LMS/PIN/N02915

Pinellas County, Florida, Site Environmental Restoration Project

Semiannual Progress Report for the 4.5 Acre Site

June through November 2017

January 2018

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Abbreviations

amsl	above mean sea level (feet)
cDCE	*cis*-1,2-dichloroethene
COPCs	contaminants of potential concern
CTLs	cleanup target levels
DOE	U.S. Department of Energy
FAC	*Florida Administrative Code*
FDEP	Florida Department of Environmental Protection
mg/L	milligrams per liter
STAR Center	Young - Rainey Science, Technology, and Research Center
TCE	trichloroethene
TCOPCs	total contaminants of potential concern
tDCE	*trans*-1,2-dichloroethene
VC	vinyl chloride
VOCs	volatile organic compounds

Executive Summary

The 4.5 Acre Site was originally part of the Pinellas Plant, a former U.S. Department of Energy (DOE)-owned facility now known as the Young - Rainey Science, Technology, and Research (STAR) Center, where weapons research, development, and production was conducted until DOE completed its mission in 1995. Groundwater at the site was impacted by chlorinated solvents as a result of onsite activities during DOE operations. The contaminant source was removed through numerous aggressive remedial actions conducted by DOE since 1985, including a focused soil excavation by large-diameter auger in 2009.

Subsequent to the 2009 soil excavation, DOE performed three bioinjection events at the site in February 2010, July 2013, and October–December 2016. These events consisted of injecting emulsified vegetable oil and the microorganism *Dehalococcoides mccartyi* into the subsurface to enhance naturally occurring biological degradation of the solvents. The result of these actions was a significant reduction of contaminant concentrations in the closure monitoring wells, indicating that the contaminant plume is stable or shrinking. The only remaining contaminant is vinyl chloride (VC), which was detected above its cleanup target level (CTL) in three wells during the September 2016 sampling event. Although the September 2017 data from two of these three wells were rejected due to impacts from the injected oil, VC concentration in the third well was below the CTL. It is anticipated that VC will continue to degrade and that concentrations will continue to decline in these wells. While closure and performance monitoring are ongoing, DOE will continue to pursue a conditional closure of the site under the State of Florida's risk-based corrective action rules, pending implementation of restrictive covenants.

1.0 Introduction

This *Pinellas County, Florida, Site Environmental Restoration Project Semiannual Progress Report for the 4.5 Acre Site* describes environmental restoration activities for the 4.5 Acre Site in Pinellas County, Largo, Florida (Figure 1). The former U.S. Department of Energy (DOE) Pinellas Plant facility consisted of the 4.5 Acre Site and what is now the Young - Rainey Science, Technology, and Research (STAR) Center. Both the 4.5 Acre Site and the STAR Center are part of the overall Pinellas County, Florida, Site (Figure 2).

The 4.5 Acre Site is located immediately northwest of the STAR Center, in the northeast quarter of Section 13, Township 30 South, Range 15 East. DOE owned this parcel from 1957 to 1972, at which time it was sold to a private landowner. During the period of DOE ownership, the property was used for the disposal of drums of waste resins and solvents. As a result of this practice, the surficial aquifer was impacted by volatile organic compounds (VOCs)—trichloroethene (TCE), *cis*-1,2-dichloroethene (cDCE), *trans*-1,2-dichloroethene (tDCE), vinyl chloride (VC), and benzene.

Detailed background information for the site is contained in the *Long-Term Surveillance and Maintenance Plan for the Pinellas Site* (DOE 2017). That document and other site-related documents can be accessed at this website: https://www.lm.doe.gov/Pinellas/Sites.aspx.

Recent remediation activities consist of the injection of emulsified vegetable oil and the microorganism *Dehalococcoides mccartyi* into the subsurface to enhance contaminant biodegradation (also called bioinjection). Bioinjection events were conducted in February 2010, July 2013, and October through December 2016. The goal of bioinjection is to decrease contaminant concentrations to below cleanup target levels (CTLs). Evaluating the performance of these actions, in the form of monitoring well sampling, is ongoing.

1.1 Site Activities

The following work took place during the June–November 2017 period:

- Semiannual sampling was conducted; it consisted of collecting groundwater samples for VOC analysis from 10 monitoring wells on September 8, 9, and 12, and measuring water levels in all accessible wells on September 7. One monitoring well was not sampled because it was impacted by bioinjection activities.
- Results of the semiannual monitoring were reported (this document).
- Six monitoring wells (PIN20-0502, -0503, -M003, -M005, -M065, and -M066) and three former recovery wells (PIN20-RW01, -RW02, and -RW03) were abandoned on September 25–26, 2017, in accordance with Southwest Florida Water Management District requirements. These wells were no longer needed for monitoring plume migration, monitoring bioinjection effectiveness, or recovering groundwater.
- Seven monitoring wells (PIN20-M001, -M18D, -M053, -M056, -M057, -M058, and -M059) were modified by converting them from aboveground completions to completions flush with the existing ground surface on September 27, 2017.

2.0 Monitoring Data

2.1 Groundwater Elevations and Flow

During this reporting period, depth-to-water measurements were taken in all accessible monitoring wells at the 4.5 Acre Site on September 7. The depth to water in each well was measured with an electronic water-level indicator. The groundwater elevation data are listed in Table 1. Surface-water elevations for the West Pond (to the east) and Pond 5 (to the southeast) are listed in Table 2. The water-elevation data were used to construct contours of water levels in the shallow and deep portions of the surficial aquifer (Figures 3 and 4).

For the past several years, groundwater flow patterns in both the shallow and deep surficial aquifers indicate radial flow from the center of the site, with flow to the northwest in the northern part of the site and to the west-southwest on the west side of the site. These patterns were observed in the deep surficial aquifer in September 2017 (Figure 4). There is typically also a component of flow toward the south or southeast in the southern part of the site, and this pattern was observed in the shallow surficial aquifer (Figure 3).

The average hydraulic gradient was approximately 0.003 to 0.007 foot per foot across most of the site. Calculations using Darcy's law, along with approximations of 1 foot per day for hydraulic conductivity and 0.3 for effective porosity, indicate that groundwater at the site is estimated to move about 3.6–8.5 feet per year. Groundwater velocities at the site have historically ranged from 2–10 feet per year.

2.2 Groundwater Sampling

During the semiannual monitoring event in September 2017, groundwater samples for VOC analysis were collected from 10 of the 11 routine monitoring wells. Results are discussed in Section 3.0. Well PIN20-M057 was not sampled because this well contained some of the injected emulsified vegetable oil and, therefore, the water sample would not be representative. In the purge water, the oil appears as a milky fluid when fresh, or as a cloudy dark fluid when weathered. In addition, the analytical data for 2 (PIN20-M001 and -M059) of the 10 sampled wells were rejected during the data validation process (see Section 2.4) due to interference from the injected oil.

All samples were collected in accordance with the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351), using Florida Department of Environmental Protection (FDEP) procedures. All monitoring wells were micropurged using high-density polyethylene tubing or dedicated Teflon tubing and a peristaltic pump. Samples were collected when field measurements stabilized.

Table 3 lists the September 2017 field measurements of temperature, specific conductance, turbidity, pH, oxidation–reduction potential, and dissolved oxygen recorded at the time the samples were collected. Measurements were made using a calibrated multiparameter meter with a flow cell, and turbidity was measured using a nephelometer. A full set of field parameters could not be measured in eight wells due to interference from the injected vegetable oil.

All samples were submitted to TestAmerica Laboratories in Denver, Colorado, for analysis. TestAmerica Denver is accredited by the Florida Department of Health in accordance with the National Environmental Laboratory Accreditation Conference (certification number E87667). VOCs were analyzed using U.S. Environmental Protection Agency SW-846 method 8260B.

2.3 Groundwater Analytical Results

A total of 10 water samples from the site were submitted for laboratory analysis following the September sampling event. Data from wells PIN20-M001 and PIN20-M059 were rejected because of effects from oil injections (see Section 2.4). Table 4 presents concentrations for individual contaminants of potential concern (COPCs) in samples collected from the 11 routine monitoring wells since March 2014. Figure 5 shows the total COPC (TCOPCs) concentrations (i.e., the sum of the individual COPC concentrations) for September 2017. The COPCs for the 4.5 Acre Site are TCE, cDCE, tDCE, VC, and benzene. No COPC exceeded its CTL in September. Interpretation of the laboratory data is presented in Section 3.0.

2.4 Quality Assurance/Quality Control

The results from TestAmerica were checked for quality assurance/quality control through field and laboratory duplicate samples, trip blanks, and equipment blanks. In addition, a data-validation software module for identifying and tracking anomalous groundwater data was used to generate a report of analytical results that fall outside of historical minimum or maximum values.

For wells PIN20-M001 and -M059, most of the ketone results were identified as outliers. These wells are severely impacted by oil from the 2016 bioinjection event. These samples effervesced upon acidification or had pH values greater than 2 after preservation, or both. The analytical data from these two wells are qualified with an "R" flag (as rejected) because of the effects from the oil injections. Therefore, the data for these 2 wells are not presented in this report. The data from the other 8 wells are acceptable as qualified.

As specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*, field duplicate samples should be collected at a frequency of 1 duplicate for every 20 or fewer samples. During the September 2017 event, 8 samples were collected and 1 duplicate sample was collected, so this criterion was met. However, because the data from the duplicated well (PIN20-M059) were rejected, the relative percent differences for the duplicate sample are also not presented in this report.

3.0 Data Interpretation and Performance Monitoring

While older site documents have compared groundwater contaminant concentrations to drinking water standards, those standards are not the applicable default CTLs for evaluating site remediation under the State of Florida risk-based corrective action regulations. On the basis of a comprehensive review of background data for the site (DOE 2003), it was determined that the shallow groundwater in the site vicinity is naturally elevated in aluminum and iron at levels far exceeding Florida's "Drinking Water Standards, Monitoring, and Reporting" (Chapter 62-550 *Florida Administrative Code* [FAC]). Specifically, the average background concentration of 1.1 milligrams per liter (mg/L) for aluminum exceeds the 0.2 mg/L secondary standard, and the

average background concentration for iron of 9.3 mg/L exceeds the 0.3 mg/L secondary standard. The ambient shallow groundwater in the area is therefore designated as "poor quality" as defined in 62-780.200(35) FAC. Thus, the applicable groundwater CTLs are those for groundwater of "low yield/poor quality" provided in Table 1 of Chapter 62-777 FAC (i.e., onsite CTLs are a factor of 10 higher than offsite CTLs). FAC rules stipulate use of the CTLs for poor water quality on source property and maintains that default CTLs apply offsite.

Table 4 presents concentrations of individual COPCs in samples collected from the 11 routine monitoring wells since March 2014. Figure 5 shows the concentrations for TCOPCs for September 2017. The COPCs for the 4.5 Acre Site are TCE, cDCE, tDCE, VC, and benzene. No COPC exceeded its CTL in September. However, it must be noted that well PIN20-M059 has exceeded the onsite CTL for VC since 2014 but, as previously mentioned, the data for this well were rejected, as were the data for well PIN20-M001. A VC concentration map for September 2017 is provided as Figure 6. The laboratory report for samples collected in September is provided in Appendix A.

Trend plots for the 11 routine monitoring wells are shown as Figures 7–17. Since March 2014, TCE has not been detected and benzene has not exceeded its CTL; therefore only cDCE, tDCE, and VC are shown on these plots. All 8 wells with valid data from September 2017 show VC concentrations that have either decreased or remained steady (no increases) since they were last sampled in March 2017. It should be noted that DOE cannot make true comparisons to previous concentrations and the onsite CTLs until oil impacts diminish.

4.0 Upcoming Tasks

The following task is planned for the December 2017 through May 2018 period:

- The semiannual sampling event will be conducted in March 2018.

5.0 References

DOE (U.S. Department of Energy), 2003. Y*oung - Rainey STAR Center, Pinellas Environmental Restoration Project, Historical Review and Evaluation of Contaminants of Potential Concern*, GJO-2002-359-TAC, February.

DOE (U.S. Department of Energy), 2017. *Long-Term Surveillance and Maintenance Plan for the Pinellas Site*, LMS/PIN/N01058, Office of Legacy Management, September.

Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites, LMS/PRO/S04351, continually updated, prepared by Navarro Research and Engineering, Inc., for the U.S. Department of Energy Office of Legacy Management.

