Memorandum

BURNS McDONNELL

Date: July 15, 2020

To: Kent Fletcher, Environmental Coordinator
Western Farmers Electric Cooperative

From: Kira Wylam, Burns & McDonnell

Subject: Certification of CCR Removal in Preparation of Closure by Removal
Hugo Unit 2 Impoundment

This memorandum presents the results of construction observation, documentation, and work performed by Burns & McDonnell (BMcD) during the removal of coal combustion residuals (CCR) from the Unit 2 Impoundment (referred to herein as "Impoundment") at the Hugo Power Plant (Plant). This CCR surface impoundment is owned and operated by Western Farmers Electric Cooperative (WFEC) and is subject to Oklahoma Administrative Code (OAC) 252, Chapter 517, Disposal of Coal Combustion Residuals from Electric Utilities.

WFEC retained Harrison, Walker, and Harper (referred to herein as "the Contractor") to remove ponded CCR material from the Plant's Impoundment. The Contractor initiated CCR removal work in October 2019. BMcD was retained by WFEC to act as the independent qualified professional engineer in the state of Oklahoma to certify that, upon completion of construction, the ponded CCR material in the Impoundment was removed in accordance with Section 2.2.1 of the December 2019 document titled, *Hugo CCR Surface Impoundment Closure Plan, Revision 4*, (referred to herein as "Closure Plan"). It is the opinion of BMcD that removal of CCR material from the Impoundment was performed in accordance with the approved Closure Plan, the OAC Chapter 517 regulations, and the permit, for reasons described herein.

VISUAL OBSERVATION

BMcD initially visited the site on November 19, 2020, after which bi-weekly visits were made to the site throughout the construction process to review removal progress. As construction progressed and CCR material was removed, the Contractor uncovered the existing subgrade which consisted of clay as well as sparse marine fossil formations. BMcD provided visual confirmation that the existing subgrade had been reached via excavation and confirmed the remaining subgrade material was *not* CCR through the use of hand texturing. Throughout the removal process, test pits were excavated to confirm the assumed subgrade layer was continuous and not superficial.

The Impoundment was surveyed following the final onsite inspection by BMcD on June 16, 2020. The Impoundment's closure area is delineated in the attached third-party survey verification documentation and documented with photographs.

GROUNDWATER SAMPLING

Following certification of closure of the Impoundment by removal of material, OAC 252:517-15-7(c) requires that a single round of sampling of the Impoundment's monitoring well system be conducted and analyzed. The most recent groundwater sampling report was completed by Altamira on April 28, 2020, which summarizes data collected in September and October of 2019. This report is provided as an attachment to this memorandum.

While BMcD did not conduct the sampling or run the statistics used to establish the site-specific groundwater protection standards (GWPS), BMcD has reviewed the sampling report and can certify that the sampling results provided are below the GWPS established by WFEC. Additionally, Altamira provided independent certification that the statistical method used to establish the GWPS is in accordance with the OAC requirements.

CERTIFICATION

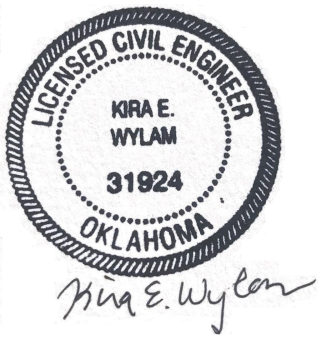
As required by OAC 252.517-15-3(c), I hereby certify that removal of CCR from the Unit 2 CCR Impoundment at the Hugo Power Plant was completed in accordance with both the written Closure Plan as required by OAC 252.517-15-7(b)(1) and the closure by removal of CCR requirement of OAC 252.517-15-7(c).

Kira E. Wylam

Kira E. Wylam

July 15, 2020

Date



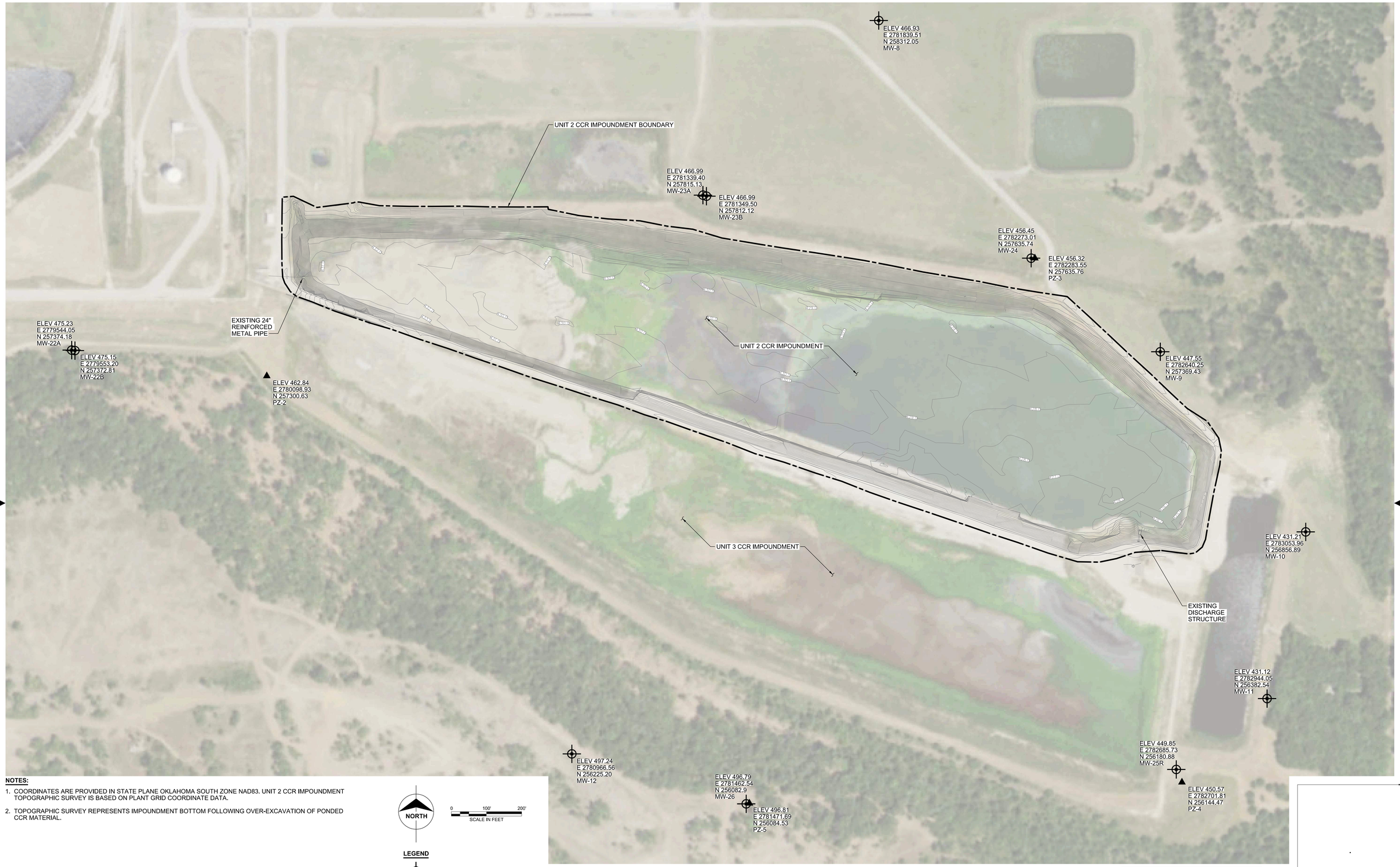
Jul 15 2020 6:15 PM

KEW/kew

Attachments – Final Closure Map
Third-Party Verification Survey
Photographs
Altamira Groundwater Monitoring Report

cc: Kristofer Raymond, WFEC
Doug Howlett, WFEC
Michael Dyke, Burns & McDonnell

Attachment -
Final Closure Map



Millimeters

Inches

Scale For Microfilming

NOTES:

1. COORDINATES ARE PROVIDED IN STATE PLANE OKLAHOMA SOUTH ZONE NAD83. UNIT 2 CCR IMPOUNDMENT TOPOGRAPHIC SURVEY IS BASED ON PLANT GRID COORDINATE DATA.
2. TOPOGRAPHIC SURVEY REPRESENTS IMPOUNDMENT BOTTOM FOLLOWING OVER-EXCAVATION OF PONDED CCR MATERIAL.

NORTH

0 100' 200'
SCALE IN FEET

LEGEND

MONITORING WELL

PIEZOMETER

UNIT 2 CCR IMPOUNDMENT BOUNDARY

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	--/--/--	JMB	VVL	--

no.	date	by	ckd	description

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
FIRM LICENSE NO. 43

designed V. LARSON
detailed J. BRUNKHORST

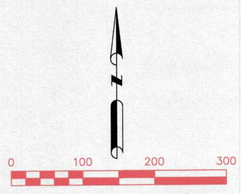
wfec western farmers electric cooperative
A Touchstone Energy® Cooperative
HUGO WESTERN FARMERS POWER PLANT
PROJECT NAME
CHOCTAW COUNTY, OKLAHOMA

HUGO WESTERN FARMERS POWER PLANT
FINAL CLOSURE MAP

project 120943 | contract --
drawing **SKC001** | rev. **A**
sheet 1 of 1 sheets
file 120943SKC001.dgn

Attachment -
Third-Party Verification Survey

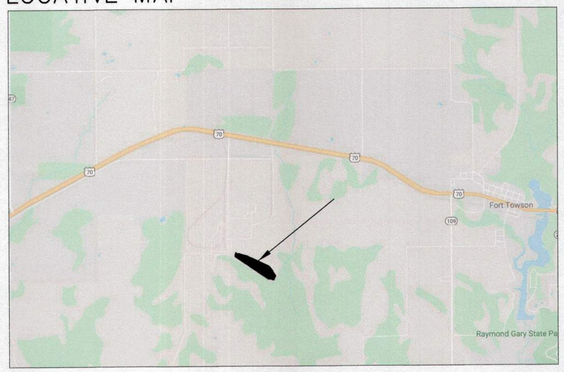
Original Survey (Prior to Excavation) - Dated November 19, 2019
Final Survey (After Excavation) - Dated June 23, 2020

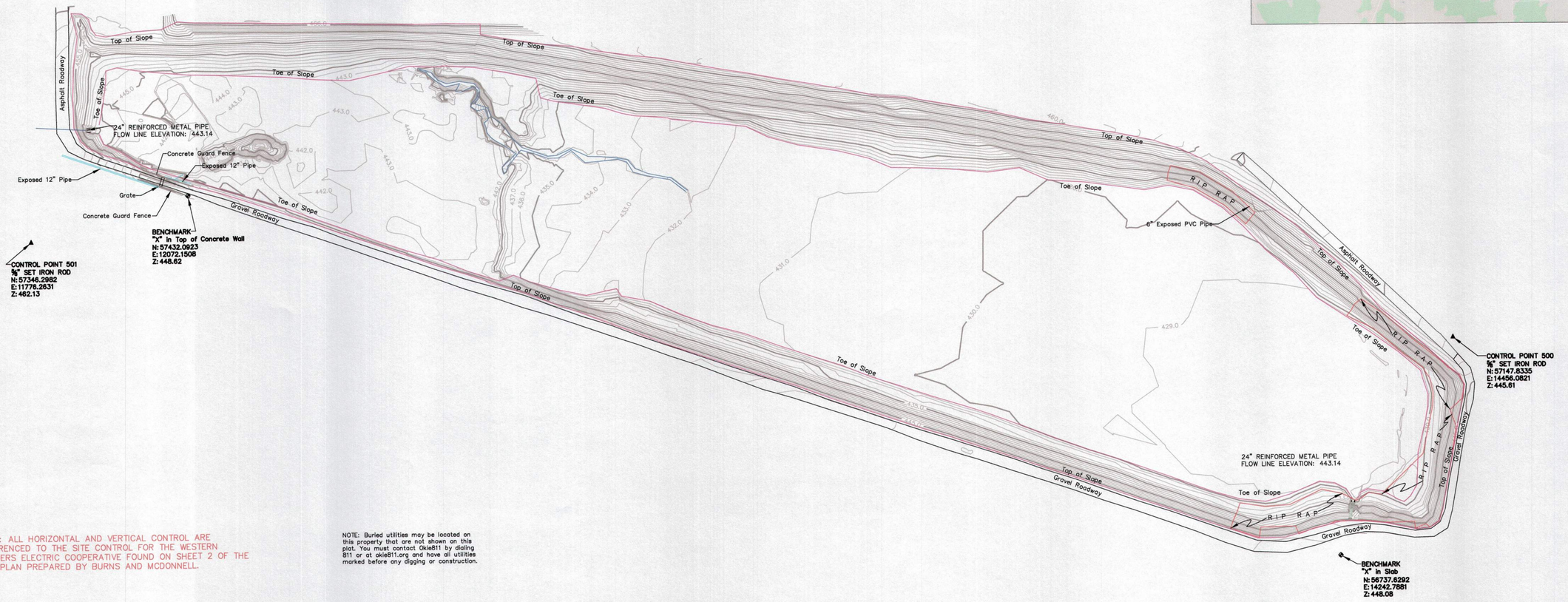


Scale 1"=100'

Basis of Bearing = Site Control

LOCATIVE MAP





NOTE: ALL HORIZONTAL AND VERTICAL CONTROL ARE REFERENCED TO THE SITE CONTROL FOR THE WESTERN FARMERS ELECTRIC COOPERATIVE FOUND ON SHEET 2 OF THE SITE PLAN PREPARED BY BURNS AND MCDONNELL.

NOTE: Buried utilities may be located on this property that are not shown on this plat. You must contact Okie811 by dialing 811 or at okie811.org and have all utilities marked before any digging or construction.

LEGEND	
Control Monument	▲
Benchmark	⊕

LICENSED PROFESSIONAL LAND SURVEYOR
CODY R. JONES
1998
OKLAHOMA

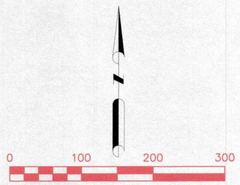
7/15/2020

CODY R. JONES PLS 1998

TOPOGRAPHIC SURVEY # 1
OF A
CCR Impoundment
SITUATED AT THE
WESTERN FARMERS ELECTRIC COOPERATIVE
FORT TOWSON, OKLAHOMA

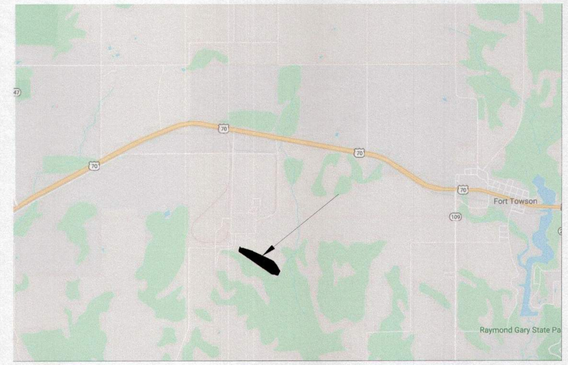
JOB NO.2019-270	DRAWN BY: CRJ	CHK BY: CRS	CAD FILE: 2019-270.DWG
DATE: NOVEMBER 19, 2019	Sheet 1 OF 1	G.F. N/A	SCALE: 1" = 40'

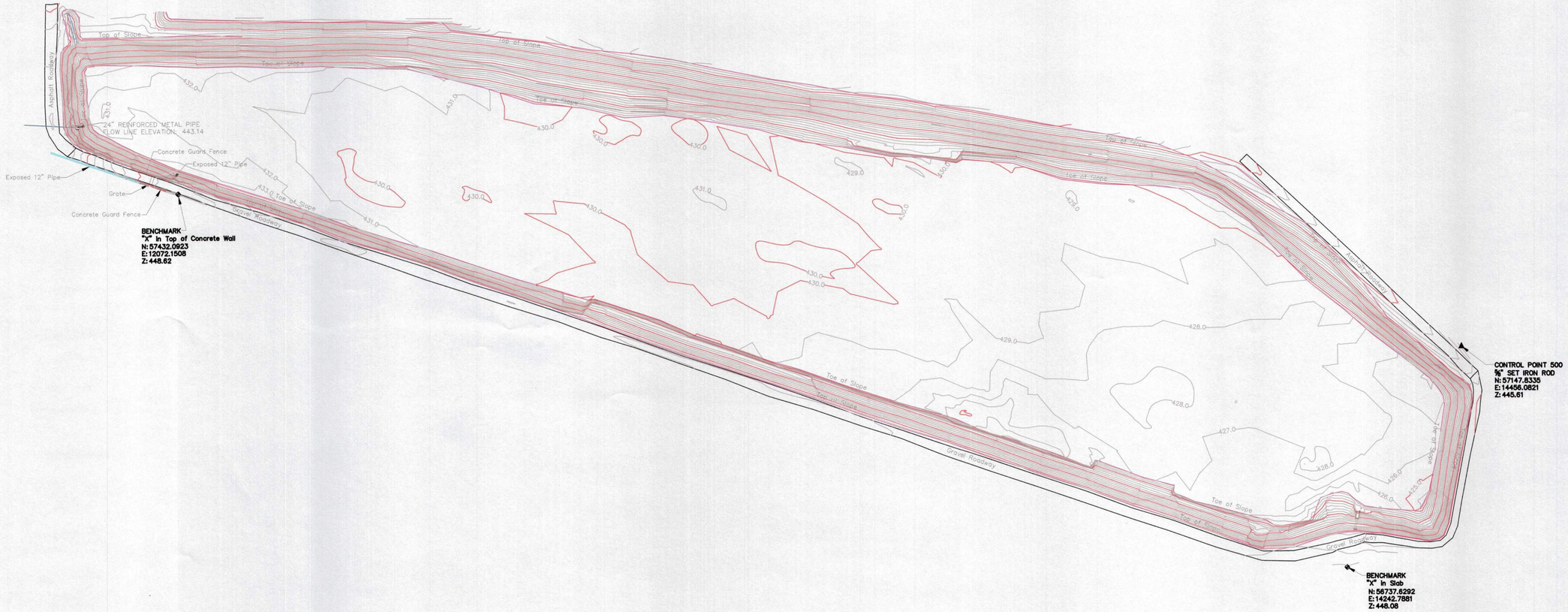
CODY R. JONES P.L.S. 1998
301 COUNTY ROAD 2516
BONHAM, TEXAS 75418
(903) 271-2814 FAX (903) 640-8959



Scale 1"=100'

LOCATIVE MAP





LEGEND	
Control Monument	▲
Benchmark	⊕

NOTE: ALL HORIZONTAL AND VERTICAL CONTROL ARE REFERENCED TO THE SITE CONTROL FOR THE WESTERN FARMERS ELECTRIC COOPERATIVE FOUND ON SHEET 2 OF THE SITE PLAN PREPARED BY BURNS AND MCDONNELL.

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LICENSED PROFESSIONAL LAND SURVEYOR
CODY R. JONES
1998
OKLAHOMA

7/15/2020

CODY R. JONES PLS 1998

TOPOGRAPHIC SURVEY # 3
OF A
CCR 2 Impoundment
SITUATED AT THE
WESTERN FARMERS ELECTRIC COOPERATIVE
FORT TOWSON, OKLAHOMA

JOB NO.2019-270-4	DRAWN BY: JWP	CHK BY: CRJ	CAD FILE: 2019-270-4.DWG
DATE: JUNE 23, 2020	Sheet 1 OF 1	G.F. N/A	SCALE: 1" = 100'

CODY R. JONES P.L.S. 1998
301 COUNTY ROAD 2516
BONHAM, TEXAS 75418
(903) 271-2814 FAX (903) 640-8959

Attachment -
Photographs


Jun 16, 2020 10:24:41 AM
230° SW
U.S. 70
Fort Towson
Choctaw County
Oklahoma


Jun 16, 2020 10:44:29 AM
284° W
Fort Towson
Oklahoma


N
W
E
S
Jun 16, 2020 10:44:33 AM
4° N
Fort Towson
Oklahoma


N
E
S
W
Jun 16, 2020 10:44:35 AM
54° NE
Fort Towson
Oklahoma


Jun 16, 2020 3:08:24 PM
123° SE
U.S. 70
Fort Towson
Choctaw County
Oklahoma

Attachment -
Altamira Groundwater Monitoring Report

SURFACE IMPOUNDMENT CCR UNIT
SEPTEMBER/OCTOBER 2019 GROUNDWATER MONITORING

WESTERN FARMERS ELECTRIC COOPERATIVE
HUGO POWER STATION
Fort Towson, Oklahoma

April 28, 2020

Prepared for:

Western Farmers Electric Cooperative

P.O. Box 429

Anadarko, Oklahoma 73005

Prepared by:

Altamira-US, LLC

3700 W. Robinson, Suite 200

Norman, Oklahoma 73072

405.701.5058

ALTAMIRA

formerly known as Enviro Clean Cardinal

List of Figures

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SURFACE IMPOUNDMENT CCR UNIT
SEPTEMBER/OCTOBER 2019 GROUNDWATER MONITORING

Western Farmers Electric Cooperative (WFEC) is in the process of closing the permitted Surface Impoundment Coal Combustion Residual (CCR) Unit at its Hugo Power Station (HPS). The HPS will be seeking clean closure of the Surface Impoundment CCR Unit in accordance with Oklahoma Administrative Code Chapter 517, Disposal of Coal Combustion Residuals from Electric Utilities (OAC 252:517). As a permitted CCR Unit, the Surface Impoundment has been subject to the groundwater monitoring requirements of OAC 252:517; Subchapter 9. Under the HPS groundwater monitoring program, wells comprising the monitoring system for the Surface Impoundment CCR Unit (MW-8, MW-9, MW-10, MW-11, MW-22A, MW-23A, MW-24 and MW-25R) were most recently sampled in September/October 2019. Location of the Surface Impoundment CCR unit is shown on **Figure 1**. Location of monitoring wells associated with the Surface Impoundment CCR Unit is shown on **Figure 2**. Sampling of monitoring wells associated with the facilities permitted Landfill CCR Unit is outside the scope of this report.

Groundwater sampling of monitoring wells associated with the Surface Impoundment CCR Unit was conducted in accordance with the Groundwater Sampling and Analysis Plan for the Hugo Power Station CCR Units (Burns & McDonell Engineering Company, March 2016 and Revised October 2017). Samples were submitted for laboratory analysis of Detection Monitoring Parameters as contained in Appendix A of OAC 252:517 and Assessment Monitoring Parameters as contained in Appendix B of OAC 252:517. Laboratory reports from September/October 2019 groundwater sampling were included in the 2019 Annual Groundwater and Corrective Action Report (Altamira-US, January 31, 2020) and are included as an attachment to this report. Also included are laboratory reports from September/October 2019 sampling of monitoring wells associated with the Landfill CCR Unit.

Data from September/October 2019 sampling associated with the Surface Impoundment CCR Unit were statistically evaluated using procedures outlined in the Groundwater Monitoring Sampling and Analysis Statistical Method Certification, Western Farmers Electric Cooperative (Enviro Clean Cardinal, October 17 2017). Analytical results for Detection Monitoring Parameters from September/October 2019 sampling were compared to pertinent background levels as established in the Initial Annual Groundwater and Corrective Action Report (Enviro Clean Cardinal, January 31, 2018). Results from September/October 2019 sampling for Detection Monitoring Parameters and a comparison to established background are summarized on **Table 1**. Analytical results for Assessment Monitoring Parameters from September/October 2019 sampling were compared to groundwater protection standards (GWPS) as established in the Initial Annual Groundwater and Corrective Action Report and/or to EPA risk-based groundwater protection standards. Results from September/October 2019 sampling for Assessment Monitoring Parameters and a comparison to GWPS are summarized on **Table 2**.

From September/October 2019 sampling for Detection Monitoring Parameters, reported concentrations for boron (MW-10 and MW-11) and chloride (MW-10, MW-11 and MW-24) were above established background and reported pH (MW-9, MW-24 and MW-25R) was slightly below established background. No statistically significant exceedances over the established GWPS were indicated for any of the Assessment Monitoring Parameters in any monitoring wells associated with the Surface Impoundment CCR Unit.

FIGURES

Figure 1: Location of CCR Units (Base Map – Google Earth)

1" approx. 500'

0 500

PROJECT

WESTERN FARMERS ELECTRIC COOPERATIVE

LOCATION

HUGO POWER STATION

PREPARED FOR

WESTERN FARMERS ELECTRIC COOPERATIVE

DRAWING TITLE

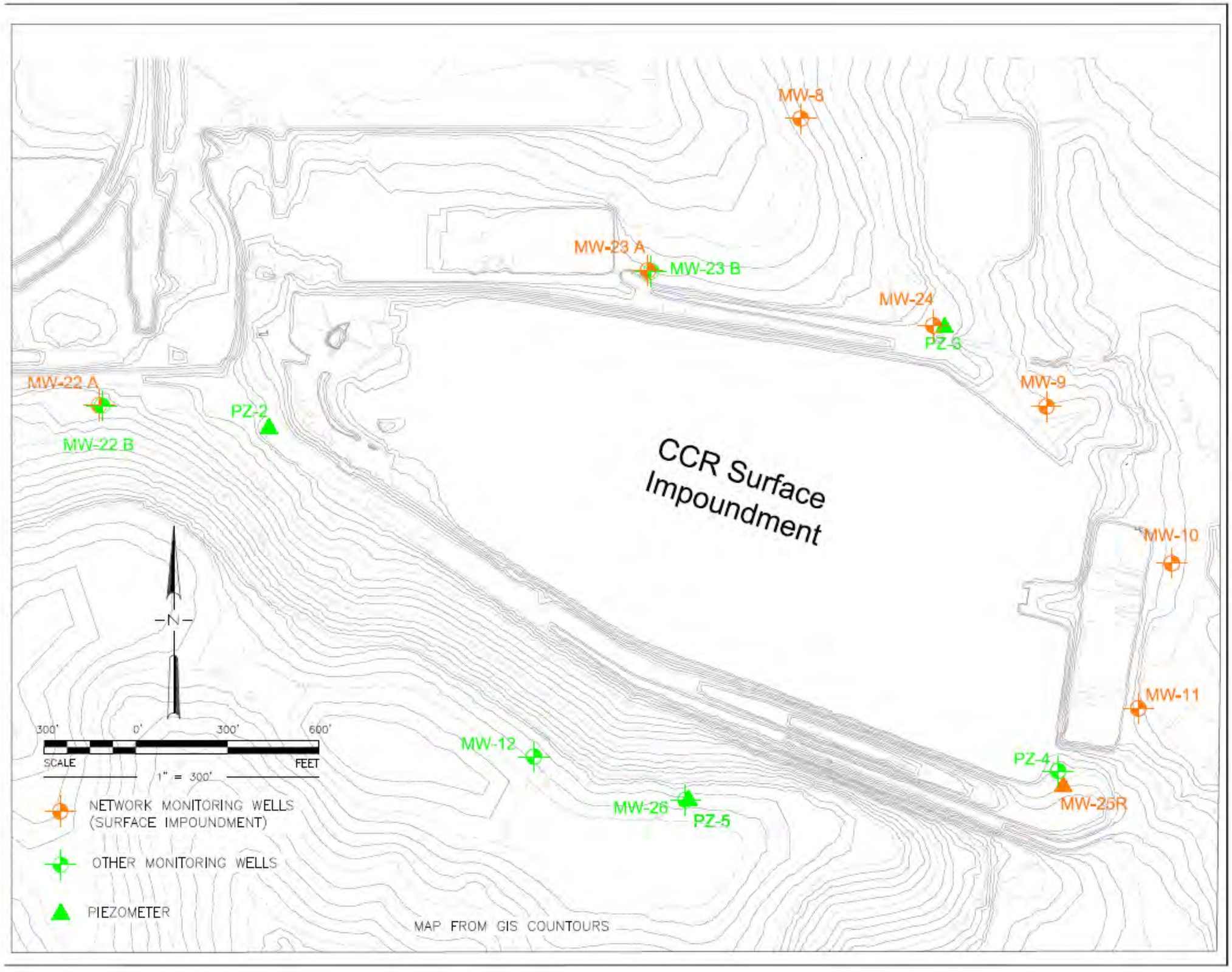
Figure 1
Location of CCR Units

Project No.	WFEE160019
Drawn By	CSS
Checked By	BS
Date	4/21/2020
Scale	1" – 500' (Approximate)
Issued For.	Western Farmers Elect. Coop.
Drawing No.	Figure 1

ALTAMIRA
formerly known as Enviro Clean Cardinal

525 Central Park Drive, Suite 500
Oklahoma City, OK 73105
Phone 405.842.1066 Fax 405.843.4687

3700 W. Robinson, Suite 200
Norman, OK 73072
Phone 405.701.5058 Fax 405.701.5208



PROJECT

WESTERN FARMERS ELECTRIC COOPERATIVE

LOCATION

HUGO POWER STATION

PREPARED FOR

WESTERN FARMERS ELECTRIC COOPERATIVE

DRAWING TITLE

Figure 2
Monitoring Well Locations
(Surface Impoundment
CCR Unit)

Project No.	WFEE160019
Drawn By	RKF
Checked By	CSS
Date	9/20/18
Scale	1" – 300' (Approximate)
Issued For.	Western Farmers Elect. Coop.
Drawing No.	Figure 2

ALTAMIRA
formerly known as Enviro Clean Cardinal

525 Central Park Drive, Suite 500
Oklahoma City, OK 73105
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Phone 405.701.5058 Fax 405.701.5208

TABLES

TABLE 1
COMPARISON OF RESULTS FROM SEPTEMBER/OCTOBER 2019 SAMPLING OF DETECTION MONITORING PARAMETERS TO ESTABLISHED BACKGROUND
SURFACE IMPOUNDMENT CCR UNIT

