SAF-RC-155
618-10 & 618-11 Field Remediation – Other
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 7/7/14
INITIAL/DATE

COMMENTS:

SDG X0050 SAF-RC-155

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 618-10 (Drum 618A-12-0005, R-1187)

GEL Laboratories LLC
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

June 25, 2014

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354

Re: RC-155 Other
Work Order: 349869
SDG: X0050

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 03, 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. 1616.

Sincerely,

Orlette Johnson
Project Manager

Purchase Order: 1510
Chain of Custody: RC-155-081
Enclosures

Table of Contents

Case Narrative

Receipt Narrative
for
WC-HANFORD, INC.
SDG: X0050
Work Order: 349869

June 25, 2014

Laboratory Identification:

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

Summary:

Sample receipt: The sample arrived at GEL Laboratories LLC, Charleston, South Carolina on June 03, 2014 for analysis.

Sample Identification: The laboratory received the following sample:

Laboratory ID	Client ID
349869001	J1TR48

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.

Orlette Johnson
Project Manager

Chain of Custody and Supporting Documentation

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-155-081

Collector PETERSON, AO	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH
Price Code	**Data Turnaround** 21 day		
Project Designation 618-10 & 618-11 Remediation	**Sampling Location** 618-10 (drum 618A-12-0005, R-1187)		**SAF No.** RC-155
Ice Chest No. SML-363	**Field Logbook No.** EL-1664	**COA** R618AN8100	**Method of Shipment** Commerical Carrier
Shipped To GEL Laboratories Charlston	**Offsite Property No.** A131106		**Bill of Lading/Air Bill No.** See OSPC

Other Labs Shipped To

374869

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive < DOT Limits
SMS 6-2-14

Special Handling and/or Storage

Use J1NN47 for shipping criteria

Preservation	Cool 4C										
Type of Container	aG										
No. of Container(s)	1										
Volume	1000mL										
Sample Analysis	See item (1) in Special Instructions										

Sample No.	Matrix	Sample Date	Sample Time									
J1TR48	OTHER	5/29/14	0835	✓								

CHAIN OF POSSESSION / **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
M Peterson	5-29-14 0906	Doug Bowers	5-29-14/0906
Doug Bowers	5-29-14/1440	SM Sexton	5/29/14 1440
SM Sexton	5/29/14 1635	1060 Battelle Fridge	2C 5/29/14 1635
1060 Battelle Fridge	2C 6/2/14 0750	SM Sexton	6/2/14 0750
SM Sexton	6/2/14 1245	FED EX	
Fedex		T. Taylor	6/03/14 0910

FINAL SAMPLE DISPOSITION

Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

Use RCF J1NN47 for shipping criteria.

(1) Reactive Cyanide; Reactive Sulfide; Ignitability - 1010; pH - 9041 Strip Test

REVIEWED BY

DATE

WCH-EE-011

Apex™

Analysis Report for RCF32576

J1NN47 SAF-RC-155 618-10/ Drum 618-A-12-0005 NO TARE Liquid

GAMMA SPECTRUM ANALYSIS

Sample Identification	: RCF32576
Sample Description	: J1NN47 SAF-RC-155 618-10/ Drum 618-A-12-0005 NO TARE Liquid
Sample Type	: Non Standard Geometry
Sample Size	: 3.620E+02 grams
Facility	: Default
Sample Taken On	: 4/2/2012 9:20:00AM
Acquisition Started	: 4/2/2012 3:47:26PM
Procedure	: Non Standard Geometry
Operator	: RCT
Detector Name	: REGIE2
Geometry	: 50 ml Pill Box
Live Time	: 3600.0 seconds
Real Time	: 3600.8 seconds
Dead Time	: 0.02 %
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 40 - 4096
Peak Area Range (in channels)	: 40 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 3/12/2012
Efficiency Calibration Used Done On	: 3/7/2012
Efficiency Calibration Description	: REGIE2 50ml PB EC030212 SN85268-238
Sample Number	: 24081

"Qualitative Only"

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.995	2.29E-01	2.68E-01	

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: WCHD	**SDG/AR/COC/Work Order:** 349869
Received By: H. Taylor	**Date Received:** 060314

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 cpm
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample contatiners < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregeated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 130162966 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?		✓		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
7	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
11	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			
14	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7701 6833 7260

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials KR Date 060414 Page 1 of 1

