

# **TANK CLOSURE ASSESSMENT REPORT- ADDENDUM II**

FOR

**ARSH OIL & GAS LLC  
550 S CYRPRESS ROAD  
POMPANO BEACH, BROWARD COUNTY, FLORIDA  
FDEP FAC# 06/8502182**

PREPARED FOR:

**BROWARD COUNTY  
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**MARCH 2019**

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ARSH OIL & GAS LLC  
550 S. CYPRESS ROAD  
POMPANO BEACH, FLORIDA 33060

FDEP FACILITY NO. 06/8502182



  
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## **TABLE OF CONTENTS**

### **LIST OF FIGURES**

FIGURE 1	SITE MAP
FIGURE 2	GROUNDWATER ELEVATION MAP – FEBRUARY 14, 2019
FIGURE 2A	GROUNDWATER ELEVATION MAP – MARCH 5, 2019
FIGURE 3	GROUNDWATER VOH CONCENTRATION MAP
FIGURE 4	GROUNDWATER PAH AND LEAD CONCENTRATION MAP

### **LIST OF TABLES**

TABLE 1	GROUNDWATER ELEVATION DATA
TABLE 2	GROUNDWATER ANALYTICAL DATA

### **LIST OF APPENDICES**

APPENDIX A	LABORATORY ANALYTICAL REPORTS & CHAIN OF CUSTODY RECORDS
APPENDIX B	GROUNDWATER SAMPLING
APPENDIX C	CALIBRATION LOGS AND FIELD NOTES

## **1.0 INTRODUCTION**

### **1.1 Purpose and Scope**

BTEX Engineering, Inc. (BTEX) was contracted by Arsh Oil & Gas, LLC to perform tank closure assessment activities at the Arsh Oil and Gas LLC facility. These assessment activities were conducted in general accordance with guidelines established in the “*Storage Tank System Closure Assessment Requirements*” Florida Department of Environmental Protection (FDEP) publication of April 1998.

The scope of work included:

- Monitoring well sampling.
- Interpretation of data in order to develop appropriate recommendations for the site.

### **1.2 Site Location and Land Use**

The subject site is located at 550 S. Cypress Road, Pompano Beach, Broward County, Florida. The subject site consists of an abandoned convenience store and retail gasoline station formerly consisting of four (4) underground storage tanks that were installed in 1965, out of service since May 30, 2008 and removed on November 6 & 7, 2018. The Site Map is included as **Figure 1**.



### 1.3 Historical Background

This site currently is currently an abandoned gasoline station and food mart. There are currently four underground storage tanks (USTs) at the site that have been out of service since May 30, 2008. These include three (3) 4,000-gallon USTs containing unleaded gasoline and one (1) 4,000-gallon UST formerly containing leaded gasoline, however it was converted to unleaded gasoline on April 11, 1991. There were previously two (2) waste oil USTs that were removed from the site. These include one (1) 275-gallon aboveground storage tank (AST) removed on July 28, 2011 and one (1) 550-gallon UST removed on September 23, 2004.

On April 9, 1987, monitoring well samples were collected from four existing monitoring wells (MW-1 through MW-4) and a strong hydrocarbon odor was noted in MW-1 and MW-2.

On April 20, 1987, an unknown amount of leaded and unleaded gasoline was discharged due to an unknown cause. Subsequently, a Discharge Reporting Form was submitted for the site. According to an Early Detection Incentive (EDI) Program Application, it was noted that no product was found in the monitoring wells and no inventory loss was recorded in the tanks.

On May 31, 2000, BBL Environmental Services, Inc. (BBL) completed a free product inspection at the site. Five compliance wells were located and petroleum odors were not detected.

On April 21, 2004, Envirospec, Inc. supervised the over-drilling of MW-NE to mitigate the free product that was discovered. Upon manual exposure of a remote fill line pipe adjacent to the monitoring well, it was noted that the pipe was the former 550-gallon waste oil's remote fill line, which was found to have an integrity breach. Envirospec, Inc. speculates the breach may have been the source of the oil product discovered in the well casing. It appeared an auger may have breached the remote fill line during the installation of the original monitoring wells prior to 1987.

On June 2, 2004, a Discharge Reporting Form was submitted for an unknown amount of waste oil product discovered floating on the groundwater in the northeast monitoring well, due to an unknown cause.

On September 23, 2004, Envirospec, Inc. supervised the removal of one 550-gallon UST containing waste oil. Pin sized holes were noted on the sides of the tank after scraping off the soil from the UST. The soil surrounding the waste oil UST was visually inspected for signs of staining. Some minor staining of soil around the fill port area was noted and the stained oil was excavated. A soil sample from the excavation was analyzed and found to exceed State Target Levels in BTEX and MTBE. A confirmation soil sample was recovered from the west wall of the tank pit. The analysis of the confirmation soil sample did not exceed any State Target Levels.

On September 29, 2004, Envirospec, Inc. supervised the installation of one temporary monitoring well (TMW-1), located in the center of the former waste oil tank. Subsequent to the well installation, a groundwater sample was collected from TMW-1 and analyzed. The groundwater analytical data from TMW-1 reported BTEX and 1,2-Dichloroethane (EDC) in exceedance of the respective State Target Levels. Subsequently, a Tank Closure Assessment Report was submitted.

On December 14, 2004, four groundwater samples were collected from four temporary well points (GP-1 through GP-4) installed radially around MW-NE. The analytical data from the four groundwater samples did not exceed the State Target Levels. No free product was found during the sampling event; however, a slight odor was noted during purging of GP-1.

A source removal was performed to eliminate the source of discharge oil in the vicinity of MW-NE. Recovered soil between depths of five to ten feet below land surface were deemed contaminated by visual screening and strong oil odors noted in the soil. The contaminated soils were removed and placed in three 55-gallon drums.

A temporary screen was installed to determine if additional product could be recovered from the area. Upon inspection, no free product was noted in the temporary well screen. A second effort was initiated on May 5, 2005, to recover additional contaminated soils. The recovered soils were placed in six 55-gallon drums; however, this method could not extract all of the impacted soils. Three confirmation soil samples were also collected from the excavation sidewalls. The soil analytical results did not exceed their respective Cleanup Target Levels (CTLs).

On June 29, 2005, Envirospec, Inc. supervised the installation of one permanent monitoring well (MW-2) in replace of former MW-NE. Following the well installation, groundwater samples were obtained from TMW-1 (MW-8) and MW-2. The analytical results reported levels below the State CTLs. Subsequently, Envirospec, Inc. submitted a Site Assessment Report Addendum and Source Removal Report.

On August 24, 2005, Envirospec, Inc. supervised the installation of four shallow monitoring wells. Following the well installation, groundwater samples were collected from all existing monitoring wells (MW-1 through MW-10). The groundwater analytical results reported levels above CTLs in several of the monitoring wells (MW-1, MW-2, MW-3, MW-7, and MW-8). Subsequently, Envirospec, Inc. submitted a Site Assessment Report Addendum II.

Natural Attenuation Monitoring (NAM) was approved for the site on March 2, 2006. NAM sampling was initiated on May 4, 2006 to monitor MW-2, MW-3, MW-8, MW-9, and MW-10. Three quarters of NAM sampling was completed at the site. According to the Year 1 Quarter 3 NAM Report, dissolved volatile organic hydrocarbons were not present above State CTLs.



On January 4, 2007, Envirospec supervised the abandonment of three monitoring wells (MW-7, MW-9, and MW-10). On April 13, 2007, a Site Rehabilitation Completion Order was granted for the May 7, 2004 discharge date.

On May 30, 2008, four (4) 4,000-gallon USTs containing unleaded gasoline were taken out of service.

On July 28, 2011, one (1) 275-gallon AST containing waste oil was removed from the site.

This site was determined eligible for state-administered cleanup under the EDI program and received a priority ranking score of 10.

BTEX completed soil and groundwater assessment activities from June 20 through October 22, 2018 under the Low Scored Site Initiative (LSSI).

BTEX oversaw the removal of the on-site USTs and completed closure activities from November 6 through November 11, 2018. In addition, BTEX completed additional soil and groundwater assessment from January 8 through January 21, 2019.

Based on a comment letter received from Broward County on February 8, 2019, the following is a description of the additional assessment activities completed.

## **2.0 GROUNDWATER EVALUATION**

### **2.1 Evaluation of Groundwater Elevation**

On February 14 and March 5, 2019, BTEX personnel collected Depth to Water (DTW) measurements from six (6) existing monitoring wells (MW-A, MW-B, MW-C, MW-D, MW-5 and MW-6).

Depth-to-water measurements were collected utilizing a Heron Dipper-T electronic water level meter capable of detecting measurements of up to 1/100 of a foot in accuracy

On February 14, 2019 the DTWs ranged from 2.88 to 3.06 feet bls. The DTWs ranged from 3.11 to 3.29 feet bls on March 5, 2019. The depth-to-water measurements, top-of-casing elevations and calculated water table elevations (WTEs) are summarized in **Table 1**. The WTEs are illustrated on **Figure 2 and Figure 2A**. Review of the WTEs within the shallow interval indicates an apparent easterly hydraulic gradient.

## **2.2 Groundwater Sampling**

BTEX personnel collected groundwater samples from one (1) existing monitoring well (MW-5) and one (1) newly installed monitoring well (MW-D) on February 14 and March 5, 2019. Purging and sampling of the wells was conducted in general accordance with the FDEP Standard Operating Procedures for Field Procedures (DEP-SOP-001/01) as referenced in Chapter 62-160, F.A.C. Groundwater samples were collected for analyses for volatile organic hydrocarbons (VOHs) via EPA Method 8260, Lead via EPA 6010 and 1,2-Dibromoethane (EDC) via EPA Method 8011. Samples were placed on ice and transported to Xenco Laboratories (Xenco) for analytical testing.

## **2.3 Groundwater Analytical Results**

Laboratory analysis of the samples collected on February 14 and March 5, 2019 reported levels below Groundwater Cleanup Target Levels (GCTLs) in both wells sampled (MW-D and MW-5).

Groundwater analytical data are summarized in **Table 2** and illustrated on **Figure 3** and **Figure 4**. The laboratory analytical report and chain of custody documentation are included in **Appendix A**. The FDEP groundwater sampling logs are included in **Appendix B**. Equipment calibration logs and the field notes are included in **Appendix C**.

## **3.0 CONCLUSIONS**

Laboratory analysis of the groundwater samples collected on both February 14 and March, 2019, reported levels below GCTLs in both monitoring wells sampled.