	DETECTION MONITORING PARAMETERS (FROM OAC 252:517 APPENDIX A AND APPENDIX III OF THE FEDERAL CCR RULE)													
	Boron		Calcium		Chloride		Fluoride		pH		Sulfate		TDS	
	September-October 2019 Detection Monitoring (mg/L)	Established Background (mg/L)	September-October 2019 Detection Monitoring (mg/L)	Established Background (mg/L)	September-October 2019 Detection Monitoring (mg/L)	Established Background (mg/L)	September-October 2019 Detection Monitoring (mg/L)	Established Background (mg/L)	September-October 2019 Detection Monitoring (mg/L)	Established Background (mg/L)	September-October 2019 Detection Monitoring (mg/L)	Established Background (mg/L)	September-October 2019 Detection Monitoring (mg/L)	Established Background (mg/L)
MW-8 (BG)	0.876	Not Applicable	481	Not Applicable	3.87	Not Applicable	0.3	Not Applicable	6.74	Not Applicable	1,350	Not Applicable	2,240	Not Applicable
MW-9	0.0655	1.935	36.8	961.4	1.35	11.6	0.161	2.84	6.44	6.8-8.0	10.5	2,156	182	244.2
MW-10	2.71	1.935	141	961.4	34.8	11.6	1.11	2.84	7.22	6.8-8.0	938	2,156	1,530	1,632
MW-11	2.38	1.935	46.8	961.4	56.1	11.6	1.59	2.84	6.95	6.8-8.0	681	2,156	1,250	1,328
MW-22A (BG)	1.49	Not Applicable	481	Not Applicable	2.39	Not Applicable	0.364	Not Applicable	6.74	Not Applicable	1,880	Not Applicable	3,030	Not Applicable
MW-23A (BG)	1.01	Not Applicable	521	Not Applicable	12.6	Not Applicable	0.402	Not Applicable	6.79	Not Applicable	1,790	Not Applicable	2,990	Not Applicable
MW-24	0.987	1.935	532	961.4	14.8	11.6	0.169	2.84	6.77	6.8-8.0	1,880	2,156	3,080	3,333
MW-25R	1.07	1.935	308	961.4	8.85	11.6	0.409	2.84	6.48	6.8-8.0	1,030	2,156	1,820	2,328

Established background are as presented in the Initial Annual Groundwater and Corrective Action Report (ECC, January 31, 2018); Table 3B (Calculated Upper Prediction Limit)
(BG) = Background / upgradient monitoring well
Not Applicable = Background values to establish SSIs are not applicable for background / upgradient monitoring wells

TABLE 2

COMPARISON OF RESULTS FROM SEPTEMBER/OCTOBER 2019 SAMPLING OF ASSESSMENT MONITORING PARAMETERS AND CONFIDENCE INTERVALS TO ESTABLISHED GWPS

SURFACE IMPOUNDMENT CCR UNIT

ASSESSMENT MONITORING PARAMETERS (FROM OAC 252:517 APPENDIX B AND APPENDIX IV OF THE FEDERAL CCR RULE)

	Antimony			Arsenic			Barium			Beryllium		
	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)
MW-8	<0.000400	Not Applicable	0.006 (MCL)	<0.0000400	Not Applicable	0.010 (MCL)	0.00401	Not Applicable	2 (MCL)	<0.000200	Not Applicable	0.004 (MCL)
MW-9	<0.000400	0.0002 - 0.00108		0.000780 J	0.00069 - 0.00191		0.0327	0.0304 - 0.0546		<0.000200	0.00005 - 0.000503	
MW-10	<0.000400	0.0002 - 0.002		0.000575 J	0.000645 - 0.00155		0.0224	0.0224 - 0.0268		<0.000200	0.00005 - 0.0005	
MW-11	<0.000400	0.0002 - 0.004		<0.000400	0.0002 - 0.00125		0.0171	0.01908 - 0.02329		<0.000200	0.00005 - 0.0005	
MW-22A	<0.000400	Not Applicable		0.00142	Not Applicable		0.0069	Not Applicable		<0.000200	Not Applicable	
MW-23A	<0.000400	Not Applicable		<0.000400	Not Applicable		0.00298 J	Not Applicable		<0.000200	Not Applicable	
MW-24	<0.000400	0.0002 - 0.004		<0.000400	0.000548 - 0.002		0.00878	0.0048 - 0.007962		<0.000200	0.00005 - 0.000551	
MW-25R	<0.000400	0.0002 - 0.002		<0.000400	0.001032 - 0.002545		0.00514	0.003932 - 0.02099		<0.000200	0.00005 - 0.00025	

	Cadmium			Chromium			Cobalt			Fluoride		
	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)
MW-8	<0.000200	Not Applicable	0.005 (MCL)	<0.000400	Not Applicable	0.1 (MCL)	0.00141 J	Not Applicable	0.0032 (UTL) 0.006 (EPA)*	0.3	Not Applicable	4 (MCL)
MW-9	<0.000200	0.00005 - 0.00025		<0.000400	0.001352 - 0.00494		0.000210 J	0.00021 - 0.000547		0.161	0.1838 - 0.2752	
MW-10	<0.000200	0.00005 - 0.00025		<0.000400	0.0002 - 0.0032		<0.000200	0.0001502 - 0.0003327		1.11	0.9566 - 1.248	
MW-11	<0.000200	0.00005 - 0.0002		<0.000400	0.0002 - 0.00121		<0.000200	0.00005 - 0.00025		1.59	1.45 - 1.73	
MW-22A	<0.000200	Not Applicable		<0.000400	Not Applicable		0.000946 J	Not Applicable		0.36	Not Applicable	
MW-23A	<0.000200	Not Applicable		0.000700 J	Not Applicable		<0.000200	Not Applicable		0.402	Not Applicable	
MW-24	<0.000200	0.0001 - 0.0005		<0.000400	0.0002 - 0.0025		0.000794 J	0.0003067 - 0.0008031		0.169	0.169 - 0.428	
MW-25R	<0.000200	0.00005 - 0.00025		<0.000400	0.0002 - 0.0025		<0.000200	0.0001 - 0.00176		0.409	0.284 - 0.616	

ASSESSMENT MONITORING PARAMETERS (FROM OAC 252:517 APPENDIX B AND APPENDIX IV OF THE FEDERAL CCR RULE)

	Lead			Lithium			Mercury			Molybdenum		
	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)
MW-8	<0.000600	Not Applicable	0.015 (MCL)	0.217	Not Applicable	0.4282 (UTL)	<0.000300	Not Applicable	0.002 (MCL)	<0.000600	Not Applicable	0.059 (UTL) 0.100 (EPA)*
MW-9	<0.000600	0.000453 - 0.001031		0.00118 J	0.00118 - 0.005		<0.0000300	0.000015 - 0.000075		<0.000600	0.00025 - 0.0025	
MW-10	<0.000600	0.00005 - 0.0003		0.0639	0.06079 - 0.07339		<0.0000300	0.000015 - 0.000075		0.00182 J	0.001412 - 0.003641	
MW-11	<0.000600	0.00005 - 0.0003		0.0532	0.05109 - 0.06281		<0.0000300	0.000015 - 0.000075		0.00340 J	0.002576 - 0.003182	
MW-22A	<0.000600	Not Applicable		0.256	Not Applicable		<0.0000300	Not Applicable		0.000787 J	Not Applicable	
MW-23A	<0.000600	Not Applicable		0.206	Not Applicable		<0.0000300	Not Applicable		<0.000600	Not Applicable	
MW-24	<0.000600	0.00005 - 0.0003		0.277	0.3262 - 0.378		<0.0000300	0.000015 - 0.000075		<0.000600	0.00025 - 0.005	
MW-25R	<0.000600	0.00025 - 0.00831		0.132	0.08038 - 0.1241		<0.000300	0.000015 - 0.00075		<0.000600	0.00211 - 0.006974	

	Selenium			Thallium			Ra-226 + Ra-228 (combined)		
	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (mg/L)	Established GWPS (mg/L)	September-October 2019 Assessment Monitoring (mg/L)	Confidence Interval (pCi/L)	Established GWPS (pCi/L)
MW-8	<0.0011	Not Applicable	0.05 (MCL)	<0.000200	Not Applicable	0.002 (MCL)	<0.69	Not Applicable	5 (MCL)
MW-9	<0.0011	0.0002599 - 0.000846		<0.000200	0.0001 - 0.0005		0.81	0.2201 - 1.071	
MW-10	<0.0011	0.00015 - 0.0015		<0.000200	0.0001 - 0.002		<0.70	0.7477 - 1.315	
MW-11	<0.0011	0.00015 - 0.00075		<0.000200	0.0001 - 0.0004		<0.71	0.5851 - 1.199	
MW-22A	<0.0011	Not Applicable		<0.000200	Not Applicable		<0.72	Not Applicable	
MW-23A	<0.0011	Not Applicable		<0.000200	Not Applicable		<0.77	Not Applicable	
MW-24	<0.0011	0.000447 - 0.0015		<0.000200	0.0001 - 0.002		<0.71	0.4806 - 0.9396	
MW-25R	<0.0011	0.00015 - 0.00075		<0.000200	0.0001 - 0.002		0.87	0.3179 - 1.219	

Not Applicable = Confidence Intervals not applicable to background / upgradient wells

In general, the established GWPS are as presented in the Initial Annual Groundwater and Corrective Action Report (ECC, January 31, 2018); Table 3D (Ground Water Protection Standard)

(MCL) - GWPS is Federal Drinking Water Standard / Tap Water Standard for lead

(UTL) - GWPS is upper tolerance limit from pooled background data from upgradient / background wells

(EPA)* = EPA promulgated alternative risk-based GWPS for cobalt, lithium and molybdenum

The UTL for lithium is greater than the EPA GWPS for lithium. Therefore the UTL (as presented in the Initial Annual Groundwater and Corrective Action Report (ECC, January 31, 2018); Table 3D (Ground Water Protection Standard)) remains the pertinent GWPS.

ATTACHMENTS

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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October 31, 2019

Bert Smith
Altamira
7060 S. Yale Avenue, Suite 603
Tulsa, OK 74136

Work Order: **HS19100073**

Laboratory Results for: **WFEC CCR Rule Site**

Dear Bert,

ALS Environmental received 9 sample(s) on Oct 02, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

Client: Altamira
Project: WFEC CCR Rule Site
Work Order: HS19100073

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100073-01	MW-11	Water		30-Sep-2019 13:07	02-Oct-2019 08:40	☐
HS19100073-02	MW-25R	Water		30-Sep-2019 14:35	02-Oct-2019 08:40	☐
HS19100073-03	MW-10	Water		30-Sep-2019 15:25	02-Oct-2019 08:40	☐
HS19100073-04	MW-22A	Water		30-Sep-2019 16:25	02-Oct-2019 08:40	☐
HS19100073-05	MW-20	Water		30-Sep-2019 17:10	02-Oct-2019 08:40	☐
HS19100073-06	Dup1	Water		30-Sep-2019 00:00	02-Oct-2019 08:40	☐
HS19100073-07	MW-7S	Water		01-Oct-2019 11:40	02-Oct-2019 08:40	☐
HS19100073-08	MW-19S	Water		01-Oct-2019 12:15	02-Oct-2019 08:40	☐
HS19100073-09	MW-18	Water		01-Oct-2019 13:00	02-Oct-2019 08:40	☐

Client: Altamira **CASE NARRATIVE**
Project: WFEC CCR Rule Site
Work Order: HS19100073

Work Order Comments

- The analyses for Radium-226 and Radium-228 were subcontracted to ALS Environmental in Fort Collins, CO. Final report attached.
- Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

  The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

Metals by Method SW7470

Batch ID: 145965

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 145959

Sample ID: HS19091377-07MS

- MS and MSD are for an unrelated sample

WetChemistry by Method M2540C

Batch ID: R347838

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500H+ B

Batch ID: R347759

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E410.4

Batch ID: R347691

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R347540

Sample ID: HS19091394-09MS

- MS and MSD are for an unrelated sample (Sulfate)

Sample ID: MW-7S (HS19100073-07MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Sulfate)

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-11
Collection Date: 30-Sep-2019 13:07

ANALYTICAL REPORT
WorkOrder:HS19100073
Lab ID:HS19100073-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 03-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	07-Oct-2019 23:53
Arsenic	U		0.000400	0.00200	mg/L	1	07-Oct-2019 23:53
Barium	**0.0171**		**0.00190**	**0.00400**	**mg/L**	1	07-Oct-2019 23:53
Beryllium	U		0.000200	0.00200	mg/L	1	07-Oct-2019 23:53
Boron	**2.38**		**0.110**	**0.200**	**mg/L**	10	08-Oct-2019 13:49
Cadmium	U		0.000200	0.00200	mg/L	1	07-Oct-2019 23:53
Calcium	**46.8**		**0.0340**	**0.500**	**mg/L**	1	07-Oct-2019 23:53
Chromium	U		0.000400	0.00400	mg/L	1	07-Oct-2019 23:53
Cobalt	U		0.000200	0.00500	mg/L	1	07-Oct-2019 23:53
Lead	U		0.000600	0.00200	mg/L	1	07-Oct-2019 23:53
Lithium	**0.0532**		**0.00100**	**0.00500**	**mg/L**	1	07-Oct-2019 23:53
Molybdenum	**0.00340**	J	**0.000600**	**0.00500**	**mg/L**	1	07-Oct-2019 23:53
Selenium	U		0.00110	0.00200	mg/L	1	07-Oct-2019 23:53
Thallium	U		0.000200	0.00200	mg/L	1	07-Oct-2019 23:53
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 03-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	03-Oct-2019 17:44
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**56.1**		**0.200**	**0.500**	**mg/L**	1	02-Oct-2019 11:18
Fluoride	**1.59**		**0.0500**	**0.100**	**mg/L**	1	02-Oct-2019 11:18
Nitrogen, Nitrate (As N)	**0.379**		**0.0300**	**0.100**	**mg/L**	1	02-Oct-2019 11:18
Sulfate	**681**		**2.00**	**5.00**	**mg/L**	10	02-Oct-2019 18:28
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,250**		**5.00**	**10.0**	**mg/L**	1	07-Oct-2019 17:35
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.95**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**21.6**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-25R
Collection Date: 30-Sep-2019 14:35

ANALYTICAL REPORT
WorkOrder:HS19100073
Lab ID:HS19100073-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 03-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	07-Oct-2019 23:56
Arsenic	U		0.000400	0.00200	mg/L	1	07-Oct-2019 23:56
Barium	**0.00514**		**0.00190**	**0.00400**	**mg/L**	1	07-Oct-2019 23:56
Beryllium	U		0.000200	0.00200	mg/L	1	07-Oct-2019 23:56
Boron	**1.07**		**0.110**	**0.200**	**mg/L**	10	08-Oct-2019 13:51
Cadmium	U		0.000200	0.00200	mg/L	1	07-Oct-2019 23:56
Calcium	**308**		**0.340**	**5.00**	**mg/L**	10	08-Oct-2019 13:51
Chromium	U		0.000400	0.00400	mg/L	1	07-Oct-2019 23:56
Cobalt	U		0.000200	0.00500	mg/L	1	07-Oct-2019 23:56
Lead	U		0.000600	0.00200	mg/L	1	07-Oct-2019 23:56
Lithium	**0.132**		**0.00100**	**0.00500**	**mg/L**	1	07-Oct-2019 23:56
Molybdenum	U		0.000600	0.00500	mg/L	1	07-Oct-2019 23:56
Selenium	U		0.00110	0.00200	mg/L	1	07-Oct-2019 23:56
Thallium	U		0.000200	0.00200	mg/L	1	07-Oct-2019 23:56
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 03-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	03-Oct-2019 17:49
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**8.85**		**0.200**	**0.500**	**mg/L**	1	02-Oct-2019 11:35
Fluoride	**0.409**		**0.0500**	**0.100**	**mg/L**	1	02-Oct-2019 11:35
Nitrogen, Nitrate (As N)	**0.354**		**0.0300**	**0.100**	**mg/L**	1	02-Oct-2019 11:35
Sulfate	**1,030**		**4.00**	**10.0**	**mg/L**	20	02-Oct-2019 18:45
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,820**		**5.00**	**10.0**	**mg/L**	1	07-Oct-2019 17:35
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.48**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**21.7**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-10
Collection Date: 30-Sep-2019 15:25

ANALYTICAL REPORT
WorkOrder:HS19100073
Lab ID:HS19100073-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 03-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	07-Oct-2019 23:58
Arsenic	**0.000575**	J	**0.000400**	**0.00200**	**mg/L**	1	07-Oct-2019 23:58
Barium	**0.0224**		**0.00190**	**0.00400**	**mg/L**	1	07-Oct-2019 23:58
Beryllium	U		0.000200	0.00200	mg/L	1	07-Oct-2019 23:58
Boron	**2.71**		**0.110**	**0.200**	**mg/L**	10	08-Oct-2019 13:53
Cadmium	U		0.000200	0.00200	mg/L	1	07-Oct-2019 23:58
Calcium	**141**		**0.0340**	**0.500**	**mg/L**	1	07-Oct-2019 23:58
Chromium	U		0.000400	0.00400	mg/L	1	07-Oct-2019 23:58
Cobalt	U		0.000200	0.00500	mg/L	1	07-Oct-2019 23:58
Lead	U		0.000600	0.00200	mg/L	1	07-Oct-2019 23:58
Lithium	**0.0639**		**0.00100**	**0.00500**	**mg/L**	1	07-Oct-2019 23:58
Molybdenum	**0.00182**	J	**0.000600**	**0.00500**	**mg/L**	1	07-Oct-2019 23:58
Selenium	U		0.00110	0.00200	mg/L	1	07-Oct-2019 23:58
Thallium	U		0.000200	0.00200	mg/L	1	07-Oct-2019 23:58
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 03-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	03-Oct-2019 17:51
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**34.8**		**0.200**	**0.500**	**mg/L**	1	02-Oct-2019 12:06
Fluoride	**1.11**		**0.0500**	**0.100**	**mg/L**	1	02-Oct-2019 12:06
Nitrogen, Nitrate (As N)	**0.244**		**0.0300**	**0.100**	**mg/L**	1	02-Oct-2019 12:06
Sulfate	**938**		**4.00**	**10.0**	**mg/L**	20	02-Oct-2019 19:01
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**6.00**	J	**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,530**		**5.00**	**10.0**	**mg/L**	1	07-Oct-2019 17:35
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**7.22**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**21.4**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-22A
Collection Date: 30-Sep-2019 16:25

ANALYTICAL REPORT
WorkOrder:HS19100073
Lab ID:HS19100073-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 03-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	08-Oct-2019 00:00
Arsenic	**0.00142**	J	**0.000400**	**0.00200**	**mg/L**	1	08-Oct-2019 00:00
Barium	**0.00690**		**0.00190**	**0.00400**	**mg/L**	1	08-Oct-2019 00:00
Beryllium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:00
Boron	**1.49**		**0.110**	**0.200**	**mg/L**	10	08-Oct-2019 13:56
Cadmium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:00
Calcium	**481**		**0.340**	**5.00**	**mg/L**	10	08-Oct-2019 13:56
Chromium	U		0.000400	0.00400	mg/L	1	08-Oct-2019 00:00
Cobalt	**0.000946**	J	**0.000200**	**0.00500**	**mg/L**	1	08-Oct-2019 00:00
Lead	U		0.000600	0.00200	mg/L	1	08-Oct-2019 00:00
Lithium	**0.256**		**0.0100**	**0.0500**	**mg/L**	10	08-Oct-2019 13:56
Molybdenum	**0.000787**	J	**0.000600**	**0.00500**	**mg/L**	1	08-Oct-2019 00:00
Selenium	U		0.00110	0.00200	mg/L	1	08-Oct-2019 00:00
Thallium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:00
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 03-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	03-Oct-2019 17:55
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**2.39**		**0.200**	**0.500**	**mg/L**	1	02-Oct-2019 12:22
Fluoride	**0.364**		**0.0500**	**0.100**	**mg/L**	1	02-Oct-2019 12:22
Nitrogen, Nitrate (As N)	**0.198**		**0.0300**	**0.100**	**mg/L**	1	02-Oct-2019 12:22
Sulfate	**1,880**		**10.0**	**25.0**	**mg/L**	50	02-Oct-2019 17:05
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**15.0**		**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**3,030**		**5.00**	**10.0**	**mg/L**	1	07-Oct-2019 17:35
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.74**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**21.4**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-20
Collection Date: 30-Sep-2019 17:10

ANALYTICAL REPORT
WorkOrder:HS19100073
Lab ID:HS19100073-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 03-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	08-Oct-2019 00:02
Arsenic	U		0.000400	0.00200	mg/L	1	08-Oct-2019 00:02
Barium	**0.0102**		**0.00190**	**0.00400**	**mg/L**	1	08-Oct-2019 00:02
Beryllium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:02
Boron	**0.777**		**0.110**	**0.200**	**mg/L**	10	08-Oct-2019 14:27
Cadmium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:02
Calcium	**368**		**0.340**	**5.00**	**mg/L**	10	08-Oct-2019 14:27
Chromium	U		0.000400	0.00400	mg/L	1	08-Oct-2019 00:02
Cobalt	U		0.000200	0.00500	mg/L	1	08-Oct-2019 00:02
Lead	U		0.000600	0.00200	mg/L	1	08-Oct-2019 00:02
Lithium	**0.101**		**0.00100**	**0.00500**	**mg/L**	1	08-Oct-2019 00:02
Molybdenum	U		0.000600	0.00500	mg/L	1	08-Oct-2019 00:02
Selenium	U		0.00110	0.00200	mg/L	1	08-Oct-2019 00:02
Thallium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:02
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 03-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	03-Oct-2019 17:57
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**5.30**		**0.200**	**0.500**	**mg/L**	1	02-Oct-2019 12:39
Fluoride	**0.340**		**0.0500**	**0.100**	**mg/L**	1	02-Oct-2019 12:39
Nitrogen, Nitrate (As N)	**0.105**		**0.0300**	**0.100**	**mg/L**	1	02-Oct-2019 12:39
Sulfate	**1,060**		**4.00**	**10.0**	**mg/L**	20	02-Oct-2019 19:18
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,890**		**5.00**	**10.0**	**mg/L**	1	07-Oct-2019 17:35
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.67**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**21.3**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: Dup1
Collection Date: 30-Sep-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19100073
Lab ID:HS19100073-06
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 03-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	08-Oct-2019 00:05
Arsenic	U		0.000400	0.00200	mg/L	1	08-Oct-2019 00:05
Barium	**0.00931**		**0.00190**	**0.00400**	**mg/L**	1	08-Oct-2019 00:05
Beryllium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:05
Boron	**0.668**		**0.110**	**0.200**	**mg/L**	10	08-Oct-2019 14:29
Cadmium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:05
Calcium	**331**		**0.340**	**5.00**	**mg/L**	10	08-Oct-2019 14:29
Chromium	U		0.000400	0.00400	mg/L	1	08-Oct-2019 00:05
Cobalt	U		0.000200	0.00500	mg/L	1	08-Oct-2019 00:05
Lead	**0.00964**		**0.000600**	**0.00200**	**mg/L**	1	08-Oct-2019 00:05
Lithium	**0.0944**		**0.00100**	**0.00500**	**mg/L**	1	08-Oct-2019 00:05
Molybdenum	U		0.000600	0.00500	mg/L	1	08-Oct-2019 00:05
Selenium	U		0.00110	0.00200	mg/L	1	08-Oct-2019 00:05
Thallium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:05
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 03-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	03-Oct-2019 17:59
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**5.32**		**0.200**	**0.500**	**mg/L**	1	02-Oct-2019 12:56
Fluoride	**0.311**		**0.0500**	**0.100**	**mg/L**	1	02-Oct-2019 12:56
Nitrogen, Nitrate (As N)	**0.0616**	J	**0.0300**	**0.100**	**mg/L**	1	02-Oct-2019 12:56
Sulfate	**1,080**		**4.00**	**10.0**	**mg/L**	20	02-Oct-2019 19:35
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,850**		**5.00**	**10.0**	**mg/L**	1	07-Oct-2019 17:35
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.76**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**21.6**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-7S
Collection Date: 01-Oct-2019 11:40

ANALYTICAL REPORT
WorkOrder:HS19100073
Lab ID:HS19100073-07
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 03-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	08-Oct-2019 00:07
Arsenic	**0.000412**	J	**0.000400**	**0.00200**	**mg/L**	1	08-Oct-2019 00:07
Barium	**0.0139**		**0.00190**	**0.00400**	**mg/L**	1	08-Oct-2019 00:07
Beryllium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:07
Boron	**1.99**		**0.110**	**0.200**	**mg/L**	10	08-Oct-2019 14:31
Cadmium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:07
Calcium	**81.1**		**0.0340**	**0.500**	**mg/L**	1	08-Oct-2019 00:07
Chromium	**0.000994**	J	**0.000400**	**0.00400**	**mg/L**	1	08-Oct-2019 00:07
Cobalt	U		0.000200	0.00500	mg/L	1	08-Oct-2019 00:07
Lead	U		0.000600	0.00200	mg/L	1	08-Oct-2019 00:07
Lithium	**0.0608**		**0.00100**	**0.00500**	**mg/L**	1	08-Oct-2019 00:07
Molybdenum	**0.000798**	J	**0.000600**	**0.00500**	**mg/L**	1	08-Oct-2019 00:07
Selenium	U		0.00110	0.00200	mg/L	1	08-Oct-2019 00:07
Thallium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:07
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 03-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	03-Oct-2019 18:04
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**16.3**		**0.200**	**0.500**	**mg/L**	1	02-Oct-2019 15:25
Fluoride	**0.729**		**0.0500**	**0.100**	**mg/L**	1	02-Oct-2019 15:25
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	02-Oct-2019 15:25
Sulfate	**633**		**4.00**	**10.0**	**mg/L**	20	02-Oct-2019 16:15
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,270**		**5.00**	**10.0**	**mg/L**	1	07-Oct-2019 17:35
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**7.39**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**21.6**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-19S
Collection Date: 01-Oct-2019 12:15

ANALYTICAL REPORT
WorkOrder:HS19100073
Lab ID:HS19100073-08
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 03-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	08-Oct-2019 00:09
Arsenic	**0.00624**		**0.000400**	**0.00200**	**mg/L**	1	08-Oct-2019 00:09
Barium	**0.0164**		**0.00190**	**0.00400**	**mg/L**	1	08-Oct-2019 00:09
Beryllium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:09
Boron	**6.64**		**0.220**	**0.400**	**mg/L**	20	08-Oct-2019 14:34
Cadmium	**0.000222**	J	**0.000200**	**0.00200**	**mg/L**	1	08-Oct-2019 00:09
Calcium	**40.4**		**0.0340**	**0.500**	**mg/L**	1	08-Oct-2019 00:09
Chromium	U		0.000400	0.00400	mg/L	1	08-Oct-2019 00:09
Cobalt	U		0.000200	0.00500	mg/L	1	08-Oct-2019 00:09
Lead	U		0.000600	0.00200	mg/L	1	08-Oct-2019 00:09
Lithium	**0.00169**	J	**0.00100**	**0.00500**	**mg/L**	1	08-Oct-2019 00:09
Molybdenum	**0.377**		**0.000600**	**0.00500**	**mg/L**	1	08-Oct-2019 00:09
Selenium	**0.0124**		**0.00110**	**0.00200**	**mg/L**	1	08-Oct-2019 00:09
Thallium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:09
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 03-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	03-Oct-2019 18:06
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**14.4**		**0.200**	**0.500**	**mg/L**	1	02-Oct-2019 16:32
Fluoride	**1.37**		**0.0500**	**0.100**	**mg/L**	1	02-Oct-2019 16:32
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	02-Oct-2019 16:32
Sulfate	**1,580**		**10.0**	**25.0**	**mg/L**	50	02-Oct-2019 16:48
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**23.0**		**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,460**		**5.00**	**10.0**	**mg/L**	1	07-Oct-2019 17:35
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**10.6**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**21.7**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-18
Collection Date: 01-Oct-2019 13:00

ANALYTICAL REPORT
WorkOrder:HS19100073
Lab ID:HS19100073-09
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 03-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	08-Oct-2019 00:11
Arsenic	**0.00264**		**0.000400**	**0.00200**	**mg/L**	1	08-Oct-2019 00:11
Barium	**0.00327**	J	**0.00190**	**0.00400**	**mg/L**	1	08-Oct-2019 00:11
Beryllium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:11
Boron	**5.29**		**0.220**	**0.400**	**mg/L**	20	08-Oct-2019 14:36
Cadmium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:11
Calcium	**25.6**		**0.0340**	**0.500**	**mg/L**	1	08-Oct-2019 00:11
Chromium	U		0.000400	0.00400	mg/L	1	08-Oct-2019 00:11
Cobalt	U		0.000200	0.00500	mg/L	1	08-Oct-2019 00:11
Lead	U		0.000600	0.00200	mg/L	1	08-Oct-2019 00:11
Lithium	**0.00372**	J	**0.00100**	**0.00500**	**mg/L**	1	08-Oct-2019 00:11
Molybdenum	**0.257**		**0.000600**	**0.00500**	**mg/L**	1	08-Oct-2019 00:11
Selenium	**0.00166**	J	**0.00110**	**0.00200**	**mg/L**	1	08-Oct-2019 00:11
Thallium	U		0.000200	0.00200	mg/L	1	08-Oct-2019 00:11
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 03-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	03-Oct-2019 18:29
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**5.07**		**0.200**	**0.500**	**mg/L**	1	02-Oct-2019 17:55
Fluoride	**1.47**		**0.0500**	**0.100**	**mg/L**	1	02-Oct-2019 17:55
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	02-Oct-2019 17:55
Sulfate	**1,020**		**10.0**	**25.0**	**mg/L**	50	02-Oct-2019 18:12
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**11.0**	J	**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,550**		**5.00**	**10.0**	**mg/L**	1	07-Oct-2019 17:35
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**10.3**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**21.5**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 11:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

Batch ID: 145959 **Start Date:** 03 Oct 2019 07:30 **End Date:** 03 Oct 2019 11:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100073-01		10 (mL)	10 (mL)	1
HS19100073-02		10 (mL)	10 (mL)	1
HS19100073-03		10 (mL)	10 (mL)	1
HS19100073-04		10 (mL)	10 (mL)	1
HS19100073-05		10 (mL)	10 (mL)	1
HS19100073-06		10 (mL)	10 (mL)	1
HS19100073-07		10 (mL)	10 (mL)	1
HS19100073-08		10 (mL)	10 (mL)	1
HS19100073-09		10 (mL)	10 (mL)	1

