

2021 Annual Groundwater Monitoring and Corrective Action Report

Edgewater Generating Station
I-43 Ash Disposal Facility
Town of Wilson
Sheboygan County, Wisconsin

Prepared for:

Alliant Energy



SCS ENGINEERS

25221069.00 | January 31, 2022

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OVERVIEW OF CURRENT STATUS

Edgewater Generating Station, I-43 Ash Disposal Facility 2021 Annual Report

In accordance with §257.90(e)(6), this section at the beginning of the annual report provides an overview of the current status of groundwater monitoring and corrective action programs for the coal combustion residual (CCR) unit. Supporting information is provided in the text of the annual report.

Category	Rule Requirement	Site Status
Monitoring Status – Start of Year	(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;	Detection
Monitoring Status – End of Year	(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;	Detection
Statistically Significant Increases (SSIs)	(iii) If it was determined that there was an SSI over background for one or more constituents listed in Appendix III to this part pursuant to §257.94(e):	
	(A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and	<u>April/May 2021</u> Fluoride: MW-302 Field pH: MW-302 <u>October 2021</u> None
	(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	Alternative Source Demonstration prepared for the April 2021 event during 2021. Assessment monitoring not required.

Category	Rule Requirement	Site Status
Statistically Significant Levels (SSL) Above Groundwater Protection Standard (GPS)	(iv) If it was determined that there was an SSL above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to §257.95(g) include all of the following:	Not applicable – Appendix IV sampling not required
	(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;	
	(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;	
	(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and	
Selection of Remedy	(v) Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection; and	Not applicable – Site is in detection monitoring
Corrective Action	(vi) Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.	Not applicable – Site is in detection monitoring

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1.0 INTRODUCTION

This 2021 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the Coal Combustion Residuals (CCR) Rule [40 Code of Federal Regulations (CFR) 257.50-107]. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90(e). The applicable sections of the Rule are provided below in italics, followed by applicable information relative to the 2021 Annual Groundwater Monitoring and Corrective Action Report for the CCR Unit.

This report covers the period of groundwater monitoring from January 1, 2021, through December 31, 2021.

The groundwater monitoring system at the Edgewater (EDG) I-43 Ash Disposal Facility (ADF) monitors a single existing CCR Unit:

- EDG I-43 Phase 3, Module 1 and 2, and Phase 4, Module 1 (existing CCR Landfill)

The monitoring system is designed to detect monitored constituents at the waste boundary of the I-43 ADF as required by 40 CFR 257.91(d). The groundwater monitoring system consists of two background wells and three downgradient monitoring wells (**Table 1** and **Figure 2**).

2.0 BACKGROUND

To provide context for the annual report, the following background information is provided in this section of the report, prior to the annual report requirement sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system

2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.1.1 Regional Information

For the purposes of groundwater monitoring, the Niagara Dolomite Aquifer is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at the I-43 ADF. The dolomite aquifer is underlain by the Maquoketa shale, which is a confining unit. The Maquoketa shale is underlain by the Cambrian-Ordovician sandstone aquifer. This sequence of sedimentary bedrock units is over 1,500 feet thick in the area of the I-43 ADF. The sedimentary sequence is underlain by Precambrian crystalline rocks that are not considered an aquifer in eastern Wisconsin. A summary of the regional hydrogeologic stratigraphy is presented in **Appendix A**.

An unconsolidated sand and gravel aquifer is present in some parts of Sheboygan County (Skinner and Borman, 1973), but does not appear laterally extensive.

Regional groundwater flow in the dolomite aquifer, in the vicinity of the site, is to the east or northeast. A map showing the regional water table elevations is included with the regional hydrogeologic information in **Appendix A**.