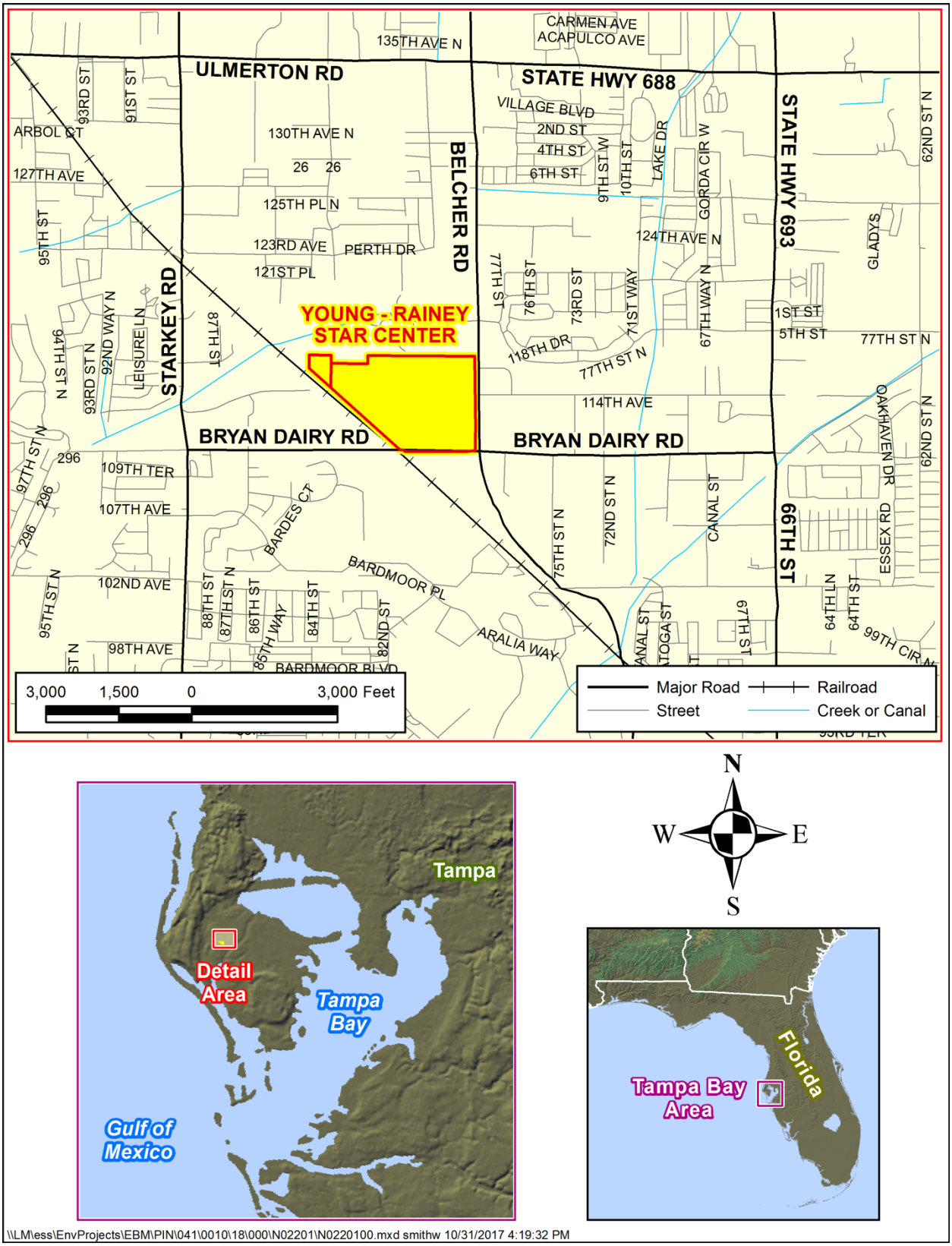

Figure 1. Young - Rainey STAR Center Location

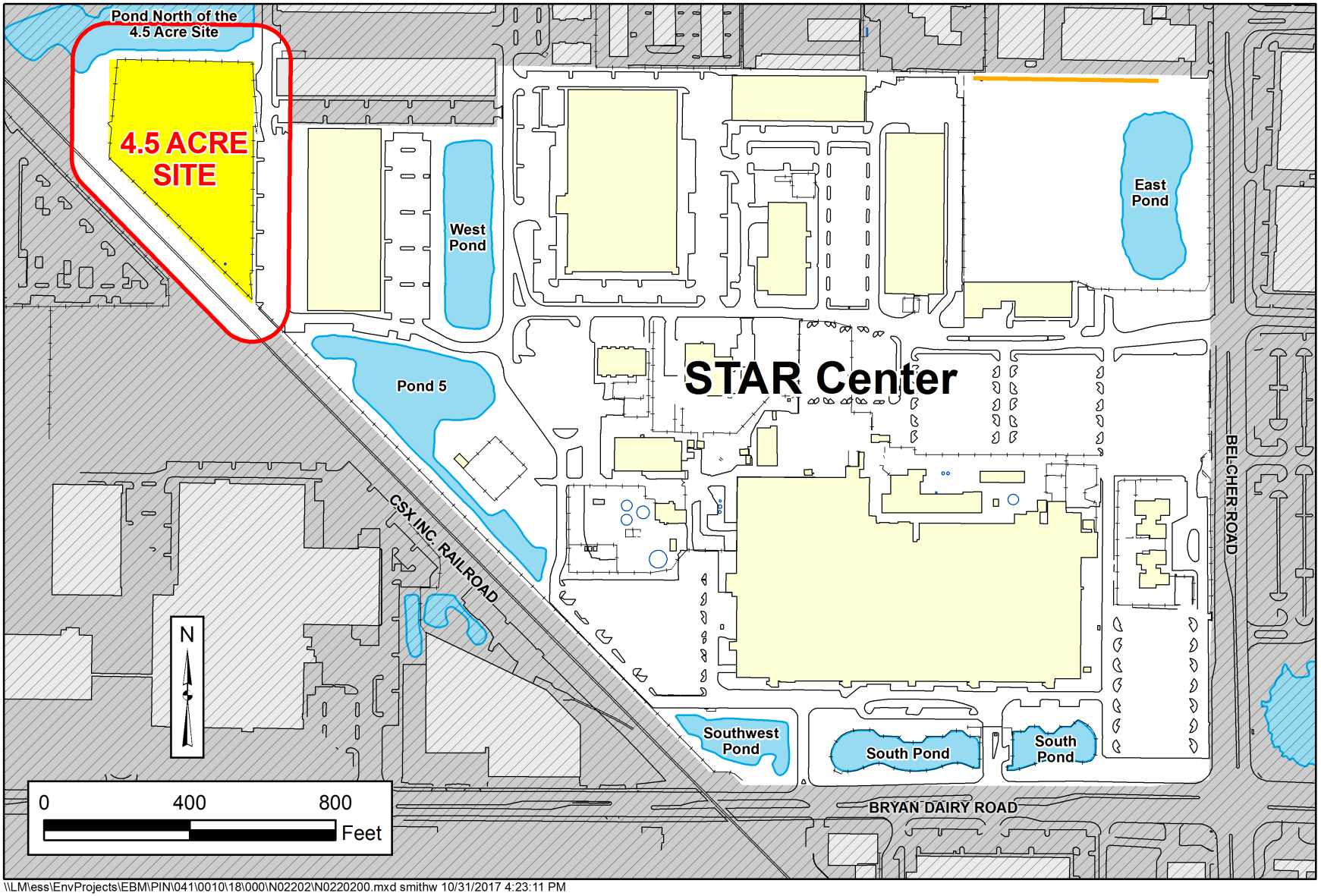

Figure 2. 4.5 Acre Site Location

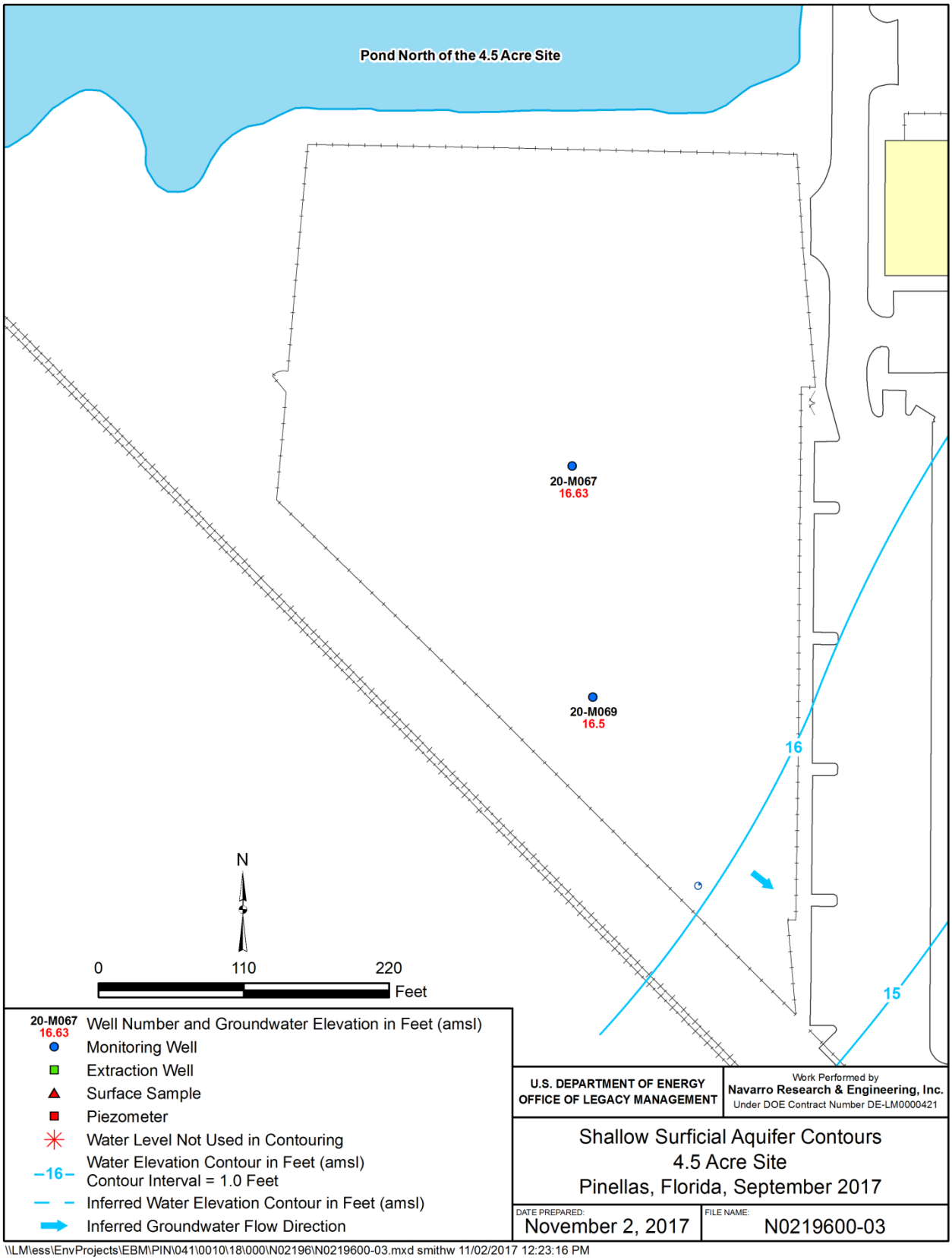

Figure 3. Shallow Surficial Aquifer Flow, September 2017

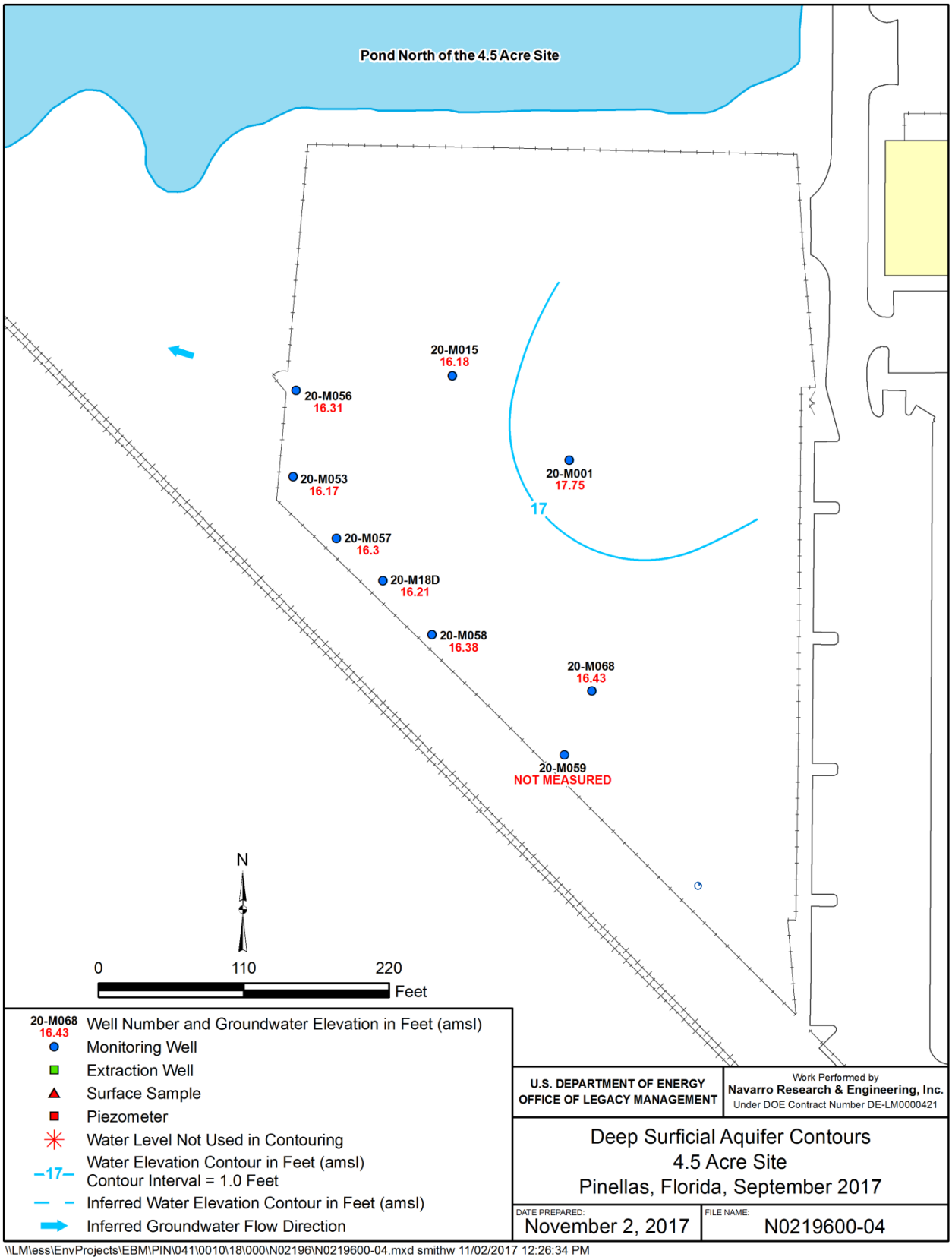

Figure 4. Deep Surficial Aquifer Flow, September 2017

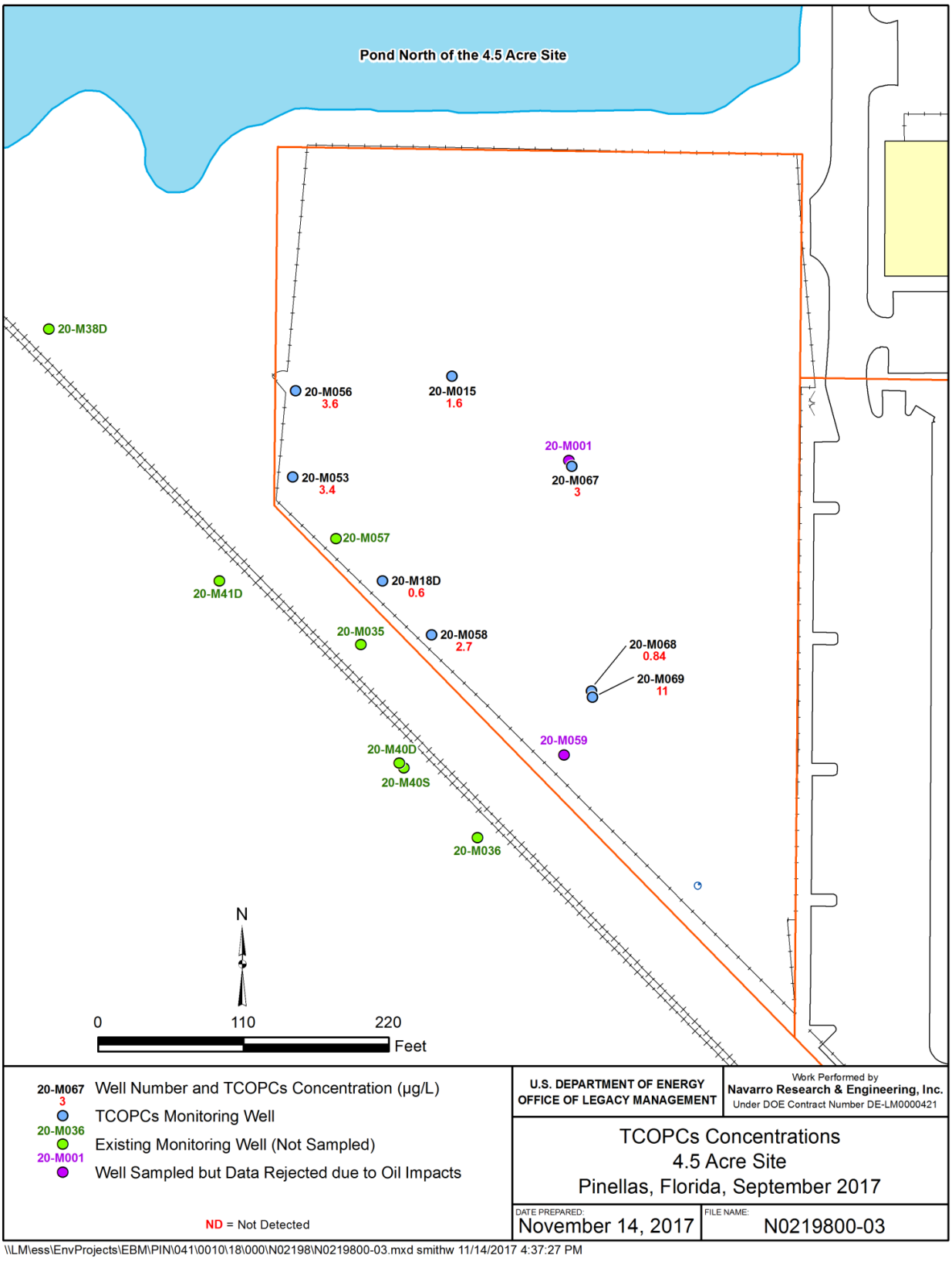

Figure 5. Total COPCs Concentrations, September 2017

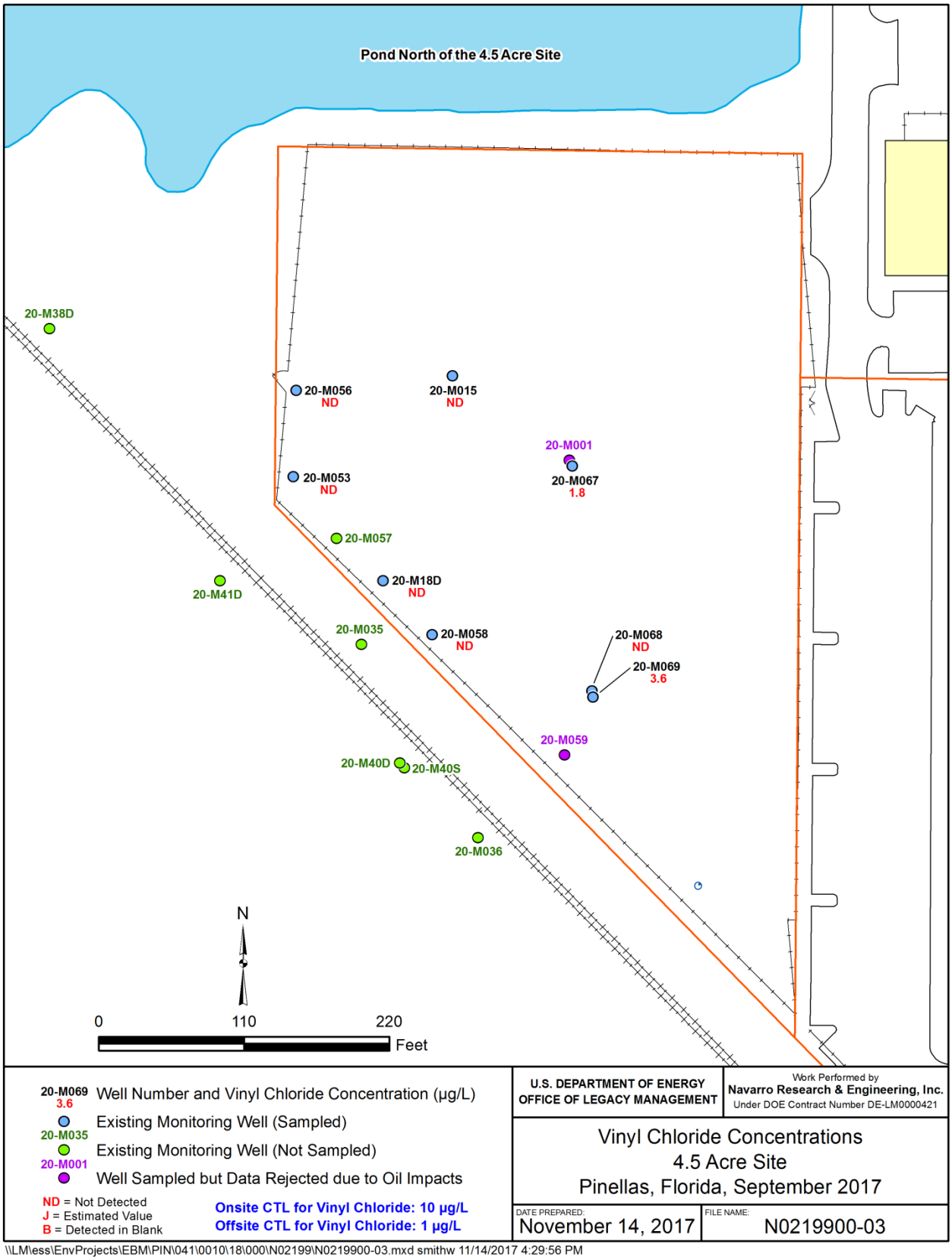

Figure 6. Vinyl Chloride Concentrations, September 2017

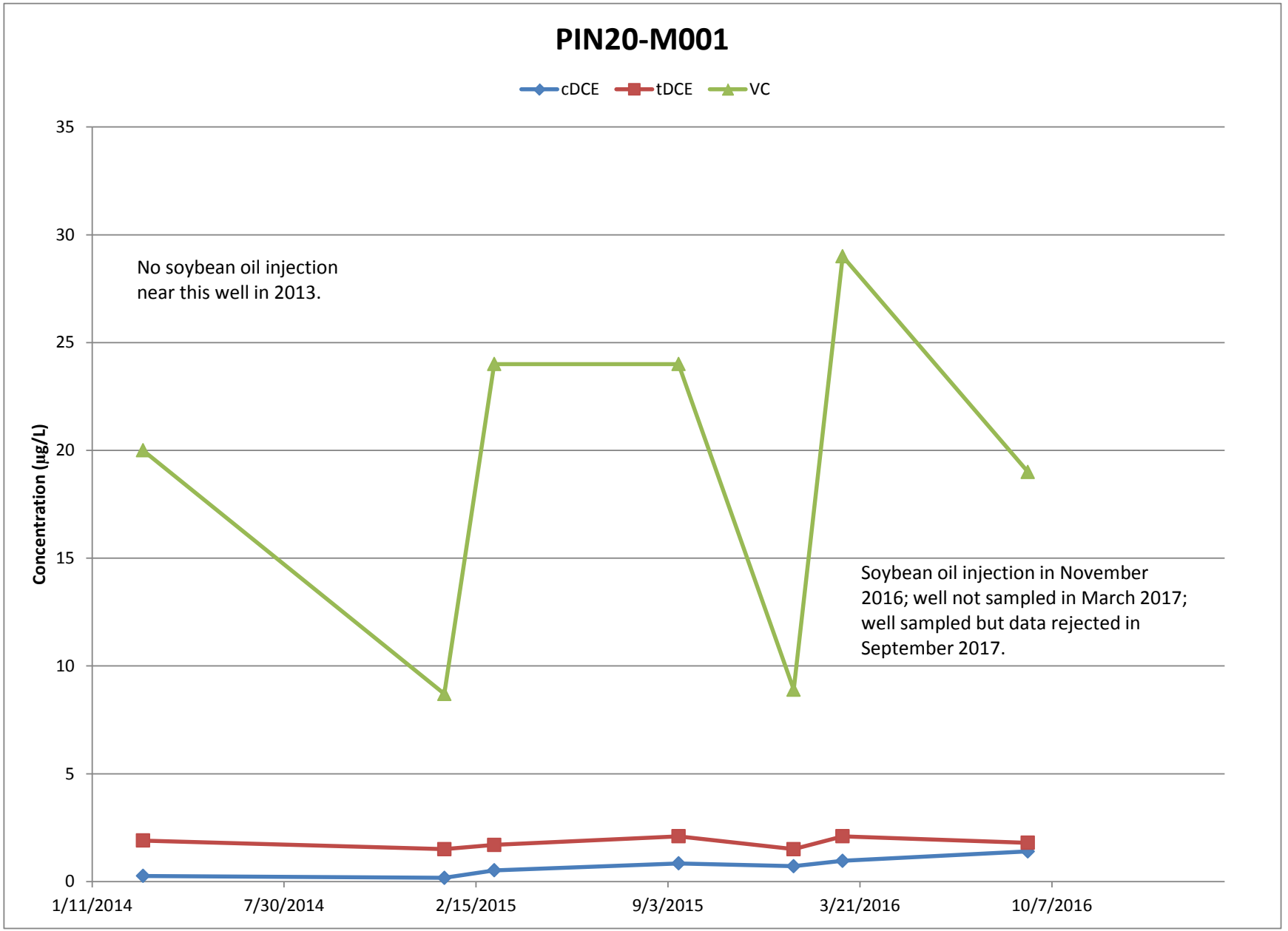

Figure 7. cDCE, tDCE, and VC in Well PIN20-M001

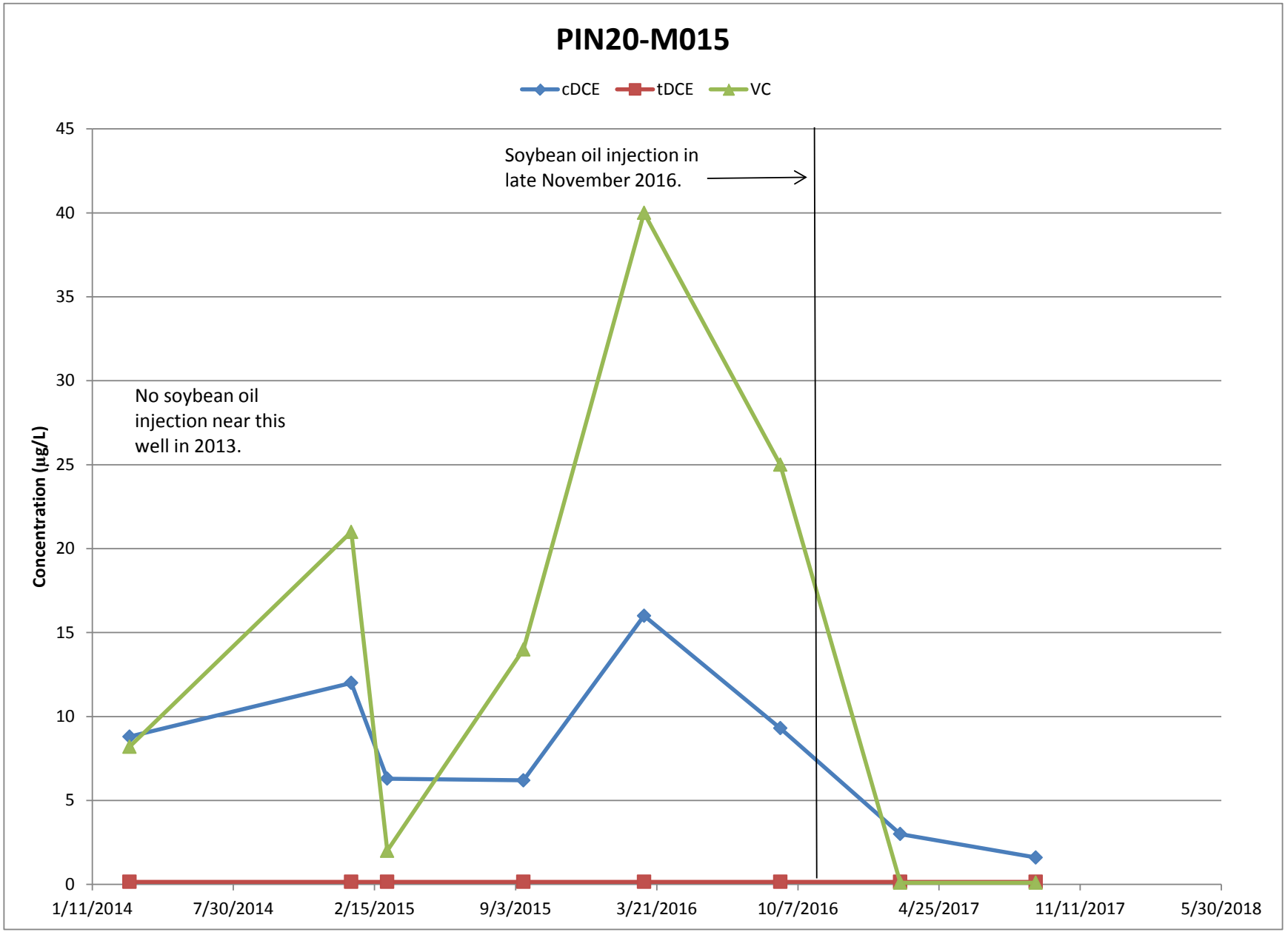

Figure 8. cDCE, tDCE, and VC in Well PIN20-M015

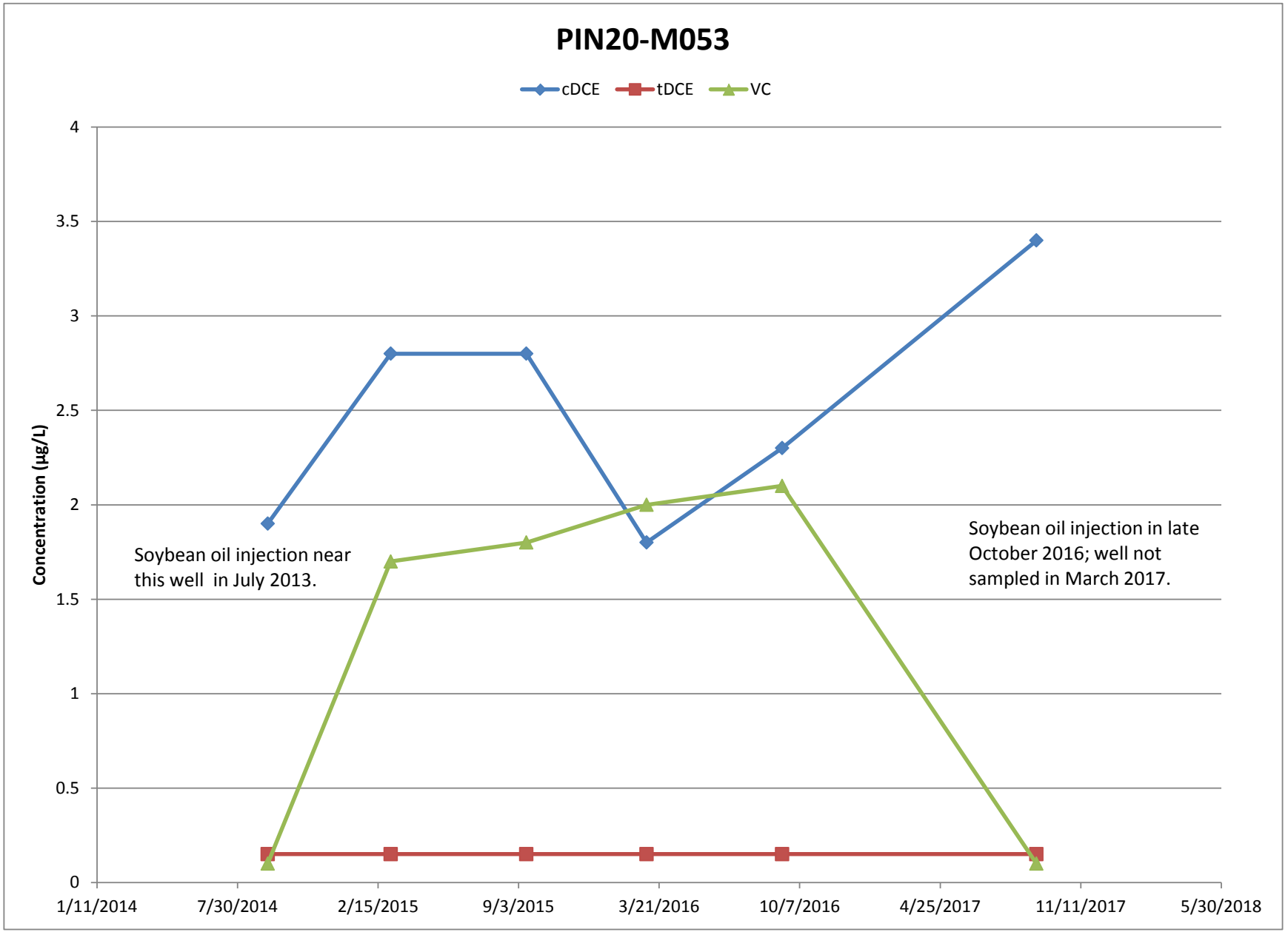

Figure 9. cDCE, tDCE, and VC in Well PIN20-M053

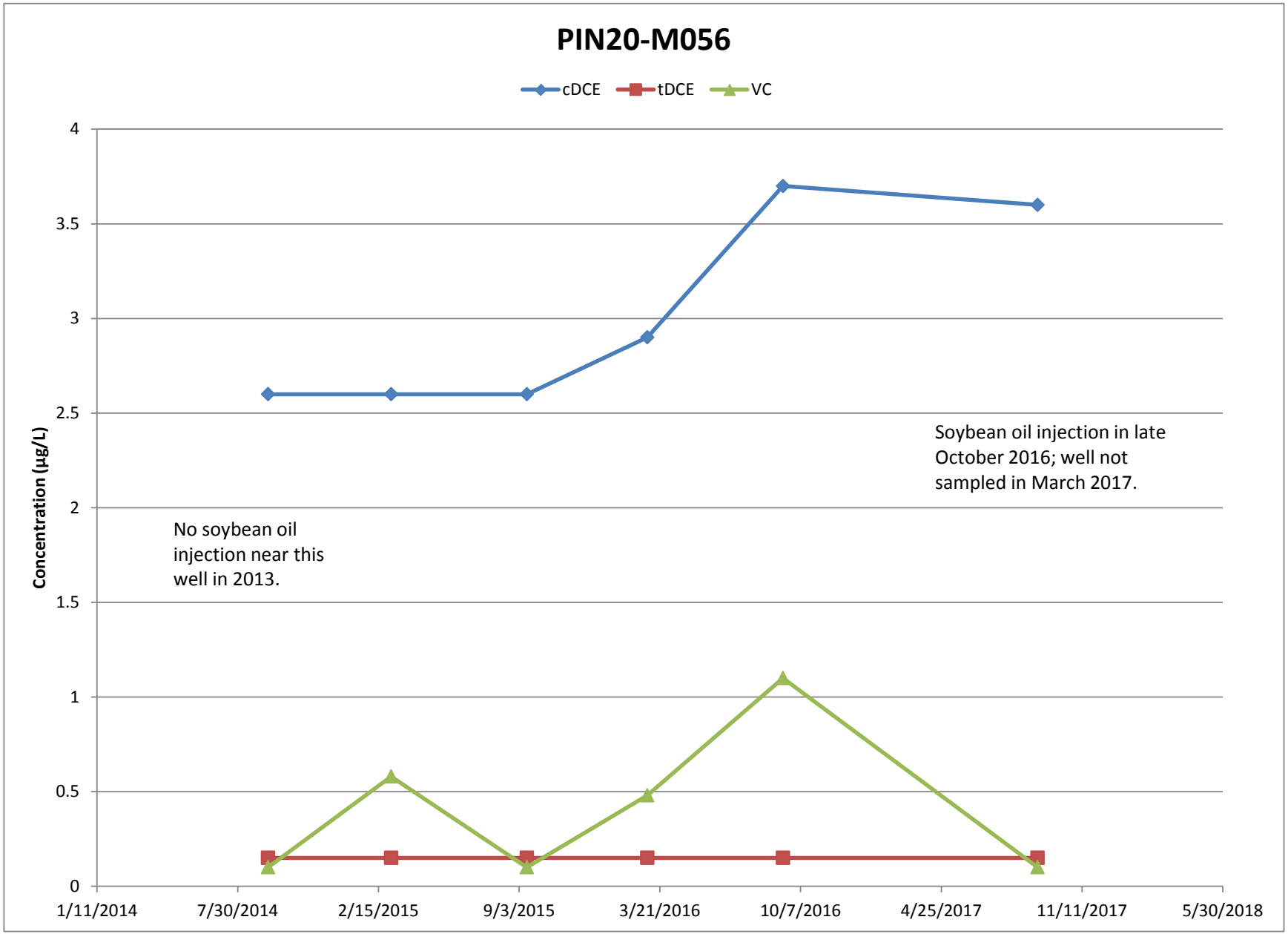

Figure 10. cDCE, tDCE, and VC in Well PIN20-M056

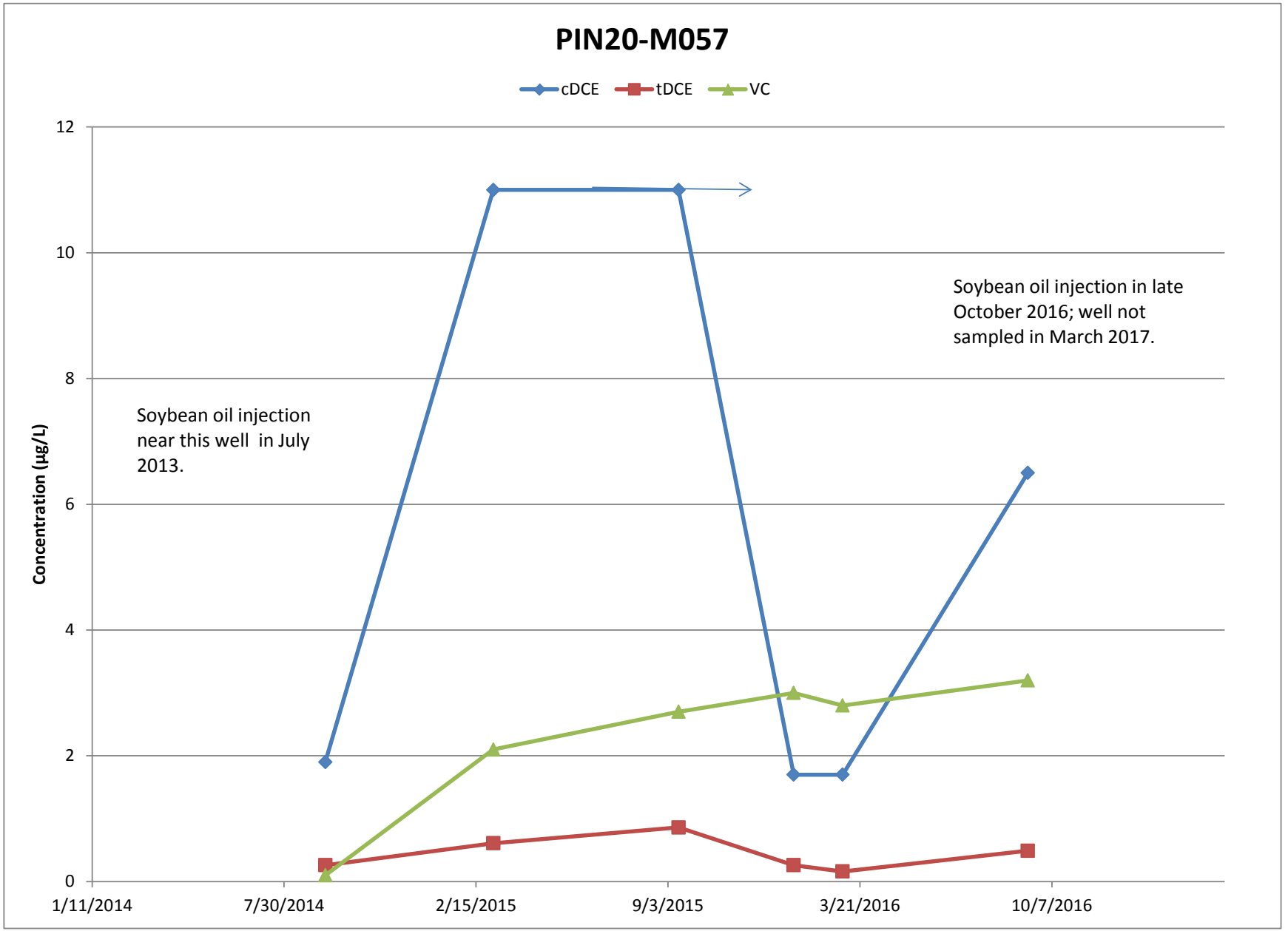

Figure 11. cDCE, tDCE, and VC in Well PIN20-M057

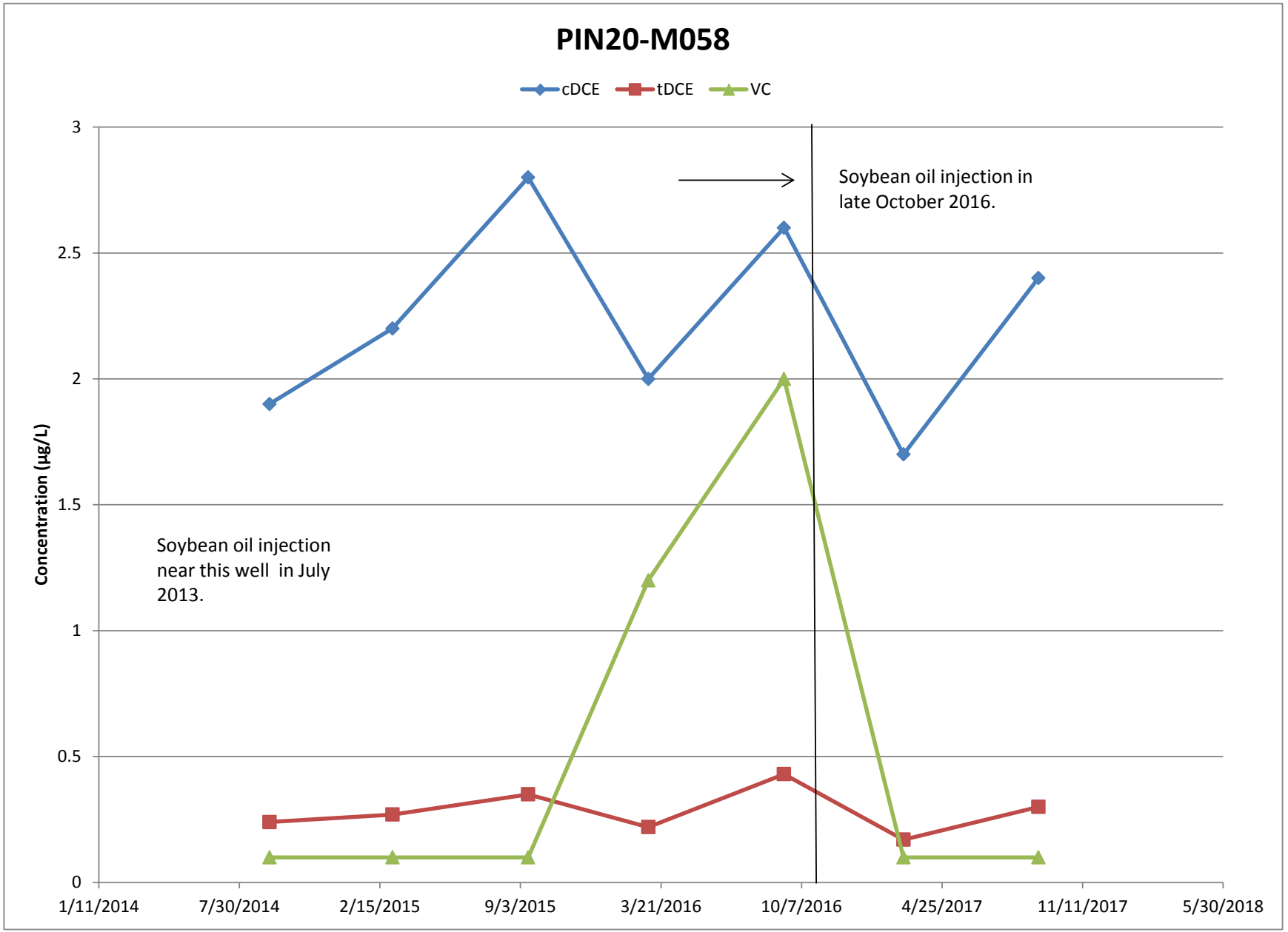

Figure 12. cDCE, tDCE, and VC in Well PIN20-M058

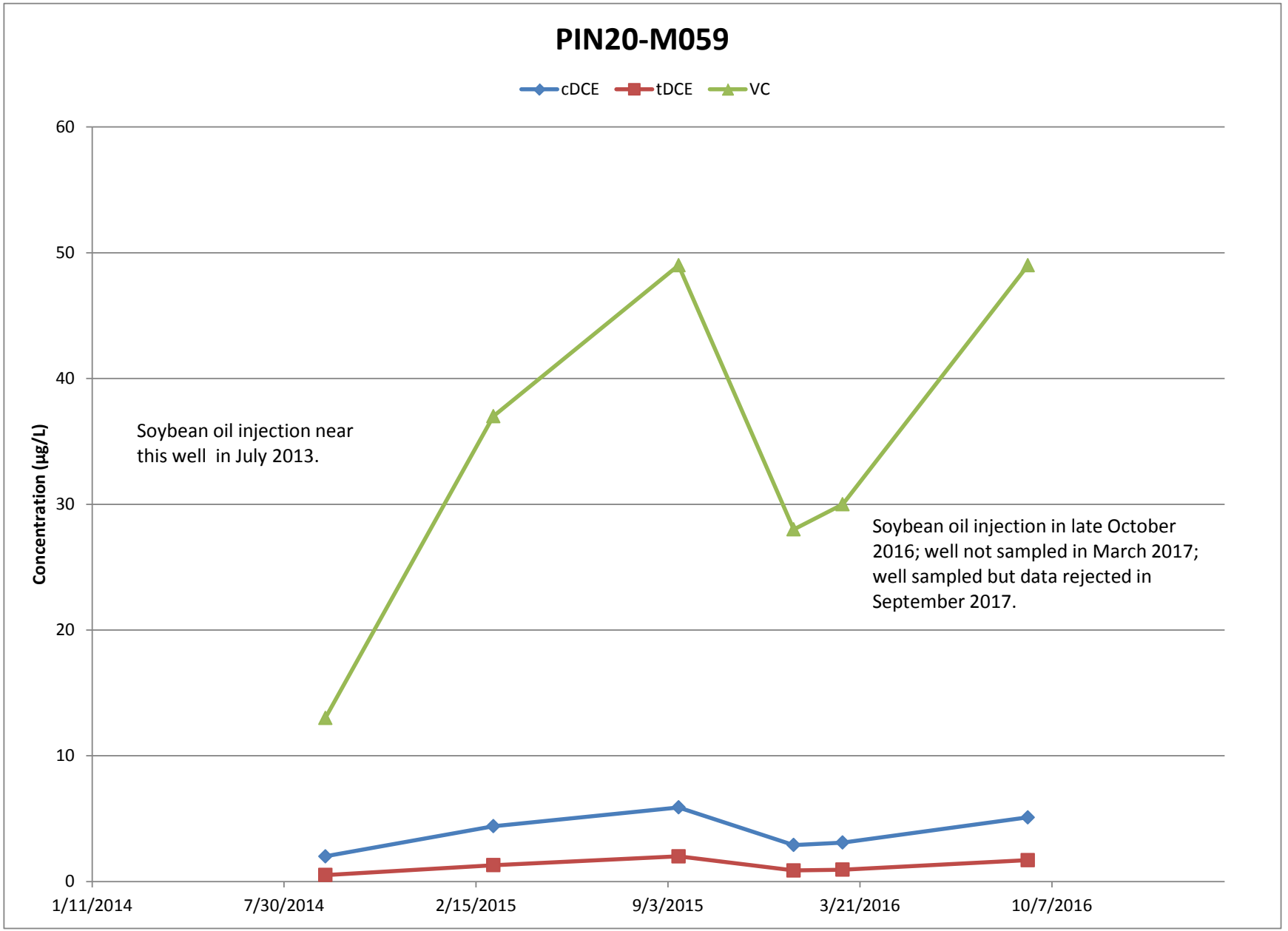

Figure 13. cDCE, tDCE, and VC in Well PIN20-M059

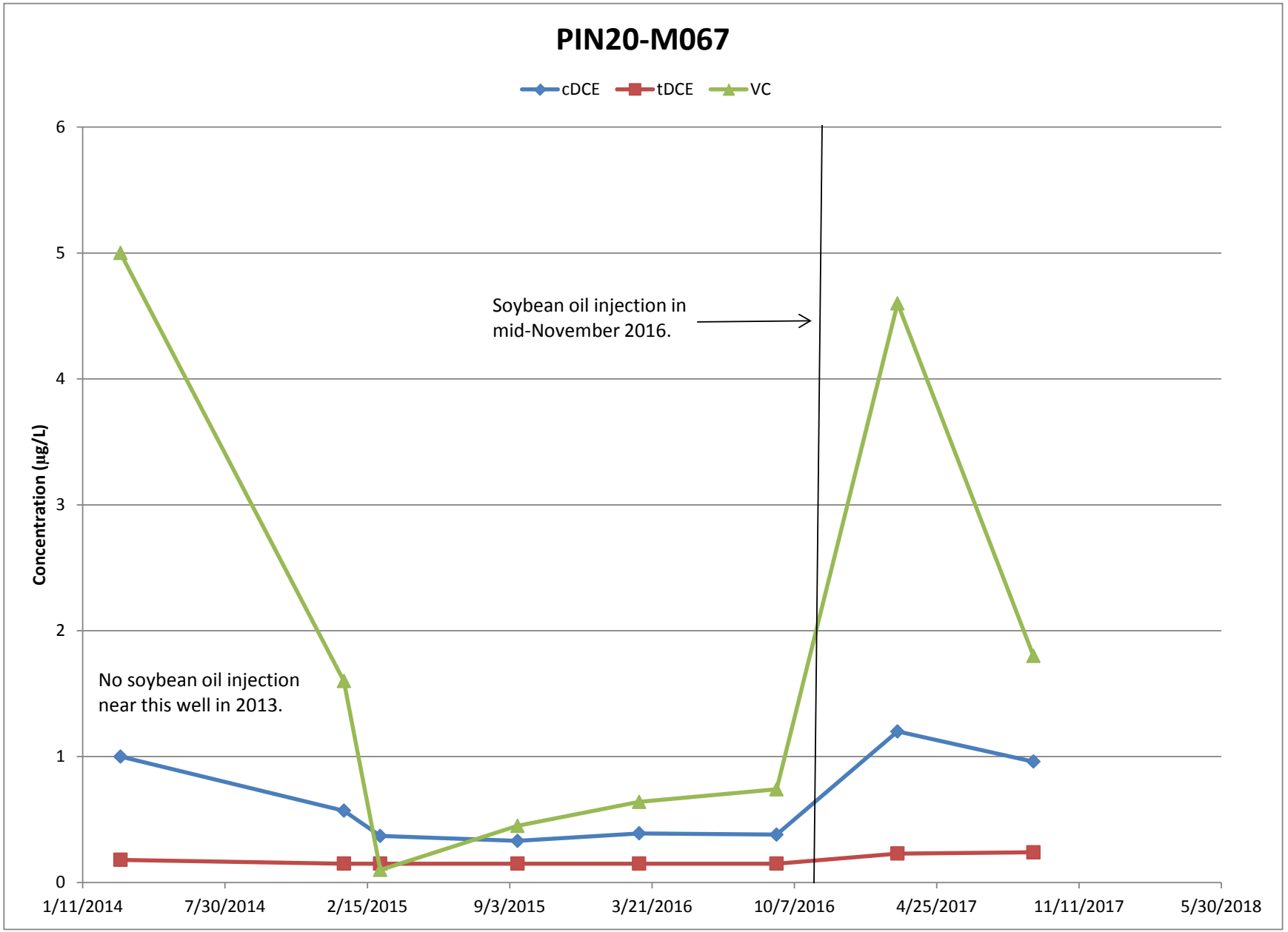

