SITE INFORMATION

	Re	port Type: C	Closure Rep	ort	1RP-4294							
General Site Info	ormation:		•									
Site:		Red Hills North	Unit #102									
Company:		EOG Resource	s, Inc.									
Section, Towns	hip and Range	Unit P	Sec. 1	T 25S	R 33E							
Lease Number:		API No. 30-025-	32748		•							
County:		Lea										
Release GPS:			32.15297° N 103.51925° W									
Surface Owner:		Federal										
Mineral Owner:												
Directions:		mi, turn south onte		mi, turn ea	ast onto lease	road for 0.7	ravel west on 128 for 1.4 mi, turn south onto lease					
Release Data:												
Date Released:		5/23/2016										
Type Release:		Produced Water	1									
Source of Contar	mination:	4" Poly Line										
Fluid Released:		65 bbls										
Fluids Recovered	d:	20 bbls										
Official Commu	nication:											
Name:	Zane Kurtz				Ike Tavarez							
Company:	EOG Resources, I	nc.			Tetra Tech							
Address:	5509 Champions	Drive			4000 N. Big							
					Ste 401							
City:	Midland Texas, 79	7016										
Phone number:	(432) 686-3667				Midland, Te (432) 687-8							
Fax:					(.02) 007 0							
Email:	Zane_Kurtz@eo	gresources.com			Ike.Tavare	z@tetratec	h.com					
					1							
Ranking Criteria	1											
Depth to Ground	water:		Ranking Score	<u> </u>		Site Data						
<50 ft 50-99 ft			20 10									
>100 ft.			0									
-100 1.			0									

WellHead Protection:		Ranking Score	Site Data	
Water Source <1,000 ft., Private <200 ft.		20		
Water Source >1,000 ft., Private >200 ft.		0	0	
Surface Body of Water:		Ranking Score	Site Data	
<200 ft.		20		
200 ft - 1,000 ft.		10		
>1,000 ft.		0	0	
		-		
Total Ranking Score		0		
	Acceptab	ole Soil RRAL (mợ	J/kg)	
	Benzene	Total BTEX	ТРН	



REVIEWED By Olivia Yu at 12:40 pm, Apr 02, 2018

June 20, 2017

NMOCD grants deferral for 1RP-4294, regarding the impacted release area, on well pad and in pasture to be remediated upon site abandonment/ retrofit or reclamation. See email correspondence for clarification.

Ms. Olivia Yu Environmental Engineer Specialist Oil Conservation Division, District 1 1625 North French Drive Hobbs, New Mexico 88240

RE: Closure Report - EOG Resources, Inc, Red Hills North Unit #102, Unit P, Section 1, Township 25S, Range 33E, Lea County, New Mexico, 1RP-4294

Ms. Yu:

On behalf of EOG Resources, Inc (EOG), Tetra Tech submits the following Closure Report for the Red Hills North Unit #102 (site) located in Section 1, Township 25 South, Range 33 East, Lea County, New Mexico. The spill site coordinates are N 32.15297°, W 103.51925°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on May 23, 2016, and released sixty-five (65) barrels of produced water due to a failed fuse on a 4" poly line. All free standing fluids were recovered with a vacuum truck and approximately twenty (20) barrels of produced water were recovered, leaving approximately forty-five (45) barrels unrecovered. The impacted areas measured approximately 120' x 210' and 30' x 100', which are located east and west of the facility in the pasture, respectively. The impacted area of the pad measured approximately 30' x 425'. The initial C-141 form is included in Appendix A.

In response to the release, EOG contacted Safety & Environmental Solutions, Inc. (SESI) in Hobbs, New Mexico to attempt to delineate the release area at the site on May 26-28, 2016. SESI prepared a Delineation Report, dated June 15, 2016, detailing the findings of the assessment activities. Based on the results, SESI was unable to vertically delineate the chloride impact at the site.

Groundwater

No water wells were listed within Section 1. According to New Mexico Office of State Engineer, a well is located in Section 13 with a depth to water of 185' below surface. In addition, the Chevron Texaco Trend Map shows an average depth to groundwater in this area is between 125' to 150' below surface. The groundwater data is shown in Appendix B.



Regulatory

A risk-based evaluation was performed for the Site in accordance with the OCD Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Investigation

On November 2 and 9, 2016, Tetra Tech personnel were onsite to install twelve (12) boreholes (BH-1 through BH-12) to depths ranging from 10'-30' below surface to assess and define the chloride extents in the soils. The borehole placements were selected based on the location of the multiple lines and an overhead power line in the area. Selected samples were analyzed for Total Petroleum Hydrocarbons (TPH) analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The borehole sampling results are summarized in Table 1. The soil boring logs are included in Appendix C. The borehole locations are shown on Figure 3. Copies of the laboratory analysis chain-of-custody documentation are included in Appendix D.

Referring to Table 1, none of the samples for TPH and BTEX showed concentrations above the laboratory reporting limits or above the RRAL's.

East Pasture Area

A total of 10 (ten) boreholes were installed in the east pasture area. The deepest chloride impact was encountered in the areas of boreholes (BH-1, BH-2 and BH-3) with concentration highs of 3,100 mg/kg (4-5'), 12,500 mg/kg (0-1') and 5,310 mg/kg (4-5'), respectively. The chloride concentrations declined with depth to 121 mg/kg BH-1 (9-10'), 344 mg/kg BH-2 (19-20') and 18.3 mg/kg BH-3 (14-15').

In addition, boreholes (BH-4, BH-5, and BH-6) also showed chloride concentrations ranging from 115 mg/kg to 5,390 mg/kg at depths ranging from 3.0' to 5.0' below surface. However, the chloride concentrations then declined with depth with concentrations of 76.9 mg/kg (6-7'), 173 mg/kg (9-10') and 12.1 mg/kg (14-15'), respectively.

The areas of boreholes (BH-8 and BH-10) showed a shallow chloride impact to the soils to a depth of approximately 4-5' below surface. Borehole (BH-10) did show chloride spikes in the deeper soils of 1,420 mg/kg at 9-10' and 1,540 mg/kg at 14-15', which appears that borehole sloughing may have occurred and possibly cross-contaminated the deeper samples.



The areas of boreholes (BH-7 and BH-9) did not show a significant chloride impact to the soils, with highs of 804 mg/kg at 4-5' and 534 mg/kg at 2-3' below surface, respectively. The boreholes declined with depth and concentrations do not appear to be an environmental concern.

West Pasture Area

A total of two (2) boreholes were installed in the west pasture area and showed a shallow impact to the area. Boreholes (BH-11 and BH-12) showed chloride concentrations in the shallow soils ranging from 2,780 mg/kg at 2-3' (BH-11) to 3,280 mg/kg at 0-1' (BH-12). The chloride significantly declined with depth to 364 mg/kg at 6-7' and 163 mg/kg at 4-5' below surface, respectively.

Pad Area

EOG initially proposed the impacted soil on the pad be deferred until abandonment, due to safety concerns. According to EOG, multiple lines are located on the pad and the main lease road from the area runs through the facility pad. The NMOCD rejected the recommendations to defer the impact and requested EOG to install trenches or boreholes to assess the impact on the pad.

In order to evaluate the impact to the soils on the pad, Tetra Tech personnel returned to the site on January 27, 2017, and installed a total of five (5) boreholes (BH-1 through BH-5) to depths ranging between 7'-25' below surface. Selected samples were analyzed for Total Petroleum Hydrocarbons (TPH) analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The borehole sampling results are summarized in Table 2. The soil boring logs are included in Appendix C. The borehole locations are shown on Figure 3. Copies of the laboratory analysis chain-of-custody documentation are included in Appendix D.

Referring to Table 2, all of the samples analyzed for TPH or BTEX did not show any concentrations exceeding the laboratory reporting limits. However, the areas of boreholes (BH-1 through BH-5) showed a shallow chloride impact to the soils. The areas of boreholes (BH-1, BH-3, and BH-5) showed chloride highs of 9,550 mg/kg, 873 mg/kg, and 4,220 mg/kg at 0-1' below surface, respectively. The chloride concentrations in these areas then declined with depth to 207 mg/kg at 6-7' (BH-1), 165 mg/kg at 4-5' (BH-4), and 323 mg/kg at 6-7' (BH-5). Additionally, the areas of boreholes (BH-2 and BH-4) showed chloride highs of 1,430 mg/kg and 5,860 mg/kg at 2-3' below surface, respectively. These areas showed chloride concentrations that declined with depth to below 250 mg/kg at 4-5', with concentrations of 164 mg/kg (BH-2) and 165 mg/kg (BH-4).

Soil Remediation

Tetra Tech submitted the work plan to the NMOCD for review and approval. According to the email from NMOCD, the plan was approved with some stipulations. As performed, the NMOCD requested that the areas be excavated to the proposed excavation depths of with liner in the areas of BH-2 and BH-10 in the pasture and BH-1 on the pad.



From May 3 through 16, 2017, Tetra Tech personnel were onsite to supervise the excavation and remediation activities in order to remove the impacted soil from the area. The excavated areas are shown on Figure 4 and highlighted (green) in Table 1. The area of borehole (BH-10) was excavated to depth of 1.5' below surface. Due to the active surface lines in the area, deeper excavation could be performed safely and the proposed depths were not achieve. The areas of boreholes (BH-8 and BH-12) were excavated to approximately 2.0' to 3.0', the areas of boreholes (BH-4, BH-5, BH-6 and BH-11) were excavated to 4.0' to 5.0', and the areas of boreholes (BH-1, BH-2, and BH-3) will be excavated to 6.0' to 7.0' below surface. The impacted soils on the pad in the areas of boreholes (BH-1 and BH-4) will be excavated to depth of 2.0'-3.0 below surface.

Once the excavations were completed, the areas of BH-1 (pad) and BH-2 and BH-3 (pasture) were lined with a 40 mil liner at 4.0' below surface (excavation bottom). The excavation were all backfilled with clean backfilled material to grade. The areas were then seeded with a BLM mixture to complete the remediation. All of the excavated material was transported offsite for proper disposal. Approximately 1,780 cubic yards of material was transported to disposal located at Sundance Services in Eunice, New Mexico.

In the area of the Plains and the EOG pipelines, limited excavation was performed in the vicinity of the lines due to safety concerns. In addition, EOG removed as much impacted material as practicable on the pad. The area of BH-5 has multiple poly lines in the area and no excavation was performed in this area, due to safety concerns. The impacted soil not accessible will be deferred until abandonment.

Conclusion

Based on the soil assessment and remediation work performed at the site, EOG request closure of this spill. The final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the remediation activities for this site, please call me at (432) 682-4559.

Sincerely,

Tetra Tech, Inc.

Ike Tavarez, Senior Project Manager, P.G.

cc: Zane Kurtz – EOG Shelly Tucker - BLM

Figures



Mapped By: Isabel Marmolejo



Mapped By: Isabel Marmolejo



Mapped By: Isabel Marmolejo



Tables

Comula ID	Comula Data	Sample	BEB	Soil	Status		TPH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Depth (ft)	Sample Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX (mg/kg)	(mg/kg)
BH-1	11/2/2016	0-1	-		Х	-	-	-	-	-	-	-	-	831
	"	2-3	-		Х	-	-	I	-	-	-	-	-	1,470
	"	4-5	-		Х	-	-	-	-	-	-	-	-	3,100
	"	6-7	-		X	-	-	-	-	-	-	-	-	1,870
	"	9-10	-	Х		-	-	-	-	-	-	-	-	121
	"	14-15	-	Х		-	-	-	-	-	-	-	-	163
BH-2	11/2/2016	0-1	-		X	<15.0	<15.0	<15.0	<0.00150	<0.00200	<0.00200	<0.00200	<0.00150	12,500
	"	2-3	-		Х	-	-	-	-	-	-	-	-	4,680
	"	4-5	-		Х	-	-	-	-	-	-	-	-	4,320
	"	6-7	-		Х	-	-	-	-	-	-	-	-	3,750
	"	9-10	-	Х		-	-	-	-	-	-	-	-	1,030
	"	14-15	-	Х		-	-	-	-	-	-	-	-	936
	"	19-20	-	Х		-	-	-	-	-	-	-	-	344
BH-3	11/2/2016	0-1	-		X	-	-	-	-	-	-	-	-	4,450
	"	2-3	-		Х	-	-	-	-	-	-	-	-	4,960
	"	4-5	-		Х	-	-	-	-	-	-	-	-	5,310
	"	6-7	-		Х	-	-	-	-	-	-	-	-	4,450
	"	9-10	-	Х		-	-	-	-	-	-	-	-	456
	"	14-15	-	Х		-	-	-	-	-	-	-	-	18.3
BH-4	11/2/2016	0-1	-		X	<15.0	<15.0	<15.0	<0.00149	<0.00198	<0.00198	<0.00198	<0.00149	2,380
	"	2-3	-		Х	-	-	-	-	-	-	-	-	5,380
	"	4-5	-		Х	-	-	-	-	-	-	-	-	3,510
	"	6-7	-	Х		-	-	-	-	-	-	-	-	76.9
	"	9-10	-	Х		-	-	-	-	-	-	-	-	253
	ł				р				ŀ	ļ	Į.	ļ	•	

O amarka ID	Comula Data	Sample	BEB	Soil	Status		TPH (mg/k	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride
Sample ID	Sample Date	Depth (ft)	Sample Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BIEX (mg/kg)	(mg/kg)
BH-5	11/2/2016	0-1	-		X	<15.0	<15.0	<15.0	<0.00149	<0.00199	<0.00199	<0.00199	<0.00149	2,270
	"	2-3	-		X	-	-	-	-	-	-	-	-	3,320
	"	4-5	-		Х	-	-	-	-	-	-	-	-	5,390
	"	6-7	-	Х		-	-	-	-	-	-	-	-	268
	"	9-10	-	Х		-	-	-	-	-	-	-	-	173
BH-6	11/2/2016	0-1	-		X	-	-	-	-	-	-	-	-	115
	"	2-3	-		Х	-	-	-	-	-	-	-	-	2,460
	"	4-5	-		Х	-	-	-	-	-	-	-	-	2,710
	"	6-7	-	Х		-	-	-	-	-	-	-	-	176
	"	9-10	-	Х		-	-	-	-	-	-	-	-	49.3
	"	14-15	-	Х		-	-	-	-	-	-	-	-	12.1
BH-7	11/2/2016	0-1	-	Х		<15.0	<15.0	<15.0	<0.00150	<0.00200	<0.00200	<0.00200	<0.00150	22.8
	"	2-3	-	Х		-	-	-	-	-	-	-	-	294
	"	4-5	-	Х		-	-	-	-	-	-	-	-	804
	"	6-7	-	Х		-	-	-	-	-	-	-	-	63.6
	"	9-10	-	Х		-	-	-	-	-	-	-	-	86.3
	"	14-15	-	Х		-	-	-	-	-	-	-	-	267
	"	19-20	-	Х		-	-	-	-	-	-	-	-	255
BH-8	11/2/2016	0-1	-		Х	<15.0	<15.0	<15.0	<0.00149	<0.00198	<0.00198	<0.00198	<0.00149	14,700
	"	2-3	-		Х	-	-	-	-	-	-	-	-	3,150
	"	4-5	-	Х		-	-	-	-	-	-	-	-	246
	"	6-7	-	Х		-	-	-	-	-	-	-	-	130
	"	9-10	-	Х		-	-	-	-	-	-	-	-	285
	"	14-15	-	Х		-	-	-	-	-	-	-	-	281

O a marcha I D	October 10 Date	Sample	BEB Sample Depth (ft)	Soil	Status		TPH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Depth (ft)		In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX (mg/kg)	(mg/kg)
BH-9	11/9/2016	0-1	-	Х		-	-	-	-	-	-	-	-	302
	"	2-3	-	Х		-	-	-	-	-	-	-	-	534
	"	4-5	-	Х		-	-	I	-	-	-	-	-	209
	"	6-7	-	Х		-	-	-	-	-	-	-	-	128
	"	9-10	-	Х		-	-	-	-	-	-	-	-	137
	"	14-15	-	Х		-	-	-	-	-	-	-	-	156
BH-10	11/9/2016	0-1.5	-		X	<15.0	<15.0	<15.0	<0.00149	<0.00199	<0.00199	<0.00199	<0.00149	1,700
	"	2-3	-	Х		-	-	-	-	-	-	-	-	1,720
	"	4-5	-	Х		-	-	-	-	-	-	-	-	101
	"	6-7	-	Х		-	-	-	-	-	-	-	-	422
	"	9-10	-	Х		-	-	-	-	-	-	-	-	1,420
	"	14-15	-	Х		-	-	-	-	-	-	-	-	1,540
	"	19-20	-	Х		-	-	-	-	-	-	-	-	132
	"	24-25	-	Х		-	-	-	-	-	-	-	-	409
	"	29-30	-	Х		-	-	-	-	-	-	-	-	146
BH-11	11/9/2016	0-1	-		X	<14.9	<14.9	<14.9	<0.00150	<0.00200	<0.00200	<0.00200	<0.00150	3,280
	"	2-3	-		Х	-	-	-	-	-	-	-	-	3,250
	"	4-5	-		Х	-	-	-	-	-	-	-	_	2,890
	"	6-7	-	Х		-	-	-	-	-	-	-	-	364
	"	9-10	-	Х		-	-	-	-	-	-	-	-	386
	"	14-15	-	Х		-	-	-	-	-	-	-	-	107

Sample ID	Sample Date	Sample Depth (ft)	BEB	Soil Status		TPH (mg/kg)			Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
			Sample Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX (mg/kg)	(mg/kg)
BH-12	11/9/2016	0-1	-		X									3,010
	"	2-3	-		X	-	-	-	-	-	-	-	-	2,780
	"	4-5	-	Х		-	-	-	-	-	-	-	-	163
	"	6-7	-	Х		-	-	-	-	-	-	-	-	54.4
	"	9-10	-	Х		-	-	-	-	-	-	-	-	170
	"	14-15	-	Х		-	-	-	-	-	-	-	-	79.7

(-)

(BEB)

40 Mil Liner

Excavation Depths

Not Analyzed

Below Excavation Bottom

212C-MD-00639 Xenco Labs

		Sample	BEB	Soil	Status		TPH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Depth (ft)	Sample Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX (mg/kg)	(mg/kg)
BH-1	1/27/2017	0-1	-		Х	<15.0	<15.0	<15.0	<0.00149	<0.00199	<0.00199	<0.00199	<0.00149	9,550
	"	2-3	-		Х	-	-	-	-	-	-	-	-	7,550
	"	4-5	-	Х		-	-	-	-	-	-	-	-	1,480
	"	6-7	-	Х		-	-	-	-	-	-	-	-	207
	"	9-10	-	Х		-	-	-	-	-	-	-	-	132
BH-2	1/27/2017	0-1	_	X		-	-	_	-	-	-	-	-	37.8
	"	2-3	-	Х		-	-	-	-	-	_	-	-	1,430
	"	4-5	-	Х		-	-	-	-	-	-	-	-	164
	"	6-7	-	Х		-	-	-	-	-	-	-	-	18.3
BH-3	1/27/2017	0-1	_	Х		<15.0	<15.0	<15.0	<0.00151	<0.00201	<0.00201	<0.00201	<0.00151	873
	"	2-3	_	X		-	-	-	-	-	-	-	-	844
	"	4-5	_	X		_	_	_	_	_	-	_	_	232
	"	6-7	_	X		_	_	_	_	-	_	_	_	381
	"	9-10	-	Х		-	-	_	-	-	-	-	-	29.9
	"	14-15	-	Х		-	-	-	-	-	-	-	-	<25.0
	"	19-20	-	Х		-	-	-	-	-	-	-	-	32.7
	"	24-25	-	Х		-	-	-	-	-	-	-	-	61.9
BH-4	1/27/2017	0-1	_		X	-	_	_	_	_	_	_	_	5,360
	"	2-3	-		X	-	-	-	-	-	_	-	-	5,860
	"	4-5	-	Х		-	-	-	-	-	-	-	-	165
	"	6-7	-	Х		-	-	_	-	-	-	-	-	<24.8
	"	9-10	_	Х		_	-	-	-	-	-	-	-	36.1
	"	14-15	-	Х		-	-	-	-	-	-	-	-	29.6
	"	19-20	-	Х		-	-	-	-	-	-	-	-	27.9
BH-5	1/27/2017	0-1	_	X		<15.0	<15.0	<15.0	<0.00150	<0.00200	<0.00200	<0.00200	<0.00150	4,220
-	"	2-3	-	X		-	-	-	-	-	-	-	-	3,100
	"	4-5	-	Х		-	-	-	-	-	-	-	-	534
	"	6-7	-	Х		-	-	-	-	-	-	-	-	323
	"	9-10	-	Х		-	-	-	-	-	-	-	-	324
	"	14-15	-	Х		-	-	-	-	-	-	-	-	369
	"	19-20	-	Х		-	-	-	-	-	-	-	-	45.8
	"	24-25	_	Х		-	-	_	_	_	-	_	_	346

(-)

Not Analyzed Below Excavation Bottom

40 Mil Liner

(BEB)

Excavation Depths

Photos

Pasture Area



View West – Area of BH-1



View West – Area of BH-2



View South – Area of BH-3



View West – Area of BH-4



View West – Area of BH-5



View East – Areas of BH-6 and BH-7



View North – Area of BH-8



View Northwest – Area of BH-9



View East - Area of BH-10



View South – Area of BH-11



View South – Area of BH-12

Pad Area



View South – Area of BH-1



View North – Area of BH-2



View South – Area of BH-3



View North – Area of BH-4



View East – Area of BH-5



View West - Area of BH-1 Vent



View West - Excavated and Lined Area of BH-1



View East - Backfilled Area of BH-1



View North - Excavated Area of BH-4



View East - Backfilled Area of Bh-4



View West - Excavated Areas of Bh-1 And BH-2



View west - Lined Area of BH-2



View East – Excavated Areas of BH-3 and BH-4



View East – Excavated Areas of BH-8



View South – Excavated Area of BH-12



View North – Excavated Areas of BH-11



View East - Excavated Areas of BH-10



View South - Backfilled Areas of BH-11 and BH-12



View South – Backfilled Areas of BH-1, BH-2 and BH-5





View South - Backfilled Areas of BH-3 and BH-6



View East - Backfilled Areas of BH-4



View South – Backfilled Areas of BH-1 and BH-8



East View – Excavated Areas of BH-5 and BH-6

Appendix A
.

