START 9213525.0551

B082W8-TMA-416

TMA

54

0046436

RECORD COPY

WESTINGHOUSE HANFORD COMPANY

MAR 1993
RECEIVED
OSM DMO

Results of Analyses For:

ORGANICS & GENERAL CHEMISTRY
Case No. 02-015
(TMA/ARLI Work Order # A3-02-015)

METALS & NITRATE/NITRITE
Case No. N3-02-029
(TMA/Skinner & Sherman W.O. # S3-02-077, S3-02-078, & S3-02-079)

March 15, 1993

JAN 1997
RECEIVED
LDMC

TMA Master Work Order N3-02-029

i sac 8/10/96

9713525.0552

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

DATE: 12/1/93

TO: File

FROM: R. C. Smith

Telephone: 372-2537

cc: B. M. Colley H4-19
R. L. Hand H4-16

SUBJECT: NCR 051722 for B082W8-TMA-416

A non-conformance report (051722) was written to document a problem with samples, chains-of-custody, and labels for the above referenced package. This NCR stated the problem, but sufficient supporting documentation including all relevant chains-of-custody were not included in the package.

Three additional samples taken to replace the samples with bubbles were shipped in the wrong ice chest. The chain-of-custody for that ice chest did not identify the new samples, and therefore the chain of custody was broken. Notes added to the bottom of the chains-of-custody identify and explain the problem. Copies of these and other supporting documentation accompany this DSI. This DSI serves as notice that this situation occurred and the accompanying paperwork provides complete documentation of the nonconformance.

TMA
Thermo Analytical Inc.

Facsimile Cover Sheet

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

Date: 11-2-93

TO: Company Name: WHC

Individual: Briana

Fax Number: (___) _____

Telephone #: (___) _____

FROM: James

Number of pages being sent (including this page): 5

This facsimile may contain CONFIDENTIAL INFORMATION which also may be legally PRIVILEGED and which is intended only for the use of the addresses(s) named above. If you are not the intended recipient of this facsimile, or the employee or agent responsible for delivering it to the intended recipient, you are hereby notified that any dissemination or copying of this facsimile may be strictly prohibited.

If you have received this facsimile in error, please immediately notify us by telephone and return the original facsimile to us at the above address via the United States Postal Service. Thank you.

☎

IF YOU DO NOT RECEIVE ALL OF THIS TRANSMISSION, PLEASE CALL THE FACSIMILE OPERATOR AT (510) 235-2633.

Operator Name: _____

Comments: Here's paperwork for 2-3-95 shipments.

It appears that the sampler put the 3 VOA vials (w/o bubbles) in the wrong ice chest

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 200-BP-1

Collection Date 1/31/93

Ice Chest No. SML-154

Field Logbook No. EFL-1020

Bill of Lading/Airbill No. 253695278-1

Offsite Property No. W92-0-0266-18

Method of Shipment EMERY

Shipped to TMA

Possible Sample Hazards/Remarks N/A

Sample Identification

B0 82W8
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (UNFILTERED)
- 1, 500ml, G, WATER, ANIONS(PO4,SO4,Cl,F)
- 1, 250ml, P, WATER, NO2/NO3 (H2SO4)
- 1, 1L, P, WATER, ALKALINITY/TDS
- 1, 1L, P, WATER, CLP-CYANIDE(NaOH)

B0 82X0
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (FILTERED)

B0 82X1
- 3, 40ml, Gs, WATER, CLP-VOA *

[] Field Transfer of Custody

Relinquished by:	Received by:	Date/Time:
1/31/93 C. Celebreki C. CELIBEGE 0635	R J SINDSON RJ Simpson	2/2/93 0954
Relinquished by: RJ SIMPSON RJ Simpson 0954 2/2/93	Received by: Alfonso Martinez	Date/Time: 2-3-93 1145
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Chain of Possession (Sign and Print Names)

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: on ice cooler # SML-160

* Three vials, B082X1, received in icechest SML-154, all had bubbles and were marked "location: 100-HR-3" KB

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector KD LEE/GG HAMILTON Date Sampled 1/31/93 Time ____ hours

Company Contact PH BUTCHER Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B082W8 ✓	1, 1L, P	WATER	TAL METALS + BI (HNO3) UNFILTERED
	✓ 1, 500ml, G	"	ANIONS (PO4,SO4,Cl,F)
	✓ 1, 250ml, P	"	NO2/NO3 (H2SO4)
	✓ 1, 1L, P	"	ALKALINITY, TDS
	✓ 1, 1L, P	"	CLP-CYANIDE (NaOH)
B082X0 ✓	1, 1L P	WATER	TAL METALS + BI (HNO3) FILTERED
B082X1 ✓	3, 40ml, Gs	WATER	CLP-VOA bubbles found on 3 vials
			TASK #: 93-011
			OPC#: IN93-0-0266-18
			BOL#: 253695 278-1

Field Information** Cold 30°; slight wind

Special Handling and/or Storage NA

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Alfonso Rokop Title Sample control tech Date 2.3.93

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

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 100-BC-5

Collection Date 1/30/93

Ice Chest No. SML-217

Field Logbook No. EFL636

Bill of Lading/Airbill No. 253695 278-1

Offsite Property No. W93-0-0266-17

Method of Shipment EMERY

Shipped to TMA

Possible Sample Hazards/Remarks N/A

Sample Identification

B07ZR7
- 3, 40ml, Gs*, WATER, CLP-VOA
- 3, 2L, aG, WATER, CLP-SEMI VOA & PCB's/PEST
- 1, 1L, P, WATER, ANIONS(IC) SO4, F, PO4, Cl/COND./pH
- 1, 500ml, P, WATER, ANIONS/NO3-NO2 (H2SO4)
- 1, 1L, G, WATER, ALK./TOT. DISSOLVED SOLIDS
- 1, 500ml, G, WATER, SULFIDE (add Zinc Acetate+NaOH pH>9)
- 1, 500ml, G, WATER, AMMONIA/CHEMICAL OXYGEN DEMAND (H2SO4 pH<2)
- 1, 1L, P, WATER, CLP-ICP/AA METALS (UNFILTERED)/CLP-Hg (HNO3)
- 1, 1L, P, WATER, CLP-CN (NaOH)
- 2, 4L, P, WATER, GROSS ALPHA/BETA,GAMMA SPEC,ALPHA SPEC(U-235/238, Pu-239/240,Am-241), Sr-90 (HNO3)
- 1, 1L, P, WATER, Tc-99 (HCl)
- 1, 250ml, Gs, WATER, TRITIUM/C-14

B07ZR8
- 1, 1L, P, WATER, CLP-ICP/AA METALS (FILTERED)/CLP-Hg (HNO3) ~~[illegible]~~

