

October 16, 2017 Reference No. 088210-35

Mr. Zane Kurtz Sr. Safety and Environmental Representative 5509 Champions Dr. Midland, TX 79706

VIA E-Mail: zane_kurtz@eogresources.com

Dear Mr. Kurtz:

Re: Assessment Summary Report

Livingston Ridge SWD Water Line

2RP-2044

EOG Resources, Inc.

Site Location: Sec. 1, T 22-S, R 31-E (Lat 32.41751°, Long -103.73427°)

Eddy County, New Mexico

GHD Services, Inc. (GHD) is pleased to present this report for the above referenced site. Assessment activities were performed at the Livingston Ridge SWD Water Line (hereafter referred to as the "Site"), from June 9 to August 18, 2017 by GHD. The Site is located within Section 1, Township 22 South, Range 31 East, in Eddy County, New Mexico (Figure 1). The property is owned by the U.S. Bureau of Land Management (BLM).

The Site is an active pipeline located approximately 30 miles east-northeast of Carlsbad, New Mexico. According to EOG Resources, Inc. (EOG) supplied Site information, a release of approximately 50 barrels (bbls) of crude oil and 3,200 bbls of produced water occurred when a flowline ruptured. Approximately 30 bbls of crude oil and 480 bbls of produced water were recovered after the release utilizing vacuum trucks. The release was discovered on October 27, 2013. A C-141 Form was submitted to the New Mexico Oil Conservation Division (NMOCD) and the BLM on November 5, 2013 and remediation permit (RP) number 2RP-2044 was assigned.

Initial delineation samples were collected on November 4, 2013 in five areas within the release area (green outlined area on Figure 2) by Yates Petroleum Corporation (Yates). Thirty-nine samples were collected from depths ranging from 2 to 16 feet below ground surface (ft. bgs) and submitted for laboratory analyses. The samples were submitted to Cardinal Laboratories (Cardinal) in Hobbs, New Mexico for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021B, total petroleum hydrocarbons (TPH) gasoline and diesel range organics by EPA Method 8015M, and chlorides by Method SM4500CL-B analysis.

None of the samples contained BTEX or TPH constituents above the laboratory reporting limits. Chloride concentrations ranged from 6,280 to 29,600 milligrams per kilogram (mg/kg).



Additional vertical delineation samples were collected on January 16, 2014 by Yates utilizing a core drill rig. Twenty-four samples were collected from depths ranging from 20 to 55 ft. bgs within three areas of the release area. The samples were submitted to Cardinal for chloride analysis by Method SM4500CL-B. Chloride concentrations ranged from 128 to 14,800 mg/kg. A sample collected from one boring centrally located in the release area contained a chloride concentration of 752 mg/kg at a depth 55 ft. bgs. This sample represented the deepest chloride concentration greater than the NMOCD Recommended Remedial Action Level (RRAL) of 600 mg/kg established for this Site (see below).

1. Recommended Remediation Action Limits

There are relatively few groundwater wells in the area of the Site with which to obtain a depth to groundwater. Based on information available from the New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System website, the closest well with a reported depth to water is approximately 3.5 miles from the site. The depth to groundwater measured in this well was 448 feet below ground surface (ft. bgs).

Based on information available from the United States Geological Survey (USGS) website, the closest USGS gauging site, approximately 2.7 miles southeast of the site, indicates groundwater at a depth of approximately 125 feet below ground surface (ft. bgs) in 1988. The well information is included in Appendix A.

Groundwater was not encountered in soil boring SB-5 that was advanced to a depth of 130 ft. bgs during GHD's assessment activities.

There do not appear to be any wellhead protection areas and no surface water bodies within 200 ft. to 1000 ft. of the Site. Therefore, the preliminary total ranking score for the Site is 0 (see table below).

Based on this score, the applicable NMOCD Site-specific RRALs are 10 mg/kg for benzene, 50 mg/kg for total BTEX, 5,000 mg/kg for total TPH, and 600 mg/kg for chlorides.

In an August 28, 2017 telephone conversation between Bernard Bockisch of GHD and Jim Griswold, NMOCD Environmental Bureau Chief, GHD was informed that the NMOCD is accepting chloride concentrations of 600 mg/kg for assessment clean up levels.

New Mexico Oil Conservation Division Site Assessment	
Ranking Criteria	Score
Depth to Ground Water (> 100 ft. bgs)	0
Wellhead Protection Area (> 1000 ft. from water source, > 200 ft. from domestic source)	0
Distance to Surface Body Water (200-1000 ft.)	0
Ranking Criteria Total Score	0*



New Mexico Oil Conservation Division Site Assessment

*Because the ranking criteria total score is 0, NMOCD established RRALs are 10 mg/kg for benzene, 50 mg/kg for total BTEX, 5,000 mg/kg for TPH¹, and 600 mg/kg for chlorides.

1. NMOCD Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993.

2. Assessment Activities

GHD and SDR Enterprises, LLC (SDR) performed additional delineation from June 9 to August 18, 2017 that included the collection of 36 soil samples from 18 test pits and 18 samples from 6 soil borings. Soil samples were collected from 2 ft. bgs and 10 ft. bgs in each test pit and submitted to Hall Environmental Analysis Laboratory (HEAL) located in Albuquerque, New Mexico. Two samples (TP-5 and TP-7) were submitted for TPH (gasoline, diesel, and motor oil range) by EPA Method 8015 BTEX by EPA Method 8021B. All of the samples were submitted for chloride analysis by EPA 300.

BTEX and TPH constituents were not detected above the laboratory reporting limits and chlorides ranged from below the laboratory reporting limit to 17,000 mg/kg. Chloride was detected above the NMOCD RRAL in five of the test pit samples (TP-2, TP-4, TP-5, TP-6, and TP-7) all at depths of 10 ft. bgs. These test pits were located in the southern area of the release. The analytical data is summarized on Table 1 and the laboratory reports are included in Appendix A.

The horizontal and vertical extent of the chloride concentrations within the northern portion of the spill area had been delineated to below the RRAL for chloride. However, the horizontal and vertical extent of chloride concentrations in the southern portion of the impacted area was not fully assessed.

Further soil sampling and soil boring activities were performed by GHD and Enviro-Drill, Inc. of Albuquerque, New Mexico from July 17 through 19, 2017 to assess the vertical extent of chloride concentrations in the soil in the southern portion of the impacted area. Thirteen additional soil samples were collected from four soil borings (SB-1 to SB-4) at depths ranging from 40 ft. bgs to 90 ft. bgs. The samples were submitted to HEAL for analysis of chloride by EPA Method 300.0.

Chloride concentrations in these samples ranged from 62 to 13,000 mg/kg. A summary of the soil boring laboratory results is presented in the following table.

Soil Boring ID	Depth	Chloride Concentration in mg/kg
SB-1	50	8,300
SB-1	60	8,300
SB-1	70	13,000
SB-1	80	11,000
SB-1	90	3,400



Soil Boring ID	Depth	Chloride Concentration in mg/kg
SB-2	50	7,600
SB-2	60	7,700
SB-2	70	6,200
SB-2	75	980
SB-3	50	62
SB-3	60	88
SB-4	40	870
SB-4	50	79
SB-5 (near SB-1)	100	48
SB-5 (near SB-1)	110	760
SB-5 (near SB-1)	120	82
SB-6 (near SB-2)	85	<30
SB-6 (near SB-2)	95	<30

The analytical data is summarized on Table 1 and the laboratory reports are included in Appendix A.

Two additional soil borings, SB-5 and SB-6 were advanced in close proximity to SB-1 and SB-2, respectively between August 16 and 18, 2017. Borings SB-1 and SB-2 experienced drilling refusal at depths of 90 and 75 ft. bgs. The two additional soil borings (SB-5 and SB-6) were advanced to collect additional samples from below these depths.

Three soil samples were collected from SB-5 (near SB-1) from 100, 110, and 120 ft. bgs and two samples were collected from SB-6 (near SB-2) at depths of 85 and 95 ft. bgs. The samples were submitted to HEAL for analysis of chloride by EPA Method 300.0.

Soils at the Site consisted primarily of clayey sands and silty sands with the sands being either very fine or fine grained. A clay with sand unit was encountered at varying depths in all of the soil borings. The soil boring logs are included as Appendix C.

Based on the collected assessment data, it appears that the vertical and horizontal extent of chlorideimpacted soil has been fully assessed as shown on Figure 2.

3. Summary and Recommendations

Based on the assessment of the chloride concentrations, GHD recommends the following:

- Excavating the spill area to a depth of 4 ft. bgs and stockpiling the soil to be used for future backfill at the Site. Soil samples will be collected and submitted for chloride analysis to determine if the excavated soil can be used as backfill.
- Placement of a 20-mil polyethylene liner in the bottom of the excavation (see Figure 2 for the excavation area) at a depth of 4 ft. bgs.



- Backfilling of the excavation with clean fill material and wheel compacting to grade.
- Fertilizing and reseeding of the disturbed area with a BLM-approved seed mix.

Following completion of the backfilling, revegetation of the site will be performed. Disturbed areas associated with the remediation efforts will be re-seeded. If after one growing season the vegetation has not taken hold, seeding may need to be repeated until revegetation is successful. The seed mix will be determined by the BLM.

Should you have any questions, or require additional information regarding this submittal please feel free to contact myself, or Bernie Bockisch at (505) 884-0672 or Bernard.Bockisch@ghd.com.

