Performance *is* Key

SITE ACTIVITY REPORT
Key Energy Services, LLC
Atha Saltwater Disposal
Eunice, Lea County, New Mexico

August 20, 2018

Prepared by:

1301 McKinney Street.
Suite 1800
Houston, Texas 77010

Beau Griffin
Environmental Specialist

Rick Graham
Environmental Director

TABLE OF CONTENTS

1.0 Introduction

Key Energy Services, LLC, (Key) conducted a site assessment, delineation and mitigation in response to a produced water release at the Atha Saltwater Disposal (SWD). The spill occurred on May 10, 2018 at approximately 08:00 hrs. The Atha SWD (herein known as "Site") is located approximately 9 miles west of Eunice, New Mexico along Lea County Road 21. Beau Griffin, Environmental Specialist-Key Environmental Department, oversaw the remediation of the site and collected soil delineation samples accordingly. The goal was to achieve compliance for the release with the New Mexico Oil Conservation Division and the Bureau of Land Management. A summary of the activities is provided below.

1.1 Site Location and Site Description

The Site is located along Lea County Road 21 just outside Eunice, New Mexico. The GPS Coordinates for the Site are as follows: 32°25'47.8" North Latitude and 130°18'36.9'' West Longitude (Figure 1). The tank battery includes six 750 barrel produced water tanks, two 750 barrel skim oil tanks, a 750 barrel "out of service" AST, a 1,000 barrel "gun barrel" tank and two 525 gallon lube oil tanks (Figure 2). The provided secondary containment is a poly-lined metal berm measuring 79' x 171' x 2.25'.

Produced water from Key customers is received via truck. The produced water is then allowed to settle and separate to remove excess oil. The oil is then removed for sale while the remaining produced water is injected into the adjacent SWD well.

1.2 Incident Description and Site clean-up activities:

On May 10th, 2018 a nipple on the discharge side of the filter pot failed causing approximately 70 bbls of a produced water to be released outside the containment area. All standing liquids were immediately vacuumed up and pumped back into the disposal system. Under the direction of the New Mexico Oil Conservation Division and the Bureau of Land Management, Key delineated the affected area and performed remedial activities to remove all contaminated soils.

On June 14th, 2018 Beau Griffin, Key's Environmental Specialist, collected vertical and horizontal soil delineation samples to compare analytical results with the regulatory limitations for TPH, BTEX and chlorides. Soil samples were collected on the surface (0-2" bgs) and one foot (1' bgs) below ground surface in each individual sample location as identified on the map in Figure 3. Soil sampling at two feet below ground surface could not be performed during this sampling event with hand tools due to soil compaction and the lithology of the site. These analytical results can be viewed in the table in Appendix 1.

Key resumed vertical and horizontal delineation activities at the site on July 18th, 2018 by utilizing a backhoe to reach two feet below ground surface in all sample locations previously identified with elevated chlorides. Key's Environmental Specialist, Beau Griffin, collected soil samples at two feet below ground surface on July 18th, 2018 in Sample Locations #2, 3, 6, 7, 10, 14 and 16. During this sampling activity Sample Location #18 was added to extend the horizontal delineation of the site. A surface soil sample was collected at Sample Location #18 during this sampling event. These analytical results can be viewed in the table in Appendix 1.

Under the direction of the New Mexico Oil Conservation Division and the Bureau of Land Management, Key began remediation activities at the site on July 31st, 2018 by excavating all affected areas to two feet below ground surface. All excavated soils are stockpiled onsite and will be disposed of properly. Key's Environmental Specialist, Beau Griffin, collected vertical and horizontal delineation soil samples on July 31st, 2018. Vertical delineation samples were collected at Sample Locations #2, 3, 6, 7, 10, 14 and 16 at 2.5' below surface grade. During this sampling activity Sample Locations #19, 20 and 21 were added to extend the horizontal delineation of the site. A surface sample was collected at Sample Locations #19, 20 and 21 during this sampling event. These analytical results can be viewed in the table in Appendix 1.

2.0 Conclusions

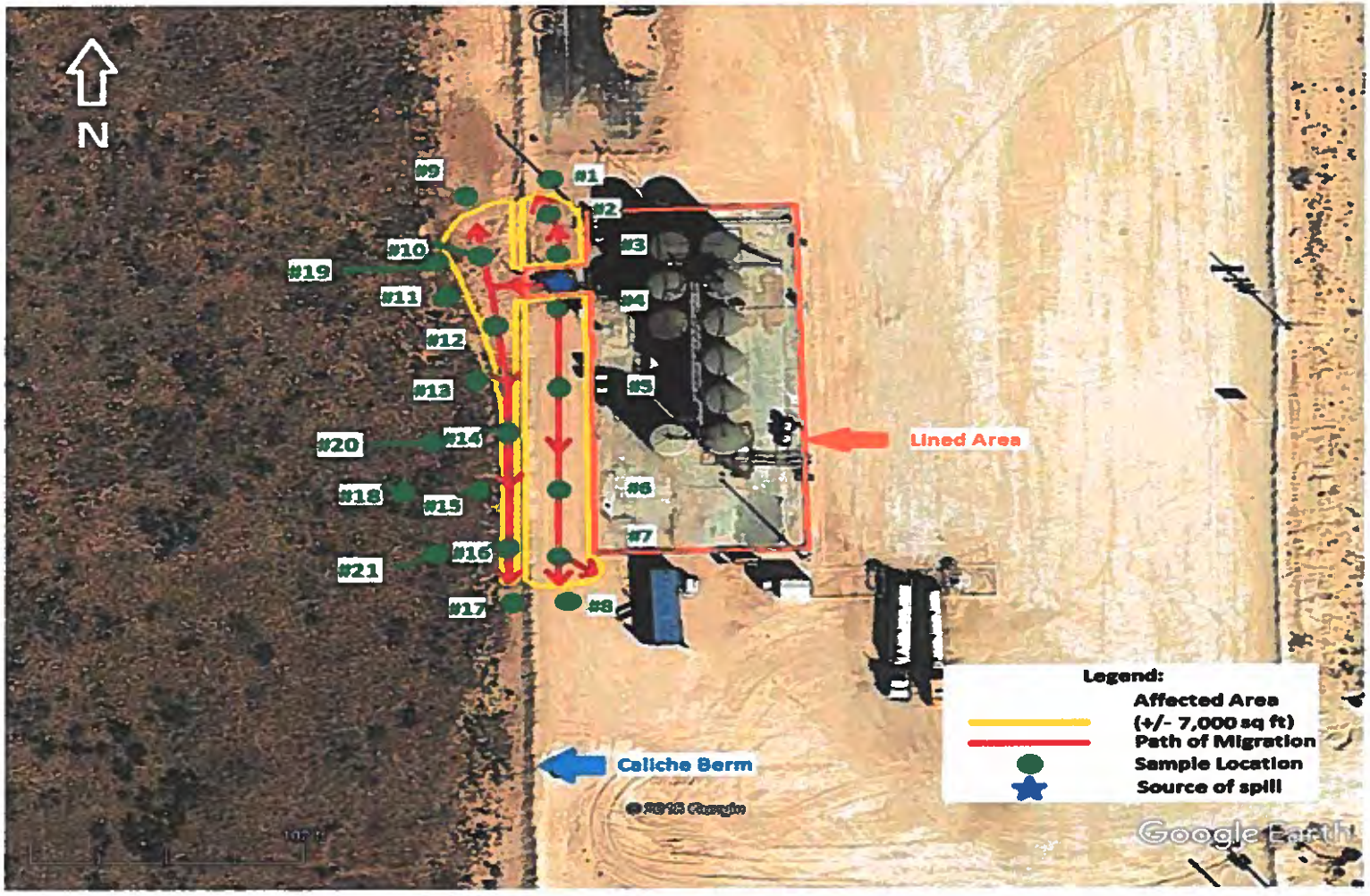
The produced water release of approximately 70 bbls on May 10th, 2018 at Key's Atha SWD has resulted in elevated levels of chlorides down to 2.5' below ground surface in some sample locations. Following the delineation sampling event on July 31st, Key believes the horizontal delineation is complete. Under the direction of the New Mexico Oil Conservation Division and the Bureau of Land Management, Key has excavated the entire affected area to two feet below ground surface. All excavated soils have been stock piled on site and will be disposed of properly. In efforts to vertically delineate the affected area, Key has noticed a consistent confining layer of rock between two and three feet below ground surface. This confining layer has limited all vertical delineation efforts thus far between these depths. Pictures of the confining layer can be viewed in Appendix 2. In conclusion, Key would like to maintain the integrity of the confining layer by refraining from further excavation into this layer. Key believes further excavation into the confining layer could expose greater depths to contamination in the future if a similar release of produced water occurs.

Figures

Figure 1. Google Earth Image of Location

Figure 2. Atha SWD Tank Battery

Figure 3. Soil Sample Locations



Appendix

Appendix 1

Tabulated Soil Analytical Results

Atha SWD Soil Analytical Results (Sample depth 0'= 0-2" bgs & 1' = 1' bgs)

14-Jun-18

Sample ID	Sample Location #1-0'	Sample Location #2-0'	Sample Location #2-1'	Sample Location #3-0'	Sample Location #3-1'	Sample Location #4-0'	Sample Location #4-1'	Sample Location #5-0'	Sample Location #5-1'	Sample Location #6-0'	Sample Location #6-1'	Sample Location #7-0'	Sample Location #7-1'	Sample Location #8-0'	Residential/ Class 1 Limits (mg/kg)
TPH (C6-C12)(mg/kg)	ND < 10	ND < 10	ND < 10	ND < 10	ND < 10	ND < 11	ND < 11	ND < 9.9	ND < 10	ND < 10	ND < 9.9	ND < 10	ND < 9.7	ND < 9.6	N/A
TPH (>C12-C28)(mg/kg)	ND < 12	21.3	ND < 12	381	ND < 12	ND < 12	ND < 13	33.0	ND < 12	ND < 12	ND < 12	ND < 12	ND < 11	ND < 11	N/A
TPH (>C28-C35)(mg/kg)	ND < 12	63.4	ND < 12	647	ND < 12	ND < 12	ND < 13	78.7	ND < 12	ND < 12	ND < 12	ND < 12	ND < 11	ND < 11	N/A
TPH (C6-35)(mg/kg)	ND < 10	84.7	ND < 10	1,030	ND < 10	ND < 11	ND < 11	111.7	ND < 10	ND < 10	ND < 9.9	ND < 10	ND < 9.7	ND < 9.6	1,000
Percent Solids (%)	90.2	92.5	92.0	91.0	90.9	86.0	87.9	93.1	94.2	91.5	94.0	91.1	96.1	95.9	N/A
Chloride (mg/kg)	410	18,200	4,480	11,600	2,880	9,570	2,260	18,800	4,180	5,760	5,200	7,730	2,580	118	600
Benzene (mg/kg)	ND < 0.0014	ND < 0.0013	ND < 0.0014	ND < 0.0014	ND < 0.0014	ND < 0.0015	ND < 0.0014	ND < 0.0013	ND < 0.0014	ND < 0.0014	ND < 0.0014	ND < 0.0013	ND < 0.0013	ND < 0.0012	0.026
Toluene (mg/kg)	ND < 0.0016	ND < 0.0014	ND < 0.0016	ND < 0.0016	ND < 0.0016	ND < 0.0017	ND < 0.0016	ND < 0.0014	ND < 0.0016	ND < 0.0016	ND < 0.0015	ND < 0.0015	ND < 0.0014	ND < 0.0014	8.2
Ethylbenzene (mg/kg)	ND < 0.0017	ND < 0.0016	ND < 0.0017	ND < 0.0017	ND < 0.0017	ND < 0.0018	ND < 0.0017	ND < 0.0016	ND < 0.0017	ND < 0.0017	ND < 0.0017	ND < 0.0016	ND < 0.0016	ND < 0.0015	7.6
Xylene (mg/kg)	ND < 0.0019	ND < 0.0017	ND < 0.0019	ND < 0.0019	ND < 0.0019	ND < 0.0020	ND < 0.0019	ND < 0.0017	ND < 0.0019	ND < 0.0019	ND < 0.0018	ND < 0.0018	ND < 0.0017	ND < 0.0016	120

Atha SWD Soil Analytical Results (Sample depth 0'= 0-2" bgs & 1' = 1' bgs)

14-Jun-18

Sample ID	Sample Location #9-0'	Sample Location #10-0'	Sample Location #10-1'	Sample Location #11-0'	Sample Location #12-0'	Sample Location #12-1'	Sample Location #13-0'	Sample Location #14-0'	Sample Location #14-1'	Sample Location #15-0'	Sample Location #16-0'	Sample Location #16-1'	Sample Location #17-0'		Residential/ Class 1 Limits (mg/kg)
TPH (C6-C12)(mg/kg)	ND < 9.6	ND < 10	ND < 10	ND < 9.9	ND < 9.9	ND < 11	ND < 9.8	ND < 10	ND < 10	ND < 9.9	ND < 11	ND < 10	ND < 9.6		N/A
TPH (>C12-C28)(mg/kg)	ND < 11	ND < 12	ND < 12	ND < 11	ND < 12	ND < 12	ND < 11	ND < 12	ND < 12	ND < 12	ND < 12	ND < 12	ND < 11		N/A
TPH (>C28-C35)(mg/kg)	ND < 11	ND < 12	ND < 12	ND < 11	ND < 12	ND < 12	ND < 11	ND < 12	ND < 12	ND < 12	ND < 12	ND < 12	ND < 11		N/A
TPH (C6-35)(mg/kg)	ND < 9.6	ND < 10	ND < 10	ND < 9.9	ND < 9.9	ND < 11	ND < 9.8	ND < 10	ND < 10	ND < 9.9	ND < 11	ND < 10	ND < 9.6		1,000
Percent Solids (%)	97.0	94.1	88.0	95.9	95.8	89.9	96.8	93.5	91.2	96.0	91.3	90.7	98.4		N/A
Chloride (mg/kg)	21.8	4,290	3,850	68.2	842	5,370	73.7	9,370	5,600	2,420	8,180	643	43.4		600
Benzene (mg/kg)	ND < 0.0013	ND < 0.0013	ND < 0.0015	ND < 0.0012	ND < 0.0013	ND < 0.0014	ND < 0.0013	ND < 0.0014	ND < 0.0013	ND < 0.0014	ND < 0.0014	ND < 0.0014	ND < 0.0013		0.026
Toluene (mg/kg)	ND < 0.0015	ND < 0.0015	ND < 0.0017	ND < 0.0014	ND < 0.0015	ND < 0.0015	ND < 0.0014	ND < 0.0015	ND < 0.0015	ND < 0.0016	ND < 0.0016	ND < 0.0016	ND < 0.0015		8.2
Ethylbenzene (mg/kg)	ND < 0.0016	ND < 0.0016	ND < 0.0018	ND < 0.0015	ND < 0.0016	ND < 0.0017	ND < 0.0015	ND < 0.0016	ND < 0.0016	ND < 0.0017	ND < 0.0017	ND < 0.0017	ND < 0.0016		7.6
Xylene (mg/kg)	ND < 0.0018	ND < 0.0018	ND < 0.0020	ND < 0.0017	ND < 0.0018	ND < 0.0018	ND < 0.0017	ND < 0.0018	ND < 0.0018	ND < 0.0019	ND < 0.0019	ND < 0.0019	ND < 0.0018		120

Atha SWD Soil Analytical Results (Sample depth 2' bgs & Sample Location #18-0' bgs)

18-Jul-18

Sample ID	Sample Location #2-2'	Sample Location #3-2'	Sample Location #4-2'	Sample Location #5-2'	Sample Location #6-2'	Sample Location #7-2'	Sample Location #10-2'	Sample Location #12-2'	Sample Location #14-2'	Sample Location #15-2'	Sample Location #16-2'	Sample Location #18-0'			Residential/ Class 1 Limits (mg/kg)
Percent Solids (%)	83.2	90.3	83.6	82.4	86.8	94.6	81.7	70.2	81.8	81.8	78	81.5			N/A
Chloride (mg/kg)	6,810	9,100	80.6	273	720	1,410	642	397	4,360	147	611	9			600