B07ZR9
- 3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: 1/30/93 1315 [illegible]	Received by: AJ SIMPSON AJ Simpson	Date/Time: 2/2/93 0941
Relinquished by: AJ SIMPSON AJ Simpson 2/2/93 0941	Received by: [illegible]	Date/Time: 2-3-93 1145
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: ON ICE. cooler # SML-142

Rcvd B082X1 CLP VOA 3 40ml. not on COC

Three vials B082X1 received in icechest SML-217 had no bubbles and were marked " location: 200-BP-1 " .KB

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled 1/30/93 Time 1450 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0 7ZL7	3; 40mL; Gs*	WATER	CLP-VOA
	3; 2L; aG	WATER	CLP-SEMI-VOA, PCB'S/PEST
	1; 1L; P	WATER	ANIONS (IC): SO4, F, PO4, Cl; COND.; pH
	1; 500mL; P	WATER	ANIONS: NO3-NO2 (H2SO4)
	1; 1L; G	WATER	ALKALINITY; TOTAL DISSOLVED SOLIDS
	1; 500mL; G	WATER	SULFIDE (add zinc acetate + NaOH pH>9)
	1; 500mL; G	WATER	AMMONIA; CHEM. OXYGEN DEMAND (H2SO4 pH<2)
	1; 1L; P	WATER	CLP-ICP METALS (UNFILTERED); CLP-Hg (HNO3)
	1; 1L; P	WATER	CLP-CN (NaOH)
	2; 4L; P	WATER	GROSS ALPHA/BETA; GAMMA SPEC;
			ALPHA SPEC: U-235/238, Pu-239/240, Am-241;
			Sr-90 (HNO3)
	1; 1L; P	WATER	Tc-99 (HCL)
	1; 250mL; Gs	WATER	TRITIUM; C-14
B07ZR8	1; 1L; P	WATER	CLP-ICP/AA METALS (FILTERED); CLP-Hg (HNO3)
B07ZR9	3; 40mL; Gs*	WATER	CLP-VOA bubbles found on one vial

Field Information**

OPC: W93- 0-0266-17

BOL: 253695278-1

TASK: 93-004

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Alfonso Mabuf Title sample control tech Date 2-3-93

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

9215525.0558

Westinghouse Hanford Company

NONCONFORMANCE REPORT

1. Page 1 of 1

2. Preprinted No. 051722

QA Log No. EQA-93-029

3. P. O., W. O., or Job Control No.	4. System/End Use	5. Item/Material	6. Dwg./Spec./Other No.	7. Rev.
N/A	RI/FS	WATER SAMPLES	N/A	N/A

8. Program/Project/Other: 200-BP-1 / 93-011

9. Safety Class: N/A

10. ASME Code Items: ☐ Yes ☒ No (If yes, notify authorized inspector)

11. Supplier Name/Address: ENVIRONMENTAL FIELD SAMPLING SERVICES

12. Notification of Potential Occurence Required: ☐ Yes ☒ No

13. Code: Lot/Heat/Serial	14. Lot Size	15. Sample	16. Qty. Acc.
N/A	1	1	0

17. Inspection Criteria: ☐ Dwg. ☐ Spec. ☐ Insp. Plan ☒ Other EIIS:1, rev 5, sec 6.2

18. Item	19. Description of Nonconformance (list serial no. where applicable)	22. Disposition, Justification, and Instructions
	THREE VOLATILE ORGANIC ANALYSIS VIALS FOR SAMPLE B08ZK1 WERE RECEIVED AT TMA WITH A 200-BP-1 CHAIN-OF-CUSTODY, ALTHOUGH VIALS WERE MARKED WITH "LOCATION": 100-HR-3. THREE VOLATILE ORGANIC ANALYSIS VIALS FOR SAMPLE B08ZK1 WERE RECEIVED AT TMA WITH A 100-BC-5 CHAIN-OF-CUSTODY, ALTHOUGH VIALS WERE MARKED WITH "LOCATION": 200-BP-1. CHAIN-OF-CUSTODY WAS BROKEN.	AS Run at analysis of vials without air bubbles. Accept chain of custody was broken and flag data appropriately when submitted.

20. Originator's Signature: R.C. SMITH R Clayton Smith — Date 2/8/93

21. Cognizant QA Manager's Signature: [signature] — Date 2/17/93

23. Design Document Change Required? ☐ Yes, Doc. No. _____ ☐ No

24. Corrective Action Required? ☐ Yes, No. _____ ☐ No

Disp. App.

25. Cognizant Engineer: M A Buckmaster — Date 3/8/93

26. Technical Rep. — Date

Signature/Org. — Date

QA Engineer: RG Cozzighat, RL Hand — Date 2/8/93, 3/8/93

Signature/Org. — Date

Signature/Org. — Date

Close

27. Accept _____ Reject _____ Follow on NCR _____

QA/C Personnel — Date

A-7310-104 (10/91)

9213525.0559

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-93-00035
Record of Disposition No.

DATE: 2/8/93	LABORATORY: TMA
PROJECT TITLE/NO.: 200-BP-1/93-0011	NCR NO.: 051722

SAMPLE IDENTIFICATION NUMBERS:

B082X1

DESCRIPTION OF EVENT:

Three VOA vials for sample B082X1, all containing air bubbles, were received at TMA with a 200-BP-1 chain-of-custody, although vials were marked with "location": 100-HR-3. Three VOA vials for sample B082X1, containing no air bubbles, were received at TMA with a 100-BC-5 chain-of-custody, although vials were marked with "location": 200-BP-1. Chain-of-custody broken.

DISPOSITION OF SAMPLES:

With concurrence from J. W. Roberts, project engineer, run VOA analysis for B082X1 using vials without bubbles marked "location": 200-BP-1 which were received with the 100-BC-5 chain-of-custody.