Figure 14. cDCE, tDCE, and VC in Well PIN20-M067

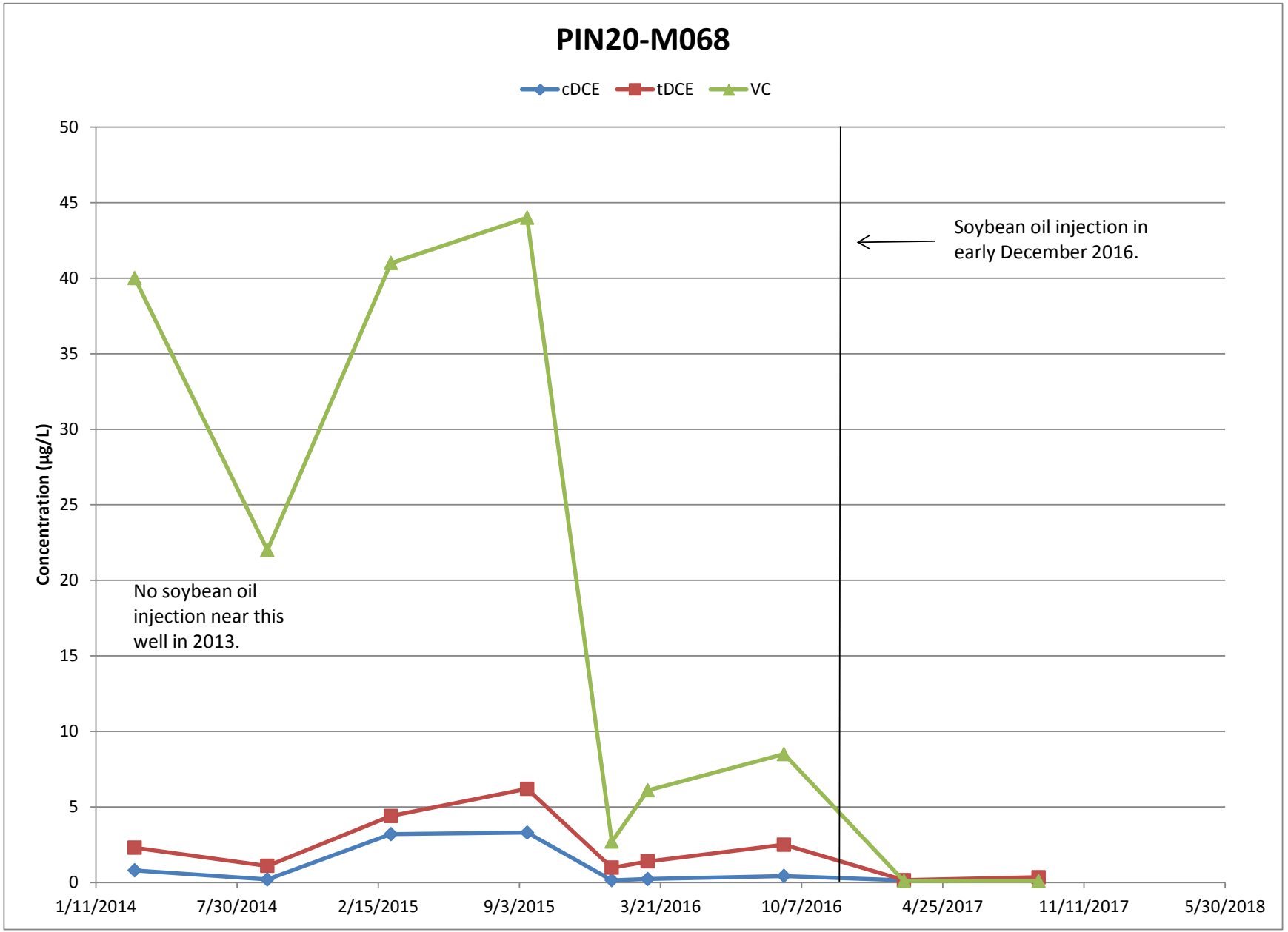

Figure 15. cDCE, tDCE, and VC in Well PIN20-M068

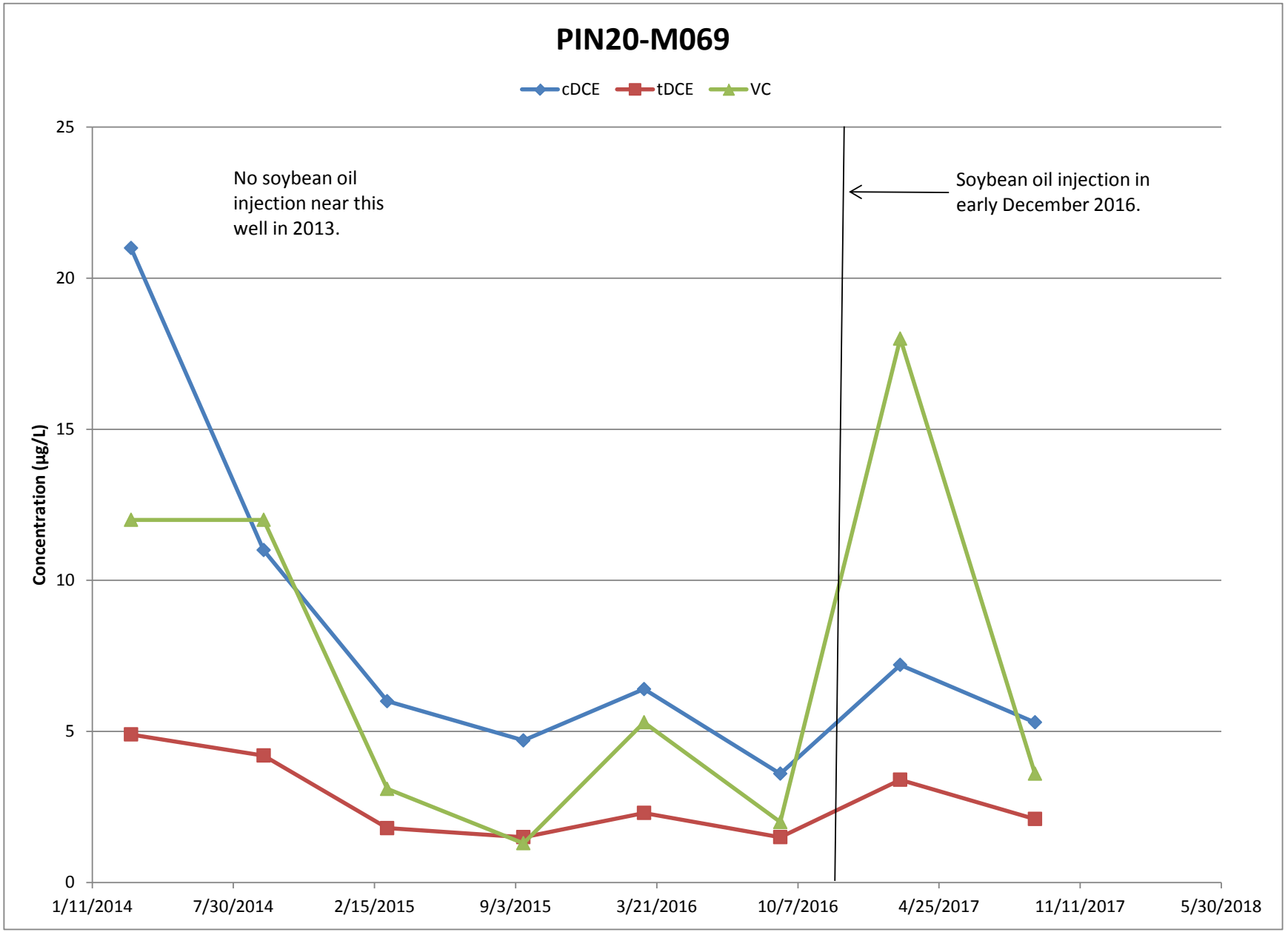

Figure 16. cDCE, tDCE, and VC in Well PIN20-M069

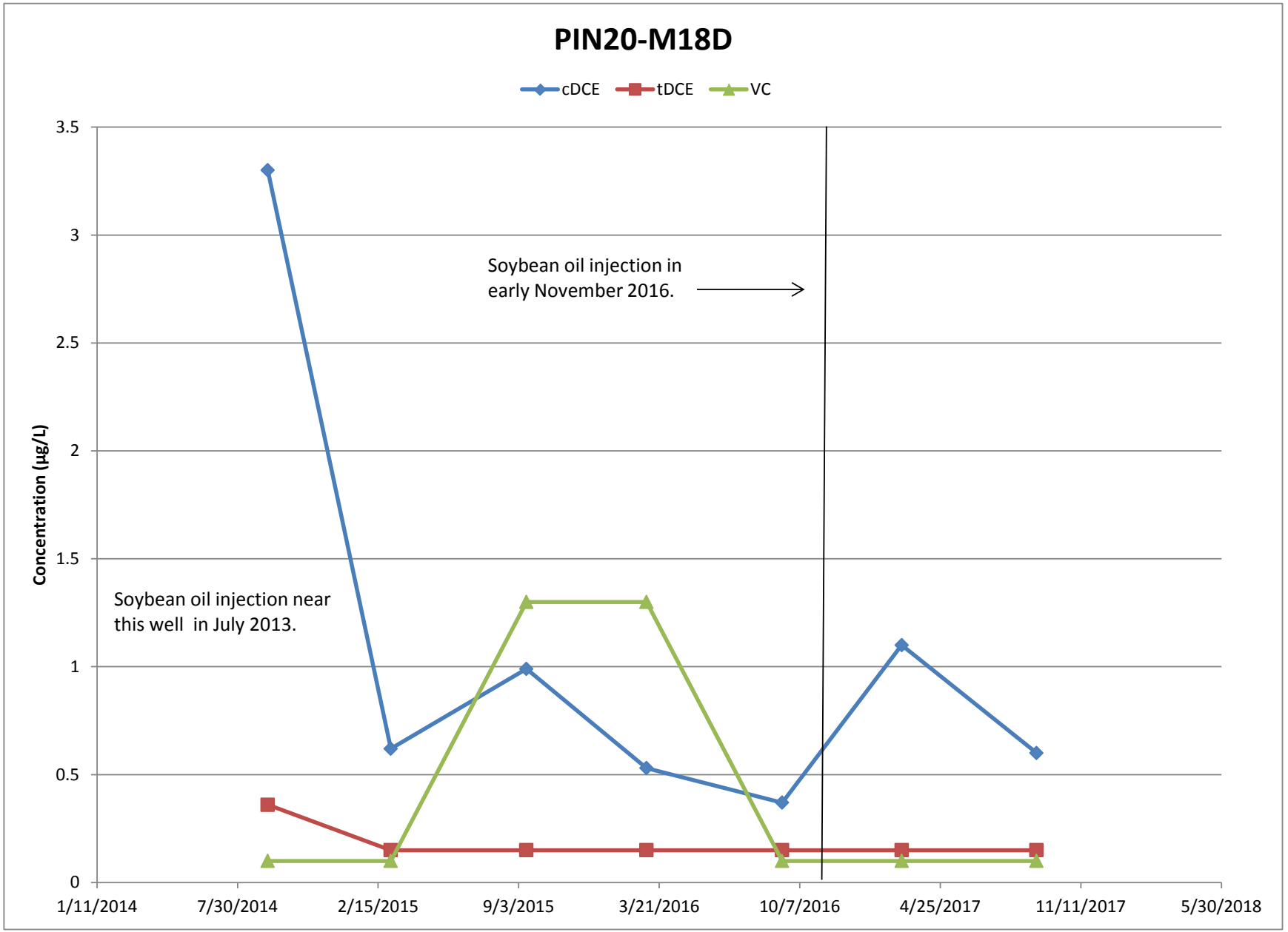

Figure 17. cDCE, tDCE, and VC in Well PIN20-M18D

Table 1. Groundwater Elevation Data at the 4.5 Acre Site, September 2017

Location	Measurement		Water Depth (ft bls)	Groundwater Elevation (ft amsl)
	Date	Time		
PIN20				
M001	9/7/2017	08:19	-0.15	17.75
M015	9/7/2017	08:32	2.21	16.18
M053	9/7/2017	08:47	1.03	16.17
M056	9/7/2017	08:43	0.79	16.31
M057	9/7/2017	08:50	1.60	16.30
M058	9/7/2017	08:55	1.32	16.38
M067	9/7/2017	08:26	2.07	16.63
M068	9/7/2017	09:09	1.72	16.43
M069	9/7/2017	09:03	1.50	16.50
M18D	9/7/2017	08:53	1.49	16.21

Note:
The water level in well PIN20-M001 was above land surface.

Abbreviations:
ft amsl = feet above mean sea level
ft bls = feet below land surface

Table 2. Surface Water Elevations at the 4.5 Acre Site, September 2017

Location	Measurement		Surface Water Elevation (ft amsl)
	Date	Time	
PIN01	Pond 5		
P501	9/7/2017	10:16	13.96
PIN02	West Pond		
W005	9/7/2017	09:59	14.28

Abbreviation:
ft amsl = feet above mean sea level

