

January 6, 2022

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

**Re: 2021 Remediation Progress Report for Murphy Oil Tank 70 Release Site
Superior Refining Company LLC Refinery, Superior, WI
WDNR BRRTS# 02-16-223154
Facility ID: 816009590**

Dear John:

On behalf of Superior Refining Company LLC (SRC), Barr Engineering Co. (Barr) is submitting this remediation progress report for the Murphy Oil Tank 70 Basin release site (Tank 70) at the SRC refinery in Superior, Wisconsin. Periodic site progress reporting to the Wisconsin Department of Natural Resources (WDNR) is required pursuant to ss. NR 700.11(1) and 724.13(3), Wisconsin Administrative Code. This report summarizes monitoring activities conducted at the site in 2021.

1.0 Facility and Site Background Information

Figure 1 shows the location of Tank 70 within the refinery, the approximate property boundary of the refinery, and the area surrounding the refinery. Figure 2 presents the site layout of Tank 70, which is located 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, Wisconsin.

The closest surface water to Tank 70 is Newton Creek, located approximately 2,000 feet east of the Tank 70 basin (Figure 1). The basin is located in the central area of the refinery which is relatively flat. The basin's ground surface is unpaved. Beneath an impermeable liner installed in June 2003 (described in the following section), the basin is underlain by native clay. The average depth to groundwater in the Tank 70 monitoring wells ranges from 1 to 4 feet below ground surface (bgs) depending on time of year. The regional groundwater flow direction below the refinery and across the Tank 70 site is toward the east (Figure 2).

As presented in the April 2014 Gannett Fleming, Inc. (GF) *Final Memorandum of Agreement, Site Investigation and Remedial Action Plan* (GF, 2014), the hydraulic conductivity of the native clay underlying the refinery is on the order of 1×10^{-7} centimeters per second (cm/sec). Assuming a horizontal hydraulic gradient of 0.003 feet per foot eastward and an effective porosity of 0.06, the estimated horizontal groundwater flow velocity at the refinery is approximately 0.01 foot per year (ft/yr) (GF, 2014).

In October 2011, Calumet Superior, LLC (Calumet) acquired the refinery from Murphy Oil. In November 2017, Husky Superior Refining Holding Corp. (Husky Superior) purchased Calumet and changed its legal name to Superior Refining Company LLC. In January 2021, Husky and Cenovus merged to become Cenovus Energy Inc. (Cenovus); however, the legal name of the refinery will remain unchanged.

2.0 Tank 70 Basin Release Site Investigation and Remediation Summary (February 1999-October 2020)

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 Oil personnel shoveled and drummed the stained snow, and a small amount of water was applied to float the gasoline. The water/gasoline mixture was vacuumed and sent through the refinery's No. 1 American Petroleum Institute (API) oil/water separator. Separated oil was stored for use at the refinery and the water was treated at the on-site wastewater treatment plant (WWTP). When the snow melted in the spring, water in the basin was also vacuumed and sent through the No. 1 API oil/water separator and 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 Oil 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 Oil was not able to immediately remove all the water/foam mixture from the Tank 70 and Tank 71 basins.

Sampling conducted after both the 1999 and 2002 releases defined the estimated extent of *platformate*-impacted soil. Summaries of the soil investigations and analytical results are provided in a GF 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 Oil installed an impermeable liner in the Tank 70 basin 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 is 60-mil high density polyethylene (HDPE) and was covered with 1.5 feet of clay fill. The 1.5 feet layer 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 (GF, 2020).

Multiple phases of investigation have been completed at the site including soil borings and test pits and the installation of monitoring wells, monitoring points, test pits, test pit sumps, and recovery sumps (Figure 2). Currently, long-term groundwater monitoring is being conducted at the site as well as product gauging and passive recovery. This report presents monitoring and project gauging data for 2021.

Research conducted by the 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 permeability aquifers (hydraulic conductivity $< 1 \times 10^{-5}$ cm/sec). The hydraulic conductivity of the native clay underlying the refinery is on the order of 1×10^{-7} cm/sec, as described in the previous section of this letter report (GF, 2014).

Based on the recommendations included in the API Interactive LNAPL Guide document, product has been manually bailed when observed in a monitoring well. The API Interactive LNAPL Guide 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 (GF, 2020).

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. Recovered product was sent through the refinery's No.1 API oil/water separator and stored for refinery use. Water from the separator and groundwater recovered from monitoring locations was treated in the refinery's on-site WWTP.

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

In October 2010, GF submitted a closure request to the WDNR on behalf of Murphy Oil, summarized as follows:

- There is an engineered cap in place to prevent direct contact and limit infiltration.
- 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 is not likely to migrate beyond the immediate vicinity of the Tank 70 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 submitted in May 2014; September 2013 through December 2017 data submitted in April 2018; June through October 2018 data submitted in November 2018; April 2019 through October 2019 data submitted in January 2020; and April 2020 through October 2020 data submitted in February 2021.

3.0 Remedial and Monitoring Activities in 2021

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 sump TP-1/T70, as shown on Figure 2. Note that:

- Test pits TP-2/T70 and TP-5/T70 were backfilled in June 2000.
- MW-1/T70 and MW-2/T70 were 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 because of damaged PVC casing and possible surface water infiltration.

Year-round access to monitoring wells, monitoring points, and the test pit at the refinery is not practical because of relatively shallow groundwater, cold weather, and snow. When conditions allow access, water and product levels are monitored monthly. If product is encountered, the product is removed and sent through the refinery's No. 1 API oil/water separator and stored for refinery use.

Monitoring wells are gauged, purged and sampled in spring and fall (typically April/May and September/October). Monitoring wells, monitoring points and test pit TP-1/T70 are routinely checked for the presence of product and, if encountered, the product is removed from the well, point, or pit by bailing.

Since the most recent remediation progress report was submitted to the WDNR on February 26, 2021 (Barr, 2021), work at Tank 70 has included the gauging of water and product levels in associated site monitoring wells, monitoring points, and a test pit, and the collection of groundwater samples from select locations. Monitoring and sampling activities conducted in 2021 are summarized in Table 1.

3.1 Product Recovery

During the reporting period, measurable product was not encountered in the monitoring wells, monitoring points, or test pit TP-1/T70. As established in the 2019 report (GF, 2020), if free product is not observed during the April/May gauging event, the wells, points, and test pit are then checked quarterly (rather than monthly) through the October sampling event.

SRC will continue to check for free product, but for all practical purposes, free product likely has been recovered to the extent practical from the Tank 70 basin.

3.2 Groundwater Sampling and Results

Groundwater samples were collected by Barr and Insight Environmental (Insight) field staff at the site during May and October 2021. Each well was purged dry twice and allowed to recover for at least 14 days between purge events and prior to the collection of the samples. Routine sampling of monitoring wells MW-2R/T70 through MW-6/T70 was conducted on May 24, 2021 and October 5, 2021. Field staff used new one-time-use polyethylene disposable bailers with new nylon rope to collect each groundwater sample. The May 2021 groundwater samples were sent to Pace Analytical (Pace) in Green Bay, Wisconsin (Wisconsin laboratory certification #405132750) and the October 2021 samples were sent to Pace in Minneapolis, Minnesota (Wisconsin laboratory certification #999407970); samples were analyzed for

petroleum volatile organic compounds (PVOCs) and naphthalene using Method 8260B. The PVOC analyte list consisted of benzene, toluene, ethylbenzene, and xylenes (BTEX); 1,2,4- and 1,3,5-trimethylbenzene (TMB) 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 presents the analytical results of the groundwater samples compared to the NR 140 Preventative Action Limits (PAL) and Enforcement Standards (ES). The TMB results presented on Table 2 are a sum of the concentrations for 1,2,4-TMB and 1,3,5-TMB. As shown in Table 2:

- Historically, at least one PVOC compound has been present at a concentration at or above its applicable ES in each well. The recent exception is monitoring well MW-5/T70 where there have been no PVOC concentrations that exceed ESs since 2017.
- Because of the removal of accumulated free product over the years, PVOC and naphthalene concentrations in the wells have been stable or decreasing. For example, Figure 3 through Figure 5 present trend analysis plots for concentrations of BTEX; BTEX plus naphthalene; and BTEX plus naphthalene plus TMBs (respectively) in groundwater samples from 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 a scatter plot chart. Note that the plotted data for each well only includes the time period since: a) free product was most recently removed; and b) samples were collected at least once per year. As shown on Figure 3 through Figure 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 2021.

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 purged dry later in the year. Consequently, a groundwater contour map representing static conditions for the Tank 70 site has not been created. However, the regional groundwater flow direction in the vicinity of the Tank 70 site is to the east (GF, 2014) (Figure 2).

4.0 Future Work

SRC's work plan for 2022 is as 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 documents that PVOC and naphthalene concentrations in both wells are decreasing (Figure 3 through Figure 5). SRC had planned to abandon MW-1R/T70 and MW-7/T70 in 2021, but the work was delayed due to a temporary refocusing of efforts on the refinery rebuild activities and implementation of a new policy on ground disturbance at the refinery.
- Continue to check for, and if present, manually bail product from the remaining five monitoring wells (MW-2R/T70 through MW-6/T70), the four monitoring points (MP-1/T70 through MP-4/T70), and the test pit sump TP-1/T70 during each sampling event as conditions allow. 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.
- If product is observed in TP-1/T70, the sump will be pumped out using an on-site vacuum truck. The purged/pumped product/water will be separated and stored or sent through the refinery's No. 1 API oil/water separator and on-site WWTP as described above.
- Discontinue monthly product checks at monitoring wells and monitoring points. If, however, product is observed during the spring gauging event, monthly monitoring of these locations will resume. If product is not observed, the wells and points will only be checked during the spring and fall sampling events.
- Collect biannual (spring and fall) groundwater samples from monitoring wells without free product and have the samples analyzed for PVOCs and naphthalene by a Wisconsin-certified laboratory using EPA Method 8260B. Each monitoring well (but not test pit sump TP-1/T70) will be purged dry twice and allowed to recover for at least 14 days, prior to the collection of samples.
- Document the proper abandonment of MW-1R/T70 and MW-7/T70, recovery of any product, and analytical results of the 2022 groundwater samples in a remediation progress report to the WDNR by the end of January 2023. If product is not encountered in any of the wells, monitoring points, or sump in 2022, and the concentrations continue to show a decreasing trend, a site closure request may be prepared for WDNR review and approval.

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,

BARR ENGINEERING CO.



Lynette M. Carney
Project Manager

cc: Matt Turner (SRC)

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Table 2	Groundwater Analytical Results for Detected Compounds

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Figure 3	BTEX Groundwater Concentrations vs. Time
Figure 4	BTEX+N Groundwater Concentrations vs. Time
Figure 5	BTEX+N+TMBs Groundwater Concentrations vs. Time

Attachments

Attachment A Pace Analytical Laboratory Reports

References

Barr Engineering Co., 2021. *2020 Remediation Progress Report for Murphy Oil Tank 70 Release Site Superior Refining Company LLC Refinery, Superior, WI, WDNR BRRTS# 02-16-223154, Facility ID: 816009590*. February 26, 2021.

Gannett Fleming, Inc. (GF), 2014. *Final Memorandum of Agreement, Site Investigation and Remedial Action Plan, Superior Refinery, Superior, Wisconsin, WDNR BRRTS# 02-16-559511*. April 2014.

GF, 2020. *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*. January 28, 2020.

Wisconsin Department of Natural Resources, 2020. *Reminder to Include Evaluation of Emerging Contaminants in Site Investigation, Murphy Oil – Tank #70, 2407 Stinson Ave, BRRTS# 02-16-223154*. Letter to Husky Energy dated August 17, 2020.

CERTIFICATION

"I, Lynette M. Carney, 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 of the information contained in this document is correct, and the document was prepared in compliance with all applicable requirements in Chapters NR 700 to 726, Wis. Adm. Code."



Lynette M. Carney, PG
Reg #: 1138

January 6, 2022

Date

Tables

Table 1
2021 Fluid Level Monitoring Data
Tank 70 Release Site (1)
Superior Refining Company LLC
Superior, Wisconsin

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		Comments/ Footnotes
	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)																								
04/28/21	--	5.19	--	5.93	--	5.11	--	5.35	--	3.46	--	2.60	--	4.78	--	4.70	--	3.75	--	3.44	--	3.69	--	4.20	(2)
05/11/21	--	5.65	--	6.14	--	5.55	--	5.82	--	3.48	--	3.04	--	5.12	--	5.09	--	4.39	--	5.52	--	4.50	--	4.20	(2) (5)
05/24/21	--	5.73	--	5.87	--	5.02	--	5.4	--	3.48	--	2.56	--	4.87	--	4.67	--	3.44	--	3.49	--	3.71	--	4.22	(3)
07/27/21	--	5.14	--	5.91	--	5.23	--	5.28	--	3.30	--	2.85	--	4.91	--	4.71	--	4.26	--	4.71	--	3.68	--	4.40	(4)
09/08/21	--	5.50	--	6.15	--	5.50	--	5.78	--	3.33	--	3.23	--	5.20	--	5.08	--	4.58	--	4.35	--	nm	--	4.72	(2)
09/21/21	--	5.20	--	5.79	--	5.15	--	5.39	--	3.35	--	3.02	--	5.01	--	4.82	--	3.57	--	3.45	--	3.69	--	4.42	(2)
10/05/21	--	5.25	--	5.94	--	5.23	--	5.40	--	3.35	--	3.08	--	5.00	--	4.91	--	4.21	--	3.90	--	3.73	--	4.49	(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.

(4) Free product check

(5) MW-1R/T70 and MW-7/T70 were gauged on 5/18/2021.

Table 2
Groundwater Analytical Results for Detected Compounds
Tank 70 Release Site
Superior Refining Company LLC
Superior, Wisconsin

Well ID Date	Substance Concentration (µg/l) and Results Qualifier (if any)									
	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										
9/9/1999	115000	25900	4390	33800	16600	3720	< 1,500	na	na	na
12/9/1999	115000	23100	2730	30500	17280	3584	< 150	na	na	na
3/9/2000	87000	25000	2400	31000	14000	3130	< 160	na	na	na
6/14/2000	120000	28000	3300	43000	21000	4040	< 94	na	na	na
6/7/2002	130000	31000	2600	33000	16100	3030	< 35	55 J	450	240 J
9/12/2002	110000	29000	2600	34000	17700	3920	< 86	na	810	na
9/30/2004	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
5/26/2005	167000	25100	5510	50300	32800	10970	< 150	na	848	na
11/9/2005	108000	38200	2130	46000	13890	1578	< 300	na	< 800	na
5/10/2006	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/16/2006	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
5/27/2008	103000	31000	1750	31500	13910	2657	< 15.0	na	475	na
11/24/2008	96400	26400	2060	28100	15790	3592	< 150	na	753 J	na
5/27/2009	115000	32900	2930	33600	18510	3555	< 60.0	na	669	na
10/25/2011	na	28100	1970	24200	13040	2003 J	< 500	na	< 1000	na
5/16/2012	na	26300	2360	23000	14890	2882	< 122	na	< 178	na
8/21/2013	na	24850	2545	22250	16885	3524.5 J	< 123	na	668 J	na
10/21/2014	na	13600	983	10500	9390	2032	< 48.5	na	348	na
6/23/2015	na	14600	1500	14300	12770	2397	< 21.8	na	418 J	na
10/6/2015	na	10400	570	8130	8750	1904	< 21.8	na	< 312	na
5/24/2016	na	30800	1670	20700	13870	2668	< 21.8	na	380 J	na
10/5/2016	na	12400	106 J	8630	8450	1280	< 21.8	na	< 312	na
5/17/2017	na	30400	2020	21100	14280	2269	< 34.8	na	599 J	na
10/25/2017	na	22000	1410	13900	11420	2275	< 34.8	na	< 500	na
6/12/2018	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										
9/12/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/30/2004	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
5/26/2005	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/9/2005	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
5/10/2006	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/16/2006	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
5/27/2008	160000	37900	3920	56000	26540	4431	< 15.0	na	777	na
11/24/2008	140000	31100	3900	46200	24045	5245	< 150	na	1055 J	na
5/27/2009	148000	32400	4210	51100	26605	4935	< 75.0	na	966.5	na
10/25/2011	na	23600	2700	38100	20590	3270 J	< 500	na	< 1000	na
5/16/2012	na	23200	3210	37300	23890	5420	< 122	na	445 J	na
8/21/2013	na	20800	5410	41200	44100	19330	< 98.7	na	3950	na
10/21/2014	na	17300	2280	25800	19110	4280	< 97.0	na	776	na
6/23/2015	na	15900	2130	25200	21480	4483	< 43.6	na	743 J	na
10/6/2015	na	15200	1600	24100	17850	4002	< 43.6	na	< 625	na
5/24/2016	na	22000	2150	29500	19980	3918	< 43.6	na	< 625	na
10/5/2016	na	19200	1480	25700	18670	3086	< 43.6	na	< 625	na
5/16/2017	na	23000	2510	31500	23540	4044	< 43.6	na	< 625	na
10/25/2017	na	19800	2250	28400	21060	3678	< 43.6	na	< 625	na
6/12/2018	na	16300	2000	24400	21700	4410	< 43.6	na	< 625	na
10/9/2018	na	14400	1850	20900	21540	4919	< 311	na	575 J	na
5/21/2019	na	5650	875	9910	19720	5990	< 249	na	766 J	na
10/9/2019	na	11800	1310	15700	18610	5400	< 249	na	919 J	na
5/27/2020	na	19100	2310	25600	19900	4026	< 249	na	692 J	na
10/6/2020	na	18500	1970	23000	23900	4720 a	< 0.12	na	888 J	na
5/24/2021	na	15700	1870	19600	17700	3558	< 226	na	755 J	na
10/5/2021	na	13500	970	15000	15000	3321	< 18.1	na	685	na

Table 2
Groundwater Analytical Results for Detected Compounds
Tank 70 Release Site
Superior Refining Company LLC
Superior, Wisconsin

Well ID Date	Substance Concentration (µg/l) and Results Qualifier (if any)									
	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-3/T70										
9/12/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/30/2004	1400	400	66	3.2	143	87	< 0.90	na	14	na
5/26/2005	5970	1200	61.7	884	1412	274.3	< 15.0	< 15.5	47.3	< 15.0
11/9/2005	665	129	13.8	< 6.00	44	13	< 6.00	na	< 16.0	na
5/10/2006	< 10,000	500	102.0	636	823	231.7	< 0.300	na	27.5	na
11/16/2006	< 50.0	< 0.31	< 0.500	< 0.300	< 0.920	< 0.710	< 0.300	na	< 0.800	na
5/23/2007	< 50.0	< 0.31	< 0.500	0.948 J	1.90 J	< 0.710	< 0.300	na	2.51 J	na
11/15/2007	< 50.0	< 0.31	< 0.500	< 0.300	< 0.920	< 0.710	< 0.300	na	0.975 J	na
5/27/2008	151	14.2	3.57	5.44	15.62	4.06	< 0.300	na	< 0.800	na
11/24/2008	< 50.0	2.73	0.998 J	< 0.300	< 0.920	1.12	< 0.300	na	< 0.800	na
5/27/2009	252	38.2	11.8	3.5	40.9	19.16	1.76 J	na	1.86 J	na
10/25/2011	na	2040	444	154	2536	899	< 50.0	na	189 J	na
5/16/2012	na	2080	483	295	2494	761	< 12.2	na	33.7 J	na
8/21/2013	na	186	31.4	6.7	198.3	75.6	< 0.99	na	8.0 J	na
10/21/2014	na	273	7.2	6.0	436	149.1	< 1.2	na	8.9	na
6/23/2015	na	2.8	< 0.50	< 0.50	3.63 J	< 3.8	< 0.17	na	< 2.50	na
10/6/2015	na	4.0	0.70 J	< 0.50	< 1.77 J	< 1.28 J	< 0.17	na	< 2.50	na
5/24/2016	na	748	44.5	12.2	522	218.4	< 1.7	na	< 25.0	na
10/5/2016	na	< 0.50	< 0.50	< 0.50	< 1.50	< 1.00	< 0.17	na	< 2.50	na
5/17/2017	na	56.1	< 0.50	0.78 J	22.6	8.42 J	< 0.17	na	3.2 J	na
10/25/2017	na	0.83 J	< 0.50	< 0.50	2.20 J	< 1.12 J	108	na	< 2.5	na
6/12/2018	na	441	9.5 J	12.5	299.7	95.8	< 1.7	na	< 25.0	na
10/9/2018	na	32.5	4.1	0.50 J	55.8	36.6	< 1.2	na	5.1	na
5/21/2019	na	270	22.2	7.1	265.8	104.9	< 1.2	na	15.7	na
10/9/2019	na	364	31.2	3.0 J	210.1	105.3 J	< 3.1	na	24.8	na
5/27/2020	na	821	179	23.0	592	252.1	< 1.2	na	46.5	na
10/6/2020	na	365	31.2	3.1	206	98.0	< 0.12	na	21.8	na
5/24/2021	na	352	25.0 J-	7.2	273	115.0	< 1.1	na	17.7	na
10/5/2021	na	601 H	85.7 J-	6.3	282 J-	149 a	< 0.36	na	31.3	na
MW-4/T70										
9/12/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/30/2004	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
5/26/2005	234000	23400	4280	49300	35130	9800	< 600	< 620	1810	820
11/9/2005	145000	28900	4640	50300	47400	11850	< 75.0	na	1060	na
5/10/2006	88350	23600	2505	39700	25550	5805	< 150	na	750 J	na
11/16/2006	116000	22900	2420	40900	25130	4970	< 75.0	na	979	na
5/23/2007	129000	24300	2080	37600	24630	5160	< 75.0	na	1040	na
11/15/2007	110000	19800	1770	29000	22290	5200	< 150	na	1380	na
5/27/2008	127000	27100	2320	38800	26540	5270	< 150	na	777 J	na
11/24/2008	104000	22000	1800	30500	22890	5810	< 150	na	1150 J	na
5/27/2009	123000	27200	2750	38900	24340	4820	440	na	808	na
10/25/2011	na	20300	2110	37100	25290	5160	< 500	na	< 1000	na
5/16/2012	na	21700	1720	30500	21400	5100	< 122	na	279 J	na
8/21/2013	na	21300	1800	31200	23170	5790 J	< 123	na	997 J	na
10/21/2014	na	15300	1140	21000	18090	3863	< 97.0	na	751	na
6/23/2015	na	6210	615	9580	10030	2067	< 17.4	na	497 J	na
10/6/2015	na	10700	1500	17600	17470	3190	< 17.4	na	515	na
5/24/2016	na	14700	2160	20700	23200	4118	< 17.4	na	712	na
10/5/2016	na	10600	1520	15700	18360	3446	< 17.4	na	686	na
5/17/2017	na	16700	1750	25900	21540	3906	< 21.8	na	584 J	na
10/25/2017	na	11100	954	13600	11720	2148	< 34.8	na	< 500	na
6/12/2018	na	12200	1560	15900	21550	4152	< 17.4	na	681	na
10/9/2018	na	17400	1810	23200	24230	4283	< 125	na	609	na

Table 2
Groundwater Analytical Results for Detected Compounds
Tank 70 Release Site
Superior Refining Company LLC
Superior, Wisconsin

Well ID Date	Substance Concentration (µg/l) and Results Qualifier (if any)									
	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
5/21/2019	na	16200	1860	18300	22430	4430	< 12.5	na	923	na
10/9/2019	na	16400	1600	20000	20810	4221	< 249	na	847 J	na
5/27/2020	na	12000	1380	15400	19400	3814	< 249	na	724 J	na
10/6/2020	na	17500	1820	21800	26300	4630 a	< 0.12	na	869 J	na
5/24/2021	na	10200	926	10000	16000	3020	< 113	na	563	na
10/5/2021	na	12800	880	12100	20000	3646	< 3.2 H	na	853	na
MW-5/T70										
9/12/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/30/2004	1600	6.1	11	17	78	35	< 0.61	0.62 J	78	< 0.81
5/26/2005	1530	4.75	3.05	17.8	66.4	26.43	< 0.3	na	72.3	na
11/9/2005	1810	7.81	3.01	25.2	120.2	174	< 0.3	na	85	na
5/10/2006	1620	5.87	8.73	18.9	78.3	109.9	< 0.300	na	47.3	na
11/16/2006	1560	6.89	2.55	18.1	87.5	52.1	< 0.300	na	72.2	na
5/23/2007	1270	4.54	24.5	15.0	65.1	48.3	< 0.300	na	68.1	na
11/15/2007	1150	6.78	< 2.50	12.0	57.7	37.4	< 1.50	na	57.0	na
5/27/2008	1120	8.79	22.5	18.4	76.8	36.1	< 1.50	na	60.6	na
11/24/2008	1190	6.84 J	17.2	15.0	84.6	51.6	< 1.50	na	101	na
5/27/2009	1930	7.69	59.1	24.3	120.0	65.7	< 0.300	na	112	na
10/25/2011	na	9.13	78.8	30.4	143.0	80.8	< 0.50	na	148	na
5/16/2012	na	10.4	58.2	25.9	107.5	62.7	< 0.61	na	129	na
8/21/2013	na	8.7	80.8	31.5	143.4	80.1	< 0.49	na	198	na
10/21/2014	na	0.91 J	< 0.39	1.0	7.4 J	< 1.52	< 0.48	na	3.4	na
6/23/2015	na	2.6	17.4	8.1	41.3	23.7	< 0.17	na	48.6	na
10/6/2015	na	1.6	0.59 J	< 0.50	11.3	3.1	< 0.17	na	10.9	na
5/24/2016	na	4.9	20.7	11.3	46.9	25.8	< 0.17	na	61.4	na
10/5/2016	na	3.4	3.2	7.5	41.0	16.9	< 0.17	na	42.2	na
5/16/2017	na	1.7	8.8	4.1	20.4	10.7	< 0.17	na	20.4	na
10/25/2017	na	179	9.9	1.6	136.8	56.8	< 0.17	na	17.9	na
6/12/2018	na	2.0	10.5	5.7	30.7	14.3	< 0.35	na	32.4	na
10/9/2018	na	4.3	0.66 J	0.51 J	4.08 J	< 1.97 J	< 1.2	na	2.5 J	na
5/21/2019	na	< 0.25	< 0.22	< 0.17	< 0.73	< 1.71	< 1.2	na	< 1.2	na
10/9/2019	na	1.3	0.85 J	2.1 J	11.1	5.2 J	< 1.2	na	14.8	na
5/27/2020	na	< 0.25	< 0.32	< 0.27	< 1.5	< 1.71	< 1.2	na	< 1.2	na
10/6/2020	na	1.7	3.9	3.4	16.7	20.5 a	< 0.12	na	35.1 J+	na
5/24/2021	na	< 0.30	< 0.33	< 0.29	< 1.0	< 0.81	< 1.1	na	< 1.1	na
10/5/2021	na	< 0.12	0.13 J	0.28 J	0.67	< 0.22	< 0.18	na	0.42 J	na
MW-6/T70										
9/12/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/30/2004	9700	1200	58	140	3400	850	< 6.1	< 5.9	26	< 8.1
5/26/2005	21600	5490	52	3620	5150	1287	< 15.0	na	< 40.0	na
11/9/2005	18600	5240	258	4150	5460	1296	< 30.0	na	192	na
5/10/2006	34600	14900	399	17900	9570	1719	< 60.0	na	< 160	na
11/16/2006	59100	13800	659	16500	13000	2904	< 75.0	na	< 200	na
5/23/2007	35700	8730	< 125	8020	7450	2166	< 75.0	na	295 J	na
11/15/2007	21100	4040	335	4150	4060	1012	< 30.0	na	248 J	na
5/27/2008	50100	13400	960	14100	9870	1882	< 30.0	na	250 J	na
11/24/2008	2520	337	28.7	341	617	189	< 3.00	na	30.1	na
5/27/2009	27400	4600	629	4780	6890	1820	59.4 J	na	229	na
10/25/2011	na	7420	763	2410	8750	2460	< 50.0	na	251 J	na
5/16/2012	na	1600	260	660	1935	620	< 6.1	na	49.9 J	na
8/21/2013	na	3990	393	313	2650	774	< 9.9	na	114	na
10/21/2014	na	2630	16.0 J	126	2126	579	< 9.7	na	85.9	na
6/23/2015	na	537	6.3	33.4	160.9	57.7	< 0.87	na	14.5 J	na
10/6/2015	na	84.1	4.6	6.4	101.7	25.0	< 0.17	na	4.0 J	na
5/24/2016	na	1270	69.7	158	1158	295.5	< 1.7	na	41.9 J	na

Table 2
Groundwater Analytical Results for Detected Compounds
Tank 70 Release Site
Superior Refining Company LLC
Superior, Wisconsin

Well ID Date	Substance Concentration (µg/l) and Results Qualifier (if any)									
	GRO	Benzene	Ethyl- benzene	Toluene	Xylenes	TMBs	MTBE	Isopropyl- benzene	Naphthalene	n-Propyl- benzene
NR 140 PAL	NS	<i>0.5</i>	<i>140</i>	<i>160</i>	<i>400</i>	<i>96</i>	<i>12</i>	NS	<i>10</i>	NS
NR 140 ES	NS	5	700	800	2,000	480	60	NS	100	NS
10/5/2016	na	<i>147</i>	8.1	9.1	211.3	54.8	< 0.17	na	<i>11.4</i>	na
5/16/2017	na	2380	<i>394</i>	<i>191</i>	2407	647	< 8.7	na	< 125	na
10/25/2017	na	350	4.0 J	12.0	276.4	88.6	< 0.70	na	<i>12.5</i> J	na
6/12/2018	na	42.3	< 0.50	2.3	66.0	13.0	< 0.17	na	3.0 J	na
10/9/2018	na	235	16.2	8.2	164.6	30.4	< 1.2	na	2.8 J	na
5/21/2019	na	666	54.0	36.3	239.0	71.4	< 2.5	na	<i>11.3</i>	na
10/9/2019	na	271	23.6	7.1 J	181.7	74.4	< 2.5	na	<i>13.8</i>	na
5/27/2020	na	387	43.5	15.0	134	77.1	< 1.2	na	<i>13.4</i>	na
10/6/2020	na	128	6.7	3.1	121	38.6 a	< 0.12	na	6.8 J+	na
5/24/2021	na	89.3	9.7	3.3	27.2	17.4	< 1.1	na	2.9 J	na
10/5/2021	na	175	14.6	5.6	55.4	28.6	< 0.18	na	6.6	na
MW-7/T70										
9/12/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/30/2004	120000	29000	2900	36000	18800	3600	< 120	< 130	560	240 J
5/26/2005	144000	26400	3640	40600	24370	6440	< 150	na	4430	na
11/9/2005	104000	31000	3100	44400	21950	3661	< 150	na	500	na
5/10/2006	105000	29900	2420	34700	17580	3613	< 60.0	na	836	na
11/16/2006	111000	30700	2420	38150	17525	2634	< 150	na	< 400	na
5/23/2007	127500	31350	3170	41050	20880	4460	< 150	na	996.5 J	na
11/15/2007	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
5/27/2008	153000	38700	3470	53800	26310	4810	< 150	na	809 J	na
11/24/2008	123000	28300	2740	36100	22150	5200	< 150	na	1100 J	na
5/27/2009	115000	31200	3130	32200	21500	4410	< 75.0	na	682	na
10/25/2011	na	27600	2320	22500	17750	7270	< 500	na	1100 J	na
5/16/2012	na	26300	2460	21900	18620	5360	< 122	na	459 J	na
8/21/2013	na	24900	2450	18200	16860	5030 J	< 123	na	753 J	na
10/21/2014	na	21000	1930	21000	15100	3023	< 60.6	na	501	na
6/23/2015	na	17000	1570	19300	13650	2573	< 34.8	na	< 500	na
10/6/2015	Starting 10/06/15, well not sampled due to PVC casing damage and surface water infiltration									

NOTES:

Results are in micrograms per liter (µg/l) or parts per billion (ppb).

Detected concentrations at or above an applicable NR 140 PAL are in **bold** font; those at or above an NR 140 ES are in *italicized* font.

Prior to 2020, duplicate sample results were 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).

a = Estimated value, calculated using some or all values that are estimates.

H = Recommended sample preservation, extraction or analysis holding time was exceeded.

FP = Free product, well not sampled.

GRO = Gasoline range organics.

J (Pre 2020) = Estimated concentration below laboratory quantitation level.

J (Post 2020) = Estimated detected value. Either certain QC criteria were not met or the concentration is between the laboratory's detection and quantitation limits.

J+ = The result is an estimated quantity and may be biased high.

J- = The result is an estimated quantity and may be biased low.

MTBE = Methyl tert butyl ether.

na = Not analyzed.

NI = Not installed.

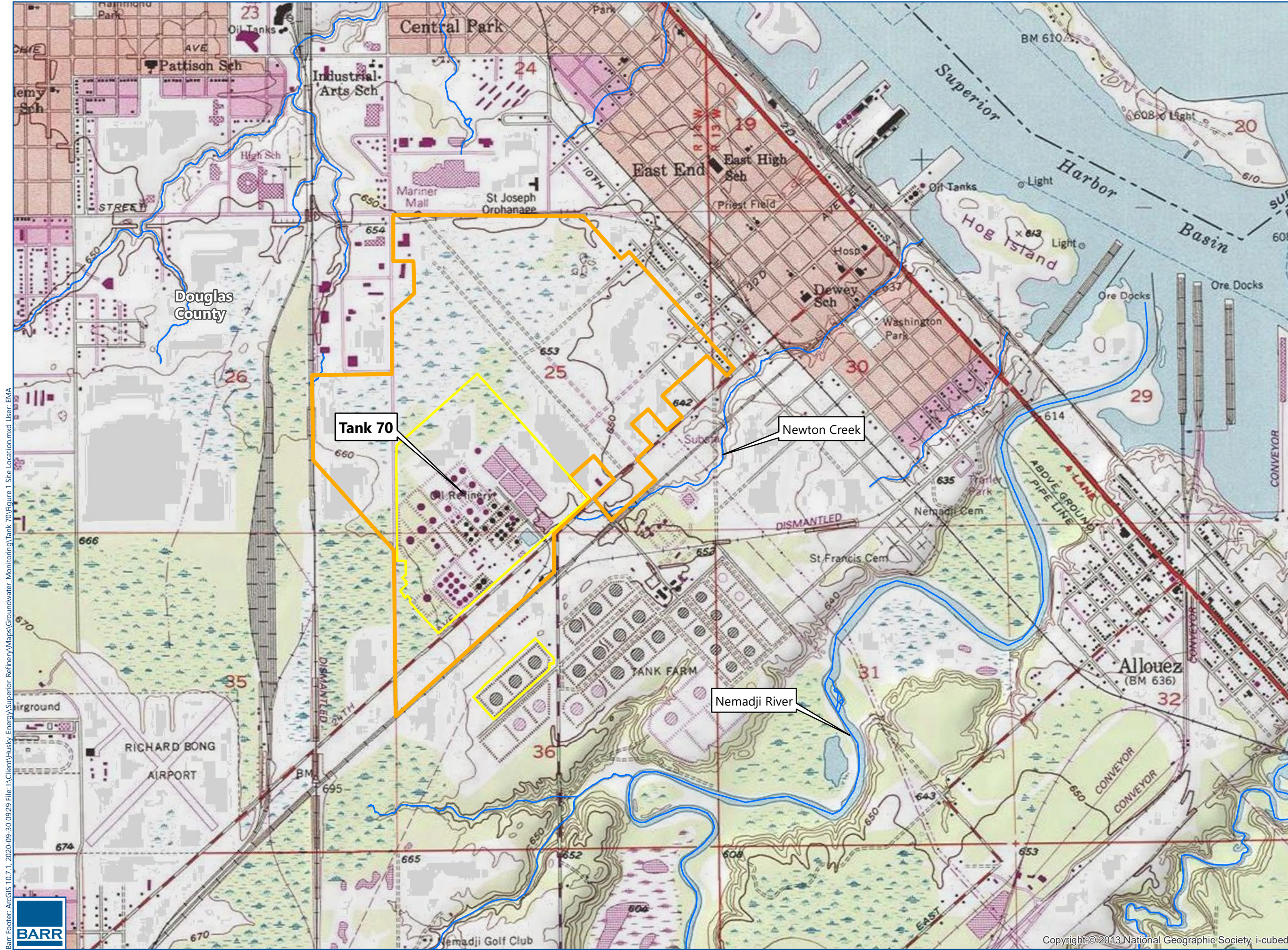
NR 140 ES = Wisconsin Administrative Code NR 140 Enforcement Standard; 7/1/2015.

NR 140 PAL = Wisconsin Administrative Code NR 140 Preventive Action Limit; 7/1/2015.

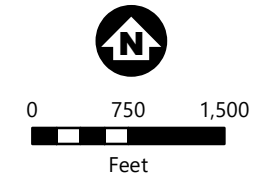
NS = No standard.

TMBs = Sum of 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene.

Figures



- Approximate SRC Property Boundaries for Contiguous Operations
- Approximate Fenceline Boundaries for Refining-Related Activities

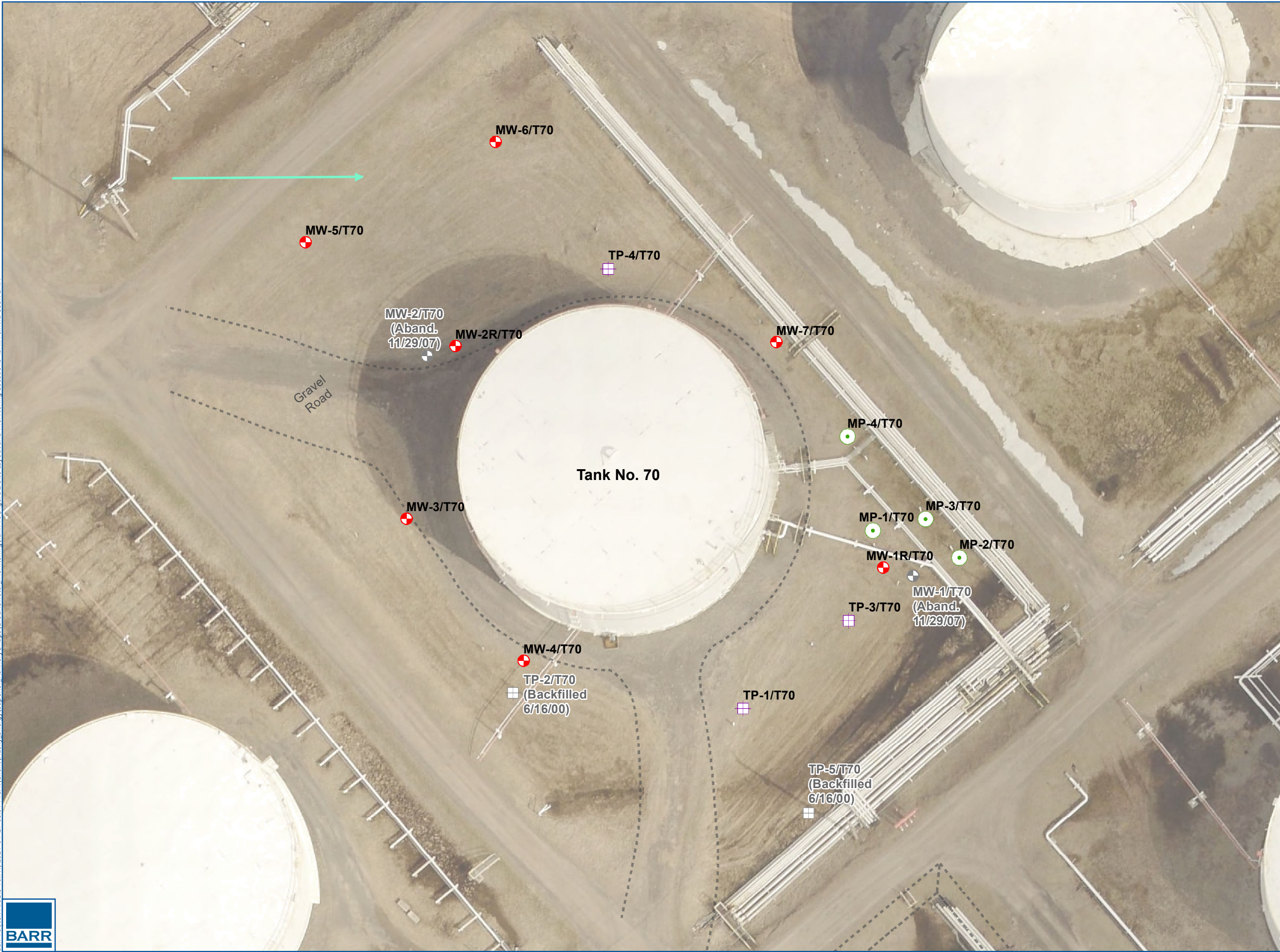


SITE LOCATION
 Superior Refining
 Company LLC (SRC)
 Superior, WI
FIGURE 1

Barr Footer: ArcGIS 10.7.1, 2020-09-30 09:29 File: I:\Client\Husky Energy\Superior Refinery\Maps\Groundwater_Monitoring\Tank 70\Figure 1 Site Location.mxd User: EMA



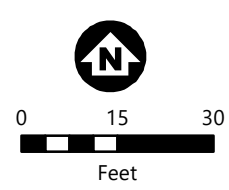
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- ⊕ Monitoring Well
MW-1/T70 installed 1999.
MW-2/T70, MW-3/T70,
MW-4/T70 installed 2003.
MW-5/T70, MW-6/T70,
MW-7/T70 installed 2004.
MW-1R/T70 and MW-2R/
T70 installed 2007.
- ⊞ Test Pit
- ⊙ Monitoring Point
(July 2001)
- General Direction of
Groundwater Flow

- Notes:
1. Gray shaded wells/test pits have been abandoned, back-filled, or are not locatable.
 2. Site layout and sample locations are based on field measurements by Twin Ports Testing and are to be considered approximate; site not surveyed.
 3. Sumps installed in Test Pits TP-1, TP-3, and TP-4 in June 2000. Each sump is 8 feet deep and consists of 6" diameter PVC with 4 feet of slotted PVC screen.
 4. Each monitoring point is 7 feet deep and consists of PVC with 3 feet of 4" diameter slotted PVC screen.
 5. Impermeable liner with clay layer cap installed in Tank 70 basin, June 2003.

Source: Gannett Fleming

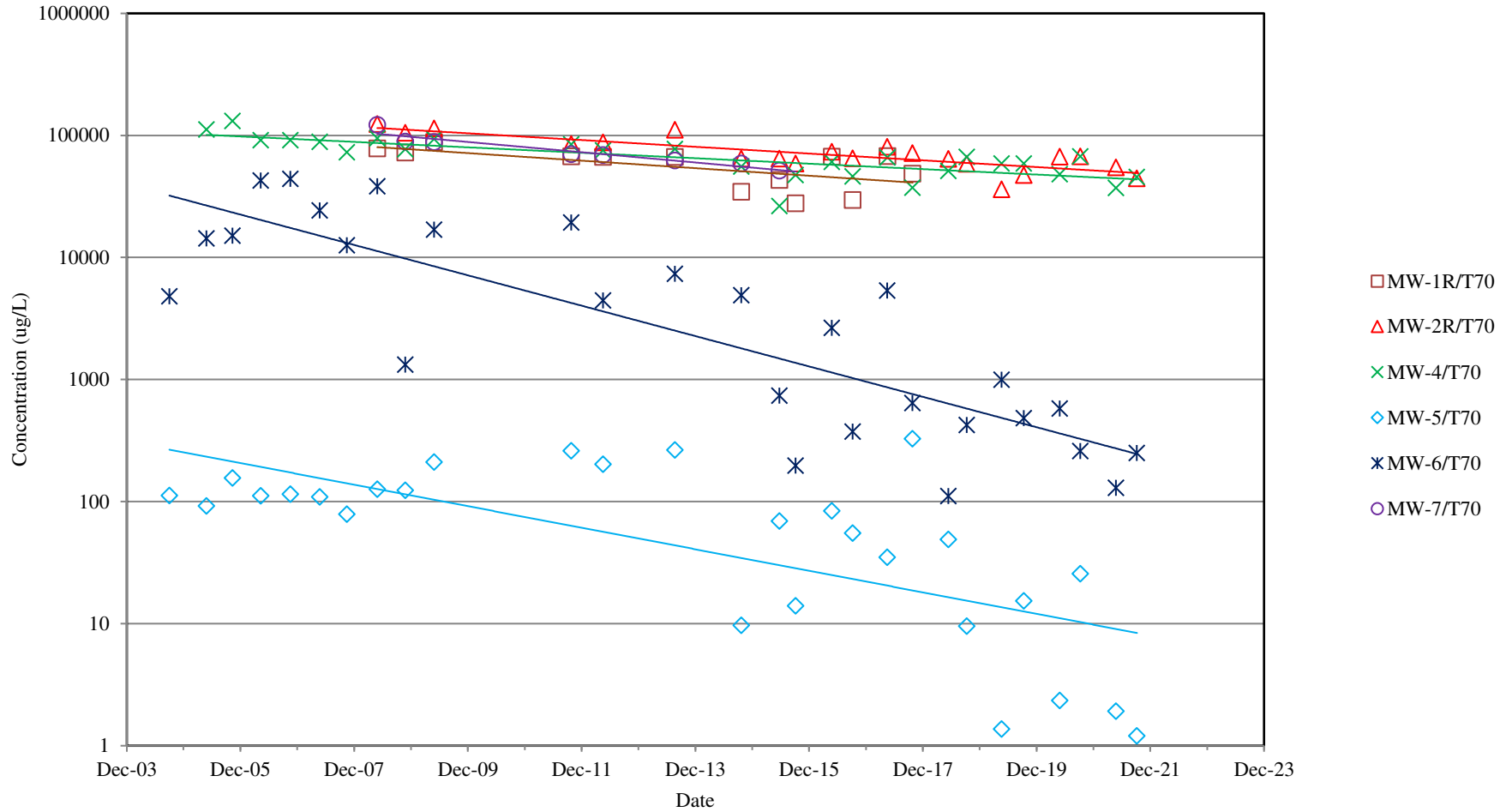


1 inch = 30 feet

TANK 70 SITE LAYOUT & MONITORING LOCATIONS
Superior Refining
Company LLC (SRC)
Superior, WI
FIGURE 2



FIGURE 3

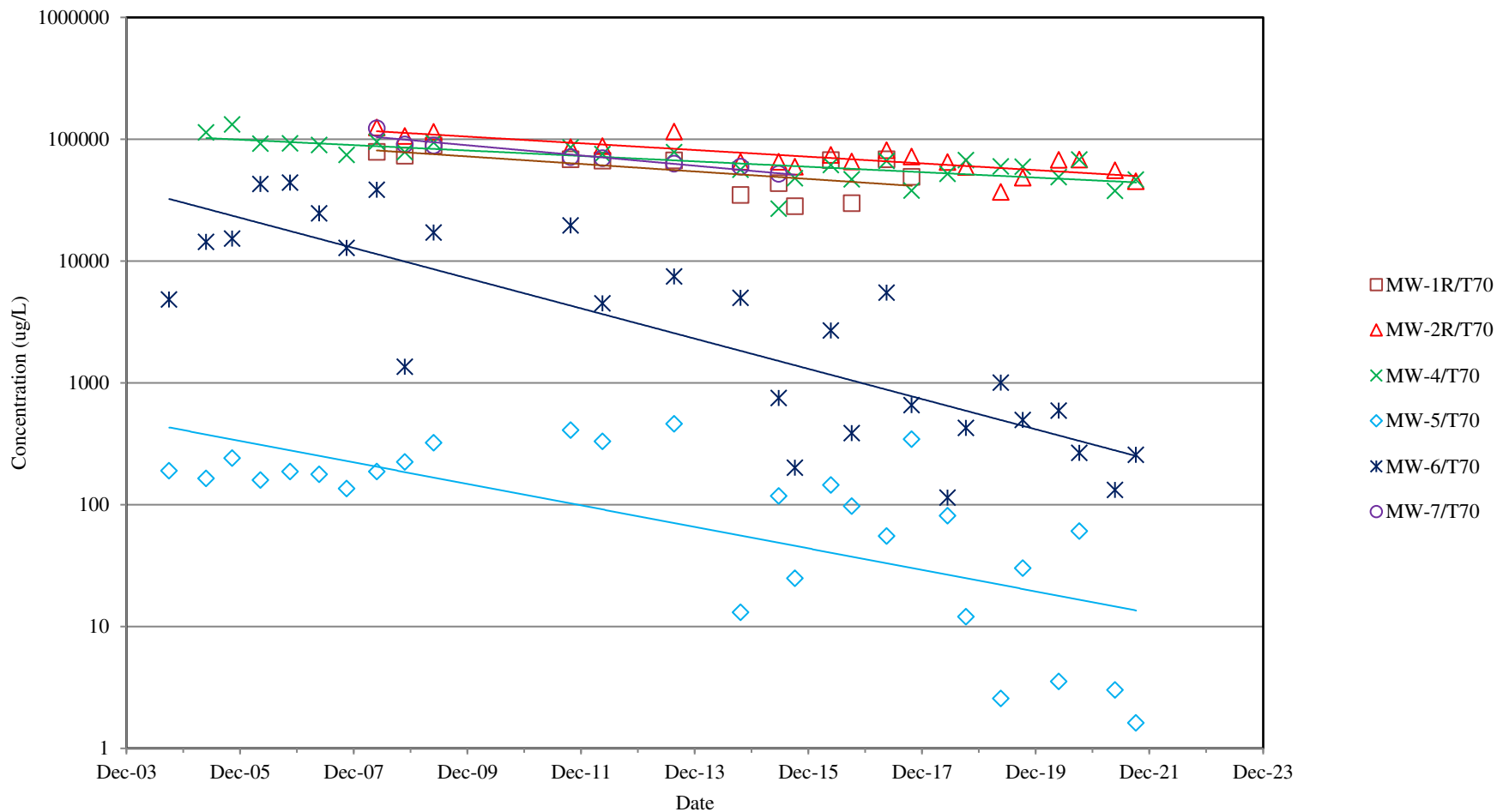


Note: Best-fit exponential trend lines generated using Excel and non-detect concentrations (if any) plotted at detection limit.

BTEX GROUNDWATER CONCENTRATIONS TANK 70 BASIN

SUPERIOR REFINING COMPANY LLC
SUPERIOR, WISCONSIN

FIGURE 4

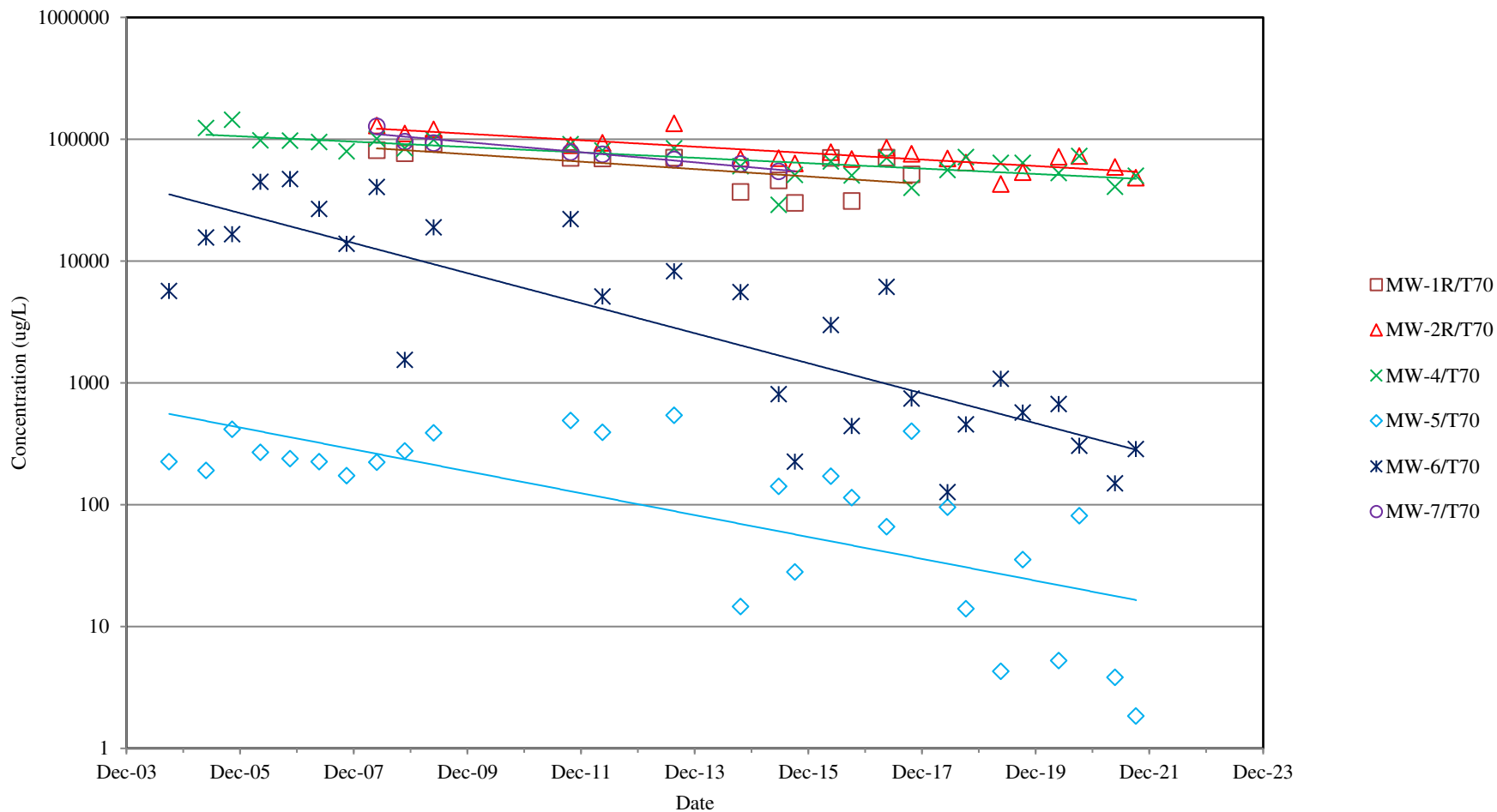


Note: Best-fit exponential trend lines generated using Excel and non-detect concentrations (if any) plotted at detection limit.

BTEX+N GROUNDWATER CONCENTRATIONS TANK 70 BASIN

SUPERIOR REFINING COMPANY LLC
SUPERIOR, WISCONSIN

FIGURE 5



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

SUPERIOR REFINING COMPANY LLC
SUPERIOR, WISCONSIN

Attachments

Attachment A

Pace Analytical Laboratory Reports

June 03, 2021

Jim Taraldsen
Barr Engineering Company
325 S Lake Ave
Duluth, MN 55802

RE: Project: 49161494 SRC GW Samp T70
Pace Project No.: 10562227

Dear Jim Taraldsen:

Enclosed are the analytical results for sample(s) received by the laboratory on May 24, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

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

Sincerely,



Amanda Albrecht
amanda.albrecht@pacelabs.com
(612)607-6382
Project Manager

Enclosures

cc: BarrDM@barr.com, Barr Engineering
Data Management, Barr Engineering
Accounts Payable, Barr Engineering



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

Pace Analytical Services Green Bay

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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SAMPLE SUMMARY

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10562227001	MW-2R/T70	Water	05/24/21 10:42	05/24/21 15:45
10562227002	MW-3/T70	Water	05/24/21 10:46	05/24/21 15:45
10562227003	MW-4/T70	Water	05/24/21 10:51	05/24/21 15:45
10562227004	MW-5/T70	Water	05/24/21 10:55	05/24/21 15:45
10562227005	MW-6/T70	Water	05/24/21 11:00	05/24/21 15:45
10562227006	Trip Blank	Water	05/24/21 00:00	05/24/21 15:45

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SAMPLE ANALYTE COUNT

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10562227001	MW-2R/T70	EPA 8260	LAP	11	PASI-G
10562227002	MW-3/T70	EPA 8260	LAP	11	PASI-G
10562227003	MW-4/T70	EPA 8260	LAP	11	PASI-G
10562227004	MW-5/T70	EPA 8260	LAP	11	PASI-G
10562227005	MW-6/T70	EPA 8260	LAP	11	PASI-G
10562227006	Trip Blank	EPA 8260	LAP	11	PASI-G

PASI-G = Pace Analytical Services - Green Bay

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

Sample: MW-2R/T70 **Lab ID: 10562227001** Collected: 05/24/21 10:42 Received: 05/24/21 15:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
Benzene	15700	ug/L	200	59.1	200		06/01/21 09:22	71-43-2	
Ethylbenzene	1870	ug/L	200	65.0	200		06/01/21 09:22	100-41-4	
Methyl-tert-butyl ether	<226	ug/L	1000	226	200		06/01/21 09:22	1634-04-4	
Naphthalene	755J	ug/L	1000	226	200		06/01/21 09:22	91-20-3	
Toluene	19600	ug/L	200	57.6	200		06/01/21 09:22	108-88-3	
1,2,4-Trimethylbenzene	2830	ug/L	200	89.7	200		06/01/21 09:22	95-63-6	
1,3,5-Trimethylbenzene	728	ug/L	200	71.5	200		06/01/21 09:22	108-67-8	
Xylene (Total)	17700	ug/L	600	210	200		06/01/21 09:22	1330-20-7	
Surrogates									
Toluene-d8 (S)	96	%	70-130		200		06/01/21 09:22	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		200		06/01/21 09:22	460-00-4	
1,2-Dichlorobenzene-d4 (S)	103	%	70-130		200		06/01/21 09:22	2199-69-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

Sample: MW-3/T70 **Lab ID: 10562227002** Collected: 05/24/21 10:46 Received: 05/24/21 15:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
Benzene	352	ug/L	5.0	1.5	5		06/01/21 15:07	71-43-2	
Ethylbenzene	25.0	ug/L	1.0	0.33	1		06/01/21 13:25	100-41-4	M1
Methyl-tert-butyl ether	<1.1	ug/L	5.0	1.1	1		06/01/21 13:25	1634-04-4	
Naphthalene	17.7	ug/L	5.0	1.1	1		06/01/21 13:25	91-20-3	
Toluene	7.2	ug/L	1.0	0.29	1		06/01/21 13:25	108-88-3	
1,2,4-Trimethylbenzene	99.8	ug/L	1.0	0.45	1		06/01/21 13:25	95-63-6	
1,3,5-Trimethylbenzene	15.2	ug/L	1.0	0.36	1		06/01/21 13:25	108-67-8	
Xylene (Total)	273	ug/L	3.0	1.0	1		06/01/21 13:25	1330-20-7	
Surrogates									
Toluene-d8 (S)	95	%	70-130		1		06/01/21 13:25	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130		1		06/01/21 13:25	460-00-4	
1,2-Dichlorobenzene-d4 (S)	104	%	70-130		1		06/01/21 13:25	2199-69-1	

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

Sample: MW-4/T70 **Lab ID: 10562227003** Collected: 05/24/21 10:51 Received: 05/24/21 15:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
Benzene	10200	ug/L	100	29.5	100		06/01/21 09:03	71-43-2	
Ethylbenzene	926	ug/L	100	32.5	100		06/01/21 09:03	100-41-4	
Methyl-tert-butyl ether	<113	ug/L	500	113	100		06/01/21 09:03	1634-04-4	
Naphthalene	563	ug/L	500	113	100		06/01/21 09:03	91-20-3	
Toluene	10000	ug/L	100	28.8	100		06/01/21 09:03	108-88-3	
1,2,4-Trimethylbenzene	2380	ug/L	100	44.9	100		06/01/21 09:03	95-63-6	
1,3,5-Trimethylbenzene	640	ug/L	100	35.7	100		06/01/21 09:03	108-67-8	
Xylene (Total)	16000	ug/L	300	105	100		06/01/21 09:03	1330-20-7	
Surrogates									
Toluene-d8 (S)	96	%	70-130		100		06/01/21 09:03	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		100		06/01/21 09:03	460-00-4	
1,2-Dichlorobenzene-d4 (S)	101	%	70-130		100		06/01/21 09:03	2199-69-1	

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

Sample: MW-5/T70 **Lab ID: 10562227004** Collected: 05/24/21 10:55 Received: 05/24/21 15:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
Benzene	<0.30	ug/L	1.0	0.30	1		06/01/21 18:57	71-43-2	
Ethylbenzene	<0.33	ug/L	1.0	0.33	1		06/01/21 18:57	100-41-4	
Methyl-tert-butyl ether	<1.1	ug/L	5.0	1.1	1		06/01/21 18:57	1634-04-4	
Naphthalene	<1.1	ug/L	5.0	1.1	1		06/01/21 18:57	91-20-3	
Toluene	<0.29	ug/L	1.0	0.29	1		06/01/21 18:57	108-88-3	
1,2,4-Trimethylbenzene	<0.45	ug/L	1.0	0.45	1		06/01/21 18:57	95-63-6	
1,3,5-Trimethylbenzene	<0.36	ug/L	1.0	0.36	1		06/01/21 18:57	108-67-8	
Xylene (Total)	<1.0	ug/L	3.0	1.0	1		06/01/21 18:57	1330-20-7	
Surrogates									
Toluene-d8 (S)	98	%	70-130		1		06/01/21 18:57	2037-26-5	
4-Bromofluorobenzene (S)	104	%	70-130		1		06/01/21 18:57	460-00-4	
1,2-Dichlorobenzene-d4 (S)	104	%	70-130		1		06/01/21 18:57	2199-69-1	

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

Sample: MW-6/T70 **Lab ID: 10562227005** Collected: 05/24/21 11:00 Received: 05/24/21 15:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
Benzene	89.3	ug/L	1.0	0.30	1		06/01/21 19:15	71-43-2	
Ethylbenzene	9.7	ug/L	1.0	0.33	1		06/01/21 19:15	100-41-4	
Methyl-tert-butyl ether	<1.1	ug/L	5.0	1.1	1		06/01/21 19:15	1634-04-4	
Naphthalene	2.9J	ug/L	5.0	1.1	1		06/01/21 19:15	91-20-3	
Toluene	3.3	ug/L	1.0	0.29	1		06/01/21 19:15	108-88-3	
1,2,4-Trimethylbenzene	15.4	ug/L	1.0	0.45	1		06/01/21 19:15	95-63-6	
1,3,5-Trimethylbenzene	2.0	ug/L	1.0	0.36	1		06/01/21 19:15	108-67-8	
Xylene (Total)	27.2	ug/L	3.0	1.0	1		06/01/21 19:15	1330-20-7	
Surrogates									
Toluene-d8 (S)	100	%	70-130		1		06/01/21 19:15	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130		1		06/01/21 19:15	460-00-4	
1,2-Dichlorobenzene-d4 (S)	105	%	70-130		1		06/01/21 19:15	2199-69-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

Sample: Trip Blank **Lab ID: 10562227006** Collected: 05/24/21 00:00 Received: 05/24/21 15:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
Benzene	<0.30	ug/L	1.0	0.30	1		06/01/21 17:42	71-43-2	
Ethylbenzene	<0.33	ug/L	1.0	0.33	1		06/01/21 17:42	100-41-4	
Methyl-tert-butyl ether	<1.1	ug/L	5.0	1.1	1		06/01/21 17:42	1634-04-4	
Naphthalene	<1.1	ug/L	5.0	1.1	1		06/01/21 17:42	91-20-3	
Toluene	<0.29	ug/L	1.0	0.29	1		06/01/21 17:42	108-88-3	
1,2,4-Trimethylbenzene	<0.45	ug/L	1.0	0.45	1		06/01/21 17:42	95-63-6	
1,3,5-Trimethylbenzene	<0.36	ug/L	1.0	0.36	1		06/01/21 17:42	108-67-8	
Xylene (Total)	<1.0	ug/L	3.0	1.0	1		06/01/21 17:42	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	70-130		1		06/01/21 17:42	2037-26-5	
4-Bromofluorobenzene (S)	104	%	70-130		1		06/01/21 17:42	460-00-4	
1,2-Dichlorobenzene-d4 (S)	103	%	70-130		1		06/01/21 17:42	2199-69-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

QC Batch: 386605 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
 Laboratory: Pace Analytical Services - Green Bay
 Associated Lab Samples: 10562227001, 10562227002, 10562227003, 10562227004, 10562227005, 10562227006

METHOD BLANK: 2230787 Matrix: Water
 Associated Lab Samples: 10562227001, 10562227002, 10562227003, 10562227004, 10562227005, 10562227006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.45	1.0	06/01/21 08:08	
1,3,5-Trimethylbenzene	ug/L	<0.36	1.0	06/01/21 08:08	
Benzene	ug/L	<0.30	1.0	06/01/21 08:08	
Ethylbenzene	ug/L	<0.33	1.0	06/01/21 08:08	
Methyl-tert-butyl ether	ug/L	<1.1	5.0	06/01/21 08:08	
Naphthalene	ug/L	<1.1	5.0	06/01/21 08:08	
Toluene	ug/L	<0.29	1.0	06/01/21 08:08	
Xylene (Total)	ug/L	<1.0	3.0	06/01/21 08:08	
1,2-Dichlorobenzene-d4 (S)	%	104	70-130	06/01/21 08:08	
4-Bromofluorobenzene (S)	%	97	70-130	06/01/21 08:08	
Toluene-d8 (S)	%	95	70-130	06/01/21 08:08	

LABORATORY CONTROL SAMPLE: 2230788

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	45.3	91	70-132	
Ethylbenzene	ug/L	50	47.7	95	80-123	
Methyl-tert-butyl ether	ug/L	50	48.4	97	66-130	
Toluene	ug/L	50	45.6	91	80-121	
Xylene (Total)	ug/L	150	141	94	70-130	
1,2-Dichlorobenzene-d4 (S)	%			98	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			97	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2231936 2231937

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10562227002 Result	Spike Conc.	Spike Conc.	Result						
Benzene	ug/L	352	50	50	417	411	129	118	70-132	1	20 E
Ethylbenzene	ug/L	25.0	50	50	62.8	63.3	76	77	80-123	1	20 M1
Methyl-tert-butyl ether	ug/L	<1.1	50	50	51.8	51.4	104	103	66-130	1	20
Toluene	ug/L	7.2	50	50	51.4	50.2	88	86	80-121	3	20
Xylene (Total)	ug/L	273	150	150	391	384	78	74	70-130	2	20
1,2-Dichlorobenzene-d4 (S)	%						102	103	70-130		
4-Bromofluorobenzene (S)	%						94	95	70-130		
Toluene-d8 (S)	%						96	95	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: 49161494 SRC GW Samp T70

Pace Project No.: 10562227

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.

ANALYTE QUALIFIERS

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

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161494 SRC GW Samp T70
Pace Project No.: 10562227

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10562227001	MW-2R/T70	EPA 8260	386605		
10562227002	MW-3/T70	EPA 8260	386605		
10562227003	MW-4/T70	EPA 8260	386605		
10562227004	MW-5/T70	EPA 8260	386605		
10562227005	MW-6/T70	EPA 8260	386605		
10562227006	Trip Blank	EPA 8260	386605		

REPORT OF LABORATORY ANALYSIS

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 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: BARR Engineering

WO# : 40227588

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



Tracking #: 1456 2247 5454

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 - 90 Type of Ice: Wet Blue Dry None

Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 1 /Corr: .5

Person examining contents:	
Date: <u>5/26/14</u>	Initials: <u>SRK</u>
Labeled By Initials: <u>SRK</u>	

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Temp should be above freezing to 6°C.

Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

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:
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 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 type="checkbox"/> Yes <input checked="" 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. <u>904 one V6914 no date 5/27/14 SRK</u>
-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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

November 01, 2021

Jim Taraldsen
Barr Engineering Company
325 S Lake Ave
Duluth, MN 55802

RE: Project: 49161494 SRC GW Sampling TK70
Pace Project No.: 10581977

Dear Jim Taraldsen:

Enclosed are the analytical results for sample(s) received by the laboratory on October 06, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

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

Sincerely,



Amanda Albrecht
amanda.albrecht@pacelabs.com
(612)607-6382
Project Manager

Enclosures

cc: BarrDM@barr.com, Barr Engineering
Data Management, Barr Engineering
Accounts Payable, Barr Engineering



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

A2LA Certification #: 2926.01*

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #:74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 49161494 SRC GW Sampling TK70
Pace Project No.: 10581977

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10581977001	MW-2R/T70	Water	10/05/21 09:26	10/06/21 13:55
10581977002	MW-5/T70	Water	10/05/21 09:31	10/06/21 13:55
10581977003	MW-6/T70	Water	10/05/21 09:37	10/06/21 13:55
10581977004	MW-3/T70	Water	10/05/21 09:42	10/06/21 13:55
10581977005	MW-4/T70	Water	10/05/21 09:45	10/06/21 13:55
10581977006	Trip Blank	Water	10/05/21 00:00	10/06/21 13:55

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SAMPLE ANALYTE COUNT

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10581977001	MW-2R/T70	EPA 8260D	NMB	11	PASI-M
10581977002	MW-5/T70	EPA 8260D	NMB	11	PASI-M
10581977003	MW-6/T70	EPA 8260D	NMB	11	PASI-M
10581977004	MW-3/T70	EPA 8260D	NMB, ZH	11	PASI-M
10581977005	MW-4/T70	EPA 8260D	NMB, ZH	11	PASI-M
10581977006	Trip Blank	EPA 8260D	NMB	11	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

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PROJECT NARRATIVE

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Date: November 01, 2021

Case Narrative

Volatile Organics Analysis

8260D

Excessive Dilution

One sample was analyzed within method holding time at an elevated dilution based on an evaluation of historical target analyte concentrations. After the analysis, it was determined that methyl-tert-butyl-ether was not detected at the elevated dilution and could have been analyzed with a lower dilution factor. A second analysis, outside of the method recommended holding time, was performed and is reported for this analyte.

MW-4/T70 was initially analyzed with a 200x dilution factor.

Insufficient Dilution

One sample was analyzed within method holding time at a low dilution based on an evaluation of historical target analyte concentrations. After the analysis, it was determined that the benzene concentration exceeded the calibration curve limits and should be analyzed with a higher dilution factor. A second analysis, outside of the method recommended holding time, was performed and is reported for this analyte.

The benzene concentration for MW-3/T70 was initially estimated at 642 ug/L.

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Sample: MW-2R/T70 **Lab ID: 10581977001** Collected: 10/05/21 09:26 Received: 10/06/21 13:55 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV UST									
Analytical Method: EPA 8260D									
Pace Analytical Services - Minneapolis									
Benzene	13500	ug/L	39.6	11.9	100		10/16/21 04:21	71-43-2	
Ethylbenzene	970	ug/L	22.8	6.9	100		10/16/21 04:21	100-41-4	
Methyl-tert-butyl ether	<18.1	ug/L	60.3	18.1	100		10/16/21 04:21	1634-04-4	
Naphthalene	685	ug/L	66.9	20.1	100		10/16/21 04:21	91-20-3	
Toluene	15000	ug/L	37.6	11.3	100		10/16/21 04:21	108-88-3	
1,2,4-Trimethylbenzene	2600	ug/L	39.6	11.9	100		10/16/21 04:21	95-63-6	
1,3,5-Trimethylbenzene	721	ug/L	32.0	9.6	100		10/16/21 04:21	108-67-8	
Xylene (Total)	15000	ug/L	59.3	17.8	100		10/16/21 04:21	1330-20-7	
Surrogates									
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		100		10/16/21 04:21	2199-69-1	D4
4-Bromofluorobenzene (S)	99	%	75-125		100		10/16/21 04:21	460-00-4	
Toluene-d8 (S)	97	%	75-125		100		10/16/21 04:21	2037-26-5	

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Sample: MW-5/T70 **Lab ID: 10581977002** Collected: 10/05/21 09:31 Received: 10/06/21 13:55 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV UST									
Analytical Method: EPA 8260D									
Pace Analytical Services - Minneapolis									
Benzene	<0.12	ug/L	0.40	0.12	1		10/16/21 04:39	71-43-2	
Ethylbenzene	0.13J	ug/L	0.23	0.069	1		10/16/21 04:39	100-41-4	
Methyl-tert-butyl ether	<0.18	ug/L	0.60	0.18	1		10/16/21 04:39	1634-04-4	
Naphthalene	0.42J	ug/L	0.67	0.20	1		10/16/21 04:39	91-20-3	
Toluene	0.28J	ug/L	0.38	0.11	1		10/16/21 04:39	108-88-3	
1,2,4-Trimethylbenzene	<0.12	ug/L	0.40	0.12	1		10/16/21 04:39	95-63-6	
1,3,5-Trimethylbenzene	<0.096	ug/L	0.32	0.096	1		10/16/21 04:39	108-67-8	
Xylene (Total)	0.67	ug/L	0.59	0.18	1		10/16/21 04:39	1330-20-7	
Surrogates									
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		1		10/16/21 04:39	2199-69-1	
4-Bromofluorobenzene (S)	100	%	75-125		1		10/16/21 04:39	460-00-4	
Toluene-d8 (S)	96	%	75-125		1		10/16/21 04:39	2037-26-5	

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Sample: MW-6/T70 **Lab ID: 10581977003** Collected: 10/05/21 09:37 Received: 10/06/21 13:55 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV UST									
Analytical Method: EPA 8260D									
Pace Analytical Services - Minneapolis									
Benzene	175	ug/L	0.40	0.12	1		10/16/21 04:58	71-43-2	
Ethylbenzene	14.6	ug/L	0.23	0.069	1		10/16/21 04:58	100-41-4	
Methyl-tert-butyl ether	<0.18	ug/L	0.60	0.18	1		10/16/21 04:58	1634-04-4	
Naphthalene	6.6	ug/L	0.67	0.20	1		10/16/21 04:58	91-20-3	
Toluene	5.6	ug/L	0.38	0.11	1		10/16/21 04:58	108-88-3	
1,2,4-Trimethylbenzene	25.6	ug/L	0.40	0.12	1		10/16/21 04:58	95-63-6	
1,3,5-Trimethylbenzene	3.0	ug/L	0.32	0.096	1		10/16/21 04:58	108-67-8	
Xylene (Total)	55.4	ug/L	0.59	0.18	1		10/16/21 04:58	1330-20-7	
Surrogates									
1,2-Dichlorobenzene-d4 (S)	101	%	70-130		1		10/16/21 04:58	2199-69-1	
4-Bromofluorobenzene (S)	102	%	75-125		1		10/16/21 04:58	460-00-4	
Toluene-d8 (S)	95	%	75-125		1		10/16/21 04:58	2037-26-5	

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Sample: MW-3/T70 **Lab ID: 10581977004** Collected: 10/05/21 09:42 Received: 10/06/21 13:55 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV UST									
Analytical Method: EPA 8260D									
Pace Analytical Services - Minneapolis									
Benzene	601	ug/L	11.5	3.5	20		10/27/21 09:13	71-43-2	H5
Ethylbenzene	85.7	ug/L	0.46	0.14	2		10/16/21 05:16	100-41-4	M1
Methyl-tert-butyl ether	<0.36	ug/L	1.2	0.36	2		10/16/21 05:16	1634-04-4	
Naphthalene	31.3	ug/L	1.3	0.40	2		10/16/21 05:16	91-20-3	
Toluene	6.3	ug/L	0.75	0.23	2		10/16/21 05:16	108-88-3	
1,2,4-Trimethylbenzene	147	ug/L	0.79	0.24	2		10/16/21 05:16	95-63-6	M1
1,3,5-Trimethylbenzene	2.4	ug/L	0.64	0.19	2		10/16/21 05:16	108-67-8	M1
Xylene (Total)	282	ug/L	1.2	0.36	2		10/16/21 05:16	1330-20-7	MS
Surrogates									
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		2		10/16/21 05:16	2199-69-1	D4
4-Bromofluorobenzene (S)	101	%	75-125		2		10/16/21 05:16	460-00-4	
Toluene-d8 (S)	95	%	75-125		2		10/16/21 05:16	2037-26-5	

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Sample: MW-4/T70 **Lab ID: 10581977005** Collected: 10/05/21 09:45 Received: 10/06/21 13:55 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV UST									
Analytical Method: EPA 8260D									
Pace Analytical Services - Minneapolis									
Benzene	12800	ug/L	79.3	23.8	200		10/16/21 05:34	71-43-2	
Ethylbenzene	880	ug/L	45.7	13.7	200		10/16/21 05:34	100-41-4	
Methyl-tert-butyl ether	<3.2	ug/L	10.8	3.2	20		10/27/21 08:57	1634-04-4	H1
Naphthalene	853	ug/L	134	40.2	200		10/16/21 05:34	91-20-3	
Toluene	12100	ug/L	75.3	22.6	200		10/16/21 05:34	108-88-3	
1,2,4-Trimethylbenzene	2890	ug/L	79.3	23.8	200		10/16/21 05:34	95-63-6	
1,3,5-Trimethylbenzene	756	ug/L	64.0	19.2	200		10/16/21 05:34	108-67-8	
Xylene (Total)	20000	ug/L	119	35.6	200		10/16/21 05:34	1330-20-7	
Surrogates									
1,2-Dichlorobenzene-d4 (S)	98	%	70-130		20		10/27/21 08:57	2199-69-1	D4
4-Bromofluorobenzene (S)	92	%	75-125		20		10/27/21 08:57	460-00-4	
Toluene-d8 (S)	98	%	75-125		20		10/27/21 08:57	2037-26-5	

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ANALYTICAL RESULTS

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Sample: Trip Blank **Lab ID: 10581977006** Collected: 10/05/21 00:00 Received: 10/06/21 13:55 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV UST									
Analytical Method: EPA 8260D									
Pace Analytical Services - Minneapolis									
Benzene	<0.12	ug/L	0.40	0.12	1		10/16/21 00:24	71-43-2	
Ethylbenzene	<0.069	ug/L	0.23	0.069	1		10/16/21 00:24	100-41-4	
Methyl-tert-butyl ether	<0.18	ug/L	0.60	0.18	1		10/16/21 00:24	1634-04-4	
Naphthalene	<0.20	ug/L	0.67	0.20	1		10/16/21 00:24	91-20-3	
Toluene	<0.11	ug/L	0.38	0.11	1		10/16/21 00:24	108-88-3	
1,2,4-Trimethylbenzene	<0.12	ug/L	0.40	0.12	1		10/16/21 00:24	95-63-6	
1,3,5-Trimethylbenzene	<0.096	ug/L	0.32	0.096	1		10/16/21 00:24	108-67-8	
Xylene (Total)	<0.18	ug/L	0.59	0.18	1		10/16/21 00:24	1330-20-7	
Surrogates									
1,2-Dichlorobenzene-d4 (S)	102	%	70-130		1		10/16/21 00:24	2199-69-1	
4-Bromofluorobenzene (S)	100	%	75-125		1		10/16/21 00:24	460-00-4	
Toluene-d8 (S)	96	%	75-125		1		10/16/21 00:24	2037-26-5	

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QUALITY CONTROL DATA

Project: 49161494 SRC GW Sampling TK70
Pace Project No.: 10581977

QC Batch: 777221 Analysis Method: EPA 8260D
QC Batch Method: EPA 8260D Analysis Description: 8260D MSV UST-WATER
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10581977001, 10581977002, 10581977003, 10581977004, 10581977005, 10581977006

METHOD BLANK: 4140004 Matrix: Water
Associated Lab Samples: 10581977001, 10581977002, 10581977003, 10581977004, 10581977005, 10581977006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.12	0.40	10/15/21 23:10	
1,3,5-Trimethylbenzene	ug/L	<0.096	0.32	10/15/21 23:10	
Benzene	ug/L	<0.12	0.40	10/15/21 23:10	
Ethylbenzene	ug/L	<0.069	0.23	10/15/21 23:10	
Methyl-tert-butyl ether	ug/L	<0.18	0.60	10/15/21 23:10	
Naphthalene	ug/L	<0.20	0.67	10/15/21 23:10	
Toluene	ug/L	<0.11	0.38	10/15/21 23:10	
Xylene (Total)	ug/L	<0.18	0.59	10/15/21 23:10	
1,2-Dichlorobenzene-d4 (S)	%	99	70-130	10/15/21 23:10	
4-Bromofluorobenzene (S)	%	100	75-125	10/15/21 23:10	
Toluene-d8 (S)	%	96	75-125	10/15/21 23:10	

LABORATORY CONTROL SAMPLE & LCSD: 4140005 4140006

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	18.2	17.2	91	86	75-126	5	20	
1,3,5-Trimethylbenzene	ug/L	20	18.3	17.4	92	87	75-125	5	20	
Benzene	ug/L	20	19.2	18.1	96	91	73-125	6	20	
Ethylbenzene	ug/L	20	17.3	16.2	87	81	75-125	6	20	
Methyl-tert-butyl ether	ug/L	20	20.6	20.7	103	103	75-125	0	20	
Naphthalene	ug/L	20	20.7	21.5	103	108	69-127	4	20	
Toluene	ug/L	20	18.7	17.8	94	89	75-125	5	20	
Xylene (Total)	ug/L	60	57.0	54.9	95	91	75-125	4	20	
1,2-Dichlorobenzene-d4 (S)	%				100	100	70-130			
4-Bromofluorobenzene (S)	%				100	100	75-125			
Toluene-d8 (S)	%				98	98	75-125			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4148110 4148111

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max		Qual
		10581977004 Result	Spike Conc.	Spike Conc.	Result					Result	RPD	
1,2,4-Trimethylbenzene	ug/L	147	40	40	172	161	62	35	68-126	7	30	M1
1,3,5-Trimethylbenzene	ug/L	2.4	40	40	26.7	24.7	61	56	67-125	8	30	M1
Benzene	ug/L	601	40	40	647	618	12	-59	60-125	5	30	E,P6
Ethylbenzene	ug/L	85.7	40	40	108	102	55	42	61-125	5	30	M1
Methyl-tert-butyl ether	ug/L	<0.36	40	40	30.1	27.7	75	69	61-125	8	30	
Naphthalene	ug/L	31.3	40	40	61.5	59.9	75	71	54-127	3	30	

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QUALITY CONTROL DATA

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4148110		4148111		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		10581977004 Result	MS Spike Conc.	MSD Spike Conc.									
Toluene	ug/L	6.3	40	40	34.1	30.6	70	61	61-125	11	30		
Xylene (Total)	ug/L	282	120	120	355	335	60	44	63-125	6	30	MS	
1,2-Dichlorobenzene-d4 (S)	%							101	100	70-130			
4-Bromofluorobenzene (S)	%							99	101	75-125			
Toluene-d8 (S)	%							97	96	75-125			

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QUALITY CONTROL DATA

Project: 49161494 SRC GW Sampling TK70
Pace Project No.: 10581977

QC Batch: 779551 Analysis Method: EPA 8260D
QC Batch Method: EPA 8260D Analysis Description: 8260D MSV UST-WATER
Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10581977004, 10581977005

METHOD BLANK: 4151725 Matrix: Water

Associated Lab Samples: 10581977004, 10581977005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	<0.17	0.58	10/27/21 00:56	
Methyl-tert-butyl ether	ug/L	<0.16	0.54	10/27/21 00:56	
1,2-Dichlorobenzene-d4 (S)	%	96	70-130	10/27/21 00:56	
4-Bromofluorobenzene (S)	%	92	75-125	10/27/21 00:56	
Toluene-d8 (S)	%	99	75-125	10/27/21 00:56	

LABORATORY CONTROL SAMPLE: 4151726

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	20.8	104	73-125	
Methyl-tert-butyl ether	ug/L	20	21.0	105	75-125	
1,2-Dichlorobenzene-d4 (S)	%			97	70-130	
4-Bromofluorobenzene (S)	%			94	75-125	
Toluene-d8 (S)	%			98	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4151727 4151728

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10584550005 Result	Spike Conc.	Spike Conc.	Result						
Benzene	ug/L	ND	20	20	26.9	24.0	134	120	60-125	11	30 M1
Methyl-tert-butyl ether	ug/L	ND	20	20	27.5	23.3	137	117	61-125	16	30 M1
1,2-Dichlorobenzene-d4 (S)	%						100	96	70-130		
4-Bromofluorobenzene (S)	%						97	95	75-125		
Toluene-d8 (S)	%						100	100	75-125		

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QUALIFIERS

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

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.

ANALYTE QUALIFIERS

D4 Sample was diluted due to the presence of high levels of target analytes.

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

H1 Analysis conducted outside the recognized method holding time.

H5 Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.

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

MS Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161494 SRC GW Sampling TK70

Pace Project No.: 10581977

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10581977001	MW-2R/T70	EPA 8260D	777221		
10581977002	MW-5/T70	EPA 8260D	777221		
10581977003	MW-6/T70	EPA 8260D	777221		
10581977004	MW-3/T70	EPA 8260D	777221		
10581977004	MW-3/T70	EPA 8260D	779551		
10581977005	MW-4/T70	EPA 8260D	777221		
10581977005	MW-4/T70	EPA 8260D	779551		
10581977006	Trip Blank	EPA 8260D	777221		

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Barr Engineering Co. Chain of Custody

- Ann Arbor Duluth Hibbing Minneapolis
 Bismarck Grand Rapids Jefferson City Salt Lake City

- Sample Origination State:
 KS MO UT
 MI ND WI
 MN SD Other: _____

Analysis Requested
 Water _____ Soil _____
 COC Number: **57642**
 COC 1 of 1
 Matrix Code: _____

WO#: 10581977

 10581977

REPORT TO	INVOICE TO
Company: <u>Barr Engineering Co.</u>	Company: <u>Barr</u>
Address: <u>325 S. Lake Ave Duluth MN</u>	Address: _____
Name: <u>Lynette Carney</u>	Name: _____
email: <u>lcarney@barr.com</u>	email: _____
Copy to: <u>datamgt@barr.com</u>	P.O. _____
Project Name: <u>SRC GW sampling TK 70</u>	Barr Project No: <u>49161494.01 200 203</u>

Location	Sample Depth			Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y/N	Total Number Of Containers	Analysis Requested	% Solids	Preservative Code	Field Filtered Y/N
	Start	Stop	Unit (m./ft. or in.)									
1. <u>MW-2R/T70</u>	_____	_____	_____	<u>10/05/2011</u>	<u>0926</u>	<u>GW</u>	<u>N</u>	<u>3</u>	<u>X</u>		<u>001</u>	
2. <u>MW-5/T70</u>	_____	_____	_____		<u>0931</u>			<u>3</u>	<u>X</u>		<u>002</u>	
3. <u>MW-6/T70</u>	_____	_____	_____		<u>0937</u>			<u>3</u>	<u>X</u>		<u>003</u>	
4. <u>MW-3/T70</u>	_____	_____	_____		<u>0942</u>			<u>3</u>	<u>X</u>		<u>004</u>	
5. <u>MW-4/T70</u>	_____	_____	_____		<u>0945</u>			<u>3</u>	<u>X</u>		<u>005</u>	
6. <u>Trip Blank</u>	_____	_____	_____		<u>-</u>	<u>-</u>	<u>N</u>	<u>2</u>	<u>X</u>		<u>006</u>	
7.												
8.												
9.												
10.												

BARR USE ONLY		Relinquished by:	On Ice? Y/N	Date	Time	Received by:	Date	Time
Sampled by: <u>WMTJ</u>	Relinquished by: <u>[Signature]</u>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<u>10/5/21</u>	<u>12:49</u>	<u>Stalacid/Pace</u>	<u>10/5/21</u>	<u>12:50</u>	
Barr Proj. Manager: <u>LMC</u>	Relinquished by: _____	<input type="checkbox"/> Y <input type="checkbox"/> N			<u>Stacy Pace</u>	<u>10/6/21</u>	<u>13:55</u>	
Barr DQ Manager: <u>JET</u>	Samples Shipped VIA:	<input type="checkbox"/> Courier <input type="checkbox"/> Federal Express <input type="checkbox"/> Sampler <input type="checkbox"/> Other: _____	Air Bill Number:	Requested Due Date: <input checked="" type="checkbox"/> Standard Turn Around Time <input type="checkbox"/> Rush _____ (mm/dd/yyyy)				
Lab Name: <u>Pace</u>	Lab Location: <u>Minneapolis, MN</u>	Lab WO:	Temperature on Receipt (°C): <u>0.3</u>	Custody Seal Intact? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> None				

Distribution - White-Original: Accompanies Shipment to Laboratory; Yellow Copy: Include in Field Documents; Pink Copy: Send to Data Management Administrators.



Document Name: Sample Condition Upon Receipt (SCUR) - MN

Document Revised: 14Apr2021 Page 1 of 1

Document No.: ENV-FRM-MIN4-0150 Rev.02

Pace Analytical Services - Minneapolis

Sample Condition Upon Receipt

Client Name: Barr Eng.

Project #:

WO#: 10581977 PM: AA1 Due Date: 10/20/21 CLIENT: BARR

Courier: Fed,Ex UPS USPS Client Pace Speedee Commercial

Tracking Number: See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Biological Tissue Frozen? Yes No N/A

Packing Material: Bubble Wrap Bubble Bags None Other: Temp Blank? Yes No

Thermometer: T1(0461) T2(1336) T3(0459) OS418-LS T4(0254) T5(0489) 160285052 Type of Ice: Wet Blue None Dry Melted

Did Samples Originate in West Virginia? Yes No Were All Container Temps Taken? Yes No N/A

Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: 0.3 °C Average Corrected Temp (no temp blank only): 0.3 °C

USDA Regulated Soil: (N/A, water sample/Other:) Date/Initials of Person Examining Contents: HKB 10/16/21

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

Table with 14 rows and 2 columns. Left column contains questions about custody, analysis, and preservation. Right column contains checkboxes and a comments section.

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Date/Time: Field Data Required? Yes No

Project Manager Review: Date: 10/7/21

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: HKB