APPROVAL SIGNATURES:

R. C. Smith/
OSM Project Coordinator (Print/Sign Name) Date

M. BUCKMASTER
~~J. W. Roberts/~~
Technical Representative (Print/Sign Name) Date

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

9713525.0560

QUALITY ASSURANCE

NONCONFORMANCE REPORT DISTRIBUTION

1. FROM:	2. MSIN:	3. DATE:
EQA	H4-16	2/16/93

4. NCR No.:	5. Initiation, Disposition, or Closure (I, D, C):
DS1722 / EQA-93-029	

6. TO:	MSIN	I	D	C
Cognizant Engineer MA Buckmaster	H6-13			
Cognizant Quality Engineer RL Hand	H4-16			
Originator RA Smith	H4-23			
Q. A. Manager —				
Cognizant QE Manager TL Remington	H4-16			
Facility Manager				
Engineering Records				
Safety				
QSDM	L4-86			
Other: JCS Package				
Q. C.				
Buyer (Procurement)				
P.O. File (Procurement)				
Vendor File (Procurement)				
RM Calley	H4-23			
JH Kessler	H4-23			
EQA Files	H4-16			

7. QST Codes

Subject:	Cause:	Contr. Factor:	PPG:
PR-02-003	PM-002		

8. Responsible Action Party:	Org Code:
MA Buckmaster	81320

A-6000-816 (09/91)

9713525.0561

000002A

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 200-BP-1

Collection Date 1/31/93

Ice Chest No. SML-154

Field Logbook No. EFL-1020

Bill of Lading/Airbill No. 253695278-1

Offsite Property No. W92-0-0266-18

Method of Shipment EMERY

Shipped to TMA

Possible Sample Hazards/Remarks N/A

Sample Identification

B0 82W8
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (UNFILTERED)
- 1, 500ml, G, WATER, ANIONS(PO4,SO4,Cl,F)
- 1, 250ml, P, WATER, NO2/NO3 (H2SO4)
- 1, 1L, P, WATER, ALKALINITY/TDS
- 1, 1L, P, WATER, CLP-CYANIDE(NaOH)

B0 82X0
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (FILTERED)

B0 82X1
- 3, 40ml, Gs, WATER, CLP-VOA *

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: 1/31/93 C. Celiberti C. CELIBERTI 0635	Received by: AJ SIMPSON AJ Simpson	Date/Time: 2/2/93 0954
Relinquished by: AJ SIMPSON AJ Simpson 0954 2/2/93	Received by: Alfonso Gabaldon	Date/Time: 2-3-93 1145
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: on ice cooler # SML-160

* Three vials, B082X1, received in icechest SML-154, all had bubbles and were marked "location: 100-HR-3" KB

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

 TMA/Norcal 87-3525.0562 CHAIN OF CUSTODY ORD # N3-02-029 000002

RCVD: 02/03/93 DUE: 03/05/93 02/03/93 16:07:17 KEEP: 06/03/93 DISP: S

DASH	SAMPLE IDENTIFICATION		STORED	TESTS for FRACTIONS with work in DEPT: SU and CATEGORY		
01A-W	B082W8	UNFILTERED	ARLI	WH043	WH128	WH131
01C-W	B082W8 MS	UNFILTERED	ARLI	WH043		
01D-W	B082W8 DUP	UNFILTERED	ARLI	WH043	WH128	WH131
03A-W	B082X1		ARLI	WH018		
03B-W	B082X1 MS		ARLI	WH018		
03C-W	B082X1 MSD		ARLI	WH018		

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
yamamoto	2-3-93	ARLI	2-3-93	Trudy Vola	2/4/93

9713525.0563

000002B

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector KD LEE/GG HAMILTON Date Sampled 1/31/93 Time _____ hours

Company Contact PH BUTCHER Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B082W8 ✓	1, 1L, P	WATER	TAL METALS + Bi (HNO3) UNFILTERED
✓	1, 500ml, G	"	ANIONS (PO4,SO4,Cl,F)
✓	1, 250ml, P	"	NO2/NO3 (H2SO4)
✓	1, 1L, P	"	ALKALINITY, TDS
✓	1, 1L, P	"	CLP-CYANIDE (NaOH)
B082X0 ✓	1, 1L P	WATER	TAL METALS + Bi (HNO3) FILTERED
B082X1 ✓	3, 40ml, Gs	WATER	CLP-VOA Bubbles found on 3 vials
			TASK #: 93-011
			OPC#: WN93-0-0266-18
			BOL#: 253695 278-1

Field Information** cold, 30°; slight wind

Special Handling and/or Storage NA

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Alfonso Mokuf Title sample control tech Date 2-3-93

Analysis Required

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

9213525.0564

0000026
N3-02-029

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-93-00035
Record of Disposition No.

DATE: 2/8/93

LABORATORY: TMA

PROJECT TITLE/NO.: 200-BP-1/93-0011

RECEIVED
FEB 22 1993

NCR NO.: 051722

SAMPLE IDENTIFICATION NUMBERS:

B082X1

DESCRIPTION OF EVENT:

Three VOA vials for sample B082X1, all containing air bubbles, were received at TMA with a 200-BP-1 chain-of-custody, although vials were marked with "location": 100-HR-3. Three VOA vials for sample B082X1, containing no air bubbles, were received at TMA with a 100-BC-5 chain-of-custody, although vials were marked with "location": 200-BP-1. Chain-of-custody broken.

DISPOSITION OF SAMPLES:

With concurrence from J. W. Roberts, project engineer, run VOA analysis for B082X1 using vials without bubbles marked "location": 200-BP-1 which were received with the 100-BC-5 chain-of-custody.

APPROVAL SIGNATURES:

R. C. Smith/ R Clayton Smith — 2/8/93
OSM Project Coordinator (Print/Sign Name) — Date

J. W. Roberts/ J W Roberts — 2/10/93
Technical Representative (Print/Sign Name) — Date

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

9713525.0565

SAMPLE LOG-IN SHEET

LAB NAME : TRA/APLI

PAGE : 1 OF 1

RECEIVED BY (PRINT NAME): Judy Clubb

LOG-IN-DATE : 2/4/93

RECEIVED BY (SIGNATURE): Judy Clubb

CASE NUMBER:
SAMPLE DELIVERY GROUP NO.:
SAS NUMBER:

REMARKS: SMZ-154

1. Custody Seal(s) — Present/Absent* Intact/Broken
2. Custody Seal Nos:
3. Chain of Custody Records — Present/Absent*
4. Traffic Reports or Packing List — Present/Absent*
5. Airbill — Airbill/Sticker Present/Absent*
6. Airbill No.: 6395829075
7. Sample Tags — Present/Absent*
8. Sample Tags Numbers — Listed/Not Listed on Chain of Custody
9. Sample Condition: — Intact/Broken*/Leaking
10. Does information on custody records, traffic reports, and sample tags agree — Yes/No*
11. Date Recieved at Lab: 2/4/93
12. Temp of ice chest 3 °F
13. Time Recieved: 0930

SAMPLE TRANSFER

Fraction:
Area #:
By:
On:

EPA SAMPLE #	CORRESPONDING SAMPLE TAG #	CORRESPONDING ASSIGNED LAB #	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC
	BCCM3	A3-C2-017-01	
	BC82U8	A3-C2-015-01	
	BC7ER9	A3-C2-016-02	
	BC82X1	A3-C2-015-02	
	BC7ER7	A3-C2-016-01	

* Contact SMO and attach record of resolution

Reviewed By: _____ Logbook No.: _____

Date: _____ Logbook Page No.: _____

FORM SC-1

000004

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 6395892075

2357M 6395892075

1 Date 2-3-93.

RECIPIENT'S COPY

From (Your Name) Please Print: SAMPLE control

Your Phone Number (Very Important): 510-235-2633

Department/Floor No.

