Performance is Key

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

August 20, 2018

Prepared by:





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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 were added to extend the horizontal delineation of the site. 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 2. Atha SWD Tank Battery

5

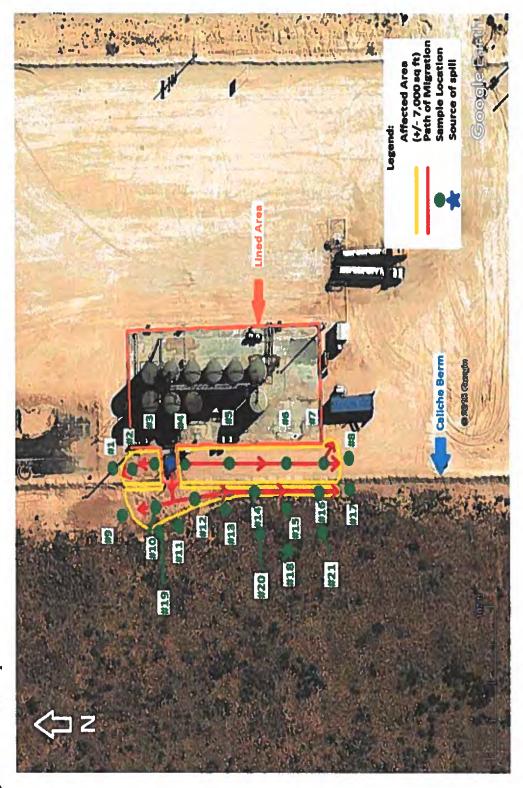


Figure 3. Soil Sample Locations

9

Appendix

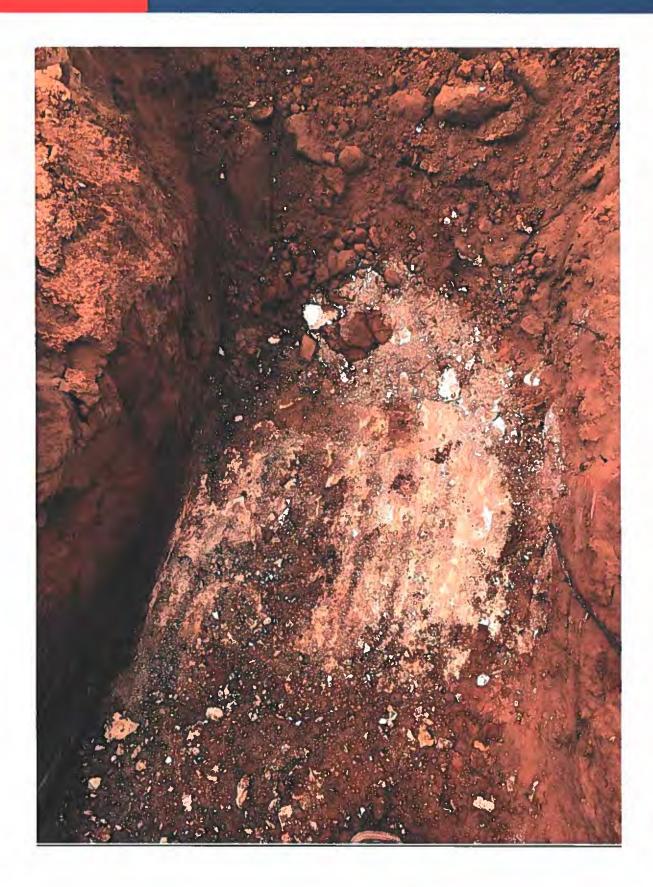
<u>Appendix 1</u>

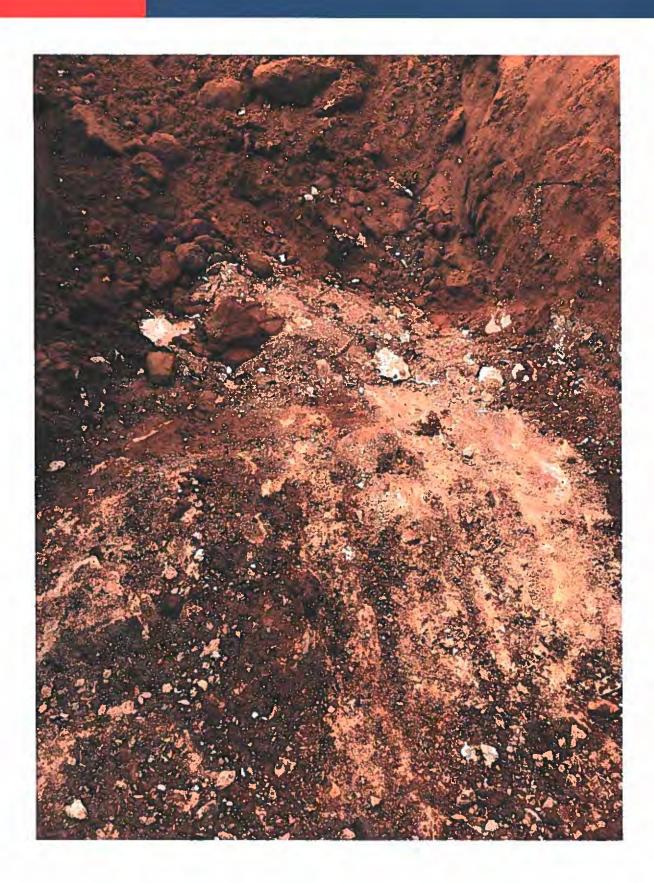
Tabulated Soil Analytical Results

					Atha	SWD Sofi Analyti	Atha SWD Soli Analytical Results (Sample depth 0'= 0-2" bgs & 1' = 1' bgs) 14-Jun-18	Me depth 0'= 0-2" 18	bgs & 1' = 1' bgs)						
Sample ID	Sample Socilos #3.0	Sample	Sample Location #7.1	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)
		_	_	_	_			_	ND < 10	ND < 10	ND < 9.9	ND < 10	ND < 9.7	ND < 9.6	N/A
1PH (LO-C12)(mg/mg)			ND < 13	381	01 > 0N	MD < 12	ND < 13	33.0	ND < 12	ND < 12	ND < 12	ND < 12	11 > UN	11 > QN	N/A
	27 × 04			547	C1 > CN	ND < 12	ND < 13	78.7	ND < 12	ND < 12	ND < 12	ND < 12	ND < 11	11 > QN	N/A
Tou (CC.36Vmm/hm)		247	ND < 10	1.030	ND < 10	11 > UN	ND < 11	111.7	ND < 10	ND < 10	ND < 9.9	ND < 10	ND < 9.7	ND < 9.6	1,000
the state of the second second	1.00	5	0.00	910	909	86.0	87.9	93.1	94.2	91.5	94.0	91.1	96.1	95.9	N/A
Percent Solids (%)	2.06	000 81	4 480	11 600	2 880	0.570	2,760	18,800	4.180	5,760	5,200	7,730	2,580	118	800
CRIMING (FIR) RG/	0100 0 T UN	MD 4 DM15		MD < 0.0014	MD < 0.0014	MD < 0.0015	ND < 0.0014	MD < 0.0013	ND < 0.0014	ND < 0.0014	ND < 0.0014	ND < 0.0013	ND < 0.0013	ND < 0.0012	0.026
benzene (mg/ kg) Tolisene (mg/kg)	ND < 0.0016	400.0 × 0N	2100.0 > UN	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	100.0 > UN	ND < 0.0017	ND < 0.0018	ND < 0.0017	ND < 0.0016	ND < 0.0017	ND < 0.0017	ND < 0.0017	ND < 0.0016	9100.0 > UN	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
					Athe	SWD Soll Analyti	Atha SWD Soli Anahytical Results (Sample depth 0'= 0-2" bgs & 1' = 1' bgs) 14-lun-18	vie depth 0'= 0-2" 28	bgs & 1'=1' bgs]	_					
	40005	Committee	-trans	(samele	Comple	Samole	Samole	Samole	Samole	Sample	Sample	Sample	Sample		Residential/ Class 1
Sample ID	Location M9-0'		Location #10-1	· Location #11-0	Location #10-0' Location #10-1' Location #11-0' Location #12-0'	Loci	Loca		Location #14-0' Location #14-1'	10C	Location #16-0"	Location #16-1' Location #17-0'	Location #17-0'		Limits (mg/kg)
Toti (CE.C1.2)(ma/ho)	96 VUN	ND < 10	ND < 10	ND < 9.9	0.0 × 0.9	ND < 11	ND < 9.8	ND < 10	01 × 0N	ND < 9.9	ND < 11	ND < 10	9.6 > ON		N/A
TOH (SC12-C28)(me/let)	ND < 11	ND < 12	ND < 12	ND < 11	ND < 12	ND < 12	11 > ON	ND < 12	ND < 12	ND < 12	ND < 12	ND < 12	11 > QN		N/A
TPH (>C28-C35)(me/ke)	11 > ON	ND < 12	ND < 12	ND < 11	ND < 12	ND < 12	ND < 11	ND < 12	ND < 12	ND < 12	ND < 12	ND < 12	11 > QN		N/A
TPH (C6-35)(mg/kg)	ND < 9.6	ND < 10	01 > UN	ND < 9.9	ND < 9.9	11 > QN	ND < 9.8	ND < 10	ND < 10	ND < 9.9	11 > QN	01 > QN	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
Chioride (mg/kg)	21.8	4,290	3,850	68.2	842	5,370	73.7	9.870	2,600	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		0.025
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	<100.0 > 010		2.0 7.6
Ethylbenzene (mg/kg)	ND < 0.0016	ND < 0.0016	ND < 0.0018	ND < 0.0015	ND < 0.0016	ND < 0.0017	<100.0 > UN 7100.0 > UN	9100.0 > UN			6100 0 > 0N	00.0 × 0.0	ND < 0.0018		120
Xylene (mg/kg)	ND < 0.0018	8100'0 > CN		/100'0 × 04	SIDULO ANA	The course for	C ULUDIA MULCIONAL BREAK (Cannala death 2' hec & Canada Location 23.8.0' has)	wh 2' hes & Samo	vie tocation #18-0	Y best					
							32-Jul-32	18							
	Sample				la sur	Sample		Sample							Residential/ Class 1
	Location #2-2'	Location #3-2'	Location #4-2*	Location #5-2"	Location #6-2*	Location #7-2	Location #10-2"	Location #12-2"	Location #14-2	Location #15-2'	Locat	Locat			CIMICS (MG/KG)
Percent Solids (%)	83.2	90.3	83.6	824	86.8	94.6	81.7	70.2	81.8	81.8	78	B1.5			N/A
Chloride (mg/kg)	6,810	9,100	80.6	273	120	1,410	242	397	4,350	14/	110	π			200
					Atha	SWD Soil Analyti	Atha SWD Soil Analytical Results (Sample depth 0'= 0-2" bgs & 1' = 1' bgs) 31-jui-18	Xe depth 0'= 0-2" 18	bgs & 1' = 1' bgs	_					
ai chemes	Sample	Sample	Sample	Sample	#7.1 ocation #10	Eample Sample 114	all4 Location #16	Sample	Sample	Sample					Residential/ Class 1
						.	- I	Location #19-0'	Location #19-0° Location #20-0° Location #21-0°	Location #21-0					Churce (mg/wg)
Percent Solids (%)	89.5	89.3	86.0	88.7	Could not reach	94.1	86.3	99.1	75.3	73.3					N/A
Chloride (me/kg)	611	5,330	451	610	N/A	7,220	1,460	36	67	22					600

Appendix 2

Confining Layer Photographs





Appendix 3

Laboratory Analytical Report TD22721 for soil analysis at Atha SWD



Houston, TX

06/22/18

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

e-Hardcopy 2.0 Automated Report



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



Richard Rolinguez Laboratory Director

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.

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)

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SGS

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Sample Summary

Key Energy

Atha SWD

Job No: TD22721

Sample Number	Collected Date	Time By	Received	Matri Code		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'
T D2272 1-8	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'
T D2272 1-11	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)

Job No:

TD22721

Key Energy

Atha SWD

Sample Number	Collected Date	Time By	Received	Matri Code		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'
T D22721-2 1	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

JOD NO: 1022/21	Job	No:	TD22721
-----------------	-----	-----	---------

Sample Number	Collected Date	Time By	Received	Matri Code		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

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 LOCAT	TION #1-0'				
Chloride		410	28		mg/kg	EPA 300.0
TD22721-2	SAMPLE LOCAT	10N #2-0'				
TPH (> C12-C2 TPH (> C28-C3 TPH (C6-C35) ^a		21.3 J 63.4 84.7	26 26 26	12 12 10	mg/kg mg/kg mg/kg	TNRCC 1005 TNRCC 1005 TNRCC 1005
Chloride		18200	1100		mg/kg	EPA 300.0
TD22721-3	SAMPLE LOCAT	FION #2-1'				
Chloride		4480	270		mg/kg	EPA 300.0
TD22721-4	SAMPLE LOCAT	ГION #3-0'				
TPH (> C12-C2 TPH (> C28-C3 TPH (C6-C35) = Chloride	5) ^a	381 647 1030 11600	26 26 26 1100	12 12 10	mg/kg mg/kg mg/kg mg/kg	TNRCC 1005 TNRCC 1005 TNRCC 1005 EPA 300.0
TD22721-5	SAMPLE LOCAT	ΓΙΟΝ #3-1'				
Chloride		2880	270		mg/kg	EPA 300.0
TD22721-6	SAMPLE LOCAT	FION #4-0'				
Chloride		9570	1200		mg/kg	EPA 300.0
TD22721-7	SAMPLE LOCAT	ΓΙΟΝ #4-1'				
Chloride		2260	280		mg/kg	EPA 300.0
TD22721-8	SAMPLE LOCAT	FION #5-0'				
TPH (> C12-C2 TPH (> C28-C3 TPH (C6-C35) ^a Chloride	(5) ^a	33.0 78.7 112 18800	26 26 26 1100	12 12 9.9	mg/kg mg/kg mg/kg mg/kg	TNRCC 1005 TNRCC 1005 TNRCC 1005 EPA 300.0
TD22721-9	SAMPLE LOCA	ΓΙΟΝ #5-1'				
Chloride		4180	260		mg/kg	EPA 300.0

N

Summary of Hits

T D2272 1
Key Energy
Atha SWD
06/14/18

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

N



Summary of Hits

T D2272 1
Key Energy
Atha SWD
06/14/18

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

N



Houston, TX

Section 3 ^ω

Sample Results

Report of Analysis



Report of Analysis										
Client Sar Lab Samp Matrix: Method: Project:	ole ID: TD227 SO - So	21-1 bil 8260C S	FION #1-0' W846 5030A		Date Sampled:06/14/18Date Received:06/15/18Percent Solids:90.2					
Run #1 Run #2	File 1D M0070068.D	DF 1	Analyzed 06/19/18 12:44	By FI	Prep Date 06/18/18 08:30	Prep Batch n/a	Analytical Batch VM2733			
Run #1 Run #2	Initial Weight 5.39 g	Final Vo 5.0 ml	olume							

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	Lim	its	
1868-53-7	Dibromofluoromethane	104%		59-126%		
2037-26-5	Toluene-D8	101%		70-1	39%	
460-00-4	4-Bromofluorobenzene	100%		63-1	38%	
17060-07-0	1,2-Dichloroethane-D4	111%		54-1	23%	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Report of Analysis										
Client San Lab Samp Matrix: Method: Project:		і 1005 ТХ	ION #1-0' (1005		Date Sampled:06/14/18Date Received:06/15/18Percent Solids:90.2					
Run #1 ª Run #2	File ID LB160627.D	DF 1	Analyzed 06/18/18 15:52	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batcl OP46472	h Analytical Batch GLB2486		
Run #1 Run #2	Initial Weight 10.2 g	Final Vo 10.0 ml	lume							
CAS No.	Compound		Result	RL	MDL	Units	Q			
	TPH (C6-C12) TPH (> C12-C TPH (> C28-C TPH (C6-C35)		ND ND ND ND	27 27 27 27	10 12 12 10	mg/kg mg/kg mg/kg mg/kg				
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its				
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	luene	106% 111%			30% 30%				

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

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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

ω. 1

	Report of Analysis							
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-1 SO - Soil	#1-0'			Date Sampled Date Received Percent Solids	: 06	6/14/18 6/15/18	
Project:	Atha SWD				I OF CONC SOMUS			
General Chemistry	,							
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method	
Chloride Solids, Percent	410 90.2	28	mg/kg %	5 1	06/19/18 13:50 06/18/18	ES TH	EPA 300. SM 2540	-



100-41-4

1330-20-7

CAS No.

