

**FINAL REPORT FOR WATER SAMPLES RECEIVED IN
DECEMBER, 2013 - SAF No. S14-011**

**Document No.: 20131323 Rev. 0
SDG: 222S20131323**

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Prepared for:

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 . 12-31-2013
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222-S LABORATORY

FINAL REPORT FOR WATER SAMPLES RECEIVED IN DECEMBER, 2013 SAF No. W14-011

1.0 INTRODUCTION

This final report presents the result for three water samples taken on December 2, 2013. The samples were analyzed in accordance with Sampling Authorization Form W14-011; *RCRA, 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 | Quality Control Samples |
| Attachment 3 | Holding Time Report |
| Attachment 4 | Receipt Paperwork |

2.0 SAMPLE RECEIPT AND HANDLING

The samples were received on December 2, 2013, with adequate paperwork. The measured temperature at receipt was 0.4 °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 Hexavalent Chromium by Spectrophotometric Determination

The hexavalent chromium analysis was performed on direct aliquots of the samples. Customer samples B2RP55 (S13M000152) and B2RP57 (S13M000153) were analyzed for hexavalent chromium in analytical batch # 44636. Sample B2T1D4 (S13M000142) was used as quality control sample (see Attachment 2). The RPD (relative percent difference) exceeded the $\leq 20\%$

requirement; however, since sample and duplicate results were both below the EQL, this criterion does not apply. All other requirements in the SAF and QAPP were met.

3.1.2 Anions by Ion Chromatography

The ion chromatography analysis for anions was performed on direct aliquots of the samples. Customer sample B2RYL1 (S13M000154) was analyzed for Anions in analytical batch #44652. Sample B2T1K3 (S13M000149) was used as quality control sample (see Attachment 2). All requirements in the SAF and the QAPP were met.

4.0 PROCEDURES

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

Table 1. Analytical Procedures.

| Analysis | Preparation Method | Analysis Procedure |
|--|--------------------|---------------------------------------|
| Hexavalent Chromium Analysis by Spectrophotometric Determination | N/A | LA-265-101 Rev. H-0 SW-846 7196A |
| 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 W14-011; *RCRA, 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 20131325

| Customer Sample ID | Laboratory Sample ID | A | CAS # | Analyte | Result Unit | Standard % Recovery | Blank | Result | Duplicate | RPD | Matrix Spike % Recovery | Det Limit | Qual Flags |
|--------------------|----------------------|---|------------|---------------------|-------------|---------------------|-----------|-----------|-----------|-----|-------------------------|-----------|------------|
| B2RP55 | S13M000152 | | 18540-29-9 | Hexavalent Chromium | ug/mL | 103 | <9.00E-03 | <9.68E-03 | n/a | n/a | n/a | 9.68E-03 | U |
| B2RP57 | S13M000153 | | 18540-29-9 | Hexavalent Chromium | ug/mL | 103 | <9.00E-03 | <9.68E-03 | n/a | n/a | n/a | 9.68E-03 | U |
| B2RYL1 | S13M000154 | | 16984-48-8 | Fluoride | ug/mL | 99.3 | <3.00E-03 | 0.157 | n/a | n/a | n/a | 0.0150 | |
| B2RYL1 | S13M000154 | | 16887-00-6 | Chloride | ug/mL | 100 | <9.00E-03 | 9.00 | n/a | n/a | n/a | 0.0450 | |
| B2RYL1 | S13M000154 | | 14797-65-0 | Nitrite | ug/mL | 108 | <0.0160 | <0.0800 | n/a | n/a | n/a | 0.0800 | U |
| B2RYL1 | S13M000154 | | 14808-79-8 | Sulfate | ug/mL | 99.2 | <0.0130 | 134 | n/a | n/a | n/a | 0.0650 | |
| B2RYL1 | S13M000154 | | 14797-55-8 | Nitrate | ug/mL | 98.6 | <9.00E-03 | 20.4 | n/a | n/a | n/a | 0.0450 | |

