



Gannett Fleming

Excellence Delivered As Promised

July 8, 2019

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: **Request for Well Abandonment**
WRR Environmental Services
WDNR BRRTS No. 02-18-000274
WDNR FID No. 618 026 530
EPA ID No. WID 990 829 475

Dear Mae:

On behalf of WRR Environmental Services, Inc., Gannett Fleming, Inc. is requesting approval to abandon the following recovery and monitoring wells at the WRR site in Eau Claire. The reasons for abandoning each of the wells are also included below.

Recovery Wells RW-1 and RW-3

Figure 1 shows the locations of RW-1 and RW-3.

- RW-1 is located upgradient of the source areas onsite and apparently was never operated due to the low-flow rate and low VOC concentrations. RW-1 is not part of the current groundwater monitoring program. A table with the analytical results of groundwater samples collected from RW-1 between May 1994 and October 1996 is included with this letter as Appendix A.
- RW-3 has not operated as a groundwater recovery well since 2003 due to a historically low-flow rate. RW-3 was replaced by dual-phase extraction well RW-10, which was installed in December 2014 and has been operating since September 2015. RW-3 is not part of the current groundwater monitoring program; the only sample collected from RW-3 over the last 12 years was in October 2013. A table with the analytical results of that sample has been included with every Operations and Maintenance report since then.

Gannett Fleming, Inc.

8040 Excelsior Drive, Suite 303, Madison, WI 53717-1338

t 608.836.1500 • f 608.831.3337

www.gannettfleming.com

Ms. Mae Willkom
Wisconsin Department of Natural Resources
July 8, 2019

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Monitoring Wells W-11, W-23, and W-24

These wells are screened in the shallow aquifer and are not sampled as part of the current groundwater monitoring program.

- W-11 has not been included as part of the groundwater monitoring program in over 12 years. Gannett Fleming collected a sample from W-11 on May 23, 2019, and no VOCs were detected in that sample. Associated pages from the May 2019 lab report for the sample collected from W-11 are included with this letter in Appendix B. See Figure 2 for the location of W-11.
- W-23 and W-24 are within 10 feet of well W-1, which is also screened at the water table and is sampled annually as part of the groundwater sampling program. See Figure 1 for the locations of W-1, W-23, and W-24. W-23 and W-24 have not been sampled since March 2006 and June 2007, respectively. A table with the analytical results of groundwater samples collected from W-23 and W-24 between February 2005 and June 2007 is included with this letter as Appendix C.

We are also requesting approval to discontinue sampling Seeps S8N and S9N. These seeps are located sidegradient of the VOC plume where it discharges into Lowes Creek. Tables with the analytical results of samples collected from seeps S8N and S9N between May 2009 and May 2018, when the most recent samples were collected from these seeps, are included with this letter in Appendix D. Because they will not be “sealed/abandoned”, these seeps can always be put back on the sampling program should that be necessary. However, based on the decreasing VOC concentrations within the plume observed over the last five years, we do not believe that the continued sampling of these seeps is necessary.

The wells for which we are requesting approval to abandon in 2019 are highlighted in yellow on Figures 1 and 2. Because the WDNR is requiring WRR to provide financial assurance through closure, including a 3 percent annual increase for inflation and a 10 percent contingency, we would like to abandon these non-essential wells in 2019 rather than carry those costs forward to the end of the project.

Gannett Fleming

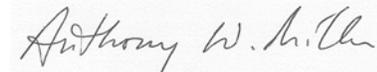
Ms. Mae Willkom
Wisconsin Department of Natural Resources
July 8, 2019

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A check for \$425 for the WDNR's technical assistance to review our request for changes to WRR's long-term groundwater monitoring plan is enclosed with this letter. Please let me know if you have any questions or need additional information to approve our request.

Sincerely,

GANNETT FLEMING, INC.