Table 3. Field Measurements of Samples Collected at the 4.5 Acre Site, September 2017

Location	Screen Depth (ft bls)	Temperature (°C)	Specific Conductance (µmho/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
PIN20							
M001	20–25	–	–	>1000	–	–	–
M015	20.8–25.8	–	–	27.2	–	–	–
M053	20–30	27.09	2441	2.87	6.66	-190	1.57
M056	19–29	–	–	84.3	–	–	–
M058	18–28	26.42	1654	11	6.71	-114.8	0.79
M059	19–29	–	–	96.9	–	–	–
M067	10–20	–	–	412	–	–	–
M068	20–30	–	–	140	–	–	–
M069	10–20	–	–	84.1	–	–	–
M18D	20–30	–	–	13.1	–	–	–

Note:
[a] Temperature corrected to 25 °C.

Abbreviations:
– = not measured
ft bls = feet below land surface
µmho/cm = micromhos per centimeter
mV = millivolts
NTU = nephelometric turbidity units

Table 4. COPC Concentrations Since March 2014 (µg/L)[a,b]

Location (all IDs start with PIN20-)	Screen Depth (ft bls)	Date Sampled	TCE	cDCE	tDCE	VC	Benzene	TCOPCs
Cleanup Target Level[c]			**30**	**700**	**1000**	**10**	**10**	
M001	20–25	3/5/2014	<0.16	0.26J	1.9	20	0.73J	22.89
		1/13/2015	<0.16	0.17J	1.5	8.7	0.45J	10.82
		3/6/2015	<0.16	0.52J	1.7	24	0.61J	26.83
		9/14/2015	<0.16	0.84J	2.1	24	0.72J	27.66
		1/12/2016	<0.16	0.71J	1.5	8.9	0.72J	11.83
		3/3/2016	<0.16	0.96J	2.1	29	0.89J	32.95
		9/12/2016	<0.16	1.4	1.8	19	0.81J	23.01