Company: T M A /NORCAL

Street Address: 2030 WRIGHT AVE

City: RICHMOND State: CA ZIP Required: 94804

2 To (Recipient's Name) Please Print: SAMPLE control ( )

Recipient's Phone Number (Very Important)

Company: TMA / ARL

Department/Floor No.

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 160 TAYLOR street

City: MONROVIA State: CA ZIP Required: 91016

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 2340 6406

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address

City State ZIP Required

3 PAYMENT 1 [X] Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card

[ ] Cash [ ] Check

4 SERVICES (Check only one box)

Priority Overnight
11 [X] OTHER PACKAGING
16 [ ] FEDEX LETTER*
12 [ ] FEDEX PAK*
13 [ ] FEDEX BOX
14 [ ] FEDEX TUBE

Standard Overnight
51 [ ] OTHER PACKAGING
56 [ ] FEDEX LETTER*
52 [ ] FEDEX PAK*
53 [ ] FEDEX BOX
54 [ ] FEDEX TUBE

Economy Two-Day
30 [ ] ECONOMY*

Government Overnight
46 [ ] GOVT LETTER
41 [ ] GOVT PACKAGE

Freight Service
70 [ ] OVERNIGHT FREIGHT**
80 [ ] TWO-DAY FREIGHT**

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [X] DELIVER WEEKDAY
3 DELIVER SATURDAY [ ]
4 [ ] DANGEROUS GOODS
5 [ ]
6 [ ] DRY ICE
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP
[ ]
12 [ ] HOLIDAY DELIVERY

6

PACKAGES	WEIGHT	YOUR DECLARED VALUE
Total 1	Total 70	Total

DIM SHIPMENT (Chargeable Weight) [ ] lbs.

L x W x H

Reserved for Driver

1 [ ] Regular Stop 3 [ ] On-Call Stop 5 [ ] Drop Box 4 [ ] B & C 6 [ ] Station

7 Release Signature

Emp. No. Date

[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Dst [ ] Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

Federal Express Use

Base Charges

Declared Value Charge

Other 1

Other 2

Total Charges

REVISION DATE 11/92 PART #137204 FXEM 12/92 FORMAT #155

155

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9713525.0567

000005

TMA/ARLI
Thermo Analytical Inc.

RADIATION DOSE RATE SURVEY FORM

Date 2/04/93 COMPANY NORCAL (WHC) OTHER ORD # 639589207

Surveyor's Name MARK S. McCRAY

Model No. HP-210 / ESP-1 Model No. AC-3-7 / ESP-1

Serial Nos. 710289 / 02619 Serial Nos. 407726 / 02628

Calibration Date 12/02/93 Calibration Date 8/01/92

Instrument Calibration Factor 0.280 Instrument Calibration Factor 0.188

Sample	Location	HP-210 CPM	HP-210 Factor	HP-210 DPM	AC-3-7 CPM	AC-3-7 Factor	AC-3-7 DPM	Settings or Breakage?	Activity, dC/mL or dC/g
Background		33.0			1.0				
Consistency		7,520	0.2903		5,070	0.1863			
Smear SML 154		45.0			4.0				
Reported (WHC) 10 samples each <50 pCi/gram									

Comments

All OK ✓ Approved MSM

Not OK Date 2/04/93

GENERAL CHEMISTRY RESULTS

CASE NO. 02-015

Water Sample #:

B082W8

CASE NARRATIVE

The holding time for the TDS analysis was exceeded. Careful review of the QC analysis indicate the data is reliable.

Sample B082W8 (A3-02-015-01) yielded a 65.0% recovery for the Phosphate analysis. The low Phosphate recovery compared to our laboratory control sample indicated the presence of a matrix interference.

No other problems were encountered during sample analysis. All QC results were acceptable.

Ernesto Vazquez

Ernesto Vazquez

TMA Inc. REPORT Work Order # A3-02-015

Received: 02/03/93

Results by Sample

SAMPLE ID B082W8 FRACTION 01A TEST CODE WCCLPL NAME Anions & Wet Chem. - WH043

Date & Time Collected 01/31/93 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	11.4	mg/L	0.2
Fluoride	300.0	0.6	mg/L	0.1
Phosphate	300.0	<0.4	mg/L	0.4
Sulfate	300.0	93	mg/L	1

FORM I

TMA Inc. REPORT Work Order # A3-02-015

Received: 02/03/93

Results by Sample

SAMPLE ID B082W8 FRACTION 01D TEST CODE WCCLPL NAME Anions & Wet Chem. - WN043

Date & Time Collected 01/31/93 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Alkalinity	310.1	97	mg/L	2
Tot. Dissolved Solids	160.1	306	mg/L	5

FORM I

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 02-015

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : February 3, 1993

1.0 DESCRIPTION OF CASE :

One water sample was analyzed for TCL Organics- Volatiles according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX	pH
B082X1	A3-02-015-02A	V	WATER	7
B082X1 MS	A3-02-015-02B	V	WATER	7
B082X1 MSD	A3-02-015-02C	V	WATER	7

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

All of the samples were received unbroken and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL WATER :

The samples were analyzed within the CLP SOW holding times.

All of the QC results were within the limits specified by the EPA CLP SOW.

TUNES :

All of the BFB tunes are injected directly into the GC/MS instrument.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B082X1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 02015 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A302015-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 30205B24

Level: (low/med) LOW Date Received: 02/03/93

% Moisture: not dec. ____ Date Analyzed: 02/05/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

9713525.0573

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

000011

B082X1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 02015 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A302015-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 30205B24

Level: (low/med) LOW Date Received: 02/03/93

% Moisture: not dec. ____ Date Analyzed: 02/05/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9713525.0574

 Skinner&Sherman REPORT Work Order # S3-02-078

Received: 02/04/93 03/08/93 13:48:58

REPORT TO: TMA/NORCAL
2030 Wright Avenue
Richmond, CA 94804

ATTEN: Dan Steurmer

PREPARED BY: TMA / Skinner & Sherman Labs.
300 Second Avenue
P.O. Box 521
Waltham, MA 02254

ATTEN: Client Services
PHONE: (617) 890-7200

CERTIFIED BY

CONTACT: DP

CLIENT: HANFORD NOR SAMPLES: 2
COMPANY: TMA/NORCAL Hanford
FACILITY: Richmond, CA