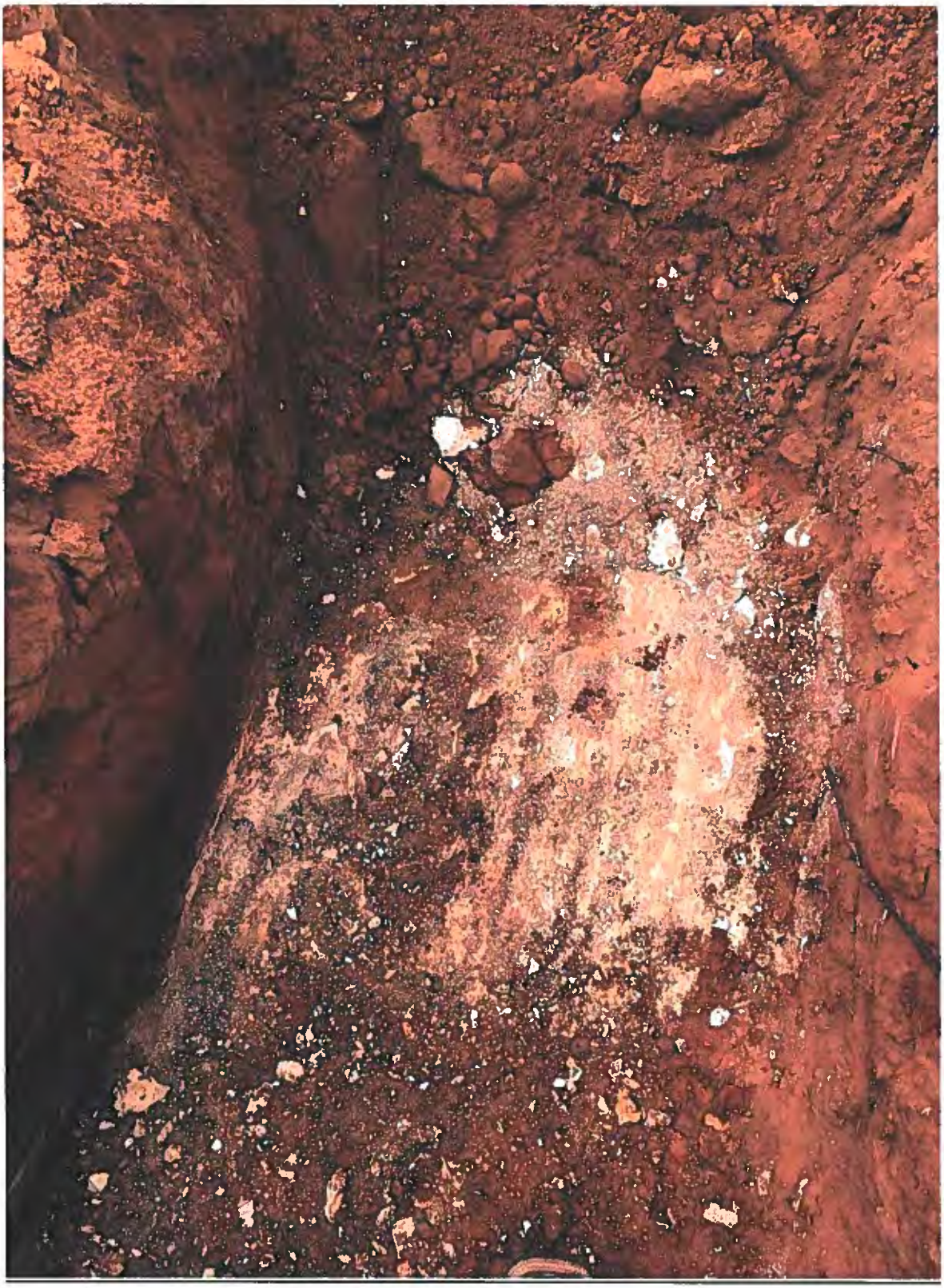
Atha SWD Soil Analytical Results (Sample depth 0'= 0-2" bgs & 1' = 1' bgs)

31-Jul-18

Sample ID	Sample Location #2-2.5'	Sample Location #3-2.5'	Sample Location #6-2.5'	Sample Location #7-2.5'	Sample Location #10-2.5'	Sample Location #14-2.5'	Sample Location #16-2.5'	Sample Location #19-0'	Sample Location #20-0'	Sample Location #21-0'					Residential/ Class 1 Limits (mg/kg)
Percent Solids (%)	89.5	89.3	86.0	88.7	Could not reach 2.5'	94.1	86.3	99.1	75.3	73.3					N/A
Chloride (mg/kg)	611	5,330	451	610	N/A	7,220	1,460	36	29	22					600

Appendix 2

Confining Layer Photographs



Appendix 3

Laboratory Analytical Report TD22721 for soil analysis at Atha SWD

SGS

Houston, TX

06/22/18

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Key Energy

Atha SWD

SGS Job Number: TD22721

Sampling Date: 06/14/18

Report to:

Key Energy
1301 McKinney Street
Houston, TX 77010
bgriffin@keyenergy.com

ATTN: Beau Griffin

Total number of pages in report: 125

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Electa Brown 713-271-4700

Certifications: TX (T104704220-18-29) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

Sections: 1 2 3 4 5 6 7

Table of Contents

Sections: 1 2 3 4 5 6 7

Table of Contents

SGS North America Inc.

Sample Summary

Key Energy

Atha SWD

Job No: TD22721

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
TD22721-1	06/14/18	07:03	06/15/18	SO	Soil	SAMPLE LOCATION #1-0'
TD22721-2	06/14/18	07:12	06/15/18	SO	Soil	SAMPLE LOCATION #2-0'
TD22721-3	06/14/18	07:15	06/15/18	SO	Soil	SAMPLE LOCATION #2-1'
TD22721-4	06/14/18	07:42	06/15/18	SO	Soil	SAMPLE LOCATION #3-0'
TD22721-5	06/14/18	07:46	06/15/18	SO	Soil	SAMPLE LOCATION #3-1'
TD22721-6	06/14/18	08:09	06/15/18	SO	Soil	SAMPLE LOCATION #4-0'
TD22721-7	06/14/18	08:13	06/15/18	SO	Soil	SAMPLE LOCATION #4-1'
TD22721-8	06/14/18	08:36	06/15/18	SO	Soil	SAMPLE LOCATION #5-0'
TD22721-9	06/14/18	08:43	06/15/18	SO	Soil	SAMPLE LOCATION #5-1'
TD22721-10	06/14/18	08:51	06/15/18	SO	Soil	SAMPLE LOCATION #6-0'
TD22721-11	06/14/18	08:56	06/15/18	SO	Soil	SAMPLE LOCATION #6-1'
TD22721-12	06/14/18	09:06	06/15/18	SO	Soil	SAMPLE LOCATION #7-0'
TD22721-13	06/14/18	09:11	06/15/18	SO	Soil	SAMPLE LOCATION #7-1'

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

Key Energy

Atha SWD

Job No: TD22721

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
TD22721-14	06/14/18	09:16	06/15/18	SO	Soil	SAMPLE LOCATION #8-0'
TD22721-15	06/14/18	09:20	06/15/18	SO	Soil	SAMPLE LOCATION #9-0'
TD22721-16	06/14/18	09:26	06/15/18	SO	Soil	SAMPLE LOCATION #10-0'
TD22721-17	06/14/18	09:29	06/15/18	SO	Soil	SAMPLE LOCATION #10-1'
TD22721-18	06/14/18	09:38	06/15/18	SO	Soil	SAMPLE LOCATION #11-0'
TD22721-19	06/14/18	09:42	06/15/18	SO	Soil	SAMPLE LOCATION #12-0'
TD22721-20	06/14/18	09:46	06/15/18	SO	Soil	SAMPLE LOCATION #12-1'
TD22721-21	06/14/18	09:58	06/15/18	SO	Soil	SAMPLE LOCATION #13-0'
TD22721-22	06/14/18	10:02	06/15/18	SO	Soil	SAMPLE LOCATION #14-0'
TD22721-23	06/14/18	10:05	06/15/18	SO	Soil	SAMPLE LOCATION #14-1'
TD22721-24	06/14/18	10:09	06/15/18	SO	Soil	SAMPLE LOCATION #15-0'
TD22721-25	06/14/18	10:14	06/15/18	SO	Soil	SAMPLE LOCATION #16-0'
TD22721-26	06/14/18	10:19	06/15/18	SO	Soil	SAMPLE LOCATION #16-1'

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

Key Energy

Atha SWD

Job No: TD22721

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
TD22721-27	06/14/18	10:24	06/15/18	SO	Soil	SAMPLE LOCATION #17-0'
TD22721-28	06/14/18	00:00	06/15/18	AQ	Trip Blank Water	TRIP BLANK

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Summary of Hits

2

Job Number: TD22721
Account: Key Energy
Project: Atha SWD
Collected: 06/14/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD22721-1	**SAMPLE LOCATION #1-0'**					
Chloride		410	28		mg/kg	EPA 300.0
TD22721-2	**SAMPLE LOCATION #2-0'**					
TPH (> C12-C28) [a]		21.3 J	26	12	mg/kg	TNRCC 1005
TPH (> C28-C35) [a]		63.4	26	12	mg/kg	TNRCC 1005
TPH (C6-C35) [a]		84.7	26	10	mg/kg	TNRCC 1005
Chloride		18200	1100		mg/kg	EPA 300.0
TD22721-3	**SAMPLE LOCATION #2-1'**					
Chloride		4480	270		mg/kg	EPA 300.0
TD22721-4	**SAMPLE LOCATION #3-0'**					
TPH (> C12-C28) [a]		381	26	12	mg/kg	TNRCC 1005
TPH (> C28-C35) [a]		647	26	12	mg/kg	TNRCC 1005
TPH (C6-C35) [a]		1030	26	10	mg/kg	TNRCC 1005
Chloride		11600	1100		mg/kg	EPA 300.0
TD22721-5	**SAMPLE LOCATION #3-1'**					
Chloride		2880	270		mg/kg	EPA 300.0
TD22721-6	**SAMPLE LOCATION #4-0'**					
Chloride		9570	1200		mg/kg	EPA 300.0
TD22721-7	**SAMPLE LOCATION #4-1'**					
Chloride		2260	280		mg/kg	EPA 300.0
TD22721-8	**SAMPLE LOCATION #5-0'**					
TPH (> C12-C28) [a]		33.0	26	12	mg/kg	TNRCC 1005
TPH (> C28-C35) [a]		78.7	26	12	mg/kg	TNRCC 1005
TPH (C6-C35) [a]		112	26	9.9	mg/kg	TNRCC 1005
Chloride		18800	1100		mg/kg	EPA 300.0
TD22721-9	**SAMPLE LOCATION #5-1'**					
Chloride		4180	260		mg/kg	EPA 300.0

Summary of Hits

Job Number: TD22721
Account: Key Energy
Project: Atha SWD
Collected: 06/14/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD22721-10	**SAMPLE LOCATION #6-0'**					
Chloride		5760	540		mg/kg	EPA 300.0
TD22721-11	**SAMPLE LOCATION #6-1'**					
Chloride		5200	260		mg/kg	EPA 300.0
TD22721-12	**SAMPLE LOCATION #7-0'**					
Xylene (total)		1.9 J	3.9	1.8	ug/kg	SW846 8260C
Chloride		7730	540		mg/kg	EPA 300.0
TD22721-13	**SAMPLE LOCATION #7-1'**					
Chloride		2580	260		mg/kg	EPA 300.0
TD22721-14	**SAMPLE LOCATION #8-0'**					
Chloride		118	5.2		mg/kg	EPA 300.0
TD22721-15	**SAMPLE LOCATION #9-0'**					
Chloride		21.8	5.1		mg/kg	EPA 300.0
TD22721-16	**SAMPLE LOCATION #10-0'**					
Chloride		4290	270		mg/kg	EPA 300.0
TD22721-17	**SAMPLE LOCATION #10-1'**					
Chloride		3850	280		mg/kg	EPA 300.0
TD22721-18	**SAMPLE LOCATION #11-0'**					
Chloride		68.2	5.2		mg/kg	EPA 300.0
TD22721-19	**SAMPLE LOCATION #12-0'**					
Chloride		842	52		mg/kg	EPA 300.0
TD22721-20	**SAMPLE LOCATION #12-1'**					
Chloride		5370	280		mg/kg	EPA 300.0

Summary of Hits

Job Number: TD22721
Account: Key Energy
Project: Atha SWD
Collected: 06/14/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD22721-21	**SAMPLE LOCATION #13-0'**					
Chloride		73.7	5.1		mg/kg	EPA 300.0
TD22721-22	**SAMPLE LOCATION #14-0'**					
Chloride		9370	530		mg/kg	EPA 300.0
TD22721-23	**SAMPLE LOCATION #14-1'**					
Chloride		5600	270		mg/kg	EPA 300.0
TD22721-24	**SAMPLE LOCATION #15-0'**					
Chloride		2420	260		mg/kg	EPA 300.0
TD22721-25	**SAMPLE LOCATION #16-0'**					
Chloride		8180	550		mg/kg	EPA 300.0
TD22721-26	**SAMPLE LOCATION #16-1'**					
Chloride		643	28		mg/kg	EPA 300.0
TD22721-27	**SAMPLE LOCATION #17-0'**					
Chloride		43.4	5.1		mg/kg	EPA 300.0
TD22721-28	**TRIP BLANK**					

No hits reported in this sample.

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #1-0'		
Lab Sample ID:	TD22721-1	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	90.2
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070068.D	1	06/19/18 12:44	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.39 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.1	1.4	ug/kg	
108-88-3	Toluene	ND	4.1	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.1	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.1	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		59-126%
2037-26-5	Toluene-D8	101%		70-139%
460-00-4	4-Bromofluorobenzene	100%		63-138%
17060-07-0	1,2-Dichloroethane-D4	111%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #1-0'		
Lab Sample ID:	TD22721-1	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	90.2
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LB160627.D	1	06/18/18 15:52	LT	06/18/18 01:00	OP46472	GLB2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	27	10	mg/kg	
	TPH (> C12-C28)	ND	27	12	mg/kg	
	TPH (> C28-C35)	ND	27	12	mg/kg	
	TPH (C6-C35)	ND	27	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	106%		70-130%
98-08-8	aaa-Trifluorotoluene	111%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #1-0'		
Lab Sample ID:	TD22721-1	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	90.2
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	410	28	mg/kg	5	06/19/18 13:50	ES	EPA 300.0
Solids, Percent	90.2		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #2-0'		
Lab Sample ID:	TD22721-2	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	92.5
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070069.D	1	06/19/18 13:13	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.64 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.8	1.3	ug/kg	
108-88-3	Toluene	ND	3.8	1.4	ug/kg	
100-41-4	Ethylbenzene	ND	3.8	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	3.8	1.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		59-126%
2037-26-5	Toluene-D8	102%		70-139%
460-00-4	4-Bromofluorobenzene	105%		63-138%
17060-07-0	1,2-Dichloroethane-D4	105%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #2-0'		
Lab Sample ID:	TD22721-2	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	92.5
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LF160624.D	1	06/18/18 14:58	LT	06/18/18 01:00	OP46472	GLF2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	10	mg/kg	
	TPH (> C12-C28)	21.3	26	12	mg/kg	J
	TPH (> C28-C35)	63.4	26	12	mg/kg	
	TPH (C6-C35)	84.7	26	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	110%		70-130%
98-08-8	aaa-Trifluorotoluene	84%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #2-0'		
Lab Sample ID:	TD22721-2	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	92.5
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	18200	1100	mg/kg	200	06/19/18 11:48	ES	EPA 300.0
Solids, Percent	92.5		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #2-1'		
Lab Sample ID:	TD22721-3	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	92.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070070.D	1	06/19/18 13:41	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.22 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.2	1.4	ug/kg	
108-88-3	Toluene	ND	4.2	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.2	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.2	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	100%		63-138%
17060-07-0	1,2-Dichloroethane-D4	118%		54-123%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #2-1'		
Lab Sample ID:	TD22721-3	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	92.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85676.D	1	06/18/18 16:13	LT	06/18/18 01:00	OP46472	GJF1573
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	10	mg/kg	
	TPH (> C12-C28)	ND	26	12	mg/kg	
	TPH (> C28-C35)	ND	26	12	mg/kg	
	TPH (C6-C35)	ND	26	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	95%		70-130%
98-08-8	aaa-Trifluorotoluene	87%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #2-1'		
Lab Sample ID:	TD22721-3	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	92.0
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	4480	270	mg/kg	50	06/19/18 12:04	ES	EPA 300.0
Solids, Percent	92		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #3-0'		
Lab Sample ID:	TD22721-4	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	91.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070071.D	1	06/19/18 14:10	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.12 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.3	1.4	ug/kg	
108-88-3	Toluene	ND	4.3	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.3	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.3	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		59-126%
2037-26-5	Toluene-D8	107%		70-139%
460-00-4	4-Bromofluorobenzene	127%		63-138%
17060-07-0	1,2-Dichloroethane-D4	115%		54-123%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #3-0'		
Lab Sample ID:	TD22721-4	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	91.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85677.D	1	06/18/18 16:38	LT	06/18/18 01:00	OP46472	GJF1573
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	10	mg/kg	
	TPH (> C12-C28)	381	26	12	mg/kg	
	TPH (> C28-C35)	647	26	12	mg/kg	
	TPH (C6-C35)	1030	26	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	101%		70-130%
98-08-8	aaa-Trifluorotoluene	83%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #3-0'		
Lab Sample ID:	TD22721-4	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	91.0
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	11600	1100	mg/kg	200	06/19/18 12:21	ES	EPA 300.0
Solids, Percent	91		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #3-1'		
Lab Sample ID:	TD22721-5	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C	**Percent Solids:**	90.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1097373.D	1	06/20/18 10:11	FI	n/a	n/a	VY4778
Run #2							

