START 9713516.0002

B082X2-TMA-427

0046183

TMA

RECORD COPY

WESTINGHOUSE HANFORD COMPANY

MAR 1993
RECEIVED
OSM DMO

Results of Analyses For:

ORGANICS & GENERAL CHEMISTRY
Case No. 02-021
(TMA/ARLI Work Order # A3-02-021)

METALS & NITRATE/NITRITE
Case No. N3-02-039
(TMA/Skinner & Sherman W.O. # S3-02-092, S3-02-093, & S3-02-094)

JAN 1997
RECEIVED
EDMC

March 22, 1993

TMA Master Work Order N3-02-039

9713516.0003

Westinghouse Hanford Company

NONCONFORMANCE REPORT

1. Page 1 of 1

2. Preprinted No. 051725

QA Log No. EQA-93-030

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	3082X5	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.	17. Inspection Criteria
N/A	1	1	0	☐ Dwg. ☐ Spec. ☐ Insp. Plan ☒ Other EII 5.9, AppA, Rev3 Sec 5.0, Item 4

18. Item	19. Description of Nonconformance (list serial no. where applicable)	22. Disposition, Justification, and Instructions
	THREE SAMPLES FOR VOLATILE ORGANIC ANALYSIS WERE COLLECTED AND IDENTIFIED AS SAMPLE NUMBER ~~[illegible]~~ RCS 2/9/93 B082X5. HOWEVER, CONTRARY TO THE SAMPLE COLLECTION CRITERIA REFERENCED IN BLOCK 17 ABOVE, TWO OF THE THREE SAMPLE BOTTLES WERE FOUND TO CONTAIN AIR BUBBLES.	Continue VOA analysis using only Vial without air bubbles

20. Originator's Signature: R. C. SMITH — Date: 2/9/93

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	Date	26. Technical Rep.	Date	Signature/Org.	Date
M.A. Buckingham	3/8/93				

QA Engineer	Date	Signature/Org.	Date	Signature/Org.	Date
R. Hand	3/8/93				

Close

27. Accept ✓ Reject _____ Follow on NCR _____ QA/C Personnel [signature] Date 4/12/93

A-7310-104 (10/91)

N3-02-039

OFFICE OF SAMPLE MANAGEMENT
RECORD OF DISPOSITION

ROD-93-00038
Record of Disposition No.

DATE: 2/9/93	LABORATORY: TMA
PROJECT TITLE/NO.: 200-BP-1/93-011	NCR NO.: 051725

SAMPLE IDENTIFICATION NUMBERS:

B082X5

RECEIVED
FEB 22 1993

DESCRIPTION OF EVENT:

Two of three VOA vials received at lab with bubbles.

DISPOSITION OF SAMPLES:

Per concurrence with M. Buckmaster, project engineer, continue VOA analysis using vial without bubbles.

APPROVAL SIGNATURES:

R. C. Smith/ R Clayton Smith — 2/9/93
OSM Project Coordinator (Print/Sign Name) — Date

M. Buckmaster/ Mark Buckmaster — 2/16/93
Technical Representative (Print/Sign Name) — Date

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

9713516.0005

QUALITY ASSURANCE

NONCONFORMANCE REPORT DISTRIBUTION

briand

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

4. NCR No.:	5. Initiation, Disposition, or Closure (I, D, C):
051725 / EQA-93-030	

6. TO:	MSIN	I	D	C
Cognizant Engineer MA Bucknuster	H6-03			
Cognizant Quality Engineer RL Hand	H4-16			
Originator RC Smith	H4-23			
Q. A. Manager —				
Cognizant QE Manager TL Bennington	H4-16			
Facility Manager				
Engineering Records				
Safety				
QSDM	L4-86			
Other: JCS Package				
Q. C.				
Buyer (Procurement)				
P.O. File (Procurement)				
Vendor File (Procurement)				
BM Colley	H4-23			
JH Kessnuk	H4-23			
EQA Files	H4-16			

APR 1993

7. QST Codes

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

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

A-6000-816 (09/91)

PAGE 1 97TMA/Norcal 0006 CHAIN OF CUSTODY ORD # N3-02-039

RCVD: 02/05/93 DUE: 03/07/93 02/05/93 16:03:12 KEEP: 06/05/93 DISP: S 000002

DASH	SAMPLE IDENTIFICATION			STORED	TESTS for FRACTIONS with work in DEPT: SU and CATEGORY
01A-W	B082X2		UNFILTERED	ARLI	: WH043 WH128 WH131
01C-W	B082X2	MS	UNFILTERED	ARLI	: WH043
01D-W	B082X2	DUP	UNFILTERED	ARLI	: WH043 WH128 WH131
03A-W	B082X5			~~S&S~~ ARLI	: WH018 Two KA vials have bubbles
03B	B082X5	MS		~~S&S~~ "	: WH018
03C	B082X5	MSD		~~S&S~~ "	: WH018

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
Yamamoto	2-5-93	ARLI	2-5-93	[illegible]	2/8/93*

*Samples opened 2/8/93: Received 2/6/93 by NLR. T.G. 2/8/93

9713516.0007

000002A
N3-02-039

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 2-3-93

Ice Chest No. SML-225

Field Logbook No. EFL-1020

Bill of Lading/Airbill No. 2519008019

Offsite Property No. ~~W92-~~ kr 2/4/93 WA3-0-0226-24

Method of Shipment EMERY

Shipped to TMA

Possible Sample Hazards/Remarks N/A

Sample Identification

BO 82X2
- 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)

BO 82X4
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (FILTERED)

BO 82X5
- 3, 40ml, Gs, WATER, CLP-VOA bubbles found on two vials.