2.1.2 Site Information

Soils at the site are primarily clay with discontinuous layers of sand and silty sand to a depth of at least 100 feet. During drilling of the CCR wells, the unconsolidated materials were identified as consisting primarily of clay. Zones of sand and gravel are known to be present within the clay, but these appear to be discontinuous, and no nearby private wells screened within the unconsolidated material have been identified. Soils encountered in borings MW-301, MW-302, MW-303, and MW-304 were primarily lean clay, silty clay, and silty sand. The upper 70 feet of soils in boring MW-305 were similar, but in approximately the lower 40 feet above bedrock, sand was the primary soil type. The depth to bedrock in the five wells ranged from approximately 109 feet to 133 feet below ground surface (bgs), and the elevation of the top of bedrock ranged from approximately 568 feet above mean sea level (amsl) to 605 feet amsl. The boring logs, well construction, and well development forms for the I-43 CCR monitoring wells are provided in **Appendix B**. All CCR monitoring wells are screened within the dolomite bedrock unit.

Shallow groundwater in the clay unit at the site generally flows east to west towards Weedens Creek, a tributary of the Sheboygan River, based on water levels measured under the state monitoring program. The flow direction to the west at the water table is consistent with previous water table maps prepared since the site was developed in the mid-1980s.

In the dolomite aquifer, groundwater flow is generally to the north and northeast as shown on the April and October 2021 bedrock potentiometric surface maps based on groundwater elevations from monitoring wells MW-301 through MW-305 (**Figures 3 and 4**). The groundwater elevation data for the CCR monitoring wells are provided in **Table 3**. Calculated horizontal gradients and flow velocities for representative flow paths are provided in **Table 4**.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and three downgradient monitoring wells (**Table 1** and **Figure 2**). The background wells include MW-304 and MW-305. The downgradient wells include MW-301, MW-302, and MW-303. The CCR Rule wells are installed in the upper portion of the dolomite aquifer. Well depths range from approximately 119 to 145 feet, measured from the top of the well casing.

3.0 §257.90(e) ANNUAL REPORT REQUIREMENTS

***Annual groundwater monitoring and corrective action report.** For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by §257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:*

3.1 §257.90(e)(1) SITE MAP

A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

A map of the site location is provided on **Figure 1**. A map with an aerial image showing the I-43 CCR unit, and all background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program, is provided as **Figure 2**.

3.2 §257.90(E)(2) MONITORING SYSTEM CHANGES

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

No new monitoring wells were installed and no wells were decommissioned as part of the groundwater monitoring program for the I-43 CCR unit in 2021.

3.3 §257.90(E)(3) SUMMARY OF SAMPLING EVENTS

In addition to all the monitoring data obtained under §§257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

Two semiannual groundwater sampling events and one resampling event were completed in 2021 at the I-43 Landfill. The samples were collected under the detection monitoring program, which was established on October 17, 2017. A summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs is included in **Table 2**.

Groundwater samples collected during the semiannual events, in April and October 2021, were analyzed for the Appendix III constituents. A resample event occurred in June 2021 at well MW-302 for fluoride and wells MW-301 and MW-302 for field pH. The resampling was performed in accordance with the Sampling and Analysis Plan for the site, which allows for 1-of-2 testing for evaluation of statistically significant increases (SSIs) above background in detection monitoring.

The sampling results for Appendix III parameters in 2021 are summarized in **Table 5**. Field parameter results for the 2021 sampling events are provided in **Table 6**. The analytical laboratory reports are provided in **Appendix C**. Historical results for each monitoring well are summarized in **Appendix D**.

3.4 §257.90(E)(4) MONITORING TRANSITION NARRATIVE

A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels);

There were no transitions between monitoring programs in 2021. The I-43 Landfill remained in the detection monitoring program.

In 2021, the monitoring results for the October 2020 and April 2021 monitoring events were evaluated for SSIs in detection monitoring parameters relative to background. For all parameters except boron, the comparison to background was based on a prediction limit approach, comparing the results to interwell upper prediction limits (UPLs) based on background monitoring results from the upgradient wells (MW-304 and MW-305). For boron, the comparison to background used intrawell UPLs based on background monitoring results from the compliance wells (MW-301, MW-302 and MW-303). As described in the technical memorandum in **Appendix E**, interwell UPLs were initially used for all Appendix III parameters, but the site transitioned to intrawell evaluation for boron beginning with the October 2018 monitoring event. The change in approach was implemented after determining that natural spatial variability was the most likely cause of boron concentrations slightly above the UPL in two compliance wells in the October 2017 and April 2018 monitoring events. Evidence for this conclusion included long term monitoring data from the state monitoring program, boron monitoring results for water supply wells in the area, the site geology, and the CCR unit construction, as described in more detail in the Alternative Source Demonstrations prepared for these events.