	Initial Weight	Final Volume
Run #1	5.34 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.1	1.4	ug/kg	
108-88-3	Toluene	ND	4.1	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.1	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.1	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		59-126%
2037-26-5	Toluene-D8	109%		70-139%
460-00-4	4-Bromofluorobenzene	100%		63-138%
17060-07-0	1,2-Dichloroethane-D4	106%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #3-1'		
Lab Sample ID:	TD22721-5	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	90.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85695.D	1	06/19/18 10:39	LT	06/18/18 01:00	OP46472	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	27	10	mg/kg	
	TPH (> C12-C28)	ND	27	12	mg/kg	
	TPH (> C28-C35)	ND	27	12	mg/kg	
	TPH (C6-C35)	ND	27	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	101%		70-130%
98-08-8	aaa-Trifluorotoluene	87%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #3-1'		
Lab Sample ID:	TD22721-5	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	90.9
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	2880	270	mg/kg	50	06/19/18 13:10	ES	EPA 300.0
Solids, Percent	90.9		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #4-0'		
Lab Sample ID:	TD22721-6	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	86.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070073.D	1	06/19/18 15:06	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.28 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.4	1.5	ug/kg	
108-88-3	Toluene	ND	4.4	1.7	ug/kg	
100-41-4	Ethylbenzene	ND	4.4	1.8	ug/kg	
1330-20-7	Xylene (total)	ND	4.4	2.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		59-126%
2037-26-5	Toluene-D8	101%		70-139%
460-00-4	4-Bromofluorobenzene	98%		63-138%
17060-07-0	1,2-Dichloroethane-D4	104%		54-123%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #4-0'		
Lab Sample ID:	TD22721-6	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	86.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85679.D	1	06/18/18 17:28	LT	06/18/18 01:00	OP46472	GJF1573
Run #2							

	Initial Weight	Final Volume
Run #1	10.5 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	28	11	mg/kg	
	TPH (> C12-C28)	ND	28	12	mg/kg	
	TPH (> C28-C35)	ND	28	12	mg/kg	
	TPH (C6-C35)	ND	28	11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		70-130%
98-08-8	aaa-Trifluorotoluene	80%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #4-0'		
Lab Sample ID:	TD22721-6	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	86.0
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	9570	1200	mg/kg	200	06/19/18 13:27	ES	EPA 300.0
Solids, Percent	86		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #4-1'		
Lab Sample ID:	TD22721-7	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	87.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070074.D	1	06/19/18 15:35	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.32 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.3	1.4	ug/kg	
108-88-3	Toluene	ND	4.3	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.3	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.3	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		59-126%
2037-26-5	Toluene-D8	102%		70-139%
460-00-4	4-Bromofluorobenzene	102%		63-138%
17060-07-0	1,2-Dichloroethane-D4	111%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #4-1'		
Lab Sample ID:	TD22721-7	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	87.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85680.D	1	06/18/18 17:53	LT	06/18/18 01:00	OP46472	GJF1573
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	28	11	mg/kg	
	TPH (> C12-C28)	ND	28	13	mg/kg	
	TPH (> C28-C35)	ND	28	13	mg/kg	
	TPH (C6-C35)	ND	28	11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	96%		70-130%
98-08-8	aaa-Trifluorotoluene	83%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #4-1'		
Lab Sample ID:	TD22721-7	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	87.9
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	2260	280	mg/kg	50	06/19/18 13:43	ES	EPA 300.0
Solids, Percent	87.9		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #5-0'		
Lab Sample ID:	TD22721-8	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C	**Percent Solids:**	93.1
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1097386.D	1	06/20/18 16:18	FI	n/a	n/a	VY4778
Run #2							

	Initial Weight	Final Volume
Run #1	5.62 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.8	1.3	ug/kg	
108-88-3	Toluene	ND	3.8	1.4	ug/kg	
100-41-4	Ethylbenzene	ND	3.8	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	3.8	1.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		59-126%
2037-26-5	Toluene-D8	107%		70-139%
460-00-4	4-Bromofluorobenzene	98%		63-138%
17060-07-0	1,2-Dichloroethane-D4	105%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #5-0'		
Lab Sample ID:	TD22721-8	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	93.1
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85696.D	1	06/19/18 11:04	LT	06/18/18 01:00	OP46472	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	9.9	mg/kg	
	TPH (> C12-C28)	33.0	26	12	mg/kg	
	TPH (> C28-C35)	78.7	26	12	mg/kg	
	TPH (C6-C35)	112	26	9.9	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		70-130%
98-08-8	aaa-Trifluorotoluene	80%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #5-0'		
Lab Sample ID:	TD22721-8	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	93.1
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	18800	1100	mg/kg	200	06/19/18 14:00	ES	EPA 300.0
Solids, Percent	93.1		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #5-1'		
Lab Sample ID:	TD22721-9	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	94.2
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070076.D	1	06/19/18 17:23	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.06 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.2	1.4	ug/kg	
108-88-3	Toluene	ND	4.2	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.2	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.2	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	98%		63-138%
17060-07-0	1,2-Dichloroethane-D4	118%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #5-1'		
Lab Sample ID:	TD22721-9	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	94.2
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85682.D	1	06/18/18 18:44	LT	06/18/18 01:00	OP46472	GJF1573
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	10	mg/kg	
	TPH (> C12-C28)	ND	26	12	mg/kg	
	TPH (> C28-C35)	ND	26	12	mg/kg	
	TPH (C6-C35)	ND	26	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	104%		70-130%
98-08-8	aaa-Trifluorotoluene	93%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #5-1'		
Lab Sample ID:	TD22721-9	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	94.2
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	4180	260	mg/kg	50	06/19/18 14:41	ES	EPA 300.0
Solids, Percent	94.2		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #6-0'		
Lab Sample ID:	TD22721-10	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	91.5
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070077.D	1	06/19/18 17:51	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.21 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.2	1.4	ug/kg	
108-88-3	Toluene	ND	4.2	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.2	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.2	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	100%		63-138%
17060-07-0	1,2-Dichloroethane-D4	110%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #6-0'		
Lab Sample ID:	TD22721-10	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	91.5
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LF160630.D	1	06/18/18 16:19	LT	06/18/18 01:00	OP46472	GLF2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.5 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	10	mg/kg	
	TPH (> C12-C28)	ND	26	12	mg/kg	
	TPH (> C28-C35)	ND	26	12	mg/kg	
	TPH (C6-C35)	ND	26	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	116%		70-130%
98-08-8	aaa-Trifluorotoluene	98%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #6-0'		
Lab Sample ID:	TD22721-10	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	91.5
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	5760	540	mg/kg	100	06/19/18 14:58	ES	EPA 300.0
Solids, Percent	91.5		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #6-1'		
Lab Sample ID:	TD22721-11	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	94.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070078.D	1	06/19/18 18:20	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.21 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.1	1.4	ug/kg	
108-88-3	Toluene	ND	4.1	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	4.1	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.1	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	99%		63-138%
17060-07-0	1,2-Dichloroethane-D4	112%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #6-1'		
Lab Sample ID:	TD22721-11	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	94.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LF160632.D	1	06/18/18 16:46	LT	06/18/18 01:00	OP46472	GLF2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	9.9	mg/kg	
	TPH (> C12-C28)	ND	26	12	mg/kg	
	TPH (> C28-C35)	ND	26	12	mg/kg	
	TPH (C6-C35)	ND	26	9.9	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	121%		70-130%
98-08-8	aaa-Trifluorotoluene	99%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #6-1'		
Lab Sample ID:	TD22721-11	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	94.0
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	5200	260	mg/kg	50	06/19/18 14:49	ES	EPA 300.0
Solids, Percent	94		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #7-0'		
Lab Sample ID:	TD22721-12	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C	**Percent Solids:**	91.1
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1097374.D	1	06/20/18 10:39	FI	n/a	n/a	VY4778
Run #2							

	Initial Weight	Final Volume
Run #1	5.60 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.9	1.3	ug/kg	
108-88-3	Toluene	ND	3.9	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	3.9	1.6	ug/kg	
1330-20-7	Xylene (total)	1.9	3.9	1.8	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		59-126%
2037-26-5	Toluene-D8	110%		70-139%
460-00-4	4-Bromofluorobenzene	110%		63-138%
17060-07-0	1,2-Dichloroethane-D4	110%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #7-0'		
Lab Sample ID:	TD22721-12	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	91.1
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LB160633.D	1	06/18/18 17:14	LT	06/18/18 01:00	OP46472	GLB2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	10	mg/kg	
	TPH (> C12-C28)	ND	26	12	mg/kg	
	TPH (> C28-C35)	ND	26	12	mg/kg	
	TPH (C6-C35)	ND	26	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	100%		70-130%
98-08-8	aaa-Trifluorotoluene	104%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #7-0'		
Lab Sample ID:	TD22721-12	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	91.1
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	7730	540	mg/kg	100	06/19/18 15:15	ES	EPA 300.0
Solids, Percent	91.1		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #7-1'		
Lab Sample ID:	TD22721-13	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	96.1
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070080.D	1	06/19/18 19:17	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.42 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.8	1.3	ug/kg	
108-88-3	Toluene	ND	3.8	1.4	ug/kg	
100-41-4	Ethylbenzene	ND	3.8	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	3.8	1.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	97%		63-138%
17060-07-0	1,2-Dichloroethane-D4	116%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #7-1'		
Lab Sample ID:	TD22721-13	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	96.1
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LF160634.D	1	06/18/18 17:14	LT	06/18/18 01:00	OP46472	GLF2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	9.7	mg/kg	
	TPH (> C12-C28)	ND	25	11	mg/kg	
	TPH (> C28-C35)	ND	25	11	mg/kg	
	TPH (C6-C35)	ND	25	9.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	116%		70-130%
98-08-8	aaa-Trifluorotoluene	96%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #7-1'		
Lab Sample ID:	TD22721-13	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	96.1
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	2580	260	mg/kg	50	06/19/18 15:32	ES	EPA 300.0
Solids, Percent	96.1		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #8-0'		
Lab Sample ID:	TD22721-14	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	95.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070081.D	1	06/19/18 19:45	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.72 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.6	1.2	ug/kg	
108-88-3	Toluene	ND	3.6	1.4	ug/kg	
100-41-4	Ethylbenzene	ND	3.6	1.5	ug/kg	
1330-20-7	Xylene (total)	ND	3.6	1.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		59-126%
2037-26-5	Toluene-D8	102%		70-139%
460-00-4	4-Bromofluorobenzene	99%		63-138%
17060-07-0	1,2-Dichloroethane-D4	103%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #8-0'		
Lab Sample ID:	TD22721-14	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	95.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LB160635.D	1	06/18/18 17:41	LT	06/18/18 01:00	OP46472	GLB2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	9.6	mg/kg	
	TPH (> C12-C28)	ND	25	11	mg/kg	
	TPH (> C28-C35)	ND	25	11	mg/kg	
	TPH (C6-C35)	ND	25	9.6	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	110%		70-130%
98-08-8	aaa-Trifluorotoluene	119%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #8-0'		
Lab Sample ID:	TD22721-14	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	95.9
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	118	5.2	mg/kg	1	06/19/18 15:48	ES	EPA 300.0
Solids, Percent	95.9		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #9-0'		
Lab Sample ID:	TD22721-15	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	97.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070082.D	1	06/19/18 20:14	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.16 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.0	1.3	ug/kg	
108-88-3	Toluene	ND	4.0	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	4.0	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		59-126%
2037-26-5	Toluene-D8	101%		70-139%
460-00-4	4-Bromofluorobenzene	97%		63-138%
17060-07-0	1,2-Dichloroethane-D4	108%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #9-0'		
Lab Sample ID:	TD22721-15	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	97.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LF160636.D	1	06/18/18 17:41	LT	06/18/18 01:00	OP46472	GLF2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	9.6	mg/kg	
	TPH (> C12-C28)	ND	25	11	mg/kg	
	TPH (> C28-C35)	ND	25	11	mg/kg	
	TPH (C6-C35)	ND	25	9.6	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	115%		70-130%
98-08-8	aaa-Trifluorotoluene	95%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #9-0'		
Lab Sample ID:	TD22721-15	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	97.0
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	21.8	5.1	mg/kg	1	06/19/18 16:39	ES	EPA 300.0
Solids, Percent	97		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #10-0'		
Lab Sample ID:	TD22721-16	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	94.1
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070083.D	1	06/19/18 20:42	FI	06/18/18 08:30	n/a	VM2733
Run #2							

