

MARCH 13, 2014



a member of **The GEL Group** INC



PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407

P 843.556.8171 F 843.766.1178

www.gel.com

March 13, 2014

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF X14-026
Work Order: 343653
SDG: GEL343653

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 26, 2014. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

A handwritten signature in cursive that reads "Heather Shaffer".

Heather Shaffer
Project Manager

Purchase Order: 300071ES20

Chain of Custody: X14-026-006, X14-026-007, X14-026-008, X14-026-009, X14-026-010, X14-026-011,
X14-026-012, X14-026-013, X14-026-014, X14-026-015, X14-026-021, X14-026-022, X14-026-024,
X14-026-032, X14-026-033 and X14-026-035

Enclosures



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Case Narrative

**Receipt Narrative
for
Hanford MSA (51204)
SDG: GEL343653
Work Order: 343653**

March 13, 2014

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on February 26, 2014 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. Please see the enclosed SIR for details regarding anion analysis..

Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
343653001	B2W3N1
343653002	B2W3R2
343653003	B2W3N0
343653004	B2W3R3
343653005	B2W3R1
343653006	B2W3R6
343653007	B2W3R4
343653008	B2W3R5
343653009	B2W3M3
343653010	B2W3M4
343653011	B2W3L6
343653012	B2W3L7
343653013	B2W3R8
343653014	B2W3R9
343653015	B2W3R7
343653016	B2W3K9
343653017	B2W3T1
343653018	B2W3T2
343653019	B2W3T0
343653020	B2W3L0
343653021	B2W3K2
343653022	B2W3T4
343653023	B2W3T5
343653024	B2W3K3
343653025	B2W3T3
343653026	B2W3K4
343653027	B2W3L1
343653028	B2W3L8

343653029	B2W3M5
343653030	B2W3N2
343653031	B2W3K7
343653032	B2W3L4
343653033	B2W3M8
343653034	B2W4F3
343653035	B2W4F5
343653036	B2W4F6
343653037	B2W4F7
343653038	B2W4F4
343653039	B2W4F8
343653040	B2W4H4

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: General Chemistry and Metals.

Heather Shaffer

Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

243625

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# X14-026-006

Page 1 of 1

Collector Robert Crow
SAF No. X14-026
Project Title VERIFICATION SAMPLING, FEBRUARY
Shipped To (Lab) GEL Laboratories, LLC
Protocol RCRA
Contact/Requester WATERS-HUSTED, K
Sampling Origin Hanford Site
Logbook No. HNF-N-506 58/BS
Method of Shipment Commercial Carrier
Priority: 15 Days
Telephone No. 376-4650
Purchase Order/Charge Code 300071ES20
Ice Chest No. GWS-060
Bill of Lading/Air Bill No. 758028277721
Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
 Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS Hold Time
 100 Area Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 401647.

Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2W3N1	N	W	2/25/14	0931	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3N1	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3N1	N	W			1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2W3N1	N	W			1x20-mL P	Activity Scan	6 Months	None
B2W3R2	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3R2	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3N0	Y	W			1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2W3R3	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3R3	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3R1	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3R1	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C

Relinquished By Robert Crow	Print R Crow	Sign	Date/Time FEB 25 2014 0951	Received By Mawle	Print Mawle	Sign	Date/Time FEB 25 2014 0951	Matrix *
Relinquished By Mawle	Print Mawle	Sign	Date/Time 2-25-14 1400	Received By FEDEX	Print FEDEX	Sign	Date/Time 0951	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By Mawle	Print Mawle	Sign	Date/Time 2-26-14 0900	Received By Jen Birgini	Print Jen Birgini	Sign	Date/Time 0900	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# X14-026-007
Page 1 of 1

Collector: FM Hall CHPRC
 SAF No.: X14-026
 Project Title: VERIFICATION SAMPLING, FEBRUARY
 Shipped To (Lab): GEL Laboratories, LLC
 Protocol: RCRA
 Contact/Requester: WATERS-HUSTED, K
 Sampling Origin: Hanford Site
 Logbook No.: HNF-N-506.58/84
 Method of Shipment: Commercial Carrier
 Priority: 15 Days
 Telephone No.: 376-4650
 Purchase Order/Charge Code: 300071ES20
 Ice Chest No.: GWS-258
 Bill of Lading/Air Bill No.: 9980-1505-7754
 Offsite Property No.: 4702

POSSIBLE SAMPLE HAZARDS/REMARKS
 Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.
SPECIAL INSTRUCTIONS Hold Time
 100 Area Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 401647
 Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W3R6	N	W	2/24/14	10:17	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3R6	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3R4	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3R4	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3R5	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3R5	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3M3	Y	W			1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2W3M4	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3M4	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3M4	N	W			1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2W3M4	N	W			1x20-mL P	Activity Scan	6 Months	None

Relinquished By: FM Hall CHPRC
 Relinquished By: [Signature]
 Relinquished By: [Signature]
 Relinquished By: Fed Ex
 Date/Time: FEB 24 2014 1100
 Date/Time: 2/24/14 1400
 Date/Time: [Signature]
 Date/Time: [Signature]
 Received By: [Signature]
 Received By: FEDEX
 Received By: [Signature]
 Received By: [Signature]
 Sign: [Signature]
 Sign: [Signature]
 Sign: [Signature]
 Sign: [Signature]
 Date/Time: FEB 24 2014 1100
 Date/Time: [Signature]
 Date/Time: [Signature]
 Date/Time: [Signature]
 Date/Time: [Signature]
 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
 Disposed By: [Signature]
 Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Date/Time: [Signature]

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X14-026-008**
Page 1 of 1

Collector: Robert Crow Telephone No. 376-4650
 SAF No. X14-026 Purchase Order/Charge Code 30007IES20
 Project Title: VERIFICATION SAMPLING, FEBRUARY Sampling Origin: Hanford Site
 Shipped To (Lab): GEL Laboratories, LLC Logbook No. HNF-N-506-5885 Ice Chest No. GWS-060
 Protocol: RCRA Method of Shipment: Commercial Carrier Bill of Lading/Air Bill No. 7980 2829721
 Priority: 15 Days Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
 Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.
SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
 100 Area Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 401647

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W3L6	Y	W	2/25/14	0823	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2W3L7	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3L7	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3L7	N	W			1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2W3L7	N	W			1x20-mL P	Activity Scan	6 Months	None
B2W3R8	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3R8	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3R9	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3R9	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3R7	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3R7	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C

Relinquished By: Robert Crow	Print: R Crow	Sign:	Date/Time: FEB 25 2014 0951	Received By: M. J. ...	Print: M. J. ...	Sign:	Date/Time: FEB 25 2014 0957
Relinquished By: M. J. ...	Print: M. J. ...	Sign:	Date/Time: 2-25-14 1400	Received By: FEDEX	Print: FEDEX	Sign:	Date/Time:
Relinquished By: Fed Ex	Print: Fed Ex	Sign:	Date/Time:	Received By: J. ...	Print: J. ...	Sign: Jen Pellegrini	Date/Time: 2-26-14 0900
Relinquished By:	Print:	Sign:	Date/Time:	Received By:	Print:	Sign:	Date/Time:

Disposal Method (e.g., Return to customer, per lab procedure, used in process):

Disposed By:

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-026-009

Page 1 of 1

Collector SCOTT KINGS **Contact/Requester** WATERS-HUSTED, K **Telephone No.** 376-4650
SAF No. X14-026 **Sampling Origin** Hanford Site **Purchase Order/Charge Code** 300071ES20
Project Title VERIFICATION SAMPLING, FEBRUARY **Logbook No.** HNF-N-50616519 **Ice Chest No.** GWS-193
Shipped To (Lab) GEL Laboratories, LLC **Method of Shipment** Commercial Carrier **Bill of Lading/Air Bill No.** 7980-1505-9025
Protocol RCRA **Priority:** 15 Days **PRIORITY** **Offsite Property No.** 4702

POSSIBLE SAMPLE HAZARDS/REMARKS
 Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS **Hold Time** **Total Activity Exemption:** Yes No
 100 Area Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 401647.