Sincerely,

GHD

Alan Brandon Senior Project Manager

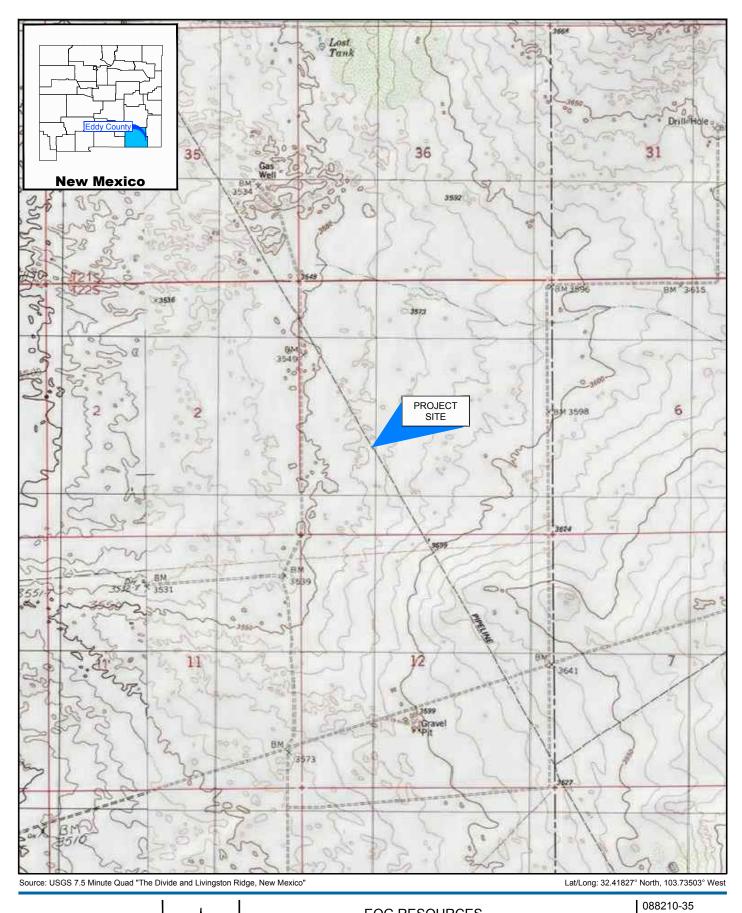
AIK Brand

BB/mc/30

Bernard Bockisch

Albuquerque Operations Manager





O 1000 2000ft

Coordinate System:

NAD 1983 (2011) StatePlaneNew Mexico East (US Feet)



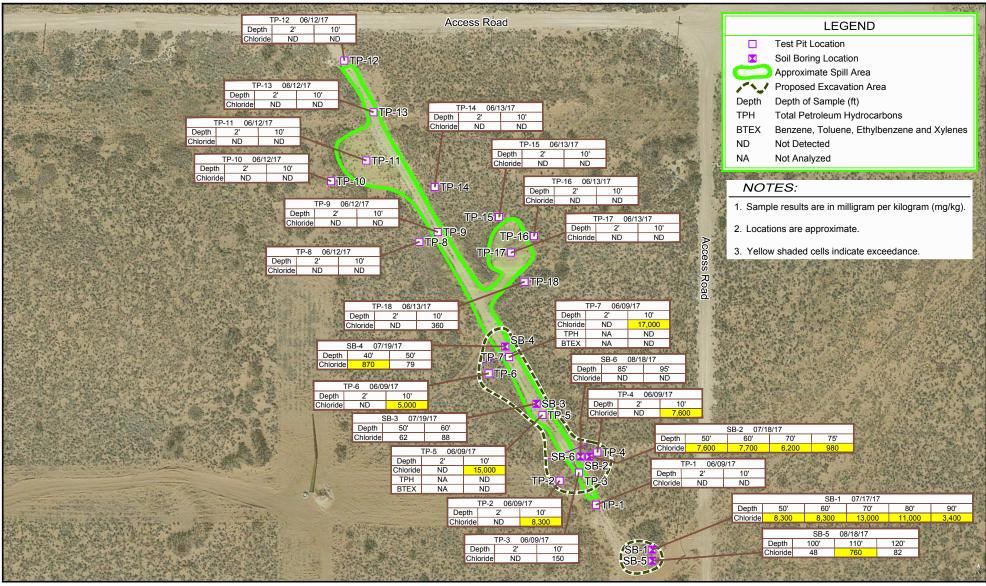
GHD

EOG RESOURCES EDDY COUNTY, NEW MEXICO LIVINGSTON RIDGE SWD No.2

Jun 21, 2017

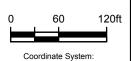
SITE LOCATION MAP

FIGURE 1



Source: Image © 2016 Google - Imagery Date: February 1, 2017

Lat/Long: 32.41827° North, 103.73503° West



New Mexico East (US Feet)

NAD 1983 (2011) StatePlane-





EOG RESOURCES EDDY COUNTY, NEW MEXICO LIVINGSTON RIDGE SWD No.2

SAMPLE LOCATION MAP

088210-35 Oct 11, 2017

FIGURE 2

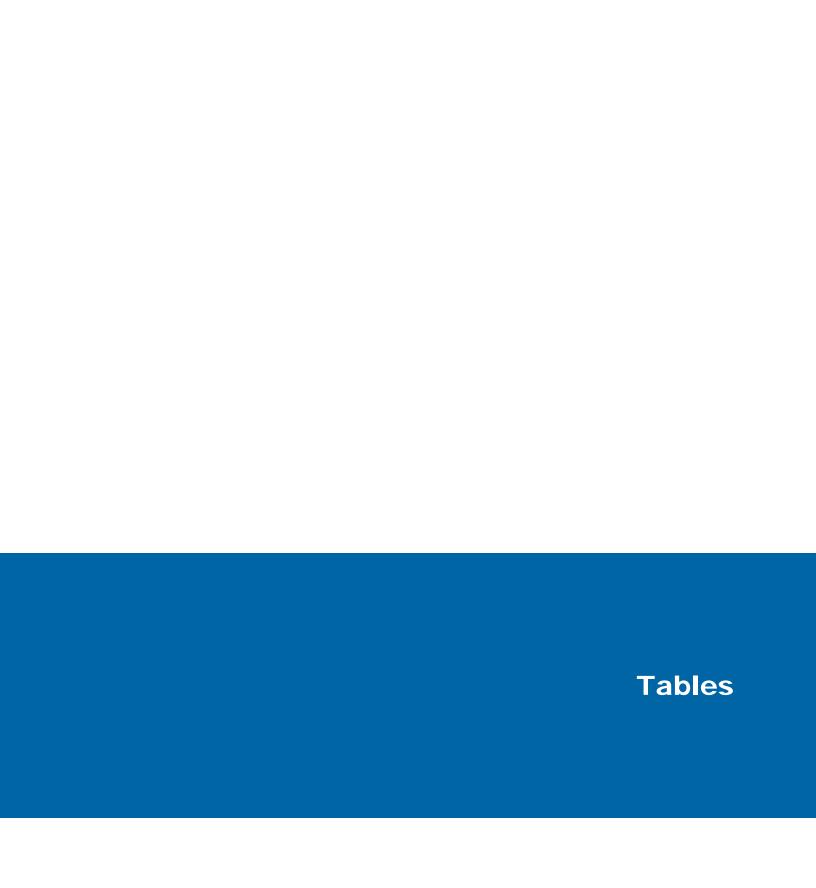


Table 1

Livingston Ridge SWD #2 Water Line - Summary of Soil Analytical Data

	Depth							TPH	TPH	TPH	Total	
Sample ID	(feet)	Date	Benzene	Toluene	Ethylbenzene	Xylenes	BTEX	(GRO)	(DRO)	(MRO)	TPH	Chloride
088210-35-060917-MG-TP-1-2	2	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-060917-MG-TP-1-10	10	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-060917-MG-TP-2-2	2	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-060917-MG-TP-2-10	10	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	8300
088210-35-060917-MG-TP-3-2	2	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-060917-MG-TP-3-10	10	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	150
088210-35-060917-MG-TP-4-2	2	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-060917-MG-TP-4-10	10	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	7600
088210-35-060917-MG-TP-5-2	2	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-060917-MG-TP-5-10	10	06/09/2017	< 0.024	<0.048	<0.048	< 0.097	<0.217	<4.8	<9.6	<48	<62.4	15000
088210-35-060917-MG-TP-6-2	2	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-060917-MG-TP-6-10	10	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	5000
088210-35-060917-MG-TP-7-2	2	06/09/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-060917-MG-TP-7-10	10	06/09/2017	< 0.024	< 0.049	<0.049	< 0.097	<0.219	<4.9	<10	<50	<64.9	17000
088210-35-061217-MG-TP-8-2	2	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061217-MG-TP-8-10	10	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061217-MG-TP-9-2	2	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061217-MG-TP-9-10	10	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061217-MG-TP-10-2	2	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061217-MG-TP-10-10	10	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061217-MG-TP-11-2	2	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061217-MG-TP-11-10	10	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061217-MG-TP-12-2	2	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061217-MG-TP-12-10	10	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061217-MG-TP-13-2	2	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061217-MG-TP-13-10	10	06/12/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061317-MG-TP-14-2	2	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061317-MG-TP-14-10	10	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061317-MG-TP-15-2	2	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061317-MG-TP-15-10	10	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061317-MG-TP-16-2	2	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061317-MG-TP-16-10	10	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061317-MG-TP-17-2	2	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061317-MG-TP-17-10	10	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-061317-MG-TP-18-2	2	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-33-061317-MG-TP-18-10	10	06/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	360

Table 1

Livingston Ridge SWD #2 Water Line - Summary of Soil Analytical Data

	Depth	_	_					TPH	TPH	TPH	Total	
Sample ID	(feet)	Date	Benzene	Toluene	Ethylbenzene	Xylenes	BTEX	(GRO)	(DRO)	(MRO)	TPH	Chloride
088210-35-071717-MG-SB-1-50	50	07/17/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	8300
088210-35-071717-MG-SB-1-60	60	07/17/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	8300
088210-35-071717-MG-SB-1-70	70	07/17/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	13000
088210-35-071817-MG-SB-1-80	80	07/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	11000
088210-35-071817-MG-SB-1-90	90	07/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	3400
088210-35-071817-MG-SB-2-50	50	07/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	7600
088210-35-071817-MG-SB-2-60	60	07/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	7700
088210-35-071817-MG-SB-2-70	70	07/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	6200
088210-35-071817-MG-SB-2-75	75	07/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	980
088210-35-071817-MG-SB-3-50	50	07/19/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	62
088210-35-071817-MG-SB-3-60	60	07/19/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	88
088210-35-071817-MG-SB-4-40	40	07/19/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	870
088210-35-071817-MG-SB-4-50	50	07/19/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	79
088210-35-081817-SP-SB-5-100	100	08/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	48
088210-35-081817-SP-SB-5-110	110	08/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	760
088210-35-081817-SP-SB-5-120	120	08/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	82
088210-35-081617-SP-SB-6-85	85	08/16/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
088210-35-081617-SP-SB-6-95	95	08/16/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<30
						-						
	·			-		-	-					
NMOCD RRALs (Total Ra	nking Score	= 0)	10		50				Total TP	H: 5,000		600