	Initial Weight	Final Volume
Run #1	5.36 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.0	1.3	ug/kg	
108-88-3	Toluene	ND	4.0	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	4.0	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	95%		63-138%
17060-07-0	1,2-Dichloroethane-D4	105%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #10-0'		
Lab Sample ID:	TD22721-16	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	94.1
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LB160637.D	1	06/18/18 18:08	LT	06/18/18 01:00	OP46472	GLB2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	10	mg/kg	
	TPH (> C12-C28)	ND	26	12	mg/kg	
	TPH (> C28-C35)	ND	26	12	mg/kg	
	TPH (C6-C35)	ND	26	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	116%		70-130%
98-08-8	aaa-Trifluorotoluene	105%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #10-0'		
Lab Sample ID:	TD22721-16	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	94.1
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	4290	270	mg/kg	50	06/19/18 16:56	ES	EPA 300.0
Solids, Percent	94.1		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #10-1'		
Lab Sample ID:	TD22721-17	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	88.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070098.D	1	06/20/18 03:50	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.17 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.4	1.5	ug/kg	
108-88-3	Toluene	ND	4.4	1.7	ug/kg	
100-41-4	Ethylbenzene	ND	4.4	1.8	ug/kg	
1330-20-7	Xylene (total)	ND	4.4	2.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	97%		63-138%
17060-07-0	1,2-Dichloroethane-D4	115%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #10-1'		
Lab Sample ID:	TD22721-17	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	88.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LF160638.D	1	06/18/18 18:08	LT	06/18/18 01:00	OP46472	GLF2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.5 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	27	10	mg/kg	
	TPH (> C12-C28)	ND	27	12	mg/kg	
	TPH (> C28-C35)	ND	27	12	mg/kg	
	TPH (C6-C35)	ND	27	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	112%		70-130%
98-08-8	aaa-Trifluorotoluene	96%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #10-1'		
Lab Sample ID:	TD22721-17	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	88.0
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	3850	280	mg/kg	50	06/19/18 17:13	ES	EPA 300.0
Solids, Percent	88		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #11-0'		
Lab Sample ID:	TD22721-18	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	95.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070099.D	1	06/20/18 04:18	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.63 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.7	1.2	ug/kg	
108-88-3	Toluene	ND	3.7	1.4	ug/kg	
100-41-4	Ethylbenzene	ND	3.7	1.5	ug/kg	
1330-20-7	Xylene (total)	ND	3.7	1.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	98%		63-138%
17060-07-0	1,2-Dichloroethane-D4	113%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #11-0'		
Lab Sample ID:	TD22721-18	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	95.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LB160639.D	1	06/18/18 18:35	LT	06/18/18 01:00	OP46472	GLB2486
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	9.9	mg/kg	
	TPH (> C12-C28)	ND	26	11	mg/kg	
	TPH (> C28-C35)	ND	26	11	mg/kg	
	TPH (C6-C35)	ND	26	9.9	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	114%		70-130%
98-08-8	aaa-Trifluorotoluene	117%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #11-0'		
Lab Sample ID:	TD22721-18	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	95.9
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	68.2	5.2	mg/kg	1	06/19/18 17:30	ES	EPA 300.0
Solids, Percent	95.9		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #12-0'		
Lab Sample ID:	TD22721-19	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	95.8
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070100.D	1	06/20/18 04:47	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.26 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.0	1.3	ug/kg	
108-88-3	Toluene	ND	4.0	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	4.0	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	99%		63-138%
17060-07-0	1,2-Dichloroethane-D4	123%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #12-0'		
Lab Sample ID:	TD22721-19	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	95.8
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85708.D	1	06/19/18 16:06	LT	06/18/18 04:30	OP46476	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	9.9	mg/kg	
	TPH (> C12-C28)	ND	26	12	mg/kg	
	TPH (> C28-C35)	ND	26	12	mg/kg	
	TPH (C6-C35)	ND	26	9.9	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		70-130%
98-08-8	aaa-Trifluorotoluene	89%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #12-0'		
Lab Sample ID:	TD22721-19	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	95.8
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	842	52	mg/kg	10	06/19/18 15:39	ES	EPA 300.0
Solids, Percent	95.8		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #12-1'		
Lab Sample ID:	TD22721-20	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	89.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070101.D	1	06/20/18 05:15	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.49 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.1	1.4	ug/kg	
108-88-3	Toluene	ND	4.1	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	4.1	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.1	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	98%		63-138%
17060-07-0	1,2-Dichloroethane-D4	113%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #12-1'		
Lab Sample ID:	TD22721-20	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	89.9
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85711.D	1	06/19/18 17:21	LT	06/18/18 04:30	OP46476	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	27	11	mg/kg	
	TPH (> C12-C28)	ND	27	12	mg/kg	
	TPH (> C28-C35)	ND	27	12	mg/kg	
	TPH (C6-C35)	ND	27	11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	99%		70-130%
98-08-8	aaa-Trifluorotoluene	90%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #12-1'		
Lab Sample ID:	TD22721-20	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	89.9
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	5370	280	mg/kg	50	06/19/18 16:28	ES	EPA 300.0
Solids, Percent	89.9		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #13-0'		
Lab Sample ID:	TD22721-21	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	96.8
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070102.D	1	06/20/18 05:45	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.47 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.8	1.3	ug/kg	
108-88-3	Toluene	ND	3.8	1.4	ug/kg	
100-41-4	Ethylbenzene	ND	3.8	1.5	ug/kg	
1330-20-7	Xylene (total)	ND	3.8	1.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	100%		63-138%
17060-07-0	1,2-Dichloroethane-D4	114%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #13-0'		
Lab Sample ID:	TD22721-21	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	96.8
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85712.D	1	06/19/18 17:47	LT	06/18/18 04:30	OP46476	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	9.8	mg/kg	
	TPH (> C12-C28)	ND	25	11	mg/kg	
	TPH (> C28-C35)	ND	25	11	mg/kg	
	TPH (C6-C35)	ND	25	9.8	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	103%		70-130%
98-08-8	aaa-Trifluorotoluene	89%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #13-0'		
Lab Sample ID:	TD22721-21	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	96.8
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	73.7	5.1	mg/kg	1	06/19/18 16:45	ES	EPA 300.0
Solids, Percent	96.8		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #14-0'		
Lab Sample ID:	TD22721-22	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	93.5
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070103.D	1	06/20/18 07:55	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.30 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.0	1.4	ug/kg	
108-88-3	Toluene	ND	4.0	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	4.0	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	117%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	97%		63-138%
17060-07-0	1,2-Dichloroethane-D4	120%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #14-0'		
Lab Sample ID:	TD22721-22	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	93.5
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85713.D	1	06/19/18 18:12	LT	06/18/18 04:30	OP46476	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	10	mg/kg	
	TPH (> C12-C28)	ND	26	12	mg/kg	
	TPH (> C28-C35)	ND	26	12	mg/kg	
	TPH (C6-C35)	ND	26	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	101%		70-130%
98-08-8	aaa-Trifluorotoluene	96%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #14-0'		
Lab Sample ID:	TD22721-22	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	93.5
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	9370	530	mg/kg	100	06/19/18 17:01	ES	EPA 300.0
Solids, Percent	93.5		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #14-1'		
Lab Sample ID:	TD22721-23	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	91.2
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070104.D	1	06/20/18 08:23	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.47 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.0	1.3	ug/kg	
108-88-3	Toluene	ND	4.0	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	4.0	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	94%		63-138%
17060-07-0	1,2-Dichloroethane-D4	116%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #14-1'		
Lab Sample ID:	TD22721-23	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	91.2
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85717.D	1	06/19/18 19:52	LT	06/18/18 04:30	OP46476	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	27	10	mg/kg	
	TPH (> C12-C28)	ND	27	12	mg/kg	
	TPH (> C28-C35)	ND	27	12	mg/kg	
	TPH (C6-C35)	ND	27	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	96%		70-130%
98-08-8	aaa-Trifluorotoluene	86%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #14-1'		
Lab Sample ID:	TD22721-23	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	91.2
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	5600	270	mg/kg	50	06/19/18 17:18	ES	EPA 300.0
Solids, Percent	91.2		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #15-0'		
Lab Sample ID:	TD22721-24	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	96.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070105.D	1	06/20/18 08:52	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.04 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.1	1.4	ug/kg	
108-88-3	Toluene	ND	4.1	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.1	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.1	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	99%		63-138%
17060-07-0	1,2-Dichloroethane-D4	113%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #15-0'		
Lab Sample ID:	TD22721-24	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	96.0
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85718.D	1	06/19/18 20:18	LT	06/18/18 04:30	OP46476	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	26	9.9	mg/kg	
	TPH (> C12-C28)	ND	26	12	mg/kg	
	TPH (> C28-C35)	ND	26	12	mg/kg	
	TPH (C6-C35)	ND	26	9.9	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	106%		70-130%
98-08-8	aaa-Trifluorotoluene	100%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #15-0'		
Lab Sample ID:	TD22721-24	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	96.0
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	2420	260	mg/kg	50	06/19/18 17:34	ES	EPA 300.0
Solids, Percent	96		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #16-0'		
Lab Sample ID:	TD22721-25	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	91.3
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070106.D	1	06/20/18 09:21	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.28 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.1	1.4	ug/kg	
108-88-3	Toluene	ND	4.1	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.1	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.1	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	99%		63-138%
17060-07-0	1,2-Dichloroethane-D4	110%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #16-0'		
Lab Sample ID:	TD22721-25	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	91.3
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85719.D	1	06/19/18 20:43	LT	06/18/18 04:30	OP46476	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.0 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	27	11	mg/kg	
	TPH (> C12-C28)	ND	27	12	mg/kg	
	TPH (> C28-C35)	ND	27	12	mg/kg	
	TPH (C6-C35)	ND	27	11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	99%		70-130%
98-08-8	aaa-Trifluorotoluene	87%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #16-0'		
Lab Sample ID:	TD22721-25	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	91.3
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	8180	550	mg/kg	100	06/19/18 17:51	ES	EPA 300.0
Solids, Percent	91.3		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #16-1'		
Lab Sample ID:	TD22721-26	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C SW846 5030A	**Percent Solids:**	90.7
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0070107.D	1	06/20/18 09:49	FI	06/18/18 08:30	n/a	VM2734
Run #2							

	Initial Weight	Final Volume
Run #1	5.31 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.2	1.4	ug/kg	
108-88-3	Toluene	ND	4.2	1.6	ug/kg	
100-41-4	Ethylbenzene	ND	4.2	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	4.2	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		59-126%
2037-26-5	Toluene-D8	101%		70-139%
460-00-4	4-Bromofluorobenzene	99%		63-138%
17060-07-0	1,2-Dichloroethane-D4	107%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #16-1'		
Lab Sample ID:	TD22721-26	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	90.7
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85720.D	1	06/19/18 21:08	LT	06/18/18 04:30	OP46476	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	27	10	mg/kg	
	TPH (> C12-C28)	ND	27	12	mg/kg	
	TPH (> C28-C35)	ND	27	12	mg/kg	
	TPH (C6-C35)	ND	27	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	102%		70-130%
98-08-8	aaa-Trifluorotoluene	95%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #16-1'		
Lab Sample ID:	TD22721-26	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	90.7
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	643	28	mg/kg	5	06/19/18 18:07	ES	EPA 300.0
Solids, Percent	90.7		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #17-0'		
Lab Sample ID:	TD22721-27	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	SW846 8260C	**Percent Solids:**	98.4
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1097387.D	1	06/20/18 16:46	FI	n/a	n/a	VY4778
Run #2							

	Initial Weight	Final Volume
Run #1	5.21 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.9	1.3	ug/kg	
108-88-3	Toluene	ND	3.9	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	3.9	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	3.9	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		59-126%
2037-26-5	Toluene-D8	109%		70-139%
460-00-4	4-Bromofluorobenzene	99%		63-138%
17060-07-0	1,2-Dichloroethane-D4	103%		54-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #17-0'		
Lab Sample ID:	TD22721-27	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
Method:	TNRCC 1005 TX1005	**Percent Solids:**	98.4
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	JF85721.D	1	06/19/18 21:33	LT	06/18/18 04:30	OP46476	GJF1574
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	9.6	mg/kg	
	TPH (> C12-C28)	ND	25	11	mg/kg	
	TPH (> C28-C35)	ND	25	11	mg/kg	
	TPH (C6-C35)	ND	25	9.6	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	114%		70-130%
98-08-8	aaa-Trifluorotoluene	97%		70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #17-0'		
Lab Sample ID:	TD22721-27	**Date Sampled:**	06/14/18
Matrix:	SO - Soil	**Date Received:**	06/15/18
		Percent Solids:	98.4
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	43.4	5.1	mg/kg	1	06/19/18 18:24	ES	EPA 300.0
Solids, Percent	98.4		%	1	06/18/18	TH	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD22721-28	**Date Sampled:**	06/14/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/15/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Atha SWD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01248945.D	1	06/19/18 07:24	FI	n/a	n/a	VX3697
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	96%		80-119%
460-00-4	4-Bromofluorobenzene	105%		72-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

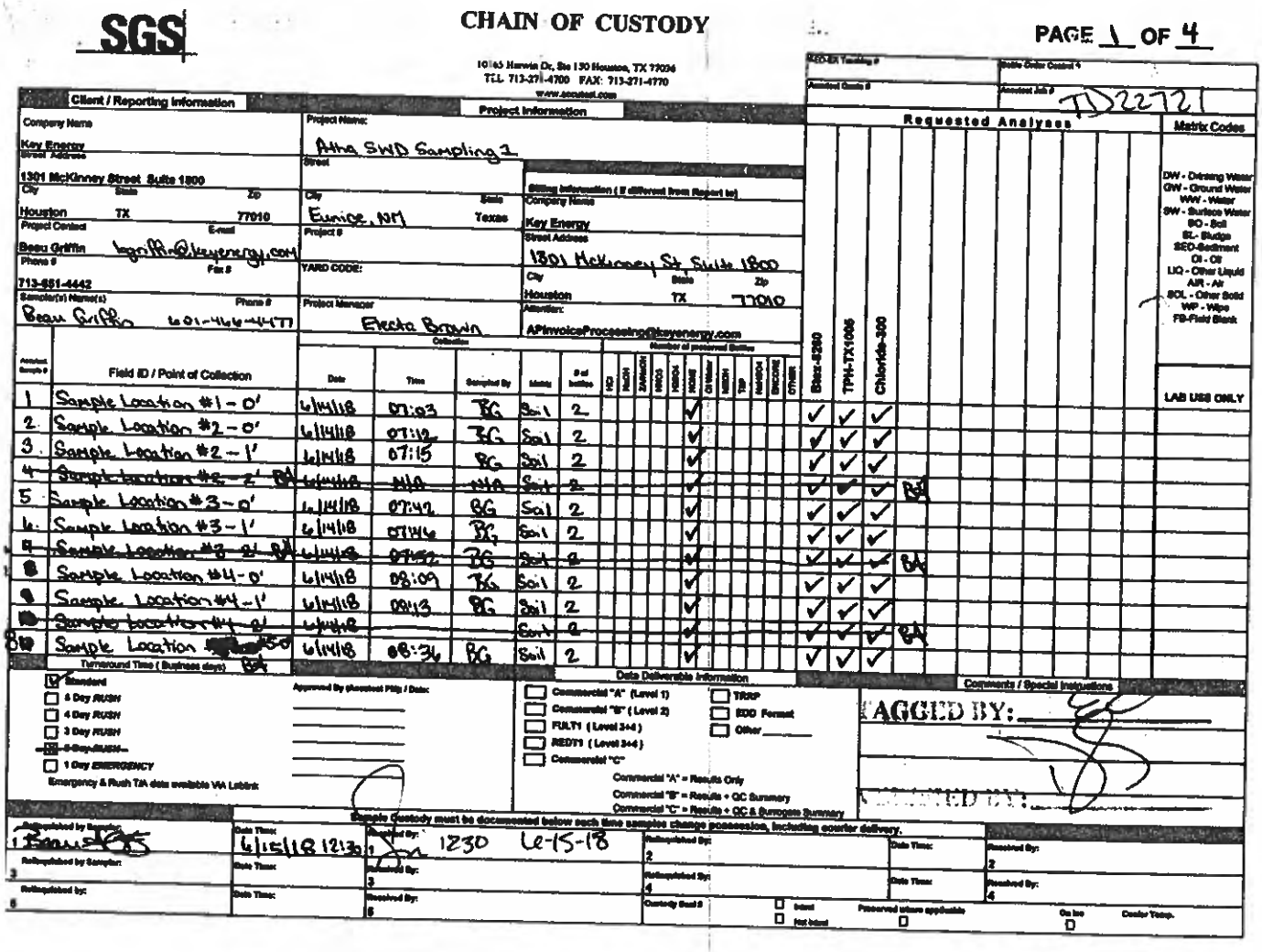
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



SGS

CHAIN OF CUSTODY

PAGE 1 OF 4

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.sgsnet.com

TD22721

Client / Reporting Information

Company Name: Key Energy
Street Address: 1301 McKinney Street Suite 1800
City: Houston State: TX Zip: 77010
Project Contact: Beau Griffin E-mail: bgriffin@keyenergy.com
Phone #: 713-651-4442 Fax #:
Sampler(s) Name(s): Beau Griffin Phone #: 432-448-4477

Project Information

Project Name: Atha SWD Sampling 2
Street:
City: Eunice, NM State: Texas
Project #:
YARD CODE:
Project Manager: Electa Brown

Billing Information (If different from Report to)

Company Name: Key Energy
Street Address: 1301 McKinney St Suite 1800
City: Houston State: TX Zip: 77010
Attention: APInvoiceProcessing@keyenergy.com

Requested Analyses

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles	Btex-8260	TPH-TX1005	Chloride-300	LAB USE ONLY
1	Sample Location #1 - 0'	6/14/18	07:03	BG	Soil	2		✓	✓	✓	
2	Sample Location #2 - 0'	6/14/18	07:12	BG	Soil	2		✓	✓	✓	
3	Sample Location #2 - 1'	6/14/18	07:15	BG	Soil	2		✓	✓	✓	
4	Sample Location #2 - 2' BA	6/14/18	N/A	N/A	Soil	2		✓	✓	✓	
5	Sample Location #3 - 0'	6/14/18	07:42	BG	Soil	2		✓	✓	✓	
6	Sample Location #3 - 1'	6/14/18	07:46	BG	Soil	2		✓	✓	✓	
7	Sample Location #3 - 2' BA	6/14/18	07:52	BG	Soil	2		✓	✓	✓	
8	Sample Location #4 - 0'	6/14/18	08:09	BG	Soil	2		✓	✓	✓	
9	Sample Location #4 - 1'	6/14/18	08:13	BG	Soil	2		✓	✓	✓	
10	Sample Location #4 - 2'	6/14/18			Soil	2		✓	✓	✓	
11	Sample Location [redacted]50	6/14/18	08:36	BG	Soil	2		✓	✓	✓	

Turnaround Time (Business days)

- [x] Standard
- [ ] 4 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Emergency & Rush TAT data available VIA Lablink

Approved By (Accutest PM) / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Summary Summary

Comments / Special Instructions

TAGGED BY:

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler	Date Time	Received By	Date Time
1		6/15/18 1213		
2	Relinquished by Sampler	Date Time	Received By	1230 6-15-18
3	Relinquished by:	Date Time	Received By:	
4			Received By:	
5				

	Relinquished By	Date Time	Received By:
2			
4	Relinquished By:	Date Time	Received By:

Custody Seal #: Intact / Not Intact — Preserved where applicable — On Ice — Cooler Temp.

4.1 4

TD22721: Chain of Custody
Page 1 of 10

SGS

CHAIN OF CUSTODY

PAGE 2 OF 4

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL 713-271-4700 FAX 713-271-4770

TD22721

Client / Reporting Information

Company Name: Key Energy
Street Address: 1301 McKinney Street Suite 1800
City: Houston State: TX Zip: 77010
Project Contact: Beau Griffin E-mail: bgriffin@keyenergy.com
Phone #: 713-651-4442 Fax #:
Sampler(s) Name(s): Beau Griffin Phone #: 601-466-4477

Project Information

Project Name: Anna SWD Sampling 1
Street:
City: Eunice State: Texas
Project #:
YARD CODE:
Project Manager: Electa Braun

Billing Information (If different from Report to)

Company Name: Key Energy
Street Address:
City: Houston State: TX Zip:
Attention: APInvoiceProcessing@keyenergy.com

Requested Analyses

Item	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of Bottles	HCl	MeOH	DI Water	Other	Btex-8260	TPH-TX1005	Chloride-300	Matrix Codes
1	Sample Location #5-1'	6/14/18	08:43	BG	Soil	2				✓	✓	✓	✓	
2	Sample Location #5-2'	6/14/18			Soil	2				✓	✓	✓	✓	
3	Sample Location #6-0'	6/14/18	08:51	BG	Soil	2				✓	✓	✓	✓	
4	Sample Location #6-1'	6/14/18	08:56	BG	Soil	2				✓	✓	✓	✓	
5	Sample Location #6-2'	6/14/18			Soil	2				✓	✓	✓	✓	
6	Sample Location #7-0'	6/14/18	09:06	BG	Soil	2				✓	✓	✓	✓	
7	Sample Location #7-1'	6/14/18	09:11	BG	Soil	2				✓	✓	✓	✓	
8	Sample Location #7-2'	6/14/18			Soil	2				✓	✓	✓	✓	
9	Sample Location #8-0'	6/14/18	09:16	BG	Soil	2				✓	✓	✓	✓	
10	Sample Location #9-0'	6/14/18	09:20	BG	Soil	2				✓	✓	✓	✓	
11	Sample Location #10-0'	6/14/18	09:24	BG	Soil	2				✓	✓	✓	✓	

LAB USE ONLY

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

Turnaround Time (Business days)

- [x] Standard
- [ ] 6 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] ~~2 Day RUSH~~
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Approved By (Accredited PM) / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] RRP
- [ ] EDD Format
- [ ] Other
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1	Beau	6/15/18 1730		1230 6-15-18		
2						
3						
4						
5						
6						

Custody Seal #: Intact / Not Intact — Preserved where applicable — On Ice — Cooler Temp.