The interwell and intrawell UPLs were most recently updated in January 2021, using background data collected through October 2020 for interwell UPLs and through April 2020 for intrawell UPLs. The Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities (U.S. Environmental Protection Agency, 2009; Section 5.3.1) recommends periodic updating of background for both intrawell and interwell analyses. For semiannual monitoring, an update interval of 2 to 3 years is recommended; therefore, the next UPL update is planned for 2023 or 2024. The UPL calculations are included in **Appendix E**. The UPLs calculated in January 2021 were applied to the evaluation of the October 2020 and April 2021 monitoring results, completed in 2021, and will be applied to the evaluation of the October 2021 monitoring results, to be completed in 2022.

SSIs for fluoride and field pH were observed at MW-302 for the April 2021 monitoring event and June 2021 resampling event. As shown in **Table 5**, one additional individual pH result at MW-301 in April 2021 exceeded the UPL, but the retesting results was below the UPL; therefore, there is no SSI under the 1-of-2 retesting approach established for statistical evaluation at I-43.

3.5 §257.90(E)(5) OTHER REQUIREMENTS

Other information required to be included in the annual report as specified in §§257.90 through 257.98.

Additional potentially applicable requirements for the annual report, and the location of the requirement within the Rule, are provided in the following sections. For each cited section of the Rule, the portion referencing the annual report requirement is provided below in italics, followed by applicable information relative to the 2021 Annual Groundwater Monitoring and Corrective Action Report for the I-43 CCR unit.

3.5.1 §257.90(e) General Requirements

For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year.

Status of Groundwater Monitoring and Corrective Action Program. The groundwater monitoring and corrective action program is currently in detection monitoring.

Summary of Key Actions Completed.

- Statistical evaluation and determination of SSIs for the October 2020 and April 2021 monitoring events.
- Two semiannual groundwater sampling and analysis events (April and October 2021).
- One resample groundwater sampling and analysis event (June 2021).

Description of Any Problems Encountered. No problems were encountered in 2021.

Discussion of Actions to Resolve the Problems. Not applicable.

Projection of Key Activities for the Upcoming Year (2022):

- Statistical evaluation and determination of any SSIs for the October 2021 and April 2022 monitoring events.
- If an SSI is determined, then within 90 days either:
 - Complete alternative source demonstration (if applicable), or
 - Establish an assessment monitoring program.
- Two semiannual groundwater sampling and analysis events (April and October 2022).

3.5.2 §257.94(d) Alternative Detection Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by §257.90(e).

Not applicable. No alternative detection monitoring frequency has been proposed.

3.5.3 §257.94(e)(2) Alternative Source Demonstration for Detection Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by §257.90(e), in addition to the certification by a qualified professional engineer.

The Alternative Source Demonstration (ASD) report prepared to address the SSIs observed for the April 2021 sampling event is provided in **Appendix F**. The ASD report is certified by a qualified professional engineer.

3.5.4 §257.95(c) Alternative Assessment Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by §257.90(e).

Not applicable. Assessment monitoring has not been initiated.

3.5.5 §257.95(d)(3) Assessment Monitoring Results and Standards

Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under §257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by §257.90(e).

Not applicable. Assessment monitoring has not been initiated.

3.5.6 §257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by §257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. Assessment monitoring has not been initiated.

3.5.7 §257.96(a) Extension of Time for Corrective Measures Assessment

The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measure due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by §257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. Corrective measures assessment has not been initiated.

3.6 §257.90(E)(6) OVERVIEW

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit.

The specific requirements for the overview under §257.90(e)(6) are listed and the information is provided at the beginning of this report, before the Table of Contents.

4.0 REFERENCES

Skinner, Earl L. and Ronald G. Borman, Water Resources of Wisconsin-Lake Michigan Basin, Department of the Interior United States Geological Survey Hydrogeologic Investigations Atlas HA-432, 1973.

