



**Gannett Fleming**

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February 12, 2018

File #55929.005

Ms. Mae Willkom, Hydrogeologist  
Bureau of Remediation and Redevelopment  
Wisconsin Department of Natural Resources, WCR  
1300 West Clairemont Avenue  
P.O. Box 4001  
Eau Claire, WI 54702-4001

Re: **Pilot Test Results for Soil Vapor Extraction and Recovery Wells**  
WRR Environmental Services  
WDNR BRRTS No. 02-18-000274  
WDNR FID No. 618 026 530  
EPA ID No. WID 990 829 475

Dear Ms. Willkom:

On behalf of WRR Environmental Services Co., Inc. (WRR), Gannett Fleming, Inc., (GF) is submitting this report summarizing the installation activities of soil vapor extraction (SVE) vent wells SVE-4 and SVE-5 and recovery wells RW-12 and RW-13 during the week of July 31, 2017. The report also includes the analytical results of pilot tests conducted on each of the wells to evaluate their performance and initial estimated air emissions of volatile organic compounds (VOCs) for compliance monitoring.

### **Well Installation and Pilot Test Activities**

SVE vent wells SVE-4 and SVE-5, recovery wells RW-12 and RW-13, and monitoring well W-34 were installed by Cascade Drilling of Schofield, Wisconsin, during the week of July 31, 2017. After they were installed, Cascade developed RW-12 and RW-13, and GF developed W-34. GF coordinated and provided oversight of well installation and development activities. Figure 1 shows the locations of SVE-4, SVE-5, RW-12, RW-13, and W-34.

Wells SVE-4 and SVE-5 were constructed with 15-foot-long, 4-inch-diameter PVC screens placed at a depth of 18.5 feet below the ground surface (ft bgs). The screened intervals of SVE-4 and SVE-5 extended approximately 6.5 and 10.5 ft below the water table at their respective locations so that they could be used as recovery and/or injection wells to remediate the groundwater in

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**Gannett Fleming, Inc.**

8025 Excelsior Drive, Madison, WI 53717-1900

t 608.836.1500 • f 608.831.3337

[www.gannettfleming.com](http://www.gannettfleming.com)

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those areas. Wells RW-12 and RW-13 were installed with 6-inch-diameter, 20-foot-long, stainless-steel screens and 3-foot-long sumps at 53 and 63 ft bgs, respectively. Well W-34 was constructed with a 15-foot-long, 2-inch-diameter PVC screen that extended approximately 5 feet above the water table to monitor the subsurface vacuums created during the pilot test of SVE-4. Attachment A includes the well construction and development forms for the wells listed above.

To monitor vacuums in the subsurface created during the pilot test of SVE-5, GF used a hand-auger to install monitoring points MP-2 through MP-7 along the perimeter of Warehouse A. The monitoring points were constructed with 2.5-foot-long, 1-inch-diameter PVC screens placed between 4 and 6.5 ft bgs. All monitoring point were constructed with sand filter packs around their screens and hydrated bentonite seals between 4 to 0.5 ft bgs. Figure 2 is an enlargement of the area near SVE-5 and shows the locations of MP-2 through MP-7.

### **Scope of Work for Pilot Tests**

Brief descriptions of the pilot tests follow. Attachment B includes copies of the laboratory analytical reports and chain-of-custody records for the pilot test samples.

### **SVE Pilot Tests**

Initial short-term pilot tests were conducted for approximately 2 hours at SVE-4 and 1 hour at SVE-5 on August 2, 2017. GF evaluated the results of the exhaust gas sample collected on August 2 from SVE-4 and SVE-5. Because the initial sample collected from SVE-4 contained elevated VOC concentrations that were likely unrepresentative of the VOC concentrations that would be removed during its operation, a supplemental extended pilot test was conducted on SVE-4. The supplemental pilot test on SVE-4 lasted approximately 80 hours from October 31 through November 3. A second sample of the SVE exhaust gas from SVE-4 was collected on November 3. Detected VOC concentrations measured in the two exhaust samples collected from SVE-4 decreased from 53 to 97 percent. The section below provides additional detail about the SVE pilot tests results.

Section NR 406.04(1)(m)3 of Wis. Adm. Code allows for up to 150,000 standard cubic feet (scf) of air to be emitted during an SVE pilot test. Based on measured flow rates and run times, GF estimates that approximately 138,000 and 2,400 scf of soil gas/air were removed during the pilot

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testing of SVE-4 and SVE-5, respectively. Both totals were well below the 150,000 scf threshold for an SVE pilot test.

### **Recovery Well Pilot Tests**

During and after development of recovery wells RW-12 and RW-13, water elevations were measured in the recovery wells and nearby piezometers. Unfortunately, WRR's production well operates at a variable pumping rate ranging up to 60 gallons per minute (gpm) during periods of peak demand, which caused the water elevations in the piezometers to fluctuate erratically. Therefore, it was not possible to conduct long-term pumping tests to determine the capture zones created by pumping either RW-12 or RW-13. However, based on the drawdown measured in each well when they were being developed, the estimated sustained pumping rates range from 1.5 to 2 gpm for RW-12 and 4 to 5 gpm for RW-13.

### **SVE-4 and SVE-5 Pilot Test Results**

Tables 1 and 2 present a summary of the field data measured during the pilot tests of SVE-4 and SVE-5, respectively. Based on SVE pilot test results, we estimate flow rates of 50 and 20 standard cubic feet per minute (scfm) are achievable from SVE-4 and SVE-5, respectively.

Based on subsurface vacuums measured in monitoring well W-34 near SVE-4 and monitoring points MP-2 through MP-7 near SVE-5, both vent wells had a radius of influence (ROI) of about 60 feet using the one percent of applied well-head vacuum rule, per WDNR guidance. The subsurface vacuums measured in MP-2 through MP-7 and monitoring well W-33 during the SVE-5 pilot test are included on Figure 2.

Table 3 presents a summary of the VOCs detected in the exhaust gas samples collected from SVE-4 on August 2 and November 3, 2017, and from SVE-5 on August 2 and the total VOC concentration measured in each vent well. Table 3 also includes the maximum flow rates from each vent well based on the hourly threshold for each detected compound and the maximum run time at 50 and 20 scfm for SVE-4 and SVE-5, respectively, before an annual emission threshold is exceeded. The annual maximum run time estimates assume that VOC concentrations continue to decrease as measured in the two SVE-4 pilot-test exhaust gas samples. Specifically:

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- The estimates assume that average annual VOC concentrations will be 95 percent lower than measured in November 2017.
- PCE in SVE-4 is the VOC with the shortest maximum run of 1.31 years (see calculations on Page 3 of Table 3).

Figure 3 provides supporting documentation for reference. As shown on Figure 3, the trend line based on the SVE-4 pilot test results projects that PCE concentrations will decrease to levels at which the PCE emission rate drops below its NR445.07 Table A threshold for:

- Stack heights 25 to 40 feet at a run time of approximately 165 hours (6.9 days).
- Stack heights less than 25 feet at a run time of approximately 255 hours (10.6 days).

Both estimates assume a flow/vapor extraction rate of 50 scfm, and we acknowledge the uncertainty inherent in extrapolating beyond the current data set.

### **Air Emission Estimates for RW-12 and RW-13**

Table 4 presents a summary of the VOCs that were detected in the groundwater samples collected from recovery wells RW-12 and RW-13 after they were installed and developed on August 4. Also shown in Table 4 are the estimated air emissions for the total and individual VOCs measured in each well. Those estimated air emissions are based on the estimated maximum pumping rates of 2 gpm for RW-12 and 5 gpm for RW-13 and the assumption that all the VOCs in the groundwater will be removed by the groundwater treatment system.

As shown in Table 4, if all VOCs in the groundwater pumped by RW-12 and RW-13 were emitted into the air, their mass would not exceed any of the hourly or annual thresholds for any of the regulated compounds.

### **Systems Start-Up and Proposed SVE and RW-12/13 Sampling Plan**

WRR plans to:

- Start operation of SVE-4, SVE-5, RW-12, and RW-13 at the flow rates discussed above.

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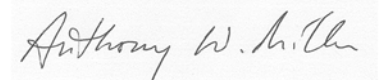
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- Collect exhaust gas samples for VOCs from the vacuum blowers that extract vapors from SVE-4 and SVE-5 once each day during the first three days of operation, weekly for the next three weeks, and monthly thereafter.
- Collect samples of the pumped groundwater from RW-12 and RW-13 monthly and have the samples analyzed for VOCs.
- Evaluate VOC concentrations and the flow rates of unit operations for soil and groundwater remediation to ensure that the NR 406.04(2) exemption threshold of 5.7 lb/hr for total VOCs and NR 445.07 Table A emission thresholds for specific compounds are not exceeded.

Summaries of the operation and the mass of VOCs removed by each of the newly installed recovery wells and new/existing SVE vacuum blowers will be included in future status reports. In the meantime, please let us know if you have any questions or need additional information regarding the pilot test results or the proposed operation of the new remediation wells.

Sincerely,

GANNETT FLEMING, INC.

  
Anthony W. Miller, P.S.S.  
Senior Environmental Scientist

  
Clifford C. Wright, P.E, P.G.  
Senior Project Engineer

AWM/jec  
Enc.

ecc: Jim Hager, Bob Fuller, & Becky Anderson (WRR)

**NOTES**

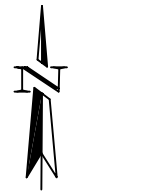
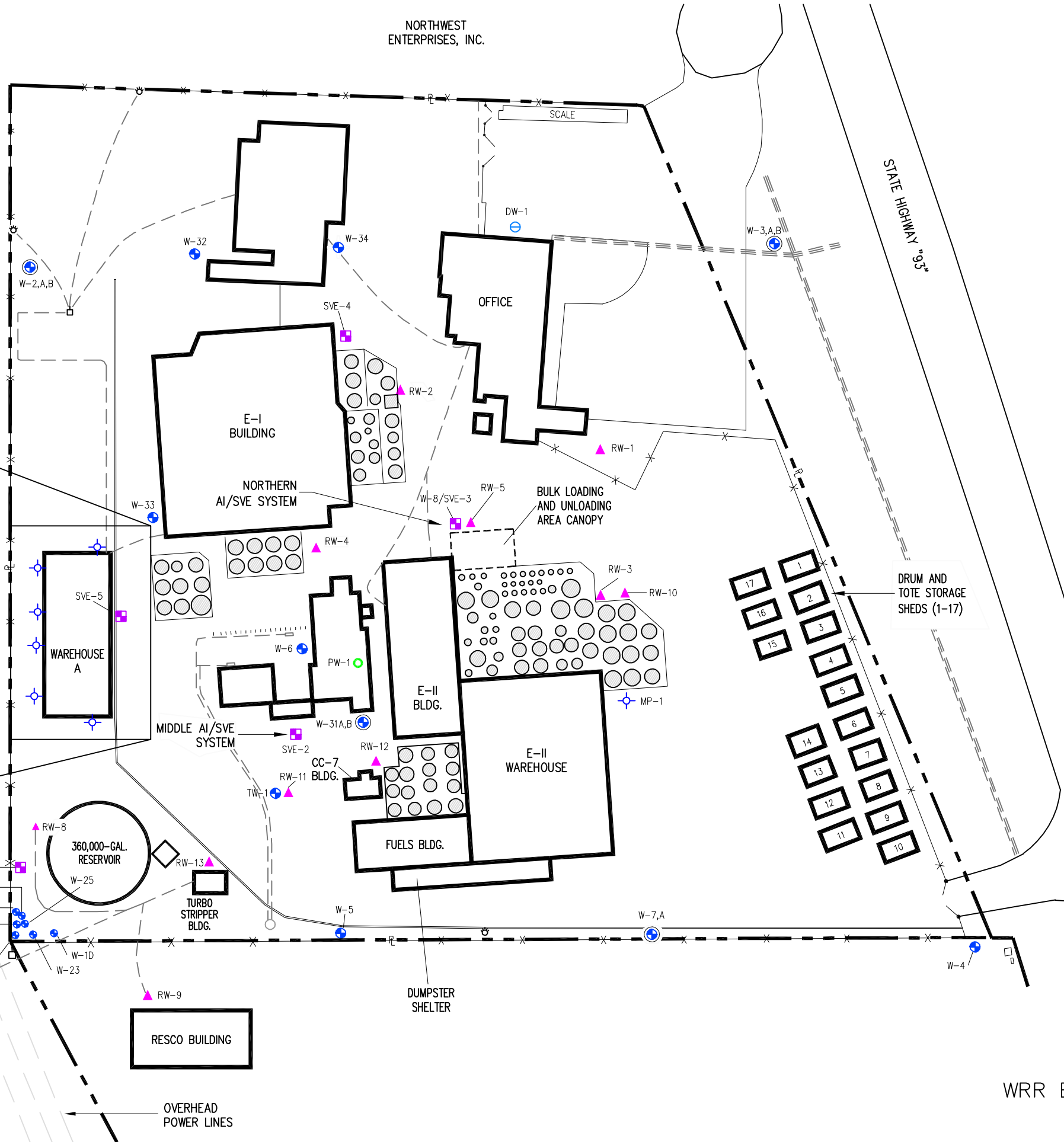
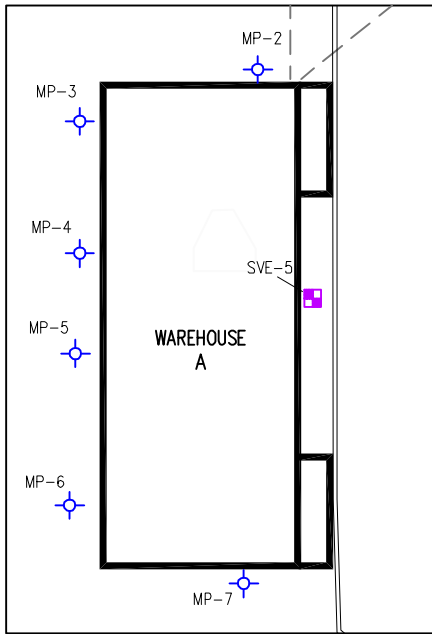
- 1. THIS DRAWING IS BASED ON ARCMAP FILES PROVIDED BY SHORT, ELLIOT, AND HENDRICKSON; ESRI AERIAL PHOTOGRAPHY AND SURVEY DATA FROM ECG INC. DATED MAY 2, 1996.
- 2. SITE FEATURES ARE APPROXIMATE.
- 3. THE LOCATIONS OF STORAGE TANKS ARE APPROXIMATE

**LEGEND**

- MONITORING WELL
- MONITORING WELL NEST
- SVE WELL LOCATION
- RECOVERY WELL
- PRODUCTION WELL
- DRINKING WATER WELL
- 1-INCH-DIAMETER MONITORING POINT
- ABOVEGROUND STORAGE TANK (APPROXIMATE LOCATION)
- POWER POLE
- LIGHT POLE
- FENCE
- SURFACE WATER DRAINAGE DITCH
- UNDERGROUND UTILITY

**NOTE**

LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE.



Approximate Scale In Feet

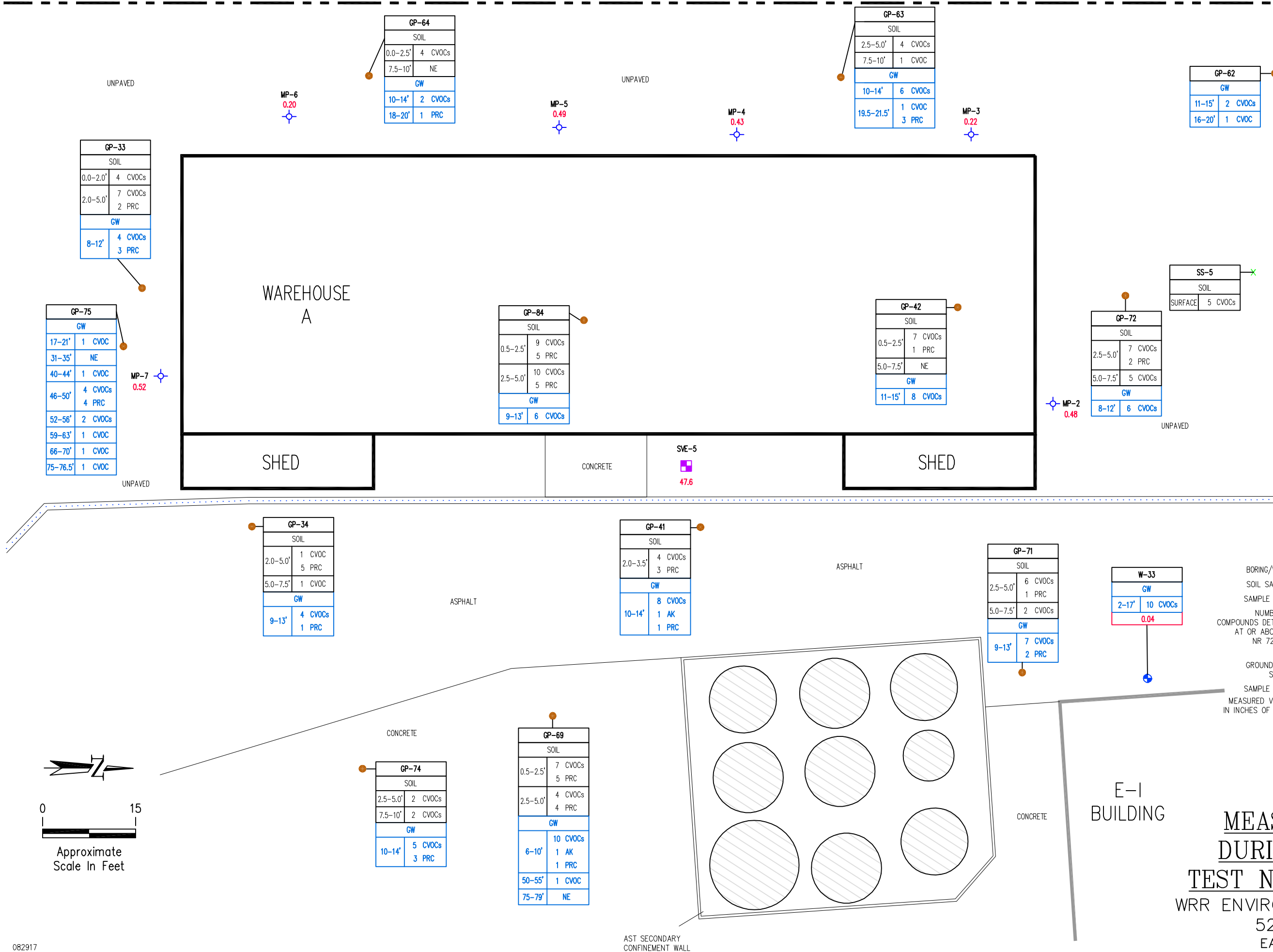
**WELL LOCATIONS**  
 WRR ENVIRONMENTAL SERVICES, INC.  
 5200 RYDER ROAD  
 EAU CLAIRE, WISCONSIN

**LEGEND**

- x SURFACE SOIL SAMPLE LOCATION
- GEOPROBE BORING SAMPLE LOCATION
- ⊕ MONITORING WELL
- DRAINAGE TRENCH
- VERTICAL SVE WELL LOCATION
- ⊕ 1-INCH DIAMETER MONITORING POINT

**NOTES:**

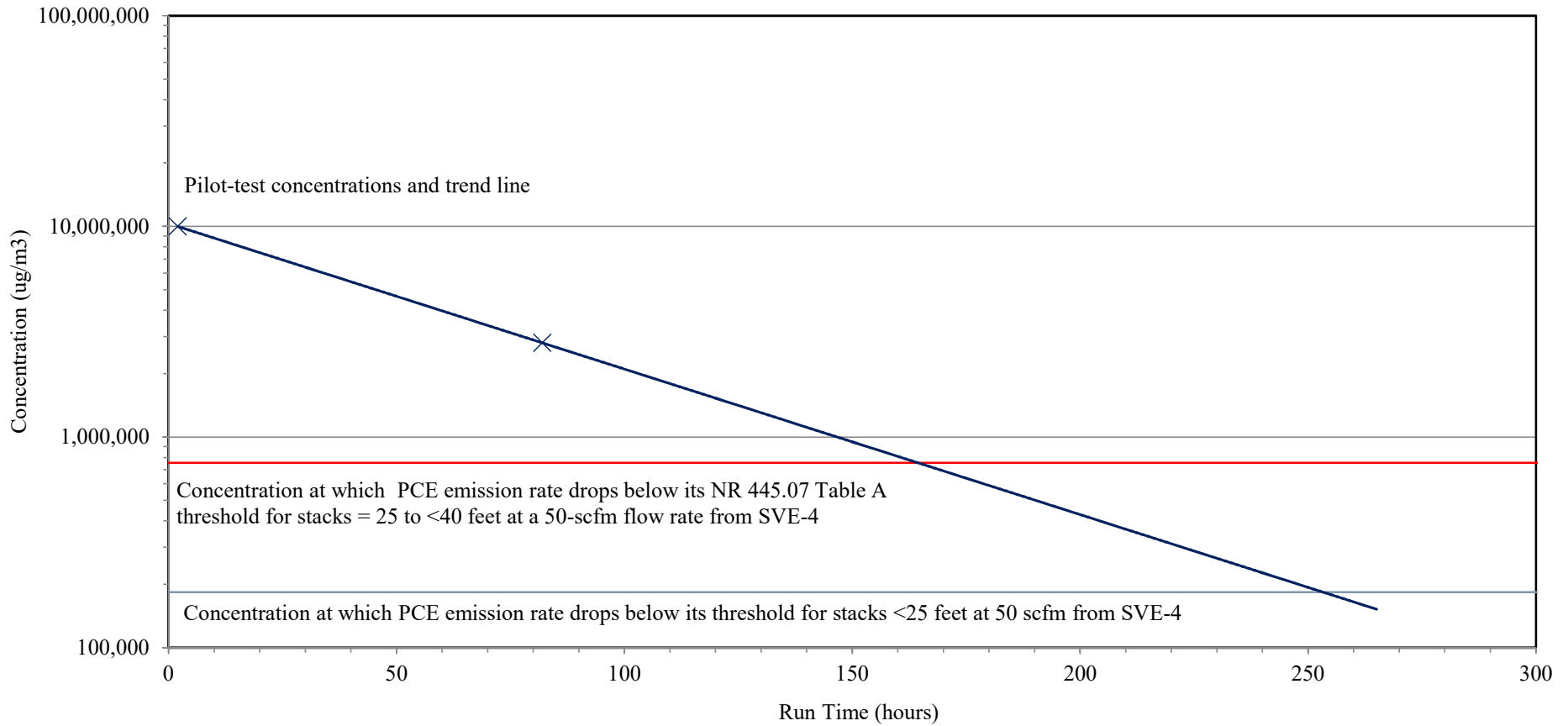
1. SURFACE SOIL SAMPLE, SS-5, WAS COLLECTED IN DECEMBER 1986.
2. GP-33 THROUGH GP-42 WERE SAMPLED IN SEPTEMBER 2013.
3. GP-62 THROUGH GP-64 WERE SAMPLED IN NOVEMBER 2013.
4. GP-69 WAS SAMPLED IN SEPTEMBER 2014.
5. GP-71 THROUGH GP-84 WERE SAMPLED IN SEPTEMBER 2016.



BORING/WELL ID	GP-69	
SOIL SAMPLES	SOIL	
SAMPLE DEPTH	2.5-5.0'	6 CVOCs
NUMBER OF COMPOUNDS DETECTED AT OR ABOVE AN NR 720 RCL	7.5-10'	7 PRC
		NE
GROUNDWATER SAMPLE	GW	
SAMPLE DEPTH	6-10'	10 CVOCs
MEASURED VACUUM IN INCHES OF WATER		1 A+K
		1 PRC
		0.48

**MEASURED VACUUMS DURING SVE-5 PILOT TEST NEAR WAREHOUSE A**  
 WRR ENVIRONMENTAL SERVICES, INC.  
 5200 RYDER ROAD  
 EAU CLAIRE, WISCONSIN

FIGURE 3



Note: Best-fit exponential trend line generated using Excel.

**PCE CONCENTRATIONS IN SVE-4 PILOT-TEST EXHAUST GAS, TREND LINE, AND NR 445.07 TABLE A ANNUAL THRESHOLD EXAMPLES**

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EAU CLAIRE, WISCONSIN

TABLE 1

SUMMARY OF SVE-4 PILOT TEST DATA (08/02/17)

Extracting from 09:45-10:55 (described as 100% full well-head vacuum because no bleed air):

Location	Pipe			Vacuum		Pressure P (psia)	Temperature T		Velocity v (fpm)	Flow rate Q	
	Diameter		Area (sq ft)	(inch Hg)	(psig)		(°F)	(°R)		(cfm)	(scfm)
	(inch)	(ft)									
Bleed (b)	2	0.17	0.02			14.3	74	534	0	0	0
Exhaust (e)	2	0.17	0.02			14.3	105	565	1,420	31	28
Inlet (i)	4	0.33	0.09	5	2.46	11.8	60	520	395	34	28

Extracting from well for step test at 70% full well-head vacuum:

Location	Pipe			Vacuum		Pressure P (psia)	Temperature T		Velocity v (fpm)	Flow rate Q	
	Diameter		Area (sq ft)	(inch Hg)	(psig)		(°F)	(°R)		(cfm)	(scfm)
	(inch)	(ft)									
Bleed (b)	2	0.17	0.02			14.3	74	534	520	11	11
Exhaust (e)	2	0.17	0.02			14.3	96	556	1,890	41	38
Inlet (i)	4	0.33	0.09	3.5	1.72	12.6	60	520	358	31	27

Extracting from well for step test at 50% full well-head vacuum:

Location	Pipe			Vacuum		Pressure P (psia)	Temperature T		Velocity v (fpm)	Flow rate Q	
	Diameter		Area (sq ft)	(inch Hg)	(psig)		(°F)	(°R)		(cfm)	(scfm)
	(inch)	(ft)									
Bleed (b)	2	0.17	0.02			14.3	74	534	1,060	23	22
Exhaust (e)	2	0.17	0.02			14.3	92.6	553	1,820	40	37
Inlet (i)	4	0.33	0.09	2.5	1.23	13.1	60	520	186	16	15

Extracting from well for step test at 20% full well-head vacuum:

Location	Pipe			Vacuum		Pressure P (psia)	Temperature T		Velocity v (fpm)	Flow rate Q	
	Diameter		Area (sq ft)	(inch Hg)	(psig)		(°F)	(°R)		(cfm)	(scfm)
	(inch)	(ft)									
Bleed (b)	2	0.17	0.02			14.3	74	534	1,550	34	33
Exhaust (e)	2	0.17	0.02			14.3	90	550	1,860	41	38
Inlet (i)	4	0.33	0.09	1	0.49	13.8	60	520	65	6	5

NOTES:

Assumed Ti = 60°F based on 15.2°C water temp measured in W-32.

Assumed Vb = 1,860 fpm at 20% full well-head vacuum (bottom table) based on other Vb measurements.

GOVERNING EQUATIONS:

$$\text{Eqtn. 1} \quad \frac{P_e \cdot v_e \cdot A_e}{T_e} = \frac{P_b \cdot v_b \cdot A_b}{T_b} + \frac{P_i \cdot v_i \cdot A_i}{T_i} \quad v_i = \left( \frac{P_e \cdot v_e \cdot A_e}{T_e} - \frac{P_b \cdot v_b \cdot A_b}{T_b} \right) \cdot \frac{T_i}{P_i \cdot A_i}$$

$$\text{Eqtn. 2} \quad Q_x = v_x \cdot A_x$$

$$\text{Eqtn. 3} \quad \frac{P_s \cdot Q_s}{T_s} = \frac{P_x \cdot Q_x}{T_x} \quad Q_s = \frac{P_x \cdot T_s}{P_s \cdot T_x} \cdot Q_x \quad \text{where: } T_s = (460+68) = 528 \text{ } ^\circ\text{R}$$

$$P_s = 14.7 \text{ psia}$$

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EAU CLAIRE, WISCONSIN

TABLE 2

SUMMARY OF SVE-5 PILOT TEST DATA (08/02/17)

Extracting from well at 15:10. Temporarily shut off blower 15:15-15:25 due to "water infiltration" with bleed valve closed.

Location	Pipe			Vacuum			Pressure P (psia)	Temperature T		Velocity v (fpm)	Flow rate Q	
	Diameter		Area (sq ft)	(in Hg)	(in wc)	(psig)		(°F)	(°R)		(cfm)	(scfm)
	(inch)	(ft)										
Bleed (b)	2	0.17	0.02				14.3	86	546	0	0	0
Exhaust (e)	2	0.17	0.02				14.3	91	551	1,300	28	26
Inlet (i)	4	0.33	0.09	5	68	2.46	11.8	60	520	370	32	26

Extracting from well at 15:28 with bleed valve partially open:

Location	Pipe			Vacuum			Pressure P (psia)	Temperature T		Velocity v (fpm)	Flow rate Q	
	Diameter		Area (sq ft)	(in Hg)	(in wc)	(psig)		(°F)	(°R)		(cfm)	(scfm)
	(inch)	(ft)										
Bleed (b)	2	0.17	0.02				14.3	84	544	1,270	28	26
Exhaust (e)	2	0.17	0.02				14.3	83	543	1,900	41	39
Inlet (i)	4	0.33	0.09	2	27	0.98	13.3	60	520	163	14	13

Extracting from well at 15:32 with bleed valve partially open:

Location	Pipe			Vacuum			Pressure P (psia)	Temperature T		Velocity v (fpm)	Flow rate Q	
	Diameter		Area (sq ft)	(in Hg)	(in wc)	(psig)		(°F)	(°R)		(cfm)	(scfm)
	(inch)	(ft)										
Bleed (b)	2	0.17	0.02				14.3	84	544	850	19	18
Exhaust (e)	2	0.17	0.02				14.3	86	546	1,560	34	32
Inlet (i)	4	0.33	0.09	3.5	47	1.72	12.6	60	520	191	17	15

Extracting from well at 15:45 with bleed valve partially open:

Location	Pipe			Vacuum			Pressure P (psia)	Temperature T		Velocity v (fpm)	Flow rate Q	
	Diameter		Area (sq ft)	(in Hg)	(in wc)	(psig)		(°F)	(°R)		(cfm)	(scfm)
	(inch)	(ft)										
Bleed (b)	2	0.17	0.02				14.3	84	544	1,280	28	26
Exhaust (e)	2	0.17	0.02				14.3	83	543	2,200	48	45
Inlet (i)	4	0.33	0.09	4	54	1.97	12.3	60	520	256	22	19

NOTES:

Assumed Ti = 60°F based on 15.2°C water temp measured in W-32.

Assumed Tb=84°F at 15:45 (bottom table) based on other Tb data. Based on other vb data, vb=1,280 fpm at 15:45 is suspect.

See Table 1 for governing equations.

WRR ENVIRONMENTAL SERVICES CO., INC.  
EAU CLAIRE, WISCONSIN

TABLE 3

SVE-4/SVE-5 PILOT-TEST EXHAUST GAS ANALYTICAL RESULTS & AIR EMISSION THRESHOLDS

Detected Volatile Organic Compounds (VOCs)	Concentration Data			Max Q Based on			Maximum Run Time Based on			NR 445.07 Table A Threshold(s) for Emissions from Stacks<25ft	
	SVE-4		SVE-5	Hourly Threshold <sup>(3,5)</sup>			Annual Threshold <sup>(4,5)</sup>			Hourly (lb/hr)	Annual (lb/yr)
	8/2/17 <sup>(1)</sup>	11/3/17 <sup>(2)</sup>		SVE-4 <sup>(1)</sup>	SVE-4 <sup>(2)</sup>	SVE-5	SVE-4 <sup>(1)</sup>	SVE-4 <sup>(2)</sup>	SVE-5		
	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )	(scfm)	(scfm)	(scfm)	(years)	(years)	(years)		
Benzene	57,000	<2,300	<270	--	--	--	49	<121	<1,030	No threshold	228
Chloroethane	<8,000	<2,400	120,000	<473,941	<1,579,804	31,596	<270,800	<902,668	451,334	14.2	1,776,876
Cumene	<7,100	<2,100	2,100	<496,411	<1,678,343	1,678,343	--	--	--	13.2	No threshold
Cyclohexane	<14,000	<4,100	2,800	--	--	--	--	--	--	Individual VOC not regulated	
1,1-Dichloroethane	<7,600	9,500	170,000	<762,381	609,905	34,083	--	--	--	21.7	No threshold
1,1-Dichloroethene	54,000	21,000	5,100	5,241	13,478	55,496	--	--	--	1.06	No threshold
1,2-Dichloroethene (combined)	169,000	78,700	132,300	67,305	144,531	85,976	--	--	--	42.6	No threshold
Dichlorodifluoromethane	<8,000	<2,400	1,000	--	--	--	--	--	--	Individual VOC not regulated	
Ethylbenzene	<7,600	<2,300	47,000	<818,593	<2,704,919	132,368	<28,505	<94,192	115,234	23.3	177,688
4-Ethyltoluene	<7,600	<2,300	3,200	--	--	--	--	--	--	Individual VOC not regulated	
n-Heptane	<8,000	<2,400	11,000	--	--	--	--	--	--	Individual VOC not regulated	
n-Hexane	64,000	<2,100	1,700	39,509	<1,204,084	1,487,398	6,770	<20,633	637,186	9.47	35,538
Methylene chloride	<8,000	19,000	42,000	<311,399	131,116	59,314	<576	2,426	2,744	9.33	3,781
4-Methyl-2-pentanone (MIBK)	<7,600	<2,300	1,300	<386,460	<1,277,000	2,259,308	--	--	--	11	No threshold
n-Nonane	<7,100	<2,100	45,000	--	--	--	--	--	--	Individual VOC not regulated	
n-Octane	<8,500	<2,500	23,000	--	--	--	--	--	--	Individual VOC not regulated	
alpha-Pinene	<6,600	<2,000	1,400	--	--	--	--	--	--	Individual VOC not regulated	
Propene	<6,600	<2,000	12,000	--	--	--	--	--	--	Individual VOC not regulated	
n-Propylbenzene	<7,600	<2,300	1,800	--	--	--	--	--	--	Individual VOC not regulated	
Tetrachloroethene (PCE)	10,000,000	2,800,000	13,000	243	869	187,112	0.367	1.31	706	9.11	301
Toluene	<8,000	<2,400	100,000	<337,099	<1,123,663	26,968	<10,832	<36,107	21,664	10.1	71,075
1,1,1-Trichloroethane (TCA)	2,900,000	1,300,000	280,000	--	--	--	--	--	--	Individual VOC not regulated	
1,1,2-Trichloroethane	<7,600	9,400	<270	--	--	--	--	--	--	Individual VOC not regulated	
Trichloroethene (TCE)	4,100,000	1,400,000	2,000	938	2,746	1,922,466	2.64	7.73	13,533	14.4	888
1,1,2-Trichlorotrifluoroethane	76,000	29,000	940,000	--	--	--	--	--	--	Individual VOC not regulated	

TABLE 3

## SVE-4/SVE-5 PILOT-TEST EXHAUST GAS ANALYTICAL RESULTS &amp; AIR EMISSION THRESHOLDS

Detected Volatile Organic Compounds (VOCs)	Concentration Data			Max Q Based on Hourly Threshold <sup>(3,5)</sup>			Maximum Run Time Based on Annual Threshold <sup>(4,5)</sup>			NR 445.07 Table A Threshold(s) for Emissions from Stacks<25ft	
	SVE-4		SVE-5	SVE-4 <sup>(1)</sup>	SVE-4 <sup>(2)</sup>	SVE-5	SVE-4 <sup>(1)</sup>	SVE-4 <sup>(2)</sup>	SVE-5	Hourly	Annual
	8/2/17 <sup>(1)</sup>	11/3/17 <sup>(2)</sup>									
	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	(scfm)	(scfm)	(scfm)	(years)	(years)	(years)	(lb/hr)	(lb/yr)
Trimethylbenzenes (combined)	<15,200	<4,400	8,700	<115,938	<400,514	202,559	--	--	--	6.6	No threshold
Vinyl chloride	<8,000	<2,400	220,000	--	--	--	<31	<103	27.99	No threshold	202
Xylenes (combined)	<21,100	<6,300	167,000	<294,848	<987,510	37,253	--	--	--	23.3	No threshold
Total VOCs [NR 406.04(2)]	17,420,000	5,666,600	2,353,400	87	269	647	--	--	--	5.7	No threshold

NOTES:

Concentrations are in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ).

Samples were collected on August 2, 2017, and analyzed by ALS Laboratory of Simi Valley, CA, for VOCs using Method TO-15. Only compounds measured in one or more samples are shown on this table.

NR 445.07 Table A thresholds are from Wisconsin Administrative Code updated March 2016.

1,2-Dichloroethene = cis-1,2-Dichloroethene and trans-1,2-Dichloroethene concentrations, combined.

Total VOCs = Summation of detected volatile organic compounds.

Trimethylbenzenes = 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene concentrations, combined.

Xylenes = m&p-Xylene and o-Xylene concentrations, combined.

-- = Not applicable.

FOOTNOTES:

(1) Initial short-term pilot test conducted 09:45-11:55 on 8/2/17 and sample collected at 11:20 on 8/2/17.

(2) Supplemental extended pilot test conducted from 09:35 on 10/31/17 to 17:23 on 11/3/17 (i.e., it lasted approximately 80 hours) and sample collected at 17:20 on 11/3/17.

(3) Max Q = maximum "allowable" flow rate at pilot-test concentration. Q above this rate would exceed hourly threshold.

(4) Maximum Run Time = Max RT, assuming Q=50/20 scfm for SVE-4/5 and 5% pilot-test concentration. Longer RT would exceed annual threshold.

(5) Yellow-shaded cells highlight lowest Max Q and shortest Max RT following extended pilot test at SVE-4 for reference. See Page 3 of this table for example calculations.

TABLE 3

SVE-4/SVE-5 PILOT-TEST EXHAUST GAS ANALYTICAL RESULTS & AIR EMISSION THRESHOLDS

EXAMPLE CALCULATIONS:

1. Max Q for SVE-4 based on total VOCs threshold emission rate and 11/3/17 concentration follows.

$$Q_c = \dot{m} \quad Q_{voc} = \frac{\dot{m}}{c} = \frac{5.7 \frac{lb}{hr}}{5,666,600 \frac{\mu g}{m^3}} \times \frac{454E6 \mu g}{1 lb} \times \frac{1 hr}{60 min} \times \frac{(3.28 ft)^3}{(1 m)^3} = 269 \text{ scfm}$$

2. Max RT for SVE-4 based on PCE annual threshold for stacks <25 ft, assumed average concentration, & Q=50 scfm follows.

$$Q_c RT = m \quad RT_{PCE} = \frac{m}{Q_c} = \frac{301 lb}{50 \frac{ft^3}{min}} \times \frac{140,000 \mu g}{m^3} \times \frac{454E6 \mu g}{1 lb} \times \frac{(3.28 ft)^3}{(1 m)^3} \times \frac{1 hr}{60 min} \times \frac{1 day}{24 hr} \times \frac{1 year}{365 days} = 1.31 \text{ yr}$$

3. Concentration at which SVE-4 PCE emission drops below its NR 445.07 Table A threshold for stacks = 25 to <40 feet follows.

$$Q_c RT = m \quad c_{PCE} = \frac{m}{QRT} = \frac{1,237 lb}{50 \frac{ft^3}{min}} \times \frac{1}{1 yr} \times \frac{454E6 \mu g}{1 lb} \times \frac{(3.28 ft)^3}{(1 m)^3} \times \frac{1 hr}{60 min} \times \frac{1 day}{24 hr} \times \frac{1 year}{365 days} = 754,087 \frac{\mu g}{m^3}$$

where:

c = Concentration in micrograms per cubic meter ( $\mu g/m^3$ ).

m = annual mass threshold in pounds (lb).

$\dot{m}$  = threshold emission rate in pounds per hour (lb/hr).

Q = flow rate in standard cubic feet per minute (scfm =  $ft^3/min$ ).

RT = run time in years (yr).

WRR ENVIRONMENTAL SERVICES CO., INC.  
EAU CLAIRE, WISCONSIN

TABLE 4

RW-12 & RW-13 PUMP-TEST ANALYTICAL RESULTS AND AIR EMISSION THRESHOLDS (AUGUST 2017)

Detected Volatile Organic Compounds (VOCs)	Concentration Data		Estimated Air Emissions								NR 445.07 Table A Threshold(s) for Emissions from Stacks<25ft	
			RW-12 (at pumping rate of 2 gpm)				RW-13 (at pumping rate of 5 gpm)				Hourly	Annual
	RW-12	RW-13	Hourly		Annual		Hourly		Annual		Hourly	Annual
	(µg/l)	(µg/l)	(lb/hr)	TH %	(lb/yr)	TH %	(lb/hr)	TH %	(lb/yr)	TH %	(lb/hr)	(lb/yr)
Acetone	69,300	39,100	0.069	--	608	--	0.098	--	857	--	Individual VOC not regulated	
2-Butanone (MEK)	16,400	5,560	0.016	--	144	--	0.0139	--	122	--	Individual VOC not regulated	
1,1-Dichloroethane	353	966	0.00035	0.0016	--	--	0.00242	0.011	--	--	21.7	No threshold
1,1-Dichloroethene	<164	176 J	<0.00017	<0.016	--	--	0.000440	0.042	--	--	1.06	No threshold
1,2-Dichloroethene (combined)	2,283 U	6,021 U	0.0023	0.0054	--	--	0.0151	0.035	--	--	42.6	No threshold
Ethylbenzene	1,730	3,880	0.0017	0.0074	15	0.0085	0.0097	0.042	85	0.048	23.3	177,688
Methylene chloride	1,520	514	0.00152	0.016	13	0.35	0.00129	0.014	11.3	0.30	9.33	3,781
4-Methyl-2-pentanone (MIBK)	10,200	3,080	0.0102	0.093	--	--	0.0077	0.070	--	--	11	No threshold
2-Propanol (isopropyl alcohol)	163,000	16,100 J	0.163	--	1,429	--	0.0403	--	353	--	Individual VOC not regulated	
Tetrachloroethene	<200	104 J	<0.00020	<0.0022	<1.8	<0.59	0.000260	0.00286	2.3	0.76	9.11	301
Toluene	38,200	47,500	0.038	0.38	335	0.47	0.119	1.2	1,041	1.46	10.1	71,075
1,1,1-Trichloroethane	1,800	656	0.0018	--	16	--	0.00164	--	14	--	Individual VOC not regulated	
1,1,2-Trichloroethane	<79.0	89.6 J	<0.000079	<0.0027	--	--	0.000224	0.0077	--	--	2.93	No threshold
Trichloroethene	1,620	<66.1	0.00162	0.011	14	1.6	<0.00017	<0.0012	<1.5	<0.17	14.4	888
Trimethylbenzenes (combined)	400	327 U	0.00040	0.0061	--	--	0.00082	0.012	--	--	6.6	No threshold
Vinyl chloride	<70.2	245	<0.00018	--	<1.54	<0.76	0.00061	--	5.4	2.7	No threshold	202
Xylenes (combined)	7,290	15,420	0.0073	0.031	--	--	0.0386	0.17	--	--	23.3	No threshold
Total VOCs [NR 406.04(2)]	314,096	139,739	0.31	5.5	--	--	0.350	6.1	--	--	5.7	No threshold

NOTES:

Concentrations are in micrograms per liter (µg/l)/parts per billion (ppb), and NR 445.07 Table A thresholds are from Wisconsin Administrative Code updated March 2016.

1,2-Dichloroethene = cis-1,2-Dichloroethene and trans-1,2-Dichloroethene concentrations, combined.

J = Estimated concentration at or above the limit of detection and below the limit of quantitation.

TH % = Percentage of threshold shown.

Total VOCs = Summation of detected VOCs.

Trimethylbenzenes = 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene concentrations, combined.

U = One of the two isomers of this compound was not detected at or above the adjusted limit of detection.

Xylenes = m&p-Xylene and o-Xylene concentrations, combined.

-- = Not applicable.

**ATTACHMENT A**

**WELL CONSTRUCTION AND DEVELOPMENT FORMS (JULY/AUGUST 2017)**

Route To: Watershed/Wastewater  Waste Management   
Remediation/Revelpment  Other

Facility/Project Name <b>WRR Environmental Services</b>		License/Permit/Monitoring Number		Boring Number <b>RW-12</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: <b>mark</b> Last Name: <b>Biermaier</b>		Date Drilling Started <b>0810312013</b> m m d d y y y y	Date Drilling Completed <b>0810412013</b> m m d d y y y y	Drilling Method <b>SONIC</b>	
Firm: <b>Cascade Drilling LP</b>		Final Static Water Level Feet MSL		Surface Elevation Feet MSL	
WI Unique Well No. <b>V069L</b>	DNR Well ID No. <b>RW-12</b>	Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/> State Plane <b>44.756782</b> N. <b>91.452958</b> W. <b>SE</b> 1/4 of <b>SW</b> 1/4 of Section <b>3</b> , T <b>26</b> N, R <b>9</b> W		Local Grid Location Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County <b>Fau Claire</b>	County Code <b>18</b>	Civil Town/City/ or Village <b>Fau Claire</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Foot (if four ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					ROD/ Comments	
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			8' 3'	8" concrete Black Sand, silt GRAVEL (Fill)											
			3' 1' 54'	Brown Sand Some silt											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm **Cascade Drilling LP**

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.



Facility/Project Name <b>WRR Environmental Services</b>	Local Grid Location of Well <b>44.756782 ft. N 91.457998 ft. E</b>	Well Name <b>RW-12</b>
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated) or Well Location: Lat. " Long. " or " "	Wis. Unique Well No. <b>VAS9L</b> DNR Well ID No.
Facility ID	St. Plane ft. N. ft. E. S/C/N	Date Well Installed <b>0810412017</b>
Type of Well Well Code <b>26 / EW</b>	Section Location of Waste/Source <b>SE 1/4 of SW 1/4 of Sec. 3 T. 26 N. R. 9</b>	Well Installed By: Name (first, last) and Firm <b>Mark Biermeier Cascade Drilling LP</b>
Distance from Waste/Source ft. <input type="checkbox"/> Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number

A. Protective pipe, top elevation --- ft. MSL

B. Well casing, top elevation --- **5'** ft. MSL

C. Land surface elevation --- ft. MSL

D. Surface seal, bottom --- ft. MSL or --- **6'** ft.

12. USCS classification of soil near screen:  
 GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

13. Sieve analysis performed?  Yes  No

14. Drilling method used: Rotary  50  
 Hollow Stem Auger  41  
Serie Other

15. Drilling fluid used: Water  02 Air  01  
 Drilling Mud  03 None  99

16. Drilling additives used?  Yes  No  
 Describe \_\_\_\_\_

17. Source of water (attach analysis, if required): \_\_\_\_\_

E. Bentonite seal, top --- ft. MSL or --- **6'** ft.

F. Fine sand, top --- ft. MSL or --- **25'** ft.

G. Filter pack, top --- ft. MSL or --- **28'** ft.

H. Screen joint, top --- ft. MSL or --- **30'** ft.

I. Well bottom --- ft. MSL or --- **53'** ft.

J. Filter pack, bottom --- ft. MSL or --- **54'** ft.

K. Borehole, bottom --- ft. MSL or --- **54'** ft.

L. Borehole, diameter --- **10'** in

M. O.D. well casing --- in.

N. I.D. well casing --- **6"** in.

1. Cap and lock?  Yes  No

2. Protective cover pipe:  
 a. Inside diameter: --- **8** in.  
 b. Length: --- **5** ft.  
 c. Material: Steel  04  
 Other

d. Additional protection?  Yes  No  
 If yes, describe: Barpen Post

3. Surface seal: Bentonite  30  
 Concrete  01  
 Other  Native

4. Material between well casing and protective pipe: Bentonite  30  
 Other  sand

5. Annular space seal: a. Granular/Chipped Bentonite  33  
 b. Lbs/gal mud weight... Bentonite-sand slurry  35  
 c. Lbs/gal mud weight... Bentonite slurry  31  
 d. % Bentonite... Bentonite-cement grout  50  
 e. 600 LBS volume added for any of the above  
 f. How installed: Tremie  01  
 Tremie pumped  02  
 Gravity  08

6. Bentonite seal: a. Bentonite granules  33  
 b.  1/4 in.  3/8 in.  1/2 in. Bentonite chips  32  
 c. Other

7. Fine sand material: Manufacturer, product name & mesh size  
 a. BB #7  
 b. Volume added 100 LBS ft<sup>3</sup>

8. Filter pack material: Manufacturer, product name & mesh size  
 a. #40 Red Fli-T  
 b. Volume added 1100 LBS ft<sup>3</sup>

9. Well casing: Flush threaded PVC schedule 40  23  
 Flush threaded PVC schedule 80  24  
 Other

10. Screen material: Stainless Steel  
 a. Screen type: Factory cut  11  
 Continuous slot  01  
 Other

b. Manufacturer Johnson  
 c. Slot size: 0.010 in.  
 d. Slotted length: 20 ft.

11. Backfill material (below filter pack): None  14  
 Other

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [Signature] Firm Cascade Drilling LP

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <i>WRR Environmental Services</i>	County Name <i>Eau Claire</i>	Well Name <i>RW-12</i>
Facility License, Permit or Monitoring Number	County Code <i>18</i>	Wis. Unique Well Number <i>VQ691</i>
		DNR Well ID Number _____

1. Can this well be purged dry?  Yes  No

2. Well development method

- surged with bailer and bailed  41
- surged with bailer and pumped  61
- surged with block and bailed  42
- surged with block and pumped  62
- surged with block, bailed and pumped  70
- compressed air  20
- bailed only  10
- pumped only  51
- pumped slowly  50
- Other \_\_\_\_\_

3. Time spent developing well 285 min.

4. Depth of well (from top of well casing) 53.0 ft.

5. Inside diameter of well 6.0 in.

6. Volume of water in filter pack and well casing \_\_\_\_\_ gal.

7. Volume of water removed from well 330.0 gal.

8. Volume of water added (if any) \_\_\_\_\_ gal.

9. Source of water added \_\_\_\_\_

10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>15.0</u> ft.	_____ ft.
Date	b. <u>08/04/2017</u> m m d d y y y y	<u>08/04/2017</u> m m d d y y y y
Time	c. <u>10:45</u> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<u>3:30</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>cloudy BRN</u>	Clear <input checked="" type="checkbox"/> 20 Turbid <input type="checkbox"/> 25 (Describe) <u>cloudy/clear</u>

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids \_\_\_\_\_ mg/l \_\_\_\_\_ mg/l

15. COD \_\_\_\_\_ mg/l \_\_\_\_\_ mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Mark Last Name: Diermaier

Firm: Cascade Drilling LP

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Facility/Firm: WRR Environmental Services

Street: 5200 Ryder Road

City/State/Zip: Eau Claire, WI 54701

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: [Signature]

Print Name: Lawrence Eidman

Firm: Cascade Drilling LP

NOTE: See instructions for more information including a list of county codes and well type codes.


Route To: Watershed/Wastewater  Waste Management   
Remediation/Revelpment  Other

Page 1 of 1

Facility/Project Name <b>WRR Environmental Services</b>			License/Permit/Monitoring Number		Boring Number <b>RW-13</b>
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: <b>Mark</b> Last Name: <b>Biermaier</b>			Date Drilling Started <b>08/03/2012</b> m m d d y y y y	Date Drilling Completed <b>08/03/2012</b> m m d d y y y y	Drilling Method <b>Sonic</b>
Firm: <b>Cascade Drilling LP</b>			Final Static Water Level Feet MSL		Surface Elevation Feet MSL
WI Unique Well No. <b>VQ590</b>	DNR Well ID No.	Well Name <b>RW-13</b>	Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/> State Plane <b>91.458352 W</b> N. <b>91.458352 W</b>		Borehole Diameter <b>10"</b> inches
Local Grid Location SE 1/4 of SW 1/4 of Section <b>3</b> . T <b>26</b> N, R <b>9W</b>			Lat <b>0</b> ' "	Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County <b>Eau Claire</b>	County Code <b>18</b>	Civil Town/City/ or Village <b>Eau Claire</b>	

Sample Number and Type	Length Alt. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PMD/FID	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			6"	Topsoil											
			6"	Brown sand											
			6"												
			6"	Brown sand some silt occ clay lens											
			6"												

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm **Cascade Drilling LP**

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Facility/Project Name <u>WRR Environmental Services</u>	Local Grid Location of Well <u>44.756376 N. 91.458358 E.</u>	Well Name <u>RW-13</u>
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated) or Well Location Lat. _____ Long. _____ or _____	Wis. Unique Well No. <u>VA590</u> DNR Well ID No. _____
Facility ID	St. Plane _____ ft. N. _____ ft. E. S/C/N	Date Well Installed <u>08/22/07</u> m m d d y y y y
Type of Well Well Code <u>261EW</u>	Section Location of Waste/Source <u>SE 1/4 of SW 1/4 of Sec. 3 T. 26 N. R. 9</u>	Well Installed By: Name (first, last) and Firm <u>Mark Bejames</u> <u>Cascade Drilling</u>
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	

A. Protective pipe, top elevation \_\_\_\_\_ ft. MSL  
 B. Well casing, top elevation 5 ft. MSL  
 C. Land surface elevation \_\_\_\_\_ ft. MSL  
 D. Surface seal, bottom \_\_\_\_\_ ft. MSL or 36 ft.

12. USCS classification of soil near screen:  
 GP  GM  GC  OW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

13. Sieve analysis performed?  Yes  No

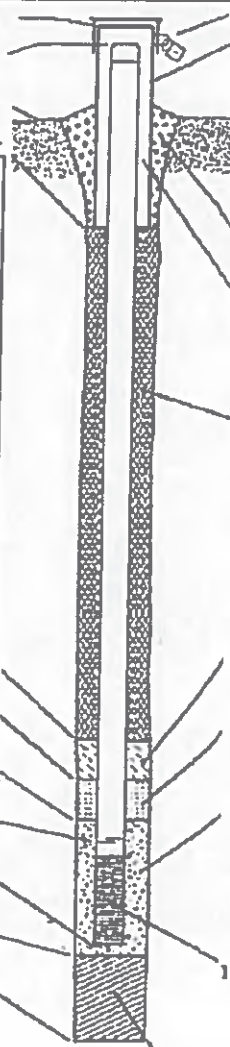
14. Drilling method used: Rotary  50  
 Hollow Stem Auger  41  
Sonic Other

15. Drilling fluid used: Water  02 Air  01  
 Drilling Mud  03 None  99

16. Drilling additives used?  Yes  No

Describe \_\_\_\_\_

17. Source of water (attach analysis, if required): \_\_\_\_\_



- Cap and lock?  Yes  No
- Protective cover pipe:
  - Inside diameter: 8 in.
  - Length: 3 ft.
  - Material: Steel  04  
Other
  - Additional protection?  Yes  No  
If yes, describe: Raspen Part
- Surface seal: Bentonite  30  
Concrete  01  
Other
- Material between well casing and protective pipe: Bentonite  30  
Other
- Annular space seal:
  - Granular/Chipped Bentonite  33
  - Lbs/gal mud weight ... Bentonite-sand slurry  35
  - Lbs/gal mud weight ... Bentonite slurry  31
  - % Bentonite ... Bentonite-cement grout  50
  - 700 LBS Ft<sup>3</sup> volume added for any of the above
  - How installed: Tremie  01  
Tremie pumped  02  
Gravity  08
- Bentonite seal:
  - Bentonite granules  33
  - 1/4 in.  3/8 in.  1/2 in. Bentonite chips  32
  - Other
- Fine sand material: Manufacturer, product name & mesh size
  - BB #7
  - Volume added 75 LBS ft<sup>3</sup>
- Filter pack material: Manufacturer, product name & mesh size
  - #40 Red Flint
  - Volume added 1000 FT ft<sup>3</sup>
- Well casing: Flush threaded PVC schedule 40  23  
 Flush threaded PVC schedule 80  24  
 Other
- Screen material: Stainless
  - Screen type: Factory cut  11  
 Continuous slot  01  
 Other
  - Manufacturer Johnson
  - Slot size: 0.010 in.
  - Slotted length: 20 ft.
- Backfill material (below filter pack): None  14  
 Other

E. Bentonite seal, top \_\_\_\_\_ ft. MSL or 05 ft.  
 F. Fine sand, top \_\_\_\_\_ MSL or 36 ft.  
 G. Filter pack, top \_\_\_\_\_ ft. MSL or 38 ft.  
 H. Screen joint, top \_\_\_\_\_ ft. MSL or 40 ft.  
 I. Well bottom \_\_\_\_\_ ft. MSL or 63 ft.  
 J. Filter pack, bottom \_\_\_\_\_ ft. MSL or 64 ft.  
 K. Borehole, bottom \_\_\_\_\_ ft. MSL or 64 ft.  
 L. Borehole, diameter 10 in.  
 M. O.D. well casing 10.5 in.  
 N. I.D. well casing 6 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
 Signature [Signature] Firm Cascade Drilling LP

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <u>WRR Environmental Services</u>	County Name <u> Eau Claire</u>	Well Name <u>RW-13</u>
Facility License, Permit or Monitoring Number	County Code <u>18</u>	Wis. Unique Well Number <u>VQ590</u>
		DNR Well ID Number _____

1. Can this well be purged dry?  Yes  No

2. Well development method
- surged with bailer and bailed  41
  - surged with bailer and pumped  61
  - surged with block and bailed  42
  - surged with block and pumped  62
  - surged with block, bailed and pumped  70
  - compressed air  20
  - bailed only  10
  - pumped only  51
  - pumped slowly  50
  - Other \_\_\_\_\_

3. Time spent developing well 240 min.

4. Depth of well (from top of well casing) 68.0 ft.

5. Inside diameter of well 6.00 in.

6. Volume of water in filter pack and well casing \_\_\_\_\_ gal.

7. Volume of water removed from well 920.0 gal.

8. Volume of water added (if any) \_\_\_\_\_ gal.

9. Source of water added \_\_\_\_\_

10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

17. Additional comments on development:

N 44.756376  
W 91.458352

11. Depth to Water Before Development After Development

(from top of well casing) a. 12.10 ft. \_\_\_\_\_ ft.

Date b. 08/02/2017 08/03/2017  
m m d d y y y y m m d d y y y y

Time c. 3:15  a.m.  p.m. 6:15  a.m.  p.m.

12. Sediment in well bottom \_\_\_\_\_ inches \_\_\_\_\_ inches

13. Water clarity Clear  10 Clear  20  
Turbid  15 Turbid  25  
(Describe) Bar, Cloudy cloudy/clear

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended \_\_\_\_\_ mg/l \_\_\_\_\_ mg/l  
solids

15. COD \_\_\_\_\_ mg/l \_\_\_\_\_ mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Mark Last Name: Biermaier

Firm: Cascade Drilling

Name and Address of Facility Contact /Owner/Responsible Party

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_  
Name: \_\_\_\_\_

Facility/Firm: WRR Environmental Services

Street: 5200 Ryder Road

City/State/Zip: Eau Claire, WI 54701

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: [Signature]

Print Name: Lawrence Erdman

Firm: Cascade Drilling LP

NOTE: See instructions for more information including a list of county codes and well type codes.

Route To: Watershed/Wastewater  Waste Management   
Remediation/Revelopment  Other

Page 6 of 6

Facility/Project Name <u>WRR Environmental Services</u>			License/Permit/Monitoring Number		Boring Number <u>SVE-4</u>
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: <u>Mark</u> Last Name: <u>Bicmoier</u> Firm: <u>Cascade Drilling LP</u>			Date Drilling Started <u>08/12/2012</u> m m d d y y y y	Date Drilling Completed <u>08/01/2012</u> m m d d y y y y	Drilling Method <u>Sonic</u>
WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter <u>8</u> inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/> State Plane <u>44252438</u> N. <u>91.958007</u> W. <u>SE</u> 1/4 of <u>SW</u> 1/4 of Section <u>3</u> , T <u>26</u> N, R <u>9W</u>			Lat <u>0</u> ' " Long <u>0</u> ' "	Local Grid Location Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County <u>Eau Claire</u>	County Code <u>18</u>	Civil Town/City/ or Village <u>Eau Claire WF</u>	

Sample Number and Type	Length Alt. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	M/D/FID	Soil Properties					ROD/ Comments	
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			<u>4"</u>	<u>Blk Top</u>											
			<u>4' 19"</u>	<u>Brown Sand Some silt</u>											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [Signature] Firm Cascade Drilling LP

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Facility/Project Name: WRR Environmental Services  
 Local Grid Location of Well: 44.257438 ft. N. 91.458007 ft. E.  W.  S.  
 Facility License, Permit or Monitoring No.: \_\_\_\_\_  
 Local Grid Origin (estimated) or Well Location: \_\_\_\_\_  
 Lat. \_\_\_\_\_ Long. \_\_\_\_\_  
 Facility ID: \_\_\_\_\_  
 St. Plane \_\_\_\_\_ ft. N. \_\_\_\_\_ ft. E. S/C/N \_\_\_\_\_  
 Type of Well: \_\_\_\_\_  
 Section Location of Waste/Source: SE 1/4 of SW 1/4 of Sec. 3, T. 26 N. R. 9  E.  W.  
 Well Code: 5715V  
 Location of Well Relative to Waste/Source:  u Upgradient  s Sidegradient  d Downgradient  n Not Known  
 Gov. Lot Number: \_\_\_\_\_  
 Distance from Waste/Source: \_\_\_\_\_ ft. Apply  Enf. Stds.  
 Well Name: SVE-4  
 Wis. Unique Well No. \_\_\_\_\_ DNR Well ID No. \_\_\_\_\_  
 Date Well Installed: 081012017  
 Well Installed By: Name (first, last) and Firm: Mark Biermaier  
Cascade Drilling LP

A. Protective pipe, top elevation: 3 ft. MSL  
 B. Well casing, top elevation: \_\_\_\_\_ ft. MSL  
 C. Land surface elevation: \_\_\_\_\_ ft. MSL  
 D. Surface seal, bottom: \_\_\_\_\_ ft. MSL or 6 ft.  
 12. USCS classification of soil near screen:  
 OP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock   
 13. Sieve analysis performed?  Yes  No  
 14. Drilling method used: Rotary  50  
 Hollow Stem Auger  41  
 Other  \_\_\_\_\_  
 15. Drilling fluid used: Water  02 Air  01  
 Drilling Mud  03 None  99  
 16. Drilling additives used?  Yes  No  
 Describe: \_\_\_\_\_  
 17. Source of water (attach analysis, if required): \_\_\_\_\_



1. Cap and lock?  Yes  No  
 2. Protective cover pipe:  
 a. Inside diameter: 6 in.  
 b. Length: 4 ft.  
 c. Material: Steel  04  
 Other  \_\_\_\_\_  
 d. Additional protection?  Yes  No  
 If yes, describe: Barrier Post  
 3. Surface seal:  
Sand  
 Bentonite  30  
 Concrete  01  
 Other  \_\_\_\_\_  
 4. Material between well casing and protective pipe:  
Sand  
 Bentonite  30  
 Other  \_\_\_\_\_  
 5. Annular space seal:  
 a. Granular/Chipped Bentonite  33  
 b. \_\_\_\_\_ Lbs/gal mud weight... Bentonite-sand slurry  35  
 c. \_\_\_\_\_ Lbs/gal mud weight... Bentonite slurry  31  
 d. \_\_\_\_\_ % Bentonite... Bentonite-cement grout  50  
 e. 30 LBS ft<sup>3</sup> volume added for any of the above  
 f. How installed: Tremie  01  
 Tremie pumped  02  
 Gravity  08  
 6. Bentonite seal:  
 a. Bentonite granules  33  
 b.  1/4 in.  3/8 in.  1/2 in. Bentonite chips  32  
 c. \_\_\_\_\_ Other  \_\_\_\_\_  
 7. Fine sand material: Manufacturer, product name & mesh size  
BB #7  
 b. Volume added 10 LBS ft<sup>3</sup>  
 8. Filter pack material: Manufacturer, product name & mesh size  
#40 Red Flint  
 b. Volume added 400 LBS ft<sup>3</sup>  
 9. Well casing: Flush threaded PVC schedule 40  23  
 Flush threaded PVC schedule 80  24  
 Other  \_\_\_\_\_  
 10. Screen material: PVC  
 a. Screen type: Factory cut  11  
 Continuous slot  01  
 Other  \_\_\_\_\_  
 b. Manufacturer Johnson  
 c. Slot size: 0.010 in.  
 d. Slotted length: 15 ft.  
 11. Backfill material (below filter pack): None  14  
 Other  \_\_\_\_\_

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
 Signature: [Signature] Firm: Cascade Drilling LP

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route To: Watershed/Wastewater  Waste Management   
Remediation/Revelpoment  Other

Page 1 of 1

Facility/Project Name <i>WRR Environmental Services</i>			License/Permit/Monitoring Number		Boring Number <i>SVE-5</i>
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: <i>Mark</i> Last Name: <i>Bicmoier</i>			Date Drilling Started <i>08/01/2017</i> m m d d y y y y	Date Drilling Completed <i>08/01/2017</i> m m d d y y y y	Drilling Method <i>Sonic</i>
Firm: <i>Cascade Drilling LP</i>			Final Static Water Level Feet MSL		Surface Elevation Feet MSL
WI Unique Well No.	DNR Well ID No.	Well Name <i>SVE-5</i>	Borehole Diameter <i>8</i> inches		
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/> State Plane <i>49.756917</i> N <i>91.458504</i> W <i>SE</i> 1/4 of <i>SW</i> 1/4 of Section <i>3</i> , T <i>26</i> N, R <i>9</i> W			Local Grid Location Lat <i>0</i> ' " <input type="checkbox"/> N <input type="checkbox"/> E Long <i>0</i> ' " <input type="checkbox"/> S <input type="checkbox"/> W		
Facility ID		County <i>Fau Claire</i>	County Code <i>18</i>	Civil Town/City/ or Village <i>Fau Claire</i>	

Number and Type	Length Alt. & Recovered (in)	Blow Counts	Depth in Feet (Before ground out (ft))	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	MD/FID	Soil Properties					ROD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			<i>4'</i>	<i>Black Top</i>										
			<i>4'</i> <i>1'</i> <i>19'</i>	<i>Brown Sand Sand Silt</i>										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *[Signature]* Firm *Cascade Drilling LP*

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Facility/Project Name <i>WRP Eau Claire</i>	Local Grid Location of Well <i>44 256919</i> ft. <input type="checkbox"/> N. <input checked="" type="checkbox"/> S. <i>91.458504</i> ft. <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Well Name <i>SVE-5</i>
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/> ) or Well Location Lat. _____ "Long. _____ or _____	Wis. Unique Well No.   DNR Well ID No.
Facility ID	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed <i>08/01/2012</i> m m d d y y y y
Type of Well Well Code <i>571SV</i>	Section Location of Waste/Source <i>SE 1/4 of SW 1/4 of Sec. 3 T. 26 N. R. 9</i> <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Well Installed By: Name (first, last) and Firm <i>Mark Biermaier</i> <i>Cascade Drilling LP</i>
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number _____

A. Protective pipe, top elevation _____ 3' ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation _____ ft. MSL	2. Protective cover pipe: a. Inside diameter: _____ 6 in. b. Length: _____ 9 ft. c. Material: _____ Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>
C. Land surface elevation _____ ft. MSL	d. Additional protection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: <i>Bumper Part</i>
D. Surface seal, bottom _____ ft. MSL or _____ ft.	3. Surface seal: _____ <i>Sand</i> Bentonite <input type="checkbox"/> 30 Concrete <input type="checkbox"/> 01 Other <input checked="" type="checkbox"/>
12. USCS classification of soil near screens: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	4. Material between well casing and protective pipe: _____ <i>Sand</i> Bentonite <input type="checkbox"/> 30 Other <input checked="" type="checkbox"/>
13. Sieve analysis performed? <input type="checkbox"/> Yes <input type="checkbox"/> No	5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 33 b. _____ Lbs/gal mud weight ... Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight ... Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite ... Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft <sup>3</sup> volume added for any of the above
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input type="checkbox"/> 41 Other <input type="checkbox"/>	f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input checked="" type="checkbox"/> 08
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input type="checkbox"/> 99	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input type="checkbox"/> 32 c. _____ Other <input type="checkbox"/>
16. Drilling additives used? <input type="checkbox"/> Yes <input type="checkbox"/> No	7. Fine sand material: Manufacturer, product name & mesh size a. <i>BB #7</i> b. Volume added <i>10 LBS</i> ft <sup>3</sup>
Describe _____	8. Filter pack material: Manufacturer, product name & mesh size a. <i>#40 Red Flint</i> b. Volume added <i>100 LBS</i> ft <sup>3</sup>
17. Source of water (attach analysis, if required):	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
E. Bentonite seal, top _____ ft. MSL or _____ 6" ft.	10. Screen material: <i>PVC</i> a. Screen type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
F. Fine sand, top _____ ft. MSL or _____ 3.5 ft.	b. Manufacturer <i>Johnson</i> c. Slot size: _____ 0.010 in. d. Slotted length: _____ 15 ft.
G. Filter pack, top _____ ft. MSL or _____ 3' ft.	11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 14 Other <input type="checkbox"/>
H. Screen joint, top _____ ft. MSL or _____ 3.5 ft.	
I. Well bottom _____ ft. MSL or _____ 18.5 ft.	
J. Filter pack, bottom _____ ft. MSL or _____ 19 ft.	
K. Borehole, bottom _____ ft. MSL or _____ 19 ft.	
L. Borehole, diameter _____ 8" in.	
M. O.D. well casing _____ in.	
N. I.D. well casing _____ 4 in.	

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
Signature *[Signature]* Firm *Cascade Drilling LP*

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route To: Watershed/Wastewater  Waste Management   
Remediation/Revelpoment  Other

Page 1 of 1

Facility/Project Name <b>WRR Environmental Services</b>			License/Permit/Monitoring Number		Boring Number <b>W-34</b>
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: <b>Mark</b> Last Name: <b>Biermaier</b>			Date Drilling Started <b>07/31/2017</b> m m d d y y y y	Date Drilling Completed <b>02/13/2017</b> m m d d y y y y	Drilling Method <b>Sonic</b>
Firm: <b>Cascade Drilling LP</b>			Final Static Water Level Feet MSL		Surface Elevation Feet MSL
WI Unique Well No. <b>VQ597</b>	DNR Well ID No.	Well Name <b>W-34</b>	Borehole Diameter <b>6</b> inches		
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/> Static Plane <u>N</u> <u>E</u>			Local Grid Location Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
SE 1/4 of SW 1/4 of Section <b>3</b> T <b>26</b> N. R <b>9</b> W			Lat <u>0</u> ' <u>0</u> "		Long <u>0</u> ' <u>0</u> "
Facility ID		County <b>Eau Claire</b>	County Code <b>18</b>	Civil Town/City/ or Village <b>Eau Claire</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			4'	Black Top											
			4'	F- Brown Sand											
			1'												
			23'												

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm **Cascade Drilling LP**

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Facility/Project Name  
**WRR Environmental Services**

Local Grid Location of Well  
**44257457** ft.  N. **91.457842** ft.  E.  W.

Well Name  
**W-34**

Facility License, Permit or Monitoring No.

Local Grid Origin  (estimated: ) or Well Location

Wis. Unique Well No. **VQ592** DNR Well ID No.

Facility ID

St. Plane \_\_\_\_\_ ft. N. \_\_\_\_\_ ft. E. S/C/N

Date Well Installed  
**02/11/2017**  
m m d d y y v v

Type of Well  
Well Code **11, MW**

Section Location of Waste/Source  
1/4 of \_\_\_\_\_ 1/4 of Sec. \_\_\_\_\_ T. \_\_\_\_\_ N, R. \_\_\_\_\_  E  W

Well Installed By: Name (first, last) and Firm  
**Mark Biermaier**

Distance from Waste/Source \_\_\_\_\_ ft.

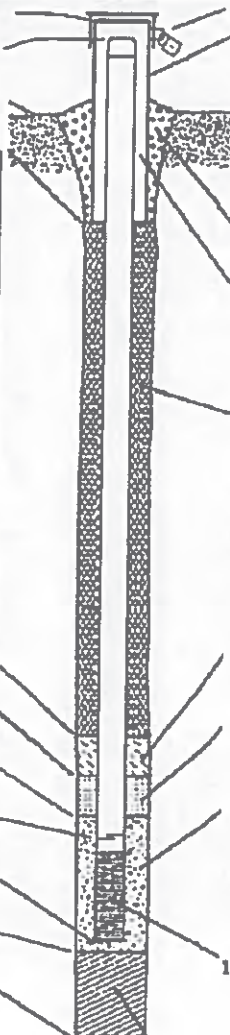
Enf. Stds. Apply

Location of Well Relative to Waste/Source  
u  Upgradient s  Sidegradient  
d  Downgradient n  Not Known

Gov. Lot Number

**Cascade Drilling LP**

- A. Protective pipe, top elevation ----- **2.5** ft. MSL
- B. Well casing, top elevation ----- ft. MSL
- C. Land surface elevation ----- ft. MSL
- D. Surface seal, bottom ----- ft. MSL or **6"** ft.



- 1. Cap and lock?  Yes  No
- 2. Protective cover pipe:
  - a. Inside diameter: **1** in.
  - b. Length: **7** ft.
  - c. Material: Steel  04 Other
  - d. Additional protection?  Yes  No  
If yes, describe: **Draper post**
- 3. Surface seal: Bentonite  30 Concrete  01 Other
- 4. Material between well casing and protective pipe: Bentonite  30 Other  **Sand**
- 5. Annular space seal:
  - a. Granular/Chipped Bentonite  33
  - b. \_\_\_\_\_ Lbs/gal mud weight... Bentonite-sand slurry  35
  - c. \_\_\_\_\_ Lbs/gal mud weight... Bentonite slurry  31
  - d. \_\_\_\_\_ % Bentonite... Bentonite-cement grout  50
  - e. \_\_\_\_\_ Ft<sup>3</sup> volume added for any of the above
  - f. How installed: Tremie  01 Tremie pumped  02 Gravity  08
- 6. Bentonite seal:
  - a. Bentonite granules  33
  - b.  1/4 in.  3/8 in.  1/2 in. Bentonite chips  32
  - c. **75 lbs** Other
- 7. Fine sand material: Manufacturer, product name & mesh size
  - a. **BB # 7**
  - b. Volume added **10 lbs** ft<sup>3</sup>
- 8. Filter pack material: Manufacturer, product name & mesh size
  - a. **#40 Red Flint**
  - b. Volume added **400 lbs** ft<sup>3</sup>
- 9. Well casing: Flush threaded PVC schedule 40  23 Flush threaded PVC schedule 80  24 Other
- 10. Screen material: **PVC**
  - a. Screen type: Factory cut  11 Continuous slot  01 Other
  - b. Manufacturer **Johnson**
  - c. Slot size: **0.012** in.
  - d. Slotted length: **15** ft.
- 11. Backfill material (below filter pack): None  14 Other

- 12. USCS classification of soil near screen:  
GP  GM  GC  OW  SW  SP   
SM  SC  ML  MH  CL  CH   
Bedrock
- 13. Sieve analysis performed?  Yes  No
- 14. Drilling method used: Rotary  50  
Hollow Stem Auger  41  
Other
- 15. Drilling fluid used: Water  02 Air  01  
Drilling Mud  03 None  99
- 16. Drilling additives used?  Yes  No  
Describe \_\_\_\_\_
- 17. Source of water (attach analysis, if required):  
\_\_\_\_\_

- E. Bentonite seal, top ----- ft. MSL or **6"** ft.
- F. Fine sand, top ----- ft. MSL or **6'** ft.
- G. Filter pack, top ----- ft. MSL or **6.5'** ft.
- H. Screen joint, top ----- ft. MSL or **7'** ft.
- I. Well bottom ----- ft. MSL or **22'** ft.
- J. Filter pack, bottom ----- ft. MSL or **23'** ft.
- K. Borehole, bottom ----- ft. MSL or **23'** ft.
- L. Borehole, diameter **6"** in.
- M. O.D. well casing ----- in.
- N. I.D. well casing **2"** in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *[Signature]*

Firm **Cascade Drilling LP**

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

**ATTACHMENT B**

**LAB REPORTS AND CHAIN-OF-CUSTODY RECORDS FOR PILOT TEST SAMPLES**

August 18, 2017

The Analytical Results & QA/QC  
Data included with this report were  
reviewed and approved by AWM  
on 08/18/17.

Tony Miller  
Gannett Fleming  
8025 Excelsior Drive  
Madison, WI 53717

RE: Project: 55929.005 WRR  
Pace Project No.: 40154528

Dear Tony Miller:

Enclosed are the analytical results for sample(s) received by the laboratory on August 05, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Chelsea Payne, Gannett Fleming Inc.



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 55929.005 WRR

Pace Project No.: 40154528

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 55929.005 WRR

Pace Project No.: 40154528

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40154528001	W-34	Water	08/01/17 15:45	08/05/17 10:30
40154528002	RW-13	Water	08/03/17 13:10	08/05/17 10:30
40154528003	RW-12	Water	08/04/17 14:55	08/05/17 10:30
40154528004	TRIP BLANK	Water	08/04/17 00:00	08/05/17 10:30

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### SAMPLE ANALYTE COUNT

Project: 55929.005 WRR

Pace Project No.: 40154528

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40154528001	W-34	EPA 8015B Modified	ALD	3
		EPA 6010	DLB	1
		EPA 8260	MDS	69
		EPA 300.0	HMB	1
		EPA 310.2	DAW	1
40154528002	RW-13	EPA 8260	MDS	69
40154528003	RW-12	EPA 8260	MDS	69
40154528004	TRIP BLANK	EPA 8260	MDS	69

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### SUMMARY OF DETECTION

Project: 55929.005 WRR

Pace Project No.: 40154528

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>40154528001</b>	<b>W-34</b>					
EPA 8015B Modified	Ethane	0.76J	ug/L	5.6	08/11/17 08:48	
EPA 8015B Modified	Ethene	0.57J	ug/L	5.0	08/11/17 08:48	
EPA 6010	Iron, Dissolved	19400	ug/L	100	08/16/17 16:53	
EPA 8260	1,1,1-Trichloroethane	30900	ug/L	250	08/10/17 20:43	
EPA 8260	1,1,2-Trichloroethane	937	ug/L	250	08/10/17 20:43	
EPA 8260	1,1-Dichloroethane	994	ug/L	250	08/10/17 20:43	
EPA 8260	1,1-Dichloroethene	2440	ug/L	250	08/10/17 20:43	
EPA 8260	1,2-Dichloroethane	135J	ug/L	250	08/10/17 20:43	
EPA 8260	1,2-Dichloropropane	367	ug/L	250	08/10/17 20:43	
EPA 8260	Methylene Chloride	704	ug/L	250	08/10/17 20:43	
EPA 8260	Tetrachloroethene	3190	ug/L	250	08/10/17 20:43	
EPA 8260	Trichloroethene	17900	ug/L	250	08/10/17 20:43	
EPA 8260	cis-1,2-Dichloroethene	23800	ug/L	250	08/10/17 20:43	
EPA 300.0	Sulfate	53.4	mg/L	15.0	08/15/17 20:35	
EPA 310.2	Alkalinity, Total as CaCO3	76.8	mg/L	23.5	08/11/17 11:28	
<b>40154528002</b>	<b>RW-13</b>					
EPA 8260	1,1,1-Trichloroethane	656	ug/L	200	08/10/17 21:06	
EPA 8260	1,1,2-Trichloroethane	89.6J	ug/L	200	08/10/17 21:06	
EPA 8260	1,1-Dichloroethane	966	ug/L	200	08/10/17 21:06	
EPA 8260	1,1-Dichloroethene	176J	ug/L	200	08/10/17 21:06	
EPA 8260	1,2,4-Trimethylbenzene	227	ug/L	200	08/10/17 21:06	
EPA 8260	2-Butanone (MEK)	5560	ug/L	4000	08/10/17 21:06	
EPA 8260	2-Propanol	16100J	ug/L	50000	08/10/17 21:06	
EPA 8260	4-Methyl-2-pentanone (MIBK)	3080	ug/L	1000	08/10/17 21:06	
EPA 8260	Acetone	39100	ug/L	4000	08/10/17 21:06	
EPA 8260	Ethylbenzene	3880	ug/L	200	08/10/17 21:06	
EPA 8260	Methylene Chloride	514	ug/L	200	08/10/17 21:06	
EPA 8260	Tetrachloroethene	104J	ug/L	200	08/10/17 21:06	
EPA 8260	Toluene	47500	ug/L	200	08/10/17 21:06	
EPA 8260	Vinyl chloride	245	ug/L	200	08/10/17 21:06	
EPA 8260	Xylene (Total)	15500	ug/L	600	08/10/17 21:06	
EPA 8260	cis-1,2-Dichloroethene	5970	ug/L	200	08/10/17 21:06	
EPA 8260	m&p-Xylene	11800	ug/L	400	08/10/17 21:06	
EPA 8260	o-Xylene	3620	ug/L	200	08/10/17 21:06	
<b>40154528003</b>	<b>RW-12</b>					
EPA 8260	1,1,1-Trichloroethane	1800	ug/L	400	08/11/17 11:36	
EPA 8260	1,1-Dichloroethane	353J	ug/L	400	08/11/17 11:36	
EPA 8260	2-Butanone (MEK)	16400	ug/L	8000	08/11/17 11:36	
EPA 8260	2-Propanol	163000	ug/L	100000	08/11/17 11:36	
EPA 8260	4-Methyl-2-pentanone (MIBK)	10200	ug/L	2000	08/11/17 11:36	
EPA 8260	Acetone	69300	ug/L	8000	08/11/17 11:36	
EPA 8260	Ethylbenzene	1730	ug/L	400	08/11/17 11:36	
EPA 8260	Methylene Chloride	1520	ug/L	400	08/11/17 11:36	
EPA 8260	Toluene	38200	ug/L	400	08/11/17 11:36	
EPA 8260	Trichloroethene	1620	ug/L	400	08/11/17 11:36	
EPA 8260	Xylene (Total)	7290	ug/L	1200	08/11/17 11:36	

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: 55929.005 WRR

Pace Project No.: 40154528

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
<b>40154528003</b>	<b>RW-12</b>					
EPA 8260	cis-1,2-Dichloroethene	2180	ug/L	400	08/11/17 11:36	
EPA 8260	m&p-Xylene	5630	ug/L	800	08/11/17 11:36	
EPA 8260	o-Xylene	1660	ug/L	400	08/11/17 11:36	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40154528

**Sample: W-34**      **Lab ID: 40154528001**      Collected: 08/01/17 15:45      Received: 08/05/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Methane, Ethane, Ethene GCV</b>		Analytical Method: EPA 8015B Modified							
Ethane	0.76J	ug/L	5.6	0.58	1		08/11/17 08:48	74-84-0	
Ethene	0.57J	ug/L	5.0	0.52	1		08/11/17 08:48	74-85-1	
Methane	<1.4	ug/L	2.8	1.4	1		08/11/17 08:48	74-82-8	
<b>6010 MET ICP, Dissolved</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Iron, Dissolved	19400	ug/L	100	34.0	1	08/16/17 08:36	08/16/17 16:53	7439-89-6	
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<45.1	ug/L	250	45.1	250		08/10/17 20:43	630-20-6	
1,1,1-Trichloroethane	30900	ug/L	250	125	250		08/10/17 20:43	71-55-6	
1,1,2,2-Tetrachloroethane	<62.3	ug/L	250	62.3	250		08/10/17 20:43	79-34-5	
1,1,2-Trichloroethane	937	ug/L	250	49.3	250		08/10/17 20:43	79-00-5	
1,1-Dichloroethane	994	ug/L	250	60.4	250		08/10/17 20:43	75-34-3	
1,1-Dichloroethene	2440	ug/L	250	103	250		08/10/17 20:43	75-35-4	
1,1-Dichloropropene	<110	ug/L	250	110	250		08/10/17 20:43	563-58-6	
1,2,3-Trichlorobenzene	<533	ug/L	1250	533	250		08/10/17 20:43	87-61-6	
1,2,3-Trichloropropane	<125	ug/L	250	125	250		08/10/17 20:43	96-18-4	
1,2,4-Trichlorobenzene	<552	ug/L	1250	552	250		08/10/17 20:43	120-82-1	
1,2,4-Trimethylbenzene	<125	ug/L	250	125	250		08/10/17 20:43	95-63-6	
1,2-Dibromo-3-chloropropane	<541	ug/L	1250	541	250		08/10/17 20:43	96-12-8	
1,2-Dibromoethane (EDB)	<44.4	ug/L	250	44.4	250		08/10/17 20:43	106-93-4	
1,2-Dichlorobenzene	<125	ug/L	250	125	250		08/10/17 20:43	95-50-1	
1,2-Dichloroethane	135J	ug/L	250	42.0	250		08/10/17 20:43	107-06-2	
1,2-Dichloropropane	367	ug/L	250	58.3	250		08/10/17 20:43	78-87-5	
1,3,5-Trimethylbenzene	<125	ug/L	250	125	250		08/10/17 20:43	108-67-8	
1,3-Dichlorobenzene	<125	ug/L	250	125	250		08/10/17 20:43	541-73-1	
1,3-Dichloropropane	<125	ug/L	250	125	250		08/10/17 20:43	142-28-9	
1,4-Dichlorobenzene	<125	ug/L	250	125	250		08/10/17 20:43	106-46-7	
2,2-Dichloropropane	<121	ug/L	250	121	250		08/10/17 20:43	594-20-7	
2-Butanone (MEK)	<745	ug/L	5000	745	250		08/10/17 20:43	78-93-3	
2-Chlorotoluene	<125	ug/L	250	125	250		08/10/17 20:43	95-49-8	
2-Propanol	<6090	ug/L	62500	6090	250		08/10/17 20:43	67-63-0	
4-Chlorotoluene	<53.4	ug/L	250	53.4	250		08/10/17 20:43	106-43-4	
4-Methyl-2-pentanone (MIBK)	<535	ug/L	1250	535	250		08/10/17 20:43	108-10-1	
Acetone	<738	ug/L	5000	738	250		08/10/17 20:43	67-64-1	
Benzene	<125	ug/L	250	125	250		08/10/17 20:43	71-43-2	
Bromobenzene	<57.5	ug/L	250	57.5	250		08/10/17 20:43	108-86-1	
Bromochloromethane	<85.1	ug/L	250	85.1	250		08/10/17 20:43	74-97-5	
Bromodichloromethane	<125	ug/L	250	125	250		08/10/17 20:43	75-27-4	
Bromoform	<125	ug/L	250	125	250		08/10/17 20:43	75-25-2	
Bromomethane	<609	ug/L	1250	609	250		08/10/17 20:43	74-83-9	
Carbon tetrachloride	<125	ug/L	250	125	250		08/10/17 20:43	56-23-5	
Chlorobenzene	<125	ug/L	250	125	250		08/10/17 20:43	108-90-7	
Chloroethane	<93.6	ug/L	250	93.6	250		08/10/17 20:43	75-00-3	
Chloroform	<625	ug/L	1250	625	250		08/10/17 20:43	67-66-3	
Chloromethane	<125	ug/L	250	125	250		08/10/17 20:43	74-87-3	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40154528

**Sample: W-34**      **Lab ID: 40154528001**      Collected: 08/01/17 15:45      Received: 08/05/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b> Analytical Method: EPA 8260									
Dibromochloromethane	<125	ug/L	250	125	250		08/10/17 20:43	124-48-1	
Dibromomethane	<107	ug/L	250	107	250		08/10/17 20:43	74-95-3	
Dichlorodifluoromethane	<56.0	ug/L	250	56.0	250		08/10/17 20:43	75-71-8	
Diisopropyl ether	<125	ug/L	250	125	250		08/10/17 20:43	108-20-3	
Ethylbenzene	<125	ug/L	250	125	250		08/10/17 20:43	100-41-4	
Hexachloro-1,3-butadiene	<526	ug/L	1250	526	250		08/10/17 20:43	87-68-3	
Isopropylbenzene (Cumene)	<35.8	ug/L	250	35.8	250		08/10/17 20:43	98-82-8	
Methyl-tert-butyl ether	<43.6	ug/L	250	43.6	250		08/10/17 20:43	1634-04-4	
Methylene Chloride	704	ug/L	250	58.1	250		08/10/17 20:43	75-09-2	
Naphthalene	<625	ug/L	1250	625	250		08/10/17 20:43	91-20-3	
Styrene	<125	ug/L	250	125	250		08/10/17 20:43	100-42-5	
Tetrachloroethene	3190	ug/L	250	125	250		08/10/17 20:43	127-18-4	
Toluene	<125	ug/L	250	125	250		08/10/17 20:43	108-88-3	
Trichloroethene	17900	ug/L	250	82.7	250		08/10/17 20:43	79-01-6	
Trichlorofluoromethane	<46.2	ug/L	250	46.2	250		08/10/17 20:43	75-69-4	
Vinyl chloride	<43.9	ug/L	250	43.9	250		08/10/17 20:43	75-01-4	
Xylene (Total)	<375	ug/L	750	375	250		08/10/17 20:43	1330-20-7	
cis-1,2-Dichloroethene	23800	ug/L	250	64.0	250		08/10/17 20:43	156-59-2	
cis-1,3-Dichloropropene	<125	ug/L	250	125	250		08/10/17 20:43	10061-01-5	
m&p-Xylene	<250	ug/L	500	250	250		08/10/17 20:43	179601-23-1	
n-Butylbenzene	<125	ug/L	250	125	250		08/10/17 20:43	104-51-8	
n-Propylbenzene	<125	ug/L	250	125	250		08/10/17 20:43	103-65-1	
o-Xylene	<125	ug/L	250	125	250		08/10/17 20:43	95-47-6	
p-Isopropyltoluene	<125	ug/L	250	125	250		08/10/17 20:43	99-87-6	
sec-Butylbenzene	<547	ug/L	1250	547	250		08/10/17 20:43	135-98-8	
tert-Butylbenzene	<45.1	ug/L	250	45.1	250		08/10/17 20:43	98-06-6	
trans-1,2-Dichloroethene	<64.1	ug/L	250	64.1	250		08/10/17 20:43	156-60-5	
trans-1,3-Dichloropropene	<57.4	ug/L	250	57.4	250		08/10/17 20:43	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	106	%	67-130		250		08/10/17 20:43	1868-53-7	
Toluene-d8 (S)	98	%	70-130		250		08/10/17 20:43	2037-26-5	
4-Bromofluorobenzene (S)	84	%	61-130		250		08/10/17 20:43	460-00-4	
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Sulfate	53.4	mg/L	15.0	5.0	5		08/15/17 20:35	14808-79-8	
<b>310.2 Alkalinity</b> Analytical Method: EPA 310.2									
Alkalinity, Total as CaCO3	76.8	mg/L	23.5	7.0	1		08/11/17 11:28		

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40154528

**Sample: RW-13**      **Lab ID: 40154528002**      Collected: 08/03/17 13:10      Received: 08/05/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<36.1	ug/L	200	36.1	200		08/10/17 21:06	630-20-6	
1,1,1-Trichloroethane	656	ug/L	200	100	200		08/10/17 21:06	71-55-6	
1,1,2,2-Tetrachloroethane	<49.9	ug/L	200	49.9	200		08/10/17 21:06	79-34-5	
1,1,2-Trichloroethane	89.6J	ug/L	200	39.5	200		08/10/17 21:06	79-00-5	
1,1-Dichloroethane	966	ug/L	200	48.3	200		08/10/17 21:06	75-34-3	
1,1-Dichloroethene	176J	ug/L	200	82.0	200		08/10/17 21:06	75-35-4	
1,1-Dichloropropene	<88.2	ug/L	200	88.2	200		08/10/17 21:06	563-58-6	
1,2,3-Trichlorobenzene	<427	ug/L	1000	427	200		08/10/17 21:06	87-61-6	
1,2,3-Trichloropropane	<100	ug/L	200	100	200		08/10/17 21:06	96-18-4	
1,2,4-Trichlorobenzene	<442	ug/L	1000	442	200		08/10/17 21:06	120-82-1	
1,2,4-Trimethylbenzene	227	ug/L	200	100	200		08/10/17 21:06	95-63-6	
1,2-Dibromo-3-chloropropane	<433	ug/L	1000	433	200		08/10/17 21:06	96-12-8	
1,2-Dibromoethane (EDB)	<35.6	ug/L	200	35.6	200		08/10/17 21:06	106-93-4	
1,2-Dichlorobenzene	<100	ug/L	200	100	200		08/10/17 21:06	95-50-1	
1,2-Dichloroethane	<33.6	ug/L	200	33.6	200		08/10/17 21:06	107-06-2	
1,2-Dichloropropane	<46.6	ug/L	200	46.6	200		08/10/17 21:06	78-87-5	
1,3,5-Trimethylbenzene	<100	ug/L	200	100	200		08/10/17 21:06	108-67-8	
1,3-Dichlorobenzene	<100	ug/L	200	100	200		08/10/17 21:06	541-73-1	
1,3-Dichloropropane	<100	ug/L	200	100	200		08/10/17 21:06	142-28-9	
1,4-Dichlorobenzene	<100	ug/L	200	100	200		08/10/17 21:06	106-46-7	
2,2-Dichloropropane	<96.8	ug/L	200	96.8	200		08/10/17 21:06	594-20-7	
2-Butanone (MEK)	5560	ug/L	4000	596	200		08/10/17 21:06	78-93-3	
2-Chlorotoluene	<100	ug/L	200	100	200		08/10/17 21:06	95-49-8	
2-Propanol	16100J	ug/L	50000	4870	200		08/10/17 21:06	67-63-0	
4-Chlorotoluene	<42.7	ug/L	200	42.7	200		08/10/17 21:06	106-43-4	
4-Methyl-2-pentanone (MIBK)	3080	ug/L	1000	428	200		08/10/17 21:06	108-10-1	
Acetone	39100	ug/L	4000	591	200		08/10/17 21:06	67-64-1	
Benzene	<100	ug/L	200	100	200		08/10/17 21:06	71-43-2	
Bromobenzene	<46.0	ug/L	200	46.0	200		08/10/17 21:06	108-86-1	
Bromochloromethane	<68.1	ug/L	200	68.1	200		08/10/17 21:06	74-97-5	
Bromodichloromethane	<100	ug/L	200	100	200		08/10/17 21:06	75-27-4	
Bromoform	<100	ug/L	200	100	200		08/10/17 21:06	75-25-2	
Bromomethane	<487	ug/L	1000	487	200		08/10/17 21:06	74-83-9	
Carbon tetrachloride	<100	ug/L	200	100	200		08/10/17 21:06	56-23-5	
Chlorobenzene	<100	ug/L	200	100	200		08/10/17 21:06	108-90-7	
Chloroethane	<74.9	ug/L	200	74.9	200		08/10/17 21:06	75-00-3	
Chloroform	<500	ug/L	1000	500	200		08/10/17 21:06	67-66-3	
Chloromethane	<100	ug/L	200	100	200		08/10/17 21:06	74-87-3	
Dibromochloromethane	<100	ug/L	200	100	200		08/10/17 21:06	124-48-1	
Dibromomethane	<85.3	ug/L	200	85.3	200		08/10/17 21:06	74-95-3	
Dichlorodifluoromethane	<44.8	ug/L	200	44.8	200		08/10/17 21:06	75-71-8	
Diisopropyl ether	<100	ug/L	200	100	200		08/10/17 21:06	108-20-3	
Ethylbenzene	3880	ug/L	200	100	200		08/10/17 21:06	100-41-4	
Hexachloro-1,3-butadiene	<421	ug/L	1000	421	200		08/10/17 21:06	87-68-3	
Isopropylbenzene (Cumene)	<28.7	ug/L	200	28.7	200		08/10/17 21:06	98-82-8	
Methyl-tert-butyl ether	<34.8	ug/L	200	34.8	200		08/10/17 21:06	1634-04-4	

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### ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40154528

**Sample: RW-13**      **Lab ID: 40154528002**      Collected: 08/03/17 13:10      Received: 08/05/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>									
Analytical Method: EPA 8260									
Methylene Chloride	514	ug/L	200	46.5	200		08/10/17 21:06	75-09-2	
Naphthalene	<500	ug/L	1000	500	200		08/10/17 21:06	91-20-3	
Styrene	<100	ug/L	200	100	200		08/10/17 21:06	100-42-5	
Tetrachloroethene	104J	ug/L	200	100	200		08/10/17 21:06	127-18-4	
Toluene	47500	ug/L	200	100	200		08/10/17 21:06	108-88-3	
Trichloroethene	<66.1	ug/L	200	66.1	200		08/10/17 21:06	79-01-6	
Trichlorofluoromethane	<37.0	ug/L	200	37.0	200		08/10/17 21:06	75-69-4	
Vinyl chloride	245	ug/L	200	35.1	200		08/10/17 21:06	75-01-4	
Xylene (Total)	15500	ug/L	600	300	200		08/10/17 21:06	1330-20-7	
cis-1,2-Dichloroethene	5970	ug/L	200	51.2	200		08/10/17 21:06	156-59-2	
cis-1,3-Dichloropropene	<100	ug/L	200	100	200		08/10/17 21:06	10061-01-5	
m&p-Xylene	11800	ug/L	400	200	200		08/10/17 21:06	179601-23-1	
n-Butylbenzene	<100	ug/L	200	100	200		08/10/17 21:06	104-51-8	
n-Propylbenzene	<100	ug/L	200	100	200		08/10/17 21:06	103-65-1	
o-Xylene	3620	ug/L	200	100	200		08/10/17 21:06	95-47-6	
p-Isopropyltoluene	<100	ug/L	200	100	200		08/10/17 21:06	99-87-6	
sec-Butylbenzene	<437	ug/L	1000	437	200		08/10/17 21:06	135-98-8	
tert-Butylbenzene	<36.1	ug/L	200	36.1	200		08/10/17 21:06	98-06-6	
trans-1,2-Dichloroethene	<51.3	ug/L	200	51.3	200		08/10/17 21:06	156-60-5	
trans-1,3-Dichloropropene	<45.9	ug/L	200	45.9	200		08/10/17 21:06	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	108	%	67-130		200		08/10/17 21:06	1868-53-7	
Toluene-d8 (S)	100	%	70-130		200		08/10/17 21:06	2037-26-5	
4-Bromofluorobenzene (S)	97	%	61-130		200		08/10/17 21:06	460-00-4	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40154528

**Sample: RW-12**      **Lab ID: 40154528003**      Collected: 08/04/17 14:55      Received: 08/05/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<72.2	ug/L	400	72.2	400		08/11/17 11:36	630-20-6	
1,1,1-Trichloroethane	1800	ug/L	400	200	400		08/11/17 11:36	71-55-6	
1,1,2,2-Tetrachloroethane	<99.7	ug/L	400	99.7	400		08/11/17 11:36	79-34-5	
1,1,2-Trichloroethane	<79.0	ug/L	400	79.0	400		08/11/17 11:36	79-00-5	
1,1-Dichloroethane	353J	ug/L	400	96.6	400		08/11/17 11:36	75-34-3	
1,1-Dichloroethene	<164	ug/L	400	164	400		08/11/17 11:36	75-35-4	
1,1-Dichloropropene	<176	ug/L	400	176	400		08/11/17 11:36	563-58-6	
1,2,3-Trichlorobenzene	<853	ug/L	2000	853	400		08/11/17 11:36	87-61-6	
1,2,3-Trichloropropane	<200	ug/L	400	200	400		08/11/17 11:36	96-18-4	
1,2,4-Trichlorobenzene	<884	ug/L	2000	884	400		08/11/17 11:36	120-82-1	
1,2,4-Trimethylbenzene	<200	ug/L	400	200	400		08/11/17 11:36	95-63-6	
1,2-Dibromo-3-chloropropane	<866	ug/L	2000	866	400		08/11/17 11:36	96-12-8	
1,2-Dibromoethane (EDB)	<71.1	ug/L	400	71.1	400		08/11/17 11:36	106-93-4	
1,2-Dichlorobenzene	<200	ug/L	400	200	400		08/11/17 11:36	95-50-1	
1,2-Dichloroethane	<67.2	ug/L	400	67.2	400		08/11/17 11:36	107-06-2	
1,2-Dichloropropane	<93.2	ug/L	400	93.2	400		08/11/17 11:36	78-87-5	
1,3,5-Trimethylbenzene	<200	ug/L	400	200	400		08/11/17 11:36	108-67-8	
1,3-Dichlorobenzene	<200	ug/L	400	200	400		08/11/17 11:36	541-73-1	
1,3-Dichloropropane	<200	ug/L	400	200	400		08/11/17 11:36	142-28-9	
1,4-Dichlorobenzene	<200	ug/L	400	200	400		08/11/17 11:36	106-46-7	
2,2-Dichloropropane	<194	ug/L	400	194	400		08/11/17 11:36	594-20-7	
2-Butanone (MEK)	16400	ug/L	8000	1190	400		08/11/17 11:36	78-93-3	
2-Chlorotoluene	<200	ug/L	400	200	400		08/11/17 11:36	95-49-8	
2-Propanol	163000	ug/L	100000	9740	400		08/11/17 11:36	67-63-0	
4-Chlorotoluene	<85.5	ug/L	400	85.5	400		08/11/17 11:36	106-43-4	
4-Methyl-2-pentanone (MIBK)	10200	ug/L	2000	856	400		08/11/17 11:36	108-10-1	
Acetone	69300	ug/L	8000	1180	400		08/11/17 11:36	67-64-1	
Benzene	<200	ug/L	400	200	400		08/11/17 11:36	71-43-2	
Bromobenzene	<92.0	ug/L	400	92.0	400		08/11/17 11:36	108-86-1	
Bromochloromethane	<136	ug/L	400	136	400		08/11/17 11:36	74-97-5	
Bromodichloromethane	<200	ug/L	400	200	400		08/11/17 11:36	75-27-4	
Bromoform	<200	ug/L	400	200	400		08/11/17 11:36	75-25-2	
Bromomethane	<974	ug/L	2000	974	400		08/11/17 11:36	74-83-9	
Carbon tetrachloride	<200	ug/L	400	200	400		08/11/17 11:36	56-23-5	
Chlorobenzene	<200	ug/L	400	200	400		08/11/17 11:36	108-90-7	
Chloroethane	<150	ug/L	400	150	400		08/11/17 11:36	75-00-3	
Chloroform	<1000	ug/L	2000	1000	400		08/11/17 11:36	67-66-3	
Chloromethane	<200	ug/L	400	200	400		08/11/17 11:36	74-87-3	
Dibromochloromethane	<200	ug/L	400	200	400		08/11/17 11:36	124-48-1	
Dibromomethane	<171	ug/L	400	171	400		08/11/17 11:36	74-95-3	
Dichlorodifluoromethane	<89.7	ug/L	400	89.7	400		08/11/17 11:36	75-71-8	
Diisopropyl ether	<200	ug/L	400	200	400		08/11/17 11:36	108-20-3	
Ethylbenzene	1730	ug/L	400	200	400		08/11/17 11:36	100-41-4	
Hexachloro-1,3-butadiene	<842	ug/L	2000	842	400		08/11/17 11:36	87-68-3	
Isopropylbenzene (Cumene)	<57.3	ug/L	400	57.3	400		08/11/17 11:36	98-82-8	
Methyl-tert-butyl ether	<69.7	ug/L	400	69.7	400		08/11/17 11:36	1634-04-4	

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### ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40154528

**Sample: RW-12**      **Lab ID: 40154528003**      Collected: 08/04/17 14:55      Received: 08/05/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
Methylene Chloride	1520	ug/L	400	93.0	400		08/11/17 11:36	75-09-2	
Naphthalene	<1000	ug/L	2000	1000	400		08/11/17 11:36	91-20-3	
Styrene	<200	ug/L	400	200	400		08/11/17 11:36	100-42-5	
Tetrachloroethene	<200	ug/L	400	200	400		08/11/17 11:36	127-18-4	
Toluene	38200	ug/L	400	200	400		08/11/17 11:36	108-88-3	
Trichloroethene	1620	ug/L	400	132	400		08/11/17 11:36	79-01-6	
Trichlorofluoromethane	<74.0	ug/L	400	74.0	400		08/11/17 11:36	75-69-4	
Vinyl chloride	<70.2	ug/L	400	70.2	400		08/11/17 11:36	75-01-4	
Xylene (Total)	7290	ug/L	1200	600	400		08/11/17 11:36	1330-20-7	
cis-1,2-Dichloroethene	2180	ug/L	400	102	400		08/11/17 11:36	156-59-2	
cis-1,3-Dichloropropene	<200	ug/L	400	200	400		08/11/17 11:36	10061-01-5	
m&p-Xylene	5630	ug/L	800	400	400		08/11/17 11:36	179601-23-1	
n-Butylbenzene	<200	ug/L	400	200	400		08/11/17 11:36	104-51-8	
n-Propylbenzene	<200	ug/L	400	200	400		08/11/17 11:36	103-65-1	
o-Xylene	1660	ug/L	400	200	400		08/11/17 11:36	95-47-6	
p-Isopropyltoluene	<200	ug/L	400	200	400		08/11/17 11:36	99-87-6	
sec-Butylbenzene	<874	ug/L	2000	874	400		08/11/17 11:36	135-98-8	
tert-Butylbenzene	<72.1	ug/L	400	72.1	400		08/11/17 11:36	98-06-6	
trans-1,2-Dichloroethene	<103	ug/L	400	103	400		08/11/17 11:36	156-60-5	
trans-1,3-Dichloropropene	<91.8	ug/L	400	91.8	400		08/11/17 11:36	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	108	%	67-130		400		08/11/17 11:36	1868-53-7	
Toluene-d8 (S)	98	%	70-130		400		08/11/17 11:36	2037-26-5	
4-Bromofluorobenzene (S)	93	%	61-130		400		08/11/17 11:36	460-00-4	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40154528

**Sample: TRIP BLANK**      **Lab ID: 40154528004**      Collected: 08/04/17 00:00      Received: 08/05/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		08/10/17 14:50	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		08/10/17 14:50	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		08/10/17 14:50	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		08/10/17 14:50	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		08/10/17 14:50	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		08/10/17 14:50	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		08/10/17 14:50	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		08/10/17 14:50	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		08/10/17 14:50	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		08/10/17 14:50	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		08/10/17 14:50	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		08/10/17 14:50	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		08/10/17 14:50	594-20-7	
2-Butanone (MEK)	<3.0	ug/L	20.0	3.0	1		08/10/17 14:50	78-93-3	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	95-49-8	
2-Propanol	<24.3	ug/L	250	24.3	1		08/10/17 14:50	67-63-0	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		08/10/17 14:50	106-43-4	
4-Methyl-2-pentanone (MIBK)	<2.1	ug/L	5.0	2.1	1		08/10/17 14:50	108-10-1	
Acetone	<3.0	ug/L	20.0	3.0	1		08/10/17 14:50	67-64-1	
Benzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		08/10/17 14:50	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		08/10/17 14:50	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		08/10/17 14:50	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		08/10/17 14:50	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		08/10/17 14:50	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		08/10/17 14:50	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		08/10/17 14:50	75-71-8	
Diisopropyl ether	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	108-20-3	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		08/10/17 14:50	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		08/10/17 14:50	98-82-8	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		08/10/17 14:50	1634-04-4	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR  
Pace Project No.: 40154528

**Sample: TRIP BLANK**      **Lab ID: 40154528004**      Collected: 08/04/17 00:00      Received: 08/05/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		08/10/17 14:50	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		08/10/17 14:50	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	108-88-3	
Trichloroethene	<0.33	ug/L	1.0	0.33	1		08/10/17 14:50	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		08/10/17 14:50	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		08/10/17 14:50	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		08/10/17 14:50	1330-20-7	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		08/10/17 14:50	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		08/10/17 14:50	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		08/10/17 14:50	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		08/10/17 14:50	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		08/10/17 14:50	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		08/10/17 14:50	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		08/10/17 14:50	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	109	%	67-130		1		08/10/17 14:50	1868-53-7	
Toluene-d8 (S)	95	%	70-130		1		08/10/17 14:50	2037-26-5	
4-Bromofluorobenzene (S)	85	%	61-130		1		08/10/17 14:50	460-00-4	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40154528

QC Batch: 264273	Analysis Method: EPA 8015B Modified
QC Batch Method: EPA 8015B Modified	Analysis Description: Methane, Ethane, Ethene GCV
Associated Lab Samples: 40154528001	

METHOD BLANK: 1555366 Matrix: Water  
Associated Lab Samples: 40154528001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	<0.58	5.6	08/11/17 08:02	
Ethene	ug/L	<0.52	5.0	08/11/17 08:02	
Methane	ug/L	<1.4	2.8	08/11/17 08:02	

LABORATORY CONTROL SAMPLE & LCSD: 1555367

Parameter	Units	1555368									
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
Ethane	ug/L	53.6	52.7	52.9	98	99	80-120	0	20		
Ethene	ug/L	50	48.5	48.6	97	97	80-119	0	20		
Methane	ug/L	28.6	27.4	27.5	96	96	80-120	0	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1555707

Parameter	Units	1555708										
		40154789001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Ethane	ug/L	<0.58	53.6	53.6	52.5	51.3	98	96	79-120	2	20	
Ethene	ug/L	<0.52	50	50	48.8	47.3	98	95	78-119	3	20	
Methane	ug/L	<1.4	28.6	28.6	27.6	26.7	96	94	10-200	3	20	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40154528

QC Batch: 264719	Analysis Method: EPA 6010
QC Batch Method: EPA 3010	Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 40154528001	

METHOD BLANK: 1557380 Matrix: Water  
Associated Lab Samples: 40154528001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	<34.0	100	08/16/17 16:32	

LABORATORY CONTROL SAMPLE: 1557381

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	5000	5180	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1557382 1557383

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		40154508001	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Iron, Dissolved	ug/L	<34.0	5000	5000	5140	5150	102	103	75-125	0	20		

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40154528

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QC Batch:	264117	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV Oxygenates
Associated Lab Samples:	40154528001, 40154528002, 40154528003, 40154528004		

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METHOD BLANK: 1554258 Matrix: Water  
Associated Lab Samples: 40154528001, 40154528002, 40154528003, 40154528004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	08/10/17 11:27	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	08/10/17 11:27	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	08/10/17 11:27	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	08/10/17 11:27	
1,1-Dichloroethane	ug/L	<0.24	1.0	08/10/17 11:27	
1,1-Dichloroethene	ug/L	<0.41	1.0	08/10/17 11:27	
1,1-Dichloropropene	ug/L	<0.44	1.0	08/10/17 11:27	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	08/10/17 11:27	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	08/10/17 11:27	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	08/10/17 11:27	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	08/10/17 11:27	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	08/10/17 11:27	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	08/10/17 11:27	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	08/10/17 11:27	
1,2-Dichloroethane	ug/L	<0.17	1.0	08/10/17 11:27	
1,2-Dichloropropane	ug/L	<0.23	1.0	08/10/17 11:27	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	08/10/17 11:27	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	08/10/17 11:27	
1,3-Dichloropropane	ug/L	<0.50	1.0	08/10/17 11:27	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	08/10/17 11:27	
2,2-Dichloropropane	ug/L	<0.48	1.0	08/10/17 11:27	
2-Butanone (MEK)	ug/L	<3.0	20.0	08/10/17 11:27	
2-Chlorotoluene	ug/L	<0.50	1.0	08/10/17 11:27	
2-Propanol	ug/L	<24.3	250	08/10/17 11:27	
4-Chlorotoluene	ug/L	<0.21	1.0	08/10/17 11:27	
4-Methyl-2-pentanone (MIBK)	ug/L	<2.1	5.0	08/10/17 11:27	
Acetone	ug/L	<3.0	20.0	08/10/17 11:27	
Benzene	ug/L	<0.50	1.0	08/10/17 11:27	
Bromobenzene	ug/L	<0.23	1.0	08/10/17 11:27	
Bromochloromethane	ug/L	<0.34	1.0	08/10/17 11:27	
Bromodichloromethane	ug/L	<0.50	1.0	08/10/17 11:27	
Bromoform	ug/L	<0.50	1.0	08/10/17 11:27	
Bromomethane	ug/L	<2.4	5.0	08/10/17 11:27	
Carbon tetrachloride	ug/L	<0.50	1.0	08/10/17 11:27	
Chlorobenzene	ug/L	<0.50	1.0	08/10/17 11:27	
Chloroethane	ug/L	<0.37	1.0	08/10/17 11:27	
Chloroform	ug/L	<2.5	5.0	08/10/17 11:27	
Chloromethane	ug/L	<0.50	1.0	08/10/17 11:27	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	08/10/17 11:27	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	08/10/17 11:27	
Dibromochloromethane	ug/L	<0.50	1.0	08/10/17 11:27	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40154528

METHOD BLANK: 1554258

Matrix: Water

Associated Lab Samples: 40154528001, 40154528002, 40154528003, 40154528004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/L	<0.43	1.0	08/10/17 11:27	
Dichlorodifluoromethane	ug/L	<0.22	1.0	08/10/17 11:27	
Diisopropyl ether	ug/L	<0.50	1.0	08/10/17 11:27	
Ethylbenzene	ug/L	<0.50	1.0	08/10/17 11:27	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	08/10/17 11:27	
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	08/10/17 11:27	
m&p-Xylene	ug/L	<1.0	2.0	08/10/17 11:27	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	08/10/17 11:27	
Methylene Chloride	ug/L	<0.23	1.0	08/10/17 11:27	
n-Butylbenzene	ug/L	<0.50	1.0	08/10/17 11:27	
n-Propylbenzene	ug/L	<0.50	1.0	08/10/17 11:27	
Naphthalene	ug/L	<2.5	5.0	08/10/17 11:27	
o-Xylene	ug/L	<0.50	1.0	08/10/17 11:27	
p-Isopropyltoluene	ug/L	<0.50	1.0	08/10/17 11:27	
sec-Butylbenzene	ug/L	<2.2	5.0	08/10/17 11:27	
Styrene	ug/L	<0.50	1.0	08/10/17 11:27	
tert-Butylbenzene	ug/L	<0.18	1.0	08/10/17 11:27	
Tetrachloroethene	ug/L	<0.50	1.0	08/10/17 11:27	
Toluene	ug/L	<0.50	1.0	08/10/17 11:27	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	08/10/17 11:27	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	08/10/17 11:27	
Trichloroethene	ug/L	<0.33	1.0	08/10/17 11:27	
Trichlorofluoromethane	ug/L	<0.18	1.0	08/10/17 11:27	
Vinyl chloride	ug/L	<0.18	1.0	08/10/17 11:27	
Xylene (Total)	ug/L	<1.5	3.0	08/10/17 11:27	
4-Bromofluorobenzene (S)	%	90	61-130	08/10/17 11:27	
Dibromofluoromethane (S)	%	108	67-130	08/10/17 11:27	
Toluene-d8 (S)	%	98	70-130	08/10/17 11:27	

LABORATORY CONTROL SAMPLE: 1554259

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	50.2	100	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	47.8	96	70-130	
1,1,2-Trichloroethane	ug/L	50	52.3	105	70-130	
1,1-Dichloroethane	ug/L	50	57.7	115	71-132	
1,1-Dichloroethene	ug/L	50	45.3	91	75-130	
1,2,4-Trichlorobenzene	ug/L	50	43.5	87	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	42.8	86	63-123	
1,2-Dibromoethane (EDB)	ug/L	50	53.3	107	70-130	
1,2-Dichlorobenzene	ug/L	50	46.2	92	70-130	
1,2-Dichloroethane	ug/L	50	47.9	96	70-131	
1,2-Dichloropropane	ug/L	50	52.9	106	80-120	
1,3-Dichlorobenzene	ug/L	50	48.0	96	70-130	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40154528

LABORATORY CONTROL SAMPLE: 1554259

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	50	48.6	97	70-130	
Benzene	ug/L	50	49.3	99	73-145	
Bromodichloromethane	ug/L	50	52.2	104	70-130	
Bromoform	ug/L	50	49.9	100	67-130	
Bromomethane	ug/L	50	23.5	47	26-128	
Carbon tetrachloride	ug/L	50	52.5	105	70-133	
Chlorobenzene	ug/L	50	52.6	105	70-130	
Chloroethane	ug/L	50	45.7	91	58-120	
Chloroform	ug/L	50	52.9	106	80-121	
Chloromethane	ug/L	50	25.6	51	40-127	
cis-1,2-Dichloroethene	ug/L	50	57.4	115	70-130	
cis-1,3-Dichloropropene	ug/L	50	50.6	101	70-130	
Dibromochloromethane	ug/L	50	50.0	100	70-130	
Dichlorodifluoromethane	ug/L	50	26.9	54	20-135	
Ethylbenzene	ug/L	50	54.0	108	87-129	
Isopropylbenzene (Cumene)	ug/L	50	55.4	111	70-130	
m&p-Xylene	ug/L	100	110	110	70-130	
Methyl-tert-butyl ether	ug/L	50	53.6	107	66-143	
Methylene Chloride	ug/L	50	52.9	106	70-130	
o-Xylene	ug/L	50	55.0	110	70-130	
Styrene	ug/L	50	54.2	108	70-130	
Tetrachloroethene	ug/L	50	47.6	95	70-130	
Toluene	ug/L	50	53.3	107	82-130	
trans-1,2-Dichloroethene	ug/L	50	53.7	107	75-132	
trans-1,3-Dichloropropene	ug/L	50	50.7	101	70-130	
Trichloroethene	ug/L	50	52.5	105	70-130	
Trichlorofluoromethane	ug/L	50	42.4	85	76-133	
Vinyl chloride	ug/L	50	36.6	73	57-136	
Xylene (Total)	ug/L	150	165	110	70-130	
4-Bromofluorobenzene (S)	%			106	61-130	
Dibromofluoromethane (S)	%			103	67-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1554266 1554267

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40154593001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	<5.0	50	50	49.4	49.7	99	99	70-134	1	20	
1,1,2,2-Tetrachloroethane	ug/L	<5.0	50	50	55.1	55.1	110	110	70-130	0	20	
1,1,2-Trichloroethane	ug/L	<5.0	50	50	54.5	53.2	109	106	70-130	3	20	
1,1-Dichloroethane	ug/L	<5.0	50	50	49.9	58.0	100	116	71-133	15	20	
1,1-Dichloroethene	ug/L	<5.0	50	50	46.2	45.9	92	92	75-136	1	20	
1,2,4-Trichlorobenzene	ug/L	<10.0	50	50	51.3	50.2	103	100	70-130	2	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	50	50	53.1	47.6	106	95	63-123	11	20	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40154528

Parameter	Units	40154593001		1554266		1554267		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
1,2-Dibromoethane (EDB)	ug/L	<0.16	50	50	54.4	54.4	109	109	70-130	0	20		
1,2-Dichlorobenzene	ug/L	<5.0	50	50	52.7	51.1	105	102	70-130	3	20		
1,2-Dichloroethane	ug/L	<5.0	50	50	49.7	47.7	99	95	70-131	4	20		
1,2-Dichloropropane	ug/L	<5.0	50	50	58.6	59.5	117	119	80-120	2	20		
1,3-Dichlorobenzene	ug/L	<5.0	50	50	55.2	52.6	110	105	70-130	5	20		
1,4-Dichlorobenzene	ug/L	<5.0	50	50	54.0	52.5	108	105	70-130	3	20		
Benzene	ug/L	<5.0	50	50	50.2	50.5	100	101	73-145	1	20		
Bromodichloromethane	ug/L	<5.0	50	50	55.0	55.7	110	111	70-130	1	20		
Bromoform	ug/L	<5.0	50	50	57.8	55.8	116	112	67-130	3	20		
Bromomethane	ug/L	<10.0	50	50	19.8	28.9	40	58	26-129	37	20	R1	
Carbon tetrachloride	ug/L	<5.0	50	50	53.5	55.3	107	111	70-134	3	20		
Chlorobenzene	ug/L	<5.0	50	50	55.7	54.7	111	109	70-130	2	20		
Chloroethane	ug/L	<10.0	50	50	44.7	46.1	89	92	58-120	3	20		
Chloroform	ug/L	<5.0	50	50	51.0	52.1	102	104	80-121	2	20		
Chloromethane	ug/L	<10.0	50	50	24.6	25.4	49	50	40-128	3	20		
cis-1,2-Dichloroethene	ug/L	<5.0	50	50	48.3	49.6	97	99	70-130	3	20		
cis-1,3-Dichloropropene	ug/L	<10.0	50	50	51.1	52.7	102	105	70-130	3	20		
Dibromochloromethane	ug/L	<2.0	50	50	52.0	53.1	104	106	70-130	2	20		
Dichlorodifluoromethane	ug/L	<5.0	50	50	27.4	27.1	55	54	20-146	1	20		
Ethylbenzene	ug/L	<5.0	50	50	57.3	55.7	115	111	87-129	3	20		
Isopropylbenzene (Cumene)	ug/L	<5.0	50	50	58.2	57.0	116	114	70-130	2	20		
m&p-Xylene	ug/L	<1.0	100	100	118	115	118	115	70-130	3	20		
Methyl-tert-butyl ether	ug/L	<0.17	50	50	44.7	54.5	89	109	66-143	20	20		
Methylene Chloride	ug/L	<5.0	50	50	50.3	50.9	101	102	70-130	1	20		
o-Xylene	ug/L	<0.50	50	50	58.7	57.1	117	114	70-130	3	20		
Styrene	ug/L	<10.0	50	50	55.5	55.9	111	112	70-130	1	20		
Tetrachloroethene	ug/L	<5.0	50	50	50.2	47.9	100	96	70-130	5	20		
Toluene	ug/L	<5.0	50	50	56.8	56.0	114	112	82-131	1	20		
trans-1,2-Dichloroethene	ug/L	<5.0	50	50	52.4	53.0	105	106	75-135	1	20		
trans-1,3-Dichloropropene	ug/L	<10.0	50	50	49.8	53.3	100	107	70-130	7	20		
Trichloroethene	ug/L	<5.0	50	50	54.7	55.0	109	110	70-130	1	20		
Trichlorofluoromethane	ug/L	<5.0	50	50	42.8	43.3	86	87	76-150	1	20		
Vinyl chloride	ug/L	<2.0	50	50	36.2	36.4	72	73	56-143	1	20		
Xylene (Total)	ug/L	<5.0	150	150	176	172	118	114	70-130	3	20		
4-Bromofluorobenzene (S)	%						104	105	61-130				
Dibromofluoromethane (S)	%						97	98	67-130				
Toluene-d8 (S)	%						99	98	70-130				

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40154528

QC Batch: 264190      Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0      Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40154528001

METHOD BLANK: 1554662      Matrix: Water  
Associated Lab Samples: 40154528001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	<1.0	3.0	08/15/17 18:25	

LABORATORY CONTROL SAMPLE: 1554663

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	20	20.7	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1554664      1554665

Parameter	Units	40154446008		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec				
Sulfate	mg/L	51.8	100	100	154	155	103	103	90-110	0	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1554666      1554667

Parameter	Units	40154680001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec				
Sulfate	mg/L	<20.0	400	400	417	421	104	105	90-110	1	15		

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40154528

QC Batch: 264278 Analysis Method: EPA 310.2  
QC Batch Method: EPA 310.2 Analysis Description: 310.2 Alkalinity  
Associated Lab Samples: 40154528001

METHOD BLANK: 1555376 Matrix: Water  
Associated Lab Samples: 40154528001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.0	23.5	08/11/17 11:22	

LABORATORY CONTROL SAMPLE: 1555377

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	103	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1555378 1555379

Parameter	Units	40154777007 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Spike Conc.	MSD Result						
Alkalinity, Total as CaCO3	mg/L	151	100	244	100	245	93	93	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1555380 1555381

Parameter	Units	40154777010 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Spike Conc.	MSD Result						
Alkalinity, Total as CaCO3	mg/L	81.3	100	180	100	179	99	98	90-110	0	20	

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## QUALIFIERS

Project: 55929.005 WRR

Pace Project No.: 40154528

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 55929.005 WRR

Pace Project No.: 40154528

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40154528001	W-34	EPA 8015B Modified	264273		
40154528001	W-34	EPA 3010	264719	EPA 6010	264820
40154528001	W-34	EPA 8260	264117		
40154528002	RW-13	EPA 8260	264117		
40154528003	RW-12	EPA 8260	264117		
40154528004	TRIP BLANK	EPA 8260	264117		
40154528001	W-34	EPA 300.0	264190		
40154528001	W-34	EPA 310.2	264278		

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

(Please Print Clearly)

Company Name: Gannett Fleming  
 Branch/Location: Madison, WI  
 Project Contact: Tony Miller  
 Phone: 608-836-1500  
 Project Number: 55929.005  
 Project Name: WRR  
 Project State: WI  
 Sampled By (Print): Marcus Mussey  
 Sampled By (Sign): [Signature]  
 PO #:

**Data Package Options** (billable)  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 Sl = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	W-34	8-1	1545	GW
002	RW-13	8-3	1310	GW
003	RW-12	8-4	1455	GW
004	Trip Blank			



UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

40154528

### CHAIN OF CUSTODY

**\*Preservation Codes**  
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED? (YES/NO)  
 PRESERVATION (CODE)\*

Y/N	N	N	Y	N						
	N	N	Y	N						
Pick Letter	B	A	D	B						
Analyses Requested	VOC	WI	AIKY, SULS, Ni.	Metals (Diss Fe)	MEE					

**Quote #:**

**Mail To Contact:** Tony Miller

**Mail To Company:** awmiller@gfnet.com

**Mail To Address:** 8025 Excelsior Dr. Madison, WI 53717

**Invoice To Contact:**

**Invoice To Company:**

**Invoice To Address:**

**Invoice To Phone:**

**CLIENT COMMENTS**

**LAB COMMENTS (Lab Use Only)**

**Profile #**

correct date: 8/1  
 6-40mL B 2-250mL AD  
 3-40mL B  
 ↓  
 2-40mL B

**Rush Turnaround Time Requested - Prelims**  
 (Rush TAT subject to approval/surcharge)  
 Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:  
 Email #2:  
 Telephone:  
 Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By: <u>Marcus Mussey (GF)</u>	Date/Time: <u>8-4, 1535</u>	Received By: <u>FedEx</u>	Date/Time:
Relinquished By: <u>FedEx</u>	Date/Time: <u>8/5/17 1030</u>	Received By: <u>Zach Johnson-Pace</u>	Date/Time: <u>8/5/17 1030</u>
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

**PACE Project No.**  
40154528

Receipt Temp = 201 °C

Sample Receipt pH  
 OK / Adjusted

Cobler Custody Seal  
 Present / Not Present  
 Intact / Not Intact



Sample Condition Upon Receipt

Pace Analytical Services, LLC. - Green Bay WI
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40154528

Client Name: Gannett Fleming

Courier: [x] Fed Ex [ ] UPS [ ] Client [ ] Pace Other: [ ]

Tracking #: 7874 1406 8320



Custody Seal on Cooler/Box Present: [ ] yes [x] no Seals intact: [ ] yes [ ] no

Custody Seal on Samples Present: [ ] yes [x] no Seals intact: [ ] yes [ ] no

Packing Material: [ ] Bubble Wrap [x] Bubble Bags [ ] None [ ] Other

Thermometer Used: N/A Type of Ice: [x] Wet [ ] Blue [ ] Dry [ ] None [x] Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: [ ] ICorr: 201 Biological Tissue is Frozen: [ ] yes [ ] no

Temp Blank Present: [ ] yes [x] no

Temp should be above freezing to 6°C.

Biota Samples may be received at ≤ 0°C.

Person examining contents:

Date: 8/7/17

Initials: RMV

Comments:

Table with 15 rows of inspection criteria and checkboxes. Includes items like 'Chain of Custody Present', 'Short Hold Time Analysis', 'Rush Turn Around Time Requested', 'Sufficient Volume', 'Correct Containers Used', 'Containers Intact', 'Filtered volume received for Dissolved tests', 'Sample Labels match COC', 'All containers needing preservation have been checked', 'Headspace in VOA Vials', 'Trip Blank Present'.

Client Notification/ Resolution:

If checked, see attached form for additional comments [ ]

Person Contacted: [ ] Date/Time: [ ]

Comments/ Resolution: Nitrate cancelled by client per discussion with PM (7/20/17) 8/7/17 RMV

Project Manager Review: RMK for DM

Date: 8/7/17



---

2655 Park Center Dr., Suite A  
Simi Valley, CA 93065  
T: +1 805 526 7161  
F: +1 805 526 7270  
[www.alsglobal.com](http://www.alsglobal.com)

## LABORATORY REPORT

August 16, 2017

The Analytical Results & QA/QC  
Data included with this report were  
reviewed and approved by AWM  
on 08/16/17.

Anthony Miller  
Gannett Fleming, Incorporated  
8025 Excelsior Dr.  
Madison, WI 53717

**RE: WRR / 55929.005**

Dear Anthony:

Enclosed are the results of the samples submitted to our laboratory on August 9, 2017. For your reference, these analyses have been assigned our service request number P1703872.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at [www.alsglobal.com](http://www.alsglobal.com). Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

**ALS | Environmental**

*By Sue Anderson at 9:54 am, Aug 16, 2017*

For Kelly Horiuchi  
Laboratory Director



2655 Park Center Dr., Suite A  
Simi Valley, CA 93065  
T: +1 805 526 7161  
F: +1 805 526 7270  
[www.alsglobal.com](http://www.alsglobal.com)

Client: Gannett Fleming, Incorporated  
Project: WRR / 55929.005

Service Request No: P1703872

---

## CASE NARRATIVE

The samples were received intact under chain of custody on August 9, 2017 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

### Volatile Organic Compound Analysis

The samples were analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The upper control criteria were exceeded for benzyl chloride and 1,2-dibromo-3-chloropropane in the Continuing Calibration Verification (CCV). Since the apparent problems equate to a potential high bias and the field samples did not contain the analytes in question, the data quality has not been affected. No corrective action was required.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

---

*The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.*

*Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.*





2655 Park Center Dr., Suite A  
 Simi Valley, CA 93065  
 T: +1 805 526 7161  
 F: +1 805 526 7270  
[www.alsglobal.com](http://www.alsglobal.com)

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	<a href="http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home">http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home</a>	AZ0694
Florida DOH (NELAP)	<a href="http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm">http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm</a>	E871020
Louisiana DEQ (NELAP)	<a href="http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx">http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx</a>	05071
Maine DHHS	<a href="http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm">http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm</a>	2016036
Minnesota DOH (NELAP)	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	1177034
New Jersey DEP (NELAP)	<a href="http://www.nj.gov/dep/oqa/">http://www.nj.gov/dep/oqa/</a>	CA009
New York DOH (NELAP)	<a href="http://www.wadsworth.org/labcert/elap/elap.html">http://www.wadsworth.org/labcert/elap/elap.html</a>	11221
Oregon PHD (NELAP)	<a href="http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	4068-004
Pennsylvania DEP	<a href="http://www.depweb.state.pa.us/labs">http://www.depweb.state.pa.us/labs</a>	68-03307 (Registration)
PJLA (DoD ELAP)	<a href="http://www.pjlabs.com/search-accredited-labs">http://www.pjlabs.com/search-accredited-labs</a>	65818 (Testing)
Texas CEQ (NELAP)	<a href="http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html</a>	T104704413-17-8
Utah DOH (NELAP)	<a href="http://health.utah.gov/lab/environmental-lab-certification/">http://health.utah.gov/lab/environmental-lab-certification/</a>	CA01627201 7-8
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at [www.alsglobal.com](http://www.alsglobal.com), or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

**ALS ENVIRONMENTAL**

**DETAIL SUMMARY REPORT**

Client: Gannett Fleming, Incorporated  
Project ID: WRR / 55929.005

Service Request: P1703872

Date Received: 8/9/2017  
Time Received: 09:30

TO-15 - VOC Cans

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	
SVE - 4 EXHAUST	P1703872-001	Air	8/2/2017	11:20	ISC01237	-0.41	5.53	X
SVE - 5 EXHAUST	P1703872-002	Air	8/2/2017	16:12	ISC01023	-2.77	5.47	X



# Air - Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A  
 Simi Valley, California 93065  
 Phone (805) 526-7161  
 Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle  
 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10-Day-Standard

ALS Project No  
P1703872

Company Name & Address (Reporting Information) <span style="font-size: 1.2em;">Gannett Flemmy</span> <span style="font-size: 1.2em;">8025 Excalibur Dr.</span> <span style="font-size: 1.2em;">Madison, WI 53717</span>				Project Name <span style="font-size: 1.5em; font-weight: bold;">WRR</span>				ALS Contact:		Analysis Method           Comments e.g. Actual Preservative or specific instructions
				Project Manager <span style="font-size: 1.2em;">Tony Miller</span>				Project Number <span style="font-size: 1.5em; font-weight: bold;">55929.005</span>		
Phone <span style="font-size: 1.2em;">608.515-8993</span>		Fax		P.O. # / Billing Information						
Email Address for Result Reporting <span style="font-size: 1.2em;">awmiller@gfnet.com</span>				Sampler (Print & Sign) <span style="font-size: 1.2em;">Marcus Mussey</span>						
Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	<span style="font-size: 1.5em; font-weight: bold;">✓</span> TO-15 <span style="font-size: 1.5em; font-weight: bold;">✓</span> LLS	
<span style="font-size: 1.2em;">SVE-4 Exhaust</span>	<span style="font-size: 1.2em;">1</span>	<span style="font-size: 1.2em;">8-2</span>	<span style="font-size: 1.2em;">11:20</span>	<span style="font-size: 1.2em;">1SC01237</span>		<span style="font-size: 1.2em;">29</span>	<span style="font-size: 1.2em;">0</span>	<span style="font-size: 1.2em;">1L</span>		
<span style="font-size: 1.2em;">SVE-5 Exhaust</span>	<span style="font-size: 1.2em;">2</span>	<span style="font-size: 1.2em;">8-2</span>	<span style="font-size: 1.2em;">16:12</span>	<span style="font-size: 1.2em;">2SC01023</span>		<span style="font-size: 1.2em;">29</span>	<span style="font-size: 1.2em;">0</span>	<span style="font-size: 1.2em;">1L</span>		

5 of 19

Report Tier Levels - please select				EDD required YES / No		Chain of Custody Seal: (Circle)		Project Requirements (MRLs, QAPP)
Tier I - Results (Default in not specified) _____		Tier III (Results + QC & Calibration Summaries) _____		Type: _____ Units: _____		INTACT    BROKEN <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">ABSENT</span>		
Tier II (Results + QC Summaries) _____		Tier IV (Date Validation Package) 10% Surcharge _____						
Relinquished by: (Signature)	Date: <span style="font-size: 1.2em;">8/3/17</span>	Time: <span style="font-size: 1.2em;">11:20</span>	Received by: (Signature) <span style="font-size: 1.2em;">EJEX</span>		Date:	Time:	Cooler / Blank Temperature _____ °C	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature) <span style="font-size: 1.2em;">Riley Hwa</span>		Date: <span style="font-size: 1.2em;">8/3/17</span>	Time: <span style="font-size: 1.2em;">9:30 am</span>		



# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** SVE - 4 EXHAUST

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P1703872-001

Test Code: EPA TO-15

Date Collected: 8/2/17

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: 8/9/17

Analyst: #N/A

Date Analyzed: 8/11/17

Sample Type: 1.0 L Summa Canister

Volume(s) Analyzed: 0.000030 Liter(s)

Test Notes:

0.000010 Liter(s)

Container ID: 1SC01237

Initial Pressure (psig): -0.41      Final Pressure (psig): 5.53

Container Dilution Factor: 1.42

CAS #	Compound	Result	MRL	Result	MRL	Data Qualifier
		µg/m <sup>3</sup>	µg/m <sup>3</sup>	ppbV	ppbV	
115-07-1	Propene	ND	24,000	ND	14,000	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	24,000	ND	4,800	
74-87-3	Chloromethane	ND	24,000	ND	11,000	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	24,000	ND	3,400	
75-01-4	Vinyl Chloride	ND	24,000	ND	9,300	
106-99-0	1,3-Butadiene	ND	24,000	ND	11,000	
74-83-9	Bromomethane	ND	24,000	ND	6,100	
75-00-3	Chloroethane	ND	24,000	ND	9,000	
64-17-5	Ethanol	ND	240,000	ND	130,000	
75-05-8	Acetonitrile	ND	24,000	ND	14,000	
107-02-8	Acrolein	ND	95,000	ND	41,000	
67-64-1	Acetone	ND	240,000	ND	100,000	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	24,000	ND	4,200	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	240,000	ND	96,000	
107-13-1	Acrylonitrile	ND	24,000	ND	11,000	
75-35-4	1,1-Dichloroethene	<b>54,000</b>	24,000	<b>14,000</b>	6,000	
75-09-2	Methylene Chloride	ND	24,000	ND	6,800	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	24,000	ND	7,600	
76-13-1	Trichlorotrifluoroethane (CFC 113)	<b>76,000</b>	24,000	<b>10,000</b>	3,100	
75-15-0	Carbon Disulfide	ND	240,000	ND	76,000	
156-60-5	trans-1,2-Dichloroethene	ND	24,000	ND	6,000	
75-34-3	1,1-Dichloroethane	ND	24,000	ND	5,800	
1634-04-4	Methyl tert-Butyl Ether	ND	24,000	ND	6,600	
108-05-4	Vinyl Acetate	ND	240,000	ND	67,000	
78-93-3	2-Butanone (MEK)	ND	240,000	ND	80,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 2 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** SVE - 4 EXHAUST

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P1703872-001

Test Code: EPA TO-15

Date Collected: 8/2/17

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: 8/9/17

Analyst: #N/A

Date Analyzed: 8/11/17

Sample Type: 1.0 L Summa Canister

Volume(s) Analyzed: 0.000030 Liter(s)

Test Notes:

0.000010 Liter(s)

Container ID: 1SC01237

Initial Pressure (psig): -0.41      Final Pressure (psig): 5.53

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	<b>160,000</b>	24,000	<b>40,000</b>	6,000	
141-78-6	Ethyl Acetate	ND	47,000	ND	13,000	
110-54-3	n-Hexane	<b>64,000</b>	24,000	<b>18,000</b>	6,700	
67-66-3	Chloroform	ND	24,000	ND	4,800	
109-99-9	Tetrahydrofuran (THF)	ND	24,000	ND	8,000	
107-06-2	1,2-Dichloroethane	ND	24,000	ND	5,800	
71-55-6	1,1,1-Trichloroethane	<b>2,900,000</b>	24,000	<b>530,000</b>	4,300	
71-43-2	Benzene	<b>57,000</b>	24,000	<b>18,000</b>	7,400	
56-23-5	Carbon Tetrachloride	ND	24,000	ND	3,800	
110-82-7	Cyclohexane	ND	47,000	ND	14,000	
78-87-5	1,2-Dichloropropane	ND	24,000	ND	5,100	
75-27-4	Bromodichloromethane	ND	24,000	ND	3,500	
79-01-6	Trichloroethene	<b>4,100,000</b>	24,000	<b>770,000</b>	4,400	
123-91-1	1,4-Dioxane	ND	24,000	ND	6,600	
80-62-6	Methyl Methacrylate	ND	47,000	ND	12,000	
142-82-5	n-Heptane	ND	24,000	ND	5,800	
10061-01-5	cis-1,3-Dichloropropene	ND	24,000	ND	5,200	
108-10-1	4-Methyl-2-pentanone	ND	24,000	ND	5,800	
10061-02-6	trans-1,3-Dichloropropene	ND	24,000	ND	5,200	
79-00-5	1,1,2-Trichloroethane	ND	24,000	ND	4,300	
108-88-3	Toluene	ND	24,000	ND	6,300	
591-78-6	2-Hexanone	ND	24,000	ND	5,800	
124-48-1	Dibromochloromethane	ND	24,000	ND	2,800	
106-93-4	1,2-Dibromoethane	ND	24,000	ND	3,100	
123-86-4	n-Butyl Acetate	ND	24,000	ND	5,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 3 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** SVE - 4 EXHAUST

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P1703872-001

Test Code: EPA TO-15

Date Collected: 8/2/17

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: 8/9/17

Analyst: #N/A

Date Analyzed: 8/11/17

Sample Type: 1.0 L Summa Canister

Volume(s) Analyzed: 0.000030 Liter(s)

Test Notes:

0.000010 Liter(s)

Container ID: 1SC01237

Initial Pressure (psig): -0.41      Final Pressure (psig): 5.53

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	24,000	ND	5,100	
127-18-4	Tetrachloroethene	<b>10,000,000</b>	71,000	<b>1,500,000</b>	10,000	<b>D</b>
108-90-7	Chlorobenzene	ND	24,000	ND	5,100	
100-41-4	Ethylbenzene	ND	24,000	ND	5,500	
179601-23-1	m,p-Xylenes	ND	47,000	ND	11,000	
75-25-2	Bromoform	ND	24,000	ND	2,300	
100-42-5	Styrene	ND	24,000	ND	5,600	
95-47-6	o-Xylene	ND	24,000	ND	5,500	
111-84-2	n-Nonane	ND	24,000	ND	4,500	
79-34-5	1,1,2,2-Tetrachloroethane	ND	24,000	ND	3,400	
98-82-8	Cumene	ND	24,000	ND	4,800	
80-56-8	alpha-Pinene	ND	24,000	ND	4,200	
103-65-1	n-Propylbenzene	ND	24,000	ND	4,800	
622-96-8	4-Ethyltoluene	ND	24,000	ND	4,800	
108-67-8	1,3,5-Trimethylbenzene	ND	24,000	ND	4,800	
95-63-6	1,2,4-Trimethylbenzene	ND	24,000	ND	4,800	
100-44-7	Benzyl Chloride	ND	24,000	ND	4,600	
541-73-1	1,3-Dichlorobenzene	ND	24,000	ND	3,900	
106-46-7	1,4-Dichlorobenzene	ND	24,000	ND	3,900	
95-50-1	1,2-Dichlorobenzene	ND	24,000	ND	3,900	
5989-27-5	d-Limonene	ND	24,000	ND	4,200	
96-12-8	1,2-Dibromo-3-chloropropane	ND	24,000	ND	2,400	
120-82-1	1,2,4-Trichlorobenzene	ND	24,000	ND	3,200	
91-20-3	Naphthalene	ND	24,000	ND	4,500	
87-68-3	Hexachlorobutadiene	ND	24,000	ND	2,200	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

D = The reported result is from a dilution.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** SVE - 5 EXHAUST

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P1703872-002

Test Code: EPA TO-15

Date Collected: 8/2/17

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: 8/9/17

Analyst: #N/A

Date Analyzed: 8/11/17

Sample Type: 1.0 L Summa Canister

Volume(s) Analyzed: 0.0010 Liter(s)

Test Notes:

0.00010 Liter(s)

Container ID: 1SC01023

Initial Pressure (psig): -2.77      Final Pressure (psig): 5.47

Container Dilution Factor: 1.69

CAS #	Compound	Result	MRL	Result	MRL	Data Qualifier
		µg/m <sup>3</sup>	µg/m <sup>3</sup>	ppbV	ppbV	
115-07-1	Propene	12,000	850	6,800	490	
75-71-8	Dichlorodifluoromethane (CFC 12)	1,000	850	200	170	
74-87-3	Chloromethane	ND	850	ND	410	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	850	ND	120	
75-01-4	Vinyl Chloride	220,000	8,500	84,000	3,300	D
106-99-0	1,3-Butadiene	ND	850	ND	380	
74-83-9	Bromomethane	ND	850	ND	220	
75-00-3	Chloroethane	120,000	850	45,000	320	
64-17-5	Ethanol	ND	8,500	ND	4,500	
75-05-8	Acetonitrile	ND	850	ND	500	
107-02-8	Acrolein	ND	3,400	ND	1,500	
67-64-1	Acetone	ND	8,500	ND	3,600	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	850	ND	150	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	8,500	ND	3,400	
107-13-1	Acrylonitrile	ND	850	ND	390	
75-35-4	1,1-Dichloroethene	5,100	850	1,300	210	
75-09-2	Methylene Chloride	42,000	850	12,000	240	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	850	ND	270	
76-13-1	Trichlorotrifluoroethane (CFC 113)	940,000	8,500	120,000	1,100	D
75-15-0	Carbon Disulfide	ND	8,500	ND	2,700	
156-60-5	trans-1,2-Dichloroethene	2,300	850	580	210	
75-34-3	1,1-Dichloroethane	170,000	8,500	43,000	2,100	D
1634-04-4	Methyl tert-Butyl Ether	ND	850	ND	230	
108-05-4	Vinyl Acetate	ND	8,500	ND	2,400	
78-93-3	2-Butanone (MEK)	ND	8,500	ND	2,900	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

D = The reported result is from a dilution.



# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 2 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** SVE - 5 EXHAUST

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P1703872-002

Test Code: EPA TO-15

Date Collected: 8/2/17

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: 8/9/17

Analyst: #N/A

Date Analyzed: 8/11/17

Sample Type: 1.0 L Summa Canister

Volume(s) Analyzed: 0.0010 Liter(s)

Test Notes:

0.00010 Liter(s)

Container ID: 1SC01023

Initial Pressure (psig): -2.77      Final Pressure (psig): 5.47

Container Dilution Factor: 1.69

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	<b>130,000</b>	850	<b>33,000</b>	210	
141-78-6	Ethyl Acetate	ND	1,700	ND	470	
110-54-3	n-Hexane	<b>1,700</b>	850	<b>470</b>	240	
67-66-3	Chloroform	ND	850	ND	170	
109-99-9	Tetrahydrofuran (THF)	ND	850	ND	290	
107-06-2	1,2-Dichloroethane	ND	850	ND	210	
71-55-6	1,1,1-Trichloroethane	<b>280,000</b>	8,500	<b>52,000</b>	1,500	<b>D</b>
71-43-2	Benzene	ND	850	ND	260	
56-23-5	Carbon Tetrachloride	ND	850	ND	130	
110-82-7	Cyclohexane	<b>2,800</b>	1,700	<b>810</b>	490	
78-87-5	1,2-Dichloropropane	ND	850	ND	180	
75-27-4	Bromodichloromethane	ND	850	ND	130	
79-01-6	Trichloroethene	<b>2,000</b>	850	<b>370</b>	160	
123-91-1	1,4-Dioxane	ND	850	ND	230	
80-62-6	Methyl Methacrylate	ND	1,700	ND	410	
142-82-5	n-Heptane	<b>11,000</b>	850	<b>2,600</b>	210	
10061-01-5	cis-1,3-Dichloropropene	ND	850	ND	190	
108-10-1	4-Methyl-2-pentanone	<b>1,300</b>	850	<b>320</b>	210	
10061-02-6	trans-1,3-Dichloropropene	ND	850	ND	190	
79-00-5	1,1,2-Trichloroethane	ND	850	ND	150	
108-88-3	Toluene	<b>100,000</b>	850	<b>28,000</b>	220	
591-78-6	2-Hexanone	ND	850	ND	210	
124-48-1	Dibromochloromethane	ND	850	ND	99	
106-93-4	1,2-Dibromoethane	ND	850	ND	110	
123-86-4	n-Butyl Acetate	ND	850	ND	180	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

D = The reported result is from a dilution.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 3 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** SVE - 5 EXHAUST

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P1703872-002

Test Code: EPA TO-15

Date Collected: 8/2/17

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: 8/9/17

Analyst: #N/A

Date Analyzed: 8/11/17

Sample Type: 1.0 L Summa Canister

Volume(s) Analyzed: 0.0010 Liter(s)

Test Notes:

0.00010 Liter(s)

Container ID: 1SC01023

Initial Pressure (psig): -2.77      Final Pressure (psig): 5.47

Container Dilution Factor: 1.69

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	23,000	850	4,900	180	
127-18-4	Tetrachloroethene	13,000	850	1,900	120	
108-90-7	Chlorobenzene	ND	850	ND	180	
100-41-4	Ethylbenzene	47,000	850	11,000	190	
179601-23-1	m,p-Xylenes	120,000	1,700	28,000	390	
75-25-2	Bromoform	ND	850	ND	82	
100-42-5	Styrene	ND	850	ND	200	
95-47-6	o-Xylene	47,000	850	11,000	190	
111-84-2	n-Nonane	45,000	850	8,500	160	
79-34-5	1,1,2,2-Tetrachloroethane	ND	850	ND	120	
98-82-8	Cumene	2,100	850	430	170	
80-56-8	alpha-Pinene	1,400	850	260	150	
103-65-1	n-Propylbenzene	1,800	850	360	170	
622-96-8	4-Ethyltoluene	3,200	850	640	170	
108-67-8	1,3,5-Trimethylbenzene	3,200	850	640	170	
95-63-6	1,2,4-Trimethylbenzene	5,500	850	1,100	170	
100-44-7	Benzyl Chloride	ND	850	ND	160	
541-73-1	1,3-Dichlorobenzene	ND	850	ND	140	
106-46-7	1,4-Dichlorobenzene	ND	850	ND	140	
95-50-1	1,2-Dichlorobenzene	ND	850	ND	140	
5989-27-5	d-Limonene	ND	850	ND	150	
96-12-8	1,2-Dibromo-3-chloropropane	ND	850	ND	87	
120-82-1	1,2,4-Trichlorobenzene	ND	850	ND	110	
91-20-3	Naphthalene	ND	850	ND	160	
87-68-3	Hexachlorobutadiene	ND	850	ND	79	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Method Blank

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P170811-MB

Test Code: EPA TO-15

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Analyst: Anusha Bayyrapu/Wida Ang

Sample Type: 1.0 L Summa Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 8/11/17

Volume(s) Analyzed: 1.00 Liter(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result	MRL	Result	MRL	Data Qualifier
		µg/m <sup>3</sup>	µg/m <sup>3</sup>	ppbV	ppbV	
115-07-1	Propene	ND	0.50	ND	0.29	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	ND	0.10	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	ND	0.072	
75-01-4	Vinyl Chloride	ND	0.50	ND	0.20	
106-99-0	1,3-Butadiene	ND	0.50	ND	0.23	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.50	ND	0.19	
64-17-5	Ethanol	ND	5.0	ND	2.7	
75-05-8	Acetonitrile	ND	0.50	ND	0.30	
107-02-8	Acrolein	ND	2.0	ND	0.87	
67-64-1	Acetone	ND	5.0	ND	2.1	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.50	ND	0.089	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	ND	2.0	
107-13-1	Acrylonitrile	ND	0.50	ND	0.23	
75-35-4	1,1-Dichloroethene	ND	0.50	ND	0.13	
75-09-2	Methylene Chloride	ND	0.50	ND	0.14	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	ND	0.16	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.50	ND	0.065	
75-15-0	Carbon Disulfide	ND	5.0	ND	1.6	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.50	ND	0.12	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	ND	0.14	
108-05-4	Vinyl Acetate	ND	5.0	ND	1.4	
78-93-3	2-Butanone (MEK)	ND	5.0	ND	1.7	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 2 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Method Blank

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P170811-MB

Test Code: EPA TO-15

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Analyst: Anusha Bayyrapu/Wida Ang

Sample Type: 1.0 L Summa Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 8/11/17

Volume(s) Analyzed: 1.00 Liter(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.0	ND	0.28	
110-54-3	n-Hexane	ND	0.50	ND	0.14	
67-66-3	Chloroform	ND	0.50	ND	0.10	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	ND	0.17	
107-06-2	1,2-Dichloroethane	ND	0.50	ND	0.12	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ND	0.092	
71-43-2	Benzene	ND	0.50	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.50	ND	0.080	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.50	ND	0.11	
75-27-4	Bromodichloromethane	ND	0.50	ND	0.075	
79-01-6	Trichloroethene	ND	0.50	ND	0.093	
123-91-1	1,4-Dioxane	ND	0.50	ND	0.14	
80-62-6	Methyl Methacrylate	ND	1.0	ND	0.24	
142-82-5	n-Heptane	ND	0.50	ND	0.12	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.50	ND	0.12	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ND	0.11	
79-00-5	1,1,2-Trichloroethane	ND	0.50	ND	0.092	
108-88-3	Toluene	ND	0.50	ND	0.13	
591-78-6	2-Hexanone	ND	0.50	ND	0.12	
124-48-1	Dibromochloromethane	ND	0.50	ND	0.059	
106-93-4	1,2-Dibromoethane	ND	0.50	ND	0.065	
123-86-4	n-Butyl Acetate	ND	0.50	ND	0.11	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 3 of 3

**Client:** Gannett Fleming, Incorporated  
**Client Sample ID:** Method Blank  
**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872  
 ALS Sample ID: P170811-MB

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8  
 Analyst: Anusha Bayyrapu/Wida Ang  
 Sample Type: 1.0 L Summa Canister  
 Test Notes:

Date Collected: NA  
 Date Received: NA  
 Date Analyzed: 8/11/17  
 Volume(s) Analyzed: 1.00 Liter(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	ND	0.11	
127-18-4	Tetrachloroethene	ND	0.50	ND	0.074	
108-90-7	Chlorobenzene	ND	0.50	ND	0.11	
100-41-4	Ethylbenzene	ND	0.50	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.0	ND	0.23	
75-25-2	Bromoform	ND	0.50	ND	0.048	
100-42-5	Styrene	ND	0.50	ND	0.12	
95-47-6	o-Xylene	ND	0.50	ND	0.12	
111-84-2	n-Nonane	ND	0.50	ND	0.095	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	ND	0.073	
98-82-8	Cumene	ND	0.50	ND	0.10	
80-56-8	alpha-Pinene	ND	0.50	ND	0.090	
103-65-1	n-Propylbenzene	ND	0.50	ND	0.10	
622-96-8	4-Ethyltoluene	ND	0.50	ND	0.10	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	ND	0.10	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	ND	0.10	
100-44-7	Benzyl Chloride	ND	0.50	ND	0.097	
541-73-1	1,3-Dichlorobenzene	ND	0.50	ND	0.083	
106-46-7	1,4-Dichlorobenzene	ND	0.50	ND	0.083	
95-50-1	1,2-Dichlorobenzene	ND	0.50	ND	0.083	
5989-27-5	d-Limonene	ND	0.50	ND	0.090	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	ND	0.052	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	ND	0.067	
91-20-3	Naphthalene	ND	0.50	ND	0.095	
87-68-3	Hexachlorobutadiene	ND	0.50	ND	0.047	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

**ALS ENVIRONMENTAL**

SURROGATE SPIKE RECOVERY RESULTS

Page 1 of 1

**Client:** Gannett Fleming, Incorporated  
**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8  
 Analyst: Anusha Bayyrapu/Wida Ang  
 Sample Type: 1.0 L Summa Canister(s)  
 Test Notes:

Date(s) Collected: 8/2/17  
 Date(s) Received: 8/9/17  
 Date(s) Analyzed: 8/11/17

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4	Toluene-d8	Bromofluorobenzene	Acceptance Limits	Data Qualifier
		Percent Recovered	Percent Recovered	Percent Recovered		
Method Blank	P170811-MB	<b>95</b>	<b>102</b>	<b>108</b>	70-130	
Lab Control Sample	P170811-LCS	<b>92</b>	<b>99</b>	<b>113</b>	70-130	
SVE - 4 EXHAUST	P1703872-001	<b>94</b>	<b>101</b>	<b>105</b>	70-130	
SVE - 5 EXHAUST	P1703872-002	<b>92</b>	<b>97</b>	<b>108</b>	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Lab Control Sample

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P170811-LCS

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: NA

Analyst: Anusha Bayyrapu/Wida Ang

Date Analyzed: 8/11/17

Sample Type: 1.0 L Summa Canister

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
115-07-1	Propene	210	155	74	52-127	
75-71-8	Dichlorodifluoromethane (CFC 12)	210	168	80	68-109	
74-87-3	Chloromethane	210	191	91	51-130	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	211	184	87	66-114	
75-01-4	Vinyl Chloride	210	206	98	61-125	
106-99-0	1,3-Butadiene	210	210	100	62-144	
74-83-9	Bromomethane	210	210	100	73-123	
75-00-3	Chloroethane	210	179	85	69-122	
64-17-5	Ethanol	1,060	811	77	62-124	
75-05-8	Acetonitrile	213	152	71	57-114	
107-02-8	Acrolein	212	179	84	62-116	
67-64-1	Acetone	1,060	906	85	57-117	
75-69-4	Trichlorofluoromethane (CFC 11)	210	169	80	63-98	
67-63-0	2-Propanol (Isopropyl Alcohol)	424	348	82	66-121	
107-13-1	Acrylonitrile	213	190	89	68-123	
75-35-4	1,1-Dichloroethene	213	180	85	76-118	
75-09-2	Methylene Chloride	212	189	89	60-118	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	212	185	87	65-126	
76-13-1	Trichlorotrifluoroethane (CFC 113)	212	187	88	73-114	
75-15-0	Carbon Disulfide	213	185	87	57-102	
156-60-5	trans-1,2-Dichloroethene	213	183	86	74-123	
75-34-3	1,1-Dichloroethane	212	172	81	69-111	
1634-04-4	Methyl tert-Butyl Ether	213	184	86	69-113	
108-05-4	Vinyl Acetate	1,060	1080	102	76-128	
78-93-3	2-Butanone (MEK)	212	194	92	63-127	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 2 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Lab Control Sample

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P170811-LCS

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: NA

Analyst: Anusha Bayyrapu/Wida Ang

Date Analyzed: 8/11/17

Sample Type: 1.0 L Summa Canister

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
156-59-2	cis-1,2-Dichloroethene	212	176	83	72-117	
141-78-6	Ethyl Acetate	426	392	92	68-127	
110-54-3	n-Hexane	213	167	78	55-116	
67-66-3	Chloroform	212	176	83	70-109	
109-99-9	Tetrahydrofuran (THF)	213	181	85	72-113	
107-06-2	1,2-Dichloroethane	212	172	81	69-113	
71-55-6	1,1,1-Trichloroethane	212	179	84	72-115	
71-43-2	Benzene	212	175	83	65-107	
56-23-5	Carbon Tetrachloride	213	184	86	71-113	
110-82-7	Cyclohexane	425	357	84	71-115	
78-87-5	1,2-Dichloropropane	212	176	83	71-115	
75-27-4	Bromodichloromethane	214	191	89	75-118	
79-01-6	Trichloroethene	212	190	90	68-114	
123-91-1	1,4-Dioxane	213	196	92	81-131	
80-62-6	Methyl Methacrylate	424	452	107	72-130	
142-82-5	n-Heptane	213	175	82	68-116	
10061-01-5	cis-1,3-Dichloropropene	210	202	96	77-126	
108-10-1	4-Methyl-2-pentanone	213	207	97	69-126	
10061-02-6	trans-1,3-Dichloropropene	213	220	103	79-125	
79-00-5	1,1,2-Trichloroethane	212	193	91	75-119	
108-88-3	Toluene	212	180	85	59-118	
591-78-6	2-Hexanone	213	203	95	69-129	
124-48-1	Dibromochloromethane	213	208	98	74-136	
106-93-4	1,2-Dibromoethane	212	213	100	73-131	
123-86-4	n-Butyl Acetate	216	211	98	69-130	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.



# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 3 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Lab Control Sample

**Client Project ID:** WRR / 55929.005

ALS Project ID: P1703872

ALS Sample ID: P170811-LCS

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: NA

Analyst: Anusha Bayyrapu/Wida Ang

Date Analyzed: 8/11/17

Sample Type: 1.0 L Summa Canister

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
111-65-9	n-Octane	212	174	82	66-120	
127-18-4	Tetrachloroethene	213	205	96	65-130	
108-90-7	Chlorobenzene	212	189	89	68-120	
100-41-4	Ethylbenzene	212	188	89	68-122	
179601-23-1	m,p-Xylenes	424	378	89	68-123	
75-25-2	Bromoform	212	224	106	69-130	
100-42-5	Styrene	212	219	103	71-133	
95-47-6	o-Xylene	212	190	90	68-122	
111-84-2	n-Nonane	212	182	86	65-120	
79-34-5	1,1,2,2-Tetrachloroethane	212	197	93	69-130	
98-82-8	Cumene	212	191	90	70-123	
80-56-8	alpha-Pinene	213	198	93	70-128	
103-65-1	n-Propylbenzene	214	198	93	69-125	
622-96-8	4-Ethyltoluene	212	209	99	67-130	
108-67-8	1,3,5-Trimethylbenzene	212	192	91	67-124	
95-63-6	1,2,4-Trimethylbenzene	212	201	95	67-129	
100-44-7	Benzyl Chloride	212	252	119	79-138	
541-73-1	1,3-Dichlorobenzene	212	216	102	65-136	
106-46-7	1,4-Dichlorobenzene	213	214	100	66-141	
95-50-1	1,2-Dichlorobenzene	212	207	98	67-136	
5989-27-5	d-Limonene	212	206	97	71-134	
96-12-8	1,2-Dibromo-3-chloropropane	212	265	125	73-136	
120-82-1	1,2,4-Trichlorobenzene	212	236	111	64-134	
91-20-3	Naphthalene	214	246	115	62-136	
87-68-3	Hexachlorobutadiene	213	201	94	60-133	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.



