



**Gannett Fleming**

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January 28, 2020

File #34265.003

John Sager  
Wisconsin Department of Natural Resources  
1701 North 4th Street  
Superior, WI 54880

Re: 2019 Remediation Progress Report for Tank 70 Release Site  
Superior Refining Company LLC Refinery, Superior, WI  
WDNR BRRTS# 02-16-223154 and Facility ID: 816009590

Dear John:

On behalf of Superior Refining Company LLC (SRC), Gannett Fleming, Inc. (GF) is submitting this remediation progress report for the Murphy Oil (Murphy) Tank 70 release site (WDNR BRRTS# 02-16-223154) at the SRC refinery in Superior for 2019. In addition, it includes background information on the refinery, Tank 70 basin, and Tank 70 release site for reference.

Periodic reporting of remediation site progress to the Wisconsin Department of Natural Resources (WDNR) is required pursuant to ss. NR 700.11(1) and 724.13(3), Wisconsin Administrative Code. A completed certification page for the report is also attached.

### **Pertinent Site Background and Tank 70 Basin Information**

Figure 1 is a location map showing Tank 70, the refinery, its approximate property boundary, and the area around the refinery and was prepared using the most recent USGS topographic map. Figure 2 is a site plan of the Tank 70 basin, which is in the SW  $\frac{1}{4}$  of the SW  $\frac{1}{4}$  of Section 25, Township 49 North, Range 14 West, Superior Township of Douglas County.

The land surrounding the basin is also owned by SRC and is part of the refinery. The closest surface water is Newton Creek, located approximately 2,000 feet east, as shown on Figure 1. The Tank 70 basin is located on relatively level land in the north-central area of the refinery. The basin's ground surface is unpaved. Beneath an impermeable liner installed in June 2003, as described in the following section, the basin is underlain by native clay; the depth to groundwater ranges from approximately 1 to 4 feet below ground surface (bgs), based on

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John Sager  
Wisconsin Department of Natural Resources  
January 28, 2020

-2-

location and time of year; and the regional direction of shallow groundwater flow below the refinery is to the east.

The hydraulic conductivity of the native clay underlying the refinery is on the order of  $10^{-7}$  centimeters per second (cm/sec). Assuming a horizontal hydraulic gradient of 0.003 and effective porosity of 0.06, the estimated horizontal groundwater flow velocity is approximately 0.01 foot per year (ft/yr). This does not include contaminant retardation.

In October 2011, Calumet Superior, LLC (Calumet) acquired the refinery from Murphy. Effective November 8, 2017, Husky Superior Refining Holding Corp (Husky Superior) purchased Calumet and changed its legal name to Superior Refining Company LLC.

#### **Tank 70 Release Site Background and Remedial History (February 1999-October 2018)**

A release of about 200 gallons of platformate (gasoline blend stock) within the Tank 70 basin was reported to the WDNR on February 25, 1999. The release occurred when a bleeder valve cracked at the ground surface due to frost heave. In immediate response to the release, Murphy personnel shoveled up and drummed the stained snow, and a small amount of water was applied to float the gasoline. The water/gasoline mixture was vacuumed up and treated in the No. 1 API oil/water separator/wastewater treatment plant (WWTP). When the snow melted in the spring, water in the basin was also vacuumed up and treated in the No. 1 API oil/water separator/WWTP.

In January 2002, all liquid product (platformate) was removed from Tank 70 to conduct an API 653 tank inspection. An access hatch was removed to allow workers access to the inside of the tank. On January 7, 2002, a fire occurred inside Tank 70 as the tank was being cleaned. Murphy personnel used a mixture of water and foam to put out the fire, which took approximately two hours. The water and foam that were used to put out the fire ran out the open access hatch into the bermed Tank 70 basin. Some of the water/foam mixture was pumped into the adjacent Tank 71 basin, which is lined with a plastic membrane. Because of the extremely cold temperatures at the time of the fire and other activities associated with the fire that needed to be completed, Murphy was not able to immediately remove all the water/foam mixture from the Tanks 70 and Tank 71 basins.

John Sager  
Wisconsin Department of Natural Resources  
January 28, 2020

-3-

Sampling conducted after both releases defined the estimated extent of impacted soil. (Summaries of the soil investigations and analytical results are provided in GF's October 26, 2010, closure request to the WDNR.) In addition, after removing the tank that was destroyed by fire in January 2002 and prior to installing the new tank in the basin, Murphy installed an impermeable liner in June 2003. Prior to the installation of the liner, soil in the Tank 70 basin was graded flat, a layer of cobbles was laid down and leveled, followed by 0.5 foot of sand. The liner was 60-mil HDPE and was covered with 1.5 feet of clay fill. The 1.5 feet of clay protects the liner from exposure to weather extremes, maintenance vehicles, and personnel.

This clay layer and liner serve as a permanent engineered barrier that eliminates direct-contact and meets the performance standard criteria in NR 720.08. This liner also minimizes future soil-to-groundwater contaminant migration.

Research conducted by the American Petroleum Institute (API) and published in a 2004 document titled, "API Interactive LNAPL Guide, Version 2.0" found that periodic manual removal of product is most appropriate for low to moderate product production volumes, such as low permeability aquifers (hydraulic conductivity  $< 10^{-5}$  cm/sec). The hydraulic conductivity of the native clay underlying the refinery is on the order of  $10^{-7}$  cm/sec, as described in the previous section of this letter report.

Based on the recommendations included in the API (2004) document, Twin Ports Testing of Superior (Twin Ports) manually bailed product when found in a well. API (2004) also states that product preferentially accumulates in wells when the potentiometric surface is low. This occurs because as the potentiometric surface drops, product that remains above the water level will drain downward into the well. As the potentiometric surface rises, the product becomes submerged and trapped in the soil pores and subsequently will not accumulate in the well. In general, this appears to be the case in the Tank 70 site wells that have had measurable product. To take advantage of this apparent pattern, the wells located in the basin were purged dry following each depth to product or groundwater measurement event to promote the accumulation of product.

Using this approach from November 1999 to May 2009, a total of 262 liters (approximately 70 gallons) of product was recovered. Most of the free product (>92%) was recovered from MP-1/T70, MP-4/T70, MW-1/T70, and MW-2/T70. All free product and/or petroleum-contaminated

John Sager  
Wisconsin Department of Natural Resources  
January 28, 2020

-4-

groundwater recovered from monitoring locations was treated in the No. 1 API oil/water separator/WWTP.

In addition to bailing free product, Twin Ports installed 1.5-inch-diameter, petroleum-absorbent socks in select wells. These socks passively absorbed any free product that collected in the well. Twin Ports regularly inspected the absorbent socks in the monitoring wells and the monitoring points for product and replaced the socks as necessary.

In October 2010, GF submitted a closure request to the WDNR on behalf of Murphy, as outlined below.

- There is an engineered cap in place to prevent direct contact.
- Summaries of the historical free product measurements and volume of product recovered were included and documented that product had been recovered to the extent practicable.
- The residual groundwater contamination should not migrate beyond the immediate vicinity of the basin, based on the relatively low (i.e., approximately 0.01 ft/yr) horizontal groundwater flow velocity in the native clay.
- The site would be registered on the WDNR's Geographic Information System (GIS) database of sites where residual soil and groundwater contamination remains.

In August 2011, supplemental soil and groundwater data from outside the Tank 70 basin were submitted to the WDNR, as requested, in support of the October 2010 closure request. However, on September 9, 2011, the WDNR denied site closure and requested additional groundwater monitoring to show stable or decreasing trends. Subsequent SRC/GF groundwater monitoring data submittals to the WDNR include October 2011 through August 2013 data in May 2014, September 2013 through December 2017 data in April 2018, and June through October 2018 data in November 2018.

### **Remedial and Monitoring Activities in 2019**

The Tank 70 basin monitoring network currently includes MW-1R/T70, MW-2R/T70, and MW-3/T70 through MW-7/T70; monitoring points MP-1/T70 through MP-4/T70; and test pit sumps TP-1/T70, TP-3/T70, and TP-4/T70, as shown on Figure 2. Note that:

John Sager  
Wisconsin Department of Natural Resources  
January 28, 2020

-5-

- Test pits TP-2/T70 and TP-5/T70 were backfilled in June 2006.
- MW-1/T70 and MW-2/T70 were plugged and abandoned in November 2007 and replaced by MW-1R/T70 and MW-2R/T70, respectively.
- MW-7/T70 has not been sampled since June 2015, and MW-1R/T70 has not been sampled since October 2017 due to damaged PVC casing/surface water infiltration.

Since the last update report was submitted to the WDNR on November 12, 2018, work in the Tank 70 basin has included monitoring on-site wells for free product and collecting groundwater samples from select locations.

During the reporting period, no measurable product was observed as summarized in Table 1. SRC will continue to check for free product, but for all practical purposes, we believe free product has been recovered to the extent practical from the Tank 70 basin, and the site is ready for closure.

Groundwater samples were collected by GF and Insight Environmental field staff at the site during the reporting period in May and October 2019. Each well was purged dry twice and allowed to recover for at least 14 days, prior to the collection of the samples. Monitoring wells MW-2R/T70 and MW-3/T70 through MW-6/T70 were routinely sampled.

Field staff used new one-time-use polyethylene bailers with new nylon rope to collect each groundwater sample. The groundwater samples were sent to Pace Analytical of Green Bay (Wisconsin laboratory certification #405132750) and analyzed for petroleum volatile organic compounds (PVOCs) and naphthalene (N). Four of the PVOCs of common concern include benzene, toluene, ethylbenzene, and xylenes (BTEX). The other PVOCs include the two trimethylbenzenes (TMBs) and methyl tert butyl ether (MTBE).

Wells not sampled due to damaged PVC casing/surface water infiltration include MW-7/T70 starting in October 2015 and MW-1R/T70 starting in June 2018.

Table 2 summarizes the analytical results of the groundwater samples in micrograms per liter ( $\mu\text{g}/\ell$ ). As shown in Table 2, at least one PVOC compound has historically been present at a concentration at or above its applicable NR 140 enforcement standard (ES) in each well. However, because of the removal of accumulated free product over the years, PVOC and N

John Sager  
Wisconsin Department of Natural Resources  
January 28, 2020

-6-

concentrations in the wells have been stable or decreasing. For example, Figures 3 through 5 present trend analysis plots for BTEX, BTEX(+)N, and BTEX(+)N(+)TMBs concentrations in the groundwater at MW-1R/T70, MW-2R/T70, and MW-4/T70 through MW-7/T70. Note that the best-fit exponential trend lines were generated using Excel. As shown on Figures 3 through 5, dissolved-phase concentrations in the wells have followed a general downward trend. Attachment A provides copies of the laboratory reports and chain of custody records for the groundwater samples collected in 2019.

Historically, a groundwater contour map for the Tank 70 release site has not been prepared because groundwater levels in the wells either are influenced by local surface/melt water in the spring or typically do not have sufficient time to reach static levels after they are bailed later in the year. Consequently, a groundwater contour map representing static conditions for the Tank 70 site cannot be created.

### **Future Work**

Due to relatively shallow groundwater, cold weather, and snow, year-round access to wells at the refinery is not practical. During time periods when it's warm enough to allow access (i.e., from April/May through October/November), SRG's work plan for 2020 follows:

- Abandon MW-1R/T70 and MW-7/T70 since the PVC casing of both wells is damaged. A replacement well will not be installed at either location because:
  - Product has never been measured in MW-1R/T70 since it was installed in May 2008.
  - Product has not been measured in MW-7/T70 since November 2007.
  - Historical data document that PVOC and N concentrations in both wells are decreasing. SRC had planned to abandon MW-1R/T70 and MW-7/T70 in 2019, but the work was delayed due to implementation of a new policy on ground disturbance at the refinery.
- Continue to manually bail product from the remaining five monitoring wells (MW-2/T70 through MW-6/T70) and four monitoring points (MP-1/T70 through MP-4/T70) when free product is present. The purged product/water will continue to be treated in the refinery's No. 1 API oil/water separator/WWTP.

**Gannett Fleming**

John Sager  
Wisconsin Department of Natural Resources  
January 28, 2020

-7-

- Continue to gauge test pit sump TP-1/T70, along with the monitoring wells, etc. If product is observed in TP-1/T70, then pump the sump using an on-site vacuum truck. The pumped product/water would be treated in the refinery's No. 1 API oil/water separator/WWTP.
- If product is observed, then check the wells, points, and test pit sump monthly. If product is not observed, then check the wells, points, and sump quarterly.
- Collect groundwater samples from those monitoring wells without product biannually, and have the samples analyzed for PVOCs and N by a Wisconsin-certified laboratory using EPA Method 8260. Each monitoring well (but not TP-1/T70) will be purged dry twice and allowed to recover, prior to the collection of the samples.
- Document the proper abandonment of MW-1R/T70 and MW-7/T70, recovery of any product, and analytical results of the 2020 groundwater samples in our next remediation progress report to the WDNR by the end of January 2021.

Please contact Matt Turner at SRC and/or me if you have any comments, questions, need additional information, or agree that the site is now ready for closure.

Sincerely,

GANNETT FLEMING, INC.



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

CCW/jec  
Enc.

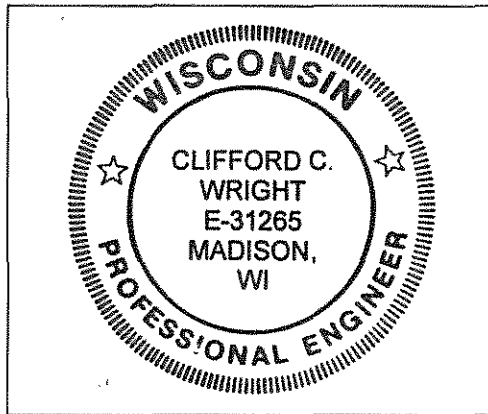
ecc: Matt Turner (SRC)  
Tony Miller, Dennis Kugle (GF)

**ENGINEERING AND HYDROGEOLOGIST CERTIFICATIONS**

I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print Name Clifford C. Wright	Title Project Engineer
Signature <i>Clifford C. Wright</i>	Date 1/28/2020

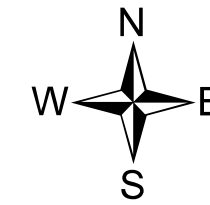
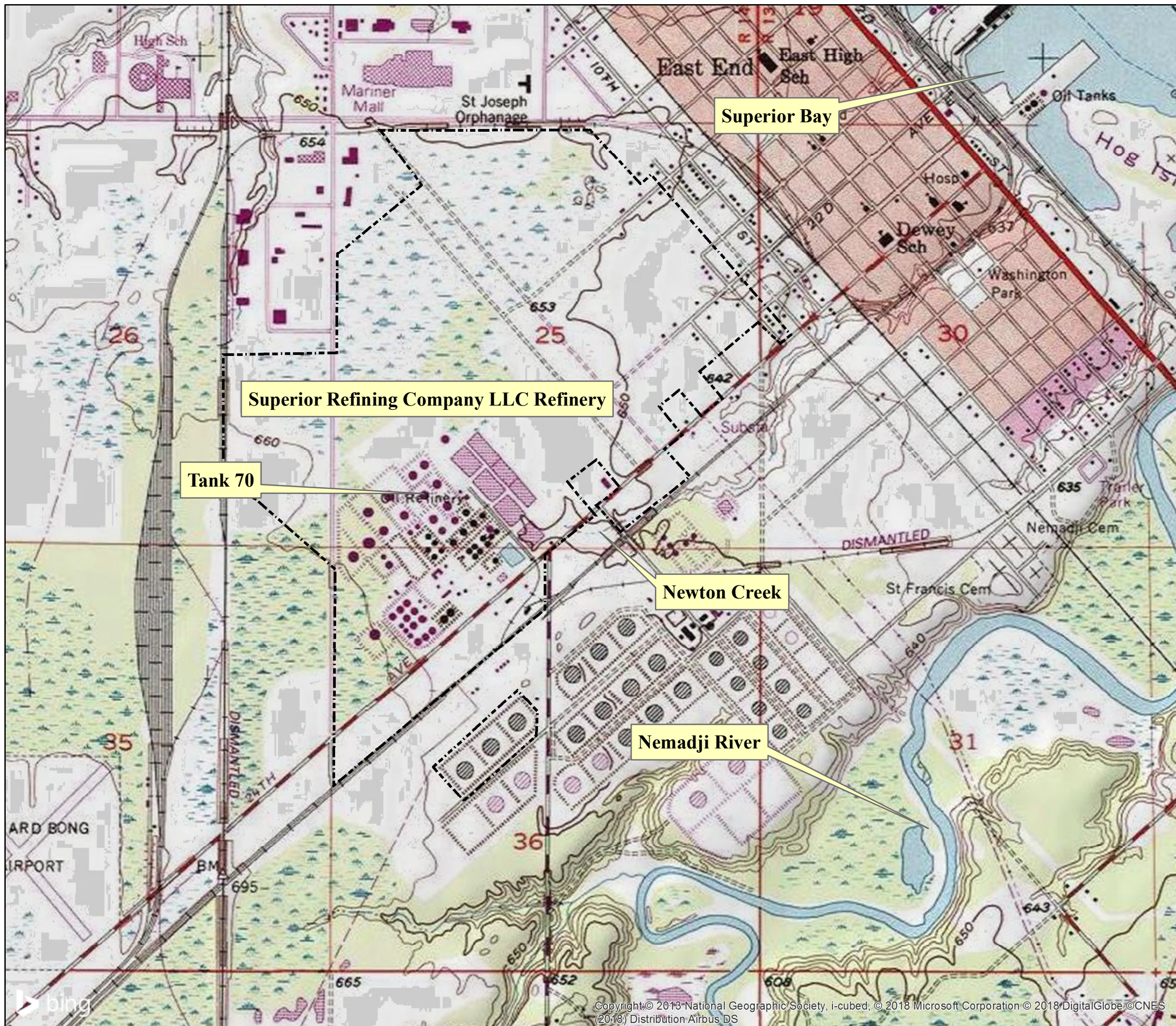
P.E. Seal for E-31265:



I hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print Name Clifford C. Wright	Title Project Geologist
Signature <i>Clifford C. Wright</i>	Date 1/28/2020



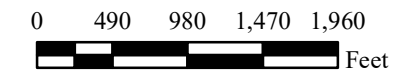


### Legend

----- Approximate Property Boundary

### Notes:

1. Contour interval = 10ft.
2. Site datum = mean sea level (MSL).
3. Topographic map obtained from ArcGIS USA Topo Map Service. Service includes seamless, scanned image of USGS topographic maps.