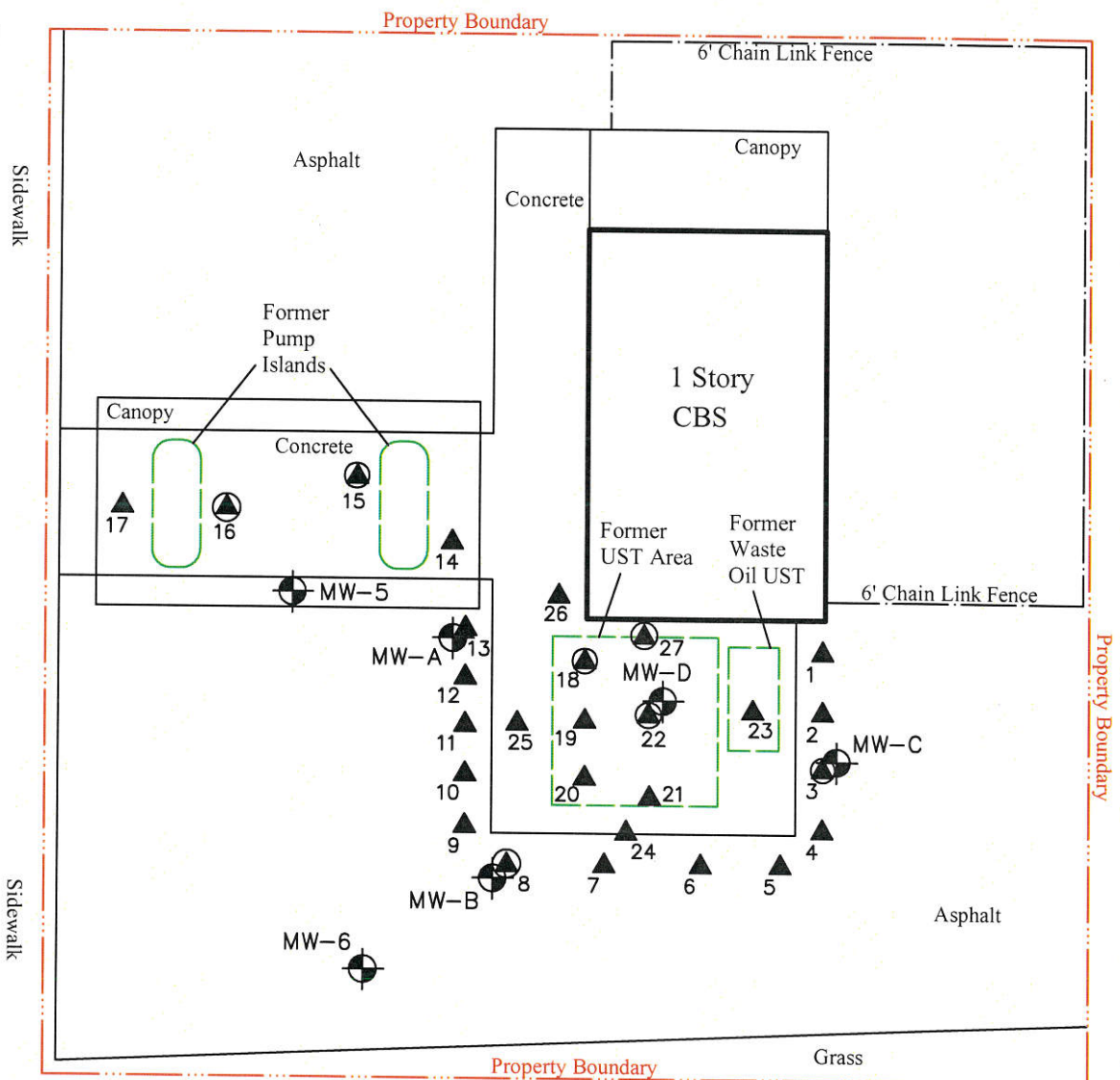
## **4.0 RECOMMENDATIONS**

Based upon the previous soil and current groundwater analytical results, BTEX believes that the site begin Natural Attenuation Monitoring (NAM) in order to reach closure. These activities should be completed under LSSI funding.

## FIGURES



Cypress Road



Legend:

- Shallow Monitoring Well
- Soil Boring Location
- Soil Sample Location

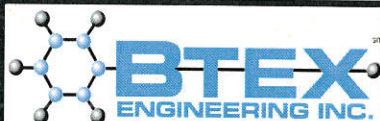
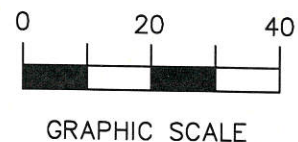


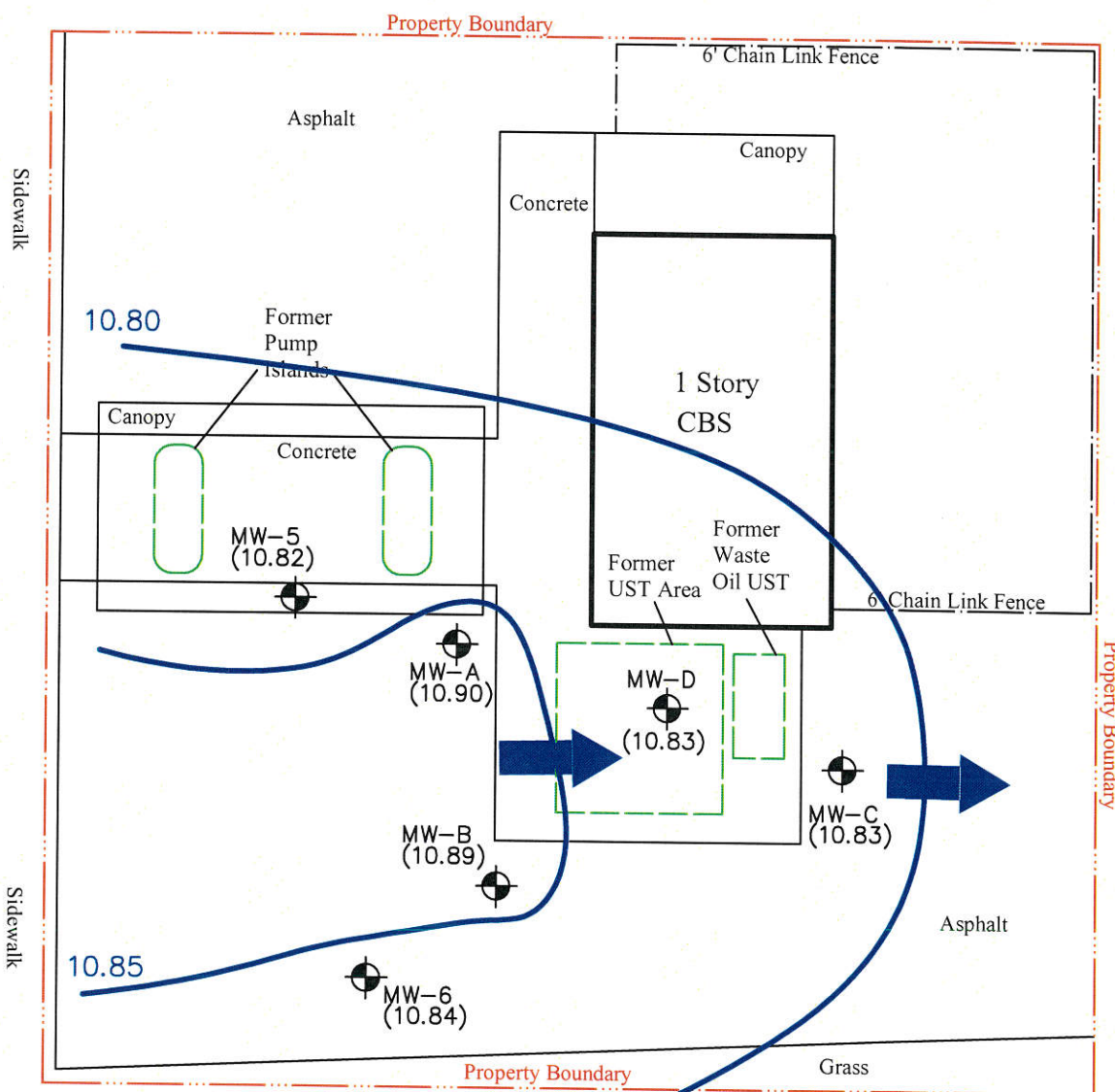
Figure 1  
Site Map

Arsh Oil & Gas LLC  
550 S Cypress Road  
Pompano Beach, Florida  
FDEP ID 06/8502182





Cypress Road



Legend:



Shallow Monitoring Well

(11.06) Groundwater Table Elevation (feet)



Groundwater Table Elevation Contour (feet)



Groundwater Flow Direction



GRAPHIC SCALE

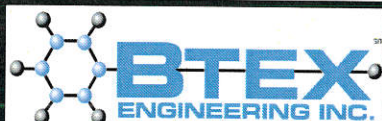


Figure 2  
Groundwater Elevation Map  
February 14, 2019

Arsh Oil & Gas LLC  
550 S Cypress Road  
Pompano Beach, Florida  
FDEP ID 06/8502182

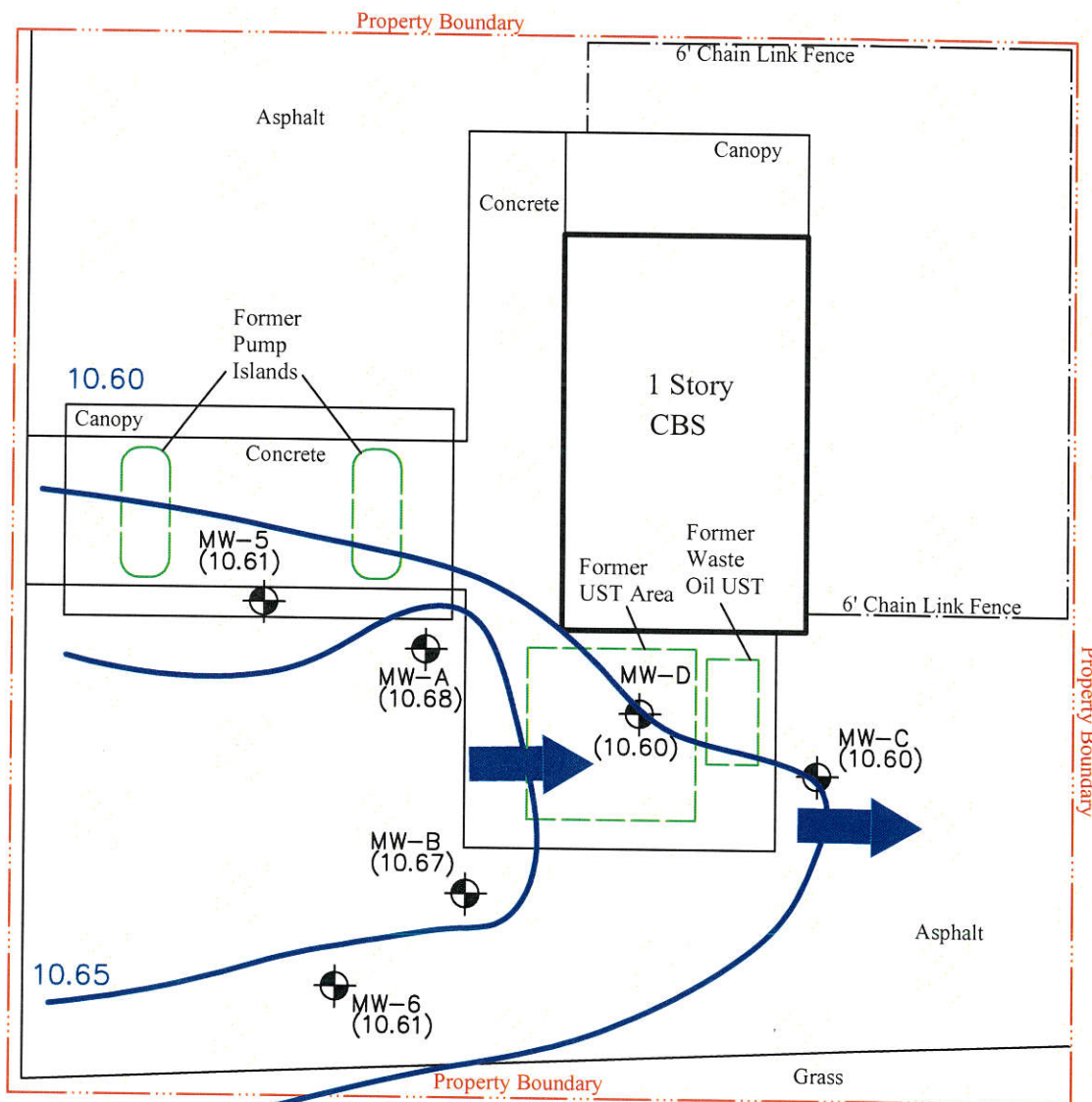




Cypress Road

Sidewalk

Sidewalk



Legend:



Shallow Monitoring Well

(10.61) Groundwater Table Elevation (feet)



Groundwater Table Elevation Contour (feet)



Groundwater Flow Direction



GRAPHIC SCALE

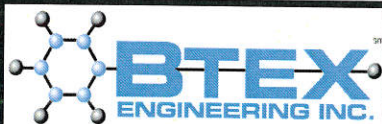
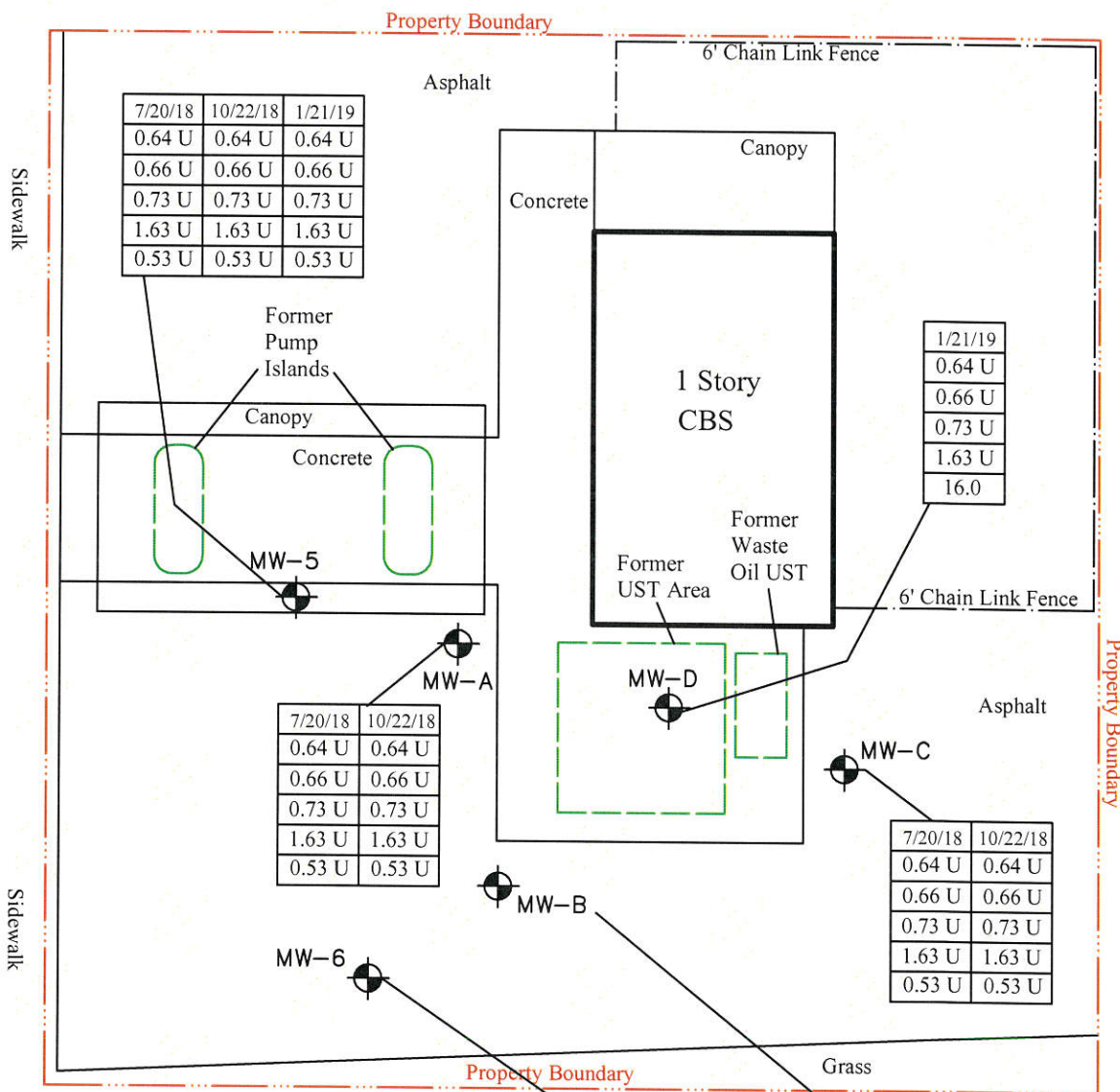


Figure 2A  
Groundwater Elevation Map  
March 5, 2019

Arsh Oil & Gas LLC  
550 S Cypress Road  
Pompano Beach, Florida  
FDEP ID 06/8502182



Cypress Road



### Legend:



Shallow Monitoring Well

1/21/19	Sampling Date
0.64 U	Benzene Concentration (ug/l)
0.66 U	Toluene Concentration (ug/l)
0.73 U	Ethyl Benzene Concentration (ug/l)
1.63 U	Xylenes Concentration (ug/l)
0.53 U	Methyl-tert-butyl-ether Concentration (ug/l)

Bold Values Indicate levels above GCTL

Groundwater Concentration Contour Lines

GCTL - Groundwater Cleanup Target Level

NADC - Natural Attenuation Default Concentrations

ug/l - micrograms per liter or parts per billion

7/20/18	10/22/18
0.64 U	0.64 U
0.66 U	0.66 U
0.73 U	0.73 U
1.63 U	1.63 U
0.53 U	0.53 U

7/20/18	10/22/18
0.64 U	0.64 U
0.66 U	0.66 U
0.73 U	0.73 U
1.63 U	1.63 U
0.53 U	0.53 U



GRAPHIC SCALE

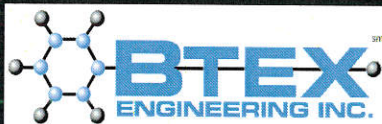
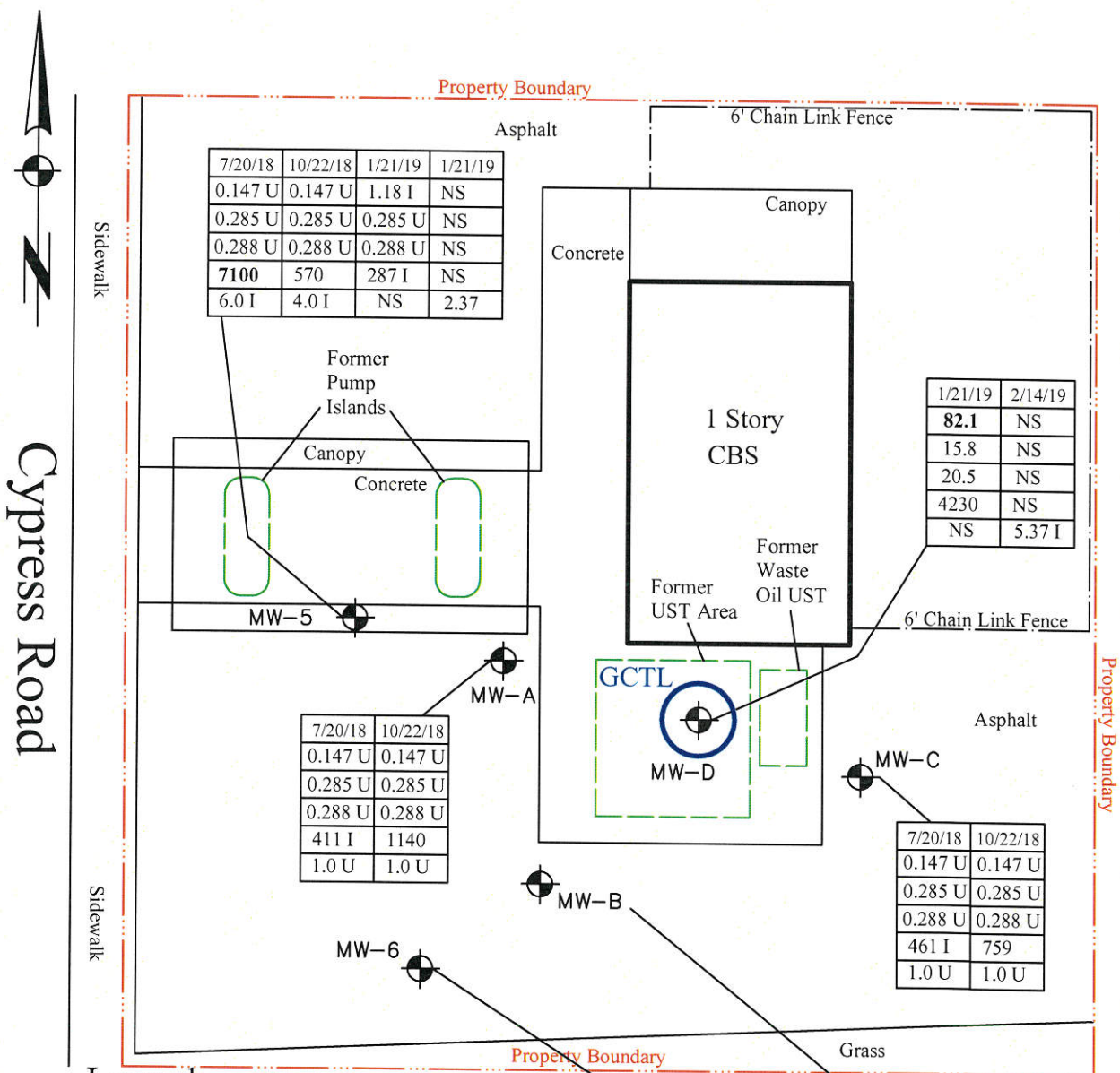


Figure 3  
Groundwater VOA Concentration Map  
October 22, 2018 & January 21, 2019

Arsh Oil & Gas LLC  
550 S Cypress Road  
Pompano Beach, Florida  
FDEP ID 06/8502182





### Legend:



Shallow Monitoring Well

1/21/19	Sampling Date
1.18 I	Naphthalene Concentration (ug/l)
0.285 U	1-Methylnaphthalene Concentration (ug/l)
0.288 U	2-Methylnaphthalene Concentration (ug/l)
287 I	TRPH Concentration (ug/l)
NS	Lead Concentration (ug/l)

Bold Values Indicate levels above GCTL

Groundwater Concentration Contour Lines

GCTL - Groundwater Cleanup Target Level

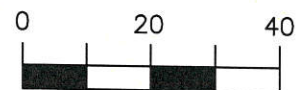
NADC - Natural Attenuation Default Concentrations

ug/l - micrograms per liter or parts per billion

NS - Not Sampled

7/20/18	10/22/18
0.147 U	0.147 U
0.285 U	0.285 U
0.288 U	0.288 U
395 I	656
1.0 U	1.0 U

7/20/18	10/22/18
0.147 U	0.147 U
0.285 U	0.285 U
0.288 U	0.288 U
414 I	1070
1.0 U	1.0 U



GRAPHIC SCALE



Figure 4  
Groundwater PAH Concentration Map  
February 14, 2019

Arsh Oil & Gas LLC  
550 S Cypress Road  
Pompano Beach, Florida  
FDEP ID 06/8502182