WORK ID: N3-02-029
TAKEN: BY CLIENT
TRANS: FED EX
TYPE: WATER
P.O. #: N3-02-029
INVOICE: under separate cover

SAMPLE IDENTIFICATION		TEST CODES and NAMES used on this workorder	
01	B082W8	NO3NO2	Nitrate Plus Nitrite
01	B082W8 DUPL		
01	B082W8 SPIKE		
02	LCSW		

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in connection with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.
300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-ALAB TEST FAX (617) 890-2003

Received: 02/04/93

Results by Sample

SAMPLE ID B082W8 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 01/31/93 Category WATER

NO3NO2 2.89
mg N/L

SAMPLE ID B082W8 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 01/31/93 Category WATER

NO3NO2 2.91
mg N/L

SAMPLE ID B082W8 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 01/31/93 Category WATER

NO3NO2 4.94
mg N/L

SAMPLE ID LCSW SAMPLE # 02 FRACTIONS: A
Date & Time Collected not specified Category WATER

NO3NO2 2.02
mg N/L

2

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.
300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4LAB TEST FAX (617) 890-7203

Received: 02/04/93 03/08/93 13:48:58

TMA/NORCAL Hanford

QUALITY CONTROL

MATRIX SPIKE

Sample ID	Sample Result	Spike Added	Spike Result	% Recovery
S302078-01	2.89 mg/L	2.00 mg/L	4.94 mg/L	102.5

DUPLICATE

Sample ID	Sample result	Duplicate Result	Relative % Difference
S302078-01	2.89 mg/L	2.91 mg/L	0.7

QUALITY CONTROL SAMPLES

Sample ID	True Value	Found Value	Percent Recovery
LCS	2.00 mg/L	2.02 mg/L	101.0
Prep blank	--	<0.25 mg/L	--

TMA
Thermo Analytical Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200

Received: 02/04/93

Test Methodology

TEST CODE NO3NO2 NAME Nitrate Plus Nitrite

Methods for Chemical Analysis of Water and Wastes
EPA - 600/4-79-020 March 1979 Method 353.2 (modified)

TMA
Thermo Analytical Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3882

9713525.0578

TMA/Skinner & Sherman Labs SAMPLE LOG-IN
WORKORDER S302078 CLIENT Hanford Nox No. SAMPLES:
PROTCL CLP TURNARND 33 Day 1
COOLER TEMP: 5 oC, or NA (Soil) (Water) (Specify Other)
CUSTODIAN B. Lauer SDG/BATCH N/A
CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N302029
SHIPER & # Fedex PO/CONTRACT# -
TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D 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 2/4/93
LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	B082W8	water	2/4/93	1.32	D.S N03 N02	
2						
3						
4						
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26						
27						

Samples are from site known to have Rad-Contamination: YES ✓ NO
Samples have detectable amounts of Radioactive Material: YES NO ✓

SUBCONTRACT: YES/NO, TO: DATE: Complete 2/5/93

REVIEWED

* EPA/CLP required Rev 1.6 PAGE: 33 ~~22~~ 31

9213525.0579

PAGE 1 TMA/Norcal CHAIN OF CUSTODY ORD # N3-02-029

RCVD: 02/03/93 DUE: 03/05/93 02/03/93 16:07:11 KEEP: 06/03/93 DISP: S

DASH	SAMPLE IDENTIFICATION			STORED	TESTS for FRACTIONS with work in DEPT: SU and CATEGORY					
01B-W	B082W8		UNFILTERED	S&S	WH007	WH008	WH010	WH011	WH075A	WH137
01E	B082W8	MS	UNFILTERED	S&S	WH007	WH008	WH010	WH011	WH075A	WH137
01F	B082W8	DUP	UNFILTERED	S&S	WH007	WH008	WH010	WH011	WH075A	WH137
01G-W	L C S			S&S	WH007	WH008	WH010	WH075A	WH137	
02A-W	B082X0		FILTERED	S&S	WH007	WH008	WH010	WH075A		
02B-W	B082X0	MS	FILTERED	S&S	WH007	WH008	WH010	WH075A		
02C-W	B082X0	DUP	FILTERED	S&S	WH007	WH008	WH010	WH075A		
02D-W	L C S			S&S	WH007	WH008	WH010	WH075A		

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
tyamamoto	2-3-93	SKINNER	2-3-93	[illegible]	2/4/93

9713525.0580

TMA
Thermo Analytical Inc.

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

RECORD COPY

MAR 1993 RECEIVED DSM DMO

February 26, 1993

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

Quality Control Narrative

Scope
One (1) water sample was submitted to TMA/Skinner & Sherman Laboratories, Inc. on February 4, 1993 from TMA/Norcal. The sample was analyzed for the USEPA CLP metals, cyanide and bismuth. The analysis was performed under TMA/Skinner and Sherman work order S302077.

Methodology
The sample was prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work ILM02. Bismuth was analyzed by flame atomic absorption spectroscopy.

Discussion
All quality control requirements were met for the samples with the following exception;

The selenium digestion spike recovery 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

i 8/14/96

9213525.0581

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B082W8

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

Lab Code: SKINER Case No.: N3-02-029SAS No.: SDG No.: B082W8

Matrix (soil/water): WATER Lab Sample ID: 02077-01S

Level (low/med): LOW Date Received: 02/04/93

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	36.2	B		P
7440-36-0	Antimony	18.4	U		P
7440-38-2	Arsenic	8.5	B	S	F
7440-39-3	Barium	29.5	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	1.6	U		P
7440-70-2	Calcium	43700			P
7440-47-3	Chromium	64.7			P
7440-48-4	Cobalt	2.6	B		P
7440-50-8	Copper	5.7	B		P
7439-89-6	Iron	280			P
7439-92-1	Lead	4.1		W	F
7439-95-4	Magnesium	12500			P
7439-96-5	Manganese	5.5	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	34.0	B		P
7440-09-7	Potassium	7020			P
7782-49-2	Selenium	3.3	U	WN	F
7440-22-4	Silver	3.9	U		P
7440-23-5	Sodium	21000			P
7440-28-0	Thallium	2.6	U		F
7440-62-2	Vanadium	23.7	B		P
7440-66-6	Zinc	4.7	U		P
	Cyanide	10.0	U		CA
7440-69-9	Bismuth	500	U		A

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLOUDY Artifacts:

Comments:

C2

9713525.0582

Sampled 1/31/93

TMA/Skinner & Sherman Labs SAMPLE LOG-IN
WORKORDER S302077 CLIENT Hanford Nox No. SAMPLES:
PROTCL CLP TURNARND 33 Days
COOLER TEMP: 5 oC, or NA (Soil) 1 (Water) (Specify Other)
CUSTODIAN B. Prowle SDG/BATCH N/A
CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N302029
SHIPER & # Fed Ex PO/CONTRACT# ⊥
TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. 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 2/4/93
LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

UNFILTERED

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	Bog2W8	water	2/4/93	1.64/13.20	0.5 Tm/CN + Bismuth	
2						
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26						
27						

Samples are from site known to have Rad-Contamination: YES ✓ NO
Samples have detectable amounts of Radioactive Material: YES NO ✓

SUBCONTRACT: YES/NO, TO: DATE:

REVIEWED

Comp 2/5/93 BP

146

* EPA/CLP required Rev 1.6 PAGE:

9713525.0583

TMA
Thermo Analytical Inc.

