

## Exhibit II. Hunter Industrial Park Phase II Environmental Site Assessment



# Hunter Industrial Park Phase II Environmental Site Assessment

## Limited Site Investigation

Hunter Industrial Park  
(Approximately 32°32'29.67"N, 93°46'55.63"W)  
Shreveport, Caddo Parish, Louisiana

July 16, 2018  
Terracon Project No. EB187005



### Prepared for:

Headwaters, Inc.  
307 Highland Park Cove  
Ridgeland, Mississippi

### Prepared by:

Terracon Consultants, Inc.  
Ridgeland, Mississippi

Offices Nationwide  
Employee-Owned

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# Terracon

Geotechnical   ■   Environmental   ■   Construction Materials   ■   Facilities

July 16, 2018



Headwaters, Inc.  
307 Highland Park Cove  
Ridgeland, MS 39157

Attn: Mr. Josh Brown  
P: (601) 634-0097  
E: [josh@headwaters-inc.com](mailto:josh@headwaters-inc.com)

RE: Limited Site Investigation  
Hunter Industrial Park  
(Approximately 32°32'29.67"N, 93°46'55.63"W)  
Shreveport, Caddo Parish, Louisiana  
Terracon Proposal No. EB187005

Dear Mr. Brown:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Limited Site Investigation (LSI) report for the above-referenced site. This assessment was performed in accordance with Terracon Proposal No. PEB187005, dated June 11, 2018.

We appreciate the opportunity to be of service to you on this project. If there are any questions regarding this report or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,  
**Terracon Consultants, Inc.**

A handwritten signature in purple ink that reads "E. Claire Lamar". The signature is fluid and cursive, with the first name "E." and last name "Lamar" clearly visible.

E. Claire Lamar, GIT  
Staff Geologist

Jason A. McIlwain, RPG  
Environmental Department Manager

Attachments

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**Limited Site Investigation  
Hunter Industrial Park  
(Approximately 32°32'29.67"N, 93°46'55.63"W)  
Shreveport, Caddo Parish, Louisiana  
Terracon Project No. EB187005  
July 16, 2018**

## **1.0 INTRODUCTION**

### **1.1 Site Description**

<b>Site Name</b>	Hunter Industrial Park
<b>Site Location/Address</b>	(Approximately 32°32'29.67"N, 93°46'55.63"W) Shreveport, Louisiana
<b>Land Area</b>	Site Boundary: Approximately 135.33 acres Area of Concern: Approximately 12.9 acres
<b>Site Improvements</b>	Undeveloped and/or wooded

The site location is depicted on Exhibit 1 of Appendix A, which was reproduced from a portion of the USGS 7.5-minute series topographic map. The site plan is included as Exhibit 2 of Appendix A. The boring location map is included as Exhibit 3 of Appendix A.

### **1.2 Background**

The site is currently undeveloped and/or wooded land with no apparent building structures. The property consists of approximately 135.33 acres.

### **1.3 Purpose and Goal**

The purpose of this Limited Site Investigation (LSI) is to determine if impacts to soil and/or groundwater exist from an apparent dumping ground discovered by Headwaters, Inc. (client) while conducting a Phase I Environmental Site Assessment (ESA) on the site. The client reported finding evidence of household debris, empty discarded drums, etc. This portion of the site, known as the Area of Environmental Concern (AEC), consists of the northern approximate 12.9 acres of the property. The goal of the LSI was to collect soil and groundwater samples for analytical testing to determine if contamination exists at the AEC.

### **1.4 Scope of Services**

A detailed description of the scope of services was presented in Terracon's Proposal No. PEB187005, dated June 11, 2018, as approved by the client. This LSI was conducted in general accordance with the guidelines and procedures identified by the Louisiana Department

## Limited Site Investigation

Hunter Industrial Park ■ Shreveport, Louisiana  
July 16, 2018 ■ Terracon Project No. EB187005



of Environmental Quality's (LDEQ) Risk Evaluation/Corrective Action Program (RECAP), *Appendix B – Site Investigation Requirements*, dated October 20, 2003. Significant variations from the approved Scope of Work did not occur as part of this LSI.

### 1.5 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken for similar studies in the same geographical area during the same time period. Terracon makes no warranties, either express or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of this report. These services were performed in accordance with the scope of work agreed to by the client as reflected in our proposal.

### 1.6 Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this assessment. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

### 1.7 Reliance

This report has been prepared for the exclusive use of Headwaters, Inc. Any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of Terracon. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, LSI report, and Terracon's Terms and Conditions. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to the client and all relying parties unless otherwise agreed in writing.

## 2.0 FIELD ACTIVITIES AND METHODOLOGY

### 2.1 Site Geology

The site is situated in the Red River Valley Alluvium deposits of northwestern Louisiana. These sediments are geologically young sedimentary sequences that were deposited in or adjacent to the Red River. The Red River Valley Alluvium generally consist of gray, brownish gray, and reddish brown clay and silty clay, with some sand and gravel.

### 2.2 Soil Borings

Terracon's field activities were conducted on June 20, 2018, by Mr. Lee A. Polk, Jr., a Terracon Staff Geologist. Four soil borings (B-1 through B-4) were advanced in accessible areas of the site which represent areas of most likely environmental impact from potential releases. The locations of the soil borings are depicted on Exhibit 3.

Drilling services were performed by Walker-Hill Environmental, Inc. (WHE) utilizing direct-push techniques under the supervision of a Terracon professional. Soil samples were collected continuously using a dual-tube sampling system fitted with four-foot vinyl acetate sampling liners. Soil borings were advanced to a maximum depth of approximately 36 feet below surface grade (bsg) in soil boring B-1, approximately 28 feet bsg in soil boring B-2, and approximately 30 feet bsg in soil borings B-3 and B-4 to investigate subsurface conditions at the site.

Sampling equipment was cleaned using an Liquinox® wash and potable water prior to the beginning of the project and between each soil boring location. Soil samples were observed to document soil lithology, color, relative moisture content and sensory evidence of potential adverse environmental impact. Representative soil samples were field-screened using a photoionization detector (PID) to determine the potential presence of volatile organic compounds (VOCs).

- n A brownish tan and brownish red silty/sandy clay was encountered from approximately ground surface to approximately 12 feet bsg in soil borings B-1 through B-4;
- n A gray silty clay was encountered from approximately 12 feet bsg to approximately 16 feet bsg in soil borings B-1 through B-4;
- n A gray/yellowish tan/red mottled silty clay was encountered from approximately 16 feet bsg to approximately 24 feet bsg in soil borings B-1 through B-4;
- n A gray/tan mottled silty clay/sand was encountered from approximately 24 feet bsg to terminal depths of approximately 28 feet bsg in soil boring B-2 and approximately 32 feet bsg in soil borings B-3 and B-4.
- n A gray/yellowish tan mottled silty clay was encountered from approximately 23 feet bsg to approximately 32 feet bsg in soil boring B-1.
- n A gray sandy silt was encountered from approximately 32 feet bsg to the terminal depth of approximately 36 feet bsg in soil boring B-1.

The soil boring logs located in Appendix B should be referenced for additional information regarding lithology, PID screening values, unusual odors and/or suspect indicators of adverse environmental impacts, encountered groundwater depths, and analytical sample collection depths at the site.

## **2.3 Soil Sampling**

Soil samples were collected for laboratory analysis based on either PID screening, lithology, depth within the vadose zone or other field observations. The soil samples were identified respective to the boring identification and depth of collection; i.e., sample B-1 was collected from soil boring B-1. Indicators of adverse environmental impacts were not identified during the soil boring advancement. Low and/or non-detect PID readings (<100 parts per million (ppm)) were documented in each soil boring. The soil sample for analytical testing from B-1 was collected from the 32'-34' zone, sample from B-2 was collected from the 24-26' zone, and samples from B-3 and B-4 were collected from the 28'-30' zone.

The collected soil samples were placed in laboratory-provided sample containers, sealed and labeled appropriately, then placed on ice in an insulated container for the duration of field activities. The container was then sealed and shipped to ESC Lab Sciences (ESC) in Mt. Juliet, Tennessee on June 21, 2018, under chain of custody protocol.

## **2.4 Groundwater Sampling**

Following completion of soil sampling, grab groundwater samples were collected from temporary groundwater monitoring wells installed in each soil boring and identified respective to the boring identification; i.e., sample TW-1 was collected from soil boring B-1. Each temporary groundwater monitoring well was constructed of 1.0-inch inner diameter (ID) PVC riser pipe and approximately 10 feet of 1.0-inch ID pre-slotted factory well screen. The wells were installed to the following approximate terminal depths: TW-1 (44 feet bsg), TW-2 (36 feet bsg), TW-3 (40 feet bsg), and TW-4 (40 feet bsg). After collection of groundwater samples, the temporary groundwater monitoring wells were pulled and the borings were backfilled with a bentonite/grout mixture. The bentonite/grout mixture were allowed to hydrate prior to each borehole being topped with soil cuttings flush to ground surface.

