

**FINAL REPORT FOR WATER SAMPLES RECEIVED IN
DECEMBER, 2013 - SAF No. X14-007**

**Document No.: 20131339 Rev. 0
SDG: 222S20131339**

Carolina E. Menjivar
Advanced Technologies and Laboratories International, Inc.

Date Published
December 31, 2013

Prepared for:



CH2M Hill Plateau Remediation Co.
P.O. Box 850
Richland, WA 99352

Prepared by:



ATL, Inc.
P.O. Box 250
Richland, WA 99352-0250
509-372-2525

 12-31-2013
C.E. Menjivar, ATL Project Coordinator

222-S LABORATORY

FINAL REPORT FOR WATER SAMPLES RECEIVED IN DECEMBER, 2013 SAF No. X14-007

1.0 INTRODUCTION

This final report presents the results for four water samples taken on December 3, 2013. The samples were analyzed in accordance with Sampling Authorization Form X14-007; *Aquifer Tubes, November 2013*, and ATL-MP-1011; *ATL Quality Assurance Project Plan for 222-S Laboratory* (QAPP). The following attachments are included in this report.

Attachment 1	Data Summary Report
Attachment 2	Holding Time Report
Attachment 3	Receipt Paperwork

2.0 SAMPLE RECEIPT AND HANDLING

The samples were received on December 3, 2013, with adequate paperwork. The measured temperature at receipt was -0.2°C .

3.0 ANALYTICAL RESULTS SUMMARY

The Data Summary Report (Attachment 1) presents the final analytical results. The “Det Limit” column in Attachment 1 contains the method detection limit (MDL).

In Attachment 1, the column labeled “A#” indicates the aliquot class or the method used for sample preparation before analysis. For analysis without a preparation step, this column is left blank.

The “Qual Flags” column in Attachments 1 and 2 contain data qualifier flags that are defined as follows:

- “U” indicates that the reported result is less than the MDL
- “B” indicates that the reported result is greater than the MDL, but lower than the estimated quantitation limit (EQL).

Manual calculations using rounded results from the Data Summary Report or result calculation forms may differ slightly from the actual results derived from the raw data.

3.1 ANALYSES

3.1.1 Anions by Ion Chromatography

The ion chromatography analysis for anions was performed on direct aliquots of the samples. The samples from this sample delivery group were analyzed for Anions in analytical batch #44695. All requirements in the SAF and the QAPP were met.

4.0 PROCEDURES

Table 1 lists the analytical procedure used for analysis of the samples.

Table 1. Analytical Procedures.

Analysis	Preparation Method	Analysis Procedure
Anions By Ion Chromatography	N/A	LA-533-166 Rev. B-1-A SW-846 9056A

5.0 REFERENCES

ATL-MP-1011, 2013, *ATL Quality Assurance Project Plan for 222-S Laboratory*, Rev. 12-B, Advanced Technologies and Laboratories International, Inc., Richland, Washington.

Sampling Authorization Form X14-007; *Aquifer Tubes, November 2013*, CH2M Hill, Plateau Remediation Company, Richland, Washington