### Site Location Map

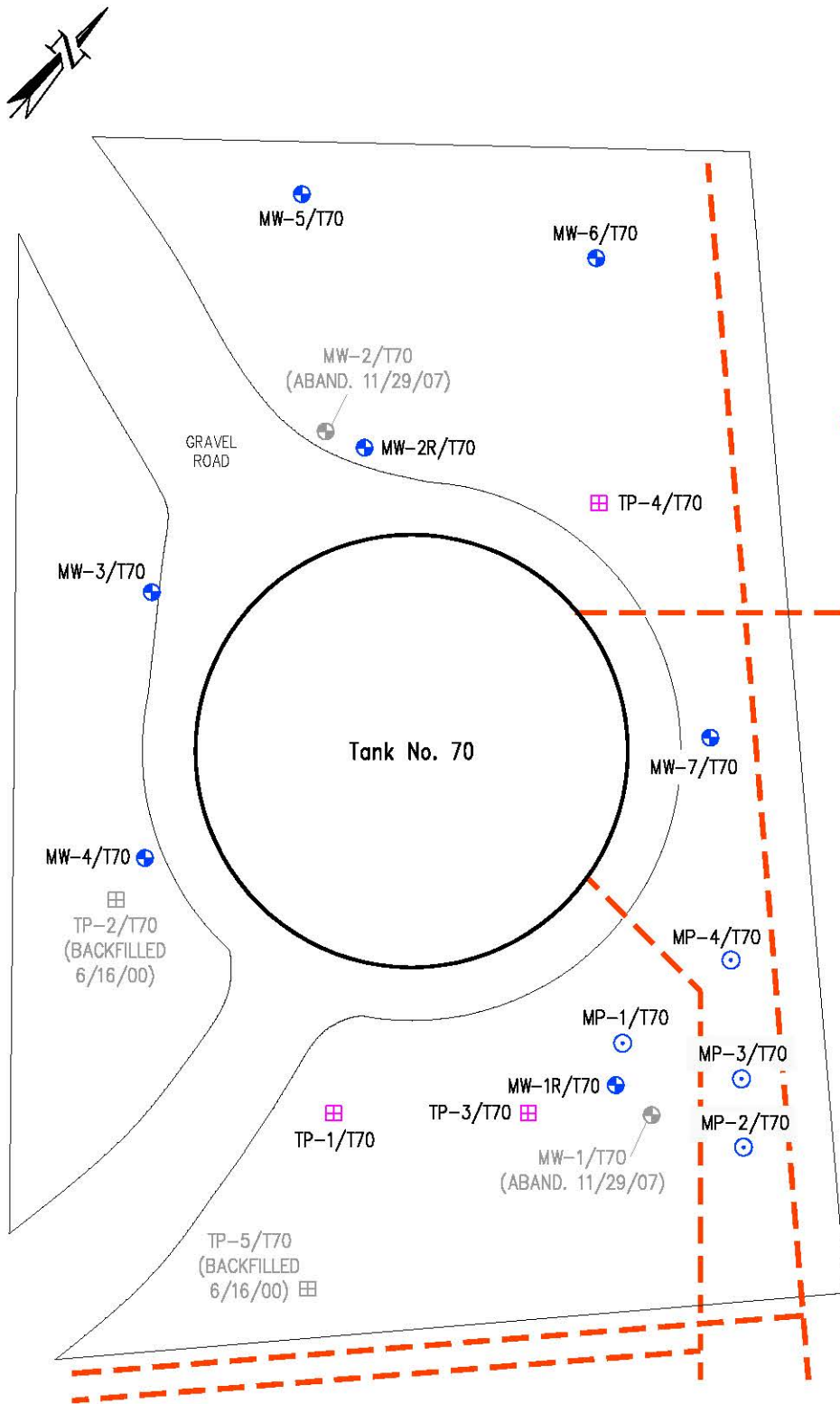
SUPERIOR REFINING COMPANY LLC REFINERY  
SUPERIOR, WISCONSIN



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Project No.	34265.003	Date	1/10/2020	Figure	1
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**LEGEND**

- + Monitoring Well Location
- Test Pit Location (See Note 3)
- Monitoring Point Location
- Aboveground Piping

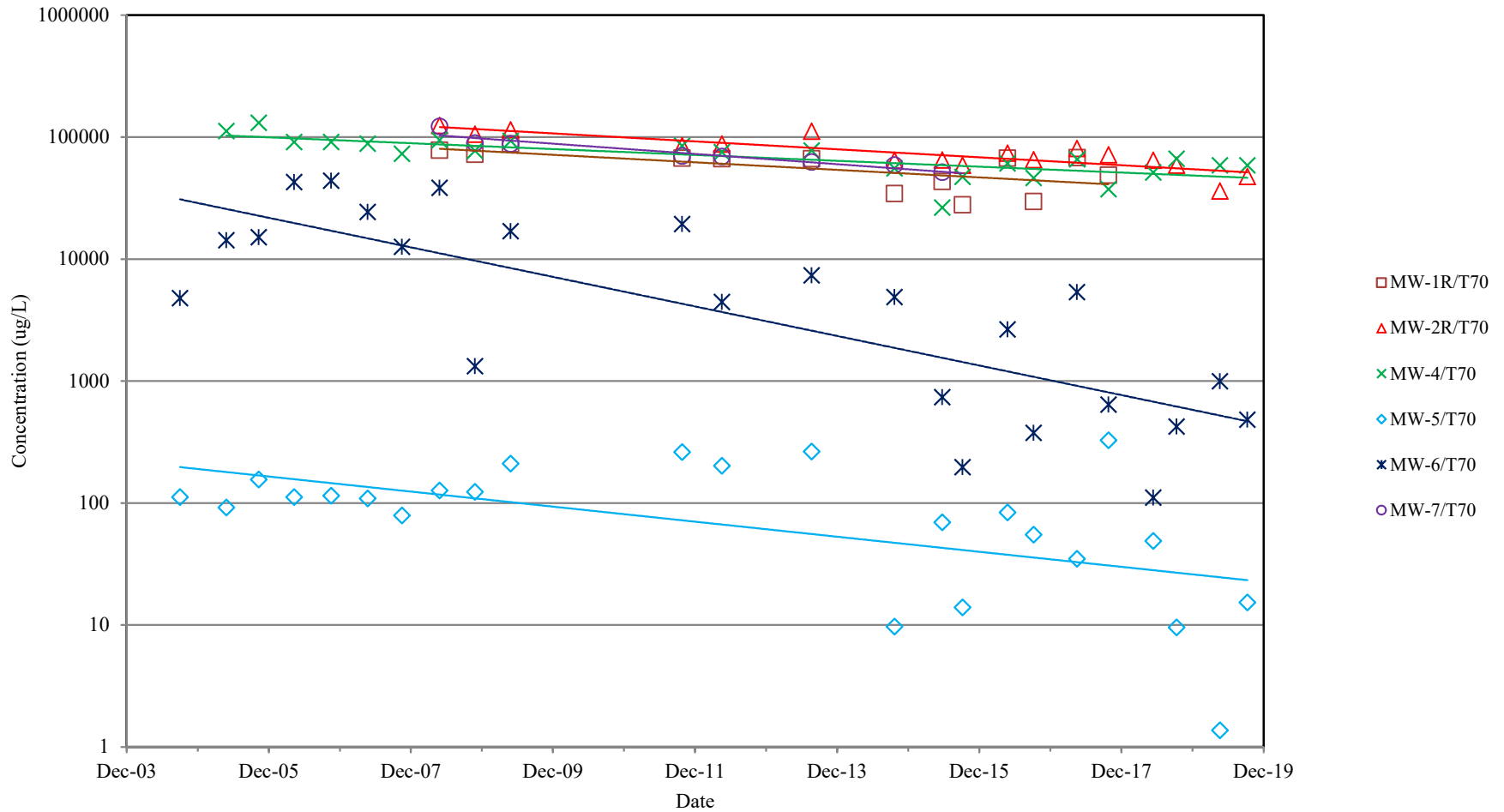
**NOTES**

1. Site Layout And Sample Locations Are Based On Field Measurements By Twin Ports Testing And Are To Be Considered Approximate; Site Not Surveyed.
2. MW-1/T70 Installed In August 1999.
3. Sumps Installed In Test Pits TP-1, TP-3, & TP-4 In June 2000. Each Sump Is 8 Feet Deep And Consists Of 6"Ø PVC With 4 Feet Of Slotted PVC Screen.
4. Each Monitoring Point Installed In July 2001 Is 7 Feet Deep And Consists Of PVC With 3 Feet Of 4"Ø Slotted PVC Screen.
5. MW-2/T70, MW-3/T70, And MW-4/T70 Installed In May 2003.
6. Impermeable Liner With Clay Layer Cap Installed In Basin In June 2003.
7. Monitoring Wells MW-5/T70 Through MW-7/T70 Installed In May 2004.
8. Monitoring Wells MW-1R/T70 And MW-2R/T70 Installed On November 29, 2007.
9. Shaded Wells/Test Pits Have Been Abandoned/Backfilled Or Lost.



**TANK NO. 70  
SITE PLAN**

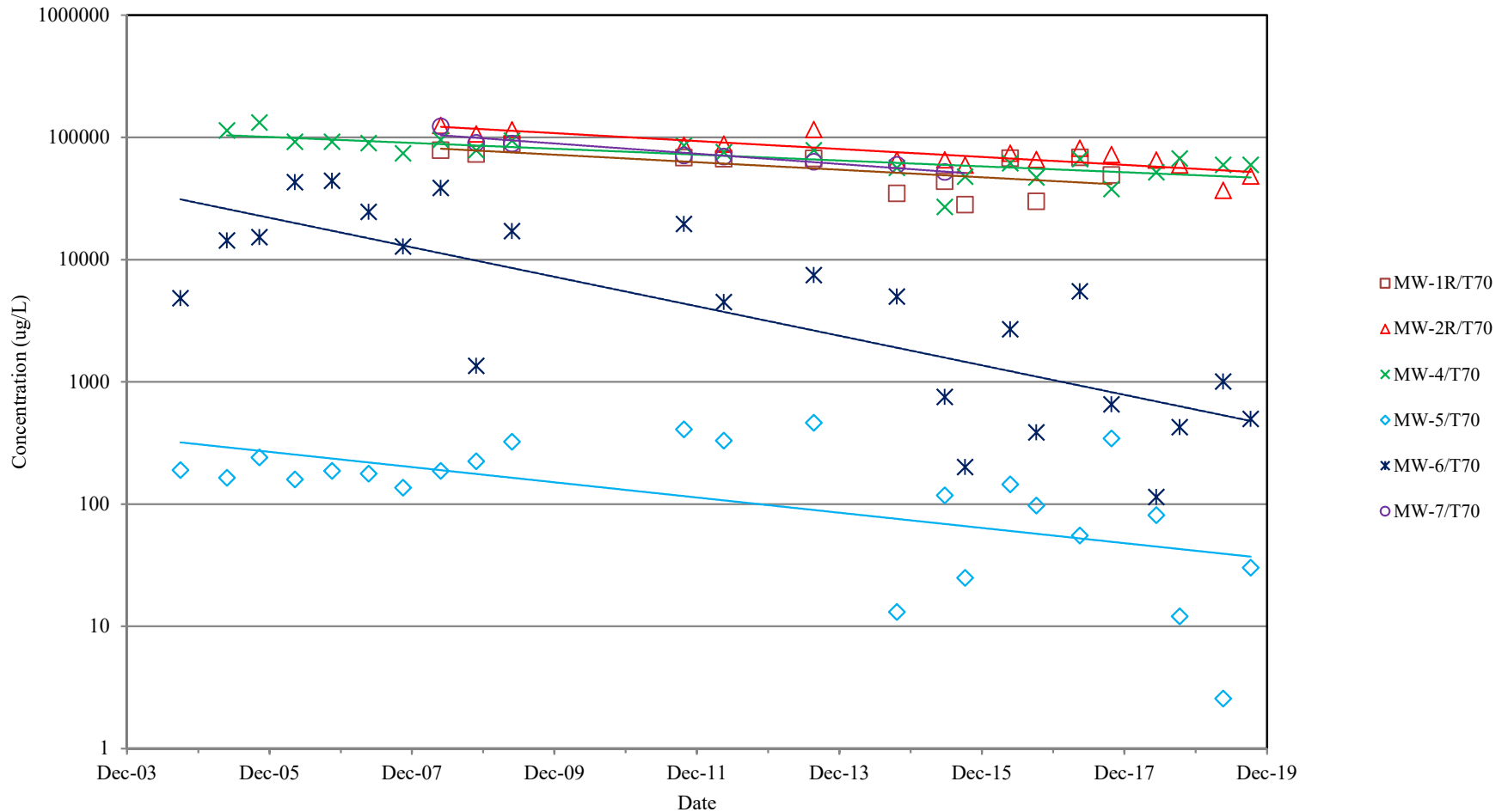
SUPERIOR REFINING COMPANY LLC  
SUPERIOR, WISCONSIN



Note: Best-fit exponential trend lines generated using Excel and non-detect concentrations (if any) plotted at detection limit.

**BTEX GROUNDWATER CONCENTRATIONS TANK 70 BASIN**

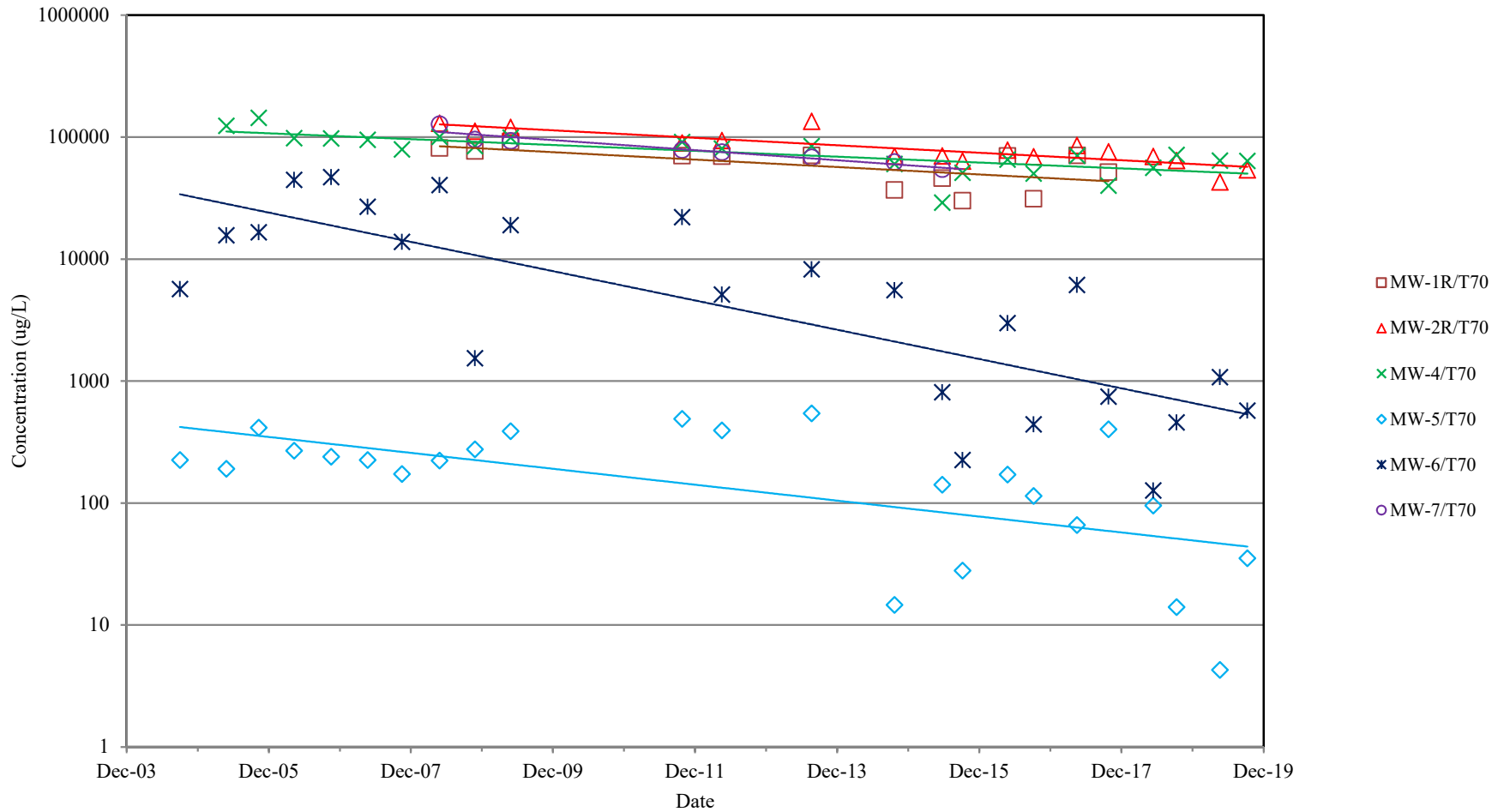
SUPERIOR REFINING COMPANY LLC  
SUPERIOR, WISCONSIN



Note: Best-fit exponential trend lines generated using Excel and non-detect concentrations (if any) plotted at detection limit.

**BTEX+N GROUNDWATER CONCENTRATIONS TANK 70 BASIN**

SUPERIOR REFINING COMPANY LLC  
SUPERIOR, WISCONSIN



Note: Best-fit exponential trend lines generated using Excel and non-detect concentrations (if any) plotted at detection limit.

**BTEX+N+TMBs GROUNDWATER CONCENTRATIONS TANK 70 BASIN**

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TABLE 1

2019 FLUID LEVEL MONITORING DATA FOR TANK 70 RELEASE SITE<sup>(1)</sup>

Date	MP-1/T70		MP-2/T70		MP-3/T70		MP-4/T70		MW-1R/T70		MW-2R/T70		MW-3/T70		MW-4/T70		MW-5/T70		MW-6/T70		MW-7/T70		TP-1/T70		Foot- notes
	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	
	Depth to Fluid from Top of Casing (feet)																								
04/25/19	--	4.85	--	5.81	--	5.08	--	4.76	nm	nm	--	2.48	--	4.47	--	4.65	--	3.42	--	3.34	nm	nm	--	3.95	(2)
05/07/19	--	5.09	--	5.93	--	5.18	--	5.15	nm	nm	--	2.62	--	6.91	--	4.87	--	3.83	--	3.63	nm	nm	--	4.02	(2)
05/21/19	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	--	2.34	--	4.39	--	4.52	--	4.50	--	3.31	nm	nm	nm	nm	(3)
09/10/19	--	4.70	--	5.76	--	5.00	--	4.82	nm	nm	--	3.05	--	4.65	--	4.61	--	4.22	--	3.19	nm	nm	--	4.00	(2)
09/24/19	--	4.76	--	5.84	--	5.05	--	4.99	nm	nm	--	2.81	--	4.66	--	4.57	--	3.94	--	3.39	nm	nm	--	4.02	(2)
10/09/19	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	--	2.91	--	4.72	--	4.68	--	5.01	--	3.42	nm	nm	nm	nm	(3)

**NOTES:**

DTP = Depth to product in feet.

DTW = Depth to water in feet.

nm = Not measured.

-- = Not applicable/no free product.

**FOOTNOTES:**

(1) Table does not include data from MW-5/T70 when that well was gauged for Environmental Repair Program (ERP) monitoring.

(2) Bailed the monitoring wells (MWs) dry in preparation for sampling, but skipped MW-1R/T70 and MW-7/T70 due to damaged PVC casing.

(3) Sampled the MWs (see Table 2 for summary of analytical results), but MW-1R/T70 and MW-7/T70 not sampled due to damaged PVC casing/surface water infiltration.