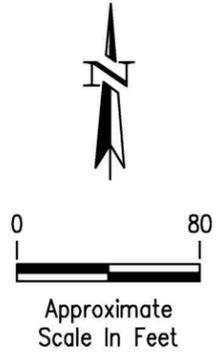


Anthony W. Miller, P.S.S.
Senior Environmental Scientist

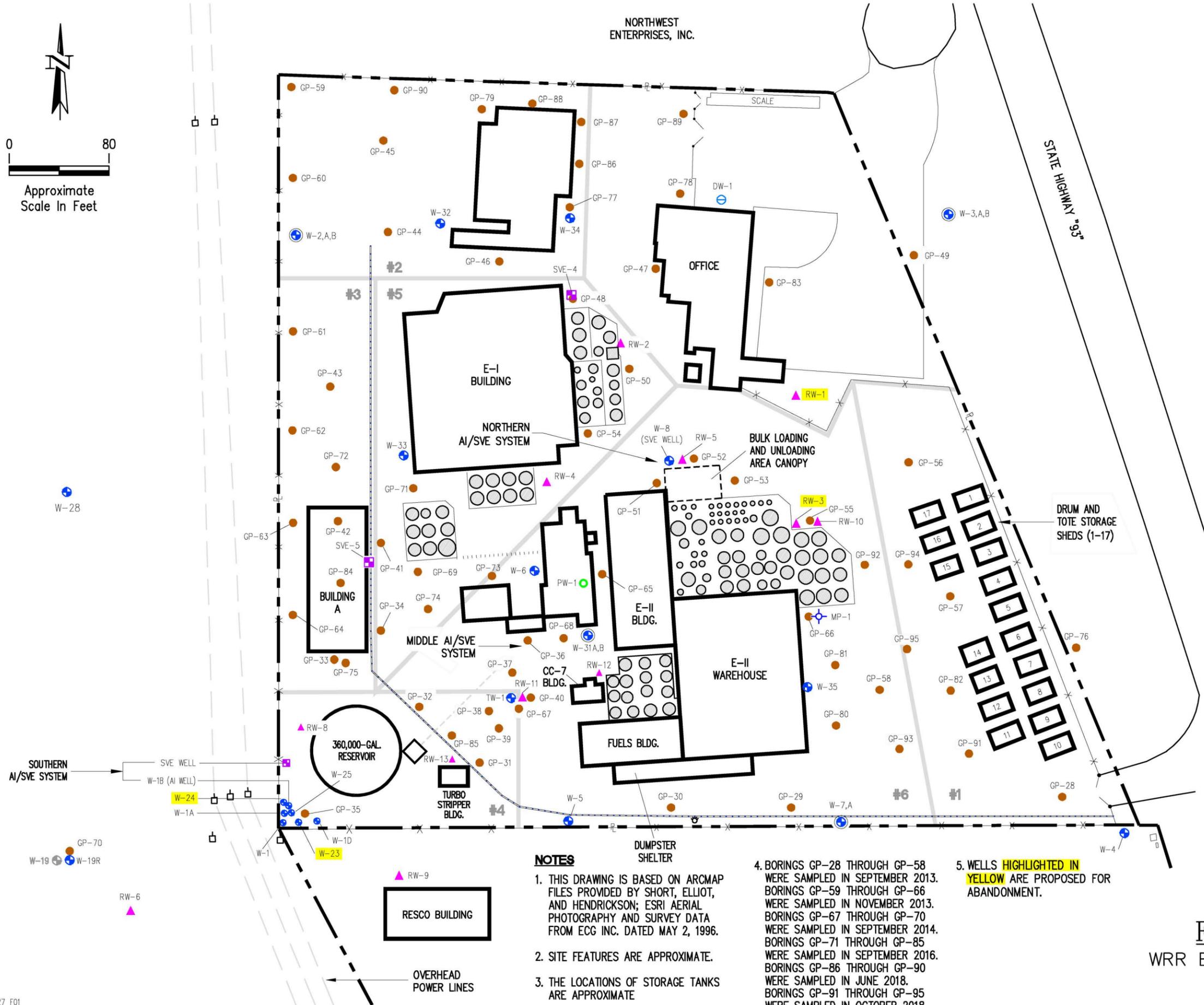
AWM/jec

Enc.

ecc: Doug Coenen (WDNR)
Bob Fuller, Jim Hager, and Becky Anderson (WRR)



Approximate Scale In Feet



LEGEND

- GEOPROBE BORING SAMPLE LOCATION
- ⊕ MONITORING WELL
- ⊕ MONITORING WELL NEST
- ▲ RECOVERY WELL
- PRODUCTION WELL
- ⊕ DRINKING WATER WELL
- ⊕ 1-INCH-DIAMETER MONITORING POINT
- ABOVEGROUND STORAGE TANK (APPROXIMATE LOCATION)
- ⊕ POWER POLE
- ⊕ LIGHT POLE
- X—X— FENCE
- — — SURFACE WATER DRAINAGE DITCH
- #2 SOLID WASTE MANAGEMENT UNITS

NOTES

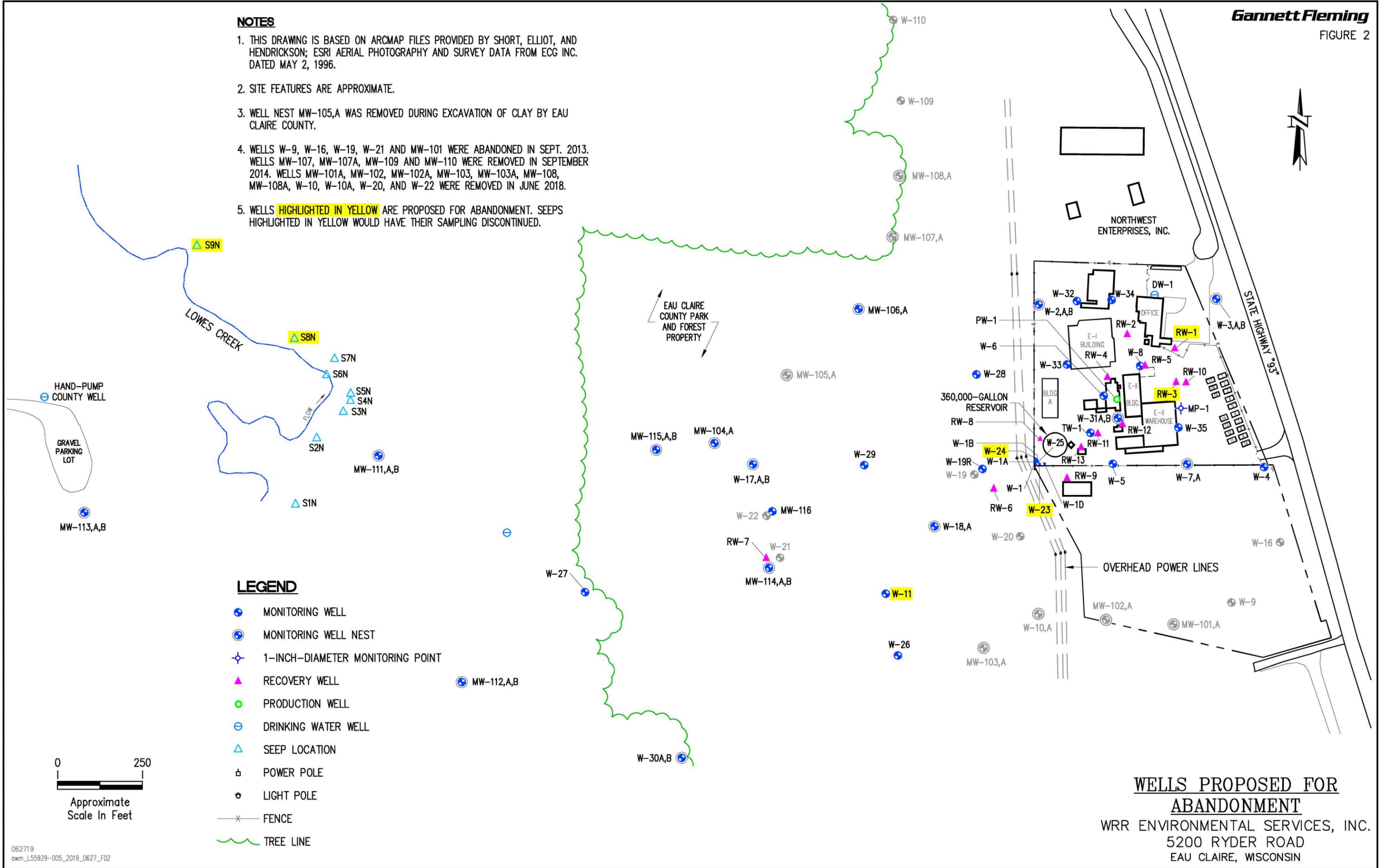
1. THIS DRAWING IS BASED ON ARCMAP FILES PROVIDED BY SHORT, ELLIOT, AND HENDRICKSON; ESRI AERIAL PHOTOGRAPHY AND SURVEY DATA FROM ECG INC. DATED MAY 2, 1996.
2. SITE FEATURES ARE APPROXIMATE.
3. THE LOCATIONS OF STORAGE TANKS ARE APPROXIMATE
4. BORINGS GP-28 THROUGH GP-58 WERE SAMPLED IN SEPTEMBER 2013. BORINGS GP-59 THROUGH GP-66 WERE SAMPLED IN NOVEMBER 2013. BORINGS GP-67 THROUGH GP-70 WERE SAMPLED IN SEPTEMBER 2014. BORINGS GP-71 THROUGH GP-85 WERE SAMPLED IN SEPTEMBER 2016. BORINGS GP-86 THROUGH GP-90 WERE SAMPLED IN JUNE 2018. BORINGS GP-91 THROUGH GP-95 WERE SAMPLED IN OCTOBER 2018.
5. WELLS HIGHLIGHTED IN YELLOW ARE PROPOSED FOR ABANDONMENT.

