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February 8, 2021

Delivery via Email and FedEx Overnight Delivery

Mr. Jeffery E. Mendenhall
South Carolina Department of Health and Environmental Control
Assessment Section, UST Management Division
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201

Subject: Completion Report for Shallow Bedrock Zone Air Sparge Test
Products (SE) Pipe Line Corporation
Lewis Drive Remediation Site
Belton, South Carolina
Site ID #18693, "Kinder Morgan Belton Pipeline Release"

Dear Mr. Mendenhall,

This correspondence is being submitted on behalf of Products (SE) Pipe Line Corporation (PPL) to provide documentation of the subject work activities. The work activities were approved in a letter from South Carolina Department of Health and Environmental Control (DHEC) titled, *Review of Request to Conduct Shallow Bedrock Zone Air Sparge Test and Notification of Planned Horizontal Well Sparging Shutdown to Monitor Rebound,* date stamped September 28, 2020.

The following work activities were conducted on October 6 and 7, 2020, in accordance with the work plan document titled *Request to Conduct Shallow Bedrock Zone Air Sparge Test*, submitted August 19, 2020, and approved by DHEC on September 28, 2020.

The primary objective of the test was to evaluate the feasibility of injecting air into the shallow bedrock, particularly injection pressure, flow rate, and the horizontal and vertical extent of air propagation in the subsurface (orientation of air dispersal and the potential propagation of a "zone of influence").

Work Conducted

October 6

- Conducted baseline gauging, collected and recorded dissolved oxygen (DO) measurements, and collected groundwater samples for BTEX, 1,2-DCA, naphthalene, and MTBE analysis at select wells (Figure 1). Analytical results are presented in Table 1. Field notes and gauging logs are included as Attachments A and B, respectively.
    - Free product was detected in recovery wells (RW) RW-02 and RW-03, and a sheen was detected in monitoring well MW-18 and recovery sump (RS) RS-01. Samples were

collected from RW-01, RS-01, RS-02, vertical bedrock sparge (VBS) well VBS-01, VBS-02, and VBS-03.

- Sparging was attempted at VBS-01, but pressures > 10 psi could not be achieved, apparently due to grout seal failure. Air was observed flowing out of the surface completion during testing.
- Sparging was then attempted at VBS-02 and VBS-03. Tests at both wells produced nearly identical results – "deadhead" (maximum) pressure of approximately 108 psi was observed within 1-2 minutes of sparging.
  - Gauge pressure was measured at base of manifold leg, (before exiting the enclosure), at < 1 scfm flow. Initial flow of approximately 3 scfm recorded at VBS-02 was later determined to be a leaking socket (glued) fitting at the wellhead. Higher flow could not be achieved regardless of valve position
  - Water level gauging and dissolved oxygen measurements 1-2 hours after start-up indicated negligible differences from baseline.
- VBS-02 and VBS-03 were left at operating at maximum pressure overnight.

October 7

- There were no changes in flow or pressure observed in the VBS-02 and VBS-03 manifold legs and the test was discontinued with the approval of the PPL Remediation director on-site.

Summary of Findings and Conclusion

- Except for one low level detection of toluene (1.06 µg/L at VBS-01), dissolved hydrocarbons were not detected in the three bedrock sparge wells.
- Dissolved hydrocarbons exceeding target screening levels were detected at recovery sump RS-01 (benzene, toluene, ethylene, and xylenes) and RW-01 (benzene).
- Product was measured (ft) in the following locations: RS-01 (0.02), RW-02 (0.07), and RW-03 (0.04)
- Testing was unable to be completed at VBS-01 due to surface completion exhibiting grout seal leakage.
- Two of the bedrock sparge wells (VBS-02 and VBS-03) did not accept air. Flow and pressures remained unchanged throughout the testing period. DO readings and water levels remained stable during the testing, showing no significant response.
- Test results indicate there is insufficient fracture aperture/density to permit air flow, even at 100+ psi, therefore air sparging of bedrock at these depths is impractical, and no further evaluation of bedrock sparging is planned in this immediate area.

Please let us know if you have any questions about the test procedures and results.

Regards,

Jacobs

February 8, 2021
Subject: Completion Report for Shallow Bedrock Zone Air Sparge Test

William M. Waldron
Program Manager

Copies: Greg Dempsey, Plantation (Digital, greg_dempsey@kindermorgan.com)
Mary Clair Lyons, Esq., Plantation (Digital, Mary_Lyons@kindermorgan.com)
Richard Morton, Esq., Womble Bond Dickinson, LLP (Digital, ric.morton@wbd-us.com)

Attachments:

Table 1 - Analytical Results for Bedrock Sparge Test
Figure 1 - Monitoring Plan - Bedrock Sparging Phase I

Attachment A - Field Notes
Attachment B - Gauging and Field Data Collection Log
Attachment C - Analytical Laboratory Results

Table 1 - Analytical Results for Bedrock Sparge Test

Plantation Pipe Line Company

Lewis Drive Remediation Site, Belton, South Carolina

Site ID #18693 "Kinder Morgan Belton Pipeline Release"

			Analyte													
Sample ID	**Sample Date**	**Units**	**Benzene**		**Ethylbenzene**		**Toluene**		**Total Xylenes**		**1,2-DCA**		**MTBE**		**Naphthalene**	
	RBSL[a]:	**µg/L**	**5.0**		**700**		**1,000**		**10,000**		**5.0**		**40**		**25**	
RS-02-100620	10/6/2020	µg/L	1	U	1	U	1	U	3	U	1	U	1	U	5	U
VBS-03-100620	10/6/2020	µg/L	1	U	1	U	1	U	3	U	1	U	1	U	5	U
RS-01-100620	10/6/2020	µg/L	**4120**		**1560**		**21300**		**17700**		200	U[b]	200	U[b]	1000	U[b]
RW-01-100620	10/6/2020	µg/L	**85.1**		**52.0**		5	U	**49.7**		5	U	5	U	25	U
VBS-02-100620	10/6/2020	µg/L	1	U	1	U	1	U	3	U	1	U	1	U	5	U
VBS-01-100620	10/6/2020	µg/L	1	U	1	U	**1.06**		3	U	1	U	1	U	5	U