SGS

CHAIN OF CUSTODY

PAGE 3 OF 4

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

SGS-ES Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: TD22721

Client / Reporting Information

Company Name: Key Energy
Street Address: 1301 McKinney Street Suite 1800
City: Houston | State: TX | Zip: 77010
Project Contact: Beau Griffin | E-mail: bgriffin@keyenergy.com
Phone #: 713-651-4442 | Fax #:
Sampler(s) Name(s): Beau Griffin | Phone #: 601-466-4477

Project Information

Project Name: Atha SWD Sampling 1
Street:
City: Eunice, NM | State: Texas
Project #:
YARD CODE:
Project Manager: Electa Brown

Billing Information (if different from Report to)

Company Name: Key Energy
Street Address: 1301 McKinney St, Suite 1800
City: Houston | State: TX | Zip: 77010
Attention: APInvoiceProcessing@keyenergy.com

Requested Analyses

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	ZnAc/NaOH	HNO3	H2SO4	NONE	Other	MEOH	TBP	NaHSO4	ENCORE	OTHER	Btex-8260	TPH-TX1005	Chloride-300	LAB USE ONLY
7	Sample Location #10-1'	6/14/18	09:23	BG	Soil	2						✓							✓	✓	✓	
24	Sample Location #10-2'	6/14/18			Soil	2						✓							✓	✓	✓ BA	
8	Sample Location #11-0'	6/14/18	09:38	BG	Soil	2						✓							✓	✓	✓	
9	Sample Location #12-0'	6/14/18	09:42	BG	Soil	2						✓							✓	✓	✓	
10	Sample Location #12-1'	6/14/18	09:46	BG	Soil	2						✓							✓	✓	✓	
26	Sample Location #12-2'	6/14/18			Soil	2						✓							✓	✓	✓ BA	
11	Sample Location #13-0'	6/14/18	09:58	BG	Soil	2						✓							✓	✓	✓	
12	Sample Location #14-0'	6/14/18	10:02	BG	Soil	2						✓							✓	✓	✓	
13	Sample Location #14-1'	6/14/18	10:05	BG	Soil	2						✓							✓	✓	✓	
28	Sample Location #14-2'	6/14/18			Soil	2						✓							✓	✓	✓ BA	
14	Sample Location #15-0'	6/14/18	10:09	BG	Soil	2						✓							✓	✓	✓	

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] ~~2 Day RUSH~~
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA LabLink

Approved By (Accutest PM) / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] RUL T1 (Level 3+4)
- [ ] RED T1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other

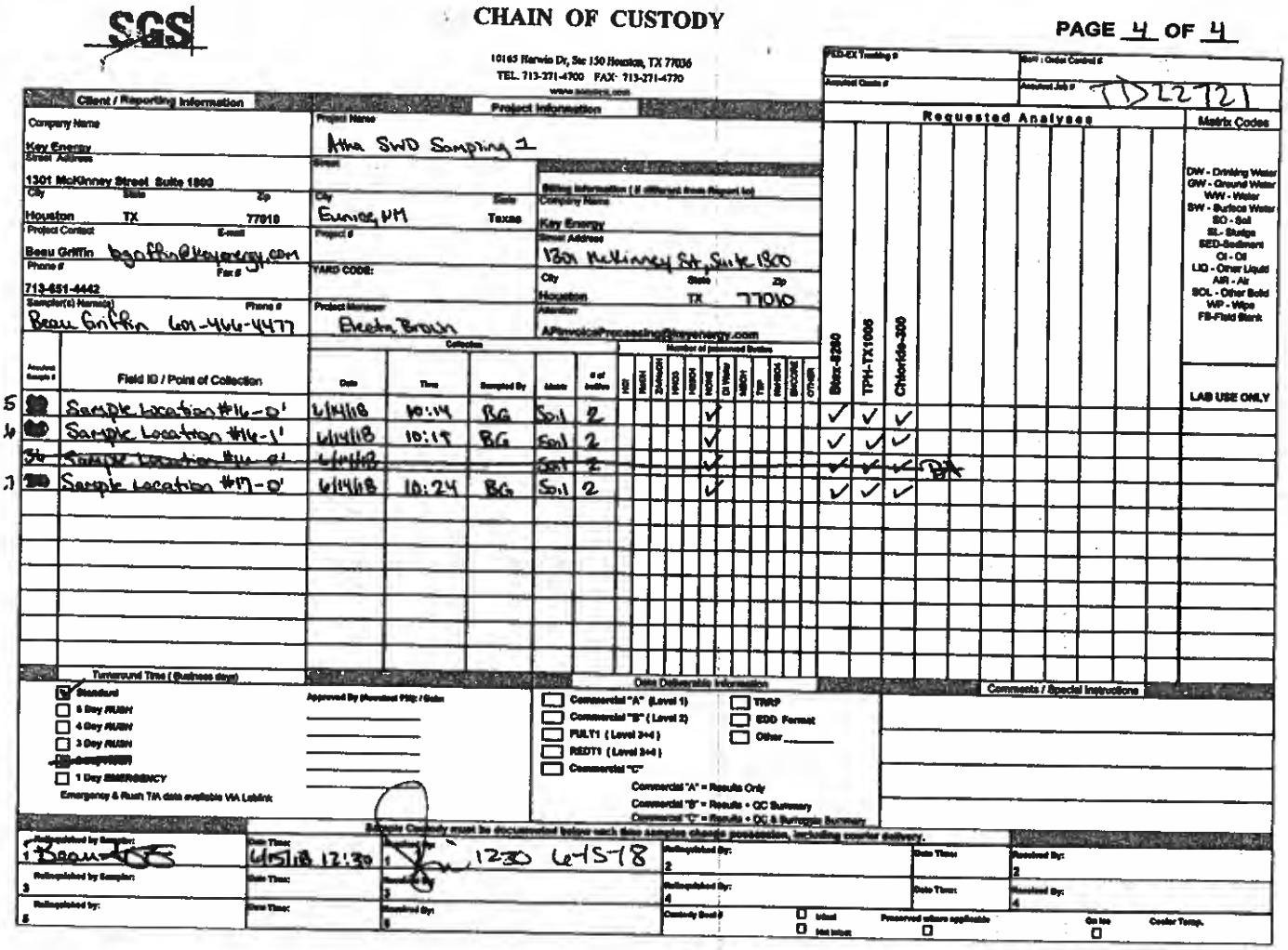
Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Beau Griffin	6/15/18 12:30	1280	2		2
3			3	4		4
5			6	Custody Seal #	Intact / Not Intact	Preserved where applicable: On Ice / Cooler Temp.

TD22721: Chain of Custody
Page 3 of 10



CHAIN OF CUSTODY

PAGE 4 OF 4

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770

Client / Reporting Information
Company Name: Key Energy
Street Address: 1301 McKinney Street Suite 1800
City: Houston State: TX Zip: 77010
Project Contact: Beau Griffin E-mail: bgriffin@keyenergy.com
Phone #: 713-651-4442 Fax #:
Sampler(s) Name(s): Beau Griffin Phone #: 601-466-4477

Project Information
Project Name: Atha SWD Sampling 1
Street:
City: Eunice, NM State: Texas
Project #:
YARD CODE:
Project Manager: Beau Griffin

Billing Information (If different from Report to)
Company Name: Key Energy
Street Address: 1301 McKinney St, Suite 1800
City: Houston State: TX Zip: 77010
Attention: APInvoiceProcessing@keyenergy.com

Requested Analyses
Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	HNO3	H2SO4	NaOH	None	DI Water	MeOH	Tbr	NaHSO4	ZnAcet	OTHER	Bkrz-8260	TPH-TX1005	Chloride-300	LAB USE ONLY
5	Sample Location #16-0'	6/14/18	10:14	BG	Soil	2					✓							✓	✓	✓	
6	Sample Location #16-1'	6/14/18	10:19	BG	Soil	2					✓							✓	✓	✓	
7	Sample Location #17-0'	6/14/18	10:24	BG	Soil	2					✓							✓	✓	✓	

Turnaround Time (Business days)
- [x] Standard
- [ ] 5 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Approved By (Received Prior / Date):

Data Deliverable Information
- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] PULY1 (Level 3+4)
- [ ] RED71 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date Time:	Received By:	Date Time:
1	Beau GS	6/15/18 12:30	1	1230 6/15/18
2			2	
3			3	
4			4	
5			5	

Custody Seal #: Intact / Not Intact — Preserved where applicable — On Ice — Cooler Temp.

TD22721

TD22721: Chain of Custody
Page 4 of 10

ACCUTEST

COOLER TEMP FORM

TC# TD22721

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 6-15-23

Client: Key Energy

Cooler Number: 1

Thermometer ID: IR5 CF, °C 0 Corrected Temp, °C 4.3

SAMPLES CONTAINED IN COOLER

6-1 Trip Blank
7-0
7-1
8-0
9-0
10-0
10-1
11-0
12-0
12-1
13-0
13-0
14-0
14-1

Form: SM027-06 Rev 10/24/2016

4.1 4

TD22721: Chain of Custody
Page 5 of 10

ACCUTEST

COOLER TEMP FORM

TC# TD22724

Delivered by (circle one): FedEx/UPS ALGC Driver (Client)

Date:

Client: Key Energy

Cooler Number: 2

Thermometer ID: DR3 CF, °C 0 Corrected Temp, °C 4.6

SAMPLES CONTAINED IN COOLER

Form: SM027-06 Rev 10/24/2016

4.1 4

TD22721: Chain of Custody
Page 6 of 10

SGS Sample Receipt Summary

Job Number: TD22721 **Client:** KEY ENERGY **Project:** ATHA SWD SAMPLING

Date / Time Received: 6/15/2018 12:30:00 PM **Delivery Method:** **Airbill #'s:**

No. Coolers: 2 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (4.8/4.8); #2: (4.6/4.6);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☑	☐	☐	☑	☐
2. Trip Blank listed on COC:	☐	☑	☐		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☑	☐	☐		

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments Received TB not listed on COC.

4.1 4

Sample Receipt Log

Job #: TD22721 **Date / Time Received:** 6/15/2018 12:30:00 PM 12:3 **Initials:** EC

Client: KEY ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
	TD22721-1	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable.				
	TD22721-1	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-2	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable.				
	TD22721-2	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-3	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable.				
	TD22721-3	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-4	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-4	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-5	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-5	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-6	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-6	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-7	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable.				
	TD22721-7	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-8	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable.				
	TD22721-8	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-9	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-9	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-10	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-10	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-11	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-11	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-12	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable.				

4.1 4

TD22721: Chain of Custody
Page 8 of 10

Sample Receipt Log

Job #: TD22721 **Date / Time Received:** 6/15/2018 12:30:00 PM 12:3 **Initials:** EC

Client: KEY ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
	TD22721-12	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-13	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-13	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-14	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-14	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-15	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-15	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-16	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-16	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-17	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-17	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-18	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-18	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-19	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-19	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-20	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-20	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-21	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-21	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-22	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-22	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-23	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-23	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				

Sample Receipt Log

Job #: TD22721 **Date / Time Received:** 6/15/2018 12 30 00 PM 12:3 **Initials:** EC

Client: KEY ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
	TD22721-24	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-24	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-25	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-25	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-26	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-26	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-27	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable				
	TD22721-27	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				
	TD22721-28	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD22721-28	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

4.1 4

TD22721: Chain of Custody
Page 10 of 10

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3697-MB	X01248925.D	1	06/18/18	FI	n/a	n/a	VX3697

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-28

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	104%	72-122%
17060-07-0	1,2-Dichloroethane-D4	102%	68-124%
2037-26-5	Toluene-D8	96%	80-119%
460-00-4	4-Bromofluorobenzene	103%	72-126%

Method Blank Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2733-MB	M0070065.D	1	06/19/18	FI	n/a	n/a	VM2733

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-1, TD22721-2, TD22721-3, TD22721-4, TD22721-6, TD22721-7, TD22721-9, TD22721-10, TD22721-11, TD22721-13, TD22721-14, TD22721-15, TD22721-16

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.0	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	4.0	1.6	ug/kg	
108-88-3	Toluene	ND	4.0	1.5	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	1.8	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	103%	59-126%
2037-26-5	Toluene-D8	99%	70-139%
460-00-4	4-Bromofluorobenzene	99%	63-138%
17060-07-0	1,2-Dichloroethane-D4	114%	54-123%

Method Blank Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2734-MB	M0070092.D	1	06/20/18	FI	n/a	n/a	VM2734

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-17, TD22721-18, TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-26

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.0	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	4.0	1.6	ug/kg	
108-88-3	Toluene	ND	4.0	1.5	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	1.8	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	95%	59-126%
2037-26-5	Toluene-D8	104%	70-139%
460-00-4	4-Bromofluorobenzene	96%	63-138%
17060-07-0	1,2-Dichloroethane-D4	93%	54-123%

Method Blank Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY4778-MB	Y1097372.D	1	06/20/18	FI	n/a	n/a	VY4778

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-5, TD22721-8, TD22721-12, TD22721-27

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.0	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	4.0	1.6	ug/kg	
108-88-3	Toluene	ND	4.0	1.5	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	1.8	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	106%	59-126%
2037-26-5	Toluene-D8	109%	70-139%
460-00-4	4-Bromofluorobenzene	97%	63-138%
17060-07-0	1,2-Dichloroethane-D4	104%	54-123%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Blank Spike Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3697-BS	X01248922.D	1	06/18/18	FI	n/a	n/a	VX3697

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-28

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	28.2	113	68-119
100-41-4	Ethylbenzene	25	27.1	108	71-117
108-88-3	Toluene	25	26.8	107	73-119
1330-20-7	Xylene (total)	75	81.7	109	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	104%	72-122%
17060-07-0	1,2-Dichloroethane-D4	98%	68-124%
2037-26-5	Toluene-D8	97%	80-119%
460-00-4	4-Bromofluorobenzene	102%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY4778-BS	Y1097369.D	1	06/20/18	FI	n/a	n/a	VY4778

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-5, TD22721-8, TD22721-12, TD22721-27

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	50.4	101	58-124
100-41-4	Ethylbenzene	50	51.1	102	57-124
108-88-3	Toluene	50	50.9	102	67-119
1330-20-7	Xylene (total)	150	149	99	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	105%	59-126%
2037-26-5	Toluene-D8	99%	70-139%
460-00-4	4-Bromofluorobenzene	100%	63-138%
17060-07-0	1,2-Dichloroethane-D4	101%	54-123%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2733-BS	M0070062.D	1	06/19/18	FI	n/a	n/a	VM2733
VM2733-BSD [a]	M0070063.D	1	06/19/18	FI	n/a	n/a	VM2733

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-1, TD22721-2, TD22721-3, TD22721-4, TD22721-6, TD22721-7, TD22721-9, TD22721-10, TD22721-11, TD22721-13, TD22721-14, TD22721-15, TD22721-16

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	50	56.7	113	52.2	104	8	58-124/30
100-41-4	Ethylbenzene	50	56.1	112	51.2	102	9	57-124/30
108-88-3	Toluene	50	50.7	101	46.4	93	9	67-119/30
1330-20-7	Xylene (total)	150	170	113	155	103	9	62-120/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	98%	103%	59-126%
2037-26-5	Toluene-D8	102%	102%	70-139%
460-00-4	4-Bromofluorobenzene	95%	98%	63-138%
17060-07-0	1,2-Dichloroethane-D4	105%	105%	54-123%

(a) Insufficient sample available for MS/MSD.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2734-BS	M0070088.D	1	06/19/18	FI	n/a	n/a	VM2734
VM2734-BSD [a]	M0070089.D	1	06/19/18	FI	n/a	n/a	VM2734

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-17, TD22721-18, TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-26

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	50	53.2	106	51.9	104	2	58-124/30
100-41-4	Ethylbenzene	50	50.8	102	50.0	100	2	57-124/30
108-88-3	Toluene	50	46.5	93	46.3	93	0	67-119/30
1330-20-7	Xylene (total)	150	152	101	150	100	1	62-120/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	100%	99%	59-126%
2037-26-5	Toluene-D8	101%	103%	70-139%
460-00-4	4-Bromofluorobenzene	97%	96%	63-138%
17060-07-0	1,2-Dichloroethane-D4	103%	96%	54-123%

(a) Insufficient sample available for MS/MSD.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD22717-20MS	X01248928.D	1	06/18/18	FI	n/a	n/a	VX3697
TD22717-20MSD	X01248929.D	1	06/19/18	FI	n/a	n/a	VX3697
TD22717-20	X01248926.D	1	06/18/18	FI	n/a	n/a	VX3697

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-28

CAS No.	Compound	TD22717-20 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		25	26.7	107	25	26.6	106	0	68-119/12
100-41-4	Ethylbenzene	ND		25	25.0	100	25	25.2	101	1	71-117/12
108-88-3	Toluene	ND		25	24.8	99	25	24.9	100	0	73-119/13
1330-20-7	Xylene (total)	ND		75	75.3	100	75	75.9	101	1	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD22717-20	Limits
1868-53-7	Dibromofluoromethane	107%	106%	106%	72-122%
17060-07-0	1,2-Dichloroethane-D4	101%	101%	103%	68-124%
2037-26-5	Toluene-D8	96%	96%	97%	80-119%
460-00-4	4-Bromofluorobenzene	102%	101%	104%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD22637-1MS	Y1097376.D	1	06/20/18	FI	n/a	n/a	VY4778
TD22637-1MSD	Y1097377.D	1	06/20/18	FI	n/a	n/a	VY4778
TD22637-1	Y1097375.D	1	06/20/18	FI	n/a	n/a	VY4778

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD22721-5, TD22721-8, TD22721-12, TD22721-27

CAS No.	Compound	TD22637-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		1910	1780	93	1910	1760	92	1	58-124/26
100-41-4	Ethylbenzene	ND		1910	1810	95	1910	1760	92	3	57-124/29
108-88-3	Toluene	ND		1910	1830	96	1910	1770	93	3	67-119/28
1330-20-7	Xylene (total)	ND		5730	5280	92	5730	5120	89	3	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TD22637-1	Limits
1868-53-7	Dibromofluoromethane	95%	97%	96%	59-126%
2037-26-5	Toluene-D8	99%	98%	109%	70-139%
460-00-4	4-Bromofluorobenzene	100%	97%	95%	63-138%
17060-07-0	1,2-Dichloroethane-D4	95%	95%	98%	54-123%

* = Outside of Control Limits.