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

RECEIVED

RECEIVED MAR 1993 DMO

February 26, 1993

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

Quality Control Narrative

Scope
One (1) water sample was submitted to TMA/Skinner & Sherman Laboratories, Inc. on February 4, 1993. The sample was analyzed for the USEPA CLP metals and bismuth. The analysis was performed under TMA/Skinner and Sherman work order S302079.

Methodology
The sample was prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work ILM02. Bismuth was analyzed by flame atomic absorption spectroscopy.

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

The lead, selenium and thallium digestion spike recoveries exceeded the control limit requirements.

The lead and selenium laboratory 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

i sm 8/14/96

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B082X0

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

Lab Code: SKINER Case No.: N3-02-029SAS No.: SDG No.: B082X0

Matrix (soil/water): WATER Lab Sample ID: 02079-01S

Level (low/med): LOW Date Received: 02/04/93

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	21.2	U		P
7440-36-0	Antimony	19.0	U		P
7440-38-2	Arsenic	9.9	B		F
7440-39-3	Barium	32.4	B		P
7440-41-7	Beryllium	0.90	U		P
7440-43-9	Cadmium	1.4	U		P
7440-70-2	Calcium	44700			P
7440-47-3	Chromium	5.4	B		P
7440-48-4	Cobalt	3.2	U		P
7440-50-8	Copper	4.9	U		P
7439-89-6	Iron	46.9	B		P
7439-92-1	Lead	7.0		N*	F
7439-95-4	Magnesium	12700			P
7439-96-5	Manganese	1.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	10.1	B		P
7440-09-7	Potassium	6850			P
7782-49-2	Selenium	11.6		+N*	F
7440-22-4	Silver	4.6	U		P
7440-23-5	Sodium	21300			P
7440-28-0	Thallium	1.9	U	WN	F
7440-62-2	Vanadium	23.4	B		P
7440-66-6	Zinc	2.5	U		P
	Cyanide				NR
7440-69-9	Bismuth	500	U		A

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

002

9716525.0585

Sampled 1/31/93

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S302079 CLIENT Hanford Nox No. SAMPLES: 1

PROTCL CLP TURNARND 33 Day (Soil) (Water) (Specify Other)

COOLER TEMP: 5 oC, or NA

CUSTODIAN D. Crowley SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N302029

SHIPER & # Fed Ex PO/CONTRACT# ↓

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. 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 2/4/93

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

FILTERED

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	B082K0	water	2/4/93	1.60	DS Tm + B.Smuth	Hg due 2-25-93
2						
3						
4						
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26						
27						

Samples are from site known to have Rad-Contamination: YES ✓ NO

Samples have detectable amounts of Radioactive Material: YES NO ✓

SUBCONTRACT: YES/NO, TO: DATE:

REVIEWED

CWM 2/5/93

BL

* EPA/CLP required Rev 1.6 PAGE: 34

Golder Associates Inc. 9213525.0586

4104-148th Avenue, NE
Redmond, WA 98052
Telephone (206) 883-0777
Fax (206) 882-5498

Golder Associates

May 4, 1993

Our ref: 913-1719
S/O/2144

Westinghouse Hanford Company
2355 Stevens Drive
345 Hills, MSIN H4-19
Richland, Washington 99352

ATTENTION: Ms. Brianna Colley

RE: 200-BP-1 DATA VALIDATION, TASK ORDER S-92-19, TRANSMITTAL OF VALIDATION MEMOS AND ORIGINAL DATA PACKAGES

Dear Ms. Colley:

Enclosed are four original data packages and the corresponding validation memos for the First Quarter 1993 Groundwater samples analyzed for TCL volatiles, TAL metals, and general chemistry.

The data packages included in this shipment are as follows:

- 9302L495-WES-1025
- 9302L511-WES-1031
- B082X2-TMA-427
- B082W8-TMA-416

The validation memos can be located at the beginning of each associated data package folder.

Please call if you have any questions.

Sincerely,

GOLDER ASSOCIATES INC.

Donald M. Caldwell
for Kent M. Angelos
Task Manager

Donald M. Caldwell
Donald M. Caldwell
Project Director

cc: Jeannette Duncan

9213525.0587

MEMORANDUM

TO: 200-BP-1 Project QA Record May 4, 1993

FR: Susan Winter, Golder Associates Inc.

RE: GENERAL CHEMISTRY ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE B082W8-TMA-416

INTRODUCTION

This memo presents the results of data validation on data package B082W8-TMA-416 consisting of one (1) low level water sample submitted for general chemistry analysis. The sample was analyzed by TMA/Norcal using standard methods for all associated parameters. The sample included in this data package is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B082W8	01/31/93	WATER

Data validation was conducted in accordance with the revised WHC statement of work (WHC 1993) and validation procedures (Bechtold 1992) in which twenty percent (20%) of the samples were randomly assigned for validation. The sample in this data set was verified and blank adjusted as summarized below since it was not selected for full data validation.

Attachments 1 and 2 to this memo provide the data reporting qualifiers and a summary of the verified results.

DATA QUALITY OBJECTIVES

Sample Result Verification. All sample results were supported in the raw data.

Blank Adjustment. All results in the associated blank sample were undetected and therefore, blank adjustment was not required.

REFERENCES

WHC, 1993, Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision F, April 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

9713525.0588

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). The data are usable for decision making purposes.

U - Indicates the 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. The data are usable for decision making purposes.

UJ - Indicates the analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

BJ - Indicates the analyte was analyzed for and detected at a concentration greater than the IDL but less than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.

J - Indicates the analyte was analyzed for and detected at a concentration greater than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.

UR - Indicates the analyte was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.

R - Indicates the analyte was analyzed and detected; however, due to an identified quality control deficiency the data are unusable.