1868-53-7

2037-26-5

460-00-4

Ethylbenzene

Xylene (total)

Toluene-D8

17060-07-0 1,2-Dichloroethane-D4

Surrogate Recoveries

Dibromofluoromethane

4-Bromofluorobenzene

	Report of Analysis Page 1 of 1										
Client San Lab Samp Matrix: Method: Project:	le ID: TD2272 SO - So	21-2 il 8260C S	FION #2-0' SW846 5030A			Date	Received: 06	5/14/18 5/15/18 2.5			
Run #1 Run #2	File ID M0070069.D	DF 1	Analyzed 06/19/18 13:13	By FI	Prep D 06/18/1	ate 8 08:30	Prep Batch n/a	Analytical Batch VM2733			
Run #1 Run #2	Initial Weight 5.64 g	Final V 5.0 ml	olume								
Purgeable	Aromatics										
CAS No.	Compound		Result	RL	MDL	Units	Q				
71-43-2 108-88-3	Benzene Toluene		ND ND	3.8 3.8	1.3 1.4	ug/kg ug/kg					

3.8

3.8

Run#2

1.6

1.7

Limits

59-126%

70-139%

63-138%

54-123%

ug/kg

ug/kg

ND

ND

Run# 1

102%

102%

105%

105%

ND = Not detected	MDL = Method Detection Limit

RL = Reporting Limit

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



3.2

E = Indicates value exceeds calibration range

Report of Analysis										
Client San Lab Samp Matrix: Method: Project:		OCATION #2-0' 05 TX1005		Date Sampled:06/14/18Date Received:06/15/18Percent Solids:92.5						
Run #1 ª Run #2	File ID D LF160624.D i	F Analyzed 06/18/18 14:58	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GLF2486			
Run #1 Run #2		nal Volume).0 ml								
CAS No.	Compound	Result	RL	MDL	Units	Q				
	TPH (C6-C12) TPH (> C12-C28) TPH (> C28-C35) TPH (C6-C35)	ND 21.3 63.4 84.7	26 26 26 26	10 12 12 10	mg/kg mg/kg mg/kg mg/kg	J				
CAS No.	Surrogate Recove	ries Run# 1	Run# 2	Lim	its					
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotolue	110% ae 84%			30% 30%					

(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

TD22721

		Page 1 of 1	L					
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-2 SO - Soil	#2-0'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18	
Project:	Atha SWD				I treent Sonds			
General Chemistry	y .							_
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method	
Chloride Solids, Percent	18200 92.5	1100	mg/kg %	200 1	06/19/18 11:48 06/18/18	ES TH	EPA 300.0 SM 2540 G	



3.2 3

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	Page 1 of 1								
Client San Lab Samp Matrix: Method: Project:	le ID: TD227 SO - So	21-3 51 8260C S	TION #2-1' SW846 5030A		Date Sampled:06/14/18Date Received:06/15/18Percent Solids:92.0				
Run #1 Run #2	File ID M0070070. D	DF 1	Analyzed 06/19/18 13:41	By Fl	Prep Date 06/18/18 08:30	Prep Batch n/a	Analytical Batch VM2733		
Run #1 Run #2	Initial Weight 5.22 g	Final V 5.0 ml	olume						

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	Lim	its	
1868-53-7	Dibromofluoromethane	108%		59-1	26%	
2037-26-5	Toluene-D8	100%		70-1	39%	
460-00-4	4-Bromofluorobenzene	100%		63-1	38%	
17060-07-0	1,2-Dichloroethane-D4	118%		54-1	23%	

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



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TD22721

			Page 1 of 1							
Client San Lab Samp Matrix: Method: Project:					Date Sampled: 06/14/18 Date Received: 06/15/18 Percent Solids: 92.0					
Run #1 ª Run #2	File 1D JF85676.D	DF 1	Analyzed 06/18/18 16:13	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batcl OP46472	h Analytical Batch GJF1573		
Run #1 Run #2	Initial Weight 10.3 g	Final Vo 10.0 ml	lume							
CAS No.	Compound		Result	RL	MDL	Units	Q			
	TPH (C6-C12) TPH (> C12-C TPH (> C28-C TPH (C6-C35)	•	ND ND ND ND	26 26 26 26	10 12 12 10	mg/kg mg/kg mg/kg mg/kg				
CAS No.	Surrogate Recoveries		Run# 1	Run# 2	Limits					
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotoluene		95% 87%	70-130% 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

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



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E = Indicates value exceeds calibration range

Report of Analysis Page									
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION #2-1'TD22721-3SO - SoilAtha SWD								ယ
Project:									
General Chemistry	4		•						
Analyte	Result	RL	Units	DF	Analyzed	By	Methoo	1	
Chloride Solids, Percent	4480 92	270	mg/kg %	50 1	06/19/18 12:04 06/18/18	ES TH	EPA 300 SM 2540		



TD22721

100-41-4

1330-20-7

CAS No.

1868-53-7

2037-26-5

460-00-4

Ethylbenzene

Xylene (total)

Toluene-D8

17060-07-0 1,2-Dichloroethane-D4

Surrogate Recoveries

Dibromofluoromethane

4-Bromofluorobenzene

			Page 1 of 1					
Client San Lab Samp Matrix: Method: Project:	-	21-4 il 8260C S	ГІОN #3-0' SW846 5030A			Date Date Perc	06/14/18 06/15/18 91.0	
Run #1 Run #2	File ID M0070071.D	DF 1	Analyzed 06/19/18 14:10	By FI	Prep D 06/18/1	ate 8 08:30	Prep Batc n/a	h Analytical Batch VM2733
Run #1 Run #2	Initial Weight 5.12 g	Final Vo 5.0 ml	olume					
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL	Units	Q	
71-43-2 108-88-3	Benzene Toluene			4.3 4.3	1.4 1.6	ug/kg ug/kg		

4.3

4.3

Run#2

ND

ND

Run# 1

110%

107%

127%

115%

1.7

1.9

Limits

59-126%

70-139%

63-138%

54-123%

ug/kg

ug/kg

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

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



3.4

E = Indicates value exceeds calibration range

			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:			Date Sampled: 06/14/18 Date Received: 06/15/18 Percent Solids: 91.0					
Run #1 ª Run #2	File ID JF85677.D	DF 1	Analyzed 06/18/18 16:38	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GJF1573
Run #1 Run #2	Initial Weight 10.4 g	Final Vol 10.0 ml	ume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C28) TPH (> C28-C35) TPH (C6-C35)		ND 381 647 1030	26 26 26 26	10 12 12 10	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Recoveries		Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotoluene		101% 83%			30% 30%		

(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





		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-4 SO - Soil	#3-0'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18 .0
Project:	Atha SWD						
General Chemistry	Ý						
Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride Solids, Percent	11600 91	1100	mg/kg %	200 1	06/19/18 12:21 06/18/18	ES TH	EPA 300.0 SM 2540 G



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				Report	of Ai	nalysis		Page 1 of
Client Sar Lab Samp Matrix: Method: Project:		SAMPL TD2272 SO - So SW846 Atha SV	il 8260C	ION #3-1'		D	ate Sampled: ate Received: ercent Solids:	
Run #1 Run #2	File ID Y10973	73.D	DF 1	Analyzed 06/20/18 10:11	By Fl	Prep Date n/a	Prep Batch n/a	h Analytical Batch VY4778
Run #1 Run #2	Initial 5.34 g	Weight	Final Vo 5.0 ml	lume				

CAS No.	Compound	Result	RL	MÐL	Units
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	Lim	its
1868-53-7	Dibromofluoromethane	108%		59-1	26%
2037-26-5	Toluene-D8	109%		70-1	39%
460-00-4	4-Bromofluorobenzene	100%		63-1	38%
17060-07-0	1,2-Dichloroethane-D4	106%		54-1	23%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Q



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E = Indicates value exceeds calibration range

			Report	of An	alysis			Page 1 of 1
Client Sam Lab Samp Matrix: Method: Project:		il C 1005 TX	ON #3-1' 1005			Date	Sampled: Received: ent Solids:	06/14/18 06/15/18 90.9
Run #1 ^a Run #2	File ID JF85695.D	DF 1	Analyzed 06/19/18 10:39	By LT	Prep D 06/18/1	ate 8 01:00	Prep Bate OP46472	h Analytical Batch GJF1574
Run #1 Run #2	Initial Weight 10.1 g	Final Vol 10.0 ml	ume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	ТРН (C6-C12) ТРН (> C12-C ТРН (> C28-C ТРН (C6-C35)	28) 35)	ND ND ND ND	27 27 27 27 27	10 12 12 10	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	oluene	101% 87%			30% 30%		

(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



		Repo	rt of An	alysis			1	Page 1 of 1	ະ ເ
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-5 SO - Soil	#3-1'			Date Sampled Date Received Percent Solids	: 06	06/15/18		
Project:	Atha SWD								
General Chemistry	,								
Analyte	Result	RL	Units	DF	Analyzed	By	Method	l	
Chloride Solids, Percent	2880 90.9	270	mg/kg %	50 1	06/19/18 13:10 06/18/18	ES TH	EPA 300. SM 2540		



			Report of	of A	nalysis		Page 1 of
Client San Lab Samp Matrix: Method: Project:	SO - So	21-6 il 8260C	ATION #4-0' SW846 5030A		Date Date Perc	06/14/18 06/15/18 86.0	
Run #1 Run #2	File 1D M0070073.D	DF 1	Analyzed 06/19/18 15:06	By F1	Prep Date 06/18/18 08:30	Prep Batc n/a	h Analytical Batch VM2733
Run #1 Run #2	Initial Weight 5.28 g	Final 5.0 m	Volume 1				

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	Lim	its	
1868-53-7	Dibromofluoromethane	106%		59-1	26%	
2037-26-5	Toluene-D8	101%		70-1	39%	
460-00-4	4-Bromofluorobenzene	98%		63-1	38%	
17060-07-0	1,2-Dichloroethane-D4	104%		54-1	23%	

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 An	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		21-6 9il C 1005 T	ГІОN #4-0' X1005			Date	Sampled: Received: ent Solids:	06/14/18 06/15/18 86.0
Run #1 ª Run #2	File ID JF85679,D	DF 1	Analyzed 06/18/18 17:28	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batcl OP46472	h Analytical Batch GJF1573
Run #1 Run #2	Initial Weight 10.5 g	Final Vo 10.0 ml						
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C TPH (> C28-C TPH (C6-C35)	C28) C35)	ND ND ND ND	28 28 28 28 28	11 12 12 11	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	oluene	94% 80%			30% 30%		

(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



		Repo	rt of An	alysis			1	Page 1 of 1	
Client Sample ID:	SAMPLE LOCATIO	ON #4-0'							
Lab Sample ID:	TD22721-6				Date Sampled	: 06	/14/18		
Matrix:	SO - Soil				Date Received	: 06	/15/18		
					Percent Solids	: 86	5.0		
Project:	Atha SWD								
General Chemistry	1								
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method	l	
Chloride	9570	1200	mg/kg	200	06/19/18 13:27	ES	EPA 300.	0	
Solids, Percent	86		%	1	06/18/18	тн	SM 2540	G	

RL = Reporting Limit



			Report	of A	nalysis			Page 1 of	
Client San Lab Samp Matrix: Method: Project:	le ID: TD227 SO - So	21-7 pil 8260C S	TION #4-1' 5W846 5030A		Date	Received: 06	06/14/18 06/15/18 87.9		
Run #1 Run #2	File ID M0070074.D	DF 1	Analyzed 06/19/18 15:35	By Fl	Prep Da 06/18/18		Prep Batch n/a	Analytical Batch VM2733	
Run #1 Run #2	Initial Weight 5.32 g	Final V 5.0 ml	olume						
Purgeable	Aromatics								
CAS No.	Compound		Result	RL	MDL	Units	Q		
71 /2 2	Bonzono		ND	4.2	14	0			

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	Liı	mits
1868-53-7	Dibromofluoromethane	106%		59-	126%
2037-26-5	Toluene-D8	102%		70-	-139%
460-00-4	4-Bromofluorobenzene	102%		63-	-138%

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



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			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		oil C 1005 TX	ION #4-1' 1005			Date	Received: 06	/14/18 /15/18 /.9
Run #1 ª Run #2	File ID JF85680. D	DF 1	Analyzed 06/18/18 17:53	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GJF1573
Run #1 Run #2	Initial Weight 10.1 g	Final Vo l 10.0 ml	lume	·•				
CAS No.	Compound		Result	RL	MDL	Units	Q	
	ТРН (C6-C12) ТРН (> C12-C ТРН (> C28-C ТРН (C6-C35)	C28) C35)	ND ND ND ND	28 28 28 28 28	11 13 13 11	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	oluene	96% 83%			30% 30%		

(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

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-7 SO - Soil	#4-1'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18
Project:	Atha SWD				i citent bonus	. 07	.,
General Chemistry	,						
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method
Chloride Solids, Percent	2260 87.9	280	mg/kg %	50 1	06/19/18 13:43 06/18/18	ES TH	EPA 300.0 SM 2540 G



		_	Report	of Ai	nalysis		Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		il 8260C	'ION #5-0'		Da		6/14/18 6/15/18 3.1
Run #1 Run #2	File ID Y1097386.D	DF 1	Analyzed 06/20/18 16:18	By Fl	Prep Date n/a	Prep Batch n/a	Analytical Batch VY4778
Run #1 Run #2	Initial Weight 5.62 g	Final Vo 5.0 ml	lume				
Purgeable CAS No.	Aromatics Compound		Result	RL	MDL Unit	ts Q	

CAS NO.	Compound	Result	KL		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	Lim	its		
1868-53-7	Dibromofluoromethane	108%		59-1	26%		
2037-26-5	Toluene-D8	107%		70-1	39%		
460-00-4	4-Bromofluorobenzene	98%		63-1	38%		
17060-07-0	1,2-Dichloroethane-D4	105%		54-1	23%		

MDL = Method Detection Limit ND = Not detected

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



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			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		il C 1005 TX	ION #5-0' 1005	·		Date	Sampled: Received: ent Solids:	06/14/18 06/15/18 93.1
Run #1 ª Run #2	File 1D JF85696. D	DF 1	Analyzed 06/19/18 11:04	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batel OP46472	h Analytical Batch GJF1574
Run #1 Run #2	Initial Weight 10.4 g	Final Vol 10.0 ml	lume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	ТРН (C6-C12) ТРН (> C12-C ТРН (> C28-C ТРН (C6-C35)	28) 35)	ND 33.0 78.7 112	26 26 26 26	9.9 12 12 9.9	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	luene	94% 80%			30% 30%		

(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

TD22721

		Repo	rt of An	alysis			Pa	age 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-8 SO - Soil	#5-0'	·		Date Sampled Date Received Percent Solids	l: 06	5/14/18 5/15/18	
Project:	Atha SWD				Tercent Sonds	. 93		
General Chemistry								
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method	
Chloride Solids, Percent	18800 93.1	1100	mg/kg %	200 1	06/19/18 14:00 06/18/18	ES TH	EPA 300.0 SM 2540 G	



3.8 3.8

108-88-3

100-41-4

1330-20-7

CAS No.