The groundwater flow direction and the depth to shallow groundwater would likely vary depending upon seasonal rainfall, nearby surficial water bodies and other geologic conditions. Without the benefit of permanently installed groundwater monitoring wells and surveyed datum, groundwater flow direction at the site cannot be ascertained. This is not anticipated to affect the findings or recommendations of this LSI.



### **3.0 DATA EVALUATION**

Four soil samples and four groundwater samples were submitted to ESC for laboratory analysis. Headwaters, Inc. requested that the soil and groundwater samples be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by the Environmental Protection Agency (EPA) method 8260B, total petroleum hydrocarbon – gasoline range organics (TPH-GRO) by EPA method 8015D/GRO, total petroleum hydrocarbon – diesel range organics (TPH-DRO) by EPA method 8015, and total petroleum hydrocarbon – diesel range organics (TPH-DRO) by EPA method 8015. One laboratory-provided quality assurance/quality control (QA/QC) trip blank sample was also submitted for BTEX analysis. Please refer to Appendix C for the laboratory analytical report and Appendix A for the analytical data summary tables.

#### **3.1 Soil Samples**

Based on review of the analytical data report provided by ESC, the soil samples collected on June 20, 2018 did not contain total BTEX, TPH-GRO, TPH-DRO, or TPH-ORO concentrations above the laboratory method detection limits (MDL). The analytical results are presented in Table 1 attached in Appendix A.

#### **3.2 Groundwater Samples**

Based on review of the analytical data report provided by ESC, groundwater samples collected from temporary groundwater wells TW-1 through TW-4 exhibited TPH-DRO concentrations exceeding the LDEQ RECAP screening level of 0.15 milligrams per liter (mg/l) for groundwater. The following groundwater concentrations were reported for samples collected on June 20, 2018: TW-1 (0.525 mg/l), TW-2 (1.41 mg/l), TW-3 (0.237 mg/l), and TW-4 (0.158 mg/l). Groundwater samples collected on June 20, 2018 did not contain total BTEX, TPH-GRO, or TPH-ORO concentrations above the laboratory MDLs. A summary of the groundwater analytical data and comparison to the LDEQ RECAP screening levels is provided in Table 2 in Appendix A.

### **4.0 FINDINGS**

The LDEQ RECAP includes minimum standards for regulatory involvement based on contaminants identified in soil and groundwater; i.e. “screening standards”. These values were developed based on risk evaluation and potential human exposure, as well as that considered to be protective of the environment. The screening standards for soil are divided into three categories (non-industrial, industrial and protective of groundwater).

Terracon compared the analytical data for the soil samples collected as part of this LSI to the LDEQ RECAP soil screening standards for non-industrial sites (SSni), the screening standards for industrial sites (SSi), and the screening standards protective of groundwater (SSgw). The

## Limited Site Investigation

Hunter Industrial Park ■ Shreveport, Louisiana  
July 16, 2018 ■ Terracon Project No. EB187005



soil samples collected did not contain total BTEX, TPH-GRO, TPH-DRO, or TPH-ORO concentrations above the method detection limit (MDL).

Terracon compared the analytical data for groundwater samples collected as part of this LSI to the LDEQ RECAP screening standards for groundwater (GWss). The groundwater samples collected from temporary groundwater monitoring wells (TW-1 through TW-4) contained concentrations exceeding the LDEQ RECAP screening standard of 0.15 mg/l for TPH-DRO in groundwater. The following groundwater concentrations were reported for samples collected on June 20, 2018: TW-1 (0.525 mg/l), TW-2 (1.41 mg/l), TW-3 (0.237 mg/l), and TW-4 (0.158 mg/l).

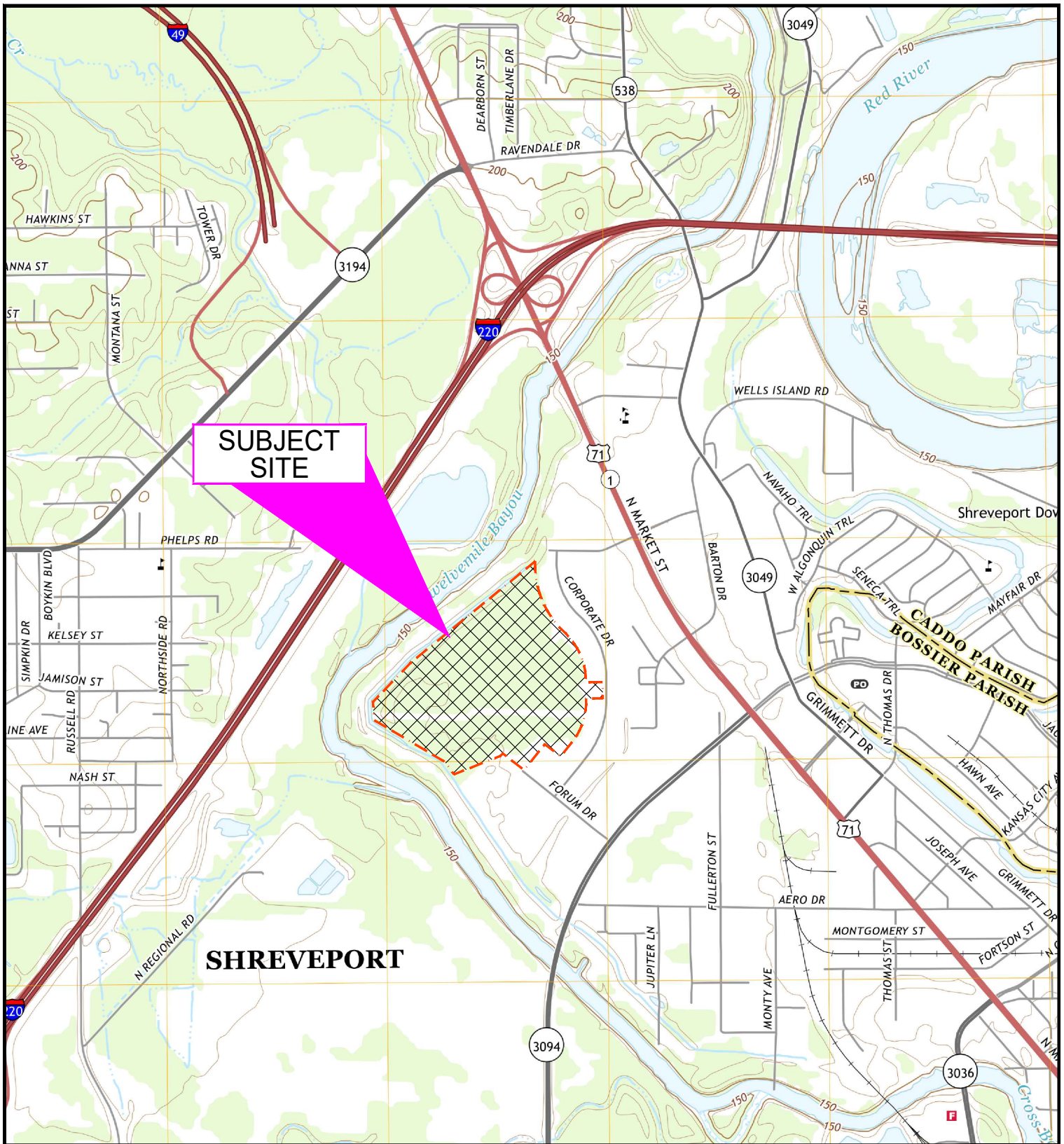
## 5.0 GENERAL COMMENTS

This report has been prepared for the exclusive use of the client and the entities identified in Section 1.7 for the specific applications to the project as discussed here-in. The analysis and opinions expressed in this report are based upon data obtained from the soil and groundwater samples and laboratory analysis at the indicated sample locations or from other information discussed in this report. This report does not reflect variations in subsurface stratigraphy, hydrogeology, and contaminant distribution that may occur across the site or at locations other than the sample collection points. Actual subsurface conditions may vary and may not become evident without further assessment.