Notes:

[a] RBSL = Risk-based screening levels identified in South Carolina Underground Storage Tank Management Division Programmatic Quality Assurance Program Plan, Revision 3.1, Table D1 "RBSLs for Groundwater", February 2016

[b] The analyte was analyzed for, but was not detected above the laboratory reporting/quantitation limit. However, the laboratory reporting/quantitation limit is above the screening criteria. The actual absence or presence of this analyte between the screening criteria and the laboratory reporting/quantitation limit can not be determined.

Samples analyzed by EPA Methods SW 8260D

Bold indicates the analyte was detected above the reported detection limit.

Gray shading indicates the analyte exceeded RBSLs.

U = analyte was not detected above the reported detection limit

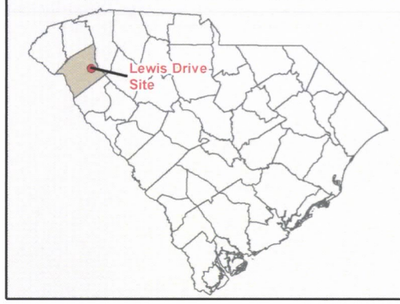
ID = identification

MTBE = methyl tertiary butyl ether

1,2-DCA = 1,2-dichloroethane

µg/L = microgram(s) per liter

LOCATOR MAP



LEGEND

- Release Point
- Residuum Monitoring Well
- Bedrock Monitoring Well
- Piezometer
- Recovery Well (4" diameter)
- Surface Water Sampling Location
- Vertical Bedrock Sparging Well
- Vertical Saprolite Sparging Well
- Horizontal Sparging Well Riser
- Horizontal Sparging Well Screen
- Pipeline
- Waterbody
- AS System Compound
- Remediation Zone
- Wells to be Monitored during Bedrock Sparging Phase I Test

Base Map Sources:
*Environmental Systems Research Institute (Esri) ArcMap World Imagery, 2018. Basemap features are approximate.
*United States Geological Survey (USGS) National Hydrography Dataset (NHD)

0 100 200
Approximate scale in feet

Figure 1. Monitoring Plan - Bedrock Sparging Phase I
Lewis Drive Remediation Site
Belton, South Carolina
Site ID #18693 "Kinder Morgan Belton Pipeline Release"

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\\DC1VS01\GISPROJ\K\KINDERMORGAN\654558LEWISDR_ER\GIS\MAPS\2020_WELL_EXPANSION\FIG1_MONITORING_PLAN_BDRCKSPPH1.MXD AG017958 2/8/2021

Attachment A
Field Notes

Location BELTON, SC Date 10/6/20

Project / Client LEWIS DRIVE / KM

TEAM M. WARREN / ATL
M. STRONG / CIT

WEATHER MID 60'S / CLOUDY

EQUIPMENT: SOLINST # 32707
MINIRAE # 059903
ISO LOT # CBJ-248-100-5
ISO EXPH 2/27/2023

0830 M. WARREN AND M. STRONG ARRIVE ON SITE AND HOLD PTSP

0835 CALIBRATE MINIRAE → 101.5ppm

EQUIPMENT: PRO ODO # 31446

1200 RETURN FROM LUNCH

1242 START PUMP AT MW-22, NOT ENOUGH WATER TO COLLECT LOW FLOW PARAMETERS BEFORE GOING DRY, SO WE WILL PUMP WELL DRY, WAIT FOR RECHARGE, AND THEN SAMPLE.
0.4 GALLONS PUMPED BEFORE WELL BECAME DRY.

1330 START PUMP AT MW-44

1335 MW-44 BECAME DRY

Location BELTON, SC Date 10/6/20

Project / Client LEWIS DRIVE / ICM

1345 VBS-01 - 100620

1400 VBS-02 - 100620

1410 VBS-03 - 100620

RS-02 - 100620

RS-01 - 100620

RW-01 - 100620

NOTE: MW-18 HAD 1.5 FT OF WATER COLUMN AND WAS NOT SAMPLED TO BE ABLE TO START THE TEST

1500 PROGRAM TROLLS FOR VBS-02 AND VBS-03

1530 DEPLOY TROLL INTO VBS-02

1540 DEPLOY TROLL INTO VBS-03

1650 VBS-02 (LABELED AS BRSO2 IN THE COMPOUND) WAS TURNED ON. PRESSURE REACHED 100 PSI WITH A FLOW RATE OF 3.2 GSM. ~~PRESSURE~~ FLOW RATE DROPPED TO 2.5 ~~PSI~~ GSM AT 1651

NOTE VBS-01 IS THOUGHT TO BE LABELED AS BRSO3 IN THE COMPOUND. IT IS POSSIBLE THE LINE FOR ~~VB~~ VBS-01

Retrieved from River

Location BELTON, SC Date 10/6/20

Project / Client LEWIS DRIVE / ICM

HAS A LEAK DUE TO NO PRESSURE DETECTED IN THE GAUGE. THE GAUGE WILL BE TESTED TO SEE IF IT IS THE GAUGE OR THE LINE THAT IS BAD. FLOW IS READING AT 3.7 CFM,

NOTE VBS-03 (LABELED AS BRS01 IN THE COMPOUND) REACHED A PRESSURE OF 104psi (LIMIT IS ~110psi) WITH A FLOW RATE OF 3.0 CFM,