Notes:

All sample results are in milligrams per kilogram
NA = Not Analyzed
NMOCD = New Mexico Oil Conservation Division
RRALs = Recommended Remediation Action Limits

Highlighted = Exceeds NMOCD RRAL



Appendix A Water Well Report



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)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to

(NAD83 UTM in meters)

(In feet)

		POD													
		Sub-			Q										Water
POD Number	Code	basin (County	64	16	4	Sec	Tws	Rng	Х	Υ	DistanceD	epthWellDep	thWater C	olumn
C 02744			ED	3	2	1	11	22S	31E	617374	3586631*	1839	4911		
<u>C 02745</u>			ED	4	2	2	15	22S	31E	616789	3585013* 🍪	3300	925		
<u>C 02746</u>			ED	4	2	2	15	228	31E	616789	3585013*	3300	930		
<u>C 02747</u>			ED	4	2	2	15	228	31E	616789	3585013*	3300	1076		
C 02949 EXPL			ED	1	1	4	34	218	31E	616140	3589231* 🌼	3397	970		
<u>C 03150</u>			ED	2	4	4	14	228	31E	618412	3584025* 🌼	3469	981		
<u>C 02939</u>		С	LE	3	3	1	19	228	32E	620234	3583042*	4560	280		
C 03717 POD1		С	LE	4	4	1	09	228	32E	624094	3586365 🌑	5179	650		
C 03112 EXPLORE			ED	3	1	1	09	228	31E	613753	3586590*	5341	3567		
C 02415			ED	3	3	4	16	228	31E	614592	3583785* 🎒	5746	880	448	432
<u>C 02727</u>			ED	3	1	1	33	218	31E	613716	3589809*	5815	913		
C 02682			ED	4	4	4	80	228	31E	613566	3585379*	5836	4400		

Average Depth to Water:

448 feet

Minimum Depth:

448 feet

Maximum Depth:

448 feet

Record Count: 12

UTMNAD83 Radius Search (in meters):

Easting (X): 619026.33

Northing (Y): 3587439.34

Radius: 6000

*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.

8/24/17 8:17 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER



USGS Home Contact USGS Search USGS

National Water Information System: Web Interface

USGS Water Resources	Data Category:	Geographic Area:	
5505 Water Resources	Groundwater ~	United States 🗸	GO

Click to hideNews Bulletins

- Please see news on new formats
- Full News

Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

• 322333103461401

Minimum number of levels = 1

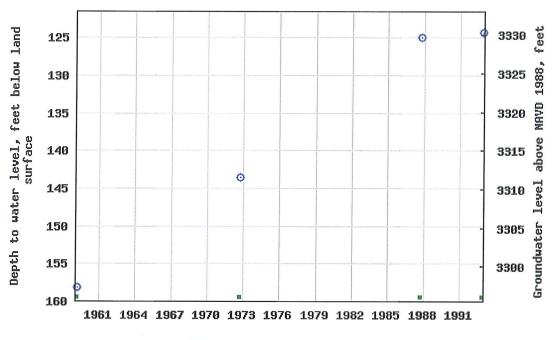
Save file of selected sites to local disk for future upload

USGS 322333103461401 22S.31E.15.13214

Available data for this site	Groundwater:	Field measurements	~	GO	
Eddy County, New Mexico					
Hydrologic Unit Code					
Latitude 32°23'40", Longit	ude 103°46	5'16" NAD27			
Land-surface elevation 3,45	55 feet abov	ve NAVD88			
This well is completed in th	e Santa Ros	sa Sandstone (23	1SN	RS) lo	cal aquifer.
	0	t formate			

output formuts
Table of data
Tab-separated data
Graph of data
Reselect period

USGS 322333103461401 225.31E.15.13214



Period of approved data

Breaks in the plot represent a gap of at least one year between field measurements.

Download a presentation-quality graph

Questions about sites/data? Feedback on this web site

Automated retrievals

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Data Tips

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U.S. Department of the Interior | U.S. Geological Survey

Title: Groundwater for USA: Water Levels

URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: USGS Water Data Support Team

Page Last Modified: 2017-10-04 09:30:06 EDT

0.97 0.88 nadww02







Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

June 19, 2017

Bernie Bockish GHD 6121 Indian School Road, NE #200 Albuquerque, NM 87110

TEL: (505) 884-0672 FAX

RE: Livingston 2 OrderNo.: 1706844

Dear Bernie Bockish:

Hall Environmental Analysis Laboratory received 36 sample(s) on 6/15/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

Indest

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-1-2'

 Project:
 Livingston 2
 Collection Date: 6/9/2017 9:55:00 AM

 Lab ID:
 1706844-001
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 1:56:39 AM	M 32339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 1 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: **6/19/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-1-10

 Project:
 Livingston 2
 Collection Date: 6/9/2017 10:05:00 AM

 Lab ID:
 1706844-002
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	l Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 2:58:41 AM	Л 32339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 2 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: **6/19/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD

Client Sample ID: 088210-35-060917-MG-TP-2-10

 Project:
 Livingston 2
 Collection Date: 6/9/2017 10:55:00 AM

 Lab ID:
 1706844-003
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qu	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Anal	yst: MRA
Chloride	8300	300	mg/Kg	200 6/18/2017 10:18:05	PM 32339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 40
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quanitative Limit	R	RPD outside accepted recovery limits
	RL	Reporting Detection Limit	S	% Recovery outside of range due to dilution or matrix

Lab Order **1706844**Date Reported: **6/19/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-3-2'

 Project:
 Livingston 2
 Collection Date: 6/9/2017 11:10:00 AM

 Lab ID:
 1706844-004
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analy	yst: MRA
Chloride	ND	30	mg/Kg	20	6/17/2017 3:23:31 A	M 32339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 4 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Analytical ReportLab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-3-10

 Project:
 Livingston 2
 Collection Date: 6/9/2017 11:25:00 AM

 Lab ID:
 1706844-005
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				An	alyst: MRA
Chloride	150	30	mg/Kg	20 6/17/2017 3:35:56	AM 32339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 5 of 40
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quanitative Limit	R	RPD outside accepted recovery limits
	RL	Reporting Detection Limit	S	% Recovery outside of range due to dilution or matrix

Lab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD

Client Sample ID: 088210-35-060917-MG-TP-4-2'

 Project:
 Livingston 2
 Collection Date: 6/9/2017 11:35:00 AM

 Lab ID:
 1706844-006
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Ana	lyst: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 3:48:20 /	AM 32339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 6 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order 1706844

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-4-10

 Project:
 Livingston 2
 Collection Date: 6/9/2017 11:50:00 AM

 Lab ID:
 1706844-007
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qu	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Anal	yst: MRA
Chloride	7600	300	mg/Kg	200 6/18/2017 10:30:30	PM 32339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 7 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-5-2'

 Project:
 Livingston 2
 Collection Date: 6/9/2017 1:05:00 PM

 Lab ID:
 1706844-008
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analy	yst: MRA
Chloride	ND	30	mg/Kg	20	6/17/2017 4:13:09 A	M 32339

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 8 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Analytical Report Lab Order 1706844

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD Client Sample ID: 088210-35-060917-MG-TP-5-10

Project: Livingston 2 **Collection Date:** 6/9/2017 1:20:00 PM 1706844-009 Lab ID: Matrix: SOIL **Received Date:** 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	15000	750	mg/Kg	500	6/18/2017 10:42:55 PM	32340
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS	;			Analyst	: TOM
Diesel Range Organics (DRO)	ND	9.6	mg/Kg	1	6/16/2017 4:23:31 PM	32315
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	6/16/2017 4:23:31 PM	32315
Surr: DNOP	102	70-130	%Rec	1	6/16/2017 4:23:31 PM	32315
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	6/16/2017 6:45:47 PM	32311
Surr: BFB	102	54-150	%Rec	1	6/16/2017 6:45:47 PM	32311
EPA METHOD 8021B: VOLATILES					Analyst	: NSB
Benzene	ND	0.024	mg/Kg	1	6/16/2017 6:45:47 PM	32311
Toluene	ND	0.048	mg/Kg	1	6/16/2017 6:45:47 PM	32311
Ethylbenzene	ND	0.048	mg/Kg	1	6/16/2017 6:45:47 PM	32311
Xylenes, Total	ND	0.097	mg/Kg	1	6/16/2017 6:45:47 PM	32311
Surr: 4-Bromofluorobenzene	129	66.6-132	%Rec	1	6/16/2017 6:45:47 PM	32311

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix Е

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

RL Reporting Detection Limit

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits Page 9 of 40 J

P Sample pH Not In Range

R RPD outside accepted recovery limits

% Recovery outside of range due to dilution or matrix

Analytical Report Lab Order 1706844

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-6-2'

 Project:
 Livingston 2
 Collection Date: 6/9/2017 1:40:00 PM

 Lab ID:
 1706844-010
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 10:48:00 A	AM 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 10 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: **6/19/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-6-10

 Project:
 Livingston 2
 Collection Date: 6/9/2017 1:55:00 PM

 Lab ID:
 1706844-011
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qu	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Anal	yst: MRA
Chloride	5000	150	mg/Kg	100 6/18/2017 10:55:19 [PM 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 11 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: **6/19/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD

Client Sample ID: 088210-35-060917-MG-TP-2-2'

 Project:
 Livingston 2
 Collection Date: 6/9/2017 10:40:00 AM

 Lab ID:
 1706844-012
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 11:37:38 A	M 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 12 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-7-2'

 Project:
 Livingston 2
 Collection Date: 6/9/2017 2:05:00 PM

 Lab ID:
 1706844-013
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	/st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 12:14:51 F	PM 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 13 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Analytical ReportLab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-060917-MG-TP-7-10