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: 2-3-93 1400 B. WHITTEN	Received by: K. Trapp / K. Trapp	Date/Time: 2/4/93 0700
Relinquished by: 2/4/93 K. Trapp / K. Trapp 0730	Received by: Alfonso Rodriguez	Date/Time: 2-5-93 1130
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: FRIG #5

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

9713516.0008

0000028

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector KD LEE/GG HAMILTON Date Sampled 2-3-93 Time 1118 hours

Company Contact PH BUTCHER Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B082X2	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)
	KT 2/4/93		
B082X3/4	1, 1L P	WATER	TAL METALS + Bi (HNO3) FILTERED
B082X5	3, 40ml, Gs	WATER	CLP-VOA
			TASK #: 93-011
			OPC#: W93-0-0226-24
			BOL#: 2519008019

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by [illegible] Title sample control tech Date 2-5-93

Analysis Required _____

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

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

A-6030-108(R 7/90)

9713516.0009

SAMPLE LOG-IN SHEET

000003

LAB NAME : TRA/ARI

PAGE : 1 OF 1

RECEIVED BY (PRINT NAME): Trudy Gaw

LOG-IN-DATE : 2/8/93

RECEIVED BY (SIGNATURE): Trudy Gaw

CASE NUMBER:

SAMPLE DELIVERY GROUP NO.:

SAS NUMBER:

REMARKS: 5ML 236

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.: 6395892286

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 * 2/8/93

12. Temp of ice chest 4 °C

13. Time Recieved: 0945

SAMPLE TRANSFER

Fraction:

Area #:

By:

On:

EPA SAMPLE #	CORRESPONDING SAMPLE TAG #	CORRESPONDING ASSIGNED LAB #	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC
	B082X2	A3-02-021-01	Trace air bubble
	B082X5	A3-02-021-02	

* Contact SMO and attach record of resolution

Reviewed By:

Date:

Logbook No.:

Logbook Page No.:

FORM DC-1

*Opened 2/8/93; Received 2/6/93 off hours; see form: TG. 2/8/93

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER 6395072036

6395072036

RECIPIENT'S COPY

1 Date 2-5-93

From (Your Name) Please Print: SAMPLE CONTROL

Your Phone Number (Very Important):

Company:

Department/Floor No:

Street Address:

City:

State: CA

ZIP Required:

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

Recipient's Phone Number (Very Important):

Company: THALARI

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

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning)
11 [X] OTHER PACKAGING
16 [ ] FEDEX LETTER*
12 [ ] FEDEX PAK*
13 [ ] FEDEX BOX
14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon)
51 [ ] OTHER PACKAGING
56 [ ] FEDEX LETTER*
52 [ ] FEDEX PAK*
53 [ ] FEDEX BOX
54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day)
30 [ ] ECONOMY*
* Economy Letter rate not available. Minimum charge: One pound economy rate

Government Overnight (Reserved for authorized users only)
46 [ ] GOVT LETTER
41 [ ] GOVT PACKAGE

Freight Service (for packages over 150 lbs.)
70 [ ] OVERNIGHT FREIGHT**
80 [ ] TWO-DAY FREIGHT**
(Confirmed time/date required)

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [ ] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) [X] (Not available to all locations)
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE (Dangerous Goods Shipper's Declaration not required)
Dry ice 9 UN 1845 x kg 904 III
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
[ ]
12 [ ] HOLIDAY DELIVERY (If offered)

6 PACKAGES | WEIGHT (In Pounds Only) | YOUR DECLARED VALUE (See right)
1 | 2.1
Total | Total 1 39 | Total

DIM SHIPMENT (Chargeable Weight)
[ ] lbs
L x W x H

Received At
[X] Regular Stop [ ] Drop Box
4 [ ] B S C

7 Release

Emp. No | Date

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

Street Address

City | State | Zip

Received By: X Nicole Lott

Date/Time Received: 2/6/93 9:20 AM

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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9713516.0010

000004

TMA/ARLI
Thermo Analytical Inc.

RADIATION DOSE RATE SURVEY FORM

Date 2/08/93 COMPANY NORCAL (w HC) OTHER ORD # 639589086

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 12/2/93 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	Spillage or Breakage?	Activity, uCi/ml or uCi/g
Background		32.0			0				
Consistency		7,380	0.2849		5,060	0.1885			
Smear SML 236		34.0			1.0				
Repeated (w HC) 12 samples each < 50 uCi/gram									

Comments

All OK ✓ Approved MSM

Not OK Date 2/08/93

GENERAL CHEMISTRY RESULTS

CASE NO. 02-021

Water Sample #:

B082X2

CASE NARRATIVE

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

Sample B082X2 (A3-02-021-01) yielded a 69.0% 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

9713516.0013

000009

TMA Inc. REPORT Work Order # A3-02-021

Received: 02/05/93

Results by Sample

SAMPLE ID B082X2 FRACTION 01A TEST CODE WCCLPL NAME Anions & Wet Chem. - WH043

Date & Time Collected 02/03/93 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.0	mg/L	0.2
Fluoride	300.0	0.5	mg/L	0.1
Phosphate	300.0	<0.4	mg/L	0.4
Sulfate	300.0	23	mg/L	1

FORM I

9713516.0014

000010

TMA Inc. REPORT Work Order # A3-02-021

Received: 02/05/93

Results by Sample

SAMPLE ID B082X2 FRACTION 01D TEST CODE WCCLPL NAME Anions & Wet Chem. - WH043

Date & Time Collected 02/03/93 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Alkalinity	310.1	107	mg/L	2
Tot. Dissolved Solids	160.1	201	mg/L	5

FORM I

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 02-021

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : February 5, 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
B082X5	A3-02-021-02A	V	WATER	7
B082X5 MS	A3-02-021-02B	V	WATER	7
B082X5 MSD	A3-02-021-02C	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.