1868-53-7 2037-26-5

460-00-4

Toluene

Ethylbenzene

Xylene (total)

Toluene-D8

17060-07-0 1,2-Dichloroethane-D4

Surrogate Recoveries

Dibromofluoromethane

4-Bromofluorobenzene

			Report	of A	nalysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	le ID: TD2272 SO - So	21-9 il 8260C S	TION #5-1' SW846 5030A			Date		/14/18 /15/18 .2
Run #1 Run #2	File 1D M0070076.D	DF 1	Analyzed 06/19/18 17:23	By FI	Prep D 06/18/1	ate 8 08:30	Prep Batch n/a	Analytical Batch VM2733
Run #1 Run #2	Initial Weight 5.06 g	Final V 5.0 ml	olume					
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL	Units	Q	
71-43-2	Benzene		ND	4.2	1.4	ug/kg		

4.2

4.2

4.2

Run# 2

1.6

1.7

1.9

Limits

59-126%

70-139%

63-138%

54-123%

ND

ND

ND

Run#1

110%

98%

98%

118%

ND = Not detected MDL = Method Detection Limit

E = Indicates value exceeds calibration range

RL = Reporting Limit

J = Indicates an estimated value

ug/kg

ug/kg

ug/kg

- B = Indicates analyte found in associated method blank
- N = Indicates presumptive evidence of a compound



TD22721

			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		I-9 I 1005 TX	ION #5-1' (1005			Date	1	/14/18 /15/18 .2
Run #1 ª Run #2	File ID JF85682.D	DF 1	Analyzed 06/18/18 18:44	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GJF1573
Run #1 Run #2	Initial Weight 10.2 g	Final Vo 10.0 ml	lume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C2 TPH (> C28-C2 TPH (C6-C35)		ND ND ND ND	26 26 26 26	10 12 12 10	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Reco	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotol	uene	104% 93%			30% 30%		

(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

ა 9

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-9 SO - Soil	#5-1'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18
Project:	Atha SWD				I el cent Sonds	h. 7 4	
General Chemistry	,						
Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride Solids, Percent	4180 94.2	260	mg/kg %	50 1	06/19/18 14:41 06/18/18	ES TH	EPA 300.0 SM 2540 G

3.9 S



			Report	of Aı	nalysis		Page 1 of 1	
Client San Lab Samp Matrix: Method: Project:	-	21-10 il 8260C \$	TION #6-0' SW846 5030A		Da	te Received: 0	06/14/18 06/15/18 91.5	
Run #1 Run #2	File ID M0070077.D	DF 1	Analyzed 06/19/18 17:51	By FI	Prep Date 06/18/18 08:3	Prep Batch 0 n/a	Analytical Batch VM2733	
Run #1 Run #2	Initial Weight 5.21 g	Final V 5.0 ml	'olume					
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL Unit	s Q		

	· · [2] • · · · · · · ·					
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	Lim	its	
1868-53-7	Dibromofluoromethane	105%		59-1	26%	
2037-26-5	Toluene-D8	100%		70-1	39%	
460-00-4	4-Bromofluorobenzene	100%		63-1	38%	
17060-07-0	1,2-Dichloroethane-D4	110%		54-1	23%	

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



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			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		1005 TX	ON #6-0' 1005			Date	-	/14/18 /15/18 .5
Run #1 ª Run #2	File 1D LF160630.D	DF 1	Analyzed 06/18/18 16:19	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GLF2486
Run #1 Run #2	Initial Weight 10.5 g	Final Vol 10.0 ml	ume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C2 TPH (> C28-C3 TPH (C6-C35)		ND ND ND ND	26 26 26 26	10 12 12 10	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Reco	veries	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotol	uene	116% 98%		32 T T	30% 30%		

(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

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-10 SO - Soil	#6-0'			Date Sampled Date Received Percent Solids	: 06	
Project:	Atha SWD						
General Chemistry	1						
Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride Solids, Percent	5760 91.5	540	mg/kg %	100 1	06/19/18 14:58 06/18/18	ES TH	EPA 300.0 SM 2540 G



108-88-3

100-41-4

1330-20-7

CAS No.

1868-53-7

2037-26-5

460-00-4

Toluene

Ethylbenzene

Xylene (total)

Toluene-D8

17060-07-0 1,2-Dichloroethane-D4

Surrogate Recoveries

Dibromofluoromethane

4-Bromofluorobenzene

			Report	of A	nalysis			Page 1 of
Client San Lab Samp Matrix: Method: Project:	le ID: TD2272 SO - So SW846	SAMPLE LOCATION #6-1' TD22721-11 SO - Soil SW846 8260C SW846 5030A Atha SWD				06/14/18 06/15/18 94.0		
Run #1 Run #2	File 1D M0070078.D	DF 1	Analyzed 06/19/18 18:20	By Fl	Prep D 06/18/1	ate 8 08:30	Prep Batch n/a	Analytical Batch VM2733
Run #1 Run #2	Initial Weight 5.21 g	Final ' 5.0 ml	Volume					
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL	Units	Q	
71-43-2	Benzene		ND	4.1	_. 1.4	ug/kg		

4.1

4.1

4.1

Run# 2

1.5

1.7

1.8

Limits

59-126%

70-139%

63-138%

54-123%

ug/kg

ug/kg

ug/kg

ND

ND

ND

Run# 1

108%

98%

99%

112%

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



TD22721

		Report	of An	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	-	CATION #6-1' TX1005		Date Sampled:06/14/18Date Received:06/15/18Percent Solids:94.0			
Run #1 ª Run #2	File ID DF LF160632.D 1	Analyzed 06/18/18 16:46	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GLF2486
Run #1 Run #2	Initial WeightFinal10.3 g10.0	al Volume) ml					
CAS No.	Compound	Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C28) TPH (> C28-C35) TPH (C6-C35)	ND ND ND ND	26 26 26 26	9.9 12 12 9.9	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Recoveri	es Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotoluene	121% 99%		- 63 T T	30% 30%		

(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

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-11 SO - Soil	#6-1'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18
Project:	Atha SWD				Tercent Sonus	• 74	
General Chemistry	,						
Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride Solids, Percent	5200 94	260	mg/kg %	50 1	06/19/18 14:49 06/18/18	ES TH	EPA 300.0 SM 2540 G

RL = Reporting Limit



3.11 3

TD22721

			Report	of A	nalysis		Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	-	21-12 bil 8260C	'ION #7-0'			Date Sampled: Date Received: Percent Solids:	06/14/18 06/15/18 91.1
Run #1 Run #2	File ID Y1097374.D	DF 1	Analyzed 06/20/18 10:39	By Fl	Prep Date n/a	Prep Batc n/a	h Analytical Batch VY4778
Run #1 Run #2	Initial Weight 5.60 g	Final Ve 5.0 ml	blume				
Purgeable	Aromatics						
CAS No.	Compound		Result	RL	MDL U	nits Q	

Compound	Result	RL	MDL	Units
Benzene	ND	3.9	1.3	ug/kg
Toluene	ND	3.9	1.5	ug/kg
Ethylbenzene	ND	3.9	1.6	ug/kg
Xylene (total)	1.9	3.9	1.8	ug/kg
Surrogate Recoveries	Run# 1	Run# 2	Lim	its
Dibromofluoromethane	113%		59-1	26%
Dibromofluoromethane Toluene-D8	113% 110%			26% 39%
			70-1	
	Benzene Toluene Ethylbenzene Xylene (total)	BenzeneNDTolueneNDEthylbenzeneNDXylene (total)1.9	BenzeneND3.9TolueneND3.9EthylbenzeneND3.9Xylene (total)1.93.9	Benzene ND 3.9 1.3 Toluene ND 3.9 1.5 Ethylbenzene ND 3.9 1.6 Xylene (total) 1.9 3.9 1.8

MDL = Method Detection Limit ND Not detected

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

J



		Report	of Ana	alysis			Page 1 of	
Client Sam Lab Samp Matrix: Method: Project:				Date Sampled: 06/14/18 Date Received: 06/15/18 Percent Solids: 91.1				
Run #1 ª Run #2	File ID DF LB160633.D 1	Analyzed 06/18/18 17:14	By I LT	Prep D: 06/18/1		Prep Batch OP46472	Analytical Batch GLB2486	
Run #1 Run #2	Initial Weight Final 10.4 g 10.0 n	Volume nl						
CAS No.	Compound	Result	RL	MDL	Units	Q		
	TPH (C6-C12) TPH (> C12-C28) TPH (> C28-C35) TPH (C6-C35)	ND ND ND ND	26 26 26 26	10 12 12 10	mg/kg mg/kg mg/kg mg/kg			
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its			
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotoluene	100% 104%			30% 30%			

(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

 $\mathbf{B} =$ Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

	Report of Analysis								
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-12 SO - Soil	#7-0'			Date Sampled Date Received	: 06	/14/18 /15/18		
Project:	Atha SWD	Atha SWD							
General Chemistry	1								
Analyte	Result	RL	Units	DF	Analyzed	By	Method		
Chloride Solids, Percent	7730 91.1	540	mg/kg %	100 1	06/19/18 15:15 06/18/18	ES TH	EPA 300.0 SM 2540 G		



			Report	of A	nalysis		Page 1 of 1
Client San Lab Sam Matrix: Method: Project:	ple ID: TD2272 SO - So	21-13 il 8260C	ATION #7-1' SW846 5030A		Date	Received: (06/14/18 06/15/18 96.1
Run #1 Run #2	File 1D M0070080.D	DF 1	Analyzed 06/19/18 19:17	By Fl	Prep Date 06/18/18 08:30	Prep Batch n/a	Analytical Batch VM2733
Run #1 Run #2	Initial Weight 5.42 g	Final 5.0 m	Volume :l				
Purgeabl	e Aromatics						

Compound	Result	RL	MÐL	Units	Q
Benzene	ND	3.8	1.3	ug/kg	
Toluene	ND	3.8	1.4	ug/kg	
Ethylbenzene	ND	3.8	1.6	ug/kg	
Xylene (total)	ND	3.8	1.7	ug/kg	
Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
Dibromofluoromethane	112%		59-1	26%	
Toluene-D8	99%		70-1	39%	
4-Bromofluorobenzene	97%		63-1	38%	
1,2-Dichloroethane-D4	116%		54-1	23%	
	Benzene Toluene Ethylbenzene Xylene (total) Surrogate Recoveries Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	BenzeneNDTolueneNDEthylbenzeneNDXylene (total)NDSurrogate RecoveriesRun# 1Dibromofluoromethane112%Toluene-D899%4-Bromofluorobenzene97%	BenzeneND3.8TolueneND3.8EthylbenzeneND3.8Xylene (total)ND3.8Surrogate RecoveriesRun# 1Run# 2Dibromofluoromethane112%Toluene-D899%4-Bromofluorobenzene97%	BenzeneND3.81.3TolueneND3.81.4EthylbenzeneND3.81.6Xylene (total)ND3.81.7Surrogate RecoveriesRun# 1Run# 2LimDibromofluoromethane112%59-1Toluene-D899%70-14-Bromofluorobenzene97%63-1	Benzene ND 3.8 1.3 ug/kg Toluene ND 3.8 1.4 ug/kg Ethylbenzene ND 3.8 1.6 ug/kg Xylene (total) ND 3.8 1.7 ug/kg Surrogate Recoveries Run#1 Run#2 Limits Dibromofluoromethane 112% 59-126% Toluene-D8 99% 70-139% 4-Bromofluorobenzene 97% 63-138%

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



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			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	•	ION #7-1' (1005		Date Sampled: 06/14/18 Date Received: 06/15/18 Percent Solids: 96.1				
Run #1 ª Run #2	File ID LF160634.D	DF 1	Analyzed 06/18/18 17:14	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GLF2486
Run #1 Run #2	Initial Weight 10.3 g	Final Vo 10.0 ml	lume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C TPH (> C28-C TPH (C6-C35)	•	ND ND ND ND	25 25 25 25	9.7 11 11 9.7	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Reco	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	luene	116% 96%			30% 30%		

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

MDL = Method Detection Limit ND = Not detected

- 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 Page									
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-13 SO - Soil	l #7-1'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18		
Project:	Atha SWD								
General Chemistry	,								
Analyte	Result	RL	Units	DF	Analyzed	By	Method		
Chloride Solids, Percent	2580 96.1	260	mg/kg	50	06/19/18 15:32 06/18/18	ES	EPA 300.0		



			Report	of A	nalysis		Page 1 of
Client Sar Lab Samp Matrix: Method: Project:	ole ID: TD22 SO - S	721-14 Soil 6 8260C	CATION #8-0' SW846 5030A		Date Date Perc	96/14/18 96/15/18 95.9	
Run #1 Run #2	File 1D M0070081.D	DF 1	Analyzed 06/19/18 19:45	By FI	Prep Date 06/18/18 08:30	Prep Batch n/a	Analytical Batch VM2733
Run #1 Run #2	Initial Weigh 5.72 g	t Final 5.0 m	Volume 1				