9713525.0590

ATTACHMENT 2

AS QUALIFIED DATA SUMMARY

9713525.0591

000009

TMA Inc. REPORT Work Order # A3-02-015

Received: 02/03/93

Results by Sample

SAMPLE ID B082W8 FRACTION 01A TEST CODE WCCLPL NAME Anions & Wet Chem. - WR043

Date & Time Collected 01/31/93 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	11.4	mg/L	0.2
Fluoride	300.0	0.6	mg/L	0.1
Phosphate	300.0	<0.4	mg/L	0.4
Sulfate	300.0	93	mg/L	1

FORM I

No blank adjustment required.

verified 4/19/93

9213525.0592

000010

TMA Inc. REPORT Work Order # A3-02-815

Received: 02/03/93

Results by Sample

SAMPLE ID B082W8 FRACTION 01D TEST CODE WCCLPL NAME Anions & Wet Chem. - WW043

Date & Time Collected 01/31/93 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Alkalinity	310.1	97	mg/L	2
Tot. Dissolved Solids	160.1	306	mg/L	5

FORM I

No blank adjustment required.

verified 4/29/93

9713525.0593

Received: 02/04/93 Results by Sample

SAMPLE ID B082W8 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 01/31/93 Category WATER

NO3NO2 2.89
mg N/L

SAMPLE ID B082W8 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 01/31/93 Category WATER

NO3NO2 2.91
mg N/L

SAMPLE ID B082W8 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 01/31/93 Category WATER

NO3NO2 4.94
mg N/L

SAMPLE ID LCSW SAMPLE # 02 FRACTIONS: A
Date & Time Collected not specified Category WATER

NO3NO2 2.02
mg N/L

verified
No Blank adjustment required.
4/29/93

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

300 Second Avenue, P.O. Box 571 Waltham

9713525.0594

MEMORANDUM

TO: 200-BP-1 Project QA Record May 4, 1993

FR: Susan Winter, Golder Associates Inc.

RE: VOLATILE ORGANIC ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE B082W8-TMA-416

INTRODUCTION

This memo presents the results of data validation on data package B082W8-TMA-416 consisting of one (1) low level water sample submitted for volatile organic analysis. The sample was analyzed by TMA/Norcal according to the CLP protocol for TCL volatile compounds. The sample included in this data set is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B082X1	01/31/93	WATER

Data validation was conducted in accordance with the revised WHC statement of work (WHC 1993) and validation procedures (Bechtold 1992) in which twenty percent (20%) of the samples were randomly assigned for validation. The sample in this data set was verified and blank adjusted as summarized below since it was not selected for full data validation.

Attachments 1 and 2 to this memo provide the data reporting qualifiers and a summary of the verified results.

DATA QUALITY OBJECTIVES

Sample Result Verification. All sample results were supported in the raw data.

Blank Adjustment. All associated sample results are non-detects, therefore, no blank adjustment was required.

REFERENCES

WHC, 1993, Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision F, April 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

9713525.0595

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.

U - Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.

UR - Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.

R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.

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

N - Indicates presumptive evidence of a compound.

9713525.0597

ATTACHMENT 2

AS QUALIFIED DATA SUMMARY

9213525.0598

000010

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B082X1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 02015 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A302015-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 30205B24

Level: (low/med) LOW Date Received: 02/03/93

% Moisture: not dec. ____ Date Analyzed: 02/05/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

FORM I VOA 3/90

No blank adjustment required. 4/29/93

9216525.0599

MEMORANDUM

TO: 200-BP-1 Project QA Record May 4, 1993

FR: Susan Winter, Golder Associates Inc.

RE: METALS ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE B082W8-TMA-416

INTRODUCTION

This memo presents the results of data validation on data package B082W8-TMA-416 consisting of two (2) water samples submitted for total and dissolved metals analysis. The samples were analyzed by TMA/Norcal using the CLP protocol for TAL metals/cyanide analytes. A list of the samples included in this data package is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B082W8	01/31/93	WATER
B082X0	01/31/93	WATER

Data validation was conducted in accordance with the revised WHC statement of work (WHC 1993) and validation procedures (Bechtold 1992) in which twenty percent (20%) of the samples were randomly assigned for validation. The samples in this data set were verified and blank adjusted as summarized below since they were not selected for full data validation.

Attachments 1 through 3 to this memo provide the data reporting qualifiers, a summary of the verified results, and a summary of the associated blank results.

DATA QUALITY OBJECTIVES

Sample Result Verification. All sample results were supported in the raw data.

Blank Adjustment. Aluminum, cobalt, copper, lead, and manganese were detected in the laboratory blank associated with sample B082W8, and chromium and iron were detected in the laboratory blank associated with B082X0. The associated sample results have been qualified as undetected (U) since they were less than five times the respective blank concentrations.

REFERENCES

WHC, 1993, Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision F, April 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

9713525.0601

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). The data are usable for decision making purposes.

U - Indicates the 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. The data are usable for decision making purposes.

UJ - Indicates the analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

BJ - Indicates the analyte was analyzed for and detected at a concentration greater than the IDL but less than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.

J - Indicates the analyte was analyzed for and detected at a concentration greater than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.

UR - Indicates the analyte was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.

R - Indicates the analyte was analyzed and detected; however, due to an identified quality control deficiency the data are unusable.

9713525.0603

ATTACHMENT 2

AS QUALIFIED DATA SUMMARY

9213525.0604

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B082W8

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

Lab Code: SKINER Case No.: N3-02-029SAS No.: SDG No.: B082W8

Matrix (soil/water): WATER Lab Sample ID: 02077-01S

Level (low/med): LOW Date Received: 02/04/93

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	36.2	B		P	u
7440-36-0	Antimony	18.4	U		P	
7440-38-2	Arsenic	8.5	B	S	F	
7440-39-3	Barium	29.5	B		P	
7440-41-7	Beryllium	0.50	U		P	
7440-43-9	Cadmium	1.6	U		P	
7440-70-2	Calcium	43700			P	
7440-47-3	Chromium	64.7			P	
7440-48-4	Cobalt	2.6	B		P	u
7440-50-8	Copper	5.7	B		P	u
7439-89-6	Iron	280			P	
7439-92-1	Lead	4.1		W	F	u
7439-95-4	Magnesium	12500			P	
7439-96-5	Manganese	5.5	B		P	u
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	34.0	B		P	
7440-09-7	Potassium	7020			P	
7782-49-2	Selenium	3.3	U	WN	F	
7440-22-4	Silver	3.9	U		P	
7440-23-5	Sodium	21000			P	
7440-28-0	Thallium	2.6	U		F	
7440-62-2	Vanadium	23.7	B		P	
7440-66-6	Zinc	4.7	U		P	
	Cyanide	10.0	U		CA	
7440-69-9	Bismuth	500	U		A	

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLOUDY Artifacts:

Comments:

Verified
Blank adjustment required. 4/29/93

C2

9213525.0605

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B082X0

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

Lab Code: SKINER Case No.: N3-02-029SAS No.: SDG No.: B082X0

Matrix (soil/water): WATER Lab Sample ID: 02079-01S

Level (low/med): LOW Date Received: 02/04/93

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	21.2	U		P	
7440-36-0	Antimony	19.0	U		P	
7440-38-2	Arsenic	9.9	B		F	
7440-39-3	Barium	32.4	B		P	
7440-41-7	Beryllium	0.90	U		P	
7440-43-9	Cadmium	1.4	U		P	
7440-70-2	Calcium	44700			P	
7440-47-3	Chromium	5.4	~~B~~		P	u
7440-48-4	Cobalt	3.2	U		P	
7440-50-8	Copper	4.9	U		P	
7439-89-6	Iron	46.9	~~B~~		P	u
7439-92-1	Lead	7.0		N*	F	
7439-95-4	Magnesium	12700			P	
7439-96-5	Manganese	1.7	U		P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	10.1	B		P	
7440-09-7	Potassium	6850			P	
7782-49-2	Selenium	11.6		+N*	F	
7440-22-4	Silver	4.6	U		P	
7440-23-5	Sodium	21300			P	
7440-28-0	Thallium	1.9	U	WN	F	
7440-62-2	Vanadium	23.4	B		P	
7440-66-6	Zinc	2.5	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	500	U		A	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

Verified
Blank adjustment required.

OC2

FORM I - IN ILM02.1

9713525.0606

ATTACHMENT 3

ASSOCIATED BLANK DATA SUMMARY

WESTINGHOUSE/HANFORD

3
BLANKS

Blank associated with sample B082W8

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

Lab Code: SKINER Case No.: N3-02-029SAS No.: SDG No.: B082W8

Preparation Blank Matrix (soil/water): WATER

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	27.0	U	40.3	B	27.0	U	27.0	U	27.660	B	P
Antimony	18.4	U	18.4	U	18.4	U	18.4	U	18.400	U	P
Arsenic	3.7	U	3.7	U	3.7	U	3.7	U	3.700	U	F
Barium	1.0	U	1.3	B	1.0	U	1.2	B	1.000	U	P
Beryllium	0.5	U	0.5	U	0.5	U	0.5	U	0.500	U	P
Cadmium	1.6	U	1.6	U	2.2	B	1.6	U	1.600	U	P
Calcium	17.2	U	39.8	B	17.2	U	17.2	U	-86.260	B	P
Chromium	2.7	U	2.7	U	2.7	U	2.7	U	-4.060	B	P
Cobalt	2.5	U	3.6	B	2.5	U	5.6	B	2.500	U	P
Copper	4.2	B	9.2	B	4.6	B	8.9	B	6.020	B	P
Iron	-8.9	B	6.5	U	6.5	U	6.5	U	-7.380	B	P
Lead	1.2	U	1.2	U	1.2	U	1.2	U	1.356	B	F
Magnesium	37.9	B	44.5	B	24.6	U	27.0	B	24.600	U	P
Manganese	1.0	U	1.6	B	1.6	B	2.5	B	1.000	U	P
Mercury	0.1	U	0.1	U	0.1	U			0.100	U	CV
Nickel	3.0	U	3.0	U	3.0	U	3.0	U	3.000	U	P
Potassium	116.0	U	116.0	U	116.0	U	116.0	U	116.000	U	P
Selenium	3.3	U	3.3	U	3.3	U	3.3	U	3.300	U	F
Silver	3.9	U	3.9	U	3.9	U	3.9	U	3.900	U	P
Sodium	42.1	U	42.1	U	42.1	U	42.1	U	42.100	U	P
Thallium	2.6	U	2.6	U	2.6	U	2.6	U	2.600	U	F
Vanadium	2.5	U	2.5	U	2.8	B	2.5	U	2.500	U	P
Zinc	4.7	U	4.7	U	4.7	U	4.7	U	4.700	U	P
Cyanide	10.0	U	10.0	U	10.0	U			10.000	U	CA
Bismuth	500.0	U	500.0	U	500.0	U			500.000	U	A

5/10/93

07

9715525.0608

WESTINGHOUSE/HANFORD

3
BLANKS

Blank associated with Sample B082X0.

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

Lab Code: SKINER Case No.: N3-02-029SAS No.: SDG No.: B082X0

Preparation Blank Matrix (soil/water): WATER

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	21.2	U	30.4	B	21.2	U	21.2	U	21.200	U	P
Antimony	19.0	U	19.0	U	19.0	U	19.0	U	19.000	U	P
Arsenic	2.6	U	2.6	U	2.6	U	2.6	U	2.600	U	F
Barium	3.6	B	3.6	B	3.6	B	2.4	B	2.400	U	P
Beryllium	0.9	U	0.9	U	0.9	U	0.9	U	0.900	U	P
Cadmium	1.4	U	1.4	U	1.4	U	1.4	U	1.400	U	P
Calcium	74.7	B	15.3	U	15.3	U	15.3	U	-105.370	B	P
Chromium	5.4	B	4.2	U	4.2	U	4.2	U	-4.720	B	P
Cobalt	3.2	U	3.2	U	3.2	U	3.4	B	3.200	U	P
Copper	17.1	B	11.9	B	7.4	B	8.9	B	8.930	B	P
Iron	8.6	B	9.4	B	3.7	U	8.2	B	-4.690	B	P
Lead	1.5	U	1.5	U	1.8	B	1.5	U	1.500	U	F
Magnesium	65.6	U	65.6	U	65.6	U	65.6	U	65.600	U	P
Manganese	1.7	U	1.7	U	1.7	U	1.7	U	1.700	U	P
Mercury	0.1	U	0.1	U	0.1	U			0.100	U	CV
Nickel	5.4	U	5.4	U	5.4	U	5.4	U	5.400	U	P
Potassium	123.8	U	123.8	U	123.8	U	123.8	U	123.800	U	P
Selenium	3.1	U	3.1	U	3.1	U	3.1	U	3.100	U	F
Silver	4.6	U	4.6	U	4.6	U	4.6	U	4.600	U	P
Sodium	54.3	B	38.7	U	38.7	U	38.7	U	38.700	U	P
Thallium	1.9	U	1.9	U	1.9	U	1.9	U	1.900	U	F
Vanadium	4.0	U	4.0	U	4.0	U	4.0	U	4.000	U	P
Zinc	5.9	B	4.8	B	2.5	U	3.9	B	2.500	U	P
Cyanide											NR
Bismuth	500.0	U	500.0	U	500.0	U	500.0	U	500.000	U	A