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Nicole Roth
CLP Program Manager

Wida Ang
Organics Supervisor

9713516.0017

000010

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B082X5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 02021 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A302021-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 30211B04

Level: (low/med) LOW Date Received: 02/05/93

% Moisture: not dec. ____ Date Analyzed: 02/11/93

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	2	BJ
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

EPA SAMPLE NO.

B082X5

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 02021 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A302021-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 30211B04

Level: (low/med) LOW Date Received: 02/05/93

% Moisture: not dec. ____ Date Analyzed: 02/11/93

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

9713516.0019

 Skinner&Sherman REPORT Work Order # S3-02-094

Received: 02/09/93 03/08/93 14:07:17

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

ATTEN Dan Steurmer

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

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

ATTEN Client Services
PHONE (617) 890-7200

CERTIFIED BY

CONTACT DP

WORK ID N3-02-039
TAKEN BY CLIENT
TRANS FED EX
TYPE WATER
P.O. # N3-02-039
INVOICE under separate cover

SAMPLE IDENTIFICATION		TEST CODES and NAMES used on this workorder	
01	B082X2	NO3NO2	Nitrate Plus Nitrite
01	B082X2 DUPL		
01	B082X2 SPIKE		
02	LCSW		

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 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

9713516.0020

 Skinner&Sherman REPORT Work Order # S3-02-094

Received: 02/09/93 Results by Sample

SAMPLE ID B082X2 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 02/03/93 Category WATER

NO3NO2 3.07
mg N/L

SAMPLE ID B082X2 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 02/03/93 Category WATER

NO3NO2 3.10
mg N/L

SAMPLE ID B082X2 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 02/03/93 Category WATER

NO3NO2 5.02
mg N/L

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

NO3NO2 1.98
mg N/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
1-800-4 LAB TEST FAX (617) 890-3883

9713516.0021

Received: 02/09/93 03/08/93 14:07:17

TMA/NORCAL Hanford

QUALITY CONTROL

MATRIX SPIKE

Sample ID	Sample Result	Spike Added	Spike Result	% Recovery
S302094-01	3.07 mg/L	2.00 mg/L	5.02 mg/L	97.5

DUPLICATE

Sample ID	Sample result	Duplicate Result	Relative % Difference
S302094-01	3.07 mg/L	3.10 mg/L	1.0

QUALITY CONTROL SAMPLES

Sample ID	True Value	Found Value	Percent Recovery
LCS	2.00 mg/L	1.98 mg/L	99.0
Prep blank	--	<0.25 mg/L	--

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 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

9713516.0022

Received: 02/09/93 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) 890-3883

9713516.0023

Sampled 2/3/93

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S302094 CLIENT Hanford Nor No. SAMPLES: 1

PROTCL clp TURNARND 33 Days

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

CUSTODIAN B. Pamle SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N302039

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 2/10/93

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

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME U
1	B082X2	water	2-9-93	1.06	DS N03 N02	
2						
3						
4						
5						
6						
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17						
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22						
23						
24						
25						
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: BP

REVIEWED completed 2/10/93

* EPA/CLP required Rev 1.6 PAGE: 50

9713516.0024

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
OSM DMO

March 1, 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 9, 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 S302092.

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.

Steven R. Provencal

Steven R. Provencal
Lead Chemist

8/12/96 KDB

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B082X2

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

Lab Code: SKINER Case No.: N3-02-039SAS No.: SDG No.: B082X2

Matrix (soil/water): WATER Lab Sample ID: 02092-01S

Level (low/med): LOW Date Received: 02/09/93

% 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	27.0	U		P
7440-36-0	Antimony	18.4	U		P
7440-38-2	Arsenic	9.9	B		F
7440-39-3	Barium	26.2	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	1.6	U		P
7440-70-2	Calcium	29400			P
7440-47-3	Chromium	2.7	U		P
7440-48-4	Cobalt	2.5	U		P
7440-50-8	Copper	4.5	B		P
7439-89-6	Iron	59.3	B		P
7439-92-1	Lead	1.2	U		F
7439-95-4	Magnesium	8840			P
7439-96-5	Manganese	1.9	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.0	U		P
7440-09-7	Potassium	5000	B		P
7782-49-2	Selenium	3.1	U	WN	F
7440-22-4	Silver	3.9	U		P
7440-23-5	Sodium	14200			P
7440-28-0	Thallium	2.6	U		F
7440-62-2	Vanadium	22.5	B		P
7440-66-6	Zinc	12.0	B		P
	Cyanide	10.0	U		CA
7440-69-9	Bismuth	500	U		A

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9713516.0026

Sampled 2/3/93

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER 5302092 CLIENT Hanford Nor No. SAMPLES:

PROTCL CLP TURNARND 33 Days 1 (Soil) (Water) (Specify Other

COOLER TEMP: 5 oC, or NA

CUSTODIAN B. Arnold SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N302039

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 2-9-93

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

UNFILTERED

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME U
1	508 2x2	water	2-9-93	1.82	D.S	TM + CN + B.smith
2						
3						
4						
5						
6						
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22						
23						
24						
25						
26						
27						

141

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

REVIEWED

* EPA/CLP required Rev 1.6 PAGE: 48 2/10/93 BP

9713516.0027

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
OSM DMO

March 1, 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 9, 1993. The sample was analyzed for the USEPA CLP metals and bismuth. The analysis was performed under TMA/Skinner and Sherman work order S302093.