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TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR DETECTED COMPOUNDS - TANK 70 RELEASE SITE

Well ID	GRO	Benzene	Ethyl-benzene	Toluene	Xylenes	TMBs	MTBE	Isopropyl-benzene	Naphthalene	n-Propyl-benzene
NR 140 PAL	NS	0.5	140	160	400	96	12	NS	10	NS
NR 140 ES	NS	5	700	800	2,000	480	60	NS	100	NS
MW-1/T70 from 09/09/99 through 11/15/07 and its replacement MW-1R/T70 since 05/27/08										
09/09/99	115,000	25,900	4,390	33,800	16,600	3,720	<1,500	na	na	na
12/09/99	115,000	23,100	2,730	30,500	17,280	3,584	<150	na	na	na
03/09/00	87,000	25,000	2,400	31,000	14,000	3,130	<160	na	na	na
06/14/00	120,000	28,000	3,300	43,000	21,000	4,040	<94	na	na	na
06/07/02	130,000	31,000	2,600	33,000	16,100	3,030	<35	55 J	450	240 J
09/12/02	110,000	29,000	2,600	34,000	17,700	3,920	<86	na	810	na
09/30/04	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/26/05	167,000	25,100	5,510	50,300	32,800	10,970	<150	na	848	na
11/09/05	108,000	38,200	2,130	46,000	13,890	1,578	<300	na	800 U	na
05/10/06	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/16/06	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/27/08	103,000	31,000	1,750	31,500	13,910	2,657	<15.0	na	475	na
11/24/08	96,400	26,400	2,060	28,100	15,790	3,592	<150	na	753 J	na
05/27/09	115,000	32,900	2,930	33,600	18,510	3,555	<60.0	na	669	na
10/25/11	na	28,100	1,970	24,200	13,040	2,003 J	<500	na	1,000 U	na
05/16/12	na	26,300	2,360	23,000	14,890	2,882	<122	na	178 U	na
08/21/13	na	24,850	2,545	22,250	16,885	3,525 J	<123	na	668 J	na
10/21/14	na	13,600	983	10,500	9,390	2,032	<48.5	na	348	na
06/23/15	na	14,600	1,500	14,300	12,770	2,397	<21.8	na	418 J	na
10/06/15	na	10,400	570	8,130	8,750	1,904	<21.8	na	312 U	na
05/24/16	na	30,800	1,670	20,700	13,870	2,668	<21.8	na	380 J	na
10/05/16	na	12,400	106 J	8,630	8,450	1,280	<21.8	na	312 U	na
05/17/17	na	30,400	2,020	21,100	14,280	2,269	<34.8	na	599 J	na
10/25/17	na	22,000	1,410	13,900	11,420	2,275	<34.8	na	500 U	na
06/12/18	Starting 06/12/18, well not sampled due to PVC casing damage and surface water infiltration									
MW-2/T70 from 09/12/02 through 11/16/06 and its replacement MW-2R/T70 since 05/27/08										
09/12/02	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/30/04	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/26/05	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/09/05	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/10/06	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/16/06	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/27/08	160,000	37,900	3,920	56,000	26,540	4,431	<15.0	na	777	na
11/24/08	140,000	31,100	3,900	46,200	24,045	5,245	<150	na	1,055 J	na
05/27/09	148,000	32,400	4,210	51,100	26,605	4,935	<75.0	na	967	na
10/25/11	na	23,600	2,700	38,100	20,590	3,270 J	<500	na	1,000 U	na
05/16/12	na	23,200	3,210	37,300	23,890	5,420	<122	na	445 J	na
08/21/13	na	20,800	5,410	41,200	44,100	19,330	<98.7	na	3,950	na
10/21/14	na	17,300	2,280	25,800	19,110	4,280	<97.0	na	776	na
06/23/15	na	15,900	2,130	25,200	21,480	4,483	<43.6	na	743 J	na
10/06/15	na	15,200	1,600	24,100	17,850	4,002	<43.6	na	625 U	na
05/24/16	na	22,000	2,150	29,500	19,980	3,918	<43.6	na	625 U	na

TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR DETECTED COMPOUNDS - TANK 70 RELEASE SITE

Well ID	Date	GRO	Benzene	Ethyl-benzene	Toluene	Xylenes	TMBs	MTBE	Isopropyl-benzene	Naphthalene	n-Propyl-benzene
NR 140 PAL		NS	0.5	140	160	400	96	12	NS	10	NS
NR 140 ES		NS	5	700	800	2,000	480	60	NS	100	NS
10/05/16		na	19,200	1,480	25,700	18,670	3,086	<43.6	na	625 U	na
05/16/17		na	23,000	2,510	31,500	23,540	4,044	<43.6	na	625 U	na
10/25/17		na	19,800	2,250	28,400	21,060	3,678	<43.6	na	625 U	na
06/12/18		na	16,300	2,000	24,400	21,700	4,410	<43.6	na	625 U	na
10/09/18		na	14,400	1,850	20,900	21,540	4,919	<311	na	575 J	na
05/21/19		na	5,650	875	9,910	19,720	5,990	<249	na	766 J	na
10/09/19		na	11,800	1,310	15,700	18,610	5,400	<249	na	919 J	na
MW-3/T70											
09/12/02		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/30/04		1,400	400	66	3.2	143	87	<0.90	na	14	na
05/26/05		5,970	1,200	61.7	884	1,412	274.3	<15.0	<15.5	47.3	<15.0
11/09/05		665	129	13.8	<6.00	44	13.0	<6.00	na	16.0 U	na
05/10/06		<10,000	500	102.0	636	823	231.7	<0.300	na	27.5	na
11/16/06		<50.0	0.310 U	0.500 U	0.300 U	0.920 U	0.710 U	<0.300	na	0.800 U	na
05/23/07		<50.0	0.310 U	0.500 U	0.948 J	1.90 J	0.710 U	<0.300	na	2.51 J	na
11/15/07		<50.0	0.310 U	0.500 U	0.300 U	0.920 U	0.710 U	<0.300	na	0.975 J	na
05/27/08		151	14.2	3.57	5.44	15.62	4.06	<0.300	na	0.800 U	na
11/24/08		<50.0	2.73	0.998 J	0.300 U	0.920 U	1.12	<0.300	na	0.800 U	na
05/27/09		252	38.2	11.8	3.5	40.9	19.16	1.76 J	na	1.86 J	na
10/25/11		na	2,040	444	154	2,536	899	<50.0	na	189 J	na
05/16/12		na	2,080	483	295	2,494	761	<12.2	na	33.7 J	na
08/21/13		na	186	31.4	6.7	198.3	75.6	<0.99	na	8.0 J	na
10/21/14		na	273	7.2	6.0	436	149.1	<1.2	na	8.9	na
06/23/15		na	2.8	0.50 U	0.50 U	3.63 J	3.8 U	<0.17	na	2.5 U	na
10/06/15		na	4.0	0.70 J	0.50 U	1.77 JU	1.28 JU	<0.17	na	2.5 U	na
05/24/16		na	748	44.5	12.2	522	218.4	<1.7	na	25.0 U	na
10/05/16		na	0.50 U	0.50 U	0.50 U	1.50 U	1.00 U	<0.17	na	2.5 U	na
05/17/17		na	56.1	0.50 U	0.78 J	22.6	8.42 J	<0.17	na	3.2 J	na
10/25/17		na	0.83 J	0.50 U	0.50 U	2.20 J	1.12 JU	108	na	2.5 U	na
06/12/18		na	441	9.5 J	12.5	299.7	95.8	<1.7	na	25.0 U	na
10/09/18		na	32.5	4.1	0.50 J	55.8	36.6	<1.2	na	5.1	na
05/21/19		na	270	22.2	7.1	265.8	104.9	<1.2	na	15.7	na
10/09/19		na	364	31.2	3.0 J	210.1	105.3 J	<3.1	na	24.8	na
MW-4/T70											
09/12/02		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/30/04		FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/26/05		234,000	23,400	4,280	49,300	35,130	9,800	<600	<620	1,810	820
11/09/05		145,000	28,900	4,640	50,300	47,400	11,850	<75.0	na	1,060	na
05/10/06		88,350	23,600	2,505	39,700	25,550	5,805	<150	na	750 J	na
11/16/06		116,000	22,900	2,420	40,900	25,130	4,970	<75.0	na	979	na
05/23/07		129,000	24,300	2,080	37,600	24,630	5,160	<75.0	na	1,040	na
11/15/07		110,000	19,800	1,770	29,000	22,290	5,200	<150	na	1,380	na
05/27/08		127,000	27,100	2,320	38,800	26,540	5,270	<150	na	777 J	na
11/24/08		104,000	22,000	1,800	30,500	22,890	5,810	<150	na	1,150 J	na
05/27/09		123,000	27,200	2,750	38,900	24,340	4,820	440	na	808	na
10/25/11		na	20,300	2,110	37,100	25,290	5,160	<500	na	1,000 U	na



TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR DETECTED COMPOUNDS - TANK 70 RELEASE SITE

Well ID	GRO	Benzene	Ethyl-benzene	Toluene	Xylenes	TMBs	MTBE	Isopropyl-benzene	Naphthalene	n-Propyl-benzene
NR 140 PAL	NS	0.5	140	160	400	96	12	NS	10	NS
NR 140 ES	NS	5	700	800	2,000	480	60	NS	100	NS
05/16/12	na	21,700	1,720	30,500	21,400	5,100	<122	na	279 J	na
08/21/13	na	21,300	1,800	31,200	23,170	5,790 J	<123	na	997 J	na
10/21/14	na	15,300	1,140	21,000	18,090	3,863	<97.0	na	751	na
06/23/15	na	6,210	615	9,580	10,030	2,067	<17.4	na	497 J	na
10/06/15	na	10,700	1,500	17,600	17,470	3,190	<17.4	na	515	na
05/24/16	na	14,700	2,160	20,700	23,200	4,118	<17.4	na	712	na
10/05/16	na	10,600	1,520	15,700	18,360	3,446	<17.4	na	686	na
05/17/17	na	16,700	1,750	25,900	21,540	3,906	<21.8	na	584 J	na
10/25/17	na	11,100	954	13,600	11,720	2,148	<34.8	na	500 U	na
06/12/18	na	12,200	1,560	15,900	21,550	4,152	<17.4	na	681	na
10/09/18	na	17,400	1,810	23,200	24,230	4,283	<125	na	609	na
05/21/19	na	16,200	1,860	18,300	22,430	4,430	<12.5	na	923	na
10/09/19	na	16,400	1,600	20,000	20,810	4,221	<249	na	847 J	na
MW-5/T70										
09/12/02	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/30/04	1,600	6.1	11	17	78	35	<0.61	0.62 J	78	<0.81
05/26/05	1,530	4.75	3.05	17.8	66.4	26.43	<0.3	na	72	na
11/09/05	1,810	7.81	3.01	25.2	120.2	174	<0.3	na	85	na
05/10/06	1,620	5.87	8.73	18.9	78.3	109.9	<0.300	na	47.3	na
11/16/06	1,560	6.89	2.55	18.1	87.5	52.1	<0.300	na	72.2	na
05/23/07	1,270	4.54	24.5	15.0	65.1	48.3	<0.300	na	68.1	na
11/15/07	1,150	6.78	2.50 U	12.0	57.7	37.4	<1.50	na	57.0	na
05/27/08	1,120	8.79	22.5	18.4	76.8	36.1	<1.50	na	60.6	na
11/24/08	1,190	6.84 J	17.2	15.0	84.6	51.6	<1.50	na	101	na
05/27/09	1,930	7.69	59.1	24.3	120.0	65.7	<0.300	na	112	na
10/25/11	na	9.13	78.8	30.4	143.0	80.8	<0.50	na	148	na
05/16/12	na	10.4	58.2	25.9	107.5	62.7	<0.61	na	129	na
08/21/13	na	8.7	80.8	31.5	143.4	80.1	<0.49	na	198	na
10/21/14	na	0.91 J	0.39 U	1.0	7.4 J	1.52 U	<0.48	na	3.4	na
06/23/15	na	2.6	17.4	8.1	41.3	23.7	<0.17	na	48.6	na
10/06/15	na	1.6	0.59 J	0.50 U	11.3	3.1	<0.17	na	10.9	na
05/24/16	na	4.9	20.7	11.3	46.9	25.8	<0.17	na	61.4	na
10/05/16	na	3.4	3.2	7.5	41.0	16.9	<0.17	na	42.2	na
05/16/17	na	1.7	8.8	4.1	20.4	10.7	<0.17	na	20.4	na
10/25/17	na	179	9.9	1.6	136.8	56.8	<0.17	na	17.9	na
06/12/18	na	2.0	10.5	5.7	30.7	14.3	<0.35	na	32.4	na
10/09/18	na	4.3	0.66 J	0.51 J	4.08 J	1.97 JU	<1.2	na	2.5 J	na
05/21/19	na	0.25 U	0.22 U	0.17 U	0.73 U	1.71 U	<1.2	na	1.2 U	na
10/09/19	na	1.3	0.85 J	2.1 J	11.1	5.2 J	<1.2	na	14.8	na
MW-6/T70										
09/12/02	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/30/04	9,700	1,200	58	140	3,400	850	<6.1	<5.9	26	<8.1
05/26/05	21,600	5,490	52	3,620	5,150	1,287	<15.0	na	40.0 U	na
11/09/05	18,600	5,240	258	4,150	5,460	1,296	<30.0	na	192	na
05/10/06	34,600	14,900	399	17,900	9,570	1,719	<60.0	na	160 U	na
11/16/06	59,100	13,800	659	16,500	13,000	2,904	<75.0	na	200 U	na

TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR DETECTED COMPOUNDS - TANK 70 RELEASE SITE

Well ID	GRO	Benzene	Ethyl-benzene	Toluene	Xylenes	TMBs	MTBE	Isopropyl-benzene	Naphthalene	n-Propyl-benzene
NR 140 PAL	NS	0.5	140	160	400	96	12	NS	10	NS
NR 140 ES	NS	5	700	800	2,000	480	60	NS	100	NS
05/23/07	35,700	8,730	125 U	8,020	7,450	2,166	<75.0	na	295 J	na
11/15/07	21,100	4,040	335	4,150	4,060	1,012	<30.0	na	248 J	na
05/27/08	50,100	13,400	960	14,100	9,870	1,882	<30.0	na	250 J	na
11/24/08	2,520	337	28.7	341	617	189	<3.00	na	30.1	na
05/27/09	27,400	4,600	629	4,780	6,890	1,820	59.4 J	na	229	na
10/25/11	na	7,420	763	2,410	8,750	2,460	<50.0	na	251 J	na
05/16/12	na	1,600	260	660	1,935	620	<6.1	na	49.9 J	na
08/21/13	na	3,990	393	313	2,650	774	<9.9	na	114	na
10/21/14	na	2,630	16.0 J	126	2,126	579	<9.7	na	85.9	na
06/23/15	na	537	6.3	33.4	160.9	57.7	<0.87	na	14.5 J	na
10/06/15	na	84.1	4.6	6.4	101.7	25.0	<0.17	na	4.0 J	na
05/24/16	na	1,270	69.7	158	1,158	295.5	<1.7	na	41.9 J	na
10/05/16	na	147	8.1	9.1	211.3	54.8	<0.17	na	11.4	na
05/16/17	na	2,380	394	191	2,407	647	<8.7	na	125 U	na
10/25/17	na	350	4.0 J	12.0	276.4	88.6	<0.70	na	12.5 J	na
06/12/18	na	42.3	0.50 U	2.3	66.0	13.0	<0.17	na	3.0 J	na
10/09/18	na	235	16.2	8.2	164.6	30.4	<1.2	na	2.8 J	na
05/21/19	na	666	54.0	36.3	239.0	71.4	<2.5	na	11.3	na
10/09/19	na	271	23.6	7.1 J	181.7	74.4	<2.5	na	13.8	na
MW-7/T70										
09/12/02	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/30/04	120,000	29,000	2,900	36,000	18,800	3,600	<120	<130	560	240 J
05/26/05	144,000	26,400	3,640	40,600	24,370	6,440	<150	na	4,430	na
11/09/05	104,000	31,000	3,100	44,400	21,950	3,661	<150	na	500	na
05/10/06	105,000	29,900	2,420	34,700	17,580	3,613	<60.0	na	836	na
11/16/06	111,000	30,700	2,420	38,150	17,525	2,634	<150	na	<400	na
05/23/07	127,500	31,350	3,170	41,050	20,880	4,460	<150	na	997 J	na
11/15/07	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/27/08	153,000	38,700	3,470	53,800	26,310	4,810	<150	na	809 J	na
11/24/08	123,000	28,300	2,740	36,100	22,150	5,200	<150	na	1,100 J	na
05/27/09	115,000	31,200	3,130	32,200	21,500	4,410	<75.0	na	682	na
10/25/11	na	27,600	2,320	22,500	17,750	7,270	<500	na	1,100 J	na
05/16/12	na	26,300	2,460	21,900	18,620	5,360	<122	na	459 J	na
08/21/13	na	24,900	2,450	18,200	16,860	5,030 J	<123	na	753 J	na
10/21/14	na	21,000	1,930	21,000	15,100	3,023	<60.6	na	501	na
06/23/15	na	17,000	1,570	19,300	13,650	2,573	<34.8	na	500 U	na
10/06/15	Starting 10/06/15, well not sampled due to PVC casing damage and surface water infiltration									

TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR DETECTED COMPOUNDS - TANK 70 RELEASE SITE

NOTES:

Results are in micrograms per liter ( $\mu\text{g}/\ell$ ) or parts per billion (ppb).

Detected concentrations at/above an applicable NR 140 PAL in red font & italicized; those at/above an NR 140 ES in red font & bold.

Duplicate sample results are averaged for statistical analysis/plotting, per Dec 2013 ITRC guidance.

Samples collected from most wells were analyzed for VOCs at least once; all other samples analyzed for GRO/PVOCs and naphthalene or PVOCs and naphthalene. In addition, MW-1/T70 was sampled for dissolved lead on 09/09/99 (6.25 ppb) and 12/09/99 (<1.0 ppb).

FP = Free product, well not sampled.

GRO = Gasoline range organics.

J = Estimated concentration, concentration below the laboratory's level of quantitation.

MTBE = Methyl tert butyl ether.

na = Not analyzed.

NI = Not installed.

NR 140 ES = Wisconsin Administrative Code NR 140 Enforcement Standard.

NR 140 PAL = Wisconsin Administrative Code NR 140 Preventive Action Limit.

NS = No standard.

TMBs = Trimethylbenzenes.

U = Compound not detected at or above the detection limit, which is the value shown for all parameters except xylenes and TMBs.

**ATTACHMENT A**

**LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS FOR GROUNDWATER  
SAMPLES COLLECTED IN 2019**

June 04, 2019

**Project #34265.003**  
**T40/T50/T68/T70 GW Data**  
**Reviewed by CCW**  
**6/5/19**

Clifford Wright  
Gannett Fleming  
8040 Excelsior Drive, Ste 303  
Madison, WI 53717

RE: Project: 34265.003 SUPERIOR REFINING CO  
Pace Project No.: 40188098

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on May 22, 2019. 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



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

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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: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40188098001	MW-1/T40	Water	05/21/19 08:50	05/22/19 08:20
40188098002	MW-2/T40	Water	05/21/19 08:35	05/22/19 08:20
40188098003	MW-4/T40	Water	05/21/19 08:55	05/22/19 08:20
40188098004	MW-5/T40	Water	05/21/19 08:30	05/22/19 08:20
40188098005	MW-6/T40	Water	05/21/19 08:40	05/22/19 08:20
40188098006	MW-7/T40	Water	05/21/19 08:45	05/22/19 08:20
40188098007	TS-1/T40	Water	05/21/19 08:25	05/22/19 08:20
40188098008	MW-1/T68	Water	05/21/19 09:00	05/22/19 08:20
40188098009	MW-2/T68	Water	05/21/19 09:30	05/22/19 08:20
40188098010	MW-4/T68	Water	05/21/19 09:25	05/22/19 08:20
40188098011	MW-5/T66	Water	05/21/19 09:15	05/22/19 08:20
40188098012	MW-5/T68	Water	05/21/19 09:10	05/22/19 08:20
40188098013	MW-6/T68	Water	05/21/19 09:20	05/22/19 08:20
40188098014	MW-2R/T70	Water	05/21/19 09:45	05/22/19 08:20
40188098015	MW-3/T70	Water	05/21/19 10:00	05/22/19 08:20
40188098016	MW-4/T70	Water	05/21/19 10:05	05/22/19 08:20
40188098017	MW-5/T70	Water	05/21/19 09:50	05/22/19 08:20
40188098018	MW-6/T70	Water	05/21/19 09:55	05/22/19 08:20
40188098019	MW-4/T50	Water	05/21/19 08:10	05/22/19 08:20
40188098020	MW-5/T50	Water	05/21/19 08:05	05/22/19 08:20
40188098021	MW-6/T50	Water	05/21/19 08:15	05/22/19 08:20
40188098022	TRIP BLANK	Water	05/21/19 00:00	05/22/19 08:20

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 34265.003 SUPERIOR REFINING CO  
Pace Project No.: 40188098

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40188098001	MW-1/T40	EPA 8260	HNW	11	PASI-G
40188098002	MW-2/T40	EPA 8260	HNW	11	PASI-G
40188098003	MW-4/T40	EPA 8260	HNW	11	PASI-G
40188098004	MW-5/T40	EPA 8260	HNW	11	PASI-G
40188098005	MW-6/T40	EPA 8260	HNW	11	PASI-G
40188098006	MW-7/T40	EPA 8260	HNW	11	PASI-G
40188098007	TS-1/T40	EPA 8260	HNW	11	PASI-G
40188098008	MW-1/T68	EPA 8260	HNW	63	PASI-G
40188098009	MW-2/T68	EPA 8260	SMT	63	PASI-G
40188098010	MW-4/T68	EPA 8260	SMT	63	PASI-G
40188098011	MW-5/T66	EPA 8260	HNW	63	PASI-G
40188098012	MW-5/T68	EPA 8260	HNW	63	PASI-G
40188098013	MW-6/T68	EPA 8260	HNW	63	PASI-G
40188098014	MW-2R/T70	EPA 8260	HNW	12	PASI-G
40188098015	MW-3/T70	EPA 8260	HNW	12	PASI-G
40188098016	MW-4/T70	EPA 8260	LAP	12	PASI-G
40188098017	MW-5/T70	EPA 8260	LAP	12	PASI-G
40188098018	MW-6/T70	EPA 8260	LAP	12	PASI-G
40188098019	MW-4/T50	EPA 8021	ALD	10	PASI-G
40188098020	MW-5/T50	EPA 8021	ALD	10	PASI-G
40188098021	MW-6/T50	EPA 8021	ALD	10	PASI-G
40188098022	TRIP BLANK	EPA 8260	SMT	63	PASI-G