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP46472-MB	JF85675.D	1	06/18/18	LT	06/18/18	OP46472	GJF1573

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TD22721-1, TD22721-2, TD22721-3, TD22721-4, TD22721-5, TD22721-6, TD22721-7, TD22721-8, TD22721-9, TD22721-10, TD22721-11, TD22721-12, TD22721-13, TD22721-14, TD22721-15, TD22721-16, TD22721-17, TD22721-18

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	9.6	mg/kg	
	TPH (> C12-C28)	ND	25	11	mg/kg	
	TPH (> C28-C35)	ND	25	11	mg/kg	
	TPH (C6-C35)	ND	25	9.6	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	91%	70-130%
98-08-8	aaa-Trifluorotoluene	84%	70-130%

Method Blank Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP46476-MB	JF85707.D	1	06/19/18	LT	06/18/18	OP46476	GJF1574

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-26, TD22721-27

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	9.6	mg/kg	
	TPH (> C12-C28)	ND	25	11	mg/kg	
	TPH (> C28-C35)	ND	25	11	mg/kg	
	TPH (C6-C35)	ND	25	9.6	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	94%	70-130%
98-08-8	aaa-Trifluorotoluene	90%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP46472-BS	JF85673.D	1	06/18/18	LT	06/18/18	OP46472	GJF1573
OP46472-BSD	JF85674.D	1	06/18/18	LT	06/18/18	OP46472	GJF1573

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TD22721-1, TD22721-2, TD22721-3, TD22721-4, TD22721-5, TD22721-6, TD22721-7, TD22721-8, TD22721-9, TD22721-10, TD22721-11, TD22721-12, TD22721-13, TD22721-14, TD22721-15, TD22721-16, TD22721-17, TD22721-18

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	238	95	232	93	3	75-125/20
	TPH (> C12-C28)	250	222	89	217	87	2	75-125/20
	TPH (C6-C35)	500	460	92	449	90	2	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	90%	86%	70-130%
98-08-8	aaa-Trifluorotoluene	90%	85%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP46476-BS	JF85699.D	1	06/19/18	LT	06/18/18	OP46476	GJF1574
OP46476-BSD	JF85700.D	1	06/19/18	LT	06/18/18	OP46476	GJF1574

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-26, TD22721-27

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	203	81	223	89	9	75-125/20
	TPH (> C12-C28)	250	195	78	197	79	1	75-125/20
	TPH (C6-C35)	500	398	80	420	84	5	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	93%	92%	70-130%
98-08-8	aaa-Trifluorotoluene	84%	91%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP46472-MS	LF160626.D	1	06/18/18	LT	06/18/18	OP46472	GLF2486
OP46472-MSD	LF160628.D	1	06/18/18	LT	06/18/18	OP46472	GLF2486
TD22721-2 [a]	LF160624.D	1	06/18/18	LT	06/18/18	OP46472	GLF2486

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TD22721-1, TD22721-2, TD22721-3, TD22721-4, TD22721-5, TD22721-6, TD22721-7, TD22721-8, TD22721-9, TD22721-10, TD22721-11, TD22721-12, TD22721-13, TD22721-14, TD22721-15, TD22721-16, TD22721-17, TD22721-18

CAS No.	Compound	TD22721-2 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	ND		267	244	91	263	235	89	4	75-125/20
	TPH (> C12-C28)	21.3	J	267	261	90	263	250	87	4	75-125/20
	TPH (C6-C35)	84.7		534	505	79	526	484	76	4	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TD22721-2	Limits
84-15-1	o-Terphenyl	111%	109%	110%	70-130%
98-08-8	aaa-Trifluorotoluene	83%	82%	84%	70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD22721
Account: KEYENTXH Key Energy
Project: Atha SWD

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP46476-MS	JF85709.D	1	06/19/18	LT	06/18/18	OP46476	GJF1574
OP46476-MSD	JF85710.D	1	06/19/18	LT	06/18/18	OP46476	GJF1574
TD22721-19 [a]	JF85708.D	1	06/19/18	LT	06/18/18	OP46476	GJF1574

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-26, TD22721-27

CAS No.	Compound	TD22721-19 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	ND		257	243	95	259	233	90	4	75-125/20
	TPH (> C12-C28)	ND		257	224	87	259	213	82	5	75-125/20
	TPH (C6-C35)	ND		514	467	91	517	446	86	5	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TD22721-19	Limits
84-15-1	o-Terphenyl	102%	98%	98%	70-130%
98-08-8	aaa-Trifluorotoluene	98%	90%	89%	70-130%

(a) Sample collected in bulk. All results for nC6 to nC12 boiling point range are considered estimated values.

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD22721
Account: KEYENTXH - Key Energy
Project: Atha SWD

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Bromide	GP48174/GN90579	5.0	0.0	mg/kg	100	97.0	97.0	90-110%
Chloride	GP48174/GN90579	5.0	0.0	mg/kg	100	109	109.0	90-110%
Chloride	GP48175/GN90579	5.0	0.0	mg/kg	100	106	106.0	90-110%
Chloride	GP48178/GN90581	5.0	0.0	mg/kg	100	101	101.0	90-110%
Fluoride	GP48174/GN90579	5.0	0.0	mg/kg	100	98.9	98.9	90-110%
Nitrogen, Nitrate	GP48174/GN90579	5.0	0.0	mg/kg	100	92.5	92.5	90-110%
Nitrogen, Nitrite	GP48174/GN90579	5.0	0.0	mg/kg	100	97.9	97.9	90-110%
Sulfate	GP48174/GN90579	5.0	0.0	mg/kg	100	98.2	98.2	90-110%

Associated Samples:
Batch GP48174: TD22721-2, TD22721-3, TD22721-4, TD22721-5, TD22721-6, TD22721-7, TD22721-8
Batch GP48175: TD22721-11, TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-26, TD22721-27
Batch GP48178: TD22721-1, TD22721-9, TD22721-10, TD22721-12, TD22721-13, TD22721-14, TD22721-15, TD22721-16, TD22721-17, TD22721-18
(*) Outside of QC limits

7.1

7

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD22721
Account: KEYENTXH - Key Energy
Project: Atha SWD

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Bromide	GP48174/GN90579	TD22466-1	mg/kg	0.0	0.0	0.0	0-20%
Chloride	GP48174/GN90579	TD22466-1	mg/kg	282	283	0.4	0-20%
Chloride	GP48175/GN90579	TD22721-11	mg/kg	5200	5220	0.4	0-20%
Chloride	GP48178/GN90581	TD22721-1	mg/kg	410	409	0.2	0-20%
Fluoride	GP48174/GN90579	TD22466-1	mg/kg	81.0	80.3	0.9	0-20%
Nitrogen, Nitrate	GP48174/GN90579	TD22466-1	mg/kg	0.0	0.0	0.0	0-20%
Nitrogen, Nitrite	GP48174/GN90579	TD22466-1	mg/kg	0.0	0.0	0.0	0-20%
Solids, Percent	GN90535	TD22721-1	%	90.2	90.2	0.0	0-5%
Solids, Percent	GN90536	TD22721-14	%	95.9	96	0.1	0-5%
Sulfate	GP48174/GN90579	TD22466-1	mg/kg	1350	1350	0.0	0-20%

Associated Samples:
Batch GN90535: TD22721-1, TD22721-2, TD22721-3, TD22721-4, TD22721-5, TD22721-6, TD22721-7, TD22721-8, TD22721-9, TD22721-10, TD22721-11, TD22721-12, TD22721-13
Batch GN90536: TD22721-14, TD22721-15, TD22721-16, TD22721-17, TD22721-18, TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-26, TD22721-27
Batch GP48174: TD22721-2, TD22721-3, TD22721-4, TD22721-5, TD22721-6, TD22721-7, TD22721-8
Batch GP48175: TD22721-11, TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-26, TD22721-27
Batch GP48178: TD22721-1, TD22721-9, TD22721-10, TD22721-12, TD22721-13, TD22721-14, TD22721-15, TD22721-16, TD22721-17, TD22721-18
(*) Outside of QC limits

7.2

7

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD22721
Account: KEYENTXH - Key Energy
Project: Atha SWD

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Bromide	GP48174/GN90579	TD22466-1	mg/kg	0.0	99.4	145	145.9N	80-120%
Chloride	GP48174/GN90579	TD22466-1	mg/kg	282	99.4	201	-81.5N	80-120%
Chloride	GP48175/GN90579	TD22721-11	mg/kg	5200	106	6110	858.8(a)	80-120%
Chloride	GP48178/GN90581	TD22721-1	mg/kg	410	110	630	199.6N	80-120%
Fluoride	GP48174/GN90579	TD22466-1	mg/kg	81.0	99.4	161	80.5	80-120%
Nitrogen, Nitrate	GP48174/GN90579	TD22466-1	mg/kg	0.0	99.4	137	137.8N	80-120%
Nitrogen, Nitrite	GP48174/GN90579	TD22466-1	mg/kg	0.0	99.4	150	150.9N	80-120%
Sulfate	GP48174/GN90579	TD22466-1	mg/kg	1350	99.4	434	-921.5(a)	80-120%

Associated Samples:
Batch GP48174: TD22721-2, TD22721-3, TD22721-4, TD22721-5, TD22721-6, TD22721-7, TD22721-8
Batch GP48175: TD22721-11, TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-26, TD22721-27
Batch GP48178: TD22721-1, TD22721-9, TD22721-10, TD22721-12, TD22721-13, TD22721-14, TD22721-15, TD22721-16, TD22721-17, TD22721-18
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

7.3

Appendix 4

Laboratory Analytical Report TD24377 for soil analysis at Atha SWD

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Key Energy

Atha SWD

Sampling 2

SGS Job Number: TD24377

Sampling Date: 07/18/18

Report to:

Key Energy
1301 McKinney Street
Houston, TX 77010
bgriffin@keyenergy.com

ATTN: Beau Griffin

Total number of pages in report: **28**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Electa Brown 713-271-4700

Certifications: TX (T104704220-18-30) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

Sections: 1 2 3 4 5

Table of Contents

SGS North America Inc.

Sample Summary

Key Energy

Job No: TD24377

Atha SWD
Project No: Sampling 2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD24377-1	07/18/18	10:35		07/19/18	SO	Soil	SAMPLE LOCATION #2-2'
TD24377-2	07/18/18	10:37		07/19/18	SO	Soil	SAMPLE LOCATION #3-2'
TD24377-3	07/18/18	10:46		07/19/18	SO	Soil	SAMPLE LOCATION #4-2'
TD24377-4	07/18/18	10:49		07/19/18	SO	Soil	SAMPLE LOCATION #5-2'
TD24377-5	07/18/18	10:59		07/19/18	SO	Soil	SAMPLE LOCATION #6-2'
TD24377-6	07/18/18	11:02		07/19/18	SO	Soil	SAMPLE LOCATION #7-2'
TD24377-7	07/18/18	10:41		07/19/18	SO	Soil	SAMPLE LOCATION #10-2'
TD24377-8	07/18/18	10:53		07/19/18	SO	Soil	SAMPLE LOCATION #12-2'
TD24377-9	07/18/18	10:57		07/19/18	SO	Soil	SAMPLE LOCATION #14-2'
TD24377-10	07/18/18	11:05		07/19/18	SO	Soil	SAMPLE LOCATION #15-2'
TD24377-11	07/18/18	11:08		07/19/18	SO	Soil	SAMPLE LOCATION #16-2'
TD24377-12	07/18/18	11:13		07/19/18	SO	Soil	SAMPLE LOCATION #18-0'

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Summary of Hits

Job Number: TD24377
Account: Key Energy
Project: Atha SWD
Collected: 07/18/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD24377-1	**SAMPLE LOCATION #2-2'**					
Chloride		6810	600		mg/kg	EPA 300.0
TD24377-2	**SAMPLE LOCATION #3-2'**					
Chloride		9100	550		mg/kg	EPA 300.0
TD24377-3	**SAMPLE LOCATION #4-2'**					
Chloride		83.6	31		mg/kg	EPA 300.0
TD24377-4	**SAMPLE LOCATION #5-2'**					
Chloride		273	12		mg/kg	EPA 300.0
TD24377-5	**SAMPLE LOCATION #6-2'**					
Chloride		720	29		mg/kg	EPA 300.0
TD24377-6	**SAMPLE LOCATION #7-2'**					
Chloride		1410	52		mg/kg	EPA 300.0
TD24377-7	**SAMPLE LOCATION #10-2'**					
Chloride		642	30		mg/kg	EPA 300.0
TD24377-8	**SAMPLE LOCATION #12-2'**					
Chloride		397	14		mg/kg	EPA 300.0
TD24377-9	**SAMPLE LOCATION #14-2'**					
Chloride		4360	300		mg/kg	EPA 300.0
TD24377-10	**SAMPLE LOCATION #15-2'**					
Chloride		147	6.1		mg/kg	EPA 300.0
TD24377-11	**SAMPLE LOCATION #16-2'**					
Chloride		611	32		mg/kg	EPA 300.0

Summary of Hits

Job Number: TD24377
Account: Key Energy
Project: Atha SWD
Collected: 07/18/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD24377-12	**SAMPLE LOCATION #18-0'**					
Chloride		9.1	6.1		mg/kg	EPA 300.0

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #2-2'		
Lab Sample ID:	TD24377-1	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	83.2
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	6810	600	mg/kg	100	07/23/18 11:31	LR	EPA 300.0
Solids, Percent	83.2		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #3-2'		
Lab Sample ID:	TD24377-2	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	90.3
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	9100	550	mg/kg	100	07/23/18 11:48	LR	EPA 300.0
Solids, Percent	90.3		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #4-2'		
Lab Sample ID:	TD24377-3	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	80.6
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	83.6	31	mg/kg	5	07/23/18 12:05	LR	EPA 300.0
Solids, Percent	80.6		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #5-2'		
Lab Sample ID:	TD24377-4	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	82.4
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	273	12	mg/kg	2	07/23/18 12:55	LR	EPA 300.0
Solids, Percent	82.4		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #6-2'		
Lab Sample ID:	TD24377-5	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	86.8
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	720	29	mg/kg	5	07/23/18 14:03	LR	EPA 300.0
Solids, Percent	86.8		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #7-2'		
Lab Sample ID:	TD24377-6	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	94.6
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	1410	52	mg/kg	10	07/23/18 14:20	LR	EPA 300.0
Solids, Percent	94.6		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #10-2'		
Lab Sample ID:	TD24377-7	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	81.7
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	642	30	mg/kg	5	07/23/18 14:37	LR	EPA 300.0
Solids, Percent	81.7		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #12-2'		
Lab Sample ID:	TD24377-8	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	70.2
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	397	14	mg/kg	2	07/23/18 14:54	LR	EPA 300.0
Solids, Percent	70.2		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #14-2'		
Lab Sample ID:	TD24377-9	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	81.8
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	4360	300	mg/kg	50	07/23/18 15:44	LR	EPA 300.0
Solids, Percent	81.8		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #15-2'		
Lab Sample ID:	TD24377-10	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	81.8
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	147	6.1	mg/kg	1	07/23/18 16:01	LR	EPA 300.0
Solids, Percent	81.8		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #16-2'		
Lab Sample ID:	TD24377-11	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	78.0
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	611	32	mg/kg	5	07/23/18 16:18	LR	EPA 300.0
Solids, Percent	78		%	1	07/20/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #18-0'		
Lab Sample ID:	TD24377-12	**Date Sampled:**	07/18/18
Matrix:	SO - Soil	**Date Received:**	07/19/18
		Percent Solids:	81.5
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	9.1	6.1	mg/kg	1	07/23/18 17:42	LR	EPA 300.0
Solids, Percent	81.5		%	1	07/20/18	BS	SM 2540 G