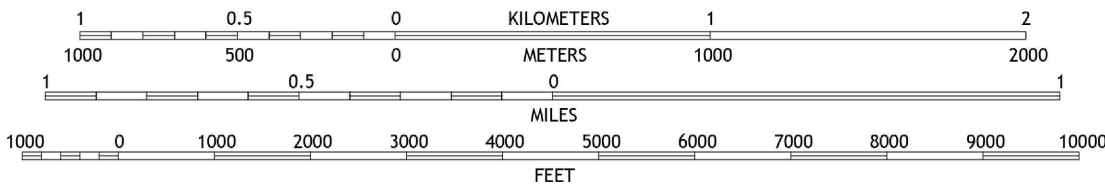
**APPENDIX A**

**EXHIBITS**

**ANALYTICAL TABLES**



SCALE 1:24 000



USGS  
Quad Map  
North Highlands, LA  
2018

Project Mgr: WBM	Project No. EB187005	 Consulting Engineers and Scientists 859 Pear Orchard Road Ridgeland, MS 39157 (601) 956-4467	Site Location Map Limited Site Investigation Hunter Industrial Park Shreveport, Louisiana	Exhibit 1
Drawn By: MK(MP)	Scale: AS SHOWN			
Checked By: ECL/JAM	File No. FIGURE SITE MAPS.DWG			
Approved By: JAM	Date: July 2018			





<div>Project Mgr: WBM</div> <div>Drawn By: MK(MP)</div> <div>Checked By: ECL/JAM</div> <div>Approved By: JAM</div>		<div>Project No. EB187005</div> <div>Scale: AS SHOWN</div> <div>File No. FIGURE SITE MAPS.DWG</div> <div>Date: July 2018</div>		<div><div>Terracon</div><div>Consulting Engineers and Scientists</div></div> <div>859 Pear Orchard Road      Ridgeland, MS 39157 (601) 956-4467      (601) 956-9533</div>		<div>Site Location Map</div> <div>Limited Site Investigation</div> <div>Hunter Industrial Park</div> <div>Shreveport, Louisiana</div>		<div>Exhibit</div> <div>2</div>
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<b>LEGEND</b> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <span style="color: red; font-size: 1.2em; margin-right: 5px;">●</span> <span>B-1 Soil Sample Location</span> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <span style="border: 2px dashed orange; width: 20px; height: 10px; display: inline-block; margin-right: 5px;"></span> <span>Area of Environmental Concern (±12.9 acres)</span> </div> <div style="display: flex; align-items: center;"> <span style="border-top: 2px dashed orange; width: 20px; display: inline-block; margin-right: 5px;"></span> <span>Approximate Site Boundary (135.33 acres)</span> </div>		<div style="margin-bottom: 10px;"> <b>N</b>  </div> <div>   <i>Scale in Feet</i> </div>
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Base: Google Earth

Project Mgr: WBM	Project No. EB187005	 Consulting Engineers and Scientists  <small>859 Pear Orchard Road      Ridgeland, MS 39157 (601) 956-4467                      (601) 956-9533</small>	<b>Boring Location Map</b>  Limited Site Investigation Hunter Industrial Park Shreveport, Louisiana	Exhibit  <div style="font-size: 2em; font-weight: bold;">3</div>
Drawn By: MK(MP)	Scale: AS SHOWN			
Checked By: ECL/JAM	File No. FIGURE SITE MAPS.DWG			
Approved By: JAM	Date: July 2018			



**Table 1**  
**Soil Analytical Data Summary**  
**Hunter Industrial Park**  
**Shreveport, Louisiana**  
**Project No. EB187005**

Sample	Sample Depth (feet)	Sample Collection Date	Analytes						
			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-ORO (mg/kg)
B-1	(32'-34')	6/20/2018	ND	ND	ND	ND	ND	ND	ND
B-2	(24'-26')	6/20/2018	ND	ND	ND	ND	ND	ND	ND
B-3	(28'-30')	6/20/2018	ND	ND	ND	ND	ND	ND	ND
B-4	(28'-30')	6/20/2018	ND	ND	ND	ND	ND	ND	ND
LDEQ RECAP SSni			1.50	68.0	160	18.0	65.0	65.0	180
LDEQ RECAP SSI			3.10	470	230	120	510	510	2,500
LDEQ RECAP SSgw			0.051	20.0	19.0	150	65.0	65.0	10,000

Notes:

"mg/kg" - milligrams per kilogram, or parts per million.

"ND" - not detected at a concentration at or above the method reporting level

TPH-GRO: Total Petroleum Hydrocarbons - Gasoline Range Organics

TPH-DRO: Total Petroleum Hydrocarbons - Diesel Range Organics

TPH-ORO: Total Petroleum Hydrocarbons - Oil Range Organics

LDEQ: Louisiana Department of Environmental Quality

RECAP: Risk Evaluation / Corrective Action Program

SSni: LDEQ RECAP screening standard for surface soil on non-industrial land

SSI: LDEQ RECAP screening standard for surface soil on industrial land

SSgw: LDEQ RECAP screening standard for the soil concentration protective of groundwater



Table 2  
Groundwater Analytical Data Summary  
Hunter Industrial Park  
Shreveport, Louisiana  
Project No. EB187005

Sample	Sample Collection Date	Analytes						
		Benzene (mg/l)	Toluene (mg/l)	Ethylbenzene (mg/l)	Total Xylenes (mg/l)	TPH-GRO (mg/l)	TPH-DRO (mg/l)	TPH-ORO (mg/l)
TW-1	6/20/2018	ND	ND	ND	ND	ND	<b>0.525</b>	ND
TW-2	6/20/2018	ND	ND	ND	ND	ND	<b>1.41</b>	ND
TW-3	6/20/2018	ND	ND	ND	ND	ND	<b>0.237</b>	ND
TW-4	6/20/2018	ND	ND	ND	ND	ND	<b>0.158</b>	ND
Trip Blank	6/20/2018	ND	ND	ND	ND	NA	NA	NA
<b>LDEQ RECAP GW Screening Standards</b>		0.005	1.00	0.70	10.0	0.15	0.15	0.15

Notes:

"mg/l" - milligrams per liter

"ND" - not detected at a concentration at or above the method reporting level

"NA" - not available

TPH-GRO: Total Petroleum Hydrocarbons - Gasoline Range Organics

TPH-DRO: Total Petroleum Hydrocarbons - Diesel Range Organics

TPH-ORO: Total Petroleum Hydrocarbons - Oil Range Organics

LDEQ: Louisiana Department of Environmental Quality

RECAP: Risk Evaluation / Corrective Action Program

**Bold** indicates concentration detected above the LDEQ RECAP Groundwater screening levels



**APPENDIX B**

**SOIL BORING LOGS**

# BORING LOG NO. B-1/TW-1


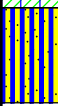

Page 1 of 1

PROJECT: Hunter Park LSI

CLIENT: Headwaters, Inc.

SITE:

Shreveport, LA

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 32.541637° Longitude: 93.780942°		DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)
	DEPTH	MATERIAL DESCRIPTION					
	4.0	<u>Silty Clay (CL-ML)</u> , Brownish Tan, no odor, dry				100	0.4
		<u>Silty Clay (CL-ML)</u> , Brownish Red, no odor, dry, hard	5			75	0.4
	11.0	<u>Silty Clay (CL-ML)</u> , Gray, no odor, dry, hard	10			100	0.4 / 0.3
	16.0	<u>Silty Clay (CL-ML)</u> , Gray and Tanish Brown Mottled, no odor, dry, very firm	15			100	0.3
	22.0	<u>Silty Clay (CL-ML)</u> , Yellowish Tan, no odor, dry, hard	20			100	0.2 / 0.3
	24.0	<u>Silty Clay (CL-ML)</u> , Gray and Yellowish Tan Mottled, no odor, dry, hard	25			100	0.6 / 0.7
	32.0	<u>Silty Clay (CL-ML)</u> , Gray and Yellowish Tan Mottled, no odor, dry, hard	30			100	0.4 / 0.5
	36.0	<u>Sandy Silt (ML)</u> , Gray, no odor, wet beginning at 34' bsg, loose	35			100	0.3 / 0.2
			40				
		<b>Boring Terminated at 44 Feet</b>					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:  
Dual-Tube


See Appendices for description of field procedures.  
See Appendices for description of laboratory procedures and additional data (if any).  
See Appendices for explanation of symbols and abbreviations.

Notes:

Abandonment Method:

Well pulled and boring backfilled with bentonite/grout mixture.

## WATER LEVEL OBSERVATIONS

 Water Encountered

**Terracon**  
859 S Pear Orchard Rd  
Ridgeland, MS

Boring Started:

Drill Rig: Geoprobe

Project No.: EB187005

Boring Completed: 06-20-2018

Driller: WHE

Exhibit: B-1

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ENVIRONMENTAL SMART LOG BORELOGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/16/18

# BORING LOG NO. B-2/TW-2

Page 1 of 1

PROJECT: Hunter Park LSI

CLIENT: Headwaters, Inc.