Sample No.	Filter	*	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2W3K9	Y	W	WEB 24 2014	0922	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2W3T1	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3T1	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3T2	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3T2	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3T0	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3T0	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3L0	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3L0	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3L0	N	W			1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2W3L0	N	W	FEB 24 2014	0922	1x20-mL P	Activity Scan	6 Months	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
SCOTT KING			FEB 24 2014 1100	Scott King			FEB 24 2014 1100	S = Soil, DS = Drum Solids, SE = Sediment, DL = Drum Liquids, SO = Solid, T = Tissue, SL = Sludge, WI = Wine, W = Water, L = Liquid, O = Oil, V = Vegetation, A = Air, X = Other
Relinquished By			2/24/14 1400	Relinquished By				
Relinquished By				Relinquished By				
Relinquished By				Relinquished By				

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# **X14-026-010** Page 1 of 1

Collector: **FM Hall CHPRC** Telephone No. **376-4650**

SAF No. **X14-026** Purchase Order/Charge Code **30007 IES20**

Project Title: **VERIFICATION SAMPLING, FEBRUARY** Sampling Origin: **Hanford Site**

Shipped To (Lab): **GEL Laboratories, LLC** Logbook No. **HNF-N-506 58/04** Ice Chest No. **GWS-258**

Protocol: **RCRA** Method of Shipment: **Commercial Carrier** Bill of Lading/Air Bill No. **1980-1505-754**

Priority: **15 Days** Offsite Property No. **4702**

POSSIBLE SAMPLE HAZARDS/REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS Hold Time: Total Activity Exemption: Yes No

100 Area Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 401647

Sample No.	Filter	*	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2W3K2	Y	W	2/24/14	0909	1x500-mL G/P	6010_METALS_ICP; COMMON	6 Months	HNO3 to pH <2
B2W3T4	N	W			1x1-L aGs*	9020_TOX; COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3T4	N	W			1x250-mL aG	9060_TOX; COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3T5	N	W			1x1-L aGs*	9020_TOX; COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3T5	N	W			1x250-mL aG	9060_TOX; COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3K3	N	W			1x1-L aGs*	9020_TOX; COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3K3	N	W			1x250-mL aG	9060_TOX; COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W3K3	N	W			1x500-mL G/P	6010_METALS_ICP; COMMON	6 Months	HNO3 to pH <2
B2W3K3	N	W			1x20-mL P	Activity Scan	6 Months	None
B2W3T3	N	W			1x1-L aGs*	9020_TOX; COMMON	28 Days	H2SO4 to pH <2/Cool~4C
B2W3T3	N	W			1x250-mL aG	9060_TOX; COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C

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Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By: FM Hall CHPRC			FEB 24 2014 1100	Received By: CFulton			FEB 24 2014 1100
Relinquished By: CFulton			2/24/14 1400	Received By: FedEx			
Relinquished By: FedEx				Received By: Jen Pellegrini			2-26-14 0900

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____

Dispersed By: _____ Date/Time: _____

PRINTED 0 2/12/2014

A-6004-842 (REV 2)

CH2MHill Plateau Remediation
Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-026-011

Page 1 of 1

Collector	FM Hall CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X14-026	Sampling Origin	Hanford Site	Purchase Order/Charge Code	30007IES20
Project Title	VERIFICATION SAMPLING, FEBRU	Logbook No.	HNF-N-506 58/84	Ice Chest No.	GWS-258
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	9980-1505-7254
Protocol	RCRA	Priority:	15 Days	Offsite Property No.	4702
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS			
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		100 Area Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 401647			
Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W3K4	N	W	2/24/14	0909	1x250-mL G/P	9056_ANIONS_IC: COMMON	28 Days/48 Hours	Cool-4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
Relinquished By FM Hall CHPRC			FEB 24 2014 1100	Received By C. Burton			FEB 24 2014 1100	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By C. Burton			2/24/14 1400	Received By FEDEX			FEB 26 2014 0900	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By Fed Ex				Received By				

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X14-026-012**
Page 1 of 1

Collector	SCOTT KING	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X14-026	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071ES20
Project Title	VERIFICATION SAMPLING, FEBRU	Logbook No.	HNF-N-506 65 / 9	Ice Chest No.	GWS-193
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	7980-1505-9025
Protocol	RCRA	Priority:	15 Days	Offsite Property No.	4702

POSSIBLE SAMPLE HAZARDS/REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS Hold Time
100 Area Generator Knowledge Information Form applies.
The CACN for analytical work at WSCF is 401647

Total Activity Exemption: Yes No

Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W3L1	N	FEB 24 2014	0922	1x250-mL G/P	9056_ANIONS_IC: COMMON	28 Days/48 Hours	Cool-4C

Relinquished By	SCOTT KING	Date/Time	FEB 24 2014 1100	Received By	[Signature]	Date/Time	FEB 24 2014 1100	Print	Sign	Matrix *
Relinquished By	[Signature]	Date/Time	2/24/14 1400	Received By	[Signature]	Date/Time				
Relinquished By	[Signature]	Date/Time	Feb Ex	Received By	[Signature]	Date/Time				
Relinquished By	[Signature]	Date/Time	2-26-14	Received By	[Signature]	Date/Time				

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By _____ Date/Time _____

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

CH2MHill Plateau Remediation
Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.#

X14-026-013

Page 1 of 1

Collector	Robert Crow	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X14-026	Sampling Origin	Hanford Site	Purchase Order/Charge Code	30007IES20
Project Title	VERIFICATION SAMPLING, FEBRU	Logbook No.	HNF-N-506-58/85	Ice Chest No.	CWS-060
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	798028279721
Protocol	RCRA	Priority:	15 Days	Offsite Property No.	

POSSIBLE SAMPLE HAZARDS/REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
100 Area Generator Knowledge Information Form applies.
The CACN for analytical work at WSCF is 401647

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W3L8	N	W 2/25/14	0833	1x250-mL G/P	9056_ANIONS_IC: COMMON	28 Days/48 Hours	Cool-4C

Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time	Date/Time
Relinquished By	Robert Crow	R Crow	Received By	MALIKU MALIKU	MALIKU MALIKU	FEB 25 2014 0951	FEB 25 2014 0951
Relinquished By			Received By	FedEx		1400	
Relinquished By			Received By	Jenfelgrini		2:26:14	0900
Relinquished By			Received By				

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

FINAL SAMPLE DISPOSITION
Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

CH2MHill Plateau Remediation
Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-026-014

Page 1 of 1

Collector	FM Hall CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X14-026	Sampling Origin	Hanford Site	Purchase Order/Charge Code	30007IES20
Project Title	VERIFICATION SAMPLING, FEBRUA	Logbook No.	HNF-N-506 56/84	Ice Chest No.	6255-258
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	9980-1505-7754
Protocol	RCRA	Priority:	15 Days	Offsite Property No.	4702

Sample No.	B2W3M5	Filter	N	Date	2/24/14	Time	1017	No/Type Container	1x250-ml G/P	9056_ANIONS_IC: COMMON	Sample Analysis	28 Days/48 Hours	Holding Time	28 Days/48 Hours	Preservative	Cool-4C
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SPECIAL INSTRUCTIONS Hold Time
100 Area Generator Knowledge Information Form applies.
The CACN for analytical work at WSCF is 401647.

POSSIBLE SAMPLE HAZARDS/REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA
Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

Total Activity Exemption: Yes No

Received By	Print	Sign	Received By	Print	Sign	Date/Time	Date/Time
Received By	FM Hall	[Signature]	Received By	John O'Shea	[Signature]	FEB 24 2014 1100	FEB 24 2014 1100
Received By	CHPRC	[Signature]	Received By	FED EX	[Signature]	2/24/14 1400	
Received By	FM Hall	[Signature]	Received By	Jen Pelgrin	[Signature]	2-24-14 0900	
Received By	CHPRC	[Signature]	Received By				

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

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-026-015

Page 1 of 1

Collector	Robert Crow	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X14-026	Sampling Origin	Hanford Site	Purchase Order/Charge Code	30007IES20
Project Title	VERIFICATION SAMPLING, FEBRU	Logbook No.	HNF-N-506 58.85	Ice Chest No.	CWS-060
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	798028279721
Protocol	RCRA	Priority:	15 Days	Offsite Property No.	

POSSIBLE SAMPLE HAZARDS/REMARKS
 Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA. Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
 100 Area Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 401647

Sample No.	Filter	* Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2W3N2	N	W 2/25/14	0931	1x250-mL G/P	9056_ANIONS_IC: COMMON	28 Days/48 Hours	Cool-4C

Requested By	Print	Sign	Received By	Print	Sign	Date/Time	Date/Time
Requested By	Robert Crow		Received By	MA LOK + W MAZILTA		FEB 25 2014 0951	
Requested By	MA LOK + W MAZILTA		Received By	FEDEX			
Requested By	FEDEX		Received By	JJ. Jen Belgrini		2.26.14 0900	
Requested By			Received By				

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

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X14-026-021** Page 1 of 1

Collector: **FM Hall CHPRC** Telephone No. **376-4650**

SAF No. **X14-026** Purchase Order/Charge Code **30007IES20**

Project Title: **VERIFICATION SAMPLING, FEBRUARY** Sampling Origin: **Hanford Site**

Shipped To (Lab): **Waste Sampling & Characterization - 255** Logbook No. **HNF-N-506 58/84** Ice Chest No. **GWS-121**

Protocol: **RCRA** Method of Shipment: **GOVERNMENT VEHICLE** Bill of Lading/Air Bill No.: **335 NWA 798023566691**

Priority: **15 Days** Priority: **PRIORITY** Offsite Property No.: **N/A**

POSSIBLE SAMPLE HAZARDS/REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS Hold Time: Total Activity Exemption: Yes No
 100 Area Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 401647

Sample No.	Filter	* Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2W3K7	N	2/24/14	0909	1x500-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool-4C