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.

Steven R. Provencal

Steven R. Provencal
Lead Chemist

8/12/96 KDD

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B082X4

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

Lab Code: SKINER Case No.: N3-02-039SAS No.: SDG No.: B082X4

Matrix (soil/water): WATER Lab Sample ID: 02093-01S

Level (low/med): LOW Date Received: 02/09/93

% 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	30.6	B		P
7440-36-0	Antimony	19.0	U		P
7440-38-2	Arsenic	9.4	B		F
7440-39-3	Barium	27.5	B		P
7440-41-7	Beryllium	0.90	U		P
7440-43-9	Cadmium	2.0	B		P
7440-70-2	Calcium	29700			P
7440-47-3	Chromium	4.2	U		P
7440-48-4	Cobalt	3.2	U		P
7440-50-8	Copper	4.9	U		P
7439-89-6	Iron	3.7	U		P
7439-92-1	Lead	1.2	U		F
7439-95-4	Magnesium	8970			P
7439-96-5	Manganese	1.[illegible]	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	5.4	U		P
7440-09-7	Potassium	5090			P
7782-49-2	Selenium	3.1	U	WN	F
7440-22-4	Silver	4.6	U		P
7440-23-5	Sodium	14300			P
7440-28-0	Thallium	1.5	U		F
7440-62-2	Vanadium	22.0	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:

9713516.0029

Sampled 2/3/93

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S302093 CLIENT Hanford Nor No. SAMPLES:

PROTCL CLP TURNARND 33 Day 1

COOLER TEMP: 5 oC, or NA (Soil) (Water) (Specify Other)

CUSTODIAN B. Prunle SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N302039

SHIPER & # Fed Ex PO/CONTRACT# 1

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. SANCHEZ

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: nm

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 2-9-93

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

FILTERED

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME U
1	B082X4	water	2-9-93	1.91	DS Tm + Bismuth	
2						
3						
4						
5						
6						
7						
8						
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24						
25						
26						
27						

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

Samples have detected amounts of Radioactive Material: YES NO ✓

126

SUBCONTRACT: YES/NO, TO: DATE: complete 2/10/93

REVIEWED

* EPA/CLP required Rev 1.6 PAGE: 49 BP

9713516.0030

VALIDATION SUMMARY

9713516.0031

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 B082X2-TMA-427

INTRODUCTION

This memo presents the results of data validation on data package B082X2-TMA-427 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
B082X5	02/03/93	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 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. The methylene chloride sample result of 2 µg/L was qualified as undetected (U) and corrected to the reporting limit of 10 µg/L since methylene chloride was detected in the blank at a concentration of 3 µg/L.

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.

9713516.0032

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.

9713516.0034

ATTACHMENT 2

AS QUALIFIED DATA SUMMARY

9713516.0035

000010

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B082X5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 02021 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A302021-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 30211B04

Level: (low/med) LOW Date Received: 02/05/93

% Moisture: not dec. ____ Date Analyzed: 02/11/93

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 ~~2~~	~~BJ~~ 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

Verified. 5/03/93

FORM I VOA 3/90

9713516.0036

ATTACHMENT 3

ASSOCIATED BLANK DATA SUMMARY

9713516.0037

000051

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK0211B

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 02021 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: WBLK0211

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 30211B03

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 02/11/93

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	3	J
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

5/03/93

9713516.0038

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 B082X2-TMA-427

INTRODUCTION

This memo presents the results of data validation on data package B082X2-TMA-427 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. A list of the samples validated is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B082X2	02/03/93	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.

9713516.0039

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.

9713516.0041

ATTACHMENT 2

AS QUALIFIED DATA SUMMARY

9713516.0042

000009

TMA Inc. REPORT Work Order # A3-02-021

Received: 02/05/93

Results by Sample

SAMPLE ID B082X2 FRACTION 01A TEST CODE WCCLPL NAME Anions & Wet Chem. - WN043

Date & Time Collected 02/03/93 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.0	mg/L	0.2
Fluoride	300.0	0.5	mg/L	0.1
Phosphate	300.0	<0.4	mg/L	0.4
Sulfate	300.0	23	mg/L	1

FORM I

Verified

9/03/93

9713516.0043

000010

TMA Inc. REPORT Work Order # A3-02-021

Received: 02/05/93

Results by Sample

SAMPLE ID B082X2 FRACTION 01D TEST CODE WCCLPL NAME Anions & Wet Chem. - WN043

Date & Time Collected 02/03/93 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Alkalinity	310.1	107	mg/L	2
Tot. Dissolved Solids	160.1	201	mg/L	5

FORM I

Unverified.

5/03/93

9713516.0044

 Skinner&Sherman REPORT Work Order # S3-02-094

Received: 02/09/93 Results by Sample

SAMPLE ID B082X2 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 02/03/93 Category WATER

NO3NO2 3.07 mg N/L

SAMPLE ID B082X2 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 02/03/93 Category WATER

NO3NO2 3.10 mg N/L

SAMPLE ID B082X2 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 02/03/93 Category WATER

NO3NO2 5.02 mg N/L

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

NO3NO2 1.98 mg N/L

verified. 5/03/93

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

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1-800-4-LAB TEST FAX (617) 890-3883

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 B082X2-TMA-427

INTRODUCTION

This memo presents the results of data validation on data package B082X2-TMA-427 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 validated is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B082X2	02/03/93	WATER
B082X4*	02/03/93	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, marked with an asterisk (*), were randomly assigned for validation. Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of the matrix spike and GFAA analytical spikes as summarized under "Minor Deficiencies".

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

Detection Limits. Detection limit goals were met for all analyses.

Completeness. The data package was complete for all requested analyses. Two (2) samples were validated in this data set with a total of 49 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets the work plan objectives of 90%.

Samples B082X2 and B082X4 were identified as field split samples from site location 2-E33-24. However, since the corresponding sample results are not currently available, the relative percent differences could not be determined.

MAJOR DEFICIENCIES

No deficiencies were identified for the metals fraction which required rejection of data.

MINOR DEFICIENCIES

Blanks

Copper, iron, and manganese were detected in the laboratory blank associated with sample B082X2, and aluminum and cadmium were detected in the laboratory blank associated with B082X4. Therefore, since the associated sample results were less than five times the respective blank concentrations, the associated sample results have been qualified as undetected (U).

Matrix Spike

The matrix spike percent recoveries for selenium in both samples, B082X2 and B082X4, were less than the 75% control limit, but greater than 30%. Therefore, the associated sample results have been qualified as estimated (UJ).

GFAA Analytical Spikes

GFAA analytical spikes for selenium in samples B082X2 and B082X4 were below the control limit of 85%. Therefore, the associated sample results have been qualified as estimated (UJ).

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.

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9713516_0048

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.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9713516.0050

DATA QUALIFICATION SUMMARY - FORM B-7

B082X2 - MA-427

SDG:	REVIEWER:	DATE: 5/03/93	PAGE 1 OF 1
COMMENTS: Metals			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Copper	u	B082X2	present in blanks
Iron	u	↓	↓
Manganese	u	↓	↓
Selenium	UJ	B082X2	MS %R < 75%
Aluminum	u	B082X4	present in blanks
Cadmium	u	↓	↓
Selenium	UJ	B082X4	MS %R < 75%
Selenium	UJ	B082X4	GFAA Analytical Spike %R
↓	↓	B082X2	out of CL

9713516.0051

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713516.0052

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER: 2-E33-24

INORGANIC ANALYSIS DATA SHEET

B082X2
Split

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

Lab Code: SKINER Case No.: N3-02-039SAS No.: SDG No.: B082X2

Matrix (soil/water): WATER Lab Sample ID: 02092-01S

Level (low/med): LOW Date Received: 02/09/93

% 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 +	27.0	U		P	
7440-36-0	Antimony +	18.4	U		P	
7440-38-2	Arsenic +	9.9	B		F	
7440-39-3	Barium +	26.2	B		P	
7440-41-7	Beryllium +	0.50	U		P	
7440-43-9	Cadmium +	1.6	U		P	
7440-70-2	Calcium +	29400			P	
7440-47-3	Chromium +	2.7	U		P	
7440-48-4	Cobalt +	2.5	U		P	
7440-50-8	Copper +	4.5	~~B~~		P	u
7439-89-6	Iron +	59.3	~~B~~		P	u
7439-92-1	Lead +	1.2	U		F	
7439-95-4	Magnesium +	8840			P	
7439-96-5	Manganese +	1.9	~~B~~		P	u
7439-97-6	Mercury +	0.10	U		CV	
7440-02-0	Nickel +	3.0	U		P	
7440-09-7	Potassium +	5000	B		P	
7782-49-2	Selenium +	3.1	~~U~~	WN	F	uJ
7440-22-4	Silver +	3.9	U		P	
7440-23-5	Sodium +	14200			P	
7440-28-0	Thallium +	2.6	U		F	
7440-62-2	Vanadium +	22.5	B		P	
7440-66-6	Zinc +	12.0	B		P	
	Cyanide +	10.0	U		CA	
7440-69-9	Bismuth +	500	U		A	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

5/03/93

Comments:
Verified.

02

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WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 2-E33-24

B082X4
Split

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

Lab Code: SKINER Case No.: N3-02-039SAS No.: SDG No.: B082X4

Matrix (soil/water): WATER Lab Sample ID: 02093-01S

Level (low/med): LOW Date Received: 02/09/93

% 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	30.6	~~B~~		P	u
7440-36-0	Antimony	19.0	U		P	
7440-38-2	Arsenic	9.4	B		F	
7440-39-3	Barium	27.5	B		P	
7440-41-7	Beryllium	0.90	U		P	
7440-43-9	Cadmium	2.0	~~B~~		P	u
7440-70-2	Calcium	29700			P	
7440-47-3	Chromium	4.2	U		P	
7440-48-4	Cobalt	3.2	U		P	
7440-50-8	Copper	4.9	U		P	
7439-89-6	Iron	3.7	U		P	
7439-92-1	Lead	1.2	U		F	
7439-95-4	Magnesium	8970			P	
7439-96-5	Manganese	1.7	U		P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	5.4	U		P	
7440-09-7	Potassium	5090			P	
7782-49-2	Selenium	3.1	~~U~~	WN	F	uJ
7440-22-4	Silver	4.6	U		P	
7440-23-5	Sodium	14300			P	
7440-28-0	Thallium	1.5	U		F	
7440-62-2	Vanadium	22.0	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:

5/03/93

Comments:
Verified
Validated

2

FORM I - IN ILM02.1

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ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9713516.0055

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/03/93
LABORATORY: Weston	CASE:	SDG: B082X2
SAMPLES/MATRIX: Waters - Total Metals Analysis - TMA-427		
B082X2		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

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

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records			✓
Reduction Formulae			✓
Instrument Run Logs	✓		
Chemist Notebook Pages			✓

2. HOLDING TIMES

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

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

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? **Yes** No N/A

Are the correlation coefficients ≥0.995? **Yes** No N/A

Was a midrange cyanide standard distilled? Yes No **N/A**

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? **Yes** No N/A

Are there calculation errors? Yes **No** N/A

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

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? **Yes** No N/A

Are the AB solution %R values within control? **Yes** No N/A

Are there calculation errors? Yes **No** N/A

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

6. LABORATORY BLANKS

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

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

7. FIELD BLANKS

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

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

8. MATRIX SPIKE SAMPLE ANALYSIS

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

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

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

9. LABORATORY CONTROL SAMPLE

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

Are there calculation errors? Yes No N/A

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

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

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

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

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

12. ICP SERIAL DILUTION

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

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

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

13. FIELD DUPLICATE SAMPLES

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

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

14. FIELD SPLIT SAMPLES

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

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

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

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

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

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

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

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

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

17. ANALYTE QUANTITATION AND DETECTION LIMITS

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

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

18. OVERALL ASSESSMENT AND SUMMARY

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

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

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COMMENTS (attach additional sheets as necessary):

Sample B082X2 was identified as a field split sample of site location 2-E33-24. However, since the corresponding sample data is not currently available - the RPD could not be determined.

5/03/93

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WESTINGHOUSE/HANFORD

3
BLANKS

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

Lab Code: SKINER Case No.: N3-02-039SAS No.: SDG No.: B082X2

Preparation Blank Matrix (soil/water): WATER

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

Assoc. w/ B082X2.

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
	SX		SX						SX		
Aluminum	27.0	U	27.0	U	27.0	U	27.0	U	27.000	U	P
Antimony	18.4	U	18.4	U	18.4	U	18.4	U	18.400	U	P
Arsenic	3.9	U	3.9	U	3.9	U	3.9	U	3.900	U	F
Barium	1.0	B	1.0	U	1.2	B	1.0	U	1.410	B	P
Beryllium	0.5	U	0.5	U	0.5	U	0.5	B	0.500	U	P
Cadmium	1.6	U	1.6	U	1.6	U	1.6	U	1.600	U	P
Calcium	28.3	B	29.0	B	18.8	B	33.9	B	17.200	U	P
Chromium	2.7	U	2.7	U	9.0	B	2.7	U	2.700	U	P
Cobalt	2.5	U	2.5	U	2.5	U	2.5	U	2.500	U	P
Copper	30 6.0	B	45 9.0	B	2.9	U	4.8	B	2.900	U	P
Iron	6.5	U	65.5 13.1	B	6.5	U	12.3	B	6.500	U	P
Lead	1.2	U	1.2	U	1.2	U	1.2	U	2.294	B	F
Magnesium	31.0	B	37.2	B	31.8	B	45.0	B	61.220	B	P
Manganese	1.0	U	7.0 1.4	B	1.6	B	1.6	B	11.0 2.200	B	P
Mercury	0.1	U	0.1	U	0.1	U	0.1	U	0.100	U	CV
Nickel	3.0	U	3.0	U	15.3	B	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	3.1	U	3.1	U	3.1	U	3.1	U	3.100	U	F
Silver	3.9	U	3.9	U	3.9	U	3.9	U	-8.960	B	P
Sodium	42.1	U	42.1	U	42.1	U	42.1	U	211.310	B	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	2.5	U	2.5	U	2.500	U	P
Zinc	4.7	U	4.7	U	11.0	B	13.3	B	4.700	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	CA
Bismuth	500.0	U	500.0	U	500.0	U	500.0	U	500.000	U	A

Assoc. w/ B082X2

5/3/93

07

9713516.0062

WESTINGHOUSE/HANFORD

5A

SPIKE SAMPLE RECOVERY

SAMPLE NUMBER:

B082X2S

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

Lab Code: SKINER Case No.: N3-02-039SAS No.: SDG No.: B082X2

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2006.7000		27.0000	U	2000.00	100.3		P
Antimony	75-125	517.1400		18.4000	U	500.00	103.4		P
Arsenic	75-125	51.3650		9.9430	B	40.00	103.6		F
Barium	75-125	1959.8000		26.2100	B	2000.00	96.7		P
Beryllium	75-125	53.3400		0.5000	U	50.00	106.7		P
Cadmium	75-125	50.4700		1.6000	U	50.00	100.9		P
Calcium									NR
Chromium	75-125	204.6100		2.7000	U	200.00	102.3		P
Cobalt	75-125	502.4300		2.5000	U	500.00	100.5		P
Copper	75-125	253.7000		4.4900	B	250.00	99.7		P
Iron	75-125	1094.1000		59.2700	B	1000.00	103.5		P
Lead	75-125	19.4350		1.2000	U	20.00	97.2		F
Magnesium									NR
Manganese	75-125	500.4000		1.8800	B	500.00	99.7		P
Mercury	75-125	0.7493		0.1000	U	1.00	74.9	OK	CV
Nickel	75-125	504.3700		3.0000	U	500.00	100.9		P
Potassium									NR
Selenium	75-125	7.1980		3.1000	U	10.00	72.0	N	F
Silver	75-125	49.7200		3.9000	U	50.00	99.4		P
Sodium									NR
Thallium	75-125	43.0615		2.6000	U	50.00	86.1		F
Vanadium	75-125	527.6000		22.4600	B	500.00	101.0		P
Zinc	75-125	509.6600		11.9900	B	500.00	99.5		P
Cyanide	75-125	516.0214		10.0000	U	500.00	103.2		CA
Bismuth	75-125	5260.0000		500.0000	U	5000.00	105.2		A