SITE:

Shreveport, LA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ENVIRONMENTAL SMART LOG BORELOGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/16/18

GRAPHIC LOG	LOCATION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)
	See Exhibit A-2 Latitude: 32.541451° Longitude: 93.781761°					
	DEPTH MATERIAL DESCRIPTION					
	3.0 <b>Sandy Clay, Slightly Silty (CL-ML)</b> , Reddish Brown, no odor, dry, Very Firm				75	0.2 / 0.3
	4.0 <b>Silty Sand (SM)</b> , Reddish Brown, no odor, dry, Loose					
	<b>Silty Clay (CL-ML)</b> , Brownish Red, no odor, dry, Hard	5			100	0.3
		10			100	0.4 / 0.3
	12.0 <b>Silty Clay (CL-ML)</b> , Brownish Gray, no odor, dry, Hard				100	0.2 / 0.3
	15.0 <b>Silty Clay (CL-ML)</b> , Brown and Yellowish Tan, no odor, dry, Hard	15				
	16.0 <b>Silty Clay (CL-ML)</b> , Gray, Yellowish Tan, and Red Mottled, no odor, dry, Very Firm				100	0.4 / 0.3
		20			100	0.3
	24.0 <b>Silty Sand, Slightly Clayey (SM)</b> , Gray, no odor, wet beginning at 26' bsg, Loose	25	▽		100	0.2
	36.0 <b>Boring Terminated at 36 Feet</b>	35				
The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.		Hammer Type: Automatic				
Advancement Method: Dual-Tube  Abandonment Method: Well pulled and boring backfilled with bentonite/grout mixture.		See Appendices for description of field procedures. See Appendices for description of laboratory procedures and additional data (if any). See Appendices for explanation of symbols and abbreviations.		Notes:		
<b>WATER LEVEL OBSERVATIONS</b> ▽ Water Encountered				Boring Started: Drill Rig: Geoprobe Project No.: EB187005		
				Boring Completed: 06-20-2018 Driller: WHE Exhibit: B-2		

# BORING LOG NO. B-3/TW-3

Page 1 of 1

PROJECT: Hunter Park LSI

CLIENT: Headwaters, Inc.

SITE:


Shreveport, LA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ENVIRONMENTAL SMART LOG BORELOGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/16/18

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 32.541° Longitude: 93.78304°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)
DEPTH	MATERIAL DESCRIPTION					
0.0	<b>Silty Clay, Slightly Sandy (CL-ML)</b> , Reddish Brown, no odor, dry, Very Firm				75	0.2 / 0.3
4.0	<b>Silty Clay (CL-ML)</b> , Dark Redish Brown, no odor, dry, Hard	5			100	0.3 / 0.2
12.0	<b>Silty Clay (CL-ML)</b> , Gray, no odor, dry, Hard	10			100	0.2
16.0	<b>Silty Clay (CL-ML)</b> , Dark Red, Gray, and Yellowish Tan Mottled, no odor, dry, Hard	15			100	3.0 / 4.0
24.0	<b>Silty Clay, Slightly Sandy (CL-ML)</b> , Gray and Yellowish Tan, no odor, wet beginning at 30' bsg, Soft	20			100	3.0 / 2.0
32.0		25			100	2.0 / 3.0
		30	▽		100	0.3
		35				
	<b>Boring Terminated at 40 Feet</b>	40				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method: Dual-Tube	See Appendices for description of field procedures. See Appendices for description of laboratory procedures and additional data (if any).	Notes:	
Abandonment Method: Well pulled and boring backfilled with bentonite/grout mixture.	See Appendices for explanation of symbols and abbreviations.		
<b>WATER LEVEL OBSERVATIONS</b>	 <p>859 S Pear Orchard Rd Ridgeland, MS</p>	Boring Started:	Boring Completed: 06-20-2018
▽ Water Encountered		Drill Rig: Geoprobe	Driller: WHE
		Project No.: EB187005	Exhibit: B-3

# BORING LOG NO. B-4/TW-4


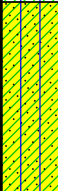

Page 1 of 1

PROJECT: Hunter Park LSI

CLIENT: Headwaters, Inc.


SITE:

Shreveport, LA

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 32.540549° Longitude: 93.784174°		DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)
	DEPTH	MATERIAL DESCRIPTION					
	4.0	<b>Silty Clay, Slightly Sandy (CL-ML)</b> , Reddish Brown, no odor, dry, Very Firm				75	0.3
		<b>Silty Clay (CL-ML)</b> , Dark Reddish Brown, no odor, dry, Hard	5			100	0.2
	12.0	<b>Silty Clay (CL-ML)</b> , Gray, no odor, dry, Hard	10			100	0.3 / 0.2
	16.0	<b>Silty Clay (CL-ML)</b> , Dark Red, Gray, and Yellowish Tan Mottled, no odor, dry, Hard	15			100	0.4 / 0.3
	24.0	<b>Silty Clay, Slightly Sandy (CL-ML)</b> , Gray & Yellowish Tan, no odor, wet beginning at 30' bsg, Soft	20			100	0.3 / 0.2
	32.0		25			100	0.3 / 0.2
			30			100	0.2
			35				
		<b>Boring Terminated at 40 Feet</b>	40				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method: Dual-Tube	See Appendices for description of field procedures. See Appendices for description of laboratory procedures and additional data (if any). See Appendices for explanation of symbols and abbreviations.	Notes:	
Abandonment Method: Well pulled and boring backfilled with bentonite/grout mixture.			
<b>WATER LEVEL OBSERVATIONS</b>	 <p>859 S Pear Orchard Rd Ridgeland, MS</p>	Boring Started:	Boring Completed: 06-20-2018
 <i>Water Encountered</i>		Drill Rig: Geoprobe	Driller: WHE
		Project No.: EB187005	Exhibit: B-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ENVIRONMENTAL SMART LOG BORELOGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/16/18

**APPENDIX C**

**ANALYTICAL DATA REPORTS**

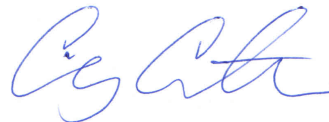
June 29, 2018

## Terracon - Ridgeland, MS

Sample Delivery Group: L1003969  
Samples Received: 06/22/2018  
Project Number: EB178005  
Description: Hunter Park LSI

Report To: Mr. Brad McKnight  
859 Pear Orchard Rd.  
Ridgeland, MS 39157

Entire Report Reviewed By:



Craig Cothron  
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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# SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



## B-1 L1003969-01 Solid

Collected by  
Andy Polk

Collected date/time  
06/20/18 10:00

Received date/time  
06/22/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1129602	1	06/23/18 16:48	06/26/18 05:06	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1129054	1	06/23/18 16:48	06/24/18 18:25	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1129596	1	06/25/18 20:31	06/26/18 05:14	DMW

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## B-2 L1003969-02 Solid

Collected by  
Andy Polk

Collected date/time  
06/20/18 11:40

Received date/time  
06/22/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1129602	1	06/23/18 16:48	06/26/18 05:27	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1129329	1	06/23/18 16:48	06/25/18 11:05	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1129596	1	06/25/18 20:31	06/26/18 05:28	DMW

## B-3 L1003969-03 Solid

Collected by  
Andy Polk

Collected date/time  
06/20/18 13:55

Received date/time  
06/22/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1129602	1	06/23/18 16:48	06/26/18 05:48	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1129329	1	06/23/18 16:48	06/25/18 11:25	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1129596	1	06/25/18 20:31	06/26/18 05:42	DMW

## B-4 L1003969-04 Solid

Collected by  
Andy Polk

Collected date/time  
06/20/18 15:55

Received date/time  
06/22/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1129602	1	06/23/18 16:48	06/26/18 06:09	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1129329	1	06/23/18 16:48	06/25/18 11:45	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1129596	1	06/25/18 20:31	06/26/18 05:56	DMW

## TW-1 L1003969-05 GW

Collected by  
Andy Polk

Collected date/time  
06/20/18 10:30

Received date/time  
06/22/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1130432	1	06/27/18 17:52	06/27/18 17:52	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1129049	1	06/24/18 23:58	06/24/18 23:58	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1129593	1	06/25/18 20:03	06/26/18 06:28	TH

## TW-2 L1003969-06 GW

Collected by  
Andy Polk

Collected date/time  
06/20/18 12:05

Received date/time  
06/22/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1130432	1	06/27/18 18:15	06/27/18 18:15	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1129049	1	06/25/18 00:17	06/25/18 00:17	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1129593	3	06/25/18 20:03	06/26/18 06:47	TH

## SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



## TW-3 L1003969-07 GW

Collected by  
Andy PolkCollected date/time  
06/20/18 14:30Received date/time  
06/22/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1130432	1	06/27/18 18:37	06/27/18 18:37	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1129049	1	06/25/18 00:38	06/25/18 00:38	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1129593	1	06/25/18 20:03	06/26/18 07:06	TH

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## TW-4 L1003969-08 GW

Collected by  
Andy PolkCollected date/time  
06/20/18 16:37Received date/time  
06/22/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1130432	1	06/27/18 19:00	06/27/18 19:00	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1129049	1	06/25/18 00:57	06/25/18 00:57	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1129593	1	06/25/18 20:03	06/26/18 07:25	TH

## TRIP BLANK L1003969-09 GW

Collected by  
Andy PolkCollected date/time  
06/20/18 00:00Received date/time  
06/22/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1129049	1	06/24/18 20:59	06/24/18 20:59	LRL



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 radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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.