WELLS PROPOSED FOR ABANDONMENT

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

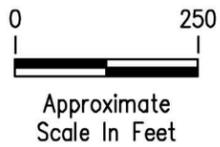
NOTES

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. WELL NEST MW-105,A WAS REMOVED DURING EXCAVATION OF CLAY BY EAU CLAIRE COUNTY.
4. WELLS W-9, W-16, W-19, W-21 AND MW-101 WERE ABANDONED IN SEPT. 2013. WELLS MW-107, MW-107A, MW-109 AND MW-110 WERE REMOVED IN SEPTEMBER 2014. WELLS MW-101A, MW-102, MW-102A, MW-103, MW-103A, MW-108, MW-108A, W-10, W-10A, W-20, AND W-22 WERE REMOVED IN JUNE 2018.
5. WELLS HIGHLIGHTED IN YELLOW ARE PROPOSED FOR ABANDONMENT. SEEPS HIGHLIGHTED IN YELLOW WOULD HAVE THEIR SAMPLING DISCONTINUED.



LEGEND

- MONITORING WELL
- ⊕ MONITORING WELL NEST
- ⊕ 1-INCH-DIAMETER MONITORING POINT
- ▲ RECOVERY WELL
- PRODUCTION WELL
- ⊖ DRINKING WATER WELL
- △ SEEP LOCATION
- ⊕ POWER POLE
- ⊕ LIGHT POLE
- x — FENCE
- ~ TREE LINE



WELLS PROPOSED FOR ABANDONMENT
 WRR ENVIRONMENTAL SERVICES, INC.
 5200 RYDER ROAD
 EAU CLAIRE, WISCONSIN

APPENDIX A

INDOOR AIR VAPOR ACTION LEVELS AND VAPOR RISK SCREENING LEVELS

Table 9 Continued . . .

Analyte	NR 140 ES	Well ID					
		RW-1					
		05/94	11/94	05/95	10/95	04/96	10/96
Acetone	1,000	X	48 ⁽⁷⁾	X	3	X	<5.3
2-Butanone (MEK)	460	X	23	X	3	X	<3.0
1,2-Dichlorobenzene	600	X	X	X	12	1 ⁽¹⁾	<0.8
1,4-Dichlorobenzene	75	X	X	X	4	X	<0.6
1,1-Dichloroethane	850	X	X	X	5	2 ⁽¹⁾	1.6 ⁽⁴⁾
Methylene chloride	5	X	X	X	1 ⁽¹⁾	X	<2.1
Tetrachloroethene	5	X	8.1	X	2	X	<2.2
Toluene	343	X	X	X	X	0.7 ⁽²⁾	0.7 ⁽⁴⁾
1,1,1-Trichloroethane	200	17	X	X	1	1 ⁽¹⁾	0.6 ⁽⁴⁾
Trichloroethene	5	X	X	X	0.9 ⁽¹⁾	X	<0.5
Xylenes (Total)	620	X	X	X	3	X	<0.9

From Eder's
12/23/96
RCRA Facility
Investigation

APPENDIX B

OPERATION & MAINTENANCE MANUAL FOR ROOTS BLOWER



The analytical results and
QA/QC data included with
this report were reviewed by
AWM on 06/05/19.

06-Jun-2019

Anthony Miller
Gannett Fleming, Inc.
8025 Excelsior Dr.
Madison, WI 53717-1900

Re: **WRR (55929.005)**

Work Order: **19051723**

Dear Anthony,

ALS Environmental received 24 samples on 24-May-2019 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 109.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in black ink that reads "Ehrland Bosworth".

Electronically approved by: Ehrland Bosworth

Ehrland Bosworth
Project Manager

Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Gannett Fleming, Inc.
 Project: WRR (55929.005)
 Sample ID: W-11
 Collection Date: 5/22/2019 10:35 AM