Form C-141 Revised August 8, 2011

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

1220 S. St. Fran	Santa Fe, NM 87505 Santa Fe, NM 87505										
Release Notification and Corrective Action											
									Final Report		
Name of Co	mpany	EOG Re	sources,	Inc.			Zane Kurtz				- Indi Itoport
Address	5509 Cha	mpions Driv	e, Midlar	id, TX 79706		Telephone 1					
Facility Nat	ne Re	d Hills Nort	h Unit #1	02		Facility Typ	e Oil	Well		;	
Surface Ow	ner BLM			Mineral C	wner]	BLM		API	No. 30-025-	32748	
				LOCA	TIO	N OF REI	LEASE				
Unit Letter	Section	Township	Range	Feet from the		South Line	Feet from the	East/West Lin	e County		
Р	1	258	33E	510"	S		660'	Е	Lea		
		La	titude	32.1535		Longitude	-103.5197				
Type of Rele	ase Pi	roduced Water			URE	OF REL	Release 65	Volur	e Recovered	20	
Source of Re		4" Poly Line		·		Date and H	lour of Occurrenc	e Date a	nd Hour of Di		
Was Immedia	ate Notice (Siven?				5-23-2016	Whom? NA	1500			
was mineur			Yes 🗵	No 🗌 Not Re	equired						
By Whom?						Date and H					
Was a Water	course Read		Yes 🗵			If YES, Vo	olume Impacting t	he Watercourse			
10 11				-						_	
If a Watercou NA	irse was Im	pacted, Descr	ibe Fully.								
		em and Reme				(8) 1 1 D					
4" water tran: placed and in	ster poly lii itial deline:	te failed from	a bad fuse ent will co	e. Released appro mmence 5-26-201	6. Once	e initial asses	sment is complete	celease ran acro	ss pad into pas on work plan	will be	submitted to
BLM and OC							· · · · ·	,			-
Describe Are	a Affected	and Cleanup A	Action Tal	ten.*							·
L hereby certi	fy that the i	information gi	ven above	is true and comp	lete to th	he best of my	knowledge and u	nderstand that r	ursuant to NM	OCD r	ules and
regulations al	ll operators	are required t	o report ar	nd/or file certain r	elease no	otifications a	nd perform correc	tive actions for	releases which	may er	ndanger
				e of a C-141 repo investigate and r							
or the enviror	nment. In a	ddition, NMC	CD accep	tance of a C-141	report de	oes not reliev	e the operator of r	responsibility fo	r compliance v	with any	y other
federal, state,	or local la	ws and/or regu	lations.								
	2		_	- 101			<u>OIL CON</u>	SERVATIC	N DIVISIO	<u>)N</u>	
Signature: July 5-25-2016											
Printed Name: Zane Kurtz Approved by Environmental Specialist:											
				•					D		
Title: Sr. En	vironmenta	l Rep., EOG F	lesources,	Inc.		Approval Dat	e:	Expirati	on Date:		
E-mail Addre	ess: zane_k	urtz@eogresc	urces.com	ι		Conditions of	Approval:		Attached		
Date: 5-	-25-2016	Phone	432-425-	.2023							
Date. J.	-2010	rnone.	+32-423	2023							

* Attach Additional Sheets If Necessary

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

API No. 30-025-32748

Release Notification and Corrective Action

	OPERATOR	Initial Report	Final Report
Name of Company EOG Resources, Inc.	Contact Zane Kurtz		
Address 5509 Champions Drive, Midland, Tx 79706	Telephone No. (432) 425-2023		
Facility Name Red Hills North Unit #102	Facility Type Oil Well		

LOCATION OF RELEASE

Mineral Owner: BLM

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
Р	1	25S	33E	510'	S	660'	E	Lea

Latitude 32.1535° Longitude -103.5197°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 65 bbls	Volume Re	ecovered 20 bbls
Source of Release: 4" poly line	Date and Hour of Occurrence	Date and H	lour of Discovery
	5-23-16	1500	
Was Immediate Notice Given?	If YES, To Whom?		
🗌 Yes 🛛 No 🗌 Not Required	N/A		
By Whom? Josh Russo	Date and Hour		
Was a Watercourse Reached?	If YES, Volume Impacting the Wa	tercourse.	
🗌 Yes 🖾 No	N/A		
If a Watercourse was Impacted, Describe Fully.*			
N/A			
N/A			
Describe Cause of Problem and Remedial Action Taken.*			
4" water transfer maly line foiled from a had free. Balassed annewingtal	v 65 hbla Decevered 20 hbla The role		and into nosture. The
4" water transfer poly line failed from a bad fuse. Released approximatel impacted soils on the pad and in the pasture were removed; material was			
with clean material to surface grade.	transported offsite for proper disposal	. The excavation	ed areas were men backfined
with clean matchar to surface grade.			
Describe Area Affected and Cleanup Action Taken.*			
Tetra Tech inspected site and collected samples to define spills extent. So			
was then brought up to surface grade with clean backfill material. Tetra 7	Fech prepared closure report and subm	itted to NMO	CD for review.
I hereby certify that the information given above is true and complete to	the best of my knowledge and underst	and that nursu	ant to NMOCD rules and
regulations all operators are required to report and/or file certain release i			
public health or the environment. The acceptance of a C-141 report by the			
should their operations have failed to adequately investigate and remedia			
or the environment. In addition, NMOCD acceptance of a C-141 report of			
federal, state, or local laws and/or regulations.	1 1	5	1 5
1.0	OIL CONSER	VATION I	DIVISION
My DS			<u> </u>
Signature:			
	Approved by District Supervisor:		
Printed Name: Ike Tavarez (agent for EOG)			
Title: Project Manager	Approval Date:	Expiration D	ata:
	Appioval Date.		atc.
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:		
			Attached
Date: 6/20/17 Phone: (432) 682-4559			

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data Average Depth to Groundwater (ft) EOG Resources - Red Hills North Unit #102 Lea County, New Mexico

	24	South		32 East						
6	5	4	3	2	1					
7	8	9	10 20	11	12					
18	17	16	15	14	13					
19	20	21	22	23	24					
30	29	28	27	26	25					
31	32	33 290	34	35	36					
	25 South 32 East									
6	5	4	3	2	1					
7	8	9	10	11	12					
18	17	16	15	14	13					
19	20	21	22	23	24					
30	29	28	27	26	25					
31	32 290	33	34	35	36					
		South		32 East						
6	5	4	3	2	1					
7	8	9	10	11	12					
18	17	16	15	14	13					
19	20	21 333 180	22	23	24					
30	29	28	27	26	25					
31 295	32	33	34	35	36					

	24 Sc	outh	33	East	
6	5	4	3	2	1
7	8	9	10 24.6	11	12
18	17	16	15	14	13
19	20	21	22	23 208	24 16.9
30	29	28	27	26	25
31	32	33 <mark>93.2</mark>	34	35	36

	25 Sc	outh	33	East	
6	5	4	3	2	1
	90				SITE
7	8	9	10	11	12
18	17	16	15	14	13 185
19	20 200	21 120	22	23	24
30	29	28	27 125	26 110	25
31 257	32	33	34	35	36

	24 Sc	outh	34	East	
6	5	4 475	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	25 S	South	3	4 East	t
6	5	4	3	2	1 260
7	8	9	10	11	12
18	17	16	15 135	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	26 Sc	outh	33		
6	5	4	3	2	1
			175		
7	8	9	10	11	12
				145	200
18	17	16	15	14	13
				135	
19	20	21	22	23	24
		120			
30	29	28	27	26	25
			125		
31	32	33	34	35	36

	26 Sc	outh	34	East	
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6) Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location



New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD has been replaced O=orphaned, C=the file is closed)	(quai					IE 3=SW largest)	,	33 UTM in meters)		(In feet	·)
POD Number	POD Sub- Code basin (County	Q C 6410			: Tws	Rng	х	Y	•	•	Water Column
<u>C 02312</u>		LE	1 2	1	05	25S	33E	632241	3559687* 🌍	150	90	60
<u>C 02313</u>		LE	23	3	26	25S	33E	636971	3552098* 🌍	150	110	40
C 02373 CLW317846	0	LE	2 1	1	13	25S	33E	638518	3556544* 🌍	625	185	440
<u>C 02373 S</u>		LE	12	1	13	25S	33E	638721	3556549* 🌍	625	185	440
									Average Depth to	o Water:	142 f	eet
									Minimun	ו Depth:	90 f	eet
									Maximum	i Depth:	185 f	eet
Record Count: 4												

PLSS Search:

Township: 25S Range: 33E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD has been replaced O=orphaned, C=the file is closed)	(quar						IE 3=SW largest)	,	33 UTM in meters)		(In feet	:)
POD Number	POD Sub- Code basin C	countv	-	Q 16			: Tws	Rna	х	Y	-		Water Column
C 02312		LE		2			25S		632241	3559687* 🌍	150	90	60
<u>C 02313</u>		LE	2	3	3	26	25S	33E	636971	3552098* 🌍	150	110	40
C 02373 CLW317846	0	LE	2	1	1	13	25S	33E	638518	3556544* 🌍	625	185	440
<u>C 02373 S</u>		LE	1	2	1	13	25S	33E	638721	3556549* 🌍	625	185	440
										Average Depth to	Water:	142 f	eet
										Minimum	n Depth:	90 f	eet
										Maximum	Depth:	185 f	eet
Record Count: 4													

PLSS Search:

Township: 25S Range: 33E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



New Mexico Office of the State Engineer Water Column/Average Depth to Water

POD suffix indicates the POD has been replaced & no longer serves a water right file.)	been replaced O=orphaned, C=the file is closed)	(quar						E 3=SW largest)	,	3 UTM in meters)		(In feet)
POD Number	POD Sub- Code basin C	County	-	Q 16		Sec	Tws	Rng	x	Y	-	-	Water Column
<u>C 02299</u>	CUB	LE					25S		649417	3554478* 🌍	350	300	50
<u>C 02314</u>		LE	2	4	2	15	25S	34E	646170	3556243* 🌍	175	135	40
C 02315		LE	2	4	2	15	25S	34E	646170	3556243* 🌍	175	135	40
<u>C 02316</u>		LE	3	4	3	29	25S	34E	642003	3551967* 🌍	100	50	50
<u>C 02317</u>		LE	3	4	3	29	25S	34E	642003	3551967* 🌍	100	50	50
<u>C 02401</u>		LE	2	2	1	01	25S	34E	648534	3559896* 🌍	275	260	15
										Average Depth to	Water:	155 f	eet
										Minimum	Depth:	50 f	eet
										Maximum	Depth:	300 f	eet

Record Count: 6

PLSS Search:

Township: 25S Ra

Range: 34E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Appendix C

		-		
Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-1 (Pasture Area)			
GPS	32.15297 -103.518925			
Project #:	212C-MD-00639			
Total Depth	15'			
Date Installed:	11/2/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Fine-Med Sand	Lt. Stain/No Odor		1,420
2-3	Light Brown, Silty Sand	No Stain or odor		1,420
4-5	Light Brown, Silty Sand	No Stain or odor		4,700
6-7	Light Brown-White, Dense Caliche	No Stain or odor		710
9-10	Whitish,Silty Sand	No Stain or odor		2,410
14-15	White-Silty Sand	No Stain or odor	300	373

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-2 (Pasture Area)			
GPS	32.15299 -103.51913			
Project #:	212C-MD-00639			
Total Depth	20'			
Date Installed:	11/2/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Dark Brown, Fine Silty Sand	No Stain or odor	-	Over Limit
2-3	Light Brown, Fine silty sand	No Stain or odor	-	12,590
4-5	Light Brown, Fine silty sand	No Stain or odor	-	9,690
6-7	Light Brown, Dense Silty Sand	No Stain or odor	-	8,850
9-10	Light Brown, Silty Sand, Very Dense	No Stain or odor	-	2,800
14-15	White Caliche	No Stain or odor	500	1,410
19-20	Whte Loose Caliche, Silty Sand	No Stain or odor	-	548
		0		

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-3 (Pasture Area)			
GPS	32.15297 -103.51905			
Project #:	212C-MD-00639			
Total Depth	15'			
Date Installed:	11/2/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Dark Brown Fine silty Sand	No Stain/No Odor	-	6,790
2-3	Dark Brown Fine silty Sand	No Stain or odor	-	4,500
4-5	Dark Brown, silty Sand	No Stain or odor	-	4,950
6-7	Brown, Loose Silty Sand	No Stain or odor	-	3,500
9-10	Light Brown Silty Sand	No Stain or odor	-	430
14-15	White Friable Caliche	No Stain or odor	-	340
1			1	

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-4 (Pasture Area)			
GPS	32.15298 -103.51890			
Project #:	212C-MD-00639			
Total Depth	10'			
Date Installed:	11/2/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Dark Brown, Fine Silty Sand	No Stain or odor	-	2,970
2-3	Dark Brown, Silty Clay	No Stain or odor	-	6,770
4-5	Brown Silty Clay	No Stain or odor	-	3,660
6-7	Friable White Caliche	No Stain or odor	-	202
9-10	Friable White Caliche	No Stain or odor	-	437

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-5 (Pasture Area)			
GPS	32.15293 -103.51911			
Project #:	212C-MD-00639			
Total Depth	10'			
Date Installed:	11/2/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Dark brown, Fine silty sand	No Stain or odor	-	2,890
2-3	Brown Loose Silty sand	No Stain or odor	-	4,360
4-5	Light Brown, Silty-sand	No Stain or odor	-	6,800
6-7	Redish Brown fine Silty sand	No Stain or odor	-	437
9-10	Light Brown, Silty-Sand	No Stain or odor	-	252
			_	

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-6 (Pasture Area)			
GPS	32.15292 -103.51896			
Project #:	212C-MD-00639			
Total Depth	15'			
Date Installed:	11/2/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Dark Brown, Fine Silty Sand	No Stain or odor	-	400
2-3	Light Brown, Fine Silty Sand, some caliche	No Stain or odor	-	3,150
4-5	Light Brown, Fine Silty Sand, some caliche	No Stain or odor	-	3,530
6-7	Whitish-brown, fine silty sand	No Stain or odor	-	785
9-10	White friable caliche	No Stain or odor	-	457
14-15	Dense White Caliche	No Stain or odor	180	428

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-7 (Pasture Area)			
GPS	32.15291 -103.51879			
Project #:	212C-MD-00639			
Total Depth	20'			
Date Installed:	11/2/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Dark brown, fine silty sand	No Stain or odor	-	287
2-3	Light brown, fine silty sand	No Stain or odor	-	416
4-5	Light brown, fine silty sand	No Stain or odor	-	1,700
6-7	Light brown, fine silty sand	No Stain or odor	-	1,130
9-10	White friable caliche	No Stain or odor	350	381
14-15	Dense White caliche	No Stain or odor	-	1,010
19-20	Dense reddish-brown silty sand	No Stain or odor	210	450

o				
Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-8 (Pasture Area)			
GPS	32.15304 -103.51924			
Project #:	212C-MD-00639			
Total Depth	15'			
Date Installed:	11/2/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Dark brown, fine silty sand	No Stain or odor	-	8,970
2-3	Dense, white caliche	No Stain or odor	-	2,930
4-5	Dense, white caliche	No Stain or odor	-	859
6-7	Dense, white caliche	No Stain or odor	-	1,510
9-10	white caliche, silty sand	No Stain or odor	220	417
14-15	white caliche, silty sand	No Stain or odor	290	430

·			,	
Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-9 (Pasture Area)			
GPS	32.15312 -103.51898			
Project #:	212c-md-00639			
Total Depth	15ft			
Date Installed:	11/9/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Brown Fine-medium Silty loose sand.	No odor/light stain	-	425
2-3	Brown Fine-medium Silty loose sand.	No odor/light stain	-	611
4-5	Pink/white Fine-medium silty loose sand	No odor/light stain	-	707
6-7	Pink/white Fine-medium silty loose sand	No odor/No stain	-	700
9-10	Pink/White, fine-medium silty loose sand, caliche	No odor/No stain	220	530
14-15	Pink/White, fine-medium silty loose sand,caliche	No odor/No stain	200	435

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-10 (Pasture Area)			
GPS	32.15318 -103.51865			
Project #:	212C-MD-00639			
Total Depth	30ft			
Date Installed:	11/9/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Brown Fine-medium silty sand	No odor/No staining	-	707
2-3	Brown Fine-medium silty sand	No odor/No staining	-	707
4-5	Pink-white fine-medium silty loose sand	No odor/No staining	-	720
6-7	Pink-white fine-medium silty loose sand	No odor/No staining	-	709
9-10	Reddish-yellow, fine-medium loose sand	No odor/No staining		700
14-15	Reddish-yellow, fine-medium loose sand	No odor/No staining		707
19-20	Pink-white fine-medium silty loose sand	No odor/No staining	190	290
24-25	Pink-white fine-medium silty loose sand	No odor/No staining	500	520
29-30	Pink-white fine-medium silty loose sand	No odor/No staining	200	240

		1		
Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-11 (Pasture Area)			
GPS	31.15331 -103.52036			
Project #:	212C-MD-00639			
Total Depth	15ft			
Date Installed:	11/9/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Brown Fine-medium silty sand	No odor/light stain	-	707
2-3	Brown Fine-medium silty sand	No odor/light stain	-	705
4-5	Reddish-brown, Fine-medium loose silty sand	No odor/No staining	-	706
6-7	Pink-white, Fine-medium loose silty sand, caliche	No odor/No staining	240	350
9-10	Pink-white, Fine-medium loose silty sand, caliche	No odor/No staining	300	546
14-15	Olive yellow, fine-medium loose silty sand, w/ caliche	No odor/No staining	180	211