Comments:

10

ACCURACY DATA SUMMARY - FORM B-4

B082X2-TMA-427

SDG:	REVIEWER: [illegible]	DATE: 5/03/93	PAGE 1 OF 1	
COMMENTS: GFAA Analytical Spike				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B082X2	Selenium	65%	B082X2	UJ

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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/03/93
LABORATORY: Weston	CASE:	SDG: B082X2-
SAMPLES/MATRIX: Water		MA-427
B082X4 - Dissolved Metals Analysis		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓	—	—
Cover Page	✓	—	—
Traffic Reports obtained from wet chem pkg.	✓	—	—
Sample Data			
Inorganic Analysis Data Sheets	✓	—	—
Standards Data			
Initial and Continuing Calibration Verification	✓	—	—
CRDL Standard for AA and ICP	✓	—	—
QC Summary			
Blanks	✓	—	—
ICP Interference Check Summary	✓	—	—
Spike Sample Recovery	✓	—	—
Post-Digestion Spike Sample Recovery	—	—	✓
Duplicate	✓	—	—
Laboratory Control Sample	✓	—	—
Standard Addition Results	✓	—	—
ICP Serial Dilutions	✓	—	—
Instrument Detection Limits	✓	—	—
ICP Interelement Correction Factors	✓	—	—
ICP Linear Ranges	✓	—	—
Preparation Log	✓	—	—
Analysis Run Log	✓	—	—
Raw Data			
ICP Raw Data	✓	—	—
Furnace AA Raw Data	✓	—	—
Mercury Raw Data	✓	—	—
Cyanide Raw Data	—	—	✓
Additional Data			
Internal laboratory chain-of-custody	✓	—	✓ 05/13/93
Laboratory Sample Preparation Records	✓	—	—

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records			✓
Reduction Formulae			✓
Instrument Run Logs	✓		
Chemist Notebook Pages			✓

2. HOLDING TIMES

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

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

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? **Yes** No N/A

Are the correlation coefficients ≥ 0.995? **Yes** No N/A

Was a midrange cyanide standard distilled? S1343 ~~Yes~~ No **N/A**

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? **Yes** No N/A

Are there calculation errors? Yes **No** N/A

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

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? **Yes** No N/A

Are the AB solution %R values within control? **Yes** No N/A

Are there calculation errors? Yes **No** N/A

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

6. LABORATORY BLANKS

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

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

7. FIELD BLANKS

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

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

8. MATRIX SPIKE SAMPLE ANALYSIS

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

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

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

9. LABORATORY CONTROL SAMPLE

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

Are there calculation errors? Yes No N/A

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

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

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

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

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

12. ICP SERIAL DILUTION

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

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

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

13. FIELD DUPLICATE SAMPLES

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

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

14. FIELD SPLIT SAMPLES

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

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

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

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

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

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

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

If no, were MSA analyses performed when required? Yes No N/A

Are MSA correlation coefficients ≥0.995? Yes No N/A

If no, was a second MSA analysis performed? Yes No N/A

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

17. ANALYTE QUANTITATION AND DETECTION LIMITS

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

Are results within the calibrated range of the instruments and within the linear range of the ICP? Yes No N/A

Are all detection limits below the CRQL? Yes No N/A

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

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

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

COMMENTS (attach additional sheets as necessary):

- Sample B0B2X4 was identified as a split sample from site location 2-E33-24. However, since the corresponding sample data is not currently available - the relative percent differences cannot be determined.

1/3/93

- ~~the chain~~

- Copies of the chain of custody are not present in this data package - however they were obtained from the wet chemistry section data package.

HOLDING TIME SUMMARY - FORM B-1

B082X2-TMA-427

SDG:	REVIEWER: [illegible]	DATE: 5/03/93	PAGE 1 OF 1
COMMENTS: Dissolved Metals			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B082X4	ICP	2/03/93	NA	2/16/93	NA	13	None
	Bi			2/24/93		21	
	As			2/17/93		14	
	Pb			02/16/93		13	
	Se			02/17/93		14	
	Tl			02/16/93		13	
	Hg			2/16/93		13	

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WESTINGHOUSE/HANFORD

3
BLANKS

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

Lab Code: SKINER Case No.: N3-02-039SAS No.: SDG No.: B082X4

Preparation Blank Matrix (soil/water): WATER

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

Assoc. w/ sample B082X4.