Received By: **SSU-1** Date/Time: **1547** Sign: **FEB 24 2014** Print

Received By: **Ed K...** Date/Time: **0900** Sign: **2-25-14**

Received By: **FED-X** Date/Time: **1400** Sign: **2-25-14**

Received By: **J. Jan Pellegriani** Date/Time: **0900** Sign: **2-26-14**

Disposal Method (e.g. Return to customer, per lab procedure, used in process)

Disposed By: **J. Jan Pellegriani**

FINAL SAMPLE DISPOSITION Date/Time

PRINTED 0 2/12/2014

A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-026-022

Page 1 of 1

Collector	SCOTT KING	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X14-026	Sampling Origin	Hanford Site	Purchase Order/Charge Code	30007IES20
Project Title	VERIFICATION SAMPLING, FEBRUA	Logbook No.	HNF-N-506 05/9	Ice Chest No.	GLSS-121
Shipped To (Lab)	Waste Sampling & Characterization 2-25-14	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	79802356691
Protocol	RCRA	Priority:	15 Days	Offsite Property No.	N/A
<p>POSSIBLE SAMPLE HAZARDS/REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.</p>		<p>SPECIAL INSTRUCTIONS 100 Area Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 401647</p>		<p>Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	

Sample No.	Filter	* Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2W3L4	N	FEB 7 6 2014	0922	1x500-mL P	300.0_ANIONS_JC: COMMON	48 Hours	Cool-4C

Received By	Print	Sign	Received By	Print	Sign	Date/Time	Date/Time	Matrix *
SCOTT KING	<i>Scott King</i>		<i>SSU #1</i>			FEB 24 2014 1515	FEB 24 2014 515	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
Received By	Date/Time	Date/Time	Received By	Date/Time	Date/Time			
SSU-1	2-25-14	0900	<i>Ed Kwan Ed Kwan</i>	2-25-14	0900			
Received By	Date/Time	Date/Time	Received By	Date/Time	Date/Time			
<i>Ed Kwan Ed Kwan</i>	2-25-14	1400	<i>FED - X</i>					
Received By	Date/Time	Date/Time	Received By	Date/Time	Date/Time			
<i>Fed Ex</i>			<i>Ed Kwan Ed Kwan</i>	2-25-14	0900			
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Date/Time		Date/Time		

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-026-024

Page 1 of 1

Collector	FM Hall CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X14-026	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071ES20
Project Title	VERIFICATION SAMPLING, FEBRUA	Logbook No.	HNF-N-506 58/84	Ice Chest No.	GLWS-121
Shipped To (Lab)	Waste Sampling & Characterization	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	3554 1980 3566691
Protocol	RCRA	Priority:	15 Days	Offsite Property No.	N/A

Sample No.	B2W3M8	Filter	N	Date	2/24/14	Time	1017	No/Type Container	1x500-ml P	300.0_ANIONS_IC: COMMON	Sample Analysis	48 Hours	Holding Time	Cool~4C	Preservative
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POSSIBLE SAMPLE HAZARDS/REMARKS
 Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA.
 Dangerous Goods Regulations but are not releasable per DOE Order 438.1.

SPECIAL INSTRUCTIONS
 100 Area Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 401647

Total Activity Exemption: Yes No

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
FM Hall			FEB 24 2014	SSU-1			FEB 24 2014
CHPRC				Ed Kwon			
Relinquished By			0900	Received By			0900
SSU-1				Ed Kwon			2-25-14
Relinquished By			1400	Received By			
Ed Kwon				FED-X			
Relinquished By				Received By			
Fed Ex				JJ. Jentelganni			2-26-14 0900

Matrix *

S	=	Soil	DS	=	Drum Solids
SE	=	Sediment	DL	=	Drum Liquids
SO	=	Solid	T	=	Tissue
SL	=	Sludge	WT	=	Wipe
W	=	Water	L	=	Liquid
O	=	Oil	V	=	Vegetation
A	=	Air	X	=	Other

Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # X14-026-033
Collector	SCOTT KING	Contact/Requester	WATERS-HUSTED, K	Telephone No. 376-4650
SAF No.	X14-026	Sampling Origin	Hanford Site	Purchase Order/Charge Code 300071ES20
Project Title	VERIFICATION SAMPLING, FEBRUARY	Logbook No.	HNF-N-506 1059	Ice Chest No. GWS-193
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No. 7980-1505-9025
Protocol	RCRA	Priority:	15 Days	Offsite Property No. 4702
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS		
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA. Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		Hold Time <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		
Total Activity Exemption: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		The CACN for analytical work at WSCF is 401647		

Sample No.	Filter	* Print	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W4F8	N	W	FEB 26 2014	1023	1x250-mL G/P	9056_ANIONS_IC: COMMON	28 Days/48 Hours	Cool~4C
B2W4F8	N	W			1x20-mL P	Activity Scan	6 Months	None

Received By	Print	Sign	Date/Time
SCOTT KING			FEB 24 2014 1100
Received By	Print	Sign	Date/Time
Scott King			FEB 24 2014 1100
Received By	Print	Sign	Date/Time
Fred Ex			FEB 24 2014 1400
Received By	Print	Sign	Date/Time
Fred Ex			FEB 24 2014 0900

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CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# **X14-026-035**
Page 1 of 1

Collector: **SCOTT KING** Telephone No.: **376-4650**

SAF No.: **X14-026** Purchase Order/Charge Code: **300071ES20**

Project Title: **VERIFICATION SAMPLING, FEBRU** Ice Chest No.: **2-25-14 GWS-121**

Shipped To (Lab): **Waste Sampling & Characterization** Bill of Lading/Air Bill No.: **3-24-14 N/A 198023566691**

Protocol: **RCRA** Priority: **15 Days** Priority: **PRIORITY** Offsite Property No.: **N/A**

POSSIBLE SAMPLE HAZARDS/REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS Hold Time: Total Activity Exemption: Yes No
100 Area Generator Knowledge Information Form applies.
The CACN for analytical work at WSCF is 401647.

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W4H4	N	FEB 24 2014	1023	1x500-mL P	300.0 ANIONS_IC: COMMON	48 Hours	Cool~4C

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Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
SCOTT KING	<i>Scott King</i>		FEB 24 2014 1515	SSU-1	SSU-1		FEB 24 2014 1515	S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge W = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
SSU-1			2-25-14 0900	SSU-1	<i>SSU-1</i>		2-25-14 0900	
SSU-1			2-25-14 1400	SSU-1	<i>SSU-1</i>		2-25-14 1400	
SSU-1			2-25-14 1400	SSU-1	<i>SSU-1</i>		2-25-14 1400	

FINAL SAMPLE DISPOSITION
Disposal Method (e.g., Return to customer, per lab procedure, used in process):
J. Jennifer Pellipani 2-26-14 0900
Disposed By: *J. Jennifer Pellipani*

PRINTED ON 2/19/2014 A-6004-842 (REV 2)

SAMPLE RECEIPT & REVIEW FORM

Client: <u>HMSA</u>		SDG/AR/COC/Work Order: <u>343636 / 343642 / 343645 / 343653 / 343662</u>	
Received By: <u>JP</u>		Date Received: <u>2-26-14</u>	
Suspected Hazard Information		Yes	No
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	<input type="checkbox"/>

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>130442961</u> Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7	Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14	Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other 7980 2827972) " 1505 7754 " " 9025 " 2356 6691

Comments (Use Continuation Form if needed):

Sample Issue Resolution

SAMPLE ISSUE RESOLUTION

SIR NUM SDR14-127
REV NUM 0
DATE INITIATED 3/13/2014

SAMPLE EVENT INFORMATION

SAF NUM(S) X14-026
OPERABLE UNIT(S) 100-NR-2
PROJECT(S) RCRA14
SAMPLE EVENT TITLE(S) RCRA14
LABORATORY GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES 10
SAMPLE NUMBERS B2W3K4, B2W3L1, B2W3M1, B2W3M5, B2W3N5, B2W4D2, B2W4D8, B2W4F8, B2W4J4, B2W4K0
SAMPLE MATRIX WATER
COLLECTION DATE 2/24/2014 - 2/25/2014
SDG NUM GEL343653, GEL343723

ISSUE BACKGROUND

CLASS Laboratory Issue
TYPE Analysis Holding Time Exceeded
DESCRIPTION The listed samples were received with insufficient time to run within holding time for 9056_ANIONS_IC: COMMON.

DISPOSITION

DESCRIPTION PROPOSED DISPOSITION: The lab will report the data, but results will be flagged as out of holding.

JUSTIFICATION ACCEPTED DISPOSITION: Accept proposed resolution.