SW-846, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

Attachment 1

DATA SUMMARY REPORT

DATA SUMMARY REPORT FOR SAMPLE DELIVERY GROUP 20131339

Customer Sample ID	Laboratory Sample ID	A	CAS #	Analyte	Result Unit	Standard % Recovery	Blank	Result	Duplicate	RPD	Matrix Spike % Recovery	Det Limit	Qual Flags
B2RWT1	S13M000176		16984-48-8	Fluoride	ug/mL	97.3	<3.00E-03	0.101	n/a	n/a	n/a	0.0150	B
B2RWT1	S13M000176		16887-00-6	Chloride	ug/mL	99.6	<9.00E-03	2.18	n/a	n/a	n/a	0.0450	
B2RWT1	S13M000176		14797-65-0	Nitrite	ug/mL	96.6	<0.0160	<0.0800	n/a	n/a	n/a	0.0800	U
B2RWT1	S13M000176		14808-79-8	Sulfate	ug/mL	100	0.0630	29.4	n/a	n/a	n/a	0.0650	
B2RWT1	S13M000176		14797-55-8	Nitrate	ug/mL	99.4	<9.00E-03	3.33	n/a	n/a	n/a	0.0450	
B2RWT8	S13M000179		16984-48-8	Fluoride	ug/mL	97.3	<3.00E-03	0.115	n/a	n/a	n/a	0.0150	B
B2RWT8	S13M000179		16887-00-6	Chloride	ug/mL	99.6	<9.00E-03	11.2	n/a	n/a	n/a	0.0450	
B2RWT8	S13M000179		14797-65-0	Nitrite	ug/mL	96.6	<0.0160	<0.0800	n/a	n/a	n/a	0.0800	U
B2RWT8	S13M000179		14808-79-8	Sulfate	ug/mL	100	0.0630	116	n/a	n/a	n/a	0.0650	
B2RWT8	S13M000179		14797-55-8	Nitrate	ug/mL	99.4	<9.00E-03	16.2	n/a	n/a	n/a	0.0450	
B2RX38	S13M000177		16984-48-8	Fluoride	ug/mL	93.9	<3.00E-03	0.110	0.109	0.913	95.2	3.00E-03	
B2RX38	S13M000177		16887-00-6	Chloride	ug/mL	96.3	<9.00E-03	1.92	1.90	0.732	96.1	9.00E-03	
B2RX38	S13M000177		14797-65-0	Nitrite	ug/mL	102	<0.0160	<0.0160	<0.0160	n/a	90.0	0.0160	U
B2RX38	S13M000177		14808-79-8	Sulfate	ug/mL	99.1	0.0660	17.9	17.8	0.645	92.6	0.0130	
B2RX38	S13M000177		14797-55-8	Nitrate	ug/mL	98.6	<9.00E-03	2.62	2.63	0.458	90.7	9.00E-03	
B2T1D0	S13M000178		16984-48-8	Fluoride	ug/mL	97.3	<3.00E-03	<3.00E-03	n/a	n/a	n/a	3.00E-03	U
B2T1D0	S13M000178		16887-00-6	Chloride	ug/mL	99.6	<9.00E-03	<9.00E-03	n/a	n/a	n/a	9.00E-03	U
B2T1D0	S13M000178		14797-65-0	Nitrite	ug/mL	96.6	<0.0160	<0.0160	n/a	n/a	n/a	0.0160	U
B2T1D0	S13M000178		14808-79-8	Sulfate	ug/mL	100	0.0630	<0.0130	n/a	n/a	n/a	0.0130	U
B2T1D0	S13M000178		14797-55-8	Nitrate	ug/mL	99.4	<9.00E-03	<9.00E-03	n/a	n/a	n/a	9.00E-03	U

Attachment 2

HOLDING TIME REPORT

Ordered by Holding Time

All Hold Times - Status: Not Mailed

Holding Time	Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time	Hold Time Days/Hr Remaining
12/05/13 07:30	20131339	S13M000178	LIQUID	IC - ANIONS/SMALL ORG. ACIDS		12/03/13 07:30	12/03/13 13:55	N/A	12/04/13 23:22	N - A	8h
12/05/13 11:13	20131339	S13M000177	LIQUID	IC - ANIONS/SMALL ORG. ACIDS		12/03/13 11:13	12/03/13 13:55	N/A	12/04/13 16:09	N - A	19h
12/05/13 12:19	20131339	S13M000176	LIQUID	IC - ANIONS/SMALL ORG. ACIDS		12/03/13 12:19	12/03/13 13:55	N/A	12/04/13 21:42	N - A	15h
12/05/13 12:51	20131339	S13M000179	LIQUID	IC - ANIONS/SMALL ORG. ACIDS		12/03/13 12:51	12/03/13 13:55	N/A	12/04/13 22:48	N - A	14h

Attachment 3

RECEIPT PAPERWORK

222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST	ATS-LO-090-101 Rev <u>06.0</u>
--------------	---	--------------------------------

Date Samples Received: 12-3-2013 Group #: 20131339
 Number of Samples: X → 4 CEM12/04/13
 Sample Custodian: [Signature]

Sample Custodian to Complete:

Action	Yes	No	N/A	Comments
RSA/COC provided?	✓			
RSR provided?		✓		
Verify GKI is complete		✓		<input checked="" type="checkbox"/> In Project File
Received from an alpha facility?		✓		<input type="checkbox"/> Contact PC for approval to release
Check that outer custody seal is intact, if present	✓			
Record cooler temperature in centigrade, as appropriate			00/-0.2	<input type="checkbox"/> Check if no cooler and/or no ice
Samples are intact and in good condition	✓			If No, provide comments below
Verify that COC or RSA is accurate and complete, containing the following information:				
• Client name and client sample number	✓			
• Date and time of sampling	✓			
• Sampling location or origin	✓			
• Container type, size, and number	✓			
• Preservatives (if used) are noted on the COC/RSA and sample bottle		✓		
• Analysis request is clear	✓			
• Signature of persons relinquishing and receiving samples	✓			
• Date and/or time of sample custody exchange	✓			
Verify that sample numbers on containers match the COC and/or RSA	✓			
Samples stored properly (e.g., refrigeration)	✓			

Notify the PC immediately if any problems are noted. Any "No" checked boxes require PC resolution. For WRPS samples, the initials block below is completed by the responsible WRPS PC.