Tables

1. Groundwater Monitoring Well Network
2. CCR Rule Groundwater Samples Summary
3. Water Level Summary
4. Horizontal Gradients and Flow Velocity
5. Groundwater Analytical Results Summary
6. Groundwater Field Data Summary – 2021

**Table 1. Groundwater Monitoring Well Network
Edgewater I-43 Landfill / SCS Engineers Project #25221069.00**

Monitoring Well	Location in Monitoring Network	Role in Monitoring Network
MW-301	Downgradient	Compliance
MW-302	Downgradient	Compliance
MW-303	Downgradient	Compliance
MW-304	Upgradient	Background
MW-305	Upgradient	Background

Created by: RM
 Last revision by: RM
 Checked by: NDK

Date: 12/14/2020
 Date: 1/7/2021
 Date: 1/7/2021

**Table 2. CCR Rule Groundwater Samples Summary
Edgewater Generating Station I-43 Landfill
SCS Engineers Project #25221069.00**

Sample Dates	Compliance Wells			Background Wells	
	MW-301	MW-302	MW-303	MW-304	MW-305
4/13/2021	D	D	D	D	D
6/24/2021	D-R	D-R	--	--	--
10/26/2021	D	D	D	D	D
Total Samples	3	3	2	2	2

Abbreviations:

D = Required by Detection Monitoring Program

D-R = Detection Monitoring Retest Sample

-- = Not Sampled

Created by: MDB

Date: 12/15/2021

Last revision by: MDB

Date: 12/22/2021

Checked by: JAO

Date: 12/22/2021

Table 3. Water Level Summary
WPL - I43 / SCS Engineers Project #25221069.00

Well Number	Ground Water Elevation in feet above mean sea level (amsl)				
	MW-301	MW-302	MW-303	MW-304	MW-305
Top of Casing Elevation (feet amsl)	696.96	702.57	719.25	691.97	717.67
Screen Length (ft)	5.00	5.00	5.00	5.00	5.00
Total Depth (ft from top of casing)	134.56	144.33	144.65	119.49	122.97
Top of Well Screen Elevation (ft)	567.40	563.24	579.60	577.48	600.46
Measurement Date					
April 8, 2016	692.29	683.61	696.30	--	--
April 26, 2016	653.54	653.56	653.59	655.90	
June 20, 2016	652.01	651.89	651.80	653.79	--
August 9, 2016	649.68	649.30	649.37	651.55	--
October 19, 2016	652.32	652.38	652.18	654.00	--
December 19, 2016	652.85	652.79	652.82	654.26	--
January 5, 2017	652.86	652.82	652.80	654.15	
January 23, 2017	652.98	664.97	652.92	654.37	--
February 23, 2017	653.14	653.10	653.10	654.49	658.02
April 7, 2017	654.43	654.72	654.55	654.85	659.65
June 6, 2017	654.11	654.12	654.14	655.70	659.70
August 1, 2017	652.64	652.55	652.50	654.49	658.54
October 23, 2017	652.03	652.05	652.03	653.65	657.22
April 3, 2018	651.28	651.25	651.30	652.86	656.24
October 4, 2018	650.71	650.70	650.70	652.26	655.89
April 8-9, 2019	653.06	654.06	654.06	655.59	659.03
October 8, 2019	653.26	653.21	653.27	654.77	658.77
November 26, 2019	--	--	655.56	--	--
April 7, 2020	656.59	656.47	656.46	658.16	661.58
May 20, 2020	--	655.81	--	--	--
October 13, 2020	652.16	652.17	652.20	654.17	658.08
December 18, 2020	653.91	653.88	--	--	--
April 13, 2021	654.56	654.57	654.53	656.36	659.69
June 16, 2021	649.78	649.75	--	--	--
October 26, 2021	650.76	650.88	650.90	652.54	655.86
Bottom of Well Elevation (ft)	562.40	558.24	574.60	572.48	594.70