SUBMITTED BY: Heather Shaffer/GEL Date: 3/13/14
ACCEPTED BY: Karen Waters-Husted/CHPRC Date: 3/13/14

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: HMSA

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol-condensation product	Y	Organics	Semi-Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H h flags. In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	Inorganics	Metals	Replaces J
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (Organics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely performed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	General Chemistry		Replaces J
C	Programmed	Target analyte was detected in the sample and the associated blank, and the sample concentration was ≤ 5 times the blank concentration.	Y	Inorganics	Metals	Replaces B
C	Programmed	Target analyte was detected in the sample and the associated blank, and the sample concentration was ≤ 5 times the blank concentration.	Y	General Chemistry		Replaces B

Laboratory Certifications

List of current GEL Certifications as of 13 March 2014

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-14-9
Utah NELAP	SC000122013-11
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Metals Analysis

Case Narrative

**Metals Fractional Narrative
Hanford MSA (HMSA)
SDG GEL343653**

Sample Analysis

Sample ID	Client ID
343653001	B2W3N1
343653003	B2W3N0
343653009	B2W3M3
343653010	B2W3M4
343653011	B2W3L6
343653012	B2W3L7
343653016	B2W3K9
343653020	B2W3L0
343653021	B2W3K2
343653024	B2W3K3
343653034	B2W4F3
343653038	B2W4F4
1203043487	Method Blank (MB) ICP
1203043488	Laboratory Control Sample (LCS)
1203043491	343653001(B2W3N1L) Serial Dilution (SD)
1203043489	343653001(B2W3N1S) Matrix Spike (MS)
1203043490	343653001(B2W3N1SD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Method/Analysis Information

Analytical Batch: 1369760
Prep Batch : 1369759
Standard Operating Procedures: GL-MA-E-013 REV# 22 and GL-MA-E-006 REV# 9
Analytical Method: 6010_METALS_ICP
Prep Method : SW846 3005A

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Metals analysis-ICP was performed on a PE 7300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

Calibration Information

Instrument Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

CRDL Requirements

All CRDL standards met the advisory control limits with the exceptions of antimony. The PQL recovered high for antimony but the samples were less than the MDL

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following sample was selected as the quality control (QC) sample for this SDG: 343653001 (B2W3N1).

Matrix Spike (MS) Recovery Statement

The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

Matrix Spike Duplicate (MSD) Recovery Statement

The percent recovery (%R) obtained from the MSD analyses are evaluated when the sample concentration is less than four time (4X) the spike concentration added. All applicable elements met the acceptance criteria.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations that are 25X the IDL/MDL for CVAA, 50X the IDL/MDL for ICP, and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the established acceptance criteria.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The samples in this SDG did not require dilutions.

Preparation Information

The samples in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

HMSA001 Hanford MSA (51204)

Client SDG: GEL343653 GEL Work Order: 343653

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

C Target analyte was detected in the sample and the associated blank, and the sample concentration was ≤ 5 times the blank concentration.

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Heather Shaffer.

Reviewed by

Nick Wood Elmore 3-11-14

MARCH 13, 2014

GEL LABORATORIES LLC

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W3N1
Lab Sample ID: 343653001
Matrix: WATER
Collect Date: 25-FEB-14 09:31
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP data for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

MARCH 13, 2014

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Certificate of Analysis

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Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W3N0
Lab Sample ID: 343653003
Matrix: WATER
Collect Date: 25-FEB-14 09:31
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP data for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 11, 2014

Client Sample ID: B2W3M3
 Lab Sample ID: 343653009
 Matrix: WATER
 Collect Date: 24-FEB-14 10:17
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP												
<i>SW846 3005A/6010C Liquid (ICP:COMMON) "As Received"</i>												
Arsenic	B	8.26	5.00	30.0	100	ug/L	1	HSC	03/06/14	12:00	1369760	1
Barium	B	12.8	1.00	5.00	20.0	ug/L	1					
Cadmium	U	ND	1.00	5.00	5.00	ug/L	1					
Calcium		12300	50.0	200	1000	ug/L	1					
Chromium	B	3.81	1.00	5.00	10.0	ug/L	1					
Cobalt	U	ND	1.00	5.00	20.0	ug/L	1					
Copper	U	ND	3.00	10.0	10.0	ug/L	1					
Iron	U	ND	30.0	100	50.0	ug/L	1					
Magnesium		2590	110	300	750	ug/L	1					
Manganese	U	ND	2.00	10.0	5.00	ug/L	1					
Nickel	U	ND	1.50	5.00	40.0	ug/L	1					
Potassium	B	2200	50.0	150	4000	ug/L	1					
Silver	U	ND	1.00	5.00	10.0	ug/L	1					
Sodium		121000	100	300	500	ug/L	1					
Vanadium	B	19.5	1.00	5.00	25.0	ug/L	1					
Zinc	B	3.32	3.30	10.0	10.0	ug/L	1					
Antimony	U	ND	3.50	10.0	60.0	ug/L	1	HSC	03/11/14	06:56	1369760	2

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	SW846 3005A for 6010C	AXG2	03/05/14	0800	1369759

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	6010_METALS_ICP	
2	6010_METALS_ICP	

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W3M4
Lab Sample ID: 343653010
Matrix: WATER
Collect Date: 24-FEB-14 10:17
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP data for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W3L6
Lab Sample ID: 343653011
Matrix: WATER
Collect Date: 25-FEB-14 08:23
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP data for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

MARCH 13, 2014

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PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W3L7
Lab Sample ID: 343653012
Matrix: WATER
Collect Date: 25-FEB-14 08:23
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP results for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

MARCH 13, 2014

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Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W3K9
Lab Sample ID: 343653016
Matrix: WATER
Collect Date: 24-FEB-14 09:22
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP results for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
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PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W3L0
Lab Sample ID: 343653020
Matrix: WATER
Collect Date: 25-FEB-14 09:22
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP data for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

MARCH 13, 2014

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Company : CH2MHill Plateau Remediation Company
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PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W3K2
Lab Sample ID: 343653021
Matrix: WATER
Collect Date: 24-FEB-14 09:09
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP data for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W3K3
Lab Sample ID: 343653024
Matrix: WATER
Collect Date: 24-FEB-14 09:09
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP data for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W4F3
Lab Sample ID: 343653034
Matrix: WATER
Collect Date: 24-FEB-14 10:23
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP data for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 11, 2014

Client Sample ID: B2W4F4
Lab Sample ID: 343653038
Matrix: WATER
Collect Date: 24-FEB-14 10:23
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes Metals Analysis-ICP data for various elements like Antimony, Arsenic, Barium, etc.

The following Prep Methods were performed

Table with 6 columns: Method, Description, Analyst, Date, Time, Prep Batch. Row: SW846 3005A, SW846 3005A for 6010C, AXG2, 03/05/14, 0800, 1369759

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Row: 1, 6010_METALS_ICP

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: March 11, 2014

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 343653

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1369760										
QC1203043488	LCS										
Antimony	500			531	ug/L		106	(80%-120%)	HSC	03/06/14	11:42
Arsenic	500			528	ug/L		106	(80%-120%)			
Barium	500			523	ug/L		105	(80%-120%)			
Cadmium	500			527	ug/L		105	(80%-120%)			
Calcium	5000			5120	ug/L		102	(80%-120%)			
Chromium	500			521	ug/L		104	(80%-120%)			
Cobalt	500			523	ug/L		105	(80%-120%)			
Copper	500			535	ug/L		107	(80%-120%)			
Iron	5000			5330	ug/L		107	(80%-120%)			
Magnesium	5000			5250	ug/L		105	(80%-120%)			
Manganese	500			525	ug/L		105	(80%-120%)			
Nickel	500			527	ug/L		105	(80%-120%)			
Potassium	5000			5230	ug/L		105	(80%-120%)			
Silver	500			528	ug/L		106	(80%-120%)			
Sodium	5000			5100	ug/L		102	(80%-120%)			
Vanadium	500			529	ug/L		106	(80%-120%)			
Zinc	500			518	ug/L		104	(80%-120%)			
QC1203043487	MB										
Antimony			U	ND	ug/L					03/06/14	11:38
Arsenic			U	ND	ug/L						

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QC Summary

Workorder: 343653

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1369760										
Barium			U	ND	ug/L						
Cadmium			U	ND	ug/L				HSC	03/06/14	11:38
Calcium			U	ND	ug/L						
Chromium			U	ND	ug/L						
Cobalt			U	ND	ug/L						
Copper			U	ND	ug/L						
Iron			B	33.7	ug/L						
Magnesium			U	ND	ug/L						
Manganese			U	ND	ug/L						
Nickel			U	ND	ug/L						
Potassium			U	ND	ug/L						
Silver			U	ND	ug/L						
Sodium			U	ND	ug/L						
Vanadium			U	ND	ug/L						
Zinc			U	ND	ug/L						
QC1203043489 343653001 MS											
Antimony	500	U	ND	528	ug/L		105	(75%-125%)		03/06/14	11:48
Arsenic	500	B	8.46	564	ug/L		111	(75%-125%)			
Barium	500	B	14.0	533	ug/L		104	(75%-125%)			
Cadmium	500	U	ND	515	ug/L		103	(75%-125%)			
Calcium	5000		12800	18300	ug/L		109	(75%-125%)			
Chromium	500		10.3	519	ug/L		102	(75%-125%)			
Cobalt	500	U	ND	517	ug/L		103	(75%-125%)			

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QC Summary

Workorder: 343653

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1369760										
Copper	500	U	ND	556	ug/L		111	(75%-125%)	HSC	03/06/14	11:48
Iron	5000	C	66.7	5170	ug/L		102	(75%-125%)			
Magnesium	5000		2860	8000	ug/L		103	(75%-125%)			
Manganese	500	U	ND	513	ug/L		102	(75%-125%)			
Nickel	500	B	3.73	519	ug/L		103	(75%-125%)			
Potassium	5000	B	3220	8460	ug/L		105	(75%-125%)			
Silver	500	U	ND	524	ug/L		105	(75%-125%)			
Sodium	5000		128000	139000	ug/L		N/A	(75%-125%)			
Vanadium	500		45.8	576	ug/L		106	(75%-125%)			
Zinc	500	U	ND	534	ug/L		106	(75%-125%)			
QC1203043490 343653001 MSD											
Antimony	500	U	ND	519	ug/L	1.71	103	(0%-20%)		03/06/14	11:51
Arsenic	500	B	8.46	539	ug/L	4.56	106	(0%-20%)			
Barium	500	B	14.0	539	ug/L	1.20	105	(0%-20%)			
Cadmium	500	U	ND	520	ug/L	0.971	104	(0%-20%)			
Calcium	5000		12800	18100	ug/L	0.863	105	(0%-20%)			
Chromium	500		10.3	524	ug/L	0.972	103	(0%-20%)			
Cobalt	500	U	ND	523	ug/L	1.27	105	(0%-20%)			
Copper	500	U	ND	564	ug/L	1.29	112	(0%-20%)			
Iron	5000	C	66.7	5200	ug/L	0.511	103	(0%-20%)			
Magnesium	5000		2860	8000	ug/L	0.0075	103	(0%-20%)			
Manganese	500	U	ND	519	ug/L	1.17	104	(0%-20%)			

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QC Summary

Workorder: 343653

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1369760										
Nickel	500	B	3.73	523	ug/L	0.860	104	(0%-20%)	HSC	03/06/14	11:51
Potassium	5000	B	3220	8380	ug/L	0.944	103	(0%-20%)			
Silver	500	U	ND	528	ug/L	0.810	106	(0%-20%)			
Sodium	5000		128000	137000	ug/L	1.36	N/A	(0%-20%)			
Vanadium	500		45.8	584	ug/L	1.23	108	(0%-20%)			
Zinc	500	U	ND	538	ug/L	0.688	107	(0%-20%)			
QC1203043491 343653001 SDILT											
Antimony		U	ND DU	ND	ug/L	N/A		(0%-10%)		03/06/14	11:54
Arsenic		B	8.46 DU	ND	ug/L	N/A		(0%-10%)			
Barium		B	14.0 D	2.66	ug/L	4.93		(0%-10%)			
Cadmium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Calcium			12800 D	2500	ug/L	2.8		(0%-10%)			
Chromium			10.3 D	1.85	ug/L	10.5		(0%-10%)			
Cobalt		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Copper		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Iron		C	66.7 DU	ND	ug/L	N/A		(0%-10%)			
Magnesium			2860 D	597	ug/L	4.38		(0%-10%)			
Manganese		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Nickel		B	3.73 DU	ND	ug/L	N/A		(0%-10%)			
Potassium		B	3220 D	675	ug/L	4.93		(0%-10%)			
Silver		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Sodium			128000 D	25100	ug/L	1.86		(0%-10%)			

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QC Summary

Workorder: 343653

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1369760										
Vanadium		45.8	D	9.23	ug/L	.719		(0%-10%)	HSC	03/06/14	11:54
Zinc	U	ND	DU	ND	ug/L	N/A		(0%-10%)			

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank, and the sample concentration was <= 5 times the blank concentration.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

General Chem Analysis

Case Narrative

**General Chemistry Narrative
Hanford MSA (HMSA)
SDG GEL343653**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1370151 and 1370152 **Method:** SW 9060A Total Organic Carbon

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9060A:

Sample ID	Client ID
343653001	B2W3N1
343653002	B2W3R2
343653004	B2W3R3
343653005	B2W3R1
343653006	B2W3R6
343653007	B2W3R4
343653008	B2W3R5
343653010	B2W3M4
343653012	B2W3L7
343653013	B2W3R8
343653014	B2W3R9
343653015	B2W3R7
343653017	B2W3T1
343653018	B2W3T2
343653019	B2W3T0
343653020	B2W3L0
343653022	B2W3T4
343653023	B2W3T5
343653024	B2W3K3
343653025	B2W3T3
343653035	B2W4F5
343653036	B2W4F6
343653037	B2W4F7
343653038	B2W4F4
1203044485	Method Blank (MB)
1203044486	343653001(B2W3N1) Sample Duplicate (DUP)
1203044487	343653015(B2W3R7) Sample Duplicate (DUP)
1203044488	343653001(B2W3N1) Post Spike (PS)
1203044489	343653015(B2W3R7) Post Spike (PS)
1203044490	Laboratory Control Sample (LCS)
1203044491	Method Blank (MB)
1203044492	343653035(B2W4F5) Sample Duplicate (DUP)
1203044493	343723014(B2W4J1) Sample Duplicate (DUP)
1203044494	343653035(B2W4F5) Post Spike (PS)
1203044495	343723014(B2W4J1) Post Spike (PS)
1203044496	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV# 12.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Carbon analysis was performed on a O-I Analytical Model 1010 Total Organic Carbon Analyzer.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 343653001 (B2W3N1), 343653015 (B2W3R7)- Batch 1370151, 343653035 (B2W4F5) and 343723014 (B2W4J1)- Batch 1370152.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recoveries for this sample set were within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product:	Total Organic Halogens (TOX)	
Analytical Batch:	1369252, 1370446, 1370449 and 1372157	Method: SW9020B TOX (Organic Halogen)

Sample Analysis

The following samples were analyzed using the analytical protocol as established in 9020_TOX:

Sample ID	Client ID
343653001	B2W3N1
343653002	B2W3R2
343653004	B2W3R3
343653005	B2W3R1
343653006	B2W3R6
343653007	B2W3R4
343653008	B2W3R5
343653010	B2W3M4
343653012	B2W3L7
343653013	B2W3R8
343653014	B2W3R9
343653015	B2W3R7
343653017	B2W3T1
343653018	B2W3T2
343653019	B2W3T0
343653020	B2W3L0
343653022	B2W3T4
343653023	B2W3T5
343653024	B2W3K3
343653025	B2W3T3
343653035	B2W4F5
343653036	B2W4F6
343653037	B2W4F7
343653038	B2W4F4
1203042096	Method Blank (MB)
1203042097	343653001(B2W3N1) Sample Duplicate (DUP)
1203042098	343653001(B2W3N1) Post Spike (PS)
1203042099	Laboratory Control Sample (LCS)
1203045320	Method Blank (MB)
1203045321	343653014(B2W3R9) Sample Duplicate (DUP)
1203045323	Laboratory Control Sample (LCS)
1203045324	Method Blank (MB)
1203045325	343653023(B2W3T5) Sample Duplicate (DUP)
1203045326	343653023(B2W3T5) Post Spike (PS)
1203045327	Laboratory Control Sample (LCS)
1203047965	343653014(B2W3R9) Post Spike (PS)
1203049364	Method Blank (MB)
1203049365	Laboratory Control Sample (LCS)
1203049366	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-007 REV# 14.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Halogen analysis was performed on a Mitsubishi AOX-200.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 343653001 (B2W3N1)- Batch 1369252, 343653014 (B2W3R9)- Batch 1370446 and 343653023 (B2W3T5)- Batch 1370449.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The spike is not applicable. 343653038 (B2W4F4)- Batch 1372157.

Duplicate Relative Percent Difference (RPD) Statement

One or more of the values for the sample and/or duplicate are less than 5 times the Practical Quantitation Limit (PQL), and the difference is within one PQL value; therefore, the RPD is not applicable. 1203042097 (B2W3N1)- Batch 1369252, 1203045321 (B2W3R9)- Batch 1370446 and 1203045325 (B2W3T5)- Batch 1370449. The Duplicate is not applicable. 343653038 (B2W4F4)- Batch 1372157.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recovery met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD between the LCS and LCSD met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments

Sample was re-ran several times due to failing CCV, there is no sample left for QC analysis. 343653038 (B2W4F4)- Batch 1372157. A pair of nitrate wash blanks is analyzed at the start of the batch. Although they are designated as ICB, they are performed for calculating purposes only. The value of the nitrate wash blanks are averaged and subtracted from all samples. Neither of these values should exceed 0.6 ug Cl. The PQL limit typically applied to ICB results does not apply in this application, since the results are used only to determine background concentrations and are subtracted from all calculated results.

Breakthrough effect

The breakthrough effect was observed but not confirmed for the following sample: 343653017 (B2W3T1)- Batch 1370446. Breakthrough effect: If the value for a sample is greater than the reporting limit (10 ug/L), the result for the second slug should not be greater than 25% of the combined value of the first and second slug. Results which do not meet these criteria are designated with a "Fail" comment in the Breakthrough effect column on the Logbook page; however, the "fail" designation is not applicable for samples with a result of less than 10 ug/L.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product: Ion Chromatography
Analytical Batch: 1369084 **Method:** SW846 9056A Anions

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9056A:

Sample ID	Client ID
343653026	B2W3K4
343653027	B2W3L1
343653028	B2W3L8
343653029	B2W3M5
343653030	B2W3N2
343653031	B2W3K7
343653032	B2W3L4
343653033	B2W3M8
343653039	B2W4F8
343653040	B2W4H4
1203041693	Method Blank (MB)
1203041694	343653026(B2W3K4) Sample Duplicate (DUP)
1203041695	343653026(B2W3K4) Post Spike (PS)
1203041696	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 22.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-3000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 343653026 (B2W3K4).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recoveries for this sample set were within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

The following samples were received with insufficient time to prep and/or analyze within the remaining method-specified holding time. The samples were analyzed as soon as possible by the analyst. 343653026 (B2W3K4), 343653027 (B2W3L1), 343653029 (B2W3M5), 343653031 (B2W3K7), 343653032 (B2W3L4), 343653033 (B2W3M8), 343653039 (B2W4F8) and 343653040 (B2W4H4).

Sample Dilutions

The following samples in this sample group were diluted due to high concentration: 1203041694 (B2W3K4), 1203041695 (B2W3K4), 343653026 (B2W3K4), 343653027 (B2W3L1), 343653028 (B2W3L8), 343653029 (B2W3M5), 343653030 (B2W3N2), 343653031 (B2W3K7), 343653032 (B2W3L4), 343653033 (B2W3M8), 343653039 (B2W4F8) and 343653040 (B2W4H4).

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1271128 1203041694 (B2W3K4), 1203041695 (B2W3K4), 343653026 (B2W3K4), 343653027 (B2W3L1), 343653029 (B2W3M5), 343653031 (B2W3K7), 343653032 (B2W3L4), 343653033 (B2W3M8), 343653039 (B2W4F8) and 343653040 (B2W4H4).

Manual Integrations

Manual integrations were not required for the samples in this SDG.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product: Alkalinity
Analytical Batch: 1369686 **Method:** SM 2320B Total Alkalinity

Sample Analysis

The following samples were analyzed using the analytical protocol as established in 2320_ALKALINITY:

Sample ID	Client ID
343653038	B2W4F4
1203043285	Method Blank (MB)
1203043286	343653038(B2W4F4) Sample Duplicate (DUP)
1203043291	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-033 REV# 11.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration analysis was performed on a manually operated buret.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 343653038 (B2W4F4).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recoveries for this sample set were within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments

Less sample was used because limited volume was provided by the client. 1203043286 (B2W4F4) and 343653038 (B2W4F4).

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

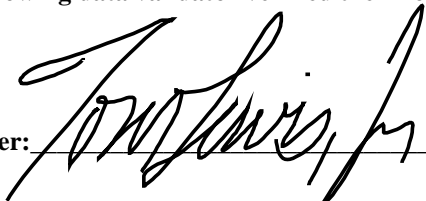
Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:  Date: 13March14

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis Report
for**

HMSA001 Hanford MSA (51204)

Client SDG: GEL343653 GEL Work Order: 343653

The Qualifiers in this report are defined as follows:

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

D Results are reported from a diluted aliquot of sample.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

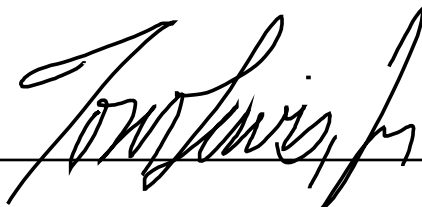
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Heather Shaffer.

Reviewed by



GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3N1
 Lab Sample ID: 343653001
 Matrix: WATER
 Collect Date: 25-FEB-14 09:31
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	728	330	1000	1000	ug/L	1	TSM	03/04/14	15:09	1370151	1
Total Organic Carbon #2	B	720	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	634	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	653	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	684	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens		10.2	3.33	10.0	10.0	ug/L	1	RMJ	03/06/14	15:05	1369252	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3R2
 Lab Sample ID: 343653002
 Matrix: WATER
 Collect Date: 25-FEB-14 09:31
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	807	330	1000	1000	ug/L	1	TSM	03/04/14	16:11	1370151	1
Total Organic Carbon #2	B	751	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	685	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	631	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	719	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens		10.8	3.33	10.0	10.0	ug/L	1	RMJ	03/06/14	16:46	1369252	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

MARCH 13, 2014

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Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3R3
Lab Sample ID: 343653004
Matrix: WATER
Collect Date: 25-FEB-14 09:31
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes sections for Carbon Analysis and Halogen Analysis.

The following Analytical Methods were performed

Table with columns: Method, Description, Analyst Comments. Lists methods 1 (SW846 9060A) and 2 (9020_TOX).

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 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3R1
 Lab Sample ID: 343653005
 Matrix: WATER
 Collect Date: 25-FEB-14 09:31
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	762	330	1000	1000	ug/L	1	TSM	03/04/14	17:18	1370151	1
Total Organic Carbon #2	B	743	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	735	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	727	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	742	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	8.76	3.33	10.0	10.0	ug/L	1	RMJ	03/06/14	19:12	1369252	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3R6
 Lab Sample ID: 343653006
 Matrix: WATER
 Collect Date: 24-FEB-14 10:17
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	622	330	1000	1000	ug/L	1	TSM	03/04/14	17:52	1370151	1
Total Organic Carbon #2	B	620	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	547	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	580	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	592	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	9.84	3.33	10.0	10.0	ug/L	1	RMJ	03/06/14	20:18	1369252	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3R4
 Lab Sample ID: 343653007
 Matrix: WATER
 Collect Date: 24-FEB-14 10:17
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	618	330	1000	1000	ug/L	1	TSM	03/04/14	18:25	1370151	1
Total Organic Carbon #2	B	601	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	569	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	368	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	539	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	9.36	3.33	10.0	10.0	ug/L	1	RMJ	03/06/14	21:01	1369252	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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Report Date: March 13, 2014

Client Sample ID: B2W3R5
 Lab Sample ID: 343653008
 Matrix: WATER
 Collect Date: 24-FEB-14 10:17
 Receive Date: 26-FEB-14
 Collector: Client
 Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	626	330	1000	1000	ug/L	1	TSM	03/04/14	19:17	1370151	1
Total Organic Carbon #2	B	586	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	557	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	583	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	588	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	6.92	3.33	10.0	10.0	ug/L	1	RMJ	03/06/14	22:05	1369252	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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Report Date: March 13, 2014

Client Sample ID: B2W3M4
 Lab Sample ID: 343653010
 Matrix: WATER
 Collect Date: 24-FEB-14 10:17
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	598	330	1000	1000	ug/L	1	TSM	03/04/14	19:51	1370151	1
Total Organic Carbon #2	B	566	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	526	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	485	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	544	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	6.46	3.33	10.0	10.0	ug/L	1	RMJ	03/06/14	23:00	1369252	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3L7
 Lab Sample ID: 343653012
 Matrix: WATER
 Collect Date: 25-FEB-14 08:23
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	953	330	1000	1000	ug/L	1	TSM	03/04/14	20:24	1370151	1
Total Organic Carbon #2	B	878	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	887	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	821	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	885	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	7.80	3.33	10.0	10.0	ug/L	1	RMJ	03/07/14	00:08	1369252	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

MARCH 13, 2014

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Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3R8
Lab Sample ID: 343653013
Matrix: WATER
Collect Date: 25-FEB-14 08:23
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes sections for Carbon Analysis and Halogen Analysis.

The following Analytical Methods were performed

Table with columns: Method, Description, Analyst Comments. Lists methods 1 (SW846 9060A) and 2 (9020_TOX).

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 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3R9
 Lab Sample ID: 343653014
 Matrix: WATER
 Collect Date: 25-FEB-14 08:23
 Receive Date: 26-FEB-14
 Collector: Client
 Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	915	330	1000	1000	ug/L	1	TSM	03/04/14	21:32	1370151	1
Total Organic Carbon #2	B	883	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	902	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	837	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	884	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens		10.3	3.33	10.0	10.0	ug/L	1	RMJ	03/10/14	14:35	1370446	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

MARCH 13, 2014

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Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3R7
Lab Sample ID: 343653015
Matrix: WATER
Collect Date: 25-FEB-14 08:23
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes sections for Carbon Analysis and Halogen Analysis.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Lists methods 1 (SW846 9060A) and 2 (9020_TOX).