Work Order: 19051723
 Lab ID: 19051723-17
 Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C			Analyst: WH	
1,1,1,2-Tetrachloroethane	U		0.38	1.3	µg/L	1	6/3/2019 18:20
1,1,1-Trichloroethane	U		0.46	1.5	µg/L	1	6/3/2019 18:20
1,1,2,2-Tetrachloroethane	U		0.40	1.3	µg/L	1	6/3/2019 18:20
1,1,2-Trichloroethane	U		0.46	1.5	µg/L	1	6/3/2019 18:20
1,1-Dichloroethane	U		0.44	1.5	µg/L	1	6/3/2019 18:20
1,1-Dichloroethene	U		0.40	1.4	µg/L	1	6/3/2019 18:20
1,1-Dichloropropene	U		0.37	1.2	µg/L	1	6/3/2019 18:20
1,2,3-Trichlorobenzene	U		0.42	1.4	µg/L	1	6/3/2019 18:20
1,2,3-Trichloropropane	U		0.40	1.3	µg/L	1	6/3/2019 18:20
1,2,4-Trichlorobenzene	U		0.45	1.5	µg/L	1	6/3/2019 18:20
1,2,4-Trimethylbenzene	U		0.45	1.5	µg/L	1	6/3/2019 18:20
1,2-Dibromo-3-chloropropane	U		0.43	1.4	µg/L	1	6/3/2019 18:20
1,2-Dibromoethane	U		0.41	1.4	µg/L	1	6/3/2019 18:20
1,2-Dichlorobenzene	U		0.32	1.1	µg/L	1	6/3/2019 18:20
1,2-Dichloroethane	U		0.44	1.4	µg/L	1	6/3/2019 18:20
1,2-Dichloropropane	U		0.48	1.6	µg/L	1	6/3/2019 18:20
1,3,5-Trimethylbenzene	U		0.65	2.2	µg/L	1	6/3/2019 18:20
1,3-Dichlorobenzene	U		0.33	1.1	µg/L	1	6/3/2019 18:20
1,3-Dichloropropane	U		0.40	1.3	µg/L	1	6/3/2019 18:20
1,4-Dichlorobenzene	U		0.35	1.2	µg/L	1	6/3/2019 18:20
2,2-Dichloropropane	U		0.52	1.7	µg/L	1	6/3/2019 18:20
2-Butanone	U		0.52	1.7	µg/L	1	6/3/2019 18:20
2-Chlorotoluene	U		0.36	1.2	µg/L	1	6/3/2019 18:20
2-Propanol	U		33	110	µg/L	1	6/3/2019 18:20
4-Chlorotoluene	U		0.31	1.0	µg/L	1	6/3/2019 18:20
4-Methyl-2-pentanone	U		0.52	1.7	µg/L	1	6/3/2019 18:20
Acetone	U		4.4	3.6	µg/L	1	6/3/2019 18:20
Benzene	U		0.46	1.5	µg/L	1	6/3/2019 18:20
Bromobenzene	U		0.38	1.3	µg/L	1	6/3/2019 18:20
Bromochloromethane	U		0.45	1.5	µg/L	1	6/3/2019 18:20
Bromodichloromethane	U		0.49	1.6	µg/L	1	6/3/2019 18:20
Bromoform	U		0.56	1.9	µg/L	1	6/3/2019 18:20
Bromomethane	U		0.90	3.0	µg/L	1	6/3/2019 18:20
Carbon tetrachloride	U		0.40	1.4	µg/L	1	6/3/2019 18:20
Chlorobenzene	U		0.40	1.3	µg/L	1	6/3/2019 18:20
Chloroethane	U		0.68	2.3	µg/L	1	6/3/2019 18:20
Chloroform	U		0.46	1.5	µg/L	1	6/3/2019 18:20
Chloromethane	U		0.83	2.8	µg/L	1	6/3/2019 18:20

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 06-Jun-19

Client: Gannett Fleming, Inc.
Project: WRR (55929.005)
Sample ID: W-11
Collection Date: 5/22/2019 10:35 AM

Work Order: 19051723
Lab ID: 19051723-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	U		0.42	1.4	µg/L	1	6/3/2019 18:20
cis-1,3-Dichloropropene	U		0.57	1.9	µg/L	1	6/3/2019 18:20
Dibromochloromethane	U		0.40	1.3	µg/L	1	6/3/2019 18:20
Dibromomethane	U		0.65	2.2	µg/L	1	6/3/2019 18:20
Dichlorodifluoromethane	U		0.68	2.3	µg/L	1	6/3/2019 18:20
Diisopropyl ether	U		0.41	1.4	µg/L	1	6/3/2019 18:20
Ethylbenzene	U		0.34	1.1	µg/L	1	6/3/2019 18:20
Hexachlorobutadiene	U		0.56	1.9	µg/L	1	6/3/2019 18:20
Isopropylbenzene	U		0.35	1.2	µg/L	1	6/3/2019 18:20
m,p-Xylene	U		0.81	2.7	µg/L	1	6/3/2019 18:20
Methyl tert-butyl ether	U		0.45	1.5	µg/L	1	6/3/2019 18:20
Methylene chloride	U		0.86	2.9	µg/L	1	6/3/2019 18:20
Naphthalene	U		0.77	2.6	µg/L	1	6/3/2019 18:20
n-Butylbenzene	U		0.34	1.1	µg/L	1	6/3/2019 18:20
n-Propylbenzene	U		0.48	1.6	µg/L	1	6/3/2019 18:20
o-Xylene	U		0.31	1.0	µg/L	1	6/3/2019 18:20
p-Isopropyltoluene	U		0.26	0.88	µg/L	1	6/3/2019 18:20
sec-Butylbenzene	U		0.30	1.0	µg/L	1	6/3/2019 18:20
Styrene	U		0.33	1.1	µg/L	1	6/3/2019 18:20
tert-Butylbenzene	U		0.39	1.3	µg/L	1	6/3/2019 18:20
Tetrachloroethene	U		0.39	1.3	µg/L	1	6/3/2019 18:20
Toluene	U		0.45	1.5	µg/L	1	6/3/2019 18:20
trans-1,2-Dichloroethene	U		0.48	1.6	µg/L	1	6/3/2019 18:20
trans-1,3-Dichloropropene	U		0.38	2.7	µg/L	1	6/3/2019 18:20
Trichloroethene	U		0.43	1.4	µg/L	1	6/3/2019 18:20
Trichlorofluoromethane	U		0.52	1.7	µg/L	1	6/3/2019 18:20
Vinyl chloride	U		0.53	1.8	µg/L	1	6/3/2019 18:20
Xylenes, Total	U		0.81	4.4	µg/L	1	6/3/2019 18:20
Surr: 1,2-Dichloroethane-d4	99.0			75-120	%REC	1	6/3/2019 18:20
Surr: 4-Bromofluorobenzene	93.6			80-110	%REC	1	6/3/2019 18:20
Surr: Dibromofluoromethane	103			85-115	%REC	1	6/3/2019 18:20
Surr: Toluene-d8	92.4			85-110	%REC	1	6/3/2019 18:20

Note: See Qualifiers page for a list of qualifiers and their definitions.



Cincinnati, OH
+1 513 733 5336

Fort Collins, CO
+1 970 490 1511

Everett, WA
+1 425 356 2600

Holland, MI
+1 616 399 6070

Chain of Custody Form

Houston, TX
+1 281 530 5656

Spring City, PA
+1 610 948 4903

South Charleston, WV
+1 304 356 3168

Middletown, PA
+1 717 944 5541

Salt Lake City, UT
+1 801 266 7700

York, PA
+1 717 505 5280

Page 2 of 3

COC ID: 189141

ALS Project Manager: EB

ALS Work Order #: 19051723

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order	<u>55429.005</u>	Project Name	<u>WRR</u>	A	<u>VOCs</u>										
Work Order		Project Number		B											
Company Name	<u>Gannett Fleming, Inc.</u>	Bill To Company	<u>Gannett Fleming, Inc</u>	C											
Send Report To		Invoice Attn	<u>Accounts Payable</u>	D											
Address	<u>8025 Excelsior Dr.</u>	Address	<u>8025 Excelsior Dr.</u>	E											
				F											
City/State/Zip	<u>Madison, WI 53717</u>	City/State/Zip	<u>Madison, WI 53717</u>	G											
Phone	<u>(608) 836-1500</u>	Phone	<u>(608) 836-1500</u>	H											
Fax		Fax		I											
e-Mail Address		e-Mail Address		J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	<u>TW-1</u>	<u>5/22/19</u>	<u>16:05</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
2	<u>DW</u>	<u>5/23/19</u>	<u>12:50</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>										
3	<u>RW-2</u>	<u>"</u>	<u>9:50</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>										
4	<u>RW-2</u>																
5	<u>RW-5</u>	<u>5/23/19</u>	<u>11:05</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
6	<u>RW-6</u>																
7	<u>RW-8</u>	<u>5/23/19</u>	<u>14:50</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
8	<u>RW-9</u>	<u>5/23/19</u>	<u>14:55</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>X</u>										
9	<u>W-11</u>	<u>5/22/19</u>	<u>10:35</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>X</u>										
10	<u>TW-1 dup</u>	<u>5/23/19</u>	<u>8:20</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>X</u>										