 Project:
 Livingston 2
 Collection Date: 6/9/2017 2:40:00 PM

 Lab ID:
 1706844-014
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	: MRA
Chloride	17000	750	mg/Kg	500	6/18/2017 11:07:43 PM	32340
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS					Analyst	: TOM
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	6/16/2017 4:45:37 PM	32315
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	6/16/2017 4:45:37 PM	32315
Surr: DNOP	102	70-130	%Rec	1	6/16/2017 4:45:37 PM	32315
EPA METHOD 8015D: GASOLINE RANGE					Analyst	: NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	6/16/2017 7:10:02 PM	32311
Surr: BFB	96.5	54-150	%Rec	1	6/16/2017 7:10:02 PM	32311
EPA METHOD 8021B: VOLATILES					Analyst	: NSB
Benzene	ND	0.024	mg/Kg	1	6/16/2017 7:10:02 PM	32311
Toluene	ND	0.049	mg/Kg	1	6/16/2017 7:10:02 PM	32311
Ethylbenzene	ND	0.049	mg/Kg	1	6/16/2017 7:10:02 PM	32311
Xylenes, Total	ND	0.097	mg/Kg	1	6/16/2017 7:10:02 PM	32311
Surr: 4-Bromofluorobenzene	122	66.6-132	%Rec	1	6/16/2017 7:10:02 PM	32311

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: * Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limit Page 14 of 40
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

Lab Order **1706844**Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-8-2'

 Project:
 Livingston 2
 Collection Date: 6/12/2017 10:50:00 AM

 Lab ID:
 1706844-015
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 12:39:40 F	PM 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 15 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order 1706844

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-8-10

 Project:
 Livingston 2
 Collection Date: 6/12/2017 11:10:00 AM

 Lab ID:
 1706844-016
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	l Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 12:52:04 P	M 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 16 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits

RL Reporting Detection Limit

% Recovery outside of range due to dilution or matrix

Analytical Report Lab Order 1706844

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-9-2'

 Project:
 Livingston 2
 Collection Date: 6/12/2017 11:20:00 AM

 Lab ID:
 1706844-017
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	l Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 1:04:29 PM	1 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 17 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order 1706844

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-9-10

 Project:
 Livingston 2
 Collection Date: 6/12/2017 11:35:00 AM

 Lab ID:
 1706844-018
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 1:16:53 PM	Л 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 18 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits

RL Reporting Detection Limit

% Recovery outside of range due to dilution or matrix

Lab Order **1706844**

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 6/19/2017

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-10-2

 Project:
 Livingston 2
 Collection Date: 6/12/2017 11:55:00 AM

 Lab ID:
 1706844-019
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 1:29:17 PM	Л 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 19 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-10-1

 Project:
 Livingston 2
 Collection Date: 6/12/2017 1:05:00 PM

 Lab ID:
 1706844-020
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	/st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 1:41:41 PI	M 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 20 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Analytical Report Lab Order 1706844

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-11-2

 Project:
 Livingston 2
 Collection Date: 6/12/2017 1:15:00 PM

 Lab ID:
 1706844-021
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 1:54:06 PM	M 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 21 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Analytical ReportLab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-11-1

 Project:
 Livingston 2
 Collection Date: 6/12/2017 1:30:00 PM

 Lab ID:
 1706844-022
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qu	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Ana	alyst: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 2:06:30	PM 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 22 of 40
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quanitative Limit	R	RPD outside accepted recovery limits
	RL	Reporting Detection Limit	S	% Recovery outside of range due to dilution or matrix

Lab Order **1706844**Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-12-2

 Project:
 Livingston 2
 Collection Date: 6/12/2017 1:45:00 PM

 Lab ID:
 1706844-023
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 2:43:43 PM	Л 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 23 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: **6/19/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-12-1

 Project:
 Livingston 2
 Collection Date: 6/12/2017 2:00:00 PM

 Lab ID:
 1706844-024
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Anal	yst: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 2:56:08 P	M 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 24 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-13-2

 Project:
 Livingston 2
 Collection Date: 6/12/2017 2:10:00 PM

 Lab ID:
 1706844-025
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	/st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 3:08:34 PM	M 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 25 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061217-MG-TP-13-1

 Project:
 Livingston 2
 Collection Date: 6/12/2017 2:30:00 PM

 Lab ID:
 1706844-026
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analy	/st: MRA
Chloride	ND	30	mg/Kg	20	6/17/2017 3:20:58 P	M 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 26 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-14-2

 Project:
 Livingston 2
 Collection Date: 6/13/2017 8:15:00 AM

 Lab ID:
 1706844-027
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analy	yst: MRA
Chloride	ND	30	mg/Kg	20	6/17/2017 3:33:23 P	M 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 27 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-14-1

 Project:
 Livingston 2
 Collection Date: 6/13/2017 8:40:00 AM

 Lab ID:
 1706844-028
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qu	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 3:45:47 PM	M 32340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 28 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-15-2

 Project:
 Livingston 2
 Collection Date: 6/13/2017 9:00:00 AM

 Lab ID:
 1706844-029
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Anal	yst: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 4:23:00 P	M 32341

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 29 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-15-1

 Project:
 Livingston 2
 Collection Date: 6/13/2017 9:15:00 AM

 Lab ID:
 1706844-030
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	yst: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 5:25:03 PI	M 32341

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 30 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-16-2

 Project:
 Livingston 2
 Collection Date: 6/13/2017 9:25:00 AM

 Lab ID:
 1706844-031
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	/st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 5:37:27 PM	M 32341

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 31 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Analytical Report Lab Order 1706844

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-16-1

 Project:
 Livingston 2
 Collection Date: 6/13/2017 9:40:00 AM

 Lab ID:
 1706844-032
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	/st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 5:49:52 PM	M 32341

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 32 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Analytical ReportLab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-17-2

Project: Livingston 2
 Collection Date: 6/13/2017 9:50:00 AM

 Lab ID: 1706844-033
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analy	yst: MRA
Chloride	ND	30	mg/Kg	20	6/17/2017 6:02:17 PI	M 32341

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 33 of 40
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quanitative Limit	R	RPD outside accepted recovery limits
	RL	Reporting Detection Limit	S	% Recovery outside of range due to dilution or matrix

Lab Order **1706844**

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 6/19/2017

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-17-1

 Project:
 Livingston 2
 Collection Date: 6/13/2017 10:00:00 AM

 Lab ID:
 1706844-034
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 6:14:42 PM	M 32341

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 34 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**

Date Reported: 6/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-18-2

 Project:
 Livingston 2
 Collection Date: 6/13/2017 10:25:00 AM

 Lab ID:
 1706844-035
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qual	Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analys	st: MRA
Chloride	ND	30	mg/Kg	20 6/17/2017 6:27:07 PM	32341

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 35 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Lab Order **1706844**

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 6/19/2017

CLIENT: GHD **Client Sample ID:** 088210-35-061317-MG-TP-18-1

 Project:
 Livingston 2
 Collection Date: 6/13/2017 11:00:00 AM

 Lab ID:
 1706844-036
 Matrix: SOIL
 Received Date: 6/15/2017 9:30:00 AM

Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: MRA
Chloride	360	30	mg/Kg	20 6/17/2017 6:39:31 PM	Л 32341

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: Value exceeds Maximum Contaminant Level. Analyte detected in the associated Method Blank D Sample Diluted Due to Matrix Е Value above quantitation range Analyte detected below quantitation limits Page 36 of 40 Н Holding times for preparation or analysis exceeded J ND Not Detected at the Reporting Limit P Sample pH Not In Range PQL Practical Quanitative Limit R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

WO#: **1706844**

19-Jun-17

Client: GHD

Project: Livingston 2

Sample ID MB-32339 SampType: mblk TestCode: EPA Method 300.0: Anions

Client ID: PBS Batch ID: 32339 RunNo: 43583

Prep Date: 6/16/2017 Analysis Date: 6/16/2017 SeqNo: 1372810 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride ND 1.5

Sample ID LCS-32339 SampType: Ics TestCode: EPA Method 300.0: Anions

Client ID: LCSS Batch ID: 32339 RunNo: 43583

Prep Date: 6/16/2017 Analysis Date: 6/16/2017 SeqNo: 1372811 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride 14 1.5 15.00 0 94.9 90 110

Sample ID MB-32340 SampType: mblk TestCode: EPA Method 300.0: Anions

Client ID: PBS Batch ID: 32340 RunNo: 43585

Prep Date: 6/17/2017 Analysis Date: 6/17/2017 SeqNo: 1372868 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride ND 1.5

Sample ID LCS-32340 SampType: Ics TestCode: EPA Method 300.0: Anions

Client ID: LCSS Batch ID: 32340 RunNo: 43585

Prep Date: 6/17/2017 Analysis Date: 6/17/2017 SeqNo: 1372869 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride 14 1.5 15.00 0 94.4 90 110

Sample ID MB-32341 SampType: mblk TestCode: EPA Method 300.0: Anions

Client ID: PBS Batch ID: 32341 RunNo: 43585

Prep Date: 6/17/2017 Analysis Date: 6/17/2017 SeqNo: 1372898 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride ND 1.5

Sample ID LCS-32341 SampType: Ics TestCode: EPA Method 300.0: Anions

Client ID: LCSS Batch ID: 32341 RunNo: 43585

Prep Date: 6/17/2017 Analysis Date: 6/17/2017 SeqNo: 1372899 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride 14 1.5 15.00 0 93.5 90 110

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

RL Reporting Detection Limit

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 37 of 40

P Sample pH Not In Range

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

Hall Environmental Analysis Laboratory, Inc.