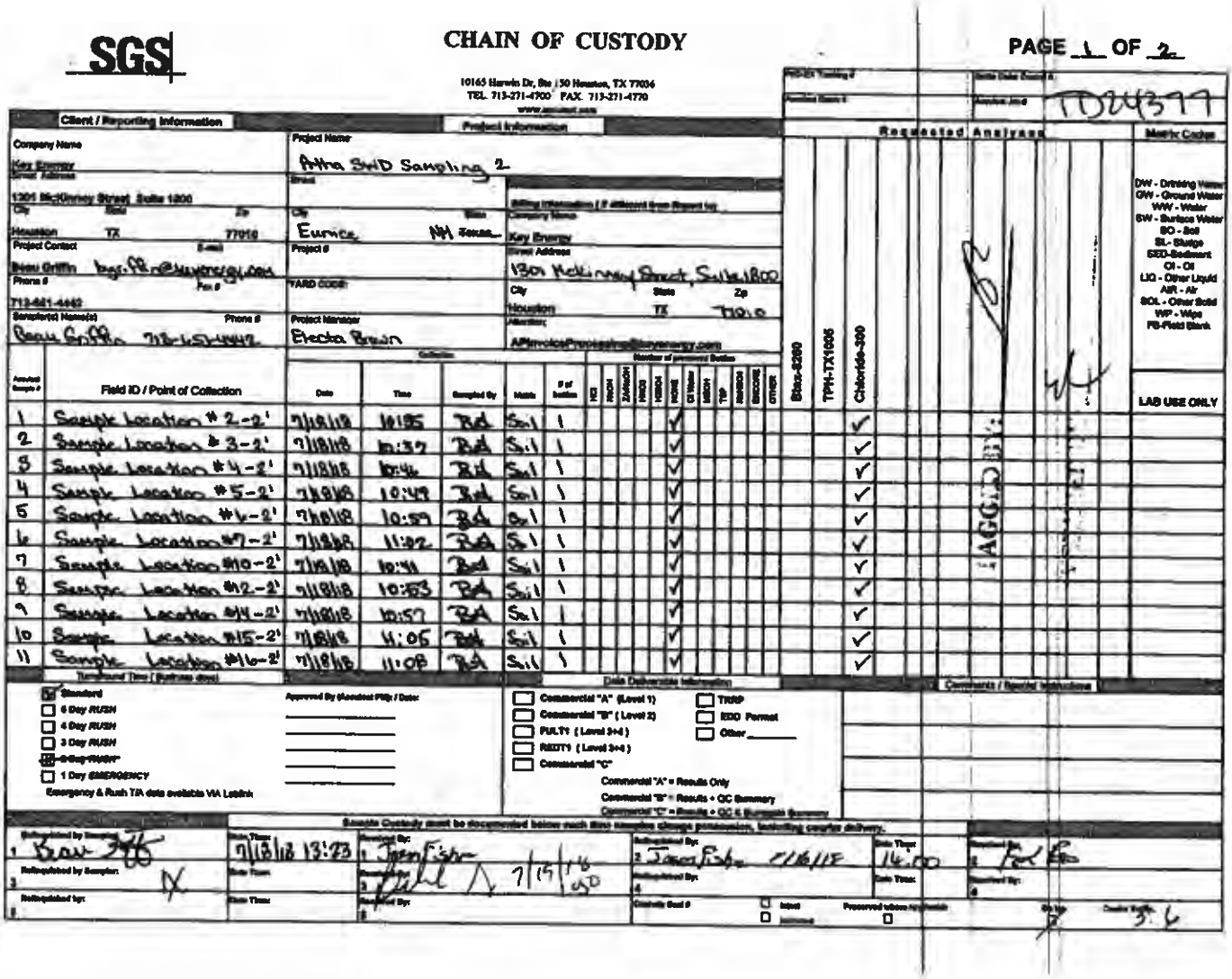
RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



SGS

CHAIN OF CUSTODY

PAGE 1 OF 2

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX. 713-271-4770

TD24377

Client / Reporting Information

Company Name: Key Energy
Street Address: 1301 McKinney Street Suite 1800
City: Houston State: TX Zip: 77010
Project Contact: Beau Griffin E-mail: beau.griffin@keyenergy.com
Phone #: 713-651-4443 Fax #:
Sampler(s) Name(s): Beau Griffin Phone #: 713-651-4443

Project Information

Project Name: Attn SWD Sampling 2
Street:
City: Eunice State: NM Zip:
Project #:
TARD Code:
Project Manager: Electra Brown

Billing Information (If different from Report to)

Company Name: Key Energy
Street Address: 1301 McKinney Street, Suite 1800
City: Houston State: TX Zip: 77010
Attention: APInvoiceProcessing@keyenergy.com

Requested Analyses

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank

Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	H2SO4	ZnAc+NaOH	HNO3	NONE	Other	MEOH	TSP	NaHSO4	ENCORE	OTHER	Btex-8260	TPH-TX1005	Chloride-300	LAB USE ONLY
1	Sample Location # 2-2'	7/18/18	10:35	BG	Soil	1					✓									✓	
2	Sample Location # 3-2'	7/18/18	10:37	BG	Soil	1					✓									✓	
3	Sample Location #4-2'	7/18/18	10:44	BG	Soil	1					✓									✓	
4	Sample Location #5-2'	7/18/18	10:49	BG	Soil	1					✓									✓	
5	Sample Location #6-2'	7/18/18	10:53	BG	Soil	1					✓									✓	
6	Sample Location #7-2'	7/18/18	11:02	BG	Soil	1					✓									✓	
7	Sample Location #10-2'	7/18/18	10:41	BG	Soil	1					✓									✓	
8	Sample Location #12-2'	7/18/18	10:53	BG	Soil	1					✓									✓	
9	Sample Location #14-2'	7/18/18	10:57	BG	Soil	1					✓									✓	
10	Sample Location #15-2'	7/18/18	4:05	BG	Soil	1					✓									✓	
11	Sample Location #16-2'	7/18/18	11:08	BG	Soil	1					✓									✓	

Turnaround Time (Business days)

- [x] Standard
- [ ] 6 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Approved By (Auditor/PM) / Date:

Emergency & Rush TA data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] PULT (Level 3+4)
- [ ] TRRP (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Raw Data Summary

Comments / Special Instructions

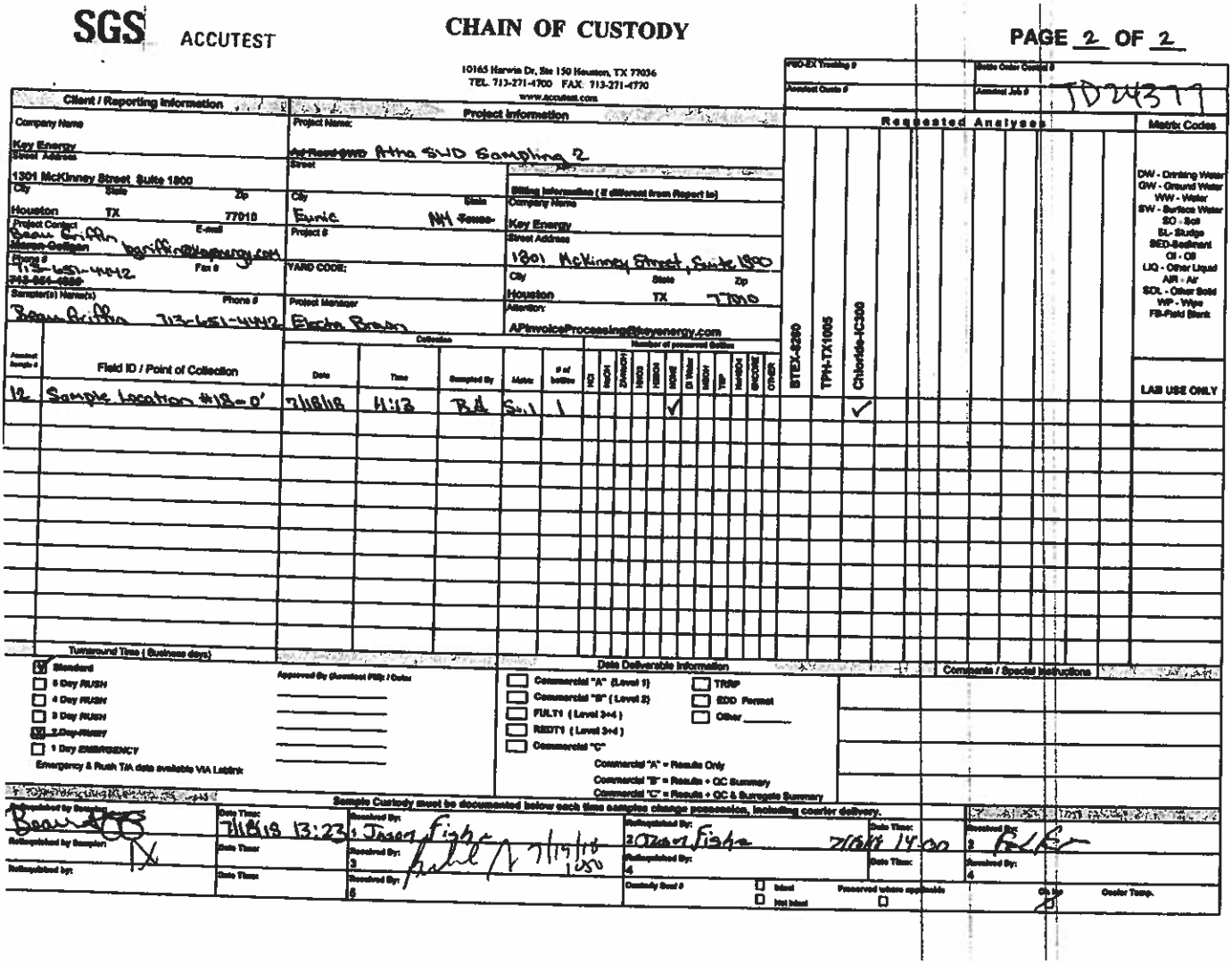
Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1	Beau Griffin	7/18/18 13:23	Jason Fisher	Jason Fisher 7/18/18	16:00	
2						
3						
4						

Custody Seal #: Intact / Not Intact — Preserved where applicable

On Ice: Cooler Temp: 3.6

4.1 4



SGS ACCUTEST

CHAIN OF CUSTODY

PAGE 2 OF 2

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX. 713-271-4770
www.accutest.com

TD24377

Client / Reporting Information

Company Name: Key Energy
Street Address: 1301 McKinney Street, Suite 1800
City: Houston State: TX Zip: 77010
Project Contact: Beau Griffin E-mail: bgriffin@keyenergy.com
Phone #: 713-451-4442 Fax #:
Sampler(s) Name(s): Beau Griffin Phone #: 713-451-4442

Project Information

Project Name: Ad Road SWD Area SVD Sampling 2
Street:
City: Eunice State: NM
Project #:
YARD CODE:
Project Manager: Elecia Brown

Billing Information (if different from Report to)

Company Name: Key Energy
Street Address: 1301 McKinney Street, Suite 1800
City: Houston State: TX Zip: 77010
Attention: APInvoiceProcessing@keyenergy.com

Requested Analyses

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	HNO3	ZnAc/NaOH	H2SO4	NaOH	DI Water	MeOH	Tris	NaHSO4	ENCORE	OTHER	BTEX-8260	TPH-TX1005	Chloride-IC300
12	Sample Location #12-0'	7/18/19	11:13	BA	Soil	1						✓								✓

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

LAB USE ONLY

Turnaround Time (Business days)

- [X] Standard
- [ ] 5 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [X] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Emergency & Rush TAT data available VIA Labtrk

Approved By (Accutest PM) / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] READY1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
Beau Griffin	7/18/19 13:23	1 Jason Fisher	2 Jason Fisher	7/19/19 14:00	2
Relinquished by:	Date Time:	3	4	Date Time:	4
		Received By: 5			

Custody Seal #: Intact / Not Intact — Preserved where applicable — On Ice — Cooler Temp.

4.1 4

TD24377: Chain of Custody
Page 2 of 5

TD24377: Chain of Custody
Page 3 of 5

SGS Sample Receipt Summary

Job Number: TD24377 **Client:** KEY ENERGY **Project:** ATHA SWD SAMPLING

Date / Time Received: 7/19/2018 10:50:00 AM **Delivery Method:** **Airbill #'s:** 444830283305

No. Coolers: 1 **Therm ID:** IR-4; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (3.6/3.6);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		

Quality Control Preservation	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐		☐	☑	☐	☐
2. Trip Blank listed on COC:	☐		☐	☑		
3. Samples preserved properly:	☑		☐			
4. VOCs headspace free:	☐		☐	☑		

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Sample Receipt Log

Job #: TD24377 **Date / Time Received:** 7/19/2018 10:50:00 AM 10:5 **Initials:** BG

Client: KEY ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD24377-1	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6
1	TD24377-2	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6
1	TD24377-3	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6
1	TD24377-4	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6
1	TD24377-5	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6
1	TD24377-6	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable	IR-4	3.6	0	3.6
1	TD24377-7	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable	IR-4	3.6	0	3.6
1	TD24377-8	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6
1	TD24377-9	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6
1	TD24377-10	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6
1	TD24377-11	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6
1	TD24377-12	8oz	1	2-101	N/P	Note #2 - Preservative check not applicable.	IR-4	3.6	0	3.6

TD24377: Chain of Custody
Page 5 of 5

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD24377
Account: KEYENTXH - Key Energy
Project: Atha SWD

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride	GP48717/GN91474	5.0	0.0	mg/kg	100	96.2	96.2	90-110%
Chloride	GP48718/GN91474	5.0	0.0	mg/kg	100	100	100.0	90-110%

Associated Samples:
Batch GP48717: TD24377-1, TD24377-2, TD24377-3, TD24377-4, TD24377-5, TD24377-6, TD24377-7, TD24377-8
Batch GP48718: TD24377-9, TD24377-10, TD24377-11, TD24377-12
(*) Outside of QC limits

5.1

5

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD24377
Account: KEYENTXH - Key Energy
Project: Atha SWD

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chloride	GP48717/GN91474	TD24377-3	mg/kg	83.6	80.7	3.5	0-20%
Chloride	GP48718/GN91474	TD24377-11	mg/kg	611	608	0.5	0-20%
Solids, Percent	GN91412	TD24393-1	%	80.2	80.4	0.2	0-5%

Associated Samples:
Batch GN91412: TD24377-1, TD24377-2, TD24377-3, TD24377-4, TD24377-5, TD24377-6, TD24377-7, TD24377-8, TD24377-9, TD24377-10, TD24377-11, TD24377-12
Batch GP48717: TD24377-1, TD24377-2, TD24377-3, TD24377-4, TD24377-5, TD24377-6, TD24377-7, TD24377-8
Batch GP48718: TD24377-9, TD24377-10, TD24377-11, TD24377-12
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD24377
Account: KEYENTXH - Key Energy
Project: Atha SWD

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP48717/GN91474	TD24377-3	mg/kg	83.6	123	228	117.6	80-120%
Chloride	GP48718/GN91474	TD24377-11	mg/kg	611	127	2560	1532.4(a)	80-120%

Associated Samples:
Batch GP48717: TD24377-1, TD24377-2, TD24377-3, TD24377-4, TD24377-5, TD24377-6, TD24377-7, TD24377-8
Batch GP48718: TD24377-9, TD24377-10, TD24377-11, TD24377-12
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Appendix 5

Laboratory Analytical Report TD25029 for soil analysis at Atha SWD

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Key Energy

Atha SWD

Atha SWD Sampling #3

SGS Job Number: TD25029

Sampling Date: 07/31/18

Report to:

Key Energy
1301 McKinney Street
Houston, TX 77010
bgriffin@keyenergy.com

ATTN: Beau Griffin

Total number of pages in report: **23**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Electa Brown 713-271-4700

Certifications: TX (T104704220-18-30) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