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	Lim	its	
1868-53-7	Dibromofluoromethane	99%		59-1	26%	
2037-26-5	Toluene-D8	102%		70-1	39%	
460-00-4	4-Bromofluorobenzene	99%		63-1	38%	
17060-07-0	1,2-Dichloroethane-D4	103%		54-1	23%	

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



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			Report	of Ana	alysis			Page 1 of 1		
Client San Lab Samp Matrix: Method: Project:		21-14 il 2 1005 TZ	TION #8-0' K1005		Date Sampled: 06/14/18 Date Received: 06/15/18 Percent Solids: 95.9					
Run #1 ª Run #2	File ID LB160635.D	DF 1	Analyzed 06/18/18 17:41	By LT	Prep D: 06/18/1		Prep Batch OP46472	Analytical Batch GLB2486		
Run #1 Run #2	Initial Weight 10.4 g	Final Vo 10.0 ml	blume							
CAS No.	Compound		Result	RL	MDL	Units	Q			
	ТРН (C6-C12) ТРН (> C12-C ТРН (> C28-C ТРН (C6-C35)	28) 35)	ND ND	25 25 25 25	9.6 11 11 9.6	mg/kg mg/kg mg/kg mg/kg				
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its				
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	bluene	110% 119%			30% 30%				

(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

		Repo	ort of An	alysis			Page 1 of	1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-14 SO - Soil	#8-0'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18	ļ
Project:	Atha SWD						-	
General Chemistry	,							
Analyte	Result	RL	Units	DF	Analyzed	By	Method	
Chloride Solids, Percent	118 95.9	5.2	mg/kg %	1 1	06/19/18 15:48 06/18/18	ES TH	EPA 300.0 SM 2540 G	

RL = Reporting Limit

 ~ 2



3.14 3

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			Report	of Ai	nalysis			Page 1 of 1
Client Sar Lab Samp Matrix: Method: Project:	SO - So	oil 8260C SV	ION #9-0' W846 5030A	Date Sampled:06/14/18Date Received:06/15/18Percent Solids:97.0				
Run #1 Run #2	File ID M0070082.D	DF 1	Analyzed 06/19/18 20:14	By FI	Prep D: 06/18/1		Prep Batch n/a	Analytical Batch VM2733
Run #1 Run #2	Initial Weight 5.16 g	Final Vo 5.0 ml	lume					····
-	Aromatics							
CAS No.	Compound		Result	RL	MDL	Units	Q	

	P				•	
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	Lim	its	
1868-53-7	Dibromofluoromethane	101%		59-1	26%	
1868-53-7 2037-26-5	Dibromofluoromethane Toluene-D8	101% 101%			26% 39%	
				70-1	100	
2037-26-5	Toluene-D8	101%		70-1 63-1	39%	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

- J = Indicates an estimated value
 - $\mathbf{B} =$ Indicates analyte found in associated method blank
- N = Indicates presumptive evidence of a compound



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3.15

E = Indicates value exceeds calibration range

			Report	of An	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		1-15 il 1005 T	FION #9-0' X1005			/14/18 /15/18 /.0		
Run #1 ª Run #2	File ID LF160636.D	DF 1	Analyzed 06/18/18 17:41	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GLF2486
Run #1 Run #2	Initial Weight 10.4 g	Final Ve 10.0 ml	olume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C TPH (> C28-C TPH (C6-C35)	-	ND ND ND ND	25 25 25 25	9.6 11 11 9.6	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	luene	115% 95%			30% 30%		

(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

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-15 SO - Soil	#9-0'			Date Sampled Date Received Percent Solids	: 06	
Project:	Atha SWD				i ci cent bonus	• >1	
General Chemistry	1						
Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride Solids, Percent	21.8 97	5.1	mg/kg %	1 1	06/19/18 16:39 06/18/18	ES TH	EPA 300.0 SM 2540 G

3.15 **3**



108-88-3

100-41-4

1330-20-7

CAS No.

1868-53-7

2037-26-5

460-00-4

Toluene

Ethylbenzene

Xylene (total)

Toluene-D8

17060-07-0 1,2-Dichloroethane-D4

Surrogate Recoveries

Dibromofluoromethane

4-Bromofluorobenzene

			Report	of Ai	nalysis			Page 1 of 1
Client Sam Lab Samp Matrix: Method: Project:	•	21-16 il 8260C S	TION #10-0' SW846 5030A			Date		/14/18 /15/18 .1
Run #1 Run #2	File ID M0070083.D	DF 1	Analyzed 06/19/18 20:42	By Fl	Prep D: 06/18/1		Prep Batch n/a	Analytical Batch VM2733
Run #1 Run #2	Initial Weight 5.36 g	Final V 5.0 ml	olume					· · · · · · · · · · · · · · · · · · ·
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL	Units	Q	
71-43-2	Benzene		ND	4.0	1.3	ug/kg		

4.0

4.0

4.0

Run# 2

1.5

1.6

1.8

Limits

59-126%

70-139%

63-138%

54-123%

ug/kg ug/kg

ug/kg

ND

ND

ND

Run#1

103%

100%

95%

105%

ND =	Not d	etec	ted	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



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		Report	of An	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	•	DCATION #10-0' 5 TX1005			5/14/18 5/15/18 1.1		
Run #1 ª Run #2	File ID DF LB160637.D 1	Analyzed 06/18/18 18:08	By B LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GLB2486
Run #1 Run #2		al Volume 0 ml					
CAS No.	Compound	Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C28) TPH (> C28-C35) TPH (C6-C35)	ND ND ND ND	26 26 26 26	10 12 12 10	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Recover	es Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotoluene	116% 105%			30% 30%		

(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: Lab Sample ID: Matrix:	SAMPLE LOCATION # TD22721-16 SO - Soil	¢10-0'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18		
Project:	Atha SWD				i ci centi Jonus	• 77	. 1		
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	ТН	SM 2540 G		

RL = Reporting Limit



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3.16

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			Report of	of Ai	nalysis		Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	le ID: TD2272 SO - So	21-17 il 8260C	ATION #10-1' SW846 5030A		Date	Received:	06/14/18 06/15/18 88.0
Run #1 Run #2	File ID M0070098.D	DF 1	Analyzed 06/20/18 03:50	By FI	Prep Date 06/18/18 08:30	Prep Batch n/a	Analytical Batch VM2734
Run #1 Run #2	Initial Weight 5.17 g	Final V 5.0 ml	Volume		·		
Purgeable CAS No.	Aromatics Compound		Result	RL	MDL Units	0	

CAS NO.	Compound	Result	NL.	MUL	Units	Y
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	Lim	its	
1868-53-7	Dibromofluoromethane	109%		59-1	26%	
1868-53-7 2037-26-5	Dibromofluoromethane Toluene-D8	109% 99%			26% 39%	
				70-1		
2037-26-5	Toluene-D8	99%		70-1 63-1	39%	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit E = Indicates value exceeds calibration range

- tion Limit J = Indicates an estimated value
 - B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound
 - N = maleates presumptive evi

			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		21-17 il C 1005 T 7	(1005)			Date		/14/18 /15/18 8.0
Run #1 ª Run #2	File ID LF160638.D	DF 1	Analyzed 06/18/18 18:08	By LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GLF2486
Run #1 Run #2	Initial Weight 10.5 g	Final Vo 10.0 ml	olume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	ТРН (C6-C12) ТРН (> C12-C ТРН (> C28-C ТРН (C6-C35)	28) 35)	ND ND	27 27 27 27 27	10 12 12 10	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	oluene	112% 96%			30% 30%		

(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

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-17 SO - Soil	#10-1'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18
Project:	Atha SWD				i creent bonda	• 00	
General Chemistry	/						
Analyte	Result	RL	Units	DF	Analyzed	Ву	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



3.17 3

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			Report	of A	nalysis		Page 1 of 1	
Client Sample ID:SAMPLE LOCATION #11-0'Lab Sample ID:TD22721-18Matrix:SO - SoilMethod:SW846 8260CSW846 8260CSW846 5030AProject:Atha SWD								
Run #1 Run #2	File ID M0070099.D	DF 1	Analyzed 06/20/18 04:18	By Fl	Prep Date 06/18/18 08:30	Prep Batch n/a	Analytical Batch VM2734	
Run #1 Run #2	Initial Weight 5.63 g	Final Vo 5.0 ml	lume					
Purgeable	e Aromatics							
CAS No.	Compound		Result	RL	MDL Units	Q		

CAS NO.	Compound	Result	NL.		Units	Ŷ
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	Lim	its	
1868-53-7	Dibromofluoromethane	111%		59-1	26%	
1868-53-7 2037-26-5	Dibromofluoromethane Toluene-D8	111% 99%			26% 39%	
				70-1		
2037-26-5	Toluene-D8	99%		70-1 63-1	39%	

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



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		Report	of An	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		005 TX1005		X	Date		/14/18 /15/18 .9
Run #1 ª Run #2	File ID D LB160639.D 1	OF Analyzed 06/18/18 18:35	By 5 LT	Prep D 06/18/1	ate 8 01:00	Prep Batch OP46472	Analytical Batch GLB2486
Run #1 Run #2		`inal Volume 0.0 ml					
CAS No.	Compound	Result	RL _	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C28) TPH (> C28-C35) TPH (C6-C35)		26 26 26 26	9.9 11 11 9.9	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Recove	eries Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotolue	114% ne 117%			30% 30%		

(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

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-18 SO - Soil	#11-0'			Date Sampled Date Received Percent Solids	: 06	
Project:	Atha SWD				i cicciti Sonda	• 75	.9
General Chemistry	,						
Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride Solids, Percent	68.2 95.9	5.2	mg/kg %	1 1	06/19/18 17:30 06/18/18	ES TH	EPA 300.0 SM 2540 G

RL = Reporting Limit



			Report of	of A	nalysis			Page 1 of 1
Client Sar Lab Samp Matrix: Method: Project:	ole ID: TD2272 SO - So	21-19 bil 8260C \$	TION #12-0' SW846 5030A		1	Date		/14/18 /15/18 5.8
Run #1 Run #2	File ID M0070100.D	DF 1	Analyzed 06/20/18 04:47	By Fl	Prep Date 06/18/18 08	:30	Prep Batch n/a	Analytical Batch VM2734
Run #1 Run #2	Initial Weight 5.26 g	Final V 5.0 ml	/olume					
Purgeable CAS No.	e Aromatics Compound		Result	RL	MDL U	nits	Q	

71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	ND ND ND ND	4.0 4.0 4.0 4.0	1.3 1.5 1.6 1.8	ug/kg ug/kg ug/kg ug/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2		nits
1868-53-7 2037-26-5 460-00-4 17060-07-0	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene 1,2-Dichloroethane-D4	111% 99% 99% 123%		70- 63-	126% 139% 138% 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



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			Report	of Ana	alysis			Page 1 of 1
Client Sam Lab Samp Matrix: Method: Project:		-19 1005 TX	'ION #12-0' (1005			Date	-	/14/18 /15/18 .8
Run #1 ª Run #2	File ID JF85708.D	DF 1	Analyzed 06/19/18 16:06	By LT	Prep D 06/18/1	ate 8 04:30	Prep Batch OP46476	Analytical Batch GJF1574
Run #1 Run #2	Initial Weight 10.1 g	Final Vo 10.0 ml	lume	··				
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C2 TPH (> C28-C3 TPH (C6-C35)	•	ND ND	26 26 26 26	9.9 12 12 9.9	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Reco	veries	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotol	uene	98% 89%			30% 30%		

(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

		Repo	rt of An	alysis			Page 1 of
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-19 SO - Soil	i #12-0'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18
Project:	Atha SWD				rerceit Sonus	: 93	.0
General Chemistry	/						
Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	842	52	mg/kg	10	06/19/18 15:39		EPA 300.0
Solids, Percent	95.8		%	1	06/18/18	ТН	SM 2540 G

			Report	of A	nalysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	le ID: TD2272 SO - So	21-20 il 8260C S	TION #12-1' W846 5030A			Date	-	/14/18 /15/18 /.9
Run #1 Run #2	File ID M0070101.D	DF 1	Analyzed 06/20/18 05:15	By Fl	Prep Date 06/18/18 0		Prep Batch n/a	Analytical Batch VM2734
Run #1 Run #2	Initial Weight 5.49 g	Final Vo 5.0 ml	blume					
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL U	Jnits	Q	

CAS No.	Compound	Result	RL	MDL	Units	•
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	Lim	its	
1868-53-7	Dibromofluoromethane	111%		59-1	26%	
2037-26-5	Toluene-D8	100%		70-1	39%	
460-00-4	4-Bromofluorobenzene	98%		63-1	38%	

113%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

17060-07-0 1,2-Dichloroethane-D4

J Indicates an estimated value

54-123%

- B = Indicates analyte found in associated method blank
- N = Indicates presumptive evidence of a compound



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			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	le ID: TD227 SO - S	21-20 oil C 1005 T	FION #12-1' X1005			Date		/14/18 /15/18 9.9
Run #1 ª Run #2	File ID JF85711.D	DF 1	Analyzed 06/19/18 17:21	By LT	Prep D 06/18/1	ate 8 04:30	Prep Batch OP46476	Analytical Batch GJF1574
Run #1 Run #2	Initial Weight 10.2 g	Final Vo 10.0 ml				••		
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH (C6-C12 TPH (> C12- TPH (> C28- TPH (C6-C35	C28) C35)	ND ND ND ND	27 27 27 27	11 12 12 11	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Re	coveries	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorot	oluene	99% 90%		1.1.2	30% 30%		

(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

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION # TD22721-20 SO - Soil	ŧ12-1'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18 .9
Project:	Atha SWD					• • • •	
General Chemistry	1						
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	тн	SM 2540 G

RL = Reporting Limit



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3.20

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			Report of	of A	nalysis		Page 1 of
Client Sar Lab Samp Matrix: Method: Project:	ble ID: TD227 SO - S	21-21 oil 5 8260C	TION #13-0' SW846 5030A		Date	Sampled: Received: ent Solids:	
Run #1 Run #2	File ID M0070102.D	DF 1	Analyzed 06/20/18 05:45	By FI	Prep Date 06/18/18 08:30	Prep Batc n/a	h Analytical Batcl VM2734
Run #1 Run #2	Initial Weight 5.47 g	Final V 5.0 ml	olume				

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	Lim	its	
1868-53-7	Dibromofluoromethane	110%		59-1	26%	
2037-26-5	Toluene-D8	100%		70-1	39%	
460-00-4	4-Bromofluorobenzene	100%		63-1	38%	
17060-07-0	1,2-Dichloroethane-D4	114%		54-1	23%	

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



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3.21

			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		-21 1005 ΤΣ	'ION #13-0' K1005			Date		/14/18 /15/18 .8
Run #1 ª Run #2	File ID JF85712.D	DF 1	Analyzed 06/19/18 17:47	By LT	Prep D 06/18/1	ate 8 04:30	Prep Batch OP46476	Analytical Batch GJF1574
Run #1 Run #2	Initial Weight 10.2 g	Final Vo 10.0 ml	lume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C2 TPH (> C28-C3 TPH (C6-C35)		ND ND	25 25 25 25	9.8 11 11 9.8	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Reco	veries	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotol	uene	103% 89%		-	30% 30%		

(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

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-21 SO - Soil	l #13-0'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18
Project:	Atha SWD				i ciccat Sonus	. 90	.0
General Chemistry	1						
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	тн	SM 2540 G

3.21 در



CAS No.