M015	20.8–25.8	3/5/2014	<0.16	8.8	<0.15	8.2	<0.16	17
		1/13/2015	<0.16	12	<0.15	21	<0.16	33
		3/5/2015	<0.16	6.3	<0.15	2	<0.16	8.3
		9/14/2015	<0.16	6.2	<0.15	14	<0.16	20.2
		1/12/2016	<0.16	18	<0.15	37	<0.16	55
		3/3/2016	<0.16	16	<0.15	40	<0.16	56
		9/12/2016	<0.16	9.3	<0.15	25	<0.16	34.3
		3/1/2017	<0.16	3	<0.15	<0.1	<0.16	3
		9/9/2017	<0.16	1.6	<0.15	<0.1	<0.16	1.6
M053	20–30	9/11/2014	<0.16	1.9	<0.15	<0.1	<0.16	1.9
		3/5/2015	<0.16	2.8	<0.15	1.7	<0.16	4.5
		9/14/2015	<0.16	2.8	<0.15	1.8	<0.16	4.6
		3/3/2016	<0.16	1.8	<0.15	2	<0.16	3.8
		9/12/2016	<0.16	2.3	<0.15	2.1	<0.16	4.4
		9/9/2017	<0.16	3.4	<0.15	<0.1	<0.16	3.4
M056	19–29	9/11/2014	<0.16	2.6	<0.15	<0.1	<0.16	2.6
		3/5/2015	<0.16	2.6	<0.15	0.58J	<0.16	3.18
		9/14/2015	<0.16	2.6	<0.15	<0.1	<0.16	2.6
		3/3/2016	<0.16	2.9	<0.15	0.48J	<0.16	3.38
		9/12/2016	<0.16	3.7	<0.15	1.1	<0.16	4.8
		9/9/2017	<0.16	3.6	<0.15	<0.1	<0.16	3.6
M057	20–30	9/11/2014	<0.16	1.9	0.26J	<0.1	<0.16	2.16
		3/5/2015	<0.16	11	0.61J	2.1	<0.16	13.71
		9/14/2015	<0.16	11J	0.86J	2.7J	<0.16	14.56
		1/12/2016	<0.16	1.7	0.26J	3	<0.16	4.96
		3/3/2016	<0.16	1.7	0.16J	2.8	<0.16	4.66
		9/12/2016	<0.16	6.5	0.49J	3.2	<0.16	10.19

Table 4. COPC Concentrations Since March 2014 (µg/L)[a,b] (continued)