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-12 (Pasture Area)			
GPS	32.15339 -103.52039			
Project #:	212C-MD-00639			
Total Depth	15ft			
Date Installed:	11/9/2016			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Salinity (ppm)
0-1	Brown, Fine-medium silty sand	No odor/No staining	-	707
2-3	Brown, Fine-medium silty sand	No odor/No staining	-	703
4-5	Pink-white, fine-medium loose silty sand, w/ caliche	No odor/No staining	-	210
6-7	Pink-white, fine-medium loose silty sand, w/ caliche	No odor/No staining	-	690
9-10	Pink-white, fine-medium loose silty sand, w/ caliche	No odor/No staining	180	238
14-15	yellowish-brown, fine-medium loose silty sand, caliche	No odor/No staining	180	196

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-1 (Pad Area)			
GPS	32.15328 -103.51909			
Project #:	212C-MD-00639			
Total Depth	15ft			
Date Installed:	1/26/2017			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Salinity(PPM)	Chloride (ppm)
0-1	Brown Med-fine Silty sand	Lt. Stain/No Odor	710	
2-3	Brown Med-fine Silty sand	No Stain or odor	6.29ppt	
4-5	Whitsih-brown med-fine Silty sand	No Stain or odor	904	
6-7	Redish-brown Fine Silty sand	No Stain or odor	315	250
9-10	Redish-brown Fine Silty sand	No Stain or odor	215	220
14-15	White caliche	No Stain or odor	294	

Cilent: EOG Image: Constraint of the state of the st	i				
Boring/Well:BH-2 (Pad Area)Image: Constraint of the state of t		EOG			
GPS32.15330 -103.51922Image: constraint of the stand of the st	Site Name	Red Hills North Unit #102			
Project #:212C-MD-00639Total Depth15ftDate Installed:1/26/2017DEPTH (Ft)Lithology/Sample DescriptionNOTESSalinity(PPM)Chloride (ppm)0-1Brown med-fine S.SLt. Stain/No Odor1762-3Brown med-fine S.SNo Stain or odor1.64ppt4-5white caliche, fine sandNo Stain or odor6-7white caliche, fine sandNo Stain or odor9-10white caliche, fine sandNo Stain or odor400190	Boring/Well:	BH-2 (Pad Area)			
Total Depth15ftImage: constraint of the state of	GPS	32.15330 -103.51922			
Date Installed: 1/26/2017 DEPTH (Ft) Lithology/Sample Description NOTES Salinity(PPM) Chloride (ppm) 0-1 Brown med-fine S.S Lt. Stain/No Odor 176 2-3 Brown med-fine S.S No Stain or odor 1.64ppt 4-5 white caliche, fine sand No Stain or odor 290 200 6-7 white caliche, fine sand No Stain or odor 127 160 9-10 white caliche, fine sand No Stain or odor 400 190	Project #:	212C-MD-00639			
DEPTH (Ft) Lithology/Sample Description NOTES Salinity(PPM) Chloride (ppm) 0-1 Brown med-fine S.S Lt. Stain/No Odor 176 176 2-3 Brown med-fine S.S No Stain or odor 1.64ppt 176 4-5 white caliche, fine sand No Stain or odor 290 200 6-7 white caliche, fine sand No Stain or odor 127 160 9-10 white caliche, fine sand No Stain or odor 400 190	Total Depth	15ft			
0-1Brown med-fine S.SLt. Stain/No Odor1762-3Brown med-fine S.SNo Stain or odor1.64ppt4-5white caliche, fine sandNo Stain or odor2902006-7white caliche, fine sandNo Stain or odor1271609-10white caliche, fine sandNo Stain or odor400190	Date Installed:	1/26/2017			
0-1Brown med-fine S.SLt. Stain/No Odor1762-3Brown med-fine S.SNo Stain or odor1.64ppt4-5white caliche, fine sandNo Stain or odor2902006-7white caliche, fine sandNo Stain or odor1271609-10white caliche, fine sandNo Stain or odor400190					
2-3Brown med-fine S.SNo Stain or odor1.64ppt4-5white caliche, fine sandNo Stain or odor2902006-7white caliche, fine sandNo Stain or odor1271609-10white caliche, fine sandNo Stain or odor400190	DEPTH (Ft)	Lithology/Sample Description	NOTES	Salinity(PPM)	Chloride (ppm)
4-5white caliche, fine sandNo Stain or odor2902006-7white caliche, fine sandNo Stain or odor1271609-10white caliche, fine sandNo Stain or odor400190	0-1	Brown med-fine S.S	Lt. Stain/No Odor	176	
6-7white caliche, fine sandNo Stain or odor1271609-10white caliche, fine sandNo Stain or odor400190	2-3	Brown med-fine S.S	No Stain or odor	1.64ppt	
6-7white caliche, fine sandNo Stain or odor1271609-10white caliche, fine sandNo Stain or odor400190	4-5	white caliche, fine sand	No Stain or odor	290	200
9-10 white caliche, fine sand No Stain or odor 400 190	6-7			127	160
	9-10		No Stain or odor	400	190
Image: section of the section of th	14-15		No Stain or odor	200	100
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Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-3 (Pad Area)			
GPS	32.15345 -103.51959			
Project #:	212C-MD-00639			
Total Depth	25ft			
Date Installed:	1/26/2017			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Salinity(PPM)	Chloride (ppm)
0-1	Light brownmed-fine s.s	No Stain or odor	710	
2-3	Brown med-fine s.s	No Stain or odor	1.59ppt	
4-5	Brown med-fine s.s	No Stain or odor	518	
6-7	Brown med-fine s.s	No Stain or odor	774	
9-10	Redish-tan fine sand	No Stain or odor	107	
14-15	Redish-tan fine sand	No Stain or odor	700	
19-20	pale olive green fine silty clay	No Stain or odor	290	160
24-25	Redish brown fine silty clay	No Stain or odor	320	180

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Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-4 (Pad Area)			
GPS	32.15348 -103.51978			
Project #:	212C-MD-00639			
Total Depth	20ft			
Date Installed:	1/26/2017			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Salinity(PPM)	Chloride (ppm)
0-1	Light brown medium sand	No Stain/No Odor	710	
2-3	brown medium sand	No Stain or odor	740	
4-5	brown med-fine sand	No Stain or odor	230	
6-7	tan med-fine sand	No Stain or odor	700	
9-10	Redish brown, med-fine sand	No Stain or odor	700	
14-15	Redish brown, fine sand	No Stain or odor	233	100
19-20	brown fine s.s w/ white caliche	No Stain or odor	2.8	120

Client:	EOG			
Site Name	Red Hills North Unit #102			
Boring/Well:	BH-5 (Pad Area)			
GPS	32.15349 -103.52015			
Project #:	212C-MD-00639			
Total Depth	25ft			
Date Installed:	1/26/2017			
DEPTH (Ft)	Lithology/Sample Description	NOTES	Salinity(PPM)	Chloride (ppm)
0-1	brown med-fine sand	Lt. Stain/light Odor	4.44ppt	
2-3	brown med-fine sand	No Stain or odor	2.97ppt	
4-5	white-brown caliche, w/fine sand	No Stain or odor	298	
6-7	white-pink caliche, w/fine sand	No Stain or odor	470	
9-10	white-pink caliche, w/fine sand	No Stain or odor	850	
14-15	light brown fine s.s	No Stain or odor	740	
19-20	med-fine silty clay	No Stain or odor	325	120
24-25	redish- brown fine silty clay	No Stain or odor	390	220
				-

Appendix D

Analytical Report 540004

for Tetra Tech- Midland

Project Manager: Ike Tavarez

EOG-Red Hills North Unit #102

212C-MD-00639

16-NOV-16

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054) Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295) Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400) Xenco-San Antonio: Texas (T104704534) Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757) Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



16-NOV-16



Project Manager: **Ike Tavarez Tetra Tech- Midland** 4000 N. Big Spring Suite 401 Midland, TX 79705

Reference: XENCO Report No(s): 540004 EOG-Red Hills North Unit #102 Project Address: Lea County NM

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 540004. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 540004 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Huns hoah

Kelsey Brooks Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



Sample Cross Reference 540004



Tetra Tech- Midland, Midland, TX

EOG-Red Hills North Unit #102

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH-1 (0-1)	S	11-02-16 00:00	0 - 1	540004-001
BH-1 (2-3)	S	11-02-16 00:00	2 - 3	540004-002
BH-1 (4-5)	S	11-02-16 00:00	4 - 5	540004-003
BH-1 (6-7)	S	11-02-16 00:00	6 - 7	540004-004
BH-1 (9-10)	S	11-02-16 00:00	9 - 10	540004-005
BH-1 (14-15)	S	11-02-16 00:00	14 - 15	540004-006
BH-2 (0-1)	S	11-02-16 00:00	0 - 1	540004-007
BH-2 (2-3)	S	11-02-16 00:00	2 - 3	540004-008
BH-2 (4-5)	S	11-02-16 00:00	4 - 5	540004-009
BH-2 (6-7)	S	11-02-16 00:00	6 - 7	540004-010
BH-2 (9-10)	S	11-02-16 00:00	9 - 10	540004-011
BH-2 (14-15)	S	11-02-16 00:00	14 - 15	540004-012
BH-2 (19-20)	S	11-02-16 00:00	19 - 20	540004-013
BH-3 (0-1)	S	11-02-16 00:00	0 - 1	540004-014
BH-3 (2-3)	S	11-02-16 00:00	2 - 3	540004-015
BH-3 (4-5)	S	11-02-16 00:00	4 - 5	540004-016
BH-3 (6-7)	S	11-02-16 00:00	6 - 7	540004-017
BH-3 (9-10)	S	11-02-16 00:00	9 - 10	540004-018
BH-3 (14-15)	S	11-02-16 00:00	14 - 15	540004-019
BH-4 (0-1)	S	11-02-16 00:00	0 - 1	540004-020
BH-4 (2-3)	S	11-02-16 00:00	2 - 3	540004-021
BH-4 (4-5)	S	11-02-16 00:00	4 - 5	540004-022
BH-4 (6-7)	S	11-02-16 00:00	6 - 7	540004-023
BH-4 (9-10)	S	11-02-16 00:00	9 - 10	540004-024
BH-5 (0-1)	S	11-02-16 00:00	0 - 1	540004-025
BH-5 (2-3)	S	11-02-16 00:00	2 - 3	540004-026
BH-5 (4-5)	S	11-02-16 00:00	4 - 5	540004-027
BH-5 (6-7)	S	11-02-16 00:00	6 - 7	540004-028
BH-5 (9-10)	S	11-02-16 00:00	9 - 10	540004-029
BH-6 (0-1)	S	11-02-16 00:00	0 - 0	540004-030
BH-6 (2-3)	S	11-02-16 00:00	2 - 3	540004-031
BH-6 (4-5)	S	11-02-16 00:00	4 - 5	540004-032
BH-6 (6-7)	S	11-02-16 00:00	6 - 7	540004-033
BH-6 (9-10)	S	11-02-16 00:00	9 - 10	540004-034
BH-6 (14-15)	S	11-02-16 00:00	14 - 15	540004-035
BH-7 (0-1)	S	11-02-16 00:00	0 - 1	540004-036
BH-7 (2-3)	S	11-02-16 00:00	2 - 3	540004-037
BH-7 (4-5)	S	11-02-16 00:00	4 - 5	540004-038
BH-7 (6-7)	S	11-02-16 00:00	6 - 7	540004-039
BH-7 (9-10)	S	11-02-16 00:00	9 - 10	540004-040
BH-7 (14-15)	S	11-02-16 00:00	14 - 15	540004-041
BH-7 (19-20)	S	11-02-16 00:00	19 - 20	540004-042
BH-8 (0-1)	S	11-02-16 00:00	0 - 1	540004-044



BH-8 (2-3) BH-8 (4-5) BH-8 (6-7) BH-8 (9-10) BH-8 (14-15) BH-7 (24-25)

Sample Cross Reference 540004



Tetra Tech- Midland, Midland, TX

EOG-Red Hills North Unit #102

S	11-02-16 00:00	2 - 3	540004-045
S	11-02-16 00:00	4 - 5	540004-046
S	11-02-16 00:00	6 - 7	540004-047
S	11-02-16 00:00	9 - 10	540004-048
S	11-02-16 00:00	14 - 15	540004-049
S	11-02-16 00:00	24 - 25	Not Analyzed



CASE NARRATIVE



Client Name: Tetra Tech- Midland Project Name: EOG-Red Hills North Unit #102

Project ID: 212C-MD-00639 Work Order Number(s): 540004
 Report Date:
 16-NOV-16

 Date Received:
 11/08/2016

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments: Batch: LBA-3003631 BTEX by EPA 8021B Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Project Id:212C-MD-00639Contact:Ike TavarezProject Location:Lea County NM

Certificate of Analysis Summary 540004

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Tue Nov-08-16 04:38 pmReport Date:16-NOV-16Project Manager:Kelsey Brooks

	Lab Id:	540004-0	01	540004-0	02	540004-0	03	540004-0	04	540004-0	005	540004-0	06
Analysis Requested	Field Id:	BH-1 (0-	BH-1 (0-1)		3)	BH-1 (4-5) BH-1 (6-7)		7)	BH-1 (9-10)		BH-1 (14-	15)	
Analysis Kequestea	Depth:	0-1	0-1			4-5		6-7	6-7 9-10		14-15		
	Matrix:	SOIL	SOIL			SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-02-16	Nov-02-16 00:00		00:00	Nov-02-16 00:00		Nov-02-16 00:00		Nov-02-16 00:00		Nov-02-16 (00:00
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-09-16	Nov-09-16 11:00		Nov-09-16 11:00		1:00	Nov-09-16 1	1:00	Nov-09-16 11:00		Nov-09-16 1	1:00
	Analyzed:	Nov-09-16	Nov-09-16 16:02		16:09	Nov-09-16 1	6:16	Nov-09-16 1	6:38	Nov-09-16	16:59	Nov-09-16 1	7:06
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		831	5.00	1470	5.00	3100	25.0	1870	25.0	121	25.0	163	5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Huns Boah

Kelsey Brooks Project Manager



Ike Tavarez

Lea County NM

Contact:

Project Location:

Certificate of Analysis Summary 540004

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Tue Nov-08-16 04:38 pmReport Date:16-NOV-16Project Manager:Kelsey Brooks

	1												
	Lab Id:	540004-0	007	540004-0	08	540004-0	09	540004-0	10	540004-0	11	540004-0	12
Analysis Requested	Field Id:	BH-2 (0	-1)	BH-2 (2-	3)	BH-2 (4-	5)	BH-2 (6-	7)	BH-2 (9-1	0)	BH-2 (14-	15)
Analysis Requesieu	Depth:	0-1	0-1			4-5		6-7		9-10		14-15	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16 (00:00	Nov-02-16 (00:00	Nov-02-16 (00:00
BTEX by EPA 8021B	Extracted:	Nov-09-16	12:00										
	Analyzed:	Nov-09-16	13:45										
	Units/RL:	mg/kg	RL										
Benzene		ND	0.00150										
Toluene		ND	0.00200										
Ethylbenzene		ND	0.00200										
m,p-Xylenes		ND	0.00200										
o-Xylene		ND	0.00299										
Total Xylenes		ND	0.00200										
Total BTEX		ND	0.00150										
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-09-16	11:00	Nov-09-16	1:00	Nov-09-16	11:00	Nov-09-16 1	1:00	Nov-09-16 1	1:00	Nov-09-16 1	1:00
	Analyzed:	Nov-09-16	17:13	Nov-09-16	7:20	Nov-09-16	17:27	Nov-09-16 1	7:34	Nov-09-16 1	7:55	Nov-09-16 1	8:02
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		12500	100	4680	50.0	4320	25.0	3750	25.0	1030	5.00	936	5.00
TPH by SW 8015B	Extracted:	Nov-08-16	17:00										
	Analyzed:	Nov-09-16	09:40										
	Units/RL:	mg/kg	RL										
C6-C10 Gasoline Range Hydrocarbons		ND	15.0										
C10-C28 Diesel Range Organics		ND	15.0										
Total TPH		ND	15.0										

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Huns Boah

Kelsey Brooks Project Manager



Project Id:212C-MD-00639Contact:Ike TavarezProject Location:Lea County NM

Certificate of Analysis Summary 540004

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Tue Nov-08-16 04:38 pmReport Date:16-NOV-16Project Manager:Kelsey Brooks

	Lab Id:	540004-013		540004-014		540004-015		540004-016		540004-017		540004-018	
Analysis Requested	Field Id:	BH-2 (19-20)		BH-3 (0-1)		BH-3 (2-3)		BH-3 (4-5)		BH-3 (6-7)		BH-3 (9-10)	
	Depth:	19-20		0-1		2-3		4-5		6-7		9-10	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-02-16	Nov-02-16 00:00		00:00	Nov-02-16 00:00		Nov-02-16 00:00		Nov-02-16 00:00		Nov-02-16 00:00	
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-09-16	Nov-09-16 11:00		11:00	Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00	
	Analyzed:	Nov-09-16	Nov-09-16 18:09		Nov-10-16 12:55		3:16	Nov-10-16 13:23		Nov-10-16 13:30		Nov-10-16 13:37	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		344	5.00	4450	25.0	4960	50.0	5310	50.0	4450	25.0	456	5.00

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Huns Boah

Kelsey Brooks Project Manager



Ike Tavarez

Lea County NM

Contact:

Project Location:

Certificate of Analysis Summary 540004

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Tue Nov-08-16 04:38 pmReport Date:16-NOV-16Project Manager:Kelsey Brooks

	1												
Analysis Requested	Lab Id:	540004-0	19	540004-0	20	540004-0	21	540004-0	22	540004-0	23	540004-0	24
	Field Id:	BH-3 (14-15)		BH-4 (0-1)		BH-4 (2-3)		BH-4 (4-5)		BH-4 (6-7)		BH-4 (9-10)	
	Depth:	14-15		0-1		2-3		4-5	4-5		6-7		9-10
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16 (00:00	Nov-02-16 (0:00	Nov-02-16 (00:00	Nov-02-16 (00:00
BTEX by EPA 8021B	Extracted:			Nov-09-16	12:00								
	Analyzed:			Nov-09-16	16:05								
	Units/RL:			mg/kg	RL								
Benzene				ND	0.00149								
Toluene				ND	0.00198								
Ethylbenzene				ND	0.00198								
m,p-Xylenes				ND	0.00198								
o-Xylene				ND	0.00298								
Total Xylenes				ND	0.00198								
Total BTEX				ND	0.00149								
Inorganic Anions by EPA 300/300.1 Extracted:		eted: Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00	
	Analyzed:	Nov-10-16 14:12		Nov-10-16 14:20		Nov-10-16 1	14:27	Nov-10-16 14:34		Nov-10-16 14:41		Nov-10-16 14:48	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		18.3	5.00	2380	25.0	5380	50.0	3510	25.0	76.9	5.00	253	5.00
TPH by SW 8015B	Extracted:			Nov-08-16	17:00								
	Analyzed:			Nov-09-16	10:28								
	Units/RL:			mg/kg	RL								
C6-C10 Gasoline Range Hydrocarbons				ND	15.0								
C10-C28 Diesel Range Organics				ND	15.0								
Total TPH				ND	15.0								

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Huns Boah

Kelsey Brooks Project Manager



Ike Tavarez

Lea County NM

Contact:

Project Location:

Certificate of Analysis Summary 540004

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Tue Nov-08-16 04:38 pmReport Date:16-NOV-16Project Manager:Kelsey Brooks