1700 M. STRONG WILL TRY TO SWITCH OUT THE PRESSURE GAUGE OF VBS-1 (OR BRS03).

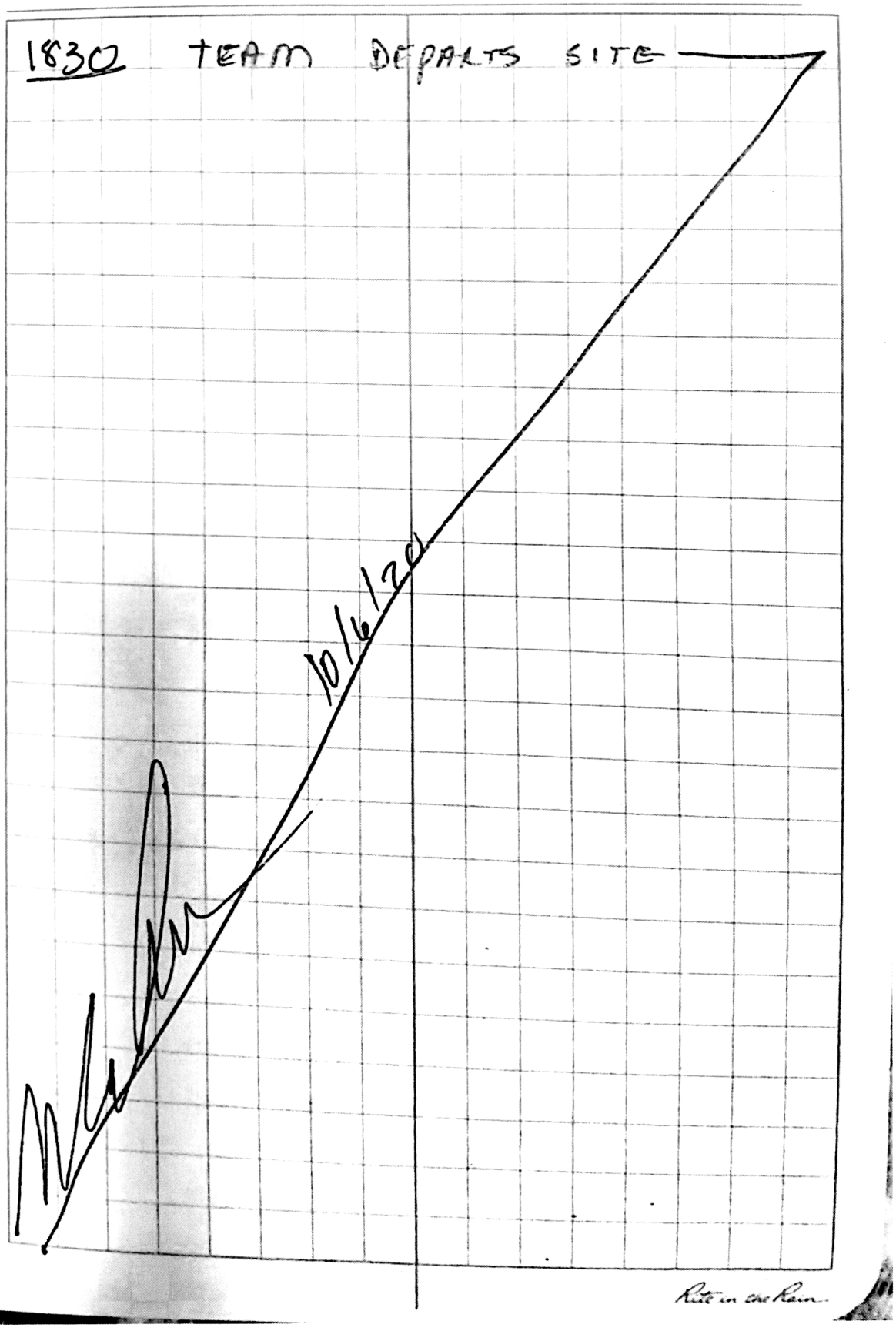
1702 VBS-02 PRESSURE DROPPED TO 0.0 psi.

1735 REGAUGE WELLS IMMEDIATELY SURROUNDING VBS WELLS FOR CHANGE IN WATER LEVEL.

1815 COMPLETE GAUGING AND RETURN TO COMPOUND TO GEAR DOWN

Location BELTON, SC Date 10/6/20

Project / Client LEWIS DRIVE / KM



Location BELTON, SC Date 10/7/20

Project / Client LEWIS DRIVE / KINDER MORGAN

TEAM M. STRONG
M. WARREN

0830 M. WARREN ARRIVES ON SITE AND BEGINS CLEANING UP EQUIPMENT.

0900 M. STRONG ARRIVES ON SITE

EQUIPMENT: SOLINST 045651
PUMP 046802
MINIRAE
CALIBRATION -> 100.0PPM
ISOEXP:
ISO LOT: CBJ-248-100-S

0910 TEAM HOLDS PTSP AND DISCUSSES PLAN FOR DAY.

0915 CHECK VBS-01 FOR LEAKS AT THE WELL. SPRAYED LIQUINOX AND OBSERVED AIR FLOW LEAKING ALONG BASE OF WELL CASING AROUND DIRT.