Batch ID: 145965 **Start Date:** 03 Oct 2019 10:00 **End Date:** 03 Oct 2019 12:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100073-01		10 (mL)	10 (mL)	1
HS19100073-02		10 (mL)	10 (mL)	1
HS19100073-03		10 (mL)	10 (mL)	1
HS19100073-04		10 (mL)	10 (mL)	1
HS19100073-05		10 (mL)	10 (mL)	1
HS19100073-06		10 (mL)	10 (mL)	1
HS19100073-07		10 (mL)	10 (mL)	1
HS19100073-08		10 (mL)	10 (mL)	1
HS19100073-09		10 (mL)	10 (mL)	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 145959 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19100073-01	MW-11	30 Sep 2019 13:07		03 Oct 2019 07:30	08 Oct 2019 13:49	10
HS19100073-01	MW-11	30 Sep 2019 13:07		03 Oct 2019 07:30	07 Oct 2019 23:53	1
HS19100073-02	MW-25R	30 Sep 2019 14:35		03 Oct 2019 07:30	08 Oct 2019 13:51	10
HS19100073-02	MW-25R	30 Sep 2019 14:35		03 Oct 2019 07:30	07 Oct 2019 23:56	1
HS19100073-03	MW-10	30 Sep 2019 15:25		03 Oct 2019 07:30	08 Oct 2019 13:53	10
HS19100073-03	MW-10	30 Sep 2019 15:25		03 Oct 2019 07:30	07 Oct 2019 23:58	1
HS19100073-04	MW-22A	30 Sep 2019 16:25		03 Oct 2019 07:30	08 Oct 2019 13:56	10
HS19100073-04	MW-22A	30 Sep 2019 16:25		03 Oct 2019 07:30	08 Oct 2019 00:00	1
HS19100073-05	MW-20	30 Sep 2019 17:10		03 Oct 2019 07:30	08 Oct 2019 14:27	10
HS19100073-05	MW-20	30 Sep 2019 17:10		03 Oct 2019 07:30	08 Oct 2019 00:02	1
HS19100073-06	Dup1	30 Sep 2019 00:00		03 Oct 2019 07:30	08 Oct 2019 14:29	10
HS19100073-06	Dup1	30 Sep 2019 00:00		03 Oct 2019 07:30	08 Oct 2019 00:05	1
HS19100073-07	MW-7S	01 Oct 2019 11:40		03 Oct 2019 07:30	08 Oct 2019 14:31	10
HS19100073-07	MW-7S	01 Oct 2019 11:40		03 Oct 2019 07:30	08 Oct 2019 00:07	1
HS19100073-08	MW-19S	01 Oct 2019 12:15		03 Oct 2019 07:30	08 Oct 2019 14:34	20
HS19100073-08	MW-19S	01 Oct 2019 12:15		03 Oct 2019 07:30	08 Oct 2019 00:09	1
HS19100073-09	MW-18	01 Oct 2019 13:00		03 Oct 2019 07:30	08 Oct 2019 14:36	20
HS19100073-09	MW-18	01 Oct 2019 13:00		03 Oct 2019 07:30	08 Oct 2019 00:11	1
Batch ID: 145965 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS19100073-01	MW-11	30 Sep 2019 13:07		03 Oct 2019 10:00	03 Oct 2019 17:44	1
HS19100073-02	MW-25R	30 Sep 2019 14:35		03 Oct 2019 10:00	03 Oct 2019 17:49	1
HS19100073-03	MW-10	30 Sep 2019 15:25		03 Oct 2019 10:00	03 Oct 2019 17:51	1
HS19100073-04	MW-22A	30 Sep 2019 16:25		03 Oct 2019 10:00	03 Oct 2019 17:55	1
HS19100073-05	MW-20	30 Sep 2019 17:10		03 Oct 2019 10:00	03 Oct 2019 17:57	1
HS19100073-06	Dup1	30 Sep 2019 00:00		03 Oct 2019 10:00	03 Oct 2019 17:59	1
HS19100073-07	MW-7S	01 Oct 2019 11:40		03 Oct 2019 10:00	03 Oct 2019 18:04	1
HS19100073-08	MW-19S	01 Oct 2019 12:15		03 Oct 2019 10:00	03 Oct 2019 18:06	1
HS19100073-09	MW-18	01 Oct 2019 13:00		03 Oct 2019 10:00	03 Oct 2019 18:29	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R347540 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS19100073-01	MW-11	30 Sep 2019 13:07			02 Oct 2019 18:28	10
HS19100073-01	MW-11	30 Sep 2019 13:07			02 Oct 2019 11:18	1
HS19100073-02	MW-25R	30 Sep 2019 14:35			02 Oct 2019 18:45	20
HS19100073-02	MW-25R	30 Sep 2019 14:35			02 Oct 2019 11:35	1
HS19100073-03	MW-10	30 Sep 2019 15:25			02 Oct 2019 19:01	20
HS19100073-03	MW-10	30 Sep 2019 15:25			02 Oct 2019 12:06	1
HS19100073-04	MW-22A	30 Sep 2019 16:25			02 Oct 2019 17:05	50
HS19100073-04	MW-22A	30 Sep 2019 16:25			02 Oct 2019 12:22	1
HS19100073-05	MW-20	30 Sep 2019 17:10			02 Oct 2019 19:18	20
HS19100073-05	MW-20	30 Sep 2019 17:10			02 Oct 2019 12:39	1
HS19100073-06	Dup1	30 Sep 2019 00:00			02 Oct 2019 19:35	20
HS19100073-06	Dup1	30 Sep 2019 00:00			02 Oct 2019 12:56	1
HS19100073-07	MW-7S	01 Oct 2019 11:40			02 Oct 2019 16:15	20
HS19100073-07	MW-7S	01 Oct 2019 11:40			02 Oct 2019 15:25	1
HS19100073-08	MW-19S	01 Oct 2019 12:15			02 Oct 2019 16:48	50
HS19100073-08	MW-19S	01 Oct 2019 12:15			02 Oct 2019 16:32	1
HS19100073-09	MW-18	01 Oct 2019 13:00			02 Oct 2019 18:12	50
HS19100073-09	MW-18	01 Oct 2019 13:00			02 Oct 2019 17:55	1
Batch ID: R347691 (0)	**Test Name :** CHEMICAL OXYGEN DEMAND BY E410.4				**Matrix:** Water	
HS19100073-01	MW-11	30 Sep 2019 13:07			05 Oct 2019 16:15	1
HS19100073-02	MW-25R	30 Sep 2019 14:35			05 Oct 2019 16:15	1
HS19100073-03	MW-10	30 Sep 2019 15:25			05 Oct 2019 16:15	1
HS19100073-04	MW-22A	30 Sep 2019 16:25			05 Oct 2019 16:15	1
HS19100073-05	MW-20	30 Sep 2019 17:10			05 Oct 2019 16:15	1
HS19100073-06	Dup1	30 Sep 2019 00:00			05 Oct 2019 16:15	1
HS19100073-07	MW-7S	01 Oct 2019 11:40			05 Oct 2019 16:15	1
HS19100073-08	MW-19S	01 Oct 2019 12:15			05 Oct 2019 16:15	1
HS19100073-09	MW-18	01 Oct 2019 13:00			05 Oct 2019 16:15	1
Batch ID: R347759 (0)	**Test Name :** PH BY SM4500H+ B				**Matrix:** Water	
HS19100073-01	MW-11	30 Sep 2019 13:07			07 Oct 2019 13:00	1
HS19100073-02	MW-25R	30 Sep 2019 14:35			07 Oct 2019 13:00	1
HS19100073-03	MW-10	30 Sep 2019 15:25			07 Oct 2019 13:00	1
HS19100073-04	MW-22A	30 Sep 2019 16:25			07 Oct 2019 13:00	1
HS19100073-05	MW-20	30 Sep 2019 17:10			07 Oct 2019 13:00	1
HS19100073-06	Dup1	30 Sep 2019 00:00			07 Oct 2019 13:00	1
HS19100073-07	MW-7S	01 Oct 2019 11:40			07 Oct 2019 13:00	1
HS19100073-08	MW-19S	01 Oct 2019 12:15			07 Oct 2019 13:00	1
HS19100073-09	MW-18	01 Oct 2019 13:00			07 Oct 2019 13:00	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R347838 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS19100073-01	MW-11	30 Sep 2019 13:07			07 Oct 2019 17:35	1
HS19100073-02	MW-25R	30 Sep 2019 14:35			07 Oct 2019 17:35	1
HS19100073-03	MW-10	30 Sep 2019 15:25			07 Oct 2019 17:35	1
HS19100073-04	MW-22A	30 Sep 2019 16:25			07 Oct 2019 17:35	1
HS19100073-05	MW-20	30 Sep 2019 17:10			07 Oct 2019 17:35	1
HS19100073-06	Dup1	30 Sep 2019 00:00			07 Oct 2019 17:35	1
HS19100073-07	MW-7S	01 Oct 2019 11:40			07 Oct 2019 17:35	1
HS19100073-08	MW-19S	01 Oct 2019 12:15			07 Oct 2019 17:35	1
HS19100073-09	MW-18	01 Oct 2019 13:00			07 Oct 2019 17:35	1
Batch ID: R349521 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RADIUM 228				**Matrix:** Water	
HS19100073-01	MW-11	30 Sep 2019 13:07			31 Oct 2019 11:26	1
HS19100073-01	MW-11	30 Sep 2019 13:07			31 Oct 2019 11:26	1
HS19100073-02	MW-25R	30 Sep 2019 14:35			31 Oct 2019 11:26	1
HS19100073-02	MW-25R	30 Sep 2019 14:35			31 Oct 2019 11:26	1
HS19100073-03	MW-10	30 Sep 2019 15:25			31 Oct 2019 11:26	1
HS19100073-03	MW-10	30 Sep 2019 15:25			31 Oct 2019 11:26	1
HS19100073-04	MW-22A	30 Sep 2019 16:25			31 Oct 2019 11:26	1
HS19100073-04	MW-22A	30 Sep 2019 16:25			31 Oct 2019 11:26	1
HS19100073-05	MW-20	30 Sep 2019 17:10			31 Oct 2019 11:26	1
HS19100073-05	MW-20	30 Sep 2019 17:10			31 Oct 2019 11:26	1
HS19100073-06	Dup1	30 Sep 2019 00:00			31 Oct 2019 11:26	1
HS19100073-06	Dup1	30 Sep 2019 00:00			31 Oct 2019 11:26	1
HS19100073-07	MW-7S	01 Oct 2019 11:40			31 Oct 2019 11:26	1
HS19100073-07	MW-7S	01 Oct 2019 11:40			31 Oct 2019 11:26	1
HS19100073-08	MW-19S	01 Oct 2019 12:15			31 Oct 2019 11:26	1
HS19100073-08	MW-19S	01 Oct 2019 12:15			31 Oct 2019 11:26	1
HS19100073-09	MW-18	01 Oct 2019 13:00			31 Oct 2019 11:26	1
HS19100073-09	MW-18	01 Oct 2019 13:00			31 Oct 2019 11:26	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

QC BATCH REPORT

Batch ID: 145959 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-145959** Units: **mg/L** Analysis Date: **08-Oct-2019 13:38**
Client ID: Run ID: **ICPMS04_347836** SeqNo: **5287123** PrepDate: **03-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.00200								
Arsenic	U	0.00200								
Barium	U	0.00400								
Beryllium	U	0.00200								
Boron	U	0.0200								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00400								
Cobalt	U	0.00500								
Lead	U	0.00200								
Lithium	U	0.00500								
Molybdenum	U	0.00500								
Selenium	U	0.00200								
Thallium	U	0.00200								

LCS Sample ID: **LCS-145959** Units: **mg/L** Analysis Date: **07-Oct-2019 23:15**
Client ID: Run ID: **ICPMS04_347728** SeqNo: **5285985** PrepDate: **03-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04753	0.00200	0.05	0	95.1	80 - 120				
Arsenic	0.05248	0.00200	0.05	0	105	80 - 120				
Barium	0.04882	0.00400	0.05	0	97.6	80 - 120				
Beryllium	0.0532	0.00200	0.05	0	106	80 - 120				
Boron	0.5393	0.0200	0.5	0	108	80 - 120				
Cadmium	0.05082	0.00200	0.05	0	102	80 - 120				
Calcium	5.404	0.500	5	0	108	80 - 120				
Chromium	0.05176	0.00400	0.05	0	104	80 - 120				
Cobalt	0.05406	0.00500	0.05	0	108	80 - 120				
Lead	0.04998	0.00200	0.05	0	100.0	80 - 120				
Lithium	0.1046	0.00500	0.1	0	105	80 - 120				
Molybdenum	0.0509	0.00500	0.05	0	102	80 - 120				
Selenium	0.04808	0.00200	0.05	0	96.2	80 - 120				
Thallium	0.04882	0.00200	0.05	0	97.6	80 - 120				

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

QC BATCH REPORT

Batch ID: 145959 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS19091377-07MS** Units: **mg/L** Analysis Date: **07-Oct-2019 23:22**
Client ID: Run ID: **ICPMS04_347728** SeqNo: **5285988** PrepDate: **03-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04702	0.00200	0.05	0.000008	94.0	80 - 120				
Arsenic	0.201	0.00200	0.05	0.1455	111	80 - 120				
Barium	0.7393	0.00400	0.05	0.6617	155	80 - 120				SO
Beryllium	0.05277	0.00200	0.05	0.000047	105	80 - 120				
Boron	0.6584	0.0200	0.5	0.1206	108	80 - 120				
Cadmium	0.04986	0.00200	0.05	0.000013	99.7	80 - 120				
Calcium	139.4	0.500	5	127	247	80 - 120				SO
Chromium	0.05088	0.00400	0.05	0.000168	101	80 - 120				
Cobalt	0.05121	0.00500	0.05	0.000976	100	80 - 120				
Lead	0.048	0.00200	0.05	0.000163	95.7	80 - 120				
Lithium	0.1088	0.00500	0.1	0.005161	104	80 - 120				
Molybdenum	0.05263	0.00500	0.05	0.002474	100	80 - 120				
Selenium	0.0501	0.00200	0.05	0.000493	99.2	80 - 120				
Thallium	0.04639	0.00200	0.05	0.000384	92.0	80 - 120				

MSD Sample ID: **HS19091377-07MSD** Units: **mg/L** Analysis Date: **07-Oct-2019 23:24**
Client ID: Run ID: **ICPMS04_347728** SeqNo: **5285989** PrepDate: **03-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04823	0.00200	0.05	0.000008	96.4	80 - 120	0.04702	2.54	20	
Arsenic	0.2038	0.00200	0.05	0.1455	117	80 - 120	0.201	1.4	20	
Barium	0.737	0.00400	0.05	0.6617	151	80 - 120	0.7393	0.307	20	SO
Beryllium	0.05287	0.00200	0.05	0.000047	106	80 - 120	0.05277	0.187	20	
Boron	0.6687	0.0200	0.5	0.1206	110	80 - 120	0.6584	1.54	20	
Cadmium	0.05095	0.00200	0.05	0.000013	102	80 - 120	0.04986	2.16	20	
Calcium	137.1	0.500	5	127	203	80 - 120	139.4	1.61	20	SO
Chromium	0.05196	0.00400	0.05	0.000168	104	80 - 120	0.05088	2.1	20	
Cobalt	0.05177	0.00500	0.05	0.000976	102	80 - 120	0.05121	1.09	20	
Lead	0.04831	0.00200	0.05	0.000163	96.3	80 - 120	0.048	0.656	20	
Lithium	0.1091	0.00500	0.1	0.005161	104	80 - 120	0.1088	0.284	20	
Molybdenum	0.05417	0.00500	0.05	0.002474	103	80 - 120	0.05263	2.9	20	
Selenium	0.04926	0.00200	0.05	0.000493	97.5	80 - 120	0.0501	1.7	20	
Thallium	0.04721	0.00200	0.05	0.000384	93.6	80 - 120	0.04639	1.74	20	

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

QC BATCH REPORT

Batch ID: 145959 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS19091377-07PDS** Units: **mg/L** Analysis Date: **07-Oct-2019 23:27**
Client ID: Run ID: **ICPMS04_347728** SeqNo: **5285990** PrepDate: **03-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.08233	0.00200	0.1	0.000008	82.3	75 - 125				
Arsenic	0.2449	0.00200	0.1	0.1455	99.4	75 - 125				
Barium	0.7754	0.00400	0.1	0.6617	114	75 - 125				O
Beryllium	0.1012	0.00200	0.1	0.000047	101	75 - 125				
Boron	0.3825	0.0200	0.25	0.1206	105	75 - 125				
Cadmium	0.09649	0.00200	0.1	0.000013	96.5	75 - 125				
Calcium	139.2	0.500	10	127	121	75 - 125				O
Chromium	0.09959	0.00400	0.1	0.000168	99.4	75 - 125				
Cobalt	0.09906	0.00500	0.1	0.000976	98.1	75 - 125				
Lead	0.09403	0.00200	0.1	0.000163	93.9	75 - 125				
Lithium	0.1051	0.00500	0.1	0.005161	99.9	70 - 125				
Molybdenum	0.1001	0.00500	0.1	0.002474	97.6	75 - 125				
Selenium	0.09418	0.00200	0.1	0.000493	93.7	75 - 125				
Thallium	0.09312	0.00200	0.1	0.000384	92.7	75 - 125				

SD Sample ID: **HS19091377-07SD** Units: **mg/L** Analysis Date: **07-Oct-2019 23:20**
Client ID: Run ID: **ICPMS04_347728** SeqNo: **5285987** PrepDate: **03-Oct-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	U	0.0100					0.000008	0	10	
Arsenic	0.1442	0.0100					0.1455	0.932	10	
Barium	0.6019	0.0200					0.6617	9.04	10	
Beryllium	U	0.0100					0.000047	0	10	
Cadmium	U	0.0100					0.000013	0	10	
Calcium	124.1	2.50					127	2.32	10	
Chromium	U	0.0200					0.000168	0	10	
Cobalt	U	0.0250					0.000976	0	10	
Lead	U	0.0100					0.000163	0	10	
Lithium	U	0.0250					0.005161	0	10	
Molybdenum	U	0.0250					0.002474	0	10	
Selenium	U	0.0100					0.000493	0	10	
Thallium	U	0.0100					0.000384	0	10	

The following samples were analyzed in this batch: HS19100073-01 HS19100073-02 HS19100073-03 HS19100073-04 HS19100073-05 HS19100073-06 HS19100073-07 HS19100073-08 HS19100073-09

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

QC BATCH REPORT

Batch ID: 145965 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-145965** Units: **mg/L** Analysis Date: **03-Oct-2019 17:40**
Client ID: Run ID: **HG03_347583** SeqNo: **5282276** PrepDate: **03-Oct-2019** DF: **1**

Analyte	Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U		0.000200								

LCS Sample ID: **LCS-145965** Units: **mg/L** Analysis Date: **03-Oct-2019 17:42**
Client ID: Run ID: **HG03_347583** SeqNo: **5282277** PrepDate: **03-Oct-2019** DF: **1**

Analyte	Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0051		0.000200	0.005	0	102	80 - 120				

MS Sample ID: **HS19100073-01MS** Units: **mg/L** Analysis Date: **03-Oct-2019 17:46**
Client ID: **MW-11** Run ID: **HG03_347583** SeqNo: **5282279** PrepDate: **03-Oct-2019** DF: **1**

Analyte	Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00508		0.000200	0.005	0.000007	101	75 - 125				

MSD Sample ID: **HS19100073-01MSD** Units: **mg/L** Analysis Date: **03-Oct-2019 17:47**
Client ID: **MW-11** Run ID: **HG03_347583** SeqNo: **5282280** PrepDate: **03-Oct-2019** DF: **1**

Analyte	Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0051		0.000200	0.005	0.000007	102	75 - 125	0.00508	0.393	20	

The following samples were analyzed in this batch:

HS19100073-01	HS19100073-02	HS19100073-03	HS19100073-04
HS19100073-05	HS19100073-06	HS19100073-07	HS19100073-08
HS19100073-09			

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

QC BATCH REPORT

Batch ID: R347540 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **WBLKW1-100219** Units: **mg/L** Analysis Date: **02-Oct-2019 14:35**
Client ID: Run ID: **ICS-Integrion_347540** SeqNo: **5280798** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								
Sulfate	U	0.500								

LCS Sample ID: **WLCSW1-100219** Units: **mg/L** Analysis Date: **02-Oct-2019 14:52**
Client ID: Run ID: **ICS-Integrion_347540** SeqNo: **5280799** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.75	0.500	20	0	98.7	90 - 110				
Fluoride	4.106	0.100	4	0	103	90 - 110				
Nitrogen, Nitrate (As N)	3.966	0.100	4	0	99.1	90 - 110				
Sulfate	19.85	0.500	20	0	99.3	90 - 110				

LCSD Sample ID: **WLCSDW1-100219** Units: **mg/L** Analysis Date: **02-Oct-2019 15:09**
Client ID: Run ID: **ICS-Integrion_347540** SeqNo: **5280800** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.77	0.500	20	0	98.8	90 - 110	19.75	0.0962	20	
Fluoride	4.09	0.100	4	0	102	90 - 110	4.106	0.405	20	
Nitrogen, Nitrate (As N)	3.969	0.100	4	0	99.2	90 - 110	3.966	0.0907	20	
Sulfate	19.97	0.500	20	0	99.8	90 - 110	19.85	0.588	20	

MS Sample ID: **HS19100073-07MS** Units: **mg/L** Analysis Date: **02-Oct-2019 15:42**
Client ID: **MW-7S** Run ID: **ICS-Integrion_347540** SeqNo: **5280802** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	25.82	0.500	10	16.27	95.5	80 - 120				
Fluoride	2.817	0.100	2	0.7292	104	80 - 120				
Nitrogen, Nitrate (As N)	2.013	0.100	2	0	101	80 - 120				
Sulfate	617.1	0.500	10	612.8	43.0	80 - 120				SEO

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

QC BATCH REPORT

Batch ID: R347540 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MS Sample ID: **HS19091394-09MS** Units: **mg/L** Analysis Date: **02-Oct-2019 22:04**
Client ID: Run ID: **ICS-Integrion_347540** SeqNo: **5280825** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	48.72	1.00	20	30.64	90.4	80 - 120				
Fluoride	4.097	0.200	4	0.199	97.5	80 - 120				
Nitrogen, Nitrate (As N)	9.999	0.200	4	6.439	89.0	80 - 120				
Sulfate	105.3	1.00	20	89.66	78.2	80 - 120				SO

MSD Sample ID: **HS19100073-07MSD** Units: **mg/L** Analysis Date: **02-Oct-2019 15:58**
Client ID: **MW-7S** Run ID: **ICS-Integrion_347540** SeqNo: **5280803** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	25.5	0.500	10	16.27	92.2	80 - 120	25.82	1.29	20	
Fluoride	2.742	0.100	2	0.7292	101	80 - 120	2.817	2.72	20	
Nitrogen, Nitrate (As N)	1.954	0.100	2	0	97.7	80 - 120	2.013	2.98	20	
Sulfate	613.1	0.500	10	612.8	3.04	80 - 120	617.1	0.649	20	SEO

MSD Sample ID: **HS19091394-09MSD** Units: **mg/L** Analysis Date: **02-Oct-2019 22:21**
Client ID: Run ID: **ICS-Integrion_347540** SeqNo: **5280826** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	48.88	1.00	20	30.64	91.2	80 - 120	48.72	0.328	20	
Fluoride	4.106	0.200	4	0.199	97.7	80 - 120	4.097	0.215	20	
Nitrogen, Nitrate (As N)	10.06	0.200	4	6.439	90.5	80 - 120	9.999	0.608	20	
Sulfate	106.1	1.00	20	89.66	82.2	80 - 120	105.3	0.749	20	O

The following samples were analyzed in this batch:

HS19100073-01	HS19100073-02	HS19100073-03	HS19100073-04
HS19100073-05	HS19100073-06	HS19100073-07	HS19100073-08
HS19100073-09			

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

QC BATCH REPORT

Batch ID: R347691 (0) **Instrument: WetChem_HS** **Method: CHEMICAL OXYGEN DEMAND BY E410.4**

MBLK Sample ID: **MBLK-R347691** Units: **mg/L** Analysis Date: **05-Oct-2019 16:15**
Client ID: Run ID: **WetChem_HS_347691** SeqNo: **5283740** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	U	15.0								

LCS Sample ID: **LCS-R347691** Units: **mg/L** Analysis Date: **05-Oct-2019 16:15**
Client ID: Run ID: **WetChem_HS_347691** SeqNo: **5283739** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	96	15.0	100	0	96.0	85 - 115				

MS Sample ID: **HS19100276-02MS** Units: **mg/L** Analysis Date: **05-Oct-2019 16:15**
Client ID: Run ID: **WetChem_HS_347691** SeqNo: **5283742** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	52	15.0	50	4	96.0	80 - 120				

MSD Sample ID: **HS19100276-02MSD** Units: **mg/L** Analysis Date: **05-Oct-2019 16:15**
Client ID: Run ID: **WetChem_HS_347691** SeqNo: **5283741** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	53	15.0	50	4	98.0	80 - 120	52	1.9	20	

The following samples were analyzed in this batch:

HS19100073-01	HS19100073-02	HS19100073-03	HS19100073-04
HS19100073-05	HS19100073-06	HS19100073-07	HS19100073-08
HS19100073-09			

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

QC BATCH REPORT

Batch ID: **R347759 (0)** **Instrument:** **WetChem_HS** **Method:** **PH BY SM4500H+ B**

DUP Sample ID: **HS19100183-02DUP** Units: **pH Units** Analysis Date: **07-Oct-2019 13:00**
Client ID: Run ID: **WetChem_HS_347759** SeqNo: **5285050** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.06	0.100					7.07	0.142	10	
Temp Deg C @pH	19.8	0					19.6	1.02	10	

The following samples were analyzed in this batch:

HS19100073-01	HS19100073-02	HS19100073-03	HS19100073-04
HS19100073-05	HS19100073-06	HS19100073-07	HS19100073-08
HS19100073-09			

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100073

QC BATCH REPORT

Batch ID: R347838 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-100719** Units: **mg/L** Analysis Date: **07-Oct-2019 17:35**
Client ID: Run ID: **Balance1_347838** SeqNo: **5286705** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-100719** Units: **mg/L** Analysis Date: **07-Oct-2019 17:35**
Client ID: Run ID: **Balance1_347838** SeqNo: **5286706** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1044	10.0	1000	0	104	85 - 115				

DUP Sample ID: **HS19100120-01DUP** Units: **mg/L** Analysis Date: **07-Oct-2019 17:35**
Client ID: Run ID: **Balance1_347838** SeqNo: **5286701** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	146	10.0					148	1.36	5	

DUP Sample ID: **HS19100037-01DUP** Units: **mg/L** Analysis Date: **07-Oct-2019 17:35**
Client ID: Run ID: **Balance1_347838** SeqNo: **5286687** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	216	10.0					222	2.74	5	

The following samples were analyzed in this batch:

HS19100073-01	HS19100073-02	HS19100073-03	HS19100073-04
HS19100073-05	HS19100073-06	HS19100073-07	HS19100073-08
HS19100073-09			

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: **HS19100073**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

Sample Receipt Checklist

Client Name: Enviro Clean Services-Tulsa
Work Order: HS19100073
Date/Time Received: **02-Oct-2019 08:40**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 2-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 2-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:210173
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.3°C / 0.3°C, 0.6°C / 0.6°C, 0.9°C / 0.9°C UC/C	IR25	
Cooler(s)/Kit(s):	43656, 44159, 44990		
Date/Time sample(s) sent to storage:	10/02/2019 11:40		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 210173

HS19100073

Altamira
WFEC CCR Rule Site

Customer Information		Project Information		ALS Project Manager:
Purchase Order		Project Name	WFEC CCR Rule Site	
Work Order		Project Number	-	
Company Name	Enviro Clean Services, LLC	Bill To Company	Altamira	
Send Report To	Heather Tiffany	Invoice Attn	Heather Tiffany	
Address	~~7030 S. Yale Avenue, Suite 603~~ 525 Central Park Dr. Suite 500	Address	~~7030 S. Yale Avenue, Suite 603~~	
City/State/Zip	~~Tulsa, OK 74136~~ OKC/OK/73105	City/State/Zip	~~Tulsa OK 74136~~	
Phone	~~(918) 794-7828~~ 405-434-5662	Phone	~~(918) 794-7828~~ 405-434-5662	
Fax		Fax		
e-Mail Address	heather.tiffany@ecogrp.com	e-Mail Address	heather.tiffany@ecogrp.com	

A	ICP_TW (Metals (Appendix III and IV))
B	HG_W (Mercury)
C	300_W (Cl,F,SO4,NO3)
D	TDS_W 2540C (TDS)
E	PH_W M4500H+B (pH)
F	SUB_RA 226 (Radium 226- Sub to ALS Fort Collins)
G	SUB_RA 228 (Radium 226- Sub to ALS Fort Collins)
H	COD
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-11	9/30/19	1307	W		7	X	X	X	X	X	X	X	X			
2	MW-25R	9/30/19	1435	W		7	X	X	X	X	X	X	X	X			
3	MW-10	9/30/19	1525	W		7	X	X	X	X	X	X	X	X			
4	MW-22A	9/30/19	1625	W		7	X	X	X	X	X	X	X	X			
5	MW-20	9/30/19	1710	W		7	X	X	X	X	X	X	X	X			
6	Dup 1	9/30/19	----	W		7	X	X	X	X	X	X	X	X			
7	MW-75	9/30 10/1/19	1140	W		7	X	X	X	X	X	X	X	X			
8	MW-19S	10/1/19	1215	W		7	X	X	X	X	X	X	X	X			
9	MW-18	10/1/19	1300	W		7	X	X	X	X	X	X	X	X			
10																	

Sampler(s) Please Print & Sign: Pasha Khlystov Pasha Khlystov

Shipment Method: FedEx

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Pasha Khlystov Date: 10/1/19 Time: 1400

Relinquished by: Date: 10/2/19 Time: 08:40

Received by:

Received by (Laboratory):

Checked by (Laboratory):

Logged by (Laboratory):

Notes: ODEQ

Cooler ID	Cooler Temp.
	°C
43656	0.5
44159	0.6
44190	0.9

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

CF: 0 IR#25

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS
10450 Stancliff Rd., S
Houston, Texas 7709
Tel. +1 281 530 5656
Fax. +1 281 530 5887

uite 210

CUSTODY SEAL
Date: 10/01/19 Time: 14:00
Name:
Company: Pasha Hydrostar

Seal Broken By:
Date: 10/1/19

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTOD
Date: 10/01/19
Name:
Company:

Y SEAL
14:00
Hydrostar

Seal Broken By:
Date: 10/1/19

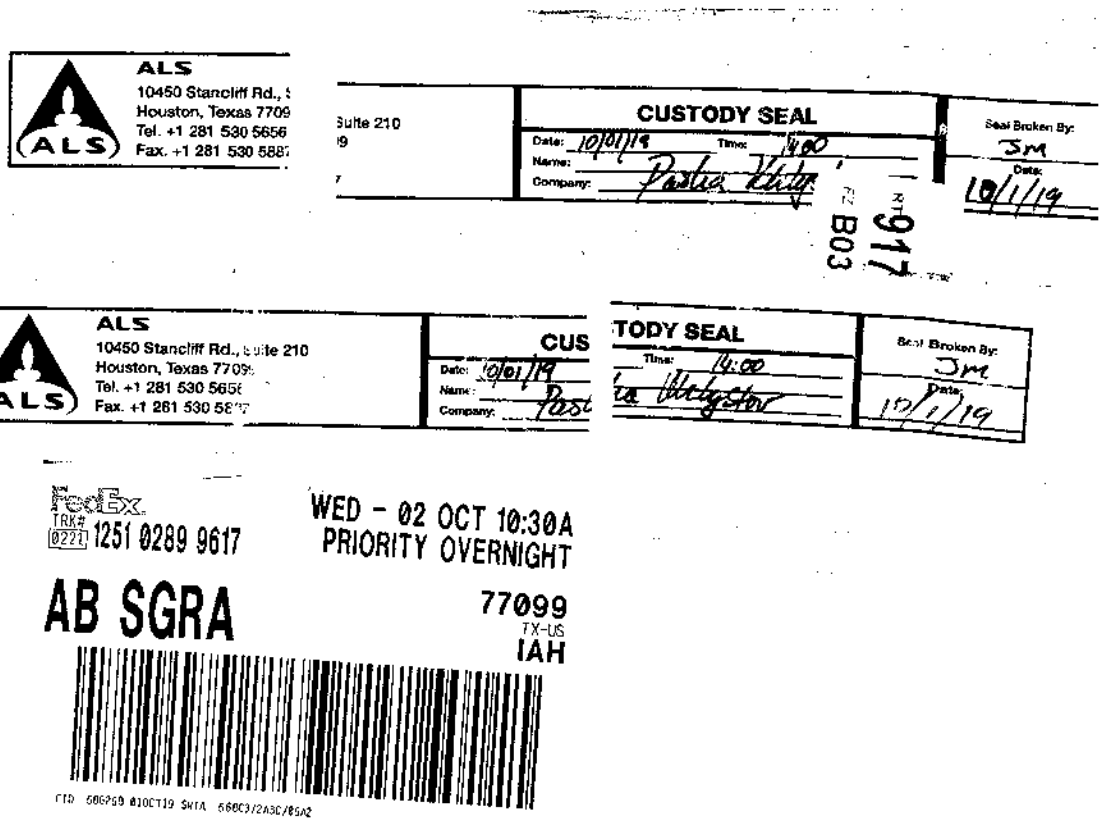
FedEx Express

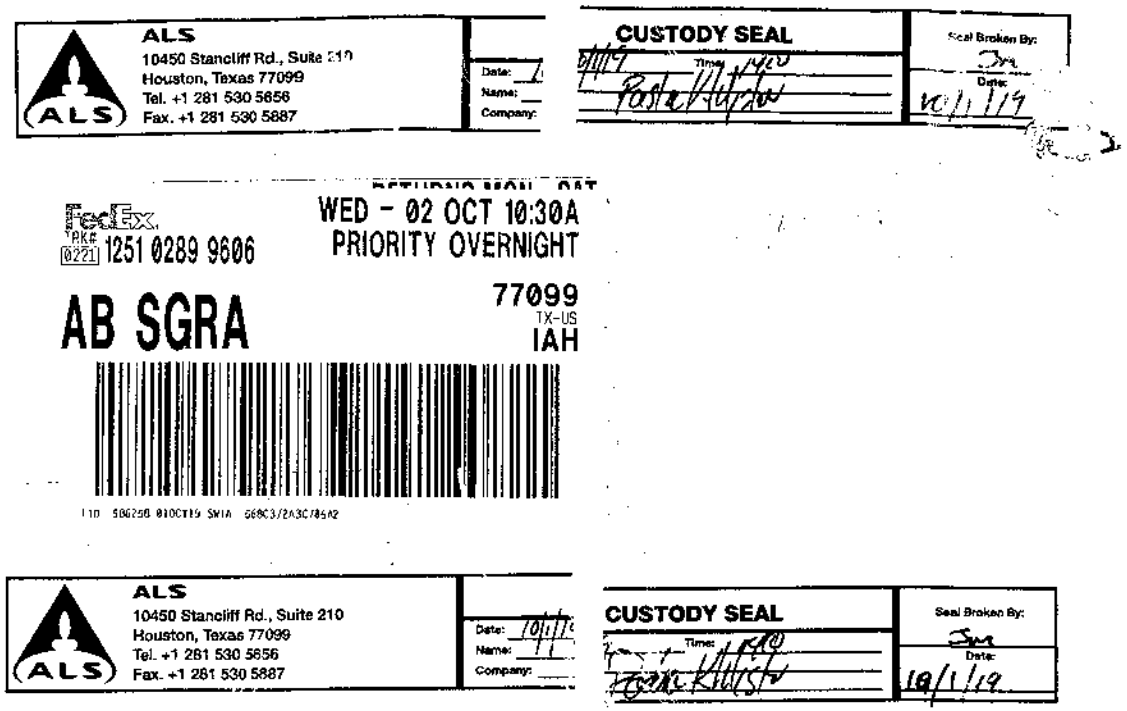
WED - 02 OCT 10:30A
PRIORITY OVERNIGHT

FedEx
TRK# 0221 1251 0289 9661

77099
TX-US
IAH

AB SGRA





ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Date:
Name:
Company:

CUSTODY SEAL
Time:

Seal Broken By:
Date:

FedEx
TRK# 0221 1251 0289 9606

WED - 02 OCT 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Date:
Name:
Company:

CUSTODY SEAL
Time:

Seal Broken By:
Date:

Wednesday, October 30, 2019

RJ Modashia
ALS Environmental
10450 Stancliff Rd, Suite 210
Houston, TX 77099

Re: ALS Workorder: 1910079
Project Name:
Project Number: HS19100073

Dear Mr. Modashia:

Nine water samples were received from ALS Environmental, on 10/3/2019. The samples were scheduled for the following analyses:

Radium-226
Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff R. Kujawa
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1910079

Radium-228:
The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to EPA method 904.0.

All acceptance criteria were met.

Radium-226:
The samples were prepared and analyzed according to EPA method 903.1.

All acceptance criteria were met.

ADDRESS 225 Commerce Drive, Fort Collins Colorado 80524 USA | PHONE +1 970 490 1511 | FAX +1 970 490 1522

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1910079
Client Name: ALS Environmental
Client Project Name:
Client Project Number: HS19100073
Client PO Number: 10-12292

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
MW-11	1910079-1		WATER	30-Sep-19	13:07
MW-25R	1910079-2		WATER	30-Sep-19	14:35
MW-10	1910079-3		WATER	30-Sep-19	15:25
MW-22A	1910079-4		WATER	30-Sep-19	16:25
MW-20	1910079-5		WATER	30-Sep-19	17:10
Dup1	1910079-6		WATER	30-Sep-19	0:00
MW-7S	1910079-7		WATER	01-Oct-19	11:40
MW-19S	1910079-8		WATER	01-Oct-19	12:15
MW-18	1910079-9		WATER	01-Oct-19	13:00

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

1210079

Subcontract Chain of Custody

SAMPLING STATE: **Oklahoma** **COC ID:** **12292**

SUBCONTRACT TO:

ALS Environmental, Fort Collins
225 Commerce Drive
Fort Collins, CO 80524

Phone: +1 970 490 1511

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100073
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100073-01**	**MW-11**	**Water**	**30 Sep 2019 13:07**
	Report as combined 226 & 228			16 Oct 2019
	Report as combined 226 & 228			16 Oct 2019
2.	**HS19100073-02**	**MW-25R**	**Water**	**30 Sep 2019 14:35**
	Report as combined 226 & 228			16 Oct 2019
	Report as combined 226 & 228			16 Oct 2019
3.	**HS19100073-03**	**MW-10**	**Water**	**30 Sep 2019 15:25**
	Report as combined 226 & 228			16 Oct 2019
	Report as combined 226 & 228			16 Oct 2019
4.	**HS19100073-04**	**MW-22A**	**Water**	**30 Sep 2019 16:25**
	Report as combined 226 & 228			16 Oct 2019
	Report as combined 226 & 228			16 Oct 2019
5.	**HS19100073-05**	**MW-20**	**Water**	**30 Sep 2019 17:10**
	Report as combined 226 & 228			16 Oct 2019
	Report as combined 226 & 228			16 Oct 2019
6.	**HS19100073-06**	**Dup1**	**Water**	**30 Sep 2019 00:00**
	Report as combined 226 & 228			16 Oct 2019
	Report as combined 226 & 228			16 Oct 2019

Subcontract Chain of Custody

SAMPLING STATE: **Oklahoma** **COC ID: 12292**

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
7.	**HS19100073-07**	**MW-7S**	**Water**	**01 Oct 2019 11:40**
	Report as combined 226 & 228			16 Oct 2019
	Report as combined 226 & 228			16 Oct 2019
8.	**HS19100073-08**	**MW-19S**	**Water**	**01 Oct 2019 12:15**
	Report as combined 226 & 228			16 Oct 2019
	Report as combined 226 & 228			16 Oct 2019
9.	**HS19100073-09**	**MW-18**	**Water**	**01 Oct 2019 13:00**
	Report as combined 226 & 228			16 Oct 2019
	Report as combined 226 & 228			16 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: STD (Laboratory Standard QC: method blank and LCS required)

Relinquished By: J. MARTIN Date/Time: 10/02/19 18:00

Received By: [signature] Date/Time: 10/3/19 0825

Cooler ID(s): Temperature(s):

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS TX Workorder No: 1210079

Project Manager: JRK Initials: JEM Date: 10/3/19

1.	Are airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
2.	Are custody seals on **shipping** containers intact?	NONE	YES	NO *
3.	Are custody seals on **sample** containers intact?	NONE	YES	NO *
4.	Is there a COC (chain-of-custody) present?		YES	NO *
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		YES	NO *
6.	Are short-hold samples present?		YES	NO
7.	Are all samples within holding times for the requested analyses?		YES	NO *
8.	Were all sample containers received intact? (not broken or leaking)		YES	NO *
9.	Is there sufficient sample for the requested analyses?		YES	NO *
10.	Are all samples in the proper containers for the requested analyses?		YES	NO *
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)	N/A	YES	NO *
12.	Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO *
13.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	N/A	YES	NO
14.	Were the samples shipped on ice?		YES	NO
15.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #1 #3 #4	RAD ONLY	YES	NO

Cooler #:	1	2
Temperature (°C):	amb	amb
No. of custody seals on cooler:	2	2
DOT Survey/ Acceptance Information — External µR/hr reading:	12	13
Background µR/hr reading:	14	

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)

*** Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.**

All client bottle ID's vs ALS lab ID's double-checked by: JEM

If applicable, was the client contacted? YES / NO (NA) Contact: _____ Date/Time: _____

Project Manager Signature / Date: 10.7.19

Form 201r27.xls
(02/11/2019)

*IR Gun #1, VWR SN 170560549
*IR Gun #3, VWR SN 170647571
*IR Gun #4, Oakton, SN 2372220101-0002

1a10079

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part# 159469-434 RIT2 EXP 02/20

12-2

ALS

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 02OCT19
ACTWGT: 42.50 LB
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN
BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS FORT COLLINS
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
REF: HS19100073/074 RJ/DW

umb

SS1C3/2630/104C

FedEx
Express
E

THU - 03 OCT 3:00P
STANDARD OVERNIGHT

2 of 2
MPS# 0283 1251 0290 1908
Mstr# 1251 0290 1898
0201

AG FTCA

80524
CO-US DEN

1a10079

Must Deliver Next Business Day
Time and Tempature Sensitive!

ALS

13-2

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 02OCT19
ACTWGT: 42.50 LB
CAD: 300130/CAFE3211
DIMS: 19x18x13 IN

BILL THIRD PARTY

TO **SAMPLE RECEIVING**
ALS FORT COLLINS
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
REF: HS19100073/074 RJ/DW

551C3/2A3C/104C

FedEx
Express

E

J181118080501uv

1 of 2
TRK# 0201 **1251 0290 1893**
MASTER

THU - 03 OCT 3:00P
STANDARD OVERNIGHT

AG FTCA

80524
CO-US **DEN**

Client:	ALS Environmental	**Date:**	*30-Oct-19*
Project:	HS19100073	**Work Order:**	1910079
Sample ID:	MW-11	**Lab ID:**	1910079-1
Legal Location:		**Matrix:**	WATER
Collection Date:	9/30/2019 13:07	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1			**SOP 783**		Prep Date: **10/23/2019**	PrepBy: **JXH**
Ra-226	ND (+/- 0.32)	U	0.49	pCi/l	NA	10/29/2019 12:02
Carr: BARIUM	*96.2*		*40-110*	*%REC*	DL = NA	10/29/2019 12:02
Radium-228 Analysis by GFPC			**SOP 724**		Prep Date: **10/15/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.71	pCi/l	NA	10/29/2019 08:05
Ra-228	ND (+/- 0.37)	U	0.71	pCi/l	NA	10/21/2019 08:05
Carr: BARIUM	*97.2*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client:	ALS Environmental	**Date:**	*30-Oct-19*
Project:	HS19100073	**Work Order:**	1910079
Sample ID:	MW-25R	**Lab ID:**	1910079-2
Legal Location:		**Matrix:**	WATER
Collection Date:	9/30/2019 14:35	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1			**SOP 783**		Prep Date: **10/23/2019**	PrepBy: **JXH**
Ra-226	ND (+/- 0.21)	U	0.43	pCi/l	NA	10/29/2019 12:02
Carr: BARIUM	*95.7*		*40-110*	*%REC*	DL = NA	10/29/2019 12:02
Radium-228 Analysis by GFPC			**SOP 724**		Prep Date: **10/15/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	**0.87 (+/- 0)**		**0.81**	**pCi/l**	NA	10/29/2019 08:05
Ra-228	**0.87 (+/- 0.45)**		**0.81**	**pCi/l**	NA	10/21/2019 08:05
Carr: BARIUM	*88.4*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client:	ALS Environmental	**Date:**	*30-Oct-19*
Project:	HS19100073	**Work Order:**	1910079
Sample ID:	MW-10	**Lab ID:**	1910079-3
Legal Location:		**Matrix:**	WATER
Collection Date:	9/30/2019 15:25	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **JXH**
Ra-226	**0.39 (+/- 0.31)**		**0.36**	**pCi/l**	NA	10/29/2019 12:02
Carr: BARIUM	*95.6*		*40-110*	*%REC*	DL = NA	10/29/2019 12:02
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/15/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.7	pCi/l	NA	10/29/2019 08:05
Ra-228	ND (+/- 0.35)	U	0.7	pCi/l	NA	10/21/2019 08:05
Carr: BARIUM	*98.3*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client:	ALS Environmental	**Date:**	*30-Oct-19*
Project:	HS19100073	**Work Order:**	1910079
Sample ID:	MW-22A	**Lab ID:**	1910079-4
Legal Location:		**Matrix:**	WATER
Collection Date:	9/30/2019 16:25	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1			**SOP 783**		Prep Date: **10/23/2019**	PrepBy: **JXH**
Ra-226	ND (+/- 0.3)	U	0.46	pCi/l	NA	10/29/2019 12:23
Carr: BARIUM	*94.3*		*40-110*	*%REC*	DL = NA	10/29/2019 12:23
Radium-228 Analysis by GFPC			**SOP 724**		Prep Date: **10/15/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.72	pCi/l	NA	10/29/2019 08:05
Ra-228	ND (+/- 0.35)	U	0.72	pCi/l	NA	10/21/2019 08:05
Carr: BARIUM	*98.5*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

SAMPLE SUMMARY REPORT

Client: ALS Environmental
Project: HS19100073
Sample ID: MW-20
Legal Location:
Collection Date: 9/30/2019 17:10

Date: *30-Oct-19*
Work Order: 1910079
Lab ID: 1910079-5
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **JXH**
Ra-226	ND (+/- 0.22)	U	0.36	pCi/l	NA	10/29/2019 12:23
Carr: BARIUM	*97.6*		*40-110*	*%REC*	DL = NA	10/29/2019 12:23
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/15/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	**0.82 (+/- 0)**		**0.76**	**pCi/l**	NA	10/29/2019 08:05
Ra-228	**0.82 (+/- 0.43)**		**0.76**	**pCi/l**	NA	10/21/2019 08:05
Carr: BARIUM	*97.3*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client: ALS Environmental
Date: *30-Oct-19*
Project: HS19100073
Work Order: 1910079
Sample ID: Dup1
Lab ID: 1910079-6
Legal Location:
Matrix: WATER
Collection Date: 9/30/2019 00:00
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **JXH**
Ra-226	ND (+/- 0.35)	U	0.45	pCi/l	NA	10/29/2019 12:23
Carr: BARIUM	*95.5*		*40-110*	*%REC*	DL = NA	10/29/2019 12:23
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/15/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.74	pCi/l	NA	10/29/2019 08:05
Ra-228	ND (+/- 0.4)	U	0.74	pCi/l	NA	10/21/2019 08:05
Carr: BARIUM	*99.3*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client:	ALS Environmental	**Date:**	*30-Oct-19*
Project:	HS19100073	**Work Order:**	1910079
Sample ID:	MW-7S	**Lab ID:**	1910079-7
Legal Location:		**Matrix:**	WATER
Collection Date:	10/1/2019 11:40	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **JXH**
Ra-226	ND (+/- 0.26)	U	0.35	pCi/l	NA	10/29/2019 12:23
Carr: BARIUM	*96.3*		*40-110*	*%REC*	DL = NA	10/29/2019 12:23
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/15/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.71	pCi/l	NA	10/29/2019 08:05
Ra-228	ND (+/- 0.38)	U	0.71	pCi/l	NA	10/21/2019 08:05
Carr: BARIUM	*98.2*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client:	ALS Environmental	**Date:**	*30-Oct-19*
Project:	HS19100073	**Work Order:**	1910079
Sample ID:	MW-19S	**Lab ID:**	1910079-8
Legal Location:		**Matrix:**	WATER
Collection Date:	10/1/2019 12:15	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **JXH**
Ra-226	ND (+/- 0.24)	U	0.46	pCi/l	NA	10/29/2019 12:23
Carr: BARIUM	*90.1*		*40-110*	*%REC*	DL = NA	10/29/2019 12:23
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/15/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.74	pCi/l	NA	10/29/2019 08:05
Ra-228	ND (+/- 0.33)	Y1,U	0.74	pCi/l	NA	10/21/2019 08:05
Carr: BARIUM	*101*	Y1	*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client:	ALS Environmental	**Date:**	*30-Oct-19*
Project:	HS19100073	**Work Order:**	1910079
Sample ID:	MW-18	**Lab ID:**	1910079-9
Legal Location:		**Matrix:**	WATER
Collection Date:	10/1/2019 13:00	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **JXH**
Ra-226	ND (+/- 0.19)	U	0.28	pCi/l	NA	10/29/2019 12:23
Carr: BARIUM	*97.7*		*40-110*	*%REC*	DL = NA	10/29/2019 12:23
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/15/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.71	pCi/l	NA	10/29/2019 08:05
Ra-228	ND (+/- 0.32)	U	0.71	pCi/l	NA	10/21/2019 08:05
Carr: BARIUM	*99.2*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client:	ALS Environmental	**Date:**	*30-Oct-19*
Project:	HS19100073	**Work Order:**	1910079
Sample ID:	MW-18	**Lab ID:**	1910079-9
Legal Location:		**Matrix:**	WATER
Collection Date:	10/1/2019 13:00	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met.

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

G - A pattern resembling gasoline was detected in this sample.

D - A pattern resembling diesel was detected in this sample.

M - A pattern resembling motor oil was detected in this sample.

C - A pattern resembling crude oil was detected in this sample.

4 - A pattern resembling JP-4 was detected in this sample.

5 - A pattern resembling JP-5 was detected in this sample.

H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.

L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.

Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

QC BATCH REPORT

Batch ID: **RE191023-2-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS Sample ID: **RE191023-2** Units: **pCi/l** Analysis Date: **10/29/2019 12:57**
Client ID: Run ID: **RE191023-2A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	46 (+/- 12)	1	46.47		98.7	67-120					P
Carr: BARIUM	18190		18730		97.1	40-110					

LCSD Sample ID: **RE191023-2** Units: **pCi/l** Analysis Date: **10/29/2019 12:57**
Client ID: Run ID: **RE191023-2A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	52 (+/- 13)	0	46.47		112	67-120		46	0.4	2.1	P
Carr: BARIUM	18040		18770		96.1	40-110		18190			

MB Sample ID: **RE191023-2** Units: **pCi/l** Analysis Date: **10/29/2019 12:57**
Client ID: Run ID: **RE191023-2A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.24									U
Carr: BARIUM	18190		18750		97	40-110					

The following samples were analyzed in this batch:

1910079-1	1910079-2	1910079-3
1910079-4	1910079-5	1910079-6
1910079-7	1910079-8	1910079-9

Client: ALS Environmental
Work Order: 1910079
Project: HS19100073

QC BATCH REPORT

Batch ID: **RA191015-1-1** Instrument ID **GASPROP** Method: **Radium-228 Analysis by GFPC**

LCS Sample ID: **RA191015-1** Units: **ug** Analysis Date: **10/21/2019 08:05**
Client ID: Run ID: **RA191015-1A** Prep Date: **10/15/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	36910		37670		98	40-110					
Ra-228	15 (+/- 3.5)	0.7	13.69		110	70-130					P

MB Sample ID: **RA191015-1** Units: **ug** Analysis Date: **10/21/2019 08:05**
Client ID: Run ID: **RA191015-1A** Prep Date: **10/15/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	37520		37670		99.6	40-110					
Ra-228	ND	0.75									U

The following samples were analyzed in this batch:

1910079-1	1910079-2	1910079-3
1910079-4	1910079-5	1910079-6
1910079-7	1910079-8	1910079-9

10450 Stancliff Rd. Suite 210
Houston, TX 77099
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October 31, 2019

Bert Smith
Altamira
7060 S. Yale Avenue, Suite 603
Tulsa, OK 74136

Work Order: **HS19100183**

Laboratory Results for: **WFEC CCR Rule Site**

Dear Bert,

ALS Environmental received 6 sample(s) on Oct 03, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

Client: Altamira
Project: WFEC CCR Rule Site
Work Order: HS19100183

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100183-01	MW-21	Water		02-Oct-2019 10:50	03-Oct-2019 08:33	☐
HS19100183-02	MW-3	Water		02-Oct-2019 11:50	03-Oct-2019 08:33	☐
HS19100183-03	MW-14A	Water		02-Oct-2019 13:10	03-Oct-2019 08:33	☐
HS19100183-04	MW-15A	Water		02-Oct-2019 13:45	03-Oct-2019 08:33	☐
HS19100183-05	Dup2	Water		02-Oct-2019 00:00	03-Oct-2019 08:33	☐
HS19100183-06	MW-5S	Water		02-Oct-2019 14:20	03-Oct-2019 08:33	☐

Client: Altamira **CASE NARRATIVE**
Project: WFEC CCR Rule Site
Work Order: HS19100183

Work Order Comments

- The analyses for Radium-226 and Radium-228 were subcontracted to ALS Environmental in Fort Collins, CO. Final report attached.
- Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

  The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

Metals by Method SW7470

Batch ID: 146096

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 146090

Sample ID: MW-3 (HS19100183-02MS)

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Calcium

WetChemistry by Method M2540C

Batch ID: R347960

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500H+ B

Batch ID: R347759

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E410.4

Batch ID: R347690

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R347621

Sample ID: MW-3 (HS19100183-02MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Sulfate)

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-21
Collection Date: 02-Oct-2019 10:50

ANALYTICAL REPORT
WorkOrder:HS19100183
Lab ID:HS19100183-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	09-Oct-2019 00:18
Arsenic	**0.000638**	J	**0.000400**	**0.00200**	**mg/L**	1	09-Oct-2019 00:18
Barium	**0.00999**		**0.00190**	**0.00400**	**mg/L**	1	09-Oct-2019 00:18
Beryllium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:18
Boron	**2.63**		**0.110**	**0.200**	**mg/L**	10	09-Oct-2019 13:15
Cadmium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:18
Calcium	**146**		**0.0340**	**0.500**	**mg/L**	1	09-Oct-2019 00:18
Chromium	U		0.000400	0.00400	mg/L	1	09-Oct-2019 00:18
Cobalt	**0.000227**	J	**0.000200**	**0.00500**	**mg/L**	1	09-Oct-2019 00:18
Lead	U		0.000600	0.00200	mg/L	1	09-Oct-2019 00:18
Lithium	**0.118**		**0.00100**	**0.00500**	**mg/L**	1	09-Oct-2019 00:18
Molybdenum	**0.00105**	J	**0.000600**	**0.00500**	**mg/L**	1	09-Oct-2019 00:18
Selenium	U		0.00110	0.00200	mg/L	1	09-Oct-2019 00:18
Thallium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:18
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:09
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**22.1**		**0.200**	**0.500**	**mg/L**	1	03-Oct-2019 17:38
Fluoride	**0.537**		**0.0500**	**0.100**	**mg/L**	1	03-Oct-2019 17:38
Nitrogen, Nitrate (As N)	**0.329**		**0.0300**	**0.100**	**mg/L**	1	03-Oct-2019 17:38
Sulfate	**1,560**		**4.00**	**10.0**	**mg/L**	20	03-Oct-2019 17:55
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 15:00
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,700**		**5.00**	**10.0**	**mg/L**	1	08-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**7.58**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**19.9**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-3
Collection Date: 02-Oct-2019 11:50

ANALYTICAL REPORT
WorkOrder:HS19100183
Lab ID:HS19100183-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Oct-2019		Analyst: JHD
Antimony	**0.000410**	J	**0.000400**	**0.00200**	**mg/L**	1	09-Oct-2019 00:02
Arsenic	U		0.000400	0.00200	mg/L	1	09-Oct-2019 00:02
Barium	**0.0112**		**0.00190**	**0.00400**	**mg/L**	1	09-Oct-2019 00:02
Beryllium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:02
Boron	**1.06**		**0.110**	**0.200**	**mg/L**	10	09-Oct-2019 12:38
Cadmium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:02
Calcium	**213**		**0.340**	**5.00**	**mg/L**	10	09-Oct-2019 12:38
Chromium	**0.00142**	J	**0.000400**	**0.00400**	**mg/L**	1	09-Oct-2019 00:02
Cobalt	**0.000259**	J	**0.000200**	**0.00500**	**mg/L**	1	09-Oct-2019 00:02
Lead	U		0.000600	0.00200	mg/L	1	09-Oct-2019 00:02
Lithium	**0.136**		**0.00100**	**0.00500**	**mg/L**	1	09-Oct-2019 00:02
Molybdenum	U		0.000600	0.00500	mg/L	1	09-Oct-2019 00:02
Selenium	U		0.00110	0.00200	mg/L	1	09-Oct-2019 00:02
Thallium	**0.000466**	J	**0.000200**	**0.00200**	**mg/L**	1	09-Oct-2019 00:02
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:04
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**13.7**		**0.200**	**0.500**	**mg/L**	1	03-Oct-2019 18:12
Fluoride	**0.319**		**0.0500**	**0.100**	**mg/L**	1	03-Oct-2019 18:12
Nitrogen, Nitrate (As N)	**0.200**		**0.0300**	**0.100**	**mg/L**	1	03-Oct-2019 18:12
Sulfate	**1,210**		**4.00**	**10.0**	**mg/L**	20	04-Oct-2019 05:33
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 15:00
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,110**		**5.00**	**10.0**	**mg/L**	1	08-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**7.07**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**19.6**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-14A
Collection Date: 02-Oct-2019 13:10

ANALYTICAL REPORT
WorkOrder:HS19100183
Lab ID:HS19100183-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	09-Oct-2019 00:20
Arsenic	U		0.000400	0.00200	mg/L	1	09-Oct-2019 00:20
Barium	**0.0118**		**0.00190**	**0.00400**	**mg/L**	1	09-Oct-2019 00:20
Beryllium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:20
Boron	**0.980**		**0.110**	**0.200**	**mg/L**	10	09-Oct-2019 13:17
Cadmium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:20
Calcium	**306**		**0.340**	**5.00**	**mg/L**	10	09-Oct-2019 13:17
Chromium	**0.00110**	J	**0.000400**	**0.00400**	**mg/L**	1	09-Oct-2019 00:20
Cobalt	U		0.000200	0.00500	mg/L	1	09-Oct-2019 00:20
Lead	U		0.000600	0.00200	mg/L	1	09-Oct-2019 00:20
Lithium	**0.154**		**0.00100**	**0.00500**	**mg/L**	1	09-Oct-2019 00:20
Molybdenum	**0.000709**	J	**0.000600**	**0.00500**	**mg/L**	1	09-Oct-2019 00:20
Selenium	U		0.00110	0.00200	mg/L	1	09-Oct-2019 00:20
Thallium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:20
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:11
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**14.2**		**0.200**	**0.500**	**mg/L**	1	03-Oct-2019 20:41
Fluoride	**0.286**		**0.0500**	**0.100**	**mg/L**	1	03-Oct-2019 20:41
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	03-Oct-2019 20:41
Sulfate	**1,580**		**4.00**	**10.0**	**mg/L**	20	03-Oct-2019 20:58
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**5.00**	J	**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 15:00
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,750**		**5.00**	**10.0**	**mg/L**	1	08-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**7.18**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**20.1**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-15A
Collection Date: 02-Oct-2019 13:45