WO#: 1706844

19-Jun-17

Client: GHD

Project: Livingston 2

Sample ID MB-32315 SampType: MBLK TestCode: EPA Method 8015M/D: Diesel Range Organics Client ID: **PBS** Batch ID: 32315 RunNo: 43560 Prep Date: 6/15/2017 Analysis Date: 6/16/2017 SeqNo: 1372149 Units: mg/Kg Analyte Result **PQL** SPK value SPK Ref Val %REC LowLimit HighLimit %RPD **RPDLimit** Qual Diesel Range Organics (DRO) ND 10 ND 50

Motor Oil Range Organics (MRO)

Surr: DNOP 10.00 96.0 70 9.6 130

Sample ID LCS-32315 SampType: LCS TestCode: EPA Method 8015M/D: Diesel Range Organics

Client ID: LCSS Batch ID: 32315 RunNo: 43560

Prep Date: 6/15/2017 Analysis Date: 6/16/2017 SeqNo: 1372317 Units: mg/Kg

Analyte SPK value SPK Ref Val %REC LowLimit HighLimit %RPD **RPDLimit** Qual Diesel Range Organics (DRO) 50 10 99.8 50.00 73.2 114 Surr: DNOP 4.8 5.000 95.6 70 130

Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- Practical Quanitative Limit
- Reporting Detection Limit

- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

Page 38 of 40

Hall Environmental Analysis Laboratory, Inc.

WO#: **1706844**

19-Jun-17

Client: GHD

Surr: BFB

Project: Livingston 2

Sample ID MB-32311 SampType: MBLK TestCode: EPA Method 8015D: Gasoline Range

Client ID: PBS Batch ID: 32311 RunNo: 43568

Prep Date: 6/15/2017 Analysis Date: 6/16/2017 SeqNo: 1373048 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Gasoline Range Organics (GRO) ND 5.0

Surr: BFB 970 1000 96.9 54 150

Sample ID LCS-32311 SampType: LCS TestCode: EPA Method 8015D: Gasoline Range

Client ID: LCSS Batch ID: 32311 RunNo: 43568

1100

Prep Date: 6/15/2017 Analysis Date: 6/16/2017 SeqNo: 1373049 Units: mg/Kg

1000

Analyte Result **PQL** SPK value SPK Ref Val %REC LowLimit HighLimit %RPD **RPDLimit** Qual Gasoline Range Organics (GRO) 25 5.0 25.00 102 76.4 125

108

54

150

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

Page 39 of 40

Hall Environmental Analysis Laboratory, Inc.

1.3

WO#: **1706844**

19-Jun-17

Client: GHD

Surr: 4-Bromofluorobenzene

Project: Livingston 2

Sample ID MB-32311 SampType: MBLK TestCode: EPA Method 8021B: Volatiles

Client ID: PBS Batch ID: 32311 RunNo: 43568

Prep Date: 6/15/2017 Analysis Date: 6/16/2017 SeqNo: 1373066 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

 Benzene
 ND
 0.025

 Toluene
 ND
 0.050

 Ethylbenzene
 ND
 0.050

 Xylenes, Total
 ND
 0.10

Surr: 4-Bromofluorobenzene 1.2 1.000 124 66.6 132

1.000

Sample ID LCS-32311	Samp	Гуре: LC	s	Tes	tCode: El	iles				
Client ID: LCSS	Batcl	h ID: 32	311	F	RunNo: 4	3568				
Prep Date: 6/15/2017	Analysis [Date: 6/	16/2017	S	SeqNo: 1	373067	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	107	80	120			
Toluene	1.1	0.050	1.000	0	108	80	120			
Ethylbenzene	1.1	0.050	1.000	0	109	80	120			
Xvlenes, Total	3.3	0.10	3.000	0	110	80	120			

126

66.6

132

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

RL Reporting Detection Limit

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

Page 40 of 40



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Sample Log-In Check List

Website: www.hallenvironmental.com Client Name: **GHD** Work Order Number: 1706844 RcptNo: 1 Received By: Erin Melendrez 6/15/2017 9:30:00 AM Completed By: 6/15/2017 10:29:02 AM **Ashley Gallegos** 04/15/17 Reviewed By: Chain of Custody 1 Custody seals intact on sample bottles? No 🗔 Not Present Yes 🗸 No 🗔 2. Is Chain of Custody complete? Not Present 3. How was the sample delivered? Courier Log In 4. Was an attempt made to cool the samples? Yes 🗸 No 🔲 NA 🗌 5. Were all samples received at a temperature of >0° C to 6.0°C Yes 🔽 NA 🗀 Sample(s) in proper container(s)? Yes 🗸 No 🗆 7. Sufficient sample volume for indicated test(s)? 8. Are samples (except VOA and ONG) properly preserved? 9. Was preservative added to bottles? Yes 🗌 No 🗸 NA 🗌 10. VOA vials have zero headspace? No VOA Vials Yes No 🗀 Yes 🗆 11. Were any sample containers received broken? No 🗹 # of preserved bottles checked Yes 🗸 12. Does paperwork match bottle labels? No 🗆 for pH: (<2 or >12 unless noted) (Note discrepancies on chain of custody) Adjusted? 13. Are matrices correctly identified on Chain of Custody? Yes 🗸 No 🗌 14. Is it clear what analyses were requested? Yes 🗸 No 🗌 15. Were all holding times able to be met? Yes 🔽 No 🗌 Checked by: (If no, notify customer for authorization.) Special Handling (if applicable) 16. Was client notified of all discrepancies with this order? Yes NA 🛂 Person Notified: Date By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person Regarding: Client Instructions: 17. Additional remarks: 18. Cooler Information Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By Good

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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

August 01, 2017

Bernie Bockish GHD 6121 Indian School Road, NE #200 Albuquerque, NM 87110

FAX

RE: Livingston 2 OrderNo.: 1707B18

Dear Bernie Bockish:

TEL: (505) 884-0672

Hall Environmental Analysis Laboratory received 13 sample(s) on 7/21/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order: **1707B18**Date Reported: **8/1/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD Lab Order: 1707B18 Project: Livingston 2 1707B18-001 **Collection Date:** 7/17/2017 4:20:00 PM Lab ID: Client Sample ID: S088210-35-071717MG-SB-1-50' Matrix: SOIL **Analyses** Result **PQL Qual Units DF** Date Analyzed **Batch ID EPA METHOD 300.0: ANIONS** Analyst: SRM Chloride 8300 300 mg/Kg 200 7/27/2017 5:15:27 PM 33021 1707B18-002 Collection Date: 7/17/2017 5:05:00 PM Lab ID: Client Sample ID: S088210-35-071717MG-SB-1-60' Matrix: SOIL Result **PQL Qual Units DF** Date Analyzed **Batch ID** Analyses **EPA METHOD 300.0: ANIONS** Analyst: SRM Chloride 8300 300 mg/Kg 200 7/27/2017 5:27:52 PM 33021 Lab ID: 1707B18-003 **Collection Date:** 7/17/2017 5:50:00 PM Client Sample ID: S088210-35-071717MG-SB-1-70' Matrix: SOIL **POL Qual Units** Analyses Result **DF Date Analyzed Batch ID EPA METHOD 300.0: ANIONS** Analyst: SRM 500 7/27/2017 5:40:17 PM Chloride 13000 750 mg/Kg 33021 1707B18-004 Lab ID: Collection Date: 7/18/2017 9:10:00 AM Client Sample ID: S088210-35-071817MG-SB-1-80' Matrix: SOIL **POL Qual Units** Analyses Result **DF Date Analyzed Batch ID EPA METHOD 300.0: ANIONS** Analyst: SRM Chloride 11000 750 mg/Kg 500 7/27/2017 5:52:42 PM Lab ID: 1707B18-005 **Collection Date:** 7/18/2017 10:05:00 AM Client Sample ID: S088210-35-071817MG-SB-1-90' Matrix: SOIL Analyses Result **PQL Qual Units DF Date Analyzed Batch ID EPA METHOD 300.0: ANIONS** Analyst: SRM Chloride 3400 150 mg/Kg 100 7/27/2017 6:29:56 PM 33021

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: * Value exceeds Maximum Contaminant Level.

- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 4
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order: **1707B18**Date Reported: **8/1/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD Lab Order: 1707B18 Project: Livingston 2 1707B18-006 **Collection Date:** 7/18/2017 2:10:00 PM Lab ID: Client Sample ID: S088210-35-071817MG-SB-2-50' Matrix: SOIL **Analyses** Result **PQL Qual Units DF** Date Analyzed **Batch ID EPA METHOD 300.0: ANIONS** Analyst: SRM Chloride 7600 750 mg/Kg 500 7/27/2017 6:42:20 PM 33021 1707B18-007 **Collection Date:** 7/18/2017 2:55:00 PM Lab ID: Client Sample ID: S088210-35-071817MG-SB-2-60' Matrix: SOIL Result **PQL Qual Units DF** Date Analyzed **Batch ID** Analyses **EPA METHOD 300.0: ANIONS** Analyst: SRM Chloride 7700 300 mg/Kg 200 7/27/2017 6:54:45 PM 33021 Lab ID: 1707B18-008 **Collection Date:** 7/18/2017 3:30:00 PM Client Sample ID: S088210-35-071817MG-SB-2-70' Matrix: SOIL **POL Qual Units** Analyses Result **DF Date Analyzed Batch ID EPA METHOD 300.0: ANIONS** Analyst: SRM 200 7/27/2017 7:07:10 PM Chloride 6200 300 mg/Kg 33021 1707B18-009 Lab ID: Collection Date: 7/18/2017 4:15:00 PM Client Sample ID: S088210-35-071817MG-SB-2-75' Matrix: SOIL **POL Qual Units** Analyses Result **DF Date Analyzed Batch ID EPA METHOD 300.0: ANIONS** Analyst: MRA Chloride 980 30 mg/Kg 20 7/26/2017 4:12:52 PM Lab ID: 1707B18-010 **Collection Date:** 7/19/2017 11:15:00 AM Client Sample ID: S088210-35-071917MG-SB-3-50' Matrix: SOIL **PQL Qual Units** Analyses Result **DF Date Analyzed Batch ID EPA METHOD 300.0: ANIONS** Analyst: MRA Chloride 62 30 mg/Kg 20 7/26/2017 4:25:17 PM 33021

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers: * Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits Page 2 of 4