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
	5x		5x								
Aluminum	21.2	U	244 48.8	B	41.2	B	53.3	B	199 39.800	B	P
Antimony	19.0	U	19.0	U	19.0	U	19.0	U	19.000	U	P
Arsenic	3.9	U	3.9	U	3.9	U	3.9	U	3.900	U	F
Barium	21.5 4.3	B	2.4	U	2.4	U	2.4	U	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	18.5 3.7	B	4.6	B	4.0	B	1.400	U	P
Calcium	153.5 30.7	B	92 18.4	B	15.3	U	15.3	U	15.300	U	P
Chromium	4.2	U	26 5.2	B	4.2	U	4.2	U	48 9.610	B	P
Cobalt	3.2	U	16 3.2	B	3.2	B	3.2	U	3.200	U	P
Copper	51 10.2	B	37 7.4	B	4.9	U	4.9	U	4.900	U	P
Iron	-17.6	B	-12.3	B	-15.5	B	3.7	U	176 35.200	B	P
Lead	-1.2	B	1.2	U	1.2	U	1.2	U	1.200	U	F
Magnesium	328 65.6	U	65.6	U	65.6	U	65.6	U	65.600	U	P
Manganese	29.5 5.9	B	1.7	U	1.9	B	1.7	U	1.700	U	P
Mercury	0.1	U	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	212.5 42.5	B	38.7	U	56.9	B	42.5	B	38.700	U	P
Thallium	1.5	U	1.5	U	1.5	U	1.5	U	1.500	U	F
Vanadium	4.0	U	4.0	U	4.0	U	4.0	U	4.000	U	P
Zinc	20 4.0	B	14 2.8	B	2.5	U	3.6	B	2.500	U	P
Cyanide											NR
Bismuth	500.0	U	500.0	U	500.0	U	500.0	U	500.000	U	A

Assoc. w/ B082X4

5/23/93

7

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WESTINGHOUSE/HANFORD

5A

SPIKE SAMPLE RECOVERY

SAMPLE NUMBER: B082X4S

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

Lab Code: SKINER Case No.: N3-02-039SAS No.: SDG No.: B082X4

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2029.0000		30.5600	B	2000.00	99.9		P
Antimony	75-125	458.4800		19.0000	U	500.00	91.7		P
Arsenic	75-125	50.5865		9.3555	B	40.00	103.1		F
Barium	75-125	1870.8000		27.5100	B	2000.00	92.2		P
Beryllium	75-125	52.3800		0.9000	U	50.00	104.8		P
Cadmium	75-125	50.5100		2.0000	B	50.00	97.0		P
Calcium									NR
Chromium	75-125	196.8100		4.2000	U	200.00	98.4		P
Cobalt	75-125	468.2200		3.2000	U	500.00	93.6		P
Copper	75-125	240.3500		4.9000	U	250.00	96.1		P
Iron	75-125	1051.0000		3.7000	U	1000.00	105.1		P
Lead	75-125	21.4730		1.2000	U	20.00	107.4		F
Magnesium									NR
Manganese	75-125	476.7800		1.7000	U	500.00	95.4		P
Mercury	75-125	0.7922		0.1000	U	1.00	79.2		CV
Nickel	75-125	473.3500		5.4000	U	500.00	94.7		P
Potassium									NR
Selenium	75-125	7.1065		3.1000	U	10.00	71.1	N	F
Silver	75-125	47.6700		4.6000	U	50.00	95.3		P
Sodium									NR
Thallium	75-125	45.9025		1.5000	U	50.00	91.8		F
Vanadium	75-125	497.1700		21.9700	B	500.00	95.0		P
Zinc	75-125	469.2600		2.5000	U	500.00	93.9		P
Cyanide									NR
Bismuth	75-125	5160.0000		500.0000	U	5000.00	103.2		A

Comments:

5/03/93

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FORM V (Part 1) - IN ILM02.1

ACCURACY DATA SUMMARY - FORM B-4

B082X2-TMA-427

SDG:	REVIEWER: [illegible]	DATE: 8/5/93	PAGE 1 OF 1
COMMENTS: GFAA Analytical Spikes			

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B082X4	Selenium	77%	B082X4	UJ

9713516.0073

SOG
B082X2-TMA-427

9713516.0074

Copied from Wet Chem fraction

000002A
N3-02-039

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER
Company Contact PH BUTCHER
Project Designation/Sampling Locations 200-BP-1
Ice Chest No. SML-225
Bill of Lading/Airbill No. 2519008019
Method of Shipment EMERY
Shipped to TMA
Possible Sample Hazards/Remarks N/A

Telephone (509)376-5045
Collection Date 2-3-93
Field Logbook No. EFL-1020
Offsite Property No. ~~W92-~~ kr 2/4/93 WA3-0-0226-24

Sample Identification

BO 82X2
- 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)

BO 82X4
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (FILTERED)

BO 82X5
- 3, 40ml, Gs, WATER, CLP-VOA bottles found on Tma vials.

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: 2-3-93 1400 B. WHITTEN	Received by: K. Trapp / K. Trapp	Date/Time: 2/4/93 0700
Relinquished by: 2/4/93 K. Trapp / K. Trapp 0730	Received by: [illegible]	Date/Time: 2-5-93 1130
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: FRIG #5

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

9713516.0075

0000028

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector KD LEE/GG HAMILTON Date Sampled 2-3-93 Time 1118 hours

Company Contact PH BUTCHER Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B082X2	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)
	KT 2/4/93		
B082X3/4	1, 1L P	WATER	TAL METALS + BI (HNO3) FILTERED
B082X5	3, 40ml, Gs	WATER	CLP-VOA
			TASK #: 93-011
			OPC#: W93-0-0226-24
			BOL#: 2519008019

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by [illegible] Title sample control tech Date 2-5-93

Analysis Required _____

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

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

A-6030-060 (10/91)