Craig Cothron  
Technical Service Representative

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Collected date/time: 06/20/18 10:00

L1003969

## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2018 05:06	<a href="#">WG1129602</a>
(S) a,a,a-Trifluorotoluene(FID)	99.9		77.0-120		06/26/2018 05:06	<a href="#">WG1129602</a>

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/24/2018 18:25	<a href="#">WG1129054</a>
Toluene	ND		0.00500	1	06/24/2018 18:25	<a href="#">WG1129054</a>
Ethylbenzene	ND		0.00250	1	06/24/2018 18:25	<a href="#">WG1129054</a>
Total Xylenes	ND		0.00650	1	06/24/2018 18:25	<a href="#">WG1129054</a>
(S) Toluene-d8	119		80.0-120		06/24/2018 18:25	<a href="#">WG1129054</a>
(S) Dibromofluoromethane	100		74.0-131		06/24/2018 18:25	<a href="#">WG1129054</a>
(S) a,a,a-Trifluorotoluene	100		80.0-120		06/24/2018 18:25	<a href="#">WG1129054</a>
(S) 4-Bromofluorobenzene	106		64.0-132		06/24/2018 18:25	<a href="#">WG1129054</a>

<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Qc<sup>7</sup> Gl<sup>8</sup> Al

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/26/2018 05:14	<a href="#">WG1129596</a>
C28-C40 Oil Range	ND		4.00	1	06/26/2018 05:14	<a href="#">WG1129596</a>
(S) o-Terphenyl	80.3		18.0-148		06/26/2018 05:14	<a href="#">WG1129596</a>

<sup>9</sup> Sc



Collected date/time: 06/20/18 11:40

L1003969

## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2018 05:27	<a href="#">WG1129602</a>
(S) a,a,a-Trifluorotoluene(FID)	100		77.0-120		06/26/2018 05:27	<a href="#">WG1129602</a>

1 Cp

2 Tc

3 Ss

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/25/2018 11:05	<a href="#">WG1129329</a>
Toluene	ND		0.00500	1	06/25/2018 11:05	<a href="#">WG1129329</a>
Ethylbenzene	ND		0.00250	1	06/25/2018 11:05	<a href="#">WG1129329</a>
Total Xylenes	ND		0.00650	1	06/25/2018 11:05	<a href="#">WG1129329</a>
(S) Toluene-d8	110		80.0-120		06/25/2018 11:05	<a href="#">WG1129329</a>
(S) Dibromofluoromethane	94.2		74.0-131		06/25/2018 11:05	<a href="#">WG1129329</a>
(S) a,a,a-Trifluorotoluene	109		80.0-120		06/25/2018 11:05	<a href="#">WG1129329</a>
(S) 4-Bromofluorobenzene	96.3		64.0-132		06/25/2018 11:05	<a href="#">WG1129329</a>

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/26/2018 05:28	<a href="#">WG1129596</a>
C28-C40 Oil Range	ND		4.00	1	06/26/2018 05:28	<a href="#">WG1129596</a>
(S) o-Terphenyl	81.7		18.0-148		06/26/2018 05:28	<a href="#">WG1129596</a>

9 Sc



Collected date/time: 06/20/18 13:55

L1003969

## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2018 05:48	<a href="#">WG1129602</a>
(S) a,a,a-Trifluorotoluene(FID)	99.9		77.0-120		06/26/2018 05:48	<a href="#">WG1129602</a>

1 Cp

2 Tc

3 Ss

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/25/2018 11:25	<a href="#">WG1129329</a>
Toluene	ND		0.00500	1	06/25/2018 11:25	<a href="#">WG1129329</a>
Ethylbenzene	ND		0.00250	1	06/25/2018 11:25	<a href="#">WG1129329</a>
Total Xylenes	ND		0.00650	1	06/25/2018 11:25	<a href="#">WG1129329</a>
(S) Toluene-d8	112		80.0-120		06/25/2018 11:25	<a href="#">WG1129329</a>
(S) Dibromofluoromethane	96.2		74.0-131		06/25/2018 11:25	<a href="#">WG1129329</a>
(S) a,a,a-Trifluorotoluene	106		80.0-120		06/25/2018 11:25	<a href="#">WG1129329</a>
(S) 4-Bromofluorobenzene	100		64.0-132		06/25/2018 11:25	<a href="#">WG1129329</a>

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/26/2018 05:42	<a href="#">WG1129596</a>
C28-C40 Oil Range	ND		4.00	1	06/26/2018 05:42	<a href="#">WG1129596</a>
(S) o-Terphenyl	72.5		18.0-148		06/26/2018 05:42	<a href="#">WG1129596</a>

9 Sc



Collected date/time: 06/20/18 15:55

L1003969

## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2018 06:09	<a href="#">WG1129602</a>
(S) a,a,a-Trifluorotoluene(FID)	102		77.0-120		06/26/2018 06:09	<a href="#">WG1129602</a>

1 Cp

2 Tc

3 Ss

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/25/2018 11:45	<a href="#">WG1129329</a>
Toluene	ND		0.00500	1	06/25/2018 11:45	<a href="#">WG1129329</a>
Ethylbenzene	ND		0.00250	1	06/25/2018 11:45	<a href="#">WG1129329</a>
Total Xylenes	ND		0.00650	1	06/25/2018 11:45	<a href="#">WG1129329</a>
(S) Toluene-d8	112		80.0-120		06/25/2018 11:45	<a href="#">WG1129329</a>
(S) Dibromofluoromethane	95.0		74.0-131		06/25/2018 11:45	<a href="#">WG1129329</a>
(S) a,a,a-Trifluorotoluene	106		80.0-120		06/25/2018 11:45	<a href="#">WG1129329</a>
(S) 4-Bromofluorobenzene	101		64.0-132		06/25/2018 11:45	<a href="#">WG1129329</a>

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/26/2018 05:56	<a href="#">WG1129596</a>
C28-C40 Oil Range	ND		4.00	1	06/26/2018 05:56	<a href="#">WG1129596</a>
(S) o-Terphenyl	83.9		18.0-148		06/26/2018 05:56	<a href="#">WG1129596</a>

9 Sc



## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		100	1	06/27/2018 17:52	<a href="#">WG1130432</a>
(S) a,a,a-Trifluorotoluene(FID)	95.7		77.0-122		06/27/2018 17:52	<a href="#">WG1130432</a>

1  
Cp2  
Tc3  
Ss

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	06/24/2018 23:58	<a href="#">WG1129049</a>
Toluene	ND		1.00	1	06/24/2018 23:58	<a href="#">WG1129049</a>
Ethylbenzene	ND		1.00	1	06/24/2018 23:58	<a href="#">WG1129049</a>
Total Xylenes	ND		3.00	1	06/24/2018 23:58	<a href="#">WG1129049</a>
(S) Toluene-d8	104		80.0-120		06/24/2018 23:58	<a href="#">WG1129049</a>
(S) Dibromofluoromethane	93.1		76.0-123		06/24/2018 23:58	<a href="#">WG1129049</a>
(S) a,a,a-Trifluorotoluene	102		80.0-120		06/24/2018 23:58	<a href="#">WG1129049</a>
(S) 4-Bromofluorobenzene	94.5		80.0-120		06/24/2018 23:58	<a href="#">WG1129049</a>

4  
Cn5  
Sr6  
Qc7  
Gl8  
Al

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	525		100	1	06/26/2018 06:28	<a href="#">WG1129593</a>
C28-C40 Oil Range	ND		100	1	06/26/2018 06:28	<a href="#">WG1129593</a>
(S) o-Terphenyl	118		52.0-156		06/26/2018 06:28	<a href="#">WG1129593</a>

9  
Sc





## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		100	1	06/27/2018 18:15	<a href="#">WG1130432</a>
(S) a,a,a-Trifluorotoluene(FID)	99.3		77.0-122		06/27/2018 18:15	<a href="#">WG1130432</a>

1 Cp

2 Tc

3 Ss

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	06/25/2018 00:17	<a href="#">WG1129049</a>
Toluene	ND		1.00	1	06/25/2018 00:17	<a href="#">WG1129049</a>
Ethylbenzene	ND		1.00	1	06/25/2018 00:17	<a href="#">WG1129049</a>
Total Xylenes	ND		3.00	1	06/25/2018 00:17	<a href="#">WG1129049</a>
(S) Toluene-d8	100		80.0-120		06/25/2018 00:17	<a href="#">WG1129049</a>
(S) Dibromofluoromethane	94.8		76.0-123		06/25/2018 00:17	<a href="#">WG1129049</a>
(S) a,a,a-Trifluorotoluene	98.1		80.0-120		06/25/2018 00:17	<a href="#">WG1129049</a>
(S) 4-Bromofluorobenzene	94.0		80.0-120		06/25/2018 00:17	<a href="#">WG1129049</a>