## **TABLES**

# TABLE 1

## GROUNDWATER ELEVATION DATA

ARSH OIL & GAS LLC  
550 S CYPRESS ROAD  
POMPANO BEACH, FLORIDA  
FDEP FAC ID # 06/8502182

WELL NO.	MW-A	MW-B	MW-C
DIAMETER	1"	1"	1"
WELL DEPTH	11.00	11.00	11.00
SCREEN INTERVAL	1'-11'	1'-11'	1'-11'
TOP OF CASING ELEV.	13.91	13.79	13.87

Date	DTW	GW ELEV.	DTW	GW ELEV.	DTW	GW ELEV.
7/20/18	3.52	10.39	3.40	10.39	3.51	10.36
10/22/18	3.24	10.67	3.09	10.70	3.23	10.64
1/21/19	NM	NM	NM	NM	NM	NM
2/5/19	2.80	11.11	2.69	11.10	2.83	11.04
2/14/19	3.01	10.90	2.90	10.89	3.04	10.83
3/5/19	3.23	10.68	3.12	10.67	3.27	10.60

WELL NO.	MW-D	MW-5	MW-6
DIAMETER	1"	2"	2"
WELL DEPTH	11.00	11.00	11.00
SCREEN INTERVAL	1'-11'	1'-11'	1'-11'
TOP OF CASING ELEV.	13.71	13.80	13.90

Date	DTW	GW ELEV.	DTW	GW ELEV.	DTW	GW ELEV.
7/20/18	NA	NA	3.20	10.60	3.54	10.36
10/22/18	NA	NA	3.08	10.72	3.28	10.62
1/21/19	3.40	10.31	3.55	10.25	NM	NM
2/5/19	2.68	11.03	2.74	11.06	2.84	11.06
2/14/19	2.88	10.83	2.98	10.82	3.06	10.84
3/5/19	3.11	10.60	3.19	10.61	3.29	10.61

DTW = Depth to Water  
ELEV. = Elevation

All measurements in Feet  
NM = Not Measured

# TABLE 2

## GROUNDWATER ANALYTICAL DATA - VOAs

ARSH OIL & GAS LLC  
550 S CYPRESS ROAD  
POMPAÑO BEACH, FLORIDA  
FDEP FAC ID # 06/8502182

Sample Location	Date	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Xylenes (ug/l)	MTBE (ug/l)	TRPH FL-PRO (ug/l)	EDB (ug/l)	Lead (ug/l)
Table I GCTLs		1	40	30	20	20	5000	0.02	15
Table V NADCs		100	400	300	200	200	50000	2	150
MW-A	7/20/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	411 I	NS	1.0 U
	10/22/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	1140	NS	1.0 U
	2/14/2019	NS	NS	NS	NS	NS	NS	NS	NS
MW-B	7/20/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	414 I	NS	1.0 U
	10/22/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	1070	NS	1.0 U
	2/14/2019	NS	NS	NS	NS	NS	NS	NS	NS
MW-C	7/20/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	461 I	NS	1.0 U
	10/22/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	759	NS	1.0 U
	2/14/2019	NS	NS	NS	NS	NS	NS	NS	NS
MW-D	1/21/2019	0.640 U	0.660 U	0.730 U	1.63 U	16.0	4230	NS	NS
	2/14/2019	NS	NS	NS	NS	NS	NS	NS	5.37 I
	3/5/2019	NS	NS	NS	NS	NS	NS	0.0109 U	NS
MW-5	7/20/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	<b>7100</b>	NS	6.0 I
	10/22/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	570	NS	4.0 I
	1/21/2019	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	287 I	NS	NS
	2/14/2019	NS	NS	NS	NS	NS	NS	NS	2.37 U
	3/5/2019	NS	NS	NS	NS	NS	NS	0.0109 U	NS
MW-6	7/20/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	395 I	NS	1.0 U
	10/22/2018	0.640 U	0.660 U	0.730 U	1.63 U	0.530 U	656	NS	1.0 U

### NOTE:

GCTLs - Groundwater Cleanup Target Levels from Chapter 62-777, F.A.C. (effective August 5, 1999)

NADCs - Natural Attenuation Default Concentrations from Chapter 62-777, F.A.C. (effective August 5, 1999)

MTBE-Methyl-Tert-Butyl Ether.

TRPH - Total Recoverable Petroleum Hydrocarbons

I - The reported value is between the laboratory Method Detection limit & the laboratory Practical Quantification Limit.

**Bold values indicate concentrations above GCTLs**

U - Analyte included in the analysis, but not detected.

ug/l - micrograms per liter or parts per billion

E - The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.

This value is only an estimate (CLP E-flag).

NS - Not Sampled



TABLE 2

## GROUNDWATER ANALYTICAL DATA - PAHS

ARSH OIL & GAS LLC  
550 S CYPRESS ROAD  
POMPANO BEACH, FLORIDA  
FDEP FAC ID # 06/8502182

Sample		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene	Fluoranthene	Indeno(1,2,3-c,d) Pyrene	1-Methyl Naphthalene	2-Methyl Naphthalene	Naphthalene	Phenanthrene	Pyrene
Location	Date																		
GCTL		20	210	2100	0.05	0.2	5	210	0.5	4.8	0.005	280	2800	0.05	28	280	14	210	210
NADC		200	2100	21000	5	20	5	2100	50	480	0.5	2800	2800	5	280	280	140	2100	2100
MW-A	7/20/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U
	10/22/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U
MW-B	7/20/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U
	10/22/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U
MW-C	7/20/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U
	10/22/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U
MW-D	1/21/2019	0.350 I	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	15.8	20.5	82.1	0.215 U	0.409 U
MW-5	7/20/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U
	10/22/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U
	1/21/2019	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	1.18 I	0.215 U	0.409 U
MW-6	7/20/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U
	10/22/2018	0.188 U	0.393 U	0.0100 U	0.0500 U	0.200 U	0.0500 U	0.341 U	0.500 U	0.169 U	0.0050 U	0.0100 U	0.217 U	0.0500 U	0.285 U	0.288 U	0.147 U	0.215 U	0.409 U

NOTE: ug/l - micrograms per liter or parts per billion

NS refers to Not Sampled

PAHs - Polynuclear Aromatic Hydrocarbons.

GC/TL refers to Groundwater and Surface Water Target Levels of FDEP Chapter 62-777 F.A.C.

NADC refers to Natural Attenuation Default Concentrations of FDEP Chapter 62-777 F.A.C.

**Bold values indicate concentrations above GC/TLs**

U - Analyte included in the analysis, but not detected.

I - The reported value is between the laboratory Method Detection limit &amp; the laboratory Practical Quantification Limit.

E - The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is only an estimate (CLP E-flag).



**TABLE 2**  
**GROUNDWATER ANALYTICAL DATA - VOHS**

550 S CYPRESS ROAD  
POMPANO BEACH, FLORIDA  
FDEP FAC ID # 06/8502182

Sample	1,2-Dichloroethane	1,2-Dichloropropane	Dichlorodifluoromethane	Vinyl Chloride	Chloroethane	Trichloroethene	1,1-Dichloroethene	Methyl bromide	Methylene Chloride	trans-1,2-Dichloroethene	cis-1,2-Dichloroethene	Chloroform	Bromodichloromethane	1,1,1-Trichloroethane	Carbon Tetrachloride	Trichloroethylene	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	Tetrachloroethylene	Dibromochloromethane	Chlorobenzene	1,1,2,2-Tetrachloroethane	Bromobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene	
Location	30	5	1400	1	3.9	270	95	9.8	17	53	70	0.4	1.5	730	0.5	6.4	1.4	1.4	1.4	1.4	8.8	1.5	120	0.7	48	380	6.4	880
GCTL	300	500	14000	100	5.4	1500	510	98	26	250	180	0.6	2.2	3600	0.7	9.3	2.2	2.2	2	2	18	2.3	650	1.2	93	2200	9.9	5000
NADC																												
MW-D	2/14/2019	0.180 U	0.220 U	0.190 U	0.250 U	0.530 U	0.110 U	0.250 U	0.420 U	0.210 U	0.210 U	0.160 U	0.250 U	0.160 U	0.330 U	0.190 U	0.100 U	0.110 U	0.250 U	0.180 U	0.150 U	0.150 U	0.180 U	0.170 U	0.170 U	0.170 U	0.140 U	
MW-5	2/14/2019	0.160 U	0.220 U	0.190 U	0.250 U	0.530 U	0.110 U	0.250 U	0.420 U	0.210 U	0.210 U	0.160 U	0.250 U	0.160 U	0.330 U	0.190 U	0.100 U	0.110 U	0.250 U	0.180 U	0.150 U	0.150 U	0.180 U	0.170 U	0.170 U	0.170 U	0.140 U	

NOTE: ug/l - micrograms per liter or parts per billion

NS refers to Not Sampled

NA refers to Not Analyzed

PAHs - Polynuclear Aromatic Hydrocarbons.

GCTL refers to Groundwater and Surface Water Target Levels of FDEP Chapter 62-777 F.A.C.

NADC refers to Natural Attenuation Default Concentrations of FDEP Chapter 62-777 F.A.C.

**Bold values indicate concentrations above GCTLs**

Underlined values indicate concentrations above NADCs

E - Exceeds calibration curve; therefore results are estimated.

J - The reported value is less than the laboratory reporting limit but greater than the MDL, therefore, it is an estimated value.

U - Analyte included in the analysis, but not detected.

I - The reported value is between the laboratory Method Detection Limit & the laboratory Practical Quantification Limit.

T - Second column confirmation exceeded the SW-846 criteria of 40% RPD for this compound.

## **APPENDIX A**

# Analytical Report 614615

for

**BTEX Engineering, Inc.**

**Project Manager: Dave Chuslo**

**Arsh Oil & Gas**

*MW-D & S, Tank pull*

**21-FEB-19**

**Xenco Laboratories**

**1550 Latham Rd Suite 2**

**West Palm Beach, FL 33409**

**Ph:(561) 689-6701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)

Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429), North Carolina (483)

Xenco-Lakeland: Florida (E84098)

21-FEB-19

Project Manager: **Dave Chuslo**  
**BTEX Engineering, Inc.**  
601 N Congress Avenue, Suite 103  
Delray Beach, FL 33445

Reference: XENCO Report No(s): **614615**  
**Arsh Oil & Gas**  
Project Address:

**Dave Chuslo:**

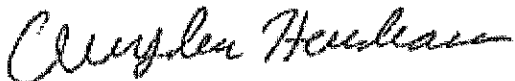
We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 614615. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

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

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 614615 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,



---

**Angela Harlan**  
Senior Project Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

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

## Sample Cross Reference 614615

**BTEX Engineering, Inc., Delray Beach, FL**

Arsh Oil & Gas

<b>Sample Id</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Sample Depth</b>	<b>Lab Sample Id</b>
MW-5	W	02-14-19 10:55		614615-001
MW-D	W	02-14-19 10:30		614615-002

## **CASE NARRATIVE**

***Client Name: BTEX Engineering, Inc.***

***Project Name: Arsh Oil & Gas***

Project ID:

Work Order Number(s): 614615

Report Date: 21-FEB-19

Date Received: 02/14/2019

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**Sample receipt non conformances and comments:**

None

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**Sample receipt non conformances and comments per sample:**

None

## Hits Summary 614615

**BTEX Engineering, Inc., Delray Beach, FL**  
Arsh Oil & Gas

Below is a summary of the analytes which were found to be present in the samples associated with this work order. This should only be used in conjunction with the included analytical results.