Attachment 2

QUALITY CONTROL SAMPLES

20131325 Rev. 0
DECEMBER 31, 2013

16-dec-2013 11:52:34

DSR.Jar v. 2.7.31

WSCF Diversion FY14

Data Summary Report

| SDG Number | Customer Sample ID | Laboratory Sample Id | A | CAS # | Analyte | Result Unit | Standard % Recovery | Blank | Result | Duplicate | RPD | Matrix Spike % Recovery | Det Limit | Qual Flags |
|--------------|--------------------|----------------------|---|------------|---------------------|-------------|---------------------|-----------|---------|-----------|-------|-------------------------|-----------|------------|
| 222S20131323 | B2T1K3 | S13M000149 | | 16984-48-8 | Fluoride | ug/mL | 99.3 | <3.00E-03 | 0.173 | 0.199 | 14.0 | 98.1 | 0.0150 | |
| 222S20131323 | B2T1K3 | S13M000149 | | 16887-00-6 | Chloride | ug/mL | 100 | <9.00E-03 | 6.47 | 7.36 | 12.9 | 104 | 0.0450 | |
| 222S20131323 | B2T1K3 | S13M000149 | | 14797-65-0 | Nitrite | ug/mL | 108 | <0.0160 | <0.0800 | <0.0800 | n/a | 105 | 0.0800 | U |
| 222S20131323 | B2T1K3 | S13M000149 | | 14808-79-8 | Sulfate | ug/mL | 99.2 | <0.0130 | 35.3 | 35.5 | 0.709 | 98.4 | 0.0650 | |
| 222S20131323 | B2T1K3 | S13M000149 | | 14797-55-8 | Nitrate | ug/mL | 98.6 | <9.00E-03 | 3.35 | 3.62 | 7.98 | 98.3 | 0.0450 | |
| 222S20131328 | B2T1D4 | S13M000142 | | 18540-29-9 | Hexavalent Chromium | ug/mL | 103 | <9.00E-03 | 0.0161 | 0.0364 | 77.3 | 102 | 9.68E-03 | B |

NA = Not Analyzed, ND = Not Detected

B - Estimated

U - < Det Limit

Attachment 3

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 |
|----------------|--------------|------------|--------|------------------------------|-------------|----------------|----------------|-----------|----------------|---------------------|-----------------------------|
| 12/03/13 09:14 | 20131325 | S13M000152 | LIQUID | CHROMIUM VI | | 12/02/13 09:14 | 12/02/13 14:26 | N/A | 12/02/13 21:50 | N - A | 12h |
| 12/03/13 09:14 | 20131325 | S13M000153 | LIQUID | CHROMIUM VI | | 12/02/13 09:14 | 12/02/13 14:26 | N/A | 12/02/13 21:50 | N - A | 12h |
| 12/04/13 09:14 | 20131325 | S13M000154 | LIQUID | IC - ANIONS/SMALL ORG. ACIDS | | 12/02/13 09:14 | 12/02/13 14:26 | N/A | 12/03/13 17:13 | N - A | 16h |

Attachment 4

RECEIPT PAPERWORK

| | | |
|--------------|---|--------------------------------|
| 222-S | SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST | ATS-LO-090-101 Rev <u>06-0</u> |
|--------------|---|--------------------------------|

Date Samples Received: 12-2-13 Group #: 20131322 et al
 Number of Samples: 1/2 → 3 CEM 12/3/13 20131325
 Sample Custodian: [Signature]

Sample Custodian to Complete:

| Action | Yes | No | N/A | Comments |
|--|-----|----|------------------|---|
| RSA/COC provided? | L | | | |
| RSR provided? | | L | | |
| Verify GKI is complete | | L | | <input type="checkbox"/> In Project File |
| Received from an alpha facility? | | L | | <input type="checkbox"/> Contact PC for approval to release |
| Check that outer custody seal is intact, if present | L | | | |
| Record cooler temperature in centigrade, as appropriate | | | 0.4 ^c | <input type="checkbox"/> Check if no cooler and/or no ice |
| Samples are intact and in good condition | L | | | If No, provide comments below |
| Verify that COC or RSA is accurate and complete, containing the following information: | | | | |
| • Client name and client sample number | L | | | |
| • Date and time of sampling | L | | | |
| • Sampling location or origin | L | | | |
| • Container type, size, and number | L | | | |
| • Preservatives (if used) are noted on the COC/RSA and sample bottle | L | | | |
| • Analysis request is clear | L | | | |
| • Signature of persons relinquishing and receiving samples | L | | | |
| • Date and/or time of sample custody exchange | L | | | |
| Verify that sample numbers on containers match the COC and/or RSA | L | | | |
| Samples stored properly (e.g., refrigeration) | L | | | |