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1410		300	3	06/26/2018 06:47	<a href="#">WG1129593</a>
C28-C40 Oil Range	ND		300	3	06/26/2018 06:47	<a href="#">WG1129593</a>
(S) o-Terphenyl	101		52.0-156		06/26/2018 06:47	<a href="#">WG1129593</a>

9 Sc



## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		100	1	06/27/2018 18:37	<a href="#">WG1130432</a>
(S) a,a,a-Trifluorotoluene(FID)	95.6		77.0-122		06/27/2018 18:37	<a href="#">WG1130432</a>

1 Cp

2 Tc

3 Ss

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	06/25/2018 00:38	<a href="#">WG1129049</a>
Toluene	ND		1.00	1	06/25/2018 00:38	<a href="#">WG1129049</a>
Ethylbenzene	ND		1.00	1	06/25/2018 00:38	<a href="#">WG1129049</a>
Total Xylenes	ND		3.00	1	06/25/2018 00:38	<a href="#">WG1129049</a>
(S) Toluene-d8	104		80.0-120		06/25/2018 00:38	<a href="#">WG1129049</a>
(S) Dibromofluoromethane	92.0		76.0-123		06/25/2018 00:38	<a href="#">WG1129049</a>
(S) a,a,a-Trifluorotoluene	103		80.0-120		06/25/2018 00:38	<a href="#">WG1129049</a>
(S) 4-Bromofluorobenzene	91.6		80.0-120		06/25/2018 00:38	<a href="#">WG1129049</a>

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	237		100	1	06/26/2018 07:06	<a href="#">WG1129593</a>
C28-C40 Oil Range	ND		100	1	06/26/2018 07:06	<a href="#">WG1129593</a>
(S) o-Terphenyl	104		52.0-156		06/26/2018 07:06	<a href="#">WG1129593</a>

9 Sc



## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		100	1	06/27/2018 19:00	<a href="#">WG1130432</a>
(S) a,a,a-Trifluorotoluene(FID)	97.1		77.0-122		06/27/2018 19:00	<a href="#">WG1130432</a>

1 Cp

2 Tc

3 Ss

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	06/25/2018 00:57	<a href="#">WG1129049</a>
Toluene	ND		1.00	1	06/25/2018 00:57	<a href="#">WG1129049</a>
Ethylbenzene	ND		1.00	1	06/25/2018 00:57	<a href="#">WG1129049</a>
Total Xylenes	ND		3.00	1	06/25/2018 00:57	<a href="#">WG1129049</a>
(S) Toluene-d8	106		80.0-120		06/25/2018 00:57	<a href="#">WG1129049</a>
(S) Dibromofluoromethane	94.4		76.0-123		06/25/2018 00:57	<a href="#">WG1129049</a>
(S) a,a,a-Trifluorotoluene	99.6		80.0-120		06/25/2018 00:57	<a href="#">WG1129049</a>
(S) 4-Bromofluorobenzene	95.1		80.0-120		06/25/2018 00:57	<a href="#">WG1129049</a>

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	158		100	1	06/26/2018 07:25	<a href="#">WG1129593</a>
C28-C40 Oil Range	ND		100	1	06/26/2018 07:25	<a href="#">WG1129593</a>
(S) o-Terphenyl	103		52.0-156		06/26/2018 07:25	<a href="#">WG1129593</a>

9 Sc



## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	06/24/2018 20:59	<a href="#">WG1129049</a>
Toluene	ND		1.00	1	06/24/2018 20:59	<a href="#">WG1129049</a>
Ethylbenzene	ND		1.00	1	06/24/2018 20:59	<a href="#">WG1129049</a>
Total Xylenes	ND		3.00	1	06/24/2018 20:59	<a href="#">WG1129049</a>
(S) Toluene-d8	104		80.0-120		06/24/2018 20:59	<a href="#">WG1129049</a>
(S) Dibromofluoromethane	94.1		76.0-123		06/24/2018 20:59	<a href="#">WG1129049</a>
(S) a,a,a-Trifluorotoluene	99.6		80.0-120		06/24/2018 20:59	<a href="#">WG1129049</a>
(S) 4-Bromofluorobenzene	96.8		80.0-120		06/24/2018 20:59	<a href="#">WG1129049</a>

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Qc<sup>7</sup> Gl<sup>8</sup> Al<sup>9</sup> Sc

Method Blank (MB)

(MB) R3321409-3 06/26/18 01:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	104			77.0-120

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

(LCS) R3321409-1 06/26/18 00:12 • (LCSD) R3321409-2 06/26/18 00:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.12	5.19	93.1	94.3	70.0-136			1.34	20
(S) a,a,a-Trifluorotoluene(FID)				89.6	87.4	77.0-120				

L1003891-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1003891-02 06/26/18 06:51 • (MS) R3321409-4 06/26/18 07:12 • (MSD) R3321409-5 06/26/18 07:33

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.82	36.8	318	348	41.2	45.5	100	10.0-147			8.83	30
(S) a,a,a-Trifluorotoluene(FID)					99.8	99.7		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3321598-3 06/27/18 14:06

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TPH (GC/FID) Low Fraction	U		31.4	100
(S) a,a,a-Trifluorotoluene(FID)	96.5			77.0-122

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

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

(LCS) R3321598-1 06/27/18 12:13 • (LCSD) R3321598-2 06/27/18 12:36

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 %
TPH (GC/FID) Low Fraction	5500	5050	5090	91.7	92.5	71.0-136			0.816	20
(S) a,a,a-Trifluorotoluene(FID)				110	110	77.0-122				

L1003969-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1003969-05 06/27/18 17:52 • (MS) R3321598-4 06/27/18 23:28 • (MSD) R3321598-5 06/27/18 23:51

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5500	ND	2050	2300	36.6	41.1	1	18.0-160			11.5	20
(S) a,a,a-Trifluorotoluene(FID)					101	103		77.0-122				



Method Blank (MB)

(MB) R3321000-3 06/24/18 20:19

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	107			80.0-120
(S) Dibromofluoromethane	92.7			76.0-123
(S) a,a,a-Trifluorotoluene	101			80.0-120
(S) 4-Bromofluorobenzene	95.3			80.0-120

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

(LCS) R3321000-1 06/24/18 19:19 • (LCSD) R3321000-2 06/24/18 19:39

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 %
Benzene	25.0	22.1	21.8	88.4	87.1	69.0-123			1.49	20
Ethylbenzene	25.0	24.2	26.7	97.0	107	77.0-120			9.59	20
Toluene	25.0	24.9	26.8	99.5	107	77.0-120			7.25	20
Xylenes, Total	75.0	69.9	78.4	93.2	105	77.0-120			11.5	20
(S) Toluene-d8				100	108	80.0-120				
(S) Dibromofluoromethane				90.7	91.3	76.0-123				
(S) a,a,a-Trifluorotoluene				101	101	80.0-120				
(S) 4-Bromofluorobenzene				96.0	90.3	80.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3320478-3 06/24/18 09:40

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	118			80.0-120
(S) Dibromofluoromethane	94.7			74.0-131
(S) a,a,a-Trifluorotoluene	99.5			80.0-120
(S) 4-Bromofluorobenzene	100			64.0-132

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

(LCS) R3320478-1 06/24/18 08:16 • (LCSD) R3320478-2 06/24/18 08:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.134	0.134	107	107	71.0-124			0.0597	20
Ethylbenzene	0.125	0.121	0.116	97.0	93.2	77.0-120			3.98	20
Toluene	0.125	0.129	0.123	103	98.5	70.0-120			4.26	20
Xylenes, Total	0.375	0.379	0.360	101	96.0	77.0-120			5.14	20
(S) Toluene-d8				104	102	80.0-120				
(S) Dibromofluoromethane				115	106	74.0-131				
(S) a,a,a-Trifluorotoluene				102	99.4	80.0-120				
(S) 4-Bromofluorobenzene				110	108	64.0-132				

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Method Blank (MB)

(MB) R3321739-3 06/25/18 10:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	115			80.0-120
(S) Dibromofluoromethane	89.1			74.0-131
(S) a,a,a-Trifluorotoluene	112			80.0-120
(S) 4-Bromofluorobenzene	99.2			64.0-132

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

(LCS) R3321739-1 06/25/18 08:59 • (LCSD) R3321739-2 06/25/18 09:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.102	0.105	81.5	83.9	71.0-124			2.88	20
Ethylbenzene	0.125	0.122	0.120	97.2	96.1	77.0-120			1.10	20
Toluene	0.125	0.131	0.131	105	105	70.0-120			0.232	20
Xylenes, Total	0.375	0.352	0.351	93.9	93.6	77.0-120			0.284	20
(S) Toluene-d8				113	111	80.0-120				
(S) Dibromofluoromethane				100	101	74.0-131				
(S) a,a,a-Trifluorotoluene				106	106	80.0-120				
(S) 4-Bromofluorobenzene				98.0	99.9	64.0-132				