Laboratory Certifications

List of current GEL Certifications as of 25 June 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	SC000122014−12
Vermont	VT87156
Virginia NELAP	460202
Washington	C780−12
Wisconsin	999887790

General Chem Analysis

Case Narrative

General Chemistry Narrative
WC-HANFORD, INC. (WCHN)
SDG X0050

Method/Analysis Information

Product:	**Cyanide and Reactive Releasable**		
Analytical Batch:	1393085	**Method:**	SW 7.3.3 Reactivity and Releasable
Prep Batch :	1393084	**Method:**	SSW846 7.3.3 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 7.3.3:

Sample ID	Client ID
349869001	J1TR48
1203101684	Method Blank (MB)
1203101686	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-069 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 Flow Injection analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

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 recoveries met the acceptance limits.

Quality Control (QC) Designation
No samples were selected for QC analysis. Please see the additional comments section of the Narrative for details.

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 following sample in this sample group was diluted due to high concentration: 1203101686 (LCS).

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:	**Flashpoint by Setaflash**		
Analytical Batch:	1396803	**Method:**	SW1020B Setaflash Flash Point 200

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 1020B:

Sample ID	Client ID
349869001	J1TR48
1203111414	349868001(J1TR47) Sample Duplicate (DUP)
1203111415	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-066 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 Hazardous Waste analysis was performed on a Setaflash Flashpoint Rapid Tester.

Quality Control (QC) Information

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: 349868001 (J1TR47).

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.

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:	**pH_by_strip**		
Analytical Batch:	1394630	**Method:**	SW846 9041A pH

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9041A:

Sample ID	Client ID
349869001	J1TR48
1203105741	Laboratory Control Sample (LCS)
1203105742	349506001(J1TR46) Sample Duplicate (DUP)

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-008 REV# 21.

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 and Ion analysis was not performed on an analytical instrument.

Initial Standardization
The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the 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.

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
The following DER was generated for this SDG: 1302641. 349869001 (J1TR48).

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:	**Sulfide and Reactive Releasable**		
Analytical Batch:	1395114	**Method:**	Reactive Sulfide SW846 Chapter 7.3.4

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 Chpt. 7.3.4-TIT:

Sample ID	Client ID
349869001	J1TR48
1203107078	Method Blank (MB)
1203107079	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-069 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 and Ion analysis was not performed on an analytical instrument.

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
No samples were selected for QC analysis. Please see the additional comments section of the Narrative for details.

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
Results for the following samples are less than the value reported(RDL).NO PQL or MDL for the Reactive Releasable Sulfide are reported. 1203107078 (MB) and 349869001 (J1TR48).

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.

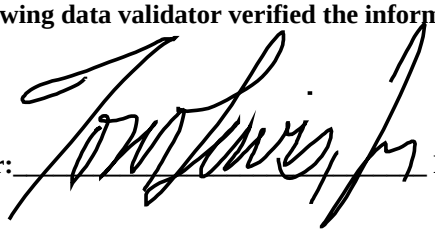
Certification Statement

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:** 02July14

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
10-JUN-14	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
MANUAL	SW846 9041A	Liquid	LBNL, WCHN
Batch ID:	**Sample Numbers:**		
1394630	See Below		

Potentially affected work order(s)(SDG): 349122(W5087),349313(X0047),349506(X0048),349868(X0049),349869(X0050),349870(X0051)

Application Issues:

Sample received out of holding

Specification and Requirements Exception Description:	**DER Disposition:**
1. Sample received out of holding: 349122 006 349313 001 349506 001 349868 001 349869 001 349870 001	1. The following samples from this sample group were received by the lab outside of the method specified holding time.

Originator's Name:

Sarah Carson 11-JUN-14

Data Validator/Group Leader:

Elzbieta Szulc 11-JUN-14

Sample Data Summary

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

Certificate of Analysis Report
for

WCHN001 WC-HANFORD, INC.

Client SDG: X0050 GEL Work Order: 349869 Project: RC-155 Other

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.

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, Orlette Johnson.