1868-53-7

2037-26-5

460-00-4

			Report	of Ai	nalysis			Page 1 of 1
Client Sam Lab Sampl Matrix: Method: Project:	le ID: TD227 SO - So	21-22 bil 8260C S	FION #14-0' W846 5030A			Date	Received: 06	5/14/18 5/15/18 3.5
Run #1 Run #2	File ID M0070103.D	DF 1	Analyzed 06/20/18 07:55	By Fl	Prep D 06/18/1	ate 8 08:30	Prep Batch n/a	Analytical Batch VM2734
Run #1 Run #2	Initial Weight 5.30 g	Final Ve 5.0 ml	olume					
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL	Units	Q	
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)		ND ND	4.0 4.0 4.0 4.0	1.4 1.5 1.6 1.8	ug/kg ug/kg ug/kg ug/kg		

Run# 2

Limits

59-126%

70-139%

63-138%

54-123%

Run# 1

117%

99%

97%

120%

ND = Not detected MDL = Method Detection Limit

Surrogate Recoveries

Dibromofluoromethane

4-Bromofluorobenzene

Toluene-D8

17060-07-0 1,2-Dichloroethane-D4

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



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			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		21-22 il C 1005 T T	FION #14-0' X1005			Date		/14/18 /15/18 5.5
Run #1 ª Run #2	File 1D JF85713.D	DF 1	Analyzed 06/19/18 18:12	By LT	Prep Da 06/18/1		Prep Batch OP46476	Analytical Batch GJF1574
Run #1 Run #2	Initial Weight 10.2 g	Final Ve 10.0 ml	blume					· · · · · · · · · · · · · · · · · · ·
CAS No.	Compound		Result	RL	MDL	Units	Q	
	ТРН (C6-C12) ТРН (> C12-C ТРН (> C28-C ТРН (C6-C35)	28) 35)	ND ND	26 26 26 26	10 12 12 10	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	oluene	101% 96%		70-1 70-1	0 -		

(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

		Repo	rt of An	alysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-22 SO - Soil	l #14-0'			Date Sampled Date Received Percent Solids	: 06	
Project:	Atha SWD				reicent Sollus	. 93	.5
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	ТН	SM 2540 G

3.22 **3**

RL = Reporting Limit



			Report	of Ai	nalysis		Page 1 of 1
Client Sa Lab Sam Matrix: Method: Project:	ple ID: TD2272 SO - So	21-23 5il 8260C S	TION #14-1' SW846 5030A	Date Date Perc	06/14/18 06/15/18 91.2		
Run #1 Run #2	File ID M0070104.D	DF 1	Analyzed 06/20/18 08:23	By Fl	Prep Date 06/18/18 08:30	Prep Batch n/a	Analytical Batch VM2734
Run #1 Run #2	Initial Weight 5.47 g	Final V 5.0 ml	olume				
Purgeable	e 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	Lim	its	
1868-53-7	Dibromofluoromethane	112%		59-1	26%	
2037-26-5	Toluene-D8	99%		70-1	39%	
460-00-4	4-Bromofluorobenzene	94%		63-1	38%	
17060-07-0	1,2-Dichloroethane-D4	116%		54-1	23%	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

- E = Indicates value exceeds calibration range
- J = Indicates an estimated value

 $\mathbf{B} = \mathbf{I}$ Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



			Report	of An	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		21-23 il 2 1005 TZ	(100 #14-1) (1005			Date		/14/18 /15/18 .2
Run #1 ª Run #2	File 1D JF85717.D	DF 1	Analyzed 06/19/18 19:52	By LT	Prep D 06/18/1	ate 8 04:30	Prep Batch OP46476	Analytical Batch GJF1574
Run #1 Run #2	Initial Weight 10.3 g	Final Vo 10.0 ml	blume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	ТРН (C6-C12) ТРН (> C12-C ТРН (> C28-C ТРН (C6-C35)	28) 35)	ND ND	27 27 27 27 27	10 12 12 10	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	luene	96% 86%			30% 30%		

(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 = l 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: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-23 SO - Soil	#14-1'	5	·	Date Sampled Date Received Percent Solids	: 06			
Project:	Atha SWD	T el cent Sonus	. 91	. 2					
General Chemistry	,								
Analyte	Result	RL	Units	DF	Analyzed	By	Method		
Chloride Solids, Percent	5600 91.2	270	mg/kg %	50 1	06/19/18 17:18 06/18/18	ES TH	EPA 300.0 SM 2540 G		



108-88-3

100-41-4

1330-20-7

CAS No.

1868-53-7

2037-26-5

460-00-4

Toluene

Ethylbenzene

Xylene (total)

Toluene-D8

17060-07-0 1,2-Dichloroethane-D4

Surrogate Recoveries

Dibromofluoromethane

4-Bromofluorobenzene

			Report	of A	nalysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	le ID: TD227 SO - So	21-24 bil 8260C S	TION #15-0' SW846 5030A			Date		/14/18 /15/18 .0
Run #1 Run #2	File ID M0070105.D	DF 1	Analyzed 06/20/18 08:52	By FI	Prep D 06/18/1	ate 8 08:30	Prep Batch n/a	Analytical Batch VM2734
Run #1 Run #2	Initial Weight 5.04 g	Final V 5.0 ml	olume					
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL	Units	Q	
71-43-2	Benzene		ND	4.1	1.4	ug/kg		

4.1

4.1

4.1

Run# 2

1.6

1.7

1.9

Limits

59-126%

70-139%

63-138%

54-123%

ug/kg

ug/kg

ug/kg

ND

ND

ND

Run# 1

108%

99%

99%

113%

- 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



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			Report	of Ana	alysis			Page 1 of 1	
Client San Lab Samp Matrix: Method: Project:	•		CATION #15-0' TX1005		Date Sampled: 06/14/18 Date Received: 06/15/18 Percent Solids: 96.0				
Run #1 ª Run #2	File 1D JF85718.D	DF 1	Analyzed 06/19/18 20:18	By LT	Prep D 06/18/1	ate 8 04:30	Prep Batch OP46476	Analytical Batch GJF1574	
Run #1 Run #2	Initial Weight 10.1 g	Final Ve 10.0 ml	olume						
CAS No.	Compound		Result	RL	MDL	Units	Q		
	TPH (C6-C12) TPH (> C12-C2 TPH (> C28-C3 TPH (C6-C35)		ND ND ND ND	26 26 26 26	9.9 12 12 9.9	mg/kg mg/kg mg/kg mg/kg			
CAS No.	Surrogate Reco	veries	Run# 1	Run# 2	Lim	its			
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotol	uene	106% 100%			30% 30%			

(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

		Page 1 of 1					
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-24 SO - Soil	#15-0'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18
Project:	Atha SWD						
General Chemistry	,			·			
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method
Chloride	2420	260	mg/kg	50	06/19/18 17:34	ES	EPA 300.0
Solids, Percent	96		%	1	06/18/18	ΤН	SM 2540 G

RL = Reporting Limit



3.24 **3**

			Report	of A	nalysis		Page 1 of 1
Client Sar Lab Samp Matrix: Method: Project:	ole ID: TD: SO SW	22721-25 - Soil	ATION #16-0' SW846 5030A		Date Date Perc	06/14/18 06/15/18 91.3	
Run #1 Run #2	File 1D M0070106.1	DF D 1	Analyzed 06/20/18 09:21	By Fl	Prep Date 06/18/18 08:30	Prep Batch n/a	Analytical Batch VM2734
Run #1 Run #2	Initial Weig 5.28 g	ht Final 5.0 m	Volume I				

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	Lim	its	
1868-53-7	Dibromofluoromethane	106%		59-1	26%	
2037-26-5	Toluene-D8	98%		70-1	39%	
460-00-4	4-Bromofluorobenzene	99%		63-1	38%	
17060-07-0	1,2-Dichloroethane-D4	110%		54-1	23%	

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



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			Report	of An	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		21-25 il 2 1005 T	TION #16-0' X1005		6/14/18 6/15/18 1.3			
Run #1 ª Run #2	File ID JF85719.D	DF 1	Analyzed 06/19/18 20:43	By LT	Prep D 06/18/1	ate 8 04:30	Prep Batch OP46476	Analytical Batch GJF1574
Run #1 Run #2	Initial Weight 10.0 g	Final V 10.0 ml	olume					
CAS No.	Compound		Result	RL	MDL	Units	Q	
	ТРН (C6-C12) ТРН (> C12-C ТРН (> C28-C ТРН (C6-C35)	28) 35)	ND ND	27 27 27 27	11 12 12 11	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluoroto	luene	99% 87%		1000	30% 30%		

(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 Pa										
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-25 SO - Soil	#16-0'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18 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 Ai	nalysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	le ID: TD2272 SO - So	21-26 il 8260C SV	'ION #16-1' W846 5030A]	Date		5/14/18 5/15/18 0.7
Run #1 Run #2	File 1D M0070107. D	DF 1	Analyzed 06/20/18 09:49	By Fl	Prep Date 06/18/18 08	:30	Prep Batch n/a	Analytical Batch VM2734
Run #1 Run #2	Initial Weight 5.31 g	Final Vo 5.0 ml	lume					
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL U	nits	0	

CAS NO.	Compound	Result	KL.	MIDE	Onits	Y
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	Lim	its	
1868-53-7	Dibromofluoromethane	108%		59-1	26%	
2037-26-5	Toluene-D8	101%		70-1	39%	
460-00-4	4-Bromofluorobenzene	99%		63-1	38%	
17060-07-0	1,2-Dichloroethane-D4	107%		54-1	23%	

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



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			Report	of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		ATION #16-1' TX1005			Date Date Perce	5/14/18 5/15/18 0.7		
Run #1 ª Run #2	File 1D JF85720.D	DF 1	Analyzed 06/19/18 21:08	By LT	Prep D 06/18/1	ate 8 04:30	Prep Batch OP46476	Analytical Batch GJF1574
Run #1 Run #2	Initial Weight 10.1 g	Final V 10.0 m	Volume Il					
CAS No.	Compound	-	Result	RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C2 TPH (> C28-C3 TPH (C6-C35)		ND ND ND ND	27 27 27 27 27	10 12 12 10	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Reco	veries	Run# 1	Run# 2	Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotol	uene	102% 95%			30% 30%		

(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

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TD22721

3.26 ω

Report of Analysis									
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-26 SO - Soil	N #16-1'			Date Sampled Date Received Percent Solids	: 06	/14/18 /15/18		
Project:	Atha SWD								
General Chemistry	/				·,				
Analyte	Result	RL	Units	DF	Analyzed	By	Method		
Chloride	643	28	mg/kg	5	06/19/18 18:07		EPA 300.0		
Solids, Percent	90.7		%	1	06/18/18	тн	SM 2540 G		

RL = Reporting Limit



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			Report	of A	nalysis		Page 1 of 1	
Client Sample ID:SAMPLE LOCATION #17-0'Lab Sample ID:TD22721-27Date Sampled:06/14/18Matrix:SO - SoilDate Received:06/15/18Method:SW846 8260CPercent Solids:98.4Project:Atha SWDPercent Solids:98.4								
Run #1 Run #2	File ID Y1097387.D	DF 1	Analyzed 06/20/18 16:46	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch VY4778	
Run #1 Run #2	Initial Weight 5.21 g	Final Vo 5.0 ml	olume				<u>.</u>	
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL Unit	ts Q		

1.3

1.5

1.6 1.8

Limits

59-126%

70-139%

63-138%

54-123%

ug/kg ug/kg

ug/kg

ug/kg

CAS No.	Compound	Result	RL
71-43-2	Benzene	ND	3.9
108-88-3	Toluene	ND	3.9
100-41-4	Ethylbenzene	ND	3.9
1330-20-7	Xylene (total)	ND	3.9
CAS No.	Surrogate Recoveries	Run# 1	Run# 2

106%

109%

99%

103%

Dibromofluoromethane

4-Bromofluorobenzene

Toluene-D8

17060-07-0 1,2-Dichloroethane-D4

ND = Not detected	MDL = Method Detection Limit

RL = Reporting Limit E = Indicates value exceeds calibration range

1868-53-7

2037-26-5

460-00-4

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



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		Re	port of A	nalysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		005 TX1005			Date Date Perc	5/14/18 5/15/18 3.4	
Run #1 ª Run #2	File ID I JF85721.D	DF Analyze 1 06/19/18	•	Prep D 06/18/1	ate 8 04:30	Prep Batch OP46476	Analytical Batch GJF1574
Run #1 Run #2		Final Volume 10.0 ml					
CAS No.	Compound	Resu	lt RL	MDL	Units	Q	
	TPH (C6-C12) TPH (> C12-C28 TPH (> C28-C35 TPH (C6-C35)		25 25 25 25	9.6 11 11 9.6	mg/kg mg/kg mg/kg mg/kg		
CAS No.	Surrogate Recov	eries Run#	1 Run#	2 Lim	its		
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotolu	114% ene 97%			30% 30%		

(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: Lab Sample ID: Matrix:	SAMPLE LOCATION TD22721-27 SO - Soil	¥ #17-0'			Date Sampled Date Received Percent Solids	l: 06	/14/18 /15/18 .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	ТН	SM 2540 G			

RL = Reporting Limit



TD22721

3.27

3

1330-20-7

CAS No.