0930 T. WILEY ARRIVES ON SITE

1030 J. AYCOCK ARRIVES ON SITE.

1040 BEGIN SITE WALK TO BROWN'S CREEK AND SW-02.

1130 LEAVE FOR LUNCH

Location BELTON, SC Date 10/7/20

Project / Client LEWIS DRIVE / KINDER MORGAN

1352	DTW = 32.63 ft bgs AT VBS-03	
1352	START PUMP AT VBS-03 PER: PUMP WILL NOT PULL AT A DTW > 25ft. M. WARREN AND M. STRONG WILL MONITOR RECOVERY	
1402	DTW = 32.65 ft bgs AT VBS-03	
1408		32.65
1412		32.64
1420		32.63
1430		32.62
1445		31.61
1500		31.60

VBS-02 Recovery

	DTW
1412	26.34
1429	26.34
1445	26.33
1500	26.32

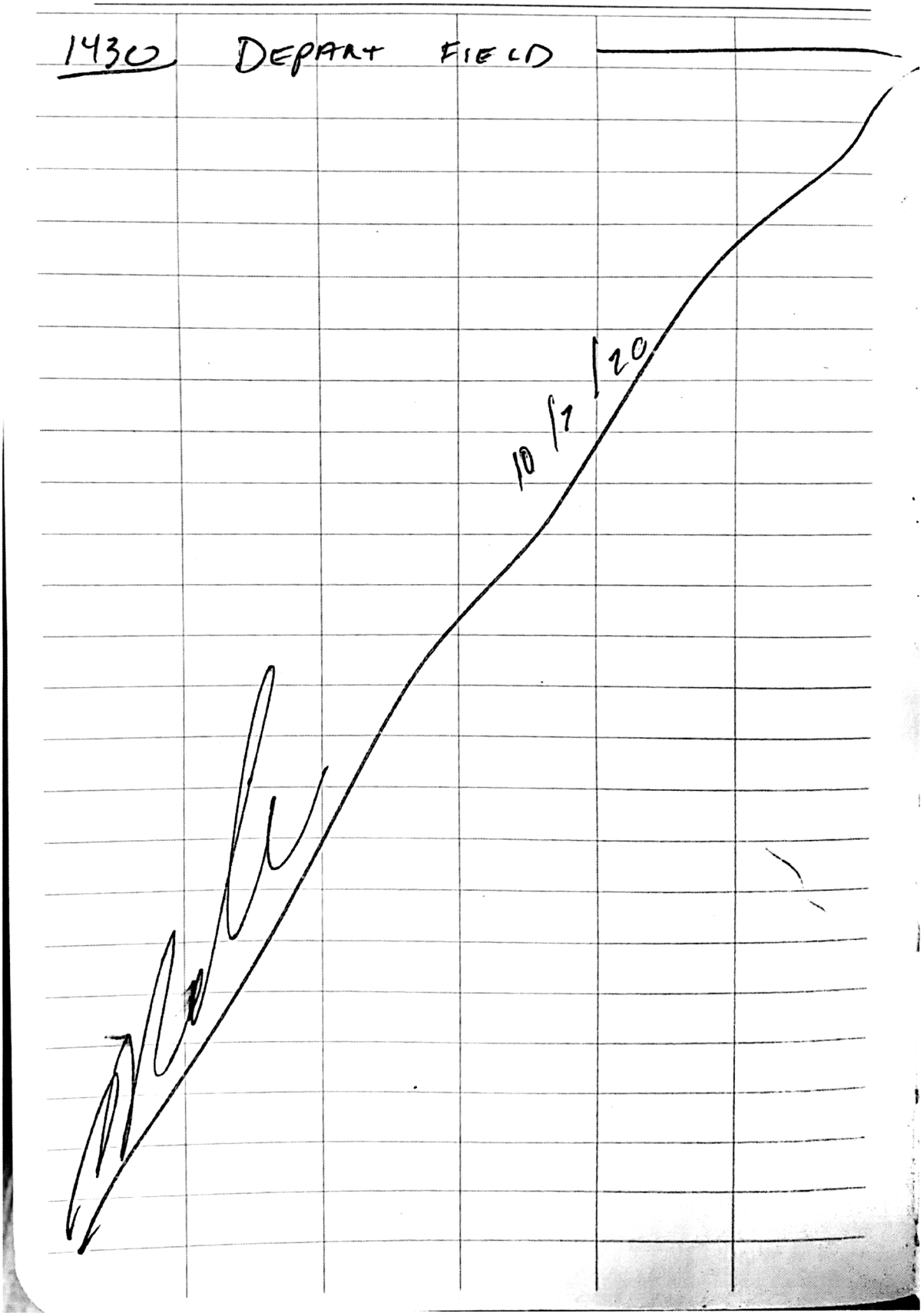
Rite in the Rain

38

Location BELTON, SC Date 10/7/20

Project / Client LEWIS DRIVE / KM

1430 DEPART FIELD



Attachment B
Gauging and Field Data Collection Log

Table 2 - Gauging Sheet for VBS-01 Sparge Test

SM: Tom Wiley
PN: KMLDOM20

Project: Bedrock Sparging Test
Technicians: M. W M. S

Client: Plantation Pipe Line

Equipment: Oil/Water Interface Probe and optical DO probe (YSI ProODO)

Date: 10/6/2020

Sample Location	Monitoring Frequency	Time	PID Reading (ppm)	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	DO (mg/ml)	Comments (i.e. lid bolted down, missing bolts, condition of cap, replace cap, vault bolted down, water in vault, smell, etc.)
MW-11	Initial	1057	471.1	—	27.96	0.67	TD = 32.02
	1						
	2						
MW-18	Initial	1034	0.2	—	18.52	0.32	
	1	1758	7.0	(illegible) 19.06	19.06	NM	SHEEN AT 19.06
	2						
MW-22	Initial	1002	0.0	—	9.52	2.26	TD = 10.34
	1	1743	0.1	—	9.50	5.59	
	2						
MW-44	Initial	0922	0.0	—	8.64	0.93	TD = 9.77
	1						
	2						
MW-44B	Initial	0924	6.0	—	13.43	0.10	
	1						
	2						
RS-01	Initial	1026	340.0	12.36	12.36	NM	SHEEN
	1	1752	...	12.44	12.46	NM	
	2						
RS-02	Initial	1020	0.0	—	9.44	0.21	
	1	1750	0.0	—	10.51	0.18	
	2						
RW-01	Initial	1038	18.6	—	14.67	0.22	
	1 1903	1752	50.7	—	14.65		
	2						

Table 2 - Gauging Sheet for VBS-01 Sparge Test

SM: Tom Wiley
PN: KMLDOM20

Project: Bedrock Sparging Test
Technicians: M.W MS.