Samples acceptable for release? Yes PC/SC Initials [Signature] Date 12-3-2013

If No, comment on communication and resolution:

Other Comments:

DECEMBER 31, 2013

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-007-146

Page 1 of 1

Collector D. Floyd		Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650					
SAF No. X14-007		Sampling Origin Hanford Site	Purchase Order/Charge Code 303064ES20					
Project Title AQUIFER TUBES, NOVEMBER 2013		Logbook No. HNF-N-506 62/50	Ice Chest No. N/A					
Shipped To (Lab) Waste Sampling & Characterization		Method of Shipment GOVERNMENT VEHICLE	Bill of Lading/Air Bill No. N/A					
Protocol SURV 222-S		Priority: 31 Days PRIORITY	Offsite Property No. N/A					
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400 5 (1990/1993)		SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Site Wide Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 403899. FY13 and FY14 samples cannot be in the same SDG.						
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2RWT1	✓	N	W 12/3/13	12:19 ✓	1x500-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool-4C

*Group II 20131339 ✓
Sample # S13M000176*

Relinquished By D. Floyd	Print [Signature]	Sign [Signature]	Date/Time 12/3/13 1355	Received By Sharon Uddell	Print [Signature]	Sign [Signature]	Date/Time 12/3/13 1355	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By			Date/Time	

CH2M Hill Plateau Remediation Company

DECEMBER 31, 2013
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
X14-007-197

Page 1 of 1

Collector D. Floyd		Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650					
SAF No. X14-007		Sampling Origin Hanford Site	Purchase Order/Charge Code 303064ES20					
Project Title AQUIFER TUBES, NOVEMBER 2013		Logbook No. HNF-N-506 <u>62/50</u>	Ice Chest No. N/A					
Shipped To (Lab) Waste Sampling & Characterization		Method of Shipment GOVERNMENT VEHICLE	Bill of Lading/Air Bill No. N/A					
Protocol SURV 222-5		Priority: 31 Days PRIORITY	Offsite Property No. N/A					
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400 5 (1990/1993)		SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Site Wide Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 403899. FY13 and FY14 samples cannot be in the same SDG.						
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2RX38	✓	N	W	12/3/13	1113	✓ 1x500-mL P 300.0_ANIONS_IC: COMMON	48 Hours	Cool-4C

Group # ~~20131339~~ 2013 1339 ✓
 844 12-3-13
 Sample # S13M000177 ✓

Relinquished By D. Floyd	Print	Sign	Date/Time 12/3/13 1355	Received By Sharon Holden	Print	Sign	Date/Time 12/3/13 1355 ✓	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By			Date/Time	Received By			Date/Time	
Relinquished By			Date/Time	Received By			Date/Time	
Relinquished By			Date/Time	Received By			Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By			Date/Time	

DECEMBER 31, 2013

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-007-354

Page 1 of 1

Collector D. Floyd		Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650					
SAF No. X14-007		Sampling Origin Hanford Site	Purchase Order/Charge Code 303064ES20					
Project Title AQUIFER TUBES, NOVEMBER 2013		Logbook No. HNF-N-506 <u>62/50</u>	Ice Chest No. N/A					
Shipped To (Lab) Waste Sampling & Characterization		Method of Shipment GOVERNMENT VEHICLE	Bill of Lading/Air Bill No. N/A					
Protocol SURV 222-S		Priority: 31 Days PRIORITY	Offsite Property No. N/A					
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400 5 (1990/1993)		SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Site Wide Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 403899. FY13 and FY14 samples cannot be in the same SDG.						
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2T1D0	✓	N	W 12/3/13	0730 ✓	1x500-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool-4C

Group# 20131339 ✓
 Sample# S13M000178 ✓

Relinquished By D. Floyd	Print [Signature]	Sign [Signature]	Date/Time 12/3/13 1355	Received By Sharon Udell	Print [Signature]	Sign [Signature]	Date/Time 12/3/13 1355 ✓	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By			Date/Time	