Reviewed by 

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

Certificate of Analysis

Report Date: July 2, 2014

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-155 Other

Client SDG: X0050

Client Sample ID: J1TR48
Sample ID: 349869001
Matrix: OTHERLIQ
Collect Date: 29-MAY-14 08:35
Receive Date: 03-JUN-14
Collector: Client

Project: WCHN00414
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis											
SW 7.3.3 Reactivity, Releasable "As Received"											
Reactive Releasable Cyanide	<	250		250	mg/kg	1	AXH3	06/11/14	1047	1393085	1
Hazardous Waste											
SW1020B Setaflash Flash Point 200 "As Received"											
Setaflash-200		166	75.0	75.0	Fahrenheit	1	MXB3	06/19/14	0930	1396803	2
Titration and Ion Analysis											
Reactive Sulfide SW846 Chapter 7.3.4 "As Received"											
Reactive Releasable Sulfide	<	500		500	mg/kg		SXC5	06/11/14	1406	1395114	3
SW846 9041A pH "As Received"											
pH at Temp 21.0C	X	4.70	0.010	0.100	pH	1	SXC5	06/10/14	1207	1394630	4

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 7.3.3 Prep	SW 7.3.3 Reactivity, Releasable Cyanide	AXH3	06/10/14	1430	1393084

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 7.3.3	
2	SW846 1020B	
3	SW846 Chpt. 7.3.4-TIT	
4	SW846 9041A	

Notes:

Quality Control Summary

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

QC Summary

Report Date: July 2, 2014

WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington

Contact: **Joan Kessner**

Workorder: **349869** **Client SDG:** X0050 **Project Description:** RC-155 Other

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Flow Injection Analysis										
Batch 1393085										
QC1203101686 LCS										
Reactive Releasable Cyanide	1000		D	280	mg/kg		28	(0%-58%)	AXH3	06/11/14 10:56
QC1203101684 MB										
Reactive Releasable Cyanide			<	250	mg/kg					06/11/14 10:44
Hazardous Waste										
Batch 1396803										
QC1203111414 349868001 DUP										
Setaflash-200		>200		>200	Fahrenheit	0.00		(0%-9%)	MXB3	06/19/14 09:02
QC1203111415 LCS										
Setaflash-200	81.0			82.0	Fahrenheit		101	(97%-103%)		06/19/14 08:21
Titration and Ion Analysis										
Batch 1394630										
QC1203105742 349506001 DUP										
pH	X	5.00	X	5.00	pH	0.00		(0%-10%)	SXC5	06/10/14 12:05
QC1203105741 LCS										
pH	7.00			7.00	pH		100	(99%-101%)		06/10/14 12:00
Batch 1395114										
QC1203107079 LCS										
Reactive Releasable Sulfide	536			804	mg/kg		150	(57%-159%)	SXC5	06/11/14 14:06
QC1203107078 MB										
Reactive Releasable Sulfide			<	500	mg/kg					06/11/14 14:05

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > 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.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

QC Summary

Workorder: 349869 **Client SDG:** X0050 **Project Description:** RC-155 Other

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

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 or %RPD not applicable.
^ 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

Prep Logbook

Reactive Cyanide and Sulfide

Batch ID: **1393084**
Analyst: Aubrey Kingsbury
Method: SW846 7.3.3 Prep
Lab SOP: GL-GC-E-069 REV# 11
Instrument: Sartorius Balance B-001

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1203101686	Reactive Cyanide LCS	URF2083330-01	10	mL

Sample ID	Run Date	Matrix	Initial Weight (g)	Final Volume (mL)	Prep Factor (mL/g)	pH Check
1203101684 MB	10-JUN-2014 14:30:00	Oil	10	50	5	
1203101686 LCS	10-JUN-2014 14:30:00	Oil	10	50	5	
349868001	10-JUN-2014 14:30:00	Oil	10.01	50	4.995	
349869001	10-JUN-2014 14:30:00	Oil	10.05	50	4.97512	
349870001	10-JUN-2014 14:30:00	Oil	10.04	50	4.98008	
350173001	10-JUN-2014 14:30:00	Soil	10	50	5	
1203101685 DUP (350173001)	10-JUN-2014 14:30:00	Soil	10.14	50	4.93097	
350259001	10-JUN-2014 14:30:00	Soil	10.03	50	4.98504	
350318001	10-JUN-2014 14:30:00	Soil	10.13	50	4.93583	

Reagent/Solvent Lot ID	Description	Amount
2099158-A1	0.01N H2SO4	200 mL
2116546-C	0.25N Sodium Hydroxide Solution	50 mL
WCN140610-07	150 ppb CN Distilled ICV Standard	.0375 mL

Comments:

Start Time: 10-JUN-14 14:00:29

End Time: 10-JUN-14 14:30:29