<b>Sample ID: MW-D</b>	<b>Sample ID: 614615-002</b>	<b>Date/Time Sampled: 02/14/2019 10:30</b>	<b>Matrix: Water</b>
------------------------	------------------------------	--	----------------------

<b>Analyte Name</b>	<b>Method</b>	<b>CAS No.</b>	<b>Dil.</b>	<b>Result</b>	<b>RL/PQL</b>	<b>MDL</b>	<b>Units</b>	<b>Qual</b>
Lead	SW6010C	7439-92-1	1	5.37	15.0	2.37	ug/L	I



# Certificate of Analytical Results 614615

## BTEX Engineering, Inc., Delray Beach, FL Arsh Oil & Gas

Sample Id: **MW-5**  
Lab Sample Id: 614615-001

Matrix: Ground Water  
Date Collected: 02.14.19 10.55

Date Received: 02.14.19 14.10

Analytical Method: Field Parameters

Tech: LAR

Analyst: LAR

Seq Number: 3079268

% Moisture:

SUB: E84098

Parameter	Cas Number	Result	PQL	MDL	Flag	Units	Analysis Date	Dil
pH	12408-02-5	7.68				SU	02.14.19 10.55	1
Temperature	TEMP	27.68				Deg C	02.14.19 10.55	1
Specific conductance	COND	370				uS/cm	02.14.19 10.55	1
Dissolved Oxygen	7782-44-7	1.48				mg/L	02.14.19 10.55	1
Turbidity	TURBIDITY	3.25				NTU	02.14.19 10.55	1

Analytical Method: Lead, Total by SW846-6010C

Tech: AHI

Analyst: DEP

Seq Number: 3079806

Prep Method: SW3010A

% Moisture:

Date Prep: 02.20.19 03.00

SUB: E871002

Parameter	Cas Number	Result	PQL	MDL	Flag	Units	Analysis Date	Dil
Lead	7439-92-1	2.37 U	15.0	2.37	U	ug/L	02.20.19 13.07	1

# Certificate of Analytical Results 614615

## BTEX Engineering, Inc., Delray Beach, FL

### Arsh Oil & Gas

Sample Id: MW-5  
Lab Sample Id: 614615-001

Matrix: Ground Water  
Date Collected: 02.14.19 10.55

Date Received: 02.14.19 14.10

Analytical Method: VOH by SW-846 8260B

Prep Method: SW5030B

Tech: JNL

% Moisture:

Analyst: JNL

Date Prep: 02.15.19 10.36

Seq Number: 3079284

SUB: E84098

Parameter	Cas Number	Result	PQL	MDL	Flag	Units	Analysis Date	Dil
Bromodichloromethane	75-27-4	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.19	1
Bromoform	75-25-2	0.170 U	1.00	0.170	U	ug/L	02.15.19 15.19	1
Methyl bromide	74-83-9	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.19	1
Carbon Tetrachloride	56-23-5	0.330 U	1.00	0.330	U	ug/L	02.15.19 15.19	1
Chlorobenzene	108-90-7	0.150 U	1.00	0.150	U	ug/L	02.15.19 15.19	1
Chloroethane	75-00-3	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.19	1
Chloroform	67-66-3	0.160 U	1.00	0.160	U	ug/L	02.15.19 15.19	1
Methyl Chloride	74-87-3	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.19	1
Dibromochloromethane	124-48-1	0.150 U	1.00	0.150	U	ug/L	02.15.19 15.19	1
1,2-Dichlorobenzene	95-50-1	0.140 U	1.00	0.140	U	ug/L	02.15.19 15.19	1
1,3-Dichlorobenzene	541-73-1	0.170 U	1.00	0.170	U	ug/L	02.15.19 15.19	1
1,4-Dichlorobenzene	106-46-7	0.170 U	1.00	0.170	U	ug/L	02.15.19 15.19	1
Dichlorodifluoromethane	75-71-8	0.220 U	1.00	0.220	U	ug/L	02.15.19 15.19	1
1,1-Dichloroethane	75-34-3	0.110 U	1.00	0.110	U	ug/L	02.15.19 15.19	1
1,2-Dichloroethane	107-06-2	0.180 U	1.00	0.180	U	ug/L	02.15.19 15.19	1
1,1-Dichloroethene	75-35-4	0.200 U	1.00	0.200	U	ug/L	02.15.19 15.19	1
cis-1,2-Dichloroethylene	156-59-2	0.210 U	1.00	0.210	U	ug/L	02.15.19 15.19	1
trans-1,2-dichloroethylene	156-60-5	0.210 U	1.00	0.210	U	ug/L	02.15.19 15.19	1
1,2-Dichloropropane	78-87-5	0.150 U	1.00	0.150	U	ug/L	02.15.19 15.19	1
cis-1,3-Dichloropropene	10061-01-5	0.100 U	1.00	0.100	U	ug/L	02.15.19 15.19	1
trans-1,3-dichloropropene	10061-02-6	0.110 U	1.00	0.110	U	ug/L	02.15.19 15.19	1
Methylene Chloride	75-09-2	0.420 U	1.00	0.420	U	ug/L	02.15.19 15.19	1
1,1,2,2-Tetrachloroethane	79-34-5	0.180 U	1.00	0.180	U	ug/L	02.15.19 15.19	1
Tetrachloroethylene	127-18-4	0.160 U	1.00	0.160	U	ug/L	02.15.19 15.19	1
1,1,1-Trichloroethane	71-55-6	0.160 U	1.00	0.160	U	ug/L	02.15.19 15.19	1
1,1,2-Trichloroethane	79-00-5	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.19	1
Trichloroethylene	79-01-6	0.190 U	1.00	0.190	U	ug/L	02.15.19 15.19	1
Trichlorofluoromethane	75-69-4	0.530 U	1.00	0.530	U	ug/L	02.15.19 15.19	1
Vinyl Chloride	75-01-4	0.190 U	1.00	0.190	U	ug/L	02.15.19 15.19	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag	
1,2-Dichloroethane-D4	17060-07-0	100		%	53-159	02.15.19 15.19		
Toluene-D8	2037-26-5	96		%	70-130	02.15.19 15.19		
4-Bromofluorobenzene	460-00-4	107		%	30-180	02.15.19 15.19		

# Certificate of Analytical Results 614615

## BTEX Engineering, Inc., Delray Beach, FL

### Arsh Oil & Gas

Sample Id: **MW-D**  
Lab Sample Id: 614615-002

Matrix: Ground Water  
Date Collected: 02.14.19 10.30

Date Received: 02.14.19 14.10

Analytical Method: Field Parameters

Tech: LAR

% Moisture:

Analyst: LAR

Seq Number: 3079268

SUB: E84098

Parameter	Cas Number	Result	PQL	MDL	Flag	Units	Analysis Date	Dil
pH	12408-02-5	6.40				SU	02.14.19 10.30	1
Temperature	TEMP	24.81				Deg C	02.14.19 10.30	1
Specific conductance	COND	390				uS/cm	02.14.19 10.30	1
Dissolved Oxygen	7782-44-7	1.16				mg/L	02.14.19 10.30	1
Turbidity	TURBIDITY	13.8				NTU	02.14.19 10.30	1

Analytical Method: Lead, Total by SW846-6010C

Prep Method: SW3010A

Tech: AHI

% Moisture:

Analyst: DEP

Date Prep: 02.20.19 03.00

Seq Number: 3079806

SUB: E871002

Parameter	Cas Number	Result	PQL	MDL	Flag	Units	Analysis Date	Dil
Lead	7439-92-1	5.37	15.0	2.37	I	ug/L	02.20.19 13.11	1

# Certificate of Analytical Results 614615

## BTEX Engineering, Inc., Delray Beach, FL

### Arsh Oil & Gas

Sample Id: **MW-D**  
Lab Sample Id: 614615-002

Matrix: Ground Water  
Date Collected: 02.14.19 10.30

Date Received: 02.14.19 14.10

Analytical Method: VOH by SW-846 8260B

Prep Method: SW5030B

Tech: JNL

% Moisture:

Analyst: JNL

Date Prep: 02.15.19 10.36

Seq Number: 3079284

SUB: E84098

Parameter	Cas Number	Result	PQL	MDL	Flag	Units	Analysis Date	Dil
Bromodichloromethane	75-27-4	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.37	1
Bromoform	75-25-2	0.170 U	1.00	0.170	U	ug/L	02.15.19 15.37	1
Methyl bromide	74-83-9	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.37	1
Carbon Tetrachloride	56-23-5	0.330 U	1.00	0.330	U	ug/L	02.15.19 15.37	1
Chlorobenzene	108-90-7	0.150 U	1.00	0.150	U	ug/L	02.15.19 15.37	1
Chloroethane	75-00-3	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.37	1
Chloroform	67-66-3	0.160 U	1.00	0.160	U	ug/L	02.15.19 15.37	1
Methyl Chloride	74-87-3	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.37	1
Dibromochloromethane	124-48-1	0.150 U	1.00	0.150	U	ug/L	02.15.19 15.37	1
1,2-Dichlorobenzene	95-50-1	0.140 U	1.00	0.140	U	ug/L	02.15.19 15.37	1
1,3-Dichlorobenzene	541-73-1	0.170 U	1.00	0.170	U	ug/L	02.15.19 15.37	1
1,4-Dichlorobenzene	106-46-7	0.170 U	1.00	0.170	U	ug/L	02.15.19 15.37	1
Dichlorodifluoromethane	75-71-8	0.220 U	1.00	0.220	U	ug/L	02.15.19 15.37	1
1,1-Dichloroethane	75-34-3	0.110 U	1.00	0.110	U	ug/L	02.15.19 15.37	1
1,2-Dichloroethane	107-06-2	0.180 U	1.00	0.180	U	ug/L	02.15.19 15.37	1
1,1-Dichloroethene	75-35-4	0.200 U	1.00	0.200	U	ug/L	02.15.19 15.37	1
cis-1,2-Dichloroethylene	156-59-2	0.210 U	1.00	0.210	U	ug/L	02.15.19 15.37	1
trans-1,2-dichloroethylene	156-60-5	0.210 U	1.00	0.210	U	ug/L	02.15.19 15.37	1
1,2-Dichloropropane	78-87-5	0.150 U	1.00	0.150	U	ug/L	02.15.19 15.37	1
cis-1,3-Dichloropropene	10061-01-5	0.100 U	1.00	0.100	U	ug/L	02.15.19 15.37	1
trans-1,3-dichloropropene	10061-02-6	0.110 U	1.00	0.110	U	ug/L	02.15.19 15.37	1
Methylene Chloride	75-09-2	0.420 U	1.00	0.420	U	ug/L	02.15.19 15.37	1
1,1,2,2-Tetrachloroethane	79-34-5	0.180 U	1.00	0.180	U	ug/L	02.15.19 15.37	1
Tetrachloroethylene	127-18-4	0.160 U	1.00	0.160	U	ug/L	02.15.19 15.37	1
1,1,1-Trichloroethane	71-55-6	0.160 U	1.00	0.160	U	ug/L	02.15.19 15.37	1
1,1,2-Trichloroethane	79-00-5	0.250 U	1.00	0.250	U	ug/L	02.15.19 15.37	1
Trichloroethylene	79-01-6	0.190 U	1.00	0.190	U	ug/L	02.15.19 15.37	1
Trichlorofluoromethane	75-69-4	0.530 U	1.00	0.530	U	ug/L	02.15.19 15.37	1
Vinyl Chloride	75-01-4	0.190 U	1.00	0.190	U	ug/L	02.15.19 15.37	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,2-Dichloroethane-D4	17060-07-0	97	%	53-159	02.15.19 15.37	
Toluene-D8	2037-26-5	94	%	70-130	02.15.19 15.37	
4-Bromofluorobenzene	460-00-4	98	%	30-180	02.15.19 15.37	

## CHRONOLOGY OF HOLDING TIMES

Analytical Method : Lead, Total by SW846-6010C

Client : BTEX Engineering, Inc.