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Lab Order: **1707B18**Date Reported: **8/1/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD Lab Order: 1707B18 Project: Livingston 2 Lab ID: 1707B18-011 Collection Date: 7/19/2017 11:45:00 AM Client Sample ID: S088210-35-071917MG-SB-3-60' Matrix: SOIL Analyses Result **PQL Qual Units DF** Date Analyzed **Batch ID EPA METHOD 300.0: ANIONS** Analyst: MRA Chloride 30 mg/Kg 20 7/26/2017 4:37:42 PM 33021 88 Collection Date: 7/19/2017 3:05:00 PM Lab ID: 1707B18-012 Client Sample ID: S088210-35-071917MG-SB-4-40' Matrix: SOIL Result **PQL Qual Units DF** Date Analyzed **Batch ID Analyses EPA METHOD 300.0: ANIONS** Analyst: MRA 7/26/2017 4:50:07 PM Chloride 870 30 mg/Kg 33021 Lab ID: 1707B18-013 **Collection Date:** 7/19/2017 3:35:00 PM

Result

79

PQL Qual Units

mg/Kg

30

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

Analyses

Chloride

EPA METHOD 300.0: ANIONS

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix

Client Sample ID: S088210-35-071917MG-SB-4-50'

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
 - S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range

Matrix: SOIL

DF Date Analyzed

20 7/26/2017 5:02:32 PM

Batch ID

33021

Analyst: MRA

- J Analyte detected below quantitation limits Page 3 of 4
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

WO#: **1707B18**

01-Aug-17

Client: GHD

Project: Livingston 2

Sample ID MB-33021 SampType: MBLK TestCode: EPA Method 300.0: Anions

Client ID: PBS Batch ID: 33021 RunNo: 44523

Prep Date: 7/26/2017 Analysis Date: 7/26/2017 SeqNo: 1407865 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride ND 1.5

Sample ID LCS-33021 SampType: LCS TestCode: EPA Method 300.0: Anions

Client ID: LCSS Batch ID: 33021 RunNo: 44523

Prep Date: 7/26/2017 Analysis Date: 7/26/2017 SeqNo: 1407866 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride 14 1.5 15.00 0 90.9 90 110

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 4 of 4



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

Sample Log-In Check List

RcptNo: 1 GHD Work Order Number: 1707B18 Client Name: Received By: 7/21/2017 9:45:00 AM Sophia Campuzano in Mas Erin Melendrez 7/21/2017 10:32:15 AM Completed By: 7/21/17 Reviewed By: Chain of Custody Yes No 🗌 Not Present 1. Custody seals intact on sample bottles? No 🔲 Yes 🗸 Not Present 2. Is Chain of Custody complete? 3. How was the sample delivered? Courier Log In No 🗆 NA 🗌 Yes 🔽 4. Was an attempt made to cool the samples? NA 🗆 Yes 🔽 No 🗌 5. Were all samples received at a temperature of >0° C to 6.0°C No 🔲 Yes 🔽 6. Sample(s) in proper container(s)? Yes 🗹 No 🗌 7. Sufficient sample volume for indicated test(s)? Yes 🗸 8. Are samples (except VOA and ONG) properly preserved? No ∟ NA 🗌 Yes 🗌 No 🔽 9. Was preservative added to bottles? Yes 🗌 No 🗀 No VOA Vials 10. VOA vials have zero headspace? Yes No 🗹 11. Were any sample containers received broken? # of preserved bottles checked Yes 🗹 No 🗌 for pH: 12. Does paperwork match bottle labels? (<2 or >12 unless noted) (Note discrepancies on chain of custody) Adjusted? Yes 🔽 No 🗔 13. Are matrices correctly identified on Chain of Custody? Yes 🗸 No 🗌 14. Is it clear what analyses were requested? No 🗌 Checked by: Yes 🗸 15. Were all holding times able to be met? (If no, notify customer for authorization.) Special Handling (if applicable) Yes 🗌 NA 🗸 16. Was client notified of all discrepancies with this order? No 🗀 Person Notified: Date: eMail Phone Fax In Person By Whom: Via: Regarding: Client Instructions: 17. Additional remarks: 18. Cooler Information Cooler No Temp °C | Condition Seal Intact | Seal No Seal Date Good

	HALL ENVIRONMENTAL ANALYSIS LABORATORY	www.hallenvironmental.com	Albuquerque, NM 87109	Fax 505-345-4107	Analysis Request	(*(bc8,2	280	(A	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Sold Pestic 8081 Pestic 8260B (VOA 8270 (Semi- 700 J.A.S.	X	X	X	X	X	×	X	×	8	×	×	\times		
	HALL ET ANALYS	www hallenvi	4901 Hawkins NE - Albi		Anal	(0)	O / MF	1) (DB (DB	1T + 1 OS 1.81 1.40	(GF-	BTEX + MT TPH 8015B TPH (Metho TPH (Metho PAH's (8310													Remarks:	
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Turn-Around Time:	XStandard	Project Name:	Startivingst	Project #:	1088211	Project Manag	Bernard	12	On Ice:	emi	Container F	402 Sil Sa											,	Received by:	Received by: Srye C. C
Chain-of-Custody Record	ces Inc.		Indian School Rd State	12 NM 87110	14	email or Fax#: Bernard Backischo abdeom Project Manager	Level 4 (Full Validation)				Sample Request ID	5058210-36-0717-M6-58-1-50 402 Soil Sc	SOSSIO-35-071717116-58-1-60	5-988118-35-07179-16-58-1-70	5-08510-35-07817-146-58-1-30	5038218-35.071817-46-38-1-96	5-69500 BONSITA6-58250	5-68821635-02817-46-58-2-60	5-085218-35-071817-16-38-2-70	S-0 sychols on sit Messal	5-048210-35-011417-14-18-25-01280-2	07-585-974-113110-58-904880-5	5-088-21/411110-35-015880-3	y pri Cour	of by
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ů	Client: CH		Mailing Address:	NE All	Phone #: 5 05	email or Fa	QA/QC Package:	Accreditation	□ NELAP	□ EDD (Type)	Date	7/17 16	11/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1	7117 17	7118 09	7/18/10	1/18 114	7/18 14		2/18/16	7/19 /111	7/19 11	7/19 115	Date: Time: 7/20 080	Date: Time:

Chain-of-Custody Record Turn-Around Time:		Project Name:	Idian Shool Rol Ste 200 Livingston 2	NA STILO Project #:	884 0672 08 8210-35	ward Backisch, and and Project Manager:	Bernard Bock 1sch (8027)	Sampler: Michael Cant B F C C S S	X Yes	BE (GI 6) OV (GI	Matrix Sample Request ID Container Preservative HEAL No. + ATT HEA	8-088246-35-459 402 Sol 201 J.CE -013					Referred by Referred by: 1 Date Time Remarks:	Style Con D7/2///7
Chain-of-Custody	Client CHD Services, Inc.		Mailing Address: (121 Indian Shr	NEAlboanerane, NM &	1	email or Fax#: Bernard, Bockisch	QA/QC Package:			□ EDD (Type)	Time Matrix	7/19 1635 5 5-088240-					Date: Time: Relinquished by	Date: Time: Relinguished by:



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

September 01, 2017

Alan Brandon GHD 6121 Indian School Road, NE #200 Albuquerque, NM 87110 TEL: (505) 884-0672

FAX

RE: Livingston Ridge SWD No 2 OrderNo.: 1708C84

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 3 sample(s) on 8/22/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

Indest

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order: 1708C84 Date Reported: 9/1/2017

Hall Environmental Analysis Laboratory, Inc.

Lab Order: 1708C84

DF Date Analyzed

DF Date Analyzed

Batch ID

Batch ID

Project: Livingston Ridge SWD No 2

GHD

CLIENT:

Analyses

Lab ID: 1708C84-001 Collection Date: 8/18/2017 10:53:00 AM

Client Sample ID: S-088210-35-081817-SP-SB-5-100 Matrix: SOIL Result

EPA METHOD 300.0: ANIONS Analyst: MRA

Chloride 48 30 mg/Kg 20 8/28/2017 6:01:52 PM 33585

PQL Qual Units

PQL Qual Units

Collection Date: 8/18/2017 11:40:00 AM Lab ID: 1708C84-002

Client Sample ID: S-088210-35-081817-SP-SB-5-110 Matrix: SOIL

Result

Analyses EPA METHOD 300.0: ANIONS Analyst: MRA

Chloride 760 30 mg/Kg 8/28/2017 6:14:16 PM 33585

Lab ID: 1708C84-003 **Collection Date:** 8/18/2017 12:22:00 PM

Client Sample ID: S-088210-35-081817-SP-SB-5-120 Matrix: SOIL

PQL Qual Units DF Date Analyzed Analyses Result **Batch ID EPA METHOD 300.0: ANIONS** Analyst: MRA

Chloride 30 20 8/28/2017 6:26:40 PM 82 mg/Kg 33585

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- Value above quantitation range Ε
- Analyte detected below quantitation limits Page 1 of 2
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1708C84**

01-Sep-17

Client: GHD

Project: Livingston Ridge SWD No 2

Sample ID MB-33585 SampType: mblk TestCode: EPA Method 300.0: Anions

Client ID: PBS Batch ID: 33585 RunNo: 45254

Prep Date: 8/28/2017 Analysis Date: 8/28/2017 SeqNo: 1434156 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride ND 1.5

Sample ID LCS-33585 SampType: Ics TestCode: EPA Method 300.0: Anions

Client ID: LCSS Batch ID: 33585 RunNo: 45254

Prep Date: 8/28/2017 Analysis Date: 8/28/2017 SeqNo: 1434157 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride 14 1.5 15.00 0 90.3 90 110