Sampler(s) Please Print & Sign <u>Car Page</u>		Shipment Method <u>FedEx</u>		Required Turnaround Time: (Check Box) <input type="checkbox"/> Std 10 WK Days <input type="checkbox"/> 5 WK Days <input checked="" type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour				Results Due Date:			
Relinquished by: <u>Car Page</u>	Date: <u>5/23/19</u>	Time: <u>18:00</u>	Received by:		Notes:						
Relinquished by: <u>FedEx</u>	Date: <u>5/24/19</u>	Time: <u>0930</u>	Received by (Laboratory): <u>[Signature]</u>		Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)				
Logged by (Laboratory): <u>KEV</u>	Date: <u>5/24/19</u>	Time: <u>1400</u>	Checked by (Laboratory): <u>EB</u>		<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> TRRP Checklist					
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035					<input type="checkbox"/> Level III Std QC/Raw Data	<input type="checkbox"/> TRRP Level IV					
					<input type="checkbox"/> Level IV SW846/CLP						
					<input type="checkbox"/> Other						

APPENDIX C

SHALLOW AQUIFER GROUNDWAER ANALTHYICAL RESULTS

Table 1 (Continued)
Shallow Aquifer Groundwater Analytical Results

CAS No.	Analytical Parameters	NR 140 Standards		Well No./Sampling Date																	
		ES	PAL	W-23						W-24						W-25					
				2/05	3/05	6/05	9/05	12/05	3/06	2/05	3/05	6/05	9/05	3/06	6/27/07	2/05	3/05	6/05	9/05	12/05	3/06
	VOCs ¹ (µg/l)																				
000067641	Acetone	1,000	200	<5.5	840	<5.5	<5.5	<5.5	<1.7	<5.5	<5.5	<5.5	<5.5	7.9	4.9	55	<5.5	<5.5	<5.5	<5.5	3.6
000075058	Acetonitrile	NSE	NSE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
000071432	Benzene	5.0	0.5	<0.29	<0.22	<0.29	<0.20	<0.20	<0.20	<0.29	<0.29	<0.29	<0.22	<0.20	<0.11	<2.9	<0.22	<0.22	<0.22	<0.20	<0.20
000104518	n-Butylbenzene	NSE	NSE	BDL	BDL	<0.31	<0.24	<0.24	<0.25	BDL	BDL	<0.31	<0.18	<0.37	<0.2	BDL	BDL	<0.18	<0.18	<0.24	<0.37
000075150	Carbon Disulfide	1,000	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
000075003	Chloroethane	400	80	<1.7	<1.0	<1.7	<1.2	<1.2	<1.7	<1.7	<1.7	<1.7	<1.0	<0.48	<1.5	<17	<1.0	<1.0	<1.0	<1.2	<0.48
000067663	Chloroform	6.0	0.6	<0.30	<0.2	<0.30	<0.23	<0.23	<0.21	<0.30	<0.30	<0.30	<0.20	<0.17	<0.17	<3.0	<0.2	<0.2	<0.20	<0.23	<0.17
000074873	Chloromethane	3.0	0.3	<0.24	<0.13	<0.24	<0.20	<0.20	<0.20	<0.24	<0.24	<0.24	<0.13	0.40	<0.47	<2.4	<0.13	<0.13	<0.13	<0.20	<0.14
000095498	2-Chlorotoluene	NSE	NSE	<0.39	<0.20	<0.39	<0.22	<0.22	<0.19	<0.39	<0.39	<0.39	<0.20	<0.19	<0.29	<3.9	<0.20	<0.20	<0.20	<0.22	<0.19
000095501	1,2-Dichlorobenzene	600	60	<0.28	<0.22	<0.28	<0.28	<0.28	<0.34	<0.28	<0.28	<0.28	<0.22	<0.19	<0.28	<2.8	<0.22	<0.22	<0.22	<0.28	<0.19
000106647	1,4-Dichlorobenzene	75	15	<0.23	<0.20	<0.23	<0.33	<0.33	<0.24	<0.23	<0.23	<0.23	<0.20	<0.20	<0.21	<2.3	<0.20	<0.20	<0.20	<0.33	<0.20
000075718	Dichlorodifluoromethane	1,000	200	<0.18	<0.18	<0.18	<0.16	<0.16	<0.17	0.49	<0.18	<0.18	<0.18	<0.17	<0.14	<1.8	<0.18	<0.18	<0.18	<0.16	<0.17
000075343	1,1-Dichloroethane	850	85	<0.30	<0.21	<0.30	<0.17	<0.17	<0.19	<0.30	<0.30	<0.30	<0.21	<0.21	<0.13	<3.0	<0.21	<0.21	<0.21	5.1	<0.21
000107062	1,2-Dichloroethane	5.0	0.5	<0.34	<0.18	<0.34	<0.16	<0.16	<0.19	<0.34	<0.34	<0.34	<0.18	<0.19	0.40	<3.4	<0.18	<0.18	<0.18	<0.16	<0.19
000075354	1,1-Dichloroethene	7.0	0.7	<0.41	<0.17	<0.41	<0.20	<0.20	<0.15	<0.41	<0.41	<0.41	<0.17	<0.19	<0.21	<4.1	<0.17	<0.17	<0.17	0.61	<0.19
000540590	1,2-cis-Dichloroethene	70	7.0	<0.40	<0.23	<0.40	<0.18	<0.18	<0.19	<0.40	<0.40	<0.40	<0.23	<0.20	<0.26	<4.0	<0.23	<0.23	<0.23	1.8	<0.20
000156605	1,2-trans-Dichloroethene	100	20	<0.35	<0.17	<0.35	<0.18	<0.18	<0.17	<0.35	<0.35	<0.35	<0.22	<0.17	<0.13	<3.5	<0.17	<0.17	<0.22	<0.18	<0.17
000078875	1,2-Dichloropropane	5.0	0.5	<0.35	<0.18	<0.35	<0.26	<0.26	<0.18	<0.35	<0.35	<0.35	<0.18	<0.18	<0.24	<3.5	<0.18	<0.18	<0.18	<0.26	<0.18
000100414	Ethylbenzene	700	140	0.81	1.4	1.2	0.38	<0.18	2.9	0.96	<0.26	<0.26	<0.18	0.76	<0.20	<2.6	<0.18	<0.18	<0.18	<0.18	<0.18
000075694	Fluorotrichloromethane	3,490	698	<0.38	<0.19	<0.38	<0.17	<0.17	<0.17	<0.38	<0.38	<0.38	<0.19	<0.34	<0.21	<3.8	<0.19	<0.19	<0.19	<0.17	<0.34
000087683	Hexachlorobutadiene	NSE	NSE	<0.41	<0.32	<0.41	<0.26	<0.26	<0.26	<0.41	<0.41	<0.41	<0.32	<0.43	<0.24	<4.1	<0.32	<0.32	<0.32	<0.26	<0.43
000067630	Isopropyl Alcohol	NSE	NSE	8.6	100	<7.1	<4.3	6.9	<8.6	13	13	<7.1	<3.7	68	<13	<71	8.4	<3.7	<3.7	5.1	11
000098828	Isopropylbenzene	NSE	NSE	<0.36	<0.18	<0.36	<0.19	<0.19	<0.18	<0.36	<0.36	<0.36	<0.18	<0.16	<0.12	<3.6	<0.18	<0.18	<0.18	<0.19	<0.16
000108203	Isopropyl ether	NSE	NSE	<0.35	<0.23	<0.35	<0.25	<0.25	<0.18	<0.35	<0.35	<0.35	<0.23	<0.18	<0.20	<3.5	<0.23	<0.23	<0.23	<0.25	<0.18
000099876	p-Isopropyltoluene	NSE	NSE	<0.30	<0.19	<0.30	<0.23	<0.23	<0.28	<0.30	<0.30	<0.30	<0.19	<0.18	<0.22	<3.0	<0.19	<0.19	<0.19	<0.23	<0.18
000078933	Methyl Ethyl Ketone	460	90	<0.56	<0.80	0.63	<0.52	<0.52	<0.70	0.73	0.63	0.99	<0.80	6.9	<1.0	<5.6	<0.80	<0.80	<0.80	<0.52	1.5
000108101	Methyl Isobutyl Ketone	500	50	<0.53	0.45	<0.53	<0.43	<0.43	<0.20	<0.53	<0.53	<0.53	<0.15	<0.37	<0.15	<5.3	<0.15	<0.15	<0.15	<0.43	<0.37
001634044	Methyl tert-butyl Ether	60	12	<0.31	<0.22	<0.31	<0.18	<0.18	<0.19	<0.31	<0.31	<0.31	<0.22	<0.19	<0.14	<3.1	<0.22	<0.22	<0.22	<0.18	<0.19
000075092	Methylene Chloride	5.0	0.5	<0.43	<0.31	<0.43	<0.25	<0.25	<0.36	<0.43	<0.43	<0.43	<0.20	<0.18	<0.40	<4.3	1.2	1.5	0.48	<0.25	<0.18
000091203	Naphthalene	40	8.0	<0.39	<0.23	<0.39	<0.37	<0.37	<0.38	<0.39	<0.39	<0.39	<0.23	<0.26	<0.31	<3.9	<0.23	<0.23	<0.23	<0.37	<0.26
000100425	Styrene	100	10	<0.32	BDL	<0.32	<0.18	<0.18	<0.21	<0.32	<0.32	<0.32	<0.19	<0.14	<0.16	<3.2	BDL	<0.19	<0.19	<0.18	<0.14
000127184	Tetrachloroethene	5.0	0.5	<0.31	<0.21	<0.31	<0.16	<0.16	<0.16	<0.31	<0.31	0.38	<0.21	<0.18	<0.26	<3.1	<0.21	<0.21	<0.21	<0.16	<0.18
000108883	Toluene	1,000	200	<0.34	0.28	<0.34	<0.21	<0.21	<0.19	<0.34	<0.34	<0.34	<0.19	<0.18	<0.24	<3.4	0.47	<0.19	<0.19	<0.21	<0.18
NA	Total Trimethylbenzenes	480	96	<0.70	<0.38	<0.70	<0.44	<0.54	<0.47	<0.70	<0.70	<0.70	<0.38	<0.36	<0.54	<7.0	<0.38	<0.38	<0.38	<0.54	0.34
001330207	Total Xylenes	10,000	1,000	<0.89	0.21	<0.89	0.25	0.26	2.05	<0.89	<0.89	<0.89	<0.35	2.88	<0.61	<8.9	<0.58	<0.58	<0.35	<0.60	3.42
000087616	1,2,3-Trichlorobenzene	NSE	NSE	<0.36	<0.25	<0.36	<0.32	<0.32	<0.32	<0.36	<0.36	<0.36	<0.25	<0.17	<0.13	<3.6	<0.25	<0.25	<0.25	<0.32	<0.17
000120821	1,2,4-Trichlorobenzene	70	14	<0.37	<0.24	<0.36	<0.21	<0.21	<0.26	<0.37	<0.37	<0.37	<0.24	<0.15	<0.25	<3.7	<0.24	<0.24	<0.24	<0.21	<0.15
000071556	1,1,1-Trichloroethane	200	40	<0.27	<0.29	<0.27	<0.21	<0.21	<0.19	<0.27	<0.27	<0.27	<0.29	<0.20	<0.18	<2.7	<0.29	<0.29	<0.29	<0.21	<0.20
000079005	1,1,2-Trichloroethane	5.0	0.5	<0.42	<0.26	<0.42	<0.20	<0.20	<0.17	2.4	0.46	<0.42	<0.26	<0.17	<0.21	<4.2	<0.26	<0.26	<0.26	<0.20	<0.17
000079016	Trichloroethene	5.0	0.5	<0.25	<0.28	<0.25	0.23	<0.19	<0.30	0.32	0.47	0.27	0.33	<0.21	0.57	<2.5	0.36	<0.28	<0.28	3	<0.21
000075014	Vinyl Chloride	0.2	0.02	<0.11	<0.15	<0.11	<0.20	<0.20	<0.20	<0.11	<0.11	<0.11	<0.15	<0.17	<0.18	<1.1	<0.15	<0.15	<0.15	5.4	<0.17

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APPENDIX D

**TABLES WITH THE ANALYTICAL RESULTS OF SAMPLES COLLECTED FROM SEEPS
S8N AND S9N BETWEEN MAY 2009 AND MAY 2018**

614	S8N	RESULTS MONTH/YEAR																											
		DESCRIPTION	CASNU	ES	PAL	05/09	10/09	05/10	10/10	05/11	10/11	05/12	10/12	06/13	10/13	10/13Du	05/14	10/14	12/14	06/15	11/15	05/16	10/16	5/17	10/17	05/18	09/18	10/18	05/19
1,1,1-Trichloroethane	0000715	200	40	< .13		< .2		< .22		< .21										< 0.50	< 0.50		< 0.50		< 0.36				
1,1,2-Trichloroethane	0000790	5	0.5	< .21		< .17		< .23		< .25										< 0.20	< 0.20		< 0.20		< 0.40				
1,1-Dichloroethane	0000753	850	85	< .17		< .16		< .21		< .19										< 0.24	< 0.24		< 0.24		< 0.31				
1,1-Dichloroethene	0000753	7	0.7	< .22		< .15		< .21		< .2										< 0.41	< 0.41		< 0.41		< 0.28				
1,2,3-Trichlorobenzene	0000876	NSE	NSE	< .3		< .23		< .27		< .26										< 2.1	< 2.1		< 2.1		< 0.17				
1,2,4-Trichlorobenzene	0001208	70	14	< .22		< .3		< .32		< .28										< 2.2	< 2.2		< 2.2		< 0.21				
1,2-cis-Dichloroethene	0001565	70	7	< .16		< .12		< .2		< .21										< 0.26	< 0.26		< 0.26		< 0.25				
1,2-Dichlorobenzene	0000955	600	60	< .16		< .13		< .16		< .19										< 0.50	< 0.50		< 0.50		< 0.22				
1,2-Dichloroethane	0001070	5	0.5	< .15		< .22		< .16		< .24										< 0.17	< 0.17		< 0.17		< 0.17				
1,2-Dichloropropane	0000788	5	0.5	< .33		< .21		< .22		< .2										< 0.23	< 0.23		< 0.23		< 0.25				
1,2-trans-Dichloroethen	0001566	100	20	< .21		< .13		< .26		< .19										< 0.26	< 0.26		< 0.26		< 0.28				
1,4-Dichlorobenzene	0001064	75	15	< .3		< .13		< .22		< .22										< 0.50	< 0.50		< 0.50		< 0.21				
124TRIMTHLBENZEN	0000956	480	96	< .19		< .12		< .18		< .24										< 0.50	< 0.50		< 0.50		< 0.37				
135TRIMTHLBENZEN	0001086	480	96	< .19		< .12		< .2		< .25										< 0.50	< 0.50		< 0.50		< 0.29				
2-Chlorotoluene	0000954	NSE	NSE	< .19		< .15		< .2		< .26										< 0.50	< 0.50		< 0.50		< 0.32				
Acetone	0000676	9000	1800	< 4		9.9		6.4		8										3.9	< 3.0		< 3.0		< 0.92				
Benzene	0000714	5	0.5	< .24		< .13		< .2		< .26										< 0.50	< 0.50		< 0.50		< 0.30				
Chloroethane	0000750	400	80	< 1.1		< .67		< 1.5		< 2.1										< 0.37	< 0.37		< 0.37		< 0.29				
Chloroform	0000676	6	0.6	< .13		< .13		< .2		< .23										< 2.5	< 2.5		< 2.5		< 0.26				
Chloromethane	0000748	30	3	< .23		< .28		< .23		< .24										< 0.50	< 0.50		< 0.50		< 0.17				
Dichlorodifluoromethan	0000757	1000	200	< .25		< .13		< .29		< .19										< 0.22	< 0.22		< 0.22		< 0.13				
Ethylbenzene	0001004	700	140	< .15		< .12		< .21		< .22										< 0.50	< 0.50		< 0.50		< 0.40				
Fluorotrichloromethane	0000756	3490	698	< .21		< .11		< .32		< .25										< 0.18	< 0.18		< 0.18		< 0.20				
Hexachlorobutadiene	0000876	NSE	NSE	< .25		< .36		< .45		< .23										< 2.1	< 2.1		< 2.1		< 0.24				
Isopropyl Alcohol	0000676	NSE	NSE	14		< 14		< 8.3		16										< 24.3	< 24.3		< 24.3		NA				
Isopropyl ether	0001082	NSE	NSE	< .16		< .2		< .25		< .19										< 0.50	< 0.50		< 0.50		< 0.13				
Isopropylbenzene	0000988	NSE	NSE	< .18		< .1		< .22		< .22										< 0.14	< 0.14		< 0.14		< 0.31				
Methyl Ethyl Ketone	0000789	4000	800	1.1		1		< 1		< 1										< 3.0	< 3.0		< 3.0		< 0.58				
Methyl Isobutyl Ketone	0001081	500	50	< .37		< .64		< .53		< .31										< 2.1	< 2.1		< 2.1		< 0.11				
Methyl tert-butyl Ether	0016340	60	12	< .19		< .13		< .28		< .19										< 0.17	< 0.17		< 0.17		< 0.12				
Methylene Chloride	0000750	5	0.5	< .22		< .27		< .48		< .4										< 0.23	< 0.23		< 0.23		< 0.56				
Naphthalene	0000912	100	10	< .32		< .31		< .41		< .32										< 2.5	< 2.5		< 2.5		< 0.18				
n-Butylbenzene	0001045	NSE	NSE	< .23		< .14		< .18		< .24										< 0.50	< 0.50		< 0.50		< 0.22				
p-Isopropyltoluene	0000998	NSE	NSE	< .16		4.5		7.2		1										0.68	< 0.50		< 0.50		< 0.14				
Styrene	0001004	100	10	< .2		< .11		< .17		< .19										< 0.50	< 0.50		< 0.50		< 0.24				
Tetrachloroethene	0001271	5	0.5	< .12		< .18		< .21		< .15										< 0.50	< 0.50		< 0.50		< 0.27				
Toluene	0001088	800	160	< .18		.26		1.5		.55										< 0.50	< 0.50		< 0.50		< 0.37				
Total TriMthBenzenes	TOTALT	480	96	< .19		< .12		< .18		< .24										< 1	< 1		< 1		< .66				
Total Xylenes	TOTAL X	2000	400	< .17		< .16		< .24		< .22										< 1.5	< 1.5		< 1.5		< 1.33				
Trichloroethene	0000790	5	0.5	< .37		< .16		< .17		< .25										< 0.33	< 0.33		< 0.33		< 0.30				
Vinyl Chloride	0000750	0.2	0.02	< .17		< .17		< .18		< .15										< 0.18	< 0.18		< 0.18		< 0.20				
Xylene - M & P	1796012	2000	400	< .28		< .22		< .33		< .46										< 1.0	< 1.0		< 1.0		< 0.98				
Xylene - O	0000954	2000	400	< .17		< .16		< .24		< .22										< 0.50	< 0.50		< 0.50		< 0.35				

616	S9N	RESULTS MONTH/YEAR																											
		DESCRIPTION	CASNU	ES	PAL	05/09	10/09	05/10	10/10	05/11	10/11	05/12	10/12	06/13	10/13	10/13Du	05/14	10/14	12/14	06/15	11/15	05/16	10/16	5/17	10/17	05/18	09/18	10/18	05/19
1,1,1-Trichloroethane	0000715	200	40	< .13		< .2		< .22		< .21		< 0.44														< 0.36			
1,1,2-Trichloroethane	0000790	5	0.5	< .21		< .17		< .23		< .25		< 0.39														< 0.40			
1,1-Dichloroethane	0000753	850	85	< .17		< .16		< .21		< .19		< 0.28														< 0.31			
1,1-Dichloroethene	0000753	7	0.7	< .22		< .15		< .21		< .2		< 0.43														< 0.28			
1,2,3-Trichlorobenzene	0000876	NSE	NSE	< .3		< .23		< .27		< .26		< 0.77														< 0.17			
1,2,4-Trichlorobenzene	0001208	70	14	< .22		< .3		< .32		< .28		< 2.5														< 0.21			
1,2-cis-Dichloroethene	0001565	70	7	< .16		< .12		< .2		< .21		< 0.42														< 0.25			
1,2-Dichlorobenzene	0000955	600	60	< .16		< .13		< .16		< .19		< 0.44														< 0.22			
1,2-Dichloroethane	0001070	5	0.5	< .15		< .22		< .16		< .24		< 0.48														< 0.17			
1,2-Dichloropropane	0000788	5	0.5	< .33		< .21		< .22		< .2		< 0.50														< 0.25			
1,2-trans-Dichloroethen	0001566	100	20	< .21		< .13		< .26		< .19		< 0.37														< 0.28			
1,4-Dichlorobenzene	0001064	75	15	< .3		< .13		< .22		< .22		< 0.43														< 0.21			
124TRIMTHLBENZEN	0000956	480	96	< .19		< .12		< .18		< .24		< 0.57														< 0.37			
135TRIMTHLBENZEN	0001086	480	96	< .19		< .12		< .2		< .25		< 2.5														< 0.29			
2-Chlorotoluene	0000954	NSE	NSE	< .19		< .15		< .2		< .26		< 0.48														< 0.32			
Acetone	0000676	9000	1800	< 4		12		< 4.2		6.3		7.9														< 0.92			
Benzene	0000714	5	0.5	< .24		< .13		< .2		< .26		< 0.50														< 0.30			
Chloroethane	0000750	400	80	< 1.1		< .67		< 1.5		< 2.1		< 0.44														< 0.29			
Chloroform	0000676	6	0.6	< .13		< .13		< .2		< .23		< 0.69														< 0.26			
Chloromethane	0000748	30	3	< .23		< .28		< .23		< .24		0.41														< 0.17			
Dichlorodifluoromethan	0000757	1000	200	< .25		< .13		< .29		< .19		< 0.40														< 0.13			
Ethylbenzene	0001004	700	140	< .15		< .12		< .21		< .22		< 0.50														< 0.40			
Fluorotrichloromethane	0000756	3490	698	< .21		< .11		< .32		< .25		< 0.48														< 0.20			
Hexachlorobutadiene	0000876	NSE	NSE	< .25		< .36		< .45		< .23		< 1.3														< 0.24			
Isopropyl Alcohol	0000676	NSE	NSE	< 10		< 14		< 8.3		< 6.3		< 40.8														NA			
Isopropyl ether	0001082	NSE	NSE	< .16		< .2		< .25		< .19		< 0.50														< 0.13			
Isopropylbenzene	0000988	NSE	NSE	< .18		< .1		< .22		< .22		< 0.34														< 0.31			
Methyl Ethyl Ketone	0000789	4000	800	< .5		1.1		< 1		< 1		< 2.7														< 0.58			
Methyl Isobutyl Ketone	0001081	500	50	< .37		< .64		< .53		< .31		< 2.3														< 0.11			
Methyl tert-butyl Ether	0016340	60	12	< .19		< .13		< .28		< .19		< 0.49														< 0.12			
Methylene Chloride	0000750	5	0.5	< .22		< .27		< .48		< .4		< 0.36														< 0.56			
Naphthalene	0000912	100	10	< .32		< .31		< .41		< .32		< 2.5														< 0.18			
n-Butylbenzene	0001045	NSE	NSE	< .23		< .14		< .18		< .24		< 0.40														< 0.22			
p-Isopropyltoluene	0000998	NSE	NSE	< .16		< .11		< .19		< .2		< 0.40														< 0.14			
Styrene	0001004	100	10	< .2		< .11		< .17		< .19		< 0.35														< 0.24			
Tetrachloroethene	0001271	5	0.5	< .12		< .18		< .21		< .15		< 0.47														< 0.27			
Toluene	0001088	800	160	< .18		.32		< .17		< .23		< 0.44														< 0.37			
Total TriMthBenzenes	TOTALT	480	96	< .19		< .12		< .18		< .24		< .57														< .66			
Total Xylenes	TOTAL X	2000	400	< .17		< .16		< .24		< .22		< .5														< 1.33			
Trichloroethene	0000790	5	0.5	< .37		< .16		< .17		< .25		< 0.43														< 0.30			
Vinyl Chloride	0000750	0.2	0.02	< .17		< .17		< .18		< .15		< 0.18														< 0.20			
Xylene - M & P	1796012	2000	400	< .28		< .22		< .33		< .46		< 0.82														< 0.98			
Xylene - O	0000954	2000	400	< .17		< .16		< .24		< .22		< 0.50														< 0.35			