	1												
Analysis Requested	Lab Id:	540004-	025	540004-0	26	540004-0	27	540004-0	28	540004-0	29	540004-03	30
	Field Id:	BH-5 (0-1)		BH-5 (2-	3)	BH-5 (4-5)		BH-5 (6-7)		BH-5 (9-10)		BH-6 (0-1)	
	Depth:	0-1		2-3		4-5		6-7		9-10		0-0	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16 (00:00	Nov-02-16 0	00:00
BTEX by EPA 8021B Extracted:		Nov-09-16 12:00											
	Analyzed:	Nov-09-16 14:18											
	Units/RL:	mg/kg	RL										
Benzene		ND	0.00149										
Toluene		ND	0.00199										
Ethylbenzene		ND	0.00199										
m,p-Xylenes		ND	0.00199										
o-Xylene		ND	0.00298										
Total Xylenes		ND	0.00199										
Total BTEX		ND	0.00149										
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00		Nov-10-16 11:00	
	Analyzed:	Nov-11-16 12:33		Nov-11-16 12:40 Nov-11-16 12:47		12:47	Nov-11-16 12:54		Nov-11-16 13:01		Nov-11-16 13:08		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		2270	25.0	3320	25.0	5390	50.0	268	5.00	173	5.00	115	5.00
TPH by SW 8015B	Extracted:	Nov-08-16	17:00										
	Analyzed:	Nov-09-16	10:54										
	Units/RL:	mg/kg	RL										
C6-C10 Gasoline Range Hydrocarbons		ND	15.0										
C10-C28 Diesel Range Organics		ND	15.0										
Total TPH		ND	15.0										

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Huns Boah

Kelsey Brooks Project Manager


Ike Tavarez

Lea County NM

Contact:

Project Location:

Certificate of Analysis Summary 540004

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Tue Nov-08-16 04:38 pmReport Date:16-NOV-16Project Manager:Kelsey Brooks

	Lab Id:	540004-0	31	540004-0	32	540004-0	33	540004-0	34	540004-0	35	540004-0	036
Anglucia Deguested	Field Id:	BH-6 (2-	3)	BH-6 (4-	5)	BH-6 (6-	7)	BH-6 (9-1	0)	BH-6 (14-	15)	BH-7 (0	-1)
Analysis Requested	Depth:	2-3		4-5		6-7		9-10		14-15		0-1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	,
	Sampled:	Nov-02-16	00:00	Nov-02-16 (00:00	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16	00:00
BTEX by EPA 8021B	Extracted:											Nov-09-16	12:00
	Analyzed:											Nov-09-16	14:34
	Units/RL:											mg/kg	RL
Benzene												ND	0.00150
Toluene												ND	0.00200
Ethylbenzene												ND	0.00200
m,p-Xylenes												ND	0.00200
o-Xylene												ND	0.00299
Total Xylenes												ND	0.00200
Total BTEX												ND	0.00150
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-10-16	11:00	Nov-10-16 1	4:00	Nov-11-16	11:00	Nov-11-16	1:00	Nov-11-16	11:00	Nov-11-16	11:00
	Analyzed:	Nov-11-16	13:15	Nov-11-16 1	3:22	Nov-14-16	19:11	Nov-11-16	6:29	Nov-11-16	16:36	Nov-11-16	16:43
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		2460	25.0	2710	50.0	176	5.00	49.3	5.00	12.1	5.00	22.8	5.00
TPH by SW 8015B	Extracted:		Î		ĺ							Nov-08-16	17:00
	Analyzed:											Nov-09-16	11:45
	Units/RL:											mg/kg	RL
C6-C10 Gasoline Range Hydrocarbons	·											ND	15.0
C10-C28 Diesel Range Organics												ND	15.0
Total TPH												ND	15.0

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Huns Boah

Kelsey Brooks Project Manager



Project Id:212C-MD-00639Contact:Ike TavarezProject Location:Lea County NM

Certificate of Analysis Summary 540004

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Tue Nov-08-16 04:38 pmReport Date:16-NOV-16Project Manager:Kelsey Brooks

	Lab Id:	540004-0	37	540004-0	38	540004-0	39	540004-04	40	540004-0	41	540004-0	42
Analysis Requested	Field Id:	BH-7 (2-	3)	BH-7 (4-	5)	BH-7 (6-	7)	BH-7 (9-1	0)	BH-7 (14-	-15)	BH-7 (19-	20)
Analysis Kequestea	Depth:	2-3		4-5		6-7		9-10		14-15		19-20	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-02-16	00:00	Nov-02-16 (00:00	Nov-02-16 (00:00	Nov-02-16 (Nov-02-16 00:00 Nov-0		00:00	Nov-02-16 (00:00
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-11-16 11:00		Nov-11-16 11:00		Nov-11-16 1	1:00	Nov-11-16 1	1:00	Nov-11-16	11:00	Nov-11-16 1	1:00
	Analyzed:	Nov-11-16	16:50	Nov-14-16 1	1:40	Nov-14-16 1	1:54	Nov-14-16 1	2:01	Nov-14-16	12:08	Nov-14-16 1	2:15
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		294	5.00	804	25.0	63.6	5.00	86.3	5.00	267	25.0	255	5.00

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Huns Boah

Kelsey Brooks Project Manager



Ike Tavarez

Lea County NM

Contact:

Project Location:

Certificate of Analysis Summary 540004

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Tue Nov-08-16 04:38 pmReport Date:16-NOV-16Project Manager:Kelsey Brooks

	Lab Id:	540004-	044	540004-0	45	540004-0)46	540004-0	47	540004-0	48	540004-0	49
Analysis Requested	Field Id:	BH-8 (0	-1)	BH-8 (2-	3)	BH-8 (4-	-5)	BH-8 (6-	7)	BH-8 (9-1	0)	BH-8 (14-	15)
marysis Requesieu	Depth:	0-1		2-3		4-5		6-7		9-10		14-15	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16	00:00	Nov-02-16 (00:00	Nov-02-16 (00:00
BTEX by EPA 8021B	Extracted:	Nov-09-16	12:00								ľ		
	Analyzed:	Nov-09-16	14:50										
	Units/RL:	mg/kg	RL										
Benzene		ND	0.00149										
Toluene		ND	0.00198										
Ethylbenzene		ND	0.00198										
m,p-Xylenes		ND	0.00198										
o-Xylene		ND	0.00298										
Total Xylenes		ND	0.00198										
Total BTEX		ND	0.00149										
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-11-16	11:00	Nov-11-16	1:00	Nov-11-16	11:00	Nov-11-16	11:00	Nov-11-16	1:00	Nov-11-16 1	11:00
	Analyzed:	Nov-14-16	12:22	Nov-14-16	2:44	Nov-14-16	13:05	Nov-14-16	13:19	Nov-14-16	3:26	Nov-14-16 1	13:33
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		14700	100	3150	25.0	246	5.00	130	5.00	285	5.00	281	5.00
TPH by SW 8015B	Extracted:	Nov-08-16	17:00										
	Analyzed:	Nov-09-16	12:08										
	Units/RL:	mg/kg	RL										
C6-C10 Gasoline Range Hydrocarbons		ND	15.0										
C10-C28 Diesel Range Organics		ND	15.0										
Total TPH		ND	15.0										

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Huns Boah

Kelsey Brooks Project Manager



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- **F** RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantitation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- ** Surrogate recovered outside laboratory control limit.
- **BRL** Below Reporting Limit.
- RL Reporting Limit

MDL Method Detection Limit	SDL Sample Detection Limit	LOD Limit of Detection
PQL Practical Quantitation Limit	MQL Method Quantitation Limit	LOQ Limit of Quantitation

- **DL** Method Detection Limit
- NC Non-Calculable
- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr Suite 102, Tempe AZ 85282	(602) 437-0330	



Lab Batch #:	3003551	Sample: 540004-007 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/09/16 09:40	st	RROGATE R	ECOVERY	STUDY	
	TPH	l by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1-Chlorooctane			112	99.7	112	70-135	
o-Terphenyl			55.0	49.9	110	70-135	
Lab Batch #:	3003551	Sample: 540004-020 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/09/16 10:28	SU	RROGATE R	ECOVERY	STUDY	
	TPH	I by SW 8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane			110	99.8	110	70-135	
o-Terphenyl			55.2	49.9	111	70-135	
Lab Batch #:	3003551	Sample: 540004-025 / SMP	Batc				
Units:	mg/kg	Date Analyzed: 11/09/16 10:54		RROGATE R		STUDY	
	TPH	l by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes	נהן	[0]	[D]	701	
1-Chlorooctane			110	99.7	110	70-135	
o-Terphenyl			53.5	49.9	107	70-135	
Lab Batch #:	3003551	Sample: 540004-036 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/09/16 11:45	SU	RROGATE R	ECOVERY	STUDY	
	TPH	l by SW 8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane			109	100	109	70-135	
o-Terphenyl			53.5	50.0	107	70-135	
Lab Batch #:	3003551	Sample: 540004-044 / SMP	Batc	h: 1 Matrix	: Soil	1	
Units:	mg/kg	Date Analyzed: 11/09/16 12:08	SU	RROGATE R	ECOVERY	STUDY	
	TPH	I by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag
1.011		Analytes	110			70.125	
			113	99.8	113	70-135	
1-Chlorooctane o-Terphenyl			54.0	49.9	108	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Lab Batch #:	ers: 540004 3003631	Sample: 540004-007 / SMP	Batc	-	: 212C-MD-0 : Soil		
Units:	mg/kg	Date Analyzed: 11/09/16 13:45		RROGATE R	-	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag
1,4-Difluorobe			0.0325	0.0300	108	80-120	
4-Bromofluoro	benzene		0.0292	0.0300	97	80-120	
Lab Batch #:	3003631	Sample: 540004-025 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/09/16 14:18	SU	RROGATE R	ECOVERY	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobe		Anarytes	0.0323	0.0300	108	80-120	
4-Bromofluoro			0.0301	0.0300	100	80-120	
Lab Batch #:	3003631	Sample: 540004-036 / SMP	Batc			00 120	
Units:	mg/kg	Date Analyzed: 11/09/16 14:34	SU	RROGATE R		STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1,4-Difluorobe	enzene		0.0333	0.0300	111	80-120	
4-Bromofluoro			0.0302	0.0300	101	80-120	
Lab Batch #:	3003631	Sample: 540004-044 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/09/16 14:50	SU	RROGATE R	ECOVERY	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flage
1,4-Difluorobe	enzene		0.0336	0.0300	112	80-120	
4-Bromofluoro	obenzene		0.0309	0.0300	103	80-120	
Lab Batch #:	3003631	Sample: 540004-020 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/09/16 16:05	SU	RROGATE R	ECOVERY	STUDY	
		A polytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag
14D:5- 1		Analytes	0.0227	0.0000		00.120	
1,4-Difluorobe			0.0327	0.0300	109	80-120 80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Units:	mg/kg	Date Analyzed: 11/08/16 20:52	~-		ECOVERT		
Units.	iiig/kg	Date Analyzeu. 11/08/10/20.52	SU	JRROGATE R	ECOVERY	STUDY	
	ТРН	by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooc	ane		128	100	128	70-135	
o-Terpheny	1		64.4	50.0	129	70-135	
Lab Batch	#: 3003631	Sample: 715942-1-BLK / BL	K Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/09/16 13:29	SU	JRROGATE R	ECOVERY	STUDY	
		X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor		Analytes	0.0318	0.0300	106	80-120	
4-Bromoflu			0.0253	0.0300	84	80-120	
	#: 3003551	Sample: 715881-1-BKS / Bk				00-120	
Units:	mg/kg	Date Analyzed: 11/08/16 21:16					
omus.	ing/kg	Date Analyzed. 11/00/10 21.10	50	JRROGATE R	ECOVERY	STUDY	
		by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooc	ane		129	100	129	70-135	
o-Terpheny			64.0	50.0	128	70-135	
Lab Batch	#: 3003631	Sample: 715942-1-BKS / BK	IS Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/09/16 12:08	SU	JRROGATE R	ECOVERY	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor			0.0310	0.0300	103	80-120	
4-Bromoflu	orobenzene		0.0271	0.0300	90	80-120	
Lab Batch	#: 3003551	Sample: 715881-1-BSD / BS	D Batc	h: 1 Matrix	: Solid	1	
Units:	mg/kg	Date Analyzed: 11/08/16 21:40	SU	JRROGATE R	ECOVERY	STUDY	
	ТРН	by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooc	ane		124	100	124	70-135	
o-Terpheny	1		64.8	50.0	130	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Lab Batch #		4, 540004 Sample: 715942-1-BSD / BS	D Batch		: 212C-MD-0 : Solid		
Units:	mg/kg	Date Analyzed: 11/09/16 12:24		RROGATE R		STUDY	
	втех	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorob	enzene	Anarytes	0.0321	0.0300	107	80-120	
4-Bromofluor			0.0293	0.0300	98	80-120	
Lab Batch #		Sample: 539784-001 S / MS	Batch			00-120	
Units:	mg/kg	Date Analyzed: 11/08/16 22:53		RROGATE R		STUDY	
	TPH	I by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chloroocta	1e	Analytes	128	99.9	128	70-135	
o-Terphenyl			60.8	50.0	128	70-135	
Lab Batch #	• 3003631	Sample: 540004-007 S / MS	Batch			70-135	
Units:	mg/kg	Date Analyzed: 11/09/16 12:41		RROGATE R		STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorob	anzana	Anarytes	0.0319	0.0300	106	80-120	
4-Bromofluoi			0.0319	0.0300	100	80-120	
Lab Batch #		Sample: 539784-001 SD / M				00-120	
Units:	mg/kg	Date Analyzed: 11/08/16 23:17		RROGATE R		STUDY	
	TPH	I by SW 8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chloroocta	ne		129	99.9	129	70-135	
o-Terphenyl			60.6	50.0	121	70-135	
Lab Batch #	: 3003631	Sample: 540004-007 SD / M	SD Batch	1 Matrix	: Soil	<u> </u>	
Units:	mg/kg	Date Analyzed: 11/09/16 12:57	SU	RROGATE R	ECOVERY	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorob	enzene	-	0.0335	0.0300	112	80-120	
			0.0316 0.0300		1		

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



BS / BSD Recoveries



Project Name: EOG-Red Hills North Unit #102

Work Order #: 54	540004, 540004							Proj	ject ID:	212C-MD-0	00639	
Analyst: PJB		Da	ate Prepar	red: 11/09/202	16			Date A	nalyzed:	11/09/2016		
Lab Batch ID: 3003	Sample: 715942-1-B	KS	Batcl	h #: 1					Matrix:	Solid		
Units: mg/kg	ςg		BLAN	K/BLANK	SPIKE / 1	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
BTE	EX by EPA 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes			[B]	[C]	[D]	[E]	Result [F]	[G]				
Benzene		< 0.00150	0.100	0.0951	95	0.100	0.0966	97	2	70-130	35	
Toluene		< 0.00200	0.100	0.0977	98	0.100	0.0995	100	2	70-130	35	
Ethylbenzene		< 0.00200	0.100	0.0961	96	0.100	0.0993	99	3	71-129	35	
m,p-Xylenes		< 0.00200	0.200	0.199	100	0.200	0.204	102	2	70-135	35	
o-Xylene		< 0.00300	0.100	0.0944	94	0.100	0.0988	99	5	71-133	35	
Analyst: MNR	R	Da	ate Prepar	red: 11/09/202	16			Date A	nalyzed:	1/09/2016		
Lab Batch ID: 3003	Sample: 715909-1-B	KS	Batcl	h #: 1					Matrix: 3	Solid		
Units: mg/kg	ζg		BLAN	K/BLANK	SPIKE / 1	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic A Analytes	Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		<5.00	250	242	97	250	242	97	0	90-110	20	

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: EOG-Red Hills North Unit #102

Work Order #: 540004, 540004							Pro	ject ID:	212C-MD-0)0639	
Analyst: MNR	D	ate Prepar	ed: 11/10/201	16			Date A	nalyzed: 1	1/10/2016		
Lab Batch ID: 3003713 Sample: 715944-1-	BKS	Batcl	n #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK S	SPIKE /]	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Chloride	< 5.00	250	230	92	250	239	96	4	90-110	20	
						1					
Analyst: ARM	D	ate Prepar	ed: 11/08/201	16	ļ	1	Date A	nalyzed:	1/08/2016		ļI
Analyst: ARM Lab Batch ID: 3003551 Sample: 715881-1-		ate Prepar Batcl		16		1	Date A	nalyzed: 1 Matrix: S		1	
··· 2		Batcl			BLANK	SPIKE DUP		Matrix: S	Solid	DY	
Lab Batch ID: 3003551 Sample: 715881-1-		Batcl	h #: 1		BLANK S Spike Added [E]	SPIKE DUP Blank Spike Duplicate Result [F]		Matrix: S	Solid	DY Control Limits %RPD	Flag
Lab Batch ID: 3003551 Sample: 715881-1- Units: mg/kg TPH by SW 8015B	BKS Blank Sample Result	Batcl BLAN Spike Added	n #: 1 K /BLANK S Blank Spike Result	SPIKE /] Blank Spike %R	Spike Added	Blank Spike Duplicate	LICATE Blk. Spk Dup. %R	Matrix: S RECOVI	Solid ERY STUI Control Limits	Control Limits	Flag

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



Project Name: EOG-Red Hills North Unit #102



Work Order # :	540004						Project II): 212C-1	MD-0063	9		
Lab Batch ID:	3003631	QC- Sample ID:	540004	-007 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	11/09/2016	Date Prepared:	11/09/2	016	Ar	alyst: F	уB					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
]	BTEX by EPA 8021B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	L - J	[D]	[E]		[G]				
Benzene		<0.00149	0.0996	0.0915	92	0.0998	0.0925	93	1	70-130	35	
Toluene		<0.00199	0.0996	0.0924	93	0.0998	0.0960	96	4	70-130	35	
Ethylbenzene		< 0.00199	0.0996	0.0918	92	0.0998	0.0930	93	1	71-129	35	
m,p-Xylenes		< 0.00199	0.199	0.190	95	0.200	0.194	97	2	70-135	35	
o-Xylene		< 0.00299	0.0996	0.0911	91	0.0998	0.0942	94	3	71-133	35	
Lab Batch ID:	3003608	QC- Sample ID:	539986	-001 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	11/09/2016	Date Prepared:	11/09/2	016	Ar	alyst: N	ANR					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride		308	250	548	96	250	559	100	2	90-110	20	
Lab Batch ID:	3003608	QC- Sample ID:	540004	-004 S	Ba	tch #:	1 Matrix	c: Soil				
Date Analyzed:	11/09/2016	Date Prepared:	11/09/2	016	Ar	alyst: N	MNR					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[~]	[D]	[E]		[G]				
Chloride		1870	1250	3080	97	1250	3050	94	1	90-110	20	

Matrix Spike Percent Recovery $[D] = 100^{*}(C-A)/B$ Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Project Name: EOG-Red Hills North Unit #102



Work Order # :	540004						Project II): 212C-1	MD-0063	9		
Lab Batch ID:	3003713	QC- Sample ID:	540004	-014 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/10/2016	Date Prepared:	11/10/2	016	An	alyst: N	MNR					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERY	STUDY		
Inorga	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride		4450	1250	5690	99	1250	5610	93	1	90-110	20	
Lab Batch ID:	3003713	QC- Sample ID:	540004	-024 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/10/2016	Date Prepared:	11/10/2	016	An	alyst: N	MNR					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERY	STUDY		
Inorga	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride		253	250	492	96	250	508	102	3	90-110	20	
Lab Batch ID:	3003821	QC- Sample ID:	540004	-033 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/14/2016	Date Prepared:	11/11/2	016	An	alyst: N	MNR					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERY	STUDY		
Inorga	nic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		176	250	437	104	250	437	104	0	90-110	20	

Matrix Spike Percent Recovery $[D] = 100^{*}(C-A)/B$ Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Project Name: EOG-Red Hills North Unit #102



Work Order # :	540004						Project II): 212C-1	MD-0063	9		
Lab Batch ID:	3003821	QC- Sample ID:	540004	-044 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	11/14/2016	Date Prepared:	11/11/2	016	An	alyst: 1	MNR					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride		14700	5000	19900	104	5000	19900	104	0	90-110	20	
Lab Batch ID:	3003551	QC- Sample ID:	539784	-001 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	11/08/2016	Date Prepared:	11/08/2	016	An	alyst: A	ARM					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	TPH by SW 8015B	Parent Sample Result	Spike Added	Spiked Sample Result	Spiked Sample %R	Spike Added	Duplicate Spiked Sample	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	Added [B]	[C]	%K [D]	Added [E]	Result [F]	%ĸ [G]	70	70K	70KFD	
	7 mary tes											
C6-C10 Gasolin	e Range Hydrocarbons	<15.0	999	914	91	999	937	94	2	70-135	35	