L1003971-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1003971-02 06/25/18 14:25 • (MS) R3321739-4 06/25/18 14:45 • (MSD) R3321739-5 06/25/18 15:05

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.153	1.81	2.40	2.85	48.5	85.2	8	13.0-146			17.1	27
Ethylbenzene	0.153	0.970	1.34	1.41	30.0	35.7	8	10.0-147			5.13	31
Toluene	0.153	0.185	0.739	0.912	45.2	59.4	8	10.0-144			21.0	28
Xylenes, Total	0.460	0.951	1.66	2.11	19.4	31.6	8	10.0-150			23.8	31
(S) Toluene-d8					93.3	78.5		80.0-120		J2		
(S) Dibromofluoromethane					105	107		74.0-131				
(S) a,a,a-Trifluorotoluene					97.4	95.8		80.0-120				
(S) 4-Bromofluorobenzene					107	105		64.0-132				



Method Blank (MB)

(MB) R3320863-1 06/26/18 05:32

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
C10-C28 Diesel Range	U		22.2	100
C28-C40 Oil Range	U		11.8	100
(S) o-Terphenyl	105			52.0-156

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

(LCS) R3320863-2 06/26/18 05:51 • (LCSD) R3320863-3 06/26/18 06:10

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 %
C10-C28 Diesel Range	1500	1400	1360	93.4	90.7	50.0-150			2.90	20
(S) o-Terphenyl				134	135	52.0-156				

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc



Method Blank (MB)

(MB) R3320849-1 06/26/18 04:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	95.3			18.0-148

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

(LCS) R3320849-2 06/26/18 04:47 • (LCSD) R3320849-3 06/26/18 05:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	34.0	35.5	68.0	70.9	50.0-150			4.15	20
(S) o-Terphenyl				121	123	18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



## 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.

### Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
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.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
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.
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

J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
----	--

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



ESC Lab Sciences 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 ESC Lab Sciences.

## 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 <sup>1</sup>	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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	LA000356
Kentucky <sup>1 6</sup>	90010	South Carolina	84004
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana <sup>1</sup>	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

## Our Locations

ESC Lab Sciences 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. ESC Lab Sciences performs all testing at our central laboratory.



# Terracon - Ridgeland, MS

859 Pear Orchard Rd.  
Ridgeland, MS 39157

## Billing Information:

Accounts Payable  
859 Pear Orchard Rd.  
Ridgeland, MS 39157

Report to:  
Mr. Brad McKnight

Email To: brad.mcknight@terracon.com

Project  
Description: Hunter Park LSI

City/State  
Collected: Sheeviewport/LA

Phone: 769-233-2056  
Fax:

Client Project #

EB178005

Lab Project #  
AQUATEMS-HUNTERPARK

Collected by (print):  
Andy Polk  
Collected by (signature):  
[Signature]

Site/Facility ID #

P.O. #

Rush? (Lab MUST Be Notified)

Quote #

Immediately  
Packed on Ice N ☒ Y ☒

Same Day ☐ Five Day ☐  
Next Day ☐ 5 Day (Rad Only) ☐  
Two Day ☐ 10 Day (Rad Only) ☐  
Three Day ☐

Date Results Needed

STANDARD

No.  
of  
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
B-1	Grab	SS	32'34"	6-20-18	10:00	2
B-2	Grab	SS	24'26"	6-20-18	11:40	2
B-3	Grab	SS	28'30"	6-20-18	13:55	2
B-4	Grab	SS	28'30"	6-20-18	15:55	2
TW-1	Grab	GW	—	6-20-18	10:30	7
TW-2	Grab	GW	—	6-20-18	12:05	7
TW-3	Grab	GW	—	6-20-18	14:30	7
TW-4	Grab	GW	—	6-20-18	16:37	7
TRIP BLANK		GW				1

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

Remarks: Fed Ex tracking#  
4361 6934 7622

Samples returned via:  
UPS ☐ FedEx ☐ Courier ☐

Tracking # 4361 6934 7622

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

## Analysis / Container / Preservative

Analysis	Container	Preservative
DROOROLVI 40mlAmb-HCl-BT		
DRORLA 4ozClr-NoPres		
GRO 40mlAmb HCl		
V8260BTEX / GRO 2ozClr-NoPres		
V8260BTEX 40mlAmb-HCl		
V8260BTEX 40mlAmb-HCl-Blk		

Chain of Custody Page 1 of 1



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



L# C1003969  
A114

Acctnum: AQUATEMS

Template: T133157

Prelogin: P640522

TSR: 034 - Craig Cothron

PB: 3-22-18 AD

Shipped Via: FedEx Ground

Remarks Sample # (lab only)

## Sample Receipt Checklist

CDC Seal Present/Intact: ☒ Y ☐ N  
CDC 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

pH Temp

Flow Other

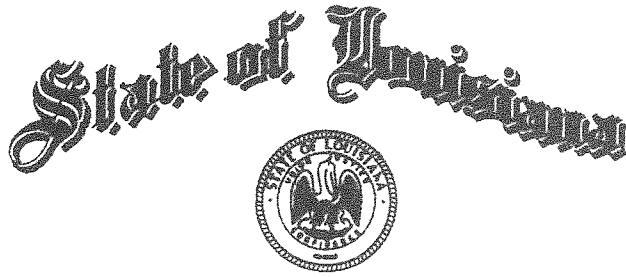
Trip Blank Received: Yes ☒ No ☐  
HCL/MeOH  
TBR

Temp: °C Bottles Received: 36

Date: 6/22/18 Time: 845

If preservation required by Login: Date/Time

Hold: Condition:  
NCF / OK



JAMES T. SIMS  
PRESIDENT

PATRICK HARRISON  
1ST VICE-PRESIDENT

CAROLYN C. PRATOR  
2ND VICE-PRESIDENT

ALI M. MUSTAPHA, P.E.  
ADMINISTRATOR-SECRETARY

DANIELLE STAFFORD  
ASSISTANT SECRETARY

MEMBERS  
KANDI MOORE  
GARY PROCELL  
HELEN GODFREY SMITH  
WILLIE WALKER

## BOARD OF COMMISSIONERS

### CADDO LEVEE DISTRICT

P.O. BOX 78282  
SHREVEPORT, LOUISIANA 71137-8282

June 11, 2018

Mr. J. Clay Cromwell  
Headwaters, Inc.  
P.O. Box 2836  
Ridgeland, MS 39157

**Re: Permit No. 18-01 to perform a geotechnical investigation within the Hunter Industrial Park Site located south of the Twelve Mile Bayou Levee segment, including four sub-surface soil borings of 40', in Sections 22 & 23, T18N, R14W, Latitude/Longitude: Various, Caddo Parish, Louisiana**

Dear Mr. Cromwell:

Enclosed is your permit application on the above referenced project. Also, we are enclosing two (2) permit approval forms for signature and execution. Please have both permit approval forms executed and return both to this office for further processing.

If you have any questions, please contact our office.

Sincerely,

Ali M. Mustapha, P. E.  
Administrator-Secretary

Enclosures

TELEPHONE NO. (318) 221-2654

FAX NO. (318) 221-2634

"AN EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER"

PERMIT APPROVAL

\_\_\_\_\_  
Headwaters, Inc.  
\_\_\_\_\_  
P.O. Box 2836  
\_\_\_\_\_  
Ridgeland, MS 39157  
\_\_\_\_\_  
Attn: J. Clay Cromwell

afterward referred to as the "Permittee", which (who) requested permission of the Board of Commissioners of the Caddo Levee District to: **perform a geotechnical investigation within the Hunter Industrial Park Site located south of the Twelve Mile Bayou Levee segment, including four sub-surface soil borings of 40', in Sections 22 & 23, T18N, R14W, Latitude/Longitude: Various, Caddo Parish, Louisiana** as described in Permittee's letter of 02/19/2018, attached hereto and made part hereof as Exhibit "A".

THE BOARD OF COMMISSIONERS OF THE CADDO LEVEE DISTRICT (hereinafter the "Board") represented by Ali Mustapha, P.E., its Administrator, which declared that it grants such permission, conditioned upon the following:

X (1) The general requirements of law relating to levees and drainage found illustratively but not exclusively in Title 38 of the Louisiana Revised Statutes and the conditions of the permit application must be met; and,

N/A (2) The special requirements of the Office of Public Works of the Department of Transportation of the State of Louisiana, as per its letter of \_\_\_\_\_ attached hereto and made part hereof as Exhibit "B", and must be met; and,

X (3) The special requirements of the United States Department of the Army, Corps of Engineers, as per its letter of 06/06/2018 attached hereto and made a part hereof as Exhibit "C", must be met.