Client: Plantation Pipe Line

Equipment: Oil/Water Interface Probe and optical DO probe (YSI ProODO)

Date: 10/6/2020

Sample Location	Monitoring Frequency	Time	PID Reading (ppm)	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	DO (mg/ml)	Comments (i.e. lid bolted down, missing bolts, condition of cap, replace cap, vault bolted down, water in vault, smell, etc.)
VBS-01	Initial	0947	0.0	—	19.63		
	1						
	2						
	3						
	4						
	5						
VBS-02	Initial	1239	10.1	—	6.75		
	1						
	2						
	3						
	4						
	5						
VBS-03	Initial	0957	10.7	—	9.81		
	1						
	2						
	3						
	4						
	5						
MW-01	Initial	0935	0.0	—	9.82	0.28	
	1	1810	0.0	—	9.80	0.28	DTW = 9.85
	2						
MW-01B	Initial	0936	0.1	—	9.87	0.26	
	1	1815	0.2	—	9.82	@0.28 0.24	DTW = 9.91
	2						

Table 2 - Gauging Sheet for VBS-01 Sparge Test

SM: Tom Wiley
PN: KMLDOM20

Client: Plantation Pipe Line

Project: Bedrock Sparging Test
Technicians: MW MS

Equipment: Oil/Water Interface Probe and optical DO probe (YSI ProODO)

Date: 10/6/2020

Sample Location	Monitoring Frequency	Time	PID Reading (ppm)	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	DO (mg/ml)	Comments (i.e. lid bolted down, missing bolts, condition of cap, replace cap, vault bolted down, water in vault, smell, etc.)
RW-02	Initial	1045	988.0	22.89	22.96	NM	
	1						
	2						
RW-03	Initial	1054	890	23.61	23.65	NM	
	1						
	2						

BTOC - below top of casing
ft - feet
PN - Project Number

[1]Total depths collected December 2020

WL - Water Level

ppm - parts per million
SM - Site Manager
Prod. Rec = Product Recovered

Attachment C
Analytical Laboratory Results

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 21, 2020

Kinder Morgan- Atlanta, GA

Sample Delivery Group:	L1271404
Samples Received:	10/08/2020
Project Number:	KMLD0M20
Description:	Lewis Drive Groundwater
Site:	LEWIS DRIVE
Report To:	Bethany Garvey Ten 10th Street NW Suite 1400 Atlanta, GA 30309

Entire Report Reviewed By:

Chris McCord
Project Manager

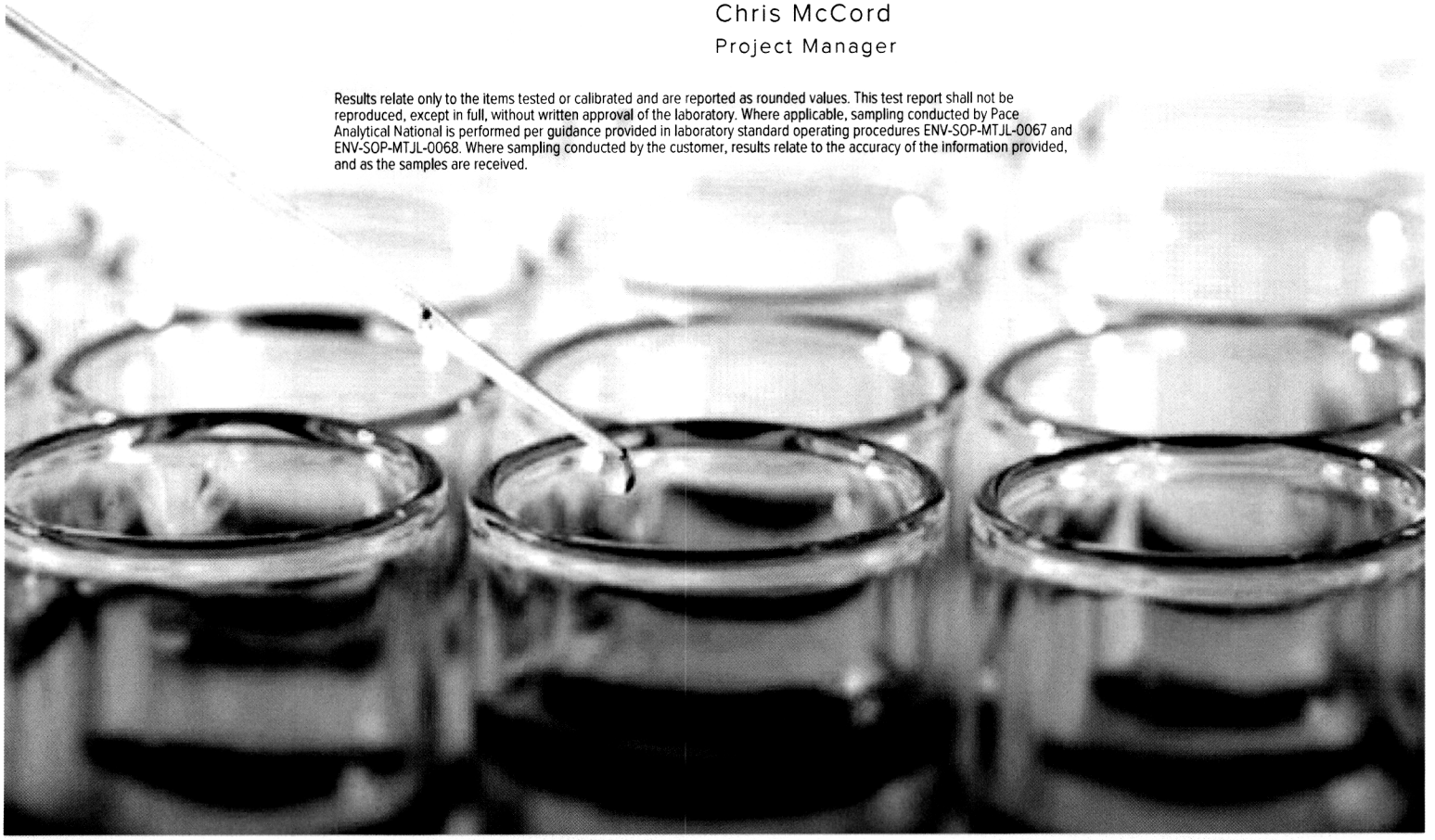


TABLE OF CONTENTS

RS-02-100620 L1271404-01 GW

Collected by: Melissa Warren | Collected date/time: 10/06/20 14:35 | Received date/time: 10/08/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1560920	1	10/18/20 08:57	10/18/20 08:57	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1562073	1	10/20/20 13:07	10/20/20 13:07	JAH	Mt. Juliet, TN

VBS-03-100620 L1271404-02 GW

Collected by: Melissa Warren | Collected date/time: 10/06/20 14:10 | Received date/time: 10/08/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1560920	1	10/18/20 09:16	10/18/20 09:16	DWR	Mt. Juliet, TN

RS-01-100620 L1271404-03 GW

Collected by: Melissa Warren | Collected date/time: 10/06/20 14:45 | Received date/time: 10/08/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1560920	200	10/18/20 10:34	10/18/20 10:34	DWR	Mt. Juliet, TN

RW-01-100620 L1271404-04 GW

Collected by: Melissa Warren | Collected date/time: 10/06/20 15:00 | Received date/time: 10/08/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1562212	5	10/20/20 15:15	10/20/20 15:15	BMB	Mt. Juliet, TN

VBS-02-100620 L1271404-05 GW

Collected by: Melissa Warren | Collected date/time: 10/06/20 14:00 | Received date/time: 10/08/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1561018	1	10/17/20 17:09	10/17/20 17:09	JHH	Mt. Juliet, TN

VBS-01-100620 L1271404-06 GW

Collected by: Melissa Warren | Collected date/time: 10/06/20 13:45 | Received date/time: 10/08/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1561018	1	10/17/20 17:30	10/17/20 17:30	JHH	Mt. Juliet, TN

FB01-100620 L1271404-07 GW

Collected by: Melissa Warren | Collected date/time: 10/06/20 15:10 | Received date/time: 10/08/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1561018	1	10/17/20 16:29	10/17/20 16:29	JHH	Mt. Juliet, TN

TB01-100620 L1271404-08 GW

Collected by: Melissa Warren | Collected date/time: 10/06/20 00:00 | Received date/time: 10/08/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1561018	1	10/17/20 16:49	10/17/20 16:49	JHH	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris McCord
Project Manager

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/18/2020 08:57	WG1560920
Toluene	ND		1.00	1	10/18/2020 08:57	WG1560920
Ethylbenzene	ND		1.00	1	10/18/2020 08:57	WG1560920
Total Xylenes	ND		3.00	1	10/20/2020 13:07	WG1562073
Methyl tert-butyl ether	ND		1.00	1	10/18/2020 08:57	WG1560920
Naphthalene	ND		5.00	1	10/18/2020 08:57	WG1560920
1,2-Dichloroethane	ND		1.00	1	10/18/2020 08:57	WG1560920
(S) Toluene-d8	*110*		*80.0-120*		*10/18/2020 08:57*	WG1560920
(S) Toluene-d8	*105*		*80.0-120*		*10/20/2020 13:07*	WG1562073
(S) 4-Bromofluorobenzene	*99.2*		*77.0-126*		*10/18/2020 08:57*	WG1560920
(S) 4-Bromofluorobenzene	*92.9*		*77.0-126*		*10/20/2020 13:07*	WG1562073
(S) 1,2-Dichloroethane-d4	*110*		*70.0-130*		*10/18/2020 08:57*	WG1560920
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*10/20/2020 13:07*	WG1562073

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/18/2020 09:16	WG1560920
Toluene	ND		1.00	1	10/18/2020 09:16	WG1560920
Ethylbenzene	ND		1.00	1	10/18/2020 09:16	WG1560920
Total Xylenes	ND		3.00	1	10/18/2020 09:16	WG1560920
Methyl tert-butyl ether	ND		1.00	1	10/18/2020 09:16	WG1560920
Naphthalene	ND		5.00	1	10/18/2020 09:16	WG1560920
1,2-Dichloroethane	ND		1.00	1	10/18/2020 09:16	WG1560920
(S) Toluene-d8	*110*		*80.0-120*		*10/18/2020 09:16*	WG1560920
(S) 4-Bromofluorobenzene	*101*		*77.0-126*		*10/18/2020 09:16*	WG1560920
(S) 1,2-Dichloroethane-d4	*113*		*70.0-130*		*10/18/2020 09:16*	WG1560920