Location (all IDs start with PIN20-)	Screen Depth (ft bls)	Date Sampled	TCE	cDCE	tDCE	VC	Benzene	TCOPCs
Cleanup Target Level[c]			**30**	**700**	**1000**	**10**	**10**	
M058	18–28	9/11/2014	<0.16	1.9	0.24J	<0.1	<0.16	2.14
		3/5/2015	<0.16	2.2	0.27J	<0.1	<0.16	2.47
		9/14/2015	<0.16	2.8	0.35J	<0.1	<0.16	3.15
		3/3/2016	<0.16	2	0.22J	1.2	<0.16	3.42
		9/12/2016	<0.16	2.6	0.43J	2	<0.16	5.03
		3/1/2017	<0.16	1.7	0.17J	<0.1	<0.16	1.87
		9/9/2017	<0.16	2.4	0.3J	<0.1	<0.16	2.7
M059	19–29	9/11/2014	<0.16	2	0.52J	13	0.22J	15.74
		3/5/2015	<0.16	4.4	1.3	37	0.26J	42.96
		9/14/2015	<0.16	5.9	2	49	0.29J	57.19
		1/12/2016	<0.16	2.9	0.88J	28	0.28J	32.06
		3/3/2016	<0.16	3.1	0.94J	30	0.3J	34.34
		9/12/2016	<0.16	5.1	1.7	49	0.32J	56.12
M067	10–20	3/5/2014	<0.16	1	0.18J	5	<0.16	6.18
		1/13/2015	<0.16	0.57J	<0.15	1.6	<0.16	2.17
		3/5/2015	<0.16	0.37J	<0.15	<0.1	<0.16	0.37
		9/14/2015	<0.16	0.33J	<0.15	0.45J	<0.16	0.78
		3/3/2016	<0.16	0.39J	<0.15	0.64J	<0.16	1.03
		9/12/2016	<0.16	0.38J	<0.15	0.74J	<0.16	1.12
		3/2/2017	<0.16	1.2	0.23J	4.6	<0.16	6.03
		9/8/2017	<0.16	0.96J	0.24J	1.8	<0.16	3
M068	20–30	3/7/2014	<0.16	0.8J	2.3	40	0.37J	43.47
		9/11/2014	<0.16	0.2J	1.1	22	0.36J	23.66
		3/5/2015	<0.16	3.2	4.4	41	0.25J	48.85
		9/14/2015	<0.16	3.3	6.2	44	0.26J	53.76
		1/12/2016	<0.16	<0.15	0.98J	2.7	0.29J	3.97
		3/3/2016	<0.16	0.23J	1.4	6.1	0.28J	8.01
		9/12/2016	<0.16	0.43J	2.5	8.5	0.28J	11.71
		3/2/2017	<0.16	<0.15	0.16J	<0.1	0.39J	0.55
		9/8/2017	<0.16	<0.15	0.35J	<0.1	0.49J	0.84
M069	10–20	3/7/2014	<0.16	21	4.9	12	<0.16	37.9
		9/11/2014	<0.16	11	4.2	12	<0.16	27.2
		3/5/2015	<0.16	6	1.8	3.1	<0.16	10.9
		9/14/2015	<0.16	4.7	1.5	1.3	<0.16	7.5
		3/3/2016	<0.16	6.4	2.3	5.3	<0.16	14
		9/12/2016	<0.16	3.6	1.5	2	<0.16	7.1
		3/2/2017	<0.16	7.2	3.4	18	<0.16	28.6
		9/8/2017	<0.16	5.3	2.1	3.6	<0.16	11

Table 4. COPC Concentrations Since March 2014 (µg/L)[a,b] (continued)

Location (all IDs start with PIN20-)	Screen Depth (ft bls)	Date Sampled	TCE	cDCE	tDCE	VC	Benzene	TCOPCs
Cleanup Target Level[c]			**30**	**700**	**1000**	**10**	**10**	
M18D	20–30	9/11/2014	<0.16	3.3	0.36J	<0.1	<0.16	3.66
		3/5/2015	<0.16	0.62J	<0.15	<0.1	<0.16	0.62
		9/14/2015	<0.16	0.99J	<0.15	1.3J	<0.16	2.29
		3/3/2016	<0.16	0.53J	<0.15	1.3	<0.16	1.83
		9/12/2016	<0.16	0.37J	<0.15	<0.1	<0.16	0.37
		3/1/2017	<0.16	1.1	<0.15	<0.1	<0.16	1.1
		9/9/2017	<0.16	0.6J	<0.15	<0.1	<0.16	0.6

Notes:
[a] The "<" values are method detection limits.
[b] Not all wells were sampled during every sampling event.
[c] The offsite CTL is a factor of 10 lower than the listed onsite (poor water quality) CTL.

Abbreviations:
ft bls = feet below land surface
J = estimated value
µg/L = micrograms per liter

Appendix A

Laboratory Reports

September 2017 Semiannual Monitoring

ANALYTICAL REPORT

Job Number: 280-101087-1

SDG Number: 17088675

Job Description: PINELLAS MONITORING

For:
Navarro Research and Engineering, Inc
2597 Legacy Way
Grand Junction, CO 81503

Attention: Mr. Steve Donivan

Approved for release.
DiLea R Bindel
Project Manager I
9/25/2017 11:41 AM

DiLea R Bindel, Project Manager I
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0173
dilea.bindel@testamericainc.com
09/25/2017

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

Pages have been deleted from this laboratory report file to reduce file size. The deleted pages contain raw data and instrument calibrations. If the full laboratory report is needed, contact Scott.Surovchak@lm.doe.gov

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CASE NARRATIVE

Client: Navarro Research and Engineering, Inc.

Project: PINELLAS MONITORING - 17088675

Report Number: 280-101087-1

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

Results between the method detection limit (MDL) and reporting limit (RL) are flagged with a "J" qualifier to indicate an estimated value. These results are statistically less reliable than results greater than or equal to the RL and should be considered a qualitative value.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 9/13/2017 8:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.2º C and 5.0º C.

GC/MS VOLATILES - SW846 8260B

Due to high concentrations of target analytes, some samples had to be analyzed at a dilution. The reporting limits have been elevated accordingly. To provide the lowest possible detection limits, multiple runs are reported.

The following samples were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, when verified by the laboratory, the pH was greater than 2 (pH=4), and the following samples were analyzed after 7 days from sampling: PIN20-2860 (PJU 251) and PIN20-M059 (PJU 257).

The following samples were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, when verified by the laboratory, the pH was greater than 2 (pH=7), and the following samples were analyzed after 7 days from sampling: PIN20-M001 (PJU 253).

Acetone and Methylene Chloride, common laboratory contaminants, were detected in method blank MB 280-387937/6 at levels that were above the method detection limit but below one half the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

The internal standard (ISTD) response for TBA-d9 in the following samples associated with batch 280-387937 was outside acceptance criteria: PIN20-2860 (PJU 251), PIN20-2861 (PJU 252), PIN20-M056 (PJU 255), PIN20-M058 (PJU 246) and PIN20-M059 (PJU 257). This ISTD does not correspond to any of the requested target compounds; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DATA REPORTING QUALIFIERS

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Lab Section	Qualifier	Description
GC/MS VOA		
	B	Compound was found in the blank and sample.
	U	Indicates the analyte was analyzed for but not detected.
	F1	MS and/or MSD Recovery is outside acceptance limits.
	4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
	F2	MS/MSD RPD exceeds control limits
	E	Result exceeded calibration range.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

SAMPLE SUMMARY

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-101087-1	PIN20-2860	Water	09/08/2017 1000	09/13/2017 0850
280-101087-1MS	PIN20-2860	Water	09/08/2017 1000	09/13/2017 0850
280-101087-1MSD	PIN20-2860	Water	09/08/2017 1000	09/13/2017 0850
280-101087-2	PIN20-2861	Water	09/08/2017 0800	09/13/2017 0850
280-101087-3	PIN20-M001	Water	09/08/2017 1520	09/13/2017 0850
280-101087-4	PIN20-M015	Water	09/09/2017 1215	09/13/2017 0850
280-101087-5	PIN20-M053	Water	09/09/2017 1055	09/13/2017 0850
280-101087-6	PIN20-M056	Water	09/09/2017 1130	09/13/2017 0850
280-101087-7	PIN20-M058	Water	09/09/2017 0920	09/13/2017 0850
280-101087-8	PIN20-M059	Water	09/08/2017 0940	09/13/2017 0850
280-101087-9	PIN20-M067	Water	09/08/2017 1430	09/13/2017 0850
280-101087-10	PIN20-M068	Water	09/08/2017 1120	09/13/2017 0850
280-101087-11	PIN20-M069	Water	09/08/2017 1040	09/13/2017 0850
280-101087-12	PIN20-M18D	Water	09/09/2017 0950	09/13/2017 0850

EXECUTIVE SUMMARY - Detections

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
280-101087-1	**PIN20-2860**					
Acetone		290		50	ug/L	8260B
Benzene		0.70	J	1.0	ug/L	8260B
2-Butanone (MEK)		480		25	ug/L	8260B
Carbon disulfide		0.60	J	1.0	ug/L	8260B
cis-1,2-Dichloroethene		0.92	J	1.0	ug/L	8260B
trans-1,2-Dichloroethene		0.36	J	1.0	ug/L	8260B
Ethylbenzene		0.16	J	1.0	ug/L	8260B
2-Hexanone		17	F1	5.0	ug/L	8260B
4-Methyl-2-pentanone		9.9	F1	5.0	ug/L	8260B
Styrene		0.17	J	1.0	ug/L	8260B
Toluene		0.19	J	1.0	ug/L	8260B
Vinyl chloride		0.70	J F1	1.0	ug/L	8260B
280-101087-2	**PIN20-2861**					
Acetone		8.1	J B	10	ug/L	8260B
Methylene Chloride		0.32	J B	1.0	ug/L	8260B
280-101087-3	**PIN20-M001**					
Acetone		730		100	ug/L	8260B
Benzene		0.81	J	1.0	ug/L	8260B
2-Butanone (MEK)		1400		50	ug/L	8260B
Carbon disulfide		0.65	J	1.0	ug/L	8260B
cis-1,2-Dichloroethene		1.4		1.0	ug/L	8260B
trans-1,2-Dichloroethene		0.81	J	1.0	ug/L	8260B
1,1-Dichloropropene		0.24	J	1.0	ug/L	8260B
2-Hexanone		19		5.0	ug/L	8260B
4-Methyl-2-pentanone		6.3		5.0	ug/L	8260B
Toluene		0.22	J	1.0	ug/L	8260B
Vinyl chloride		1.2		1.0	ug/L	8260B
280-101087-4	**PIN20-M015**					
Acetone		16	B	10	ug/L	8260B
2-Butanone (MEK)		12		5.0	ug/L	8260B
Carbon disulfide		1.6		1.0	ug/L	8260B
cis-1,2-Dichloroethene		1.6		1.0	ug/L	8260B
2-Hexanone		1.7	J	5.0	ug/L	8260B
4-Methyl-2-pentanone		1.9	J	5.0	ug/L	8260B
280-101087-5	**PIN20-M053**					
Acetone		11	B	10	ug/L	8260B
cis-1,2-Dichloroethene		3.4		1.0	ug/L	8260B

EXECUTIVE SUMMARY - Detections

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
280-101087-6	**PIN20-M056**					
Acetone		17	B	10	ug/L	8260B
2-Butanone (MEK)		6.9		5.0	ug/L	8260B
Carbon disulfide		0.45	J	1.0	ug/L	8260B
cis-1,2-Dichloroethene		3.6		1.0	ug/L	8260B
2-Hexanone		1.8	J	5.0	ug/L	8260B
280-101087-7	**PIN20-M058**					
Acetone		9.1	J B	10	ug/L	8260B
cis-1,2-Dichloroethene		2.4		1.0	ug/L	8260B
trans-1,2-Dichloroethene		0.30	J	1.0	ug/L	8260B
280-101087-8	**PIN20-M059**					
Acetone		290		50	ug/L	8260B
Benzene		0.73	J	1.0	ug/L	8260B
2-Butanone (MEK)		490		25	ug/L	8260B
Carbon disulfide		1.0		1.0	ug/L	8260B
cis-1,2-Dichloroethene		1.0		1.0	ug/L	8260B
trans-1,2-Dichloroethene		0.38	J	1.0	ug/L	8260B
Ethylbenzene		0.25	J	1.0	ug/L	8260B
2-Hexanone		19		5.0	ug/L	8260B
Methylene Chloride		0.43	J B	1.0	ug/L	8260B
4-Methyl-2-pentanone		11		5.0	ug/L	8260B
Styrene		0.18	J	1.0	ug/L	8260B
Toluene		0.21	J	1.0	ug/L	8260B
280-101087-9	**PIN20-M067**					
Acetone		11	B	10	ug/L	8260B
cis-1,2-Dichloroethene		0.96	J	1.0	ug/L	8260B
trans-1,2-Dichloroethene		0.24	J	1.0	ug/L	8260B
Vinyl chloride		1.8		1.0	ug/L	8260B
280-101087-10	**PIN20-M068**					
Acetone		17	B	10	ug/L	8260B
Benzene		0.49	J	1.0	ug/L	8260B
2-Butanone (MEK)		6.6		5.0	ug/L	8260B
trans-1,2-Dichloroethene		0.35	J	1.0	ug/L	8260B
Toluene		1.4		1.0	ug/L	8260B

EXECUTIVE SUMMARY - Detections

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
280-101087-11	**PIN20-M069**					
Acetone		11	B	10	ug/L	8260B
cis-1,2-Dichloroethene		5.3		1.0	ug/L	8260B
trans-1,2-Dichloroethene		2.1		1.0	ug/L	8260B
Vinyl chloride		3.6		1.0	ug/L	8260B
280-101087-12	**PIN20-M18D**					
Acetone		8.5	J B	10	ug/L	8260B
cis-1,2-Dichloroethene		0.60	J	1.0	ug/L	8260B

METHOD SUMMARY

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds (GC/MS)	TAL DEN	SW846 8260B	
Purge and Trap	TAL DEN		SW846 5030B

Lab References:

TAL DEN = TestAmerica Denver

Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Method	Analyst	Analyst ID
SW846 8260B	Wickham, Tom A	TAW

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-2860**

Lab Sample ID: 280-101087-1
Client Matrix: Water

Date Sampled: 09/08/2017 1000
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4133.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1217			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1217				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	0.70	J	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.60	J	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U F1	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	0.92	J	0.15	1.0
trans-1,2-Dichloroethene	0.36	J	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	J	0.16	1.0
Hexachlorobutadiene	0.36	U F2 F1	0.36	1.0
2-Hexanone	17	F1	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	9.9	F1	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0
Styrene	0.17	J	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: PIN20-2860

Lab Sample ID: 280-101087-1
Client Matrix: Water

Date Sampled: 09/08/2017 1000
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4133.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1217			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1217				

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,2,2-Tetrachloroethane	0.21	U F1	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.19	J	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U F1	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U F1	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.70	J F1	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U F1	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	122		70 - 127
Toluene-d8 (Surr)	107		80 - 125
4-Bromofluorobenzene (Surr)	105		78 - 120
Dibromofluoromethane (Surr)	107		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-2860**

Lab Sample ID: 280-101087-1
Client Matrix: Water

Date Sampled: 09/08/2017 1000
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-388221	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4217.D
Dilution:	5.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/20/2017 1246	Run Type:	DL	Final Weight/Volume:	20 mL
Prep Date:	09/20/2017 1246				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	290		9.5	50
2-Butanone (MEK)	480		10	25

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	91		70 - 127
Toluene-d8 (Surr)	96		80 - 125
4-Bromofluorobenzene (Surr)	87		78 - 120
Dibromofluoromethane (Surr)	87		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-2861**

Lab Sample ID: 280-101087-2
Client Matrix: Water

Date Sampled: 09/08/2017 0800
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4136.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1319			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1319				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	8.1	J B	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	2.0	U	2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	0.15	U	0.15	1.0
trans-1,2-Dichloroethene	0.15	U	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	J B	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-2861**

Lab Sample ID: 280-101087-2
Client Matrix: Water

Date Sampled: 09/08/2017 0800
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4136.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1319			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1319				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	112		70 - 127
Toluene-d8 (Surr)	111		80 - 125
4-Bromofluorobenzene (Surr)	111		78 - 120
Dibromofluoromethane (Surr)	108		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M001**

Lab Sample ID: 280-101087-3
Client Matrix: Water

Date Sampled: 09/08/2017 1520
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4137.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1339			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1339				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	0.81	J	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.65	J	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	1.4		0.15	1.0
trans-1,2-Dichloroethene	0.81	J	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.24	J	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	19		1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	6.3		0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M001**

Lab Sample ID: 280-101087-3
Client Matrix: Water

Date Sampled: 09/08/2017 1520
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4137.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1339			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1339				

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.22	J	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	1.2		0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	117		70 - 127
Toluene-d8 (Surr)	112		80 - 125
4-Bromofluorobenzene (Surr)	110		78 - 120
Dibromofluoromethane (Surr)	110		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M001**

Lab Sample ID: 280-101087-3
Client Matrix: Water

Date Sampled: 09/08/2017 1520
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-388385	Instrument ID:	VMS_P
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	P2450.D
Dilution:	10			Initial Weight/Volume:	20 mL
Analysis Date:	09/21/2017 1121	Run Type:	DL	Final Weight/Volume:	20 mL
Prep Date:	09/21/2017 1121				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	730		19	100
2-Butanone (MEK)	1400		20	50

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	127		70 - 127
Toluene-d8 (Surr)	113		80 - 125
4-Bromofluorobenzene (Surr)	118		78 - 120
Dibromofluoromethane (Surr)	118		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M015**

Lab Sample ID: 280-101087-4
Client Matrix: Water

Date Sampled: 09/09/2017 1215
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4138.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1400			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1400				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	16	B	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	12		2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	1.6		0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	1.6		0.15	1.0
trans-1,2-Dichloroethene	0.15	U	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	J	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	1.9	J	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: PIN20-M015