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 2 of 2



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: GHD Work Order Number: 1708C84 RcptNo: 1 Mitall Comin Received By: Isaiah Ortiz 8/22/2017 8:57:00 AM Michelle Garcia 8/22/2017 4:08:36 PM Completed By: 8/23/2017 エMの Reviewed By: Chain of Custody No 🗀 Not Present 1. Custody seals intact on sample bottles? Yes 🗍 No 🗌 Yes 🗹 Not Present 2. Is Chain of Custody complete? 3. How was the sample delivered? <u>FedEx</u> Log in No 🗌 NA 🗌 Yes 🔽 4. Was an attempt made to cool the samples? 5. Were all samples received at a temperature of >0° C to 6.0°C Yes 🗸 No 🗌 NA 🗌 6. Sample(s) in proper container(s)? Yes 🗹 No 🗆 Yes 🗸 No 🗌 7. Sufficient sample volume for indicated test(s)? Yes 🗹 No 🗆 8. Are samples (except VOA and ONG) properly preserved? No 🗸 NA 🗌 Yes 9. Was preservative added to bottles? No 🗌 No VOA Vials 🗹 Yes 10. VOA vials have zero headspace? Yes 🗆 No 🗹 11. Were any sample containers received broken? # of preserved bottles checked Yes 🗸 No 🗌 for pH: 12. Does paperwork match bottle labels? (<2 or >12 unless noted) (Note discrepancies on chain of custody) No 🗌 Adjusted? Yes 🗹 13. Are matrices correctly identified on Chain of Custody? Yes 🗸 14. Is it clear what analyses were requested? Yes 🗸 15. Were all holding times able to be met? No 🗆 Checked by: (If no, notify customer for authorization.) Special Handling (if applicable) Yes No 🗌 16. Was client notified of all discrepancies with this order? NA 🗸 Person Notified: Date By Whom: Via: eMail Phone Fax Regarding: Client Instructions: 17. Additional remarks: 18. Cooler Information Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date 0.1 Good Not Present

Chain-of-Custody Record		Turn-Around Time:	rime:					-			Ġ			Š		
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30 200, Albuquerang NM 87/10	Δ_	Project #:	٠,		ř	el. 505	Tel. 505-345-3975	3975	Fax	Fax 505-345-4107	345-4	1107				
Phone #: 505-84-0672		7,890 1	USS 210 (2)					Ã	ıalysi	Analysis Request	lest				77	
email or Fax#: Alan. Brancloun Och d.com		Project Manager:	jer:			(0)			(*C							
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□ NELAP □ Other	<u>ō</u> 	On Ice:	□ Yes	□ No		O٤						<u>(</u> ∀	G		or 1	
□ EDD (Type)	Š	Sample Temperature:	erature: O	5.1		ອ)					(/	<u>΄</u> ΟΛ-	~		(人)	
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I If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.	may be subcontr	acted to other ac	credited laboratorie	es. This serves as notice of this	possibility.	Any sub	contract	ed data	ili be cle	arly notat	ed on t	he anal	/tical rep	ort.		



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

August 28, 2017

Alan Brandon GHD 6121 Indian School Road, NE #200 Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: Livington Ridge SWD No 2 OrderNo.: 1708B40

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/18/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

Indest

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1708B40

Date Reported: 8/28/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD Lab Order: 1708B40

Project: Livington Ridge SWD No 2

Lab ID: 1708B40-001 **Collection Date:** 8/16/2017 11:41:00 AM

Client Sample ID: S-088210-35-081617-SP-SB-6-85' **Matrix:** SOIL

 Analyses
 Result
 PQL
 Qual
 Units
 DF
 Date Analyzed
 Batch ID

 EPA METHOD 300.0: ANIONS
 Analyst: MRA

 Chloride
 ND
 30
 mg/Kg
 20
 8/26/2017 12:09:13 AM
 33563

Lab ID: 1708B40-002 **Collection Date:** 8/16/2017 11:44:00 AM

Client Sample ID: S-088210-35-081617-SP-SB-6-95' Matrix: SOIL

 Analyses
 Result
 PQL
 Qual
 Units
 DF
 Date Analyzed
 Batch ID

 EPA METHOD 300.0: ANIONS
 Analyst: MRA

 Chloride
 ND
 30
 mg/Kg
 20
 8/26/2017 12:21:37 AM
 33563

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
 - S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 2
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1708B40**

28-Aug-17

Client: GHD

Project: Livington Ridge SWD No 2

Sample ID MB-33563 SampType: mblk TestCode: EPA Method 300.0: Anions

Client ID: PBS Batch ID: 33563 RunNo: 45224

Prep Date: 8/25/2017 Analysis Date: 8/25/2017 SeqNo: 1433002 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride ND 1.5

Sample ID LCS-33563 SampType: Ics TestCode: EPA Method 300.0: Anions

Client ID: LCSS Batch ID: 33563 RunNo: 45224

Prep Date: 8/25/2017 Analysis Date: 8/25/2017 SeqNo: 1433003 Units: mg/Kg

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Chloride 14 1.5 15.00 0 96.3 90 110

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 2 of 2



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: GHD Wo	ork Order Number: 1708B40		RcptNo: 1
Received By: Sophia Campuzano 8/18/	2017 9:15:00 AM	Sozahii Bayar	
Completed By: Ashley Gallegos 8/18/	2017 11:28:06 AM	A	
Reviewed By: Spe 08/18/17		V	
Chain of Custody			
1. Custody seals intact on sample bottles?	Yes 🗌	No 🗌	Not Present ✓
2. Is Chain of Custody complete?	Yes 🗹	No 🗌	Not Present
3. How was the sample delivered?	Courier		
<u>Log In</u>			
4. Was an attempt made to cool the samples?	Yes 🗸	No 🗆	NA 🗌
5. Were all samples received at a temperature of >0	0° C to 6.0°C Yes ✓	No 🗆	NA 🗆
6. Sample(s) in proper container(s)?	Yes 🗹	No 🗆	
7. Sufficient sample volume for indicated test(s)?	Yes 🗸	No 🗆	
8. Are samples (except VOA and ONG) properly pres	served? Yes 🗹	No 🗌	
9. Was preservative added to bottles?	Yes	No 🗹	NA \square
10.VOA vials have zero headspace?	Yes	No 🗆	No VOA Vials ⊻
11. Were any sample containers received broken?	Yes □	No 🗹	# of preserved
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes 🗹	No 🗆	bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custo	ody? Yes 🗹	No 🔲	Adjusted?
14. Is it clear what analyses were requested?	Yes 🗹	No 🗌	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹	No 🗆	Checked by:
Special Handling (if applicable)			
16. Was client notified of all discrepancies with this ord	der? Yes	No 🗆	NA 🗹
Person Notified:	Date		
By Whom:	Via: ☐ eMail ☐ i	Phone 🗌 Fax	☐ In Person
Regarding:			
Client Instructions:			na ann an an deil in faith an Maria an Ann an A
17. Additional remarks:			
18. Cooler Information Cooler No Temp °C Condition Seal Inte	act Seal No Seal Date	Signed By	
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:	ZZ	8	cins	0	5-0-5							EDB (Wetho					at a constant
			daw	0 40	60-5				935.00	0200		orteM) H9T					8
			4901 Hawkins NE		Tel. 505-345-39/5					20.00		88108 H9T				- is	Anva
		V.	4	H		_						TM + X3T8				Remarks:	Aligis
		.790			0		(1208	8) S	.8M	T +	BE	TM + X3T8				8	9 §
			Livingston Ridge SWD No. 2				0000		522	No D		HEAL NO.	- 001	-002		Date Time	8/17/17 02! Bate Time 8/18/17 09(15
5	□ Rush	ini.	SSTON RIELL		088210/3S	der	Alex Braylor)	1612 G	髊	emperature: (, O	Preservative Type	+CE	-			O Credited laborators
- Carrier Carrier	Standard	Project Name:	上でい	Project #:	080	Project Manager	a		Sampler:	On Ice:	Sample Tem	Container Type and #	1-50 p 20p	➾		Race (red by:	Received by:
Chain-of-Custody Record	egue		Wen Charl Rd NE	140 00	0.672	Ale Broker achel com		□ Level 4 (Full Validation)				Sample Request ID	5087210-35081617.58-386-85 402 dus	59-19-45-10180-5E-00805		d by:	Receipt by: Recei
of-Cu	OHD. Albuquegue	ğ	Mailing Address: 6121-		Sor -884- 0672					□ Other		Matrix	- jě	->		Relinquished by:	47 6 / X13
hain	E	×	Address	700 AL	40	l č	QA/QC Package:	dard	itation	AP	□ EDD (Type)	Time	h.(11.00		Time:	Time: Refin
J	Client:		Mailing	oto	Phone #:	email	QA/QC	□ Standard	Accreditation	O NELAP	□ EDC	Date	SIFIT	7		Date:	Self.

Appendix C Boring Logs



Page 1 of 2

PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES

LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-1
DATE COMPLETED: July 17, 2017

DRILLING METHOD: HSA

EPTH t BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE				SAM		
					NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
2	SC-CLAYEY SAND, fine grained, well sorted, reddish brown, dry								
10 12	- light brown at 10.0ft BGS								
14	- light reddish brown at 15.0ft BGS								
18 20 22	- very fine grained, brown at 20.0ft BGS				SB-1-20				
24 26	SM-SILTY SAND, very fine grained, well sorted, brown, dry	25.00			SB-1-25				
28	- reddish brown at 30.0ft BGS				SB-1-30				
32 34 36					SB-1-35				
38 10					SB-1-40				
14 16	- fine grained, dark brown at 45.0ft BGS		WIT BEN	NTONITE PS AND	SB-1-45				



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-1

DATE COMPLETED: July 17, 2017

DRILLING METHOD: HSA

# DOC I	STRATIGRAPHIC DESCRIPTION & REMARKS	DE	EPTH BGS	BOREHOLE			SAMF		
DEPTH ft BGS		11 1	600		NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
-50 -52	SC-CLAYEY SAND, very fine grained, light brown, well sorted, dry	50.0	.00	CUTTINGS	SB-1-50				830
- 54 - 56 - 58				CUTTINGS					
- 60 - 62	- brown at 60.0ft BGS				SB-1-60				830
-64 -66									
- 68 - 70		70.0	00		SB-1-70				1300
-72	CL-SANDY CLAY, very fine grained, well sorted, reddish brown, dry	70.0	.00		OD-1-/U				1300
-74 -76									
-78 -80		80.0	00		SB-1-80				1100
-82	SC-CLAYEY SAND, very fine grained, well sorted, brown, dry				OD-1-00				1100
- 84 - 86	- reddish brown at 85.0ft BGS				SB-1-85				
-88		90.0	00		SB-1-90				340
-90 -92	END OF BOREHOLE @ 90.0ft BGS	90.0	.00	_	1-90				340
-94									