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### SUMMARY OF DETECTION

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>40188098012</b>	<b>MW-5/T68</b>					
EPA 8260	o-Xylene	7350	ug/L	250	05/30/19 18:58	
<b>40188098013</b>	<b>MW-6/T68</b>					
EPA 8260	1,2,4-Trimethylbenzene	2720	ug/L	700	05/30/19 19:20	
EPA 8260	1,2-Dichloroethane	236J	ug/L	250	05/30/19 19:20	
EPA 8260	1,3,5-Trimethylbenzene	767	ug/L	728	05/30/19 19:20	
EPA 8260	Benzene	22600	ug/L	250	05/30/19 19:20	
EPA 8260	Ethylbenzene	1550	ug/L	250	05/30/19 19:20	
EPA 8260	Naphthalene	297J	ug/L	1250	05/30/19 19:20	
EPA 8260	Toluene	20400	ug/L	1250	05/30/19 19:20	
EPA 8260	m&p-Xylene	13700	ug/L	500	05/30/19 19:20	
EPA 8260	o-Xylene	6660	ug/L	250	05/30/19 19:20	
<b>40188098014</b>	<b>MW-2R/T70</b>					
EPA 8260	1,2,4-Trimethylbenzene	4720	ug/L	560	05/24/19 10:38	
EPA 8260	1,3,5-Trimethylbenzene	1270	ug/L	582	05/24/19 10:38	
EPA 8260	Benzene	5650	ug/L	200	05/24/19 10:38	
EPA 8260	Ethylbenzene	875	ug/L	200	05/24/19 10:38	
EPA 8260	Naphthalene	766J	ug/L	1000	05/24/19 10:38	
EPA 8260	Toluene	9910	ug/L	1000	05/24/19 10:38	
EPA 8260	m&p-Xylene	13900	ug/L	400	05/24/19 10:38	
EPA 8260	o-Xylene	5820	ug/L	200	05/24/19 10:38	
<b>40188098015</b>	<b>MW-3/T70</b>					
EPA 8260	1,2,4-Trimethylbenzene	78.5	ug/L	2.8	05/25/19 02:07	
EPA 8260	1,3,5-Trimethylbenzene	26.4	ug/L	2.9	05/25/19 02:07	
EPA 8260	Benzene	270	ug/L	5.0	05/28/19 11:23	
EPA 8260	Ethylbenzene	22.2	ug/L	1.0	05/25/19 02:07	
EPA 8260	Naphthalene	15.7	ug/L	5.0	05/25/19 02:07	
EPA 8260	Toluene	7.1	ug/L	5.0	05/25/19 02:07	
EPA 8260	m&p-Xylene	190	ug/L	2.0	05/25/19 02:07	
EPA 8260	o-Xylene	75.8	ug/L	1.0	05/25/19 02:07	
<b>40188098016</b>	<b>MW-4/T70</b>					
EPA 8260	1,2,4-Trimethylbenzene	3340	ug/L	560	05/29/19 03:18	
EPA 8260	1,3,5-Trimethylbenzene	1090	ug/L	29.1	05/28/19 14:50	
EPA 8260	Benzene	16200	ug/L	200	05/29/19 03:18	
EPA 8260	Ethylbenzene	1860	ug/L	10.0	05/28/19 14:50	
EPA 8260	Naphthalene	923	ug/L	50.0	05/28/19 14:50	
EPA 8260	Toluene	18300	ug/L	1000	05/29/19 03:18	
EPA 8260	m&p-Xylene	15800	ug/L	400	05/29/19 03:18	
EPA 8260	o-Xylene	6630	ug/L	200	05/29/19 03:18	
<b>40188098018</b>	<b>MW-6/T70</b>					
EPA 8260	1,2,4-Trimethylbenzene	57.4	ug/L	5.6	05/28/19 14:28	
EPA 8260	1,3,5-Trimethylbenzene	14.0	ug/L	5.8	05/28/19 14:28	
EPA 8260	Benzene	666	ug/L	10.0	05/29/19 02:56	
EPA 8260	Ethylbenzene	54.0	ug/L	2.0	05/28/19 14:28	
EPA 8260	Naphthalene	11.3	ug/L	10.0	05/28/19 14:28	

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
<b>40188098018</b>	<b>MW-6/T70</b>					
EPA 8260	Toluene	36.3	ug/L	10.0	05/28/19 14:28	
EPA 8260	m&p-Xylene	178	ug/L	4.0	05/28/19 14:28	
EPA 8260	o-Xylene	61.0	ug/L	2.0	05/28/19 14:28	

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## PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

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**Method:** EPA 8021

**Description:** 8021 GCV Short List

**Client:** Gannett Fleming Inc.

**Date:** June 04, 2019

**General Information:**

3 samples were analyzed for EPA 8021. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

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## PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

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**Method:** EPA 8260

**Description:** 8260 MSV

**Client:** Gannett Fleming Inc.

**Date:** June 04, 2019

### General Information:

7 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

pH: Post-analysis pH measurement indicates insufficient VOA sample preservation.

- MW-2/T68 (Lab ID: 40188098009)

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 322936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40188564001

R1: RPD value was outside control limits.

- MSD (Lab ID: 1875584)
  - 1,1-Dichloroethane
  - Methyl-tert-butyl ether

### Additional Comments:

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## PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

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**Method:** EPA 8260

**Description:** 8260 MSV UST

**Client:** Gannett Fleming Inc.

**Date:** June 04, 2019

### General Information:

12 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 322305

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40188098001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1871922)
  - Benzene
  - Ethylbenzene
  - m&p-Xylene
  - o-Xylene
- MSD (Lab ID: 1871923)
  - Benzene
  - Ethylbenzene
  - m&p-Xylene

### Additional Comments:

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## PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

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**Method:** EPA 8260

**Description:** 8260 MSV UST

**Client:** Gannett Fleming Inc.

**Date:** June 04, 2019

Analyte Comments:

QC Batch: 322305

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 1871922)
  - Benzene
  - m&p-Xylene
- MSD (Lab ID: 1871923)
  - Benzene
  - m&p-Xylene

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

**Sample: MW-2R/T70**      **Lab ID: 40188098014**      Collected: 05/21/19 09:45      Received: 05/22/19 08:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<b>4720</b>	ug/L	560	168	200		05/24/19 10:38	95-63-6	
1,3,5-Trimethylbenzene	<b>1270</b>	ug/L	582	175	200		05/24/19 10:38	108-67-8	
Benzene	<b>5650</b>	ug/L	200	49.3	200		05/24/19 10:38	71-43-2	
Ethylbenzene	<b>875</b>	ug/L	200	43.6	200		05/24/19 10:38	100-41-4	
Methyl-tert-butyl ether	<b>&lt;249</b>	ug/L	831	249	200		05/24/19 10:38	1634-04-4	
Naphthalene	<b>766J</b>	ug/L	1000	235	200		05/24/19 10:38	91-20-3	
Toluene	<b>9910</b>	ug/L	1000	34.4	200		05/24/19 10:38	108-88-3	
m&p-Xylene	<b>13900</b>	ug/L	400	93.1	200		05/24/19 10:38	179601-23-1	
o-Xylene	<b>5820</b>	ug/L	200	52.4	200		05/24/19 10:38	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	105	%	70-130		200		05/24/19 10:38	1868-53-7	
Toluene-d8 (S)	98	%	70-130		200		05/24/19 10:38	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130		200		05/24/19 10:38	460-00-4	

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## ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

**Sample: MW-3/T70**      **Lab ID: 40188098015**      Collected: 05/21/19 10:00      Received: 05/22/19 08:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<b>78.5</b>	ug/L	2.8	0.84	1		05/25/19 02:07	95-63-6	
1,3,5-Trimethylbenzene	<b>26.4</b>	ug/L	2.9	0.87	1		05/25/19 02:07	108-67-8	
Benzene	<b>270</b>	ug/L	5.0	1.2	5		05/28/19 11:23	71-43-2	
Ethylbenzene	<b>22.2</b>	ug/L	1.0	0.22	1		05/25/19 02:07	100-41-4	
Methyl-tert-butyl ether	<b>&lt;1.2</b>	ug/L	4.2	1.2	1		05/25/19 02:07	1634-04-4	
Naphthalene	<b>15.7</b>	ug/L	5.0	1.2	1		05/25/19 02:07	91-20-3	
Toluene	<b>7.1</b>	ug/L	5.0	0.17	1		05/25/19 02:07	108-88-3	
m&p-Xylene	<b>190</b>	ug/L	2.0	0.47	1		05/25/19 02:07	179601-23-1	
o-Xylene	<b>75.8</b>	ug/L	1.0	0.26	1		05/25/19 02:07	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	107	%	70-130		1		05/25/19 02:07	1868-53-7	
Toluene-d8 (S)	98	%	70-130		1		05/25/19 02:07	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130		1		05/25/19 02:07	460-00-4	

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## ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

**Sample: MW-4/T70**      **Lab ID: 40188098016**      Collected: 05/21/19 10:05      Received: 05/22/19 08:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<b>3340</b>	ug/L	560	168	200		05/29/19 03:18	95-63-6	
1,3,5-Trimethylbenzene	<b>1090</b>	ug/L	29.1	8.7	10		05/28/19 14:50	108-67-8	
Benzene	<b>16200</b>	ug/L	200	49.3	200		05/29/19 03:18	71-43-2	
Ethylbenzene	<b>1860</b>	ug/L	10.0	2.2	10		05/28/19 14:50	100-41-4	
Methyl-tert-butyl ether	<b>&lt;12.5</b>	ug/L	41.5	12.5	10		05/28/19 14:50	1634-04-4	
Naphthalene	<b>923</b>	ug/L	50.0	11.8	10		05/28/19 14:50	91-20-3	
Toluene	<b>18300</b>	ug/L	1000	34.4	200		05/29/19 03:18	108-88-3	
m&p-Xylene	<b>15800</b>	ug/L	400	93.1	200		05/29/19 03:18	179601-23-1	
o-Xylene	<b>6630</b>	ug/L	200	52.4	200		05/29/19 03:18	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	112	%	70-130		10		05/28/19 14:50	1868-53-7	
Toluene-d8 (S)	99	%	70-130		10		05/28/19 14:50	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		10		05/28/19 14:50	460-00-4	

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## ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

**Sample: MW-5/T70**      **Lab ID: 40188098017**      Collected: 05/21/19 09:50      Received: 05/22/19 08:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		05/28/19 13:44	95-63-6	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		05/28/19 13:44	108-67-8	
Benzene	<0.25	ug/L	1.0	0.25	1		05/28/19 13:44	71-43-2	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		05/28/19 13:44	100-41-4	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		05/28/19 13:44	1634-04-4	
Naphthalene	<1.2	ug/L	5.0	1.2	1		05/28/19 13:44	91-20-3	
Toluene	<0.17	ug/L	5.0	0.17	1		05/28/19 13:44	108-88-3	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		05/28/19 13:44	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		05/28/19 13:44	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	114	%	70-130		1		05/28/19 13:44	1868-53-7	
Toluene-d8 (S)	104	%	70-130		1		05/28/19 13:44	2037-26-5	
4-Bromofluorobenzene (S)	84	%	70-130		1		05/28/19 13:44	460-00-4	

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### ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

**Sample: MW-6/T70**      **Lab ID: 40188098018**      Collected: 05/21/19 09:55      Received: 05/22/19 08:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<b>57.4</b>	ug/L	5.6	1.7	2		05/28/19 14:28	95-63-6	
1,3,5-Trimethylbenzene	<b>14.0</b>	ug/L	5.8	1.7	2		05/28/19 14:28	108-67-8	
Benzene	<b>666</b>	ug/L	10.0	2.5	10		05/29/19 02:56	71-43-2	
Ethylbenzene	<b>54.0</b>	ug/L	2.0	0.44	2		05/28/19 14:28	100-41-4	
Methyl-tert-butyl ether	<b>&lt;2.5</b>	ug/L	8.3	2.5	2		05/28/19 14:28	1634-04-4	
Naphthalene	<b>11.3</b>	ug/L	10.0	2.4	2		05/28/19 14:28	91-20-3	
Toluene	<b>36.3</b>	ug/L	10.0	0.34	2		05/28/19 14:28	108-88-3	
m&p-Xylene	<b>178</b>	ug/L	4.0	0.93	2		05/28/19 14:28	179601-23-1	
o-Xylene	<b>61.0</b>	ug/L	2.0	0.52	2		05/28/19 14:28	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	112	%	70-130		2		05/28/19 14:28	1868-53-7	
Toluene-d8 (S)	104	%	70-130		2		05/28/19 14:28	2037-26-5	
4-Bromofluorobenzene (S)	89	%	70-130		2		05/28/19 14:28	460-00-4	

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### ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

**Sample: TRIP BLANK**      **Lab ID: 40188098022**      Collected: 05/21/19 00:00      Received: 05/22/19 08:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		05/31/19 11:05	630-20-6	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		05/31/19 11:05	71-55-6	
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		05/31/19 11:05	79-34-5	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		05/31/19 11:05	79-00-5	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		05/31/19 11:05	75-34-3	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		05/31/19 11:05	75-35-4	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		05/31/19 11:05	563-58-6	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		05/31/19 11:05	87-61-6	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		05/31/19 11:05	96-18-4	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		05/31/19 11:05	120-82-1	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		05/31/19 11:05	95-63-6	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		05/31/19 11:05	96-12-8	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		05/31/19 11:05	106-93-4	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		05/31/19 11:05	95-50-1	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		05/31/19 11:05	107-06-2	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		05/31/19 11:05	78-87-5	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		05/31/19 11:05	108-67-8	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		05/31/19 11:05	541-73-1	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		05/31/19 11:05	142-28-9	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		05/31/19 11:05	106-46-7	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		05/31/19 11:05	594-20-7	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		05/31/19 11:05	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		05/31/19 11:05	106-43-4	
Benzene	<0.25	ug/L	1.0	0.25	1		05/31/19 11:05	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		05/31/19 11:05	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		05/31/19 11:05	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		05/31/19 11:05	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		05/31/19 11:05	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		05/31/19 11:05	74-83-9	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		05/31/19 11:05	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		05/31/19 11:05	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		05/31/19 11:05	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		05/31/19 11:05	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		05/31/19 11:05	74-87-3	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		05/31/19 11:05	124-48-1	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		05/31/19 11:05	74-95-3	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		05/31/19 11:05	75-71-8	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		05/31/19 11:05	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		05/31/19 11:05	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		05/31/19 11:05	98-82-8	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		05/31/19 11:05	1634-04-4	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		05/31/19 11:05	75-09-2	
Naphthalene	<1.2	ug/L	5.0	1.2	1		05/31/19 11:05	91-20-3	
Styrene	<0.47	ug/L	1.6	0.47	1		05/31/19 11:05	100-42-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		05/31/19 11:05	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		05/31/19 11:05	108-88-3	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

**Sample: TRIP BLANK**      **Lab ID: 40188098022**      Collected: 05/21/19 00:00      Received: 05/22/19 08:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260							
Trichloroethene	<0.26	ug/L	1.0	0.26	1		05/31/19 11:05	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		05/31/19 11:05	75-69-4	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		05/31/19 11:05	75-01-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		05/31/19 11:05	156-59-2	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		05/31/19 11:05	10061-01-5	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		05/31/19 11:05	179601-23-1	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		05/31/19 11:05	104-51-8	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		05/31/19 11:05	103-65-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		05/31/19 11:05	95-47-6	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		05/31/19 11:05	99-87-6	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		05/31/19 11:05	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		05/31/19 11:05	98-06-6	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		05/31/19 11:05	156-60-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		05/31/19 11:05	10061-02-6	
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	87	%	70-130		1		05/31/19 11:05	460-00-4	
Dibromofluoromethane (S)	96	%	70-130		1		05/31/19 11:05	1868-53-7	HS
Toluene-d8 (S)	98	%	70-130		1		05/31/19 11:05	2037-26-5	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO  
Pace Project No.: 40188098

QC Batch: 322441 Analysis Method: EPA 8021  
QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX  
Associated Lab Samples: 40188098019, 40188098020, 40188098021

METHOD BLANK: 1873411 Matrix: Water  
Associated Lab Samples: 40188098019, 40188098020, 40188098021

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.34	1.1	05/28/19 10:25	
1,3,5-Trimethylbenzene	ug/L	<0.33	1.1	05/28/19 10:25	
Benzene	ug/L	<0.31	1.0	05/28/19 10:25	
Ethylbenzene	ug/L	<0.33	1.1	05/28/19 10:25	
m&p-Xylene	ug/L	<0.66	2.2	05/28/19 10:25	
Methyl-tert-butyl ether	ug/L	<0.32	1.1	05/28/19 10:25	
Naphthalene	ug/L	<0.51	1.7	05/28/19 10:25	
o-Xylene	ug/L	<0.32	1.0	05/28/19 10:25	
Toluene	ug/L	<0.49	1.6	05/28/19 10:25	
a,a,a-Trifluorotoluene (S)	%	101	85-115	05/28/19 10:25	

LABORATORY CONTROL SAMPLE & LCSD: 1873412 1873413

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.3	19.7	102	98	87-118	3	20	
1,3,5-Trimethylbenzene	ug/L	20	20.1	19.6	101	98	84-115	3	20	
Benzene	ug/L	20	21.2	21.1	106	106	85-115	1	20	
Ethylbenzene	ug/L	20	20.8	20.3	104	101	85-115	3	20	
m&p-Xylene	ug/L	40	41.6	40.4	104	101	85-115	3	20	
Methyl-tert-butyl ether	ug/L	20	21.1	20.7	105	103	85-115	2	20	
Naphthalene	ug/L	20	20.2	20.1	101	100	83-119	1	20	
o-Xylene	ug/L	20	20.7	20.1	104	101	85-115	3	20	
Toluene	ug/L	20	21.1	20.8	105	104	85-115	2	20	
a,a,a-Trifluorotoluene (S)	%				102	101	85-115			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1873802 1873803

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188097005 Result	Spike Conc.	Spike Conc.	MS Result						
1,2,4-Trimethylbenzene	ug/L	<0.34	20	20	21.7	21.2	108	106	72-135	2	20
1,3,5-Trimethylbenzene	ug/L	<0.33	20	20	21.6	21.2	108	106	67-134	2	20
Benzene	ug/L	<0.31	20	20	22.4	22.0	112	110	85-122	2	20
Ethylbenzene	ug/L	<0.33	20	20	22.4	21.9	112	110	85-129	2	20
m&p-Xylene	ug/L	<0.66	40	40	44.8	43.8	112	110	85-124	2	20
Methyl-tert-butyl ether	ug/L	<0.32	20	20	20.9	20.3	105	102	85-118	3	20
Naphthalene	ug/L	<0.51	20	20	20.0	20.0	100	100	78-132	0	20
o-Xylene	ug/L	<0.32	20	20	21.9	21.5	110	107	85-124	2	20
Toluene	ug/L	<0.49	20	20	22.6	22.0	113	110	85-122	2	20

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1873802 1873803												
Parameter	Units	40188097005 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
a,a,a-Trifluorotoluene (S)	%							102	102	85-115		

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

QC Batch: 322350 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV  
Associated Lab Samples: 40188098008, 40188098011, 40188098012, 40188098013

METHOD BLANK: 1872065 Matrix: Water  
Associated Lab Samples: 40188098008, 40188098011, 40188098012, 40188098013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	05/30/19 15:35	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	05/30/19 15:35	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	05/30/19 15:35	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	05/30/19 15:35	
1,1-Dichloroethane	ug/L	<0.27	1.0	05/30/19 15:35	
1,1-Dichloroethene	ug/L	<0.24	1.0	05/30/19 15:35	
1,1-Dichloropropene	ug/L	<0.54	1.8	05/30/19 15:35	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	05/30/19 15:35	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	05/30/19 15:35	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	05/30/19 15:35	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	05/30/19 15:35	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	05/30/19 15:35	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	05/30/19 15:35	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	05/30/19 15:35	
1,2-Dichloroethane	ug/L	<0.28	1.0	05/30/19 15:35	
1,2-Dichloropropane	ug/L	<0.28	1.0	05/30/19 15:35	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	05/30/19 15:35	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	05/30/19 15:35	
1,3-Dichloropropane	ug/L	<0.83	2.8	05/30/19 15:35	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	05/30/19 15:35	
2,2-Dichloropropane	ug/L	<2.3	7.6	05/30/19 15:35	
2-Chlorotoluene	ug/L	<0.93	5.0	05/30/19 15:35	
4-Chlorotoluene	ug/L	<0.76	2.5	05/30/19 15:35	
Benzene	ug/L	<0.25	1.0	05/30/19 15:35	
Bromobenzene	ug/L	<0.24	1.0	05/30/19 15:35	
Bromochloromethane	ug/L	<0.36	5.0	05/30/19 15:35	
Bromodichloromethane	ug/L	<0.36	1.2	05/30/19 15:35	
Bromoform	ug/L	<4.0	13.2	05/30/19 15:35	
Bromomethane	ug/L	<0.97	5.0	05/30/19 15:35	
Carbon tetrachloride	ug/L	<0.17	1.0	05/30/19 15:35	
Chlorobenzene	ug/L	<0.71	2.4	05/30/19 15:35	
Chloroethane	ug/L	<1.3	5.0	05/30/19 15:35	
Chloroform	ug/L	<1.3	5.0	05/30/19 15:35	
Chloromethane	ug/L	<2.2	7.3	05/30/19 15:35	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	05/30/19 15:35	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	05/30/19 15:35	
Dibromochloromethane	ug/L	<2.6	8.7	05/30/19 15:35	
Dibromomethane	ug/L	<0.94	3.1	05/30/19 15:35	
Dichlorodifluoromethane	ug/L	<0.50	5.0	05/30/19 15:35	
Ethylbenzene	ug/L	<0.22	1.0	05/30/19 15:35	
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	05/30/19 15:35	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