ANALYTICAL REPORT
WorkOrder:HS19100183
Lab ID:HS19100183-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	09-Oct-2019 00:22
Arsenic	**0.000676**	J	**0.000400**	**0.00200**	**mg/L**	1	09-Oct-2019 00:22
Barium	**0.0216**		**0.00190**	**0.00400**	**mg/L**	1	09-Oct-2019 00:22
Beryllium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:22
Boron	**3.19**		**0.220**	**0.400**	**mg/L**	20	09-Oct-2019 13:19
Cadmium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:22
Calcium	**82.4**		**0.0340**	**0.500**	**mg/L**	1	09-Oct-2019 00:22
Chromium	U		0.000400	0.00400	mg/L	1	09-Oct-2019 00:22
Cobalt	**0.000257**	J	**0.000200**	**0.00500**	**mg/L**	1	09-Oct-2019 00:22
Lead	U		0.000600	0.00200	mg/L	1	09-Oct-2019 00:22
Lithium	**0.0743**		**0.00100**	**0.00500**	**mg/L**	1	09-Oct-2019 00:22
Molybdenum	**0.196**		**0.000600**	**0.00500**	**mg/L**	1	09-Oct-2019 00:22
Selenium	U		0.00110	0.00200	mg/L	1	09-Oct-2019 00:22
Thallium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:22
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:23
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**25.9**		**0.200**	**0.500**	**mg/L**	1	03-Oct-2019 20:08
Fluoride	**1.24**		**0.0500**	**0.100**	**mg/L**	1	03-Oct-2019 20:08
Nitrogen, Nitrate (As N)	**0.287**		**0.0300**	**0.100**	**mg/L**	1	03-Oct-2019 20:08
Sulfate	**1,510**		**4.00**	**10.0**	**mg/L**	20	03-Oct-2019 20:25
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**18.0**		**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 15:00
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,500**		**5.00**	**10.0**	**mg/L**	1	08-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**7.58**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**20.1**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: Dup2
Collection Date: 02-Oct-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19100183
Lab ID:HS19100183-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	09-Oct-2019 00:25
Arsenic	**0.000574**	J	**0.000400**	**0.00200**	**mg/L**	1	09-Oct-2019 00:25
Barium	**0.0111**		**0.00190**	**0.00400**	**mg/L**	1	09-Oct-2019 00:25
Beryllium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:25
Boron	**2.89**		**0.220**	**0.400**	**mg/L**	20	09-Oct-2019 13:22
Cadmium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:25
Calcium	**155**		**0.0340**	**0.500**	**mg/L**	1	09-Oct-2019 00:25
Chromium	U		0.000400	0.00400	mg/L	1	09-Oct-2019 00:25
Cobalt	U		0.000200	0.00500	mg/L	1	09-Oct-2019 00:25
Lead	U		0.000600	0.00200	mg/L	1	09-Oct-2019 00:25
Lithium	**0.129**		**0.00100**	**0.00500**	**mg/L**	1	09-Oct-2019 00:25
Molybdenum	**0.00184**	J	**0.000600**	**0.00500**	**mg/L**	1	09-Oct-2019 00:25
Selenium	U		0.00110	0.00200	mg/L	1	09-Oct-2019 00:25
Thallium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:25
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:24
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**22.2**		**0.200**	**0.500**	**mg/L**	1	03-Oct-2019 19:02
Fluoride	**0.509**		**0.0500**	**0.100**	**mg/L**	1	03-Oct-2019 19:02
Nitrogen, Nitrate (As N)	**0.467**		**0.0300**	**0.100**	**mg/L**	1	03-Oct-2019 19:02
Sulfate	**1,530**		**4.00**	**10.0**	**mg/L**	20	03-Oct-2019 19:18
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**7.00**	J	**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 15:00
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,720**		**5.00**	**10.0**	**mg/L**	1	08-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**7.12**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**19.8**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-5S
Collection Date: 02-Oct-2019 14:20

ANALYTICAL REPORT
WorkOrder:HS19100183
Lab ID:HS19100183-06
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	09-Oct-2019 00:27
Arsenic	**0.000736**	J	**0.000400**	**0.00200**	**mg/L**	1	09-Oct-2019 00:27
Barium	**0.00928**		**0.00190**	**0.00400**	**mg/L**	1	09-Oct-2019 00:27
Beryllium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:27
Boron	**2.49**		**0.110**	**0.200**	**mg/L**	10	09-Oct-2019 13:24
Cadmium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:27
Calcium	**22.5**		**0.0340**	**0.500**	**mg/L**	1	09-Oct-2019 00:27
Chromium	U		0.000400	0.00400	mg/L	1	09-Oct-2019 00:27
Cobalt	U		0.000200	0.00500	mg/L	1	09-Oct-2019 00:27
Lead	U		0.000600	0.00200	mg/L	1	09-Oct-2019 00:27
Lithium	**0.0536**		**0.00100**	**0.00500**	**mg/L**	1	09-Oct-2019 00:27
Molybdenum	**0.00315**	J	**0.000600**	**0.00500**	**mg/L**	1	09-Oct-2019 00:27
Selenium	U		0.00110	0.00200	mg/L	1	09-Oct-2019 00:27
Thallium	U		0.000200	0.00200	mg/L	1	09-Oct-2019 00:27
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:26
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**25.1**		**0.200**	**0.500**	**mg/L**	1	03-Oct-2019 21:15
Fluoride	**1.54**		**0.0500**	**0.100**	**mg/L**	1	03-Oct-2019 21:15
Nitrogen, Nitrate (As N)	**0.212**		**0.0300**	**0.100**	**mg/L**	1	03-Oct-2019 21:15
Sulfate	**434**		**4.00**	**10.0**	**mg/L**	20	03-Oct-2019 21:31
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 15:00
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,180**		**5.00**	**10.0**	**mg/L**	1	08-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**7.55**	H	**0.100**	**0.100**	**pH Units**	1	07-Oct-2019 13:00
Temp Deg C @pH	**20.3**	H	**0**	**0**	**°C**	1	07-Oct-2019 13:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

Batch ID: 146090 **Start Date:** 07 Oct 2019 13:30 **End Date:** 07 Oct 2019 17:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100183-01		10 (mL)	10 (mL)	1
HS19100183-02		10 (mL)	10 (mL)	1
HS19100183-03		10 (mL)	10 (mL)	1
HS19100183-04		10 (mL)	10 (mL)	1
HS19100183-05		10 (mL)	10 (mL)	1
HS19100183-06		10 (mL)	10 (mL)	1

Batch ID: 146096 **Start Date:** 07 Oct 2019 11:00 **End Date:** 07 Oct 2019 13:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100183-01		10 (mL)	10 (mL)	1
HS19100183-02		10 (mL)	10 (mL)	1
HS19100183-03		10 (mL)	10 (mL)	1
HS19100183-04		10 (mL)	10 (mL)	1
HS19100183-05		10 (mL)	10 (mL)	1
HS19100183-06		10 (mL)	10 (mL)	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 146090 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19100183-01	MW-21	02 Oct 2019 10:50		07 Oct 2019 13:30	09 Oct 2019 13:15	10
HS19100183-01	MW-21	02 Oct 2019 10:50		07 Oct 2019 13:30	09 Oct 2019 00:18	1
HS19100183-02	MW-3	02 Oct 2019 11:50		07 Oct 2019 13:30	09 Oct 2019 12:38	10
HS19100183-02	MW-3	02 Oct 2019 11:50		07 Oct 2019 13:30	09 Oct 2019 00:02	1
HS19100183-03	MW-14A	02 Oct 2019 13:10		07 Oct 2019 13:30	09 Oct 2019 13:17	10
HS19100183-03	MW-14A	02 Oct 2019 13:10		07 Oct 2019 13:30	09 Oct 2019 00:20	1
HS19100183-04	MW-15A	02 Oct 2019 13:45		07 Oct 2019 13:30	09 Oct 2019 13:19	20
HS19100183-04	MW-15A	02 Oct 2019 13:45		07 Oct 2019 13:30	09 Oct 2019 00:22	1
HS19100183-05	Dup2	02 Oct 2019 00:00		07 Oct 2019 13:30	09 Oct 2019 13:22	20
HS19100183-05	Dup2	02 Oct 2019 00:00		07 Oct 2019 13:30	09 Oct 2019 00:25	1
HS19100183-06	MW-5S	02 Oct 2019 14:20		07 Oct 2019 13:30	09 Oct 2019 13:24	10
HS19100183-06	MW-5S	02 Oct 2019 14:20		07 Oct 2019 13:30	09 Oct 2019 00:27	1
Batch ID: 146096 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS19100183-01	MW-21	02 Oct 2019 10:50		07 Oct 2019 11:00	07 Oct 2019 20:09	1
HS19100183-02	MW-3	02 Oct 2019 11:50		07 Oct 2019 11:00	07 Oct 2019 20:04	1
HS19100183-03	MW-14A	02 Oct 2019 13:10		07 Oct 2019 11:00	07 Oct 2019 20:11	1
HS19100183-04	MW-15A	02 Oct 2019 13:45		07 Oct 2019 11:00	07 Oct 2019 20:23	1
HS19100183-05	Dup2	02 Oct 2019 00:00		07 Oct 2019 11:00	07 Oct 2019 20:24	1
HS19100183-06	MW-5S	02 Oct 2019 14:20		07 Oct 2019 11:00	07 Oct 2019 20:26	1
Batch ID: R347621 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS19100183-01	MW-21	02 Oct 2019 10:50			03 Oct 2019 17:55	20
HS19100183-01	MW-21	02 Oct 2019 10:50			03 Oct 2019 17:38	1
HS19100183-02	MW-3	02 Oct 2019 11:50			04 Oct 2019 05:33	20
HS19100183-02	MW-3	02 Oct 2019 11:50			03 Oct 2019 18:12	1
HS19100183-03	MW-14A	02 Oct 2019 13:10			03 Oct 2019 20:58	20
HS19100183-03	MW-14A	02 Oct 2019 13:10			03 Oct 2019 20:41	1
HS19100183-04	MW-15A	02 Oct 2019 13:45			03 Oct 2019 20:25	20
HS19100183-04	MW-15A	02 Oct 2019 13:45			03 Oct 2019 20:08	1
HS19100183-05	Dup2	02 Oct 2019 00:00			03 Oct 2019 19:18	20
HS19100183-05	Dup2	02 Oct 2019 00:00			03 Oct 2019 19:02	1
HS19100183-06	MW-5S	02 Oct 2019 14:20			03 Oct 2019 21:31	20
HS19100183-06	MW-5S	02 Oct 2019 14:20			03 Oct 2019 21:15	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R347690 (0)	**Test Name :** CHEMICAL OXYGEN DEMAND BY E410.4				**Matrix:** Water	
HS19100183-01	MW-21	02 Oct 2019 10:50			05 Oct 2019 15:00	1
HS19100183-02	MW-3	02 Oct 2019 11:50			05 Oct 2019 15:00	1
HS19100183-03	MW-14A	02 Oct 2019 13:10			05 Oct 2019 15:00	1
HS19100183-04	MW-15A	02 Oct 2019 13:45			05 Oct 2019 15:00	1
HS19100183-05	Dup2	02 Oct 2019 00:00			05 Oct 2019 15:00	1
HS19100183-06	MW-5S	02 Oct 2019 14:20			05 Oct 2019 15:00	1
Batch ID: R347759 (0)	**Test Name :** PH BY SM4500H+ B				**Matrix:** Water	
HS19100183-01	MW-21	02 Oct 2019 10:50			07 Oct 2019 13:00	1
HS19100183-02	MW-3	02 Oct 2019 11:50			07 Oct 2019 13:00	1
HS19100183-03	MW-14A	02 Oct 2019 13:10			07 Oct 2019 13:00	1
HS19100183-04	MW-15A	02 Oct 2019 13:45			07 Oct 2019 13:00	1
HS19100183-05	Dup2	02 Oct 2019 00:00			07 Oct 2019 13:00	1
HS19100183-06	MW-5S	02 Oct 2019 14:20			07 Oct 2019 13:00	1
Batch ID: R347960 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS19100183-01	MW-21	02 Oct 2019 10:50			08 Oct 2019 16:30	1
HS19100183-02	MW-3	02 Oct 2019 11:50			08 Oct 2019 16:30	1
HS19100183-03	MW-14A	02 Oct 2019 13:10			08 Oct 2019 16:30	1
HS19100183-04	MW-15A	02 Oct 2019 13:45			08 Oct 2019 16:30	1
HS19100183-05	Dup2	02 Oct 2019 00:00			08 Oct 2019 16:30	1
HS19100183-06	MW-5S	02 Oct 2019 14:20			08 Oct 2019 16:30	1
Batch ID: R349572 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RADIUM 228				**Matrix:** Water	
HS19100183-01	MW-21	02 Oct 2019 10:50			31 Oct 2019 17:51	1
HS19100183-01	MW-21	02 Oct 2019 10:50			31 Oct 2019 17:51	1
HS19100183-02	MW-3	02 Oct 2019 11:50			31 Oct 2019 17:51	1
HS19100183-02	MW-3	02 Oct 2019 11:50			31 Oct 2019 17:51	1
HS19100183-03	MW-14A	02 Oct 2019 13:10			31 Oct 2019 17:51	1
HS19100183-03	MW-14A	02 Oct 2019 13:10			31 Oct 2019 17:51	1
HS19100183-04	MW-15A	02 Oct 2019 13:45			31 Oct 2019 17:51	1
HS19100183-04	MW-15A	02 Oct 2019 13:45			31 Oct 2019 17:51	1
HS19100183-05	Dup2	02 Oct 2019 00:00			31 Oct 2019 17:51	1
HS19100183-05	Dup2	02 Oct 2019 00:00			31 Oct 2019 17:51	1
HS19100183-06	MW-5S	02 Oct 2019 14:20			31 Oct 2019 17:51	1
HS19100183-06	MW-5S	02 Oct 2019 14:20			31 Oct 2019 17:51	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: 146090 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLKF1-146090** Units: **mg/L** Analysis Date: **08-Oct-2019 23:58**
Client ID: Run ID: **ICPMS04_347836** SeqNo: **5288143** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.00200								
Arsenic	U	0.00200								
Barium	U	0.00400								
Beryllium	U	0.00200								
Cadmium	U	0.00200								
Calcium	0.06276	0.500								J
Chromium	U	0.00400								
Cobalt	U	0.00500								
Lead	U	0.00200								
Lithium	U	0.00500								
Molybdenum	U	0.00500								
Selenium	U	0.00200								
Thallium	U	0.00200								

MBLK Sample ID: **MBLK-146090** Units: **mg/L** Analysis Date: **09-Oct-2019 12:31**
Client ID: Run ID: **ICPMS04_347920** SeqNo: **5289106** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.00200								
Arsenic	U	0.00200								
Barium	U	0.00400								
Beryllium	U	0.00200								
Boron	U	0.0200								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00400								
Cobalt	U	0.00500								
Lead	U	0.00200								
Lithium	U	0.00500								
Molybdenum	U	0.00500								
Selenium	U	0.00200								
Thallium	U	0.00200								

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: 146090 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLKF1-146090** Units: **mg/L** Analysis Date: **09-Oct-2019 12:33**
Client ID: Run ID: **ICPMS04_347920** SeqNo: **5289107** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	U	0.0200								

LCS Sample ID: **LCS-146090** Units: **mg/L** Analysis Date: **09-Oct-2019 00:00**
Client ID: Run ID: **ICPMS04_347836** SeqNo: **5288159** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04612	0.00200	0.05	0	92.2	80 - 120				
Arsenic	0.04874	0.00200	0.05	0	97.5	80 - 120				
Barium	0.04568	0.00400	0.05	0	91.4	80 - 120				
Beryllium	0.04813	0.00200	0.05	0	96.3	80 - 120				
Cadmium	0.04665	0.00200	0.05	0	93.3	80 - 120				
Calcium	4.868	0.500	5	0	97.4	80 - 120				
Chromium	0.04568	0.00400	0.05	0	91.4	80 - 120				
Cobalt	0.04669	0.00500	0.05	0	93.4	80 - 120				
Lead	0.04626	0.00200	0.05	0	92.5	80 - 120				
Lithium	0.09335	0.00500	0.1	0	93.4	80 - 120				
Molybdenum	0.04635	0.00500	0.05	0	92.7	80 - 120				
Selenium	0.04588	0.00200	0.05	0	91.8	80 - 120				
Thallium	0.04474	0.00200	0.05	0	89.5	80 - 120				

LCS Sample ID: **LCS-146090** Units: **mg/L** Analysis Date: **09-Oct-2019 12:36**
Client ID: Run ID: **ICPMS04_347920** SeqNo: **5289108** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.4465	0.0200	0.5	0	89.3	80 - 120				

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: 146090 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS19100183-02MS** Units: **mg/L** Analysis Date: **09-Oct-2019 00:07**
Client ID: **MW-3** Run ID: **ICPMS04_347836** SeqNo: **5288162** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04546	0.00200	0.05	0.00041	90.1	80 - 120				
Arsenic	0.0495	0.00200	0.05	0.0003	98.4	80 - 120				
Barium	0.05941	0.00400	0.05	0.01116	96.5	80 - 120				
Beryllium	0.05214	0.00200	0.05	0.000053	104	80 - 120				
Cadmium	0.04727	0.00200	0.05	0.000036	94.5	80 - 120				
Calcium	223.9	0.500	5	214.7	183	80 - 120				SEO
Chromium	0.0484	0.00400	0.05	0.001422	94.0	80 - 120				
Cobalt	0.04721	0.00500	0.05	0.000259	93.9	80 - 120				
Lead	0.04617	0.00200	0.05	0.000169	92.0	80 - 120				
Lithium	0.2547	0.00500	0.1	0.1365	118	80 - 120				E
Molybdenum	0.04962	0.00500	0.05	0.000539	98.2	80 - 120				
Selenium	0.04435	0.00200	0.05	0.000211	88.3	80 - 120				
Thallium	0.04403	0.00200	0.05	0.000466	87.1	80 - 120				

MS Sample ID: **HS19100183-02MS** Units: **mg/L** Analysis Date: **09-Oct-2019 12:42**
Client ID: **MW-3** Run ID: **ICPMS04_347920** SeqNo: **5289111** PrepDate: **07-Oct-2019** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	1.48	0.200	0.5	1.064	83.2	80 - 120				

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: 146090 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS19100183-02MSD** Units: **mg/L** Analysis Date: **09-Oct-2019 00:09**
Client ID: **MW-3** Run ID: **ICPMS04_347836** SeqNo: **5288163** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04274	0.00200	0.05	0.00041	84.7	80 - 120	0.04546	6.16	20	
Arsenic	0.04734	0.00200	0.05	0.0003	94.1	80 - 120	0.0495	4.45	20	
Barium	0.05531	0.00400	0.05	0.01116	88.3	80 - 120	0.05941	7.15	20	
Beryllium	0.0479	0.00200	0.05	0.000053	95.7	80 - 120	0.05214	8.46	20	
Cadmium	0.04497	0.00200	0.05	0.000036	89.9	80 - 120	0.04727	4.98	20	
Calcium	213.3	0.500	5	214.7	-29.1	80 - 120	223.9	4.86	20	SEO
Chromium	0.04503	0.00400	0.05	0.001422	87.2	80 - 120	0.0484	7.23	20	
Cobalt	0.04514	0.00500	0.05	0.000259	89.8	80 - 120	0.04721	4.48	20	
Lead	0.04362	0.00200	0.05	0.000169	86.9	80 - 120	0.04617	5.66	20	
Lithium	0.2295	0.00500	0.1	0.1365	93.0	80 - 120	0.2547	10.4	20	E
Molybdenum	0.04663	0.00500	0.05	0.000539	92.2	80 - 120	0.04962	6.2	20	
Selenium	0.04255	0.00200	0.05	0.000211	84.7	80 - 120	0.04435	4.15	20	
Thallium	0.042	0.00200	0.05	0.000466	83.1	80 - 120	0.04403	4.72	20	

MSD Sample ID: **HS19100183-02MSD** Units: **mg/L** Analysis Date: **09-Oct-2019 14:50**
Client ID: **MW-3** Run ID: **ICPMS04_347920** SeqNo: **5289321** PrepDate: **07-Oct-2019** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	1.556	0.200	0.5	1.064	98.4	80 - 120	1.48	5.02	20	

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: 146090 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS19100183-02PDS** Units: **mg/L** Analysis Date: **09-Oct-2019 00:11**
Client ID: **MW-3** Run ID: **ICPMS04_347836** SeqNo: **5288164** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.08411	0.00200	0.1	0.00041	83.7	75 - 125				
Arsenic	0.1063	0.00200	0.1	0.0003	106	75 - 125				
Barium	0.1115	0.00400	0.1	0.01116	100	75 - 125				
Beryllium	0.1065	0.00200	0.1	0.000053	106	75 - 125				
Cadmium	0.1017	0.00200	0.1	0.000036	102	75 - 125				
Chromium	0.104	0.00400	0.1	0.001422	103	75 - 125				
Cobalt	0.1019	0.00500	0.1	0.000259	102	75 - 125				
Lead	0.09992	0.00200	0.1	0.000169	99.7	75 - 125				
Lithium	0.1842	0.00500	0.05	0.1365	95.4	70 - 125				
Molybdenum	0.1077	0.00500	0.1	0.000539	107	75 - 125				
Selenium	0.1007	0.00200	0.1	0.000211	100	75 - 125				
Thallium	0.09386	0.00200	0.1	0.000466	93.4	75 - 125				

PDS Sample ID: **HS19100183-02PDS** Units: **mg/L** Analysis Date: **09-Oct-2019 12:47**
Client ID: **MW-3** Run ID: **ICPMS04_347920** SeqNo: **5289113** PrepDate: **07-Oct-2019** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	3.163	0.200	2	1.064	105	75 - 125				
Calcium	302.8	5.00	100	213.1	89.7	75 - 125				

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: 146090 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS19100183-02SD** Units: **mg/L** Analysis Date: **09-Oct-2019 00:04**
Client ID: **MW-3** Run ID: **ICPMS04_347836** SeqNo: **5288161** PrepDate: **07-Oct-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	U	0.0100					0.00041	0	10	
Arsenic	U	0.0100					0.0003	0	10	
Barium	0.01141	0.0200					0.01116	0	10	J
Beryllium	U	0.0100					0.000053	0	10	
Cadmium	U	0.0100					0.000036	0	10	
Chromium	U	0.0200					0.001422	0	10	
Cobalt	U	0.0250					0.000259	0	10	
Lead	U	0.0100					0.000169	0	10	
Lithium	0.1364	0.0250					0.1365	0.0901	10	
Molybdenum	U	0.0250					0.000539	0	10	
Selenium	U	0.0100					0.000211	0	10	
Thallium	U	0.0100					0.000466	0	10	

SD Sample ID: **HS19100183-02SD** Units: **mg/L** Analysis Date: **09-Oct-2019 12:40**
Client ID: **MW-3** Run ID: **ICPMS04_347920** SeqNo: **5289110** PrepDate: **07-Oct-2019** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	217.1	25.0					213.1	1.88	10	

The following samples were analyzed in this batch: HS19100183-01 HS19100183-02 HS19100183-03 HS19100183-04 HS19100183-05 HS19100183-06

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: 146096 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-146096** Units: **mg/L** Analysis Date: **07-Oct-2019 20:00**
Client ID: Run ID: **HG03_347748** SeqNo: **5285651** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-146096** Units: **mg/L** Analysis Date: **07-Oct-2019 20:02**
Client ID: Run ID: **HG03_347748** SeqNo: **5285652** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00519	0.000200	0.005	0	104	80 - 120				

MS Sample ID: **HS19100276-02MS** Units: **mg/L** Analysis Date: **07-Oct-2019 20:17**
Client ID: Run ID: **HG03_347748** SeqNo: **5285661** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00513	0.000200	0.005	0.000003	103	75 - 125				

MS Sample ID: **HS19100183-02MS** Units: **mg/L** Analysis Date: **07-Oct-2019 20:06**
Client ID: **MW-3** Run ID: **HG03_347748** SeqNo: **5285654** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00517	0.000200	0.005	-0.00001	104	75 - 125				

MSD Sample ID: **HS19100276-02MSD** Units: **mg/L** Analysis Date: **07-Oct-2019 20:19**
Client ID: Run ID: **HG03_347748** SeqNo: **5285662** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00517	0.000200	0.005	0.000003	103	75 - 125	0.00513	0.777	20	

MSD Sample ID: **HS19100183-02MSD** Units: **mg/L** Analysis Date: **07-Oct-2019 20:07**
Client ID: **MW-3** Run ID: **HG03_347748** SeqNo: **5285655** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00512	0.000200	0.005	-0.00001	103	75 - 125	0.00517	0.972	20	

The following samples were analyzed in this batch: HS19100183-01 HS19100183-02 HS19100183-03 HS19100183-04 HS19100183-05 HS19100183-06

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: R347621 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **WBLKW1-100319** Units: **mg/L** Analysis Date: **03-Oct-2019 16:49**
Client ID: Run ID: **ICS-Integrion_347621** SeqNo: **5282549** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								
Sulfate	U	0.500								

LCS Sample ID: **WLCSW1-100319** Units: **mg/L** Analysis Date: **03-Oct-2019 17:05**
Client ID: Run ID: **ICS-Integrion_347621** SeqNo: **5282550** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.43	0.500	20	0	97.2	90 - 110				
Fluoride	3.929	0.100	4	0	98.2	90 - 110				
Nitrogen, Nitrate (As N)	3.915	0.100	4	0	97.9	90 - 110				
Sulfate	19.5	0.500	20	0	97.5	90 - 110				

LCSD Sample ID: **WLCSDW1-100319** Units: **mg/L** Analysis Date: **03-Oct-2019 17:22**
Client ID: Run ID: **ICS-Integrion_347621** SeqNo: **5282551** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.49	0.500	20	0	97.4	90 - 110	19.43	0.293	20	
Fluoride	4.02	0.100	4	0	100	90 - 110	3.929	2.28	20	
Nitrogen, Nitrate (As N)	3.931	0.100	4	0	98.3	90 - 110	3.915	0.398	20	
Sulfate	19.59	0.500	20	0	98.0	90 - 110	19.5	0.441	20	

MS Sample ID: **HS19100183-02MS** Units: **mg/L** Analysis Date: **04-Oct-2019 05:49**
Client ID: **MW-3** Run ID: **ICS-Integrion_347621** SeqNo: **5282596** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	203.4	10.0	200	13.26	95.1	80 - 120				
Fluoride	38.61	2.00	40	0.494	95.3	80 - 120				
Nitrogen, Nitrate (As N)	39.62	2.00	40	1.178	96.1	80 - 120				
Sulfate	1370	10.0	200	1211	79.7	80 - 120				SO

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: R347621 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0

MS Sample ID: **HS19100183-02MS** Units: **mg/L** Analysis Date: **03-Oct-2019 18:28**
Client ID: **MW-3** Run ID: **ICS-Integrion_347621** SeqNo: **5282653** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23.17	0.500	10	13.72	94.5	80 - 120				
Fluoride	2.359	0.100	2	0.3189	102	80 - 120				
Nitrogen, Nitrate (As N)	2.269	0.100	2	0.2005	103	80 - 120				
Sulfate	1158	0.500	10	1158	-0.0720	80 - 120				SEO

MS Sample ID: **HS19091252-04MS** Units: **mg/L** Analysis Date: **03-Oct-2019 23:44**
Client ID: Run ID: **ICS-Integrion_347621** SeqNo: **5282574** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	292.1	5.00	100	201.5	90.6	80 - 120				
Fluoride	20.82	1.00	20	0.551	101	80 - 120				
Nitrogen, Nitrate (As N)	22.5	1.00	20	3.407	95.4	80 - 120				
Sulfate	110.9	5.00	100	15.62	95.3	80 - 120				

MSD Sample ID: **HS19100183-02MSD** Units: **mg/L** Analysis Date: **03-Oct-2019 18:45**
Client ID: **MW-3** Run ID: **ICS-Integrion_347621** SeqNo: **5282654** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23.17	0.500	10	13.72	94.5	80 - 120	23.17	0.0129	20	
Fluoride	2.365	0.100	2	0.3189	102	80 - 120	2.359	0.246	20	
Nitrogen, Nitrate (As N)	2.273	0.100	2	0.2005	104	80 - 120	2.269	0.185	20	
Sulfate	1149	0.500	10	1158	-88.3	80 - 120	1158	0.765	20	SEO

MSD Sample ID: **HS19100183-02MSD** Units: **mg/L** Analysis Date: **04-Oct-2019 06:06**
Client ID: **MW-3** Run ID: **ICS-Integrion_347621** SeqNo: **5282597** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	204.8	10.0	200	13.26	95.8	80 - 120	203.4	0.657	20	
Fluoride	38.87	2.00	40	0.494	96.0	80 - 120	38.61	0.692	20	
Nitrogen, Nitrate (As N)	39.81	2.00	40	1.178	96.6	80 - 120	39.62	0.494	20	
Sulfate	1383	10.0	200	1211	85.8	80 - 120	1370	0.894	20	O

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: R347621 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS19091252-04MSD** Units: **mg/L** Analysis Date: **04-Oct-2019 00:01**
Client ID: Run ID: **ICS-Integrion_347621** SeqNo: **5282575** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	293.3	5.00	100	201.5	91.7	80 - 120	292.1	0.396	20	
Fluoride	20.01	1.00	20	0.551	97.3	80 - 120	20.82	3.96	20	
Nitrogen, Nitrate (As N)	22.57	1.00	20	3.407	95.8	80 - 120	22.5	0.328	20	
Sulfate	111.8	5.00	100	15.62	96.2	80 - 120	110.9	0.854	20	

The following samples were analyzed in this batch: HS19100183-01 HS19100183-02 HS19100183-03 HS19100183-04 HS19100183-05 HS19100183-06

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: R347690 (0) **Instrument: WetChem_HS** **Method: CHEMICAL OXYGEN DEMAND BY E410.4**

MBLK Sample ID: **MBLK-R347690** Units: **mg/L** Analysis Date: **05-Oct-2019 15:00**
Client ID: Run ID: **WetChem_HS_347690** SeqNo: **5283710** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	U	15.0								

LCS Sample ID: **LCS-R347690** Units: **mg/L** Analysis Date: **05-Oct-2019 15:00**
Client ID: Run ID: **WetChem_HS_347690** SeqNo: **5283709** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	100	15.0	100	0	100	85 - 115				

MS Sample ID: **HS19100183-02MS** Units: **mg/L** Analysis Date: **05-Oct-2019 15:00**
Client ID: **MW-3** Run ID: **WetChem_HS_347690** SeqNo: **5283712** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	50	15.0	50	2	96.0	80 - 120				

MSD Sample ID: **HS19100183-02MSD** Units: **mg/L** Analysis Date: **05-Oct-2019 15:00**
Client ID: **MW-3** Run ID: **WetChem_HS_347690** SeqNo: **5283711** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	54	15.0	50	2	104	80 - 120	50	7.69	20	

The following samples were analyzed in this batch: HS19100183-01 HS19100183-02 HS19100183-03 HS19100183-04 HS19100183-05 HS19100183-06

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: **R347759 (0)** **Instrument:** **WetChem_HS** **Method:** **PH BY SM4500H+ B**

DUP Sample ID: **HS19100183-02DUP** Units: **pH Units** Analysis Date: **07-Oct-2019 13:00**
Client ID: **MW-3** Run ID: **WetChem_HS_347759** SeqNo: **5285050** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.06	0.100					7.07	0.142	10	
Temp Deg C @pH	19.8	0					19.6	1.02	10	

The following samples were analyzed in this batch: HS19100183-01 HS19100183-02 HS19100183-03 HS19100183-04 HS19100183-05 HS19100183-06

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100183

QC BATCH REPORT

Batch ID: R347960 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-100819** Units: **mg/L** Analysis Date: **08-Oct-2019 16:30**
Client ID: Run ID: **Balance1_347960** SeqNo: **5289163** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-100819** Units: **mg/L** Analysis Date: **08-Oct-2019 16:30**
Client ID: Run ID: **Balance1_347960** SeqNo: **5289164** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1022	10.0	1000	0	102	85 - 115				