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-2
DATE COMPLETED: July 18, 2017

DRILLING METHOD: HSA

DEPTH	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE			SAM	PLE	
ft BGS	STIVATIONAL FILE DESCRIPTION & NEWANNO	ft BGS	BONEHOLE	NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
-2 -4 -6	SC-CLAYEY SAND, fine grained, well sorted, reddish yellow, dry			N N	Z	R	<u>'Z</u>	
- 8 - 10 - - 12 - 14	SM-SILTY SAND, very fine grained, well sorted, light brown, dry	10.00						
16 18 20 22 24	- fine grained, reddish brown at 20.0ft BGS			SB-2-20				
228 -30 -32 -34	- pink at 30.0ft BGS			SB-2-30				
- 36 - 38 - 40 - 42 - 44 - 46	SC-CLAYEY SAND, very fine grained, well sorted, reddish brown, dry	40.00	BACKFILLED WITH BENTONITE CHIPS AND SOIL CUTTINGS	SB-2-40				



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-2

DATE COMPLETED: July 18, 2017

DRILLING METHOD: HSA

DEPTH t BGS	STRATIGRAPHIC DESCRIPTION & REMARKS		DEPTH ft BGS	BOREHOLE	K	A	1 3	ᅵㅣ	۵
					NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
50 52 54	CL-SANDY CLAY, very fine grained, well sorted, slightly plastic, strong brown, dry	5	50.00		SB-2-50				7600
6 8 0 2 4	- with sand at 60.0ft BGS				SB-2-60				770
6 8 0 —	SM-SILTY SAND, fine grained, well sorted, reddish yellow, dry	7	70.00		SB-2-70				6200
74 76	END OF BOREHOLE @ 75.0ft BGS	7	75.00		SB-2-75				980
8									
0									
2 4									
6									
8									
0									
12									



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-3

DATE COMPLETED: July 19, 2017

DRILLING METHOD: HSA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BORE	HOLE			SAMF		
		200			NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
-4	SC-CLAYEY SAND, fine grained, well sorted, reddish yellow, dry								
· 8 · · 10 · · 12	- very fine grained, light brown at 10.0ft BGS								
16	SM-SILTY SAND, very fine grained, well sorted, reddish yellow, dry	15.00							
18					SB-3-20				
22 24 26	- strong brown at 25.0ft BGS				SB-3-25				
30	SC-CLAYEY SAND, very fine grained, well sorted, reddish brown, dry	30.00	—	— BACKFILLED WITH BENTONITE	SB-3-30				
32 34	,	05.00		CHIPS AND SOIL CUTTINGS	00.00				
36	CL-SANDY CLAY, very fine grained, well sorted, low plasticity, strong brown, dry	35.00			SB-3-35				
40	SC-cLAYEY SAND, very fine grained, well sorted, reddish brown, dry	40.00			SB-3-40				
44					OD 2 45				
46					SB-3-45				



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-3

DATE COMPLETED: July 19, 2017

DRILLING METHOD: HSA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE			SAM	PLE	
ft BGS	STIATIGNAL FILE DESCRIPTION & REMARKS	ft BGS	BONETIOLE	3ER	VAL	(%)	I I	ide (g)
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
50 52	CL-SANDY CLAY, very fine grained, well sorted, low plasticity, reddish brown, dry	50.00		SB-3-50				62
60	END OF BOREHOLE @ 60.0ft BGS	60.00		SB-3-60				88
62	2.15 0. 50.12.1022 @ 00.01.500							
_ 64								
66								
- - 68								
- - 70								
_ _ 76								
- - 80								
- - - -82								
- - 84								
- - 86								
 88								
90								
- - - - -92								
- 94 94								
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE;	REFER TO (L CURRENT ELEVATION TABLE	1				



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-4

DATE COMPLETED: July 19, 2017

DRILLING METHOD: HSA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	;	DEPTH ft BGS	BORE	HOLE			SAM		
1 200			11 15 15 15 15 15 15 15 15 15 15 15 15 1			NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
2	SC-CLAYEY SAND, fine grained, well sorted, reddish yellow, dry									
3 10 12	- very fine grained at 10.0ft BGS									
16 18	SM-SILTY SAND, very fine grained, well sorted, light brown, dry		15.00							
20 - 22 24	SC-CLAYEY SAND, very fine grained, well sorted, light brown, dry		20.00			SB-4-20				
26	SM-SILTY SAND, very fine grained, well sorted, strong brown, dry		25.00		— BACKFILLED WITH BENTONITE CHIPS AND SOIL CUTTINGS	SB-4-25				
30 32 34						SB-4-30				
36 38	CL-SANDY CLAY, very fine grained, well sorted, low plasticity, reddish brown, dry		35.00			SB-4-35				
40 42	- strong brown at 40.0ft BGS					SB-4-40				870
14 16	SC-CLAYEY SAND, very fine grained, well sorted, reddish brown, dry		45.00			SB-4-45				



Page 2 of 2

PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-4

DATE COMPLETED: July 19, 2017

DRILLING METHOD: HSA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE			SAMF	PLE	
ft BGS	OTTATIONAL THE DESCRIPTION & NEWARING	ft BGS	BOKEHOLE	3ER	VAL	(%)	LUE	ide kg)
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
					_		-	
50	END OF BOREHOLE @ 50.0ft BGS	50.00		SB-4-50				79
52								
_ 54								
_ 56								
_ _ 58								
60								
62								
E								
64 								
66 								
68 								
 70								
- 72								
74 								
- 76								
78								
80								
82								
84								
86								
88								
} -90								
92								
94								
90 92 94	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; RE	FER TO C	CURRENT ELEVATION TABLE					
<u>;</u>								



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES

LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-5

DATE COMPLETED: August 18, 2017

DRILLING METHOD: HSA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE			SAM		
11 003		IL BUS		NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
22 4 6 8 10 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144 146	SEE SB-1 FOR STRATIGRAPHIC DETAILS			NOW	INTER	REC	AV 'N'	Chlor



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-5

DATE COMPLETED: August 18, 2017

DRILLING METHOD: HSA

EPTH BGS	STRATIGRAPHIC DESCRIPTION & REMARKS		DEPTH ft BGS	BOREH	SAMPLE						
. 500			11 1100			NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)	
50											
52											
54											
56											
58											
60											
62											
64				-	- BACKFILLED						
66					- BACKFILLED WITH BENTONITE CHIPS AND SOIL CUTTINGS						
58					CUTTINGS						
70											
72											
74											
76											
78											
80											
32											
34											
36											
38											
90 —	SC-CLAYEY SAND, with silt, coarse grained,	1///	90.00								
92	poorly graded, brown, dry										
94											
	TES: MEASURING POINT ELEVATIONS MAY CHAN										



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35 DATE COMPLETED: August 18, 2017

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

FIELD PERSONNEL: S. PEREZ

DRILLING METHOD: HSA

HOLE DESIGNATION: SB-5

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS		DEPTH ft BGS	BOREHOLE		SAMPLE						
πBGS			πBGS		NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride			
98 - 100 - - 102 - 104	SP-SAND, with silt, trace clay, coarse grained sandstone, poorly graded, brown, dry		100.00		SB-5-20				4			
106					SB-5-25				7			
- 114 - 116 - 118												
-120 -122	- trace silt and clay at 120.0ft BGS				SB-5-30				8			
- 124 - 126												
- 128												
- 130 - 132	END OF BOREHOLE @ 130.0ft BGS	<u> [6, 2], 6</u>	130.00	1 ∕28	SB-5-35							
- 134 - 136												
- 138												
- 132 - 134 - 136 - 138 - 140 - 142												



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PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES

LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-6

DATE COMPLETED: August 16, 2017

DRILLING METHOD: HSA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE			SAMPLE		
		IL BUS		NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
22 4 6 8 10 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144 146	SEE SB-1 FOR STRATIGRAPHIC DETAILS			NOW	INTER	REC	AV 'N'	Chlo



Page 2 of 3

PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES
LOCATION: EDDY COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-6

DATE COMPLETED: August 16, 2017

DRILLING METHOD: HSA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	S	DEPTH ft BGS	BORE	HOLE	SAMPLE					
						NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)	
50 52 54 56 58 60 62 64 66 68 70 72			75.00		BACKFILLED WITH BENTONITE CHIPS AND SOIL CUTTINGS	NON -	INTE	REC	>.N.	Ohlo	
76 78 80 82 84	CL-SILTY CLAY, few sand, fine garined, reddish brown, dry		75.00			SB-6-85		,	45	<30	
86 88 90 92 94	SW-SILTY SAND, trace fine gravel, coarse grained, well graded, reddish brown, dry		86.50			SB-6-95			15	<30	



JRDEN) Page 3 of 3
HOLE DESIGNATION: SB-6

PROJECT NAME: LIVINGSTON RIDGE SWD NO. 2

PROJECT NUMBER: 088210-35

CLIENT: EOG RESOURCES

DATE COMPLETED: August 16, 2017
DURCES

DRILLING METHOD: HSA

LOCATION: EDDY COUNTY, NEW MEXICO

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE			SAMI	PLE	
ft BGS	CHANGING FILE BESSELL HONG TELLWARD	ft BGS	BONEHOLE	NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
				N N	INTE	REC		Chlc (mg
	END OF BOREHOLE @ 96.5ft BGS	96.50	20		>			
98 								
100								
- 102 								
- - 104								
106								
108								
110 110								
112 112								
114 114								
- - 116								
118								
_ 120								
- - 122								
- 124								
- - - - 126								
- - - - 128								
- - - - 130								
-								
- - - - 134								
- - - - 136								
138								
- 140								
- 140 - - - 140								
132								
N	OTES: MEASURING POINT ELEVATIONS MAY CHANGE; RE	FER TO C	URRENT ELEVATION TABLE		•	•		