METHOD BLANK: 1872065

Matrix: Water

Associated Lab Samples: 40188098008, 40188098011, 40188098012, 40188098013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	05/30/19 15:35	
m&p-Xylene	ug/L	<0.47	2.0	05/30/19 15:35	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	05/30/19 15:35	
Methylene Chloride	ug/L	<0.58	5.0	05/30/19 15:35	
n-Butylbenzene	ug/L	<0.71	2.4	05/30/19 15:35	
n-Propylbenzene	ug/L	<0.81	5.0	05/30/19 15:35	
Naphthalene	ug/L	<1.2	5.0	05/30/19 15:35	
o-Xylene	ug/L	<0.26	1.0	05/30/19 15:35	
p-Isopropyltoluene	ug/L	<0.80	2.7	05/30/19 15:35	
sec-Butylbenzene	ug/L	<0.85	5.0	05/30/19 15:35	
Styrene	ug/L	<0.47	1.6	05/30/19 15:35	
tert-Butylbenzene	ug/L	<0.30	1.0	05/30/19 15:35	
Tetrachloroethene	ug/L	<0.33	1.1	05/30/19 15:35	
Toluene	ug/L	<0.17	5.0	05/30/19 15:35	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	05/30/19 15:35	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	05/30/19 15:35	
Trichloroethene	ug/L	<0.26	1.0	05/30/19 15:35	
Trichlorofluoromethane	ug/L	<0.21	1.0	05/30/19 15:35	
Vinyl chloride	ug/L	<0.17	1.0	05/30/19 15:35	
4-Bromofluorobenzene (S)	%	96	70-130	05/30/19 15:35	
Dibromofluoromethane (S)	%	98	70-130	05/30/19 15:35	
Toluene-d8 (S)	%	98	70-130	05/30/19 15:35	

LABORATORY CONTROL SAMPLE: 1872066

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	46.8	94	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	52.1	104	70-130	
1,1,2-Trichloroethane	ug/L	50	54.8	110	70-130	
1,1-Dichloroethane	ug/L	50	54.3	109	73-150	
1,1-Dichloroethene	ug/L	50	58.8	118	73-138	
1,2,4-Trichlorobenzene	ug/L	50	47.0	94	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	44.1	88	64-129	
1,2-Dibromoethane (EDB)	ug/L	50	53.4	107	70-130	
1,2-Dichlorobenzene	ug/L	50	49.0	98	70-130	
1,2-Dichloroethane	ug/L	50	47.7	95	75-140	
1,2-Dichloropropane	ug/L	50	50.8	102	73-135	
1,3-Dichlorobenzene	ug/L	50	47.8	96	70-130	
1,4-Dichlorobenzene	ug/L	50	48.8	98	70-130	
Benzene	ug/L	50	54.8	110	70-130	
Bromodichloromethane	ug/L	50	54.7	109	70-130	
Bromoform	ug/L	50	46.3	93	68-129	
Bromomethane	ug/L	50	42.8	86	18-159	
Carbon tetrachloride	ug/L	50	46.3	93	70-130	

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

LABORATORY CONTROL SAMPLE: 1872066

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	52.4	105	70-130	
Chloroethane	ug/L	50	47.8	96	53-147	
Chloroform	ug/L	50	50.8	102	74-136	
Chloromethane	ug/L	50	28.6	57	29-115	
cis-1,2-Dichloroethene	ug/L	50	56.7	113	70-130	
cis-1,3-Dichloropropene	ug/L	50	44.8	90	70-130	
Dibromochloromethane	ug/L	50	45.7	91	70-130	
Dichlorodifluoromethane	ug/L	50	35.1	70	10-130	
Ethylbenzene	ug/L	50	54.7	109	80-124	
Isopropylbenzene (Cumene)	ug/L	50	55.7	111	70-130	
m&p-Xylene	ug/L	100	113	113	70-130	
Methyl-tert-butyl ether	ug/L	50	51.2	102	54-137	
Methylene Chloride	ug/L	50	57.3	115	73-138	
o-Xylene	ug/L	50	55.6	111	70-130	
Styrene	ug/L	50	56.4	113	70-130	
Tetrachloroethene	ug/L	50	51.9	104	70-130	
Toluene	ug/L	50	56.1	112	80-126	
trans-1,2-Dichloroethene	ug/L	50	57.1	114	73-145	
trans-1,3-Dichloropropene	ug/L	50	43.5	87	70-130	
Trichloroethene	ug/L	50	55.3	111	70-130	
Trichlorofluoromethane	ug/L	50	52.9	106	76-147	
Vinyl chloride	ug/L	50	45.4	91	51-120	
4-Bromofluorobenzene (S)	%			104	70-130	
Dibromofluoromethane (S)	%			96	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1872175 1872176

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188180001 Result	Spike Conc.	Spike Conc.	Conc.								
1,1,1-Trichloroethane	ug/L	<0.24	50	50	50	47.0	47.2	94	94	70-130	0	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	50	50	50	51.6	52.1	103	104	70-130	1	20	
1,1,2-Trichloroethane	ug/L	<0.55	50	50	50	53.8	54.0	108	108	70-137	0	20	
1,1-Dichloroethane	ug/L	<0.27	50	50	50	54.5	54.5	109	109	73-153	0	20	
1,1-Dichloroethene	ug/L	<0.24	50	50	50	58.4	58.2	117	116	73-138	0	20	
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	50	48.5	48.4	96	96	70-130	0	20	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	50	50	50	44.0	44.3	88	89	58-129	1	20	
1,2-Dibromoethane (EDB)	ug/L	<0.83	50	50	50	53.1	52.9	106	106	70-130	0	20	
1,2-Dichlorobenzene	ug/L	<0.71	50	50	50	48.9	48.7	98	97	70-130	0	20	
1,2-Dichloroethane	ug/L	<0.28	50	50	50	47.8	47.7	96	95	75-140	0	20	
1,2-Dichloropropane	ug/L	<0.28	50	50	50	50.2	51.4	100	103	71-138	2	20	
1,3-Dichlorobenzene	ug/L	<0.63	50	50	50	48.2	48.4	96	97	70-130	0	20	
1,4-Dichlorobenzene	ug/L	<0.94	50	50	50	49.2	49.0	98	98	70-130	0	20	
Benzene	ug/L	<0.25	50	50	50	55.1	55.3	110	111	70-130	0	20	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1872175		1872176		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		40188180001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Bromodichloromethane	ug/L	<0.36	50	50	54.1	54.5	108	109	70-130	1	20	
Bromoform	ug/L	<4.0	50	50	46.0	46.0	92	92	68-129	0	20	
Bromomethane	ug/L	<0.97	50	50	46.3	47.3	93	95	15-170	2	20	
Carbon tetrachloride	ug/L	<0.17	50	50	46.3	46.7	93	93	70-130	1	20	
Chlorobenzene	ug/L	<0.71	50	50	52.2	51.9	104	104	70-130	1	20	
Chloroethane	ug/L	<1.3	50	50	46.2	46.5	92	93	51-148	1	20	
Chloroform	ug/L	<1.3	50	50	51.1	51.0	102	102	74-136	0	20	
Chloromethane	ug/L	<2.2	50	50	26.2	26.3	52	53	23-115	0	20	
cis-1,2-Dichloroethene	ug/L	<0.27	50	50	57.3	57.6	115	115	70-131	0	20	
cis-1,3-Dichloropropene	ug/L	<3.6	50	50	46.7	47.4	93	95	70-130	1	20	
Dibromochloromethane	ug/L	<2.6	50	50	45.6	45.5	91	91	70-130	0	20	
Dichlorodifluoromethane	ug/L	<0.50	50	50	23.1	22.9	46	46	10-132	1	20	
Ethylbenzene	ug/L	<0.22	50	50	54.4	54.4	109	109	80-125	0	20	
Isopropylbenzene (Cumene)	ug/L	<0.39	50	50	55.5	55.1	111	110	70-130	1	20	
m&p-Xylene	ug/L	<0.47	100	100	113	112	113	112	70-130	1	20	
Methyl-tert-butyl ether	ug/L	<1.2	50	50	51.2	51.7	102	103	51-145	1	20	
Methylene Chloride	ug/L	<0.58	50	50	57.5	58.2	115	116	73-140	1	20	
o-Xylene	ug/L	<0.26	50	50	55.4	55.1	111	110	70-130	1	20	
Styrene	ug/L	<0.47	50	50	56.5	55.8	113	112	70-130	1	20	
Tetrachloroethene	ug/L	<0.33	50	50	52.4	52.2	105	104	70-130	0	20	
Toluene	ug/L	<0.17	50	50	55.8	55.8	112	112	80-131	0	20	
trans-1,2-Dichloroethene	ug/L	<1.1	50	50	58.3	57.8	117	116	73-148	1	20	
trans-1,3-Dichloropropene	ug/L	<4.4	50	50	44.8	45.0	90	90	70-130	1	20	
Trichloroethene	ug/L	<0.26	50	50	54.7	55.2	109	110	70-130	1	20	
Trichlorofluoromethane	ug/L	<0.21	50	50	50.2	49.9	100	100	74-147	1	20	
Vinyl chloride	ug/L	<0.17	50	50	41.7	41.3	83	83	41-129	1	20	
4-Bromofluorobenzene (S)	%						104	103	70-130			
Dibromofluoromethane (S)	%						97	98	70-130			
Toluene-d8 (S)	%						98	99	70-130			

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

QC Batch: 322936 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV  
Associated Lab Samples: 40188098009, 40188098010, 40188098022

METHOD BLANK: 1875570 Matrix: Water  
Associated Lab Samples: 40188098009, 40188098010, 40188098022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	05/31/19 07:57	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	05/31/19 07:57	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	05/31/19 07:57	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	05/31/19 07:57	
1,1-Dichloroethane	ug/L	<0.27	1.0	05/31/19 07:57	
1,1-Dichloroethene	ug/L	<0.24	1.0	05/31/19 07:57	
1,1-Dichloropropene	ug/L	<0.54	1.8	05/31/19 07:57	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	05/31/19 07:57	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	05/31/19 07:57	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	05/31/19 07:57	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	05/31/19 07:57	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	05/31/19 07:57	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	05/31/19 07:57	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	05/31/19 07:57	
1,2-Dichloroethane	ug/L	<0.28	1.0	05/31/19 07:57	
1,2-Dichloropropane	ug/L	<0.28	1.0	05/31/19 07:57	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	05/31/19 07:57	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	05/31/19 07:57	
1,3-Dichloropropane	ug/L	<0.83	2.8	05/31/19 07:57	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	05/31/19 07:57	
2,2-Dichloropropane	ug/L	<2.3	7.6	05/31/19 07:57	
2-Chlorotoluene	ug/L	<0.93	5.0	05/31/19 07:57	
4-Chlorotoluene	ug/L	<0.76	2.5	05/31/19 07:57	
Benzene	ug/L	<0.25	1.0	05/31/19 07:57	
Bromobenzene	ug/L	<0.24	1.0	05/31/19 07:57	
Bromochloromethane	ug/L	<0.36	5.0	05/31/19 07:57	
Bromodichloromethane	ug/L	<0.36	1.2	05/31/19 07:57	
Bromoform	ug/L	<4.0	13.2	05/31/19 07:57	
Bromomethane	ug/L	<0.97	5.0	05/31/19 07:57	
Carbon tetrachloride	ug/L	<0.17	1.0	05/31/19 07:57	
Chlorobenzene	ug/L	<0.71	2.4	05/31/19 07:57	
Chloroethane	ug/L	<1.3	5.0	05/31/19 07:57	
Chloroform	ug/L	<1.3	5.0	05/31/19 07:57	
Chloromethane	ug/L	<2.2	7.3	05/31/19 07:57	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	05/31/19 07:57	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	05/31/19 07:57	
Dibromochloromethane	ug/L	<2.6	8.7	05/31/19 07:57	
Dibromomethane	ug/L	<0.94	3.1	05/31/19 07:57	
Dichlorodifluoromethane	ug/L	<0.50	5.0	05/31/19 07:57	
Ethylbenzene	ug/L	<0.22	1.0	05/31/19 07:57	
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	05/31/19 07:57	

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

METHOD BLANK: 1875570

Matrix: Water

Associated Lab Samples: 40188098009, 40188098010, 40188098022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	05/31/19 07:57	
m&p-Xylene	ug/L	<0.47	2.0	05/31/19 07:57	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	05/31/19 07:57	
Methylene Chloride	ug/L	<0.58	5.0	05/31/19 07:57	
n-Butylbenzene	ug/L	<0.71	2.4	05/31/19 07:57	
n-Propylbenzene	ug/L	<0.81	5.0	05/31/19 07:57	
Naphthalene	ug/L	<1.2	5.0	05/31/19 07:57	
o-Xylene	ug/L	<0.26	1.0	05/31/19 07:57	
p-Isopropyltoluene	ug/L	<0.80	2.7	05/31/19 07:57	
sec-Butylbenzene	ug/L	<0.85	5.0	05/31/19 07:57	
Styrene	ug/L	<0.47	1.6	05/31/19 07:57	
tert-Butylbenzene	ug/L	<0.30	1.0	05/31/19 07:57	
Tetrachloroethene	ug/L	<0.33	1.1	05/31/19 07:57	
Toluene	ug/L	<0.17	5.0	05/31/19 07:57	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	05/31/19 07:57	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	05/31/19 07:57	
Trichloroethene	ug/L	<0.26	1.0	05/31/19 07:57	
Trichlorofluoromethane	ug/L	<0.21	1.0	05/31/19 07:57	
Vinyl chloride	ug/L	<0.17	1.0	05/31/19 07:57	
4-Bromofluorobenzene (S)	%	86	70-130	05/31/19 07:57	
Dibromofluoromethane (S)	%	94	70-130	05/31/19 07:57	
Toluene-d8 (S)	%	100	70-130	05/31/19 07:57	

LABORATORY CONTROL SAMPLE: 1875571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	48.5	97	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	51.7	103	70-130	
1,1,2-Trichloroethane	ug/L	50	53.2	106	70-130	
1,1-Dichloroethane	ug/L	50	54.1	108	73-150	
1,1-Dichloroethene	ug/L	50	47.7	95	73-138	
1,2,4-Trichlorobenzene	ug/L	50	42.6	85	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	41.4	83	64-129	
1,2-Dibromoethane (EDB)	ug/L	50	50.1	100	70-130	
1,2-Dichlorobenzene	ug/L	50	51.0	102	70-130	
1,2-Dichloroethane	ug/L	50	47.5	95	75-140	
1,2-Dichloropropane	ug/L	50	52.1	104	73-135	
1,3-Dichlorobenzene	ug/L	50	49.8	100	70-130	
1,4-Dichlorobenzene	ug/L	50	50.0	100	70-130	
Benzene	ug/L	50	49.2	98	70-130	
Bromodichloromethane	ug/L	50	51.6	103	70-130	
Bromoform	ug/L	50	43.0	86	68-129	
Bromomethane	ug/L	50	31.4	63	18-159	
Carbon tetrachloride	ug/L	50	50.1	100	70-130	

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

LABORATORY CONTROL SAMPLE: 1875571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	52.2	104	70-130	
Chloroethane	ug/L	50	44.8	90	53-147	
Chloroform	ug/L	50	48.8	98	74-136	
Chloromethane	ug/L	50	34.0	68	29-115	
cis-1,2-Dichloroethene	ug/L	50	47.1	94	70-130	
cis-1,3-Dichloropropene	ug/L	50	42.3	85	70-130	
Dibromochloromethane	ug/L	50	47.3	95	70-130	
Dichlorodifluoromethane	ug/L	50	37.8	76	10-130	
Ethylbenzene	ug/L	50	53.9	108	80-124	
Isopropylbenzene (Cumene)	ug/L	50	55.3	111	70-130	
m&p-Xylene	ug/L	100	109	109	70-130	
Methyl-tert-butyl ether	ug/L	50	45.0	90	54-137	
Methylene Chloride	ug/L	50	59.6	119	73-138	
o-Xylene	ug/L	50	54.9	110	70-130	
Styrene	ug/L	50	55.3	111	70-130	
Tetrachloroethene	ug/L	50	49.4	99	70-130	
Toluene	ug/L	50	52.6	105	80-126	
trans-1,2-Dichloroethene	ug/L	50	48.7	97	73-145	
trans-1,3-Dichloropropene	ug/L	50	40.4	81	70-130	
Trichloroethene	ug/L	50	55.0	110	70-130	
Trichlorofluoromethane	ug/L	50	43.8	88	76-147	
Vinyl chloride	ug/L	50	41.5	83	51-120	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			93	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1875583 1875584

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188564001 Result	Spike Conc.	Spike Conc.	Result								
1,1,1-Trichloroethane	ug/L	<0.24	50	50	49.5	47.1	99	94	70-130	5	20		
1,1,2,2-Tetrachloroethane	ug/L	<0.28	50	50	51.2	50.7	102	101	70-130	1	20		
1,1,2-Trichloroethane	ug/L	<0.55	50	50	51.4	51.1	103	102	70-137	1	20		
1,1-Dichloroethane	ug/L	<0.27	50	50	67.2	50.8	134	102	73-153	28	20	R1	
1,1-Dichloroethene	ug/L	<0.24	50	50	50.6	47.4	101	95	73-138	7	20		
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	46.9	45.0	94	90	70-130	4	20		
1,2-Dibromo-3-chloropropane	ug/L	<1.8	50	50	44.6	42.9	89	86	58-129	4	20		
1,2-Dibromoethane (EDB)	ug/L	<0.83	50	50	49.3	50.6	99	101	70-130	3	20		
1,2-Dichlorobenzene	ug/L	<0.71	50	50	51.2	48.4	102	97	70-130	6	20		
1,2-Dichloroethane	ug/L	<0.28	50	50	46.9	46.3	94	93	75-140	1	20		
1,2-Dichloropropane	ug/L	<0.28	50	50	51.8	50.3	104	101	71-138	3	20		
1,3-Dichlorobenzene	ug/L	<0.63	50	50	49.2	49.4	98	99	70-130	0	20		
1,4-Dichlorobenzene	ug/L	<0.94	50	50	50.6	48.3	101	97	70-130	5	20		
Benzene	ug/L	<0.25	50	50	48.9	47.3	98	95	70-130	3	20		

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1875583		1875584		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188564001 Result	MS Spike Conc.	MSD Spike Conc.									
Bromodichloromethane	ug/L	<0.36	50	50	51.7	50.8	103	102	70-130	2	20		
Bromoform	ug/L	<4.0	50	50	45.1	44.2	90	88	68-129	2	20		
Bromomethane	ug/L	<0.97	50	50	35.8	38.6	72	77	15-170	8	20		
Carbon tetrachloride	ug/L	<0.17	50	50	50.3	49.0	101	98	70-130	3	20		
Chlorobenzene	ug/L	<0.71	50	50	51.0	50.6	102	101	70-130	1	20		
Chloroethane	ug/L	<1.3	50	50	44.4	43.0	89	86	51-148	3	20		
Chloroform	ug/L	<1.3	50	50	48.8	47.0	98	94	74-136	4	20		
Chloromethane	ug/L	<2.2	50	50	36.4	34.8	73	70	23-115	4	20		
cis-1,2-Dichloroethene	ug/L	0.65J	50	50	47.9	45.8	95	90	70-131	5	20		
cis-1,3-Dichloropropene	ug/L	<3.6	50	50	43.9	43.1	88	86	70-130	2	20		
Dibromochloromethane	ug/L	<2.6	50	50	45.4	46.9	91	94	70-130	3	20		
Dichlorodifluoromethane	ug/L	<0.50	50	50	41.2	37.5	82	75	10-132	9	20		
Ethylbenzene	ug/L	<0.22	50	50	52.7	52.8	105	106	80-125	0	20		
Isopropylbenzene (Cumene)	ug/L	<0.39	50	50	53.7	53.7	107	107	70-130	0	20		
m&p-Xylene	ug/L	<0.47	100	100	105	105	105	105	70-130	0	20		
Methyl-tert-butyl ether	ug/L	<1.2	50	50	43.5	55.3	87	111	51-145	24	20	R1	
Methylene Chloride	ug/L	<0.58	50	50	50.1	58.0	100	116	73-140	15	20		
o-Xylene	ug/L	<0.26	50	50	52.3	53.7	105	107	70-130	3	20		
Styrene	ug/L	<0.47	50	50	53.2	53.5	106	107	70-130	1	20		
Tetrachloroethene	ug/L	0.81J	50	50	49.2	51.3	97	101	70-130	4	20		
Toluene	ug/L	<0.17	50	50	51.0	51.9	102	104	80-131	2	20		
trans-1,2-Dichloroethene	ug/L	<1.1	50	50	46.7	56.9	93	114	73-148	20	20		
trans-1,3-Dichloropropene	ug/L	<4.4	50	50	42.0	42.4	84	85	70-130	1	20		
Trichloroethene	ug/L	2.1	50	50	55.9	54.7	108	105	70-130	2	20		
Trichlorofluoromethane	ug/L	<0.21	50	50	43.6	42.9	87	86	74-147	2	20		
Vinyl chloride	ug/L	<0.17	50	50	41.3	40.5	83	81	41-129	2	20		
4-Bromofluorobenzene (S)	%						98	100	70-130				
Dibromofluoromethane (S)	%						99	94	70-130				
Toluene-d8 (S)	%						97	100	70-130				