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 12-2-13

If No, comment on communication and resolution:

Other Comments:

CH2M Hill Plateau Remediation Company

DECEMBER 31, 2013
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
W14-011-049

Page 1 of 1

| | | |
|--|---|---|
| Collector SCOTT KING | Contact/Requester Karen Waters-Husted | Telephone No. 509-376-4650 |
| SAF No. W14-011 | Sampling Origin Hanford Site | Purchase Order/Charge Code 300071ES20 |
| Project Title RCRA, NOVEMBER 2013 | Logbook No. HNF-N-506 101 133 | 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 RCRA | 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 No
 Site Wide Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 401647.
 FY13 and FY14 samples cannot be in the same SDG.

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|------------|--------|---|-------------|------|-------------------|------------------|--------------|--------------|
| B2RP57 | 2 | Y | DEC 02 2013 | 0914 | 1x500-mL aG | 7196_CR6: COMMON | 24 Hours | Cool~4C |
| B2RP55 | 1 | N | DEC 02 2013 | 1426 | 1x500-mL aG | 7196_CR6: COMMON | 24 Hours | Cool~4C |

CRP# 20131325
SAM# 1) 513M000 152 ✓
2) 513M000 153 ✓

| | | | | | | | | |
|--|--|----------------------------|--------------------------------------|--|-----------------------------|----------------------------|--------------------------------------|---|
| Relinquished By SCOTT KING | Print <i>[Signature]</i> | Sign <i>[Signature]</i> | Date/Time DEC 02 2013 1400 | Received By Randy Ellingsworth | Print <i>[Signature]</i> | Sign <i>[Signature]</i> | Date/Time DEC 02 2013 1400 | 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 Randy Ellingsworth | Print <i>[Signature]</i> | Sign <i>[Signature]</i> | Date/Time DEC 02 2013 1426 | Received By Sharon Husted | Print <i>[Signature]</i> | Sign <i>[Signature]</i> | Date/Time DEC 02 2013 1426 | |
| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time | |
| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | 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. # W14-011-124 |
| Page 1 of 1 | | |

| | | |
|--|--|--|
| Collector SCOTT KING | Contact/Requester Karen Waters-Husted | Telephone No. 509-376-4650 |
| SAF No. W14-011 | Sampling Origin Hanford Site | Purchase Order/Charge Code 300071ES20 |
| Project Title RCRA, NOVEMBER 2013 | Logbook No. HNF-N-506 <i>del 133</i> | Ice Chest No. N/A |
| Shipped To (Lab) <u>Waste Sampling & Characterization</u> | Method of Shipment GOVERNMENT VEHICLE | Bill of Lading/Air Bill No. N/A |
| Protocol RCRA <i>222-S 2512/2/13</i> | 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 401647. FY13 and FY14 samples cannot be in the same SDG. |
|--|---|

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|------------|--------|---|-------------|--------|-------------------|-------------------------|--------------|--------------|
| B2RYL1 | N | | DEC 02 2013 | 0914 ✓ | 1x500-mL P | 300.0_ANIONS_IC: COMMON | 48 Hours | Cool-4C |

GRP# 20131325
SAM# 513m000154 ✓

| | | | | | |
|--|-------------------------------|--|-------------------------------|--|-----------|
| Relinquished By SCOTT KING <i>[Signature]</i> | Date/Time DEC 02 2013 1400 | Received By Randy Ellingsworth <i>[Signature]</i> | Date/Time DEC 02 2013 1400 | 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 Randy Ellingsworth <i>[Signature]</i> | Date/Time DEC 02 2013 1426 | Received By Sharon Hildner <i>[Signature]</i> | Date/Time DEC 02 2013 1426 | | |
| 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)

- | | | | |
|--|---|---|----------------------------------|
| <input type="checkbox"/> PCB Liquid Waste | <input type="checkbox"/> PCB Bulk Product Waste | <input type="checkbox"/> PCB Transformer ≥500 ppm | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> PCB Remediation Waste | <input type="checkbox"/> PCB R&D Waste | <input type="checkbox"/> PCB contaminated electrical equipment (capacitor/ballast) <500 ppm | |
| <input type="checkbox"/> PCB Spill Material | <input type="checkbox"/> PCB Item | <input type="checkbox"/> 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 / S J TRENT

Date

12/9/07