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2655 Park Center Dr., Suite A  
Simi Valley, CA 93065  
T: +1 805 526 7161  
F: +1 805 526 7270  
[www.alsglobal.com](http://www.alsglobal.com)

## LABORATORY REPORT

November 20, 2017

The Analytical Results & QA/QC  
Data included with this report were  
reviewed and approved by AWM  
on 11/21/17.

Anthony Miller  
Gannett Fleming, Incorporated  
8025 Excelsior Dr.  
Madison, WI 53717

Dear Anthony:

Enclosed are the results of the sample submitted to our laboratory on November 13, 2017. For your reference, these analyses have been assigned our service request number P1705727.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at [www.alsglobal.com](http://www.alsglobal.com). Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

**ALS | Environmental**

By Kelly Horiuchi at 3:43 pm, Nov 20, 2017

Kelly Horiuchi  
Laboratory Director



2655 Park Center Dr., Suite A  
Simi Valley, CA 93065  
T: +1 805 526 7161  
F: +1 805 526 7270  
[www.alsglobal.com](http://www.alsglobal.com)

Client: Gannett Fleming, Incorporated

Service Request No: P1705727

---

## CASE NARRATIVE

The sample was received intact under chain of custody on November 13, 2017 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample at the time of sample receipt.

### Volatile Organic Compound Analysis

The sample was analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.1 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

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*The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.*

*Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.*



2655 Park Center Dr., Suite A  
 Simi Valley, CA 93065  
 T: +1 805 526 7161  
 F: +1 805 526 7270  
[www.alsglobal.com](http://www.alsglobal.com)

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	<a href="http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home">http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home</a>	AZ0694
Florida DOH (NELAP)	<a href="http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm">http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm</a>	E871020
Louisiana DEQ (NELAP)	<a href="http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx">http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx</a>	05071
Maine DHHS	<a href="http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm">http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm</a>	2016036
Minnesota DOH (NELAP)	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	1177034
New Jersey DEP (NELAP)	<a href="http://www.nj.gov/dep/oqa/">http://www.nj.gov/dep/oqa/</a>	CA009
New York DOH (NELAP)	<a href="http://www.wadsworth.org/labcert/elap/elap.html">http://www.wadsworth.org/labcert/elap/elap.html</a>	11221
Oregon PHD (NELAP)	<a href="http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	4068-004
Pennsylvania DEP	<a href="http://www.depweb.state.pa.us/labs">http://www.depweb.state.pa.us/labs</a>	68-03307 (Registration)
PJLA (DoD ELAP)	<a href="http://www.pjlabs.com/search-accredited-labs">http://www.pjlabs.com/search-accredited-labs</a>	65818 (Testing)
Texas CEQ (NELAP)	<a href="http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html</a>	T104704413-17-8
Utah DOH (NELAP)	<a href="http://health.utah.gov/lab/environmental-lab-certification/">http://health.utah.gov/lab/environmental-lab-certification/</a>	CA01627201 7-8
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at [www.alsglobal.com](http://www.alsglobal.com), or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Gannett Fleming, Incorporated

Service Request: P1705727

Date Received: 11/13/2017

Time Received: 09:30

TO-15 - VOC Cans

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	
SVE-4 PILOT FINAL	P1705727-001	Air	11/3/2017	17:23	1SS00112	-0.26	5.68	X





# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 3

**Client:** Gannett Fleming, Incorporated  
**Client Sample ID:** SVE-4 PILOT FINAL

ALS Project ID: P1705727  
 ALS Sample ID: P1705727-001

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8  
 Analyst: Anusha Bayyrapu  
 Sample Type: 1.0 L Silonite Summa Canister  
 Test Notes:  
 Container ID: 1SS00112

Date Collected: 11/3/17  
 Date Received: 11/13/17  
 Date Analyzed: 11/16/17  
 Volume(s) Analyzed: 0.00010 Liter(s)  
 0.000050 Liter(s)

Initial Pressure (psig): -0.26      Final Pressure (psig): 5.68

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	7,100	ND	4,100	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	7,100	ND	1,400	
74-87-3	Chloromethane	ND	7,100	ND	3,400	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	7,100	ND	1,000	
75-01-4	Vinyl Chloride	ND	7,100	ND	2,800	
106-99-0	1,3-Butadiene	ND	7,100	ND	3,200	
74-83-9	Bromomethane	ND	7,100	ND	1,800	
75-00-3	Chloroethane	ND	7,100	ND	2,700	
64-17-5	Ethanol	ND	71,000	ND	37,000	
75-05-8	Acetonitrile	ND	7,100	ND	4,200	
107-02-8	Acrolein	ND	28,000	ND	12,000	
67-64-1	Acetone	ND	71,000	ND	30,000	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	7,100	ND	1,300	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	71,000	ND	29,000	
107-13-1	Acrylonitrile	ND	7,100	ND	3,200	
75-35-4	1,1-Dichloroethene	<b>21,000</b>	7,100	<b>5,300</b>	1,800	
75-09-2	Methylene Chloride	<b>19,000</b>	7,100	<b>5,500</b>	2,000	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	7,100	ND	2,300	
76-13-1	Trichlorotrifluoroethane (CFC 113)	<b>29,000</b>	7,100	<b>3,700</b>	920	
75-15-0	Carbon Disulfide	ND	71,000	ND	23,000	
156-60-5	trans-1,2-Dichloroethene	ND	7,100	ND	1,800	
75-34-3	1,1-Dichloroethane	<b>9,500</b>	7,100	<b>2,300</b>	1,700	
1634-04-4	Methyl tert-Butyl Ether	ND	7,100	ND	2,000	
108-05-4	Vinyl Acetate	ND	71,000	ND	20,000	
78-93-3	2-Butanone (MEK)	ND	71,000	ND	24,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.



# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 2 of 3

**Client:** Gannett Fleming, Incorporated  
**Client Sample ID:** SVE-4 PILOT FINAL

ALS Project ID: P1705727  
 ALS Sample ID: P1705727-001

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8  
 Analyst: Anusha Bayyrapu  
 Sample Type: 1.0 L Silonite Summa Canister  
 Test Notes:  
 Container ID: 1SS00112

Date Collected: 11/3/17  
 Date Received: 11/13/17  
 Date Analyzed: 11/16/17  
 Volume(s) Analyzed: 0.00010 Liter(s)  
 0.000050 Liter(s)

Initial Pressure (psig): -0.26      Final Pressure (psig): 5.68

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	<b>76,000</b>	7,100	<b>19,000</b>	1,800	
141-78-6	Ethyl Acetate	ND	14,000	ND	3,900	
110-54-3	n-Hexane	ND	7,100	ND	2,000	
67-66-3	Chloroform	ND	7,100	ND	1,400	
109-99-9	Tetrahydrofuran (THF)	ND	7,100	ND	2,400	
107-06-2	1,2-Dichloroethane	ND	7,100	ND	1,700	
71-55-6	1,1,1-Trichloroethane	<b>1,300,000</b>	7,100	<b>240,000</b>	1,300	
71-43-2	Benzene	ND	7,100	ND	2,200	
56-23-5	Carbon Tetrachloride	ND	7,100	ND	1,100	
110-82-7	Cyclohexane	ND	14,000	ND	4,100	
78-87-5	1,2-Dichloropropane	ND	7,100	ND	1,500	
75-27-4	Bromodichloromethane	ND	7,100	ND	1,100	
79-01-6	Trichloroethene	<b>1,400,000</b>	7,100	<b>260,000</b>	1,300	
123-91-1	1,4-Dioxane	ND	7,100	ND	2,000	
80-62-6	Methyl Methacrylate	ND	14,000	ND	3,400	
142-82-5	n-Heptane	ND	7,100	ND	1,700	
10061-01-5	cis-1,3-Dichloropropene	ND	7,100	ND	1,600	
108-10-1	4-Methyl-2-pentanone	ND	7,100	ND	1,700	
10061-02-6	trans-1,3-Dichloropropene	ND	7,100	ND	1,600	
79-00-5	1,1,2-Trichloroethane	<b>9,400</b>	7,100	<b>1,700</b>	1,300	
108-88-3	Toluene	ND	7,100	ND	1,900	
591-78-6	2-Hexanone	ND	7,100	ND	1,700	
124-48-1	Dibromochloromethane	ND	7,100	ND	830	
106-93-4	1,2-Dibromoethane	ND	7,100	ND	920	
123-86-4	n-Butyl Acetate	ND	7,100	ND	1,500	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 3 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** SVE-4 PILOT FINAL

ALS Project ID: P1705727

ALS Sample ID: P1705727-001

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8  
 Analyst: Anusha Bayyrapu  
 Sample Type: 1.0 L Silonite Summa Canister  
 Test Notes:  
 Container ID: 1SS00112

Date Collected: 11/3/17  
 Date Received: 11/13/17  
 Date Analyzed: 11/16/17  
 Volume(s) Analyzed: 0.00010 Liter(s)  
 0.000050 Liter(s)

Initial Pressure (psig): -0.26      Final Pressure (psig): 5.68

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	7,100	ND	1,500	
127-18-4	Tetrachloroethene	<b>2,800,000</b>	14,000	<b>410,000</b>	2,100	<b>D</b>
108-90-7	Chlorobenzene	ND	7,100	ND	1,500	
100-41-4	Ethylbenzene	ND	7,100	ND	1,600	
179601-23-1	m,p-Xylenes	ND	14,000	ND	3,200	
75-25-2	Bromoform	ND	7,100	ND	680	
100-42-5	Styrene	ND	7,100	ND	1,700	
95-47-6	o-Xylene	ND	7,100	ND	1,600	
111-84-2	n-Nonane	ND	7,100	ND	1,300	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7,100	ND	1,000	
98-82-8	Cumene	ND	7,100	ND	1,400	
80-56-8	alpha-Pinene	ND	7,100	ND	1,300	
103-65-1	n-Propylbenzene	ND	7,100	ND	1,400	
622-96-8	4-Ethyltoluene	ND	7,100	ND	1,400	
108-67-8	1,3,5-Trimethylbenzene	ND	7,100	ND	1,400	
95-63-6	1,2,4-Trimethylbenzene	ND	7,100	ND	1,400	
100-44-7	Benzyl Chloride	ND	14,000	ND	2,700	
541-73-1	1,3-Dichlorobenzene	ND	7,100	ND	1,200	
106-46-7	1,4-Dichlorobenzene	ND	7,100	ND	1,200	
95-50-1	1,2-Dichlorobenzene	ND	7,100	ND	1,200	
5989-27-5	d-Limonene	ND	7,100	ND	1,300	
96-12-8	1,2-Dibromo-3-chloropropane	ND	7,100	ND	730	
120-82-1	1,2,4-Trichlorobenzene	ND	7,100	ND	950	
91-20-3	Naphthalene	ND	7,100	ND	1,300	
87-68-3	Hexachlorobutadiene	ND	7,100	ND	660	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

D = The reported result is from a dilution.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Method Blank

ALS Project ID: P1705727

ALS Sample ID: P171116-MB

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: NA

Analyst: Anusha Bayyrapu

Date Analyzed: 11/16/17

Sample Type: 1.0 L Silonite Summa Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result	MRL	Result	MRL	Data Qualifier
		µg/m <sup>3</sup>	µg/m <sup>3</sup>	ppbV	ppbV	
115-07-1	Propene	ND	0.50	ND	0.29	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	ND	0.10	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	ND	0.072	
75-01-4	Vinyl Chloride	ND	0.50	ND	0.20	
106-99-0	1,3-Butadiene	ND	0.50	ND	0.23	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.50	ND	0.19	
64-17-5	Ethanol	ND	5.0	ND	2.7	
75-05-8	Acetonitrile	ND	0.50	ND	0.30	
107-02-8	Acrolein	ND	2.0	ND	0.87	
67-64-1	Acetone	ND	5.0	ND	2.1	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.50	ND	0.089	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	ND	2.0	
107-13-1	Acrylonitrile	ND	0.50	ND	0.23	
75-35-4	1,1-Dichloroethene	ND	0.50	ND	0.13	
75-09-2	Methylene Chloride	ND	0.50	ND	0.14	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	ND	0.16	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.50	ND	0.065	
75-15-0	Carbon Disulfide	ND	5.0	ND	1.6	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.50	ND	0.12	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	ND	0.14	
108-05-4	Vinyl Acetate	ND	5.0	ND	1.4	
78-93-3	2-Butanone (MEK)	ND	5.0	ND	1.7	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 2 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Method Blank

ALS Project ID: P1705727

ALS Sample ID: P171116-MB

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: NA

Analyst: Anusha Bayyrapu

Date Analyzed: 11/16/17

Sample Type: 1.0 L Silonite Summa Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.0	ND	0.28	
110-54-3	n-Hexane	ND	0.50	ND	0.14	
67-66-3	Chloroform	ND	0.50	ND	0.10	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	ND	0.17	
107-06-2	1,2-Dichloroethane	ND	0.50	ND	0.12	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ND	0.092	
71-43-2	Benzene	ND	0.50	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.50	ND	0.080	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.50	ND	0.11	
75-27-4	Bromodichloromethane	ND	0.50	ND	0.075	
79-01-6	Trichloroethene	ND	0.50	ND	0.093	
123-91-1	1,4-Dioxane	ND	0.50	ND	0.14	
80-62-6	Methyl Methacrylate	ND	1.0	ND	0.24	
142-82-5	n-Heptane	ND	0.50	ND	0.12	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.50	ND	0.12	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ND	0.11	
79-00-5	1,1,2-Trichloroethane	ND	0.50	ND	0.092	
108-88-3	Toluene	ND	0.50	ND	0.13	
591-78-6	2-Hexanone	ND	0.50	ND	0.12	
124-48-1	Dibromochloromethane	ND	0.50	ND	0.059	
106-93-4	1,2-Dibromoethane	ND	0.50	ND	0.065	
123-86-4	n-Butyl Acetate	ND	0.50	ND	0.11	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 3 of 3

**Client:** Gannett Fleming, Incorporated  
**Client Sample ID:** Method Blank

ALS Project ID: P1705727  
 ALS Sample ID: P171116-MB

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8  
 Analyst: Anusha Bayyrapu  
 Sample Type: 1.0 L Silonite Summa Canister  
 Test Notes:

Date Collected: NA  
 Date Received: NA  
 Date Analyzed: 11/16/17  
 Volume(s) Analyzed: 1.00 Liter(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	ND	0.11	
127-18-4	Tetrachloroethene	ND	0.50	ND	0.074	
108-90-7	Chlorobenzene	ND	0.50	ND	0.11	
100-41-4	Ethylbenzene	ND	0.50	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.0	ND	0.23	
75-25-2	Bromoform	ND	0.50	ND	0.048	
100-42-5	Styrene	ND	0.50	ND	0.12	
95-47-6	o-Xylene	ND	0.50	ND	0.12	
111-84-2	n-Nonane	ND	0.50	ND	0.095	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	ND	0.073	
98-82-8	Cumene	ND	0.50	ND	0.10	
80-56-8	alpha-Pinene	ND	0.50	ND	0.090	
103-65-1	n-Propylbenzene	ND	0.50	ND	0.10	
622-96-8	4-Ethyltoluene	ND	0.50	ND	0.10	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	ND	0.10	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	ND	0.10	
100-44-7	Benzyl Chloride	ND	1.0	ND	0.19	
541-73-1	1,3-Dichlorobenzene	ND	0.50	ND	0.083	
106-46-7	1,4-Dichlorobenzene	ND	0.50	ND	0.083	
95-50-1	1,2-Dichlorobenzene	ND	0.50	ND	0.083	
5989-27-5	d-Limonene	ND	0.50	ND	0.090	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	ND	0.052	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	ND	0.067	
91-20-3	Naphthalene	ND	0.50	ND	0.095	
87-68-3	Hexachlorobutadiene	ND	0.50	ND	0.047	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

**ALS ENVIRONMENTAL**

SURROGATE SPIKE RECOVERY RESULTS

Page 1 of 1

**Client:** Gannett Fleming, Incorporated

ALS Project ID: P1705727

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8  
 Analyst: Anusha Bayyrapu  
 Sample Type: 1.0 L Silonite Summa Canister(s)  
 Test Notes:

Date(s) Collected: 11/3/17  
 Date(s) Received: 11/13/17  
 Date(s) Analyzed: 11/16/17

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4	Toluene-d8	Bromofluorobenzene	Acceptance Limits	Data Qualifier
		Percent Recovered	Percent Recovered	Percent Recovered		
Method Blank	P171116-MB	<b>102</b>	<b>101</b>	<b>95</b>	70-130	
Lab Control Sample	P171116-LCS	<b>100</b>	<b>100</b>	<b>96</b>	70-130	
SVE-4 PILOT FINAL	P1705727-001	<b>99</b>	<b>100</b>	<b>93</b>	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Lab Control Sample

ALS Project ID: P1705727

ALS Sample ID: P171116-LCS

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: NA

Analyst: Anusha Bayyrapu

Date Analyzed: 11/16/17

Sample Type: 1.0 L Silonite Summa Canister

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
115-07-1	Propene	210	176	84	54-133	
75-71-8	Dichlorodifluoromethane (CFC 12)	213	178	84	64-115	
74-87-3	Chloromethane	210	176	84	47-140	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	211	177	84	60-112	
75-01-4	Vinyl Chloride	211	192	91	63-127	
106-99-0	1,3-Butadiene	210	196	93	57-149	
74-83-9	Bromomethane	210	174	83	63-132	
75-00-3	Chloroethane	210	187	89	68-129	
64-17-5	Ethanol	1,040	1010	97	62-131	
75-05-8	Acetonitrile	210	203	97	56-136	
107-02-8	Acrolein	209	194	93	60-132	
67-64-1	Acetone	1,050	891	85	63-124	
75-69-4	Trichlorofluoromethane (CFC 11)	208	173	83	65-113	
67-63-0	2-Propanol (Isopropyl Alcohol)	422	395	94	62-135	
107-13-1	Acrylonitrile	212	209	99	68-138	
75-35-4	1,1-Dichloroethene	213	184	86	72-118	
75-09-2	Methylene Chloride	213	178	84	67-116	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	212	206	97	61-143	
76-13-1	Trichlorotrifluoroethane (CFC 113)	214	177	83	68-113	
75-15-0	Carbon Disulfide	214	177	83	68-120	
156-60-5	trans-1,2-Dichloroethene	214	199	93	71-125	
75-34-3	1,1-Dichloroethane	212	179	84	68-118	
1634-04-4	Methyl tert-Butyl Ether	213	184	86	60-123	
108-05-4	Vinyl Acetate	1,060	986	93	73-135	
78-93-3	2-Butanone (MEK)	212	196	92	70-129	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 2 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Lab Control Sample

ALS Project ID: P1705727

ALS Sample ID: P171116-LCS

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: NA

Analyst: Anusha Bayyrapu

Date Analyzed: 11/16/17

Sample Type: 1.0 L Silonite Summa Canister

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
156-59-2	cis-1,2-Dichloroethene	212	187	88	69-121	
141-78-6	Ethyl Acetate	426	366	86	66-140	
110-54-3	n-Hexane	213	184	86	61-124	
67-66-3	Chloroform	212	177	83	69-113	
109-99-9	Tetrahydrofuran (THF)	212	192	91	66-121	
107-06-2	1,2-Dichloroethane	212	175	83	62-120	
71-55-6	1,1,1-Trichloroethane	212	183	86	65-116	
71-43-2	Benzene	213	173	81	66-111	
56-23-5	Carbon Tetrachloride	214	186	87	64-122	
110-82-7	Cyclohexane	425	356	84	69-115	
78-87-5	1,2-Dichloropropane	212	187	88	69-121	
75-27-4	Bromodichloromethane	214	195	91	69-123	
79-01-6	Trichloroethene	212	173	82	69-112	
123-91-1	1,4-Dioxane	213	195	92	74-123	
80-62-6	Methyl Methacrylate	424	373	88	75-125	
142-82-5	n-Heptane	213	171	80	68-118	
10061-01-5	cis-1,3-Dichloropropene	208	192	92	74-129	
108-10-1	4-Methyl-2-pentanone	213	197	92	66-138	
10061-02-6	trans-1,3-Dichloropropene	213	213	100	75-130	
79-00-5	1,1,2-Trichloroethane	212	190	90	73-117	
108-88-3	Toluene	211	171	81	66-114	
591-78-6	2-Hexanone	211	198	94	58-146	
124-48-1	Dibromochloromethane	212	193	91	67-130	
106-93-4	1,2-Dibromoethane	211	193	91	70-127	
123-86-4	n-Butyl Acetate	215	197	92	62-140	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.



# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 3 of 3

**Client:** Gannett Fleming, Incorporated

**Client Sample ID:** Lab Control Sample

ALS Project ID: P1705727

ALS Sample ID: P171116-LCS

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8

Date Received: NA

Analyst: Anusha Bayyrapu

Date Analyzed: 11/16/17

Sample Type: 1.0 L Silonite Summa Canister

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
111-65-9	n-Octane	212	182	86	65-121	
127-18-4	Tetrachloroethene	212	177	83	62-119	
108-90-7	Chlorobenzene	212	176	83	66-115	
100-41-4	Ethylbenzene	212	178	84	69-117	
179601-23-1	m,p-Xylenes	424	352	83	67-117	
75-25-2	Bromoform	212	205	97	67-135	
100-42-5	Styrene	211	196	93	70-128	
95-47-6	o-Xylene	211	176	83	67-118	
111-84-2	n-Nonane	212	190	90	61-127	
79-34-5	1,1,2,2-Tetrachloroethane	212	190	90	70-125	
98-82-8	Cumene	212	175	83	68-116	
80-56-8	alpha-Pinene	213	184	86	69-122	
103-65-1	n-Propylbenzene	214	177	83	70-118	
622-96-8	4-Ethyltoluene	211	190	90	69-124	
108-67-8	1,3,5-Trimethylbenzene	212	180	85	65-117	
95-63-6	1,2,4-Trimethylbenzene	212	184	87	67-124	
100-44-7	Benzyl Chloride	212	218	103	75-142	
541-73-1	1,3-Dichlorobenzene	212	193	91	70-124	
106-46-7	1,4-Dichlorobenzene	214	197	92	63-124	
95-50-1	1,2-Dichlorobenzene	214	195	91	66-125	
5989-27-5	d-Limonene	213	206	97	64-135	
96-12-8	1,2-Dibromo-3-chloropropane	210	209	100	73-136	
120-82-1	1,2,4-Trichlorobenzene	218	250	115	70-141	
91-20-3	Naphthalene	209	232	111	71-146	
87-68-3	Hexachlorobutadiene	212	198	93	63-126	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.