1868-53-7

17060-07-0

2037-26-5

460-00-4

Xylene (total)

Toluene-D8

Surrogate Recoveries

Dibromofluoromethane

1,2-Dichloroethane-D4

4-Bromofluorobenzene

			Report	of A	nalysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	le ID: TD227 AQ - T	rip Blank 8260C	Water			Date		/14/18 /15/18 a
Run #1 Run #2	File ID X01248945.D	DF 1	Analyzed 06/19/18 07:24	By Fl	Prep Da n/a	ate	Prep Batch n/a	Analytical Batch VX3697
Run #1 Run #2	Purge Volume 5.0 ml							
Purgeable	Aromatics							
CAS No.	Compound		Result	RL	MDL	Units	Q	
71-43-2 108-88-3 100-41-4	Benzene Toluene Ethylbenzene		ND ND ND	1.0 1.0 1.0	0.30 0.30 0.30	ug/l ug/l ug/l		

1.0

Run# 2

ND

Run# 1

102%

103%

105%

96%

ND = Not detected MDL = Method Detection Limit

- RL = Reporting Limit
- E = Indicates value exceeds calibration range
- J = Indicates an estimated value

ug/l

0.65

Limits

72-122%

68-124%

80-119%

72-126%

- B = Indicates analyte found in associated method blank
- N = Indicates presumptive evidence of a compound



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Houston, TX

Section 4

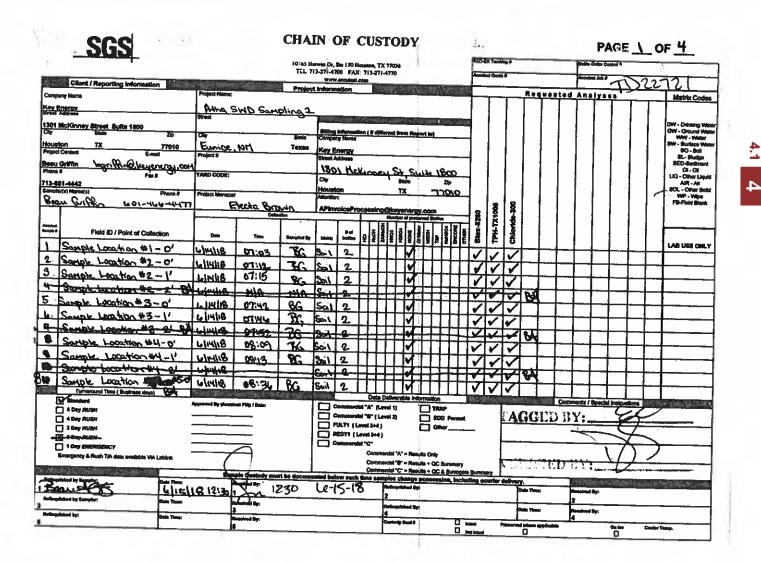
Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

Chain of Custody





TD22721: Chain of Custody Page 1 of 10

SGS

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10 Sample Location the-0'	6/14/18	08:51	BG.	Sail	2	Ħ	$^{++}$	Н	Ľ.	11	╋	╋	Ľ	.7	b	2	<u> </u>				<u> </u>	┢──╇	+	
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TD22721: Chain of Custody

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95 of 125 TD22721

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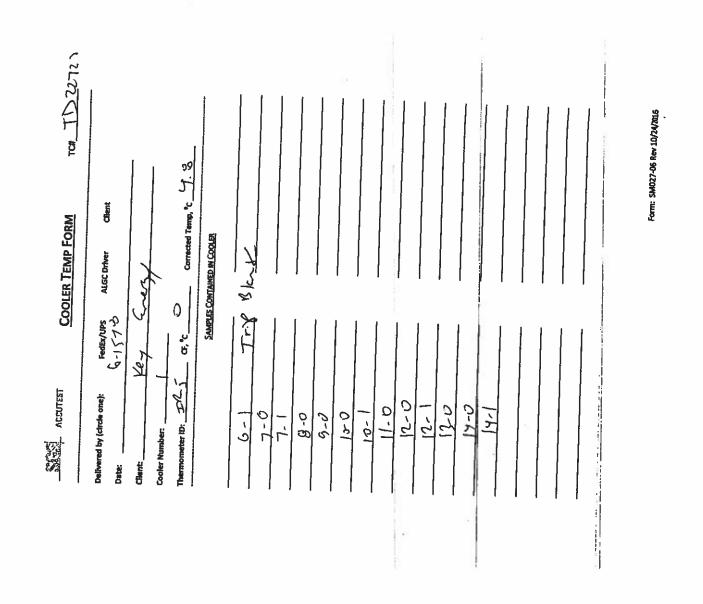
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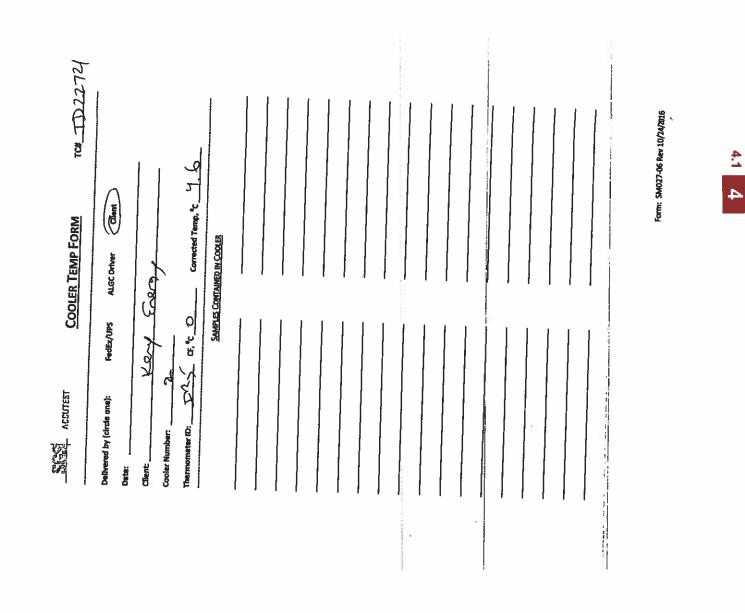
TD22721: Chain of Custody Page 5 of 10



TD22721

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TD22721

SGS Sample Receipt Summary

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4.1 4

Scoler Temps (Initial/Adjusted): #1: (4.8/4.8); #2: (4.6/4.6); Scoler Security Y or N Sample Integrity - Documentation 1 Custody Seals Present: Image: Scoler Security Image: Scoler Security 2 Custody Seals Intact; Image: Scoler Security Image: Scoler Security 3 COC Present: Image: Scoler Security Image: Scoler Security 4 Smpl Dates/Time OK Image: Scoler Temperature Image: Scoler Temperature 5 coler Temperature Y or N Image: Scoler Temperature	or: 0. Ø		
Cooler Temps (Initial/Adjusted): #1: (4.8/4.8); #2: (4.6/4.6); Cooler Security Y or N Sample Integrity - Documentation 1 Custody Seals Present: Image: Sample Integrity - Documentation 1. Sample labels present on bottles. 2 Custody Seals Intact: Image: Sample Integrity - Documentation 1. Sample labels present on bottles. 2 Custody Seals Intact: Image: Sample Integrity - Documentation 1. Sample labels present on bottles. 2 Custody Seals Intact: Image: Sample Integrity - Documentation 1. Sample labels present on bottles. 2 Custody Seals Intact: Image: Sample Integrity - Documentation 1. Sample labels present on bottles. 2 Custody Seals Intact: Image: Sample Integrity - Documentation 1. Sample labels present on bottles. 2 Custody Seals Intact: Image: Sample Integrity - Documentation 1. Sample labels present on bottles. 2 Custody Seals Intact: Image: Sample Integrity - Documentation 1. Sample labels present on bottles. 2 Custody Seals Intact: Image: Sample Integrity - Documentation 1. Sample labels present on bottles. 3 Sample container label / COC agree: Image: Sample Integrity - Documentation 1. Sample Container label / COC agree.	Y		_
1 Custody Seals Present: Image: Cooler Temperature Image:			
1 Custody Seals Present: Image: Seals Intact;			
2 Custody Seals Present Image: Seals Present			
2 Custody Seals Intact: Image: Container Labeling complete: 2 Costainer Temperature Y or N 2 Container Labeling complete: 3. Sample container Label / COC agree:			
1. Temp criteria achieved: 🖉 🔲 Sample Integrity - Condition			
	Y	or N	
2. Cooler temp verification: 1. Sample recvd within HT:			
3. Cooler media: Ice (Bag) 2 All containers accounted for:			
Quality Control Preservation Y or N N/A WTB STB 3 Condition of sample:		Intact	
1. Trip Blank present / cooler: 🗭 🗆 🖾 🖾 Sample Integrity - Instructions	Y	or N	N/A
2. Trip Blank listed on COC:			
3. Samples preserved property: 😥 🗌 2. Bottles received for unspecified tests			
4. VOCs headspace free: 🕢 🗌 🗌 🕄 3. Sufficient volume recvd for analysis			
4. Compositing instructions clear			
5. Filtering instructions clear.			

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Sample Receipt Log

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4.1 4

Job #: TD22721
Client: KEY ENERGY

Date / Time Received: 6/15/2018 12:30:00 PM 12:3

Initials: EC

Cooler#	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
-	TD22721-1	Boz	1	2-47	N/P	Note #2 - Preservative check not applicable.		-		
	TD22721-1	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.		1		
	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.		1	1	
	TD22721-3	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TD22721-4	8oz	1 1	2-47	N/P	Note #2 - Preservative check not applicable		-		
1	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	-	1		
	TD22721-5	4oz	2	VR	N/P	Note #2 - Preservative check not applicable		-	1	
	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	40z	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		+	1	-
	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	-	1	1	
	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.		-	-	-

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Sample Receipt Log

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Job #: TD22721

Date / Time Received: 6/15/2018 12:30:00 PM 12:3

Initials: EC

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	рН	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	1	-		
	TD22721-13	4oz	2	VR	N/P	Note #2 - Preservative check not applicable				÷
	TD22721-14	Boz	1	2-47	N/P	Note #2 - Preservative check not applicable	1	1		
- 1	TD22721-14	4oz	2	VR	N/P	Note #2 - Preservative check not applicable		1		
	TD22721-15	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable.			-	
	TD22721-15	402	2	VR	N/P	Note #2 - Preservative check not applicable.		-		
1	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	40z	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	40Z	2	VR	N/P	Note #2 - Preservative check not applicable			-	
			-				-			
	TD22721-19	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable			1	
	TD22721-19	40Z	2	VR	N/P	Note #2 - Preservative check not applicable.	1			
	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	A		1	
	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.		1		
	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	+	-	1	

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Sample Receipt Log

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4.1 4

Job #: TD22721

Client: KEY ENERGY

Date / Time Received:	6/15/2018 12 30 00 PM 12:3

Initials: EC

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			1	
	TD22721-26	8oz	1	2-47	N/P	Note #2 - Preservative check not applicable	-	1	1	
	TD22721-26	4oz	2	VR	N/P	Note #2 - Preservative check not applicable	· · · · · · · · · · · · · · · · · · ·	1		-
	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	40mi	1	VR	HCL	Note #1 - Preservative to be checked by analysi at the instrument.				-
	TD22721-28	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

TD22721: Chain of Custody Page 10 of 10



Houston, TX

Section 5

MS	Volatiles			
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QC Data Summaries

Includes the following where applicable:

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

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Method Blank Summary

Job Number: Account: Project:	TD22721 KEYENTXH Key Atha SWD	e Energy					
Sample VX3697-MB	File 1D X01248925.D	DF 1	Analyzed 06/18/18	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch VX3697
						Ť.:	

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%

5.1.1 **5**

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Method Blank Summary

Job Number: Account: Project:	TD22721 KEYENTXH Key Atha SWD	/ Energy					
Sample VM2733-MB	File ID M0070065.D	DF 1	Analyzed 06/19/18	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch VM2733
The OC server	ted here applies to	the felle	wing complex.			Mathad: SW/84	6 92600

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%



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Method Blank Summary Job Number: TD22721

Account: Project:	KEYENTXH Key Atha SWD						
Sample VM2734-MB	File ID M0070092.D	DF 1	Analyzed 06/20/18	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch VM2734
The OC repor	ted here applies to	the follo	wing samples:			Method: SW84	6 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: SW846 8260C



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5.1.3

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Method Blank Summary Job Number: TD22721

Job Number: Account: Project:	KEYENTXH Key Atha SWD	y Energy					
Sample VY4778-MB	File 1D Y1097372.D	DF 1	Analyzed 06/20/18	By Fl	Prep Date n/a	Prep Batch n/a	Analytical Batch VY4778
The OC series	tod hore applies to	the fells	wing complex.			Mathadi SW/84	- P360C

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 Comp	ounds	R.T.	Es	t. Conc.	Units	Q
	Total TIC, Volatile			0		ug/kg	



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TD22721

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Blank Spike Summary

Job Number: Account: Project:	TD22721 KEYENTXH Key Atha SWD	Energy					
Sample	File 1D	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	Li	nits	
1868-53-7	Dibromofluoromethane	104%	72-	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%	

5.2.1 **5**



Blank Spike Summary

Job Number: Account: Project:	TD22721 KEYENTXH Key Atha SWD	y Energy					
Sample VY4778-BS	File ID Y1097369.D	DF 1	Analyzed 06/20/18	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch VY4778
The QC repor	ted here applies to	the follo	wing samples:			Method: SW84	6 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	Lin	nits	
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%	



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5.2.2 5

Blank Spike/Blank Spike Duplicate Summary

Job Number:TD22721Account:KEYENTXH Key EnergyProject: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	BS	D	Limits			
1868-53-7	Dibromofluoromethane	98%	103	%	59-126	%		
2037-26-5	Toluene-D8	102%	102	%	70-1399	%		
460-00-4	4-Bromofluorobenzene	95%	989	6	63-1389	%		
17060-07-0	1,2-Dichloroethane-D4	105%	105	5%	54-1239	%		

(a) Insufficient sample available for MS/MSD.



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Blank Spike/Blank Spike Duplicate Summary

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

File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
M0070088.D	1	06/19/18	Fl	n/a	n/a	VM2734
M0070089.D	1	06/19/18	FI	n/a	n/a	VM2734
	M0070088.D	M0070088.D 1	M0070088.D 1 06/19/18	M0070088.D 1 06/19/18 F1	M0070088.D 1 06/19/18 Fl n/a	M0070088.D 1 06/19/18 Fl n/a n/a

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	BS	D	Limits			
1868-53-7	Dibromofluoromethane	100%	999	6	59-1269	%		
2037-26-5	Toluene-D8	101%	103	3%	70-139	%		
460-00-4	4-Bromofluorobenzene	97%	969	6	63-1389	%		
17060-07-0	1,2-Dichloroethane-D4	103%	969	6	54-1239	%		

(a) Insufficient sample available for MS/MSD.



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Matrix Spike/Matrix Spike Duplicate Summary

Job Number:TD22721Account:KEYENTXH Key EnergyProject:Atha SWD

Sample	File ID	DF	Analyzed	Ву	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

		TD22717-20		MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	ug/l	%	RPD	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	TD	22717-20	Limits				
1868-53-7	Dibromofluoromethane	107%	106%	10	6%	72-122	%			
17060-07-0	1,2-Dichloroethane-D4	101%	101%	103	3%	68-124	%			
2037-26-5	Toluene-D8	96%	96%	97	%	80-119	%			
460-00-4	4-Bromofluorobenzene	102%	101%	10-	4%	72-126	%			

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TD22721

Matrix Spike/Matrix Spike Duplicate Summary

Job Number:TD22721Account:KEYENTXH Key EnergyProject: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	TD	22637-1	Limits				
1868-53-7	Dibromofluoromethane	95%	97%	96%	6	59-1269	<i>/</i> o			
2037-26-5	Toluene-D8	99%	98%	109	%	70-1399	6			
460-00-4	4-Bromofluorobenzene	100%	97%	95%	6	63-1389	6			
17060-07-0	1,2-Dichloroethane-D4	95%	95%	989	6	54-1239	10			

5.4.2

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TD22721



Houston, TX

Section 6

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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



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Method Blank Summary Job Number: TD22721

Job Number: Account: Project:	KEYENTXH Ka Atha SWD	ey Energy					
Sample OP46472-MB	File 1D JF85675.D	DF 1	Analyzed 06/18/18	By LT	Prep Date 06/18/18	Prep Batch OP46472	Analytical Batch GJF1573
The QC repor	ted here applies t	o the follo	wing samples:			Method: TNRC	C 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) TPH (> C12-C28) TPH (> C28-C35) TPH (C6-C35)	ND ND ND ND	25 25 25 25	9.6 11 11 9.6	mg/kg mg/kg mg/kg mg/kg
CAS No.	Surrogate Recoveries		Limi	ts	

84-15-1	o-Terphenyl	91%	70-130%
98-08-8	aaa-Trifluorotoluene	84%	70-130%



6.1.1

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Method Blank Summary Job Number: TD22721

Account: Project:	KEYENTXH Ke Atha SWD	ey Energy					
Sample OP46476-MB	File ID JF85707. D	DF 1	Analyzed 06/19/18	By LT	Prep Date 06/18/18	Prep Batch OP46476	Analytical Batch GJF1574
The QC repor	ted here applies t	o the follo	wing samples:			Method: TNRC	C 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) TPH (> C12-C28) TPH (> C28-C35) TPH (C6-C35)	ND ND ND ND	25 25 25 25	9.6 11 11 9.6	mg/kg mg/kg mg/kg mg/kg
CAS No.	Surrogate Recoveries		Limits	5	

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

Project:	Atha SWD	DE		D -1	Data Data	Dave Datab	Amelantical Details
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:

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
	ТРН (С6-С35)	500	460	92	449	90	2	75-125/20
CAS No.	Surrogate Recoveries	BSP	BSI	D	Limits			
84-15-1	o-Terphenyl	90%	869	6	70-1309	6		
98-08-8	aaa-Trifluorotoluene	90%	859	6	70-1309	6		

Method: TNRCC 1005

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6.2.1

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Blank Spike/Blank Spike Duplicate Summary

	Account:KEYENTXH Key EnergyProject:Atha SWD	nt: KEYENTXH Key Energy	Job Number: TD22721
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Sample	File ID	DF	Analyzed	Ву	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:

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
	ТРН (С6-С12)	250	203	81	223	89	9	75-125/20
	TPH (> C12-C28)	250	195	78	197	79	1	75-125/20
	ТРН (С6-С35)	500	398	80	420	84	5	75-125/20
CAS No.	Surrogate Recoveries	BSP	BSI	D	Limits			
84-15-1	o-Terphenyl	93%	92%	6	70-1309	6		
98-08-8	aaa-Trifluorotoluene	84%	91%	6	70-1309	6		

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Method: TNRCC 1005

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TD22721

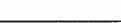
KEYENTXH Key Atha SWD	y Energy					
File 1D	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
LF160626.D	1	06/18/18	LT	06/18/18	OP46472	GLF2486
LF160628.D	1	06/18/18	LT	06/18/18	OP46472	GLF2486
LF160624.D	1	06/18/18	LT	06/18/18	OP46472	GLF2486
	KEYENTXH Key Atha SWD File 1D LF160626.D LF160628.D	KEYENTXH Key Energy Atha SWD File 1D DF LF160626.D 1 LF160628.D 1	KEYENTXH Key Energy Atha SWD DF Analyzed File 1D DF 06/18/18 LF160626.D 1 06/18/18 LF160628.D 1 06/18/18	KEYENTXH Key Energy Atha SWD DF Analyzed By File 1D DF 06/18/18 LT LF160626.D 1 06/18/18 LT LF160628.D 1 06/18/18 LT	KEYENTXH Key Energy Atha SWD DF Analyzed By Prep Date LF160626.D 1 06/18/18 LT 06/18/18 LF160628.D 1 06/18/18 LT 06/18/18	KEYENTXH Key Energy Atha SWD DF Analyzed By Prep Date Prep Batch LF160626.D 1 06/18/18 LT 06/18/18 0946472 LF160628.D 1 06/18/18 LT 06/18/18 0946472

The QC reported here applies to the following samples:

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 MS mg/kg %		Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	ТРН (C6-C12) ТРН (> C12-C28) ТРН (C6-C35)	ND 21.3 J 84.7	267 267 534)1 0 9	263 263 526	235 250 484	89 87 76	4 4 4	75-125/20 75-125/20 75-125/20
CAS No.	Surrogate Recoveries	MS	MSD	TD227	721-2	Limits				
84-15-1 98-08-8	o-Terphenyl aaa-Trifluorotoluene	111% 83%	109% 82%	110% 84%		70-130% 70-130%	-			

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



Method: TNRCC 1005

* = Outside of Control Limits.

6.3.1

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Matrix Spike/Matrix Spike Duplicate Summary Job Number: TD22721

Job Number: Account: Project:	KEYENTXH Ke Atha SWD	ey Energy					
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
	ТРН (С6-С12)	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
	ТРН (С6-С35)	ND	514	467	91	517	446	86	5	75-125/20
CAS No.	Surrogate Recoveries	MS	MSD	TD	22721-19	Limits				
84-15-1	o-Terphenyl	102%	98%	98%	6	70-130%	6			
98-08-8	aaa-Trifluorotoluene	98%	90%	89%	0	70-130%	6			

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

6.3.2 6

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TD22721



Houston, TX

Section 7

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: TD22721-1			•				22721-25. Т	

Batch GP48175: TD22721-11, TD22721-19, TD22721-20, TD22721-21, TD22721-22, TD22721-23, TD22721-24, TD22721-25, TD22721-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

SGS



7.1

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

> 124 of 125 SGS

TD22721

7.2



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.BN	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.

TD22721

7.3

<u>Appendix 4</u>

Laboratory Analytical Report TD24377 for soil analysis at Atha SWD



Houston, TX

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

e-Hardcopy 2.0 Automated Report

07/26/18

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.

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)

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ouriguez

Laboratory Director

Richard I





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Sample Summary

Key Energy

Job No: TD24377

Atha SWD Project No: Sampling 2

Sample Number	Collected Date	Time By	Received	Matri Code		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'
T D24377-9	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

TD24377
Key Energy
Atha SWD
07/18/18

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

Ν

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 LOCAT	FION #18-0'				
Chloride		9.1	6.1		mg/kg	EPA 300.0

Page 2 of 2

N



Houston, TX

Section 3 ^ω

Sample Results

Report of Analysis



	Report of Analysis								
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD24377-1 SO - Soil	#2-2'			Date Sampled Date Received Percent Solids	l: 07	7/18/18 7/19/18		C
Project:	Atha SWD								
General Chemistry Analyte	Result	RL	Units	DF	Analyzed	By	Metho	d	
Chloride Solids, Percent	6810 83.2	600	mg/kg %	100 1	07/23/18 11:31 07/20/18	LR BS	EPA 300 SM 2540		



	Report of Analysis							
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATIO TD24377-2 SO - Soil	N #3-2'			Date Sampled Date Received Percent Solids	: 07	/18/18 /19/18	
Project:	Atha SWD				I CICCIII DOILLO	, 20		
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



3.2 3

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	Report of Analysis							
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD24377-3 SO - Soil	#4-2'			Date Sampled Date Received Percent Solids	: 07	/18/18 /19/18	
Project:	Atha SWD				i ci cent Sonua	. 00		
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	



		Repo	ort of An	alysis			F	Page 1 of 1	
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD24377-4 SO - Soil	#5-2'			Date Sampled Date Received Percent Solids	: 07			
Project: General Chemistry	Atha SWD		. <u> </u>						
Analyte	Result	RL	Units	DF	Analyzed	By	Method	I	
Chloride Solids, Percent	273 82.4	12	mg/kg %	2 1	07/23/18 12:55 07/20/18	LR BS	EPA 300. SM 2540	-	



		Repo	ort of An	alysis			I	Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATIO TD24377-5 SO - Soil	ON #6-2'			Date Sampled Date Received Percent Solids	: 07	7/18/18 7/19/18 5.8	
Project:	Atha SWD							
General Chemistry	ý							
Analyte	Result	RL	Units	DF	Analyzed	By	Method	I
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



		Repo	ort of An	alysis			Page 1 of 1	
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD24377-6 SO - Soil	! #7-2'			Date Sampled Date Received Percent Solids	: 07		
Project:	Atha SWD							
General Chemistry	Ý							
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	



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	Report of Analysis								
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD24377-7 SO - Soil	#10-2'			Date Sampled Date Received Percent Solids	: 07	7/18/18 7/19/18		
Project:	Atha SWD							ľ	
General Chemistry	,								
Analyte	Result	RL	Units	DF	Analyzed	Ву	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	



		Repo	rt of An	alysis				Page 1 of 1	0.0
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD24377-8 SO - Soil	#12-2'			Date Sampled Date Received Percent Solids	: 07	7/18/18 7/19/18).2		ι
Project:	Atha SWD								
General Chemistry Analyte	' Result	RL	Units	DF	Analyzed	By	Methoo	1	
Chloride Solids, Percent	397 70.2	14	mg/kg %	2 1	07/23/18 14:54 07/20/18	LR BS	EPA 300 SM 2540		



		Repo	ort of An	alysis			P	age 1 of 1	
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD24377-9 SO - Soil	#14-2'			Date Sampled Date Received Percent Solids	: 07			
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	



		Repo	ort of An	alysis			Page 1	of 1
Client Sample ID: Lab Sample ID:	SAMPLE LOCATION TD24377-10	#15-2'			Date Sampled		/18/18	
Matrix: Project:	SO - Soil Atha SWD				Date Received Percent Solids		/19/18 .8	
General Chemistry	/							
Analyte	Result	RL	Units	DF	Analyzed	By	Method	
Chloride Solids, Percent	147 81.8	6.1	mg/kg %	1 1	07/23/18 16:01 07/20/18	LR BS	EPA 300.0 SM 2540 G	



		Repo	rt of An	alysis			I	Page 1 of 1
Client Sample ID:	SAMPLE LOCATION	l #16-2'			D - 0 - 1 4	07		
Lab Sample ID: Matrix:	TD24377-11 SO - Soil				Date Sampled Date Received		/18/18 //19/18	
					Percent Solids	: 78	.0	
Project:	Atha SWD							
General Chemistry	,							
Analyte	Result	RL	Units	DF	Analyzed	By	Method	l
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



	Report of Analysis											
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD24377-12 SO - Soil	#18-0'			Date Sampled Date Received Percent Solids	: 07	/18/18 //19/18 5					
Project:	Atha SWD				i ci cent bonus	. 01						
General Chemistry	1											
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 C	3				

3.12





Houston, TX

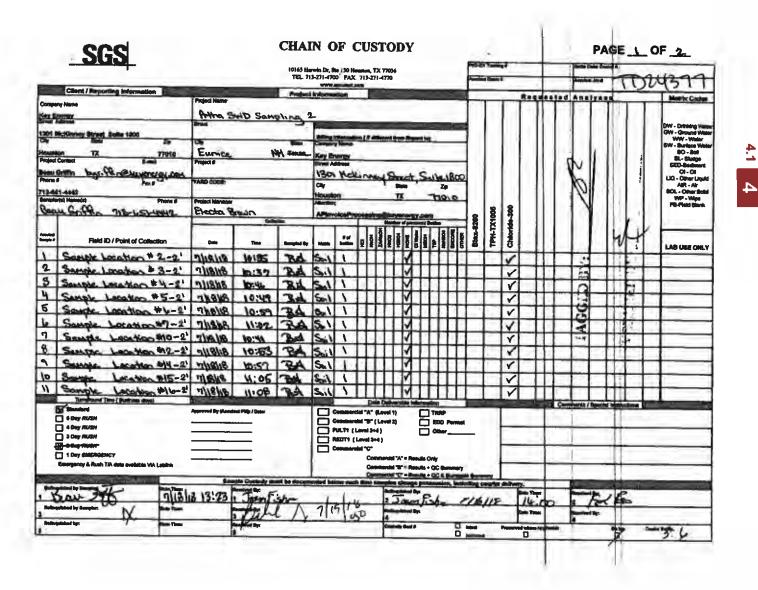
Section 4

Misc. Forms

Custody Documents and Other Forms

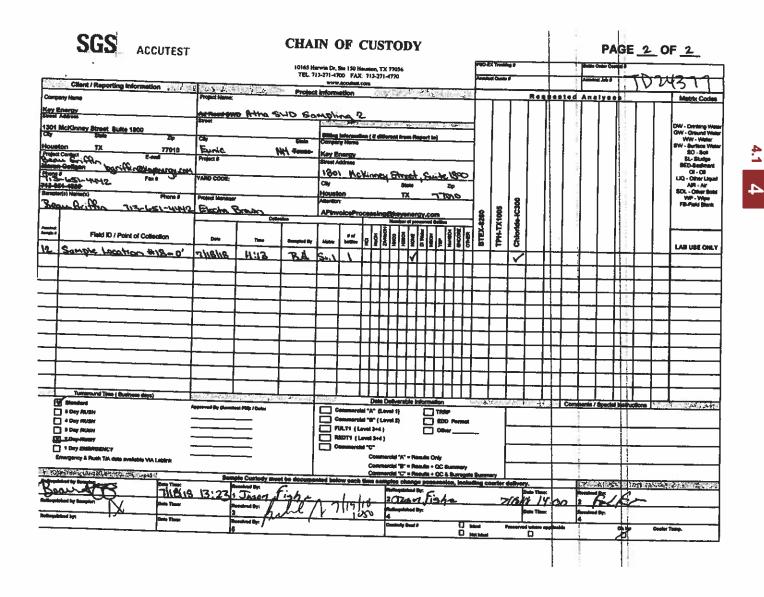
Includes the following where applicable:

Chain of Custody



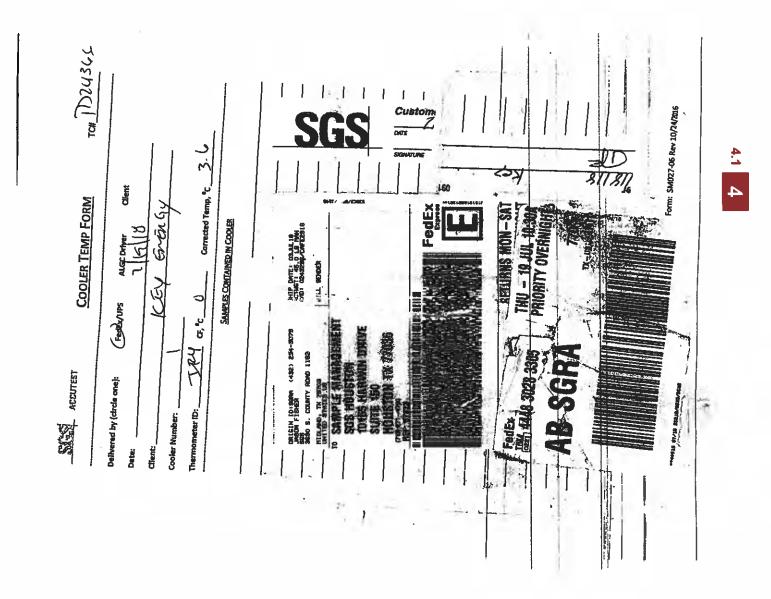
TD24377: Chain of Custody Page 1 of 5

TD24377



TD24377: Chain of Custody Page 2 of 5





TD24377: Chain of Custody Page 3 of 5



SGS Sample Receipt Summary

Page 1 of 2

4.1 4

Date / Time Received: 7/19/	2018 10	0:50:00 A	M Delivery	Method:	:	Alrbill #'s: 444830283305			
No. Coolers: 1		m ID: IR-	-			Temp Adjustment Factor:	0;		
ooler Temps (initial/Adjuste	id): <u>#1</u>	<u>: (3.6/3.6</u>	<u>):</u>						
Cooler Security Y	or N	_		<u> </u>	<u>r</u> N	Sample Integrity - Documentation	<u> </u>	or N	
1, Custody Seals Present:			COC Present:			1. Sample labels present on bottles:	Ø		
2. Custody Seals Intact:	C] 4.Sm	npl Dates/Time OK			2 Container labeling complete:			
Cooler Temperature	Y	or N				3. Sample container label / COC agree:			
1. Temp criteria achieved:						Sample Integrity - Condition	Y	or N	
2 Cooler temp verification						1. Sample recvd within HT:			
3 Cooler media:	lo	ce (Bag)				2. All containers accounted for:			
Quality Control Preservation	ı <u>Y</u>	or N	N/A	WTB	STB	3. Condition of sample:		Intact	_
1 Trip Blank present / cooler						Sample Integrity - Instructions	Y.	or N	N/A
2 Trip Blank listed on COC						1. Analysis requested is clear:			
3. Samples preserved property.						2. Bottles received for unspecified tests			
4. VOCs headspace free:						3. Sufficient volume recvd for analysis			
						4. Compositing Instructions clear:			
						5. Filtering instructions clear:		_	

TD24377: Chain of Custody Page 4 of 5



Sample Receipt Log

Date / Time Received: 7/19/2018 10:50:00 AM 10:5

Page 2 of 2

4.1

Initials: BG

Job #: TD24377

Client: KEY ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	рН	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



Houston, TX

Section 5

General Chemistry

QC Data Summaries

Includes the following where applicable:

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

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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 Chloride	GP48717/GN91474 GP48718/GN91474	5.0 5.0	0.0	mg/kg mg/kg	100 100	96.2 100	96.2 100.0	90-110% 90-110%	о 1

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



DUPLICATE RESULTS SUMMARY GENERAL CHEMISTRY

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

Analyte	Batch ID	QC Sample	Units	Origina Result	l DUP Result	RPD	QC Limits	
Chloride	GP48717/GN91474	TD24377-3	mq/kq	83.6	80.7	3.5	0-20%	
Chloride	GP48718/GN91474	TD24377-11	mq/kq	611	608	0.5	0-20%	i
Solids, Percent	GN91412	TD24393-1	8	80.2	80.4	0.2	0-5%	
Associated Samples:								c
Batch GN91412: TD24377-1,	TD24377-2, TD24377-3,	TD24377-4,	TD24377-5,	TD24377-6,	TD24377-7,	TD24377-8,	TD24377-9,	TD24377-
10, TD24377-11, TD24377-1	2							
Batch GP48717: TD24377-1,	TD24377-2, TD24377-3,	TD24377-4,	TD24377-5,	TD24377-6,	TD24377-7,	TD24377-8		
Batch GP48718: TD24377-9,	TD24377-10, TD24377-1	1, TD24377-1	.2					

(*) 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%	5.3
Chloride	GP48718/GN91474	TD24377-11	mg/kg	611	127	2560	1532.4(a)	80-120%	

Associated Samples:

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.



TD24377

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Appendix 5

Laboratory Analytical Report TD25029 for soil analysis at Atha SWD



Houston, TX

08/09/18

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

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



0 riguez Richard Laborator Director

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.

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)

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Table of Contents

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Sections:

Sample Summary

Key Energy

Job No: TD25029

Atha SWD Project No: Atha SWD Sampling #3

Sample Number	Collected Date	Time By	Received	Matri Code		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

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TD25029
Key Energy
Atha SWD
07/31/18

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

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Houston, TX

Section 3 ^ω

Sample Results

Report of Analysis

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	Report of Analysis							Page 1 of 1	
Client Sample ID: Lab Sample ID: Matrix:	: SAMPLE LOCATION #2-2.5' TD25029-1 Date Sampled: 07/31/18 SO - Soil Date Received: 08/02/18 Percent Solids: 89.5						3/02/18		¢
Project:	Atha SWD								
General Chemistry	1								
Analyte	Result	RL	Units	DF	Analyzed	By	Method	I	
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	



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	Report of Analysis						Pag	e 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	TD25029-2 Date Sampled: 07/3						/31/18 /02/18 .3	
Project:	Atha SWD							
General Chemistry	,	-						
Analyte	Result	RL	Units	DF	Analyzed	Ву	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



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	Report of Analysis								
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION # TD25029-3 SO - Soil								
Project:	Atha SWD								
General Chemistry Analyte	' Result	RL	Units	DF	Analyzed	By	Method		
Chloride Solids, Percent	45 1 86	29	mg/kg %	5 1	08/06/18 13:47 08/03/18	LR BS	EPA 300.0 SM 2540 G		



	Report of Analysis							Page 1 of 1	3.4
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD25029-4 SO - Soil	#7 - 2.5'			Date Sampled: 07/31/18 Date Received: 08/02/18 Percent Solids: 88.7		8/02/18		د ر
Project:	Atha SWD								
General Chemistry	Ŷ								
Analyte	Result	RL	Units	DF	Analyzed	By	Method	I	
Chloride Solids, Percent	610 88.7	28	mg/kg %	5 1	08/06/18 14:04 08/03/18	LR BS	EPA 300. SM 2540		



	Report of Analysis							age 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION #14-2.5' TD25029-5 SO - Soil Date Received: 08/02/18 Percent Solids: 94.1							
Project:	Atha SWD							
General Chemistry	1							
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method	
Chloride Solids, Percent	7220 94.1	520	mg/kg %	100 1	08/06/18 14:21 08/03/18	LR BS	EPA 300.0 SM 2540 (



TD25029

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		!	Page 1 of 1						
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD25029-6 SO - Soil	#16-2.5'			Date Sampled Date Received Percent Solids	: 08	//31/18 5/02/18		
Project:	Atha SWD								
General Chemistry	,								
Analyte	Result	RL	Units	DF	Analyzed	By	Methoo	1	
Chloride	1460	56	mg/kg	10	08/06/18 14:38	LR	EPA 300.	.0	
Solids, Percent	86.3		%	i	08/03/18	BS	SM 2540	G	



]	Page 1 of 1	3.7					
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION # TD25029-7 SO - Soil	19-0'			Date Sampled Date Received Percent Solids	I: 08	7/31/18 3/02/18		ယ
Project:	Atha SWD				i ci cent bonda	. ,,			
General Chemistry	/								
Analyte	Result	RL	Units	DF	Analyzed	By	Method	1	
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	



	Report of Analysis								
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD25029-8 SO - Soil	#20-0'			Date Sampled Date Received Percent Solids	: 08	//31/18 8/02/18 5.3		
Project:	Atha SWD								
General Chemistry	,				<u></u>				
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method	L	
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	



	Report of Analysis								3.9
Client Sample ID: Lab Sample ID: Matrix:	SAMPLE LOCATION TD25029-9 SO - Soil	#21-0'			Date Sampled Date Received Percent Solids	: 08	7/31/18 8/02/18 3.3		ယ
Project:	Atha SWD								
General Chemistry	/								
Analyte	Result	RL	Units	DF	Analyzed	Ву	Metho	d	
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	



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Houston, TX



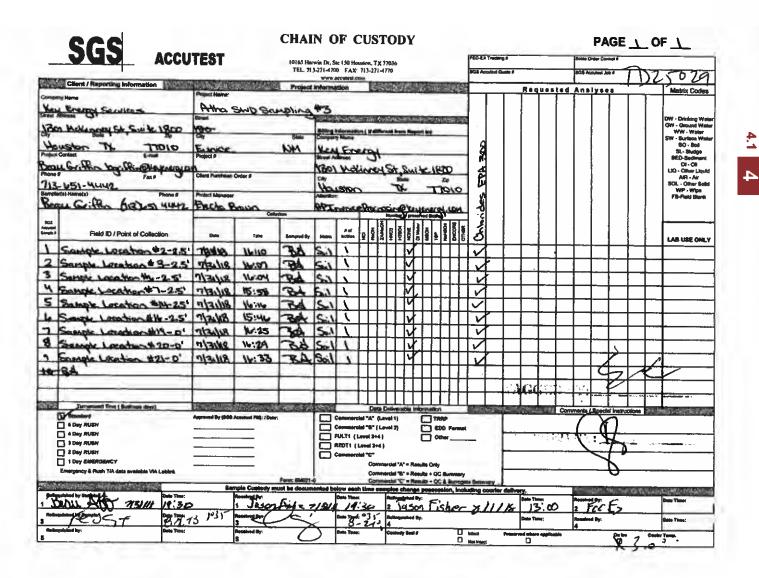
Misc. Forms

Custody Documents and Other Forms

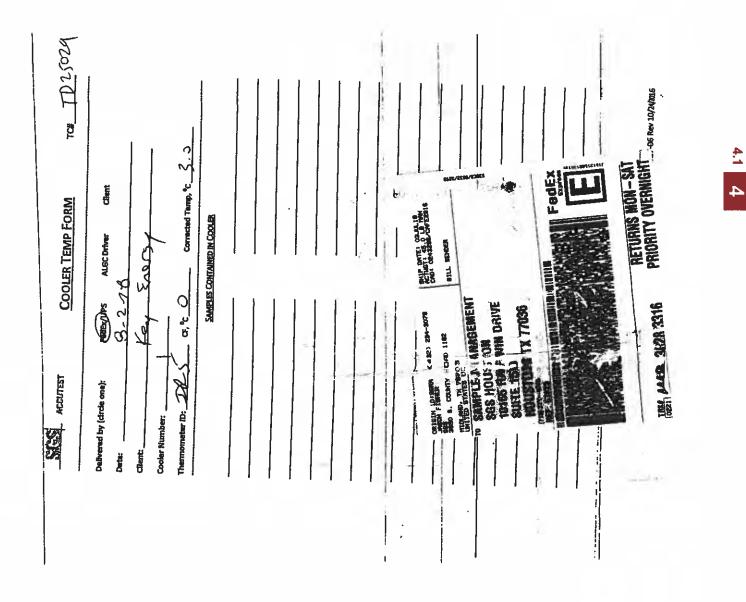
Includes the following where applicable:

• Chain of Custody





TD25029: Chain of Custody Page 1 of 4



TD25029: Chain of Custody Page 2 of 4

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SGS Sample Receipt Summary

Page 1 of 2

Cooler Temperature Y or	IR-5;); 3. COC Present Smpl Dates/Time OK	Alrbill #'s: 444830283316 Temp Adjustment Factor: Sample Integrity - Documentation 1. Sample labels present on bottles. 2. Container labeling complete: 3. Sample container label / COC agree	<u>Y o</u> Ø	<u>r N</u>	
Cooler Temps (Initial/Adjusted): #1. (3/3 Cooler Security Y or N 1. Custody Seals Present: Image: Cooler Temperature 2. Custody Seals Intact: Image: Cooler Temperature 1. Temp criteria achieved: Image: Cooler Temperature 2. Cooler temp verification: Image: Cooler Temperature	<u>Y or N</u> 3. COC Present ☑ □ 9. Smpl Dates/Time OK ☑ □	Sample Integrity - Documentation 1. Sample labels present on bottles 2. Container labeling complete: 3. Sample container label / COC agree	<u>Y o</u> Ø		
Cooler Security Y or N 1. Custody Seals Present: Image: Cooler Temperature 2. Custody Seals Intact: Image: Cooler Temperature 1. Temp criteria achieved: Image: Cooler Temp verification:	<u>Yor N</u> 3. COC Present ፼ □ 9. Smpl Dates/Time OK ፼ □	 Sample labels present on bottles. Container labeling complete: Sample container label / COC agree. 	2		
1. Custody Seals Present: Image: Custody Seals Intact: 2. Custody Seals Intact: Image: Custody Seals Intact: 2. Custody Seals Intact: Image: Custody Seals Intact: 1. Temp criteria achieved: Image: Custody Seals Intact: 2. Cooler temp verification: Image: Custody Seals Intact:	3. COC Present 🛃 🗌 Smpl Dates/Time OK 🛃 🔲	 Sample labels present on bottles. Container labeling complete: Sample container label / COC agree. 	2		
2. Custody Seals Intact: 2. Custody Seals Intact: 2. Cooler Temperature 4. Temp criteria achieved: 2. Cooler temp verification:	Smpl Dates/Time OK 🖉 🔲	2. Container labeling complete: 3 Sample container label / COC agree			
Cooler Temperature Y or 1 Temp criteria achieved: Image: Cooler temp verification:	<u>4</u>	3 Sample container label / COC agree:		П	
Temp criteria achieved: Z Cooler temp verification:					
2 Cooler temp verification	-				
		Sample Integrity - Condition	<u>Y o</u>	<u>r N</u>	
3 Cooler media: loe (B)		1. Sample recvd within HT			
	(g)	2. All containers accounted for:			
Quality Control Preservation Y or	N N/A WTB STB	3. Condition of sample:		act	
1. Trip Blank present / cooler:		Sample Integrity - Instructions	Y o	r N	N/A
2 Trip Blank listed on COC		1. Analysis requested is clear:			
3. Samples preserved property:		2. Bottles received for unspecified tests			
4 VOCs headspace free		3. Sufficient volume recvd for analysis			
		4. Compositing instructions clear:			
		5. Filtering instructions clear:			

TD25029: Chain of Custody Page 3 of 4

Sample Receipt Log

Page 2 of 2

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	pН	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 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

TD25029: Chain of Custody Page 4 of 4



Houston, TX

Section 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: 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%
Sulface	GP48918/GN91833	5.0	0.0	mg/kg	100	101	101.0	90-110%

Associated Samples:

(*) 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	l 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%	Ň			
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%	U U			
Solids, Percent	GN91747	TD25029-1	8	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, 1	TD25029-9				
Batch GP48918: TD25029-1,											

Batch GP48918: TD25029-1, TD25029-2, TD25029-3, TD25029-4, TD25029 (*) Outside of QC limits (a) RPD acceptable due to low sample and duplicate concentration.





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%	່ ບາ
Chloride	GP48918/GN91833	TD24998-1	mg/kg	46200	98.2	18200	-28504.0(a) 80-1201	ើល
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%	S
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.



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TD25029