DUP Sample ID: **HS19100183-02DUP** Units: **mg/L** Analysis Date: **08-Oct-2019 16:30**
Client ID: **MW-3** Run ID: **Balance1_347960** SeqNo: **5289153** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	2162	10.0					2114	2.25	5	

DUP Sample ID: **HS19100153-05DUP** Units: **mg/L** Analysis Date: **08-Oct-2019 16:30**
Client ID: Run ID: **Balance1_347960** SeqNo: **5289149** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	2228	10.0					2230	0.0897	5	

The following samples were analyzed in this batch: HS19100183-01 HS19100183-02 HS19100183-03 HS19100183-04 HS19100183-05 HS19100183-06

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: **HS19100183**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

Client: Altamira
Project: WFEC CCR Rule Site
Work Order: HS19100183

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100183-01	MW-21	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-01	MW-21	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-01	MW-21	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-01	MW-21	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-01	MW-21	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-01	MW-21	Login	10/3/2019 11:58:27 AM	JRM	MET054
HS19100183-02	MW-3	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-02	MW-3	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-02	MW-3	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-02	MW-3	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-02	MW-3	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-02	MW-3	Login	10/3/2019 11:58:27 AM	JRM	MET054
HS19100183-03	MW-14A	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-03	MW-14A	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-03	MW-14A	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-03	MW-14A	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-03	MW-14A	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-03	MW-14A	Login	10/3/2019 11:58:27 AM	JRM	MET054
HS19100183-04	MW-15A	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-04	MW-15A	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-04	MW-15A	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-04	MW-15A	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-04	MW-15A	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-04	MW-15A	Login	10/3/2019 11:58:27 AM	JRM	MET054
HS19100183-05	Dup2	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-05	Dup2	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-05	Dup2	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-05	Dup2	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-05	Dup2	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-05	Dup2	Login	10/3/2019 11:58:27 AM	JRM	MET054
HS19100183-06	MW-5S	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-06	MW-5S	Login	10/3/2019 11:58:27 AM	JRM	Sub
HS19100183-06	MW-5S	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-06	MW-5S	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-06	MW-5S	Login	10/3/2019 11:58:27 AM	JRM	WET120
HS19100183-06	MW-5S	Login	10/3/2019 11:58:27 AM	JRM	MET054

Sample Receipt Checklist

Client Name: Enviro Clean Services-Tulsa
Work Order: HS19100183
Date/Time Received: **03-Oct-2019 08:33**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 2-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 3-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:210170
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.0°C / 1.0°C, 1.2°C / 1.2°C, 1.3°C / 1.3°C UC/C	IR25	
Cooler(s)/Kit(s):	43951, 44913, 45046		
Date/Time sample(s) sent to storage:	10/03/2019 12:40		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

ALS

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Forr

Page 1 of 1

COC ID: 210170

HS19100183

Altamira

WFEC CCR Rule Site

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	WFEC CCR Rule Site
Work Order		Project Number	
Company Name	Enviro Clean Services, LLC	Bill To Company	Altamira
Send Report To	Heather Tiffany	Invoice Attn	Heather Tiffany
Address	~~7060 S. Yale Avenue, Suite 603~~ 525 Central Park Dr Suite 500	Address	~~7060 S. Yale Avenue, Suite 603~~
City/State/Zip	~~Tulsa, OK 74136~~ OKC, OK 73105	City/State/Zip	Tulsa ~~OK 74136~~
Phone	~~(918) 794-7828~~ 405-434-5662	Phone	~~(918) 794-7828~~
Fax		Fax	
e-Mail Address	heather.tiffany@eccgrp.com	e-Mail Address	heather.tiffany@eccgrp.com

	Analysis
A	ICP_TW (Metals (Appendix III and IV))
B	HG_W (Mercury)
C	300_W (Cl,F,SO4, NO3)
D	TDS_W 2540C (TDS)
E	PH_W M4500H+B (pH)
F	SUB_RA 226 (Radium 226- Sub to ALS Fort Collins)
G	SUB_RA 228 (Radium 226- Sub to ALS Fort Collins)
H	COD
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-21	10/2/19	1050	W		7	X	X	X	X	X	X	X	X			
2	MW-3	↓	1150	↓		↓	X	X	X	X	X	X	X	X			
3	MW-3 MS	↓	1150	↓		↓	X	X	X	X	X	X	X	X			
4	MW-3 MSD	↓	1150	↓		↓	X	X	X	X	X	X	X	X			
5	MW-14A	↓	1310	↓		↓	X	X	X	X	X	X	X	X			
6	MW-15A	↓	1345	↓		↓	X	X	X	X	X	X	X	X			
7	Dup 2	↓	—	↓		↓	X	X	X	X	X	X	X	X			
8	MW-5S	↓	1420	↓		↓	X	X	X	X	X	X	X	X			
9																	
10																	

Sampler(s) Please Print & Sign: Pasha Khlystov / Pasha Khlystov

Shipment Method: FedEx

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ______

Results Due Date:

Relinquished by: Pasha Khlystov Date: 10/2/19 Time: 15:30 Received by:

Relinquished by: Date: 10/3/19 Time: 08:33 Received by (Laboratory): [signature]

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: ODEQ

Cooler ID	Cooler Temp.
	uc
42951	1.0
44913	1.2
45046	1.3
IR25	CF0.0

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other ______
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

45046

CUSTODY SEAL

Date: 10/02/19 Time: 15:30
Name:
Company: Padia Whiglestov

Seal Broken By:
Date: 10/03/19

45046

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

45046

CUSTODY SEAL

Date: 10/02/19 Time: 15:30
Name:
Company: Padia Whiglestov

Seal Broken By:
Date:

Must Deliver Next Business Day
Time and Tempature Sensitive!

45046

ALS

ORIGIN ID:SGRA (918) 794-7828
BERT SMITH
ENVIRON CLEAN SERVICES
3700 WEST ROBINSON ST. SUITE 200

NORMAN, OK 73072
UNITED STATES US

SHIP DATE: 25SEP19
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: WFEC CCR RULE SITE-BO 67826-RJ
RMA:

FedEx Express

E

FedEx
TRK# 0221 1251 0289 9591

THU - 03 OCT 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

FID 353230 02OCT19 SWIA 568C3/2A3C/85A2

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 10/02/19 Time: 15:30
Name:
Company:

Seal Broken By:
Date: 10/03/19

U3951

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 10/02/19 Time: 15:20
Name:
Company:

Seal Broken By:
Date: 10/03/19

U3951

Must Deliver Next Business Day
Time and Tempature Sensitive!

U3951

ORIGIN ID:SGRA (918) 794-7828
BERT SMITH
ENVIRON CLEAN SERVICES
3700 WEST ROBINSON ST. SUITE 200

NORMAN, OK 73072
UNITED STATES US

SHIP DATE: 25SEP19
ACTWGT: 1.00 LB MAN
CAD: 3001307DAFE3211
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: WFEC CCR RULE SITE-BO 67026-RJ

RMA:

FedEx Express

FedEx
TRK# 0221 1251 0289 9628

THU - 03 OCT 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

ITD 353230 02OCT19 SKIA 660C3/2A3C/B5A2

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44913

CUSTODY SEAL

Date: 10/02/19 Time: 15:30
Name:
Company: Pastia Hutchinson

Seal Broken By:
Date: 10/03/19

44913

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44913

CUSTODY SEAL

Date: 10/02/19 Time: 15:50
Name:
Company: Pastia Hutchinson

Seal Broken By:
Date: 10/3/19

Must Deliver Next Business Day
Time and Tempature Sensitive!

44913

ORIGIN ID:SGRA (918) 794-7828
BERT SMITH
ENVIRON CLEAN SERVICES
3700 WEST ROBINSON ST. SUITE 200

NORMAN, OK 73072
UNITED STATES US

SHIP DATE: 25SEP19
ACTWGT: 1.00 LB MAN
CAD: 3007307/CAFE3211
DIMS: 26x14x14 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: WFEC CCR RULE SITE - BD 67826 - RJ

RMA:

FedEx Express

FedEx
TRK# 0221 1251 0289 9650

THU - 03 OCT 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

FTD 353230 02OCT19 SWIA 5803/2A3C/0EA2

Thursday, October 31, 2019

RJ Modashia
ALS Environmental
10450 Stancliff Rd, Suite 210
Houston, TX 77099

Re: ALS Workorder: 1910120
Project Name:
Project Number: HS19100183

Dear Mr. Modashia:

Six water samples were received from ALS Environmental, on 10/4/2019. The samples were scheduled for the following analyses:

Radium-226
Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff R. Kujawa
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1910120

Radium-228:
The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to EPA method 904.0.

All acceptance criteria were met.

Radium-226:
The samples were prepared and analyzed according to EPA method 903.1.

All acceptance criteria were met.

ADDRESS 225 Commerce Drive, Fort Collins Colorado 80524 USA | PHONE +1 970 490 1511 | FAX +1 970 490 1522

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1910120
Client Name: ALS Environmental
Client Project Name:
Client Project Number: HS19100183
Client PO Number: 10-12301

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
MW-21	1910120-1		WATER	02-Oct-19	10:50
MW-3	1910120-2		WATER	02-Oct-19	11:50
MW-14A	1910120-3		WATER	02-Oct-19	13:10
MW-15A	1910120-4		WATER	02-Oct-19	13:45
Dup2	1910120-5		WATER	02-Oct-19	0:00
MW-5S	1910120-6		WATER	02-Oct-19	14:20

1910120

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Oklahoma** **COC ID:** **12301**

SUBCONTRACT TO:

ALS Environmental, Fort Collins
225 Commerce Drive
Fort Collins, CO 80524

Phone: +1 970 490 1511

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100183
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100183-01**	**MW-21**	**Water**	**02 Oct 2019 10:50**
	Report as combined 226 & 228			10 Oct 2019
	Report as combined 226 & 228			10 Oct 2019
2.	**HS19100183-02**	**MW-3**	**Water**	**02 Oct 2019 11:50**
	Report as combined 226 & 228			10 Oct 2019
	Report as combined 226 & 228			10 Oct 2019
3.	**HS19100183-03**	**MW-14A**	**Water**	**02 Oct 2019 13:10**
	Report as combined 226 & 228			10 Oct 2019
	Report as combined 226 & 228			10 Oct 2019
4.	**HS19100183-04**	**MW-15A**	**Water**	**02 Oct 2019 13:45**
	Report as combined 226 & 228			10 Oct 2019
	Report as combined 226 & 228			10 Oct 2019
5.	**HS19100183-05**	**Dup2**	**Water**	**02 Oct 2019 00:00**
	Report as combined 226 & 228			10 Oct 2019
	Report as combined 226 & 228			10 Oct 2019
6.	**HS19100183-06**	**MW-5S**	**Water**	**02 Oct 2019 14:20**
	Report as combined 226 & 228			10 Oct 2019
	Report as combined 226 & 228			10 Oct 2019

1910120

Subcontract Chain of Custody

SAMPLING STATE: **Oklahoma** **COC ID:** **12301**

LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
ANALYSIS REQUESTED			DUE DATE

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS19100183-02 - MS/MSD

QC Level: STD (Laboratory Standard QC: method blank and LCS required)

Relinquished By:	J. Mahan	Date/Time:	10/3/19 18:00
Received By:		Date/Time:	10/4/19 0910
Cooler ID(s):		Temperature(s):	

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Houston Workorder No: 1910120

Project Manager: JRK Initials: EE Date: 10/4/19

1.	Are airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
2.	Are custody seals on **shipping** containers intact?	NONE	YES	(NO) *
3.	Are custody seals on **sample** containers intact?	(NONE)	YES	NO *
4.	Is there a COC (chain-of-custody) present?		(YES)	NO *
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		(YES)	NO *
6.	Are short-hold samples present?		YES	(NO)
7.	Are all samples within holding times for the requested analyses?		(YES)	NO *
8.	Were all sample containers received intact? (not broken or leaking)		(YES)	NO *
9.	Is there sufficient sample for the requested analyses?		(YES)	NO *
10.	Are all samples in the proper containers for the requested analyses?		(YES)	NO *
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)	N/A	(YES)	NO *
12.	Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO *
13.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	(N/A)	YES	NO
14.	Were the samples shipped on ice?		YES	(NO)
15.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #1 #3 #4	PAD ONLY	YES	NO

Cooler #:	1	2
Temperature (°C):	AMB	AMB
No. of custody seals on cooler:	2	2
DOT Survey/ Acceptance Information — External µR/hr reading:	13	13
Background µR/hr reading:	13	

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (YES) / NO / NA (If no, see Form 008.)

*** Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.**

2) 1 custody seal on cooler 1 was broken on receipt; other seal intact

All client bottle ID's vs ALS lab ID's double-checked by: EE

If applicable, was the client contacted? YES / NO (N/A) Contact: _____ Date/Time: _____

Project Manager Signature / Date: _____ 10-7-19

Form 201r27.xls
(02/11/2019)

*IR Gun #1, VWR SN 170560549
*IR Gun #3, VWR SN 170647571
*IR Gun #4, Oakton, SN 2372220101-0002

Must Deliver Next Business Day
Time and Tempature Sensitive!

13-2
amb

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 030CT19
ACTWGT: 43.65 LB
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
REF: HS19100138/183 BF/RJ

RT 618 5
ST 5 15:00 A
2282
10.04

FedEx Express

1 of 2
TRK# 0201 1251 0290 2282
MASTER

FRI - 04 OCT 3:00P
STANDARD OVERNIGHT

AG FTCA

* 1 seal broken

80524
CO-US DEN

Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 030CT19
ACTWGT: 43.65 LB
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
REF: HS19100138/183 BF/RJ

13-2
amb

FedEx Express

2 of 2
MPS# 0263 1251 0290 2293
Mstr# 1251 0290 2282

FRI - 04 OCT 3:00P
STANDARD OVERNIGHT

0201

AG FTCA

80524
CO-US DEN

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100183	**Work Order:**	1910120
Sample ID:	MW-21	**Lab ID:**	1910120-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/2/2019 10:50	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **ASZ**
Ra-226	ND (+/- 0.29)	U	0.37	pCi/l	NA	10/31/2019 12:20
Carr: BARIUM	*92.9*		*40-110*	*%REC*	DL = NA	10/31/2019 12:20
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/15/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	**1.59 (+/- 0)**		**0.72**	**pCi/l**	NA	10/31/2019 08:05
Ra-228	**1.59 (+/- 0.54)**		**0.72**	**pCi/l**	NA	10/21/2019 08:05
Carr: BARIUM	*98.8*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100183	**Work Order:**	1910120
Sample ID:	MW-3	**Lab ID:**	1910120-2
Legal Location:		**Matrix:**	WATER
Collection Date:	10/2/2019 11:50	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**			Prep Date: **10/23/2019**	PrepBy: **ASZ**
Ra-226	ND (+/- 0.25)	Y1,U	0.36	pCi/l	NA	10/31/2019 12:20
Carr: BARIUM	*101*	Y1	*40-110*	*%REC*	DL = NA	10/31/2019 12:20
Radium-228 Analysis by GFPC		**SOP 724**			Prep Date: **10/15/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.79	pCi/l	NA	10/31/2019 08:05
Ra-228	ND (+/- 0.43)	U	0.79	pCi/l	NA	10/21/2019 08:05
Carr: BARIUM	*98.2*		*40-110*	*%REC*	DL = NA	10/21/2019 08:05

Client:	ALS Environmental		**Date:**	*31-Oct-19*
Project:	HS19100183		**Work Order:**	1910120
Sample ID:	MW-14A		**Lab ID:**	1910120-3
Legal Location:			**Matrix:**	WATER
Collection Date:	10/2/2019 13:10		**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **ASZ**
Ra-226	ND (+/- 0.27)	Y1,U	0.42	pCi/l	NA	10/31/2019 12:20
Carr: BARIUM	*103*	Y1	*40-110*	*%REC*	DL = NA	10/31/2019 12:20
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/18/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	**1.79 (+/- 0)**		**0.74**	**pCi/l**	NA	10/31/2019 08:45
Ra-228	**1.79 (+/- 0.59)**		**0.74**	**pCi/l**	NA	10/25/2019 08:45
Carr: BARIUM	*97.4*		*40-110*	*%REC*	DL = NA	10/25/2019 08:45

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100183	**Work Order:**	1910120
Sample ID:	MW-15A	**Lab ID:**	1910120-4
Legal Location:		**Matrix:**	WATER
Collection Date:	10/2/2019 13:45	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1			**SOP 783**		Prep Date: **10/23/2019**	PrepBy: **ASZ**
Ra-226	**0.3 (+/- 0.24)**		**0.3**	**pCi/l**	NA	10/31/2019 12:20
Carr: BARIUM	*94.5*		*40-110*	*%REC*	DL = NA	10/31/2019 12:20
Radium-228 Analysis by GFPC			**SOP 724**		Prep Date: **10/18/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	**2.03 (+/- 0)**		**0.72**	**pCi/l**	NA	10/31/2019 08:45
Ra-228	**1.73 (+/- 0.57)**		**0.72**	**pCi/l**	NA	10/25/2019 08:45
Carr: BARIUM	*100*		*40-110*	*%REC*	DL = NA	10/25/2019 08:45

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100183	**Work Order:**	1910120
Sample ID:	Dup2	**Lab ID:**	1910120-5
Legal Location:		**Matrix:**	WATER
Collection Date:	10/2/2019 00:00	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**			Prep Date: **10/23/2019**	PrepBy: **ASZ**
Ra-226	ND (+/- 0.35)	U	0.49	pCi/l	NA	10/31/2019 12:20
Carr: BARIUM	*97.9*		*40-110*	*%REC*	DL = NA	10/31/2019 12:20
Radium-228 Analysis by GFPC		**SOP 724**			Prep Date: **10/18/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	**2.57 (+/- 0)**		**0.7**	**pCi/l**	NA	10/31/2019 08:45
Ra-228	**2.57 (+/- 0.74)**		**0.7**	**pCi/l**	NA	10/25/2019 08:45
Carr: BARIUM	*98.3*		*40-110*	*%REC*	DL = NA	10/25/2019 08:45

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100183	**Work Order:**	1910120
Sample ID:	MW-5S	**Lab ID:**	1910120-6
Legal Location:		**Matrix:**	WATER
Collection Date:	10/2/2019 14:20	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**			Prep Date: **10/23/2019**	PrepBy: **ASZ**
Ra-226	ND (+/- 0.22)	Y1,U	0.34	pCi/l	NA	10/31/2019 12:20
Carr: BARIUM	*109*	Y1	*40-110*	*%REC*	DL = NA	10/31/2019 12:20
Radium-228 Analysis by GFPC		**SOP 724**			Prep Date: **10/18/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	**1.44 (+/- 0)**		**0.73**	**pCi/l**	NA	10/31/2019 08:45
Ra-228	**1.44 (+/- 0.52)**		**0.73**	**pCi/l**	NA	10/25/2019 08:45
Carr: BARIUM	*97*		*40-110*	*%REC*	DL = NA	10/25/2019 08:45

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100183	**Work Order:**	1910120
Sample ID:	MW-5S	**Lab ID:**	1910120-6
Legal Location:		**Matrix:**	WATER
Collection Date:	10/2/2019 14:20	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC
U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.
G - A pattern resembling gasoline was detected in this sample.
D - A pattern resembling diesel was detected in this sample.
M - A pattern resembling motor oil was detected in this sample.
C - A pattern resembling crude oil was detected in this sample.
4 - A pattern resembling JP-4 was detected in this sample.
5 - A pattern resembling JP-5 was detected in this sample.
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

Batch ID: **RE191023-10-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

DUP Sample ID: **1910120-2** Units: **pCi/l** Analysis Date: **10/31/2019 12:20**
Client ID: **MW-3** Run ID: **RE191023-10A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	0.42 (+/- 0.28)	0.34						0.25	0.4	2.1	Y1
Carr: BARIUM	18730		18240		103	40-110		18390			Y1

LCS Sample ID: **RE191023-10** Units: **pCi/l** Analysis Date: **10/31/2019 12:54**
Client ID: Run ID: **RE191023-10A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	49 (+/- 12)	0	46.47		105	67-120					P,Y1
Carr: BARIUM	18970		18230		104	40-110					Y1

MB Sample ID: **RE191023-10** Units: **pCi/l** Analysis Date: **10/31/2019 12:54**
Client ID: Run ID: **RE191023-10A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.33									Y1,U
Carr: BARIUM	19050		18220		105	40-110					Y1

The following samples were analyzed in this batch:

1910120-1	1910120-2	1910120-3
1910120-4	1910120-5	1910120-6

QC BATCH REPORT

Batch ID: **RA191015-1-1** Instrument ID **GASPROP** Method: **Radium-228 Analysis by GFPC**

DUP Sample ID: **1910120-2** Units: **ug** Analysis Date: **10/21/2019 08:05**
Client ID: **MW-3** Run ID: **RA191015-1A** Prep Date: **10/15/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	36870		37680		97.8	40-110		36980			
Ra-228	ND	0.75						0.74	0.5	2.1	U

LCS Sample ID: **RA191015-1** Units: **ug** Analysis Date: **10/21/2019 08:05**
Client ID: Run ID: **RA191015-1A** Prep Date: **10/15/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	36910		37670		98	40-110					
Ra-228	15 (+/- 3.5)	0.7	13.69		110	70-130					P

MB Sample ID: **RA191015-1** Units: **ug** Analysis Date: **10/21/2019 08:05**
Client ID: Run ID: **RA191015-1A** Prep Date: **10/15/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	37520		37670		99.6	40-110					
Ra-228	ND	0.75									U

The following samples were analyzed in this batch: 1910120-1 1910120-2

Client: ALS Environmental
Work Order: 1910120
Project: HS19100183

QC BATCH REPORT

Batch ID: **RA191018-2-1** Instrument ID **GASPROP** Method: **Radium-228 Analysis by GFPC**

LCS Sample ID: **RA191018-2** Units: **ug** Analysis Date: **10/25/2019 08:45**
Client ID: Run ID: **RA191018-2A** Prep Date: **10/18/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	38340		38270		100	40-110					Y1
Ra-228	14.9 (+/- 3.5)	0.7	13.67		109	70-130					P,Y1

LCSD Sample ID: **RA191018-2** Units: **ug** Analysis Date: **10/25/2019 08:45**
Client ID: Run ID: **RA191018-2A** Prep Date: **10/18/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	37560		38280		98.1	40-110		38340			
Ra-228	16.3 (+/- 3.8)	0.7	13.67		119	70-130		14.9	0.3	2.1	P

MB Sample ID: **RA191018-2** Units: **ug** Analysis Date: **10/25/2019 08:45**
Client ID: Run ID: **RA191018-2A** Prep Date: **10/18/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	37800		38270		98.8	40-110					
Ra-228	ND	0.74									U

The following samples were analyzed in this batch: 1910120-3 1910120-4 1910120-5 1910120-6

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 31, 2019

Bert Smith
Altamira
7060 S. Yale Avenue, Suite 603
Tulsa, OK 74136

Work Order: **HS19100276**

Laboratory Results for: **WFEC CCR Rule Site**

Dear Bert,

ALS Environmental received 7 sample(s) on Oct 04, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

Client: Altamira
Project: WFEC CCR Rule Site
Work Order: HS19100276

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100276-01	MW-17	Water		03-Oct-2019 10:15	04-Oct-2019 08:30	☐
HS19100276-02	MW-16	Water		03-Oct-2019 11:00	04-Oct-2019 08:30	☐
HS19100276-03	MW-13	Water		03-Oct-2019 11:40	04-Oct-2019 08:30	☐
HS19100276-04	MW-23A	Water		03-Oct-2019 10:15	04-Oct-2019 08:30	☐
HS19100276-05	MW-24	Water		03-Oct-2019 11:20	04-Oct-2019 08:30	☐
HS19100276-06	MW-8	Water		03-Oct-2019 12:02	04-Oct-2019 08:30	☐
HS19100276-07	MW-9	Water		03-Oct-2019 12:47	04-Oct-2019 08:30	☐

Client: Altamira **CASE NARRATIVE**
Project: WFEC CCR Rule Site
Work Order: HS19100276

Work Order Comments

- Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

  The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

- The analyses for Radium-226 and Radium-228 were subcontracted to ALS Environmental in Fort Collins, CO. Final report attached.

Metals by Method SW6020

Batch ID: 146118

Sample ID: MW-17 (HS19100276-01MS)

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Calcium

Metals by Method SW7470

Batch ID: 146096

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M2540C

Batch ID: R348150

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500H+ B

Batch ID: R347858

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R347737

Sample ID: MW-16 (HS19100276-02MS/MSD)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Sulfate)

WetChemistry by Method E410.4

Batch ID: R347691

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-17
Collection Date: 03-Oct-2019 10:15

ANALYTICAL REPORT
WorkOrder:HS19100276
Lab ID:HS19100276-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 08-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:24
Arsenic	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:24
Barium	U		0.00190	0.00400	mg/L	1	10-Oct-2019 00:24
Beryllium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:24
Boron	**0.622**		**0.0110**	**0.0200**	**mg/L**	1	10-Oct-2019 00:24
Cadmium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:24
Calcium	**555**		**0.680**	**10.0**	**mg/L**	20	10-Oct-2019 12:04
Chromium	U		0.000400	0.00400	mg/L	1	10-Oct-2019 00:24
Cobalt	U		0.000200	0.00500	mg/L	1	10-Oct-2019 00:24
Lead	U		0.000600	0.00200	mg/L	1	10-Oct-2019 00:24
Lithium	**0.138**		**0.00100**	**0.00500**	**mg/L**	1	10-Oct-2019 00:24
Molybdenum	U		0.000600	0.00500	mg/L	1	10-Oct-2019 00:24
Selenium	U		0.00110	0.00200	mg/L	1	10-Oct-2019 00:24
Thallium	**0.000539**	J	**0.000200**	**0.00200**	**mg/L**	1	10-Oct-2019 00:24
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:29
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**3.75**		**0.200**	**0.500**	**mg/L**	1	04-Oct-2019 20:12
Fluoride	**0.370**		**0.0500**	**0.100**	**mg/L**	1	04-Oct-2019 20:12
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	04-Oct-2019 20:12
Sulfate	**1,310**		**4.00**	**10.0**	**mg/L**	20	04-Oct-2019 20:29
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,160**		**5.00**	**10.0**	**mg/L**	1	10-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.37**	H	**0.100**	**0.100**	**pH Units**	1	08-Oct-2019 14:00
Temp Deg C @pH	**23.0**	H	**0**	**0**	**°C**	1	08-Oct-2019 14:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-16
Collection Date: 03-Oct-2019 11:00

ANALYTICAL REPORT
WorkOrder:HS19100276
Lab ID:HS19100276-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 08-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:40
Arsenic	**0.000465**	J	**0.000400**	**0.00200**	**mg/L**	1	10-Oct-2019 00:40
Barium	**0.0133**		**0.00190**	**0.00400**	**mg/L**	1	10-Oct-2019 00:40
Beryllium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:40
Boron	**1.53**		**0.110**	**0.200**	**mg/L**	10	10-Oct-2019 12:11
Cadmium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:40
Calcium	**149**		**0.0340**	**0.500**	**mg/L**	1	10-Oct-2019 00:40
Chromium	U		0.000400	0.00400	mg/L	1	10-Oct-2019 00:40
Cobalt	**0.000375**	J	**0.000200**	**0.00500**	**mg/L**	1	10-Oct-2019 00:40
Lead	U		0.000600	0.00200	mg/L	1	10-Oct-2019 00:40
Lithium	**0.0424**		**0.00100**	**0.00500**	**mg/L**	1	10-Oct-2019 00:40
Molybdenum	**0.149**		**0.000600**	**0.00500**	**mg/L**	1	10-Oct-2019 00:40
Selenium	U		0.00110	0.00200	mg/L	1	10-Oct-2019 00:40
Thallium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:40
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:16
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**23.8**		**0.200**	**0.500**	**mg/L**	1	04-Oct-2019 21:52
Fluoride	**1.07**		**0.0500**	**0.100**	**mg/L**	1	04-Oct-2019 21:52
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	04-Oct-2019 21:52
Sulfate	**1,020**		**4.00**	**10.0**	**mg/L**	20	04-Oct-2019 22:42
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,810**		**5.00**	**10.0**	**mg/L**	1	10-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**7.01**	H	**0.100**	**0.100**	**pH Units**	1	08-Oct-2019 14:00
Temp Deg C @pH	**22.0**	H	**0**	**0**	**°C**	1	08-Oct-2019 14:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-13
Collection Date: 03-Oct-2019 11:40

ANALYTICAL REPORT
WorkOrder:HS19100276
Lab ID:HS19100276-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 08-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:42
Arsenic	**0.000401**	J	**0.000400**	**0.00200**	**mg/L**	1	10-Oct-2019 00:42
Barium	**0.0114**		**0.00190**	**0.00400**	**mg/L**	1	10-Oct-2019 00:42
Beryllium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:42
Boron	**2.01**		**0.110**	**0.200**	**mg/L**	10	10-Oct-2019 12:13
Cadmium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:42
Calcium	**182**		**0.340**	**5.00**	**mg/L**	10	10-Oct-2019 12:13
Chromium	U		0.000400	0.00400	mg/L	1	10-Oct-2019 00:42
Cobalt	U		0.000200	0.00500	mg/L	1	10-Oct-2019 00:42
Lead	U		0.000600	0.00200	mg/L	1	10-Oct-2019 00:42
Lithium	**0.139**		**0.00100**	**0.00500**	**mg/L**	1	10-Oct-2019 00:42
Molybdenum	**0.00210**	J	**0.000600**	**0.00500**	**mg/L**	1	10-Oct-2019 00:42
Selenium	U		0.00110	0.00200	mg/L	1	10-Oct-2019 00:42
Thallium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:42
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:31
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**17.3**		**0.200**	**0.500**	**mg/L**	1	04-Oct-2019 20:46
Fluoride	**0.422**		**0.0500**	**0.100**	**mg/L**	1	04-Oct-2019 20:46
Nitrogen, Nitrate (As N)	**0.191**		**0.0300**	**0.100**	**mg/L**	1	04-Oct-2019 20:46
Sulfate	**1,380**		**4.00**	**10.0**	**mg/L**	20	04-Oct-2019 21:02
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**6.00**	J	**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,350**		**5.00**	**10.0**	**mg/L**	1	10-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.75**	H	**0.100**	**0.100**	**pH Units**	1	08-Oct-2019 14:00
Temp Deg C @pH	**22.0**	H	**0**	**0**	**°C**	1	08-Oct-2019 14:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-23A
Collection Date: 03-Oct-2019 10:15