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

QC Batch:	322305	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV UST-WATER
Associated Lab Samples:	40188098001, 40188098002, 40188098003, 40188098004, 40188098005, 40188098006, 40188098007, 40188098014, 40188098015		

METHOD BLANK: 1871893 Matrix: Water  
Associated Lab Samples: 40188098001, 40188098002, 40188098003, 40188098004, 40188098005, 40188098006, 40188098007, 40188098014, 40188098015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	05/24/19 07:25	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	05/24/19 07:25	
Benzene	ug/L	<0.25	1.0	05/24/19 07:25	
Ethylbenzene	ug/L	<0.22	1.0	05/24/19 07:25	
m&p-Xylene	ug/L	<0.47	2.0	05/24/19 07:25	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	05/24/19 07:25	
Naphthalene	ug/L	<1.2	5.0	05/24/19 07:25	
o-Xylene	ug/L	<0.26	1.0	05/24/19 07:25	
Toluene	ug/L	<0.17	5.0	05/24/19 07:25	
4-Bromofluorobenzene (S)	%	93	70-130	05/24/19 07:25	
Dibromofluoromethane (S)	%	113	70-130	05/24/19 07:25	
Toluene-d8 (S)	%	97	70-130	05/24/19 07:25	

LABORATORY CONTROL SAMPLE: 1871894

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	53.5	107	70-130	
Ethylbenzene	ug/L	50	56.6	113	80-124	
m&p-Xylene	ug/L	100	113	113	70-130	
Methyl-tert-butyl ether	ug/L	50	43.6	87	54-137	
o-Xylene	ug/L	50	55.0	110	70-130	
Toluene	ug/L	50	54.7	109	80-126	
4-Bromofluorobenzene (S)	%			104	70-130	
Dibromofluoromethane (S)	%			113	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1871922 1871923

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40188098001 Result	Spike Conc.	Spike Conc.	Result							Result
Benzene	ug/L	374	50	50	598	494	449	241	70-130	19	20	E,M1
Ethylbenzene	ug/L	103	50	50	195	168	183	130	80-125	15	20	M1
m&p-Xylene	ug/L	1160	100	100	1560	1340	402	182	70-130	15	20	E,M1
Methyl-tert-butyl ether	ug/L	<1.2	50	50	44.4	43.0	89	86	51-145	3	20	
o-Xylene	ug/L	19.8	50	50	86.4	81.3	133	123	70-130	6	20	M1
Toluene	ug/L	0.61J	50	50	54.5	55.2	108	109	80-131	1	20	
4-Bromofluorobenzene (S)	%						102	101	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO  
Pace Project No.: 40188098

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1871922		1871923		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188098001 Result	MS Spike Conc.	MSD Spike Conc.									
Dibromofluoromethane (S)	%							112	106	70-130			
Toluene-d8 (S)	%							102	102	70-130			

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

---

QC Batch: 322341 Analysis Method: EPA 8260  
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER  
 Associated Lab Samples: 40188098016, 40188098017, 40188098018

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METHOD BLANK: 1872039 Matrix: Water

Associated Lab Samples: 40188098016, 40188098017, 40188098018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	05/28/19 06:02	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	05/28/19 06:02	
Benzene	ug/L	<0.25	1.0	05/28/19 06:02	
Ethylbenzene	ug/L	<0.22	1.0	05/28/19 06:02	
m&p-Xylene	ug/L	<0.47	2.0	05/28/19 06:02	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	05/28/19 06:02	
Naphthalene	ug/L	<1.2	5.0	05/28/19 06:02	
o-Xylene	ug/L	<0.26	1.0	05/28/19 06:02	
Toluene	ug/L	<0.17	5.0	05/28/19 06:02	
4-Bromofluorobenzene (S)	%	88	70-130	05/28/19 06:02	
Dibromofluoromethane (S)	%	106	70-130	05/28/19 06:02	
Toluene-d8 (S)	%	102	70-130	05/28/19 06:02	

LABORATORY CONTROL SAMPLE: 1872040

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	53.1	106	70-130	
Ethylbenzene	ug/L	50	54.2	108	80-124	
m&p-Xylene	ug/L	100	112	112	70-130	
Methyl-tert-butyl ether	ug/L	50	51.4	103	54-137	
o-Xylene	ug/L	50	55.2	110	70-130	
Toluene	ug/L	50	53.4	107	80-126	
4-Bromofluorobenzene (S)	%			98	70-130	
Dibromofluoromethane (S)	%			110	70-130	
Toluene-d8 (S)	%			104	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

---

### 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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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.

### LABORATORIES

PASI-G Pace Analytical Services - Green Bay

### ANALYTE QUALIFIERS

E Analyte concentration exceeded the calibration range. The reported result is estimated.

HS Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

pH Post-analysis pH measurement indicates insufficient VOA sample preservation.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40188098019	MW-4/T50	EPA 8021	322441		
40188098020	MW-5/T50	EPA 8021	322441		
40188098021	MW-6/T50	EPA 8021	322441		
40188098008	MW-1/T68	EPA 8260	322350		
40188098009	MW-2/T68	EPA 8260	322936		
40188098010	MW-4/T68	EPA 8260	322936		
40188098011	MW-5/T66	EPA 8260	322350		
40188098012	MW-5/T68	EPA 8260	322350		
40188098013	MW-6/T68	EPA 8260	322350		
40188098022	TRIP BLANK	EPA 8260	322936		
40188098001	MW-1/T40	EPA 8260	322305		
40188098002	MW-2/T40	EPA 8260	322305		
40188098003	MW-4/T40	EPA 8260	322305		
40188098004	MW-5/T40	EPA 8260	322305		
40188098005	MW-6/T40	EPA 8260	322305		
40188098006	MW-7/T40	EPA 8260	322305		
40188098007	TS-1/T40	EPA 8260	322305		
40188098014	MW-2R/T70	EPA 8260	322305		
40188098015	MW-3/T70	EPA 8260	322305		
40188098016	MW-4/T70	EPA 8260	322341		
40188098017	MW-5/T70	EPA 8260	322341		
40188098018	MW-6/T70	EPA 8260	322341		

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(Please Print Clearly)

UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436



CHAIN OF CUSTODY

Table with 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

COC No. 40188098

Company Name: Gannett Fleming, Inc.
Branch/Location: Madison, WI
Project Contact: Cliff Wright
Phone: 608/836-1500 x6722
Project Number: 34265.003
Project Name: Superior Refining Company (SRC)
Project State: WI
Sampled By (Print): Marcus Mussey
Sampled By (Sign): [Signature]

Data Package Options (billable)
MS/MSD (billable)
Matrix Codes
A=Air, B=Biota, C=Charcoal, O=Oil, S=Soil, SI=Sludge, W=Water, DW=Drinking Water, GW=Ground Water, SW=Surface Water, WW=Waste Water, WP=Wipe

Table with columns: PACE LAB #, CLIENT FIELD ID, COLLECTION DATE, TIME, MATRIX. Rows 001-013 with handwritten entries.

Table with columns: Y/N, Pick Letter, Analyses Requested. Contains handwritten entries for PVOCS and VOCs.

Quote #: Pace 2019
Mail To Contact: Cliff Wright
Mail To Company: Gannett Fleming
Mail To Address: 8025 Excelsior Dr. Madison, WI 53717
Invoice To Contact: See "Mail to Contact" info above
Invoice To Company: "
Invoice To Address: "
Invoice To Phone: 608/836-1500 x6722

Table with columns: CLIENT COMMENTS, LAB COMMENTS (Lab Use Only), Profile #. Contains handwritten time entries (8:50, 8:35, 8:55) and a signature.

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:

Table with columns: Relinquished By, Date/Time, Received By, Date/Time. Contains handwritten signatures and dates.

PACE Project No. 40188098
Receipt Temp = 1201 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present Intact / Not Intact

(Please Print Clearly)

**Company Name:** Gannett Fleming, Inc.  
**Branch/Location:** Madison, WI  
**Project Contact:** Cliff Wright  
**Phone:** 608/836-1500 x6722  
**Project Number:** 34265.003  
**Project Name:** Superior Refining Company (SRC)  
**Project State:** WI  
**Sampled By (Print):** Marcus Mussey  
**Sampled By (Sign):** *[Signature]*  
**PO #:** \_\_\_\_\_ **Regulatory Program:** \_\_\_\_\_



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

### 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

**Quote #:** Pace 2019  
**Mail To Contact:** Cliff Wright  
**Mail To Company:** Gannett Fleming  
**Mail To Address:** 8025 Excelsior Dr. Madison, WI 53717  
**Invoice To Contact:** See "Mail to Contact" info above  
**Invoice To Company:** "  
**Invoice To Address:** "  
**Invoice To Phone:** 608/836-1500 x6722

**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	Y/N	Pick Letter	Analyses Requested
		DATE	TIME				
014	MW-2R/T70	5/21	9:45	GW	N	A	PVOC/Naph 3
015	MW-3/T70		10:00		N	A	PVOC/Naph 3
016	MW-4/T70		10:05				
017	MW-5/T70		9:50				
018	MW-6/T70		9:55				
019	MW-4/T50		8:10				PVOC/Naph 3
020	MW-5/T50		8:05				
021	MW-6/T50		8:15				
022	Trip Blank						

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

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

<b>Relinquished By:</b> Marcus Mussey <i>[Signature]</i>	<b>Date/Time:</b> 5/21, 1630	<b>Received By:</b> 601mg Postal <i>[Signature]</i>	<b>Date/Time:</b> 5/21/08 0820
<b>Relinquished By:</b> Feder	<b>Date/Time:</b> 5/21/08 0820	<b>Received By:</b> [Signature]	<b>Date/Time:</b> 5/21/08 0820
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Received By:</b>	<b>Date/Time:</b>
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Received By:</b>	<b>Date/Time:</b>

**PACE Project No.** 40188098  
**Receipt Temp =** 20 °C  
**Sample Receipt pH** OK / Adjusted  
**Cooler Custody Seal** Present / Not Present Intact / Not Intact

# Sample Preservation Receipt Form

Pace Analytical Services, LLC  
1241 Bellevue Street, Suite 606  
Green Bay, WI 54302

Client Name: Gannett Fleming

Project # 460188098

All containers needing preservation have been checked and noted below:  Yes  No  N/A

Initial when completed:

Date/Time:

Page 59 of 66

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass							Plastic						Vials					Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)				
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3B	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T								ZPLC	GN		
001																	3																		2.5 / 5 / 10
002																	3																		2.5 / 5 / 10
003																	3																		2.5 / 5 / 10
004																	3																		2.5 / 5 / 10
005																	3																		2.5 / 5 / 10
006																	3																		2.5 / 5 / 10
007																	3																		2.5 / 5 / 10
008																	3																		2.5 / 5 / 10
009																	3																		2.5 / 5 / 10
010																	3																		2.5 / 5 / 10
011																	3																		2.5 / 5 / 10
012																	3																		2.5 / 5 / 10
013																	3																		2.5 / 5 / 10
014																	3																		2.5 / 5 / 10
015																	3																		2.5 / 5 / 10
016																	3																		2.5 / 5 / 10
017																	3																		2.5 / 5 / 10
018																	3																		2.5 / 5 / 10
019																	3																		2.5 / 5 / 10
020																	3																		2.5 / 5 / 10


Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:

Headspace in VOA Vials (>6mm):  Yes  No  N/A \*If yes look in headspace column

AG1U 1 liter amber glass	BP1U 1 liter plastic unpres	DG9A 40 mL amber ascorbic	JGFU 4 oz amber jar unpres
AG1H 1 liter amber glass HCL	BP2N 500 mL plastic HNO3	DG9T 40 mL amber Na Thio	WGFU 4 oz clear jar unpres
AG4S 125 mL amber glass H2SO4	BP2Z 500 mL plastic NaOH, Znact	VG9U 40 mL clear vial unpres	WPFU 4 oz plastic jar unpres
AG4U 120 mL amber glass unpres	BP3U 250 mL plastic unpres	VG9H 40 mL clear vial HCL	
AG5U 100 mL amber glass unpres	BP3B 250 mL plastic NaOH	VG9M 40 mL clear vial MeOH	SP5T 120 mL plastic Na Thiosulfate
AG2S 500 mL amber glass H2SO4	BP3N 250 mL plastic HNO3	VG9D 40 mL clear vial DI	ZPLC ziploc bag
BG3U 250 mL clear glass unpres	BP3S 250 mL plastic H2SO4		GN:





 1241 Bellevue Street, Green Bay, WI 54302	Document Name: <b>Sample Condition Upon Receipt (SCUR)</b>	Document Revised: 25Apr2018
	Document No.: <b>F-GB-C-031-Rev.07</b>	Issuing Authority: Pace Green Bay Quality Office

### Sample Condition Upon Receipt Form (SCUR)

**Client Name:** Gannett Fleming  
**Courier:**  CS Logistics  Fed Ex  Speedee  UPS  Walco  
 Client  Pace Other: \_\_\_\_\_

Project #: \_\_\_\_\_

WO#: 40188098



40188098

**Tracking #:** 8146 9026 794  
**Custody Seal on Cooler/Box Present:**  yes  no    **Seals intact:**  yes  no  
**Custody Seal on Samples Present:**  yes  no    **Seals intact:**  yes  no  
**Packing Material:**  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_  
**Thermometer Used** SR - NA    **Type of Ice:** Wet Blue Dry None     Samples on ice, cooling process has begun

**Cooler Temperature**    Uncorr: 201 /Corr: \_\_\_\_\_  
**Temp Blank Present:**  yes  no    **Biological Tissue is Frozen:**  yes  no

**Person examining contents:**  
 Date: 5/23/19  
 Initials: ML

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
<b>Short Hold Time Analysis (&lt;72hr):</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
<b>Rush Turn Around Time Requested:</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis    Matrix: <u>lv</u>		
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>423</u>		

**Client Notification/ Resolution:** \_\_\_\_\_ If checked, see attached form for additional comments   
 Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/ Resolution: \_\_\_\_\_

**Project Manager Review:** Run for PM    **Date:** 5/23/19

October 17, 2019

Clifford Wright  
Gannett Fleming  
8040 Excelsior Drive, Ste 303  
Madison, WI 53717

Project #34265.003  
SRC Fall 2019 GW  
Reviewed by CCW  
10/18/19

RE: Project: 34265.003 SUPERIOR REFINING CO  
Pace Project No.: 40197129

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on October 11, 2019. 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



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

---

### 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: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40197129001	LRS-1	Water	10/09/19 08:50	10/11/19 09:15
40197129002	LRS-2	Water	10/09/19 08:55	10/11/19 09:15
40197129003	LRS-3	Water	10/09/19 09:00	10/11/19 09:15
40197129004	LRS-4	Water	10/09/19 08:45	10/11/19 09:15
40197129005	LRS-7	Water	10/09/19 09:05	10/11/19 09:15
40197129006	MW-1/FL	Water	10/09/19 07:50	10/11/19 09:15
40197129007	MW-2/FL	Water	10/09/19 07:55	10/11/19 09:15
40197129008	MW-3/FL	Water	10/09/19 08:00	10/11/19 09:15
40197129009	MW-9/FL	Water	10/09/19 09:15	10/11/19 09:15
40197129010	MW-10/FL	Water	10/09/19 09:10	10/11/19 09:15
40197129011	MW-11/FL	Water	10/09/19 08:08	10/11/19 09:15
40197129012	MW-13/FL	Water	10/09/19 08:10	10/11/19 09:15
40197129013	MW-14/FL	Water	10/09/19 08:15	10/11/19 09:15
40197129014	MW-1/T40	Water	10/09/19 09:35	10/11/19 09:15
40197129015	MW-2/T40	Water	10/09/19 09:45	10/11/19 09:15
40197129016	MW-4/T40	Water	10/09/19 10:10	10/11/19 09:15
40197129017	MW-5/T40	Water	10/09/19 09:50	10/11/19 09:15
40197129018	MW-6/T40	Water	10/09/19 10:00	10/11/19 09:15
40197129019	MW-7/T40	Water	10/09/19 10:05	10/11/19 09:15
40197129020	TS-1/T40	Water	10/09/19 09:55	10/11/19 09:15
40197129021	MW-1/T68	Water	10/09/19 10:20	10/11/19 09:15
40197129022	MW-2/T68	Water	10/09/19 10:30	10/11/19 09:15
40197129023	MW-4/T68	Water	10/09/19 10:25	10/11/19 09:15
40197129024	MW-5/T66	Water	10/09/19 10:40	10/11/19 09:15
40197129025	MW-5/T68	Water	10/09/19 10:15	10/11/19 09:15
40197129026	MW-6/T68	Water	10/09/19 10:15	10/11/19 09:15
40197129027	MW-2R/T70	Water	10/09/19 10:50	10/11/19 09:15
40197129028	MW-3/T70	Water	10/09/19 11:05	10/11/19 09:15
40197129029	MW-4/T70	Water	10/09/19 11:10	10/11/19 09:15
40197129030	MW-5/T70	Water	10/09/19 10:55	10/11/19 09:15
40197129031	MW-6/T70	Water	10/09/19 11:00	10/11/19 09:15
40197129032	TRIP BLANK	Water	10/09/19 00:00	10/11/19 09:15

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40197129001	LRS-1	EPA 8021	ALD	9	PASI-G
40197129002	LRS-2	EPA 8021	ALD	9	PASI-G
40197129003	LRS-3	EPA 8021	ALD	9	PASI-G
40197129004	LRS-4	EPA 8021	ALD	9	PASI-G
40197129005	LRS-7	EPA 8021	ALD	9	PASI-G
40197129006	MW-1/FL	EPA 8021	ALD	9	PASI-G
40197129007	MW-2/FL	EPA 8021	ALD	9	PASI-G
40197129008	MW-3/FL	EPA 8021	ALD	9	PASI-G
40197129009	MW-9/FL	EPA 8021	ALD	9	PASI-G
40197129010	MW-10/FL	EPA 8021	ALD	9	PASI-G
40197129011	MW-11/FL	EPA 8021	ALD	9	PASI-G
40197129012	MW-13/FL	EPA 8021	ALD	9	PASI-G
40197129013	MW-14/FL	EPA 8021	ALD	9	PASI-G
40197129014	MW-1/T40	EPA 8260	LAP	11	PASI-G
40197129015	MW-2/T40	EPA 8260	LAP	11	PASI-G
40197129016	MW-4/T40	EPA 8260	LAP	11	PASI-G
40197129017	MW-5/T40	EPA 8260	LAP	11	PASI-G
40197129018	MW-6/T40	EPA 8260	LAP	11	PASI-G
40197129019	MW-7/T40	EPA 8260	LAP	11	PASI-G
40197129020	TS-1/T40	EPA 8260	LAP	11	PASI-G
40197129021	MW-1/T68	EPA 8260	HNW	63	PASI-G
40197129022	MW-2/T68	EPA 8260	HNW	63	PASI-G
40197129023	MW-4/T68	EPA 8260	HNW	63	PASI-G
40197129024	MW-5/T66	EPA 8260	HNW	63	PASI-G
40197129025	MW-5/T68	EPA 8260	HNW	63	PASI-G
40197129026	MW-6/T68	EPA 8260	HNW	63	PASI-G
40197129027	MW-2R/T70	EPA 8260	LAP	12	PASI-G
40197129028	MW-3/T70	EPA 8260	LAP	12	PASI-G
40197129029	MW-4/T70	EPA 8260	LAP	12	PASI-G
40197129030	MW-5/T70	EPA 8260	LAP	12	PASI-G
40197129031	MW-6/T70	EPA 8260	LAP	12	PASI-G
40197129032	TRIP BLANK	EPA 8260	HNW	63	PASI-G

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>40197129023</b>	<b>MW-4/T68</b>					
EPA 8260	n-Propylbenzene	30.5J	ug/L	50.0	10/16/19 12:37	
<b>40197129024</b>	<b>MW-5/T66</b>					
EPA 8260	1,2,4-Trimethylbenzene	2520	ug/L	140	10/16/19 12:58	
EPA 8260	1,2-Dichloroethane	112	ug/L	50.0	10/16/19 12:58	
EPA 8260	1,3,5-Trimethylbenzene	759	ug/L	146	10/16/19 12:58	
EPA 8260	Benzene	4260	ug/L	50.0	10/16/19 12:58	
EPA 8260	Ethylbenzene	1680	ug/L	50.0	10/16/19 12:58	
EPA 8260	Isopropylbenzene (Cumene)	35.9J	ug/L	250	10/16/19 12:58	
EPA 8260	Naphthalene	358	ug/L	250	10/16/19 12:58	
EPA 8260	Toluene	9810	ug/L	250	10/16/19 12:58	
EPA 8260	m&p-Xylene	10600	ug/L	100	10/16/19 12:58	
EPA 8260	n-Propylbenzene	106J	ug/L	250	10/16/19 12:58	
EPA 8260	o-Xylene	4170	ug/L	50.0	10/16/19 12:58	
<b>40197129025</b>	<b>MW-5/T68</b>					
EPA 8260	1,2,4-Trimethylbenzene	3570	ug/L	700	10/16/19 13:20	
EPA 8260	1,2-Dichloroethane	697	ug/L	250	10/16/19 13:20	
EPA 8260	1,3,5-Trimethylbenzene	985	ug/L	728	10/16/19 13:20	
EPA 8260	Benzene	25400	ug/L	250	10/16/19 13:20	
EPA 8260	Ethylbenzene	2480	ug/L	250	10/16/19 13:20	
EPA 8260	Naphthalene	717J	ug/L	1250	10/16/19 13:20	
EPA 8260	Toluene	39500	ug/L	1250	10/16/19 13:20	
EPA 8260	m&p-Xylene	15000	ug/L	500	10/16/19 13:20	
EPA 8260	n-Propylbenzene	258J	ug/L	1250	10/16/19 13:20	
EPA 8260	o-Xylene	6620	ug/L	250	10/16/19 13:20	
<b>40197129026</b>	<b>MW-6/T68</b>					
EPA 8260	1,2,4-Trimethylbenzene	2670	ug/L	700	10/16/19 13:42	
EPA 8260	1,2-Dichloroethane	743	ug/L	250	10/16/19 13:42	
EPA 8260	1,3,5-Trimethylbenzene	758	ug/L	728	10/16/19 13:42	
EPA 8260	Benzene	20300	ug/L	250	10/16/19 13:42	
EPA 8260	Ethylbenzene	1300	ug/L	250	10/16/19 13:42	
EPA 8260	Naphthalene	391J	ug/L	1250	10/16/19 13:42	
EPA 8260	Toluene	17700	ug/L	1250	10/16/19 13:42	
EPA 8260	m&p-Xylene	11700	ug/L	500	10/16/19 13:42	
EPA 8260	o-Xylene	5700	ug/L	250	10/16/19 13:42	
<b>40197129027</b>	<b>MW-2R/T70</b>					
EPA 8260	1,2,4-Trimethylbenzene	4270	ug/L	560	10/16/19 13:20	
EPA 8260	1,3,5-Trimethylbenzene	1130	ug/L	582	10/16/19 13:20	
EPA 8260	Benzene	11800	ug/L	200	10/16/19 13:20	
EPA 8260	Ethylbenzene	1310	ug/L	200	10/16/19 13:20	
EPA 8260	Naphthalene	919J	ug/L	1000	10/16/19 13:20	
EPA 8260	Toluene	15700	ug/L	1000	10/16/19 13:20	
EPA 8260	m&p-Xylene	12900	ug/L	400	10/16/19 13:20	
EPA 8260	o-Xylene	5710	ug/L	200	10/16/19 13:20	

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: 34265.003 SUPERIOR REFINING CO  
Pace Project No.: 40197129

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>40197129028</b>	<b>MW-3/T70</b>					
EPA 8260	1,2,4-Trimethylbenzene	101	ug/L	7.0	10/16/19 12:32	
EPA 8260	1,3,5-Trimethylbenzene	4.3J	ug/L	7.3	10/16/19 12:32	
EPA 8260	Benzene	364	ug/L	2.5	10/16/19 12:32	
EPA 8260	Ethylbenzene	31.2	ug/L	2.5	10/16/19 12:32	
EPA 8260	Naphthalene	24.8	ug/L	12.5	10/16/19 12:32	
EPA 8260	Toluene	3.0J	ug/L	12.5	10/16/19 12:32	
EPA 8260	m&p-Xylene	155	ug/L	5.0	10/16/19 12:32	
EPA 8260	o-Xylene	55.1	ug/L	2.5	10/16/19 12:32	
<b>40197129029</b>	<b>MW-4/T70</b>					
EPA 8260	1,2,4-Trimethylbenzene	3380	ug/L	560	10/16/19 12:56	
EPA 8260	1,3,5-Trimethylbenzene	841	ug/L	582	10/16/19 12:56	
EPA 8260	Benzene	16400	ug/L	200	10/16/19 12:56	
EPA 8260	Ethylbenzene	1600	ug/L	200	10/16/19 12:56	
EPA 8260	Naphthalene	847J	ug/L	1000	10/16/19 12:56	
EPA 8260	Toluene	20000	ug/L	1000	10/16/19 12:56	
EPA 8260	m&p-Xylene	14400	ug/L	400	10/16/19 12:56	
EPA 8260	o-Xylene	6410	ug/L	200	10/16/19 12:56	
<b>40197129030</b>	<b>MW-5/T70</b>					
EPA 8260	1,2,4-Trimethylbenzene	3.9	ug/L	2.8	10/17/19 10:18	
EPA 8260	1,3,5-Trimethylbenzene	1.3J	ug/L	2.9	10/17/19 10:18	
EPA 8260	Benzene	1.3	ug/L	1.0	10/17/19 10:18	
EPA 8260	Ethylbenzene	0.85J	ug/L	1.0	10/17/19 10:18	
EPA 8260	Naphthalene	14.8	ug/L	5.0	10/17/19 10:18	
EPA 8260	Toluene	2.1J	ug/L	5.0	10/17/19 10:18	
EPA 8260	m&p-Xylene	4.6	ug/L	2.0	10/17/19 10:18	
EPA 8260	o-Xylene	6.5	ug/L	1.0	10/17/19 10:18	
<b>40197129031</b>	<b>MW-6/T70</b>					
EPA 8260	1,2,4-Trimethylbenzene	62.6	ug/L	5.6	10/16/19 12:08	
EPA 8260	1,3,5-Trimethylbenzene	11.8	ug/L	5.8	10/16/19 12:08	
EPA 8260	Benzene	271	ug/L	2.0	10/16/19 12:08	
EPA 8260	Ethylbenzene	23.6	ug/L	2.0	10/16/19 12:08	
EPA 8260	Naphthalene	13.8	ug/L	10.0	10/16/19 12:08	
EPA 8260	Toluene	7.1J	ug/L	10.0	10/16/19 12:08	
EPA 8260	m&p-Xylene	141	ug/L	4.0	10/16/19 12:08	
EPA 8260	o-Xylene	40.7	ug/L	2.0	10/16/19 12:08	

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## PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO  
Pace Project No.: 40197129

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**Method:** EPA 8021  
**Description:** 8021 GCV Short List  
**Client:** Gannett Fleming Inc.  
**Date:** October 17, 2019

**General Information:**

13 samples were analyzed for EPA 8021. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO  
Pace Project No.: 40197129

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**Method:** EPA 8260  
**Description:** 8260 MSV  
**Client:** Gannett Fleming Inc.  
**Date:** October 17, 2019

### General Information:

7 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

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**Method:** EPA 8260

**Description:** 8260 MSV UST

**Client:** Gannett Fleming Inc.

**Date:** October 17, 2019

**General Information:**

12 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

**Sample: MW-2R/T70**      **Lab ID: 40197129027**      Collected: 10/09/19 10:50      Received: 10/11/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	<b>4270</b>	ug/L	560	168	200		10/16/19 13:20	95-63-6	
1,3,5-Trimethylbenzene	<b>1130</b>	ug/L	582	175	200		10/16/19 13:20	108-67-8	
Benzene	<b>11800</b>	ug/L	200	49.3	200		10/16/19 13:20	71-43-2	
Ethylbenzene	<b>1310</b>	ug/L	200	43.6	200		10/16/19 13:20	100-41-4	
Methyl-tert-butyl ether	<b>&lt;249</b>	ug/L	831	249	200		10/16/19 13:20	1634-04-4	
Naphthalene	<b>919J</b>	ug/L	1000	235	200		10/16/19 13:20	91-20-3	
Toluene	<b>15700</b>	ug/L	1000	34.4	200		10/16/19 13:20	108-88-3	
m&p-Xylene	<b>12900</b>	ug/L	400	93.1	200		10/16/19 13:20	179601-23-1	
o-Xylene	<b>5710</b>	ug/L	200	52.4	200		10/16/19 13:20	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	104	%	70-130		200		10/16/19 13:20	1868-53-7	
Toluene-d8 (S)	97	%	70-130		200		10/16/19 13:20	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		200		10/16/19 13:20	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

**Sample: MW-3/T70**      **Lab ID: 40197129028**      Collected: 10/09/19 11:05      Received: 10/11/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<b>101</b>	ug/L	7.0	2.1	2.5		10/16/19 12:32	95-63-6	
1,3,5-Trimethylbenzene	<b>4.3J</b>	ug/L	7.3	2.2	2.5		10/16/19 12:32	108-67-8	
Benzene	<b>364</b>	ug/L	2.5	0.62	2.5		10/16/19 12:32	71-43-2	
Ethylbenzene	<b>31.2</b>	ug/L	2.5	0.55	2.5		10/16/19 12:32	100-41-4	
Methyl-tert-butyl ether	<b>&lt;3.1</b>	ug/L	10.4	3.1	2.5		10/16/19 12:32	1634-04-4	
Naphthalene	<b>24.8</b>	ug/L	12.5	2.9	2.5		10/16/19 12:32	91-20-3	
Toluene	<b>3.0J</b>	ug/L	12.5	0.43	2.5		10/16/19 12:32	108-88-3	
m&p-Xylene	<b>155</b>	ug/L	5.0	1.2	2.5		10/16/19 12:32	179601-23-1	
o-Xylene	<b>55.1</b>	ug/L	2.5	0.65	2.5		10/16/19 12:32	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	101	%	70-130		2.5		10/16/19 12:32	1868-53-7	
Toluene-d8 (S)	97	%	70-130		2.5		10/16/19 12:32	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130		2.5		10/16/19 12:32	460-00-4	

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### ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

**Sample: MW-4/T70**      **Lab ID: 40197129029**      Collected: 10/09/19 11:10      Received: 10/11/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<b>3380</b>	ug/L	560	168	200		10/16/19 12:56	95-63-6	
1,3,5-Trimethylbenzene	<b>841</b>	ug/L	582	175	200		10/16/19 12:56	108-67-8	
Benzene	<b>16400</b>	ug/L	200	49.3	200		10/16/19 12:56	71-43-2	
Ethylbenzene	<b>1600</b>	ug/L	200	43.6	200		10/16/19 12:56	100-41-4	
Methyl-tert-butyl ether	<b>&lt;249</b>	ug/L	831	249	200		10/16/19 12:56	1634-04-4	
Naphthalene	<b>847J</b>	ug/L	1000	235	200		10/16/19 12:56	91-20-3	
Toluene	<b>20000</b>	ug/L	1000	34.4	200		10/16/19 12:56	108-88-3	
m&p-Xylene	<b>14400</b>	ug/L	400	93.1	200		10/16/19 12:56	179601-23-1	
o-Xylene	<b>6410</b>	ug/L	200	52.4	200		10/16/19 12:56	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	102	%	70-130		200		10/16/19 12:56	1868-53-7	
Toluene-d8 (S)	99	%	70-130		200		10/16/19 12:56	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130		200		10/16/19 12:56	460-00-4	

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### ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

**Sample: MW-5/T70**      **Lab ID: 40197129030**      Collected: 10/09/19 10:55      Received: 10/11/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<b>3.9</b>	ug/L	2.8	0.84	1		10/17/19 10:18	95-63-6	
1,3,5-Trimethylbenzene	<b>1.3J</b>	ug/L	2.9	0.87	1		10/17/19 10:18	108-67-8	
Benzene	<b>1.3</b>	ug/L	1.0	0.25	1		10/17/19 10:18	71-43-2	
Ethylbenzene	<b>0.85J</b>	ug/L	1.0	0.22	1		10/17/19 10:18	100-41-4	
Methyl-tert-butyl ether	<b>&lt;1.2</b>	ug/L	4.2	1.2	1		10/17/19 10:18	1634-04-4	
Naphthalene	<b>14.8</b>	ug/L	5.0	1.2	1		10/17/19 10:18	91-20-3	
Toluene	<b>2.1J</b>	ug/L	5.0	0.17	1		10/17/19 10:18	108-88-3	
m&p-Xylene	<b>4.6</b>	ug/L	2.0	0.47	1		10/17/19 10:18	179601-23-1	
o-Xylene	<b>6.5</b>	ug/L	1.0	0.26	1		10/17/19 10:18	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	119	%	70-130		1		10/17/19 10:18	1868-53-7	
Toluene-d8 (S)	100	%	70-130		1		10/17/19 10:18	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		1		10/17/19 10:18	460-00-4	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

**Sample: MW-6/T70**      **Lab ID: 40197129031**      Collected: 10/09/19 11:00      Received: 10/11/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST</b>									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<b>62.6</b>	ug/L	5.6	1.7	2		10/16/19 12:08	95-63-6	
1,3,5-Trimethylbenzene	<b>11.8</b>	ug/L	5.8	1.7	2		10/16/19 12:08	108-67-8	
Benzene	<b>271</b>	ug/L	2.0	0.49	2		10/16/19 12:08	71-43-2	
Ethylbenzene	<b>23.6</b>	ug/L	2.0	0.44	2		10/16/19 12:08	100-41-4	
Methyl-tert-butyl ether	<b>&lt;2.5</b>	ug/L	8.3	2.5	2		10/16/19 12:08	1634-04-4	
Naphthalene	<b>13.8</b>	ug/L	10.0	2.4	2		10/16/19 12:08	91-20-3	
Toluene	<b>7.1J</b>	ug/L	10.0	0.34	2		10/16/19 12:08	108-88-3	
m&p-Xylene	<b>141</b>	ug/L	4.0	0.93	2		10/16/19 12:08	179601-23-1	
o-Xylene	<b>40.7</b>	ug/L	2.0	0.52	2		10/16/19 12:08	95-47-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	100	%	70-130		2		10/16/19 12:08	1868-53-7	
Toluene-d8 (S)	100	%	70-130		2		10/16/19 12:08	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130		2		10/16/19 12:08	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

**Sample: TRIP BLANK**      **Lab ID: 40197129032**      Collected: 10/09/19 00:00      Received: 10/11/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b> Analytical Method: EPA 8260									
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		10/16/19 11:31	630-20-6	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		10/16/19 11:31	71-55-6	
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		10/16/19 11:31	79-34-5	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		10/16/19 11:31	79-00-5	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		10/16/19 11:31	75-34-3	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		10/16/19 11:31	75-35-4	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		10/16/19 11:31	563-58-6	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		10/16/19 11:31	87-61-6	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		10/16/19 11:31	96-18-4	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		10/16/19 11:31	120-82-1	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		10/16/19 11:31	95-63-6	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		10/16/19 11:31	96-12-8	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		10/16/19 11:31	106-93-4	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		10/16/19 11:31	95-50-1	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		10/16/19 11:31	107-06-2	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		10/16/19 11:31	78-87-5	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		10/16/19 11:31	108-67-8	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		10/16/19 11:31	541-73-1	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		10/16/19 11:31	142-28-9	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		10/16/19 11:31	106-46-7	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		10/16/19 11:31	594-20-7	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		10/16/19 11:31	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		10/16/19 11:31	106-43-4	
Benzene	<0.25	ug/L	1.0	0.25	1		10/16/19 11:31	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		10/16/19 11:31	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		10/16/19 11:31	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		10/16/19 11:31	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		10/16/19 11:31	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		10/16/19 11:31	74-83-9	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		10/16/19 11:31	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		10/16/19 11:31	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		10/16/19 11:31	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		10/16/19 11:31	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		10/16/19 11:31	74-87-3	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		10/16/19 11:31	124-48-1	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		10/16/19 11:31	74-95-3	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		10/16/19 11:31	75-71-8	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		10/16/19 11:31	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		10/16/19 11:31	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		10/16/19 11:31	98-82-8	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		10/16/19 11:31	1634-04-4	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		10/16/19 11:31	75-09-2	
Naphthalene	<1.2	ug/L	5.0	1.2	1		10/16/19 11:31	91-20-3	
Styrene	<0.47	ug/L	1.6	0.47	1		10/16/19 11:31	100-42-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		10/16/19 11:31	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		10/16/19 11:31	108-88-3	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

**Sample: TRIP BLANK**      **Lab ID: 40197129032**      Collected: 10/09/19 00:00      Received: 10/11/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260							
Trichloroethene	<0.26	ug/L	1.0	0.26	1		10/16/19 11:31	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		10/16/19 11:31	75-69-4	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		10/16/19 11:31	75-01-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		10/16/19 11:31	156-59-2	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		10/16/19 11:31	10061-01-5	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		10/16/19 11:31	179601-23-1	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		10/16/19 11:31	104-51-8	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		10/16/19 11:31	103-65-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		10/16/19 11:31	95-47-6	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		10/16/19 11:31	99-87-6	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		10/16/19 11:31	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		10/16/19 11:31	98-06-6	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		10/16/19 11:31	156-60-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		10/16/19 11:31	10061-02-6	
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	99	%	70-130		1		10/16/19 11:31	460-00-4	
Dibromofluoromethane (S)	107	%	70-130		1		10/16/19 11:31	1868-53-7	
Toluene-d8 (S)	102	%	70-130		1		10/16/19 11:31	2037-26-5	

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

QC Batch: 337629 Analysis Method: EPA 8021  
 QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX  
 Associated Lab Samples: 40197129001, 40197129002, 40197129003, 40197129004, 40197129005, 40197129006, 40197129007, 40197129008, 40197129009, 40197129010, 40197129011, 40197129012, 40197129013

METHOD BLANK: 1961193 Matrix: Water  
 Associated Lab Samples: 40197129001, 40197129002, 40197129003, 40197129004, 40197129005, 40197129006, 40197129007, 40197129008, 40197129009, 40197129010, 40197129011, 40197129012, 40197129013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.34	1.1	10/16/19 09:48	
1,3,5-Trimethylbenzene	ug/L	<0.33	1.1	10/16/19 09:48	
Benzene	ug/L	<0.31	1.0	10/16/19 09:48	
Ethylbenzene	ug/L	<0.33	1.1	10/16/19 09:48	
m&p-Xylene	ug/L	<0.32	2.0	10/16/19 09:48	
Methyl-tert-butyl ether	ug/L	<0.32	1.1	10/16/19 09:48	
o-Xylene	ug/L	<0.15	1.0	10/16/19 09:48	
Toluene	ug/L	<0.16	1.0	10/16/19 09:48	
a,a,a-Trifluorotoluene (S)	%	101	85-115	10/16/19 09:48	

LABORATORY CONTROL SAMPLE & LCSD: 1961194 1961195

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.6	19.9	93	99	87-118	7	20	
1,3,5-Trimethylbenzene	ug/L	20	18.5	19.8	92	99	84-115	7	20	
Benzene	ug/L	20	20.1	21.3	101	107	85-115	6	20	
Ethylbenzene	ug/L	20	19.3	20.7	97	103	85-115	7	20	
m&p-Xylene	ug/L	40	38.8	41.5	97	104	85-115	7	20	
Methyl-tert-butyl ether	ug/L	20	21.8	22.7	109	114	85-115	4	20	
o-Xylene	ug/L	20	19.6	20.8	98	104	85-115	6	20	
Toluene	ug/L	20	20.2	21.5	101	108	85-115	6	20	
a,a,a-Trifluorotoluene (S)	%				102	102	85-115			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1962028 1962029