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Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3T1
Lab Sample ID: 343653017
Matrix: WATER
Collect Date: 25-FEB-14 09:22
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes sections for Carbon Analysis and Halogen Analysis.

The following Analytical Methods were performed

Table with columns: Method, Description, Analyst Comments. Lists methods 1 (SW846 9060A) and 2 (9020_TOX).

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Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3T2
Lab Sample ID: 343653018
Matrix: WATER
Collect Date: 25-FEB-14 09:22
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch Method. Includes sections for Carbon Analysis and Halogen Analysis.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Lists methods 1 (SW846 9060A) and 2 (9020_TOX).

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Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3T0
Lab Sample ID: 343653019
Matrix: WATER
Collect Date: 25-FEB-14 09:22
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes sections for Carbon Analysis and Halogen Analysis.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Lists methods 1 (SW846 9060A) and 2 (9020_TOX).

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Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3L0
Lab Sample ID: 343653020
Matrix: WATER
Collect Date: 25-FEB-14 09:22
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes sections for Carbon Analysis and Halogen Analysis.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Lists methods 1 (SW846 9060A) and 2 (9020_TOX).

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 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3T4
 Lab Sample ID: 343653022
 Matrix: WATER
 Collect Date: 24-FEB-14 09:09
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	625	330	1000	1000	ug/L	1	TSM	03/05/14	01:40	1370151	1
Total Organic Carbon #2	B	599	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	597	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	477	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	575	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	6.14	3.33	10.0	10.0	ug/L	1	RMJ	03/10/14	20:17	1370446	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3T5
 Lab Sample ID: 343653023
 Matrix: WATER
 Collect Date: 24-FEB-14 09:09
 Receive Date: 26-FEB-14
 Collector: Client
 Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	654	330	1000	1000	ug/L	1	TSM	03/05/14	02:13	1370151	1
Total Organic Carbon #2	B	572	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	594	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	602	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	605	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens		13.4	3.33	10.0	10.0	ug/L	1	RMJ	03/11/14	16:05	1370449	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

MARCH 13, 2014

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Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3K3
Lab Sample ID: 343653024
Matrix: WATER
Collect Date: 24-FEB-14 09:09
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes sections for Carbon Analysis and Halogen Analysis.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Lists methods 1 (SW846 9060A) and 2 (9020_TOX).

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 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W3T3
 Lab Sample ID: 343653025
 Matrix: WATER
 Collect Date: 24-FEB-14 09:09
 Receive Date: 26-FEB-14
 Collector: Client
 Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	634	330	1000	1000	ug/L	1	TSM	03/05/14	03:20	1370151	1
Total Organic Carbon #2	B	663	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	598	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	619	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	628	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	6.18	3.33	10.0	10.0	ug/L	1	RMJ	03/11/14	18:50	1370449	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3K4
Lab Sample ID: 343653026
Matrix: WATER
Collect Date: 24-FEB-14 09:09
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Rows include Ion Chromatography results for Fluoride, Nitrite-N, Chloride, Nitrate-N, and Sulfate.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Rows 1 and 2 describe SW846 9056A.

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3L1
Lab Sample ID: 343653027
Matrix: WATER
Collect Date: 24-FEB-14 09:22
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Rows include Ion Chromatography results for Fluoride, Nitrate-N, Nitrite-N, Chloride, and Sulfate.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Rows 1 and 2 describe SW846 9056A.

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3L8
Lab Sample ID: 343653028
Matrix: WATER
Collect Date: 25-FEB-14 08:23
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Rows include Ion Chromatography and various anions like Fluoride, Nitrite-N, Chloride, Nitrate-N, Sulfate.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Rows 1 and 2 describe SW846 9056A.

MARCH 13, 2014

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Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3M5
Lab Sample ID: 343653029
Matrix: WATER
Collect Date: 24-FEB-14 10:17
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Rows include Ion Chromatography results for Fluoride, Nitrate-N, Nitrite-N, Chloride, and Sulfate.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Rows 1 and 2 describe SW846 9056A.

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Address : MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3N2
Lab Sample ID: 343653030
Matrix: WATER
Collect Date: 25-FEB-14 09:31
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes data for Ion Chromatography (SW846 9056A Anions "As Received") with rows for Fluoride, Nitrite-N, Chloride, Nitrate-N, and Sulfate.

The following Analytical Methods were performed

Table with columns: Method, Description, Analyst Comments. Lists methods 1 and 2, both corresponding to SW846 9056A.

MARCH 13, 2014

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PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3K7
Lab Sample ID: 343653031
Matrix: WATER
Collect Date: 24-FEB-14 09:09
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with 12 columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Rows include Ion Chromatography results for Fluoride, Nitrite-N, Chloride, Nitrate-N, and Sulfate.

The following Analytical Methods were performed

Table with 3 columns: Method, Description, Analyst Comments. Rows 1 and 2 describe SW846 9056A.

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Address : MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3L4
Lab Sample ID: 343653032
Matrix: WATER
Collect Date: 24-FEB-14 09:22
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes Ion Chromatography results for Fluoride, Nitrate-N, Nitrite-N, Chloride, and Sulfate.

The following Analytical Methods were performed

Table with columns: Method, Description, Analyst Comments. Lists methods 1 and 2 for SW846 9056A.

MARCH 13, 2014

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Certificate of Analysis

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Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W3M8
Lab Sample ID: 343653033
Matrix: WATER
Collect Date: 24-FEB-14 10:17
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes data for Ion Chromatography (SW846 9056A Anions "As Received") with rows for Fluoride, Nitrite-N, Chloride, Nitrate-N, and Sulfate.

The following Analytical Methods were performed

Table with columns: Method, Description, Analyst Comments. Lists methods 1 and 2, both corresponding to SW846 9056A.

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W4F5
 Lab Sample ID: 343653035
 Matrix: WATER
 Collect Date: 24-FEB-14 10:23
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	492	330	1000	1000	ug/L	1	TSM	03/05/14	14:32	1370152	1
Total Organic Carbon #2	B	445	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	447	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	456	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	460	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	6.22	3.33	10.0	10.0	ug/L	1	RMJ	03/11/14	19:30	1370449	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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Certificate of Analysis

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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W4F6
 Lab Sample ID: 343653036
 Matrix: WATER
 Collect Date: 24-FEB-14 10:23
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	597	330	1000	1000	ug/L	1	TSM	03/05/14	15:34	1370152	1
Total Organic Carbon #2	B	674	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	579	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	580	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	607	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	U	ND	3.33	10.0	10.0	ug/L	1	RMJ	03/11/14	20:50	1370449	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W4F7
 Lab Sample ID: 343653037
 Matrix: WATER
 Collect Date: 24-FEB-14 10:23
 Receive Date: 26-FEB-14
 Collector: Client
 Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	709	330	1000	1000	ug/L	1	TSM	03/05/14	16:07	1370152	1
Total Organic Carbon #2	B	642	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	620	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	517	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	622	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	3.78	3.33	10.0	10.0	ug/L	1	RMJ	03/11/14	21:30	1370449	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X14-026**

Report Date: March 13, 2014

Client Sample ID: B2W4F4
 Lab Sample ID: 343653038
 Matrix: WATER
 Collect Date: 24-FEB-14 10:23
 Receive Date: 26-FEB-14
 Collector: Client

Project: HMSA00131
 Client ID: HMSA001
 Client SDG: GEL343653

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
<i>SW 9060A Total Organic Carbon "As Received"</i>												
Total Organic Carbon #1	B	620	330	1000	1000	ug/L	1	TSM	03/05/14	16:41	1370152	1
Total Organic Carbon #2	B	606	330	1000	1000	ug/L	1					
Total Organic Carbon #3	B	596	330	1000	1000	ug/L	1					
Total Organic Carbon #4	B	598	330	1000	1000	ug/L	1					
Total Organic Carbon Average	B	605	330	1000	1000	ug/L	1					
Halogen Analysis												
<i>SW9020B TOX (Organic Halogen) "As Received"</i>												
Total Organic Halogens	B	3.56	3.33	10.0	10.0	ug/L	1	RMJ	03/12/14	16:04	1372157	2
Titration Analysis												
<i>SM 2320B Total Alkalinity "As Received"</i>												
2320_ALKALINITY		80400	1450	2000	5000	ug/L		LXA1	02/28/14	16:13	1369686	3
Bicarbonate alkalinity (CaCO3)		80400	1450	2000	2000	ug/L						
Carbonate alkalinity (CaCO3)	U	ND	1450	2000	2000	ug/L						
Hydroxide alkalinity as CaCO3	U	ND	1450	2000	2000	ug/L						

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	
3	2320_ALKALINITY	

MARCH 13, 2014

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W4F8
Lab Sample ID: 343653039
Matrix: WATER
Collect Date: 24-FEB-14 10:23
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Includes data for Ion Chromatography (SW846 9056A Anions "As Received") with rows for Fluoride, Nitrate-N, Nitrite-N, Chloride, and Sulfate.