DECEMBER 31, 2013

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-007-151

Page 1 of 1

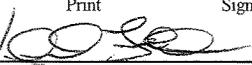
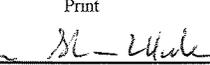
Collector D. Floyd	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650
SAF No. X14-007	Sampling Origin Hanford Site	Purchase Order/Charge Code 303064ES20
Project Title AQUIFER TUBES, NOVEMBER 2013	Logbook No. HNF-N-506 62/50	Ice Chest No. N/A
Shipped To (Lab) Waste Sampling & Characterization	Method of Shipment GOVERNMENT VEHICLE	Bill of Lading/Air Bill No. N/A
Protocol SURV 222-S	Priority: 31 Days PRIORITY	Offsite Property No. N/A

POSSIBLE SAMPLE HAZARDS/REMARKS **W. 12/3/13**
 *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400 5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes No
 Site Wide Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 403899.
 FY13 and FY14 samples cannot be in the same SDG.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2RWT8 ✓	N	W	12/3/13	1251 ✓	1x500-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool-4C

*Group # 20131339 ✓
 Sample S13M000179 ✓*

Relinquished By D. Floyd / 	Print Sign	Date/Time 12/3/13 1355	Received By Sharon L. Wade / 	Print Sign	Date/Time 12/3/13 1355 ✓	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By		Date/Time	Received By		Date/Time	
Relinquished By		Date/Time	Received By		Date/Time	
Relinquished By		Date/Time	Received By		Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time	

GENERATOR KNOWLEDGE INFORMATION

1. Chain of Custody Number NA CACN/COA NA Customer Identification Number NA

2. List generator knowledge or description of process that produced sample. Or list description of sample source:
 Sitewide S&GRP Characterization and Monitoring Sampling and Analysis

MSDS Available? No Yes Hanford MSDS No. _____

3. List all waste codes and constituents associated with the waste or media that was sampled, regardless of CERCLA status.

a) Does the sample contain any of the following listed waste codes?

By checking "unknown" the customer understands that no knowledge is available following a careful search.

List Federal Waste Code(s):

List Constituent(s):

P Codes: _____ Yes No Unknown

U Codes: _____ Yes No Unknown

K Codes: _____ Yes No Unknown

F Codes: F001 - F005; F039 Yes No Unknown

b) List applicable characteristic waste codes, flash point, pH, constituents, and concentrations as appropriate.

D001: FP <100°F FP ≥100 <140°F DOT Oxidizer Yes No Unknown

D002: pH ≤2 pH ≥12.5 Solid Corrosive (WSC2) Yes No Unknown

D003: Cyanide Sulfide Water Reactive Other _____ Yes No Unknown

D004-D043 (Identify applicable waste codes and concentrations): _____ (i.e., peroxide former, explosive, air reactive) Yes No Unknown

N/A

c) If characteristic, list any known underlying hazardous constituents (UHCs) reasonably expected to be present, and their concentrations that may be present above the LDR treatment standard (40 CFR 268.48):

N/A

d) List any known Land Disposal Restrictions (LDR) subcategories, if applicable (40 CFR 268.40):

N/A

e) List any applicable Washington State dangerous waste codes: (not required if federally regulated)

(*State mixture rule for ignitability)

WT01: Yes No Unknown

WP01: Yes No Unknown

WT02: Yes No Unknown

WP02: Yes No Unknown

W001: Yes No Unknown

WP03: Yes No Unknown

List constituents and concentrations:

F003:* Yes No Unknown

N/A

4. Is this material TSCA regulated for PCBs? Yes No Unknown Analysis Requested

List concentration if applicable: _____

If yes, what is the source of the PCBs? (see TSCA PCB Hanford Site User Guide, DOE/RL-2001-50)

- PCB Liquid Waste PCB Bulk Product Waste PCB Transformer ≥500 ppm Unknown
- PCB Remediation Waste PCB R&D Waste PCB contaminated electrical equipment (capacitor/ballast) <500 ppm
- PCB Spill Material PCB Item Other PCB Waste (list) _____

5. Is this material TRU? Yes No Unknown

6. ACCURACY OF INFORMATION

Based on my inquiry of those individuals immediately responsible for obtaining this information, that to the best of my knowledge, the information entered in this document is true, accurate, and complete.

Print & Sign SAJORA / SJ TRENT

Date 12/9/07