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	4120		200	200	10/18/2020 10:34	WG1560920
Toluene	21300		200	200	10/18/2020 10:34	WG1560920
Ethylbenzene	1560		200	200	10/18/2020 10:34	WG1560920
Total Xylenes	17700		600	200	10/18/2020 10:34	WG1560920
Methyl tert-butyl ether	ND		200	200	10/18/2020 10:34	WG1560920
Naphthalene	ND		1000	200	10/18/2020 10:34	WG1560920
1,2-Dichloroethane	ND		200	200	10/18/2020 10:34	WG1560920
(S) Toluene-d8	*110*		*80.0-120*		*10/18/2020 10:34*	WG1560920
(S) 4-Bromofluorobenzene	*105*		*77.0-126*		*10/18/2020 10:34*	WG1560920
(S) 1,2-Dichloroethane-d4	*113*		*70.0-130*		*10/18/2020 10:34*	WG1560920

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	85.1		5.00	5	10/20/2020 15:15	WG1562212
Toluene	ND		5.00	5	10/20/2020 15:15	WG1562212
Ethylbenzene	52.0		5.00	5	10/20/2020 15:15	WG1562212
Total Xylenes	49.7		15.0	5	10/20/2020 15:15	WG1562212
Methyl tert-butyl ether	ND		5.00	5	10/20/2020 15:15	WG1562212
Naphthalene	ND	J0	25.0	5	10/20/2020 15:15	WG1562212
1,2-Dichloroethane	ND		5.00	5	10/20/2020 15:15	WG1562212
(S) Toluene-d8	*106*		*80.0-120*		*10/20/2020 15:15*	WG1562212
(S) 4-Bromofluorobenzene	*95.1*		*77.0-126*		*10/20/2020 15:15*	WG1562212
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*10/20/2020 15:15*	WG1562212

Sample Narrative:

L1271404-04 WG1562212: Non-target compounds too high to run at a lower dilution.

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/17/2020 17:09	WG1561018
Toluene	ND		1.00	1	10/17/2020 17:09	WG1561018
Ethylbenzene	ND		1.00	1	10/17/2020 17:09	WG1561018
Total Xylenes	ND		3.00	1	10/17/2020 17:09	WG1561018
Methyl tert-butyl ether	ND		1.00	1	10/17/2020 17:09	WG1561018
Naphthalene	ND		5.00	1	10/17/2020 17:09	WG1561018
1,2-Dichloroethane	ND		1.00	1	10/17/2020 17:09	WG1561018
(S) Toluene-d8	*99.6*		*80.0-120*		*10/17/2020 17:09*	WG1561018
(S) 4-Bromofluorobenzene	*107*		*77.0-126*		*10/17/2020 17:09*	WG1561018
(S) 1,2-Dichloroethane-d4	*119*		*70.0-130*		*10/17/2020 17:09*	WG1561018

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/17/2020 17:30	WG1561018
Toluene	1.06		1.00	1	10/17/2020 17:30	WG1561018
Ethylbenzene	ND		1.00	1	10/17/2020 17:30	WG1561018
Total Xylenes	ND		3.00	1	10/17/2020 17:30	WG1561018
Methyl tert-butyl ether	ND		1.00	1	10/17/2020 17:30	WG1561018
Naphthalene	ND		5.00	1	10/17/2020 17:30	WG1561018
1,2-Dichloroethane	ND		1.00	1	10/17/2020 17:30	WG1561018
(S) Toluene-d8	*99.1*		*80.0-120*		*10/17/2020 17:30*	WG1561018
(S) 4-Bromofluorobenzene	*102*		*77.0-126*		*10/17/2020 17:30*	WG1561018
(S) 1,2-Dichloroethane-d4	*120*		*70.0-130*		*10/17/2020 17:30*	WG1561018

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/17/2020 16:29	WG1561018
Toluene	ND		1.00	1	10/17/2020 16:29	WG1561018
Ethylbenzene	ND		1.00	1	10/17/2020 16:29	WG1561018
Total Xylenes	ND		3.00	1	10/17/2020 16:29	WG1561018
Methyl tert-butyl ether	ND		1.00	1	10/17/2020 16:29	WG1561018
Naphthalene	ND		5.00	1	10/17/2020 16:29	WG1561018
1,2-Dichloroethane	ND		1.00	1	10/17/2020 16:29	WG1561018
(S) Toluene-d8	*100*		*80.0-120*		*10/17/2020 16:29*	WG1561018
(S) 4-Bromofluorobenzene	*108*		*77.0-126*		*10/17/2020 16:29*	WG1561018
(S) 1,2-Dichloroethane-d4	*117*		*70.0-130*		*10/17/2020 16:29*	WG1561018

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/17/2020 16:49	WG1561018
Toluene	ND		1.00	1	10/17/2020 16:49	WG1561018
Ethylbenzene	ND		1.00	1	10/17/2020 16:49	WG1561018
Total Xylenes	ND		3.00	1	10/17/2020 16:49	WG1561018
Methyl tert-butyl ether	ND		1.00	1	10/17/2020 16:49	WG1561018
Naphthalene	ND		5.00	1	10/17/2020 16:49	WG1561018
1,2-Dichloroethane	ND		1.00	1	10/17/2020 16:49	WG1561018
(S) Toluene-d8	*101*		*80.0-120*		*10/17/2020 16:49*	WG1561018
(S) 4-Bromofluorobenzene	*107*		*77.0-126*		*10/17/2020 16:49*	WG1561018
(S) 1,2-Dichloroethane-d4	*121*		*70.0-130*		*10/17/2020 16:49*	WG1561018

Method Blank (MB)

(MB) R3583157-2 10/18/20 03:44

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0941	1.00
1,2-Dichloroethane	U		0.0819	1.00
Ethylbenzene	U		0.137	1.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	*111*			*80.0-120*
(S) 4-Bromofluorobenzene	*101*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*105*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3583157-1 10/18/20 03:05