ANALYTICAL REPORT
WorkOrder:HS19100276
Lab ID:HS19100276-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 08-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:44
Arsenic	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:44
Barium	**0.00298**	J	**0.00190**	**0.00400**	**mg/L**	1	10-Oct-2019 00:44
Beryllium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:44
Boron	**1.01**		**0.110**	**0.200**	**mg/L**	10	10-Oct-2019 12:16
Cadmium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:44
Calcium	**521**		**0.340**	**5.00**	**mg/L**	10	10-Oct-2019 12:16
Chromium	**0.000700**	J	**0.000400**	**0.00400**	**mg/L**	1	10-Oct-2019 00:44
Cobalt	U		0.000200	0.00500	mg/L	1	10-Oct-2019 00:44
Lead	U		0.000600	0.00200	mg/L	1	10-Oct-2019 00:44
Lithium	**0.206**		**0.0100**	**0.0500**	**mg/L**	10	10-Oct-2019 12:16
Molybdenum	U		0.000600	0.00500	mg/L	1	10-Oct-2019 00:44
Selenium	U		0.00110	0.00200	mg/L	1	10-Oct-2019 00:44
Thallium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:44
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:36
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**12.6**		**0.200**	**0.500**	**mg/L**	1	05-Oct-2019 00:05
Fluoride	**0.402**		**0.0500**	**0.100**	**mg/L**	1	05-Oct-2019 00:05
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	05-Oct-2019 00:05
Sulfate	**1,790**		**4.00**	**10.0**	**mg/L**	20	05-Oct-2019 00:22
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	U		5.00	15.0	mg/L	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,990**		**5.00**	**10.0**	**mg/L**	1	10-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.79**	H	**0.100**	**0.100**	**pH Units**	1	08-Oct-2019 14:00
Temp Deg C @pH	**22.1**	H	**0**	**0**	**°C**	1	08-Oct-2019 14:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-24
Collection Date: 03-Oct-2019 11:20

ANALYTICAL REPORT
WorkOrder:HS19100276
Lab ID:HS19100276-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 08-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:46
Arsenic	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:46
Barium	**0.00878**		**0.00190**	**0.00400**	**mg/L**	1	10-Oct-2019 00:46
Beryllium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:46
Boron	**0.987**		**0.110**	**0.200**	**mg/L**	10	10-Oct-2019 12:18
Cadmium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:46
Calcium	**532**		**0.340**	**5.00**	**mg/L**	10	10-Oct-2019 12:18
Chromium	U		0.000400	0.00400	mg/L	1	10-Oct-2019 00:46
Cobalt	**0.000794**	J	**0.000200**	**0.00500**	**mg/L**	1	10-Oct-2019 00:46
Lead	U		0.000600	0.00200	mg/L	1	10-Oct-2019 00:46
Lithium	**0.277**		**0.0100**	**0.0500**	**mg/L**	10	10-Oct-2019 12:18
Molybdenum	U		0.000600	0.00500	mg/L	1	10-Oct-2019 00:46
Selenium	U		0.00110	0.00200	mg/L	1	10-Oct-2019 00:46
Thallium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:46
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:38
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**14.8**		**0.200**	**0.500**	**mg/L**	1	05-Oct-2019 01:11
Fluoride	**0.169**		**0.0500**	**0.100**	**mg/L**	1	05-Oct-2019 01:11
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	05-Oct-2019 01:11
Sulfate	**1,880**		**4.00**	**10.0**	**mg/L**	20	05-Oct-2019 01:28
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**6.00**	J	**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**3,080**		**5.00**	**10.0**	**mg/L**	1	10-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.77**	H	**0.100**	**0.100**	**pH Units**	1	08-Oct-2019 14:00
Temp Deg C @pH	**21.4**	H	**0**	**0**	**°C**	1	08-Oct-2019 14:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-8
Collection Date: 03-Oct-2019 12:02

ANALYTICAL REPORT
WorkOrder:HS19100276
Lab ID:HS19100276-06
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 08-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:49
Arsenic	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:49
Barium	**0.00401**		**0.00190**	**0.00400**	**mg/L**	1	10-Oct-2019 00:49
Beryllium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:49
Boron	**0.876**		**0.0110**	**0.0200**	**mg/L**	1	10-Oct-2019 00:49
Cadmium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:49
Calcium	**481**		**0.340**	**5.00**	**mg/L**	10	10-Oct-2019 12:20
Chromium	U		0.000400	0.00400	mg/L	1	10-Oct-2019 00:49
Cobalt	**0.00141**	J	**0.000200**	**0.00500**	**mg/L**	1	10-Oct-2019 00:49
Lead	U		0.000600	0.00200	mg/L	1	10-Oct-2019 00:49
Lithium	**0.217**		**0.0100**	**0.0500**	**mg/L**	10	10-Oct-2019 12:20
Molybdenum	U		0.000600	0.00500	mg/L	1	10-Oct-2019 00:49
Selenium	U		0.00110	0.00200	mg/L	1	10-Oct-2019 00:49
Thallium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:49
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:40
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**3.87**		**0.200**	**0.500**	**mg/L**	1	05-Oct-2019 01:45
Fluoride	**0.300**		**0.0500**	**0.100**	**mg/L**	1	05-Oct-2019 01:45
Nitrogen, Nitrate (As N)	**0.243**		**0.0300**	**0.100**	**mg/L**	1	05-Oct-2019 01:45
Sulfate	**1,350**		**4.00**	**10.0**	**mg/L**	20	05-Oct-2019 02:01
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**6.00**	J	**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,240**		**5.00**	**10.0**	**mg/L**	1	10-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.74**	H	**0.100**	**0.100**	**pH Units**	1	08-Oct-2019 14:00
Temp Deg C @pH	**21.8**	H	**0**	**0**	**°C**	1	08-Oct-2019 14:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: WFEC CCR Rule Site
Sample ID: MW-9
Collection Date: 03-Oct-2019 12:47

ANALYTICAL REPORT
WorkOrder:HS19100276
Lab ID:HS19100276-07
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 08-Oct-2019		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	10-Oct-2019 00:51
Arsenic	**0.000780**	J	**0.000400**	**0.00200**	**mg/L**	1	10-Oct-2019 00:51
Barium	**0.0327**		**0.00190**	**0.00400**	**mg/L**	1	10-Oct-2019 00:51
Beryllium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:51
Boron	**0.0655**		**0.0110**	**0.0200**	**mg/L**	1	10-Oct-2019 00:51
Cadmium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:51
Calcium	**36.8**		**0.0340**	**0.500**	**mg/L**	1	10-Oct-2019 00:51
Chromium	U		0.000400	0.00400	mg/L	1	10-Oct-2019 00:51
Cobalt	**0.000210**	J	**0.000200**	**0.00500**	**mg/L**	1	10-Oct-2019 00:51
Lead	U		0.000600	0.00200	mg/L	1	10-Oct-2019 00:51
Lithium	**0.00118**	J	**0.00100**	**0.00500**	**mg/L**	1	10-Oct-2019 00:51
Molybdenum	U		0.000600	0.00500	mg/L	1	10-Oct-2019 00:51
Selenium	U		0.00110	0.00200	mg/L	1	10-Oct-2019 00:51
Thallium	U		0.000200	0.00200	mg/L	1	10-Oct-2019 00:51
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 07-Oct-2019		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	07-Oct-2019 20:41
ANIONS BY E300.0		**Method:E300**					Analyst: KMU
Chloride	**1.35**		**0.200**	**0.500**	**mg/L**	1	05-Oct-2019 02:18
Fluoride	**0.161**		**0.0500**	**0.100**	**mg/L**	1	05-Oct-2019 02:18
Nitrogen, Nitrate (As N)	**0.0302**	J	**0.0300**	**0.100**	**mg/L**	1	05-Oct-2019 02:18
Sulfate	**10.5**		**0.200**	**0.500**	**mg/L**	1	05-Oct-2019 02:18
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**					Analyst: TH
Chemical Oxygen Demand	**6.00**	J	**5.00**	**15.0**	**mg/L**	1	05-Oct-2019 16:15
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**182**		**5.00**	**10.0**	**mg/L**	1	10-Oct-2019 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: MWG
pH	**6.44**	H	**0.100**	**0.100**	**pH Units**	1	08-Oct-2019 14:00
Temp Deg C @pH	**22.0**	H	**0**	**0**	**°C**	1	08-Oct-2019 14:00
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUBFC
Subcontract Analysis	See Attached		0		NA	1	31-Oct-2019 17:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

Batch ID: 146096 **Start Date:** 07 Oct 2019 11:00 **End Date:** 07 Oct 2019 13:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100276-01		10 (mL)	10 (mL)	1
HS19100276-02		10 (mL)	10 (mL)	1
HS19100276-03		10 (mL)	10 (mL)	1
HS19100276-04		10 (mL)	10 (mL)	1
HS19100276-05		10 (mL)	10 (mL)	1
HS19100276-06		10 (mL)	10 (mL)	1
HS19100276-07		10 (mL)	10 (mL)	1

Batch ID: 146118 **Start Date:** 08 Oct 2019 08:30 **End Date:** 08 Oct 2019 12:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100276-01		10 (mL)	10 (mL)	1
HS19100276-02		10 (mL)	10 (mL)	1
HS19100276-03		10 (mL)	10 (mL)	1
HS19100276-04		10 (mL)	10 (mL)	1
HS19100276-05		10 (mL)	10 (mL)	1
HS19100276-06		10 (mL)	10 (mL)	1
HS19100276-07		10 (mL)	10 (mL)	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 146096 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS19100276-01	MW-17	03 Oct 2019 10:15		07 Oct 2019 11:00	07 Oct 2019 20:29	1
HS19100276-02	MW-16	03 Oct 2019 11:00		07 Oct 2019 11:00	07 Oct 2019 20:16	1
HS19100276-03	MW-13	03 Oct 2019 11:40		07 Oct 2019 11:00	07 Oct 2019 20:31	1
HS19100276-04	MW-23A	03 Oct 2019 10:15		07 Oct 2019 11:00	07 Oct 2019 20:36	1
HS19100276-05	MW-24	03 Oct 2019 11:20		07 Oct 2019 11:00	07 Oct 2019 20:38	1
HS19100276-06	MW-8	03 Oct 2019 12:02		07 Oct 2019 11:00	07 Oct 2019 20:40	1
HS19100276-07	MW-9	03 Oct 2019 12:47		07 Oct 2019 11:00	07 Oct 2019 20:41	1
Batch ID: 146118 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19100276-01	MW-17	03 Oct 2019 10:15		08 Oct 2019 08:30	10 Oct 2019 12:04	20
HS19100276-01	MW-17	03 Oct 2019 10:15		08 Oct 2019 08:30	10 Oct 2019 00:24	1
HS19100276-02	MW-16	03 Oct 2019 11:00		08 Oct 2019 08:30	10 Oct 2019 12:11	10
HS19100276-02	MW-16	03 Oct 2019 11:00		08 Oct 2019 08:30	10 Oct 2019 00:40	1
HS19100276-03	MW-13	03 Oct 2019 11:40		08 Oct 2019 08:30	10 Oct 2019 12:13	10
HS19100276-03	MW-13	03 Oct 2019 11:40		08 Oct 2019 08:30	10 Oct 2019 00:42	1
HS19100276-04	MW-23A	03 Oct 2019 10:15		08 Oct 2019 08:30	10 Oct 2019 12:16	10
HS19100276-04	MW-23A	03 Oct 2019 10:15		08 Oct 2019 08:30	10 Oct 2019 00:44	1
HS19100276-05	MW-24	03 Oct 2019 11:20		08 Oct 2019 08:30	10 Oct 2019 12:18	10
HS19100276-05	MW-24	03 Oct 2019 11:20		08 Oct 2019 08:30	10 Oct 2019 00:46	1
HS19100276-06	MW-8	03 Oct 2019 12:02		08 Oct 2019 08:30	10 Oct 2019 12:20	10
HS19100276-06	MW-8	03 Oct 2019 12:02		08 Oct 2019 08:30	10 Oct 2019 00:49	1
HS19100276-07	MW-9	03 Oct 2019 12:47		08 Oct 2019 08:30	10 Oct 2019 00:51	1
Batch ID: R347691 (0)	**Test Name :** CHEMICAL OXYGEN DEMAND BY E410.4				**Matrix:** Water	
HS19100276-01	MW-17	03 Oct 2019 10:15			05 Oct 2019 16:15	1
HS19100276-02	MW-16	03 Oct 2019 11:00			05 Oct 2019 16:15	1
HS19100276-03	MW-13	03 Oct 2019 11:40			05 Oct 2019 16:15	1
HS19100276-04	MW-23A	03 Oct 2019 10:15			05 Oct 2019 16:15	1
HS19100276-05	MW-24	03 Oct 2019 11:20			05 Oct 2019 16:15	1
HS19100276-06	MW-8	03 Oct 2019 12:02			05 Oct 2019 16:15	1
HS19100276-07	MW-9	03 Oct 2019 12:47			05 Oct 2019 16:15	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R347737 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS19100276-01	MW-17	03 Oct 2019 10:15			04 Oct 2019 20:29	20
HS19100276-01	MW-17	03 Oct 2019 10:15			04 Oct 2019 20:12	1
HS19100276-02	MW-16	03 Oct 2019 11:00			04 Oct 2019 22:42	20
HS19100276-02	MW-16	03 Oct 2019 11:00			04 Oct 2019 21:52	1
HS19100276-03	MW-13	03 Oct 2019 11:40			04 Oct 2019 21:02	20
HS19100276-03	MW-13	03 Oct 2019 11:40			04 Oct 2019 20:46	1
HS19100276-04	MW-23A	03 Oct 2019 10:15			05 Oct 2019 00:22	20
HS19100276-04	MW-23A	03 Oct 2019 10:15			05 Oct 2019 00:05	1
HS19100276-05	MW-24	03 Oct 2019 11:20			05 Oct 2019 01:28	20
HS19100276-05	MW-24	03 Oct 2019 11:20			05 Oct 2019 01:11	1
HS19100276-06	MW-8	03 Oct 2019 12:02			05 Oct 2019 02:01	20
HS19100276-06	MW-8	03 Oct 2019 12:02			05 Oct 2019 01:45	1
HS19100276-07	MW-9	03 Oct 2019 12:47			05 Oct 2019 02:18	1
Batch ID: R347858 (0)	**Test Name :** PH BY SM4500H+ B				**Matrix:** Water	
HS19100276-01	MW-17	03 Oct 2019 10:15			08 Oct 2019 14:00	1
HS19100276-02	MW-16	03 Oct 2019 11:00			08 Oct 2019 14:00	1
HS19100276-03	MW-13	03 Oct 2019 11:40			08 Oct 2019 14:00	1
HS19100276-04	MW-23A	03 Oct 2019 10:15			08 Oct 2019 14:00	1
HS19100276-05	MW-24	03 Oct 2019 11:20			08 Oct 2019 14:00	1
HS19100276-06	MW-8	03 Oct 2019 12:02			08 Oct 2019 14:00	1
HS19100276-07	MW-9	03 Oct 2019 12:47			08 Oct 2019 14:00	1
Batch ID: R348150 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS19100276-01	MW-17	03 Oct 2019 10:15			10 Oct 2019 16:30	1
HS19100276-02	MW-16	03 Oct 2019 11:00			10 Oct 2019 16:30	1
HS19100276-03	MW-13	03 Oct 2019 11:40			10 Oct 2019 16:30	1
HS19100276-04	MW-23A	03 Oct 2019 10:15			10 Oct 2019 16:30	1
HS19100276-05	MW-24	03 Oct 2019 11:20			10 Oct 2019 16:30	1
HS19100276-06	MW-8	03 Oct 2019 12:02			10 Oct 2019 16:30	1
HS19100276-07	MW-9	03 Oct 2019 12:47			10 Oct 2019 16:30	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R349572 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RADIUM 228				**Matrix:** Water	
HS19100276-01	MW-17	03 Oct 2019 10:15			31 Oct 2019 17:51	1
HS19100276-01	MW-17	03 Oct 2019 10:15			31 Oct 2019 17:51	1
HS19100276-02	MW-16	03 Oct 2019 11:00			31 Oct 2019 17:51	1
HS19100276-02	MW-16	03 Oct 2019 11:00			31 Oct 2019 17:51	1
HS19100276-03	MW-13	03 Oct 2019 11:40			31 Oct 2019 17:51	1
HS19100276-03	MW-13	03 Oct 2019 11:40			31 Oct 2019 17:51	1
HS19100276-04	MW-23A	03 Oct 2019 10:15			31 Oct 2019 17:51	1
HS19100276-04	MW-23A	03 Oct 2019 10:15			31 Oct 2019 17:51	1
HS19100276-05	MW-24	03 Oct 2019 11:20			31 Oct 2019 17:51	1
HS19100276-05	MW-24	03 Oct 2019 11:20			31 Oct 2019 17:51	1
HS19100276-06	MW-8	03 Oct 2019 12:02			31 Oct 2019 17:51	1
HS19100276-06	MW-8	03 Oct 2019 12:02			31 Oct 2019 17:51	1
HS19100276-07	MW-9	03 Oct 2019 12:47			31 Oct 2019 17:51	1
HS19100276-07	MW-9	03 Oct 2019 12:47			31 Oct 2019 17:51	1

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: 146096 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-146096** Units: **mg/L** Analysis Date: **07-Oct-2019 20:00**
Client ID: Run ID: **HG03_347748** SeqNo: **5285651** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-146096** Units: **mg/L** Analysis Date: **07-Oct-2019 20:02**
Client ID: Run ID: **HG03_347748** SeqNo: **5285652** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00519	0.000200	0.005	0	104	80 - 120				

MS Sample ID: **HS19100276-02MS** Units: **mg/L** Analysis Date: **07-Oct-2019 20:17**
Client ID: **MW-16** Run ID: **HG03_347748** SeqNo: **5285661** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00513	0.000200	0.005	0.000003	103	75 - 125				

MS Sample ID: **HS19100183-02MS** Units: **mg/L** Analysis Date: **07-Oct-2019 20:06**
Client ID: Run ID: **HG03_347748** SeqNo: **5285654** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00517	0.000200	0.005	-0.00001	104	75 - 125				

MSD Sample ID: **HS19100276-02MSD** Units: **mg/L** Analysis Date: **07-Oct-2019 20:19**
Client ID: **MW-16** Run ID: **HG03_347748** SeqNo: **5285662** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00517	0.000200	0.005	0.000003	103	75 - 125	0.00513	0.777	20	

MSD Sample ID: **HS19100183-02MSD** Units: **mg/L** Analysis Date: **07-Oct-2019 20:07**
Client ID: Run ID: **HG03_347748** SeqNo: **5285655** PrepDate: **07-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00512	0.000200	0.005	-0.00001	103	75 - 125	0.00517	0.972	20	

The following samples were analyzed in this batch:

HS19100276-01	HS19100276-02	HS19100276-03	HS19100276-04
HS19100276-05	HS19100276-06	HS19100276-07	

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: 146118 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-146118** Units: **mg/L** Analysis Date: **10-Oct-2019 00:19**
Client ID: Run ID: **ICPMS04_347996** SeqNo: **5289854** PrepDate: **08-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.00200								
Arsenic	U	0.00200								
Barium	U	0.00400								
Beryllium	U	0.00200								
Boron	U	0.0200								
Cadmium	U	0.00200								
Calcium	0.06198	0.500								J
Chromium	U	0.00400								
Cobalt	U	0.00500								
Lead	U	0.00200								
Lithium	U	0.00500								
Molybdenum	U	0.00500								
Selenium	U	0.00200								
Thallium	U	0.00200								

LCS Sample ID: **LCS-146118** Units: **mg/L** Analysis Date: **10-Oct-2019 00:22**
Client ID: Run ID: **ICPMS04_347996** SeqNo: **5289855** PrepDate: **08-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04472	0.00200	0.05	0	89.4	80 - 120				
Arsenic	0.04672	0.00200	0.05	0	93.4	80 - 120				
Barium	0.04435	0.00400	0.05	0	88.7	80 - 120				
Beryllium	0.04555	0.00200	0.05	0	91.1	80 - 120				
Boron	0.4295	0.0200	0.5	0	85.9	80 - 120				
Cadmium	0.04667	0.00200	0.05	0	93.3	80 - 120				
Calcium	4.718	0.500	5	0	94.4	80 - 120				
Chromium	0.04517	0.00400	0.05	0	90.3	80 - 120				
Cobalt	0.04594	0.00500	0.05	0	91.9	80 - 120				
Lead	0.04579	0.00200	0.05	0	91.6	80 - 120				
Lithium	0.08866	0.00500	0.1	0	88.7	80 - 120				
Molybdenum	0.04511	0.00500	0.05	0	90.2	80 - 120				
Selenium	0.04782	0.00200	0.05	0	95.6	80 - 120				
Thallium	0.04418	0.00200	0.05	0	88.4	80 - 120				

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: 146118 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS19100276-01MS** Units: **mg/L** Analysis Date: **10-Oct-2019 00:29**
Client ID: **MW-17** Run ID: **ICPMS04_347996** SeqNo: **5289858** PrepDate: **08-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04662	0.00200	0.05	0	93.2	80 - 120				
Arsenic	0.04862	0.00200	0.05	0	97.2	80 - 120				
Barium	0.04507	0.00400	0.05	0	90.1	80 - 120				
Beryllium	0.04979	0.00200	0.05	0	99.6	80 - 120				
Boron	1.068	0.0200	0.5	0.6216	89.2	80 - 120				E
Cadmium	0.04503	0.00200	0.05	0	90.1	80 - 120				
Calcium	479.6	0.500	5	509.9	-606	80 - 120				SEO
Chromium	0.04597	0.00400	0.05	0	91.9	80 - 120				
Cobalt	0.04669	0.00500	0.05	0	93.4	80 - 120				
Lead	0.0456	0.00200	0.05	0	91.2	80 - 120				
Lithium	0.2276	0.00500	0.1	0.1383	89.3	80 - 120				E
Molybdenum	0.04537	0.00500	0.05	0	90.7	80 - 120				
Selenium	0.04821	0.00200	0.05	0	96.4	80 - 120				
Thallium	0.04523	0.00200	0.05	0.000539	89.4	80 - 120				

MSD Sample ID: **HS19100276-01MSD** Units: **mg/L** Analysis Date: **10-Oct-2019 00:31**
Client ID: **MW-17** Run ID: **ICPMS04_347996** SeqNo: **5289859** PrepDate: **08-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.047	0.00200	0.05	0	94.0	80 - 120	0.04662	0.822	20	
Arsenic	0.04819	0.00200	0.05	0	96.4	80 - 120	0.04862	0.882	20	
Barium	0.04576	0.00400	0.05	0	91.5	80 - 120	0.04507	1.53	20	
Beryllium	0.04974	0.00200	0.05	0	99.5	80 - 120	0.04979	0.117	20	
Boron	1.057	0.0200	0.5	0.6216	87.2	80 - 120	1.068	0.95	20	E
Cadmium	0.04509	0.00200	0.05	0	90.2	80 - 120	0.04503	0.149	20	
Calcium	471.8	0.500	5	509.9	-761	80 - 120	479.6	1.63	20	SEO
Chromium	0.04617	0.00400	0.05	0	92.3	80 - 120	0.04597	0.434	20	
Cobalt	0.04638	0.00500	0.05	0	92.8	80 - 120	0.04669	0.662	20	
Lead	0.04577	0.00200	0.05	0	91.5	80 - 120	0.0456	0.361	20	
Lithium	0.2272	0.00500	0.1	0.1383	88.9	80 - 120	0.2276	0.189	20	E
Molybdenum	0.04592	0.00500	0.05	0	91.8	80 - 120	0.04537	1.22	20	
Selenium	0.04772	0.00200	0.05	0	95.4	80 - 120	0.04821	1.02	20	
Thallium	0.0455	0.00200	0.05	0.000539	89.9	80 - 120	0.04523	0.595	20	

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: 146118 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS19100276-01PDS** Units: **mg/L** Analysis Date: **10-Oct-2019 00:33**
Client ID: **MW-17** Run ID: **ICPMS04_347996** SeqNo: **5289860** PrepDate: **08-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.08189	0.00200	0.1	0	81.9	75 - 125				
Arsenic	0.09421	0.00200	0.1	0	94.2	75 - 125				
Barium	0.09287	0.00400	0.1	0	92.9	75 - 125				
Beryllium	0.098	0.00200	0.1	0	98.0	75 - 125				
Boron	0.884	0.0200	0.25	0.6216	105	75 - 125				
Cadmium	0.09067	0.00200	0.1	0	90.7	75 - 125				
Chromium	0.09136	0.00400	0.1	0	91.4	75 - 125				
Cobalt	0.09254	0.00500	0.1	0	92.5	75 - 125				
Lead	0.09325	0.00200	0.1	0	93.2	75 - 125				
Molybdenum	0.09351	0.00500	0.1	0	93.5	75 - 125				
Selenium	0.09339	0.00200	0.1	0	93.4	75 - 125				
Thallium	0.09323	0.00200	0.1	0.000539	92.7	75 - 125				

PDS Sample ID: **HS19100276-01PDS** Units: **mg/L** Analysis Date: **10-Oct-2019 12:09**
Client ID: **MW-17** Run ID: **ICPMS05_348029** SeqNo: **5291184** PrepDate: **08-Oct-2019** DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	728	10.0	200	555.2	86.4	75 - 125				

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: 146118 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS19100276-01SD** Units: **mg/L** Analysis Date: **10-Oct-2019 00:26**
Client ID: **MW-17** Run ID: **ICPMS04_347996** SeqNo: **5289857** PrepDate: **08-Oct-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	U	0.0100					0.000201	0	10	
Arsenic	U	0.0100					0.00007	0	10	
Barium	U	0.0200					0.000314	0	10	
Beryllium	U	0.0100					-0.000022	0	10	
Boron	0.6065	0.100					0.6216	2.43	10	
Cadmium	U	0.0100					0.000039	0	10	
Chromium	U	0.0200					0.000143	0	10	
Cobalt	U	0.0250					0.000173	0	10	
Lead	U	0.0100					0.00004	0	10	
Lithium	0.1308	0.0250					0.1383	5.42	10	
Molybdenum	U	0.0250					0.000479	0	10	
Selenium	U	0.0100					0.000165	0	10	
Thallium	U	0.0100					0.000539	0	10	

SD Sample ID: **HS19100276-01SD** Units: **mg/L** Analysis Date: **10-Oct-2019 12:07**
Client ID: **MW-17** Run ID: **ICPMS05_348029** SeqNo: **5291183** PrepDate: **08-Oct-2019** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	558.9	50.0					555.2	0.667	10	

The following samples were analyzed in this batch: HS19100276-01 HS19100276-02 HS19100276-03 HS19100276-04 HS19100276-05 HS19100276-06 HS19100276-07

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: R347691 (0) **Instrument: WetChem_HS** **Method: CHEMICAL OXYGEN DEMAND BY E410.4**

MBLK Sample ID: **MBLK-R347691** Units: **mg/L** Analysis Date: **05-Oct-2019 16:15**
Client ID: Run ID: **WetChem_HS_347691** SeqNo: **5283740** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	U	15.0								

LCS Sample ID: **LCS-R347691** Units: **mg/L** Analysis Date: **05-Oct-2019 16:15**
Client ID: Run ID: **WetChem_HS_347691** SeqNo: **5283739** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	96	15.0	100	0	96.0	85 - 115				

MS Sample ID: **HS19100276-02MS** Units: **mg/L** Analysis Date: **05-Oct-2019 16:15**
Client ID: **MW-16** Run ID: **WetChem_HS_347691** SeqNo: **5283742** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	52	15.0	50	4	96.0	80 - 120				

MSD Sample ID: **HS19100276-02MSD** Units: **mg/L** Analysis Date: **05-Oct-2019 16:15**
Client ID: **MW-16** Run ID: **WetChem_HS_347691** SeqNo: **5283741** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	53	15.0	50	4	98.0	80 - 120	52	1.9	20	

The following samples were analyzed in this batch:

HS19100276-01	HS19100276-02	HS19100276-03	HS19100276-04
HS19100276-05	HS19100276-06	HS19100276-07	

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: R347737 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0

MBLK Sample ID: **WBLKW1-100419** Units: **mg/L** Analysis Date: **04-Oct-2019 18:33**
Client ID: Run ID: **ICS-Integrion_347737** SeqNo: **5284654** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								
Sulfate	U	0.500								

LCS Sample ID: **WLCSW1-100419** Units: **mg/L** Analysis Date: **04-Oct-2019 18:49**
Client ID: Run ID: **ICS-Integrion_347737** SeqNo: **5284655** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.39	0.500	20	0	97.0	90 - 110				
Fluoride	4.047	0.100	4	0	101	90 - 110				
Nitrogen, Nitrate (As N)	3.912	0.100	4	0	97.8	90 - 110				
Sulfate	19.45	0.500	20	0	97.2	90 - 110				

LCSD Sample ID: **WLCSDW1-100419** Units: **mg/L** Analysis Date: **04-Oct-2019 19:06**
Client ID: Run ID: **ICS-Integrion_347737** SeqNo: **5284656** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.47	0.500	20	0	97.4	90 - 110	19.39	0.401	20	
Fluoride	4.051	0.100	4	0	101	90 - 110	4.047	0.079	20	
Nitrogen, Nitrate (As N)	3.926	0.100	4	0	98.2	90 - 110	3.912	0.35	20	
Sulfate	19.56	0.500	20	0	97.8	90 - 110	19.45	0.559	20	

MS Sample ID: **HS19100276-02MS** Units: **mg/L** Analysis Date: **04-Oct-2019 22:09**
Client ID: **MW-16** Run ID: **ICS-Integrion_347737** SeqNo: **5284667** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	32.88	0.500	10	23.75	91.3	80 - 120				
Fluoride	3.098	0.100	2	1.074	101	80 - 120				
Nitrogen, Nitrate (As N)	2.03	0.100	2	0	102	80 - 120				
Sulfate	982.2	0.500	10	1002	-202	80 - 120				SEO

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: R347737 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0

MS Sample ID: **HS19100276-02MS** Units: **mg/L** Analysis Date: **04-Oct-2019 22:59**
Client ID: **MW-16** Run ID: **ICS-Integrion_347737** SeqNo: **5284670** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	215.5	10.0	200	23.6	96.0	80 - 120				
Fluoride	39.63	2.00	40	0.972	96.6	80 - 120				
Nitrogen, Nitrate (As N)	39.68	2.00	40	0	99.2	80 - 120				
Sulfate	1202	10.0	200	1018	92.1	80 - 120				O