THUS DONE AND PASSED at \_\_\_\_\_, \_\_\_\_\_ Parish, Louisiana, on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, in the presence of the undersigned witnesses who hereunto affix their signatures with appearer, and me, Notary, after a reading of the whole.

WITNESSES

\_\_\_\_\_  
\_\_\_\_\_

By: \_\_\_\_\_  
Permittee

\_\_\_\_\_  
NOTARY PUBLIC

THUS DONE AND PASSED at \_\_\_\_\_, \_\_\_\_\_ Parish, Louisiana, on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, in the presence of the undersigned witnesses who hereunto affix their signatures with appearer, and me Notary, after a reading of the whole.

WITNESSES:

\_\_\_\_\_  
\_\_\_\_\_

THE BOARD OF COMMISSIONERS  
OF THE CADDO LEVEE DISTRICT

By: \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC



PERMIT APPROVAL

\_\_\_\_\_  
Headwaters, Inc.  
\_\_\_\_\_  
P.O. Box 2836  
\_\_\_\_\_  
Ridgeland, MS 39157  
\_\_\_\_\_  
Attn: J. Clay Cromwell

afterward referred to as the "Permittee", which (who) requested permission of the Board of Commissioners of the Caddo Levee District to: **perform a geotechnical investigation within the Hunter Industrial Park Site located south of the Twelve Mile Bayou Levee segment, including four sub-surface soil borings of 40', in Sections 22 & 23, T18N, R14W, Latitude/Longitude: Various, Caddo Parish, Louisiana** as described in Permittee's letter of 02/19/2018, attached hereto and made part hereof as Exhibit "A".

THE BOARD OF COMMISSIONERS OF THE CADDO LEVEE DISTRICT (hereinafter the "Board") represented by Ali Mustapha, P.E., its Administrator, which declared that it grants such permission, conditioned upon the following:

X (1) The general requirements of law relating to levees and drainage found illustratively but not exclusively in Title 38 of the Louisiana Revised Statutes and the conditions of the permit application must be met; and,

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X (3) The special requirements of the United States Department of the Army, Corps of Engineers, as per its letter of 06/06/2018 attached hereto and made a part hereof as Exhibit "C", must be met.

THUS DONE AND PASSED at \_\_\_\_\_, \_\_\_\_\_ Parish, Louisiana, on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, in the presence of the undersigned witnesses who hereunto affix their signatures with appearer, and me, Notary, after a reading of the whole.

WITNESSES

\_\_\_\_\_  
\_\_\_\_\_

By: \_\_\_\_\_  
Permittee

\_\_\_\_\_  
NOTARY PUBLIC

THUS DONE AND PASSED at \_\_\_\_\_, \_\_\_\_\_ Parish, Louisiana, on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, in the presence of the undersigned witnesses who hereunto affix their signatures with appearer, and me Notary, after a reading of the whole.

WITNESSES:

\_\_\_\_\_  
\_\_\_\_\_

THE BOARD OF COMMISSIONERS  
OF THE CADDO LEVEE DISTRICT

By: \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

Revised: 5/15/14

**CADDO LEVEE DISTRICT  
Permit Request**

**Date:** February 19, 2018

**Name of Applicant:** Headwaters, Inc.

**Mailing Address:** Attn: J. Clay Cromwell

P.O. Box 2836 Ridgeland, MS 39157

**Email Address:** Clay@headwaters-inc.com

Clay@headwaters-inc.com

**Main Phone #:** 601.634.0097

**Alternate Phone #:** 601.415.7485

**Fax Number:**

**Detailed Description of Construction**

*(must include plan and profile sheet describing the scope of work showing distances and depths)*

Terracon will perform a geotechnical investigation within the Hunter Industrial Park Site located south of the levee segment. The work will include generally four (4) sub surface soil borings advanced to the water table or first layer of refusal, whichever is shallower. It is estimated the borings will be approximately 40 feet. The locations of the borings are per the attached site map.

**Location of Construction Address:**

Please see attached exhibit for boring locations.

**Parish:** Caddo

**Section:** 22 and 23 **Township:** 18N **Range:** 14W

**GPS Coordinates (must include topo map with GPS Coordinates):**

1. 32.540549, -93.784174, 2. 32.541, -93.78304, 3. 32.541451, -93.781761, 4. 32.541637, -93.780942

**Name of Levee:** Twelve Mile Bayou

**Name of Professional Engineer/Architect:**

**Please attach check for:**

☐ \$100.00 Individuals

☒ X

\$500.00 All others (excluding Government)

**Insurance Company Name, Address & Phone**

Project cost will remain less than \$15,000 to complete and therefore COI is not required.

**Note: PROOF OF PERFORMANCE BOND OR INSURANCE BINDER MUST BE SUBMITTED WITH THIS APPLICATION BEFORE PERMIT WILL BE GRANTED.**

**CERTIFICATE OF INSURANCE OR PERFORMANCE BOND (if requested by CLD) NAMING CLD AS AN ADDITIONAL NOTICEE FOR ALL PURPOSES. INSURANCE POLICY OF \$1,000,000 PROVIDED THAT THE INSURER WILL IMMEDIATELY NOTIFY CLD AND APPLICANT OF ANY CHANGES IN COVERAGE FOR ANY REASON\***

\*Applicant acknowledges and grants unto CLD the right to any information pursuant to this policy or bond and, with that right, the right to directly contact the insurer to determine any insured's status or any other right under the policy.

**CONTINUING GUARANTY**

I hereby jointly and severally guarantee the full and prompt performance of any of the conditions included in the Permit Request issued to me, without any additional notice, together with any expenses and fees actually incurred by the Caddo Levee District in enforcing compliance or canceling the Permit Request. I also affirm that I have read the terms and conditions of "Exhibit B" and accept all of its terms and conditions.

By

[Applicant's Signature]

J. Clay Cromwell

[Print Name/Title]

Applicant acknowledges and grants unto CLD the right to any information pursuant to this policy or performance bond and, with that right, the right to directly contact the insurer to determine any insured's status or any other right under the policy or performance bond; provided that the insurer will immediately notify CLD and applicant of any changes in coverage for any reason.

**NOTE:** This permit is based upon engineering criteria, and no interpretation or comments regarding local laws, zoning, or ordinances concerning property rights, etc., have been made. Additionally, this Permit Request does not obviate the applicant's requirement to obtain federal, state, or local permits required by law.



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
VICKSBURG DISTRICT, CORPS OF ENGINEERS  
4155 CLAY STREET  
VICKSBURG, MISSISSIPPI 39183-3435

**JUN 6 2018**

Operations Division

**SUBJECT: Review of Headwater's, Inc. request to conduct soil borings near West Agurs Levee**

Honorable James Sims  
President, Caddo Levee District  
P. O. Box 78282  
Shreveport, Louisiana, 71137

Dear Mr. Sims:

We have reviewed the permit application we received on March 27, 2018 submitted by Mr. Clay Cromwell requesting permission to collect soil borings near the West Agurs Levee. The approximate coordinates for the location of this activity are latitude 32.54054° N, longitude -93.78417° W. For the reasons, and on the conditions, stated below, we have no objection to the proposed activity.

We have determined that none of the proposed activity would occur within lands or real property interests acquired by the United States for Caddo Levee District and, therefore, that permission from the U.S. Army Corps of Engineers to conduct the activity is not required. The applicant should be advised that actions outside project boundaries that impair the usefulness of a civil works project can give rise to criminal liability under 33 U.S.C. § 411, as implemented by 33 C.F.R. § 209.170. Additionally, the Vicksburg District may pursue other legal remedies to prevent or to redress work and activities that impair the usefulness of a civil work.

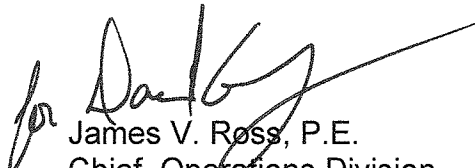
However, we have determined that the proposed activity, if performed in accordance with our best management practices outlined in DR 1130-2-530 and with all applicable federal, state, and local regulations, will not likely impair the usefulness of the West Agurs Levee within the meaning of 33 U.S.C. § 408, federal regulations (33 C.F.R. § 208), or Corps of Engineers policies and guidelines. We have also determined that the proposed activity would not otherwise be injurious to the public interest.

If at any time the nature or scope of the Applicant's activity changes, or if unexpected conditions are encountered during the performance of the activity, we must be promptly informed, as further review will be required.

Please coordinate with Mr. Rodney Nordby of the Red River Project Office of the U.S. Army Corps of Engineers prior to commencement and through completion of any work. His telephone number is (318) 549-3000 Ext. 3.

Should you have questions about our determinations, or need additional information, my point of contact is Neal Lewis, (601) 631-7493 and email address at [neal.lewis@usace.army.mil](mailto:neal.lewis@usace.army.mil).

Sincerely,

  
James V. Ross, P.E.  
Chief, Operations Division

CF:

Rodney Nordby