

# 2020 Annual Groundwater Monitoring and Corrective Action Report

Former JR Whiting Power Plant Pond 1&2 and Pond 6

Erie, Michigan

January 2021

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## 1.0 Program Summary

Coal Combustion Residuals (CCR) are regulated under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule) (USEPA, April 2015, as amended). Standards for groundwater monitoring and corrective action codified in the CCR Rule (40 CFR 257.90-98), apply to the Consumers Energy Company (Consumers Energy) Pond 1&2 and Pond 6 at the former JR Whiting (JRW) Power Plant Site. Pursuant to the CCR Rule, the owner or operator of a CCR unit must prepare an annual groundwater monitoring and corrective action report for the CCR unit documenting the status of groundwater monitoring and corrective action for the preceding year in accordance with §257.90(e). On behalf of Consumers Energy, TRC has prepared this Annual Groundwater Monitoring Report for JRW Pond 1&2 and Pond 6 to cover the period of January 1, 2020 to December 31, 2020. The reporting schedules for Pond 1&2 and Pond 6 have been aligned to be due no later than January 31 of each year.

This 2020 Pond 1&2 and Pond 6 Annual Report was prepared in accordance with the requirements of §257.90(e) and presents the monitoring results and the statistical evaluation of the detection monitoring constituents (Appendix III to Part 257 of the CCR Rule) for the April and October 2020 semiannual groundwater monitoring events for Pond 1&2 and Pond 6. As part of the statistical evaluation, the data collected during detection monitoring events are evaluated to identify statistically significant increases (SSIs) in detection monitoring constituents to determine if concentrations in detection monitoring well samples exceed background levels.

No SSIs over background limits were identified for any of the Appendix III constituents during the 2020 monitoring events. Pond 1&2 and Pond 6 remained in detection monitoring through the period covered by this report. As such, Consumers Energy will continue with the detection monitoring program at the JRW Pond 1&2 and Pond 6 in conformance with §257.90 - §257.94.



## 2.0 Groundwater Monitoring

The 2020 semiannual monitoring events were completed in April and October 2020 to comply with both the CCR Rule and the Michigan Department of Environment, Great Lakes, and Energy (EGLE)-approved monitoring program established for Pond 1&2 and Pond 6 in early 2020. Given the congruencies between the two programs, data collected and evaluated under both programs are presented together in two semiannual reports to document the 2020 monitoring activities.

#### 2.1 First Semiannual Monitoring Event

A summary of the first semiannual groundwater monitoring event is provided in Appendix A.

#### 2.2 Second Semiannual Monitoring Event

A summary of the second semiannual groundwater monitoring event is provided in Appendix B.

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## 3.0 Corrective Action

There were no corrective actions needed or performed for either Pond 1&2 or Pond 6 within the calendar year 2020. No SSIs were recorded for the 2020 monitoring period; therefore, Consumers Energy will continue with the detection monitoring program at the JRW Pond 1&2 and Pond 6 CCR unit in conformance with §257.90 - §257.94.



# Appendix A First Semiannual Monitoring Report



# First Semiannual 2020 Groundwater Monitoring Report

Former JR Whiting Power Plant Pond 1&2 and Pond 6

Erie, Michigan

July 2020

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## 1.0 Introduction

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule), as amended. Standards for groundwater monitoring and corrective action codified in the CCR Rule (40 CFR 257.90-98) apply to the Consumers Energy Company (Consumers Energy) Ponds 1 and 2 (existing surface impoundment monitored as Pond 1&2 using a multiunit groundwater monitoring system) and Pond 6 (closed inactive surface impoundment) at the former JR Whiting (JRW) Power Plant Site (the Site). Prior to the CCR Rule, from about 2009 to 2016, JR Whiting followed the approved groundwater monitoring waiver.

On December 28, 2018, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management). The December 2018 amendments to Part 115 were developed to provide the State of Michigan oversight of CCR impoundments and landfills and to better align existing state solid waste management rules and statutes with the CCR Rule. On August 8, 2019 Consumers Energy submitted a revised *JR Whiting Hydrogeological Monitoring Plan, former JR Whiting Power Plant, Erie, Michigan* (2020 HMP) (TRC, May 2020 Revision) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on May 11, 2020.

#### **1.1** Statement of Adherence to Approved Hydrogeological Monitoring Plan.

This JR Whiting First Semiannual 2020 Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to present groundwater monitoring data collected from the JR Whiting Pond 1&2 and Pond 6 during the second calendar quarter of 2020. This report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the July 5, 2013 Michigan Department of Environmental Quality - Office of Waste Management and Radiological Protection (MDEQ-OWMRP), now the EGLE Materials Management Division (MMD) communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, dated July 5, 2013 Format for Solid Waste Disposal Monitoring Submittals. All references herein to the EGLE are inclusive of the MDEQ. Groundwater sampling, analysis, and information contained in this report was prepared in adherence to the 2020 HMP approved by the EGLE on May 11, 2020.

#### 1.2 Program Summary

Historically groundwater monitoring at JRW was performed under the HMP last revised on November 26, 1997 until the groundwater monitoring waiver was approved on September 2, 2009. It was then again performed pursuant to the CCR Rule only until implementation of the 2020 HMPIn the *2019 Annual Groundwater Monitoring Report for the JRW Pond 1&2 and Pond 6* (2019 Annual Report) (TRC, January 2020), the most recent report prepared in compliance with the CCR Rule, Consumers Energy reported that no potential statistically significant increases (SSIs) were noted in the 2019 semiannual detection monitoring events. Therefore, Consumers Energy continued detection monitoring in 2020 at Pond 1&2 and Pond 6 pursuant to



§257.94 of the CCR Rule, in addition to the recently approved HMP.

This 2020 First Semiannual Report presents the monitoring results and the statistical evaluation of the detection monitoring constituents (Section 11511a(3)(c) of Part 115) for the April 2020 semiannual groundwater monitoring event for Pond 1&2 and Pond 6 and marks the first report prepared for compliance with the HMP. Detection monitoring was performed in accordance with the 2020 HMP. As part of the statistical evaluation, the data collected during detection monitoring events are evaluated to identify SSIs of detection monitoring constituents compared to background levels.

#### 1.3 Site Overview

The JR Whiting Plant was a coal-fired power generation facility located in Erie, Michigan, on the western shore of Lake Erie (Figure 1). The plant began producing electricity in 1952 from Units 1 and 2, with Unit 3 beginning operation in 1953. The plant ceased operation in April 2016. Figure 1 is the site location map showing the facility and the surrounding area. Site features are shown on Figure 2.

The JR Whiting Ash Disposal Area is licensed under Michigan Part 115 of the Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended.

Pond 1&2 is located to the east of the plant, north of the discharge canal, south of Erie Road, and west of Lake Erie and constructed in native clay soil. It was historically used for wet ash sluicing. In 2019, it received its final cover system constructed pursuant to 40 CFR 257.102(a); the Ponds 1 and 2 Closure Construction Quality Assurance (CQA) Plan dated August 31, 2017; the Part 115 Administrative Rules; and Pond 1&2 Closure Plan submitted to the EGLE on December 18, 2017.

Pond 6 is located to the north of the plant and was constructed in native clay soil. It was an inactive surface impoundment at the time the CCR Rule became effective on October 19, 2015 and was capped with final cover certified pursuant to the CCR Rule on December 5, 2017 and certified by the EGLE on August 24, 2018.

#### 1.4 Geology/Hydrogeology

Pond 1&2 and Pond 6 are located adjacent to Lake Erie. The subsurface materials encountered at the JR Whiting site are predominately clay-rich till. The surficial CCR fill material is underlain by approximately 40 to 50 feet of laterally extensive clay-rich till that acts as a natural hydraulic barrier across the site. Limestone bedrock is present beneath the till and is considered the uppermost aquifer at the site.

Groundwater present within the uppermost aquifer is confined and protected from CCR constituents by the overlying clay-rich aquitard and is typically encountered around 50 feet below ground surface (ft bgs) in the limestone (beneath the till). Potentiometric surface elevation data from groundwater within the CCR monitoring wells exhibit an extremely low hydraulic gradient across the site with no consistent or discernible flow direction.



# 2.0 Groundwater Monitoring

#### 2.1 Monitoring Well Network

A groundwater monitoring system has been established for Pond 1&2 and Pond 6, which established the monitoring well locations for detection monitoring. The detection monitoring well network for Pond 1&2 and Pond 6 currently consists of six monitoring wells for each CCR unit that are screened in the uppermost aquifer. Monitoring well locations are shown on Figure 2.

As discussed in the HMP, intrawell statistical methods for JR Whiting were selected based on the geology and hydrogeology at the Site (primarily the presence of clay/hydraulic barrier, no apparent flow direction and lack of flow potential across the aquifer), in addition to other supporting lines of evidence that the aquifer is unaffected by the CCR unit (such as the consistency in concentrations of water quality data and similarities in concentrations in background and downgradient wells). An intrawell statistical approach requires that each of the downgradient wells doubles as the background and compliance well, where data from each individual well during a detection monitoring event is compared to a statistical limit developed using the background dataset from that same well. Monitoring wells JRW-MW-15001 through JRW-MW-16006 are located around the perimeter of Pond 1&2 and monitoring wells JRW-MW-16001 through JRW-MW-16006 are located around the perimeter of the JRW Pond 6. These monitoring wells provide data on both background and downgradient groundwater quality that has not been affected by the CCR unit (total of six background/downgradient monitoring wells for each pond).

As shown on Figure 2, monitoring wells JRW-MW-16007 through JRW-MW-16009 are used for water level measurements only. These wells were initially installed as potential background monitoring wells during the initial stages of characterizing the site. However, based on further hydrogeological characterization of the uppermost aquifer, an intrawell statistical approach was selected which does not rely on JRW-MW-16007 through JRW-MW-16009 for statistical evaluation.

#### 2.2 April 2020 Groundwater Monitoring

Consumers Energy Laboratory Services personnel performed gauging and sampling of monitoring wells associated with Pond 1&2 and Pond 6 from April 7 through April 8, 2020. Groundwater monitoring was performed in accordance with the HMP. Groundwater samples collected during the April 2020 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan, for analysis of the following metals and inorganic indicator constituents:



Section 11511a(3)(c) – Detection Monitoring Constituents
Boron
Calcium
Chloride
Fluoride
Iron
рН
Sulfate
Total Dissolved Solids (TDS)

Static water level measurements were collected at all locations after equilibration to atmospheric pressure. The depth to water was measured according to ASTM D 4750, "Standard Test Method for Determining Subsurface Liquid Levels in a Borehole or Monitoring Well" and recorded to the nearest 0.01 foot. Static water elevation data are summarized in Table 1.

Groundwater samples were collected using a peristaltic pump or submersible pump in accordance with low flow sampling protocol and were not field filtered to allow for total metals analysis. Groundwater field parameters included dissolved oxygen, oxidation reduction potential, specific conductivity, temperature, and turbidity and are summarized on Table 2. All samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Consumers Energy followed chain of custody procedures to document the sample handling.

Consumers Energy collected quality assurance/quality control (QA/QC) samples from both CCR units, Pond 1&2 and Pond 6, during the April 2020 groundwater sampling event. The QA/QC samples per CCR unit consisted of one field blank, one equipment blank, one field duplicate (JRW-MW-15002 at Pond 1&2 and JHC-MW-16006 at Pond 6), and one field matrix spike/matrix spike duplicate (MS/MSD) sample collected from JRW-MW-15006 at Pond 1&2, and JHC-MW-16003 at Pond 6.

Groundwater analytical results from the first semiannual 2020 monitoring event are summarized in Table 3 (Pond 1&2) and Table 4 (Pond 6). The laboratory analytical reports are included in Appendix B. Field records are included in Appendix C.

#### 2.2.1 Data Quality Review

Data from each round were evaluated for completeness, overall quality and usability, methodspecified sample holding times, precision and accuracy, and potential sample contamination. The data were found to be complete and usable for the purposes of the CCR monitoring program. Data quality reviews are summarized in Appendix A.



#### 2.2.2 Groundwater Flow Rate and Direction

Groundwater elevation data collected during the background sampling events showed that the hydraulic gradient for groundwater within the uppermost aquifer is often so low, groundwater flow across Pond 1&2 and Pond 6 is frequently incalculable and often stagnant.

There are minor differences in hydraulic head across the monitoring wells (ranging from zero up to 0.15 feet across Pond 1&2 and up to 0.24 feet across Pond 6 from event to event from November 2016 through April 2020), indicating that the potentiometric surface is flat the majority of the time. In the few instances since November 2016 where a slight gradient was observed and calculable, the direction of the flow potential was slightly to the northwest (two events) and to the east (one event) from Pond 1&2 and slightly to the south and west from Pond 6.

The most pronounced groundwater gradient between November 2016 and April 2020 at Pond 1&2 was observed in December 19, 2016, which showed a slight horizontal gradient of approximately 0.00016 to the northwest across Pond 1&2. For Pond 6, the most pronounced potentiometric head differential of 0.24 feet was observed on February 28, 2018 between JRW-MW-16001 on the north edge of Pond 6 and JRW-MW-16004 on the south edge of the Pond 6 CCR unit. Although, when considering the potentiometric surface elevation data from all of the Pond 6 CCR unit wells, the general groundwater flow direction inferred across the pond at that time is to the southwest, in order to be conservative, the maximum head difference was used to calculate the maximum groundwater flow velocity at the Pond 6 CCR unit throughout the background monitoring period. This results in a very slight horizontal gradient of approximately 0.000099 ft/ft to the south.

#### Pond 1&2

The average groundwater gradient observed on April 7, 2020, using well pair JRW-MW-15006/JRW-MW-15002 and JRW-MW-15005/JRW-MW-15002, showed a very slight horizontal gradient of approximately 0.00014 ft/ft with minimal discernable overall flow direction across Pond 1&2 in the northern direction. Using the highest hydraulic conductivity measured at the Pond 1&2 monitoring wells of 20 feet/day (ARCADIS, 2016), and an assumed effective porosity of 0.1, this results in a groundwater flow rate of approximately 0.028 feet/day (approximately 10 feet/year). Pond 1&2 groundwater elevations measured across the Site during the April 2020 sampling event are provided on Table 1 and are summarized in plan view on Figure 3.

The extremely low gradient and lack of general flow direction is similar to that identified in previous monitoring rounds (since the background sampling events commenced in December 2016) and continues to demonstrate that the downgradient compliance wells are appropriately positioned to detect the presence of detection monitoring constituents that could potentially migrate from Pond 1&2.

#### Pond 6

During the April 2020 event, the average hydraulic gradient of 0.000040 ft/ft was calculated using well pairs JRW-MW-16004/JRW-MW 16001 and JRW-MW-16004/JRW-MW-16002 toward the north. Using the highest hydraulic conductivity measured at the Pond 6 CCR unit



monitoring wells (11.9 feet/day from the 2016 TRC well installation report) and an assumed effective porosity of 0.1, the result average groundwater flow rate is approximately 0.008 feet/day (approximately 2.9 feet/year). Groundwater elevations measured across the Site during the April 2020 sampling event are provided on Table 1 and are summarized in plan view on Figure 3.

The extremely low gradient and/or lack of general flow direction is similar to that identified in previous monitoring rounds since the background sampling events commenced in November 2016 and continues to demonstrate that the downgradient compliance wells are appropriately positioned to detect the presence of detection monitoring constituents that could potentially migrate from the JRW Pond 6.



## 3.0 Statistical Evaluation

Detection monitoring is continuing at JR Whiting Pond 1&2 and Pond 6 in accordance with the HMP. The following section summarizes the statistical approach applied to assess the first semiannual 2020 groundwater data in accordance with the detection monitoring program.

#### 3.1 Establishing Background Limits

#### Pond 1&2

Per the HMP, background limits were established for the detection monitoring constituents using data collected from each of the six established detection monitoring wells (JRW-MW-15001 through JRW-MW-15006). The background limits for each monitoring well have been calculated using thirteen rounds of data collected from November 2016 through March 2019 as presented in detail in the 2019 Annual Report. These background limits will continue to be used throughout the detection monitoring program to determine whether groundwater has been impacted from Pond 1&2 by comparing concentrations in the detection monitoring wells to their respective background limits for each detection monitoring constituent, with the exception of iron. Iron was incorporated into to the monitoring program as part of the 2020 HMP. Background limits for iron will be calculated once a minimum of eight background data points have been collected from each monitoring location.

#### Pond 6

Per the HMP, background limits were established for the detection monitoring constituents following the twelfth round of background monitoring using data collected from each of the six established detection monitoring wells (JRW-MW-16001 through JRW-MW-16006). The statistical evaluation of the background data is presented in the Pond 6 July 2019 Annual Report. The detection monitoring background limits for each monitoring well will be used throughout the detection monitoring period to determine whether groundwater has been impacted from Pond 6 by comparing concentrations in the detection monitoring wells to their respective background limits for each detection monitoring constituent, with the exception of iron. Iron was incorporated into to the monitoring program as part of the 2020 HMP. Background limits for iron will be calculated once a minimum of eight background data points have been collected from each monitoring location.

# 3.2 Data Comparison to Background Limits – Pond 1&2 First 2020 Semiannual Event (April 2020)

The concentrations of the constituents in each of the detection monitoring wells (JRW-MW-15001 through JRW-MW-15006) were compared to their respective statistical background limits calculated from the background data collected from each individual well (i.e., monitoring data from JRW-MW-15001 is compared to the background limit developed using the background dataset from JRW-MW-15001, and so forth). The comparisons are presented on Table 3.

There were no SSIs compared to background for any of the constituents.



# 3.3 Data Comparison to Background Limits – Pond 6 First Semiannual Event (April 2020)

The data comparisons of monitoring wells JRW-MW-16001 through JRW-MW-16006 for the April 2020 groundwater monitoring event are presented on Table 4. The statistical evaluation of the April 2020 constituents shows potential initial SSIs over background for:

Fluoride at JRW-MW-16002.

The initial observation of a constituent concentration above the established background limits does not necessarily constitute an SSI. Per the HMP, if there is an exceedance of a prediction limit for one or more of the constituents, the well(s) of concern can be resampled within 30 days of the completion of the initial statistical analysis for verification purposes, further discussed below. There were no SSIs compared to background for the remaining constituents.

#### 3.4 Verification Sampling for the Pond 6 First 2020 Semiannual Event

Verification resampling is recommended per the HMP and the USEPA's Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance (Unified Guidance, USEPA, 2009) to achieve performance standards as specified by Part 115 Rule 299.4908 and §257.93(g) in the CCR Rule. Per the HMP, if there is an exceedance of a prediction limit for one or more of the constituents, the well(s) of concern will be resampled within 30 days of the completion of the initial statistical analysis. Only constituents that initially exceed their statistical limit (i.e., have no previously recorded SSIs) will be analyzed for verification purposes.

As such, verification resampling for the April 2020 event was conducted on May 21, 2020 by Consumers Energy Laboratory Services personnel. Groundwater samples were collected for fluoride at JRW-MW-16002. A summary of the analytical results collected during the second semiannual verification resampling event is provided on Table 4. The associated data quality reviews are included in Appendix A.

The fluoride resample results are within the prediction limits; consequently, the initial potential SSI from the April 2020 event is not confirmed. Therefore, in accordance with the HMP and the Unified Guidance, the initial exceedances are not statistically significant, and no SSIs will be recorded for the April 2020 monitoring event.



## 4.0 Conclusions and Recommendations

No SSIs over background limits were identified at either Pond 1&2 or Pond 6 during the April 2020 monitoring event. Therefore, Consumers Energy will continue with the detection monitoring program at the JRW Pond 1&2 and Pond 6 CCR units in conformance with the HMP.

No corrective actions were needed or performed for either Pond 1&2 or Pond 6. The second semiannual monitoring event for each of these units is scheduled for the fourth calendar quarter of 2020.



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USEPA. April 2018. Barnes Johnson (Office of Resource Conservation and Recovery) to James Roewer (c/o Edison Electric Institute) and Douglas Green, Margaret Fawal (Venable LLP). Re: Coal Combustion Residuals Rule Groundwater Monitoring Requirements. April 30, 2018. United States Environmental Protection Agency, Washington, D.C. 20460. Office of Solid Waste and Emergency Response, now the Office of Land and Emergency Management.



# **Tables**

# Table 1Groundwater Elevation Summary – April 2020JR Whiting Pond 1 & 2 and Pond 6Erie, Michigan

	Ground TOC			Screen Interval	Screen Interval	April 7, 2020		
Well Location	Surface Elevation (ft)	Elevation (ft)	Geologic Unit of Screen Interval	Depth (ft BGS)	Elevation (ft)	Depth to Water	Groundwater Elevation	
						(ft BTOC)	(ft)	
Static Water Leve	I Monitoring \	Vells						
JRW-MW-16007	579.47	582.31	Limestone	68.0 to 78.0	511.5 to 501.5	4.77	577.54	
JRW-MW-16008	579.95	582.83	Limestone	68.0 to 73.0	512.0 to 507.0	5.29	577.54	
JRW-MW-16009	579.90	582.60	Limestone	69.0 to 79.0	510.9 to 500.9	5.04	577.56	
Ponds 1 & 2								
JRW-MW-15001	NM	581.39	Limestone	NM to NM	NM to NM	3.75	577.64	
JRW-MW-15002	NM	590.17	Limestone	NM to NM	NM to NM	12.57	577.60	
JRW-MW-15003	NM	587.23	Limestone	NM to NM	NM to NM	9.58	577.65	
JRW-MW-15004	NM	589.32	Limestone	NM to NM	NM to NM	11.90	577.42 <sup>(1)</sup>	
JRW-MW-15005	NM	588.28	Limestone	NM to NM	NM to NM	10.54	577.74	
JRW-MW-15006	NM	580.48	Limestone	NM to NM	NM to NM	2.75	577.73	
Pond 6								
JRW-MW-16001	589.19	592.33	Limestone	71.0 to 81.0	518.2 to 508.2	14.80	577.53	
JRW-MW-16002	585.78	588.69	Limestone	81.0 to 91.0	504.8 to 494.8	11.21	577.48	
JRW-MW-16003	586.19	589.01	Limestone	73.0 to 83.0	513.2 to 503.2	11.43	577.58	
JRW-MW-16004	586.48	589.34	Limestone	75.0 to 85.0	511.5 to 501.5	11.76	577.58	
JRW-MW-16005	589.29	592.14	Limestone	78.0 to 88.0	511.3 to 501.3	14.57	577.57	
JRW-MW-16006	588.26	591.04	Limestone	79.0 to 89.0	509.3 to 499.26	13.48	577.56	

#### Notes:

Top of casing elevation survey was conducted by Rowe Professional Services Company in July 2020.

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

ft BGS: Feet below ground surface.

NM = Not measured

NR = Not recorded

(1) Anomalous static water elevation, not used for gradient calculations.

# Table 2Summary of Groundwater Field Parameters – April 2020JR Whiting Pond 1 & 2 and 6Erie, Michigan

Sample Location	Sample Date	Dissolved Oxygen	Oxidation Reduction Potential	рН	Specific Conductivity	Temperature	Turbidity	
		(mg/L)	(mV)	(SU)	(umhos/cm)	(°C)	(NTU)	
Ponds 1 & 2								
JRW-MW-15001	4/8/2020	1.49	-75.9	7.5	1,103	13.5	5.22	
JRW-MW-15002	4/7/2020	0.18	-84.6	7.6	1,151	11.5	2.75	
JRW-MW-15003	4/7/2020	0.31	-102.2	7.7	1,017	11.8	7.63	
JRW-MW-15004	4/7/2020	0.11	-113.0	7.7	966	12.2	5.91	
JRW-MW-15005	4/8/2020	0.06	-95.1	7.7	904	13.4	1.97	
JRW-MW-15006	4/8/2020	0.04	-157.4	7.7	982	12.3	14.88	
Pond 6								
JRW-MW-16001	4/8/2020	0.10	-181.0	8.3	761	11.8	1.11	
JRW-MW-16002	4/8/2020	0.05	-128.3	7.7	1,009	12.1	6.48	
JRW-MW-16002 <sup>(1)</sup>	5/21/2020	0.04	-150.8	7.8	1,003	12.1	9.10	
JRW-MW-16003	4/8/2020	0.05	-157.9	7.6	1,053	12.3	1.76	
JRW-MW-16004	4/8/2020	0.02	-96.8	7.5	1,212	12.4	3.26	
JRW-MW-16005	4/7/2020	0.09	-143.3	7.7	888	12.2	4.00	
JRW-MW-16006	4/7/2020	0.15	-138.6	7.8	867	12.5	7.01	

#### Notes:

mg/L - Milligrams per Liter. mV - Millivolts. SU - Standard units. umhos/cm - Micromhos per centimeter.

°C - Degrees Celcius.

NTU - Nephelometric Turbidity Unit.

(1) Results for verification sampling performed on 5/21/2020.

# Table 3 Comparison of Groundwater Detection Monitoring Results to Background Limits – April 2020 JR Whiting Pond 1 & 2 Erie, Michigan

Sample Location:		JRW-M	W-15001	JRW-M	W-15002	JRW-M	W-15003	JRW-M	W-15004	JRW-M	W-15005	JRW-M	W-15006
	Sample Date:	4/8/2020	PL	4/7/2020	PL	4/7/2020	PL	4/7/2020	PL	4/8/2020	PL	4/8/2020	PL
Constituent	Unit	Data	PL	Data	PL	Data	PL	Data	PL	Data	PL PL	Data	PL
Appendix III													
Boron	ug/L	186	240	189	220	208	230	224	270	214	270	219	250
Calcium	mg/L	141	180	147	180	124	160	118	140	109	120	119	140
Chloride	mg/L	40.4	55	42.4	56	38.1	55	39.2	56.0	34.7	46.0	38.7	53
Fluoride	ug/L	1,150	1,600	1,630	1,900	1,670	1,800	1,590	1,800	1,570	1,700	1,420	1,700
Sulfate	mg/L	364	474	387	500	325	440	301	390	269	350	302	410
Total Dissolved Soli	ds mg/L	780	1,000	790	1,100	759	940	688	880	155	840	700	920
pH, Field	SU	7.5	6.8 - 8.4	7.6	7.2 - 7.9	7.7	7.3 - 8.3	7.7	7.2 - 8.0	7.7	7.3 - 8.6	7.7	7.0 - 9.0
MI Part 115													
Iron	mg/L	328	n < 8	320	n < 8	273	n < 8	367	n < 8	118	n < 8	725	n < 8

#### Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

All metals were analyzed as total unless otherwise specified.

Bold font indicates an exceedance of the Prediction Limit (PL) using the number of significant figures in the PL.

n = The number of data points collected.

# Table 4 Comparison of Groundwater Detection Monitoring Results to Background Limits – April 2020 JR Whiting Pond 6 Erie, Michigan

Sam	ple Location:	JRW-N	IW-16001	J	RW-MW-160	02	JRW-N	IW-16003	JRW-M	W-16004	JRW-M	W-16005	JRW-M	W-16006
S	Sample Date:	4/8/2020	PL	4/8/2020	5/21/2020 <sup>(1)</sup>	PL	4/8/2020	– PL	4/7/2020	PL	4/7/2020	PL	4/7/2020	PL
Constituent	Unit	Data	r L	D	ata	r L	Data	ΓL	Data	ΓL	Data	F L	Data	ГЬ
Appendix III														
Boron	ug/L	170	203	173		209	199	257	201	262	182	244	170	226
Calcium	mg/L	89	111	125		149	134	156	160	181	105	182	102	117
Chloride	mg/L	17.1	23.6	18.7		25.4	26.1	32.4	33.5	43.7	21.0	29.4	20.6	38.6
Fluoride	ug/L	1,660	2,300	1,480	1,080	1,400	1,510	1,600	1,480	1,700	1,720	1,800	1,620	2,200
Sulfate	mg/L	229	278	369		426	386	470	449	507	284	498	290	399
Total Dissolved Solids	mg/L	500	770	733		832	767	1,040	885	1,110	644	1,030	627	904
pH, Field	SU	8.3	7.5 - 8.9	7.7		7.5 - 8.3	7.6	7.4 - 7.9	7.5	7.4 - 8.2	7.7	7.3 - 8.0	7.8	7.5 - 8.2
MI Part 115														
Iron	mg/L	79	n < 8	240		n < 8	364	n < 8	208	n < 8	303	n < 8	256	n < 8

#### Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

-- = not analyzed

n = The number of data points collected.

All metals were analyzed as total unless otherwise specified.

Bold font indicates an exceedance of the Prediction Limit (PL) using the number of significant figures in the PL.

(1) Results for verification sampling performed on 5/21/2020.

# Table 5Summary of Statistical Exceedances - April 2020JR Whiting Pond 1 & 2 and Pond 6Erie, Michigan

# MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY SUMMARY OF STATISTICAL EXCEEDANCES

Data is in (X) ug/L or () mg/L unless otherwise stated

Facility: JR Whiting – WDS# 397664

Well #	Location	Parameter	Part 201 GRCC Statistical Limit (or 'CC' for Control Charts)		2 Qtr. 2020 ( <b>bold</b> >201)	4 Qtr. 2019 ( <b>bold</b> >201)	2 Qtr. 2019 ( <b>bold</b> >201)	4 Qtr. 2018 ( <b>bold</b> >201)		
No Exceedances										



# **Figures**



S:\1-PROJECTS\Consumers\_Energy\_CompanylMichigan\CCR\_GW\2017\_269767\367393-001-001slm.mxd -- Saved By: SMAJOR on 6/30/2020, 10:16:35 AM



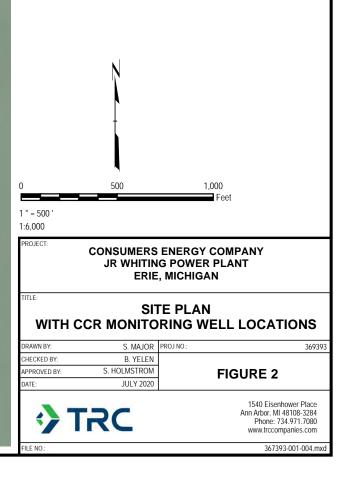
#### **LEGEND**



MONITORING WELL (STATIC WATER LEVEL ONLY) CCR UNIT MONITORING WELL

#### <u>NOTES</u>

- 1. BASE MAP IMAGERY FROM GOOGLE EARTH PRO,2019.
- 2. STATIC WATER ONLY WELL LOCATIONS SURVEYED BY SHERIDAN SURVEYING CO. ON 11/19/2015.
- 3. PONDS 1 & 2 WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES CO. ON 11/27 /2019.





Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl (

Plot Date: 7/28/2020, 14:08:32 PM by MHORN -- LAYOUT: ANSI B(11'x17") Coordinate System:

#### **LEGEND**

+

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MONITORING WELL (STATIC WATER LEVEL ONLY)

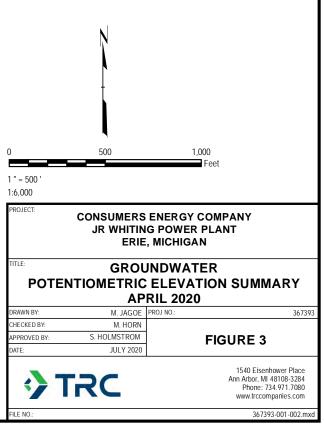
CCR UNIT MONITORING WELL

LABEL FORMAT

MONITORING WELL ID GROUNDWATER ELEVATION FT (MEASUREMENT DATE



- 1. BASE MAP IMAGERY FROM GOOGLE EARTH PRO, 4/28/2018.
- 2. WELL LOCATIONS SURVEYED BY SHERIDAN SURVEYING CO. ON 11/19/2015.
- 3. PONDS 1 & 2 WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES CO. ON 11/27/2019.
- 4. MONITORING WELL TOP OF CASING SURVEYED BY ROWE PROFESSIONAL SERVICES CO. ON 7/14/2020. VERTICAL DATUM IS NAVD88.
- 5. ANOMALOUS STATIC WATER ELEVATION. NOT USED FOR GRADIENT CALCULATION.





# Appendix A Data Quality Reviews



# Pond 1 & 2

### Laboratory Data Quality Review Groundwater Sampling Event April 2020 Consumers Energy JR Whiting Ponds 1 & 2

Groundwater samples were collected by Consumers Energy (CE) Laboratory Services for the April 2020 groundwater monitoring sampling event. Samples were analyzed for anions, total and/or dissolved metals, and total dissolved solids by CE Laboratory Services, located in Jackson, Michigan. The laboratory analytical results were reported in laboratory project number 20-0355.

During the April 2020 sampling event, a groundwater sample was collected from each of the following wells:

- JRW-MW-15001 JRW-MW-15002 JRW-MW-15003
- JRW-MW-15004 JRW-MW-15005 JRW-MW-15006

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Chloride, Fluoride, Sulfate)	EPA 300.0
Total Dissolved Solids	SM 2540C
Total and/or Dissolved Metals (Boron, Calcium, Iron)	SW-846 6020B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review

## **Data Quality Review Procedure**

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2017). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for equipment blanks and field blanks. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;

- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and laboratory control samples were not provided for review by the laboratory. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

# Findings

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable, with the exceptions noted below. The discussion that follows describes the QA/QC results and evaluation.

## **Review Summary**

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III constituents as well as iron will be utilized for the purposes of a detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.
- When the data are evaluated through a detection monitoring statistical program, findings below may be used to support the removal of outliers.