Sections: 1 2 3 4 5

Table of Contents

Sample Summary

Key Energy

Job No: TD25029

Atha SWD
Project No: Atha SWD Sampling #3

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
TD25029-1	07/31/18	16:10	08/02/18	SO	Soil	SAMPLE LOCATION #2-2.5'
TD25029-2	07/31/18	16:07	08/02/18	SO	Soil	SAMPLE LOCATION #3-2.5'
TD25029-3	07/31/18	16:04	08/02/18	SO	Soil	SAMPLE LOCATION #6-2.5'
TD25029-4	07/31/18	15:58	08/02/18	SO	Soil	SAMPLE LOCATION #7-2.5'
TD25029-5	07/31/18	16:16	08/02/18	SO	Soil	SAMPLE LOCATION #14-2.5'
TD25029-6	07/31/18	15:46	08/02/18	SO	Soil	SAMPLE LOCATION #16-2.5'
TD25029-7	07/31/18	16:25	08/02/18	SO	Soil	SAMPLE LOCATION #19-0'
TD25029-8	07/31/18	16:29	08/02/18	SO	Soil	SAMPLE LOCATION #20-0'
TD25029-9	07/31/18	16:33	08/02/18	SO	Soil	SAMPLE LOCATION #21-0'

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Summary of Hits

Job Number: TD25029
Account: Key Energy
Project: Atha SWD
Collected: 07/31/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD25029-1	**SAMPLE LOCATION #2-2.5'**					
Chloride		611	27		mg/kg	EPA 300.0
TD25029-2	**SAMPLE LOCATION #3-2.5'**					
Chloride		5330	270		mg/kg	EPA 300.0
TD25029-3	**SAMPLE LOCATION #6-2.5'**					
Chloride		451	29		mg/kg	EPA 300.0
TD25029-4	**SAMPLE LOCATION #7-2.5'**					
Chloride		610	28		mg/kg	EPA 300.0
TD25029-5	**SAMPLE LOCATION #14-2.5'**					
Chloride		7220	520		mg/kg	EPA 300.0
TD25029-6	**SAMPLE LOCATION #16-2.5'**					
Chloride		1460	56		mg/kg	EPA 300.0
TD25029-7	**SAMPLE LOCATION #19-0'**					
Chloride		36.0	4.9		mg/kg	EPA 300.0
TD25029-8	**SAMPLE LOCATION #20-0'**					
Chloride		29.2	6.5		mg/kg	EPA 300.0
TD25029-9	**SAMPLE LOCATION #21-0'**					
Chloride		22.0	6.8		mg/kg	EPA 300.0

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #2-2.5'		
Lab Sample ID:	TD25029-1	**Date Sampled:**	07/31/18
Matrix:	SO - Soil	**Date Received:**	08/02/18
		Percent Solids:	89.5
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	611	27	mg/kg	5	08/06/18 12:39	LR	EPA 300.0
Solids, Percent	89.5		%	1	08/03/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #3-2.5'		
Lab Sample ID:	TD25029-2	**Date Sampled:**	07/31/18
Matrix:	SO - Soil	**Date Received:**	08/02/18
		Percent Solids:	89.3
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	5330	270	mg/kg	50	08/06/18 13:30	LR	EPA 300.0
Solids, Percent	89.3		%	1	08/03/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #6-2.5'		
Lab Sample ID:	TD25029-3	**Date Sampled:**	07/31/18
Matrix:	SO - Soil	**Date Received:**	08/02/18
		Percent Solids:	86.0
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	451	29	mg/kg	5	08/06/18 13:47	LR	EPA 300.0
Solids, Percent	86		%	1	08/03/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #7-2.5'		
Lab Sample ID:	TD25029-4	**Date Sampled:**	07/31/18
Matrix:	SO - Soil	**Date Received:**	08/02/18
		Percent Solids:	88.7
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	610	28	mg/kg	5	08/06/18 14:04	LR	EPA 300.0
Solids, Percent	88.7		%	1	08/03/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #14-2.5'		
Lab Sample ID:	TD25029-5	**Date Sampled:**	07/31/18
Matrix:	SO - Soil	**Date Received:**	08/02/18
		Percent Solids:	94.1
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	7220	520	mg/kg	100	08/06/18 14:21	LR	EPA 300.0
Solids, Percent	94.1		%	1	08/03/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #16-2.5'		
Lab Sample ID:	TD25029-6	**Date Sampled:**	07/31/18
Matrix:	SO - Soil	**Date Received:**	08/02/18
		Percent Solids:	86.3
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	1460	56	mg/kg	10	08/06/18 14:38	LR	EPA 300.0
Solids, Percent	86.3		%	1	08/03/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #19-0'		
Lab Sample ID:	TD25029-7	**Date Sampled:**	07/31/18
Matrix:	SO - Soil	**Date Received:**	08/02/18
		Percent Solids:	99.1
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	36.0	4.9	mg/kg	1	08/06/18 14:55	LR	EPA 300.0
Solids, Percent	99.1		%	1	08/03/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #20-0'		
Lab Sample ID:	TD25029-8	**Date Sampled:**	07/31/18
Matrix:	SO - Soil	**Date Received:**	08/02/18
		Percent Solids:	75.3
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	29.2	6.5	mg/kg	1	08/06/18 15:12	LR	EPA 300.0
Solids, Percent	75.3		%	1	08/03/18	BS	SM 2540 G

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SAMPLE LOCATION #21-0'		
Lab Sample ID:	TD25029-9	**Date Sampled:**	07/31/18
Matrix:	SO - Soil	**Date Received:**	08/02/18
		Percent Solids:	73.3
Project:	Atha SWD		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	22.0	6.8	mg/kg	1	08/06/18 15:29	LR	EPA 300.0
Solids, Percent	73.3		%	1	08/03/18	BS	SM 2540 G

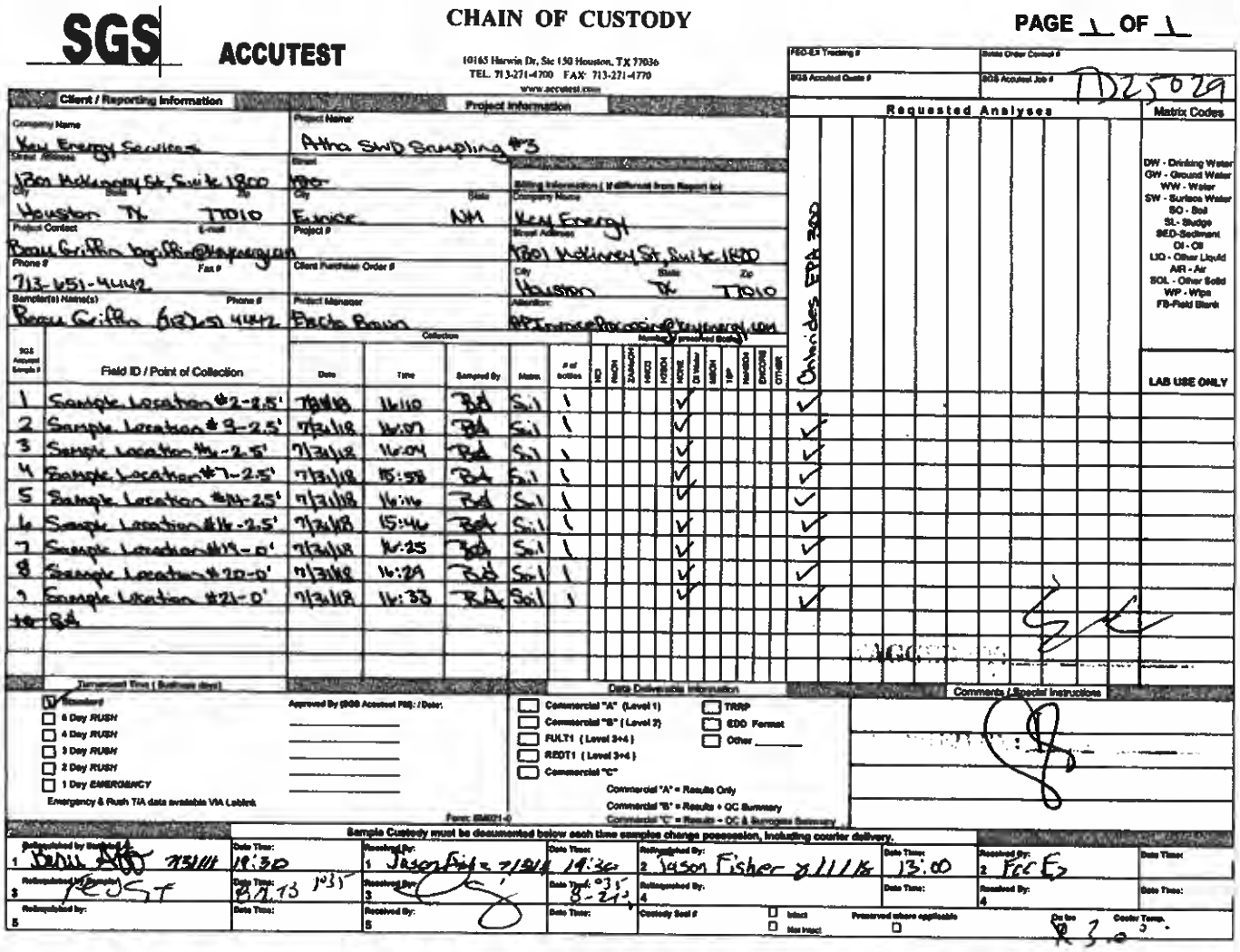
RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

SGS ACCUTEST

PAGE 1 OF 1

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

TD25029

Client / Reporting Information

Company Name: Key Energy Services
Street Address: 1301 McKinney St, Suite 1800
City: Houston State: TX Zip: 77010
Project Contact: Beau Griffin E-mail: bgriffin@keyenergy.com
Phone #: 713-651-4442 Fax #:
Sampler(s) Name(s): Beau Griffin Phone #: 713-651-4442

Project Information

Project Name: Attn SWD Sampling #3
Street: 1301
City: Eunice State: NM
Project #:
Client Purchase Order #:
Project Manager: Bucky Bruin

Billing Information (if different from Report to)

Company Name: Key Energy
Street Address: 1301 McKinney St, Suite 1800
City: Houston State: TX Zip: 77010
Attention: BPTransportation@keyenergy.com

Requested Analyses

Chlorides EPA 300

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank

SGS Accutest Sample #	Field ID / Point of Collection	Collection: Date	Time	Sampled By	Matrix	# of bottles	Preservation: HCl	HNO3	H2SO4	NaOH	MeOH	DI Water	NaHSO4	TSP	Na2S2O3	ZnOAc/NaOH	Other	LAB USE ONLY
1	Sample Location #2-2.5'	7/31/18	16:10	BG	Soil	1						✓						
2	Sample Location #3-2.5'	7/31/18	16:07	BG	Soil	1						✓						
3	Sample Location #4-2.5'	7/31/18	16:04	BG	Soil	1						✓						
4	Sample Location #7-2.5'	7/31/18	15:58	BG	Soil	1						✓						
5	Sample Location #11-2.5'	7/31/18	16:16	BG	Soil	1						✓						
6	Sample Location #16-2.5'	7/31/18	15:46	BG	Soil	1						✓						
7	Sample Location #19-0'	7/31/18	16:25	BG	Soil	1						✓						
8	Sample Location #20-0'	7/31/18	16:29	BG	Soil	1						✓						
9	Sample Location #21-0'	7/31/18	16:33	BG	Soil	1						✓						
10	BG																	

Turnaround Time (Business days)

- [x] Standard
- [ ] 6 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Approved By (SGS Accutest PM): / Date:

Emergency & Rush T/A data available VIA Labtrk

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
1	Bucky Bruin 7/31/18	19:30	1 Jason Fisher 7/31/18	19:30	2 Jason Fisher 8/1/18	13:00	2 FedEx	
3	FedEx	8/1/18 1031	3	8-2-18 0315	4		4	
5			5		Custody Seal #	Intact / Not Intact	Preserved where applicable	On Ice / Cooler Temp.

On Ice 3.0 3

4.1 4

TD25029: Chain of Custody
Page 1 of 4

4.1 4

TD25029: Chain of Custody
Page 2 of 4

SGS Sample Receipt Summary

Job Number: TD25029 **Client:** KEY ENERGY SERVICES **Project:** ATHA SWD SAMPLING 3

Date / Time Received: 8/2/2018 10:35:00 AM **Delivery Method:** **Airbill #'s:** 444830283316

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (3/3);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐	☐	☑	☐	☐
2. Trip Blank listed on COC:	☐	☐	☑		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☐	☐	☑		

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Sample Receipt Log

Job #: TD25029 **Date / Time Received:** 8/2/2018 10:35:00 AM 10:35: **Initials:** EC

Client: KEY ENERGY SERVICES

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD25029-1	8oz	1	2-1	N/P	Note #2 - Preservative check not applicable.	IR-5	3	0	3
1	TD25029-2	8oz	1	2-1	N/P	Note #2 - Preservative check not applicable.	IR-5	3	0	3
1	TD25029-3	8oz	1	2-1	N/P	Note #2 - Preservative check not applicable.	IR-5	3	0	3
1	TD25029-4	8oz	1	2-1	N/P	Note #2 - Preservative check not applicable.	IR-5	3	0	3
1	TD25029-5	8oz	1	2-1	N/P	Note #2 - Preservative check not applicable.	IR-5	3	0	3
1	TD25029-6	8oz	1	2-1	N/P	Note #2 - Preservative check not applicable.	IR-5	3	0	3
1	TD25029-7	8oz	1	2-1	N/P	Note #2 - Preservative check not applicable.	IR-5	3	0	3
1	TD25029-8	8oz	1	2-1	N/P	Note #2 - Preservative check not applicable.	IR-5	3	0	3
1	TD25029-9	8oz	1	2-1	N/P	Note #2 - Preservative check not applicable.	IR-5	3	0	3

4.1 4

TD25029: Chain of Custody
Page 4 of 4

General Chemistry

5

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD25029
Account: KEYENTXH - Key Energy
Project: Atha SWD

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Bromide	GP48918/GN91833	5.0	0.0	mg/kg	100	102	102.0	90-110%
Chloride	GP48918/GN91833	5.0	0.0	mg/kg	100	96.7	96.7	90-110%
Fluoride	GP48918/GN91833	5.0	0.0	mg/kg	100	97.2	97.2	90-110%
Nitrogen, Nitrate	GP48918/GN91833	5.0	0.0	mg/kg	100	94.2	94.2	90-110%
Nitrogen, Nitrite	GP48918/GN91833	5.0	0.0	mg/kg	100	99.4	99.4	90-110%
Sulfate	GP48918/GN91833	5.0	0.0	mg/kg	100	101	101.0	90-110%

Associated Samples:
Batch GP48918: TD25029-1, TD25029-2, TD25029-3, TD25029-4, TD25029-5, TD25029-6, TD25029-7, TD25029-8, TD25029-9
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD25029
Account: KEYENTXH - Key Energy
Project: Atha SWD

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Bromide	GP48918/GN91833	TD24998-1	mg/kg	0.0	0.0	0.0	0-20%
Chloride	GP48918/GN91833	TD24998-1	mg/kg	46200	46800	1.3	0-20%
Fluoride	GP48918/GN91833	TD24998-1	mg/kg	52.4	53.4	1.9	0-20%
Nitrogen, Nitrate	GP48918/GN91833	TD24998-1	mg/kg	0.0	29.6(a)	200.0*(a)	0-20%
Nitrogen, Nitrite	GP48918/GN91833	TD24998-1	mg/kg	343	341	0.6	0-20%
Solids, Percent	GN91747	TD25029-1	%	89.5	89.5	0.0	0-5%
Sulfate	GP48918/GN91833	TD24998-1	mg/kg	191	192	0.5	0-20%

Associated Samples:
Batch GN91747: TD25029-1, TD25029-2, TD25029-3, TD25029-4, TD25029-5, TD25029-6, TD25029-7, TD25029-8, TD25029-9
Batch GP48918: TD25029-1, TD25029-2, TD25029-3, TD25029-4, TD25029-5, TD25029-6, TD25029-7, TD25029-8, TD25029-9
(*) Outside of QC limits
(a) RPD acceptable due to low sample and duplicate concentration.

5.2.5

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD25029
Account: KEYENTXH - Key Energy
Project: Atha SWD

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Bromide	GP48918/GN91833	TD24998-1	mg/kg	0.0	98.2	89.7	91.3	80-120%
Chloride	GP48918/GN91833	TD24998-1	mg/kg	46200	98.2	18200	-28504.0(a)	80-120%
Fluoride	GP48918/GN91833	TD24998-1	mg/kg	52.4	98.2	162	111.6	80-120%
Nitrogen, Nitrate	GP48918/GN91833	TD24998-1	mg/kg	0.0	98.2	114	116.1	80-120%
Nitrogen, Nitrite	GP48918/GN91833	TD24998-1	mg/kg	343	98.2	148	-198.5N	80-120%
Sulfate	GP48918/GN91833	TD24998-1	mg/kg	191	98.2	553	72.0	80-120%

Associated Samples:
Batch GP48918: TD25029-1, TD25029-2, TD25029-3, TD25029-4, TD25029-5, TD25029-6, TD25029-7, TD25029-8, TD25029-9
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.