MS Sample ID: **HS19100270-01MS** Units: **mg/L** Analysis Date: **04-Oct-2019 19:39**
Client ID: Run ID: **ICS-Integrion_347737** SeqNo: **5284658** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	10.73	0.500	10	1.102	96.3	80 - 120				
Fluoride	1.969	0.100	2	0.0375	96.6	80 - 120				
Nitrogen, Nitrate (As N)	1.946	0.100	2	0.0319	95.7	80 - 120				
Sulfate	13.33	0.500	10	3.533	98.0	80 - 120				

MSD Sample ID: **HS19100276-02MSD** Units: **mg/L** Analysis Date: **04-Oct-2019 22:25**
Client ID: **MW-16** Run ID: **ICS-Integrion_347737** SeqNo: **5284668** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	33.08	0.500	10	23.75	93.2	80 - 120	32.88	0.588	20	
Fluoride	3.152	0.100	2	1.074	104	80 - 120	3.098	1.71	20	
Nitrogen, Nitrate (As N)	2.049	0.100	2	0	102	80 - 120	2.03	0.936	20	
Sulfate	992.7	0.500	10	1002	-97.4	80 - 120	982.2	1.06	20	SEO

MSD Sample ID: **HS19100276-02MSD** Units: **mg/L** Analysis Date: **04-Oct-2019 23:15**
Client ID: **MW-16** Run ID: **ICS-Integrion_347737** SeqNo: **5284671** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	214.4	10.0	200	23.6	95.4	80 - 120	215.5	0.512	20	
Fluoride	41.05	2.00	40	0.972	100	80 - 120	39.63	3.53	20	
Nitrogen, Nitrate (As N)	39.46	2.00	40	0	98.6	80 - 120	39.68	0.556	20	
Sulfate	1191	10.0	200	1018	86.8	80 - 120	1202	0.886	20	O

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: R347737 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS19100270-01MSD** Units: **mg/L** Analysis Date: **04-Oct-2019 19:56**
Client ID: Run ID: **ICS-Integrion_347737** SeqNo: **5284659** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	10.69	0.500	10	1.102	95.8	80 - 120	10.73	0.448	20	
Fluoride	1.96	0.100	2	0.0375	96.1	80 - 120	1.969	0.479	20	
Nitrogen, Nitrate (As N)	1.941	0.100	2	0.0319	95.4	80 - 120	1.946	0.268	20	
Sulfate	13.23	0.500	10	3.533	96.9	80 - 120	13.33	0.77	20	

The following samples were analyzed in this batch: HS19100276-01 HS19100276-02 HS19100276-03 HS19100276-04
HS19100276-05 HS19100276-06 HS19100276-07

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: **R347858 (0)** **Instrument:** **WetChem_HS** **Method:** **PH BY SM4500H+ B**

DUP Sample ID: **HS19100276-01DUP** Units: **pH Units** Analysis Date: **08-Oct-2019 14:00**
Client ID: **MW-17** Run ID: **WetChem_HS_347858** SeqNo: **5287070** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.39	0.100					6.37	0.313	10	
Temp Deg C @pH	23	0					23	0	10	

The following samples were analyzed in this batch: HS19100276-01 HS19100276-02 HS19100276-03 HS19100276-04 HS19100276-05 HS19100276-06 HS19100276-07

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: HS19100276

QC BATCH REPORT

Batch ID: R348150 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-101019** Units: **mg/L** Analysis Date: **10-Oct-2019 16:30**
Client ID: Run ID: **Balance1_348150** SeqNo: **5292971** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-101019** Units: **mg/L** Analysis Date: **10-Oct-2019 16:30**
Client ID: Run ID: **Balance1_348150** SeqNo: **5292972** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1002	10.0	1000	0	100	85 - 115				

DUP Sample ID: **HS19100299-01DUP** Units: **mg/L** Analysis Date: **10-Oct-2019 16:30**
Client ID: Run ID: **Balance1_348150** SeqNo: **5292968** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	420	10.0					424	0.948	5	

DUP Sample ID: **HS19100241-01DUP** Units: **mg/L** Analysis Date: **10-Oct-2019 16:30**
Client ID: Run ID: **Balance1_348150** SeqNo: **5292950** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1236	10.0					1214	1.8	5	

The following samples were analyzed in this batch: HS19100276-01 HS19100276-02 HS19100276-03 HS19100276-04 HS19100276-05 HS19100276-06 HS19100276-07

Client: Altamira
Project: WFEC CCR Rule Site
WorkOrder: **HS19100276**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

Client: Altamira
Project: WFEC CCR Rule Site
Work Order: HS19100276

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100276-01	MW-17	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-01	MW-17	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-01	MW-17	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-01	MW-17	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-01	MW-17	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-01	MW-17	Login	10/4/2019 10:57:16 AM	JRM	MET078
HS19100276-02	MW-16	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-02	MW-16	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-02	MW-16	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-02	MW-16	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-02	MW-16	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-02	MW-16	Login	10/4/2019 10:57:16 AM	JRM	MET078
HS19100276-03	MW-13	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-03	MW-13	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-03	MW-13	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-03	MW-13	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-03	MW-13	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-03	MW-13	Login	10/4/2019 10:57:16 AM	JRM	MET078
HS19100276-04	MW-23A	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-04	MW-23A	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-04	MW-23A	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-04	MW-23A	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-04	MW-23A	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-04	MW-23A	Login	10/4/2019 10:57:16 AM	JRM	MET078
HS19100276-05	MW-24	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-05	MW-24	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-05	MW-24	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-05	MW-24	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-05	MW-24	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-05	MW-24	Login	10/4/2019 10:57:16 AM	JRM	MET078
HS19100276-06	MW-8	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-06	MW-8	Login	10/4/2019 10:57:16 AM	JRM	Sub
HS19100276-06	MW-8	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-06	MW-8	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-06	MW-8	Login	10/4/2019 10:57:16 AM	JRM	WET144
HS19100276-06	MW-8	Login	10/4/2019 10:57:16 AM	JRM	MET078

Sample Receipt Checklist

Client Name: Enviro Clean Services-Tulsa
Work Order: HS19100276
Date/Time Received: **04-Oct-2019 08:30**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 4-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 4-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:210172
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.6°C / 1.1°C, 1.3°C / 0.8°C UC/C	IR25	
Cooler(s)/Kit(s):	43983, 44139		
Date/Time sample(s) sent to storage:	10/04/2019 11:02		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

ALS

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 210172

HS19100276

Altamira

WFEC CCR Rule Site

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	WFEC CCR Rule Site	A	ICP_TW (Metals (Appendix III and IV))
Work Order		Project Number		B	HG_W (Mercury)
Company Name	Enviro Clean Services, LLC	Bill To Company	Altamira	C	300_W (Cl,F,SO4, NO3)
Send Report To	Heather Tiffany	Invoice Attn	Heather Tiffany	D	TDS_W 2540C (TDS)
Address	~~7060 S. Yale Avenue, Suite 603~~ 525 Central Park Dr Suite 500	Address	~~7060 S. Yale Avenue, Suite 603~~	E	PH_W M4500H+B (pH)
				F	SUB_RA 226 (Radium 226- Sub to ALS Fort Collins)
City/State/Zip	~~Tulsa, OK 74136~~ OKC/OK/73105	City/State/Zip	~~Tulsa OK 74136~~	G	SUB_RA 228 (Radium 226- Sub to ALS Fort Collins)
Phone	~~(918) 794-7828~~ 405-434-5662	Phone	~~(918) 794-7828~~ 405-434-5662	H	COD
Fax		Fax		I	
e-Mail Address	heather.tiffany@eccgrp.com	e-Mail Address	heather.tiffany@eccgrp.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-17	10/3/19	10:15	W		7	X	X	X	X	X	X	X	X			
2	MW-16	10/3/19	11:00	W		7	X	X	X	X	X	X	X	X			
3	MW-13	10/3/19	11:40	W		7	X	X	X	X	X	X	X	X			
4	MW-23A	10/3/19	10:15	W		7	X	X	X	X	X	X	X	X			
5	MW-24	10/3/19	11:20	W		7	X	X	X	X	X	X	X	X			
6	MW-8	10/3/19	12:02	W		7	X	X	X	X	X	X	X	X			
7	MW-9	10/3/19	12:47	W		7	X	X	X	X	X	X	X	X			
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Pasha Valyshov [signature] Bradley Van Cleave [signature]

Shipment Method: FedEx

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Pasha Valyshov / [signature] Date: 10/3/19 Time: 14:00 Received by:

Relinquished by: Date: 10/4/19 Time: 08:30 Received by (Laboratory): J. [signature]

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: ODEQ

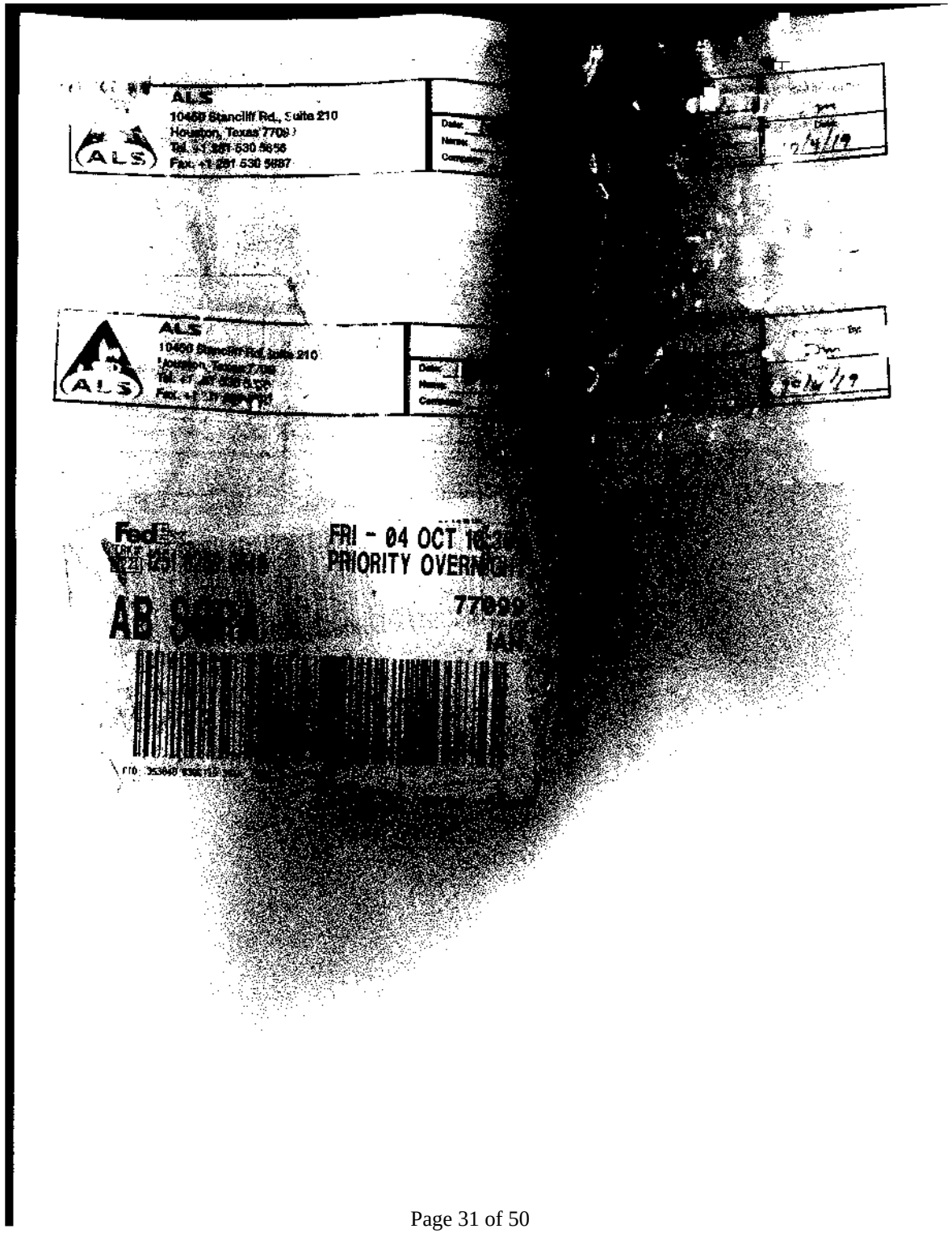
Cooler ID	Cooler Temp. uc
43983	1.6
44139	1.3

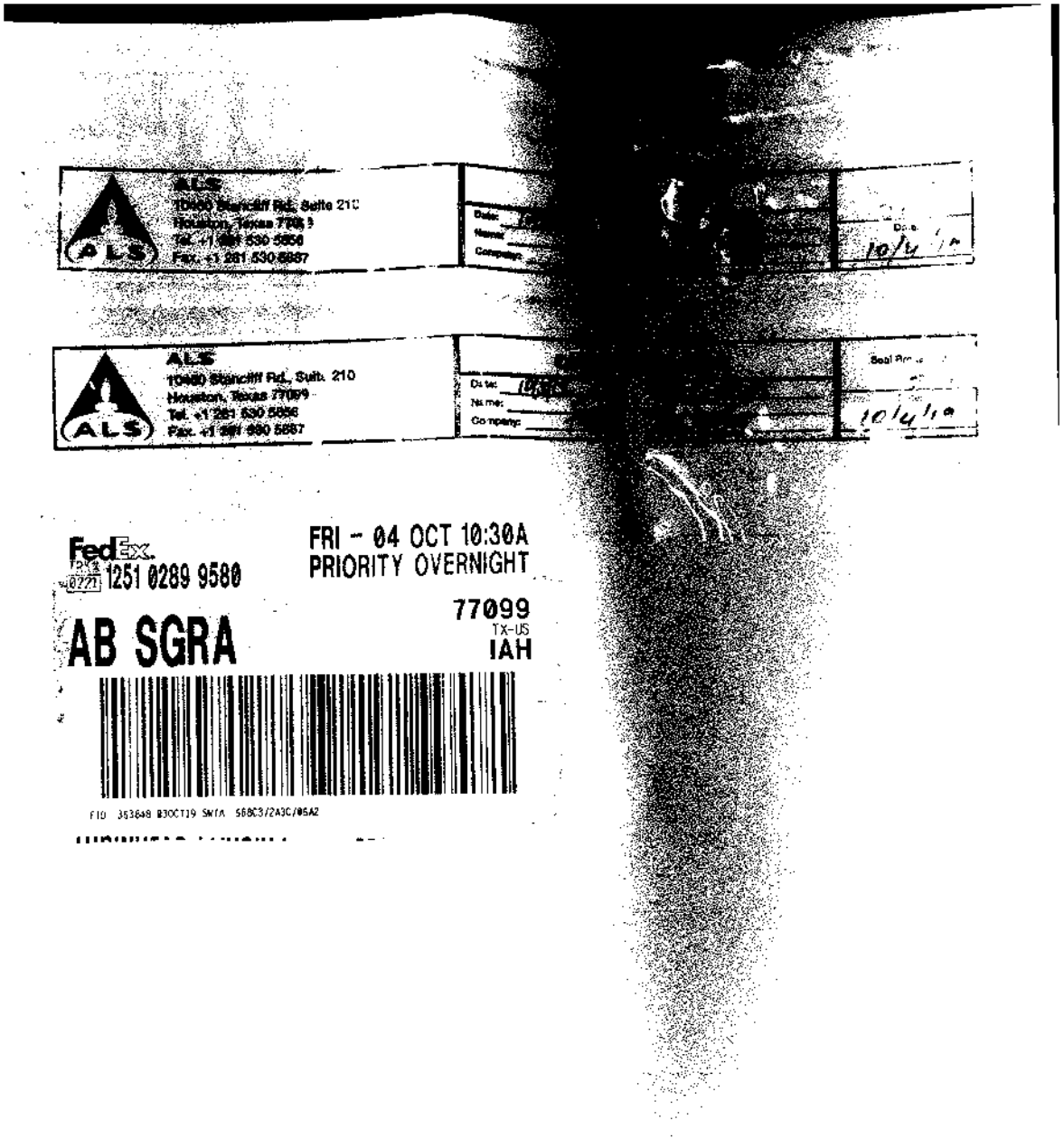
QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

1R11 CF-0.5

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.





Thursday, October 31, 2019

RJ Modashia
ALS Environmental
10450 Stancliff Rd, Suite 210
Houston, TX 77099

Re: ALS Workorder: 1910151
Project Name:
Project Number: HS19100276

Dear Mr. Modashia:

Seven water samples were received from ALS Environmental, on 10/7/2019. The samples were scheduled for the following analyses:

Radium-226
Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff R. Kujawa
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1910151

Radium-228:

The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to EPA method 904.0.

All acceptance criteria were met.

Radium-226:

The samples were prepared and analyzed according to EPA method 903.1.

All acceptance criteria were met.

ADDRESS 225 Commerce Drive, Fort Collins Colorado 80524 USA | PHONE +1 970 490 1511 | FAX +1 970 490 1522

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1910151
Client Name: ALS Environmental
Client Project Name:
Client Project Number: HS19100276
Client PO Number: 10-12314

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
MW-17	1910151-1		WATER	03-Oct-19	10:15
MW-16	1910151-2		WATER	03-Oct-19	11:00
MW-13	1910151-3		WATER	03-Oct-19	11:40
MW-23A	1910151-4		WATER	03-Oct-19	10:15
MW-24	1910151-5		WATER	03-Oct-19	11:20
MW-8	1910151-6		WATER	03-Oct-19	12:02
MW-9	1910151-7		WATER	03-Oct-19	12:47

1960151

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Oklahoma** **COC ID:** **12314**

SUBCONTRACT TO:

ALS Environmental, Fort Collins
225 Commerce Drive
Fort Collins, CO 80524

Phone: +1 970 490 1511

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100276
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100276-01**	**MW-17**	**Water**	**03 Oct 2019 10:15**
	Report as combined 226 & 228			11 Oct 2019
	Report as combined 226 & 228			11 Oct 2019
2.	**HS19100276-02**	**MW-16**	**Water**	**03 Oct 2019 11:00**
	Report as combined 226 & 228			11 Oct 2019
	Report as combined 226 & 228			11 Oct 2019
3.	**HS19100276-03**	**MW-13**	**Water**	**03 Oct 2019 11:40**
	Report as combined 226 & 228			11 Oct 2019
	Report as combined 226 & 228			11 Oct 2019
4.	**HS19100276-04**	**MW-23A**	**Water**	**03 Oct 2019 10:15**
	Report as combined 226 & 228			11 Oct 2019
	Report as combined 226 & 228			11 Oct 2019
5.	**HS19100276-05**	**MW-24**	**Water**	**03 Oct 2019 11:20**
	Report as combined 226 & 228			11 Oct 2019
	Report as combined 226 & 228			11 Oct 2019
6.	**HS19100276-06**	**MW-8**	**Water**	**03 Oct 2019 12:02**
	Report as combined 226 & 228			11 Oct 2019
	Report as combined 226 & 228			11 Oct 2019

1910151

Subcontract Chain of Custody

SAMPLING STATE: **Oklahoma** **COC ID:** **12314**

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
7.	**HS19100276-07**	**MW-9**	**Water**	**03 Oct 2019 12:47**
	Report as combined 226 & 228			11 Oct 2019
	Report as combined 226 & 228			11 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: STD (Laboratory Standard QC: method blank and LCS required)

Relinquished By:	JMcAlister	Date/Time:	10/04/19 18:00
Received By:	E.M.E.	Date/Time:	10/7/19 0845
Cooler ID(s):		Temperature(s):	

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Houston Workorder No: 1910151

Project Manager: JRK Initials: EE Date: 10/7/19

1.	Are airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
2.	Are custody seals on **shipping** containers intact?	NONE	YES	NO *
3.	Are custody seals on **sample** containers intact?	NONE	YES	NO *
4.	Is there a COC (chain-of-custody) present?		YES	NO *
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		YES	NO *
6.	Are short-hold samples present?		YES	NO
7.	Are all samples within holding times for the requested analyses?		YES	NO *
8.	Were all sample containers received intact? (not broken or leaking)		YES	NO *
9.	Is there sufficient sample for the requested analyses?		YES	NO *
10.	Are all samples in the proper containers for the requested analyses?		YES	NO *
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)	N/A	YES	NO *
12.	Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO *
13.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	N/A	YES	NO
14.	Were the samples shipped on ice?		YES	NO
15.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #1 #3 #4	RAD ONLY	YES	NO

Cooler #:	1	2							
Temperature (°C):	AMB	AMB							
No. of custody seals on cooler:	2	2							
DOT Survey/ Acceptance Information — External µR/hr reading:	15	16							
Background µR/hr reading:	13								

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)

*** Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.**

All client bottle ID's vs ALS lab ID's double-checked by: EE

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: 10-7-19

Form 201r27.xls
(02/11/2019)

*IR Gun #1, VWR SN 170560549
*IR Gun #3, VWR SN 170647571
*IR Gun #4, Oakton, SN 2372220101-0002

1910151

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 150466-434 RIT2 EXP 02/20

15-2

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 04OCT19
ACTWGT: 45.75 LB
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS FORT COLLINS
225 COMMERCE DRIVE

AMB

FORT COLLINS CO 80524
(970) 490-1511
REF: HS19100276 RJ

FedEx Express

1 of 2

TRK# 0201 1251 0290 2856

MON - 07 OCT 3:00P
STANDARD OVERNIGHT

MASTER

BD FTCA

80524
CO-US DEN

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 150466-434 RIT2 EXP 02/20

16-2

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 04OCT19
ACTWGT: 45.75 LB
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS FORT COLLINS
225 COMMERCE DRIVE

AMB

FORT COLLINS CO 80524
(970) 490-1511
REF: HS19100276 RJ

FedEx Express

2 of 2

MPS# 0263 1251 0290 2867
Mstr# 1251 0290 2856

MON - 07 OCT 3:00P
STANDARD OVERNIGHT

0201

BD FTCA

80524
CO-US DEN

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100276	**Work Order:**	1910151
Sample ID:	MW-17	**Lab ID:**	1910151-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/3/2019 10:15	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**			Prep Date: **10/23/2019**	PrepBy: **ASZ**
Ra-226	ND (+/- 0.17)	Y1,U	0.41	pCi/l	NA	10/31/2019 12:37
Carr: BARIUM	*103*	Y1	*40-110*	*%REC*	DL = NA	10/31/2019 12:37
Radium-228 Analysis by GFPC		**SOP 724**			Prep Date: **10/23/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.76	pCi/l	NA	10/31/2019 09:01
Ra-228	ND (+/- 0.35)	U	0.76	pCi/l	NA	10/28/2019 09:01
Carr: BARIUM	*96.9*		*40-110*	*%REC*	DL = NA	10/28/2019 09:01

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100276	**Work Order:**	1910151
Sample ID:	MW-16	**Lab ID:**	1910151-2
Legal Location:		**Matrix:**	WATER
Collection Date:	10/3/2019 11:00	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **ASZ**
Ra-226	ND (+/- 0.22)	Y1,U	0.37	pCi/l	NA	10/31/2019 12:37
Carr: BARIUM	*103*	Y1	*40-110*	*%REC*	DL = NA	10/31/2019 12:37
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/23/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	**0.81 (+/- 0)**		**0.77**	**pCi/l**	NA	10/31/2019 09:01
Ra-228	**0.81 (+/- 0.43)**		**0.77**	**pCi/l**	NA	10/28/2019 09:01
Carr: BARIUM	*95*		*40-110*	*%REC*	DL = NA	10/28/2019 09:01

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100276	**Work Order:**	1910151
Sample ID:	MW-13	**Lab ID:**	1910151-3
Legal Location:		**Matrix:**	WATER
Collection Date:	10/3/2019 11:40	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1			**SOP 783**		Prep Date: **10/23/2019**	PrepBy: **ASZ**
Ra-226	**0.57 (+/- 0.34)**	Y1	**0.34**	**pCi/l**	NA	10/31/2019 12:37
Carr: BARIUM	*103*	Y1	*40-110*	*%REC*	DL = NA	10/31/2019 12:37
Radium-228 Analysis by GFPC			**SOP 724**		Prep Date: **10/23/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	**1.81 (+/- 0)**		**0.73**	**pCi/l**	NA	10/31/2019 09:01
Ra-228	**1.24 (+/- 0.48)**		**0.73**	**pCi/l**	NA	10/28/2019 09:01
Carr: BARIUM	*95.3*		*40-110*	*%REC*	DL = NA	10/28/2019 09:01

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100276	**Work Order:**	1910151
Sample ID:	MW-23A	**Lab ID:**	1910151-4
Legal Location:		**Matrix:**	WATER
Collection Date:	10/3/2019 10:15	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **ASZ**
Ra-226	ND (+/- 0.25)	U	0.47	pCi/l	NA	10/31/2019 12:54
Carr: BARIUM	*98.7*		*40-110*	*%REC*	DL = NA	10/31/2019 12:54
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/23/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.77	pCi/l	NA	10/31/2019 09:01
Ra-228	ND (+/- 0.39)	U	0.77	pCi/l	NA	10/28/2019 09:01
Carr: BARIUM	*95.5*		*40-110*	*%REC*	DL = NA	10/28/2019 09:01

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100276	**Work Order:**	1910151
Sample ID:	MW-24	**Lab ID:**	1910151-5
Legal Location:		**Matrix:**	WATER
Collection Date:	10/3/2019 11:20	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**			Prep Date: **10/23/2019**	PrepBy: **ASZ**
Ra-226	ND (+/- 0.27)	Y1,U	0.35	pCi/l	NA	10/31/2019 12:54
Carr: BARIUM	*104*	Y1	*40-110*	*%REC*	DL = NA	10/31/2019 12:54
Radium-228 Analysis by GFPC		**SOP 724**			Prep Date: **10/23/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.71	pCi/l	NA	10/31/2019 09:01
Ra-228	ND (+/- 0.37)	Y1,U	0.71	pCi/l	NA	10/28/2019 09:01
Carr: BARIUM	*103*	Y1	*40-110*	*%REC*	DL = NA	10/28/2019 09:01

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100276	**Work Order:**	1910151
Sample ID:	MW-8	**Lab ID:**	1910151-6
Legal Location:		**Matrix:**	WATER
Collection Date:	10/3/2019 12:02	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**			Prep Date: **10/23/2019**	PrepBy: **ASZ**
Ra-226	ND (+/- 0.23)	Y1,U	0.31	pCi/l	NA	10/31/2019 12:54
Carr: BARIUM	*103*	Y1	*40-110*	*%REC*	DL = NA	10/31/2019 12:54
Radium-228 Analysis by GFPC		**SOP 724**			Prep Date: **10/23/2019**	PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.69	pCi/l	NA	10/31/2019 10:26
Ra-228	ND (+/- 0.35)	U	0.69	pCi/l	NA	10/30/2019 10:26
Carr: BARIUM	*98.4*		*40-110*	*%REC*	DL = NA	10/30/2019 10:26

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100276	**Work Order:**	1910151
Sample ID:	MW-9	**Lab ID:**	1910151-7
Legal Location:		**Matrix:**	WATER
Collection Date:	10/3/2019 12:47	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**SOP 783**		Prep Date: **10/23/2019**		PrepBy: **ASZ**
Ra-226	ND (+/- 0.18)	Y1,U	0.36	pCi/l	NA	10/31/2019 12:54
Carr: BARIUM	*105*	Y1	*40-110*	*%REC*	DL = NA	10/31/2019 12:54
Radium-228 Analysis by GFPC		**SOP 724**		Prep Date: **10/23/2019**		PrepBy: **RGS**
COMBINED RADIUM (226+228)	ND (+/- 0)	U	0.84	pCi/l	NA	10/31/2019 09:01
Ra-228	ND (+/- 0.39)	U	0.84	pCi/l	NA	10/28/2019 09:01
Carr: BARIUM	*84*		*40-110*	*%REC*	DL = NA	10/28/2019 09:01

Client:	ALS Environmental	**Date:**	*31-Oct-19*
Project:	HS19100276	**Work Order:**	1910151
Sample ID:	MW-9	**Lab ID:**	1910151-7
Legal Location:		**Matrix:**	WATER
Collection Date:	10/3/2019 12:47	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met.

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

G - A pattern resembling gasoline was detected in this sample.

D - A pattern resembling diesel was detected in this sample.

M - A pattern resembling motor oil was detected in this sample.

C - A pattern resembling crude oil was detected in this sample.

4 - A pattern resembling JP-4 was detected in this sample.

5 - A pattern resembling JP-5 was detected in this sample.

H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.

L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.

Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

QC BATCH REPORT

Batch ID: **RE191023-10-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS Sample ID: **RE191023-10** Units: **pCi/l** Analysis Date: **10/31/2019 12:54**

Client ID: Run ID: **RE191023-10A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	49 (+/- 12)	0	46.47		105	67-120					P,Y1
Carr: BARIUM	18970		18230		104	40-110					Y1

MB Sample ID: **RE191023-10** Units: **pCi/l** Analysis Date: **10/31/2019 12:54**

Client ID: Run ID: **RE191023-10A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.33									Y1,U
Carr: BARIUM	19050		18220		105	40-110					Y1

The following samples were analyzed in this batch:

1910151-1	1910151-2	1910151-3
1910151-4	1910151-5	1910151-6
1910151-7		

Client: ALS Environmental
Work Order: 1910151
Project: HS19100276

QC BATCH REPORT

Batch ID: **RA191023-1-2** Instrument ID **GASPROP** Method: **Radium-228 Analysis by GFPC**

LCS Sample ID: **RA191023-1** Units: **ug** Analysis Date: **10/28/2019 09:01**
Client ID: Run ID: **RA191023-1A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	36610		37340		98	40-110					
Ra-228	16.2 (+/- 3.8)	0.8	13.66		118	70-130					P

LCSD Sample ID: **RA191023-1** Units: **ug** Analysis Date: **10/28/2019 09:01**
Client ID: Run ID: **RA191023-1A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	37380		37340		100	40-110		36610			Y1
Ra-228	13.5 (+/- 3.2)	0.7	13.66		98.7	70-130		16.2	0.5	2.1	P,Y1

MB Sample ID: **RA191023-1** Units: **ug** Analysis Date: **10/28/2019 09:01**
Client ID: Run ID: **RA191023-1A** Prep Date: **10/23/2019** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Carr: BARIUM	36330		37340		97.3	40-110					
Ra-228	ND	0.75									U

The following samples were analyzed in this batch:

1910151-1	1910151-2	1910151-3
1910151-4	1910151-5	1910151-6
1910151-7		