#### QA/QC Sample Summary:

- Preparation dates were not provided by the laboratory. Since the analyses were performed within the preparation holding times, where applicable, there is no impact on data usability due to this issue.
- One equipment blank (EB-01) and one field blank (FB-01) were collected. Target analytes were not detected in these blank samples.
- MS and MSD analyses were performed on sample JRW-MW-15006 for total and dissolved metals, and anions. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory and therefore were not evaluated; further, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- The field duplicate pair samples were DUP-01/JRW-MW-15002. All criteria were met.
- Laboratory duplicate analyses were not performed on a sample from this data set.



# Pond 6

## Laboratory Data Quality Review Groundwater Sampling Event April 2020 Consumers Energy JR Whiting Pond 6

Groundwater samples were collected by Consumers Energy (CE) Laboratory Services for the April 2020 groundwater monitoring sampling event. Samples were analyzed for anions, total metals, and total dissolved solids by CE Laboratory Services, located in Jackson, Michigan. The laboratory analytical results were reported in laboratory project number 20-0356.

During the April 2020 sampling event, a groundwater sample was collected from each of the following wells:

- JRW-MW-16001
   JRW-MW-16002
   JRW-MW-16003
- JRW-MW-16004 JRW-MW-16005 JRW-MW-16006

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Chloride, Fluoride, Sulfate)	EPA 300.0
Total Dissolved Solids	SM 2540C
Total Metals (Boron, Calcium, Iron)	SW-846 6020B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review

## **Data Quality Review Procedure**

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2017). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for equipment blanks and field blanks. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and

• Overall usability of the data.

It should be noted that results for method blanks and laboratory control samples were not provided for review by the laboratory. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

### Findings

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable, with the exceptions noted below. The discussion that follows describes the QA/QC results and evaluation.

### **Review Summary**

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III constituents as well as iron will be utilized for the purposes of a detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.
- When the data are evaluated through a detection monitoring statistical program, findings below may be used to support the removal of outliers.

### **QA/QC Sample Summary:**

- Preparation dates were not provided by the laboratory. Since the analyses were performed within the preparation holding times, where applicable, there is no impact on data usability due to this issue.
- One equipment blank (EB-02) and one field blank (FB-02) were collected. Target analytes were not detected in these blank samples.
- MS and MSD analyses were performed on sample JRW-MW-16003 for total metals and anions. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory and therefore were not evaluated; further, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- The field duplicate pair samples were DUP-02/JRW-MW-16006. All criteria were met.
- Laboratory duplicate analyses were not performed on a sample from this data set.

### Laboratory Data Quality Review Verification Groundwater Sampling Event May 2020 Consumers Energy JR Whiting Pond 6

A groundwater sample was collected by Consumers Energy (CE) Laboratory Services for the May 2020 verification of the April 2020 groundwater monitoring sampling event. The sample was analyzed for fluoride by CE Laboratory Services, located in Jackson, Michigan. The laboratory analytical results were reported in laboratory project number 20-0589.

During the May 2020 sampling event, a groundwater sample was collected from the following well:

JRW-MW-16002

The sample was analyzed for the following constituent:

Analyte Group	Method		
Anions (Fluoride)	EPA 300.0		

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review

### **Data Quality Review Procedure**

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2017). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for equipment blanks and field blanks. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and laboratory control samples were not provided for review by the laboratory. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

### **Findings**

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable, with the exceptions noted below. The discussion that follows describes the QA/QC results and evaluation.

### **Review Summary**

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III constituent will be utilized for the purposes of a detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.
- When the data are evaluated through a detection monitoring statistical program, findings below may be used to support the removal of outliers.

### QA/QC Sample Summary:

- Preparation dates were not provided by the laboratory. Since the analyses were performed within the preparation holding times, where applicable, there is no impact on data usability due to this issue.
- One equipment blank (EB-01) and one field blank (FB-01) were collected. Target analytes were not detected in these blank samples.
- MS and MSD analyses were performed on sample JRW-MW-16002 for fluoride. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory and therefore were not evaluated; further, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- The field duplicate pair samples were DUP-01/JRW-MW-16002. All criteria were met.
- Laboratory duplicate analyses were not performed on a sample from this data set.



### Appendix B Laboratory Reports



Pond 1 & 2



To: MAMarion, P22-118

From: EBlaj, T-258

Date: April 21, 2020

*Subject:* RCRA GROUNDWATER MONITORING – JR WHITING POND 1 AND 2 – 2020 Q2

CC: Sarah Holmstrom, Project Manager TRC Environmental Corporation 1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 20-0355

*phone* 517-788-1251 *fax* 517-788-2533

135 W. Trail St.

Jackson, MI 49201

CE Laboratory Services conducted groundwater monitoring at JR Whiting Pond 1 & 2 on 04/07/2020 and 04/08/2020, for the 1<sup>st</sup> Semiannual monitoring requirement, and as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis in the Chemistry department of Laboratory Services on 04/09/2020.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2009 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

### **CASE NARRATIVE**

### I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

### II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22<sup>nd</sup> Edition, 2012.

### III. <u>Results/Quality Control</u>

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

### **DEFINITIONS / QUALIFIERS**

The following qualifiers and/or acronyms are used in the report, where applicable:

Acronym	Description
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

SM Standard Methods Compendium

#### 20-0355 Page 2 of 18

<u>Qualifier</u>	Description
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
Н	The maximum recommended hold time was exceeded
Ι	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
Κ	Reporting limit raised due to matrix interference
Μ	The precision for duplicate analysis was not met; RPD outside acceptance criteria
Ν	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
Х	Other notation required; comment listed in sample notes and/or case narrative



# Customer Name:JR Whiting ComplexWork Order ID:JRW RCRA GW Monitoring - Pond 1&2 - April 2020Date Received:4/9/2020Chemistry Project:20-0355

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
20-0355-01	JRW-MW-15001	Groundwater	04/08/2020 02:01 PM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-02	JRW-MW-15002	Groundwater	04/07/2020 11:14 AM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-03	JRW-MW-15003	Groundwater	04/07/2020 12:26 PM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-04	JRW-MW-15004	Groundwater	04/07/2020 01:12 PM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-05	JRW-MW-15005	Groundwater	04/08/2020 03:07 PM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-06	JRW-MW-15006	Groundwater	04/08/2020 04:15 PM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-07	DUP-01	Groundwater	04/07/2020 12:00 AM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-08	EB-01	Water	04/08/2020 07:24 AM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-09	FB-01	Water	04/07/2020 11:37 AM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-10	JRW-MW-15006 MS	Groundwater	04/08/2020 04:15 PM	JRW RCRA GW Monitoring - Pond 1&2
20-0355-11	JRW-MW-15006 MSD	Groundwater	04/08/2020 04:15 PM	JRW RCRA GW Monitoring - Pond 1&2



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	JRW-MW-15001	Collect Date:	04/08/2020
Lab Sample ID:	20-0355-01	Collect Time:	02:01 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot: 20-0355-01-C02-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	186		ug/L	20	04/13/2020	AB20-0413-02
Calcium	141000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	328		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-0355-01-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	40400		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1150		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	364000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C				Aliquot:	20-0355-01-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	780		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	JRW-MW-15002	Collect Date:	04/07/2020
Lab Sample ID:	20-0355-02	Collect Time:	11:14 AM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-0355-02-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	189		ug/L	20	04/13/2020	AB20-0413-02
Calcium	147000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	320		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-0355-02-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	42400		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1630		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	387000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C					20-0355-02-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	790		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	JRW-MW-15003	Collect Date:	04/07/2020
Lab Sample ID:	20-0355-03	Collect Time:	12:26 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-0355-03-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	208		ug/L	20	04/13/2020	AB20-0413-02
Calcium	124000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	273		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-0355-03-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	38100		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1670		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	325000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 25	540C			Aliquot:	20-0355-03-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	759		mg/L	20	04/09/2020	AB20-0409-06



20-0355
/07/2020
1:12 PM
/C

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-0355-04-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	224		ug/L	20	04/13/2020	AB20-0413-02
Calcium	118000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	367		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-0355-04-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	39200		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1590		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	301000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C				Aliquot:	20-0355-04-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	688		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	JRW-MW-15005	Collect Date:	04/08/2020
Lab Sample ID:	20-0355-05	Collect Time:	03:07 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appe	endix III and F	e Total M	etals	Aliquot:	20-0355-05-C02-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	214		ug/L	20	04/13/2020	AB20-0413-02
Calcium	109000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	118		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analy	te List, Cl, F,	SO4, Aqu	eous	Aliquot:	20-0355-05-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	34700		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1570		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	269000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C				Aliquot:	20-0355-05-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	155		mg/L	20	04/09/2020	AB20-0409-06



Iron

Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	JRW-MW-15006	Collect Date:	04/08/2020
Lab Sample ID:	20-0355-06	Collect Time:	04:15 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appe	endix III and	Fe Total M	etals	Aliquot: 2	20-0355-06-C02-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	219		ug/L	20	04/13/2020	AB20-0413-02
Calcium	119000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	725		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analy	te List, Cl, F,	, SO4, Aqu	eous	Aliquot: 2	20-0355-06-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	38700		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1420		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	302000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C				Aliquot: 2	20-0355-06-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	700		mg/L	20	04/09/2020	AB20-0409-06
Metals by EPA 6020B: CCR Rule Analy	ytes, Dissolv	ved B, Ca, I	-e	Aliquot: 2	20-0355-06-C05-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	203		ug/L	20	04/13/2020	AB20-0413-03
Calcium	114000		ug/L	1000	04/13/2020	AB20-0413-03

ug/L

04/13/2020

20

AB20-0413-03

547



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	DUP-01	Collect Date:	04/07/2020
Lab Sample ID:	20-0355-07	Collect Time:	12:00 AM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule A	Appendix III and F	e Total M	etals	Aliquot:	20-0355-07-C01-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	199		ug/L	20	04/13/2020	AB20-0413-02
Calcium	150000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	343		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule A	nalyte List, CI, F,	SO4, Aqu	eous	Aliquot:	20-0355-07-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	42400		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1780		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	393000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 254	OC			Aliquot:	20-0355-07-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	828		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	EB-01	Collect Date:	04/08/2020
Lab Sample ID:	20-0355-08	Collect Time:	07:24 AM
Matrix:	Water		

Metals by EPA 6020B: CCR Rule	Appendix III and I	e Total M	etals	Aliquot:	20-0355-08-C01-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	ND		ug/L	20	04/13/2020	AB20-0413-02
Calcium	ND		ug/L	1000	04/13/2020	AB20-0413-02
Iron	ND		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule	Analyte List, Cl, F,	SO4, Aqu	eous	Aliquot:	20-0355-08-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	ND		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	ND		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	ND		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 25	40C			Aliquot:	20-0355-08-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	ND		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	FB-01	Collect Date:	04/07/2020
Lab Sample ID:	20-0355-09	Collect Time:	11:37 AM
Matrix:	Water		

Metals by EPA 6020B: CCR Rule	Appendix III and F	e Total M	etals	Aliquot:	20-0355-09-C01-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	ND		ug/L	20	04/13/2020	AB20-0413-02
Calcium	ND		ug/L	1000	04/13/2020	AB20-0413-02
Iron	ND		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule	Analyte List, Cl, F,	SO4, Aqu	eous	Aliquot:	20-0355-09-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	ND		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	ND		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	ND		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 25	40C			Aliquot:	20-0355-09-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	ND		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	JRW-MW-15006 MS	Collect Date:	04/08/2020
Lab Sample ID:	20-0355-10	Collect Time:	04:15 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR	Rule Appendix III and F	e Total M	etals	Aliquot:	20-0355-10-C01-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	105		%	20	04/13/2020	AB20-0413-02
Calcium	113		%	1000	04/13/2020	AB20-0413-02
Iron	111		%	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR R Parameter(s)				•	20-0355-10-C02-A01 Analysis Date	Analyst: DMW Tracking #
Anions by EPA 300.0 CCR R Parameter(s) Chloride	t <mark>ule Analyte List, CI, F,</mark> Result 114	<u>SO4, Aqu</u> Flag	eous Units %	Aliquot: RL 1000	20-0355-10-C02-A01 Analysis Date 04/10/2020	Analyst: DMW Tracking # AB20-0410-01
Parameter(s)	Result		Units	RL	Analysis Date	Tracking #

Metals by EPA 6020B: C	CR Rule Analytes, Dissolve	Aliquot:	Analyst: SLK		
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking #
Boron	99	%	20	04/13/2020	AB20-0413-03
Calcium	105	%	1000	04/13/2020	AB20-0413-03
Iron	100	%	20	04/13/2020	AB20-0413-03



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-0355
Field Sample ID:	JRW-MW-15006 MSD	Collect Date:	04/08/2020
Lab Sample ID:	20-0355-11	Collect Time:	04:15 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot:	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	110		%	20	04/13/2020	AB20-0413-02
Calcium	118		%	1000	04/13/2020	AB20-0413-02
Iron	111		%	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR	Rule Analyte List, CI, F,	SO4, Aqu	eous	Aliquot:	20-0355-11-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	117		%	1000	04/10/2020	AB20-0410-01
Fluoride	96		%	1000	04/10/2020	AB20-0410-01
Fluoride Sulfate	96 102		% %	1000 2000	04/10/2020 04/15/2020	AB20-0410-01 AB20-0410-01

Metals by EPA 6020B: CCR Rule Analytes, Dissolved B, Ca, Fe					Aliquot: 20-0355-11-C03-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Boron	98		%	20	04/13/2020	AB20-0413-03	
Calcium	105		%	1000	04/13/2020	AB20-0413-03	
Iron	104		%	20	04/13/2020	AB20-0413-03	



Data Qualifiers

Exception Summary

No exceptions occured.

Chemistry Department

General Standard Operating Procedure

### TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Inspection Date: 04 00 2020 Inspection By: <u>CVH</u>	
Sample Origin/Project Name: PONdS 1+2 JRW CCR	
Shipment Delivered By: Enter the type of shipment carrier.	
Pony         FedEx         UPS         USPS         Airborne	
Other/Hand Carry (whom) 14- CONSUMERS	
Tracking Number Shipping Form Attached: Yes No	
Shipping Containers: Enter the type and number of shipping containers received.	
Cooler (1) Cardboard Box Custom Case Envelope/Mailer	
Loose/Unpackaged Containers Other	
Condition of Shipment: Enter the as-received condition of the shipment container	
Damaged Shipment Observed None / Dented Leaking	
Other	
Shipment Security: Enter if any of the shipping containers were opened before receipt.	
Shipping Containers Received: Opened Sealed	
Enclosed Documents: Enter the type of documents enclosed with the shipment.	
CoC V Work Request Air Data Sheet Other	
Temperature of Containers: Measure the temperature of several sample containers.	-
As-Received Temperature $3.2 - 4.4\%$ Samples Received on Ice: Yes $4$ No	
Number and Type of Containers: Enter the total number of sample containers received	
	king
VOA (40mL or 60mL)	
Quart/Liter (g/p)	
2-oz (amber glass)	
125 mL (plastic) [4	
24 mL vial (glass)	
500 mL (plastic)	•
Other	
Inions + TDS Sample containers	
were combined For analysis.	

20-0355 Page 17 of 18

PG. 282 not needed

## **CHAIN OF CUSTODY**

### **CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**

### Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SIT	E			PROJECT NUMBER			ANALYSIS REQUESTED						Page 1 of 1		
JRW RCRA	— April 202	20 Pond 1&2	2	20-0355											SEND REPORT TO Michelle Marion
SAMPLING TEA	AM			DATE SHIPPED	SITE	SKETCHEI CIRCLE	D ATTACHED?	tals			Pan				TRC
Casey Hanse	n					YES	NO	Total Metals	suc		Dissolved Metals				PHONE
CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCAT	ION	DEPTH (ft)	# OF CONTAINERS	Tota	Anions	TDS	5i⊄				REMARKS
20-0355-01			GW	JRW-MW-15001_040\$2			2	X	X	X					
-02	4-7-2020	1114	GW	JRW-MW-15002 _0407?	20		2	x	X	Х					
	4.7.202D	1226	GW	JRW-MW-15003_0407	20		2	x	X	Х					
	4.7.202	01312	GW	JRW-MW-15004_04077	20		2	x	Х	Х					
-05	4.6.202	1507	GW	JRW-MW-15005 0405	20		2	x	X	Х					
-06	4-6,204	1615	GW	JRW-MW-15006 <b> 0408</b>	20		3	x	X	х	X				
-07	4.7.2020		GW	DUP-01_040126			2	x	X	X					
-08	4.8.202	0 0724	GW	EB-01_040820			2	x	X	Х					Peristaetic
-09	4.7.2020	1137	GW	FB-01 -040720			2	x	Х	Х					
-10	K-6.2000	1615	GW	JRW-MW-15006 MS040	0820		3	x	X		X				
<b>↓</b> -11	4.4.1010	1615	GW	JRW-MW-15006 MSD_0	10820		3	X	x		X				
RELINQUISHEI	DBY (SIGNA	TURE)	DATE/TI	ME RECEIV	ED BY (S	SIGNATUR	E)						COMMEN	TS	22 A. E.
	XHams		4-g-	2020 0645	Y.										3,2-4,6% 01jce
RELINQUISHEI	OBY (SIGNA	TURE)	DATE/TI	ME RECEIV		SIGNATUR	E)								
<del>.</del>						E Dogo 19				0	RIGINA	L TO L	AB CO	РҮ ТО С	CUSTOMER



### Pond 6



To: MAMarion, P22-118

From: EBlaj, T-258

Date: April 21, 2020

Subject: RCRA GROUNDWATER MONITORING – JR WHITING POND 6 – 2020 Q2

CC: Sarah Holmstrom, Project Manager TRC Environmental Corporation 1540 Eisenhower Place Ann Arbor, MI 48108

### Chemistry Project: 20-0355

phone 517-788-1251

fax 517-788-2533

135 W. Trail St.

Jackson, MI 49201

CE Laboratory Services conducted groundwater monitoring at JR Whiting Pond 6 on 04/07/2020 and 04/08/2020, for the 1<sup>st</sup> Semiannual monitoring requirement, and as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis in the Chemistry department of Laboratory Services on 04/09/2020.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2009 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

### CASE NARRATIVE

### I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

### II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22<sup>nd</sup> Edition, 2012.

### III. <u>Results/Quality Control</u>

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

### **DEFINITIONS / QUALIFIERS**

The following qualifiers and/or acronyms are used in the report, where applicable:

Acronym	Description
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

Qualifier	Description
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
Н	The maximum recommended hold time was exceeded
Ι	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
Μ	The precision for duplicate analysis was not met; RPD outside acceptance criteria
Ν	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
Х	Other notation required; comment listed in sample notes and/or case narrative



# Customer Name:JR Whiting ComplexWork Order ID:JRW RCRA GW Monitoring - Pond 6 - April 2020Date Received:4/9/2020Chemistry Project:20-0356

Sample #	Field Sample ID	Matrix	Sample Date	Site
20-0356-01	JRW-MW-16001	Groundwater	04/08/2020 09:05 AM	JRW RCRA GW Monitoring - Pond 6
20-0356-02	JRW-MW-16002	Groundwater	04/08/2020 10:30 AM	JRW RCRA GW Monitoring - Pond 6
20-0356-03	JRW-MW-16003	Groundwater	04/08/2020 11:14 AM	JRW RCRA GW Monitoring - Pond 6
20-0356-04	JRW-MW-16004	Groundwater	04/08/2020 12:16 PM	JRW RCRA GW Monitoring - Pond 6
20-0356-05	JRW-MW-16005	Groundwater	04/07/2020 02:36 PM	JRW RCRA GW Monitoring - Pond 6
20-0356-06	JRW-MW-16006	Groundwater	04/07/2020 03:27 PM	JRW RCRA GW Monitoring - Pond 6
20-0356-07	DUP-02	Groundwater	04/07/2020 03:27 PM	JRW RCRA GW Monitoring - Pond 6
20-0356-08	EB-02	Water	04/08/2020 07:34 AM	JRW RCRA GW Monitoring - Pond 6
20-0356-09	FB-02	Water	04/07/2020 02:01 AM	JRW RCRA GW Monitoring - Pond 6
20-0356-10	JRW-MW-16003 MS	Groundwater	04/08/2020 11:14 AM	JRW RCRA GW Monitoring - Pond 6
20-0356-11	JRW-MW-16003 MSD	Groundwater	04/08/2020 11:14 AM	JRW RCRA GW Monitoring - Pond 6



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	JRW-MW-16001	Collect Date:	04/08/2020
Lab Sample ID:	20-0356-01	Collect Time:	09:05 AM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals					20-0356-01-C02-A01	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Boron	170		ug/L	20	04/13/2020	AB20-0413-02	
Calcium	89000		ug/L	1000	04/13/2020	AB20-0413-02	
Iron	79		ug/L	20	04/13/2020	AB20-0413-02	
Anions by EPA 300.0 CCR Rule An	Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous						
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Chloride	17100		ug/L	1000	04/10/2020	AB20-0410-01	
Fluoride	1660		ug/L	1000	04/10/2020	AB20-0410-01	
Sulfate	229000		ug/L	2000	04/15/2020	AB20-0410-01	
Total Dissolved Solids by SM 2540	Total Dissolved Solids by SM 2540C						
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Total Dissolved Solids	500		mg/L	20	04/09/2020	AB20-0409-06	



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	JRW-MW-16002	Collect Date:	04/08/2020
Lab Sample ID:	20-0356-02	Collect Time:	10:30 AM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot:	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	173		ug/L	20	04/13/2020	AB20-0413-02
Calcium	125000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	240		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Ar	Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous					Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	18700		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1480		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	369000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C Aliquot: 20-0356-02-C04-A01 Analys						Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	733		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	JRW-MW-16003	Collect Date:	04/08/2020
Lab Sample ID:	20-0356-03	Collect Time:	11:14 AM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot: 20-0356-03-C02-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	199		ug/L	20	04/13/2020	AB20-0413-02
Calcium	134000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	364		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analy	Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous				20-0356-03-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	26100		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1510		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	386000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C				Aliquot:	20-0356-03-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	767		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	JRW-MW-16004	Collect Date:	04/08/2020
Lab Sample ID:	20-0356-04	Collect Time:	12:16 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot: 2	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	201		ug/L	20	04/13/2020	AB20-0413-02
Calcium	160000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	208		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analy	rte List, CI, F,	SO4, Aqu	eous	Aliquot: 2	20-0356-04-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	33500		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1480		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	449000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C Aliquot: 20-0356-04-C04-A01						Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	885		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	JRW-MW-16005	Collect Date:	04/07/2020
Lab Sample ID:	20-0356-05	Collect Time:	02:36 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot: 20-0356-05-C02-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	182		ug/L	20	04/13/2020	AB20-0413-02
Calcium	105000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	303		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analy	Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous				20-0356-05-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	21000		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1720		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	284000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C				Aliquot: 2	20-0356-05-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	644		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	JRW-MW-16006	Collect Date:	04/07/2020
Lab Sample ID:	20-0356-06	Collect Time:	03:27 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot: 20-0356-06-C02-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	170		ug/L	20	04/13/2020	AB20-0413-02
Calcium	102000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	256		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analyt	Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous				20-0356-06-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	20600		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1620		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	290000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C				Aliquot: 2	20-0356-06-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	627		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	DUP-02	Collect Date:	04/07/2020
Lab Sample ID:	20-0356-07	Collect Time:	03:27 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot:	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	176		ug/L	20	04/13/2020	AB20-0413-02
Calcium	109000		ug/L	1000	04/13/2020	AB20-0413-02
Iron	262		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analy	eous	Aliquot:	20-0356-07-C02-A01	Analyst: DMW		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	21500		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	1720		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	290000		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C					20-0356-07-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	621		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	EB-02	Collect Date:	04/08/2020
Lab Sample ID:	20-0356-08	Collect Time:	07:34 AM
Matrix:	Water		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot: 20-0356-08-C01-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	ND		ug/L	20	04/13/2020	AB20-0413-02
Calcium	ND		ug/L	1000	04/13/2020	AB20-0413-02
Iron	ND		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot: 20-0356-08-C02-A01		Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	ND		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	ND		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	ND		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2540C				Aliquot: 20-0356-08-C03-A01 Analyst: CLH		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	ND		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	FB-02	Collect Date:	04/07/2020
Lab Sample ID:	20-0356-09	Collect Time:	02:01 AM
Matrix:	Water		

Metals by EPA 6020B: CCR Ru	Aliquot:	Analyst: SLK				
Parameter(s)	Result	esult Flag		Units RL Analy		Tracking #
Boron	ND		ug/L	20	04/13/2020	AB20-0413-02
Calcium	ND		ug/L	1000	04/13/2020	AB20-0413-02
Iron	ND		ug/L	20	04/13/2020	AB20-0413-02
Anions by EPA 300.0 CCR Rule	e Analyte List, Cl, F,	SO4, Aqu	eous	Aliquot:	20-0356-09-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	ND		ug/L	1000	04/10/2020	AB20-0410-01
Fluoride	ND		ug/L	1000	04/10/2020	AB20-0410-01
Sulfate	ND		ug/L	2000	04/15/2020	AB20-0410-01
Total Dissolved Solids by SM 2	2540C			Aliquot:	20-0356-09-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	ND		mg/L	20	04/09/2020	AB20-0409-06



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	JRW-MW-16003 MS	Collect Date:	04/08/2020
Lab Sample ID:	20-0356-10	Collect Time:	11:14 AM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot:	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	101		%	20	04/13/2020	AB20-0413-02
Calcium	113		%	1000	04/13/2020	AB20-0413-02
Iron	103		%	20	04/13/2020	AB20-0413-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous					Aliquot: 20-0356-10-C02-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Chloride	109		%	1000	04/10/2020	AB20-0410-01	
Fluoride	87		%	1000	04/10/2020	AB20-0410-01	
Sulfate	93		%	2000	04/15/2020	AB20-0410-01	



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0356
Field Sample ID:	JRW-MW-16003 MSD	Collect Date:	04/08/2020
Lab Sample ID:	20-0356-11	Collect Time:	11:14 AM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals					Aliquot: 20-0356-11-C01-A01			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #		
Boron	104		%	20	04/13/2020	AB20-0413-02		
Calcium	114		%	1000	04/13/2020	AB20-0413-02		
Iron	110		%	20	04/13/2020	AB20-0413-02		

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous					Aliquot: 20-0356-11-C02-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Chloride	108		%	1000	04/10/2020	AB20-0410-01	
Fluoride	87		%	1000	04/10/2020	AB20-0410-01	
Sulfate	93		%	2000	04/15/2020	AB20-0410-01	



Data Qualifiers

Exception Summary

No exceptions occured.

Chemistry Department

General Standard Operating Procedure

### TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

e type of shipmer	nt carrier. UPSShipping of shipping containersCustom CaOther dution of the shipmentDente	USPS g Form Attached: received. se container	Airborne Yes No Envelope/Mailer Leaking
e type of shipmer	nt carrier. UPSShipping of shipping containersCustom CaOther dution of the shipmentDente	USPS g Form Attached: received. se container	Airborne Yes No Envelope/Mailer Leaking
e type of shipmer	nt carrier. UPSShipping of shipping containersCustom CaOther dution of the shipmentDente	USPS g Form Attached: received. se container	Airborne Yes No Envelope/Mailer Leaking
<u>CUA - CONS</u> pe and number of board Box ners as-received cono ved· None ∠	Shipping containers Custom Ca Other dution of the shipment Dente	Form Attached: received. se container	Yes No Envelope/Mailer Leaking
pe and number of board Box	of shipping containers Custom Ca Other dition of the shipment Dente	received. se container ed	Envelope/Mailer
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Enter the total n	number of sample cont	ainers received	
tter         Soil			<u>roken</u>
	pe of documents equest ure the temperat 3.2 - 4.4 ° Enter the total m ter Soil     n + 4 i N e f e	pe of documents enclosed with the shipequest Air Data Shaper Air Data S	Aure the temperature of several sample containers. 3.2 - 4.6 C Samples Received on Ice: Yes Enter the total number of sample containers received ter Soil Other B 

20-0356 Page 17 of 18 PG. 282 not needed

# **CHAIN OF CUSTODY**

## **CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

**Consumers Energy** 

SAMPLING SIT	Е			PROJECT NUMBER				ANALYSIS REQUESTED					Page 1 of 1
JRW RCRA	– April 202	20 Pond 6		20-03	56								SEND REPORT TO Michelle Marion
AMPLING TEA	M		·······	DATE SHIPPED	SITE SKETCHEI CIRCLE		tals						TRC
Casey Hanse	n				YES	NO	Total Metals	suc	-				PHONE
CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATIO	DEPTH	# OF CONTAINERS	Tota	Anions	TDS				REMARKS
20-0356-01			GW	JRW-MW-16001 _0408 20		2	x	Х	X				
1	4.8.202		GW	JRW-MW-16002_040820		2	x	X	X				
1	4.6.201	_	GW	JRW-MW-16003_040820		2	x	X	X				
-04	K.6.101	0 1214	GW	JRW-MW-16004_040870		2	x	X	X				
-05	4.7.2020	1436	GW	JRW-MW-16005_040720		2	x	X	X				
	4.7.2020		GW	JRW-MW-16006_040-120		2	x	X	x				
	4.7.2020		GW	DUP-02-040720		2	x	X	x				
	4.8.2020		GW	EB-02-040820		2	x	X	x				Submersible
	47.200	•	GW	FB-02_040720		2	x	X	x				
	4.6.200		GW	JRW-MW-16003 MS ~0409	320	2	x	X					
v −11		1114	GW	JRW-MW-16003 MSD_ <b>040</b>	\$20	2	x	X					
RELINQUISHE	DBY (SIGNA	TURE)	DATE/TI	ME RECEIVED	BY (SIGNATUR	E)			ı		COM	MENTS	3,7-4,1.06
Casup	Hanser	V	4-9	,2020 0645	4-								3.2-4.6°6 ONICI
RELINQUISHE	OBY (SIGNA'	TURE)	DATE/TI	ME RECEIVED	B (SIGNATUR	E)	1						
					۷				ORIC	INAL TO	) LAB	СОРУ Т	O CUSTOMER



To: MAMarion, P22-118

From: EBlaj, T-258

Date: June 08, 2020

Subject: RCRA GROUNDWATER MONITORING – WHITING POND 6 VERIFICATION – 2020 Q2

 CC: Sarah Holmstrom, Project Manager TRC Companies, Inc.
 1540 Eisenhower Place Ann Arbor, MI 48108

### Chemistry Project: 20-0589

*phone* 517-788-1251 *fax* 517-788-2533

135 W. Trail St.

Jackson, MI 49201

CE Laboratory Services conducted groundwater monitoring at JR Whiting Pond 6 on 05/21/2020, for the 1<sup>st</sup> Semiannual monitoring requirement, and as specified in the Sampling and Analysis Plan for the site. Only MW-16002 was sampled in order to verify Fluoride level. The samples were received by the Chemistry department of Laboratory Services for analysis on 05/22/2020.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2009 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

### CASE NARRATIVE

### I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

### II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22<sup>nd</sup> Edition, 2012.

### III. <u>Results/Quality Control</u>

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

### **DEFINITIONS / QUALIFIERS**

The following qualifiers and/or acronyms are used in the report, where applicable:

Acronym	Description
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

Qualifier	Description
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
Η	The maximum recommended hold time was exceeded
Ι	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
Μ	The precision for duplicate analysis was not met; RPD outside acceptance criteria
Ν	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
Х	Other notation required; comment listed in sample notes and/or case narrative



# Customer Name:JR Whiting ComplexWork Order ID:JRW Resampling MW-16002 and Site Water Level SurveyDate Received:5/22/2020Chemistry Project:20-0589

<u>Sample #</u>	Field Sample ID	<u>Matrix</u>	Sample Date	Site
20-0589-01	JRW-MW-16002	Groundwater	05/21/2020 05:23 PM	JRW RCRA GW Monitoring - Pond 6
20-0589-02	DUP-01	Groundwater	05/21/2020 05:23 PM	JRW RCRA GW Monitoring - Pond 6
20-0589-03	EB-01	Groundwater	05/21/2020 05:23 PM	JRW RCRA GW Monitoring - Pond 6
20-0589-04	FB-01	Groundwater	05/21/2020 05:23 PM	JRW RCRA GW Monitoring - Pond 6
20-0589-05	JRW-MW-16002 MS	Groundwater	05/21/2020 05:23 PM	JRW RCRA GW Monitoring - Pond 6
20-0589-06	JRW-MW-16002 MSD	Groundwater	05/21/2020 05:23 PM	JRW RCRA GW Monitoring - Pond 6



# Sample Site:JRW RCRA GW Monitoring - Pond 6Laboratory Project:20-0589Field Sample ID:JRW-MW-16002Collect Date:05/21/2020Lab Sample ID:20-0589-01Collect Time:05:23 PMMatrix:GroundwaterCollect Time:05:23 PM

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous			Aliquot:	20-0589-01-C01-A02	Analyst: DMW	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Fluoride	1080		ug/L	1000	06/01/2020	AB20-0601-09



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0589
Field Sample ID:	DUP-01	Collect Date:	05/21/2020
Lab Sample ID:	20-0589-02	Collect Time:	05:23 PM
Matrix:	Groundwater		

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous			Aliquot: 20-0589-02-C01-A01		Analyst: DMW	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Fluoride	1030		ug/L	1000	06/01/2020	AB20-0601-09



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0589
Field Sample ID:	EB-01	Collect Date:	05/21/2020
Lab Sample ID:	20-0589-03	Collect Time:	05:23 PM
Matrix:	Groundwater		

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous			Aliquot: 20-0589-03-C01-A01		Analyst: DMW	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Fluoride	ND		ug/L	1000	06/01/2020	AB20-0601-09



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0589
Field Sample ID:	FB-01	Collect Date:	05/21/2020
Lab Sample ID:	20-0589-04	Collect Time:	05:23 PM
Matrix:	Groundwater		

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous			Aliquot: 20-0589-04-C01-A01		Analyst: DMW	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Fluoride	ND		ug/L	1000	06/01/2020	AB20-0601-09



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0589
Field Sample ID:	JRW-MW-16002 MS	Collect Date:	05/21/2020
Lab Sample ID:	20-0589-05	Collect Time:	05:23 PM
Matrix:	Groundwater		

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous			Aliquot: 20-0589-05-C01-A01		Analyst: DMW	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Fluoride	88		%	1000	06/01/2020	AB20-0601-09



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-0589
Field Sample ID:	JRW-MW-16002 MSD	Collect Date:	05/21/2020
Lab Sample ID:	20-0589-06	Collect Time:	05:23 PM
Matrix:	Groundwater		

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous			Aliquot: 20-0589-06-C01-A01		Analyst: DMW	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Fluoride	90		%	1000	06/01/2020	AB20-0601-09



Data Qualifiers

Exception Summary

No exceptions occured.

**Chemistry Department** 

PROC CHEM-1.2.01 PAGE 1 OF 2 REVISION 2 ATTACHMENT A

1000 B.100

General Standard Operating Procedure

### TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Log-In Number: _	20-0	589				
Inspection Date:	- 22-202	0	Inspecti	on By:	3	
Sample Origin/Project Nar	ne: <u>JRI</u>	N - Res	empled	HW 1600;	<u>ጉ</u>	
Shipment Delivered By: E			ų			
Pony				LISPS	Aiıb	orne
Other/Hand Carry						
Tracking Number:	NA		Shı	pping Form Att	ached Yes	No
Shipping Containers: Ente						
Cooler	• •				Euroleus	/Mailen
					Envelope	
Loose/Unpackaged						
Condition of Shipment: Er		,	_	ment container.		
Damaged Shipment				Dented		ing
Other				****		
Shipment Security: Enter i	f any of the sh	ipping conta	iners were op	ened before rec	eipt.	
Shipping Container	s Received: C	pened		Sealed		
Enclosed Documents; Ente	r the type of d	ocumente en	closed with t	he shinment		
	• •			-	0.1	
	Vork Request		_ Air Da	ta Sheet	Other	
Temperature of Containers				-		
As-Received Temp	erature <u>2.</u>	+°C	Samples	Received on Ic	e: YesNo	
Number and Type of Conta	<u>a</u> 0	13402				
<u>Container Type</u>	<u>Water</u>	<u>Soil</u>		Other	Broken	Leaking
VOA (40mL or 60ml		<u></u>			Droken	Louiding
Quart/Liter (g/p)	·····	<u></u>	<u></u>		·····	*****************
9-oz (amber glass ja	ar)					<u></u>
2-oz (amber glass)						
125 mL (plastic)	6					
24 mL vial (glass)				- -		
500 mL (plastic)			<u></u>	,		
Other						

# **CHAIN OF CUSTODY**

### **CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**

### 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

**Consumers Energy** 

SAMPLING SI	ГЕ				PROJECT NUMBER					AN.	ALYSIS	REQUEST	ED	Page 1 of 1
JRW RCRA Verifi		/ay 202 on Sami		6		20-05	89							SEND REPORT TO Michelle Marion
SAMPLING TE	AM				DATE SHIPPED	_	SITE SKETCHEL							TRC
Chase Tume	у				Carry in St.	21/20	CIRCLE YES	NO	Anions					PHONE
CE CONTROL #		AMPLE DATE	SAMF TIM		SAMPLE DESCRIPTIO	N / LOCATIO	DEPTH N (ft)	# OF CONTAINERS	Ani					REMARKS
20-0589-01	5-	21-20	172	GW GW	JRW-MW-16002			1	x					
-02	2	L		GW	DUP-01			1	X					
-03	;			GW	EB-01			1	x					
-04	r			GW	FB-01			1	x					
-05	5			GW	JRW-MW-16002 N	MS		1	x					
-06	5	V	J	GW	JRW-MW-16002 M	MSD		1	x					
										10-11 - 10-10 - 10-1				
				····										
					-									
RELINQUISHE	ED BY	(SIGNA	TURE)	DATE/T	ME /20 2015	RECEIVED	BY (SIGNATUR	Е)		2.4°C	upo		COMMENT	S
RELINQUISHE	ED BY	(SIGNA	TURE)	DATE/T		RECEIVED	Br (SIGNATUR	Е)	;	Fluke	<i>0</i> ,	548	9	
											ORIGINA	L TO LA	B COP	Y TO CUSTOMER



## Appendix C Field Notes



Pond 1 & 2

# **CHAIN OF CUSTODY**

### **CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**

### **Consumers Energy**

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

AMPLING SIT	E			PROJECT NUMBER					ANAI	LYSIS R	EQUESTED	Page 1 of 1
RW RCRA	– April 202	20 Pond 1&2	2	20-03	355							SEND REPORT TO Michelle Marion
AMPLING TEA	AM			DATE SHIPPED	SITE SKETCHEI CIRCLE		tals			Pan		TRC
Casey Hanse	n				YES NO		Total Metals	suc		Dissolued Metall		PHONE
CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATIO	DEPTH	# OF CONTAINERS	Tota	Anions	TDS	51Q		REMARKS
20-0355-01	4.8.152	140)	GW	JRW-MW-15001_040820		2	x	X	Х			
-02	4-7-2010	1114	GW	JRW-MW-15002 _040ገ2	>	2	x	X	Х			
	4.7.202D	1226	GW	JRW-MW-15003_040720		2	x	X	Х			
	4.7.202		GW	JRW-MW-15004_540720		2	x	Х	Х			
-05	4.6.202	1507	GW	JRW-MW-15005_040821	0	2	X	X	Х			
-06	4.4.202	1615	GW	JRW-MW-15006 04082	۵	3	X	X	Х	X		
-07	4.7.2020		GW	DUP-01_040126		2	x	X	X			
-08	4.8.202	0 0724	GW	EB-01_040820		2	x	X	Х			Peristaction
-09	4.7.2020	1137	GW	FB-01 -040720		2	X	X	X			
-10	Q.6.100	1615	GW	JRW-MW-15006 MS _0408	320	3	x	X		X		
<b>↓</b> -11	y & . 7070	1615	GW	JRW-MW-15006 MSD_040	820	3	x	X		X		
	d by (signa' XHMM		DATE/TI 4-9-	ME RECEIVED 2020 0645	) BY (SIGNATUR	E)					COMMENTS	3,2-4,6°0 01,102
	DBY (SIGNA'		DATE/T	ME	BY (SIGNATUR	E)						
									O	RIGINA	L TO LAB COPY	TO CUSTOMER

boratory Services		WATER LEV	EL DATA		
Site:	JR Whiting				,
Project No:	20-0355, 20-035	56		Reviewed by:	Y
Analyst:	CLH	<u> </u>		<b>Review Date:</b>	004-17-2
Date:	4/7/2020				
Method:	Electronic Tape				
Tape ID:	Geotech WLM		S/N:	1003	
Well ID	Time	DTW Trial 1 (ft)	DTW Trial 2 (ft)	DTB (ft)	Remarks
JRW MW-15001	1009 🗸	3.75 🗸	3.75	83.15	
JRW MW-15002	1015 🖌	12.57 🗸	12.57	93.05	
JRW MW-15003	1013 🖌	9.58 v	9.58	91.2	
JRW MW-15004	0956 🗸	11.9 🗸	11.9	97.8	
JRW MW-15005	0948 🗸	10.54 🖌	10.54	94.9	
JRW MW-15006	1000 -	2.75 🗸	2.75	73.8	
JRW MW-16001	0913 -	14.8 🗸	14.8	84.01	
JRW MW-16002	0906 🗸	11.21 🗸	11.21	95.5	
JRW MW-16003	0901 🗸	11.43 🗸	11.43	87.3	
JRW MW-16004	0855 🖌	11.76 🗸	11.76	90.01	
JRW MW-16005	0917 🖌	14.57 🏒	14.57	92.8	
JRW MW-16006	0851 🛩	13.48 🗸	13.48	93.27	
JRW MW-16007	0836 🗸	4.77 🖌	4.77	82.25	
JRW MW-16008	0829 -	5.29	5.29	77.55	
JRW MW-16009	0821 🗸	5.04	5.04	83.15	

NOTES: TOC reference point DTW = Depth to Water DTB = Depth to Bottom

Consumers Energy Counton Us®		WATER LEV	EL DATA					
A CENTURY OF EXCELLENCE	15 148.00							
Site:	JR Whiting			Destand has a				
Project No:	20-0355	, 20-0351	0	Reviewed by:	Taulo			
Analyst:	CLA	1		Review Date:	0 24-17-20			
Date:	4-7-2021							
Method:	Electronic Tap			1057				
Tape ID:	Solinst, Model	122 GeoTecr	WLM S/N:	.1003				
Well ID	Time	DTW Trial 1 (ft)	DTW Trial 2 (ft)	DTB (ft)	Remarks			
JRW MW-15001	1009	2,75	3,75	83.15				
JRW MW-15002	1015	12.57	12.57	93.05				
JRW MW-15003	1013	9.58	9.58	91.20				
JRW MW-15004	0956	1190	11.90	97.80	45			
JRW MW-15005	0948	10.54	10.54	94.90				
JRW MW-15006	1000	2.75	2.75	73.80				
JRW MW-16001	0913	14.80	14.80	84.01				
JRW MW-16002	0900	11.21	11.21	95.50				
JRW MW-16003	09.01	11.43	11.43	87.30				
JRW MW-16004	0855	11.76	11.70	90.01	-			
JRW MW-16005	0917	14.57	14.57	92.8D				
JRW. MW-140	04 0851	13.48	13.48	93.27				
JRW MW-16007	0834	4,77	4.77	82.25				
JRW MW-16008	0829	5.29	5.29	77.55				
JRW MW-16009	0821	5.04	5.04	83.15				
1. 			1		_			
10-10-10-10-10-10-10-10-10-10-10-10-10-1								

NOTES: TOC reference point DTW = Depth to Water DTB = Depth to Bottom

Consumers I	inergy	Equipment Details	Model & S/N
aboratory	ounton Us V Services	Monitor Brand	YSI ProDSS S/N 19M100493
A DENTURY OF	EXCELLENCE	Sonde Brand	YSI ProDSS S/N 19M100509
Sonde ID	19M	Flow Cell	EXO1 599080
Start Date	04-06-2020	DO Probe	YSI ProDSS S/N 19L103208
Project #	20-0355 : Ponds 1+2 20-0356 : Pond 6	Turbidity Probe	YSI ProDSS S/N 19L103271
111128.707.707	20-0356 : Pond V	pH With ORP	YSI ProDSS S/N 19M101274
Site	JR whiting CCR	Conductivity & Temperature Probe	YSI ProDSS S/N 19L101251

pH Standard (± 0.1)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration
4.0	GFS # 1634	19240146	4.7.21	4.01	3.97	4.06	4.00	4.02	4.08
7.0	GFS # 1639	19 280105	7.6.21	6.98	1.05	7.08	7.04	7.05	7.08
10.0	GFS # 1645	19210104	5.9.21	10.00	9.95	10.02	10.05	10.00	10.09
S.C. Mark			Initials & Date:	CLH 4.6.20	1214 04-06-20	4.7.20	4.8.20	4-8-20 CUH	4.8.20

Are the calibration values within  $\pm 0.10$  of the standard? (Y) or N (if no, recalibration is required) •

ORP Standard (± 10mV)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
229.0 (mV)	Ricca Chemical 9880	4910441	07.2020	228.9	228.2 220.1 040.200	226.1	229.1	2.28.3	229.9
	Sec. Sec.		Initials & Date:	94-06-20	04-07-20	04.07.20	4.8120	4.8.20	4.8.70

DO	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
90-110% saturation	DI Water	N/A	N/A	102.5	103.5	105.10	103.2	101.4	103.1
		1.1.1.1	Initials & Date:	4-4-20	124c - 20	4.7.20	4.8.20	CVH 41.6.20	4.6.20

PG. [92

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Specific Conductance (uS/cm)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
2241 uS/cm (2173-2308 uS/cm)	Ricca Chemical R2244230 -1A	4002L86	Feb. 2022	2216	2188	1409	1409	1409	1415
		In	itials & Date:	eut 4.6:20	040620	4:7:26 UH	Cest 4.8.20	4.8.20	4.8.20

Turbidity (NTUs)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
0	DI Water	-	-	0.12	0.12	0.39	0.27	0.21	0.26
10.0 (± 1.0 NTUs)	Hach 2659949			N/A	10.23	0.03	N/A	10.09	10.11
40.0 (± 4.0 NTUs)	Hach 2746356	A915B	06-2021	39.71	39.95	40.13		39.93	40,24
		lr	itials & Date:	9-10-20	CHOL2D	aut 471-20	49.20	att 4-8-20	CUH 4-8-20

### Additional Information for calibration standards

Standard	Source	Source Lot #	Source Exp. Date	Standard	Source	Source Lot #	Source Exp. Date
pH 4.0	GFS Chemicals	19240146	4-7.21	pH 9.0 Check (8.9 s)	GFS Chemicals	18148800	10-25-21
pH 7.0	GFS Chemicals	19200073	5.11.21				
pH 10.0	GFS Chemicals	1940 0086	9.19.21				
Sp. (1409) Conductivity	GFS Chemicals	19410200	10-14-20				
40.0 Turbidity	GFS Chemicals	ADODLE	01-22				
10.0 Turbidity	GFS Chemicals	A 0044	2-22				

Data Reviewed By:

04-17-2020 Date:

19M

P6.282

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Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
Ricca Chemical R2244230 -1A	4002L86	Feb. 2022	2290		sonde	1 1/2	-	>
	In	itials & Date:	Q14 A-10.71					
	Ricca Chemical R2244230 -1A	Source Lot # Ricca Chemical R2244230 -1A In	SourceLot #Exp. DateRicca Chemical R2244230 -1A4002L86Feb. 2022Initials & Date:Feb. 2022	Ricca Chemical R2244230 4002L86 Feb. 2022 2290	Ricca Chemical R2244230 -1A Initials & Date: Cut Arte: Th	Ricca Chemical R2244230 -1A Initials & Date: Cu4 A-Ver10	Ricca Chemical R2244230 -1A 4002L86 Feb. 2022 2290 Sonde no- Used Used Initials & Date: CH4 A-10-10	Ricca Chemical R2244230 -1A 4002L86 Feb. 2022 2290 Sonde not Used Used Initials & Date: Qu4 Are: 10

Turbidity (NTUs)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
0	DI Water	1	-	0.13	0.09	0.16	0.08	0.16	0.21
10.0 (±1.0 NTUs)	Hach 2659949			NA	10.03	10.09	NA	10.03	10.16
40.0 (±4.0 NTUs)	Hach 2746356	A9158	06-2021	40-110	40.09	41.16	40.11	40.0p	4171
		lr	nitials & Date:	4.4.20	9-10-20	47:20	4.8.20	\$ 3.20	4.8.20

Are the calibration values within ±10% of the standard?

### Y or N (if no, recalibration is required)

### Additional Information for calibration standards

Standard	Source	Source Lot #	Source Exp. Date	Standard	Source	Source Lot #	Source Exp. Date
PH 4.0			-	PH9	GFS		
PH 7.0				1.1.1	1	1 - 11	
7H 10.0							
Sp. lond.							
40 NTU	Hach						
10 NTU	Hach						

Data Reviewed By: Date: \_ 04-17-2020

<b>Consumers</b> E	nergy	Equipment Details	Model & S/N
aboratory	ount on Us	Monitor Brand	YSI ProDSS S/N 15F102974
	EXCELLENCE	Sonde Brand	YSI ProDSS S/N 15H101425 262909-1
Solide ID	154	Flow Cell	EXO1 599080
Start Date	04.00-2020	DO Probe	YSI ProDSS S/N 19G101726
	20- DZCC PONKS 14-2	Turbidity Probe	YSI ProDSS S/N 15G103731
	20.0356 : Ponds 6	pH With ORP	YSI ProDSS S/N 15H102089
Site	JR whiting CCR	Conductivity & Temperature Probe	YSI ProDSS S/N 15F104224

pH Standard (±0.1)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration
4.0	GFS # 1634	19240146	4.7.21	3.98		* Sonde	e not	used	->
7.0	GFS # 1639	19280105	7.6.21	7.00		L			->
10.0	GFS # 1645	19210104	5.9.21	10.010		L			7
			Initials & Date:	4.6.20		L			4

Is the same standard used for calibration and as-founds? Y or N (if no, document on pg. 2)
 Are the calibration values within ±0.10 of the standard? Y or N (if no, recalibration is required)

ORP Standard (±10 mV)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
229, <sub>D</sub>	Ricca Chemical 9880	4910647	07.2020	228.9		Sonde	ysed		->
(110)			Initials & Date:	4.4.20			4 20-		~7

• Are the calibration values within ±10% of the standard?

Y or N (if no, document on pg. 2) Y or N (if no, recalibration is required)

DO	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration
90-110% saturation	DI Water	N/A	N/A	94.9		*sinde	not i	used ,	
			Initials & Date:	4.6.20					
	same standar le calibration v		libration and as-fou		Y or N Y or N	N			

			Monitoring V	Vell Sampling	Worksheet		1.1			
Well ID <u>JR</u> Location <u>J</u> Depth-to-Mi	Rwhiti	ing	Date <u>4 · 8 -</u> Screen Length	Depth-to-Sc	reen Bottom		5	Casing ID (in)		
(4.8.8)						Totacite				1
			d Measureme				Sonde ID	Completed b	.C. T.A.L.	
Depth-to-wa	ter (ft) <u>2.</u> 1		HC Layer Dete	cted (Y/N) _		-	Pump	Completed b	VCUA	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Rate	Water level Drawdown		
min	units	°C	uS/cm	% sat.	ppm +/- 10%	mV	mL/min *	ft < 0.33	NTU	
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	200	3.81	+/- 10%	SOLIST
1305	7.57	13.3	1100	45.2	4.58	+66.4	200	3.81	16.50	16-1
1313	7.54	13.3	100000	37.3	3,79		200	3.81	13,33	11.0
1316	7.55	13.5	1103	31.8	3,21	+67.7	200	3.81	19.32	8.4
1319	7.54	13.5	1098	28.0	2.90	+55.8	200	3.81	54.57	7.8
1321	7,53	13.4	1104	28.7	2.91	+40.4	200	3.21	The 10	4.13
1324	7.53	13.7	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	25,9	2.41	+33,4		3.81	22.47	5.2
1327	7.53	13.6	1102	25.6	2.59	+ 32.7	200	3.81	* 38,45	
1330	7.53	13.4	Hol	25.5	2.58	+323	200	2.8/	* 41.32	5.5
133		13,7	1103	25.9	2.49	+14.7	200	3.81	4.32.42	
1336	7.51	13.5	1101	24.1	2.43	+ 14.0	200		\$36,24	45
1339	7.51	13.5	1098	22.0	2.22		200	3.81	146.31	-
1342	1	134	1094	19.4	1.95	-38.5				
Total Pump T			Total Purge Vo				Reviewed	iby of		
Weather:	LelºF,		1, sligh			nuddy	e de la	A		1
Comments:		1.	bubbles	1	PH 9 =	0		Þg.142		
Bottles	Filled	Preservativ	e Codes	A - NONE	B-HNO3	C - H2SO4	D - NaOH	E-HCIF-		
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N	
1	125mL 125mL Seb	HDPE	B A	NN						

	-			Vell Sampling \	Worksheet	-	_			
Nell ID JR			Date <u>4.8</u> .	2020 Depth-to-Sci	reen Bottom	Control Nu (ft) 83.19	imber <u>2</u>	0-0355-01 Casing ID (in)		
Depth-to-Mi		. 0								
		Field	d Measureme	ents			Sonde ID	. AM		
Depth-to-wa	ter (ft) <u>3</u> ,7	4	HC Layer Dete	cted (Y/N)	-t <sub>i</sub>			Completed by	y_Utt	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity	
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU	
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%	
1345	7.49	13.6	1094	18.6	1.87	- 50-3	200	3.81	7.01	
1348	7.48	13.6	1091	16.6	1.68	-649	200	3.81	5.81	
1351	7.48	13.7	1101	14.1	1.62	-49.1	200	3-81	te1.51	
1354	7.49	13,7	1100	15.1	1.52	-73.0	200		\$13.70	
1357	7.50	13,7	1103	15.0	1.50	-73.5	200	3.81	#22.10	
1400	7.50	13.5	1103	15,0	1.49	-75.9	200	3.81	#26.09	
1401		ed Sam								
		2 - 2 - 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	pero.			·				
								1		
					-		-			
							-	-		
						1			-	
otal Pump T	I Time (min)		Total Purge Vo	l Dume (gal) つ	VID		Reviewed	by V	_	
Veather:	LelºF.		Slight W				neviewed			
Net Prizz Co		/ming,	Strifter M	11 10, 00	y more	and the	11111	1		
Comments:	Perista	etic XI	oubbles			P	G.25	2		
				-						
Bottles	Filled	Preservativ	ve Codes	A - NONE	B-HNO3 C	- H2SO4	D - NaOH	E-HCIF-		
Dotties		Treservati	Preservative	Filtered	5 miles (	12504 1	- naon	Preservative	Filtered	
Number	Size	Туре	Code	Y/N	Number	Size	Туре	Code	Y/N	
	125mL	HDPE	B	22						
	500mL	HDPE	A	NV .						

			Consum Monitoring V	ers Energy Co Vell Sampling	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			- 1.5	
Well ID <u>JR</u> Location Depth-to-Mi	JRWh		Date <u>04</u> .	Depth-to-So			5	0336-0 Casing ID (in) unt (y/n)	
( PH 1.2-7.4	n)		d Measurem	ents		i i i i	Sonde ID	: 19n	٨
Depth-to-wa	ter (ft) <u>12</u>	.66			Completed b	v CUH			
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level Drawdown	Turbidity
min	units	•с	uS/cm	% sat.	ppm	mV	mL/min	ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%
1029	1.000				1		28D	12.55	
1040	1,53	11.4	1140	4.7	0.48	-130.2	280	12.55	48.21
1043	7.53	11.3	1150	27	0.29	-122.6	280	12.55	48.60
1040	7.52	11.4	1191	3.1	0.32	-94.9	280	12.56	37.83
1049	7-53	11.4	1150	2.4	0.25	-93.0	280	12.55	35.34
1052	7.53	11.4	1150	2.1	0.22	-91.90	28D	12.55	34.30
1055	752	11.4	1153	2.2	0.24	-78.1	280	12.55	28.17
10 58	7.54	11.4	1152	2.1	0.23	-79.1	280	12.65	13.37
101	7.65	11.4	1152	1.9	0.20	-82.5	280	12.56	10.79
1104	7.55	11.6	1191	1.8	0.19	-83.5	280	12.55	8.68
1107	1.55	11.6	1150	1.7	D.18	-83.9	28D	12.65	7.14
1110	7-56	115	1150	1.7	0.18	-84.1	280	12.55	6.00
1113	1.95	11.5	1191	1.7	0.18	-84.10	280	12.55	2.75
Fotal Pump	Time (min)		Total Purge Ve	the state of the s			Reviewed		2.
Neather: Comments:	PH9	check	+ 9-61	1 COll	ect ou	p-D1		ollected sample	@ 1114
Bottles	Filled	Preservati	ve Codes	A - NONE	B-HNO3	C - H2SO4	D - NaOH	E-HCI F-	
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N
125ml	1	HAPE	8	N		1.4.1.1			
Sooml		HIDPE	A	N					
			for low-flow an						

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				ers Energy Cor Vell Sampling			-	6	- 1		
Location Depth-to-Mi	W · MW - 1 JR W idscreen (ft)	5003 nitinar	Date <u></u> Screen Length	- 2020 Depth-to-Sc	reen Bottom		D	Casing ID (in)			
(7.3	1.8.3)	Fie	ld Measurem	ents			Sonde ID	19M			
and the second s	ater (ft) 9.6	0	HC Layer Dete	cted (Y/N) _	N		Completed by				
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level Drawdown	Turbidity		
min	units	"с	uS/cm	% sat.	ppm	mV	mL/min	ft	NTU		
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%		
1130		1.7.2 m					200	9.61			
1135	7.68	11.5	1027	13.2	1.40	- 95.8	200	9.41	120.19		
1138	7.69	11.5	1025	12.0	1.27	-95.7	200	9.61	102.1D		
1141	7.49	11.5	1019	10.6	1.13	-94.4	200	9.61	74.92		
1144	7.68	11.5	1014	9.4	1.02	-93.2	200	9.61	54.00		
1147	7.69	11.5	1012	4.4	0.70	- 95.L	200	9.61	43.27		
1150	7.69	11.5	1012	6.3	0.67	-46.9	200	9.61	39.82		
1153	7.49	11.5	1011	Ce . l	0.65	-46.9	200	9. Le 1	30.16		
1156	7.49	11.6	1010	5.2.	0.55	-47.0	200	9.41	30.01		
1159	T.69	11.7	1010	4.0	0.42	-47.1	200	9.61	21.00		
1202	7.69	11.8	1010	3.8	0.40	-47.0	200	9.61	17.56		
1205	7.69	11.7	1011	3.8	0.39	-47.0	200	and the second	15.11		
1208	7.69	11.8	1015	3.7	0.38	-47.1	200	9.41	14.75		
Fotal Pump T	Fime (min)		Total Purge Vo	olume (gal) _	1	200	Reviewed		L.		
Weather:	47°C. 1	Cloudy	, slight								
Comments:	pH 9 c	V				1	PG.1	62 1			
Bottles	s Filled	Preservati	ve Codes	A - NONE	B-HNO3 C	- H2SO4	D - NaOH	E-HCIF			
Number	Size	Type	Preservative Code	Filtered Y/N	Number	Size	Tunn	Preservative Code	Filtered Y/N		
	12GML	HDPE	B	N	Number	5120	Туре	coue	1710		
1	SOOML	HDPE	A	N	1		1				
				d <1 gal/min							

				ers Energy Cor /ell Sampling '			1	_				
Well ID Location Depth-to-Mi	IR whi-	Hing	Date <u>4</u>	Depth-to-Sc	reen Bottom	(ft) _ 91,2	Jumber 20-0355 · 03           2D         Casing ID (in) 2"           casing Mount (y/n)					
		Fie	ld Measureme	ents			Sonde ID					
Depth-to-wa	ter (ft) 9.1	eD	HC Layer Dete	cted (Y/N)	N	-	Sonde ID: 19 M Completed by <u>CU</u>					
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity			
min 3-5 min	units +/- 0.1	°C NA	uS/cm +/- 3%	% sat. +/- 10%	ppm +/- 10%	mV +/- 10mV	mL/min *	Drawdown ft < 0.33	NTU +/- 10%			
1211	7.69	11.8	1015	3.9	0.41	-98.4	200	9.41	11.87			
1214	7.69	11.8	1016	3.4	0.38	-99.5	C A COMPLETE	9.41	10.6			
1217	7.69	11.8	1017	3.2	0.33	-101.6		9.41	8.0			
1220	7.69	11.8	1017	3.0	0.32	-102.0	200	9.61	8.05			
1223	7.49	11.0	1017	3.0	0.31	-102.2	200	9.61	7.6			
1224	collect	ed Sar							16.5.7			
1226			199			1						
<u>2</u> 2.				0.000								
								-				
Total Pump 1	l	-	Total Purge Vo	olume (gal)っ	2009		Reviewed	by Y	2-			
Weather:	47°C.	cloud	y, slight	wind -	7.9			0				
						D	4.24	V				
Comments:	pagi	neur an	01 ~				6.287	L	-			
Bottles	s Filled	Preservati	ve Codes	A - NONE	B-HNO3 G	C - H2SO4 I	D - NaOH	E-HCIF	-			
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N			
	125ML	HDAE	BA						1. A.A			
1	500mi	HDRE	A	22								
	1	1 Carol										

			Consume Monitoring W	ers Energy Con ell Sampling					
Well ID J A Location Depth-to-Mid	IR whiti	ng	Date <u>4.1</u> Screen Length	Depth-to-Sc		(ft) 97.8	0	) - 0 355 - Casing ID (in) unt (y/n) <u>V</u>	
	TT	Fiel	d Measureme	ents			Sonde ID	: 19M	
Depth-to-wa	ter (ft) <u>1</u>	.92	HC Layer Dete	cted (Y/N) _	Completed by				
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min 3-5 min	units +/- 0.1	°C NA	uS/cm +/- 3%	% sat. +/- 10%	ppm +/- 10%	mV +/- 10mV	mL/min *	Drawdown ft < 0.33	NTU +/- 10%
1230	17-0.1	NO.	17-570	17- 1070	1/- 10/0	17- 10111	200	12.05	17-10/
1250	7.48	12.3	974	2.4	0.25	-105.6		12.05	13.39
1255	7.108	12.1	974	1.5	0.15	-113.9		12.05	7.60
1256	7.68	12.1	974	1.3	0.14	-115.4	200	12.05	7.22
1259	7.68	12.2	970	1.3	0.14	-114.1	200	12.05	4.90
1302	7.67	12.2	969	1.2	0.12	-112.3	200	12.05	6.16
1305	2.101	12.2	961	1.1-	0.12	-111.4	200	12.05	5.80
1308	7.107	12.2	944	1.1	0.11	-112,7	200	12.05	5.83
1311	7.67	12.2	944	1.0	0.11	-113.0	200	12.05	5.91
1312	collect	d San	ple						12,230
Total Pump T	ime (min)		Total Purge Vo	olume (gal)	3.5	-	Reviewed	by of	-
Weather: Comments:	49°F	, cloud	1, 511g) = 9.02					0	
Bottles Filled Preservativ							D - NaOH		
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N
1	125ML SOOML	HDPE	BA	22					
* Pump rate :	should be </td <td>500 mL/min 1</td> <td>or low-flow an</td> <td>d &lt;1 gal/min</td> <td>for high Volu</td> <td>ime.</td> <td></td> <td></td> <td></td>	500 mL/min 1	or low-flow an	d <1 gal/min	for high Volu	ime.			

22

Well ID	N-MW- 19	5005	Monitoring W Date <u>4.8</u>	2020	_			-0355-0	5	
Location Depth-to-Mi	VR Whit	ing	Screen Length	Depth-to-Sc (ft)	reen Bottom	(ft) <u>94.90</u> Protective 0	2 Casing Mou	Casing ID (in) Int (y/n)	2"	
(FH 5-3-9	)	Fiel	Id Measurements				Sonde ID: 19 M			
Depth-to-wa	iter (ft) 105	53	HC Layer Deter	cted (Y/N) _	4			Completed b	v_CUH	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity	
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU	
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%	
1440	-	12.5					360	10.59		
1445	716	13.5	904	2,3	0.24	-81.3	340	10.59	11.74	S
1448	7,65	13.5	903	1.6	0.16	-828	3,40		10.99	50
1451	7.104	13.5	903	1.3	6.13	- 83,9	360	10,59	\$13.73	4.
1454	7.45	13.5	903	1.1	0.12	-85,9	340	10,59	*14.52	4.
1457	7.65	13,5	903	1,0	0.10	-88.7	360	10.59	9.84	2
1500	7.65	13.5	904	0.8	0.08	-91.8	340	10,59	\$3.82	2
1503	7.45	13,5	904	6.8	0.08	-93,9	360	10.59	2.81.	2
1506	7.01	13.4	9.04	0.6	0.00	-95.1	340	10.59	\$ 8.43	1.
1507	Colle		imple	1993 (A. 1997)						
			-							
					50				~.	
Total Pump	1 1 1		Total Purge Vo	lume (gal) _	1.5		Reviewed	by		
Weather:	USUF ,	sunny.	windy				_			
Comments	SUBME	rsible	/*Bu	oules ]	PH 9	= 9.0 (	_	_		
Bottle	s Filled	Preservati			B - HNO3	C - H2SO4	D - NaOH			
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N	
-}	JOOML	HDPE HDPE	B A	22	5					
-	1	-			15	<u> </u>				

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	1.1.			ers Energy Co Vell Sampling	A						
	W-MW-E R Whit dscreen (ft)		Date <u>04 - 04</u> Screen Length	8 - 2020 Depth-to-Sc	Depth-to-Screen Bottom (ft) Casing ID (in) ZV						
PH	9.00)	Fie	ld Measureme				Sonde ID				
Depth-to-water (ft) 1.73			HC Layer Detected (Y/N)								
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity		
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU	1.00	
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%	Sonde	
1540			a also					2.75	×		
1547	7.69	12.4	984	0.5	0.06	-157.1	500	275	* 150.4	19.03	
1550	7.49	12.4	983	0,7	0.07	-157.6	500	275	49.73		
1553	7.69	12.4	984	0.4	0.06	-158,1		2.75	\$ 32.68	the second s	
1556	7.49	12.4	983	0,5	0.06	-154.3	500	2.75	122.5	18-93	
1559	7.47	12.3	984	015	0.05	-149.3	500	2.75	22.35		
1402	7.68	12.4	983	0.5	0.05	-152.1	500	2.75	51.78	16.31	
1405	7.68	12.4	982	0.5	0.05	-155.9	500	2.75	46.11	15.90	
1608	7100	12.3	9.83	0.5	0.05	- 154.2	500	2.75	13.97	14.85	
11011	7.48	12.3	982	0.4	0.04	-154.7	500	2.75	13.99	14.710	
1414	7.46	12.3	942	0.04	0.04	- 157.4	500	2.75	14.01	14.88	
Total Pump <sup>-</sup>	Time (min)		Total Purge Vo	olume (gal) _	B		Reviewed	by	<u></u>		
Weather:								1			
Comments	<u>bubn</u>	nursabl	e   bubbl	es -	pH 9= 9.	02		V			
Bottle	s Filled	Preservat	ive Codes	A - NONE	B - HNO3	- HZSO4	D - NaOH	E-HCIF			
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N		
WY3	125 mL	HDPE	B	Y	1. 10 A. 10 . 1			* ··· * *			
₩ <u>1</u> 3 3	125mL 500mL	HDRE	B A	3							
* Duma	should be a	500 ml /min	for low-flow an	d et coldeste	for bisk Vol-	ma					



# Pond 6

# CHAIN OF CUSTODY

# **CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**

# Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

AMPLING SIT	Έ			PROJECT NUMBER						ANALYS	IS REQU	JESTED		Page 1 of 1
RW RCRA	A – April 202	0 Pond 6			20-035	56								SEND REPORT TO Michelle Marion
AMPLING TE	AM		·····	DATE SHIPPED	5	SITE SKETCHEI CIRCLE		tals						TRC
Casey Hanse	n					YES	NO	Total Metals	suc	-				PHONE
CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / 2	LOCATION	DEPTH	# OF CONTAINERS	Tota	Anions	TDS				REMARKS
20-0356-01	4.8.2020	0905	GW	JRW-MW-16001_04	40820		2	X	X	x				
1	4.8.202		GW	JRW-MW-16002_04	10820		2	x	X	x				
	4.6.201		GW	JRW-MW-16003.04	40820		2	x	X	X				
-04	K.G.201	0 1214	GW	JRW-MW-16004 <b>_0</b> ሣ	10820		2	x	X	x				
-05	4.7.2020	1436	GW	JRW-MW-16005	10720		2	x	X	x				
	4.7.2020		GW	JRW-MW-16006_00	10720		2	x	X	x				
	4.7.2020		GW	DUP-02_04077	20		2	x	X	x				
	4.8.2020		GW	EB-02 -040820			2	x	X	x				Submersible
	4.7.200	•	GW	FB-02_04012C	D		2	x	X	x				
	4.6.200		GW	JRW-MW-16003 MS	-0408	20	2	x	X					
· -11	J	1114	GW	JRW-MW-16003 MS	5D_0108	.20	2	x	x					
ELINQUISHE	DBY (SIGNA'	FURE)	DATE/T	ME R	RECEIVED I	BY (SIGNATUR	E)					COMM	IENTS	3,2-4,6%
Casey	sHanser	V	4-9	,2020 0645		¥-								3,2-4,6°6 ONICI
ELINQUISHE	D BY (SIGNA	TURE)	DATE/T	ME R	RECEIVED I	34 (SIGNATUR	E)							
						v				ORIC	INAL TO	) LAB	СОРУ Т	O CUSTOMER

Count on Us		WATER LEVI	EL DATA		
CENTURY OF EXCELLENCE					
Site:	JR Whiting	50		Deviewed by	+
Project No:	20-0355, 20-03	00		Reviewed by:	1
Analyst:	CLH			Review Date:	00000
Date:	4/7/2020				
Method:	Electronic Tape		0.01	1000	
Tape ID:	Geotech WLM		S/N:	1003	
Well ID	Time	DTW Trial 1 (ft)	DTW Trial 2 (ft)	DTB (ft)	Remarks
JRW MW-15001	1009 🗸	3.75 🗸	3.75	83.15	
JRW MW-15002	1015 🖌	12.57 V	12.57	93.05	
JRW MW-15003	1013 🗸	9.58 v	9.58	91.2	
JRW MW-15004	0956 🗸	11.9 🗸	11.9	97.8	
JRW MW-15005	0948 ~	10.54 🧹	10.54	94.9	
JRW MW-15006	1000 -	2.75 🥥	2.75	73.8	
JRW MW-16001	0913 -	14.8 v	14.8	84.01	
JRW MW-16002	0906 🗸	11.21 🗸	11.21	95.5	
JRW MW-16003	0901 🗸	11.43 🗸	11.43	87.3	
JRW MW-16004	0855 🗸	11.76 v	11.76	90.01	
JRW MW-16005	0917 🖌	14.57 🧳	14.57	92.8	
JRW MW-16006	0851 -	13.48 🗸	13.48	93.27	
JRW MW-16007	0836 🗸	4.77 🖌	4.77	82.25	
JRW MW-16008	0829 -	5.29	5.29	77.55	
JRW MW-16009	0821 🗸	5.04	5.04	83.15	

NOTES: TOC reference point DTW = Depth to Water DTB = Depth to Bottom

Consumers Energy Counton Us® Laboratory Services		WATER LEV	EL DATA		
A CENTURY OF EXCELLENCE	JR Whiting	100 Caracity			
Project No:	20-03-55	20-035		Reviewed by:	4
Analyst:		1 20-0 550	0	Review Date:	004-17-20
Date:	A-7-2024	)		Review Buter	V
Method:	Electronic Tap				
Tape ID:		122 GeoTecr	WLM S/N:	1003	
Well ID	Time	DTW Trial 1 (ft)	DTW Trial 2 (ft)	DTB (ft)	Remarks
JRW MW-15001	1009	2,75	3,75	83.15	
JRW MW-15002	1015	12.57	12.57	93.05	
JRW MW-15003	10/3	9.58	9.58	91.20	
JRW MW-15004	0956	11.90	11.90	97.80	Yay
JRW MW-15005	0948	10.54	10.54	94.90	
JRW MW-15006	1000	2.75	2.75	73.80	
JRW MW-16001	0913	14.80	14.80	84.01	
JRW MW-16002	0900	11.21	11.21	95.50	
JRW MW-16003	09.01	11.43	11.43	87.30	
JRW MW-16004	0855	11.76	11.70	90.01	
JRW MW-16005	0917	14.57	14.57	92.8D	
JRW. mw-140	06 0851	13.48	13.48	93:27	-
JRW MW-16007	0834	4,77	4,77	82.25	
JRW MW-16008	0829	5.29	5.29	77.55	
JRW MW-16009	0821	5.04	5.04	83.15	
					_

NOTES: TOC reference point DTW = Depth to Water DTB = Depth to Bottom

Consumers E	inergy	Equipment Details	Model & S/N
aboratory	Services	Monitor Brand	YSI ProDSS S/N 19M100493
CENTURY OF	EXCELLENCE	Sonde Brand	YSI ProDSS S/N 19M100509
Sonde ID	19M	Flow Cell	EXO1 599080
Start Date	04-010-2020	DO Probe	YSI ProDSS S/N 19L103208
Project #	20.0355 : Ponds 142	Turbidity Probe	YSI ProDSS S/N 19L103271
7.742.0400	20-0356 : Pond 6	pH With ORP	YSI ProDSS S/N 19M101274
Site	JR whiting CCR	Conductivity & Temperature Probe	YSI ProDSS S/N 19L101251

pH Standard (± 0.1)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration
4.0	GFS # 1634	19240146	4.7.21	4.01	3.97	4.06	4.00	4.02	4.08
7.0	GFS # 1639	19280105	7.6.21	6.98	7.05	7.08	7.04	7.05	7.08
10.0	GFS # 1645	19210104	5.9.21	10.00	9.95	10.02	10.05	10.00	10.09
			Initials & Date:	Cutt 4.6.20	04-05-20	4:7:20	4.8.20 Cut	4-8-20 CUH	4.8.20

Are the calibration values within ±0.10 of the standard? ٠

1		-				and the second s	P
cal 4910Kg1	07.2020	228.9	228.2	226.1	229.1	2.28:3	2299
			·tut	04.07.20	4.8120	City 4.8.20	4.8.70
	ndard used for ca	Initials & Date:	Initials & Date: 44-04-20 ndard used for calibration and as-founds?	Initials & Date: 44 10 11 10 10 10 10 10 10 10 10 10 10 10	Initials & Date: 44 - 04-01-20 04-01-20 04-01-20 04-01-20 04-01-20 04-01-20 04-01-20 04-01-20 04-01-20	Initials & Date: WH 94-00-20 04-07-20 04-07-20 4-%120 ndard used for calibration and as-founds? Y or W (if no, document of the second	Initials & Date: 444 44-64-20 64-61-20 64-

or

Y

90-110% saturation	DI Water	N/A	N/A	S Calibration Value	Calibra	End of Day Calibration	Calibration Value	이 시 이 시	Calibration
saturation	Di water	N/A	N/A	102.5	103.5	105.10	103.2	101.4	103.1

Are the calibration values within 90-110%?

N (if no, recalibration is required)

(if no, recalibration is required)

PG. 192

20-0356 (Page 6 of 16)

Specific Conductance (uS/cm)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
<b>2241</b> Range: 2173- 2308 uS/cm	Ricca Chemical R2244230 -1A	4002L86	Feb. 2022	2290		sonde	e no- ed	F	1
		In	itials & Date:	ant A-16.20					
			ation and as-fou of the standard	nds? Y		(if no, doci (if no, reca			ed)

Turbidity (NTUs)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
0	DI Water	-	-	0.13	0.09	0.16	0.08	0.10	0.21
10.0 (±1.0 NTUs)	Hach 2659949			NA	10.03	10.09	NA	10.03	10.16
40.0 (±4.0 NTUs)	Hach 2746356	A9158	04.2021	40-110	40.09	41.16	40.11	40.00	4171
		lr	nitials & Date:	A-4.20	9-10-2D	47:20	4.8.20	\$#18:20	4.8.20

Are the calibration values within ±10% of the standard?

Y or N (if no, recalibration is required)

#### Additional Information for calibration standards

Standard	Source	Source Lot #	Source Exp. Date	Standard	Source	Source Lot #	Source Exp. Date
PH 4.0				PH9	GFS		
PH 7.0			-				
7H 10.0							
Sp. lond.							
40 NTU	Hach			1			
10 NTU	Hach				1		

Data Reviewed By: Date: 04-17-2020

Consumers E	nergy	Equipment Details	Model & S/N
	nunt on Us	Monitor Brand	YSI ProDSS S/N 15F102974
aboratory	EXCELLENGE	Sonde Brand	YSI ProDSS S/N 15H101425 262909-1
Sonde ID	15H	Flow Cell	EXO1 599080
Start Date	04.00-2020	DO Probe	YSI ProDSS S/N 19G101726
Project #	20-0355 : Ponds 14-2	Turbidity Probe	YSI ProDSS S/N 15G103731
rioject#	20.0356 : Ponds 6	pH With ORP	YSI ProDSS S/N 15H102089
Site	JR whiting CCR	Conductivity & Temperature Probe	YSI ProDSS S/N 15F104224

	-	1						1	
pH Standard (±0.1)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration
4.0	GFS # 1634	19240146	4.7.21	3.98		* Sonda	e not	used	->
7.0	GFS # 1639	19280105	7.6.21	7.00		L			+
10.0	GFS # 1645	19210104	5.9.21	10.010		L			7
			Initials & Date:	4.6.20		L			7

Is the same standard used for calibration and as-founds? . Are the calibration values within ±0.10 of the standard? •

N (if no, document on pg. 2) Y or N (if no, recalibration is required) Y or

ORP Standard (±10 mV)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
229.D	Ricca Chemical	HGIOKVT	07.2020	128.9		Sonde			
(mV)	9880	(Thorse)	011 0000			not	used		7
			Initials & Date:	4.10.20			12223		~7
			libration and as-fou ±10% of the standa	nds?		V (if no, do V (if no, red		· · · ·	ed)

DO	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
90-110% saturation	DI Water	N/A	N/A	94.9		*sinde	not i	used ;	
			Initials & Date:	CAAF 20					
<ul> <li>Is the</li> </ul>		d used for ca	Initials & Date: libration and as-fou	4.6.20	Y or N Y or N Y or N	(if no, doc			

				ers Energy Con /ell Sampling \	-Con Critica				
Well ID.) (2) Location <u>1</u> Depth-to-Mic	R whit		Date <u>4.8</u> Screen Length	- 202.0 Depth-to-Sc	reen Bottom	(ft) 84.01	_	-035(- Casing ID (in) Int (y/n)	
PH 7.5.8	.a)	Fiel	d Measureme	ents			Sonde ID	: 19m	)
Depth-to-wa	ter (ft) <u>19</u>	.59	HC Layer Dete	cted (Y/N)	N			Completed b	with
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%
0758	916	117	7107	6.8	10.71	-117.7	340	15.60	13.88
0803	8.105	11.9	743	0.19 4.10	0.71	-104.3	340	15.00	15.94
0809	8.65	11.7	759	3.9	1.41	- 104.3	390	15.00	17.61
1811	8.63	11.6	758	3.6	0.38	-101.9	340	15-60	18.50
0814	8.15	11.6	7109	3.2	0.34	-1104.7	340	15.40	9.12
C180	7.85	11.6	776	2.10	0.27	-123.0		15.00	9.19
0820	1.78	11.6	780	2.1	0.22	-112.5	340	15.00	13.(1
0823	7.82	11.6	779	1.8	0.19	-115.2	340	15.40	13.47
0826	7.88	11.10	177	1.6	0.17	-122.4	340	15.00	6.06
0829	7.96	11.10	Jau	1.6	0.17	-131.1	340	15.60	4.96
12831	8.02	11.6	773	1.6	0.17	-139.0	340	15.60	1.15
6834	8.80	11.8	754	2.8	0.29	-114.4	340	15.60	7.11
Total Pump 1 Weather: Comments:	53°F,	foorth	Total Purge Vo <u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> </u>				Reviewed		ryt Z
Bottles	Filled	Preservati	ve Codes	A - NONE	B - HNO3 (	C - H2SO4	D - NaOH	E-HCIF	_
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N
1	125mL	HOPE	B	N			1		
	SOOML	HDPE	A	N		-			1
1						1			

308151827

		Casing ID (in) unt (y/n)	_		reen Bottom	Depth-to-Sc	Date <u> </u>		JRWh	Well ID <u>JR</u> Location Depth-to-Mic
		: 19M	Sonde ID			ents	ld Measureme	Fiel		
1	CUH	Completed by			N	cted (Y/N)	HC Layer Dete	.51	ter (ft) 15	Depth-to-wat
idity	Turbid	Water level	Pump Rate	ORP	DO	DO	Sp Cond	Temp	рН	Time
	NTU	Drawdown ft	mL/min	mV	ppm	% sat.	uS/cm	°C	units	min
10	+/-1	< 0.33	*	+/- 10mV	+/- 10%	+/- 10%	+/- 3%	NA	+/- 0.1	3-5 min
00	5.3	15.60	340	-217.8	0.25	24	758	11.8	8.69	0831
	4.9	15.00	340	-210.3	0.18	17	761	11.8	8.52	0840
	5.0	15.60	340	- 207.1	0.18	1.7	761	11.8	8152	0843
41 1.	5.01	15.60	340	-2024	0.16	1.5	762	11.8	8.43	0846
	4.9	15.00	340	-194.5	0.13	1.3	7141	11.9	8.40	0652
10	4.6	15.40	340	-185.3	0.11	1.0	102	11.8	8,30	0855
	4.9	15.60	340	-188.0	0-11	1.0	-761	11.8	8.33	0858
3 1.	5.0	15.60	340	-183.4	0.11	1.0	7.01	11.8	8.31	1980901
7	4.70	15.60	340	-1810	0.10	0.9	141	11.8	8.30	0904
							mple	ted so	Coller	09.05
-	7	Iby_f	Reviewed		7.0 muddy	olume (gal) <u>^</u> VUVU	Total Purge Vo	Partle		Total Pump T Weather:
z	· GZ	PG.Z			0		j (,			Comments:
			D - NaOH	C - H2SO4	B-HNO3	A - NONE	ive Codes	Preservati	Filled	Bottles
	Filter Y/N	Preservative Code	Туре	Size	Number	Filtered Y/N	Preservative Code	Туре	Size	Number
						N	B	HPPE	125mL	~1
						N	A	HDPE	SUOML	
_	1		-						-	

Vell ID	JR Whi		Date <u>4.8</u> Screen Length	Depth-to-So	creen Bottom		D	<b>D = 035 (a-</b> Casing ID (in) unt (y/n)	- 11
PH 7.5-8,3	3	Field	d Measureme	ents			Sonde ID	: 19N	1
Depth-to-wat		1	HC Layer Dete	cted (Y/N)	N		100	Completed by	, CHI
Time	pН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%
0936	Insers	ed Suk	mersele	e pan	p. tubir	g clog	ged		
	and the second se	A CONTRACTOR OF A	+; pH =			mingh		olume	
	PUYOR	FOR OH	and tu	mbidis	and the second se	5	0	12001	
0944	841	13.1	1010	12.0	1.25	.39.3	7500	11.36	736.14
0950	8.40	13.0	1030	13,7	1.43	-69.4	7500	11.36	344.67
0955	8,00	13.3	1042	12.8	1.23	-66.8	7500	11.30	29.50
1002	8,24	12.9	1021	19.5	2.05	-115,7	340	11.30	543.07
- T	> lower	ed Flow	vate fo	R ION-F	and the second se	liment	load	Increased	
1005	8.20	12.5	1631	17.5	1.83	-112.3	340	11.30	765.16
1008	1,89	17.10	1033	21.4	2.21	-79.2	340	11.30	98.59
10/1	7.85	12.3	1033	26.2	2.37	- 75.5	240	11.36	25.00
1014	7.76	12.1	1010	0.8	0.08	-115.7	340	11.36	19.30
1017	7.68	12.1	1009	0.6	0.07	-123,8	340	11.36	14.11
Total Pump T	ime (min)		Total Purge Vo	olume (gal) _	~13		Reviewed	by Y	~
Weather:	53°F,	Sunna	5						
Comments:	Subm	ersible	s e j very	terbi	4			PG.2	
Bottles	Filled	Preservativ	ve Codes	A - NONE	B-HNO3	C - H2SO4	D - NaOH	E-HCIF	
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N
1 09	125 ML SOOML	HOPE	BA	22					
1 1	100 Carton (	1			1	and and a			

-

Well ID	JR W	lle002 hiting	Monitoring W Date 4.6	3-2020	CONTRACTOR AND A REPORT	Control Nu (ft) <u></u>	umber 26	035(1-02 Casing ID (in)		
Depth-to-Mi	dscreen (ft)		_Screen Length			Protective	Casing Mot		Dem	
(7.5.8	3)		ld Measureme		-	_	Sonde ID			
Depth-to-wa	iter (ft) 11.	17	HC Layer Dete	cted (Y/N) _	N			Completed by	v CUH	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level Drawdown	Turbidity	
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	ft	NTU	
3-5 min	+/-0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%	Son
1020	7.68	12.1	G701	00	0.00	-125.3	340	11.36	15.83	1.8
1023	7.48	12.1	0101	06	0.00	-126.6	340	11.36	16.92	7.0
1026	7.44	12.1	1009	0,5	0.05	-128,0	2,40	11-30	20.19	4.
1029	7,64	12.1	1069	0.5	0.05	-128.3	340	11.310	4.83	4.4
Total Pump Total Pump	Time (min)		Total Purge Vo	olume (gal) <u>-</u>	15 gal		Reviewed	by 7 Pa.25	2	
Bottles	s Filled	Preservat	ve Codes	A - NONE	B-HNO3	C - H2SO4	D - NaOH	E-HCIF-		
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N	
1	125 mL 500 mL	HDPE	B A	NN						
			for low-flow an							

PH	5		Date <u>OY</u> -					10.0		1
(7.4.7.	-		d Measureme		N	-	Sonde ID		and	Ł
Deptn-to-wa	iter (ft) <b>\<u>\</u>.4</b>	10	HC Layer Dete	cted (Y/N) _		T	Pump	Completed by		
Time	рН	Temp	Sp Cond	DO	DO	ORP	Rate	Water level Drawdown	Turbidity	
min	units	"с	uS/cm	% sat.	ppm	mV	mL/min	ft	NTU	
3-5 min	+/-0.1	NA	+/- 3%	+/- 10%	+/-10%	+/-10mV	*	< 0.33	+/- 10%	
1047		1.000			19820		240	11.40		
1055	7.57	12.3	1038	0.10	0.0	-165-3	240	11.40	*13.91	2
1058	7.54	12.2	1049	0.6	0.07	-167.4	240	11.40	\$4.40	۱
1101	7.55	12.2	1051	6.6	0.06	-143.0	240	11.40	52.97	1.
1104	7.54	12.3	1054	0.6	6.06	-158.7	240	11.40	*3.92	2
1107	7.54	12.3	1054	0.0	90.0	-158.4	240		* 4.24	1.
1110	7.54	12.3	10 55	0.5	0.06	-158,5	240		4.85	1
1113	7.55	12.3	1053	0.5	0.05	-157.g	240	11.40	7.94	1
1114	Collec	fed so	mples							
· 7										
Total Pump	Time (min)		Total Purge Vo	olume (gal) /	15	-	Reviewed	by of	5	1
Weather:		6100101	f. minde	411				*= Bub	Nes	1
	Collecte	a ms/ M	5D,7	0	etic ti	ump, h	igh s	ulfur o		
Bottles	Filled	Preservati			B - HNO3 (	C - H2SO4 I	D - NaOH	E - HCI F	Filtered	
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Code	Y/N	
3	125mL	HIDDE	B	N	and a second sec					1
2	500ml	HOPE	A	N						

Well ID	-mw-16	004	Date 4.8				mber 20	-0356-0	4
	R White dscreen (ft)_	ing	Screen Length	Depth-to-Sc (ft)	reen Bottom	(ft) <u>90,01</u> Protective 0	Casing Mot	Casing ID (in)	24
PH T.4-8.	2	Fiel	d Measurem	ents			Sonde ID	: 19M	
Depth-to-wa	ter (ft)	.72	HC Layer Dete	ected (Y/N) _	N	-		Completed b	y cuss
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/-3%	+/- 10%	+/-10%	+/- 10mV	*	< 0.33	+/- 10%
1140	Hooked	up sub	nersible,	turdie	1	#= 7,8	8		541.88
1200	7.51	12.3	1215	1.5	0.16	-74.0	420	11.80	38.80
1203	7.45	12.3	1215	0.8	6.09	-80.2	420	11.50	6.42
1206	7.46	12.3	1213	0.4	0.04	-90.8	420	11.80	4.05
1209	7.46	12.2	1214	0.3	0.03	-92.4	420	11.960	3.92
1212	7.46	12.2	1210	0.3	0.03	-94.8	420	11.40	3.86
1215	7.47	12.4	1212	0.2	0.02	-94.8	420	11.90	3.26
1216	COLLEC	led s	ample						
			Total Purge V			1.00	Reviewed	by	~
Weather: Comments:	59°F, Subme	Sunny	, muddy	, Slighi	t Brecz	22.			
Bottles	s Filled	Preservati		a contract of the second second second	B-HNO3	C - H2SO4	D - NaOH		
	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N
Number	100	HAPE	B	N			1		
Number	125ml 500ml	HOPE	A	N		1			

Well ID JR Location J Depth-to-Mi	R whi-	<u>40</u> 05 Hing	Date <u> </u>	1·2020 Depth-to-So				-0356-0	5
			Screen Length		creen Bottom	$\frac{10 \cdot 0 \cdot 35\psi - 05}{Casing ID (in) 2^{\nu}}$			
		Fiel	d Measurem	ents			Sonde ID	: 19M	1
Depth-to-wa	ter (ft) 14.	75	HC Layer Dete	ected (Y/N)	N			Completed b	v Citl
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%
1405	0.000	1.00				Y IN	140	14.75	
1408	7.64	12.2	886	6.7	0.70	-109.5	140	14.75	14.91
1411	7.67	12.2	885	2.8	0.29	- 127.0		14.75	38.27
1414	7.48	12.4	.885	1.7	0.18	- 134.2	140	14.75	34.03
1417	7.68	12.3	887	1.4	0.15	-136.8	140	14.75	
1420	7.08	12.3	887	1.3	0.14	-138.4	140	14.75	28.69
1423	7.68	12.2	887	1.2	0.12	-141.1	140	14.75	24.68
1426	7.68	12.1	.888	1.2	0.12	-142.3	140	14,75	9.94
1429	7.68	12.2	888	1.1	0.10	-143.0	140	14.75	4.434
1432	7.68	12.2	688	1.1	0.10	-143.1	140	14.75	3.774
1435	7.8	12.2	888	1.0	0.09	-143.3	140	14,75	4.000
1434	Collected	Samele							(sonde 19m CUP
Total Pump T	ime (min)		Total Purge V	olume (gal)	2.0		Reviewed	by V	5
			Sunny,					0	
Comments:	PH9	check =	9.01,*-	turbidi	ty meas	ured in	caeib	ration c	up.
Bottles	Filled	Preservativ			B-HNO3 C	- H2SO4	D - NaOH		<u> </u>
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N
	125mL	HDPE	B	N	Number	5120	Type	coue	1/14
	SOOML	HDPE	A	N	C				

			Consume Monitoring W	ers Energy Cor Vell Sampling				1.00		
Well ID <u>JP</u> Location <u>J</u> Depth-to-Mi	Rwhit	and the second	Date <u></u> Screen Length	Depth-to-Sc	o creen Bottom	00	17	0 • 0 354 - Casing ID (in) Int (y/n)	211	
	100	Fie	ld Measureme	ents			Sonde ID	: 19M		
Depth-to-wa	ter (ft) <u>13.</u>	50	HC Layer Dete	cted (Y/N) _	2			Completed b	V CLH	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity	
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU	
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/- 10%	
1355	707	121		11 -			250	13.60		
1400	7.83	12.1	874	4.5	0.47	-138,9	250	13.40	61.39	
1403	7.85	12.3	857	2.6	0.27	-136.7	250	13.00	30.91	
1406	7.84	12.2	840	2.4	0.27	-136.8	250	13.60	32,25	
1409	7,84	12.3	857	2.7	0.28	-135.7	250		29,27	
1412	7.82	12.2	857	2.7	0.28	-12.9.4		13.60	101.41	Zlot
10.00	7.82	12.2	857	10000	0.28	128.6	250	13.60	117.21	Ste
1421	7.52	12.3	857	2.6	0.28	129.D	250	13.60	2.02	BUI
1424	X	1115	- 01	611	0,60	129.0	100		FIEL	
1427	X					Page	192	1		
						Swit		10	-	1
	1					Subm			1	1
Total Pump T	ime (min)	_	Total Purge Vo	olume (gal) _	3.5	179 - 11	Reviewed		X.	1
Weather:	49°F,	slight	Wind, P	artly c				PG. 2-87	2	
Comments:	1/4" tu	bing, p	eristalti	c / co1	lected.	bup-2	FB	-201	1401	6
Bottles	Filled	Preservati	ve Codes	A - NONE	B - HNO3	C - H2SO4 I	D - NaOH	E-HCIF		
Number	Size	Туре	Preservative Code	Filtered Y/N	Number	Size	Туре	Preservative Code	Filtered Y/N	-
	12 ml	HOPE	B	N		1			1000	
	Seeme	HOPE	n	2						
						1				
* Dump roto	should be d		for low-flow an					-		

A Switch to Sonde 1911 FOR thubidity

~ ~	-	_	Monitoring W	ell Sampling	Worksheet					
	- MW-14		Date _ 4					0.0354-0		
	L Whiti	ng			reen Bottom			Casing ID (in)	2"	
Depth-to-Mi	uscreen (ft)		_Screen Length	(10)		Protective		int (y/n)	-	1.
-		Fie	ld Measureme	ents			Sonde ID	: 19M	and in	0.1
Depth-to-wa	ter (ft) 13	.50	HC Layer Dete	cted (Y/N)	N			Completed b	v CUH	
Time	pН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level		
min	units	°C	uS/cm	% sat.	J.3 PPm ppm	mV	mL/min	Drawdown ft	LIO	
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 10%	+/- 10mV	*	< 0.33	+/-10%	
1450			1						5.2.11	
1453	1,83	123	813	2.6	0.27	-140.0	340	13.61	57.77	
1456	7.84	12.3	844	2.3	0,24	-140.9	340	13.61	52.55	5
1459	7.84	12.2	845	1.8	0.19	-142.1	340	13.41	53.30	Bubble
1502	7.83	12.3	866	1.7	0.18	-140,7	340	13.61	50.02	)
1505	7.83	12.1	869	0.9	0.10	-142.9	500	13.41	43.00	
1508	7.83	12.0	868	0.7	0.08	-144.9	500	13.61	54.27	1
1511	1.83	12.0	867	0.7	0.08	-145.0	500	- 13.61	54.00	1
1514	7.83	12.3	869	1.1	0.12	.145.2	120	13.61	40.60	1
1517	7.83	12.7	868	1.3	0.13	-144,9	120	13.61	31.36	
1520	7.82	12.5	848	1.5	0.15 -	140.3	120	13.61	7.84	sonde laying boun
1523	7.82	12.4	869	\$1.5	0.15	-139.7	120	13.61	6.60	Down
1526	1.82	12.5	867	1.4	0.15	-138.6		13.61	7.01	
			Total Purge Vo				Reviewed			1
			s, slight					1		1
				-	•			, P	9.182	1
comments:	Submer	siblep	vmp; 1	045 G	Dissolu	id aast	sbu	pbles)		
1.11			1.	V		J				
Bottles	Filled	Preservati	ve Codes	A - NONE	B-HNO3 C	- H2SO4	D - NaOH	E-HCIF-		1
			Preservative	Filtered				Preservative	1 1 1 2 2 3 2 3 2 4 1	1
Number	Size	Туре	Code	Y/N	Number	Size	Туре	Code	Y/N	
1+1=2	125mL 125mL	HDPE	B	27		-				
The	10 mc	TUTE	n							
										1
					-					

Consumers Energy	-	*			
Laboratory Services		WATER LEV	EL DATA		
Site:	JR Whiting				
Project No:	20-0589				_
Analyst:	CET			Reviewed b	y: 4
Date:	5-21-20			Review Dat	e: 05-28-20
Method:	Electronic Tap	e			
Tape ID:	Geotech		S/N: (	005	
Well ID	Time	DTW Trial 1 (ft)	DTW Trial 2 (ft)	DTB (ft)	Remarks
JRW MW-15001	1756	4.0%	4.08		NPV
JRW MW-15002	1959 1804	3-12.42	12.82		P - tight cap
JRW MW-15003	1807	9.83	9.83		PJ
JRW MW-15004	1808	11.87	11.87		ρ
JRW MW-15005	1410	10.83	10.83		PV
JRW MW-15006	1759	3.11	3.11		PV
JRW MW-16001	1745	15.03	15.03		NP V
JRW MW-16002	1420	11.52	11.52		NPV
JRW MW-16003	1738	11.73	11.73		NPV
JRW MW-16004	1741	12.09	12.09		P-tight cap
JRW MW-16005	1747	14.45	14.85		NPY
JRW MW-16006	1750	13.75	13.75		NPV
JRW MW-16007	1825	5.19	5.19		NO NO Mark
JRW MW-16008	1824	5.62	5.62		NP Nomark
JRW MW-16009	1821	5.3(	5.36		NP No mar

NOTES: TOC reference point DTW = Depth to Water DTB = Depth to Bottom NP= No pressure p=pressure V= marked on well casing for depth reading

Well ID JR	wm w.	-16002	Date S 2	50	1	Control Num	ber 20-0	589-01	
Location <u></u>	pritial			Well Materia	I: PVC	SS	Iron	Galv. S	teel
Purge Metho	od:	Peristaltic	$\checkmark$	Submersible		Fultz		Bailer	
Depth to Wa	ater Tape: 6	extech	S/N	1:1005		-			
QC SAMPLE:	$\checkmark$	MS/MSD	J DUP-		Sonde ID:	08C	11M	<b>15</b> H	V 19M
Depth-to-wa	iter T/PVC (ft)	11.52	Depth-To-B	ottom T/PVC	(ft)	-	Completed b	v C6T	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10% on parameters f	+/- 0.3ppm		*	< 0.33	+/- 10%
1456	· ·	1	Stubilzuti	on parameters j	or the last time	leteuunigs	280	11.72	
1457	7.16	12.9	992	15.3	1.55	2.9	280	11.73	2668.85
1502	7.59	12.4	979	3.7	0.39	-114.5	280	11.75	1851.32
1507	7.77	12.3	977	2.6	0.28	-135.3	280	11.77	819.91
1512	7.85	12.1	980	1.8	0.19	-146.9	280	11.79	297.69
1517	7.84	12.1	984	1.5	0.16	-146.6	280	1.80	187.64
1522	7.81	12.1	987	1.4	0.15	-144.4	280	11.80	159.71
1527	7.79	12.2	992	1.3	0.13	-143.4	280	11.80	140.32
1532	7.77	12.2	995	1.1	0.12	-143.1	280	11.80	132.19
1537	7.17	12.1	999	1.1	0.12	-143.8	280	11.40	132.41
1542	7.76	12.1	1001	0.9	0,10	-145.0	280	11.40	117.30
1547	7.74	12.2	1006	0.9	0.10			11.80	96.21
1552	Adju	ns ted	pump dept	to try a	nd lower ,	mrbility/	sturred up	sodiment	
1557 1557 15 1602	7.74	12.2	998	1.0	0.10	-136.1	280	11.80	236.89
15 1602	7.74	12.4	1000	0.9	0.09	-139.8	280		167.73
otal Pump T	ime (min): /	49	Total Purge V	olume (gal) :	2 11gal		Reviewed by:	X	
Weather:					0			05	28-20
Comments:	Eavipment	e Field Bla	nk						
Bottle	s Filled	Preserva	tive Codes:	A-NONE B-H	INO3 C-H25	04 D - NaOH E	- HCI F		-
Quantity	Size	Туре	Preservative Code A	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
6	12Sml	itbre	~	N		-			

Wen in Vil	W MW-16	5002	Date 5-2	1-20		Control Num	ber 20.0	1589-01	
Location	Whiting			Well Materia	II: PVC	ss	Iron	Galv. S	steel
Purge Metho	od:	Peristaltic	$\checkmark$	Submersible		Fultz		Bailer	
Depth to Wa	iter Tape: Gu	otech	s/r	N: 1005					
QC SAMPLE:		MS/MSD	V DUP-		Sonde ID:	08C	V 11M	15H	V 19M
Depth-to-wa	ter T/PVC (ft)	11.52	Depth-To-E	Bottom T/PVC	(ft)	_	Completed b	y CET	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 0.3ppm	+/- 10mV	*	< 0.33	+/- 10%
1807	7.75	12.3	1000	ion parameters ; O.Y	0.09	-141.1	280	11. 40	148.31
1812	7.75	12.5	1000	0.8	0.09	-143.2	280	11.90	110.85
1817	7.76	12.4	1000	0.7	0.08	-145.0	280	11.80	91.86
1622	7.77	12.5	1000	0.7	0.08	-146.6	280	11.80	80.46
1627	7.76	12.4	1003	0.7	0.08	-147.2		11.80	81.06
1632	7.77	12.3	1004	0.6	0.07	-149.0	280	11.80	76.04
1837	7.77	12.2	1004	0.6	0.06	-1495	280	11.80	75.64
1842	7,78	12.2	1004	0.6	0.06	-150.3	280	11.80	64.92
1647	7.78	12.3	1004	0.5	0.05	-151.5	2.80	11.80	53.94
1852	7.78	12.2	1004	0.5	0.05	-151.8	240	11.80	47. (3
1657	7.78	12.2	1004	0.5	0.05	-152.6	280	11.80	44.52
702	7,79	12.2	1003	0.5	0.05	-153.7	280	11.80	4213
1707	7.78	12.2	1605	0.5	0.05	-153.9	280	11.80	27.72
1712	7.78	12.2	1004	0.5	0.05	-153.8	280	11.80	23.66
1717	7.79	12-1	1004	0.4	0.04	-153.4	2.80	11.80	19.18
	ime (min): / a	41	Total Purge V	olume (gal) :	511941		Reviewed by:	¥	
Weather:					0			0	5-28-20
Comments:					Colores Car				
Bottle	s Filled	Preserva	tive Codes:	A-NONE B-I	HNO3 C-H2S	04 D-NaOH I	- HCI F		-
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
	125-1	HPPE	A	N	1				

Laboratory S	imits iervices cettaende		Mor	Consumers En hitoring Well Si		ksheet		-	
Well ID JR	N MN-160	200	Date 5-2	1-20	1	Control Num	ber 20-	0589-01	
Location	ny WN-160		1	Well Materia	I: PVC	SS	Iron	Galv. S	iteel
Purge Metho	od:	Peristaltic		Submersible		Fultz		Bailer	
Depth to Wa	iter Tape: G	notech	s/r	N: 1605		_	1		/
QC SAMPLE:	r	MS/MSD	DUP-		Sonde ID:	080	11M	<b>15H</b>	19M
Depth-to-wa	ter T/PVC (ft)	11.52	Depth-To-E	Bottom T/PVC	(ft)		Completed b	V CEI	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 0.3ppm	+/- 10mV	*	< 0.33	+/- 10%
	7 70		1	ion parameters f	1		1.00		10.64
1722	7.79	12.1	1003	0.9	0.04	-150.8	280	11.80	17.93
1723									
otal Pump T	ime (min):   4	19	Total Purge V	/olume (gal) : <sup>3</sup>	5/1 gal		Reviewed by:	Y	
Weather:								10	5-28-20
Comments:									
Bottle	s Filled	Preserva	tive Codes:	A-NONE B-H	INO3 C-H250	04 D-NaOH E	- HCI F		
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
6	125 ml	HOPE	A	2					
		1					-		
						1			

C:\Users\EBLAJ\Desktop\Latest\JRW\Monitoring Well Sampling Worksheet\_REV1\_041220.xlsx

Consumers E	inergy	Equipment Details	Model & S/N
aboratory	ount on Us Services	Monitor Brand	YSI ProDSS S/N 19M100493
CENTURY OF		Sonde Brand	YSI ProDSS S/N 19M100509
Sonde ID	19M 21 e8osisz	Flow Cell	EXO1 599080
Start Date	21 e8052820 5-27-20	DO Probe	YSI ProDSS S/N 19L103208
Project #	Jo-0589 JRWhiting	Turbidity Probe	YSI ProDSS S/N 19L103271
Site	Ionia MGP 2BOSZ825	pH With ORP	YSI ProDSS S/N 19M101274
Reviewed By & Date	os/28/20	Conductivity & Temperature Probe	YSI ProDSS S/N 19L101251

pH Standard (± 0.1)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration
4.0	GFS # 1634	19410212	10-5-21	3.98	4.00	4.07			
7.0	GFS # 1639	19410193	10-11-21	6.98	7.01	7.10			
10.0	GFS # 1645	05/07 19210104 05/07 18.10	05/09/21	10.05	9.98	10.04			
		1	nitials & Date:	5-18.20		cs 5-24-20			

Is the same standard used for calibration and as-founds? . Are the calibration values within ±0.10 of the standard? ٠

N (if no, document on pg. 2) or Ø N (if no, recalibration is required) or

ORP Standard (± 10mV)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
228 (mV)	GFS	20140051	01-30 -2021	222.0	228.4	236.1			
			Initials & Date:	er 5-18-20		cr 5-28-20	1		

DO	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration
90-110% saturation	DI Water	N/A	N/A	100.3	100.1	101.7			
			Initials & Date:	er 5-18-20		25 5-24.20			

Are the calibration values within 90-110%? ò.

<sup>()</sup> or N (if no, recalibration is required)

Sonde ID 19M 24 68052820 5-27-20 Start Date Reviewed - 05/28/20 By & Date:

Specific Conductance (uS/cm)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
1421	GFS	20080116	2-11-21	1431	1422	1448			
		In	itials & Date:	cr 5-18,20		25 5-28-20			1

Are the calibration values within range of the standard? •

or N (if no, recalibration is required)

Turbidity (NTUs)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
0	DI Water	-	-	-2.14	0.03	-0.02			
10.0 (± 1.0 NTUs)	Hach 2659949			N/A	9.96	9.99	N/A		
40.0 (± 4.0 NTUs)	Hach 2746356			42.21	40.03	40.58			
		In	itials & Date:	5-18-20		er 5-28-20			

#### Additional Information for calibration standards

Standard	Source	Source Lot #	Source Exp. Date	Standard	Source	Source Lot #	Source Exp. Date
pH 4.0	GFS Chemicals			pH 9.0 Check	GFS Chemicals		
pH 7.0	GFS Chemicals			(			
pH 10.0	GFS Chemicals				8		
Sp. Conductivity	GFS Chemicals						
40.0 Turbidity	GFS Chemicals						
10.0 Turbidity	GFS Chemicals						

Consumers Energy	Equipment Details	Model & S/N
Laboratory Services	Monitor Brand	YSI 650MDS S/N 11M100447
CEN-URY OF EXCELLENCE	Sonde Brand	YSI 6820V2 S/N 11M100468
Sonde ID 11M 24 68 05282 Start Date 5-27-20	Flow Cell	YSI 6160
Project # 20-0589	DO Probe	YSI 6150 ROX S/N 178103930
Site Fonia MGP 28-05/28/20	Turbidity Probe	YSI 6136 S/N 18A104724
Reviewed	pH With ORP	YSI 6565 18K
By & Date / 0 5 /28/20	Conductivity & Temperature Probe	YSI 6560 S/N 11L100408

pH Standard (±0.1)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration
4.0	GFS # 1634	19410212	10-5-21	3.96	4.01	3.99			
7.0	GFS # 1639	19410193	10-11-21	6.99	7.01	7.01			
10.0	GFS # 1645	20060182	01-29-22	10.06	9.98	9.93			
			Initials & Date:	UT 1-18-20		5-28-20			

Are the calibration values within ±0.10 of the standard? .

✓ or N (if no, recalibration is required)

ORP Standard (±10 mV)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
228 (mV)	CFS	20140051	01-30-21	234.7	231.9	230.3			
			Initials & Date:	LT 5-18-20		1-28.20	1.11		2.001
			ibration and as-fou 10% of the standar			(if no, doo (if no, rec			ed)

Are the calibration values within ±10% of the standard?

saturation	DI Water	N/A	N/A Initials & Date:	110.D	100.9	100.0			
DO 90-110%	Source	Source Lot#	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Da Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Da Calibration Verification

Sonde ID Start Date	11M	0			NOTE:	Sonde	. 11 4	1 only	y used
Reviewed By & Date:	¥	05	128/20		for Tu	rbiolity	- 8	210 05	128/20
Specific Conductance (uS/cm)	e Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
1427	GFS	20060116 40021-86	2-11-2021 Fob: 2022	1440	1432	1414			
		In	itials & Date:	A 5-18-10		5-28.20		1	
			ation and as-fou 6 of the standard	nds? (	or N	(if no, doci (if no, reca			ed)

lity s) Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
DI Water	1544 M		3.7	0.4	0.3	V		
Hach 2659949	A0044	02-2022	9.9	9,8	10,1	V		
Hach 2746356	AU037	02-2022	38.8	40.1	38.4	V	/	
	In	itials & Date:	er 118-20		5.28.20		1	
the same standard use e the calibration values	d for calibra	ation and as-four			s·2r.Zu (if no, docu (if no, reca			

# Additional Information for calibration standards

Standard	Source	Source Lot #	Source Exp. Date	Standard	Source	Source Lot #	Source Exp. Date
pH 4.0	GFS Chemicals			pH 9.0	GFS Chemicals		
pH 7.0	GFS Chemicals						
pH 10.0	GFS Chemicals						
Sp. Conductivity	GFS Chemicals	1.				(******)	
10 Turbidity	GFS Chemicals						
40 Turbidity	GFS Chemicals						



# Appendix B Second Semiannual Monitoring Report



# Second Semiannual 2020 Groundwater Monitoring Report

Former JR Whiting Power Plant Pond 1&2 and Pond 6

Erie, Michigan

January 2021

Sarah B. Holmstrom, P.G. Project Manager

**Prepared For:** Consumers Energy

Prepared By: TRC 1540 Eisenhower Place Ann Arbor, Michigan 48108

Brian Yelen Project Geologist

TRC | Consumers Energy Final X:\WPAAM\PJT2\367393\0000\2020Q4 GMR\R367393.0 2020Q4 GMR.DOCX



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## **FIGURES**

Figure 1	Site Location Map
Figure 2	Site Plan with CCR Monitoring Well Locations
Figure 3	Groundwater Potentiometric Elevation Summary – October 2020

#### **APPENDICES**

- Data Quality Reviews Appendix A
- Laboratory Reports
- Appendix B Appendix C **Field Notes**



# 1.0 Introduction

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule), as amended. Standards for groundwater monitoring and corrective action codified in the CCR Rule (40 CFR 257.90-98) apply to the Consumers Energy Company (Consumers Energy) Ponds 1 and 2 (existing surface impoundment monitored as Pond 1&2 using a multiunit groundwater monitoring system) and Pond 6 (closed inactive surface impoundment) at the former JR Whiting (JRW) Power Plant Site (the Site). Prior to the CCR Rule, from about 2009 to 2016, JR Whiting followed the approved groundwater monitoring waiver.

On December 28, 2018, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management). The December 2018 amendments to Part 115 were developed to provide the State of Michigan oversight of CCR impoundments and landfills and to better align existing state solid waste management rules and statutes with the CCR Rule. On August 8, 2019 Consumers Energy submitted a revised *JR Whiting Hydrogeological Monitoring Plan, former JR Whiting Power Plant, Erie, Michigan* (2020 HMP) (TRC, May 2020 Revision) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on May 11, 2020.

#### **1.1** Statement of Adherence to Approved Hydrogeological Monitoring Plan.

This JR Whiting Second Semiannual 2020 Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to present groundwater monitoring data collected from the JR Whiting Pond 1&2 and Pond 6 during the fourth calendar quarter of 2020. This report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the July 5, 2013 Michigan Department of Environmental Quality - Office of Waste Management and Radiological Protection (MDEQ-OWMRP), now the EGLE Materials Management Division (MMD) communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, dated July 5, 2013 Format for Solid Waste Disposal Monitoring Submittals. All references herein to the EGLE are inclusive of the MDEQ. Groundwater sampling, analysis, and information contained in this report was prepared in adherence to the 2020 HMP approved by the EGLE on May 11, 2020.

#### 1.2 Program Summary

Historically groundwater monitoring at JRW was performed under the HMP last revised on November 26, 1997 until the groundwater monitoring waiver was approved on September 2, 2009. It was then performed pursuant to the CCR Rule until implementation of the 2020 HMP. In the *First Semiannual 2020 Groundwater Monitoring Report for the JRW Pond 1&2 and Pond 6* (First Semiannual 2020 Report) (TRC, July 2020), the most recent report prepared in compliance with the CCR Rule and the 2020 HMP, Consumers Energy reported that no potential statistically significant increases (SSIs) were noted in the first 2020 semiannual detection monitoring event. Therefore, Consumers Energy continued detection monitoring in



the second half of 2020 at Pond 1&2 and Pond 6 pursuant to §257.94 of the CCR Rule, and the HMP.

This Second Semiannual 2020 Report presents the monitoring results and the statistical evaluation of the detection monitoring constituents (Section 11511a(3)(c) of Part 115) for the October 2020 semiannual groundwater monitoring event for Pond 1&2 and Pond 6. Detection monitoring was performed in accordance with the 2020 HMP. As part of the statistical evaluation, the data collected during detection monitoring events are evaluated to identify SSIs of detection monitoring constituents compared to background levels.

#### 1.3 Site Overview

The JR Whiting Plant was a coal-fired power generation facility located in Erie, Michigan, on the western shore of Lake Erie (Figure 1). The plant began producing electricity in 1952 from Units 1 and 2, with Unit 3 beginning operation in 1953. The plant ceased operation in April 2016. Figure 1 is the site location map showing the facility and the surrounding area. Site features are shown on Figure 2.

The JR Whiting Ash Disposal Area is licensed under Michigan Part 115 of the Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended.

Pond 1&2 is located to the east of the plant, north of the discharge canal, south of Erie Road, and west of Lake Erie and constructed in native clay soil. It was historically used for wet ash sluicing. In 2019, it received its final cover system constructed pursuant to 40 CFR 257.102(a); the Ponds 1 and 2 Closure Construction Quality Assurance (CQA) Plan dated August 31, 2017; the Part 115 Administrative Rules; and Pond 1&2 Closure Plan submitted to the EGLE on December 18, 2017. The closure of Pond 1&2 was certified by the EGLE in a letter dated August 27, 2020.

Pond 6 is located to the north of the plant and was constructed in native clay soil. It was an inactive surface impoundment at the time the CCR Rule became effective on October 19, 2015 and was capped with final cover certified pursuant to the CCR Rule on December 5, 2017 and certified by the EGLE on August 24, 2018.

#### 1.4 Geology/Hydrogeology

Pond 1&2 and Pond 6 are located adjacent to Lake Erie. The subsurface materials encountered at the JR Whiting site are predominately clay-rich till. The surficial CCR fill material is underlain by approximately 40 to 50 feet of laterally extensive clay-rich till that acts as a natural hydraulic barrier across the site. Limestone bedrock is present beneath the till and is considered the uppermost aquifer at the site.

Groundwater present within the uppermost aquifer is confined and protected from CCR constituents by the overlying clay-rich aquitard and is typically encountered around 50 feet below ground surface (ft bgs) in the limestone (beneath the till). Potentiometric surface elevation data from groundwater within the CCR monitoring wells exhibit an extremely low hydraulic gradient across the site with no consistent or discernible flow direction.



# 2.0 Groundwater Monitoring

#### 2.1 Monitoring Well Network

A groundwater monitoring system has been established for Pond 1&2 and Pond 6, which established the monitoring well locations for detection monitoring. The detection monitoring well network for Pond 1&2 and Pond 6 currently consists of six monitoring wells for each CCR unit that are screened in the uppermost aquifer. Monitoring well locations are shown on Figure 2.

As discussed in the HMP, intrawell statistical methods for JR Whiting were selected based on the geology and hydrogeology at the Site (primarily the presence of clay/hydraulic barrier, no apparent flow direction and lack of flow potential across the aquifer), in addition to other supporting lines of evidence that the aquifer is unaffected by the CCR unit (such as the consistency in concentrations of water quality data and similarities in concentrations in background and downgradient wells).

An intrawell statistical approach requires that each of the downgradient wells doubles as the background and compliance well, where data from each individual well during a detection monitoring event is compared to a statistical limit developed using the background dataset from that same well. Monitoring wells JRW-MW-15001 through JRW-MW-15006 are located around the perimeter of Pond 1&2 and monitoring wells JRW-MW-16001 through JRW-MW-16006 are located around the perimeter of the JRW Pond 6. These monitoring wells provide data on both background and downgradient groundwater quality that has not been affected by the CCR unit (total of six background/downgradient monitoring wells for each pond).

As shown on Figure 2, monitoring wells JRW-MW-16007 through JRW-MW-16009 are used for water level measurements only. These wells were initially installed as potential background monitoring wells during the initial stages of characterizing the site. However, based on further hydrogeological characterization of the uppermost aquifer, an intrawell statistical approach was selected which does not rely on JRW-MW-16007 through JRW-MW-16009 for statistical evaluation.

#### 2.2 October 2020 Groundwater Monitoring

Consumers Energy Laboratory Services personnel performed gauging and sampling of monitoring wells associated with Pond 1&2 and Pond 6 on October 1, 2020. Groundwater monitoring was performed in accordance with the HMP. Groundwater samples collected during the October 2020 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan, for analysis of the following metals and inorganic indicator constituents:



Section 11511a(3)(c) – Detection Monitoring Constituents
Boron
Calcium
Chloride
Fluoride
Iron
pH
Sulfate
Total Dissolved Solids (TDS)

Static water level measurements were collected at all locations after equilibration to atmospheric pressure. The depth to water was measured according to ASTM D 4750, "Standard Test Method for Determining Subsurface Liquid Levels in a Borehole or Monitoring Well" and recorded to the nearest 0.01 foot. Static water elevation data are summarized in Table 1.

Groundwater samples were collected using a peristaltic pump or submersible pump in accordance with low flow sampling protocol and were not field filtered to allow for total metals analysis. Groundwater field parameters included dissolved oxygen, oxidation reduction potential, specific conductivity, temperature, and turbidity and are summarized on Table 2. All samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Consumers Energy followed chain of custody procedures to document the sample handling.

Consumers Energy collected quality assurance/quality control (QA/QC) samples from both CCR units, Pond 1&2 and Pond 6, during the October 2020 groundwater sampling event. The QA/QC samples per CCR unit consisted of one field blank, one equipment blank, one field duplicate (JRW-MW-15001 at Pond 1&2 and JHC-MW-16004 at Pond 6), and one field matrix spike/matrix spike duplicate (MS/MSD) sample collected from JRW-MW-15006 at Pond 1&2, and JHC-MW-16003 at Pond 6.

Groundwater analytical results from the second semiannual 2020 monitoring event are summarized in Table 3 (Pond 1&2) and Table 4 (Pond 6). The laboratory analytical reports are included in Appendix B. Field records are included in Appendix C.

#### 2.2.1 Data Quality Review

Data from each round were evaluated for completeness, overall quality and usability, methodspecified sample holding times, precision and accuracy, and potential sample contamination. The data were found to be complete and usable for the purposes of the CCR monitoring program. Data quality reviews are summarized in Appendix A.



#### 2.2.2 Groundwater Flow Rate and Direction

Groundwater elevation data collected during the background sampling events showed that the hydraulic gradient for groundwater within the uppermost aquifer is often so low, groundwater flow across Pond 1&2 and Pond 6 is frequently incalculable and often stagnant.

There are minor differences in hydraulic head across the monitoring wells (ranging from zero up to 0.15 feet across Pond 1&2 and up to 0.24 feet across Pond 6 from event to event from November 2016 through October 2020), indicating that the potentiometric surface is flat the majority of the time. In the few instances since November 2016 where a slight gradient was observed and calculable, the direction of the flow potential was slightly to the northwest (two events) and to the east (one event) from Pond 1&2 and slightly to the south and west from Pond 6.

The most pronounced groundwater gradient between November 2016 and October 2020 at Pond 1&2 was observed in December 19, 2016, which showed a slight horizontal gradient of approximately 0.00016 to the northwest across Pond 1&2. For Pond 6, the most pronounced potentiometric head differential of 0.24 feet was observed on February 28, 2018 between JRW-MW-16001 on the north edge of Pond 6 and JRW-MW-16004 on the south edge of the Pond 6 CCR unit. Although, when considering the potentiometric surface elevation data from all of the Pond 6 CCR unit wells, the general groundwater flow direction inferred across the pond at that time is to the southwest, in order to be conservative, the maximum head difference was used to calculate the maximum groundwater flow velocity at the Pond 6 CCR unit throughout the background monitoring period. This results in a very slight horizontal gradient of approximately 0.000099 ft/ft to the south.

#### Pond 1&2

Although there was no clear flow direction when looking at water levels across the Pond 1&2 well network, the maximum groundwater gradient inferred on October 1, 2020 was calculated using well pair JRW-MW-15002/JRW-MW-15003. The maximum head difference across the Ponds 1&2 monitoring network showed a very slight horizontal gradient of approximately 0.00018 ft/ft with no clear discernable overall flow direction across Pond 1&2. Using the highest hydraulic conductivity measured at the Pond 1&2 monitoring wells of 20 feet/day (ARCADIS, 2016), and an assumed effective porosity of 0.1, this results in a maximum inferred groundwater flow rate of approximately 0.035 feet/day (approximately 12.8 feet/year). However, the actual gradient is much lower when considering the rest of the monitoring wells across Pond 1&2. The Pond 1&2 groundwater elevations measured across the Site during the October 2020 sampling event are provided on Table 1 and are summarized in plan view on Figure 3.

The extremely low gradient and lack of general flow direction is similar to that identified in previous monitoring rounds (since the background sampling events commenced in December 2016) and continues to demonstrate that the downgradient compliance wells are appropriately positioned to detect the presence of detection monitoring constituents that could potentially migrate from Pond 1&2.



#### Pond 6

During the October 2020 event, the average hydraulic gradient of 0.000076 ft/ft was calculated using well pairs JRW-MW-16001/JRW-MW-16004 and JRW-MW-16002/JRW-MW-16004 with a minimal discernable overall flow direction across Pond 6 toward the south. This inferred flow direction is opposite of the slight discernable flow direction observed to the north during the April 2020 event. Using the highest hydraulic conductivity measured at the Pond 6 CCR unit monitoring wells (11.9 feet/day from the 2016 TRC well installation report) and an assumed effective porosity of 0.1, the result average groundwater flow rate is approximately 0.009 feet/day (approximately 3.3 feet/year). Groundwater elevations measured across the Site during the October 2020 sampling event are provided on Table 1 and are summarized in plan view on Figure 3.

The extremely low gradient and/or lack of a consistent general flow direction is similar to that identified in previous monitoring rounds since the background sampling events commenced in November 2016 and continues to demonstrate that the downgradient compliance wells are appropriately positioned to detect the presence of detection monitoring constituents that could potentially migrate from the JRW Pond 6.



## 3.0 Statistical Evaluation

Detection monitoring is continuing at JR Whiting Pond 1&2 and Pond 6 in accordance with the HMP. The following section summarizes the statistical approach applied to assess the first semiannual 2020 groundwater data in accordance with the detection monitoring program.

#### 3.1 Establishing Background Limits

#### Pond 1&2

Per the HMP, background limits were established for the detection monitoring constituents using data collected from each of the six established detection monitoring wells (JRW-MW-15001 through JRW-MW-15006). The background limits for each monitoring well have been calculated using thirteen rounds of data collected from November 2016 through March 2019 as presented in detail in the 2019 Annual Report. These background limits will continue to be used throughout the detection monitoring program to determine whether groundwater has been impacted from Pond 1&2 by comparing concentrations in the detection monitoring wells to their respective background limits for each detection monitoring constituent, with the exception of iron. Iron was incorporated into to the monitoring program as part of the 2020 HMP. Background limits for iron will be calculated once a minimum of eight background data points have been collected from each monitoring location.

#### Pond 6

Per the HMP, background limits were established for the detection monitoring constituents following the twelfth round of background monitoring using data collected from each of the six established detection monitoring wells (JRW-MW-16001 through JRW-MW-16006). The statistical evaluation of the background data is presented in the Pond 6 July 2019 Annual Report. The detection monitoring background limits for each monitoring well will be used throughout the detection monitoring period to determine whether groundwater has been impacted from Pond 6 by comparing concentrations in the detection monitoring wells to their respective background limits for each detection monitoring constituent, with the exception of iron. Iron was incorporated into to the monitoring program as part of the 2020 HMP. Background limits for iron will be calculated once a minimum of eight background data points have been collected from each monitoring location.

#### 3.2 Data Comparison to Background Limits – Pond 1&2 Second 2020 Semiannual Event (October 2020)

The concentrations of the constituents in each of the detection monitoring wells (JRW-MW-15001 through JRW-MW-15006) were compared to their respective statistical background limits calculated from the background data collected from each individual well (i.e., monitoring data from JRW-MW-15001 is compared to the background limit developed using the background dataset from JRW-MW-15001, and so forth). The comparisons are presented on Table 3.

There were no SSIs compared to background for any of the constituents.



#### 3.3 Data Comparison to Background Limits – Pond 6 Second Semiannual Event (October 2020)

The data comparisons of monitoring wells JRW-MW-16001 through JRW-MW-16006 for the October 2020 groundwater monitoring event are presented on Table 4.

There were no SSIs compared to background for any of the constituents.



## 4.0 Conclusions and Recommendations

No SSIs over background limits were identified at either Pond 1&2 or Pond 6 during the October 2020 monitoring event. Therefore, Consumers Energy will continue with the detection monitoring program at the JRW Pond 1&2 and Pond 6 CCR units in conformance with the HMP.

No corrective actions were needed or performed for either Pond 1&2 or Pond 6. The first 2021 semiannual monitoring event for each of these units is scheduled for the second calendar quarter of 2021.



## 5.0 References

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USEPA. April 2018. Barnes Johnson (Office of Resource Conservation and Recovery) to James Roewer (c/o Edison Electric Institute) and Douglas Green, Margaret Fawal (Venable LLP). Re: Coal Combustion Residuals Rule Groundwater Monitoring Requirements. April 30, 2018. United States Environmental Protection Agency, Washington, D.C. 20460. Office of Solid Waste and Emergency Response, now the Office of Land and Emergency Management.



# **Tables**

# Table 1Groundwater Elevation Summary – October 2020JR Whiting Pond 1 & 2 and Pond 6Erie, Michigan

	Ground	TOC		Screen Ir	Screen Interval		Screen Interval		Octobe	October 1, 2020		
Well Location	Surface Elevation (ft)	Elevation (ft)	Geologic Unit of Screen Interval	Depth (ft BGS)		Elevation (ft)		Depth to Water	Groundwater Elevation			
									(ft BTOC)	(ft)		
Static Water Level	Monitoring W	ells										
JRW-MW-16007	579.47	582.31	Limestone	68.0 to	78.0	511.5	to	501.5	7.51	574.80		
JRW-MW-16008	579.95	582.83	Limestone	68.0 to	73.0	512.0	to	507.0	8.00	574.83		
JRW-MW-16009	579.90	582.60	Limestone	69.0 to	79.0	510.9	to	500.9	7.76	574.84		
Ponds 1 & 2												
JRW-MW-15001	NM	581.39	Limestone	NM to	NM	NM	to	NM	6.46	574.93		
JRW-MW-15002	NM	590.17	Limestone	NM to	NM	NM	to	NM	15.22	574.95		
JRW-MW-15003	NM	587.23	Limestone	NM to	NM	NM	to	NM	12.37	574.86		
JRW-MW-15004	NM	589.32	Limestone	NM to	NM	NM	to	NM	14.45	574.87		
JRW-MW-15005	NM	588.28	Limestone	NM to	NM	NM	to	NM	13.36	574.92		
JRW-MW-15006	NM	580.48	Limestone	NM to	NM	NM	to	NM	5.59	574.89		
Pond 6												
JRW-MW-16001	589.19	592.33	Limestone	71.0 to	81.0	518.2	to	508.2	17.30	575.03		
JRW-MW-16002	585.78	588.69	Limestone	81.0 to	91.0	504.8	to	494.8	13.66	575.03		
JRW-MW-16003	586.19	589.01	Limestone	73.0 to	83.0	513.2	to	503.2	14.06	574.95		
JRW-MW-16004	586.48	589.34	Limestone	75.0 to	85.0	511.5	to	501.5	14.46	574.88		
JRW-MW-16005	589.29	592.14	Limestone	78.0 to	88.0	511.3	to	501.3	17.16	574.98		
JRW-MW-16006	588.26	591.04	Limestone	79.0 to	89.0	509.3	to	499.26	16.06	574.98		

#### Notes:

Top of casing elevation survey was conducted by Rowe Professional Services Company on 7/14/2020.

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

ft BGS: Feet below ground surface.

NM = Not measured

# Table 2Summary of Groundwater Field Parameters – October 2020JR Whiting Pond 1 & 2 and 6Erie, Michigan

Sample Location	Sample Date	Dissolved Oxygen	Oxidation Reduction Potential	рН	Specific Conductivity	Temperature	Turbidity
		(mg/L)	(mV)	(SU)	(umhos/cm)	(°C)	(NTU)
Ponds 1 & 2							
JRW-MW-15001	10/1/2020	0.30	-41.5	7.5	1,105	13.8	8.13
JRW-MW-15002	10/1/2020	0.35	-144.7	7.5	1,149	13.3	4.54
JRW-MW-15003	10/1/2020	0.31	-214	7.7	1,005	12.9	7.61
JRW-MW-15004	10/1/2020	0.31	-215.6	7.6	988	13.1	6.27
JRW-MW-15005	10/1/2020	0.29	-245	7.7	890	13.5	4.89
JRW-MW-15006	10/1/2020	0.27	-330.9	7.6	992	12.9	5.01
Pond 6					•		
JRW-MW-16001	10/1/2020	0.54	-142.3	7.9	777	12.2	2.10
JRW-MW-16002	10/1/2020	0.13	-188.8	7.8	1,002	12.0	5.14
JRW-MW-16003	10/1/2020	0.18	-184.2	7.6	1,053	13.5	0.90
JRW-MW-16004	10/1/2020	0.20	-108.4	7.4	1,235	13.6	1.10
JRW-MW-16005	10/1/2020	0.18	-98.2	7.6	971	12.1	1.30
JRW-MW-16006	10/1/2020	0.59	-150.1	7.8	851	11.8	1.36

#### Notes:

mg/L - Milligrams per Liter.

mV - Millivolts.

SU - Standard units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celcius.

NTU - Nephelometric Turbidity Unit.

# Table 3 Comparison of Groundwater Detection Monitoring Results to Background Limits – October 2020 JR Whiting Ponds 1 & 2

Erie, Michigan

San	ple Location:	JRW-M	W-15001	JRW-N	/W-15002	JRW-N	IW-15003	JRW-I	MW-15004	JRW-I	MW-15005	JRW-M	W-15006
	Sample Date:	10/1/2020	PL										
Constituent	Unit	Data	ГЦ	Data	FL	Data	FL	Data	FL	Data		Data	ГЦ
Appendix III													
Boron	ug/L	196	240	174	220	191	230	216	270	182	270	203	250
Calcium	mg/L	154	180	142	180	121	160	120	140	113	120	122	140
Chloride	mg/L	44.2	55	43.5	56	41.6	55	46.6	56	31.5	46	42.6	53
Fluoride	ug/L	1,590	1,600	1,610	1,900	1,510	1,800	1,520	1,800	1,490	1,700	1,550	1,700
Sulfate	mg/L	388	474	415	500	334	440	319	390	288	350	284	410
Total Dissolved Solids	mg/L	813	1,000	846	1,100	704	940	681	880	644	840	694	920
pH, Field	SU	7.5	6.8 - 8.4	7.5	7.2 - 7.9	7.7	7.3 - 8.3	7.6	7.2 - 8.0	7.7	7.3 - 8.6	7.6	7.0 - 9.0
MI Part 115													
Iron	mg/L	484	n < 8	250	n < 8	400	n < 8	123	n < 8	61	n < 8	70	n < 8

#### Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

n = number of data points.

All metals were analyzed as total unless otherwise specified.

Bold font indicates an exceedance of the Prediction Limit (PL) using the number of significant figures in the PL.

# Table 4 Comparison of Groundwater Detection Monitoring Results to Background Limits – October 2020 JR Whiting Pond 6

Erie,	IVI	

Sai	mple Location:	JRW-M	W-16001	JRW-M	W-16002	JRW-M	W-16003	JRW-M	W-16004	JRW-M	W-16005	JRW-M	IW-16006
	Sample Date:	10/1/2020	PL	10/1/2020	PL	10/1/2020	PL	10/1/2020	PL	10/1/2020	- PL	10/1/2020	- PL
Constituent	Unit	Data	FL	Data	FL.								
Appendix III													
Boron	ug/L	169	203	154	209	178	257	192	262	180	244	171	226
Calcium	mg/L	89.2	111	130	149	127	156	151	181	117	182	101	117
Chloride	mg/L	18.6	23.6	19.8	25.4	27.5	32.4	36.4	43.7	24.1	29.4	22.4	38.6
Fluoride	ug/L	1,580	2,300	1,240	1,400	1,370	1,600	1,440	1,700	1,460	1,800	1,520	2,200
Sulfate	mg/L	244	278	379	426	393	470	472	507	344	498	290	399
Total Dissolved Solids	s mg/L	517	770	759	832	771	1,040	970	1,110	720	1,030	617	904
pH, Field	SU	7.9	7.5 - 8.9	7.8	7.5 - 8.3	7.6	7.4 - 7.9	7.4	7.4 - 8.2	7.6	7.3 - 8.0	7.8	7.5 - 8.2
MI Part 115													
Iron	mg/L	134	n < 8	243	n < 8	313	n < 8	158	n < 8	92	n < 8	252	n < 8

#### Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

n = number of data points.

All metals were analyzed as total unless otherwise specified.

Bold font indicates an exceedance of the Prediction Limit (PL) using the number of significant figures in the PL.

## Table 5 Summary of Statistical Exceedances – October 2020 JR Whiting Pond 1 & 2 and Pond 6

#### MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY SUMMARY OF STATISTICAL EXCEEDANCES

Facility: JR Whiting - WDS# 397664

Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	4 Qtr. 2020 ( <b>bold</b> >201)	2 Qtr. 2020 ( <b>bold</b> >201)	4 Qtr. 2019 ( <b>bold</b> >201)	2 Qtr. 2019 ( <b>bold</b> >201)
		No	Excee	edances				

(X) ug/L Data is in or ( ) mg/L unless otherwise stated

Erie, Michigan



# **Figures**



S:\1-PROJECTS\Consumers\_Energy\_CompanylMichigan\CCR\_GW2017\_269767\367393-001-001slm.mxd -- Saved By: SMAJOR on 12/14/2020, 10:09:24 AM



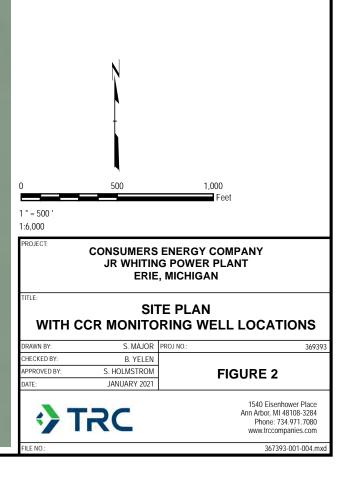
### **LEGEND**



MONITORING WELL (STATIC WATER LEVEL ONLY) CCR UNIT MONITORING WELL

#### <u>NOTES</u>

- 1. BASE MAP IMAGERY FROM GOOGLE EARTH PRO,2019.
- 2. STATIC WATER ONLY WELL LOCATIONS SURVEYED BY SHERIDAN SURVEYING CO. ON 11/19/2015.
- 3. PONDS 1 & 2 WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES CO. ON 11/27 /2019.





#### **LEGEND**

+

0

MONITORING WELL (STATIC WATER LEVEL ONLY)

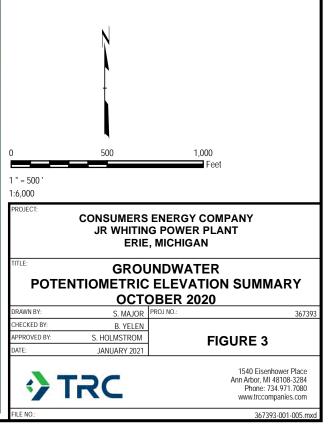
CCR UNIT MONITORING WELL

LABEL FORMAT

MONITORING WELL ID GROUNDWATER ELEVATION FT (MEASUREMENT DATE)

#### <u>NOTES</u>

- 1. BASE MAP IMAGERY FROM GOOGLE EARTH PRO, 4/28/2018.
- 2. WELL LOCATIONS SURVEYED BY SHERIDAN SURVEYING CO. ON 11/19/2015.
- 3. PONDS 1 & 2 WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES CO. ON 11/27/2019.
- 4. MONITORING WELL TOP OF CASING SURVEYED BY ROWE PROFESSIONAL SERVICES CO. ON 7/14/2020. VERTICAL DATUM IS NAVD88.
- 5. ANOMALOUS STATIC WATER ELEVATION. NOT USED FOR GRADIENT CALCULATION.





# Appendix A Data Quality Reviews



# Pond 1 & 2

## Laboratory Data Quality Review Groundwater Sampling Event October 2020 Consumers Energy JR Whiting Ponds 1 & 2

Groundwater samples were collected by Consumers Energy (CE) Laboratory Services for the October 2020 groundwater monitoring sampling event. Samples were analyzed for anions, total metals, and total dissolved solids by CE Laboratory Services, located in Jackson, Michigan. The laboratory analytical results were reported in laboratory project number 20-1090.

During the October 2020 sampling event, a groundwater sample was collected from each of the following wells:

- JRW-MW-15001 JRW-MW-15002 JRW-MW-15003
- JRW-MW-15004 JRW-MW-15005 JRW-MW-15006

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Chloride, Fluoride, Sulfate)	EPA 300.0
Total Dissolved Solids	SM 2540C
Total Metals (Boron, Calcium, Iron)	SW-846 6020B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review

## **Data Quality Review Procedure**

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2017). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for equipment blanks and field blanks. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and

• Overall usability of the data.

It should be noted that results for method blanks and laboratory control samples were not provided for review by the laboratory. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

## Findings

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable, with the exceptions noted below. The discussion that follows describes the QA/QC results and evaluation.

## **Review Summary**

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III constituents as well as iron will be utilized for the purposes of a detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.
- When the data are evaluated through a detection monitoring statistical program, findings below may be used to support the removal of outliers.

#### **QA/QC Sample Summary:**

- Preparation dates were not provided by the laboratory. Since the analyses were performed within the preparation holding times, where applicable, there is no impact on data usability due to this issue.
- One equipment blank (EB-01) and one field blank (FB-01) were collected. Target analytes were not detected in these blank samples.
- MS and MSD analyses were performed on sample JRW-MW-15006 for total metals and anions. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory and therefore were not evaluated; further, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- The field duplicate pair samples were DUP-01/JRW-MW-15001. All criteria were met.
- Laboratory duplicate analyses were not performed on a sample from this data set.



# Pond 6

## Laboratory Data Quality Review Groundwater Sampling Event October 2020 Consumers Energy JR Whiting Pond 6

Groundwater samples were collected by Consumers Energy (CE) Laboratory Services for the October 2020 groundwater monitoring sampling event. Samples were analyzed for anions, total metals, and total dissolved solids by CE Laboratory Services, located in Jackson, Michigan. The laboratory analytical results were reported in laboratory project number 20-1095.

During the October 2020 sampling event, a groundwater sample was collected from each of the following wells:

- JRW-MW-16001 JRW-MW-16002 JRW-MW-16003
- JRW-MW-16004 JRW-MW-16005 JRW-MW-16006

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Chloride, Fluoride, Sulfate)	EPA 300.0
Total Dissolved Solids	SM 2540C
Total Metals (Boron, Calcium, Iron)	SW-846 6020B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review

## **Data Quality Review Procedure**

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2017). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for equipment blanks and field blanks. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and

• Overall usability of the data.

It should be noted that results for method blanks and laboratory control samples were not provided for review by the laboratory. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

## Findings

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable, with the exceptions noted below. The discussion that follows describes the QA/QC results and evaluation.

## **Review Summary**

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III constituents as well as iron will be utilized for the purposes of a detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.
- When the data are evaluated through a detection monitoring statistical program, findings below may be used to support the removal of outliers.

#### **QA/QC Sample Summary:**

- Preparation dates were not provided by the laboratory. Since the analyses were performed within the preparation holding times, where applicable, there is no impact on data usability due to this issue.
- One equipment blank (EB-02) and one field blank (FB-02) were collected. Target analytes were not detected in these blank samples.
- MS and MSD analyses were performed on sample JRW-MW-16003 for total metals and anions. The recoveries were within the acceptance limits with the exception of calcium which exhibited high recoveries, likely due to the elevated concentration of calcium in the unspiked sample; this issue does not have an adverse effect on the data. Relative percent differences (RPDs) were not provided by the laboratory and therefore were not evaluated; further, MS/MSD concentrations were not provided by the laboratory. However, since recoveries were within the acceptance limits or deemed not to have an adverse effect on the data, there is no impact on data usability due to this issue.
- The field duplicate pair samples were DUP-02/JRW-MW-16004. All criteria were met.
- Laboratory duplicate analyses were not performed on a sample from this data set.



# Appendix B Laboratory Reports



# Pond 1 & 2



To: MAMarion, P22-118

From: EBlaj, T-258

Date: October 11, 2020

*Subject:* RCRA GROUNDWATER MONITORING – JR WHITING POND 1 AND 2 – 2020 Q4

CC: Sarah Holmstrom, Project Manager TRC Environmental Corporation 1540 Eisenhower Place Ann Arbor, MI 48108

#### Chemistry Project: 20-1090

*phone* 517-788-1251 *fax* 517-788-2533

135 W. Trail St.

Jackson, MI 49201

CE Laboratory Services conducted groundwater monitoring at JR Whiting Pond 1 & 2 on 10/01/2020 for the  $2^{nd}$  Semiannual monitoring requirement, and as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis in the Chemistry department of Laboratory Services on 10/02/2020.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2009 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

#### **CASE NARRATIVE**

#### I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

#### II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22<sup>nd</sup> Edition, 2012.

#### III. <u>Results/Quality Control</u>

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

#### **DEFINITIONS / QUALIFIERS**

The following qualifiers and/or acronyms are used in the report, where applicable:

Acronym	Description
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	Description
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
Н	The maximum recommended hold time was exceeded
Ι	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
Κ	Reporting limit raised due to matrix interference
Μ	The precision for duplicate analysis was not met; RPD outside acceptance criteria
Ν	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
Х	Other notation required; comment listed in sample notes and/or case narrative



# Customer Name:JR Whiting ComplexWork Order ID:JRW RCRA GW Monitoring - Pond 1&2 - October 2020Date Received:10/2/2020Chemistry Project:20-1090

Sample #	Field Sample ID	Matrix	Sample Date	<u>Site</u>
20-1090-01	JRW-MW-15001	Groundwater	10/01/2020 02:44 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-02	JRW-MW-15002	Groundwater	10/01/2020 01:45 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-03	JRW-MW-15003	Groundwater	10/01/2020 06:11 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-04	JRW-MW-15004	Groundwater	10/01/2020 05:14 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-05	JRW-MW-15005	Groundwater	10/01/2020 04:27 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-06	JRW-MW-15006	Groundwater	10/01/2020 03:43 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-07	DUP-01	Groundwater	10/01/2020 02:44 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-08	EB-01	Water	10/01/2020 05:17 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-09	FB-01	Water	10/01/2020 05:18 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-10	JRW-MW-15006 MS	Groundwater	10/01/2020 03:43 PM	JRW RCRA GW Monitoring - Pond 1&2
20-1090-11	JRW-MW-15006 MSD	Groundwater	10/01/2020 03:43 PM	JRW RCRA GW Monitoring - Pond 1&2



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	JRW-MW-15001	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-01	Collect Time:	02:44 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1090-01-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	196		ug/L	20	10/07/2020	AB20-1007-01
Calcium	154000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	484		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-1090-01-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	44200		ug/L	2000	10/06/2020	AB20-1006-03
Fluoride	1590		ug/L	1000	10/06/2020	AB20-1006-03
Sulfate	388000		ug/L	1000	10/07/2020	AB20-1006-03
Total Dissolved Solids by SM 2	2540C			Aliquot:	20-1090-01-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	813		mg/L	10	10/07/2020	AB20-1005-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	JRW-MW-15002	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-02	Collect Time:	01:45 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1090-02-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	174		ug/L	20	10/07/2020	AB20-1007-01
Calcium	142000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	250		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-1090-02-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	43500		ug/L	2000	10/06/2020	AB20-1006-03
Fluoride	1610		ug/L	1000	10/06/2020	AB20-1006-03
Sulfate	415000		ug/L	1000	10/07/2020	AB20-1006-03
Total Dissolved Solids by SM 25400	;			Aliquot:	20-1090-02-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	846		mg/L	10	10/07/2020	AB20-1005-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	JRW-MW-15003	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-03	Collect Time:	06:11 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1090-03-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	191		ug/L	20	10/07/2020	AB20-1007-01
Calcium	121000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	400		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-1090-03-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	41600		ug/L	2000	10/06/2020	AB20-1006-03
Fluoride	1510		ug/L	1000	10/06/2020	AB20-1006-03
Sulfate	334000		ug/L	1000	10/07/2020	AB20-1006-03
Total Dissolved Solids by SM 25	540C			Aliquot:	20-1090-03-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	704		mg/L	10	10/07/2020	AB20-1005-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	JRW-MW-15004	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-04	Collect Time:	05:14 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1090-04-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	216		ug/L	20	10/07/2020	AB20-1007-01
Calcium	120000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	123		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-1090-04-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	46600		ug/L	2000	10/06/2020	AB20-1006-03
Fluoride	1520		ug/L	1000	10/06/2020	AB20-1006-03
Sulfate	319000		ug/L	1000	10/07/2020	AB20-1006-03
Total Dissolved Solids by SM 2540C				Aliquot:	20-1090-04-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	681		mg/L	10	10/07/2020	AB20-1005-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	JRW-MW-15005	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-05	Collect Time:	04:27 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot: 20-1090-05-C02-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	182		ug/L	20	10/07/2020	AB20-1007-01
Calcium	113000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	61		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-1090-05-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	31500		ug/L	2000	10/06/2020	AB20-1006-03
Fluoride	1490		ug/L	1000	10/06/2020	AB20-1006-03
Sulfate	288000		ug/L	1000	10/07/2020	AB20-1006-03
Total Dissolved Solids by SM 2540C				Aliquot:	20-1090-05-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	644		mg/L	10	10/07/2020	AB20-1005-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	JRW-MW-15006	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-06	Collect Time:	03:43 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1090-06-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	203		ug/L	20	10/07/2020	AB20-1007-01
Calcium	122000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	70		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-1090-06-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	42600		ug/L	2000	10/06/2020	AB20-1006-03
Fluoride	1550		ug/L	1000	10/06/2020	AB20-1006-03
Sulfate	284000		ug/L	1000	10/07/2020	AB20-1006-03
Total Dissolved Solids by SM 254	0C			Aliquot:	20-1090-06-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	694		mg/L	10	10/07/2020	AB20-1005-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	DUP-01	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-07	Collect Time:	02:44 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1090-07-C01-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	190		ug/L	20	10/07/2020	AB20-1007-01
Calcium	142000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	492		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Anal	yte List, CI, F,	SO4, Aqu	eous	Aliquot:	20-1090-07-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	43400		ug/L	2000	10/06/2020	AB20-1006-03
Fluoride	1470		ug/L	1000	10/06/2020	AB20-1006-03
Sulfate	391000		ug/L	1000	10/07/2020	AB20-1006-03
Total Dissolved Solids by SM 2540C				Aliquot:	20-1090-07-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	796		mg/L	10	10/07/2020	AB20-1005-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	EB-01	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-08	Collect Time:	05:17 PM
Matrix:	Water		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot: 20-1090-08-C01-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	ND		ug/L	20	10/07/2020	AB20-1007-01
Calcium	ND		ug/L	1000	10/07/2020	AB20-1007-01
Iron	ND		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule	Analyte List, Cl, F,	SO4, Aqu	eous	Aliquot:	20-1090-08-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	ND		ug/L	2000	10/06/2020	AB20-1006-03
Fluoride	ND		ug/L	1000	10/06/2020	AB20-1006-03
Sulfate	ND		ug/L	1000	10/07/2020	AB20-1006-03
Total Dissolved Solids by SM 2	540C			Aliquot:	20-1090-08-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	ND		mg/L	10	10/07/2020	AB20-1005-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	FB-01	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-09	Collect Time:	05:18 PM
Matrix:	Water		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1090-09-C01-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	ND		ug/L	20	10/07/2020	AB20-1007-01
Calcium	ND		ug/L	1000	10/07/2020	AB20-1007-01
Iron	ND		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule	e Analyte List, Cl, F,	SO4, Aqu	eous	Aliquot:	20-1090-09-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	ND		ug/L	2000	10/06/2020	AB20-1006-03
Fluoride	ND		ug/L	1000	10/06/2020	AB20-1006-03
Sulfate	ND		ug/L	1000	10/07/2020	AB20-1006-03
Total Dissolved Solids by SM 2	2540C			Aliquot:	20-1090-09-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	ND		mg/L	10	10/07/2020	AB20-1005-06



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	JRW-MW-15006 MS	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-10	Collect Time:	03:43 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1090-10-C01-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	104		%	20	10/07/2020	AB20-1007-01
Calcium	121		%	1000	10/07/2020	AB20-1007-01
Iron	109		%	20	10/07/2020	AB20-1007-01

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous			Aliquot: 20-1090-10-C02-A01		Analyst: DMW	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	112		%	2000	10/06/2020	AB20-1006-03
Fluoride	104		%	1000	10/06/2020	AB20-1006-03
Sulfate	106		%	1000	10/07/2020	AB20-1006-03



Sample Site:	JRW RCRA GW Monitoring - Pond 1&2	Laboratory Project:	20-1090
Field Sample ID:	JRW-MW-15006 MSD	Collect Date:	10/01/2020
Lab Sample ID:	20-1090-11	Collect Time:	03:43 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals				Aliquot:	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	104		%	20	10/07/2020	AB20-1007-01
Calcium	113		%	1000	10/07/2020	AB20-1007-01
Iron	110		%	20	10/07/2020	AB20-1007-01

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous			Aliquot:	Analyst: DMW		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	114		%	2000	10/06/2020	AB20-1006-03
Fluoride	107		%	1000	10/06/2020	AB20-1006-03
Sulfate	107		%	1000	10/07/2020	AB20-1006-03



Data Qualifiers

Exception Summary

No exceptions occured.

CONSUMERS ENERGY Chemistry Department

General Standard Operating Procedure

PROC CHEM-1,2.01 PAGE 1 OF 2 REVISION 3 ATTACHMENT A

#### TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Inspection Date: 10-05-1	2020	-	Inspection By: UH		
Sample Origin/Project Nam	ie:]	RW			
Shipment Delivered By: En			rier.		
Pony Other/Hand Carry (v	FedEx	UPS LONSUM	sUSPS WAS	Airt	oorne
			Shipping Form Att		No
Shipping Containers: Enter	the type and	number of shi	pping containers received.		
Cooler 🖌	Cardboard B	Box	Custom Case	Envelop	e/Mailer
Loose/Unpackaged (	Containers		Other		
Condition of Shipment: Ent					
Damaged Shipment (		1	COMPANY AND ADDRESS OF ADDRESS OF		cing
Shipping Containers			Sealed		
Enclosed Documents: Enter	the type of d	ocuments encl	osed with the shipment. Air Data Sheet	Other	
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers:	the type of de ork Request _ Measure the	ocuments encl	osed with the shipment. Air Data Sheet of several sample containers	Other	
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers: As-Received Temper	the type of d ork Request Measure the rature Range	temperature o $\cdot 2 - 3 \cdot 0^{\circ} t$	osed with the shipment. Air Data Sheet of several sample containers Samples Received on	Other	
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers:	the type of d ork Request Measure the rature Range tion # 0 (64 (	temperature o $12 - 3.0^{\circ}$ 02 - 4.2	osed with the shipment. Air Data Sheet of several sample containers Samples Received on	Other Ice: Yes N	
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers: As-Received Temper M&TE # and Expirat	the type of d ork Request Measure the rature Range tion # 0 (64 (	temperature o $\frac{12}{12} - 3.0^{\circ}$ $\frac{12}{12} - \frac{12}{12} + \frac{12}{12}$	osed with the shipment. Air Data Sheet of several sample containers Samples Received on	Other Ice: Yes N	lo
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers: As-Received Temper M&TE # and Expirat Number and Type of Contai	the type of d ork Request Measure the rature Range] tion # 0 (64 ( mers: Enter t <u>Water</u>	temperature of $\frac{12}{12} - 3 \cdot 0^{\circ} c$ $\frac{12}{12} - \frac{12}{12} \cdot 4 \cdot 2$ the total numb	osed with the shipment. Air Data Sheet of several sample containers Samples Received on a er of sample containers rece	Other Ice: YesN eived.	lo
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers: As-Received Temper M&TE # and Expirat Number and Type of Contai <u>Container Type</u> VOA (40mL or 60mL) Quart/Liter (g/p)	the type of de ork Request Measure the rature Range] tion # 0[64] mers: Enter to <u>Water</u>  	temperature of $\frac{12}{12} - 3 \cdot 0^{\circ} c$ $\frac{12}{12} - \frac{12}{12} \cdot 4 \cdot 2$ the total numb	osed with the shipment. Air Data Sheet of several sample containers Samples Received on a er of sample containers rece	Other Ice: YesN eived.	lo
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers: As-Received Temper M&TE # and Expirat Number and Type of Contai <u>Container Type</u> VOA (40mL or 60mL) Quart/Liter (g/p) 9-oz (amber glass jar)	the type of de ork Request Measure the rature Range] tion # 0[64] mers: Enter to <u>Water</u>  	temperature of $\frac{12}{12} - 3 \cdot 0^{\circ} c$ $\frac{12}{12} - \frac{12}{12} \cdot 4 \cdot 2$ the total numb	osed with the shipment. Air Data Sheet of several sample containers Samples Received on a er of sample containers rece	Other Ice: YesN eived.	lo
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers: As-Received Temper M&TE # and Expirat Number and Type of Contai <u>Container Type</u> VOA (40mL or 60mL) Quart/Liter (g/p) 9-oz (amber glass jar 2-oz (amber glass)	the type of de ork Request Measure the rature Range] tion ± 0(64( mers: Enter the <u>Water</u> )	temperature of $\frac{12}{12} - 3 \cdot 0^{\circ} c$ $\frac{12}{12} - \frac{12}{12} \cdot 4 \cdot 2$ the total numb	osed with the shipment. Air Data Sheet of several sample containers Samples Received on A er of sample containers rece	Other Ice: YesN eived.	lo
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers: As-Received Temper M&TE # and Expirat Number and Type of Contai <u>Container Type</u> VOA (40mL or 60mL) Quart/Liter (g/p) 9-oz (amber glass jar) 2-oz (amber glass) 125 mL (plastic)	the type of de ork Request Measure the rature Range] tion # 0[64] mers: Enter to <u>Water</u>  	temperature of $\frac{12}{12} - 3 \cdot 0^{\circ} c$ $\frac{12}{12} - \frac{12}{12} \cdot 4 \cdot 2$ the total numb	osed with the shipment. Air Data Sheet of several sample containers Samples Received on A er of sample containers rece	Other Ice: YesN eived.	
Shipping Containers Enclosed Documents: Enter CoC W Temperature of Containers: As-Received Temper M&TE # and Expirat Number and Type of Contai <u>Container Type</u> VOA (40mL or 60mL) Quart/Liter (g/p) 9-oz (amber glass jar) 2-oz (amber glass)	the type of de ork Request Measure the rature Range] tion ± 0(64( mers: Enter the <u>Water</u> )	temperature of $\frac{12}{12} - 3 \cdot 0^{\circ} c$ $\frac{12}{12} - \frac{12}{12} \cdot 4 \cdot 2$ the total numb	osed with the shipment. Air Data Sheet of several sample containers Samples Received on A er of sample containers rece	Other Ice: YesN eived.	lo

20-1090 Page 17 of 18 PG . 7 7 2 not needed

# **CHAIN OF CUSTODY**

### **CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**

## **Consumers Energy**

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE	3:	10.00	1.00	PROJECT NUMBER:		ANALYSIS REQUESTED				Page 1 of 1			
IRW RCRA	– April 202	20 Pond 1&2	2	20-1090				-				SEND REPORT TO: Michelle Marion	
AMPLING TEA	M:			DATE SHIPPED:	SI	TE SKETCHEI	DATTACHED?	tals					TRC
Casey Hanser	h & Chase T	umey		V		CIRCLE ONE: YES NO		Total Metals	Anions	~			PHONE:
CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION /	LOCATION	DEPTH (ft)	# OF CONTAINERS	Tot	Ani	TDS	-		REMARKS
20-1090-01	10-01-20	1444	GW	JRW-MW-15001			3	x	х	х			
-02	1	1345	GW	JRW-MW-15002			3	x	х	x			
-03		1811	GW	JRW-MW-15003			3	x	х	x			
-04		1774	GW	JRW-MW-15004			3	x	x	x			
-05		1627	GW	JRW-MW-15005			3	x	x	x			
-06	-	1543	GW	JRW-MW-15006			3	x	х	x			
-07		1444	GW	DUP-01			3	x	x	x			
-08		1717	GW	EB-01			3	x	x	x			
-09		1718	GW	FB-01			3	x	x	x			
-10	11	1543	GW	JRW-MW-15006 MS	1		2	х	х				
<ul><li>✓ -11</li></ul>	V	1543	GW	JRW-MW-15006 MS	SD		2	x	x				
										ing F			
ELINQUISHED	BY: (SIGNA	TURE)	DATE/T		RECEIVED BY						co	MMENTS	1.2-3.09
X	2-		10-	02-20 0730	Caserp	Hangu	W						
ELINQUISHED	BY: (SIGNA	TURE)	DATE/T		RECEIVED BY								#015402
										ORIGIN	AL TO LAB	COPY	TO CUSTOMER



# Pond 6



To: MAMarion, P22-118

From: EBlaj, T-258

Date: October 11, 2020

Subject: RCRA GROUNDWATER MONITORING – JR WHITING POND 6 – 2020 Q4

CC: Sarah Holmstrom, Project Manager TRC Environmental Corporation 1540 Eisenhower Place Ann Arbor, MI 48108

#### Chemistry Project: 20-1095

*phone* 517-788-1251 *fax* 517-788-2533

135 W. Trail St.

Jackson, MI 49201

CE Laboratory Services conducted groundwater monitoring at JR Whiting Pond 6 on 10/01/2020, for the 2<sup>nd</sup> Semiannual monitoring requirement, and as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis in the Chemistry department of Laboratory Services on 10/02/2020.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2009 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

#### CASE NARRATIVE

#### I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

#### II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22<sup>nd</sup> Edition, 2012.

#### III. <u>Results/Quality Control</u>

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

NOTE: Field MS/MSD spike over-recovery was observed for Calcium due to high sample background; however, all other QA/QC elements, including spike recovery for the laboratory selected MS/MSD for Calcium were found within the acceptance criteria of the respective test methods.

#### **DEFINITIONS / QUALIFIERS**

The following qualifiers and/or acronyms are used in the report, where applicable:

Acronym	Description
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit

- PQL Practical Quantitation Limit
- TDL Target Detection Limit

Description

Qualifier

SM Standard Methods Compendium

*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
Е	Estimated due to result exceeding the linear range of the analyzer
Н	The maximum recommended hold time was exceeded

- I Dilution required due to matrix interference; reporting limit elevated
- J Estimated due to result found above MDL but below PQL (or RL)
- K Reporting limit raised due to matrix interference
- M The precision for duplicate analysis was not met; RPD outside acceptance criteria
- N Non-homogeneous sample made analysis questionable
- PI Possible interference may have affected the accuracy of the laboratory result
- Q Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
- R Result confirmed by new sample preparation and reanalysis
- X Other notation required; comment listed in sample notes and/or case narrative



# Customer Name:JR Whiting ComplexWork Order ID:JRW RCRA GW Monitoring - Pond 6 - October 2020Date Received:10/2/2020Chemistry Project:20-1095

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
20-1095-01	JRW-MW-16001	Groundwater	10/01/2020 04:51 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-02	JRW-MW-16002	Groundwater	10/01/2020 04:11 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-03	JRW-MW-16003	Groundwater	10/01/2020 02:31 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-04	JRW-MW-16004	Groundwater	10/01/2020 01:21 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-05	JRW-MW-16005	Groundwater	10/01/2020 06:06 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-06	JRW-MW-16006	Groundwater	10/01/2020 07:01 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-07	DUP-02	Groundwater	10/01/2020 01:21 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-08	EB-02	Water	10/01/2020 07:11 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-09	FB-02	Water	10/01/2020 01:08 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-10	JRW-MW-16003 MS	Groundwater	10/01/2020 02:31 PM	JRW RCRA GW Monitoring - Pond 6
20-1095-11	JRW-MW-16003 MSD	Groundwater	10/01/2020 02:31 PM	JRW RCRA GW Monitoring - Pond 6



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	JRW-MW-16001	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-01	Collect Time:	04:51 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals					Aliquot: 20-1095-01-C02-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Boron	169		ug/L	20	10/07/2020	AB20-1007-01	
Calcium	89200		ug/L	1000	10/07/2020	AB20-1007-01	
Iron	134		ug/L	20	10/07/2020	AB20-1007-01	
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot: 20-1095-01-C03-A01 Analyst: DMW							
Anions by EPA 300.0 CCR Rule Analy	te List, Ci, F,	504, Aqu	eous	Allquot:	20-1095-01-C03-A01	Analyst: DMW	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Chloride	18600		ug/L	2000	10/06/2020	AB20-1006-04	
Fluoride	1580		ug/L	1000	10/06/2020	AB20-1006-04	
Sulfate	244000		ug/L	1000	10/07/2020	AB20-1006-04	
Total Dissolved Solids by SM 2540C Aliquot: 20-1095-01-C04-A01 Analyst: CL							
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Total Dissolved Solids	517		mg/L	10	10/06/2020	AB20-1005-07	



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	JRW-MW-16002	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-02	Collect Time:	04:11 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals					Aliquot: 20-1095-02-C02-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Boron	154		ug/L	20	10/07/2020	AB20-1007-01	
Calcium	130000		ug/L	1000	10/07/2020	AB20-1007-01	
Iron	243		ug/L	20	10/07/2020	AB20-1007-01	
Anions by EPA 300.0 CCR Rule Analy	Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous					Analyst: DMW	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Chloride	19800		ug/L	2000	10/06/2020	AB20-1006-04	
Fluoride	1240		ug/L	1000	10/06/2020	AB20-1006-04	
Sulfate	379000		ug/L	1000	10/07/2020	AB20-1006-04	
Total Dissolved Solids by SM 2540C	Total Dissolved Solids by SM 2540C					Analyst: CLH	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Total Dissolved Solids	759		mg/L	10	10/06/2020	AB20-1005-07	



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	JRW-MW-16003	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-03	Collect Time:	02:31 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1095-03-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	178		ug/L	20	10/07/2020	AB20-1007-01
Calcium	127000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	313		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analy	te List, Cl, F, S	604, Aqu	eous	Aliquot: 2	20-1095-03-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	27500		ug/L	2000	10/06/2020	AB20-1006-04
Fluoride	1370		ug/L	1000	10/06/2020	AB20-1006-04
Sulfate	393000		ug/L	1000	10/07/2020	AB20-1006-04
Total Dissolved Solids by SM 2540C				Aliquot: 2	20-1095-03-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	771		mg/L	10	10/06/2020	AB20-1005-07



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	JRW-MW-16004	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-04	Collect Time:	01:21 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1095-04-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	192		ug/L	20	10/07/2020	AB20-1007-01
Calcium	151000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	158		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule	Analyte List, Cl, F,	SO4, Aqu	eous	Aliquot:	20-1095-04-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	36400		ug/L	2000	10/06/2020	AB20-1006-04
Fluoride	1440		ug/L	1000	10/06/2020	AB20-1006-04
Sulfate	472000		ug/L	1000	10/07/2020	AB20-1006-04
Total Dissolved Solids by SM 2	540C			Aliquot:	20-1095-04-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	970		mg/L	10	10/06/2020	AB20-1005-07



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	JRW-MW-16005	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-05	Collect Time:	06:06 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1095-05-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	180		ug/L	20	10/07/2020	AB20-1007-01
Calcium	117000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	92		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analyt	e List, Cl, F, S	04, Aqu	eous	Aliquot: 2	20-1095-05-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	24100		ug/L	2000	10/06/2020	AB20-1006-04
Fluoride	1460		ug/L	1000	10/06/2020	AB20-1006-04
Sulfate	344000		ug/L	1000	10/07/2020	AB20-1006-04
Total Dissolved Solids by SM 2540C				Aliquetu	20-1095-05-C04-A01	Applyot, CLH
<b>*</b>						Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	720		mg/L	10	10/06/2020	AB20-1005-07



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	JRW-MW-16006	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-06	Collect Time:	07:01 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1095-06-C02-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	171		ug/L	20	10/07/2020	AB20-1007-01
Calcium	101000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	252		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analyt	te List, Cl, F, S	O4, Aqu	eous	Aliquot: 2	20-1095-06-C03-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	22400		ug/L	2000	10/06/2020	AB20-1006-04
Fluoride	1520		ug/L	1000	10/06/2020	AB20-1006-04
Sulfate	290000		ug/L	1000	10/07/2020	AB20-1006-04
Total Dissolved Solids by SM 2540C				Aliquot: 2	20-1095-06-C04-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	617		mg/L	10	10/06/2020	AB20-1005-07



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	DUP-02	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-07	Collect Time:	01:21 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1095-07-C01-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	194		ug/L	20	10/07/2020	AB20-1007-01
Calcium	161000		ug/L	1000	10/07/2020	AB20-1007-01
Iron	155		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot:	20-1095-07-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	36700		ug/L	2000	10/06/2020	AB20-1006-04
Fluoride	1490		ug/L	1000	10/06/2020	AB20-1006-04
Sulfate	474000		ug/L	1000	10/07/2020	AB20-1006-04
Total Dissolved Solids by SM 2540C				Aliquot:	20-1095-07-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	978		mg/L	10	10/06/2020	AB20-1005-07



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	EB-02	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-08	Collect Time:	07:11 PM
Matrix:	Water		

Metals by EPA 6020B: CCR Rule Appendix III and Fe Total Metals			Aliquot: 20-1095-08-C01-A01		Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	ND		ug/L	20	10/07/2020	AB20-1007-01
Calcium	ND		ug/L	1000	10/07/2020	AB20-1007-01
Iron	ND		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule	e Analyte List, Cl, F,	SO4, Aqu	eous	Aliquot:	20-1095-08-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	ND		ug/L	2000	10/06/2020	AB20-1006-04
Fluoride	ND		ug/L	1000	10/06/2020	AB20-1006-04
Sulfate	ND		ug/L	1000	10/07/2020	AB20-1006-04
Total Dissolved Solids by SM 2	2540C			Aliquot:	20-1095-08-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	ND		mg/L	10	10/06/2020	AB20-1005-07



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	FB-02	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-09	Collect Time:	01:08 PM
Matrix:	Water		

Metals by EPA 6020B: CCR Ru	le Appendix III and F	e Total M	etals	Aliquot:	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	ND		ug/L	20	10/07/2020	AB20-1007-01
Calcium	ND		ug/L	1000	10/07/2020	AB20-1007-01
Iron	ND		ug/L	20	10/07/2020	AB20-1007-01
Anions by EPA 300.0 CCR Rule	e Analyte List, CI, F,	SO4, Aqu	eous	Aliquot:	20-1095-09-C02-A01	Analyst: DMW
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Chloride	ND		ug/L	2000	10/06/2020	AB20-1006-04
Fluoride	ND		ug/L	1000	10/06/2020	AB20-1006-04
Sulfate	ND		ug/L	1000	10/07/2020	AB20-1006-04
Total Dissolved Solids by SM 2	2540C			Aliquot:	20-1095-09-C03-A01	Analyst: CLH
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Total Dissolved Solids	ND		mg/L	10	10/06/2020	AB20-1005-07



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	JRW-MW-16003 MS	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-10	Collect Time:	02:31 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCI	etals by EPA 6020B: CCR Rule Appendix III and Fe		etals	Aliquot:	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	107		%	20	10/07/2020	AB20-1007-01
Calcium	133	*	%	1000	10/07/2020	AB20-1007-01
Iron	108		%	20	10/07/2020	AB20-1007-01

Anions by EPA 300.0 CCF	R Rule Analyte List, Cl, F,	List, CI, F, SO4, Aqueous			Aliquot: 20-1095-10-C02-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Chloride	105		%	2000	10/06/2020	AB20-1006-04	
Fluoride	101		%	1000	10/06/2020	AB20-1006-04	
Sulfate	106		%	1000	10/07/2020	AB20-1006-04	



Sample Site:	JRW RCRA GW Monitoring - Pond 6	Laboratory Project:	20-1095
Field Sample ID:	JRW-MW-16003 MSD	Collect Date:	10/01/2020
Lab Sample ID:	20-1095-11	Collect Time:	02:31 PM
Matrix:	Groundwater		

Metals by EPA 6020B: CCF	letals by EPA 6020B: CCR Rule Appendix III and Fe		etals	Aliquot:	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #
Boron	110		%	20	10/07/2020	AB20-1007-01
Calcium	131	*	%	1000	10/07/2020	AB20-1007-01
Iron	112		%	20	10/07/2020	AB20-1007-01

Anions by EPA 300.0 CCF	R Rule Analyte List, Cl, F,	ist, CI, F, SO4, Aqueous			Aliquot: 20-1095-11-C02-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking #	
Chloride	106		%	2000	10/06/2020	AB20-1006-04	
Fluoride	105		%	1000	10/06/2020	AB20-1006-04	
Sulfate	102		%	1000	10/07/2020	AB20-1006-04	



Data Qualifiers	Exception Summary

\* = Field MS/MSD spike over-recovery was observed for Calcium No other exceptions occured. due to high sample background.

CONSUMERS ENERGY Chemistry Department

General Standard Operating Procedure

PROC CHEM-1.2.01 PAGE 1 OF 2 REVISION 3 ATTACHMENT A

#### TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Project Log-In Number:					
Inspection Date:0 - 09	.2020	-	Inspection By: Lut		
Sample Origin/Project Name:		JRW			
Shipment Delivered By: Ente	r the type of	shipment car	rier.		
			USPS	Airl	orne
Other/Hand Carry (wh					
Tracking Number:				Attached: Yes	No
Shipping Containers: Enter th					12
			Custom Case		
Loose/Unpackaged Co	ontainers		Other	-	
Condition of Shipment: Enter					
Damaged Shipment O	bserved: No	me	Dented	Lea	king
Other		_			
Shipment Security: Enter if a	ny of the ship	pping contain	ers were opened before	receipt.	
Shipping Containers R	eceived: Or	bened	Sealed		
				_	
Enclosed Documents: Enter th			and an entry other		
CoC Wor	rk Request _		Air Data Sheet	Other	
Temperature of Containers: N	Measure the	temperature o	f several sample contain	ers.	
As-Received Tempera	ture Range	.8.2.200	Samples Received	on Ice: Yes 🖌 N	No
M&TE # and Expiration	m H O ISH	711.11.			
		S		1. C. A.	
Number and Type of Contain	ers: Enter t	he total numb	er of sample containers	received.	
Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)		-			
Quart/Liter (gp)	9	-			
9-oz (amber glass jar)					
2-oz (amber glass)	10	_			_
125 mL (plastic)	22				
24 mL vial (glass)	_	_			
500 mL (plastic)		_			
Other					

20-1095 Page 17 of 10-292 not needed

# **CHAIN OF CUSTODY**

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**Consumers Energy** 

-6-

## **CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

MPLING SIT	E:			PROJECT NUMBER:					ANALYSIS	REQUESTED	Page 1 of 1
RW RCRA	– April 202	0 Pond 6		20-1095						SEND REPORT TO: Michelle Marion	
MPLING TEA	TEAM:			DATE SHIPPED:	SITE SKETCHEI	O ATTACHED?	als				TRC
Casey Hanse	n & Chase T	umey			CIRCLE		Met	su			PHONE:
CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCAT	VES DEPTH ION (ft)	NO # OF CONTAINERS	Total Metals	Anions	TDS		REMARKS
20-1095-01	10.1.20	1451	GW	JRW-MW-16001		3	x	x	x		ut
T. T.	10.1.20	1411	GW	JRW-MW-16002		3	X	x	x		uut
-03	10.1.20	1431	GW	JRW-MW-16003		3	x	x	x		utt
-04		1321	GW	JRW-MW-16004		3	x	X	х		art
-05	10-1-20	1800	GW	JRW-MW-16005		3	x	x	x		cutt
-06	10.1.20	1901	GW	JRW-MW-16006		3	x	X	x		utt
-07	10.1.20	1321	GW	DUP-02		3	x	x	х		CCH
-08	10.1.20	1911	GW	EB-02		3	x	x	x		cert
-09	10.1.20	1308	GW	FB-02		3	х	X	x		cut
	10-1-20	1431	GW	JRW-MW-16003 MS		2	x	X			cut
	10.1.20	1431	GW	JRW-MW-16003 MSD		2	x	x			cutt
ELINQUISHEI	D BY: (SIGNA	TURE)	DATE/T	ME RECEIVE	ED BY: (SIGNATUR	E)				COMMENT	
ĊA	Seitz	Hans	sen	10-02-2020 0730	1						0.8-7.2°C
	D BY: (SIGNA'		DATE/T	ME: RECEIVE	ED BY (SIGNATUR	E)					#015402

20-1095 Page 18 of 18



## Appendix C Field Notes

Counton US® Boratory Services SENTURY OF EXCELLENCE		WATER LEVEL DATA								
Site:	JR Whiting									
Project No:	20-1090, 2	0-1095		Reviewed by	1: ¥	-				
Analyst:	clh/cet	· · · · ·		Review Date	e: ≬ı	0/09/20				
Date:	10/1/2020									
Method:	Electronic Tap	be								
Tape ID:	geotech		S/N:	1003						
Well ID	Time	DTW Trial 1 (ft)	DTW Trial 2 (ft)	DTB (ft)	Re	marks				
JRW MW-15001	1129	6.46	6.40	81.94						
JRW MW-15002	1149	15.22	15.22	92.28	1					
JRW MW-15003	1145	12.37	12.37	90.09	12-10	5 @ 1733				
JRW MW-15004	1141	14.45	14.45	96.45	14.2	3 @ 1642				
JRW MW-15005	1135	13.30	13.34	93.47						
JRW MW-15006	1131	5.59	5,59	82.74						
JRW MW-16001	1135	17.30	17.30	81.20	mavk TO(					
JRW MW-16002	1143	13.44	13.64	94.45	Í					
RW MW-16003	1148	14.00	14.06	Sele. 80		14.10				
JRW MW-16004	1153	14.46	14.40	89.00		14.55				
IRW MW-16005	1130	17.14	17.14	91.68						
RW MW-16006	1127	14.04	110.06	91.80						
JRW MW-16007	1117	7-51	7.51	80.98						
	1114	56-0D	8.00	76.30						
JRW MW-16008										

NOTES: TOC reference point DTW = Depth to Water DTB = Depth to Bottom

Consumers L	Energy	Equipment Details	Model & S/N
Laboratory		Monitor Brand	YSI ProDSS S/N 15F102974
Sonde ID		Sonde Brand	YSI ProDSS S/N 15H101425 262909-1
	10-01-20	Flow Cell	EXO1 599080
Alected		DO Probe	YSI ProDSS S/N 19G101726
Project #	20-1090, 20-1095	Turbidity Probe	YSI ProDSS S/N 15G103731
Site	JR whiting	pH With ORP	YSI ProDSS S/N 15H102089
Reviewed By & Date:	of 10/09/20	Conductivity & Temperature Probe	YSI ProDSS S/N 15F104224

pH Standard (±0.1)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration
4.0	GFS # 1634	19410212	10-5-2021	4.14	4.01	3.96			4.02
7.0	GFS # 1639	2018 0138	4.26.2022	7.12	7.02	1.05			7.10
10.0	GFS # 1645	20060/42	01-29-2022	10.05	9.98	10.04			10.07
			Initials & Date:	2.5	10-1-20	10.5.20	11.10		10.4.21

ORP Standard (±10 mV)	Source	Source Lot #	Source Exp. Date	Calibratior Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
22 y (mV)	GFS	20190217	02-13-21	205.4	227.6	241.1			240.1
			Initials & Date:	9.30.20	CT 10-1-20	10-5-20			LET 10.10-20

DO	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
90-110% saturation	DI Water	N/A	N/A	92.7	99.7	100.3			103.9
			Initials & Date:	cts/30/20	10.1.20	UN-5-20			10.4.20

Are the calibration values within 90-110%?

(Y) or N (if no, recalibration is required)

	15H 10-01-20								
Reviewed By & Date:	1	10/09/20							
Specific Conductance (uS/cm)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
1421	GFS	200601%	2-11-21	1427	1419	)444			1452
	· · · · · · · · · · · · · · · · · · ·	Ini	tials & Date:	9-30-20	10.1.20	10.5.20	1		cet 10.4.20
			tion and as-fou of the standard Source Exp. Date		Pre-Field to a Calibration A N N N N N N N N N N N N N N N N N N	End of Day Calibration Verification			End of Day Calibration Verification
0	DI Water	-	-	0.11	0.04	ق ع ٥٠١٤		C D	⊂a C E
10.0	Hach		-	NA	6	1.2	NA		

10.0 (±1.0 NTUs)	2659949				-	-		
40.0 (±4.0 NTUs)	Hach 2746356	40037	02-2022	38.43	40.03	42.24		
		lr	nitials & Date:	9.30.20	10.1.20	10.5-20		
			ation and as-fou % of the standa			(if no, docu (if no, reca		ed)

#### Additional Information for calibration standards

Standard	Source	Source Lot #	Source Exp. Date	Standard	Source	Source Lot #	Source Exp. Date
pH 4.0	GFS Chemicals			pH 9.0	GFS Chemicals		
pH 7.0	GFS Chemicals						
pH 10.0	GFS Chemicals						
Sp. Conductivity	GFS Chemicals						
10.0 Turbidity	GFS Chemicals						
40.0 Turbidity	GFS Chemicals						

Consumers E	inergy	Equipment Details	Model & S/N
aboratory	ount on Us Services	Monitor Brand	YSI ProDSS S/N 19M100493
CONTRACTOR	RECEIFNON	Sonde Brand	YSI ProDSS S/N 19M100509
Sonde ID	19M	Flow Cell	EXO1 599080
Start Date	10-01-20	DO Probe	YSI ProDSS S/N 19L103208
Project #	20.1090, 20-1095	Turbidity Probe	YSI ProDSS S/N 19L103271
Site	JR whiting	pH With ORP	YSI ProDSS S/N 19M101274
Reviewed By & Date	Y 10/09/20	Conductivity & Temperature Probe	YSI ProDSS S/N 19L101251

pH Standard (± 0.1)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
4.0	GFS # 1634	19410212	10-5-2021	3,92	4.03	4.03	21		3.94
7.0	GFS # 1639	2018 0138	4-2(-22	7.01	7.00	7.10			7.05
10.0	GFS # 1645	2006 0182	01-29-2022	9.98	9.96	10.07			10.04
1.00			Initials & Date:	CT 9-30-20	10-1.20	10- 3.20	24		CeT 10.6.20

ORP Standard (± 10mV) ନୁମୁନ୍	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
(mV)	GFS	20190217	02-13-21	210.0	229.1	240.1			241.1
			Initials & Date:	9.30.20	10-3-20	10-05.20			Cet 10.10.20

90-110% saturation	DI Water	Lot #	Date N/A	Solution A Value	6 Pre-Field Calibration Check	End of Day Calibration	Calibration Value	Pre-I Calibi Chi	Call Call
saturation	Di Water	nen.	00A	96.9	99.7	103.9			100.3

Are the calibration values within 90-110%? .

N (if no, recalibration is required) or

Sonde ID	19M
Start Date	10-01-20
Reviewed By & Date:	¥ 10/09/20

Specific Conductance (uS/cm)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
1421	GFS	20060116	2-11-21	1399	1426	1452			
		In	itials & Date:	9-30-20	61	01			

Are the calibration values within range of the standard? •

or N (if no, recalibration is required)

Turbidity (NTUs)	Source	Source Lot #	Source Exp. Date	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification	Calibration Value	Pre-Field Calibration Check	End of Day Calibration Verification
0	DI Water	-	-	-0.49	0.03	0.12			
10.0 (± 1.0 NTUs)	Hach 2659949			N/A			N/A	-	_
40.0 (± 4.0 NTUs)	Hach 2746356	A0037	02-2022	40.04	40.10	39.40			
		Ir	itials & Date:	Cr 9.30-20	10.1.20	CT 10.5.20			

#### Additional Information for calibration standards

Standard	Source	Source Lot #	Source Exp. Date	Standard	Source	Source Lot #	Source Exp. Date
pH 4.0	GFS Chemicals			pH 9.0 Check	GFS Chemicals		
pH 7.0	GFS Chemicals						
pH 10.0	GFS Chemicals	2					
Sp. Conductivity	GFS Chemicals						
40.0 Turbidity	GFS Chemicals						
10.0 Turbidity	GFS Chemicals						

Laboratory S	ervices			Consumers Er hitoring Well S					
had a second as a second se	-ww-nw-1 2 whitin		Date <u>10-01</u>	<del>ໄ - ງເ</del> Well Materia	I: PVC	Control Num	nber <u>20 - 109</u> Iron	0 - 01 Galv. S	teel
Purge Metho	od:	Peristaltic		Submersible		Fultz		Bailer	
Depth to Wa	ter Tape: 💪	extech	s/M	N: 1003					
QC SAMPLE:		MS/MSD	DUP-		Sonde ID:	08C	11M	✓ 15H	19M
Depth-to-wa	ter T/PVC (ft)	6.46	Depth-To-B	Bottom T/PVC	(ft) <u> </u>	_	Completed b	y_CET_	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/-0.1	NA	+/- 3%	+/- 10%	+/-0.3ppm	+/- 10mV	*	< 0.33	+/- 10%
10.00	1	-	Stablizati	on parameters j	for the last thre	e readings	T.A.S.	1.10	
1357			-	1.1.1.1.1			300	6.60	
1358	7.15	14.4	1115	28.8	2.58	-60.5	300	6.60	12.12
1403	7.54	13.9	1107	4.5	0.46	-42.6	300	6.62	7.59
1408	7.53	13.9	1107	3.8	0.39	-42.1	300	6.62	13.37
1413	7.53	17.8	1109	3.4	0.35	-41.8	300	6.62	11.27
1418	1.53	12.9	1106	3.3	0.33	-41.9	200	6.62	16.67
1423	7.53	14.1	1107	3.2	0.32	-42.2	300	6.62	10.71
1428	7.52	13.8	1106	3.1	0.32	- 41,6	300	6.62	11.36
HHH 33	1.52	13.7		3.0	0.31	-41.7	300	6.62	9.41
1438	7.52	13.9	1104	3.0	0,31	- 41.5	300	6.62	
	7.52		1105	-			300		7.18
1443	7.50	13.8	1105	2.9	0.30	-41.5	500	6.67	8.13
1444									
1452									
otal Pump T	ime (min): 4	17	Total Purge V	olume (gal) : २	= 4 gal		Reviewed by:	¥-1	0/08/20
Weather:									
Comments:	_								
Bottle	s Filled	Preserva	tive Codes:	A-NONE B-H	INO3 C - H250	04 D - NaOH I	E - HCI F		
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
2	125ml	HDPE	A		quantity	JILC	ithe	Jone	
2	V		B			_			
2	500ml	V	Ā						

ra Lourg

Laboratory S	Services		Mor	Consumers Er hitoring Well S		0.00			
	R. Whiti-		Date <u>/0-61</u> -	・ <u>えい</u> Well Materia		Control Num	iber <u>20-109</u> Iron	<b>10 - 02</b> Galv. S	teel
Purge Meth	od:	Peristaltic		Submersible		Fultz		Bailer	
Depth to Wa	ater Tape: Ge	otech	s/r	N:1003					
QC SAMPLE	:	MS/MSD	DUP-		Sonde ID:	08C	11M	✓ 15H	19M
Depth-to-wa	ater T/PVC (ft)	15.22	Depth-To-E	Bottom T/PVC	(ft) <u>92.28</u>	ft) <u>92. 28</u> Completed I			
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 0.3ppm	+/- 10mV	*	< 0.33	+/- 10%
1201	1	1	Stablizati	on parameters j	for the last thre	e readings	300	15.25	
1206	1.01	13.3	499.4	11.6	(11)	101.0		15.28	33.85
1209	6.96			61.5	6.42	101.8	300		
1214	6.89	13.1	508	37.7		88.8	300	15.28	5.76
1219	6.91	-	-	24.9	2.59	90.9	300	13.28	8.36
1224	7.18	13.3	544	13.7	1.43	46.6	300	15.28	6.71
1229	7.82	13.4	514	8.7	0.90	- 59.5	300	15.28	9.68
1234	8.29	13.4	591	7.3	0.76	-85.2	300	15.29	9.54
1239	8.71	13.2	620	6.4	0.66	-111.9	300	15.28	5.27
1244	9.12	13.3	643	5.7	0.59	-129.8	300	15.28	5.57
1249	9.35	13.0	678	4.9	0.52	-141.9	300	13.28	5.67
1254	9.46	13.1	723	4.3	0.45	-198.2	300	15.24	7.13
1259	9.42	15.3	150	4.3	0.45	-145.3	300	15.28	5.15
1304	9.34	13.6	783	4,0	0.42	-141.5	300	15.28	6.99
1309	9.12	13.6	823	3.8	0.39	-128.8	300	13.28	7.81
1314	8.83	13.6	875	3.6	0.38	-153,8	300	15.28	4.99
otal Pump	Time (min):	102	Total Purge V	olume (gal) :	F 8 gal		Reviewed by:	×	0/09/20
Weather:			_		-0			0	
Comments:									
Bottle	es Filled	Preserva	tive Codes:	A-NONE B-I	INO3 C-H250	04 D-NaOH I	- HCI F		
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
1	IZSMI	HOPE	A	N					
1	SOCM1	J	A	_ <u>_</u>					
	JUDAI		19	0					

Depth-to-water T/PVC (ft) 15:12Depth-to-water T/PVC (ft) 12:2YCompleted by CESTimepHTempSp CondDOORPPump RateWater levelTimepHTempSp CondDOORPPump RateWater levelTimepHTempSp CondDOORPPump RateWater levelTimepHTempSp CondDOORPPump RateWater level3:5 min+/-00KColspan="6">*/-00Colspan="6">Colspan="6">Colspan="6">Colspan="6">Total Vinter colspan="6">Pump RateWater levelTurbid3:5 min+/-00K*/-00ORPump RateWater level1:5 NN*/-00KColspan="6">*/-003:5 min+/-00KColspan="6">*/-00K1:5 NNA*/-00SColspan="6">Colspan="6">*/-001:5 N%NNONN1:5 N%N <th></th> <th>Services</th> <th></th> <th>Mor</th> <th>Consumers En hitoring Well S</th> <th></th> <th></th> <th></th> <th></th> <th></th>		Services		Mor	Consumers En hitoring Well S					
Location $M$ Six.x.y.       Well Material: $PVC$ SS       Iron       Galv. Steel         Purge Method: $\checkmark$ Peristaltic       Submersible       Fultz       Bailer         Depth to Water Tape:       Gefc. $S/N: 1/005$ Osc       11M $15H$ 15         QC SAMPLE:       MS/MSD       DUP       Sonde ID:       0.8C       11M $/15H$ 15         Depth-to-water T/PVC (ft) $15.42$ Depth-To-Bottom T/PVC (ft) $92.2Y$ Completed by CCS       CCS         Time       pH       Temp       Sp Cond       DO       DO       ORP       Pump Rate       Water level       Turbid         3-5min       +/-0.21       MA       +/-3.83       +/-1.036       +/-0.39m       +/-1.00m       Completed by CCS       CCS         1/5.1%       8.400       15.4       95.0       0.5       0.77       +//90.3       3000       (5.24X       5.633         3/5.1%       8.40       15.4       97.0       9.5       0.75       3.00       15.7.4       4.50         1/5.2%       1/3.5       1/1.13       5.3       0.591       -154.0       5.00       15.7.4%       4.50         1/5.2%       1/5.5<		w-mul-	15002(cont)	Date 10-0	1-20		Control Nur	her 20- 10	10-62	
Depth to Water Tape: Geoleck       S/N: 1/0/25         Sonde ID:       OBC       111M       15H       15H         Completed by CES         Time       PH       Temp       Sp Cond       DO       OR       Pump Rate       Water level       Turbid         Time       PH       Temp       Sp Cond       DO       OR       Pump Rate       Water level       Turbid         Time       PH       Temp       Sp Cond       DO       OR       Pump Rate       Water level       Turbid         Time       PH       Temp       Sp Cond       DO       OR       Pump Rate       Water level       Turbid         Time       PH       Temp       Sp Cond       DO       OC       Sp Col       Sp Col       Sp Col       Sp Col       Sp Col       Sp Col				Dute 10						teel
QC SAMPLE:       MS/MSD       DUP       Sonde ID:       OBC       11M       15H       15         Depth-to-water T/PVC (ft)       15.12.       Depth-To-Bottom T/PVC (ft)       92.2 Y       Completed by       C&1         Time       pH       Temp       Sp Cond       DO       OBC       0 RP       Pump Rate       Water level       Turbid         3-5min       +/-0.3       MA       +/-3%       +/-10%       +/-0.3ppm       mV       mt/min       Drawdown ft       NTU         3-5min       +/-0.3       MA       +/-3%       +/-10%       +/-0.3ppm       mV       mt/min       Drawdown ft       NTU         3-5min       +/-0.3       MA       +/-3%       +/-10%       +/-0.3ppm       mV       mt/min       Drawdown ft       NTU         3-50       13.5       970       3.5       0.37       r/90.3       300       /5.2%       5.5       3.5       3.5       3.5       3.5       3.5       3.5       3.5       3.5       3.6       3.74       3.60       15.42       4.35       3.5         1/3.4       1.5.5       11/3.7       11/3.7       2.3       0.53       -14/4.1       3.60       15.2%       3.67         1/							] Fultz		Bailer	
Depth-to-water T/PVC (it)       15.12       Depth-To-Bottom T/PVC (it)       92.2Y       Completed by       CES         Time       pH       Temp       Sp Cond       DO       DO       ORP       Pump Rate       Water level       Turbid         3.5 min       4/-0.3       MA       4/-38       +/-105 $\pi/-0.3$ mV       mL/min       Drawdown ft       NTU         3.5 min       +/-0.3       MA       +/-38       +/-105 $\pi/-0.3$ 3000       /5.24       5.53         15.19       8.40       15.4       950       3.5       0.37 $7/40.3$ 3000       /5.24       5.53         15.24       3.5       13.75       13.8       948       5.5       0.37 $7/40.3$ 3000       /5.24       3.45         15.29       7.54       1.61       15.4       112.7       5.7       0.91 $-154.0$ 500       15.42       3.45         15.29       1.5.5       114.7       5.3       0.54 $-194.0$ 500       15.28       5.07         15.44       15.5       114.7       5.5       0.54 $-144.0$ 500       15.28       5.07         15.44       1.5.5 <th>Depth to W</th> <th>ater Tape: Ge</th> <th>otech</th> <th>S/I</th> <th>N: 1003</th> <th></th> <th></th> <th></th> <th></th> <th></th>	Depth to W	ater Tape: Ge	otech	S/I	N: 1003					
Time         pH         Temp         Sp Cond         DO         DO         ORP         Pump Rate         Water level         Turbid           33 min         units         'C         us/cm         % sat.         ppm         mV         mL/min         Drawdown ft         NTU           33 min         4/-0.0         NA         4/-3%         4/-10%         */-00V         *         <0.33	QC SAMPLE	:	MS/MSD	DUP-	_	Sonde ID:	08C	11M	V 15H	19M
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Depth-to-wa	ater T/PVC (ft)	15.22	Depth-To-E	Bottom T/PVC	(ft) 92.24	<u> </u>	Completed b	V CET	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
Stablization parameters for the last three readings         1 \$19       8.40       15.6       950       3.5       0.37       -190.3       300       15.28       5.53         1 \$24       8.01       13.8       998       5.5       0.37       -190.3       300       15.28       5.47       5.07       15.28       5.07       15.28       5.07       15.47       5.07       15.47       5.07       15.47       5.07       15.47       5.07       15.47       5.07       15.47       5.07       15.47       5.07       15.47       5.07       15.47       5.07       15.47       5.					Concernant and a second s		and the second second	mL/min	A STATE OF A STATE	NTU
$\frac{1}{3}34 = 8.02  13.8  998  5.5  0.36  -187.4  5.06  15.42  5.84  5.84  5.84  5.84  15.28  5.84  15.28  15.28  15.28  15.28  15.28  15.28  15.28  15.28  5.97  1$	5-5 11111	+/-0.1	I NA						< 0.33	+/- 10%
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1319	8.40	13.6	930	3.5	0.37	-190.3	300	15.28	5.53
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		8.02	13.8	998	3.5	0.36	-187.4	300		3.84
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			13.7		3.4	0.35		300		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$										5.42
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			13.5			0.34	- 146.1	300	15.28	5.02
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							- 144.7	300		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							1.2.4.4	500	121	1.31
Meather:     J       Comments:       Bottles Filled     Preservative Codes:     A - NONE     B - HNO3     C - H2SO4     D - NaOH     E - HCl     F       Quantity     Size     Type     Preservative     Filtered Y/N     Quantity     Size     Type     Code     Filtered Y       1     12     Sm1     HVPE     A     A     A     A     A       1     1     1     B     1     A     A     A				1						
Bottles Filled     Preservative Codes:     A - NONE     B - HNO3     C - H2SO4     D - NaOH     E - HCl     F       Quantity     Size     Type     Preservative     Filtered     Y/N     Quantity     Size     Type     Code     Filtered V/N       1     12     Size     Type     Code     Filtered V/N     Quantity     Size     Type     Code     Filtered N       1 <td></td>										
Bottles Filled     Preservative Codes:     A - NONE     B - HNO3     C - H2SO4     D - NaOH     E - HCl     F       Quantity     Size     Type     Preservative     Filtered     Y/N     Quantity     Size     Type     Code     Filtered N       1     12,5m1     HVPE     A     A     A     A     A     A       1     1     1     B     1     A     A     A			-				-			
Bottles Filled     Preservative Codes:     A - NONE     B - HNO3     C - H2SO4     D - NaOH     E - HCl     F       Quantity     Size     Type     Preservative     Filtered     Y/N     Quantity     Size     Type     Code     Filtered V/N       1     12     Size     Type     Code     Filtered V/N     Quantity     Size     Type     Code     Filtered N       1 <td></td>										
Bottles Filled     Preservative Codes:     A - NONE     B - HNO3     C - H2SO4     D - NaOH     E - HCl     F       Quantity     Size     Type     Preservative     Filtered     Y/N     Quantity     Size     Type     Code     Filtered V/N       1     12     Size     Type     Code     Filtered V/N     Quantity     Size     Type     Code     Filtered N       1 <td></td>										
Bottles Filled     Preservative Codes:     A - NONE     B - HNO3     C - H2SO4     D - NaOH     E - HCl     F       Quantity     Size     Type     Preservative     Filtered     Y/N     Quantity     Size     Type     Code     Filtered N       1     12,5m1     HVPE     A     A     A     A     A     A       1     1     1     B     1     A     A     A										
Meather:     J       Comments:       Bottles Filled     Preservative Codes:     A - NONE     B - HNO3     C - H2SO4     D - NaOH     E - HCl     F       Quantity     Size     Type     Preservative     Filtered Y/N     Quantity     Size     Type     Code     Filtered Y       1     12     Sm1     HVPE     A     A     A     A     A       1     1     1     B     1     A     A     A	Total Pump	Time (min): 10	2	Total Purge V	olume (gal) : -	S X col		Reviewed by:	¥.	lacla.
Bottles Filled       Preservative Codes: A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCl F         Quantity       Size       Type       Preservative Code       Filtered Y/N       Quantity       Size       Type       Preservative Code       Filtered Y/N         1       12.5m1       H0PE $\triangle$ $\bigwedge$ $\frown$ $\bullet$ $\bullet$ $\bullet$ <	The BECOMMENT				10 1	o gu			1 101	04/8
Quantity     Size     Type     Preservative Code     Filtered V/N     Quantity     Size     Type     Preservative Code     Filtered N       1     12 Sm1     140 PE     A	Comments:									
QuantitySizeTypeCodeFiltered Y/NQuantitySizeTypeCodeFiltered Y/N112 Sm1140 f ( $\Delta$ $N$ <	Bottle	es Filled	Preservat	ive Codes:	A-NONE B-I	HNO3 C-H2S	04 D - NaOH I	- HCI F		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Quantity	Size		1	Filtered Y/N	Quantity	Size	Туре		Filtered Y/N
1 SOOMI U A V	1	125ml	HOPE	14.1	N					
	1	500~1	5		$\downarrow$					
Pump rate should be <500 mL/min for low-flow and <1 gal/min for high Volume.	Pump rate she	uld he <500 mile	nin for low flow an	d c1 anl/min for	high Volume					

Laboratory S	ist and Us			Consumers En hitoring Well Sa					
Well ID JQ	W-WW-1	5003	Date _10-0		_	Control Num	ber_20-109	0-03	
Location <b>V</b>	R white	<b>)</b>		Well Materia	: V PVC	SS	Iron	Galv. S	teel
Purge Meth		Peristaltic		Submersible		Fultz		Bailer	
Depth to Wa	ater Tape: Gu	otech	s/r	1:1003					
QC SAMPLE	•	MS/MSD	DUP-		Sonde ID:	08C	11M	✓ 15H	19M
Depth-to-wa	ater T/PVC (ft)	12.15	Depth-To-E	Sottom T/PVC	(ft) <u>90.09</u>		Completed b	y_cer	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3% Stablizati	+/- 10% on parameters f	+/- 0.3ppm or the last thre		*	< 0.33	+/- 10%
1733					or the last thirt		300	12.15	
1735	7.77	13.1	1007	8.5	0.88	- 184.0	300	12.15	5.26
1740	1.71	13.1	1006	4,5	0.47	-199.1	300	12.15	7.34
1745	7.10	12.9	1066	3.7	0.39	-205.1	200	12.15	5.34
1750	7.69	12.9	1005	2.3	0.35	-210.0	300	12.15	8.94
1755	7.64	13.0	1004	3.2	0.33	-211.3	300	12.15	8.66
1400	7.69	13.0	1006	3.1	0.32	-213.0	300	12.15	7.93
1805	7.69	13.0	1005	3,0	0.32	-213.6	300	12.15	8.04
1810	7.69	12.9	1005	3.0	0.31	-214.0	300	12.15	7.61
1811									
1814									
								1	
Total Pump	Time (min): イ	)	Total Purge V	olume (gal) : 🕇	= 3.5gal		Reviewed by:	× 10	109/20
Weather:				8 Y		_		0	
Comments:									
Bottle	es Filled	Preserva	tive Codes:	A-NONE B-H	INO3 C-H2S	O4 D-NaOH E	- HCI F		
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
)	125-1	HPPE	A	N	- Contractory		.162		
1	3		ß			1			
	500ml	V	A	$\vee$					

Laboratory S	Services			Consumers Er itoring Well S		C			
	w-ww-		Date <u>10-0</u>	Vell Materia	I: PVC	Control Num	ber <u>20 - 109(</u> Iron	) - 04 Galv. S	teel
Purge Meth	od:	Peristaltic		Submersible		Fultz		Bailer	
Depth to Wa	ater Tape: 6	sted	S/N	1:1003	(				
QC SAMPLE	•	MS/MSD	DUP-		Sonde ID:	08C	11M	✓ 15H	19M
Depth-to-wa	ater T/PVC (ft)	14.25	Depth-To-B	ottom T/PVC	(ft) 96.45	_	Completed b	v_CET	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min 3-5 min	units +/- 0.1	°C NA	uS/cm +/- 3%	% sat. +/- 10%	ppm +/- 0.3ppm	mV +/- 10mV	mL/min *	Drawdown ft < 0.33	NTU +/- 10%
	1		Stablizati	on parameters f		e readings			
1642							300	14.23	
1643	7.86	13.3	990 988	17.7 4.1	1.78	-196.2	300	14.23	4.48
				3.5	0.36	- 205.7			
1653	7.57	13.0	987				300	14.23	5-11
1658	7.56	13.1	987	3.3	0.34	-210.6	300	14.23	4.20
1703	7.56	13.2	987	3.1	0.33	-211.8	300	14.23	6.03
1708	7.56	13.1	987	3.0	0.32	-214.7	300	14.23	4.74
1713 1117	1.56	13.1	988	3.0	0.31	-215.6	300	14.23	6.27
רורו									
Fotal Pump 1	Time (min): ្បី	5	Total Purge V	رَ: (olume (gal)	2 3 gal		Reviewed by:	f 10/	09/20
Weather:					~ <u>j</u>			1	
Comments:									
Bottle	es Filled	Preserva	tive Codes:	A-NONE B-H	INO3 C - H2S0	04 D-NaOH I	- HCI F		
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
1	12Sml	HOPE	A	N					
;	SUGML	J	S A	1					
Pump rate sho	ould be <500 mL/r	nin for low-flow a	nd <1 gal/min for h	igh Volume.					

K:\CHEM\CLH Folder\Field\Copy of Monitoring Well Sampling Worksheet\_REV1\_041220

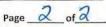
Laboratory	services		Mor	Consumers Er nitoring Well S					
	R Uniting	5005	Date <u>10+01</u>	- 20 Well Materia	I: PVC	Control Num	ber <u>20~1090</u> Iron	<b>6- 05</b> Galv. S	teel
Purge Meth	nod:	Peristaltic		Submersible		Fultz		Bailer	
Depth to W	ater Tape: G	otech	S/1	N:1003		_			
QC SAMPLE		MS/MSD	DUP-		Sonde ID:	080	11M	<b>1</b> 5H	19M
Depth-to-w	ater T/PVC (ft)	13.19	Depth-To-E	Bottom T/PVC	(ft) 93.47	-	Completed b	y_ <u>(E</u> 1	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/-0.1	NA	+/- 3%	+/- 10%	+/- 0.3ppm	+/- 10mV	*	< 0.33	+/- 10%
1100		1	Stablizati	on parameters f	or the last thre	e readings	100	1.12	_
1600		. /			1.22	-24 1	300	13.32	
16 01	8.10	13.6	899	17.0	1,60	-223.1	300	13.33	8.51
1606	7.86	13.2	890	3.9	0.41	-233.9	300	13.74	7.06
1611	1.73	13.2	890	3.1	0.33	-236.7	300	13.34	5.09
1616	2.72	13.3	290	2.9	0.31	-242.6	300	13.34	4.87
1621	7.71	13.5	Y89	2.8	0.30	-243.9	300	13.34	4.96
1626	7.70	17.5	890	2.8	0.29	-245.0	300	13.34	4.89
1627	1.1-	17.0-	010	0	0.000	5411.0	,	15.00	7.07
							-		
1630									
_					_				
Cotal Pump	Time (min): 3	0	Total Rurgo V	olumo (gal) :	52541		Reviewed by:	F.	69/20
Weather:	inne (inni). J	•	iotai ruige v	olume (gal) :✔	· 2.5 gui		Reviewed by.	1 19	01120
Comments									
10000	es Filled	Preserva	tive Codes:	A-NONE B-H	INO3 C - H250	04 D - NaOH F	- HCL E-		
			Preservative					Preservative	
Quantity	Size	Туре	Code	Filtered Y/N	Quantity	Size	Туре	Code	Filtered Y/N
1	125-	HOPE	A	N					
	500~1		6	1					
1	500 ~~1	V	A	~					

	Services		Consumers Energy Company Monitoring Well Sampling Worksheet							
Well ID 38	W-MW-15	006	Date 10-0	1-20		Control Num	ber 20-10°	10-06		
Location J	R whiting			Well Materia	I: PVC	ss [	Iron	Galv. S	iteel	
Purge Meth	od: 🗸	Peristaltic		Submersible		] Fultz		Bailer		
Depth to Wa	ater Tape: 6	restech	S/I	N: 1003						
QC SAMPLE	:	MS/MSD	DUP-		Sonde ID:	08C	11M	<b>1</b> 5H	19M	
Depth-to-wa	ater T/PVC (ft)	5.42	Depth-To-E	Bottom T/PVC	(ft) <u>82.76</u>	_	Completed b	v_C61		
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity	
min 3-5 min	units +/- 0.1	°C NA	uS/cm +/- 3%	% sat. +/- 10%	ppm +/- 0.3ppm	mV +/- 10mV	mL/min	Drawdown ft < 0.33	NTU +/- 10%	
5 5 1111	1 .7 0.1			ion parameters j		and the second se		×0.55	17-10%	
1501							300	5.48		
1502	7.62	13.7	1009	11.4	1.14	-231.5	300	5.44	4.54	
1567	1.51	13.3	995	3.5	0.31	-282-1	300	5.48	6.60	
1512	1.55	13.2	994	3.0	0.31	-296.4	300	5.48	8.37	
1517	1.55	13.2	993	2.4	0.29	-306.8	300	3.48	5.91	
1522	1.55	13.2	993	2.7	6.29	-311,1	200	5.48	4.64	
1527	1.55	13.1	994	2.7	0.28	-317.4	300	5.48	5.08	
1532	1.55	12.9	993	2.1	0.28	-324.3	300	5.48	4.58	
1537	7.55	12.9	993	2.6	0.27	-328.2	300	5.48	4.23	
1542	7.56	12.9	992	2.5	6.27	-330,9	300	5.48	5.01	
						1			-	
1543 1349										
Fotal Rump 7	Fime (min):	14	Total Durga V	(olumo (col) i d	- 11 - I	-	Deviewed hu		Calar	
Weather:		70	Total Purge v	′olume (gal) : ਤ	- 4 991		Reviewed by:		09/20	
Comments:										
Bottle	es Filled	Preserva	tive Codes:	A-NONE B-H	INO3 C - H250	04 D-NaOH E	- HCI F			
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N	
3	125m'	HOPE	A	~						
3 31	500~1		Б Д	V						
	uld be <500 mL/r	nin for low-flow a	nd <1 gal/min for l	high Volume.						

boratory Se				Consumers Er itoring Well S						
IIID JR	W-1400	) (	Date 10 - C	1-2020	>	Control Num	ber 20 · 10	95.01		1
cation	JRU	)		Well Materia	I: 🗹 PVC	SS	Iron	Galv. S	iteel	
rge Metho	d: 🔽	Peristaltic		Submersible		Fultz		Bailer		
pth to Wa	ter Tape: 50	unist	S/N	1: 122-00	4547-1					
SAMPLE:		MS/MSD	DUP-		Sonde ID:	08C	11M	<b>15</b> H	- 19M	
pth-to-wat	er T/PVC (ft)	17.30	Depth-To-E	ottom T/PVC	(ft) <u>81.20</u>		Completed b	y cust		]
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity	
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU	
3-5 min	+/-0.1	NA	+/- 3%	+/- 10%	+/- 0.3ppm	+/- 10mV	*	< 0.33	+/- 10%	
420			Jublizuti			l	500	17.39	Bubble	Net
1230	9.34	12.3	771	5962	AID	-159.8	500		22.10	Ne I
635		12.4	172	5.6	0.02		500	17.39	20.88	5
	8.21	12.1	770	5.2	0.59	-157.3	500	17.39		3
640		100000000000000000000000000000000000000			1.10 Ex.	-142,2	500	17.39	8.62	3
695	7.93	12.3	777	5.2	0.54	-142.3		17.39	1	2.
450			777	5.2	0.54	-146.5	500	11.31	5.86	-
10 squi	collec	tea so	ample		-					-
-										
										-
-										
										-
										-
al Duman T	un a lun in V	21	Tatal Durra V	(=)	Н		Deview of her	N	-	-
eather:		B	Total Purge V	olume (gal) :	-1	A.L. 1101	Reviewed by:	V	10/09/2	5
acher.	650F,	Party	clavay			e 1640'.	Domped	out sond	ie .	1
mments:	used H	andhe	LD TUNS	idity 1	Neter				_	
Bottles	s Filled	Preserva	ative Codes:	A-NONE B-I	HNO3 C - H250	04 D-NaOH E	- HCI F			1
Juantitu	Size	Turne	Preservative Code	Filtered Y/N	Quantitu	Sine	Tunc	Preservative Code	Filtered V/M	
Quantity	125mL	Type HDPE	A	N	Quantity	Size	Туре	code	Filtered Y/N	1
1	125 ML	F	B	1						
1	Soome	1	A	N						
) mp rate show	125 ml 500ml	nin for low-flow c		22						

10	we shall a	1.000	100	itoring Well S			10 100		
Well IDK	JRW	11002	Date <u>ID-</u>	Well Materia	I: PVC	Control Numl	ber 20 · 100	Galv. S	teel
Purge Metho	d: 🗸	Peristaltic		Submersible		Fultz		Bailer	
Depth to Wat	er Tape: 50	linist	S/N	1: 122-004	547-1	_	pH =7	5.8.3	
QC SAMPLE:	N	MS/MSD	DUP-		Sonde ID:	08C	11M	<b>15</b> H	19
Depth-to-wat	er T/PVC (ft)	13.60	Depth-To-B	ottom T/PVC	(ft) <u>94.45</u>	-	Completed by	v_cutt	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbid
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 0.3ppm	+/- 10mV	*	< 0.33	+/- 10
			Stablizatio	on parameters j	for the last thre	e readings			
1455	10.85	12.4	853	25	0.26	-115.7	500	13.64	16.0
1500	10.85	12.3	657	2.0	0.21	-139.4	500	13.66	11.0
1505	10.86	12.0	859	1.7	0.18	-154.8	500	13.66	10.
1510	10.84	12.1	859	1.7	0.18	-156.1	500	13.66	10.5
1515	10.85	12,1	856	1.7	0.18	-159.1	500	13.66	10.0
1520	10.84	12.0	854	1.6	0.17	- 159.0	500	13.66	9.8
1525	10.81	11.8	851	1.6	0.17	-159.7	500	13.60	9.8
1528	10.79	11.7	851	1.6	0.17	-159.3	500	13.40	9.0
1530	10.54	11.7	830	1,4	0.15	-153.4	500	13.66	10 0
1535	9,30	11.90	964	1.4	0.15	-193.8	500	13.60	13.0
1540	8.31	12.1	990	1.240		-215.4	500	13.20	11.
1545	8.15	12.3	995	1.3	0.13	- 208.1	500	13.26	10.3
1550		11.9	998	1.3	0.13	- 198.4		13.26	9.70
1555		11.9	999	1.3	0.13	- 1937	500	13,31	8.5
1590	1. IF	11.9	999	1.3	0.13	- 192.1	500	13.33	7.4
Total Pump Ti			Total Purge V		8	92.1	Reviewed by:		
		pradic	C C C C C C C C C C C C C C C C C C C	phowen			nemeneu syn		10/09/
	10, 19	TRUTE	1 vviii v	0 10 0.0	1			0	
Comments:	used	PONAD	ve turi	Bidty N	reter 1	tigh Flow	wrate	due to	ptl
Bottle	s Filled	Preservati	ve Codes:	A-NONE B-I	HNO3 C - H250	04 D-NaOH E	- HCI F		
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered
1	125mL	HDIPE	A	6					
1	125mL		B	N					
1	500 mL	1	A	N					

Laboratory Se	nte			Consumers En itoring Well Sa					
	JRW.		Date 10 ·	1-20 Well Material	: PVC	Control Numl	ber 20-	Galv. St	
Purge Metho	d:	Peristaltic		Submersible		Fultz		Bailer	
Depth to Wa	ter Tape: 50	linis+	S/N	: 122-0	04547-1				
QC SAMPLE:		MS/MSD	DUP-		Sonde ID:	08C	11M	<b>15</b> H	✓ 19M
Depth-to-wa	ter T/PVC (ft)	13.44	Depth-To-B	ottom T/PVC	(ft) 94.40	5	Completed b	v au	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min 3-5 min	units +/- 0.1	°C NA	uS/cm +/- 3%	% sat. +/- 10% on parameters f	ppm +/- 0.3ppm	mV +/- 10mV	mL/min *	Drawdown ft < 0.33	NTU +/- 10%
1405	7.87	12.1	1001	1.2	0.13	-190.5	500	13.35	6.61
	7.84	12.0	1002	1.2	0.13	-188.8	500	13.39	5.14
1610	colle		Same		0.15	08.0			5.19
			Tatal Durraci				Reviewed by		
Total Pump T Weather:	ime (min):		Total Purge v	olume (gal) :	10		Reviewed by	1	0/09/20
Comments:	Se	e pa	ge 1	82				U	
Bottle	s Filled	Preserva	tive Codes:	A-NONE B-I	HNO3 C - H250	04 D-NaOH E	- HCI F		
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
- 5	ee j	Sage	29	, 2					
* Pump rate sho	uld be <500 mL/m	in for low-flow a	nd <1 gal/min for	high Volume.					



	V-MW-16	003	Date 10 . (	01.2020		Control Num	ber 20-109	5-03,-12	-1(
ocation	JR	W		Well Materia	I: 🔽 PVC	SS	Iron	Galv. S	steel
ourge Metho	od:	Peristaltic		Submersible		Fultz		Bailer	
Depth to Wa	ter Tape: 50	linist	S/M	1: 122 - 60L	1547-1				
QC SAMPLE:		ns/msd	DUP-		Sonde ID:	08C	11M	15H	19M
Depth-to-wa	ter T/PVC (ft)	14.04	Depth-To-B	Bottom T/PVC	(ft) 84.09	3	Completed b	y_004	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 0.3ppm	+/- 10mV	*	< 0.33	+/- 10%
				on parameters		e readings			Bubbles
1346							200	14.10	t
1355	7.510	12.4	1042	2.7	0.20	-186.9	200	14.08	48.02
1400	7.97	13.3	1044	2.2	0.23	- 190.0	200	14.08	35.11
1405	7.54	12.7	1044	2.2	6.22	-179.3	200	14.08	30.59
1410	7.50	12.7	1040	1.9	0.19	-185.7	200	14.08	42.51
1415	7.54	12.7	1049	1.7	0.18	-186.4	200	14.08	1.6 *
1420	7.56	13.3	1047	2-1	0.22	-1775	200	14.08	1.4*
1425		13.4	1051	1.7	0.18	-185.5	200	14.00	1.6
1430		13.5	1053	1.9	0.18	-184.2	200	14.08	1.5
collector			151						~
CO I I COTO		cos e i	1.57						used
									handhe
									meter
4		1							reading
					-				
atal Dump T	ime (min):	1	Total Durga V	(aluma (gal) ;	5.5		Reviewed by:	¥.	
			-	Volume (gal) :	3.0		Reviewed by.	- 1 10 fe	5/20
veather.	630F, CI	oudy, 1	light vo	TICS	plue d f	LUCOS	Stickl	na to	brobes
	* Attemp	ted to	LOTS	P PI-		0		RUT	Probe
omments:	chung	ed 70 11	M Sond	e for	uvd.d	Itu Ke	erdi nep	SINOT	working
Bottle	s Filled	Preservat	ive Codes:	A-NONE B-	HNO3 C-H2S	04 D - NaOH E	- HCI F		
Quantitu	Size	Tunc	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
Quantity 3	125mL	Type HDPE	A	N	quantity	5120	Type	coue	Thered I/N
3	125mL	1 I	B	N					
	500 mL		2	N					

Laboratory S	tents Services tortices			Consumers Er itoring Well S						
Contract of the second	RW-MW RWhiti		Date <u>10</u> ·	( · 2020 Well Materia	I: PVC	Control Num	ber <u>70 -  </u> Iron	095-04 Galv. S	iteel	
Purge Metho	od: 🗸	Peristaltic		Submersible		Fultz		Bailer		
Depth to Wa	ater Tape: 50	linist 12	2 s/r	N: 122-004	1547-1					
QC SAMPLE:	r	MS/MSD [	V DUP-		Sonde ID:	08C	11M	15H	19M	1
Depth-to-wa	ater T/PVC (ft)	14.44	Depth-To-E	Bottom T/PVC	(ft) <u>89.00</u>		Completed b	y Cutt		]
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity	
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU	
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10% ion parameters	+/- 0.3ppm	+/- 10mV	*	< 0.33	+/- 10%	
17.17	H 100120		Stablizati	on parameters	for the last three	e readings		111-5	(Buppl	1
1217			11.10	1.1.4	1	CU 2	200	1455	101107	mer
1225	4.84	13.8	1237	10.0	1.02	-54.3	250	14.58	134.77	632
1230	7.03	13.3	1235	4.5	0.46	-lap.co	250	14.50	114-29	20.4
1235	7.04	13.2	1230	3,4	0.35	-73.1	250	14.59	81.00	-
1240	7.10	13.1	1229	3.0	0.31	-77.6	250	14.58	79.21	11.0
1245	7.21	13.1	1231	2.7	0.27	-89.7	250	14.50	80.13.	were
1250	7.18	12.9	1234	2,4	0.25	- 4 8.8	250	14.50	28.71	150
1255	7.19	12.9	1232	2.2	0.23	-90.3	250	14.58	54.28	120
1300	7.22	13.2	1237	2.2	0.23	- 94.1	250	14.58	13.87	11.0
1305	7.30	13.2	1237	2.2	0.22	-102.0	250	14.50	12.04	4.5
1310	7.33	13.3	1230	2.2	0.22	-104.0	250	14.500	9.34	3.2
1315	7.40	13.4	1232	2.1	6.21	-10.4	250	14.58	9.37	1.5
1320	7.37	13.4	1235	1.9	0.20	-108.4	250	14.58	5.50	1.1
1321	lollecte	1 Sampl	es							
132A	- incere	- within						1		
Total Pump	Time (min):	58	Total Purge V	/olume (gal) :	4.0		Reviewed by	Tio	109/20	1
Weather:			ly, parti					1	sonde	1
Comments:	Sunced	live Su	onde du	ta wi	Progra	m -> ext	port csv	to K:	Drive	
	es Filled		tive Codes:			04 D-NaOH E	and the second s			
Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N	1
) tl	125mL	HDPE	ON B	N	quantity	5128	туре	coue		1
1+1	125mL	HOPE	A	N						
1+1	500mL	HDPE	A	N						
* Pump rate sho	uld be <500 mL/m	in for low-flow a	nd <1 gal/min for	l high Volume.						

K:\CHEM\CLH Folder\Field\Copy of Monitoring Well Sampling Worksheet\_REV1\_041220

Page \_\_\_\_\_ of \_\_\_\_

urge Method: $\checkmark$ Peristaltic       Submersible       Fultz       Bailer         repth to Water Tape:       Sol i wist       S/N: 127 - 0045 47 - 1       Sonde ID:       08C       11M       15H       9M         tc SAMPLE:       MS/MSD       DUP       Sonde ID:       08C       11M       15H       9M         tepth-to-water T/PVC (ft)       1-1.12       Depth-To-Bottom T/PVC (ft)       91.69       Completed by       CutH         Time       pH       Temp       Sp Cond       DO       DO       ORP       Pump Rate       Water level       Turbidity         min       units       'C       us/cm       % sat.       ppm       mV       mL/min       Drawdown ft       NTU         35 min       +/-0.2       NA       +/-3%       +/-10%       +/-0.3pm       +/-10mV       < <0.33       +/-10%         1705       .       .       .	aboratory S	CELENCE			Consumers En itoring Well Sa		· · · · · · · · · · · · · · · · · · ·			
Purge Method: $\checkmark$ Peristaltic       Submersible       Fultz       Bailler         Depth to Water Tape:       Sol i $\kappa_1$ st       S/N: 127 - 0045 471 - 1       Sonde ID:       08C       11M       15H       9M         DC SAMPLE:       MS/MSD       DUP-       Sonde ID:       08C       11M       15H       9M         Depth-to-water T/PVC (ft)       17-10       Depth-To-Bottom T/PVC (ft)       91.000       OR       Pump Rate       Water level       Turbidity         Time       pH       Temp       Sp Cond       DO       DO       OR       Pump Rate       Water level       Turbidity         35 min       units       'C       us/cm       % sat.       ppm       mV       mL/min       Drawdown ft.       NTU         35 min       units       'C       us/cm       % sat.       ppm       mV       mL/min       Drawdown ft.       NTU         35 min       units       'C       us/cm       % sat.       ppm       mV       mL/min       Drawdown ft.       NTU         37.05       NA       +/-3%       +/-10%       +/-10%       <0.03       +/10%       <0.03       +/10%       <0.03       +/10%       <0.03       +/10%       <0.03       +/	Well ID JR	W- MW-1	4005	Date ]0 - 01	. 2020		Control Num	per 20 -10	195.05	
Depth to Water Tape: $501i \ wist$ $S/N: 122 - 0045 \ y - 1$ DC SAMPLE:       MS/MSD       DUP-       Sonde ID:       08C       11M       15H       Image: MS/MSD         Time       PH       Temp       Sp Cond       DO       DO       ORP       Pump Rate       Water level       Turbidity         min       units       'C       us/cm       % sat.       ppm       mV       mL/min       Drawdown ft       NTU         35 min       4/-0.1       NA       4/-3%       4/-10%       */-0.3gm       */-0.0mV       *       <0.33       +/-10%         1105       .       Us/cm       % sat.       ppm       mV       mL/min       Drawdown ft       NTU         35 min       +/-0.1       NA       +/-3%       +/-10%       */-0.3gm       */-0.0mV       *       <0.33       +/-10%         1105       .       Us/cm       Stabilization parameters for the last three readings       BUD0105       ~        <0.033       +/-10%        <0.33       +/-10%       <       <0.33       +/-10%       <       <0.33       +/-10%       <       <0.33         <0.05       10.01        <       <       <       <	ocation	JRW			Well Materia	I: PVC	SS	Iron	Galv. S	teel
AC SAMPLE:       MS/MSD       DUP-       Sonde ID:       08C       11M       15H       9M         repth-to-water T/PVC (ft) $1 \cdot 1 \cdot$	urge Metho	od: 🗸	Peristaltic		Submersible		Fultz		Bailer	
Time       pH       Temp       Sp Cond       DO       DO       ORP       Pump Rate       Water level       Turbidity         min       units       'C       us/cm       % sat.       ppm       mV       mL/min       Drawdown ft       NTU         35 min $4/0.1$ NA $4/3\%$ $4/10\%$ $4/0.3ppm$ $4/10\%$ $4/20\%$ <	Depth to Wa	ter Tape: <b>So</b>	inist	S/N	1: 122-00	04547	-1			
Time         pH         Temp         Sp Cond         DO         DO         ORP         Pump Rate         Water level         Turbidity           min         units         'C         uS/cm         % sat.         ppm         mV         mL/min         Drawdown ft         NTU           3-5 min $4/\cdot 0.1$ NA $4/\cdot 3\%$ $4/\cdot 10\%$ $4/\cdot 0.3ppm$ $4/\cdot 10mV$ $< 0.33$ $4/\cdot 10\%$ 3-5 min $1/\cdot 0.1$ NA $4/\cdot 3\%$ $4/\cdot 10\%$ $4/\cdot 0.3ppm$ $4/\cdot 10mV$ $< 0.33$ $4/\cdot 10\%$ 3-5 min $1/\cdot 0.1$ NA $4/\cdot 3\%$ $4/\cdot 10\%$ $4/\cdot 0.3ppm$ $4/\cdot 10mV$ $< 0.33$ $4/\cdot 10\%$ 3-5 min $1/\cdot 0.1$ NA $4/\cdot 3\%$ $4/\cdot 10\%$ $50pm$ $1/\cdot 10mV$ $< 0.33$ $4/\cdot 10\%$ 1705 $1/\cdot 0.1$ $8/\cdot 10^{11}$ $8/\cdot 0.43$ $+17.\cdot 1$ $500$ $17.\cdot 19$ $4/\cdot 44$ 1712 $1/\cdot 1.\%$ $8/\cdot 1$ $1/\cdot 0.85$ $1/\cdot 2.\cdot 7$ $500$ $17.\cdot 19$ $4/\cdot 9.3$ 1730 $7.\cdot 44$ $1/\cdot 1$	QC SAMPLE:	N	IS/MSD	DUP-		Sonde ID:	08C	11M	<b>15H</b>	🖌 19M
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	epth-to-wa	ter T/PVC (ft)	טו.רו	Depth-To-B	ottom T/PVC	(ft) <u>91.0</u>	9	Completed b	y CUH	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	3-5 min	+/- 0.1	NA	+/- 3%		+/- 0.3ppm		*		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	-	1	-	Stablizati	on parameters ;	for the last thre	e reaaings			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		7110		011	0.0	0.02				7703
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						1.000				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	-					1.				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$										-
$\frac{1740}{1740} = 7.43 = 12.1 = 875 = 10.5 = 0.08 = 425.3 = 500 = 17.19 = 8.02 = 17.43 = 12.1 = 875 = 10.5 = 0.04 = 419.6 = 500 = 17.19 = 10.141 = 1750 = 7.49 = 12.1 = 875 = 3.7 = 0.39 = 40.2 = 500 = 17.19 = 12.77 = 1755 = 7.50 = 12.1 = 90.4 = 2.1 = 0.22 = 82.6 = 500 = 17.19 = 12.77 = 1800 = 7.59 = 12.1 = 910 = 1.9 = 0.19 = 95.4 = 500 = 17.19 = 5.91 = 1805 = 7.59 = 12.1 = 971 = 1.7 = 0.18 = 98.2 = 500 = 17.19 = 7.76 = 1800 = 10.18 = 12.1 = 9.11 = 1.7 = 0.18 = 98.2 = 500 = 17.19 = 7.76 = 1800 = 10.18 = 12.1 = 9.11 = 1.7 = 0.18 = 98.2 = 500 = 17.19 = 7.76 = 1800 = 10.18 = 12.1 = 9.11 = 1.7 = 0.18 = 98.2 = 500 = 17.19 = 7.76 = 1800 = 10.18 =$				1000		-				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	/					0.73				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			1.			0			1	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1745		12,1	875		0.64	+19.6	500	17.19	10.141.
1800 7.59 12.1 970 1.8 0.19 -95.4 500 17.19 5.91 1805 7.59 12.1 971 1.7 0.18 -98.2 500 17.19 7.74 1806 Collected Sample (Ihr limit)	1750	7.48	12.1		3.7	0.39	-40.2	500	17.19	12.77 -
1805 7.59 12.1 971 1.7 0.18 -98.2 500 17.19 7.74. 1806 Collected Sample (1 hr limit)	1755	7.50	12.1	964	2.1	0.22	- 82.4	500	17.19	4.63
1800 Collected Sample (Ihr limit)	1800	7.59	12,1	970	1.9	0.19	- 95.4	500	17.19	5.91
	1805	7.59	12.1	971	1.1	0.18	- 98.2	500	17.19	7.74.
Total Rump Time (min): 5.0 Total Rurge Volume (gal): 4.6 Reviewed by:	1806	Collecte	ed sa	mple (	hr him	(i+)				
Fotal Pump Time (min): Total Purge Volume (gal): 4.5 Reviewed by:										
total rule (min). (1) Total rule volume (gal). (1) Neviewed by: (1)	Total Pump 1	ime (min): 🛛 😽	0	Total Purge V	/olume (gal) :	4.5		Reviewed by	· 10/	09/20
Neather: 65°F. Partly sunny	Neather:	6501	F. Par	thy sun	ny				1	
	Comments:	Bubbles	S ON PI	robes						
comments: Bubbles on Probes	Bottle	s Filled	Preserva	tive Codes:	A-NONE B-	HNO3 C - H25	04 D-NaOH E	- HCI F-	10	
	Quantity	Size	Туре	Preservative Code	Filtered Y/N	Quantity	Size	Туре	Preservative Code	Filtered Y/N
Bottles Filled     Preservative Codes:     A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCl F       Preservative     Preservative     Preservative	1	12GmL	HDPE	A	N					
Bottles Filled     Preservative Codes:     A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCl F       Quantity     Size     Type     Preservative Code       V     Type     Code     Filtered Y/N       Quantity     Size     Type       V     N     V	1	125ML		B	N					
Bottles Filled     Preservative Codes:     A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCl F       Quantity     Size     Type     Preservative Code     Filtered Y/N     Quantity     Size     Type     Preservative Code     Filtered Y/N       1     125mL     HDPE     A     N     Instruction     Instruction     Instruction		NOOMT	V	A	N					
Bottles Filled     Preservative Codes:     A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCl F       Quantity     Size     Type     Preservative Code     Filtered Y/N     Quantity     Size     Type     Preservative Code     Filtered Y/N       1     125 mL     B     N     Image: Size     Type     Image: Size     Type     Image: Size     Type     Filtered Y/N		uld be <500 mL/m					1		-	

Laboratory S				Consumers En itoring Well Sa					
	V-MW-II		Date <u>10 • 1</u>	· 2020 Well Material	: PVC	Control Num	ber <u>20 - 10</u> Iron	Galv. S	teel
Purge Metho	d: 🔽	Peristaltic		Submersible		Fultz		Bailer	
Depth to Wa	ter Tape: Sol	inist	S/N	:122-004	547-1				
QC SAMPLE:		MS/MSD	DUP-		Sonde ID:	080	11M	<b>15</b> H	19M
Depth-to-wa	ter T/PVC (ft)	110.06	Depth-To-B	ottom T/PVC	(ft) <u>41.90</u>	-	Completed b	y cut	
Time	рН	Temp	Sp Cond	DO	DO	ORP	Pump Rate	Water level	Turbidity
min	units	°C	uS/cm	% sat.	ppm	mV	mL/min	Drawdown ft	NTU
3-5 min	+/- 0.1	NA	+/- 3%	+/- 10%	+/- 0.3ppm	+/-10mV	*	< 0.33	+/- 10%
			Stablizati	on parameters f	or the last thre	e readings			Meter
1823	1						500	16.09	
1830	7.76	12.2	906	39.1	3.91	-162.4	500	14.09	13.0
1835	7.82	12.0	847	7.5	0.79	-158.4	500	16.09	9.61
1840	7.82	12.0	855	4.8	0.72	-154.1	500	16.09	8.11
1845	7.81	11.9	851	10.6	0.70	-162.5	500	16.09	7.1
1850	7.80	11.3	851	5.9	0.42	-150.4	500	110.09	3.53
1855	7.80	11.8	851	4.0	0.40	-150.D	500	16.09	3.33
1900	7.00	11.8	851	5.9	0.59	- 150.1	500	16.09	1.36
1901	1				0.21			9.01	
		d samp							
Fotal Pump T		37	Total Purge V	olume (gal) :	7.0		Reviewed by:	fiel	09 /20
	* used po		netce f					V	
Bottle	s Filled	Preservat	tive Codes: Preservative	A-NONE B-H	11103 C - H2SC	D4 D-NaOH I	- HCI F	Preservative	
Quantity	Size	Туре	Code	Filtered Y/N	Quantity	Size	Туре	Code	Filtered Y/N
1	125ml	HOPE	A	N					
1	125 ML	1	B	N					
1	GOUMI	1	A	N					
* Pump rate sho	ıld be <500 mL/m	in for low-flow a	nd <1 gal/min for l	nigh Volume.					

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