The following Analytical Methods were performed

Table with columns: Method, Description, Analyst Comments. Lists methods 1 and 2, both corresponding to SW846 9056A.

MARCH 13, 2014

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Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X14-026

Report Date: March 13, 2014

Client Sample ID: B2W4H4
Lab Sample ID: 343653040
Matrix: WATER
Collect Date: 24-FEB-14 10:23
Receive Date: 26-FEB-14
Collector: Client

Project: HMSA00131
Client ID: HMSA001
Client SDG: GEL343653

Table with columns: Parameter, Qualifier, Result, MDL, RL, CRDL, Units, DF, Analyst, Date, Time, Batch, Method. Rows include Ion Chromatography results for Fluoride, Nitrate-N, Nitrite-N, Chloride, and Sulfate.

The following Analytical Methods were performed

Table with columns: Method, Description, Analyst Comments. Rows 1 and 2 describe SW846 9056A.

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: March 13, 2014

Page 1 of 4

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 343653

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1370151										
QC1203044486	343653001	DUP									
Total Organic Carbon Average	B	684	B	771	ug/L	12.0	^	(+/-1000)	TSM	03/04/14	15:43
QC1203044487	343653015	DUP									
Total Organic Carbon Average	B	780	B	832	ug/L	6.45	^	(+/-1000)		03/04/14	22:39
QC1203044490	LCS										
Total Organic Carbon Average	10000			9880	ug/L			(85%-115%)		03/04/14	15:01
QC1203044485	MB										
Total Organic Carbon Average			U	ND	ug/L					03/04/14	14:52
QC1203044488	343653001	PS									
Total Organic Carbon Average	10.0	B	0.684	10.9	mg/L			(65%-120%)		03/04/14	16:03
QC1203044489	343653015	PS									
Total Organic Carbon Average	10.0	B	0.780	10.8	mg/L			(65%-120%)		03/04/14	22:59
Batch	1370152										
QC1203044492	343653035	DUP									
Total Organic Carbon Average	B	460	B	454	ug/L	1.31	^	(+/-1000)	TSM	03/05/14	15:05
QC1203044493	343723014	DUP									
Total Organic Carbon Average	B	612	B	583	ug/L	4.85	^	(+/-1000)		03/05/14	22:53
QC1203044496	LCS										
Total Organic Carbon Average	10000			10200	ug/L			(85%-115%)		03/05/14	14:23
QC1203044491	MB										
Total Organic Carbon Average			U	ND	ug/L					03/05/14	14:14
QC1203044494	343653035	PS									
Total Organic Carbon Average	10.0	B	0.460	10.8	mg/L			(65%-120%)		03/05/14	15:25
QC1203044495	343723014	PS									
Total Organic Carbon Average	10.0	B	0.612	10.6	mg/L			(65%-120%)		03/05/14	23:13
Halogen Analysis											
Batch	1369252										
QC1203042097	343653001	DUP									
Total Organic Halogens			10.2	B	6.66	ug/L	42.2	^	(+/-10.0)	RMJ	03/06/14 15:24
QC1203042099	LCS										

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QC Summary

Workorder: 343653

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Halogen Analysis											
Batch	1369252										
Total Organic Halogens	100			96.5	ug/L		96.5	(76%-119%)		03/06/14	14:46
QC1203042096	MB										
Total Organic Halogens			U	ND	ug/L				RMJ	03/06/14	14:21
QC1203042098	343653001	PS									
Total Organic Halogens	100	10.2		109	ug/L		98.9	(67%-139%)		03/06/14	16:08
Batch	1370446										
QC1203045321	343653014	DUP									
Total Organic Halogens		10.3	B	6.18	ug/L	49.8	^	(+/-10.0)	RMJ	03/10/14	14:54
QC1203045323	LCS										
Total Organic Halogens	100			91.9	ug/L		91.9	(76%-119%)		03/10/14	14:18
QC1203045320	MB										
Total Organic Halogens			U	ND	ug/L					03/10/14	13:55
QC1203047965	343653014	PS									
Total Organic Halogens	100	10.3		108	ug/L		97.3	(67%-139%)		03/10/14	15:37
Batch	1370449										
QC1203045325	343653023	DUP									
Total Organic Halogens		13.4	B	9.32	ug/L	36.2	^	(+/-10.0)	RMJ	03/11/14	16:25
QC1203045327	LCS										
Total Organic Halogens	100			93.7	ug/L		93.7	(76%-119%)		03/11/14	15:45
QC1203045324	MB										
Total Organic Halogens			U	ND	ug/L					03/11/14	15:25
QC1203045326	343653023	PS									
Total Organic Halogens	100	13.4		103	ug/L		89.7	(67%-139%)		03/11/14	17:00
Batch	1372157										
QC1203049365	LCS										
Total Organic Halogens	100			99.1	ug/L		99.1	(76%-119%)	RMJ	03/12/14	14:35
QC1203049366	LCSD										
Total Organic Halogens	100			96.5	ug/L	2.72	96.5	(0%-20%)		03/12/14	14:54
QC1203049364	MB										
Total Organic Halogens			U	ND	ug/L					03/12/14	14:08
Ion Chromatography											
Batch	1369084										
QC1203041694	343653026	DUP									

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QC Summary

Workorder: 343653

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1369084										
Chloride	D	17800	D	18000	ug/L	0.659		(0%-20%)	MAR1	02/26/14	21:30
Fluoride		711		741	ug/L	4.10 ^		(+/-500)		02/26/14	14:31
Nitrate-N	DX	5610	DX	5550	ug/L	1.00		(0%-20%)		02/26/14	21:30
Nitrite-N	UX	ND	UX	ND	ug/L	N/A				02/26/14	14:31
Sulfate	D	113000	D	112000	ug/L	0.514		(0%-20%)		02/26/14	21:30
QC1203041696	LCS										
Chloride	5000			4700	ug/L		94	(90%-110%)		02/26/14	13:31
Fluoride	2500			2390	ug/L		95.7	(90%-110%)			
Nitrate-N	2500			2440	ug/L		97.8	(90%-110%)			
Nitrite-N	2500			2450	ug/L		98	(90%-110%)			
Sulfate	10000			9760	ug/L		97.6	(90%-110%)			
QC1203041693	MB										
Chloride			U	ND	ug/L					02/26/14	13:02
Fluoride			U	ND	ug/L						
Nitrate-N			U	ND	ug/L						
Nitrite-N			U	ND	ug/L						
Sulfate			U	ND	ug/L						
QC1203041695	343653026 PS										
Chloride	5.00	D	1.78	D	6.69	mg/L		98.1	(90%-110%)	02/26/14	22:00
Fluoride	2.50		0.711		3.15	mg/L		97.4	(90%-110%)	02/26/14	15:01
Nitrate-N	2.50	DX	0.561	DX	2.99	mg/L		97.1	(90%-110%)	02/26/14	22:00
Nitrite-N	2.50	UX	ND	X	2.44	mg/L		97.7	(90%-110%)	02/26/14	15:01
Sulfate	10.0	D	11.3	D	22.0	mg/L		107	(90%-110%)	02/26/14	22:00

Titration Analysis

Batch 1369686

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 343653

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration Analysis											
Batch	1369686										
QC1203043286	343653038	DUP									
2320_ALKALINITY		80400		80400	ug/L	0.00		(0%-20%)	LXA1	02/28/14	16:20
Bicarbonate alkalinity (CaCO3)		80400		80400	ug/L	0.00		(0%-20%)			
Carbonate alkalinity (CaCO3)	U	ND	U	ND	ug/L	N/A					
Hydroxide alkalinity as CaCO3	U	ND	U	ND	ug/L	N/A					
QC1203043291	LCS										
2320_ALKALINITY	50000			50400	ug/L		101	(90%-110%)		02/28/14	14:19
QC1203043285	MB										
2320_ALKALINITY			U	ND	ug/L					02/28/14	14:14
Bicarbonate alkalinity (CaCO3)			U	ND	ug/L						
Carbonate alkalinity (CaCO3)			U	ND	ug/L						
Hydroxide alkalinity as CaCO3			U	ND	ug/L						

Notes:

The Qualifiers in this report are defined as follows:

- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank, and the sample concentration was <= 5 times the blank concentration.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 28-FEB-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: IC	Test / Method: SW846 9056A	Matrix Type: Liquid	Client Code: HMSA
Batch ID: 1369084	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 343653(GEL343653) Application Issues: Sample Analyzed out of Holding			
Specification and Requirements Exception Description:		DER Disposition:	
1. Sample Analyzed out of Holding: 343653 026,027,029,031,032,033,039,040 QC 1203041694DUP,1203041695PS		1. The samples was received with insufficient time to prep and/or analyze within the remaining method-specified holding time. The samples was analyzed as soon as possible by the analyst.	

Originator's Name:

Mary Sherwood 04-MAR-14

Data Validator/Group Leader:

Thomas Lewis 11-MAR-14