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40197129005 Result	Spike Conc.	Spike Conc.	MS Result						
1,2,4-Trimethylbenzene	ug/L	<0.34	20	20	19.2	18.3	96	91	72-135	5	20
1,3,5-Trimethylbenzene	ug/L	<0.33	20	20	19.4	18.4	97	92	67-134	5	20
Benzene	ug/L	0.79J	20	20	21.4	20.9	103	101	85-122	2	20
Ethylbenzene	ug/L	<0.33	20	20	20.4	19.4	102	97	85-129	5	20
m&p-Xylene	ug/L	<0.32	40	40	40.8	39.0	102	98	85-124	4	20
Methyl-tert-butyl ether	ug/L	<0.32	20	20	19.5	19.0	97	95	85-118	3	20
o-Xylene	ug/L	<0.15	20	20	20.2	19.2	101	96	85-124	5	20
Toluene	ug/L	<0.16	20	20	21.4	20.4	107	102	85-122	5	20
a,a,a-Trifluorotoluene (S)	%						104	102	85-115		

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

QC Batch: 337268 Analysis Method: EPA 8260  
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV  
 Associated Lab Samples: 40197129021, 40197129022, 40197129023, 40197129024, 40197129025, 40197129026, 40197129032

METHOD BLANK: 1959916 Matrix: Water  
 Associated Lab Samples: 40197129021, 40197129022, 40197129023, 40197129024, 40197129025, 40197129026, 40197129032

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	10/16/19 07:13	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	10/16/19 07:13	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	10/16/19 07:13	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	10/16/19 07:13	
1,1-Dichloroethane	ug/L	<0.27	1.0	10/16/19 07:13	
1,1-Dichloroethene	ug/L	<0.24	1.0	10/16/19 07:13	
1,1-Dichloropropene	ug/L	<0.54	1.8	10/16/19 07:13	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	10/16/19 07:13	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	10/16/19 07:13	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	10/16/19 07:13	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	10/16/19 07:13	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	10/16/19 07:13	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	10/16/19 07:13	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	10/16/19 07:13	
1,2-Dichloroethane	ug/L	<0.28	1.0	10/16/19 07:13	
1,2-Dichloropropane	ug/L	<0.28	1.0	10/16/19 07:13	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	10/16/19 07:13	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	10/16/19 07:13	
1,3-Dichloropropane	ug/L	<0.83	2.8	10/16/19 07:13	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	10/16/19 07:13	
2,2-Dichloropropane	ug/L	<2.3	7.6	10/16/19 07:13	
2-Chlorotoluene	ug/L	<0.93	5.0	10/16/19 07:13	
4-Chlorotoluene	ug/L	<0.76	2.5	10/16/19 07:13	
Benzene	ug/L	<0.25	1.0	10/16/19 07:13	
Bromobenzene	ug/L	<0.24	1.0	10/16/19 07:13	
Bromochloromethane	ug/L	<0.36	5.0	10/16/19 07:13	
Bromodichloromethane	ug/L	<0.36	1.2	10/16/19 07:13	
Bromoform	ug/L	<4.0	13.2	10/16/19 07:13	
Bromomethane	ug/L	<0.97	5.0	10/16/19 07:13	
Carbon tetrachloride	ug/L	<0.17	1.0	10/16/19 07:13	
Chlorobenzene	ug/L	<0.71	2.4	10/16/19 07:13	
Chloroethane	ug/L	<1.3	5.0	10/16/19 07:13	
Chloroform	ug/L	<1.3	5.0	10/16/19 07:13	
Chloromethane	ug/L	<2.2	7.3	10/16/19 07:13	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	10/16/19 07:13	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	10/16/19 07:13	
Dibromochloromethane	ug/L	<2.6	8.7	10/16/19 07:13	
Dibromomethane	ug/L	<0.94	3.1	10/16/19 07:13	
Dichlorodifluoromethane	ug/L	<0.50	5.0	10/16/19 07:13	
Ethylbenzene	ug/L	<0.22	1.0	10/16/19 07:13	
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	10/16/19 07:13	

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

METHOD BLANK: 1959916

Matrix: Water

Associated Lab Samples: 40197129021, 40197129022, 40197129023, 40197129024, 40197129025, 40197129026, 40197129032

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	10/16/19 07:13	
m&p-Xylene	ug/L	<0.47	2.0	10/16/19 07:13	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	10/16/19 07:13	
Methylene Chloride	ug/L	<0.58	5.0	10/16/19 07:13	
n-Butylbenzene	ug/L	<0.71	2.4	10/16/19 07:13	
n-Propylbenzene	ug/L	<0.81	5.0	10/16/19 07:13	
Naphthalene	ug/L	<1.2	5.0	10/16/19 07:13	
o-Xylene	ug/L	<0.26	1.0	10/16/19 07:13	
p-Isopropyltoluene	ug/L	<0.80	2.7	10/16/19 07:13	
sec-Butylbenzene	ug/L	<0.85	5.0	10/16/19 07:13	
Styrene	ug/L	<0.47	1.6	10/16/19 07:13	
tert-Butylbenzene	ug/L	<0.30	1.0	10/16/19 07:13	
Tetrachloroethene	ug/L	<0.33	1.1	10/16/19 07:13	
Toluene	ug/L	<0.17	5.0	10/16/19 07:13	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	10/16/19 07:13	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	10/16/19 07:13	
Trichloroethene	ug/L	<0.26	1.0	10/16/19 07:13	
Trichlorofluoromethane	ug/L	<0.21	1.0	10/16/19 07:13	
Vinyl chloride	ug/L	<0.17	1.0	10/16/19 07:13	
4-Bromofluorobenzene (S)	%	99	70-130	10/16/19 07:13	
Dibromofluoromethane (S)	%	102	70-130	10/16/19 07:13	
Toluene-d8 (S)	%	102	70-130	10/16/19 07:13	

LABORATORY CONTROL SAMPLE: 1959917

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	58.3	117	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	57.5	115	70-130	
1,1,2-Trichloroethane	ug/L	50	56.0	112	70-130	
1,1-Dichloroethane	ug/L	50	55.1	110	73-150	
1,1-Dichloroethene	ug/L	50	52.0	104	73-138	
1,2,4-Trichlorobenzene	ug/L	50	50.5	101	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	57.8	116	64-129	
1,2-Dibromoethane (EDB)	ug/L	50	55.2	110	70-130	
1,2-Dichlorobenzene	ug/L	50	52.9	106	70-130	
1,2-Dichloroethane	ug/L	50	59.0	118	75-140	
1,2-Dichloropropane	ug/L	50	54.6	109	73-135	
1,3-Dichlorobenzene	ug/L	50	50.8	102	70-130	
1,4-Dichlorobenzene	ug/L	50	50.1	100	70-130	
Benzene	ug/L	50	57.3	115	70-130	
Bromodichloromethane	ug/L	50	54.1	108	70-130	
Bromoform	ug/L	50	52.8	106	68-129	
Bromomethane	ug/L	50	25.8	52	18-159	
Carbon tetrachloride	ug/L	50	50.9	102	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

LABORATORY CONTROL SAMPLE: 1959917

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	53.5	107	70-130	
Chloroethane	ug/L	50	50.6	101	53-147	
Chloroform	ug/L	50	53.1	106	74-136	
Chloromethane	ug/L	50	39.0	78	29-115	
cis-1,2-Dichloroethene	ug/L	50	52.4	105	70-130	
cis-1,3-Dichloropropene	ug/L	50	54.8	110	70-130	
Dibromochloromethane	ug/L	50	56.7	113	70-130	
Dichlorodifluoromethane	ug/L	50	40.3	81	10-130	
Ethylbenzene	ug/L	50	56.8	114	80-124	
Isopropylbenzene (Cumene)	ug/L	50	55.1	110	70-130	
m&p-Xylene	ug/L	100	112	112	70-130	
Methyl-tert-butyl ether	ug/L	50	48.2	96	54-137	
Methylene Chloride	ug/L	50	50.0	100	73-138	
o-Xylene	ug/L	50	54.4	109	70-130	
Styrene	ug/L	50	49.7	99	70-130	
Tetrachloroethene	ug/L	50	48.5	97	70-130	
Toluene	ug/L	50	55.4	111	80-126	
trans-1,2-Dichloroethene	ug/L	50	50.6	101	73-145	
trans-1,3-Dichloropropene	ug/L	50	51.1	102	70-130	
Trichloroethene	ug/L	50	55.0	110	70-130	
Trichlorofluoromethane	ug/L	50	48.3	97	76-147	
Vinyl chloride	ug/L	50	48.3	97	51-120	
4-Bromofluorobenzene (S)	%			109	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			100	70-130	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO  
Pace Project No.: 40197129

QC Batch: 337260 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER  
Associated Lab Samples: 40197129014, 40197129015, 40197129016, 40197129017, 40197129018, 40197129019, 40197129020, 40197129027, 40197129028, 40197129029, 40197129030, 40197129031

METHOD BLANK: 1959896 Matrix: Water  
Associated Lab Samples: 40197129014, 40197129015, 40197129016, 40197129017, 40197129018, 40197129019, 40197129020, 40197129027, 40197129028, 40197129029, 40197129030, 40197129031

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	10/16/19 08:56	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	10/16/19 08:56	
Benzene	ug/L	<0.25	1.0	10/16/19 08:56	
Ethylbenzene	ug/L	<0.22	1.0	10/16/19 08:56	
m&p-Xylene	ug/L	<0.47	2.0	10/16/19 08:56	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	10/16/19 08:56	
Naphthalene	ug/L	<1.2	5.0	10/16/19 08:56	
o-Xylene	ug/L	<0.26	1.0	10/16/19 08:56	
Toluene	ug/L	<0.17	5.0	10/16/19 08:56	
4-Bromofluorobenzene (S)	%	96	70-130	10/16/19 08:56	
Dibromofluoromethane (S)	%	114	70-130	10/16/19 08:56	
Toluene-d8 (S)	%	101	70-130	10/16/19 08:56	

LABORATORY CONTROL SAMPLE: 1959897

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	46.4	93	70-130	
Ethylbenzene	ug/L	50	49.5	99	80-124	
m&p-Xylene	ug/L	100	98.2	98	70-130	
Methyl-tert-butyl ether	ug/L	50	50.9	102	54-137	
o-Xylene	ug/L	50	47.3	95	70-130	
Toluene	ug/L	50	47.2	94	80-126	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			97	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1959898 1959899

Parameter	Units	40197054001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Spike Conc.	MSD Spike Conc.	MS Result						
Benzene	ug/L	<0.00025 mg/L	50	50	47.0	48.8	94	98	70-130	4	20	
Ethylbenzene	ug/L	<0.00022 mg/L	50	50	49.8	52.3	100	105	80-125	5	20	
m&p-Xylene	ug/L	<0.47	100	100	98.3	104	98	104	70-130	5	20	
Methyl-tert-butyl ether	ug/L	<0.0012 mg/L	50	50	52.5	53.6	105	107	51-145	2	20	
o-Xylene	ug/L	<0.26	50	50	49.1	51.5	98	103	70-130	5	20	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1959898		1959899		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		40197054001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Toluene	ug/L	<0.00017 mg/L	50	50	49.2	51.7	98	103	80-131	5	20	
4-Bromofluorobenzene (S)	%							100	98	70-130		
Dibromofluoromethane (S)	%							98	95	70-130		
Toluene-d8 (S)	%							94	98	70-130		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

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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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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.

### LABORATORIES

PASI-G Pace Analytical Services - Green Bay

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40197129001	LRS-1	EPA 8021	337629		
40197129002	LRS-2	EPA 8021	337629		
40197129003	LRS-3	EPA 8021	337629		
40197129004	LRS-4	EPA 8021	337629		
40197129005	LRS-7	EPA 8021	337629		
40197129006	MW-1/FL	EPA 8021	337629		
40197129007	MW-2/FL	EPA 8021	337629		
40197129008	MW-3/FL	EPA 8021	337629		
40197129009	MW-9/FL	EPA 8021	337629		
40197129010	MW-10/FL	EPA 8021	337629		
40197129011	MW-11/FL	EPA 8021	337629		
40197129012	MW-13/FL	EPA 8021	337629		
40197129013	MW-14/FL	EPA 8021	337629		
40197129021	MW-1/T68	EPA 8260	337268		
40197129022	MW-2/T68	EPA 8260	337268		
40197129023	MW-4/T68	EPA 8260	337268		
40197129024	MW-5/T66	EPA 8260	337268		
40197129025	MW-5/T68	EPA 8260	337268		
40197129026	MW-6/T68	EPA 8260	337268		
40197129032	TRIP BLANK	EPA 8260	337268		
40197129014	MW-1/T40	EPA 8260	337260		
40197129015	MW-2/T40	EPA 8260	337260		
40197129016	MW-4/T40	EPA 8260	337260		
40197129017	MW-5/T40	EPA 8260	337260		
40197129018	MW-6/T40	EPA 8260	337260		
40197129019	MW-7/T40	EPA 8260	337260		
40197129020	TS-1/T40	EPA 8260	337260		
40197129027	MW-2R/T70	EPA 8260	337260		
40197129028	MW-3/T70	EPA 8260	337260		
40197129029	MW-4/T70	EPA 8260	337260		
40197129030	MW-5/T70	EPA 8260	337260		
40197129031	MW-6/T70	EPA 8260	337260		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

**Company Name:** Gannett Fleming, Inc.  
**Branch/Location:** Madison, WI  
**Project Contact:** Cliff Wright  
**Phone:** 608/836-1500 x6722  
**Project Number:** 34265.003  
**Project Name:** Superior Refining Company (SRC)  
**Project State:** WI  
**Sampled By (Print):** Marcus Mussey  
**Sampled By (Sign):** *[Signature]*



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

COC No. 40197129

### 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	Pick Letter	Analyses Requested																
N	B	3																
		1208																

**Quote #:** Pace 2019  
**Mail To Contact:** Cliff Wright  
**Mail To Company:** Gannett Fleming  
**Mail To Address:** 8040 Excelsior Dr., Suite 303, Madison, WI 53717-1338  
**Invoice To Contact:** See "Mail to Contact" info above  
**Invoice To Company:** "  
**Invoice To Address:** "  
**Invoice To Phone:** 608/836-1500 x6722  
**CLIENT COMMENTS**      **LAB COMMENTS (Lab Use Only)**      **Profile #**

**PO #:**      **Regulatory Program:**

**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	Analyses Requested
		DATE	TIME		
001	LRS-1	10/9	850	GW	3
002	LRS-2		855		
003	LRS-3		900		
004	LRS-4		845		
005	LRS-7		905		
006	MW-1/FL		750		
007	MW-2/FL		755		
008	MW-3/FL		800		
009	MW-9/FL		915		
010	MW-10/FL		910		
011	MW-11/FL		805		
012	MW-13/FL		810		
013	MW-14/FL		815		

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

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

**Email #1:**      **Telephone:**      **Fax:**

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

Relinquished By: <i>[Signature]</i>	Date/Time: 10/9, 12:30	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time: 10/11/09 9:45	Received By: Alan Loe	Date/Time: 10/11/09 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

**PACE Project No.** 40197129  
**Receipt Temp =** ROI °C  
**Sample Receipt pH** OK / Adjusted  
**Cooler Custody Seal**  
 Present / Not Present  
 Intact / Not Intact

(Please Print Clearly)

**Company Name:** Gannett Fleming, Inc.  
**Branch/Location:** Madison, WI  
**Project Contact:** Cliff Wright  
**Phone:** 608/836-1500 x6722  
**Project Number:** 34265.003  
**Project Name:** Superior Refining Company (SRC)  
**Project State:** WI  
**Sampled By (Print):** Marcus Mussey  
**Sampled By (Sign):**



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

COC No. 40197129

Page 1 of 65

# 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																
Pick Letter	B	B																
Analyses Requested	PV005	5260	V065	8260														

**Quote #:** Pace 2019  
**Mail To Contact:** Cliff Wright  
**Mail To Company:** Gannett Fleming  
**Mail To Address:** 8040 Excelsior Dr., Suite 303, Madison, WI 53717-1338  
**Invoice To Contact:** See "Mail to Contact" info above  
**Invoice To Company:** "  
**Invoice To Address:** "  
**Invoice To Phone:** 608/836-1500 x6722  
**CLIENT COMMENTS** **LAB COMMENTS (Lab Use Only)** **Profile #**

**PO #:** **Regulatory Program:**

**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	
014	MW-1/T40	10/9	9:35	6W
015	MW-2/T40		9:45	
016	MW-4/T40		10:10	
017	MW-5/T40		9:50	
018	MW-6/T40		10:00	
019	MW-7/T40		10:05	
020	TS-1/T40		9:55	
021	MW-1/T68		10:20	
022	MW-2/T68		10:30	
023	MW-4/T68		10:25	
024	MW-5/T68		10:40	
025	MW-5/T68		10:15	
026	MW-6/T68		10:35	

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

**Relinquished By:** Fed Ex **Date/Time:** 10/11/19 9:45 **Received By:** Alan Pace **Date/Time:** 10/11/19 9:45

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

**Email #1:** **Relinquished By:** **Date/Time:** **Received By:** **Date/Time:**

**Email #2:** **Relinquished By:** **Date/Time:** **Received By:** **Date/Time:**

**Telephone:** **Relinquished By:** **Date/Time:** **Received By:** **Date/Time:**

**Fax:** **Relinquished By:** **Date/Time:** **Received By:** **Date/Time:**

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

**PACE Project No.** 40197129

**Receipt Temp =** °C

**Sample Receipt pH** OK / Adjusted

**Cooler Custody Seal** Present / Not Present Intact / Not Intact



# Sample Preservation Receipt Form

Pace Analytical Services, LLC,  
1241 Bellevue Street, Suite 900  
Green Bay, WI 54302

Client Name: Gannett Fleming

Project # 4051971291

All containers needing preservation have been checked and noted below:  Yes  No  N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/Time:

Page 63 of 65

Pace Lab #	Glass						Plastic						Vials				Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)				
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3B	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU								WPFU	SP5T	ZPLC	GN
001																	3																2.5 / 5 / 10
002																	3																2.5 / 5 / 10
003																	3																2.5 / 5 / 10
004																	3																2.5 / 5 / 10
005																	3																2.5 / 5 / 10
006																	3																2.5 / 5 / 10
007																	3																2.5 / 5 / 10
008																	3																2.5 / 5 / 10
009																	3																2.5 / 5 / 10
010																	3																2.5 / 5 / 10
011																	3																2.5 / 5 / 10
012																	3																2.5 / 5 / 10
013																	3																2.5 / 5 / 10
014																	3																2.5 / 5 / 10
015																	3																2.5 / 5 / 10
016																	3																2.5 / 5 / 10
017																	3																2.5 / 5 / 10
018																	3																2.5 / 5 / 10
019																	3																2.5 / 5 / 10
020																	3																2.5 / 5 / 10

Exceptions to preservation check ( VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: \_\_\_\_\_ Headspace in VOA Vials (>6mm):  Yes  No  N/A \*If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3B	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

### Sample Preservation Receipt Form

Client Name: Barnett Fleming

Project #: 40197127

Pace Lab #	Glass							Plastic						Vials					Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)					
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3B	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T								ZPLC	GN			
021																	3																			2.5 / 5 / 10
022																	3																			2.5 / 5 / 10
023																	3																			2.5 / 5 / 10
024																	3																			2.5 / 5 / 10
025																	3																			2.5 / 5 / 10
026																	3																			2.5 / 5 / 10
027																	3																			2.5 / 5 / 10
028																	3																			2.5 / 5 / 10
029																	3																			2.5 / 5 / 10
030																	3																			2.5 / 5 / 10
031																	3																			2.5 / 5 / 10
032																	2																			2.5 / 5 / 10
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																																				2.5 / 5 / 19
																																				2.5 / 5 / 20

*LC/11/19*  
*AS*



1241 Bellevue Street, Green Bay, WI 54302

Document Name:  
Sample Condition Upon Receipt (SCUR)

Document No.:  
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Issuing Authority:  
Pace Green Bay Quality Office

### Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: Gannett Fleming

WO#: **40197129**

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Waltco  
 Client  Pace Other: \_\_\_\_\_



Tracking #: 8149 6215 5813

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

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR - N/A Type of Ice:  Blue, Dry None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROT / Corr: \_\_\_\_\_

Temp Blank Present:  yes  no Biological Tissue is Frozen:  yes  no

Person examining contents:  
Date: 10/11/19  
Initials: AS

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>433</u>		

Client Notification/ Resolution: \_\_\_\_\_ If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Project Manager Review: HMTZ PC DM

Date: 10/11/19