Matrix Spike Duplicate Percent Recovery $[G] = 100^{*}(F-A)/E$

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anager	5.000 mc 1/c 10	The pravez	TENSON:	TETRA TECH CONTACT DEBSON	FEDEX BUS	SAMPLE SHIPPED BY: (Cimba)	SAMPLED BY (Print & Initial)	X									× ×			10D. Ag As Ag As atiles 0/8260 ol. 827	Ba Co	d Cr	(Ext. tr Pb H Pd Hş	g Se	Circle or Specify Method No.	Drd PAGE:	540004
Samples		RUSH Charges Authorized:	Results by:	OTHER:	AIRBILL #:	Time;	Date: 11-d-14					· · · · · · · · · · · · · · · · · · ·) / F	Gamma Spec. Alpha Beta (Air) PLM (Asbestos) Major Anions/Ca	ations,	рН, ТС	DS			_	رب ڪ	

Temp: IR ID:R-8 CF:+ 0.12-0

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Cready Sidow my 145 + Aun det tripel 875x Aready 50 mg ect Manager retains Pink copy - Accour Temp: CF+ 01	the Tavarez		HAND DELIVERED UPS	FEDEX BUS	1030 July W.					<u> </u>	X	X		HCL HNO3 ICE NONE TFFD 8013 PAH 8270 RCRA Metal TCLP Metal TCLP Volatik TCLP Semi V RCI GC.MS Vol. 8 GC.MS Semi PCB's 8080/6 Pest. 808/600 Chlorid	V MOD. s Ag As s Ag As 2s folatiles 8240/826 . Vol. 827 508 3	TX1000 Ba Cd Ba Cd	Cr Pb Hg Se	1	-	540004
IR ID:R-8	RUSH Charges Authorized:	nesuus by:	OTHER:	AIRBILL #:	Date: <u>//</u>									Gamma Spec Alpha Beta (A PLM (Asbesto Major Anions	lir) os)	s, pH, TC)5	ST od No.)	2 9F S	1

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Account remp: Representation of the set of t	Generation of the fact	acceeds	<i>inne.</i>	Date:	Time:	Time: 10 200		×	-	×	××	×	×	×	X	×	FILTERED (Y/N) HCL HNO3 ICE NONE				dy Record	
	- Accol Temp: IRI CF:+ 0.12.4 Correcture	the aure		ОТНЕ	: (Circle) BUS	Althers Millinic		×	×					7			TPH 8019 MC PAH 8270 RCRA Metals Ag TCLP Metals Ag TCLP Volatiles TCLP Semi Volat RCI GC.MS Vol. 8240 GC.MS Semi. Vo PCB's 8080/608 Pest. 808/608 Chlorid Gamma Spec. Alpha Beta (Air) PLM (Asbestos)	g As Ba Co g As Ba Co tiles 0/8260/624 1. 8270/625	I Cr Pb Hg Se I Vr Pd Hg Se	ANALYSIS REQUEST (Circle or Specify Method No.)	5	54004

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TPT EXCEVUS br Tokal (Str Tetra Tech - Project Manar		Time:	Date:		$\frac{\text{Date: } I' \cup I}{\text{Time: } I \cup 3}$					X X VI				IN XX	NUMBER OF CONT, FILTERED (Y/N) HCL HNO3 ICE NONE	AINERS PRESERVATIVE METHOD			Custody Record	
SIDOU My/F7: Kun deeper Sumples SK Accepts SO my/E2 ger retains Pink copy - Accountif Temp: IR ID:R-8 CF:+ 0.1 J.V Corrected Temp: 1	the lance	l	ОТН	FEDEX BUS AIRBILL #:	Several States S										BTEX 8021B TPH' 8015 MOD PAH 8270 RCRA Metals Ag TCLP Metals Ag TCLP Volatiles TCLP Semi Volatile RCI GC.MS Vol. 8240/8 GC.MS Semi, Vol. PCB's 8080/608 Pest. 808/608 Chlorid Gamma Spec. Alpha Beta (Air) PLM (Asbestos) Major Anions/Cati	As Ba Co As Ba Co As Ba Co es 3260/624 8270/625	i Cr Pb Hg Se i Vr Pd Hg Se	ANALYSIS REQUEST (Circle or Specify Method No.)	PAGE: S OF: S	640004

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XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland	Acceptable Temperature Range: 0 - 6 degC
Date/ Time Received: 11/08/2016 04:38:00 PM	Air and Metal samples Acceptable Range: Ambient
Work Order #: 540004	Temperature Measuring device used : R8
Sample Recei	pt Checklist Comments
#1 *Temperature of cooler(s)?	2.7
#2 *Shipping container in good condition?	N/A
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	N/A
#5 *Custody Seals intact on shipping container/ cooler?	N/A
#6 Custody Seals intact on sample bottles?	N/A
#7 *Custody Seals Signed and dated?	N/A
#8 *Chain of Custody present?	Yes
#9 Sample instructions complete on Chain of Custody?	Yes
#10 Any missing/extra samples?	No
#11 Chain of Custody signed when relinquished/ received?	Yes
#12 Chain of Custody agrees with sample label(s)?	Yes
#13 Container label(s) legible and intact?	Yes
#14 Sample matrix/ properties agree with Chain of Custody?	Yes
#15 Samples in proper container/ bottle?	Yes
#16 Samples properly preserved?	Yes
#17 Sample container(s) intact?	Yes
#18 Sufficient sample amount for indicated test(s)?	Yes
#19 All samples received within hold time?	Yes
#20 Subcontract of sample(s)?	N/A
#21 VOC samples have zero headspace (less than 1/4 inch l	oubble)? N/A
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? E samples for the analysis of HEM or HEM-SGT which are verif analysts.	
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnA	c+NaOH? N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica Kramer

Date: 11/09/2016

Checklist reviewed by: Mms Moah Kelsey Brooks

Date: 11/09/2016

Analytical Report 540172

for Tetra Tech- Midland

Project Manager: Ike Tavarez

EOG - Red Hills North Unit #102

212C-MD-00639

17-NOV-16

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054) Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295) Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400) Xenco-San Antonio: Texas (T104704534) Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757) Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



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17-NOV-16



Project Manager: **Ike Tavarez Tetra Tech- Midland** 4000 N. Big Spring Suite 401 Midland, TX 79705

Reference: XENCO Report No(s): **540172 EOG - Red Hills North Unit #102** Project Address: Lea Co, NM

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 540172. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 540172 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Huns hoah

Kelsey Brooks Project Manager

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Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



Sample Id
BH-9 0-1
BH-9 2-3
BH-9 4-5
BH-9 6-7
BH-9 9-10
BH-9 14-15
BH-10 0-1
BH-10 2-3
BH-10 4-5
BH-10 6-7
BH-10 9-10
BH-10 14-15
BH-10 19-20
BH-10 24-25
BH-10 29-30
BH-11 0-1
BH-11 2-3
BH-11 4-5
BH-11 6-7
BH-11 9-10
BH-11 14-15
BH-12 0-1
BH-12 2-3
BH-12 4-5
BH-12 6-7
BH-12 9-10
BH-12 14-15

Sample Cross Reference 540172



Tetra Tech- Midland, Midland, TX

EOG - Red Hills North Unit #102

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	11-09-16 00:00	0 - 1	540172-001
S	11-09-16 00:00	2 - 3	540172-002
S	11-09-16 00:00	4 - 5	540172-003
S	11-09-16 00:00	6 - 7	540172-004
S	11-09-16 00:00	9 - 10	540172-005
S	11-09-16 00:00	14 - 15	540172-006
S	11-09-16 00:00	0 - 1	540172-007
S	11-09-16 00:00	2 - 3	540172-008
S	11-09-16 00:00	4 - 5	540172-009
S	11-09-16 00:00	6 - 7	540172-010
S	11-09-16 00:00	9 - 10	540172-011
S	11-09-16 00:00	14 - 15	540172-012
S	11-09-16 00:00	19 - 20	540172-013
S	11-09-16 00:00	24 - 25	540172-014
S	11-09-16 00:00	29 - 30	540172-015
S	11-09-16 00:00	0 - 1	540172-016
S	11-09-16 00:00	2 - 3	540172-017
S	11-09-16 00:00	4 - 5	540172-018
S	11-09-16 00:00	6 - 7	540172-019
S	11-09-16 00:00	9 - 10	540172-020
S	11-09-16 00:00	14 - 15	540172-021
S	11-09-16 00:00	0 - 1	540172-022
S	11-09-16 00:00	2 - 3	540172-023
S	11-09-16 00:00	4 - 5	540172-024
S	11-09-16 00:00	6 - 7	540172-025
S	11-09-16 00:00	9 - 10	540172-026
S	11-09-16 00:00	14 - 15	540172-027



CASE NARRATIVE



Client Name: Tetra Tech- Midland Project Name: EOG - Red Hills North Unit #102

Project ID: 212C-MD-00639 Work Order Number(s): 540172
 Report Date:
 17-NOV-16

 Date Received:
 11/10/2016

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments: Batch: LBA-3003809 BTEX by EPA 8021B Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Certificate of Analysis Summary 540172

Tetra Tech- Midland, Midland, TX Project Name: EOG - Red Hills North Unit #102



Project Id:212C-MD-00639Contact:Ike TavarezProject Location:Lea Co, NM

Date Received in Lab:Thu Nov-10-16 04:09 pmReport Date:17-NOV-16Project Manager:Kelsey Brooks

	Lab Id:	540172-0	01	540172-0	02	540172-0	03	540172-0	04	540172-0	05	540172-0	06
Analysis Requested	Field Id:	BH-9 0-	-1	BH-9 2-	.3	BH-9 4-	5	BH-9 6-	7	BH-9 9-	10	BH-9 14-	15
Anaiysis Kequesieu	Depth:	0-1		2-3		4-5		6-7		9-10		14-15	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-16	00:00	Nov-09-16	00:00	Nov-09-16	00:00	Nov-09-16 (00:00	Nov-09-16	00:00	Nov-09-160	00:00
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-16-16	10:47	Nov-16-16	10:47	Nov-16-16	0:47	Nov-16-16 1	0:47	Nov-16-16	10:47	Nov-16-16 1	0:47
	Analyzed:	Nov-16-16	14:45	Nov-16-16	15:06	Nov-16-16	5:13	Nov-16-16 1	5:34	Nov-16-16	15:48	Nov-16-16 1	5:55
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		302	5.00	534	5.00	209	50.0	128	5.00	137	5.00	156	5.00

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Huns Boah

Kelsey Brooks Project Manager



Certificate of Analysis Summary 540172

Tetra Tech- Midland, Midland, TX Project Name: EOG - Red Hills North Unit #102 Sur Accelotes

Project Id:212C-MD-00639Contact:Ike TavarezProject Location:Lea Co, NM

Date Received in Lab:Thu Nov-10-16 04:09 pmReport Date:17-NOV-16Project Manager:Kelsey Brooks

	Lab Id:	540172-0	007	540172-0	08	540172-0)09	540172-0	10	540172-0	11	540172-0	12
Analysis Requested	Field Id:	BH-10 ()-1	BH-10 2-	-3	BH-104	-5	BH-10 6	-7	BH-10 9-	10	BH-10 14-	-15
Analysis Requested	Depth:	0-1		2-3		4-5		6-7		9-10		14-15	
	Matrix:	SOIL	,	SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-16	00:00	Nov-09-16 (00:00	Nov-09-16	00:00	Nov-09-16 (00:00	Nov-09-16 (00:00	Nov-09-16 (00:00
BTEX by EPA 8021B	Extracted:	Nov-11-16	16:00										
	Analyzed:	Nov-11-16	19:24										
	Units/RL:	mg/kg	RL										
Benzene		ND	0.00149										
Toluene		ND	0.00199										
Ethylbenzene		ND	0.00199										
m,p-Xylenes		ND	0.00199										
o-Xylene		ND	0.00298										
Total Xylenes		ND	0.00199										
Total BTEX		ND	0.00149										
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-16-16	10:47	Nov-16-16 1	10:47	Nov-16-16	10:47	Nov-16-16	0:47	Nov-16-16 1	0:47	Nov-16-16 1	10:47
	Analyzed:	Nov-16-16	16:02	Nov-16-16 1	16:09	Nov-16-16	16:16	Nov-16-16	6:23	Nov-16-16 1	6:30	Nov-16-16 1	17:06
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1700	5.00	1720	5.00	101	5.00	422	5.00	1420	5.00	1540	5.00
TPH by SW 8015B	Extracted:	Nov-15-16	11:00										
	Analyzed:	Nov-15-16	14:19										
	Units/RL:	mg/kg	RL										
C6-C10 Gasoline Range Hydrocarbons	·	ND	15.0										
C10-C28 Diesel Range Organics		ND	15.0										
Total TPH		ND	15.0										

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Huns Boah

Kelsey Brooks Project Manager



Ike Tavarez

Lea Co, NM

Contact:

Project Location:

Certificate of Analysis Summary 540172

Tetra Tech- Midland, Midland, TX Project Name: EOG - Red Hills North Unit #102



Date Received in Lab:Thu Nov-10-16 04:09 pmReport Date:17-NOV-16Project Manager:Kelsey Brooks

	I I												
	Lab Id:	540172-0	13	540172-0	14	540172-0	15	540172-0)16	540172-0	17	540172-0	18
Analysis Requested	Field Id:	BH-10 19	-20	BH-10 24	-25	BH-10 29	-30	BH-11 ()-1	BH-11 2-	-3	BH-11 4-	-5
Anulysis Requested	Depth:	19-20		24-25		29-30		0-1		2-3		4-5	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-16	00:00	Nov-09-16 (00:00	Nov-09-16	00:00	Nov-09-16	00:00	Nov-09-16 (00:00	Nov-09-16 (00:00
BTEX by EPA 8021B	Extracted:							Nov-11-16	16:00				
	Analyzed:							Nov-11-16	19:41				
	Units/RL:							mg/kg	RL				
Benzene								ND	0.00150				
Toluene								ND	0.00200				
Ethylbenzene								ND	0.00200				
m,p-Xylenes								ND	0.00200				
o-Xylene								ND	0.00300				
Total Xylenes								ND	0.00200				
Total BTEX								ND	0.00150				
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-16-16	10:47	Nov-16-16	10:47	Nov-16-16	10:47	Nov-16-16	10:47	Nov-16-16 1	0:47	Nov-16-16 1	10:47
	Analyzed:	Nov-16-16	17:13	Nov-16-16	17:20	Nov-16-16	17:34	Nov-16-16	17:41	Nov-16-16 1	7:48	Nov-16-16 1	18:09
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		132	5.00	409	5.00	146	5.00	3280	25.0	3250	25.0	2890	25.0
TPH by SW 8015B	Extracted:							Nov-15-16	11:00				
	Analyzed:							Nov-15-16	15:32				
	Units/RL:							mg/kg	RL				
C6-C10 Gasoline Range Hydrocarbons	·							ND	14.9				
C10-C28 Diesel Range Organics								ND	14.9				
Total TPH								ND	14.9				

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Huns Boah

Kelsey Brooks Project Manager



Certificate of Analysis Summary 540172

Tetra Tech- Midland, Midland, TX Project Name: EOG - Red Hills North Unit #102



Project Id:212C-MD-00639Contact:Ike TavarezProject Location:Lea Co, NM

Date Received in Lab:Thu Nov-10-16 04:09 pmReport Date:17-NOV-16Project Manager:Kelsey Brooks

	Lab Id:	540172-0	19	540172-0	20	540172-0	21	540172-0	22	540172-0	23	540172-0	24
Analysis Requested	Field Id:	BH-116	-7	BH-11 9-	10	BH-11 14	-15	BH-12 0-	-1	BH-12 2	-3	BH-12 4-	-5
Analysis Kequestea	Depth:	6-7		9-10		14-15		0-1		2-3		4-5	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-16 (00:00	Nov-09-16 (00:00	Nov-09-16 (00:00	Nov-09-16 (00:00	Nov-09-16	00:00	Nov-09-16 (00:00
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-16-16	10:47	Nov-16-16 10:47		Nov-16-16 1	2:59	Nov-16-16 1	2:59	Nov-16-16	12:59	Nov-16-16 1	2:59
	Analyzed:	Nov-16-16	18:23	Nov-16-16	8:30	Nov-17-16 ()9:43	Nov-17-16 1	0:04	Nov-17-16	11:26	Nov-17-16 1	0:18
	Units/RL:		RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		364	5.00	386	5.00	107	5.00	3010	25.0	2780	25.0	163	5.00

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Huns Boah

Kelsey Brooks Project Manager



Certificate of Analysis Summary 540172

Tetra Tech- Midland, Midland, TX Project Name: EOG - Red Hills North Unit #102 SUP ACCREGING

Project Id:212C-MD-00639Contact:Ike TavarezProject Location:Lea Co, NM

Date Received in Lab:Thu Nov-10-16 04:09 pmReport Date:17-NOV-16Project Manager:Kelsey Brooks

	Lab Id:	540172-0	25	540172-0	26	540172-02	27		
Analysis Requested	Field Id:	BH-12 6	-7	BH-12 9-	10	BH-12 14-	-15		
Analysis Kequesiea	Depth:	6-7		9-10		14-15			
	Matrix:	SOIL		SOIL		SOIL			
	Sampled:	Nov-09-16 (00:00	Nov-09-16	00:00	Nov-09-16 (00:00		
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-16-16	2:59	Nov-16-16	2:59	Nov-16-16 1	2:59		Î
	Analyzed:	Nov-17-16	0:25	Nov-16-162	20:16	Nov-16-16 2	0:23		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		54.4	5.00	170	5.00	79.7	5.00		

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Kelsey Brooks Project Manager



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- **F** RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantitation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- **K** Sample analyzed outside of recommended hold time.
- JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- ** Surrogate recovered outside laboratory control limit.
- **BRL** Below Reporting Limit.
- RL Reporting Limit

MDL Method Detection Limit	SDL Sample Detection Limit	LOD Limit of Detection
PQL Practical Quantitation Limit	MQL Method Quantitation Limit	LOQ Limit of Quantitation

- **DL** Method Detection Limit
- NC Non-Calculable
- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr Suite 102, Tempe AZ 85282	(602) 437-0330	



	ders : 540172 #: 3003809	Sample: 540172-007 / SMP	Batc	-	: 212C-MD-0 : Soil		
J nits:	mg/kg	Date Analyzed: 11/11/16 19:24	SU	JRROGATE R	ECOVERY S	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro			0.0292	0.0300	97	80-120	
4-Bromoflu			0.0290	0.0300	97	80-120	
Lab Batch	#: 3003809	Sample: 540172-016 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/11/16 19:41	SU	JRROGATE R	ECOVERY S	STUDY	
		A by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro			0.0305	0.0300	102	80-120	
4-Bromoflu	orobenzene		0.0279	0.0300	93	80-120	
Lab Batch	#: 3003941	Sample: 540172-007 / SMP	Batc		: Soil		
Units:	mg/kg	Date Analyzed: 11/15/16 14:19	su	JRROGATE R	ECOVERYS	STUDY	
		by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 (11)		Analytes					
1-Chlorooct			99.2	99.8	99	70-135	
o-Terphenyl		Sec. 540172.016 / SMD	53.0 B _44	49.9	106	70-135	
	#: 3003941	Sample: 540172-016 / SMP	Bate				
Units:	mg/kg	Date Analyzed: 11/15/16 15:32	SU	JRROGATE R	ECOVERY	STUDY	
	TPH	by SW 8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane	-	99.0	99.6	99	70-135	
o-Terphenyl			52.8	49.8	106	70-135	
	#: 3003809	Sample: 716076-1-BLK / BL					<u> </u>
U nits:	mg/kg	Date Analyzed: 11/11/16 17:31	su	JRROGATE R	ECOVERY S	STUDY	
		by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
4 4 5		Analytes			[D]		
1,4-Difluoro			0.0290	0.0300	97	80-120	
4-Bromoflu	orobenzene		0.0258	0.0300	86	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



	3003941	Sample: 716126-1-BLK / B	LK Batc	h: 1 Matrix	. Sona		
Units:	mg/kg	Date Analyzed: 11/15/16 13:08	SU	JRROGATE R	ECOVERY	STUDY	
	ТРН	l by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctane	e		114	100	114	70-135	
o-Terphenyl			61.5	50.0	123	70-135	
Lab Batch #:	3003809	Sample: 716076-1-BKS / B	KS Batc	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/11/16 16:11	SU	JRROGATE R	ECOVERY	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobe			0.0306	0.0300	102	80-120	
4-Bromofluoro	benzene		0.0311	0.0300	104	80-120	
Lab Batch #:	3003941	Sample: 716126-1-BKS / B	KS Batc	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/15/16 13:31	SU	JRROGATE R	ECOVERY	STUDY	
		l by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctane	e		124	100	124	70-135	
o-Terphenyl			60.7	50.0	121	70-135	
Lab Batch #:	3003809	Sample: 716076-1-BSD / B	SD Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/11/16 16:27	SU	JRROGATE R	ECOVERY	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobe			0.0311	0.0300	104	80-120	
4-Bromofluoro	benzene		0.0325	0.0300	108	80-120	
Lab Batch #:	3003941	Sample: 716126-1-BSD / B	SD Batc	h: 1 Matrix	: Solid	1	<u> </u>
Units:	mg/kg	Date Analyzed: 11/15/16 13:55	SU	JRROGATE R	ECOVERY	STUDY	
	TPH	l by SW 8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1-Chlorooctane	e		127	100	127	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



	rders: 540172 #: 3003809	2, Sample: 540170-001 S / MS	Batc		: 212C-MD-0 : Soil)0639	
Units:	mg/kg	Date Analyzed: 11/11/16 16:43		RROGATE R	ECOVERY	STUDY	
		X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor			0.0324	0.0300	108	80-120	
4-Bromoflu	iorobenzene		0.0329	0.0300	110	80-120	
Lab Batch	#: 3003941	Sample: 540172-007 S / MS	Batc	h: 1 Matrix	: Soil		
U nits:	mg/kg	Date Analyzed: 11/15/16 14:43	SU	RROGATE R	ECOVERY	STUDY	
		by SW 8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc			124	99.9	124	70-135	
o-Terpheny	rl		61.0	50.0	122	70-135	
Lab Batch	#: 3003809	Sample: 540170-001 SD / N	ISD Bate	h: 1 Matrix	: Soil	1	
U nits:	mg/kg	Date Analyzed: 11/11/16 16:59	SU	RROGATE R	ECOVERY	STUDY	
	втех	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		1
1,4-Difluor	obenzene		0.0359	0.0300	120	80-120	
4-Bromoflu	iorobenzene		0.0332	0.0300	111	80-120	
Lab Batch	#: 3003941	Sample: 540172-007 SD / M	ISD Bate	h: 1 Matrix	: Soil	1	
U nits:	mg/kg	Date Analyzed: 11/15/16 15:08	SU	RROGATE R	ECOVERY	STUDY	
		by SW 8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc		~	123	99.8	123	70-135	
o-Terpheny	71		59.8	49.9	120	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



BS / BSD Recoveries



Project Name: EOG - Red Hills North Unit #102

Work Order #:	540172							Proj	ect ID:	212C-MD-(0639	
Analyst: PJB	3	Da	ate Prepar	ed: 11/11/201	16			Date A	nalyzed:	1/11/2016		
Lab Batch ID: 300	O3809 Sample: 716076-1-B	KS	Batch	n#: 1					Matrix: S	Solid		
Units: mg/	/kg		BLAN	K/BLANK	SPIKE / 1	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUI	ΟY	
	TEX by EPA 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes			[B]	[C]	[D]	[E]	Result [F]	[G]				
Benzene		< 0.00150	0.100	0.0962	96	0.100	0.0907	91	6	70-130	35	
Toluene		< 0.00200	0.100	0.0983	98	0.100	0.0915	92	7	70-130	35	
Ethylbenzene		< 0.00200	0.100	0.0980	98	0.100	0.0918	92	7	71-129	35	
m,p-Xylenes		< 0.00200	0.200	0.202	101	0.200	0.190	95	6	70-135	35	
o-Xylene		< 0.00300	0.100	0.0989	99	0.100	0.0948	95	4	71-133	35	
Analyst: SLU	U	Da	ate Prepar	ed: 11/16/201	16	•		Date A	nalyzed:	1/16/2016		
Lab Batch ID: 300	04060 Sample: 716163-1-B	KS	Batch	n#: 1					Matrix: S	Solid		
Units: mg/	/kg		BLAN	K/BLANK	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUI	ΟY	
Inorganic Analytes	Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		<5.00	250	259	104	250	242	97	7	90-110	20	

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: EOG - Red Hills North Unit #102

Work Order #: 540172	Project ID: 212C-MD-00639 Date Prepared: 11/16/2016 Date Analyzed: 11/17/2016												
Analyst: SLU	Da	ate Prepar	ed: 11/16/201	6			Date A	nalyzed:	1/17/2016				
Lab Batch ID: 3004056 Sample: 716177-1-4	BKS	Batcl	n#: 1					Matrix: S	Solid				
Units: mg/kg		BLAN	K/BLANK S	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUE	ΟY			
Inorganic Anions by EPA 300/300.1	0.1 Blank Spike Blank Blank Blank Spike Blank Spike Blank Blank Spike Blank Blank Spike Blank Blank Blk. Spk Dup. RPD Limits Limits Flag [A] [B] [C] [D] [E] Result [F] [G] [A] [C] [A] [B] [C] [A] [C] [A] [C] [A] [C] [A] [C] [A] [C] [C] [A] [C] [C] [C] [C] [C] [C] [C] [C] [C] [C									Flag			
Analytes	5.00								00.110	20			
Chloride	<5.00	250	265	106	250	259	104	2	90-110	20			
					Date Analyzed: 11/15/2016								
Analyst: ARM	Da	ate Prepar	ed: 11/15/201	6	•		Date A	nalyzed:	1/15/2016				
Analyst: ARM Lab Batch ID: 3003941 Sample: 716126-1-1		ate Prepar Batcl		6	1		Date A	nalyzed: 1 Matrix: S					
		Batcl			BLANK	SPIKE DUP		Matrix: S	Solid	DY			
Lab Batch ID: 3003941 Sample: 716126-1-I		Batcl	n#: 1		BLANK S Spike Added [E]	SPIKE DUP Blank Spike Duplicate Result [F]		Matrix: S	Solid	DY Control Limits %RPD	Flag		
Lab Batch ID: 3003941 Sample: 716126-1-H Units: mg/kg TPH by SW 8015B	3KS Blank Sample Result	Batcl BLAN Spike Added	n #: 1 K /BLANK S Blank Spike Result	SPIKE / I Blank Spike %R	Spike Added	Blank Spike Duplicate	LICATE Blk. Spk Dup. %R	Matrix: S RECOVI	Solid ERY STUE Control Limits	Control Limits	Flag		

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



Project Name: EOG - Red Hills North Unit #102



Work Order # :	540172						Project II): 212C-1	MD-0063	9		
Lab Batch ID:	3003809	QC- Sample ID:	540170	-001 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	11/11/2016	Date Prepared:	11/11/2	016	An	alyst: I	PJB					
Reporting Units:	mg/kg		Ν	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERY	STUDY		
1	BTEX by EPA 8021B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]		[G]			, , , , , , , , , , , , , , , , , , , ,	
Benzene		<0.00150	0.0998	0.0858	86	0.100	0.0864	86	1	70-130	35	
Toluene		<0.00200	0.0998	0.0898	90	0.100	0.0883	88	2	70-130	35	
Ethylbenzene		<0.00200	0.0998	0.0914	92	0.100	0.0878	88	4	71-129	35	
m,p-Xylenes		< 0.00200	0.200	0.189	95	0.200	0.184	92	3	70-135	35	
o-Xylene		< 0.00299	0.0998	0.0920	92	0.100	0.0909	91	1	71-133	35	
Lab Batch ID:	3004056	QC- Sample ID:	540433	-001 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	11/16/2016	Date Prepared:	11/16/2	016	An	alyst: S	SLU					
Reporting Units:	mg/kg		Ν	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride		3840	2500	6490	106	2500	6310	99	3	90-110	20	
Lab Batch ID:	3004060	QC- Sample ID:	540172	-001 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	11/16/2016	Date Prepared:	11/16/2	016	An	alyst: S	SLU					
Reporting Units:	mg/kg		N	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	incount [r]	[G]				
Chloride		302	250	555	101	250	570	107	3	90-110	20	

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.


Form 3 - MS / MSD Recoveries

Project Name: EOG - Red Hills North Unit #102



Work Order # :	540172						Project II): 212C-1	MD-0063	9		
Lab Batch ID:	3004060	QC- Sample ID:	540172	-011 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/16/2016	Date Prepared:	11/16/2	016	An	alyst: S	SLU					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorga	nic Anions by EPA 300/300.1	Parent Sample Result	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride		1420	250	1670	100	250	1680	104	1	90-110	20	
Lab Batch ID:	3003941	QC- Sample ID:	540172	-007 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/15/2016	Date Prepared:	11/15/2	016	An	alyst: A	ARM					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	TPH by SW 8015B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		50K [D]	[E]	Result [F]	76K [G]	/0	70K	70KPD	
C6-C10 Gasolir	e Range Hydrocarbons	<15.0	999	945	95	998	937	94	1	70-135	35	
C10-C28 Diese	Range Organics	<15.0	999	957	96	998	946	95	1	70-135	35	

 $\begin{array}{ll} Matrix \ Spike \ Percent \ Recovery \quad [D] = 100*(C-A)/B \\ Relative \ Percent \ Difference \quad RPD = 200*|(C-F)/(C+F)| \end{array}$

Matrix Spike Duplicate Percent Recovery $[G] = 100^{*}(F-A)/E$

Juest of Chain of Chain of Chain of Chain of TETRA TECH TETRA TECH International Spring St. Midland, Texas 79705 (432) 682-4559 · Fax (432) 682 SITE MANAGER: Ist Manager: Ist Manager: Ist Manager: REMARKS: Ist Manager: Ist Man	Chain of Custody Record RATECH N. Big Spring St. nd, Texas 79705 md, Texas 79705 22-4599 Fax (432) 682-3946 Sample IDENTIFICATION Sample IDENTIFICATION 97-10 1 2-3 2-4 3 2-5 <th>Under the full of the factor of the f</th>	Under the full of the factor of the f
- Return - R	Image: Image: 19705 Presenvariant Presenvariant 19705 1	-Reum Orginal copy to Teta Tech - Project Manager retains Plik cor.
	- Project Manager	Project Manager retains Pickor Traine SampLED BY: (p) TCLP Metals Ag As Ba Cd Cr Pb Hg Se TCLP Metals Ag As Ba Cd Vr Pd Hg Se TCLP Metals Ag As Ba Cd Vr Pd Hg Se TCLP Metals Ag As Ba Cd Vr Pd Hg Se

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SAMPLE CONDITION WHEN RECEIVED: **RELINQUISHED BY:** (Signature) RELINQUISHED BY: (Signature) RELINQUISHED BY: (Signature) PROJECT NO .: LAB I.D. NUMBER Analysis Request of Chain of Custody Record 1.4 11.9 ÷ 1.9 7 11.9 11.9 Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Ac 2016 --DATE 0 2 9 STATE: TIME Ś Ś S \sim S 5 Ś Ś $\mathbf{\nabla}$ MATRIX PROJECT NAME Red COMP PHONE: X \sim \sim ~ \succ ∽ ≻ × × GRAB Date: Time: Date: BH-10 BH-JO BH-10 Time: Date: Time: BH-10 BH-10 13 4-10 <u>8 H-10</u> <u>BH-10</u> BH-10 F; ZIP: REMARKS: Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 1910 N. Big Spring St. SITE MANAGER: ETRA TECH F North Unit # 12 SAMPLE IDENTIFICATION 29-30 Taverez 1 1 24-25 6-<u>،</u> -0-1 19-20 14-15 0 DATE: RECEIVED BY: (Signature) RECEIVED BY: (Signature) RECEIVED BY: (Signature) ١ ò S ł 3 BVED BY Gignature 2 TIME: NUMBER OF CONTAINERS -FILTERED (Y/N) HCL Time: Date: Time: Date: Time: Date: PRESERVATIVE ниоз METHOD ≻ ≻ ≻ ≻ ≻ ≻ × × ICE × ~ \succ \succ イ $\boldsymbol{\kappa}$ × NONE × Ł X BTEX 8021B TRH 8015 MOD. TX1005 SAMPLED BY: (Print & Initia) (Ext. to C35) TETRA TECH CONTACT PERSON: PAH 8270 7 RCRA Metals Ag As Ba Cd Cr Pb Hg Se TCLP Metals Ag As Ba Cd Vr Pd Hg Se Tavene 2 TCLP Volatiles **TCLP Semi Volatiles** (Circle or Specify Method No.) RCI ANALYSIS REQUEST 54n1-GC.MS Vol. 8240/8260/624 Temp: IR ID:R-8 GC.MS Semi. Vol. 8270/625 PAGE: PCB's 8080/608 Pest. 808/608 ム 4 Chloride 2 Gamma Spec. OTHER: AIRBILL #: Alpha Beta (Air) Time: Date: RUSH Charges Authorized: Results by: PLM (Asbestos) Yes Ĥ Major Anions/Cations, pH, TDS ş

Page 20 of 23

Corrected Temp: O · S

Final 1.000

ATTAIVSIS FEQUEST OF CINAIN OF CUSTORY FECORY TETRA TECH 1910 N. Big Spring St. Midland, Texas 79705 (42) 882-459 + Ex. (42) 882-394 CUENT NUME: Tay of a strain from the strain of a strain of a strain from the strain of a strain from the strain of a strai
TIME:

Page 21 of 23

SAMPLE CONDITION WHEN RECEIVED:	CITY: STATE: STATE:	ADDRESS:	RECINGUISHED BT: (Signature)		RELINQUISHED BY: (Signature)		11.9	11.9	n.9	11.9	11.9	11.9	LAB I.D. NUMBER DATE TIME	CLIENT NAME: EO(S			Analvsis F	
REMARKS:	PHONE: ZIP: DATE:	RECEIV	Time:	16:000	Time:		5 X 0H-12 14-1	5 X BH-12 9-1	-9 21-Hd X 5	5 X 23H-12 4-5	5 k BH-12 2-	5 K BH-12 0-	N N	SITE MANAGER:	TETRATECH 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946		Request of Chain of	
	TIME:	RECEIVED BY: (Signature)	(Severation: (Signature)	ANKATANK-			15 1	10	1 t	-	3	1	SAMPLE IDENTIFICATION		TECH Spring St. as 79705 Fax (432) 682-3946		of Custody Record	
			Time:	Time: 1409	Date: ; ;		 x	XX	XX	XX	XX	××	FILTERED (Y/N) HCL HNO3 ICE NONE BTEX 8021B	PRESERVATIVE			Record	
Topos	Ike Tavelez		្ម	FEDEX BUS	SAMPLE SHIPPED BY: (Circle)								TCLP Metals Ag TCLP Volatiles TCLP Semi Vola RCI GC.MS Vol. 8240 GC.MS Semi. Vo PCB's 8080/608 Pest. 808/608	y As Ba C y As Ba C tiles 0/8260/624 I. 8270/625	d Cr Pb Hg Se d Vr Pd Hg Se	ANALYSIS REQUEST (Circle or Specify Method No.)	PAGE:	
5	Authoria Yes	RUSH Charges	Results by:		Date,				, <u> </u>				Chloride Gamma Spec. Alpha Beta (Air) PLM (Asbestos) Major Anions/Ca	ations of	TDS	vEST vthod No.)	A OF:	

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Client: Tetra Tech- Midland

XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 11/10/2016 04:09:00 PM Temperature Measuring device used : R8 Work Order #: 540172 Comments Sample Receipt Checklist 2.5 #1 *Temperature of cooler(s)? #2 *Shipping container in good condition? N/A #3 *Samples received on ice? Yes #4 *Custody Seal present on shipping container/ cooler? N/A #5 *Custody Seals intact on shipping container/ cooler? N/A N/A #6 Custody Seals intact on sample bottles? #7 *Custody Seals Signed and dated? N/A #8 *Chain of Custody present? Yes #9 Sample instructions complete on Chain of Custody? Yes #10 Any missing/extra samples? No #11 Chain of Custody signed when relinguished/ received? Yes #12 Chain of Custody agrees with sample label(s)? Yes #13 Container label(s) legible and intact? Yes Yes #14 Sample matrix/ properties agree with Chain of Custody? #15 Samples in proper container/ bottle? Yes #16 Samples properly preserved? Yes #17 Sample container(s) intact? Yes #18 Sufficient sample amount for indicated test(s)? Yes #19 All samples received within hold time? Yes #20 Subcontract of sample(s)? N/A #21 VOC samples have zero headspace (less than 1/4 inch bubble)? N/A #22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for N/A samples for the analysis of HEM or HEM-SGT which are verified by the analysts. #23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH? N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica Wamer Jessica Kramer Checklist reviewed by: May Moah Kelsey Brooks

Date: 11/11/2016

Date: 11/11/2016

Analytical Report 545114

for Tetra Tech- Midland

Project Manager: Ike Tavarez

EOG-Red Hills North Unit #102

212C-MD-00639

06-FEB-17

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054) Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295) Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400) Xenco-San Antonio: Texas (T104704534) Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757) Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



06-FEB-17



Project Manager: **Ike Tavarez Tetra Tech- Midland** 4000 N. Big Spring Suite 401 Midland, TX 79705

Reference: XENCO Report No(s): 545114 EOG-Red Hills North Unit #102 Project Address: Lea County NM

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 545114. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 545114 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Huns hoah

Kelsey Brooks Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



Sample Id

BH #1 (0-1) BH #1 (2-3)

Sample Cross Reference 545114



Tetra Tech- Midland, Midland, TX

EOG-Red Hills North Unit #102

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	01-27-17 00:00	0 - 1 ft	545114-001
S	01-27-17 00:00	2 - 3 ft	545114-002
S	01-27-17 00:00	4 - 5 ft	545114-003
S	01-27-17 00:00	6 - 7 ft	545114-004
S	01-27-17 00:00	9 - 10 ft	545114-005
S	01-27-17 00:00	0 - 1 ft	545114-007
S	01-27-17 00:00	2 - 3 ft	545114-008
S	01-27-17 00:00	4 - 5 ft	545114-009
S	01-27-17 00:00	6 - 7 ft	545114-010
S	01-27-17 00:00	0 - 1 ft	545114-013
S	01-27-17 00:00	2 - 3 ft	545114-014
S	01-27-17 00:00	4 - 5 ft	545114-015
S	01-27-17 00:00	6 - 7 ft	545114-016
S	01-27-17 00:00	9 - 10 ft	545114-017
S	01-27-17 00:00	14 - 15 ft	545114-018
S	01-27-17 00:00	19 - 20 ft	545114-019
S	01-27-17 00:00	24 - 25 ft	545114-020
S	01-27-17 00:00	0 - 1 ft	545114-021
S	01-27-17 00:00	2 - 3 ft	545114-022
S	01-27-17 00:00	4 - 5 ft	545114-023
S	01-27-17 00:00	6 - 7 ft	545114-024
S	01-27-17 00:00	9 - 10 ft	545114-025
S	01-27-17 00:00	14 - 15 ft	545114-026
S	01-27-17 00:00	19 - 20 ft	545114-027
S	01-27-17 00:00	0 - 1 ft	545114-028
S	01-27-17 00:00	2 - 3 ft	545114-029
S	01-27-17 00:00	4 - 5 ft	545114-030
S	01-27-17 00:00	6 - 7 ft	545114-031
S	01-27-17 00:00	9 - 10 ft	545114-032
S	01-27-17 00:00	14 - 15 ft	545114-033
S	01-27-17 00:00	19 - 20 ft	545114-034
S	01-27-17 00:00	24 - 25 ft	545114-035
S	01-27-17 00:00	14 - 15 ft	Not Analyzed
S	01-27-17 00:00	9 - 10 ft	Not Analyzed
S	01-27-17 00:00	14 - 15 ft	Not Analyzed

211 11 (2 0)
BH #1 (4-5)
BH #1 (6-7)
BH #1 (9-10)
BH #2 (0-1)
BH #2 (2-3)
BH #2 (4-5)
BH #2 (6-7)
BH #3 (0-1)
BH #3 (2-3)
BH #3 (4-5)
BH #3 (6-7)
BH #3 (9-10)
BH #3 (14-15)
BH #3 (19-20)
BH #3 (24-25)
BH #4 (0-1)
BH #4 (2-3)
BH #4 (4-5)
BH #4 (6-7)
BH #4 (9-10)
BH #4 (14-15)
BH #4 (19-20)
BH #5 (0-1)
BH #5 (2-3)
BH #5 (4-5)
BH #5 (6-7)
BH #5 (9-10)
BH #5 (14-15)
BH #5 (19-20)
BH #5 (24-25)
BH #1 (14-15)

BH #2 (9-10) BH #2 (14-15)



CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: EOG-Red Hills North Unit #102

Project ID: 212C-MD-00639 Work Order Number(s): 545114
 Report Date:
 06-FEB-17

 Date Received:
 01/27/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments: Batch: LBA-3008851 BTEX by EPA 8021B Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3009410 Inorganic Anions by EPA 300/300.1

Lab Sample ID 545114-014 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 545114-001, -002, -003, -004, -005, -007, -008, -009, -010, -013, -014, -015, -016, -017, -018, -019, -020, -021, -022, -023. The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3009420 Inorganic Anions by EPA 300/300.1

Lab Sample ID 545114-034 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 545114-024, -025, -026, -027, -028, -029, -030, -031, -032, -033, -034, -035.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.



Lea County NM

Contact:

Project Location:

Certificate of Analysis Summary 545114

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Fri Jan-27-17 11:14 amReport Date:06-FEB-17Project Manager:Kelsey Brooks

Lab Id:	545114-0	001	545114-0	02	545114-0	03	545114-0	04	545114-0	005	545114-0	007
Field Id:	BH #1 (0)-1)	BH #1 (2-	-3)	BH #1 (4-	-5)	BH #1 (6	-7)	BH #1 (9-	-10)	BH #2 (0-	-1)
Depth:	0-1 ft		2-3 ft		4-5 ft		6-7 ft		9-10 ft	:	0-1 ft	
Matrix:	SOIL	,	SOIL		SOIL		SOIL		SOIL		SOIL	
Sampled:	Jan-27-17 (00:00	Jan-27-17 0	0:00	Jan-27-17 0	0:00	Jan-27-17 (00:00	Jan-27-17 (00:00	Jan-27-17 0	00:00
Extracted:	Jan-30-17	09:00										
Analyzed:	Jan-30-17	10:26										
Units/RL:	mg/kg	RL										
	ND	0.00149										
	ND	0.00199										
	ND	0.00199										
	ND	0.00199										
	ND	0.00298										
	ND	0.00199										
	ND	0.00149										
Extracted:	Feb-01-17	08:12	Feb-01-17 0	08:12	Feb-01-17 (08:12	Feb-01-17 (08:12	Feb-01-17 (08:12	Feb-01-17 (08:12
Analyzed:	Feb-03-17	14:25	Feb-03-17 1	4:47	Feb-03-17 1	5:28	Feb-03-17	5:35	Feb-03-17	15:43	Feb-03-17 1	16:05
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
	9550	50.0	7550	49.0	1480	25.0	207	4.99	132	5.00	37.8	4.83
Extracted:	Jan-28-17	13:00										
Analyzed:	Jan-28-17	20:54										
Units/RL:	mg/kg	RL										
'	ND	15.0										
	ND	15.0										
	ND	15.0										
	ND	15.0										
	Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Units/RL: Extracted: Analyzed:	Field Id: BH #1 (0 Depth: 0-1 ft Matrix: SOIL Sampled: Jan-27-17 Extracted: Jan-30-17 Analyzed: Jan-30-17 Matrix: mg/kg Units/RL: mg/kg ND ND Extracted: ND ND ND Extracted: Feb-01-17 Analyzed: Feb-03-17 Units/RL: mg/kg 9550 Extracted: Jan-28-17 Analyzed: Jan-28-17 Analyzed: MD D ND ND ND D ND Extracted: Jan-28-17 Analyzed: Jan-28-17 Maity RL: mg/kg ND ND ND ND ND ND ND ND Maity RL: Mg/kg ND ND ND ND ND ND ND ND ND <th< td=""><td>Field Id: BH #1 (0-1) Depth: 0-1 ft Matrix: SOIL Sampled: Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Analyzed: Jan-30-17 10:26 Units/RL: mg/kg RL ND 0.00149 ND 0.00199 ND 0.00190 ND 0.00190 Scaracted: Feb-01-17 08:12 Analyzed: Feb-03-17 14:25 Units/RL: mg/kg RL Jan-28-17 13:00<!--</td--><td>Field Id: BH #1 (0-1) BH #1 (2.1) Depth: 0-1 ft 2-3 ft Matrix: SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00 Extracted: Jan-30-17 09:00 Jan-27-17 00 Analyzed: Jan-30-17 10:26 Jan-27-17 00 Units/RL: mg/kg RL RL ND 0.00149 ND 0.00199 ND 0.00199 ND 0.00199 Extracted: Feb-01-17 08:12 Feb-01-17 00 Analyzed: Feb-03-17 14:25 Feb-03-17 14 Units/RL: mg/kg RL Mg/kg RL mg/kg Analyzed: Jan-28-17 13:00 Analyzed: Analyzed: Jan-28-17 20:54 ND</td><td>Field Id: BH #1 (0-1) BH #1 (2-3) Depth: 0-1 ft 2-3 ft Matrix: SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Jan-27-17 00:00 Analyzed: Jan-30-17 10:26 Jan-27-17 00:00 Units/RL: mg/kg RL RL ND 0.00149 </td><td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4 Depth: 0-1 ft 2-3 ft 4-5 ft Matrix: SOIL SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Analyzed: Jan-30-17 10:26 Image: Control of the state of t</td><td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) Depth: 0-1 ft 2-3 ft 4-5 ft Matrix: SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Jan-27-17 00:00 Jan-27-17 00:00 Analyzed: Jan-30-17 10:26 </td><td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6 Depth: 0-1 ft 2-3 ft 4-5 ft 6-7 ft Matrix: SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-28-17 10:01 Jan</td><td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) Depth: 0-1 ft 2-3 ft 4-5 ft 6-7 ft Matrix: SOIL SOIL SOIL SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Matrix/RL: mg/kg RL <</td><td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) BH #1 (9-7) BH #1 (9-7)</td><td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) BH #1 (9-1) Depth: 0-1 ft 2.3 ft 4.5 ft 6.7 ft 9-10 ft 9-10 ft Matrix: SOIL Jan-27-17 00:00 Jan-27-17 00:00<</td><td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) BH #1 (9-1) BH #1 (0-1) BH #1 (0-1)</td></td></th<>	Field Id: BH #1 (0-1) Depth: 0-1 ft Matrix: SOIL Sampled: Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Analyzed: Jan-30-17 10:26 Units/RL: mg/kg RL ND 0.00149 ND 0.00199 ND 0.00190 ND 0.00190 Scaracted: Feb-01-17 08:12 Analyzed: Feb-03-17 14:25 Units/RL: mg/kg RL Jan-28-17 13:00 </td <td>Field Id: BH #1 (0-1) BH #1 (2.1) Depth: 0-1 ft 2-3 ft Matrix: SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00 Extracted: Jan-30-17 09:00 Jan-27-17 00 Analyzed: Jan-30-17 10:26 Jan-27-17 00 Units/RL: mg/kg RL RL ND 0.00149 ND 0.00199 ND 0.00199 ND 0.00199 Extracted: Feb-01-17 08:12 Feb-01-17 00 Analyzed: Feb-03-17 14:25 Feb-03-17 14 Units/RL: mg/kg RL Mg/kg RL mg/kg Analyzed: Jan-28-17 13:00 Analyzed: Analyzed: Jan-28-17 20:54 ND</td> <td>Field Id: BH #1 (0-1) BH #1 (2-3) Depth: 0-1 ft 2-3 ft Matrix: SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Jan-27-17 00:00 Analyzed: Jan-30-17 10:26 Jan-27-17 00:00 Units/RL: mg/kg RL RL ND 0.00149 </td> <td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4 Depth: 0-1 ft 2-3 ft 4-5 ft Matrix: SOIL SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Analyzed: Jan-30-17 10:26 Image: Control of the state of t</td> <td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) Depth: 0-1 ft 2-3 ft 4-5 ft Matrix: SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Jan-27-17 00:00 Jan-27-17 00:00 Analyzed: Jan-30-17 10:26 </td> <td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6 Depth: 0-1 ft 2-3 ft 4-5 ft 6-7 ft Matrix: SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-28-17 10:01 Jan</td> <td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) Depth: 0-1 ft 2-3 ft 4-5 ft 6-7 ft Matrix: SOIL SOIL SOIL SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Matrix/RL: mg/kg RL <</td> <td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) BH #1 (9-7) BH #1 (9-7)</td> <td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) BH #1 (9-1) Depth: 0-1 ft 2.3 ft 4.5 ft 6.7 ft 9-10 ft 9-10 ft Matrix: SOIL Jan-27-17 00:00 Jan-27-17 00:00<</td> <td>Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) BH #1 (9-1) BH #1 (0-1) BH #1 (0-1)</td>	Field Id: BH #1 (0-1) BH #1 (2.1) Depth: 0-1 ft 2-3 ft Matrix: SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00 Extracted: Jan-30-17 09:00 Jan-27-17 00 Analyzed: Jan-30-17 10:26 Jan-27-17 00 Units/RL: mg/kg RL RL ND 0.00149 ND 0.00199 ND 0.00199 ND 0.00199 Extracted: Feb-01-17 08:12 Feb-01-17 00 Analyzed: Feb-03-17 14:25 Feb-03-17 14 Units/RL: mg/kg RL Mg/kg RL mg/kg Analyzed: Jan-28-17 13:00 Analyzed: Analyzed: Jan-28-17 20:54 ND	Field Id: BH #1 (0-1) BH #1 (2-3) Depth: 0-1 ft 2-3 ft Matrix: SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Jan-27-17 00:00 Analyzed: Jan-30-17 10:26 Jan-27-17 00:00 Units/RL: mg/kg RL RL ND 0.00149	Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4 Depth: 0-1 ft 2-3 ft 4-5 ft Matrix: SOIL SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Analyzed: Jan-30-17 10:26 Image: Control of the state of t	Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) Depth: 0-1 ft 2-3 ft 4-5 ft Matrix: SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Jan-27-17 00:00 Jan-27-17 00:00 Analyzed: Jan-30-17 10:26	Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6 Depth: 0-1 ft 2-3 ft 4-5 ft 6-7 ft Matrix: SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-28-17 10:01 Jan	Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) Depth: 0-1 ft 2-3 ft 4-5 ft 6-7 ft Matrix: SOIL SOIL SOIL SOIL SOIL SOIL Sampled: Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Extracted: Jan-30-17 09:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Jan-27-17 00:00 Matrix/RL: mg/kg RL <	Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) BH #1 (9-7) BH #1 (9-7)	Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) BH #1 (9-1) Depth: 0-1 ft 2.3 ft 4.5 ft 6.7 ft 9-10 ft 9-10 ft Matrix: SOIL Jan-27-17 00:00 Jan-27-17 00:00<	Field Id: BH #1 (0-1) BH #1 (2-3) BH #1 (4-5) BH #1 (6-7) BH #1 (9-1) BH #1 (0-1) BH #1 (0-1)

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Huns Boah

Kelsey Brooks Project Manager



Lea County NM

Contact:

Project Location:

Certificate of Analysis Summary 545114

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Fri Jan-27-17 11:14 amReport Date:06-FEB-17Project Manager:Kelsey Brooks

	1 1												
	Lab Id:	545114-0	008	545114-0	09	545114-0	010	545114-0	013	545114-0	014	545114-0	15
Analysis Requested	Field Id:	BH #2 (2	-3)	BH #2 (4-	-5)	BH #2 (6	-7)	BH #3 (0	-1)	BH #3 (2	-3)	BH #3 (4-	-5)
Anulysis Requested	Depth:	2-3 ft		4-5 ft		6-7 ft		0-1 ft		2-3 ft		4-5 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jan-27-17 (00:00	Jan-27-17 0	00:00	Jan-27-17 (00:00	Jan-27-17 (00:00	Jan-27-17 (00:00	Jan-27-17 0	00:00
BTEX by EPA 8021B	Extracted:							Jan-30-17 (09:00				
	Analyzed:							Jan-30-17 1	10:42				
	Units/RL:							mg/kg	RL				
Benzene								ND	0.00151				
Toluene								ND	0.00201				
Ethylbenzene								ND	0.00201				
m,p-Xylenes								ND	0.00201				
o-Xylene								ND	0.00301				
Total Xylenes								ND	0.00201				
Total BTEX								ND	0.00151				
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-01-17	08:12	Feb-01-17 0	08:12	Feb-01-17 (08:12	Feb-01-17 (08:12	Feb-01-17 (08:12	Feb-01-17 (08:12
	Analyzed:	Feb-03-17	16:12	Feb-03-17 1	6:19	Feb-03-17 1	16:27	Feb-03-17	16:34	Feb-03-17	16:41	Feb-03-17 1	17:03
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1430	25.0	164	4.98	18.3	5.00	873	25.0	844	25.0	232	4.90
TPH By SW8015 Mod	Extracted:							Jan-28-17 1	13:00				
	Analyzed:							Jan-28-17 2	21:16				
	Units/RL:							mg/kg	RL				
C6-C10 Gasoline Range Hydrocarbons								ND	15.0				
C10-C28 Diesel Range Organics								ND	15.0				
C28-C35 Oil Range Hydrocarbons								ND	15.0				
Total TPH								ND	15.0				

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Huns Boah

Kelsey Brooks Project Manager



Lea County NM

Contact:

Project Location:

Certificate of Analysis Summary 545114

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Fri Jan-27-17 11:14 amReport Date:06-FEB-17Project Manager:Kelsey Brooks

	Lab Id:	545114-0	16	545114-0	17	545114-0	18	545114-0	19	545114-020		545114-021	
Analysis Requested	Field Id:	BH #3 (6	-7)	BH #3 (9-	10)	BH #3 (14-	-15)	BH #3 (19-	-20)	BH #3 (24-	-25)	BH #4 (0-	-1)
Analysis Kequestea	Depth:	6-7 ft		9-10 ft		14-15 ft	:	19-20 f	t	24-25 f	t	0-1 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jan-27-17 0	00:00	Jan-27-17 0	0:00	Jan-27-17 0	0:00						
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-01-17 (08:12	Feb-01-17 (8:12	Feb-01-17 0	8:12	Feb-01-17 0	8:12	Feb-01-17 (08:12	Feb-01-17 0	8:12
	Analyzed:	Feb-03-17	17:11	Feb-03-17 1	7:33	Feb-03-17 1	7:40	Feb-03-17 1	7:48	Feb-03-17 1	7:55	Feb-03-17 1	8:02
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		381	25.0	29.9	24.9	ND	25.0	32.7	4.99	61.9	4.90	5360	48.9

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Kelsey Brooks Project Manager



Lea County NM

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Certificate of Analysis Summary 545114

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Fri Jan-27-17 11:14 amReport Date:06-FEB-17Project Manager:Kelsey Brooks

	Lab Id:	545114-0	22	545114-0	23	545114-0	24	545114-0	25	545114-026		545114-027	
Analysis Requested	Field Id:	BH #4 (2-	-3)	BH #4 (4	-5)	BH #4 (6-	7)	BH #4 (9-	10)	BH #4 (14-	-15)	BH #4 (19-	-20)
Analysis Kequestea	Depth:	2-3 ft		4-5 ft		6-7 ft		9-10 ft		14-15 f	t	19-20 ft	t
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jan-27-17 0	0:00	Jan-27-17 0	0:00	Jan-27-17 0	0:00	Jan-27-17 0	0:00	Jan-27-17 0	00:00	Jan-27-17 0	0:00
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-01-17 (08:12	Feb-01-17 (08:12	Feb-01-17 0	8:23	Feb-01-17 0	8:23	Feb-01-17 0)8:23	Feb-01-17 0	8:23
	Analyzed:	Feb-03-17 1	8:10	Feb-03-17 1	8:17	Feb-03-17 1	9:01	Feb-03-17 1	9:23	Feb-03-17 1	9:30	Feb-03-17 1	9:38
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		5860	49.0	165	5.00	ND	24.8	36.1	4.99	29.6	4.93	27.9	5.00

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Certificate of Analysis Summary 545114

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Fri Jan-27-17 11:14 amReport Date:06-FEB-17Project Manager:Kelsey Brooks

		545114 (20	545114.0	20	545114.0	20	545114.0	21	545114.0	22	545114.0	22
	Lab Id:	545114-0		545114-0		545114-0		545114-0	-	545114-0		545114-0	
Analysis Requested	Field Id:	BH #5 (0)-1)	BH #5 (2	-3)	BH #5 (4-	-5)	BH #5 (6	-7)	BH #5 (9-	-10)	BH #5 (14	-15)
Inutysis Requested	Depth:	0-1 ft		2-3 ft		4-5 ft		6-7 ft		9-10 ft	:	14-15 f	ît
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jan-27-17 (00:00	Jan-27-17 (00:00	Jan-27-17 0	00:00	Jan-27-17 (00:00	Jan-27-17 (00:00	Jan-27-17 (00:00
BTEX by EPA 8021B	Extracted:	Jan-30-17 (09:00										
	Analyzed:	Jan-30-17	11:31										
	Units/RL:	mg/kg	RL										
Benzene		ND	0.00150										
Toluene		ND	0.00200										
Ethylbenzene		ND	0.00200										
m,p-Xylenes		ND	0.00200										
o-Xylene		ND	0.00299										
Total Xylenes		ND	0.00200										
Total BTEX		ND	0.00150										
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-01-17	08:23	Feb-01-17 (08:23	Feb-01-17 (08:23	Feb-01-17 (08:23	Feb-01-17 (08:23	Feb-01-17 (08:23
	Analyzed:	Feb-03-17	19:45	Feb-03-17 2	20:07	Feb-03-17 2	20:14	Feb-03-17	20:22	Feb-03-17 2	20:29	Feb-03-17 2	20:36
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		4220	24.3	3100	24.7	534	4.95	323	4.98	324	25.0	369	5.00
TPH By SW8015 Mod	Extracted:	Jan-28-17	13:00										
	Analyzed:	Jan-28-17	21:39										
	Units/RL:	mg/kg	RL										
C6-C10 Gasoline Range Hydrocarbons		ND	15.0										
C10-C28 Diesel Range Organics		ND	15.0										
C28-C35 Oil Range Hydrocarbons		ND	15.0										
Total TPH		ND	15.0										

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Huns Boah

Kelsey Brooks Project Manager



Lea County NM

Contact:

Project Location:

Certificate of Analysis Summary 545114

Tetra Tech- Midland, Midland, TX Project Name: EOG-Red Hills North Unit #102



Date Received in Lab:Fri Jan-27-17 11:14 amReport Date:06-FEB-17Project Manager:Kelsey Brooks

	Lab Id:	545114-03	4	545114-0	35			
Analysis Requested	Field Id:	BH #5 (19-2	20)	BH #5 (24	-25)			
Analysis Kequestea	Depth:	19-20 ft		24-25 f	ť			
	Matrix:	SOIL		SOIL				
	Sampled:	Jan-27-17 00	00:00	Jan-27-17 (00:00			
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-01-17 08	3:23	Feb-01-17 (08:23	1		
	Analyzed:	Feb-03-17 20):44	Feb-03-17 2	21:06			
	Units/RL:	mg/kg	RL	mg/kg	RL			
Chloride		45.8	4.86	346	5.00			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Huns Boah

Kelsey Brooks Project Manager



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- **F** RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantitation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- **K** Sample analyzed outside of recommended hold time.
- JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- ** Surrogate recovered outside laboratory control limit.
- **BRL** Below Reporting Limit.
- RL Reporting Limit

MDL Method Detection Limit	SDL Sample Detection Limit	LOD Limit of Detection
PQL Practical Quantitation Limit	MQL Method Quantitation Limit	LOQ Limit of Quantitation

- **DL** Method Detection Limit
- NC Non-Calculable
- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr Suite 102, Tempe AZ 85282	(602) 437-0330	



Lab Batch #:	3008771	Sample: 545114-001 / SMP	Batcl	h: 1 Matrix	: Soll		
Units:	mg/kg	Date Analyzed: 01/28/17 20:54	SU	RROGATE R	ECOVERYS	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1-Chlorooctane			106	99.7	106	70-135	
o-Terphenyl			57.8	49.9	116	70-135	
Lab Batch #:	3008771	Sample: 545114-013 / SMP	Batcl	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 01/28/17 21:16	SU	RROGATE R	ECOVERY	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	;	Analytes	90.4	99.8	91	70-135	
o-Terphenyl			48.8	49.9	98	70-135	
Lab Batch #:	3008771	Sample: 545114-028 / SMP	Batcl			10 155	
Units:	mg/kg	Date Analyzed: 01/28/17 21:39		RROGATE R	-	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes		[0]	[D]	701	
1-Chlorooctane	•		88.2	99.8	88	70-135	
o-Terphenyl			47.6	49.9	95	70-135	
Lab Batch #:	3008851	Sample: 545114-001 / SMP	Batcl	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 01/30/17 10:26	SU	RROGATE R	ECOVERY	STUDY	
	втех	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
1 4 Differenche		Analytes	0.0265	0.0200	[D]	00.120	
1,4-Difluorobe			0.0265	0.0300	88	80-120	
4-Bromonuoro		Sample: 545114-013 / SMP	0.0305 Batcl	0.0300 h: 1 Matrix	102	80-120	
Units:	mg/kg	Date Analyzed: 01/30/17 10:42		RROGATE R		STUDY	
	втех	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1,4-Difluorobe	nzene		0.0343	0.0300	114	80-120	
4-Bromofluoro			0.0331	0.0300	110	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



	ders : 54511 #: 3008851	4, Sample: 545114-028 / SMP	Bate		: 212C-MD-(: Soil	10039	
Units:	mg/kg	Date Analyzed: 01/30/17 11:31		RROGATE R	-	STUDY	
		K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro			0.0313	0.0300	104	80-120	
4-Bromoflu			0.0301	0.0300	100	80-120	
	#: 3008771	Sample: 719243-1-BLK / Bl	LK Batc	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 01/28/17 17:04	SU	RROGATE R	ECOVERY	STUDY	
	TPHI	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane		103	100	103	70-135	
o-Terphenyl			56.3	50.0	113	70-135	
	#: 3008851	Sample: 719276-1-BLK / Bl					
Units:	mg/kg	Date Analyzed: 01/30/17 10:10		RROGATE R		STUDY	
	BTFY	X by EPA 8021B	Amount	True		Control	
	DIE	Analytes	Found [A]	Amount [B]	Recovery %R [D]	Limits %R	Flags
1,4-Difluoro	obenzene		0.0244	0.0300	81	80-120	
4-Bromoflu	orobenzene		0.0242	0.0300	81	80-120	
Lab Batch	#: 3008771	Sample: 719243-1-BKS / BJ					
Units:	mg/kg	Date Analyzed: 01/28/17 17:26	SU	RROGATE R	ECOVERY	STUDY	
	TPHI	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane	Anarytes	127	100	127	70-135	
o-Terphenyl			64.9	50.0	127	70-135	
	#: 3008851	Sample: 719276-1-BKS / BI				/0-133	
	mg/kg	Date Analyzed: 01/30/17 08:49		RROGATE R		STUDY	
Units:			Amount	True		Control	Flags
Units:	втех	Applytes	Found [A]	Amount [B]	Recovery %R [D]	Limits %R	8
Units:		X by EPA 8021B Analytes	Found		•		8

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Work Orders Lab Batch #: 30		4, Sample: 719243-1-BSD / BS	SD Batcl		: 212C-MD-0 : Solid	0039	
	g/kg	Date Analyzed: 01/28/17 17:49		RROGATE R		STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.011		Analytes	120	100		50.105	
1-Chlorooctane			129	100	129	70-135	
o-Terphenyl Lab Batch #: 30	00051	Sample: 719276-1-BSD / BS	64.2 SD Batcl	50.0 h: 1 Matrix	128	70-135	
		-					
Units: m	g/kg	Date Analyzed: 01/30/17 09:04	SU	RROGATE R	ECOVERY S	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenze			0.0327	0.0300	109	80-120	
4-Bromofluorober			0.0291	0.0300	97	80-120	
Lab Batch #: 30		Sample: 544963-001 S / MS					
Units: m	g/kg	Date Analyzed: 01/28/17 18:36		RROGATE R	ECOVERYS	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes	[**]	[10]	[D]		
1-Chlorooctane			99.3	99.9	99	70-135	
o-Terphenyl			47.8	50.0	96	70-135	
Lab Batch #: 30	008851	Sample: 545114-001 S / MS	Batc	h: 1 Matrix	: Soil		
Units: m	g/kg	Date Analyzed: 01/30/17 09:21	SU	RROGATE R	ECOVERY S	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenze	ene		0.0340	0.0300	113	80-120	
4-Bromofluorober	nzene		0.0340	0.0300	113	80-120	
Lab Batch #: 30	008771	Sample: 544963-001 SD / M	ASD Bate	h: 1 Matrix	: Soil	1	
Units: m	g/kg	Date Analyzed: 01/28/17 18:58	SU	RROGATE R	ECOVERY S	STUDY	
		3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1-Chlorooctane			99.0	99.8	99	70-135	
o-Terphenyl			48.7	49.9	98	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Work Orders : 545114 Lab Batch #: 3008851 Units: mg/kg	4, Sample: 545114-001 SD / M Date Analyzed: 01/30/17 09:37		-			
	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene		0.0313	0.0300	104	80-120	
4-Bromofluorobenzene		0.0354	0.0300	118	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



BS / BSD Recoveries



Project Name: EOG-Red Hills North Unit #102

Work Order	#: 545114							Proj	ject ID:	212C-MD-(0639	
Analyst:	ALJ	D	ate Prepar	ed: 01/30/20	17			Date A	nalyzed:	01/30/2017		
Lab Batch ID:	3008851 Sample: 719276-	1-BKS	Batcl	h #: 1					Matrix:	Solid		
Units:	mg/kg		BLAN	K /BLANK	SPIKE / 1	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
	BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analy	tes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Benzene		< 0.00151	0.101	0.0965	96	0.100	0.0972	97	1	70-130	35	
Toluene		< 0.00201	0.101	0.0884	88	0.100	0.0889	89	1	70-130	35	
Ethylbenze	ene	< 0.00201	0.101	0.0957	95	0.100	0.0971	97	1	71-129	35	
m,p-Xylen	es	< 0.00201	0.201	0.187	93	0.200	0.188	94	1	70-135	35	
o-Xylene		< 0.00302	0.101	0.0896	89	0.100	0.0907	91	1	71-133	35	
Analyst:	MGO	D	ate Prepar	red: 02/01/20	17			Date A	nalyzed: (02/03/2017	•	
Lab Batch ID:	Sample: 719337-	I-BKS	Batcl	h #: 1					Matrix:	Solid		
Units:	mg/kg		BLAN	K/BLANK	SPIKE /]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorga Analy	nnic Anions by EPA 300/300.1 tes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		<4.99	250	253	101	250	253	101	0	90-110	20	

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: EOG-Red Hills North Unit #102

Work Order #: 545114							Pro	ject ID: 2	212C-MD-0	0639	
Analyst: MGO	D	ate Prepar	red: 02/01/201	17			Date A	nalyzed: (02/03/2017		
Lab Batch ID: 3009420 Sample: 719338-1-1	BKS	Batcl	h #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK S	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUE	ЭY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<4.97	249	253	102	249	253	102	0	90-110	20	
				1							
Analyst: ARM	D	ate Prepar	ed: 01/28/201	17		<u> </u>	Date A	nalyzed: ()1/28/2017		ļ]
Analyst: ARM Lab Batch ID: 3008771 Sample: 719243-1-1		_	red: 01/28/201 h #: 1	17	ļ	I	Date A	nalyzed: (Matrix: S		<u> </u>]
		Batel			BLANK S	SPIKE DUP		Matrix: S	Solid	DY	· · · · · · · · · · · · · · · · · · ·
Lab Batch ID: 3008771 Sample: 719243-1-1		Batel	h #: 1		BLANK S Spike Added [E]	SPIKE DUP Blank Spike Duplicate Result [F]		Matrix: S	Solid	OY Control Limits %RPD	Flag
Lab Batch ID: 3008771 Sample: 719243-1-1 Units: mg/kg TPH By SW8015 Mod	BKS Blank Sample Result	Batcl BLAN Spike Added	h #: 1 K /BLANK S Blank Spike Result	SPIKE / I Blank Spike %R	Spike Added	Blank Spike Duplicate	LICATE Blk. Spk Dup. %R	Matrix: S RECOVI	Solid ERY STUE Control Limits	Control Limits	Flag



Form 3 - MS / MSD Recoveries

Project Name: EOG-Red Hills North Unit #102



Lab Batch ID: 3008851 QC Sample ID: 545114-001 S Batch #: 1 Matrix: Soil Date Analyzei: 01/30/2017 Date Prepared: 01/30/2017 Analyst: ALJ Reporting Units: mg/kg MATRIX SPIKE /	Flag
Reporting Units: mg/kg MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY BTEX by EPA 8021B Parent Sample Result IAI Spike Spike Benzene Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spike Spik	Flag
BTEX by EPA 8021B Parent Sample Result Spiked Added [B] Spiked (C) Spiked (D) Spiked (D) </th <th>Flag</th>	Flag
BIEX by EPA 8021B Sample Result Spike Added [B] Spike Adde	Flag
Benzene Out Out <thout< th="" th<=""><th></th></thout<>	
Toluene <	
Ethylbenzene <0.00200	
m.p-Xylenes <0.00200	
A S COUCE OU	
Lab Batch ID:3009410QC- Sample ID:545114-001 SBatch #:1Matrix:SoilDate Analyzed:02/03/2017Date Prepared:02/01/2017Analyst:MGOReporting Units:mg/kgMATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDYInorganic Anions by EPA 300/300.1Parent Sample Result [A]Spiked Added [B]Spiked (C]Spiked Spiked [D]Duplicate Spiked Spiked [B]Spiked Matrix:Spiked Spiked Spiked Spiked Spiked Spiked Spiked [C]Duplicate Spiked Spiked Spiked Spiked Spiked [B]Duplicate Spiked Spiked Spiked Spiked Spiked Spiked Spiked Spiked [B]Duplicate Spiked Sp	
Date Analyzet:02/03/2017Date Preparet:02/01/2017Analyst:MGOReporting Units:mg/kgMATRIX SPIKE / MATRIX SPIKE DUPLICATERECOVERY STUDYInorganic Anions by EPA 300/300.1Parent Sample Result [A]Spiked Sample (B]Spiked Sample (B]Spiked Sample (C)Spik	
Reporting Units:mg/kgMATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDYInorganic Anions by EPA 300/300.1Parent Sample Result [A]Spiked Spike (B]Spiked Result [C]Spiked Spiked (B]Spiked Spiked (B]Spiked Spiked (B]Spiked Spiked Spiked (B]Spiked Spiked (B]Spiked Spiked Spiked (B]Spiked Spiked Spiked (B]Spiked Spiked Spiked Spiked (B]Spiked Spiked Spiked Spiked (B]Spiked Spiked Spiked Spiked Spiked (B]Spiked Spiked Spiked Spiked Spiked Spiked Spiked Spiked (B]Spiked 	
Inorganic Anions by EPA 300/300.1Parent Sample Result [A]Spike Spike Added [B]Spiked Result [C]Spiked Spike (B]Spiked Spike (B]Spiked Spike (B]Spiked Spike (B]Spiked Spike (B]Spiked Spike (B]Spiked Spike (B]Spiked Spike (B]Spiked Spike (B]Spiked Spike (B]Spiked Spike (B]Spiked Spike Spike (B]Spiked Spike Spike (B]Spiked Spike Spike (B]Spiked Spike Spike (B]Spiked Spike Spike Spike (B]Spiked Spike <br< th=""><td></td></br<>	
Inorganic Anions by EPA 300/300.1Sample Result [A]Spike Added [B]Spike Result [C]Spike Sample [B]Spike Sample [C]Spike Sample [B]Spike Sample [C]Spike Sample [B]Spike Spike Sample [D]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike Spike Added [E]Spike <b< th=""><th></th></b<>	
Analytes [A] [B] [IS] [IS] [IIII] [IIIII] [IIIII] [IIIII] [IIIIII] [IIIIII] [IIIIII] [IIIIIII] [IIIIIII] [IIIIIIII] [IIIIIIII] [IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Flag
Lab Batch ID: 3009410 QC- Sample ID: 545114-014 S Batch #: 1 Matrix: Soil	
	Х
Date Analyzed: 02/03/2017 Date Prenared: 02/01/2017 Analyst: MGO	
Date Analyzet Date 11 cparcu. 02/01/2017 Analyst. 1000	
Reporting Units: mg/kg MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY	
Inorganic Anions by EPA 300/300.1Parent Sample ResultSpiked Sample ResultSpiked Sample SpikeDuplicate Spiked Sample Spiked Sample Spiked SampleSpiked Dup.Control LimitsControl Limits]
Analytes[A][B][D][E][G]	Flag
Chloride 844 250 1040 78 250 1040 78 0 90-110 20	

Matrix Spike Percent Recovery $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD = $200^{\circ}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Form 3 - MS / MSD Recoveries

Project Name: EOG-Red Hills North Unit #102



Work Order # :	545114						Project II): 212C-	MD-0063	9		
Lab Batch ID:	3009420	QC- Sample ID:	545114	-024 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	02/03/2017	Date Prepared:	02/01/2	017	An	alyst: 1	MGO					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorga	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[C]	[D]	[E]	Kesun [F]	[G]	70	70K	70KFD	
Chloride		<24.8	248	291	117	248	292	118	0	90-110	20	X
Lab Batch ID:	3009420	QC- Sample ID:	545114	-034 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	02/03/2017	Date Prepared:	02/01/2	017	An	alyst: 1	MGO					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorga	nic Anions by EPA 300/300.1	Parent Sample Result	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	Spiked Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%K	%RPD	
Chloride		45.8	243	300	105	243	305	107	2	90-110	20	
Lab Batch ID:	3008771	QC- Sample ID:	544963	-001 S	Ba	tch #:	1 Matrix	x: Soil			•	
Date Analyzed:	01/28/2017	Date Prepared:	01/28/2	017	An	alyst:	ARM					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	TPH By SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
C6-C10 Gasoli	ne Range Hydrocarbons	<15.0	999	921	92	998	984	99	7	70-135	35	
C10-C28 Diese	el Range Organics	476	999	1370	89	998	1490	102	8	70-135	35	

Matrix Spike Percent Recovery $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD = $200^{\circ}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

SAMPLE CONDITION WHEN RECEIVED	CITY: CONTACT:	RECEIVING LABORATORY: ADDRESS:		REI INOLIISHED RV (Signature)	RELINQUISHED BY: (Signature)	RELINQUISHED BY: (Signature)	(-									^{1/27/17}	LAB I.D. NUMBER DATE	PROJECT NO .: 2120-m0-00639	CLIENT NAME: EOG			Analysis
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DEMADKO.	ZIP: DATE:	Midlan RECEIVED BY: (Signature)		Time: BECEIVED BY: (Signature)	Date: REGEIVED BY: (Signature)	Time: 1-27-17 RECEIVED BY Signature Of	#2 6-	BH #2 (4-5)	BH #2 (2-3)	BH#2 (0-1)	BH# 1 (14-15)	V3H#1 (9-10)	BH#1 (6-7)	13H#1 (4-5)	BH#1 (2.3)	BH#1 (0-1)	Lea County, NM	Red Hills North Unit #102	SITE MANAGER: IKC Tavarc 2	TETRATECH 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946		inequest of Origin of Oracody ineco
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FIFTRA TECH 1910 N. Big Spring St. Midland, Texas 79705 (32) 682-4539 • Fax (42) 682-3946 SITE MANAGER: Tac. T2 THE MANAGER: Tac. T2 NOUECT NAME: MACOMPE MATRIX SITE MANAGER: Tac. T2 SITE MANAGER: Tac. T2 MATRIX Sample IDENTIFICATION SAMPLE IDENTIFICATION S X B.H # 2 (PI-10) 1 S M B.H # 3 (D-1) 1 B H # 3 (D-1) 1 NUMBER OF CONTAINERS A (H-1S) 1 B H # 3 (I + -S) 1 1 1 B H # 3 (I + - S) 1 1 1 MATRIX MATRIX 1 1 1 MATRIX SAMPLE IDENTIFICATION NUMBER OF CONTAINERS 1 1 B H # 3 (1 - 7) 1 1 1 1 1 Matrix (1 - 2.0) 1<	Request of Chain of Custody Record TETRA TECH Internation of Custody Record Million Custody Record Million Custody Record Internation of Custody Record Million Custody Record Million Custody Record Internation of Custody Record Million Custody Record	Request of Chain of Custopy Record Recurrent of the sping state of the spin state	REC	RECEIVING LABORATORY: ADDRESS:	Inclusion of togenauty	RFI INOUISHED RV: (Signature)	RELINQUISHED BY: (Signature)	RELINQUISHED BY: (Signature)	L-						-		-	hrdf	LAB I.D. NUMBER DATE TIME	212C-MD-00639	CLIENT NAME: FOG			Analysis
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Client: Tetra Tech- Midland

XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 01/27/2017 11:14:00 AM Temperature Measuring device used : R8 Work Order #: 545114 Comments Sample Receipt Checklist .6 #1 *Temperature of cooler(s)? #2 *Shipping container in good condition? Yes #3 *Samples received on ice? Yes #4 *Custody Seal present on shipping container/ cooler? N/A #5 *Custody Seals intact on shipping container/ cooler? N/A N/A #6 Custody Seals intact on sample bottles? #7 *Custody Seals Signed and dated? N/A #8 *Chain of Custody present? Yes #9 Sample instructions complete on Chain of Custody? Yes #10 Any missing/extra samples? No #11 Chain of Custody signed when relinguished/ received? Yes #12 Chain of Custody agrees with sample label(s)? Yes #13 Container label(s) legible and intact? Yes #14 Sample matrix/ properties agree with Chain of Custody? Yes #15 Samples in proper container/ bottle? Yes #16 Samples properly preserved? Yes #17 Sample container(s) intact? Yes #18 Sufficient sample amount for indicated test(s)? Yes #19 All samples received within hold time? Yes #20 Subcontract of sample(s)? N/A #21 VOC samples have zero headspace (less than 1/4 inch bubble)? N/A #22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for N/A samples for the analysis of HEM or HEM-SGT which are verified by the analysts. #23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH? N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica WAMER Jessica Kramer Checklist reviewed by: Kelsey Brooks

Date: 01/27/2017

Date: 01/27/2017