Lab Sample ID: 280-101087-4
Client Matrix: Water

Date Sampled: 09/09/2017 1215
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4138.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1400			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1400				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	110		70 - 127
Toluene-d8 (Surr)	109		80 - 125
4-Bromofluorobenzene (Surr)	108		78 - 120
Dibromofluoromethane (Surr)	110		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M053**

Lab Sample ID: 280-101087-5
Client Matrix: Water

Date Sampled: 09/09/2017 1055
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4139.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1420			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1420				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	11	B	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	2.0	U	2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	3.4		0.15	1.0
trans-1,2-Dichloroethene	0.15	U	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M053**

Lab Sample ID: 280-101087-5
Client Matrix: Water

Date Sampled: 09/09/2017 1055
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4139.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1420			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1420				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	115		70 - 127
Toluene-d8 (Surr)	112		80 - 125
4-Bromofluorobenzene (Surr)	115		78 - 120
Dibromofluoromethane (Surr)	113		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M056**

Lab Sample ID: 280-101087-6
Client Matrix: Water

Date Sampled: 09/09/2017 1130
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4140.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1441			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1441				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	17	B	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	6.9		2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	J	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	3.6		0.15	1.0
trans-1,2-Dichloroethene	0.15	U	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.8	J	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M056**

Lab Sample ID: 280-101087-6
Client Matrix: Water

Date Sampled: 09/09/2017 1130
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4140.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1441			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1441				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	111		70 - 127
Toluene-d8 (Surr)	109		80 - 125
4-Bromofluorobenzene (Surr)	110		78 - 120
Dibromofluoromethane (Surr)	112		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M058**

Lab Sample ID: 280-101087-7
Client Matrix: Water

Date Sampled: 09/09/2017 0920
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4141.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1501			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1501				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	9.1	J B	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	2.0	U	2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	2.4		0.15	1.0
trans-1,2-Dichloroethene	0.30	J	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M058**

Lab Sample ID: 280-101087-7
Client Matrix: Water

Date Sampled: 09/09/2017 0920
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4141.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1501			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1501				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	111		70 - 127
Toluene-d8 (Surr)	108		80 - 125
4-Bromofluorobenzene (Surr)	109		78 - 120
Dibromofluoromethane (Surr)	109		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M059**

Lab Sample ID: 280-101087-8
Client Matrix: Water

Date Sampled: 09/08/2017 0940
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4142.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1522			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1522				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	0.73	J	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	1.0		0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	1.0		0.15	1.0
trans-1,2-Dichloroethene	0.38	J	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.25	J	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	19		1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.43	J B	0.32	1.0
4-Methyl-2-pentanone	11		0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0
Styrene	0.18	J	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: PIN20-M059

Lab Sample ID: 280-101087-8
Client Matrix: Water

Date Sampled: 09/08/2017 0940
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4142.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1522			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1522				

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.21	J	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	127		70 - 127
Toluene-d8 (Surr)	108		80 - 125
4-Bromofluorobenzene (Surr)	106		78 - 120
Dibromofluoromethane (Surr)	115		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M059**

Lab Sample ID: 280-101087-8
Client Matrix: Water

Date Sampled: 09/08/2017 0940
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-388221	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4219.D
Dilution:	5.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/20/2017 1327	Run Type:	DL	Final Weight/Volume:	20 mL
Prep Date:	09/20/2017 1327				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	290		9.5	50
2-Butanone (MEK)	490		10	25

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	94		70 - 127
Toluene-d8 (Surr)	97		80 - 125
4-Bromofluorobenzene (Surr)	88		78 - 120
Dibromofluoromethane (Surr)	88		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M067**

Lab Sample ID: 280-101087-9
Client Matrix: Water

Date Sampled: 09/08/2017 1430
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4143.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1542			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1542				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	11	B	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	2.0	U	2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	0.96	J	0.15	1.0
trans-1,2-Dichloroethene	0.24	J	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M067**

Lab Sample ID: 280-101087-9
Client Matrix: Water

Date Sampled: 09/08/2017 1430
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4143.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1542			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1542				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	1.8		0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	115		70 - 127
Toluene-d8 (Surr)	111		80 - 125
4-Bromofluorobenzene (Surr)	114		78 - 120
Dibromofluoromethane (Surr)	111		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M068**

Lab Sample ID: 280-101087-10
Client Matrix: Water

Date Sampled: 09/08/2017 1120
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4144.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1603			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1603				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	17	B	1.9	10
Benzene	0.49	J	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	6.6		2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	0.15	U	0.15	1.0
trans-1,2-Dichloroethene	0.35	J	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M068**

Lab Sample ID: 280-101087-10
Client Matrix: Water

Date Sampled: 09/08/2017 1120
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4144.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1603			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1603				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	1.4		0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	116		70 - 127
Toluene-d8 (Surr)	109		80 - 125
4-Bromofluorobenzene (Surr)	110		78 - 120
Dibromofluoromethane (Surr)	107		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M069**

Lab Sample ID: 280-101087-11
Client Matrix: Water

Date Sampled: 09/08/2017 1040
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4145.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1624			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1624				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	11	B	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	2.0	U	2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	5.3		0.15	1.0
trans-1,2-Dichloroethene	2.1		0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: PIN20-M069

Lab Sample ID: 280-101087-11
Client Matrix: Water

Date Sampled: 09/08/2017 1040
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4145.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1624			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1624				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	3.6		0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	113		70 - 127
Toluene-d8 (Surr)	110		80 - 125
4-Bromofluorobenzene (Surr)	111		78 - 120
Dibromofluoromethane (Surr)	107		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: **PIN20-M18D**

Lab Sample ID: 280-101087-12
Client Matrix: Water

Date Sampled: 09/09/2017 0950
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4146.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1644			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1644				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	8.5	J B	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	2.0	U	2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	0.60	J	0.15	1.0
trans-1,2-Dichloroethene	0.15	U	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0
n-Propylbenzene	0.16	U	0.16	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Client Sample ID: PIN20-M18D

Lab Sample ID: 280-101087-12
Client Matrix: Water

Date Sampled: 09/09/2017 0950
Date Received: 09/13/2017 0850

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	MS1_4146.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1644			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1644				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	116		70 - 127
Toluene-d8 (Surr)	112		80 - 125
4-Bromofluorobenzene (Surr)	112		78 - 120
Dibromofluoromethane (Surr)	111		77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Surrogate Recovery Report

8260B Volatile Organic Compounds (GC/MS)

Client Matrix: Water

Lab Sample ID	Client Sample ID	DBFM %Rec	DCA %Rec	TOL %Rec	BFB %Rec
280-101087-1	PIN20-2860	107	122	107	105
280-101087-1 DL	PIN20-2860 DL	87	91	96	87
280-101087-2	PIN20-2861	108	112	111	111
280-101087-3	PIN20-M001	110	117	112	110
280-101087-3 DL	PIN20-M001 DL	118	127	113	118
280-101087-4	PIN20-M015	110	110	109	108
280-101087-5	PIN20-M053	113	115	112	115
280-101087-6	PIN20-M056	112	111	109	110
280-101087-7	PIN20-M058	109	111	108	109
280-101087-8	PIN20-M059	115	127	108	106
280-101087-8 DL	PIN20-M059 DL	88	94	97	88
280-101087-9	PIN20-M067	111	115	111	114
280-101087-10	PIN20-M068	107	116	109	110
280-101087-11	PIN20-M069	107	113	110	111
280-101087-12	PIN20-M18D	111	116	112	112
MB 280-387937/6		105	112	112	114
MB 280-388221/6		97	100	110	102
MB 280-388385/6		112	116	105	119
LCS 280-387937/4		102	108	111	108
LCS 280-388221/4		95	96	105	95
LCS 280-388385/4		112	115	105	104
LCSD 280-388221/5		96	98	106	98
280-101087-1 MS	PIN20-2860 MS	108	124	107	110
280-101060-F-4 MS		89	89	97	88
280-101182-I-1 MS		113	120	108	104
280-101087-1 MSD	PIN20-2860 MSD	111	127	109	114
280-101060-F-4 MSD		87	86	96	88
280-101182-I-1 MSD		109	113	106	104

Surrogate	Acceptance Limits
DBFM = Dibromofluoromethane (Surr)	77-120
DCA = 1,2-Dichloroethane-d4 (Surr)	70-127
TOL = Toluene-d8 (Surr)	80-125
BFB = 4-Bromofluorobenzene (Surr)	78-120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Method Blank - Batch: 280-387937

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 280-387937/6	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4124.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 0908	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 0908				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acetone	2.19	J	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	2.0	U	2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	0.15	U	0.15	1.0
trans-1,2-Dichloroethene	0.15	U	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.405	J	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Method Blank - Batch: 280-387937

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 280-387937/6	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4124.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 0908	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 0908				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
n-Propylbenzene	0.16	U	0.16	1.0
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	112	70 - 127
Toluene-d8 (Surr)	112	80 - 125
4-Bromofluorobenzene (Surr)	114	78 - 120
Dibromofluoromethane (Surr)	105	77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Lab Control Sample - Batch: 280-387937

Method: 8260B
Preparation: 5030B

Lab Sample ID:	LCS 280-387937/4	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4123.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 0847	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 0847				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Benzene	5.00	5.66	113	65 - 135	
Bromodichloromethane	5.00	5.67	113	65 - 135	
Carbon tetrachloride	5.00	5.64	113	65 - 135	
Chlorobenzene	5.00	5.03	101	65 - 135	
Chloroform	5.00	5.50	110	65 - 135	
1,3-Dichlorobenzene	5.00	4.98	100	65 - 135	
1,1-Dichloroethane	5.00	5.90	118	65 - 135	
trans-1,2-Dichloroethene	5.00	5.54	111	65 - 135	
1,1-Dichloroethene	5.00	5.60	112	65 - 136	
1,2-Dichloropropane	5.00	5.73	115	64 - 135	
Ethylbenzene	5.00	5.14	103	65 - 135	
Methylene Chloride	5.00	5.86	117	54 - 141	
Tetrachloroethene	5.00	5.01	100	65 - 135	
Toluene	5.00	5.79	116	65 - 135	
1,1,1-Trichloroethane	5.00	5.77	115	65 - 135	
Trichloroethene	5.00	5.17	103	65 - 135	

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	108	70 - 127
Toluene-d8 (Surr)	111	80 - 125
4-Bromofluorobenzene (Surr)	108	78 - 120
Dibromofluoromethane (Surr)	102	77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-387937

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	280-101087-1	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4134.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1238			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1238				20 mL
Leach Date:	N/A				

MSD Lab Sample ID:	280-101087-1	Analysis Batch:	280-387937	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4135.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/18/2017 1258			Final Weight/Volume:	20 mL
Prep Date:	09/18/2017 1258				20 mL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Benzene	114	116	65 - 135	2	20		
Bromodichloromethane	123	126	65 - 135	2	20		
Carbon tetrachloride	115	118	65 - 135	3	21		
Chlorobenzene	99	100	65 - 135	2	20		
Chloroform	109	112	65 - 135	2	20		
1,3-Dichlorobenzene	96	95	65 - 135	1	20		
1,1-Dichloroethane	115	119	65 - 135	3	21		
trans-1,2-Dichloroethene	114	117	65 - 135	2	24		
1,1-Dichloroethene	121	123	65 - 136	2	20		
1,2-Dichloropropane	123	125	64 - 135	2	20		
Ethylbenzene	98	98	65 - 135	0	20		
Methylene Chloride	120	121	54 - 141	1	26		
Tetrachloroethene	97	97	65 - 135	0	20		
Toluene	113	115	65 - 135	2	20		
1,1,1-Trichloroethane	116	120	65 - 135	4	20		
Trichloroethene	108	109	65 - 135	1	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	124	127	70 - 127
Toluene-d8 (Surr)	107	109	80 - 125
4-Bromofluorobenzene (Surr)	110	114	78 - 120
Dibromofluoromethane (Surr)	108	111	77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-387937

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	280-101087-1	Units: ug/L	MSD Lab Sample ID:	280-101087-1	
Client Matrix:	Water		Client Matrix:	Water	
Dilution:	1.0		Dilution:	1.0	
Analysis Date:	09/18/2017 1238		Analysis Date:	09/18/2017 1258	
Prep Date:	09/18/2017 1238		Prep Date:	09/18/2017 1258	
Leach Date:	N/A		Leach Date:	N/A	

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Benzene	0.70	J	5.00	5.00	6.38	6.51
Bromodichloromethane	0.17	U	5.00	5.00	6.16	6.31
Carbon tetrachloride	0.19	U	5.00	5.00	5.73	5.88
Chlorobenzene	0.17	U	5.00	5.00	4.93	5.01
Chloroform	0.16	U	5.00	5.00	5.47	5.60
1,3-Dichlorobenzene	0.13	U	5.00	5.00	4.82	4.75
1,1-Dichloroethane	0.22	U	5.00	5.00	5.77	5.95
trans-1,2-Dichloroethene	0.36	J	5.00	5.00	6.06	6.19
1,1-Dichloroethene	0.23	U	5.00	5.00	6.06	6.16
1,2-Dichloropropane	0.18	U	5.00	5.00	6.13	6.26
Ethylbenzene	0.16	J	5.00	5.00	5.08	5.07
Methylene Chloride	0.32	U	5.00	5.00	6.00	6.05
Tetrachloroethene	0.20	U	5.00	5.00	4.85	4.86
Toluene	0.19	J	5.00	5.00	5.86	5.96
1,1,1-Trichloroethane	0.16	U	5.00	5.00	5.81	6.02
Trichloroethene	0.16	U	5.00	5.00	5.40	5.47

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Method Blank - Batch: 280-388221

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 280-388221/6	Analysis Batch:	280-388221	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4207.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/20/2017 0920	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/20/2017 0920				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acetone	1.9	U	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	2.0	U	2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	0.15	U	0.15	1.0
trans-1,2-Dichloroethene	0.15	U	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Method Blank - Batch: 280-388221

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 280-388221/6	Analysis Batch:	280-388221	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4207.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/20/2017 0920	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/20/2017 0920				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
n-Propylbenzene	0.16	U	0.16	1.0
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	100	70 - 127
Toluene-d8 (Surr)	110	80 - 125
4-Bromofluorobenzene (Surr)	102	78 - 120
Dibromofluoromethane (Surr)	97	77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-388221

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 280-388221/4	Analysis Batch:	280-388221	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4206.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/20/2017 0900	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/20/2017 0900				20 mL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-388221/5	Analysis Batch:	280-388221	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4208.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/20/2017 0941	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/20/2017 0941				20 mL
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	105	106	65 - 135	1	20		
Bromodichloromethane	101	104	65 - 135	3	20		
Carbon tetrachloride	104	102	65 - 135	2	21		
Chlorobenzene	100	99	65 - 135	1	20		
Chloroform	102	105	65 - 135	3	20		
1,3-Dichlorobenzene	100	96	65 - 135	4	20		
1,1-Dichloroethane	104	107	65 - 135	3	21		
trans-1,2-Dichloroethene	104	105	65 - 135	1	24		
1,1-Dichloroethene	108	110	65 - 136	2	20		
1,2-Dichloropropane	103	105	64 - 135	2	20		
Ethylbenzene	103	98	65 - 135	5	20		
Methylene Chloride	97	104	54 - 141	7	26		
Tetrachloroethene	99	94	65 - 135	5	20		
Toluene	108	108	65 - 135	0	20		
1,1,1-Trichloroethane	106	106	65 - 135	0	20		
Trichloroethene	99	100	65 - 135	1	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	96	98	70 - 127
Toluene-d8 (Surr)	105	106	80 - 125
4-Bromofluorobenzene (Surr)	95	98	78 - 120
Dibromofluoromethane (Surr)	95	96	77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-388221

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 280-388221/4	Units: ug/L		LCSD Lab Sample ID:	LCSD 280-388221/5
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	09/20/2017 0900			Analysis Date:	09/20/2017 0941
Prep Date:	09/20/2017 0900			Prep Date:	09/20/2017 0941
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Benzene	5.00	5.00	5.26	5.32
Bromodichloromethane	5.00	5.00	5.05	5.18
Carbon tetrachloride	5.00	5.00	5.21	5.09
Chlorobenzene	5.00	5.00	5.02	4.97
Chloroform	5.00	5.00	5.08	5.23
1,3-Dichlorobenzene	5.00	5.00	4.98	4.80
1,1-Dichloroethane	5.00	5.00	5.22	5.37
trans-1,2-Dichloroethene	5.00	5.00	5.20	5.25
1,1-Dichloroethene	5.00	5.00	5.41	5.51
1,2-Dichloropropane	5.00	5.00	5.15	5.23
Ethylbenzene	5.00	5.00	5.13	4.90
Methylene Chloride	5.00	5.00	4.85	5.21
Tetrachloroethene	5.00	5.00	4.93	4.71
Toluene	5.00	5.00	5.40	5.38
1,1,1-Trichloroethane	5.00	5.00	5.31	5.32
Trichloroethene	5.00	5.00	4.96	4.99