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	5.00	5.26	105	70.0-130	
1,2-Dichloroethane	5.00	5.29	106	70.0-130	
Ethylbenzene	5.00	5.26	105	70.0-130	
Methyl tert-butyl ether	5.00	4.92	98.4	70.0-130	
Naphthalene	5.00	4.96	99.2	70.0-130	
Toluene	5.00	5.27	105	70.0-130	
Xylenes, Total	15.0	15.7	105	70.0-130	
(S) Toluene-d8			*111*	*80.0-120*	
(S) 4-Bromofluorobenzene			*99.2*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*112*	*70.0-130*	

Method Blank (MB)

(MB) R3583121-2 10/17/20 14:44

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.0941	1.00
1,2-Dichloroethane	U		0.0819	1.00
Ethylbenzene	U		0.137	1.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	*98.3*			*80.0-120*
(S) 4-Bromofluorobenzene	*103*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*118*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3583121-1 10/17/20 13:43 • (LCSD) R3583121-3 10/17/20 23:35

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	5.00	4.38	4.43	87.6	88.6	70.0-130			1.14	20
1,2-Dichloroethane	5.00	5.52	4.86	110	97.2	70.0-130			12.7	20
Ethylbenzene	5.00	4.51	4.51	90.2	90.2	70.0-130			0.000	20
Methyl tert-butyl ether	5.00	4.70	4.09	94.0	81.8	70.0-130			13.9	20
Naphthalene	5.00	5.08	5.84	102	117	70.0-130			13.9	20
Toluene	5.00	4.22	4.32	84.4	86.4	70.0-130			2.34	20
Xylenes, Total	15.0	13.8	14.2	92.0	94.7	70.0-130			2.86	20
(S) Toluene-d8				*98.6*	*99.6*	*80.0-120*				
(S) 4-Bromofluorobenzene				*103*	*103*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*122*	*106*	*70.0-130*				

Method Blank (MB)

(MB) R3583505-3 10/20/20 08:52

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	*106*			*80.0-120*
(S) 4-Bromofluorobenzene	*94.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3583505-1 10/20/20 07:30 • (LCSD) R3583505-2 10/20/20 07:51

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Xylenes, Total	15.0	13.7	14.4	91.3	96.0	70.0-130			4.98	20
(S) Toluene-d8				*104*	*104*	*80.0-120*				
(S) 4-Bromofluorobenzene				*93.9*	*93.1*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*101*	*105*	*70.0-130*				

Method Blank (MB)

(MB) R3583634-3 10/20/20 08:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.0941	1.00
1,2-Dichloroethane	U		0.0819	1.00
Ethylbenzene	U		0.137	1.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	*106*			*80.0-120*
(S) 4-Bromofluorobenzene	*94.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3583634-1 10/20/20 07:30 • (LCSD) R3583634-2 10/20/20 07:51

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	5.00	4.62	4.81	92.4	96.2	70.0-130			4.03	20
1,2-Dichloroethane	5.00	5.15	5.09	103	102	70.0-130			1.17	20
Ethylbenzene	5.00	4.46	4.84	89.2	96.8	70.0-130			8.17	20
Methyl tert-butyl ether	5.00	4.65	4.92	93.0	98.4	70.0-130			5.64	20
Naphthalene	5.00	3.61	4.00	72.2	80.0	70.0-130			10.2	20
Toluene	5.00	5.01	5.16	100	103	70.0-130			2.95	20
Xylenes, Total	15.0	13.7	14.4	91.3	96.0	70.0-130			4.98	20
(S) Toluene-d8				*104*	*104*	*80.0-120*				
(S) 4-Bromofluorobenzene				*93.9*	*93.1*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*101*	*105*	*70.0-130*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J0	J0: The identification of the analyte is acceptable, but the reported concentration is an estimate. The calibration met method criteria.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

Kinder Morgan- Atlanta, GA

Ten 10th Street NW
Suite 1400
Atlanta, GA 30309

Billing Information:
Accounts Payable
1000 Windward Concourse
Ste 450
Alpharetta, GA 30005

Report to: Bethany Garvey

Email To: bethany.garvey@jacobs.com; tom.wiley@jacobs.com

Project Description: Lewis Drive Groundwater

City/State Collected: Belton, SC

Please Circle: PT MT CT ET

Phone: 770-604-9182
Fax:

Client Project # KMLDOM20

Lab Project # KINCH2MGA-LEWIS12

Collected by (print): Melissa Warren

Site/Facility ID # Lewis Drive

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Immediately Packed on Ice N ___ Y X

Chain of Custody Page 1 of 1

Pace Analytical
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # L1271464

F113

Acctnum: KINCH2MGA
Template: T155769
Prelogin: P746132
PM: 526 - Chris McCord
PB: 12-11-19 GM
Shipped Via: FedEx Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260BTEXMNSC 40mlAmb-HCl	V8260BTEXMNSC-TB 40mlAmb-HCl-Blk	Remarks	Sample # (lab only)
RS-02-100620	GRAB	GW	N/A	10/06/20	1435	3	X			-01
VBS-03-100620		GW			1410	3	X			-02
RS-01-100620		GW			1445	3	X			-03
RW-01-100620		GW			1500	3	X			-04
VBS-02-100620		GW			1400	3	X			-05
VBS-01-100620		GW			1345	3	X			-06
FB01-100620		GW			1510	3	X			-07
TB01-100620		GW			—	1	X	X		-08
		~~GW~~				~~3~~	~~X~~			
		~~GW~~				~~3~~	~~X~~			

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: V8260BTEXMNSC=BTEX, MTBE, Naphthalene, and 1,2-DCA.

pH _____ Temp _____

Flow _____ Other _____

Samples returned via: ___ UPS ___ FedEx ___ Courier _____

Tracking # 780302204485

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		DV N

	Date:	Time:		
Relinquished by : (Signature)	10/7/20	1700	Received by: (Signature)	Trip Blank Received: Yes / No HCl / MeoH TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.7-0.4=0.3 °C Bottles Received: 21
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 10/8/20 Time: 0900

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK