Technical Memorandum

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Prepared for: Sadoff & Rudoy Industries

Project Title: Sadoff Iron & Metal Company - Cutting Oil Site - BRRTS #02-20-543060
Fond du Lac, Wisconsin

Project No.: 149111.013.003

Technical Memorandum No. 6

Subject: Results of December 2016 (4Q16) Groundwater Sampling and Analysis (38th Round)

Date: March 8, 2017

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Introduction and Background

Brown and Caldwell (BC), on behalf of Sadoff & Rudoy Industries, is submitting the attached groundwater monitoring data from the 38th round of samples collected on December 20, 2016 at the Sadoff Iron & Metal Company - Cutting Oil Site (Site) in Fond du Lac, Wisconsin (BRRTS No. 02-20-543060).

There are six (6) monitoring wells at the Site and one (1) sump (Figure 1). As requested in the report dated March 28, 2012 from Earth Science & Technology, LLC, summarizing the 25th round of groundwater data, and approved by the Wisconsin Department of Natural Resources (WDNR) shortly thereafter, groundwater samples are collected from MW-1 and the green sump (sump) only. The March 28, 2012 report requested that the two groundwater samples be analyzed for only iron and acetone. However, the WDNR granted approval to analyze the two groundwater samples for acetone only.

Sadoff Iron & Metal Company (The Company) constructed two double-lined and covered concrete bins for the storage of all the oily scrap received in the South Yard. The previously-constructed storm sewer was grouted except for the length under the railroad right-of-way. A submersible pump in a sump that is connected to the sewer pumps liquids from the sewer into a steel tank set inside BIN #2, where it is pumped by Chief Industrial Services for treatment and disposal. A technician collects the sample labeled SUMP from the sewer, not the bin, so the sample represents groundwater conditions from the remaining length of the sewer.

December 2016 (4Q16) Groundwater Sampling Activities and Results

The 4Q16 groundwater monitoring event was performed on December 20, 2016. Routine well network evaluation activities, such as label verification and maintenance, standing water/sediment removal from protective covers, and well security maintenance were performed during the 4Q16 event to ensure monitoring network integrity. Robert E. Lee & Associates (REL) measured static water levels in four (4) groundwater monitoring wells and the green sump (sump). Table 1 summarizes the 4Q16 groundwater elevations in feet above mean sea level (Ft AMSL), which were calculated by measuring the depth to water from the surveyed top-of-casing measurement at each location. The preparation of an accurate groundwater elevation contour map for this site is difficult due to the small size of the study area and the essentially flat groundwater surface level.

REL collected groundwater samples from monitoring well MW-1 and the sump. Pace Analytical Laboratory (PAL) of Green Bay, Wisconsin, analyzed the two samples for acetone using EPA Method 8260. Quality Assurance/Quality Control (QA/QC) samples included one (1) field blank and one (1) trip blank. The 4Q16 groundwater sampling event field notes are presented in Appendix A, while Appendix B contains the laboratory data sheets, including QA/QC data and chain-of-custody records. Historical groundwater elevations are graphically represented in Appendix C.

METALS

As of 2012, metals are no longer sampled. Table 2 summarizes the historical metals data from the four (4) monitoring wells and the sump.

VOLATILE ORGANIC COMPOUNDS (VOCs)

Table 3 has been updated with the recent groundwater quality data for VOCs. In general, the acetone concentrations in MW-1 and in the groundwater from the collection system have maintained consistency or improved over previous rounds. Acetone was detected in both MW-1 (39.8 micrograms per liter [µg/L]; "J" qualified) and the sump (28.8 µg/L; "J" qualified). However, neither acetone detection was in exceedance of

the NR 140 Wisconsin Administrative Code (NR 140) preventive action limit (PAL) of 1,800 µg/L or the NR 140 enforcement standard (ES) of 9,000 µg/L. The December 2016 data is consistent with historical data. Acetone was not detected in either the field blank or the trip blank. A detection which is "J" qualified is an estimated concentration between the analytical method's detection limit and quantitation limit.

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)

As of May 2011, semi-volatile organic compounds (SVOCs) are no longer sampled. Table 4 summarizes the historical SVOC data from the four (4) monitoring wells and the sump.

PUMPING SCHEDULE

The sump is pumped by Chief Industrial Services on a regular basis. MW-1 is also purged by Chief Industrial Services when they pump the sump, in an attempt to remove the oil within the well. They are able to pump approximately 50 gallons of a water/oil mixture from MW-1 at a time, but since they do not have a meter on the pump, it is not certain that they actually remove that amount of water/oil. It is possible that they actually remove some of the water/oil from the sewer backfill. Due to freezing weather, no pumping of the sump and MW-1 was conducted during the first and fourth quarters of 2016. In addition, due to integrity testing of the on-site storage bins, no pumping was conducted in mid-Aug through September. However, the pumping records from the remainder of 2016 are enclosed as Appendix D.

Trench Drain Integrity Testing

A 48 ft. collection trench runs along the back of the North Bin (Bin) to collect runoff and materials that may drain during unloading and staging of scrap metal in the Bin. BC, on behalf of The Company, conducted testing of the trench drain system associated with the cutting oil bins from September through mid-November 2015. Extensive dye testing was previously completed and indicated that there is a breach in the containment within the Bin, although the exact location of that containment breach is currently unknown. The following is a brief summary of the trench drain integrity testing results.

During the first stage of the investigation, the trench was drained, cleaned, and visually inspected. A crack was discovered about 8 ft. from the south end of the trench during the visual inspection. The trench was then divided into three sections starting at the southern end of the trench and a hydrostatic test was completed within each section. The southern end section (including the area of the visible crack) showed the greatest evidence of leakage from any of the three sections. Therefore, as a next step, orange dyed water was poured into the southern end trench section alone. The other two sections were left dry. The Company continued daily weekday monitoring of the trench level along with the two observation points (one in each of the upper and lower containment layers) and the back sump, looking for the appearance of the dye.

During the 11-week study, dye was not observed in either of the observation points or back sump as it had been during previous studies; even after loading the floor with weight similar to what the Bin would experience during normal operations and pumping 1,200 gallons out of the back sump. These results indicated that the containment at the bins was intact.

Following the integrity testing, BC recommended two potential courses of action which both pursued demolition work on the bin floor to confirm and/or quantify any breaches followed by the replacement of any necessary trench sections. However, SRI wanted to continue the dye testing in spring and mid-summer 2016 to see if the November 2015 results (*i.e.,* showing that there is no evidence of dye leaving the containment structure or liners) could be sustained. The purpose of this is to try and prove the integrity of the structure and liners.

The additional dye testing in spring and mid-summer 2016 concluded that the north bins showed evidence of failure. Upon further investigation, it was determined that the liner in the north bins had pulled away from

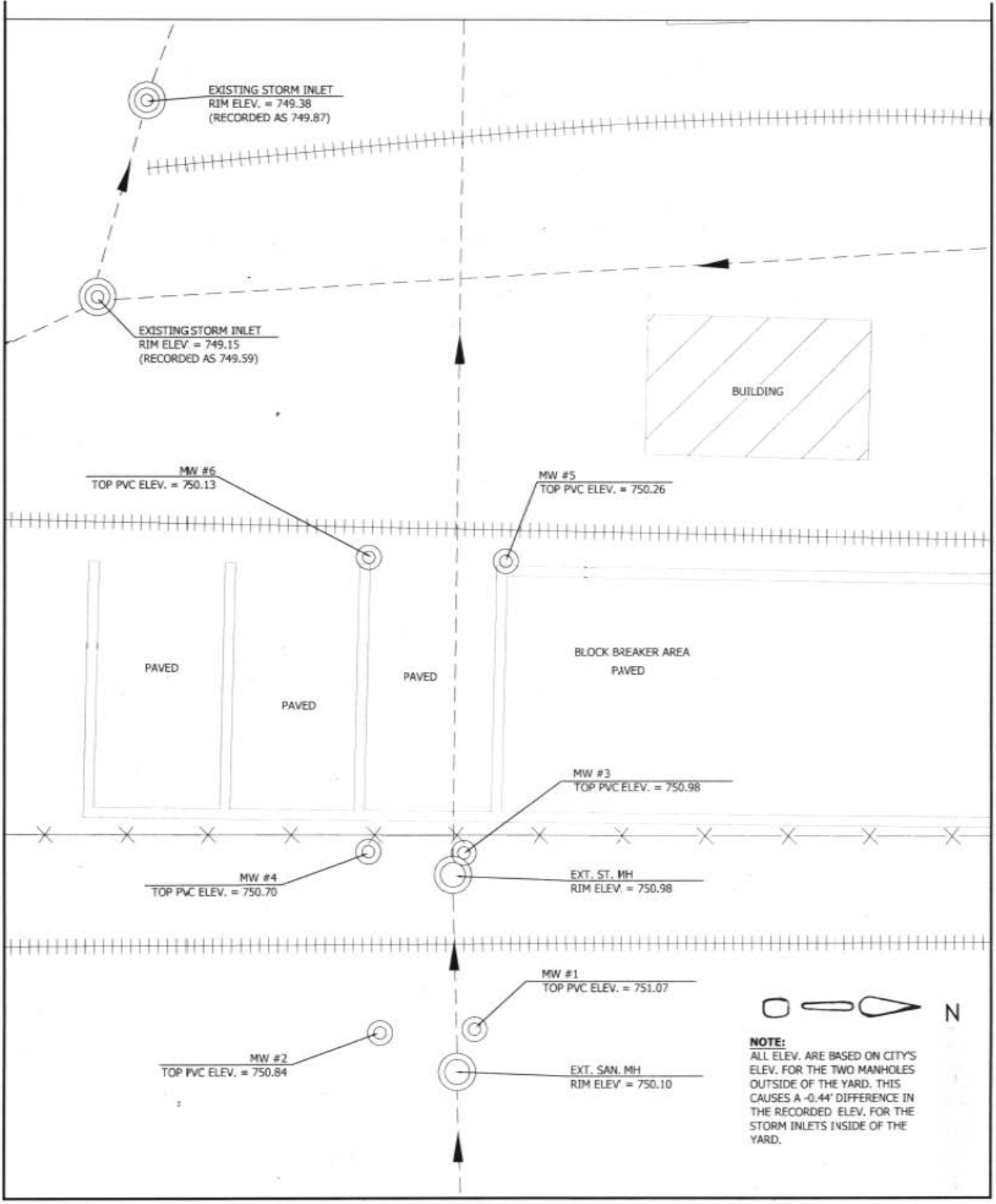
the adjacent wall. The Company took corrective actions by making several concrete repairs to fix the north bins, which will only be used for dry storage until a permanent fix can be developed and implemented. The original concrete contractor is developing a plan to evaluate whether the existing structure can be reutilized or whether a new structure needs to be designed in order to be able to use the north bins for wet storage again.

Conclusions

In order to stabilize and evaluate on-site water levels, the Company approached WDNR with a request to suspend on-site pumping activities and not resume them in the spring of 2017. The WDNR agreed with The Company's request. The WDNR stated that due to the already extended timeframe without pumping, the 2Q2017 sampling event would provide a good indication to the necessity (or lack thereof) of continued pumping and the potential to pursue a path towards closure, which requires all active pumping at the site to be concluded. Sufficient analytical data would need to be provided to demonstrate the lack of rebounding groundwater analytical concentrations.

The Company has suspended pumping activities for 2017 but will continue the groundwater sampling program. Semi-annual sampling will again be limited to acetone analysis at MW-1 and the sump in 2Q2017.

Figure



NOTE:
ALL ELEV. ARE BASED ON CITY'S ELEV. FOR THE TWO MANHOLES OUTSIDE OF THE YARD. THIS CAUSES A -0.44' DIFFERENCE IN THE RECORDED ELEV. FOR THE STORM INLETS INSIDE OF THE YARD.

SHEET 1 of 1	NEW MW'S	EARTH SCIENCE & TECHNOLOGY LLC. ALGOMA, WI	PROJECT INFO: SADOFF IRON & METAL COMPANY FOND DU LAC, WI	

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			
5			
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7			

SHEET SIZE: 11x17 | SCALE: 1" = 30' | DATE: 12-23-08 | R&I PROJECT NO: 0512196 | SURVEYED BY: NADA | DRAFTED BY: NADA | CHECKED BY: MPL | SHEET TITLE:

Tables

CUTTING OIL INVESTIGATION - BRRTS #02-20-543060
SADOFF IRON AND METAL COMPANY
Fond du Lac, Wisconsin

TABLE 1 - Groundwater Elevation Data (feet above mean sea level)					
Date	MW-1	MW-2	MW-3	MW-4	SUMP BASE
12/9/2005	745.67	742.99	744.28	744.1	742.38
3/28/2006	748.84	743.92	745.45	745.46	742.38
6/22/2006	748.09	743.04	744.4	745.19	742.38
9/20/2006	748.69	742.53	743.8	743.55	742.38
12/19/2006	748.12	743.21	744.71	744.49	742.38
4/4/2007	748.3	744.53	746.48	746.37	742.38
6/20/2007	747.75	743.16	745.13	744.98	742.38
9/20/2007	748.69	742.53	743.8	743.55	742.38
1/3/2008	742.86	742.82	743.86	743.7	742.38
3/26/2008		747.3	745.4	745.37	742.38
6/5/2008	746.46	744.03	744.47	744.58	742.38
9/25/2008	745.71	745.48	744.22	743.91	742.38
12/17/2008	745.02	742.81	743.95	743.82	742.38
3/18/2009	745.73	744.35	746.02	745.85	742.38
6/22/2009	746.06	743.43	744.8	744.67	742.38
9/24/2009	744.09	743.21	744.37	744.25	742.38
12/17/2009	743.95	743.22	744.42	744.18	742.38
3/11/2010	743.49	742.89	743.96	743.72	742.38
6/23/2010	745.48	744.22	746.35	745.93	742.38
9/15/2010	744.31	743.32	744.47	744.37	742.38
12/8/2010	743.49	742.89	743.96	743.72	742.38
3/23/2011	746.16	744.85	746.47	746.5	742.38
6/21/2011	744.85	743.53	744.52	744.53	742.38
9/22/2012	743.35	742.6	743.54	743.53	742.38
3/8/2012	745.66	744.75	745.53	745.56	742.38
6/27/2012	745.85	744.85	745.71	745.68	742.38
3/28/2013	745.79	744.48	745.72	745.69	742.38
6/6/2013	744.16	743.46	744.05	744	742.38
9/26/2013	744.15	743.12	744.1	744.08	742.38
11/1/2013	743.84	742.8	743.82	743.75	742.38
12/17/2013	743.68	742.71	743.73	743.64	742.38
9/19/2014	743.77	743.16	744.17	744.02	742.38
12/10/2014	743.88	743.28	744.22	744.1	742.38
6/25/2015	744.69	743.81	744.79	744.63	742.38
12/3/2015	744.68	744.05	745.39	745.24	742.38
6/16/2016	744.13	743.62	744.67	744.67	742.38
12/20/2016	744.05	743.32	744.28	744.15	742.38

Note:

1. A water level was unable to be collected from MW-1 during the 1Q08 monitoring event.

SADOFF IRON AND METAL COMPANY
CUTTING OIL INVESTIGATION

TABLE 2 - Historical Dissolved Metals Analysis (micrograms per liter)
MW-1

Parameter	NR 140 ES	NR 140 PAL	9/24/2009	12/22/2009	3/11/2010	6/23/2010	9/15/2010	12/9/2010	3/24/2011	6/21/2011	9/22/2011
Aluminum	N/A	N/A	-	-	Well Could Not Be Sampled	-	-	-	-	-	-
Arsenic	10	1	9.5J	7.9J		**15.7J**	1.6J	9.4J	7.2J	10.0J	4.5J
Barium	2000	400	81.9	14.2		25	112	121	304	17.9	18.3
Cadmium	5	0.5	-	-		-	-	-	-	-	-
Chromium	100	10	<0.39	0.80J		<0.5	0.69J	<0.50	0.62J	0.58J	<0.44
Copper	1300	130	11.4	73.4		2.4J	-	-	-	-	-
Iron	300	150	**10,100**	**16,800**		**12,000**	**2,240**	**2,310**	**1,000**	**9,550**	**2,000**
Lead	15	1.5	2.8J	3.3J		<1.7	2.1J	1.8J	5.5J	2.7J	3.6J
Mercury	2	0.2	1.9J	1.8J		<0.2	-	-	-	-	-
Nickel	100	20	**146**	**135**		82.7	**114**	**130**	**113**	**112**	**107**

NOTES:

15 = A value in **Bold** is an exceedance of the Enforcement Standard (ES)

1.6 = A value underlined is an exceedances of the Preventative Action Limit (PAL) but below the ES

C = Elevated Detection Limit

N= Spiked sample recovery not within control limits

Q = The analyte was detected between the limit of detection (LOD) and the limit of quantitation (LOQ). The results are qualified due to the uncertainty of analyte concentrations within this range.

N/A = PAL and ES are not established for substance

J= Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

Hyphen (-) = not analyzed for identified parameter

SADOFF IRON AND METAL COMPANY
CUTTING OIL INVESTIGATION

TABLE 2 - Historical Dissolved Metals Analysis (micrograms per liter)
MW-2

Parameter	NR 140 ES	NR 140 PAL	9/24/2009	12/22/2009	3/11/2010	6/23/2010	9/16/2010	12/9/2010	3/23/2011	6/21/2011	9/22/2011
Aluminum	N/A	N/A	-	-	-	-	-	-	-	-	-
Arsenic	10	1	3.7J	6.5J	4.4J	8.9J	**19.0J**	5.8J	3.9J	3.8J	4.7J
Barium	2000	400	450	412	266	240	361	258	335	197	260
Cadmium	5	0.5	-		-	-	-	-	-	-	-
Chromium	100	10	0.72J	0.39J	0.73J	<0.5	<0.50	<0.50	<0.50	0.55J	<0.44
Copper	1300	130	-	-	-	-	-	-	-	-	-
Iron	300	150	**1,760**	**2,400**	**803**	**1,260**	**624**	**666**	**335**	**685**	**754**
Lead	15	1.5	4.4J	1.9J	1.7J	<1.7	2.1J	<1.7	2.0J	<2.4	2.6J
Mercury	2	0.2	-	-	-	-	-	-	-	-	-
Nickel	100	20	83.9	75.4	55	27.8	48.2	54.7	33.4	32	61.5

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SADOFF IRON AND METAL COMPANY
CUTTING OIL INVESTIGATION

TABLE 2 - Historical Dissolved Metals Analysis (micrograms per liter)
MW-3

Parameter	NR 140 ES	NR 140 PAL	9/24/2009	12/22/2009	3/11/2010	6/23/2010	9/15/2010	12/9/2010	3/23/2011	6/21/2011	9/22/2011
Aluminum	N/A	N/A	-	-	-	-	-	-	-	-	-
Arsenic	10	1	6.8J	8.0J	5.2J	**17.9J**	**23.3**	6.6J	5.9J	9.2J	6.8J
Barium	2000	400	301	353	244	247	365	234	354	188	289
Cadmium	5	0.5	-	-	-	-	-	-	-	-	-
Chromium	100	10	1.0J	0.78J	1.1J	0.71J	0.92J	0.69J	<0.5	1.1J	0.94J
Copper	1300	130	-	-	-	-	-	-	-	-	-
Iron	300	150	**2,300**	**9,570**	**2,870**	**1,730**	**1,640**	**1,550**	**1,200**	**1,550**	**2,260**
Lead	15	1.5	3.4J	3.2J	2.6J	<1.7	<1.7	2.6J	1.9J	<2.4	3.5J
Mercury	2	0.2	-	-	-	-	-	-	-	-	-
Nickel	100	20	**119**	84.5	78.3	73.4	82.1	80	60.1	93.8	**117**

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Q = The analyte was detected between the limit of detection (LOD) and the limit of quantitation (LOQ). The results are qualified due to the uncertainty of analyte concentrations within this range.

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SADOFF IRON AND METAL COMPANY
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TABLE 2 - Historical Dissolved Metals Analysis (micrograms per liter)
MW-4

Parameter	NR 140 ES	NR 140 PAL	9/24/2009	12/22/2009	3/11/2010	6/23/2010	9/15/2010	12/9/2010	3/23/2011	6/21/2011	9/22/2011
Aluminum	N/A	N/A	-	-	-	-	-	-	-	-	-
Arsenic	10	1	4.6J	5.5J	6.5J	**15.5J**	**20.8**	6.4J	6.3J	6.6J	6.0J
Barium	2000	400	376	405	371	370	437	304	465	262	355
Cadmium	5	0.5	-	-	-	-	-	-	-	-	-
Chromium	100	10	0.95J	0.74J	1.3J	0.83J	0.67J	0.87J	0.67J	1.2J	0.76
Copper	1300	130	-	-	-	-	-	-	-	-	-
Iron	300	150	**1,770**	**1,640**	**5,730**	**1,680**	**1,680**	**1,640**	**1,410**	**1,370**	**1,660**
Lead	15	1.5	4.8J	2.2J	2.4J	<1.7	<1.7	2.1J	2.4J	<2.4	2.7J
Mercury	2	0.2	-	-	-	-	-	-	-	-	-
Nickel	100	20	**155**	**178**	**151**	**164**	**158**	**186**	**142**	**146**	**181**

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TABLE 2 - Historical Dissolved Metals Analysis (micrograms per liter)
SUMP

Parameter	NR 140 ES	NR 140 PAL	9/24/2009	12/22/2009	3/11/2010	6/23/2010	9/15/2010	12/9/2010	3/23/2011	6/21/2011	9/22/2011
Aluminum	N/A	N/A	-	-	-	-	-	-	-	-	-
Arsenic	10	1	7.6J	8.3J	<1.9	7.0J	**15.0J**	**11.6J**	**13.1J**	**45.8J**	5.1J
Barium	2000	400	292	92	72.9	163	220	188	228	275	64.4
Cadmium	5	0.5	-	-	-	-	-	-	-	-	-
Chromium	100	10	0.92J	0.99J	0.65J	<0.5	0.59J	<0.50	9.0J	9.6J	<0.44
Copper	1300	130	5.4J	-	17.1	2.7J	**-**	**-**	**-**	-	**-**
Iron	300	150	**8,470**	**6,190**	**14,800**	**10,700**	**3,230**	**1,790**	**16,000**	**34,100**	**3,330**
Lead	15	1.5	3.1J	3.0J	1.7J	<1.7	<1.7	2.0J	**45**	**99.6**	3.8J
Mercury	2	0.2	-	-	-	-	-	-	-	-	-
Nickel	100	20	53.3	53.3	19.8	20.6	**121**	41.1	54.8	**131**	33.1

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CUTTING OIL INVESTIGATION - BRRTS #02-20-543060
SADOFF IRON AND METAL COMPANY
Fond du Lac, Wisconsin

TABLE 3 - Volatile Organic Compound Analysis (µg/L)
MW-1

	NR 140 ES	NR140 PAL	9/24/2009	12/18/2009	3/11/2010	6/23/2010	9/15/2010	12/9/2010	3/23/2011	6/21/2011	9/22/2011	3/8/2012	6/27/2012
Acetone	9,000	1,800	**9,110**	5,890	Well Could Not Be Sampled	1,390	1,920	2,820	162J	975	1,620	1,230	571
Benzene	5	0.5	**<41.0**	**<41.0**		<4.1	**<10.2**	**<8.2**	**<10.2**	<4.1	<4.1	-	-
2-Butanone (MEK)	4,000	800	<430	<430		65.0J	<108	<86.0	<108	<43.0	<43.0	-	-
cis-1,2-Dichloroethene	70	7	**<83.0**	**<83.0**		<8.3	<20.8	<16.6	<20.8	<8.3	<8.3	-	-
Ethylbenzene	700	140	<54.0	<54.0		<5.4	<13.5	<10.8	<13.5	<5.4	<5.4	-	-
Isopropylbenzene	N/A	N/A	<59.0	<59.0		<5.9	<14.8	<11.8	<14.8	<5.9	<5.9	-	-
Methyl-tert-butyl ether	60	12	**<61.0**	**<61.0**		<6.1	<15.2	<12.2	<15.2	<6.1	<6.1	-	-
Naphthalene	100	10	<89.0	<89.0		<8.9	<22.2	<17.8	<22.2	<8.9	<8.9	-	-
n-Propylbenzene	N/A	N/A	<81.0	<81.0		<8.1	<20.2	<16.2	<16.8	<8.1	<8.1	-	-
Toluene	800	160	<67.0	<67.0		<6.7	<16.8	<13.4	<20.2	<6.7	<6.7	-	-
Trichloroethene	5	0.5	**<48.0**	**<48.0**		<4.5	**<12.0**	**<9.6**	**<12.0**	<4.8	<4.8	-	-
1,2,4-Trimethylbenzene	480	96	<97.0	<97.0		<9.9	<24.2	<19.4	<24.2	<9.7	<9.7	-	-
1,3,5-Trimethylbenzene			<83.0	<83.0		<9.7	<20.8	<16.6	<20.8	<8.3	<8.3	-	-
Vinyl Chloride	0.2	0.02	**<18.0**	**<18.0**		**<1.8**	**<4.5**	**<3.6**	**<4.5**	**<1.8**	**<1.8**	-	-
Xylene, m+p	2,000	400	<180	<180		<18.0	<45.0	<36.0	<45.0	<18.0	<18.0	-	-
Xylene, o			<83.0	<83.0		<8.3	<20.8	<16.6	<20.8	<8.3	<8.3	-	-

NOTES:

15 = A value in Bold is an exceedance of the most recent Enforcement Standard (ES)

1.6 = A value underlined is an exceedance of the most current Preventive Action Limit (PAL) but below the ES

J = The analyte was detected between the limit of detection (LOD) and the limit of quantitation (LOQ).
The results are qualified due to the uncertainty of analyte concentrations within this range.

N/A = PAL and ES are not established for substance

ES = NR 140 Wisconsin Administrative Code Enforcement Standard (Register January 2012 No. 673)

PAL = NR 140 Wisconsin Administrative Code Preventive Action Limit (Register January 2012 No. 673)

Hyphen (-) = not analyzed for identified parameter

CUTTING OIL INVESTIGATION - BRRTS #02-20-543060
SADOFF IRON AND METAL COMPANY
Fond du Lac, Wisconsin

			TABLE 3 - Volatile Organic Compound Analysis (µg/L) MW-1											
	NR 140 ES	NR140 PAL	3/28/2013	6/5/2013	9/26/2013	11/1/2013	12/17/2013	6/17/2014	9/19/2014	12/10/2014	6/25/2015	12/3/2015	6/16/2016	12/20/2016
Acetone	9,000	1,800	9.1J	<2.6	5,840	3,500	478J	<3.0	59.6	149	41.9	65.8	6.5J	39.8J
Benzene	5	0.5	-	-	**<100**	**<50.0**	**<12.5**	-	-	-	-	-	-	-
2-Butanone (MEK)	4,000	800	-	-	**18,700**	**10,700**	1060	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	70	7	-	-	**<83.8**	<29	<10.5	-	-	-	-	-	-	-
Ethylbenzene	700	140	-	-	<100	<50	<12.5	-	-	-	-	-	-	-
Isopropylbenzene	N/A	N/A	-	-	<68.2	<34.1	<8.5	-	-	-	-	-	-	-
Methyl-tert-butyl ether	60	12	-	-	**<98.7**	<49.4	<12.3	-	-	-	-	-	-	-
Naphthalene	100	10	-	-	**<500**	**<250**	<62.5	-	-	-	-	-	-	-
n-Propylbenzene	N/A	N/A	-	-	<100	<50	<12.5	-	-	-	-	-	-	-
Toluene	800	160	-	-	<87.7	<43.9	<11.0	-	-	-	-	-	-	-
Trichloroethene	5	0.5	-	-	**<72.8**	**<36.4**	**<9.1**	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	480	96	-	-	<100	<50	<12.5	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene			-	-	<100	<50	<12.5	-	-	-	-	-	-	-
Vinyl Chloride	0.2	0.02	-	-	**<37.0**	**<18.5**	**<4.6**	-	-	-	-	-	-	-
Xylene, m+p	2,000	400	-	-	<163	<81.7	<20.4	-	-	-	-	-	-	-
Xylene, o			-	-	<100	<50	<12.5	-	-	-	-	-	-	-

NOTES:

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CUTTING OIL INVESTIGATION - BRRTS #02-20-543060
SADOFF IRON AND METAL COMPANY
Fond du Lac, Wisconsin

TABLE 3 - Volatile Organic Compound Analysis (μg/L)
MW-2

	NR 140 ES	NR140 PAL	6/22/2009	9/24/2009	12/18/2009	3/11/2010	6/23/2010	9/15/2010	12/9/2010	3/23/2011	6/21/2011	9/22/2011
Acetone	9,000	1,800	14.1J	28.4J	98	8.2J	18.2J	31	31	7.5J	<5.0	26.8
Benzene	5	0.5	1.6	3.7	2.9	0.63J	1.8	1.9	2.1	0.89J	0.84J	1.9
2-Butanone (MEK)	4,000	800	<4.3	<4.3	5.8J	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
cis-1,2-Dichloroethene	70	7	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.20	<0.83
Ethylbenzene	700	140	0.90J	1.5	0.99J	0.63J	0.66J	<0.54	<0.54	<0.54	<0.54	<0.54
Isopropylbenzene	N/A	N/A	0.70J	1.4	0.83J	0.69J	0.60J	0.69J	1	<0.59	<0.59	<0.81J
Methyl-tert-butyl ether	60	12	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
Naphthalene	100	10	<0.89	1.0J	<0.89	<0.89	<0.89	<0.89	<0.89	<0.89	<0.89	<0.89
n-Propylbenzene	N/A	N/A	0.87J	1.7	0.93J	0.88J	0.86J	0.96J	1.4	<0.81	<0.81	1
Tetrachloroethene	5	0.5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Toluene	800	160	1.2	6.8	3.8	<0.67	1.9	1.3	1.5	<0.67	<0.67	0.68J
Trichloroethene	5	0.5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
1,2,4-Trimethylbenzene	480	96	7.4	15.2	8.3	2	5	2.7	3.2	<0.97	<0.97	1.2
1,3,5-Trimethylbenzene			<0.83	1.1	<0.083	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83
Vinyl Chloride	0.2	0.02	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylene, m+p	2,000	400	<1.8	2.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Xylene, o			2.4	5.4	3.6	1.2	2.7	3.3	3.9	1.2	1.4	2

NOTES:

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The results are qualified due to the uncertainty of analyte concentrations within this range.

N/A = PAL and ES are not established for substance

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Hyphen (-) = not analyzed for identified parameter

CUTTING OIL INVESTIGATION - BRRTS #02-20-543060
SADOFF IRON AND METAL COMPANY
Fond du Lac, Wisconsin

TABLE 3 - Volatile Organic Compound Analysis (µg/L)
MW-3

	NR 140 ES	NR140 PAL	6/22/2009	9/24/2009	12/18/2009	3/11/2010	6/24/2010	9/15/2010	12/9/2010	3/23/2011	6/21/2011	9/22/2011
Acetone	9,000	1,800	98	65	61	33	76	75	50	21	65.8	135
Benzene	5	0.5	**5.6**	**7.5**	3.7	3.4	**7.5**	**7.1**	4.7	3.4	**6**	3.7
2-Butanone (MEK)	4,000	800	11.7J	8.8J	6.0J	<4.3	8.0J	6.4J	5.3J	<4.3	<4.3	6.5J
cis-1,2-Dichloroethene	70	7	<0.83	<0.83	<0.83	<0.83	<0.083	<0.83	<0.83	<0.83	<0.83	<0.83
Ethylbenzene	700	140	1.2	2.4	1.8	1.9	2.1	1.8	1.8	1.6	2	1.4
Isopropylbenzene	N/A	N/A	<0.59	<0.59	<0.59	<0.59	0.59J	<0.59	<0.59	<0.59	<0.59	<0.59
Methyl-tert-butyl ether	60	12	1.2	1.4	0.96J	1	<0.61	0.74J	0.85J	<0.61	0.73J	0.83J
Naphthalene	100	10	1.4J	2.9J	2.5J	2.1J	3.4J	1.8J	2.3J	1.9J	2.2J	1.7J
n-Propylbenzene	N/A	N/A	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81
Toluene	800	160	8.6	14.3	9.2	8	12	11.6	9.7	6.1	10.2	7.3
Trichloroethene	5	0.5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
1,2,4-Trimethylbenzene	480	96	3.3	6.2	4.9	4.7	6.9	5.2	5.5	5	6.1	4.1
1,3,5-Trimethylbenzene			<0.85J	1.7	1.4	1.2	1.7	1.3	1.4	1.4	1.6	1.1
Vinyl Chloride	0.2	0.02	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylene, m+p	2,000	400	4.2	8.8	6.1	5.9	7	6.1	6.3	4.9	6.8	4.5
Xylene, o			3.4	5.7	4.7	4.4	5.2	4.9	4.8	3.9	4.7	4

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CUTTING OIL INVESTIGATION - BRRTS #02-20-543060
SADOFF IRON AND METAL COMPANY
Fond du Lac, Wisconsin

TABLE 3 - Volatile Organic Compound Analysis (µg/L)
MW-4

	NR 140 ES	NR140 PAL	6/22/2009	9/24/2009	12/18/2009	3/11/2010	6/24/2010	9/15/2010	12/9/2010	3/23/2011	6/21/2011	9/22/2011
Acetone	9,000	1,800	28	207	108	38	52	94	193	84	89.3	62.9
Benzene	5	0.5	1.8	3.8	3.1	2.1	2.5	3.4	3.3	3.3	3.2	2.8
2-Butanone (MEK)	4,000	800	6.1J	<4.3	7.9J	<4.3	<4.3	4.6J	8.4J	<4.3	<4.3	<4.3
cis-1,2-Dichloroethene	70	7	3.4	2	1.5	2.1	2.3	1.6	2.3	1.3	1.3	2.1
Ethylbenzene	700	140	0.71J	1.7	1.4	1	1	1.2	1.7	1.3	1.1	1.3
Isopropylbenzene	N/A	N/A	<0.59	0.59J	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
Methyl-tert-butyl ether	60	12	<0.61	0.72J	0.68J	<0.61	<0.61	0.68J	<0.61	<0.61	<0.61	<0.61
Naphthalene	100	10	<0.89	1.6J	1.3J	<0.89	<0.89	<0.89	1.3J	0.91J	1.0J	1.2J
n-Propylbenzene	N/A	N/A	<0.81	0.83J	<0.81	<0.81	<0.81	<0.81	0.81J	<0.81	<0.81	<0.81
Toluene	800	160	3.6	22.8	15.9	4.1	7.3	15.6	13	16	13.9	9.3
Trichloroethene	5	0.5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
1,2,4-Trimethylbenzene	480	96	2.9	8.7	6.7	3.6	5.3	6.5	8.6	6.2	6.4	6.7
1,3,5-Trimethylbenzene			<0.83	2.3	1.8	1	1.3	1.5	2	1.5	1.5	1.5
Vinyl Chloride	0.2	0.02	<0.18	**0.70J**	**0.44J**	**<0.48J**	**0.52J**	<0.18	**0.59J**	<0.18	**0.56J**	**0.35J**
Xylene, m+p	2,000	400	<1.8	4.9	3.8	<1.8	2	2.9	3.7	3.2	2.9	2.9
Xylene, o			1.9	5.4	4.3	2.8	3.2	4.2	5.2	3.7	3.7	3.8

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CUTTING OIL INVESTIGATION - BRRTS #02-20-543060
SADOFF IRON AND METAL COMPANY
Fond du Lac, Wisconsin

TABLE 3 - Volatile Organic Compound Analysis (µg/L)
SUMP

	NR 140 ES	NR140 PAL	9/24/2009	12/18/2009	3/11/2010	6/23/2010	9/15/2010	12/9/2010	3/23/2011	6/21/2011	9/22/2011	3/8/2012	6/27/2012
Acetone	9,000	1,800	1,440	1,910	379	297	209	335	735	1,060	170	6,560	4,530
Benzene	5	0.5	<2.0	**<8.2**	<2.0	<2.0	<2.0	<2.0	<2.0	**<8.2**	<2.0	-	-
2-Butanone (MEK)	4,000	800	97.2J	190J	27.5J	<21.5	<21.5	45.8	50.4J	<86.0	<21.5	-	-
cis-1,2-Dichloroethene	70	7	<4.2	<16.6	<4.2	<4.2	<4.2	<4.2	<4.2	<16.6	<4.2	-	-
Ethylbenzene	700	140	<2.7	<10.8	<2.7	<2.7	<2.7	<2.7	<2.7	<10.8	<2.7	-	-
Isopropylbenzene	N/A	N/A	<3.0	<11.8	<3.0	<3.0	<3.0	<3.0	<3.0	<11.8	<3.0	-	-
Methyl-tert-butyl ether	60	12	<3.0	<12.2	<3.0	<3.0	<3.0	<3.0	<3.0	<12.2	<3.0	-	-
Naphthalene	100	10	<4.4	<17.8	<4.4	<4.4	<4.4	<4.4	<4.4	<17.8	<4.4	-	-
n-Propylbenzene	N/A	N/A	<4.0	<16.2	<4.0	<4.0	<4.0	<4.0	<4.0	<16.2	<4.0	-	-
Toluene	800	160	<3.4	<13.4	6.4	<3.4	5.2	<3.4	4.1J	<13.4	<3.4	-	-
Trichloroethene	5	0.5	<2.4	**<9.6**	<2.4	<2.4	<2.4	<2.4	<2.4	**<9.6**	<2.4	-	-
1,2,4-Trimethylbenzene	480	96	<4.8	<19.4	5.1	<4.8	<4.8	<4.8	11.5	30.8	<4.8	-	-
1,3,5-Trimethylbenzene			<4.2	<16.6	<4.2	<4.2	<4.2	<4.2	<4.2	<16.6	<4.2	-	-
Vinyl Chloride	0.2	0.02	**<0.9**	**<3.6**	**<0.9**	**<0.9**	**<0.9**	**<0.9**	**<0.9**	**<3.6**	**<0.9**	-	-
Xylene, m+p	2,000	400	<9.0	<36.0	<9.0	<9.0	<9.0	<9.0	<9.0	<36.0	<9.0	-	-
Xylene, o			<4.2	<16.6	<4.2	<4.2	<4.2	<4.2	<4.2	<16.6	<4.2	-	-

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CUTTING OIL INVESTIGATION - BRRTS #02-20-543060
SADOFF IRON AND METAL COMPANY
Fond du Lac, Wisconsin

TABLE 3 - Volatile Organic Compound Analysis (µg/L)
SUMP

	NR 140 ES	NR140 PAL	3/28/2013	6/5/2013	9/26/2013	11/1/2013	12/17/2013	6/17/2014	9/19/2014	12/10/2014	6/25/2015	12/3/2015	6/16/2016	12/20/2016
Acetone	9,000	1,800	2,170	<2.6	1,380	4,070	2,260	<3.0	2,160	609	1,730	1,090	309	28.8J
Benzene	5	0.5	-	-	<5.0	**<25**	**<12.5**	-	-	-	-	-	-	-
2-Butanone (MEK)	4,000	800	-	-	<27	<135	<67.5	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	70	7	-	-	<4.2	<14.5	<10.5	-	-	-	-	-	-	-
Ethylbenzene	700	140	-	-	<5.0	<25	<12.5	-	-	-	-	-	-	-
Isopropylbenzene	N/A	N/A	-	-	<3.4	<17	<8.5	-	-	-	-	-	-	-
Methyl-tert-butyl ether	60	12	-	-	<4.9	<24.7	<12.3	-	-	-	-	-	-	-
Naphthalene	100	10	-	-	<25.0	**<125**	<62.5	-	-	-	-	-	-	-
n-Propylbenzene	N/A	N/A	-	-	<5.0	<25	<12.5	-	-	-	-	-	-	-
Toluene	800	160	-	-	<4.4	<21.9	<11.0	-	-	-	-	-	-	-
Trichloroethene	5	0.5	-	-	<3.6	**<18.2**	**<9.1**	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	480	96	-	-	<5.0	<25	<12.5	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene			-	-	<5.0	<25	<12.5	-	-	-	-	-	-	-
Vinyl Chloride	0.2	0.02	-	-	**<1.8**	**<9.2**	**<4.6**	-	-	-	-	-	-	-
Xylene, m+p	2,000	400	-	-	<8.2	<40.9	<20.4	-	-	-	-	-	-	-
Xylene, o			-	-	<5.0	<25	<12.5	-	-	-	-	-	-	-

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SADOFF IRON AND METAL COMPANY
CUTTING OIL INVESTIGATION

TABLE 4 - Semi-Volatile Organic Compound Analysis (ug/L)
MW-1

	NR 140 ES	NR140 PAL	6/22/2009	9/24/2009	12/18/2009	3/11/2010	6/23/2010	9/15/2010	12/9/2010	3/23/2011	9/26/2013
Acenaphthene	N/A	N/A	<6.0	<1.4	<0.91	Well Could Not Be Sampled	<0.91	<0.91	<0.45	<1.8	<0.29
Acenaphthylene	N/A	N/A	<4.8	<1.1	<0.72		<0.72	<0.72	0.50J	<1.4	6.4
Anthracene	3000	600	<7.6	<1.8	<1.1		<1.1	<1.1	<0.57	<2.3	0.56J
Benzo(a)anthracene	N/A	N/A	<4.8	<1.2	<0.72		<0.72	<0.72	<0.36	<1.4	<0.29
Benzo(b)fluoranthene	0.2	0.02	**<4.5**	**<1.1**	**<0.68**		**<0.68**	**<0.68**	**<0.34**	**<1.4**	**<0.37**
Benzo(ghi)perylene	N/A	N/A	<6.4	<1.5	<0.96		<0.96	<0.96	<0.48	<1.9	<0.40
Chrysene	0.2	0.02	**<4.6**	**<1.1**	**<0.70**		**<0.70**	**<0.70**	**<0.35**	**<1.4**	**<0.33**
Fluoranthene	400	80	<5.8	<1.4	<0.88		<0.88	<0.88	<0.44	<1.8	<0.26
Fluorene	400	80	<6.3	<1.5	<0.95		<0.95	<0.95	<0.48	<1.9	1.5J
1-Methylnaphthalene	N/A	N/A	<6.6	<1.6	<1.0		<1.0	2.3J	<0.50	<2.0	<0.31
2-Methylnaphthalene	N/A	N/A	2,730	2,210	135		15.4	20.3	86.2	60.7	2.5
Naphthalene	100	10	<6.4	<1.5	<0.97		1.6J	2.0J	0.83J	4.6J	0.76J
Phenanthrene	N/A	N/A	<10.7	<2.6	<1.6		<1.6	<1.6	<0.81	<3.2	0.66J
Pyrene	250	50	<6.3	<1.5	<0.95		<0.95	<0.95	0.47	<1.9	0.48J

NOTES:

15 = A value in **Bold** is an exceedance of the most recent NR 140 Wisconsin Administrative Code (NR 140) Enforcement Standard (ES)

1.6 = A value underlined is an exceedance of the most recent NR 140 Preventive Action Limit (PAL) but below the ES

K = Detection may be elevated due to the presence of a non-requested analyte

Q = The analyte was detected between the limit of detection (LOD) and the limit of quantitation (LOQ).

The results are qualified due to the uncertainty of analyte concentrations within this range.

Z = This compound was separated in the check standard but it did not meet the resolution criteria as set forth in SW846

N/A = PAL and ES are not established for substance

* = Precision not within control limits

J=Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

ES = NR 140 Wisconsin Administrative Code Enforcement Standard (Register January 2012 No. 673)

PAL = NR 140 Wisconsin Administrative Code Preventive Action Limit (Register January 2012 No. 673)

SADOFF IRON AND METAL COMPANY
CUTTING OIL INVESTIGATION

TABLE 4 - Semi-Volatile Organic Compound Analysis (ug/L)
SUMP

	NR 140 ES	NR140 PAL	6/22/2009	9/24/2009	12/18/2009	3/11/2010	6/23/2010	9/15/2010	12/9/2010	3/23/2011	9/26/2013
Acenaphthene	N/A	N/A	<6.4	<0.72	2.5J	<3.6	0.6J	<4.5	<0.36	<1.9	<0.29
Acenaphthylene	N/A	N/A	6.3J	<0.57	<0.90	<2.9	1.1J	5.7J	0.52J	<1.5	6.9
Anthracene	3000	600	<8.1	<0.91	4.7J	5.8J	2.0J	10.9J	0.94J	<2.5	<2.8
Benzo(a)anthracene	N/A	N/A	<5.1	0.66J	4.4J	4.4J	1.7J	11.8J	0.91J	<1.6	<2.9
Benzo(a)pyrene	N/A	N/A	<4.0	<0.45	3.3J	3.2J	1.4J	7.0J	0.76J	<1.2	<0.47
Benzo(b)fluoranthene	0.2	0.02	**<4.8**	**0.63J**	**5.1J**	**3.2J**	**1.9J**	**10.8J**	**0.68J**	**<1.5**	**<0.37**
Benzo(ghi)perylene	N/A	N/A	<6.8	<0.76	3.3J	4.0J	1.9J	10.7J	<0.38	<2.1	<0.40
Benzo(k)fluoranthene	N/A	N/A	<6.2	<0.69	4.9J	<3.5	1.4J	10.8J	0.49J	<1.9	<0.51
Chrysene	0.2	0.02	**<4.9**	**0.80J**	**6.7J**	**6.4J**	**2.5J**	**17.7J**	**1.1J**	**<1.5**	**<0.36**
Dibenz(a,h)anthracene	N/A	N/A	<4.5	<0.51	<0.80	<2.5	0.36J	<3.2	<0.26	<1.4	<0.33
Fluoranthene	400	80	<6.2	1.3J	7.0J	10J	3.1J	18.6J	1.0J	2.1J	<0.26
Fluorene	400	80	<6.7	<0.76	2.7J	8.0J	2.0J	14.6J	0.88J	<2.0	<0.32
Indeno(1,2,3-cd)pyrene	N/A	N/A	<6.6	<0.74	1.7J	<3.7	1.0J	<4.7	<0.37	<2.0	<0.42
1-Methylnaphthalene	N/A	N/A	<7.1	<0.80	17.5	8.5J	3.1J	20.8J	<0.4	7.3J	1.6J
2-Methylnaphthalene	N/A	N/A	414	17.7	59.8	35.3J	8	50.1J	4.1	67.2	6.1
Naphthalene	100	10	<6.8	<0.77	2.8J	4.2J	2.3J	90.0J	<0.39	5.5J	<0.23
Phenanthrene	N/A	N/A	<11.4	<1.3	5.6J	9.8J	2.9J	20.5J	1.8J	3.5J	<0.25
Pyrene	250	50	<6.7	1.2J	8.7J	9.9J	3.2J	26.3J	2.4J	<2.0	<0.26

NOTES:

15 = A value in **Bold** is an exceedance of the most recent NR 140 Wisconsin Administrative Code (NR 140) Enforcement Standard (ES)

1.6 = A value underlined is an exceedance of the most recent NR 140 Preventive Action Limit (PAL) but below the ES

K = Detection may be elevated due to the presence of a non-requested analyte

Q = The analyte was detected between the limit of detection (LOD) and the limit of quantitation (LOQ).

The results are qualified due to the uncertainty of analyte concentrations within this range.

Z = This compound was separated in the check standard but it did not meet the resolution criteria as set forth in SW846

N/A = PAL and ES are not established for substance

* = Precision not within control limits

J=Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

ES = NR 140 Wisconsin Administrative Code Enforcement Standard (Register January 2012 No. 673)

PAL = NR 140 Wisconsin Administrative Code Preventive Action Limit (Register January 2012 No. 673)

Appendix A: Field Notes

SITE NAME Sadoff FDL-Cutting Oil Release

DATE BAILED 12-20-16

DATE SAMPLED '12-20-16

BY: BLB

METER	True / Actual	True / Actual
PH	/	4.00 /
COND	0 /	1413 /

JOB #

WELL# DNR #	PVC ELEV.	BOTTOM DEPTH	WATER DEPTH	WATER ELEV.	GALLONS BAILED	PH	COND	TEMP °C	ODOR	COLOR	TURBID
MW-1	751.07	13.50	7.02	744.05	3.0				cutting oil	grey	Yes
MW-2	750.84	13.40	7.52	743.32							
MW-3	750.81	15.50	6.53	744.28							
MW-4	750.70	15.40	6.55	744.15							
GREEN SUMP	756.51	14.13	11.28		N/A				slight	lt pink	slight
DUP (MW-)											
FIELD BLANK									n	n	n
TRIP BLANK									n	n	n

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

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CHAIN OF CUSTODY

COC No.

*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

(Please Print Clearly)	
Company Name:	Brown & Caldwell
Branch/Location:	Milwaukee
Project Contact:	Marnie Rand
Phone:	(414) 203-2917
Project Number:	
Project Name:	Cutting Oil Wells
Project State:	WI
Sampled By (Print):	Ben Belle
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Marnie Rand
Mail To Company:	Brown & Caldwell
Mail To Address:	250 E Wisconsin Ave Milwaukee, WI 53202
Invoice To Contact:	David Borsuk
Invoice To Company:	Sadoff Iron & Metal Company
Invoice To Address:	240 West Arndt Street P.O. Box 1138 Fond Du Lac, WI 54937
Invoice To Phone:	(920) 487-3648

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 DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) PRESERVATION (CODE)* Y / N	Pick Letter	Analyses Requested: Acetone 8260	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	MW-1	12-20-16	1045	GW	N	B	X			
	MW-2		1010	GW				Static Water Level only		
	MW-3		1020	GW				Static Water Level only		
	MW-4		1030	GW				Static Water Level only		
	Sump		915	GW			X			
	Field Blank		1150	W			X			
	Trip Blank		1020	W			X			

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

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

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

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

Relinquished By:	Date/Time:	Received By:	Date/Time:
	12-21-16 / 650		12-21-16 0830
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No.

Receipt Temp = °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

Appendix B: Laboratory Data Sheets

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

December 27, 2016

Marnie Rand
Brown & Caldwell
250 E Wisconsin Ave
Milwaukee, WI 53202

RE: Project: CUTTING OIL WELLS
Pace Project No.: 40143720

Dear Marnie Rand:
Enclosed are the analytical results for sample(s) received by the laboratory on December 21, 2016. 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,

Christopher Hyska

Christopher Hyska
christopher.hyska@pacelabs.com
Project Manager

Enclosures

cc: Jim Bachhuber, Brown & Caldwell
David Borsuk, Sadoff Iron & Metal Company
Jennifer Overvoorde, Brown and Caldwell

REPORT OF LABORATORY ANALYSIS

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1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: CUTTING OIL WELLS
Pace Project No.: 40143720

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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(920)469-2436

SAMPLE SUMMARY

Project: CUTTING OIL WELLS
Pace Project No.: 40143720

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40143720001	**MW-1**	Water	12/20/16 10:45	12/21/16 09:20
40143720002	**SUMP**	Water	12/20/16 09:15	12/21/16 09:20
40143720003	**FIELD BLANK**	Water	12/20/16 11:50	12/21/16 09:20
40143720004	**TRIP BLANK**	Water	12/20/16 10:20	12/21/16 09:20

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SAMPLE ANALYTE COUNT

Project: CUTTING OIL WELLS
Pace Project No.: 40143720

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40143720001	**MW-1**	EPA 8260	LAP	4
40143720002	**SUMP**	EPA 8260	LAP	4
40143720003	**FIELD BLANK**	EPA 8260	LAP	4
40143720004	**TRIP BLANK**	EPA 8260	LAP	4

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ANALYTICAL RESULTS

Project: CUTTING OIL WELLS
Pace Project No.: 40143720

Sample: MW-1 **Lab ID: 40143720001** Collected: 12/20/16 10:45 Received: 12/21/16 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Acetone	**39.8J**	ug/L	40.0	5.9	2		12/22/16 15:38	67-64-1	
Surrogates									
4-Bromofluorobenzene (S)	92	%	70-130		2		12/22/16 15:38	460-00-4	D3
Dibromofluoromethane (S)	107	%	70-130		2		12/22/16 15:38	1868-53-7	
Toluene-d8 (S)	89	%	70-130		2		12/22/16 15:38	2037-26-5	

Sample: SUMP **Lab ID: 40143720002** Collected: 12/20/16 09:15 Received: 12/21/16 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Acetone	**28.8J**	ug/L	40.0	5.9	2		12/22/16 16:00	67-64-1	
Surrogates									
4-Bromofluorobenzene (S)	93	%	70-130		2		12/22/16 16:00	460-00-4	D3
Dibromofluoromethane (S)	102	%	70-130		2		12/22/16 16:00	1868-53-7	
Toluene-d8 (S)	93	%	70-130		2		12/22/16 16:00	2037-26-5	

Sample: FIELD BLANK **Lab ID: 40143720003** Collected: 12/20/16 11:50 Received: 12/21/16 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Acetone	**<3.0**	ug/L	20.0	3.0	1		12/22/16 14:08	67-64-1	
Surrogates									
4-Bromofluorobenzene (S)	93	%	70-130		1		12/22/16 14:08	460-00-4	
Dibromofluoromethane (S)	111	%	70-130		1		12/22/16 14:08	1868-53-7	
Toluene-d8 (S)	93	%	70-130		1		12/22/16 14:08	2037-26-5	

Sample: TRIP BLANK **Lab ID: 40143720004** Collected: 12/20/16 10:20 Received: 12/21/16 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Acetone	**<3.0**	ug/L	20.0	3.0	1		12/22/16 14:31	67-64-1	
Surrogates									
4-Bromofluorobenzene (S)	94	%	70-130		1		12/22/16 14:31	460-00-4	
Dibromofluoromethane (S)	111	%	70-130		1		12/22/16 14:31	1868-53-7	
Toluene-d8 (S)	92	%	70-130		1		12/22/16 14:31	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: CUTTING OIL WELLS
Pace Project No.: 40143720

QC Batch: 244846 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40143720001, 40143720002, 40143720003, 40143720004

METHOD BLANK: 1449442 Matrix: Water
Associated Lab Samples: 40143720001, 40143720002, 40143720003, 40143720004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acetone	ug/L	<3.0	20.0	12/22/16 10:59	
4-Bromofluorobenzene (S)	%	92	70-130	12/22/16 10:59	
Dibromofluoromethane (S)	%	101	70-130	12/22/16 10:59	
Toluene-d8 (S)	%	95	70-130	12/22/16 10:59	

LABORATORY CONTROL SAMPLE: 1449443

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			108	70-130	
Dibromofluoromethane (S)	%			106	70-130	
Toluene-d8 (S)	%			94	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1449905 1449906

Parameter	Units	40143725001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromofluorobenzene (S)	%						98	98	70-130			
Dibromofluoromethane (S)	%						103	98	70-130			
Toluene-d8 (S)	%						98	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: CUTTING OIL WELLS
Pace Project No.: 40143720

DEFINITIONS

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

ND - Not Detected at or above LOD.

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

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

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CUTTING OIL WELLS
Pace Project No.: 40143720

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40143720001	**MW-1**	EPA 8260	244846		
40143720002	**SUMP**	EPA 8260	244846		
40143720003	**FIELD BLANK**	EPA 8260	244846		
40143720004	**TRIP BLANK**	EPA 8260	244846		

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

Page 1 of 1

COC No. 40143720

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

(Please Print Clearly)	
Company Name:	Brown & Caldwell
Branch/Location:	Milwaukee
Project Contact:	Marnie Rand
Phone:	(414) 203-2917
Project Number:	
Project Name:	Cutting Oil Wells
Project State:	WI
Sampled By (Print):	Ben Belille
Sampled By (Sign):	
PO #:	**Regulatory Program:**

Quote #:	
Mail To Contact:	Marnie Rand
Mail To Company:	Brown & Caldwell
Mail To Address:	250 E Wisconsin Ave Milwaukee, WI 53202
Invoice To Contact:	David Borsuk
Invoice To Company:	Sadoff Iron & Metal Company
Invoice To Address:	240 West Arndt Street P.O. Box 1138 Fond Du Lac, WI 54937
Invoice To Phone:	(920) 487-3648

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

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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: Y/N	Pick Letter	Acetone 8260	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
									Profile #
001	MW-1	12-20-16	1045	GW		N	B	X	3-40mlVB
	MW-2		1010	GW					Static Water Level only
	MW-3		1020	GW					Static Water Level only
	MW-4		1030	GW					Static Water Level only
002	Sump		915	GW				X	
003	Field Blank		1150	W				X	
004	Trip Blank		1020	W				X	2-40mlVB

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

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

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

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

Relinquished By:	Date/Time:	Received By:	Date/Time:
	12-21-16 / 650	Melissa Venema Pace	12-21-16 0830
Melissa Venema Pace	12-21-16 0920	Susan K Wyka Pace	12-21-16 0920

PACE Project No. 40143720

Receipt Temp = ROT °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / (Not Present) Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

Sample Condition Upon Receipt

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

Pace Analytical™

Client Name: Brown + Caldwell Project #: **WO#: 40143720**

40143720

Courier: ☐ Fed Ex ☐ UPS ☐ Client ☑ Pace Other: _____

Tracking #: _____

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 N/A **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROT /Corr: **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp Blank Present: ☐ yes ☒ no

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

Person examining contents:
Date: 12-21-16
Initials: SCW

				Comments:
Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes	☐No		Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☑Yes	☐No	☐N/A	
-Pace IR Containers Used:	☐Yes	☐No	☑N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A	11.
Sample Labels match COC:	☑Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W				
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☐Yes	☐No	☑N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☐Yes	☐No	☑N/A	
exceptions: (VOA), coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☑Yes	☐No		Initial when completed / Lab Std #ID of preservative / Date/ Time:
Headspace in VOA Vials (>6mm):	☐Yes	☑No	☐N/A	14.
Trip Blank Present:	☑Yes	☐No	☐N/A	15.
Trip Blank Custody Seals Present	☑Yes	☐No	☐N/A	
Pace Trip Blank Lot # (if purchased): 372	12-21-16 SCW			

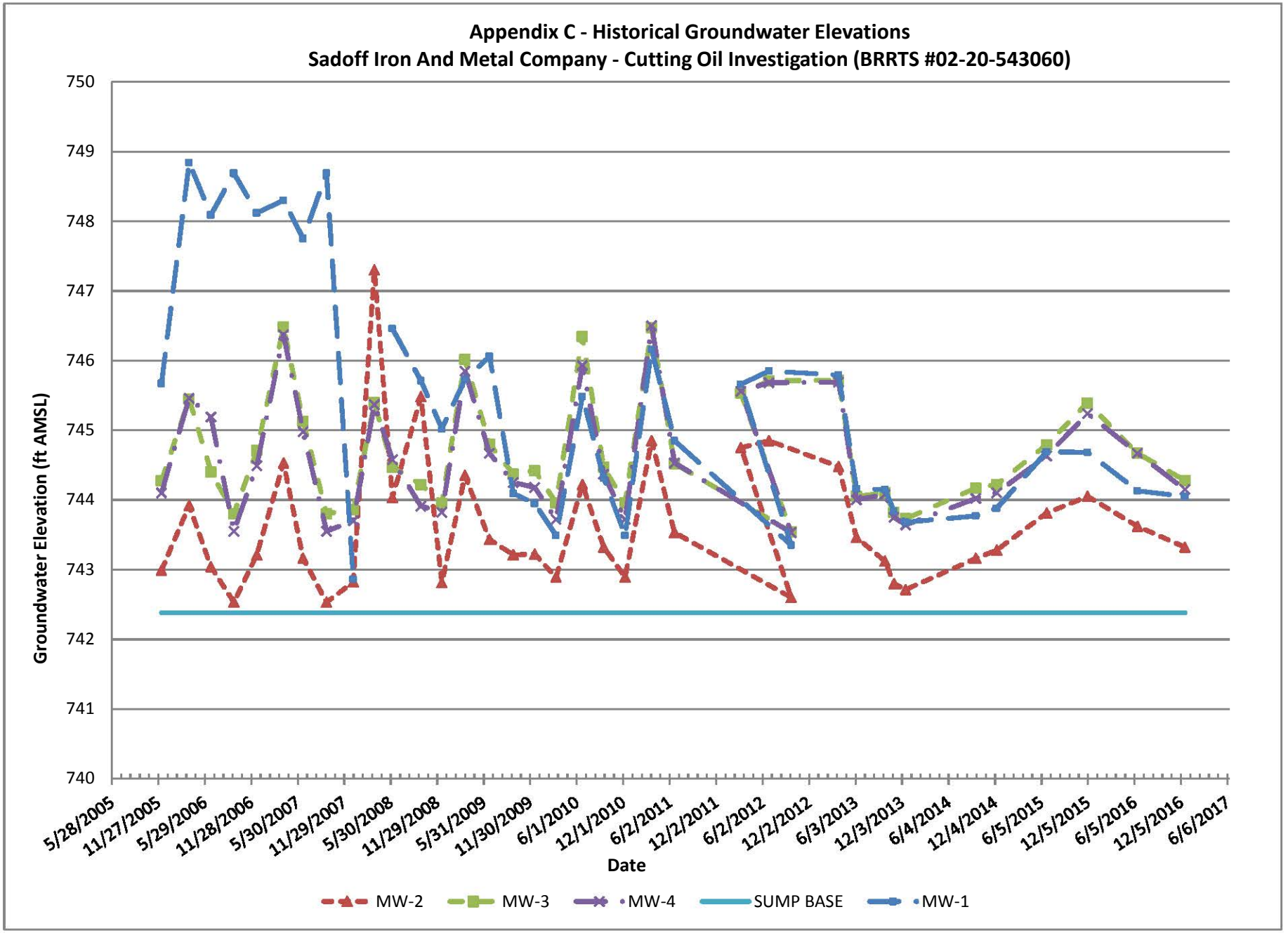
Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 12-21-16

Appendix C: Historical Groundwater Elements


Appendix C - Historical Groundwater Elevations
Sadoff Iron And Metal Company - Cutting Oil Investigation (BRRTS #02-20-543060)
Groundwater Elevation (ft AMSL)
750
749
748
747
746
745
744
743
742
741
740
5/28/2005
11/27/2005
5/29/2006
11/28/2006
5/30/2007
11/29/2007
5/30/2008
11/29/2008
5/31/2009
11/30/2009
6/1/2010
12/1/2010
6/2/2011
12/2/2011
6/2/2012
12/2/2012
6/3/2013
12/3/2013
6/4/2014
12/4/2014
6/5/2015
12/5/2015
6/5/2016
12/5/2016
6/6/2017
Date
MW-2
MW-3
MW-4
SUMP BASE
MW-1

Appendix D: January – December 2016 Pumping Records

CUTTING OIL INVESTIGATION - BRRTS #02-20-543060
SADOFF IRON AND METAL COMPANY
Fond du Lac, Wisconsin

Appendix D. January - December 2016 Pumping Records (gal)		
Date	MW-1	SUMP
4/20/2016	NR	3800
4/22/2016	NR	1300
4/26/2016	NR	4700
4/29/2016	NR	4075
5/3/2016	NR	3500
5/6/2016	NR	3400
5/10/2016	NR	3900
5/13/2016	NR	3400
5/17/2016	NR	2500
5/20/2016	NR	2800
5/24/2016	NR	1500
5/27/2016	NR	1474
6/3/2016	NR	5300
6/6/2016	NR	3461
6/8/2016	NR	3287
6/10/2016	NR	4521
6/15/2016	NR	2007
6/17/2016	NR	4346
6/21/2016	NR	1560
6/24/2016	NR	2744
7/15/2016	NR	4167
7/19/2016	NR	2811
7/22/2016	NR	2557
7/26/2016	NR	3295
7/29/2016	NR	1801
8/2/2016	NR	2515
8/5/2016	NR	1039

Note:

NR = Not Recorded

1. This spreadsheet is based on field data provided by Chief Industrial Services of Winneconne, WI, who pumps MW-1 and the Sump on behalf of Sadoff & Rudoy Industries.

2. No pumping was conducted during the first quarter (1Q) or fourth quarter (4Q) of 2016 due to freezing temperatures.

3. No pumping was conducted during most of August and all of September 2016 due to integrity testing of the cutting oil bins being conducted.