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-388221

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	280-101060-F-4 MS	Analysis Batch:	280-388221	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4221.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/20/2017 1408			Final Weight/Volume:	20 mL
Prep Date:	09/20/2017 1408				20 mL
Leach Date:	N/A				

MSD Lab Sample ID:	280-101060-F-4 MSD	Analysis Batch:	280-388221	Instrument ID:	VMS_MS1
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	MS1_4222.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/20/2017 1428			Final Weight/Volume:	20 mL
Prep Date:	09/20/2017 1428				20 mL
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Benzene	95	96	65 - 135	0	20		
Bromodichloromethane	92	93	65 - 135	1	20		
Carbon tetrachloride	89	89	65 - 135	0	21		
Chlorobenzene	90	90	65 - 135	0	20		
Chloroform	92	93	65 - 135	1	20		
1,3-Dichlorobenzene	86	86	65 - 135	1	20		
1,1-Dichloroethane	94	94	65 - 135	0	21		
trans-1,2-Dichloroethene	94	94	65 - 135	0	24		
1,1-Dichloroethene	101	102	65 - 136	1	20		
1,2-Dichloropropane	95	95	64 - 135	1	20		
Ethylbenzene	90	88	65 - 135	2	20		
Methylene Chloride	91	96	54 - 141	5	26		
Tetrachloroethene	89	87	65 - 135	2	20		
Toluene	98	97	65 - 135	1	20		
1,1,1-Trichloroethane	93	93	65 - 135	0	20		
Trichloroethene	92	91	65 - 135	1	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	89	86	70 - 127
Toluene-d8 (Surr)	97	96	80 - 125
4-Bromofluorobenzene (Surr)	88	88	78 - 120
Dibromofluoromethane (Surr)	89	87	77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-388221

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	280-101060-F-4 MS	Units: ug/L	
Client Matrix:	Water		
Dilution:	1.0		
Analysis Date:	09/20/2017 1408		
Prep Date:	09/20/2017 1408		
Leach Date:	N/A		

MSD Lab Sample ID:	280-101060-F-4 MSD
Client Matrix:	Water
Dilution:	1.0
Analysis Date:	09/20/2017 1428
Prep Date:	09/20/2017 1428
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Benzene	0.16	U	5.00	5.00	4.77	4.79
Bromodichloromethane	0.17	U	5.00	5.00	4.60	4.64
Carbon tetrachloride	0.19	U	5.00	5.00	4.44	4.46
Chlorobenzene	0.17	U	5.00	5.00	4.50	4.48
Chloroform	0.16	U	5.00	5.00	4.62	4.64
1,3-Dichlorobenzene	0.13	U	5.00	5.00	4.32	4.28
1,1-Dichloroethane	0.22	U	5.00	5.00	4.70	4.72
trans-1,2-Dichloroethene	0.15	U	5.00	5.00	4.71	4.72
1,1-Dichloroethene	0.23	U	5.00	5.00	5.03	5.08
1,2-Dichloropropane	0.18	U	5.00	5.00	4.73	4.77
Ethylbenzene	0.16	U	5.00	5.00	4.50	4.41
Methylene Chloride	0.63	J	5.00	5.00	5.17	5.43
Tetrachloroethene	0.20	U	5.00	5.00	4.45	4.36
Toluene	0.17	U	5.00	5.00	4.90	4.84
1,1,1-Trichloroethane	0.16	U	5.00	5.00	4.66	4.67
Trichloroethene	0.16	U	5.00	5.00	4.62	4.57

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Method Blank - Batch: 280-388385

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 280-388385/6	Analysis Batch:	280-388385	Instrument ID:	VMS_P
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	P2447.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/21/2017 1004	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/21/2017 1004				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acetone	1.9	U	1.9	10
Benzene	0.16	U	0.16	1.0
Bromobenzene	0.17	U	0.17	1.0
Bromochloromethane	0.10	U	0.10	1.0
Bromodichloromethane	0.17	U	0.17	1.0
Bromoform	0.19	U	0.19	1.0
Bromomethane	0.21	U	0.21	1.0
2-Butanone (MEK)	2.0	U	2.0	5.0
n-Butylbenzene	0.32	U	0.32	1.0
sec-Butylbenzene	0.17	U	0.17	1.0
tert-Butylbenzene	0.16	U	0.16	1.0
Carbon disulfide	0.45	U	0.45	1.0
Carbon tetrachloride	0.19	U	0.19	1.0
Chlorobenzene	0.17	U	0.17	1.0
Dibromochloromethane	0.17	U	0.17	1.0
Chloroethane	0.41	U	0.41	1.0
Chloroform	0.16	U	0.16	1.0
Chloromethane	0.30	U	0.30	1.0
2-Chlorotoluene	0.17	U	0.17	1.0
4-Chlorotoluene	0.21	U	0.21	1.0
1,2-Dibromo-3-Chloropropane	0.47	U	0.47	1.0
Dibromomethane	0.17	U	0.17	1.0
1,2-Dichlorobenzene	0.15	U	0.15	1.0
1,3-Dichlorobenzene	0.13	U	0.13	1.0
1,4-Dichlorobenzene	0.16	U	0.16	1.0
Dichlorodifluoromethane	0.31	U	0.31	1.0
1,1-Dichloroethane	0.22	U	0.22	1.0
1,2-Dichloroethane	0.13	U	0.13	1.0
cis-1,2-Dichloroethene	0.15	U	0.15	1.0
trans-1,2-Dichloroethene	0.15	U	0.15	1.0
1,1-Dichloroethene	0.23	U	0.23	1.0
1,2-Dichloropropane	0.18	U	0.18	1.0
1,3-Dichloropropane	0.22	U	0.22	1.0
2,2-Dichloropropane	0.18	U	0.18	1.0
cis-1,3-Dichloropropene	0.16	U	0.16	1.0
trans-1,3-Dichloropropene	0.19	U	0.19	1.0
1,1-Dichloropropene	0.19	U	0.19	1.0
Ethylbenzene	0.16	U	0.16	1.0
Hexachlorobutadiene	0.36	U	0.36	1.0
2-Hexanone	1.7	U	1.7	5.0
Isopropylbenzene	0.19	U	0.19	1.0
4-Isopropyltoluene	0.20	U	0.20	1.0
Methylene Chloride	0.32	U	0.32	1.0
4-Methyl-2-pentanone	0.98	U	0.98	5.0
Naphthalene	0.22	U	0.22	1.0

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Method Blank - Batch: 280-388385

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 280-388385/6	Analysis Batch:	280-388385	Instrument ID:	VMS_P
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	P2447.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/21/2017 1004	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/21/2017 1004				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
n-Propylbenzene	0.16	U	0.16	1.0
Styrene	0.17	U	0.17	1.0
1,1,1,2-Tetrachloroethane	0.21	U	0.21	1.0
1,1,2,2-Tetrachloroethane	0.21	U	0.21	1.0
Tetrachloroethene	0.20	U	0.20	1.0
Toluene	0.17	U	0.17	1.0
1,2,3-Trichlorobenzene	0.21	U	0.21	1.0
1,2,4-Trichlorobenzene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.16	U	0.16	1.0
1,1,2-Trichloroethane	0.27	U	0.27	1.0
Trichloroethene	0.16	U	0.16	1.0
Trichlorofluoromethane	0.29	U	0.29	1.0
1,2,3-Trichloropropane	0.33	U	0.33	1.0
1,2,4-Trimethylbenzene	0.15	U	0.15	1.0
1,3,5-Trimethylbenzene	0.16	U	0.16	1.0
Vinyl chloride	0.10	U	0.10	1.0
Xylenes, Total	0.19	U	0.19	1.0
1,2-Dibromoethane	0.18	U	0.18	1.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	116	70 - 127
Toluene-d8 (Surr)	105	80 - 125
4-Bromofluorobenzene (Surr)	119	78 - 120
Dibromofluoromethane (Surr)	112	77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Lab Control Sample - Batch: 280-388385

Method: 8260B
Preparation: 5030B

Lab Sample ID:	LCS 280-388385/4	Analysis Batch:	280-388385	Instrument ID:	VMS_P
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	P2448.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/21/2017 1023	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	09/21/2017 1023				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Benzene	5.00	5.20	104	65 - 135	
Bromodichloromethane	5.00	5.10	102	65 - 135	
Carbon tetrachloride	5.00	4.97	99	65 - 135	
Chlorobenzene	5.00	4.61	92	65 - 135	
Chloroform	5.00	4.98	100	65 - 135	
1,3-Dichlorobenzene	5.00	4.71	94	65 - 135	
1,1-Dichloroethane	5.00	5.09	102	65 - 135	
trans-1,2-Dichloroethene	5.00	5.15	103	65 - 135	
1,1-Dichloroethene	5.00	4.72	94	65 - 136	
1,2-Dichloropropane	5.00	5.33	107	64 - 135	
Ethylbenzene	5.00	4.53	91	65 - 135	
Methylene Chloride	5.00	5.40	108	54 - 141	
Tetrachloroethene	5.00	4.51	90	65 - 135	
Toluene	5.00	5.33	107	65 - 135	
1,1,1-Trichloroethane	5.00	4.98	100	65 - 135	
Trichloroethene	5.00	4.60	92	65 - 135	

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	115	70 - 127
Toluene-d8 (Surr)	105	80 - 125
4-Bromofluorobenzene (Surr)	104	78 - 120
Dibromofluoromethane (Surr)	112	77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-388385

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	280-101182-I-1 MS	Analysis Batch:	280-388385	Instrument ID:	VMS_P
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	P2455.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/21/2017 1258			Final Weight/Volume:	20 mL
Prep Date:	09/21/2017 1258				20 mL
Leach Date:	N/A				

MSD Lab Sample ID:	280-101182-I-1 MSD	Analysis Batch:	280-388385	Instrument ID:	VMS_P
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	P2456.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	09/21/2017 1317			Final Weight/Volume:	20 mL
Prep Date:	09/21/2017 1317				20 mL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Benzene	102	104	65 - 135	1	20		
Bromodichloromethane	100	103	65 - 135	3	20		
Carbon tetrachloride	95	94	65 - 135	1	21		
Chlorobenzene	94	92	65 - 135	2	20		
Chloroform	99	98	65 - 135	2	20		
1,3-Dichlorobenzene	95	94	65 - 135	1	20		
1,1-Dichloroethane	101	99	65 - 135	2	21		
trans-1,2-Dichloroethene	99	97	65 - 135	3	24		
1,1-Dichloroethene	85	77	65 - 136	9	20		
1,2-Dichloropropane	109	109	64 - 135	0	20		
Ethylbenzene	96	92	65 - 135	4	20		
Methylene Chloride	90	87	54 - 141	3	26		
Tetrachloroethene	94	94	65 - 135	1	20		
Toluene	108	107	65 - 135	1	20		
1,1,1-Trichloroethane	99	97	65 - 135	2	20		
Trichloroethene	93	89	65 - 135	4	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	120	113	70 - 127
Toluene-d8 (Surr)	108	106	80 - 125
4-Bromofluorobenzene (Surr)	104	104	78 - 120
Dibromofluoromethane (Surr)	113	109	77 - 120

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-388385

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	280-101182-I-1 MS	Units: ug/L	
Client Matrix:	Water		
Dilution:	1.0		
Analysis Date:	09/21/2017 1258		
Prep Date:	09/21/2017 1258		
Leach Date:	N/A		

MSD Lab Sample ID:	280-101182-I-1 MSD
Client Matrix:	Water
Dilution:	1.0
Analysis Date:	09/21/2017 1317
Prep Date:	09/21/2017 1317
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Benzene	0.16	U	5.00	5.00	5.11	5.18
Bromodichloromethane	0.17	U	5.00	5.00	5.02	5.17
Carbon tetrachloride	0.19	U	5.00	5.00	4.76	4.69
Chlorobenzene	0.17	U	5.00	5.00	4.71	4.60
Chloroform	0.16	U	5.00	5.00	4.97	4.90
1,3-Dichlorobenzene	0.13	U	5.00	5.00	4.75	4.69
1,1-Dichloroethane	0.22	U	5.00	5.00	5.03	4.95
trans-1,2-Dichloroethene	0.15	U	5.00	5.00	4.95	4.83
1,1-Dichloroethene	0.23	U	5.00	5.00	4.23	3.85
1,2-Dichloropropane	0.18	U	5.00	5.00	5.47	5.46
Ethylbenzene	0.16	U	5.00	5.00	4.81	4.61
Methylene Chloride	0.32	U	5.00	5.00	4.48	4.35
Tetrachloroethene	0.20	U	5.00	5.00	4.72	4.68
Toluene	0.17	U	5.00	5.00	5.41	5.35
1,1,1-Trichloroethane	0.16	U	5.00	5.00	4.95	4.87
Trichloroethene	0.16	U	5.00	5.00	4.66	4.47

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
Sdg Number: 17088675

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:280-387937					
LCS 280-387937/4	Lab Control Sample	T	Water	8260B	
MB 280-387937/6	Method Blank	T	Water	8260B	
280-101087-1	PIN20-2860	T	Water	8260B	
280-101087-1MS	Matrix Spike	T	Water	8260B	
280-101087-1MSD	Matrix Spike Duplicate	T	Water	8260B	
280-101087-2	PIN20-2861	T	Water	8260B	
280-101087-3	PIN20-M001	T	Water	8260B	
280-101087-4	PIN20-M015	T	Water	8260B	
280-101087-5	PIN20-M053	T	Water	8260B	
280-101087-6	PIN20-M056	T	Water	8260B	
280-101087-7	PIN20-M058	T	Water	8260B	
280-101087-8	PIN20-M059	T	Water	8260B	
280-101087-9	PIN20-M067	T	Water	8260B	
280-101087-10	PIN20-M068	T	Water	8260B	
280-101087-11	PIN20-M069	T	Water	8260B	
280-101087-12	PIN20-M18D	T	Water	8260B	
Analysis Batch:280-388221					
LCS 280-388221/4	Lab Control Sample	T	Water	8260B	
LCSD 280-388221/5	Lab Control Sample Duplicate	T	Water	8260B	
MB 280-388221/6	Method Blank	T	Water	8260B	
280-101060-F-4 MS	Matrix Spike	T	Water	8260B	
280-101060-F-4 MSD	Matrix Spike Duplicate	T	Water	8260B	
280-101087-1DL	PIN20-2860	T	Water	8260B	
280-101087-8DL	PIN20-M059	T	Water	8260B	
Analysis Batch:280-388385					
LCS 280-388385/4	Lab Control Sample	T	Water	8260B	
MB 280-388385/6	Method Blank	T	Water	8260B	
280-101087-3DL	PIN20-M001	T	Water	8260B	
280-101182-I-1 MS	Matrix Spike	T	Water	8260B	
280-101182-I-1 MSD	Matrix Spike Duplicate	T	Water	8260B	

Report Basis
T = Total

Shipping and Receiving Documents

NAVARRO

Chain of Custody / Sample Submittal Form

RIN: 17088675

Sampler(s): J.graham, Frazone, Campbell, Caballero

Project: Pinellas Monitoring
Purchase Order: LMCP3864 **Cost Number:** 1.101.1.06.509.2.01

Turnaround (Days): 28 **Matrix:** WA - Water

Laboratory: TestAmerica Denver
Address: 4955 Yarrow Street
Arvada, Colorado 80002
Phone: 303 736 0100

Ship #	Ticket	Sample Date	Time	Site	Location	Container	# Cont.	Preservation	Matrix	Comp.	Grab	Filtered	QC	Analysis
1	PJU 251	9/8/2017	10:00	PIN20	PIN20-2860	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 252	9/8/2017	8:00	PIN20	PIN20-2861	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 253	9/8/2017	15:20	PIN20	PIN20-M001	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 245	9/9/2017	12:15	PIN20	PIN20-M015	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 254	9/9/2017	10:55	PIN20	PIN20-M053	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 255	9/9/2017	11:30	PIN20	PIN20-M056	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 246	9/9/2017	09:20	PIN20	PIN20-M058	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 257	9/8/2017	09:40	PIN20	PIN20-M059	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 247	9/8/2017	14:30	PIN20	PIN20-M067	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 248	9/8/2017	11:20	PIN20	PIN20-M068	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 249	9/8/2017	10:40	PIN20	PIN20-M069	Glass 40 mL	3	4 C, HCl	WA			N		VOA
1	PJU 250	9/9/2017	09:50	PIN20	PIN20-M18D	Glass 40 mL	3	4 C, HCl	WA			N		VOA

* Only and Final shipment this Rin # 17088675

Relinquished by (signature)	Date	Time	Reliquished by (signature)	Date	Time	Reliquished by (signature)	Date	Time
	9/12/17	1300						
Received by (signature)	Date	Time	Received by (signature)	Date	Time	Received by (signature)	Date	Time
	9/13/17	0850						

3.1+0.1 IR#7 transferred by JS 9/12/17

Login Sample Receipt Checklist

Client: Navarro Research and Engineering, Inc

Job Number: 280-101087-1
SDG Number: 17088675

Login Number: 101087
List Number: 1
Creator: True, Joshua A

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	