Work Order #: **614615**

Project ID:

Date Received: 02/14/19

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
MW-5	614615-001	02/14/19	02/20/19	180	6	02/20/19	180	0	P
MW-D	614615-002	02/14/19	02/20/19	180	6	02/20/19	180	0	P

## CHRONOLOGY OF HOLDING TIMES

Analytical Method : VOH by SW-846 8260B

Client : BTEX Engineering, Inc.

Work Order #: **614615**

Project ID:

Date Received: 02/14/19

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
MW-5	614615-001	02/14/19				02/15/19	14	1	P
MW-D	614615-002	02/14/19				02/15/19	14	1	P

## CHRONOLOGY OF HOLDING TIMES

Analytical Method : Field Parameters

Client : BTEX Engineering, Inc.

Work Order #: **614615**

Project ID:

Date Received: 02/14/19

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Hour)	Time Held Extracted (Hour)	Date Analyzed	Max Holding Time Analyzed (Hour)	Time Held Analyzed (Hour)	Q
MW-5	614615-001	02/14/19				02/14/19	1	0	P
MW-D	614615-002	02/14/19				02/14/19	1	0	P

F = These samples were analyzed outside the recommended holding time.

P = Samples analyzed within the recommended holding time.



## Flagging Criteria



### FLORIDA flagging criteria

Data were reviewed by the  
Department Supervisor and QA Director

- A** Value reported is the mean (average) of two or more determinations.
- B** Results based upon colony counts outside the acceptable range.
- J** Estimated value; value not accurate. All results with a "J" qualifier require comment.
  - J1: Surrogate Recoveries exceed established QA/QC Limits
  - J2: No known QA/QC exists.
  - J3: Reported value failed to meet established QA/QC limits or the sample matrix interfered with the ability to make an accurate determination
  - J4: The data is questionable due to improper laboratory or field protocols
- Q** Sample held beyond the accepted holding time
- T** Value reported is less than the laboratory method detection limit. The value is reported for informational purposes, only and shall not be used in statistical analysis.
- U** Compound was analyzed for but not detected at the MDL Level.
- V** Analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- I** The reported value is between the laboratory MDL and the laboratory PQL.
- R** Significant rain in the past 48 hours.
- +** NELAC certification not offered for this compound.
- \*** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
12600 West I-20 East, Odessa, TX 79765  
6017 Financial Drive, Norcross, GA 30071  
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(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	

# QC Summary 614615

## BTEX Engineering, Inc. Arsh Oil & Gas

Analytical Method: Lead, Total by SW846-6010C

Seq Number: 3079806

MB Sample Id: 7672101-1-BLK

Matrix: Water

LCS Sample Id: 7672101-1-BKS

Prep Method: SW3010A

Date Prep: 02.20.19

LCSD Sample Id: 7672101-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Lead	<2.37	1000	1060	106	1070	107	75-125	1	20	ug/L	02.20.19 12:12	

Analytical Method: Lead, Total by SW846-6010C

Seq Number: 3079806

Parent Sample Id: 614801-001

Matrix: Ground Water

MS Sample Id: 614801-001 S

Prep Method: SW3010A

Date Prep: 02.20.19

MSD Sample Id: 614801-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Lead	<2.37	1000	867	87	829	83	75-125	4	20	ug/L	02.20.19 12:25	

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

$[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample  
 A = Parent Result  
 C = MS/LCS Result  
 E = MSD/LCSD Result

MS = Matrix Spike  
 B = Spike Added  
 D = MSD/LCSD % Rec

# QC Summary 614615

## BTEX Engineering, Inc. Arsh Oil & Gas

Analytical Method: VOH by SW-846 8260B

Seq Number: 3079284

MB Sample Id: 7671815-1-BLK

Matrix: Water

LCS Sample Id: 7671815-1-BKS

Prep Method: SW5030B

Date Prep: 02.15.19

LCSD Sample Id: 7671815-1-BSDD

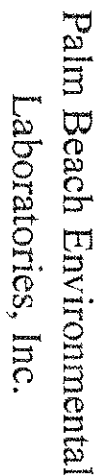
Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Bromodichloromethane	<0.250	50.0	45.4	91	46.4	93	75-120	2	20	ug/L	02.15.19 13:10	
Bromoform	<0.170	50.0	46.7	93	46.6	93	70-130	0	20	ug/L	02.15.19 13:10	
Methyl bromide	<0.250	50.0	42.7	85	43.8	88	30-145	3	20	ug/L	02.15.19 13:10	
Carbon Tetrachloride	<0.330	50.0	47.7	95	47.1	94	65-140	1	20	ug/L	02.15.19 13:10	
Chlorobenzene	<0.150	50.0	46.0	92	46.2	92	80-120	0	20	ug/L	02.15.19 13:10	
Chloroethane	<0.250	50.0	42.6	85	40.3	81	60-135	6	20	ug/L	02.15.19 13:10	
Chloroform	<0.160	50.0	46.8	94	46.5	93	65-135	1	20	ug/L	02.15.19 13:10	
Methyl Chloride	<0.250	50.0	49.9	100	48.8	98	40-125	2	20	ug/L	02.15.19 13:10	
Dibromochloromethane	<0.150	50.0	45.6	91	45.9	92	60-135	1	20	ug/L	02.15.19 13:10	
1,2-Dichlorobenzene	<0.140	50.0	44.8	90	45.4	91	70-125	1	20	ug/L	02.15.19 13:10	
1,3-Dichlorobenzene	<0.170	50.0	44.9	90	45.2	90	75-125	1	20	ug/L	02.15.19 13:10	
1,4-Dichlorobenzene	<0.170	50.0	44.8	90	44.9	90	75-125	0	20	ug/L	02.15.19 13:10	
Dichlorodifluoromethane	<0.220	50.0	62.6	125	63.1	126	30-155	1	20	ug/L	02.15.19 13:10	
1,1-Dichloroethane	<0.110	50.0	48.0	96	49.0	98	70-150	2	20	ug/L	02.15.19 13:10	
1,2-Dichloroethane	<0.180	50.0	45.6	91	45.3	91	70-130	1	20	ug/L	02.15.19 13:10	
1,1-Dichloroethene	<0.200	50.0	51.3	103	50.7	101	70-130	1	20	ug/L	02.15.19 13:10	
cis-1,2-Dichloroethylene	<0.210	50.0	49.6	99	50.1	100	70-125	1	20	ug/L	02.15.19 13:10	
trans-1,2-dichloroethylene	<0.210	50.0	50.4	101	50.4	101	60-140	0	20	ug/L	02.15.19 13:10	
1,2-Dichloropropane	<0.150	50.0	44.2	88	45.1	90	75-125	2	20	ug/L	02.15.19 13:10	
cis-1,3-Dichloropropene	<0.100	50.0	52.4	105	52.6	105	70-125	0	20	ug/L	02.15.19 13:10	
trans-1,3-dichloropropene	<0.110	50.0	51.4	103	51.7	103	55-140	1	20	ug/L	02.15.19 13:10	
Methylene Chloride	<0.420	50.0	48.6	97	48.9	98	55-140	1	20	ug/L	02.15.19 13:10	
1,1,2,2-Tetrachloroethane	<0.180	50.0	44.2	88	44.2	88	65-148	0	20	ug/L	02.15.19 13:10	
Tetrachloroethylene	<0.160	50.0	46.6	93	48.3	97	45-150	4	20	ug/L	02.15.19 13:10	
1,1,1-Trichloroethane	<0.160	50.0	46.4	93	47.2	94	65-145	2	20	ug/L	02.15.19 13:10	
1,1,2-Trichloroethane	<0.250	50.0	45.9	92	47.0	94	75-151	2	20	ug/L	02.15.19 13:10	
Trichloroethylene	<0.190	50.0	48.1	96	46.9	94	70-125	3	20	ug/L	02.15.19 13:10	
Trichlorofluoromethane	<0.530	50.0	53.6	107	54.3	109	60-145	1	20	ug/L	02.15.19 13:10	
Vinyl Chloride	<0.190	50.0	50.0	100	49.5	99	50-145	1	20	ug/L	02.15.19 13:10	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits		Units	Analysis Date		
1,2-Dichloroethane-D4	99		98		99		53-159		%	02.15.19 13:10		
Toluene-D8	94		95		95		70-130		%	02.15.19 13:10		
4-Bromofluorobenzene	106		95		94		30-180		%	02.15.19 13:10		

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

$[D] = 100 * (C-A) / B$   
 $RPD = 200 * |(C-E) / (C+E)|$   
 $[D] = 100 * (C) / [B]$   
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample  
 A = Parent Result  
 C = MS/LCS Result  
 E = MSD/LCSD Result

MS = Matrix Spike  
 B = Spike Added  
 D = MSD/LCSD % Rec



# CHAIN OF CUSTODY RECORD

Log #: 614615  
PO #: \_\_\_\_\_  
Quote #: \_\_\_\_\_  
FDEP: 2014

[illegible]



## Inter-Office Shipment

IOS Number **122571**

Date/Time: 02/14/19 14:16

Created by: Jessica Magierowski

Please send report to: Angela Harlan

Lab# From: **South Florida**

Delivery Priority:

Address: Xenco Laboratories

Lab# To: **Tampa**

Air Bill No.:

F-Mail: angela.harlan@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
614615-001	W	MW-5	02/14/19 10:55	SW8260B_VOH	VOH by SW-846 8260B	02/20/19	02/28/19	ANH	BDCME BRME CEVETH	
614615-002	W	MW-D	02/14/19 10:30	SW8260B_VOH	VOH by SW-846 8260B	02/20/19	02/28/19	ANH	BDCME BRME CEVETH	

### Inter Office Shipment or Sample Comments:

Relinquished By:

*MAZ*

Jessica Magierowski

Received By:

*Lourdes Arevalo*

Lourdes Arevalo

Date Relinquished: 02/14/2019

Date Received:

Cooler Temperature:



## Inter-Office Shipment

IOS Number **122573**

Date/Time: 02/14/19 14:26

Lab# From: **South Florida**

Lab# To: **Houston**

Created by: Jessica Magierowski

Delivery Priority:

Air Bill No.: 774476703509

Please send report to: Angela Harlan

Address: Xenco Laboratories

F-Mail: angela.harlan@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
614615-001	W	MW-5	02/14/19 10:55	SW6010C_Pb	Lead, Total by SW846-6010C	02/20/19	08/13/19	ANH	PB	
614615-001	W	MW-5	02/14/19 10:55	SW6010C_Pb	Lead, Total by SW846-6010C	02/20/19	08/13/19	ANH	PB	
614615-002	W	MW-D	02/14/19 10:30	SW6010C_Pb	Lead, Total by SW846-6010C	02/20/19	08/13/19	ANH	PB	
614615-002	W	MW-D	02/14/19 10:30	SW6010C_Pb	Lead, Total by SW846-6010C	02/20/19	08/13/19	ANH	PB	

Inter Office Shipment or Sample Comments:

Relinquished By:

*JFZ*

Jessica Magierowski

Received By:

*Monica Shakhshir*

Monica Shakhshir

Date Relinquished: 02/14/2019

Date Received: 02/15/2019 09:30

Cooler Temperature: 1.5



## XENCO Laboratories

### Inter Office Report- Sample Receipt Checklist

Sent To: Tampa

IOS #: 122571

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sent By: Jessica Magierowski

Date Sent: 02/14/2019 02:16 PM

Received By:

Date Received:

#### Sample Receipt Checklist

#### Comments

- #1 \*Temperature of cooler(s)? \_\_\_\_\_
- #2 \*Shipping container in good condition? \_\_\_\_\_
- #3 \*Samples received with appropriate temperature? \_\_\_\_\_
- #4 \*Custody Seals intact on shipping container/ cooler? \_\_\_\_\_
- #5 \*Custody Seals Signed and dated for Containers/coolers \_\_\_\_\_
- #6 \*IOS present? \_\_\_\_\_
- #7 Any missing/extra samples? \_\_\_\_\_
- #8 IOS agrees with sample label(s)/matrix? \_\_\_\_\_
- #9 Sample matrix/ properties agree with IOS? \_\_\_\_\_
- #10 Samples in proper container/ bottle? \_\_\_\_\_
- #11 Samples properly preserved? \_\_\_\_\_
- #12 Sample container(s) intact? \_\_\_\_\_
- #13 Sufficient sample amount for indicated test(s)? \_\_\_\_\_
- #14 All samples received within hold time? \_\_\_\_\_

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

NonConformance:

Corrective Action Taken:

#### Nonconformance Documentation

Contact: \_\_\_\_\_ Contacted by : \_\_\_\_\_ Date: \_\_\_\_\_

Checklist reviewed by:

Lourdes Arevalo

Date: \_\_\_\_\_



## XENCO Laboratories

### Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 122573

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : HOU-068

Sent By: Jessica Magierowski

Date Sent: 02/14/2019 02:26 PM

Received By: Monica Shakhshir

Date Received: 02/15/2019 09:30 AM

#### Sample Receipt Checklist

#### Comments

#1 *Temperature of cooler(s)?	1.5
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 *Custody Seals Signed and dated for Containers/coolers	Yes
#6 *IOS present?	Yes
#7 Any missing/extra samples?	No
#8 IOS agrees with sample label(s)/matrix?	Yes
#9 Sample matrix/ properties agree with IOS?	Yes
#10 Samples in proper container/ bottle?	Yes
#11 Samples properly preserved?	Yes
#12 Sample container(s) intact?	Yes
#13 Sufficient sample amount for indicated test(s)?	Yes
#14 All samples received within hold time?	Yes

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

NonConformance:

Corrective Action Taken:

#### Nonconformance Documentation

Contact: \_\_\_\_\_ Contacted by : \_\_\_\_\_ Date: \_\_\_\_\_

Checklist reviewed by:

  
Monica Shakhshir

Date: 02/15/2019



**XENCO Laboratories**  
**Prelogin/Nonconformance Report- Sample Log-In**

**Client:** BTEX Engineering, Inc.

**Date/ Time Received:** 02.14.2019 02.10.00 PM

**Work Order #:** 614615

**Acceptable Temperature Range:** 0 - 6 degC

**Air and Metal samples Acceptable Range:** Ambient

**Temperature Measuring device used :**

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.4
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6*Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	Yes
#18 Water VOC samples have zero headspace?	N/A

Subbed to Tampa and Houston

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

**Analyst:**

PH Device/Lot#: IR1

**Checklist completed by:**

  
\_\_\_\_\_  
Jessica Magierowski

**Date:** 02.14.2019

**Checklist reviewed by:**

**Date:** 02.14.2019

# **Analytical Report 616489**

**for**

**BTEX Engineering, Inc.**

**Project Manager: Dave Chuslo**

**Arsh Oil & Gas**

**EDB - GW**

**07-MAR-19**

**Xenco Laboratories  
1550 Latham Rd Suite 2  
West Palm Beach, FL 33409  
Ph:(561) 689-6701**

Xenco-Houston (EPA Lab Code: TX00122):  
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):  
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)  
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)  
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)  
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)  
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)  
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)  
Xenco-Atlanta (LELAP Lab ID #04176)  
Xenco-Tampa: Florida (E87429), North Carolina (483)  
Xenco-Lakeland: Florida (E84098)

07-MAR-19

Project Manager: **Dave Chuslo**  
**BTEX Engineering, Inc.**  
601 N Congress Avenue, Suite 103  
Delray Beach, FL 33445

Reference: XENCO Report No(s): **616489**  
**Arsh Oil & Gas**  
Project Address:

**Dave Chuslo:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 616489. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

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

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 616489 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,



**Chad Bechtold**

Project Manager

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## Sample Cross Reference 616489

**BTEX Engineering, Inc., Delray Beach, FL**

Arsh Oil & Gas

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-5	W	03-05-19 12:00		616489-001
MW-D	W	03-05-19 12:35		616489-002

## **CASE NARRATIVE**

*Client Name: BTEX Engineering, Inc.*

*Project Name: Arsh Oil & Gas*

Project ID:

Work Order Number(s): 616489

Report Date: 07-MAR-19

Date Received: 03/05/2019

---

**Sample receipt non conformances and comments:**

None

---

**Sample receipt non conformances and comments per sample:**

None

# Certificate of Analytical Results 616489

## BTEX Engineering, Inc., Delray Beach, FL

Arsh Oil & Gas

Sample Id: MW-5  
Lab Sample Id: 616489-001

Matrix: Ground Water  
Date Collected: 03.05.19 12.00

Date Received: 03.05.19 15.55

Analytical Method: EDB by EPA 8011

Prep Method: SW8011P

Tech: JAI

% Moisture:

Analyst: KTK

Date Prep: 03.06.19 15.00

Seq Number: 3081336

SUB: E87429

Parameter	Cas Number	Result	PQL	MDL	Flag	Units	Analysis Date	Dil
1,2-Dibromoethane	106-93-4	0.0109 U	0.0199	0.0109	U	ug/L	03.06.19 23.27	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	103	%	60-140	03.06.19 23.27			

# Certificate of Analytical Results 616489

## BTEX Engineering, Inc., Delray Beach, FL

Arsh Oil & Gas

Sample Id: **MW-D**  
Lab Sample Id: 616489-002

Matrix: Ground Water  
Date Collected: 03.05.19 12.35

Date Received: 03.05.19 15.55

Analytical Method: EDB by EPA 8011

Prep Method: SW8011P

Tech: JAI

% Moisture:

Analyst: KTK

Date Prep: 03.06.19 15.00

Seq Number: 3081336

SUB: E87429

Parameter	Cas Number	Result	PQL	MDL	Flag	Units	Analysis Date	Dil
1,2-Dibromoethane	106-93-4	0.0109 U	0.0198	0.0109	U	ug/L	03.06.19 23.54	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>		
4-Bromofluorobenzene	460-00-4	98	%	60-140	03.06.19 23.54			

## CHRONOLOGY OF HOLDING TIMES

Analytical Method : EDB by EPA 8011

Client : BTEX Engineering, Inc.

Work Order #: **616489**

Project ID:

Date Received: 03/05/19

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
MW-5	616489-001	03/05/19	03/06/19	14	1	03/06/19	14	0	P
MW-D	616489-002	03/05/19	03/06/19	14	1	03/06/19	14	0	P

F = These samples were analyzed outside the recommended holding time.

P = Samples analyzed within the recommended holding time.



## Flagging Criteria



### FLORIDA flagging criteria

Data were reviewed by the  
Department Supervisor and QA Director

- A** Value reported is the mean (average) of two or more determinations.
- B** Results based upon colony counts outside the acceptable range.
- J** Estimated value; value not accurate. All results with a "J" qualifier require comment.
  - J1: Surrogate Recoveries exceed established QA/QC Limits
  - J2: No known QA/QC exists.
  - J3: Reported value failed to meet established QA/QC limits or the sample matrix interfered with the ability to make an accurate determination
  - J4: The data is questionable due to improper laboratory or field protocols
- Q** Sample held beyond the accepted holding time
- T** Value reported is less than the laboratory method detection limit. The value is reported for informational purposes, only and shall not be used in statistical analysis.
- U** Compound was analyzed for but not detected at the MDL Level.
- V** Analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- I** The reported value is between the laboratory MDL and the laboratory PQL.
- R** Significant rain in the past 48 hours.
- +** NELAC certification not offered for this compound.
- \*** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	

# QC Summary 616489

## BTEX Engineering, Inc. Arsh Oil & Gas

Analytical Method: EDB by EPA 8011

Seq Number: 3081336

MB Sample Id: 7673071-1-BLK

Matrix: Water

LCS Sample Id: 7673071-1-BKS

Prep Method: SW8011P

Date Prep: 03.06.19

LCSD Sample Id: 7673071-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
1,2-Dibromoethane	<0.0110	0.250	0.260	104	0.280	112	60-140	7	30	ug/L	03.06.19 22:05	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
4-Bromofluorobenzene	97		103		98		60-140	%	03.06.19 22:05			

Analytical Method: EDB by EPA 8011

Seq Number: 3081336

Parent Sample Id: 616489-002

Matrix: Ground Water

MD Sample Id: 616489-002 D

Prep Method: SW8011P

Date Prep: 03.06.19

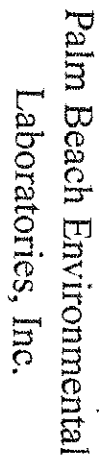
Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
1,2-Dibromoethane	<0.0109	<0.0109	0	30	ug/L	03.07.19 00:21	U

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

$[D] = 100 * (C-A) / B$   
 $RPD = 200 * |(C-E) / (C+E)|$   
 $[D] = 100 * (C) / [B]$   
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample  
 A = Parent Result  
 C = MS/LCS Result  
 E = MSD/LCSD Result

MS = Matrix Spike  
 B = Spike Added  
 D = MSD/LCSD % Rec



# CHAIN OF CUSTODY RECORD

Log #: 616489  
PO #: \_\_\_\_\_  
Quote #: \_\_\_\_\_  
FDEP: 2012

[illegible]



## Inter-Office Shipment

IOS Number : **123679**

Date/Time: 03/05/19 14:28

Created by: Jessica Magierowski

Please send report to: Chad Bechtold

Lab# From: **South Florida**

Delivery Priority:

Address: Xenco Laboratories

Lab# To: **Houston**

Air Bill No.:

E-Mail: Chad.Bechtold@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
616489-001	W	MW-5	03/05/19 12:00	SW8011	EDB by EPA 8011	03/11/19	03/19/19	CBE	DBCP EDB TCPR123	
616489-001	W	MW-5	03/05/19 12:00	SW8011	EDB by EPA 8011	03/11/19	03/19/19	CBE	DBCP EDB TCPR123	
616489-002	W	MW-D	03/05/19 12:35	SW8011	EDB by EPA 8011	03/11/19	03/19/19	CBE	DBCP EDB TCPR123	
616489-002	W	MW-D	03/05/19 12:35	SW8011	EDB by EPA 8011	03/11/19	03/19/19	CBE	DBCP EDB TCPR123	

### Inter Office Shipment or Sample Comments:

Relinquished By:

*MAZ*

Jessica Magierowski

Received By:

Date Relinquished: 03/05/2019

Date Received:

Cooler Temperature:

# XENCO Laboratories

## Inter Office Report- Sample Receipt Checklist

Sent To: Tampa

IOS #: 123679

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-20

Sent By: Jessica Magierowski

Date Sent: 03/05/2019 02:28 PM

Received By: Lourdes Arevalo

Date Received: 03/06/2019 10:01 AM

### Sample Receipt Checklist

### Comments

#1 *Temperature of cooler(s)?	3.7
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 *Custody Seals Signed and dated for Containers/coolers	Yes
#6 *IOS present?	Yes
#7 Any missing/extra samples?	Yes
#8 IOS agrees with sample label(s)/matrix?	Yes
#9 Sample matrix/ properties agree with IOS?	Yes
#10 Samples in proper container/ bottle?	Yes
#11 Samples properly preserved?	Yes
#12 Sample container(s) intact?	Yes
#13 Sufficient sample amount for indicated test(s)?	Yes
#14 All samples received within hold time?	Yes

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

NonConformance:

Corrective Action Taken:

### Nonconformance Documentation

Contact: \_\_\_\_\_ Contacted by : \_\_\_\_\_ Date: \_\_\_\_\_

Checklist reviewed by:

  
Lourdes Arevalo

Date: 03/06/2019

**XENCO Laboratories**  
**Prelogin/Nonconformance Report- Sample Log-In**

**Client:** BTEX Engineering, Inc.

**Date/ Time Received:** 03.05.2019 03.55.00 PM

**Work Order #:** 616489

**Acceptable Temperature Range:** 0 - 6 degC

**Air and Metal samples Acceptable Range:** Ambient

**Temperature Measuring device used :**

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	4.2
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6*Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	Yes
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	Yes
#18 Water VOC samples have zero headspace?	Yes

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

**Analyst:**

**PH Device/Lot#: IR# 1**



**XENCO Laboratories**  
**Prelogin/Nonconformance Report- Sample Log-In**

**Client:** BTEX Engineering, Inc.

**Acceptable Temperature Range:** 0 - 6 degC

**Date/ Time Received:** 03.05.2019 03.55.00 PM

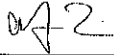
**Air and Metal samples Acceptable Range:** Ambient

**Work Order #:** 616489

**Sample Receipt Checklist**

48 hour rush

**Checklist completed by:**



\_\_\_\_\_  
Jessica Magierowski

**Date:** 03.05.2019

**Checklist reviewed by:**

**Date:** 03.05.2019

## **APPENDIX B**

## **APPENDIX C**

# DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME: Arsh Oil & Gas, LLC		SITE LOCATION: 550 S. Cypress Rd. Pompano Beach, FL	
WELL NO: MW-D		DATE: 2/14/19	

## PURGING DATA

[illegible]

## SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: BTEX Kim Chiorean				SAMPLER(S) SIGNATURE(S): <i>Kim Chiorean</i>			SAMPLING INITIATED AT: 10:30		SAMPLING ENDED AT: 10:35	
PUMP OR TUBING DEPTH IN WELL (feet): 4.5				TUBING MATERIAL CODE: HDPE			FIELD-FILTERED: Y <u>N</u> Filtration Equipment Type:		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y <u>N</u>				TUBING Y <u>N (replaced)</u>			DUPLICATE: Y <u>N</u>			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
APP	9	CG	40 ml	None			VOH		APP	
APP	1	HDPE	250 ml	None			Lead		APP	
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; HDPE = High Density Polyethylene; LDPE = Low Density Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After (Through) Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPF = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

**pH:**  $\pm 0.2$  units **Temperature:**  $\pm 0.2$  °C **Specific Conductance:**  $\pm 5\%$  **Dissolved Oxygen:** all readings  $\leq 20\%$  saturation (see Table FS 2200-2); optionally,  $\pm 0.2$  mg/L or  $\pm 10\%$  (whichever is greater) **Turbidity:** all readings  $\leq 20$  NTU; optionally  $\pm 5$  NTU or  $\pm 10\%$  (whichever is greater)

## DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME: Arsh Oil & Gas, LLC		SITE LOCATION: 550 S. Cypress Rd. Pompano Beach, FL	
WELL NO: MW-5		SAMPLE ID: 06/8502182	
		DATE: 2/14/19	

## PURGING DATA

[illegible]

## SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: BTEX Kim Chloean						SAMPLER(S) SIGNATURE(S): <i>Kim Chloean</i>		SAMPLING INITIATED AT: 10:55	SAMPLING ENDED AT: 10:58
PUMP OR TUBING DEPTH IN WELL (feet): 4.5				TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N)		Filtration Equipment Type:	FILTER SIZE: _____ μm	
FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (replaced)									Duplicate: Y (N)
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (Including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
APP	4	CG	40 ml	None			VOH	APP	400
APP	1	HDPE	250 ml	None			Lead	APP	400
REMARKS:									
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; HDPE = High Density Polyethylene; LDPE = Low Density Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)									
SAMPLING EQUIPMENT CODES: APP = After (Through) Peristaltic Pump; B = Baller; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)									
NOTES: 1. The above do not constitute a guarantee or warranty by the manufacturer.									

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

**pH:**  $\pm 0.2$  units **Temperature:**  $\pm 0.2$  °C **Specific Conductance:**  $\pm 5\%$  **Dissolved Oxygen:** all readings  $\leq 20\%$  saturation (see Table FS 2200-2); optionally,  $\pm 0.2$  mg/L or  $\pm 10\%$  (whichever is greater) **Turbidity:** all readings  $\leq 20$  NTU; optionally  $\pm 5$  NTU or  $\pm 10\%$  (whichever is greater)

## DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME: Arsh Oil & Gas, LLC		SITE LOCATION: 550 S. Cypress Rd. Pompano Beach, FL	
WELL NO: MW-D		SAMPLE ID: 06/8502182	
		DATE: 3/5/19	

## PURGING DATA

[illegible]

## SAMPLING DATA

[illegible]

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH:  $\pm 0.2$  units Temperature:  $\pm 0.2^\circ\text{C}$  Specific Conductance:  $\pm 5\%$  Dissolved Oxygen: all readings  $\leq 20\%$  saturation (see Table FS 2200-2); optionally,  $\pm 0.2\text{ mg/L}$  or  $\pm 10\%$  (whichever is greater) Turbidity: all readings  $\leq 20\text{ NTU}$ ; optionally  $\pm 5\text{ NTU}$  or  $\pm 10\%$  (whichever is greater)

# DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME: Arsh Oil & Gas, LLC		SITE LOCATION: 550 S. Cypress Rd. Pompano Beach, FL	
WELL NO: MW-5		DATE: 3/5/19	

## PURGING DATA

[illegible]

## SAMPLING DATA

[illegible]

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

**pH:**  $\pm 0.2$  units **Temperature:**  $\pm 0.2$  °C **Specific Conductance:**  $\pm 5\%$  **Dissolved Oxygen:** all readings  $\leq 20\%$  saturation (see Table FS 2200-2); optionally,  $\pm 0.2$  mg/L or  $\pm 10\%$  (whichever is greater) **Turbidity:** all readings  $\leq 20$  NTU; optionally  $\pm 5$  NTU or  $\pm 10\%$  (whichever is greater)



## **APPENDIX C**

1/28/19

Westar Gas Station

Sample I.D.

Sample Time

SB-A (6-2)

1:00

SB-B (4-6)

1:25

SB-C (6-8)

1:55

SB-D (6-8)

2:30

SB-E (4-6)

2:55

SB-D (4-6)

2:20

SB-C (4-6)

1:45

Cleaned up and off-site @ 4:00pm

2/5/19 ARSH OIL & GAS LLC

Address: 550 S. Cypress RD.

POMPANO BEACH, FL

FAC: 06/8502182

~~DOB:~~

Personnel: KC

WEATHER: SUNNY WARM

TASK: Collect GW depths

on site @ 10:00am

MW

DTW

A

2.80

B

2.69

C

2.83

D

2.68

5

2.74

6

2.84

Off site @ 10:30am

2/10/19

V-Gas

four monitoring/compliance wells are located around the VSTs (MW-5, 6, 7, 8) and four monitoring/compliance wells are located underneath the canopy near the pump islands. Site surface is mostly asphalt except for concrete along the VSTs. Site is an active 7-11 retail gas station. IDW could be stored in 55-gallon drums placed in the grass behind the bldg. No 911 power lines at site boundaries.

Off-site @ 2:30 pm.

2/14/19 ARSH Oil + GAS

550 S. Cypress RD

POMPANO BEACH, FL 33060

FAC: O6/8502182

WO# 2018-95-W1200B

ARRIVE ON SITE @ 10:05 AM

OFF SITE @ 11:30 AM

MW DTW SAMPLE TIME

A 3.01

B 2.90

C 3.04

D 2.88 10:30

E 2.98 10:55

6 3.06

COMPLETED FDEP GROUND WATER  
SAMPLING LOGS

3/5/19

AKSH 011 4 GAS

550 S. Cypress RD.

POMPANO BEACH, FL

PAC ID: 06/8502182

WO: 2018-95-W1200B

ARRIVE ON SITE AT: 11:30 AM

OFF SITE AT: 1:00 PM

PERSONNEL: KCC

WEATHER: SUNNY WARM

TASK: GW SAMPLING

VEHICLE: 1/2 TON TRUCK

MW

DTW

SAMPLE TIME

A

3.23

—

B

3.12

—

C

3.27

—

D

3.11

12:35

5

3.19

12:00

6

3.28

—

COMPLETED FDEP SAMPLE LOGS

## DEP-SOP-001/01

FT 1000 General Field Testing and Measurement

Form FD 9000-8: FIELD INSTRUMENT CALIBRATION RECORDS

INSTRUMENT YSI 556 MPS

INSTRUMENT # 2

PARAMETER: pH

**STANDARDS:** [Specify the type(s) of standards used for calibration, the origin of the standards, the standard values, and the date the standards were prepared or purchased]

Standard A 4.0 pH

Standard B 7.0 pH

Standard C 10.0 pH

[illegible]



Form FD 9000-8: FIELD INSTRUMENT CALIBRATION RECORDS

INSTRUMENT (MAKE/MODEL#) YSI 556 MPS INSTRUMENT # 2

**PARAMETER:** *[check only one]*

☐ TEMPERATURE

☐ CONDUCTIVITY☐ SALINITY

☐ pH

☐ ORP

☐ TURBIDITY

☐ RESIDUAL CI☐ DO☐ OTHER

**STANDARDS:** [Specify the type(s) of standards used for calibration, the origin of the standards, the standard values, and the date the standards were prepared or purchased]

Standard A 100%

Standard B \_\_\_\_\_

Standard C

[illegible]