Notes: -- = not measured
None

Created by: NDK
Last rev. by: REO
Checked by: MDB

Date: 1/10/2020
Date: 11/8/2021
Date: 11/8/2021

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Table 4. Horizontal Gradients and Flow Velocity Table
Edgewater I-43 Landfill
SCS Engineers Project #25221069.00
January - December 2021

Sampling Dates	North				
	h1 (ft)	h2 (ft)	Δl (ft)	Δh/Δl (ft/ft)	V (ft/d)
4/13/2021	658.0	655.0	1310	0.002	0.10
10/26/2021	655.0	652.0	1296	0.002	0.10

Wells	K Value (ft/d)	K Value (ft/d)
MW-301	1.7E-03	4.9
MW-302	4.8E-03	14
MW-303	6.8E-03	19
Geometric Mean	3.8E-03	11

Assumed Porosity, n
0.25

Groundwater flow velocity equation: $V = [K*(\Delta h/\Delta l)] / n$

ft = feet

ft/d = feet per day

K = hydraulic conductivity

n = effective porosity

V = groundwater flow velocity

h1, h2 = point interpreted groundwater elevations at locations 1 and 2

Δl = distance between location 1 and 2

Δh/Δl = hydraulic gradient

Created by: RM
 Last revision by: MDB
 Checked by: RM

Date: 12/29/2020
 Date: 12/27/2021
 Date: 12/27/2021

**Table 5. Groundwater Analytical Results Summary
Edgewater I-43 Ash Disposal Facility, Sheboygan, WI / SCS Engineers Project #25221069.00**

Parameter Name	Interwell UPL	Background Wells				Compliance Wells										
		MW-304	MW-304	MW-305	MW-305	MW-301			MW-302			MW-303				
		4/13/2021	10/26/2021	4/13/2021	10/26/2021	Intrawell UPL	4/13/2021	6/16/2021	10/26/2021	Intrawell UPL	4/13/2021	6/16/2021	10/26/2021	Intrawell UPL	4/13/2021	10/26/2021
Boron, ug/L		91.7	89.8	66.6	67.8	184	132	--	130	149	121	--	122	100	84.7	83.3
Calcium, ug/L	103,000	19,700	21,600	86,800	87,800		53,900	--	30,200		28,700	--	27,200		29,600	29,300
Chloride, mg/L	24.9	2.1	2.3	25.3	24.9		3.9	--	3.3		4.1	--	3.8		4.5	4.2
Fluoride, mg/L	0.753	0.53	0.49	0.67	0.72 J		0.64	--	0.61		0.76	0.77	0.74		0.62	0.61
Field pH, Std. Units	8.34	8.31	8.12	7.76	7.76		8.48	8.14	8.23		8.36	8.37	8.23		8.26	8.05
Sulfate, mg/L	140	15.3	15.6	127	125		10.2	--	10.2		17.4	--	15.9		25.6	28.9
Total Dissolved Solids, mg/L	598	224	218	540	556		238	--	200		232	--	220		260	268

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:

UPL = Upper Prediction Limit
SSI = Statistically Significant Increase

ug/L = micrograms per liter
mg/L = milligrams per liter

LOQ = Limit of Quantitation
LOD = Limit of Detection

-- = Not Analyzed

Notes:

1. An individual result above the UPL does not constitute an SSI above background. See the accompanying letter text for identification of statistically significant results.
2. Interwell UPLs calculated based on results from background wells MW-304 and MW-305. Interwell UPLs based on 1-of-2 retesting approach. Interwell UPLs were calculated with background results from the May 2016 through the October 2020 sampling event.
3. Following the completion of the April 2018 Alternative Source Demonstration (ASD) Report, dated October 31, 2018, the statistical method for evaluating boron data at the three compliance monitoring wells was modified to an intrawell approach. Intrawell UPLs were calculated using results from the May 2016 through the April 2020 sampling events.

Created by: NDK Date: 1/7/2021
 Last revision by: MDB Date: 12/9/2021
 Checked by: JAO Date: 12/10/2021
 Proj Mgr QA/QC: TK Date: 1/6/2022

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**Table 6. Groundwater Field Data Summary
Edgewater I-43 Ash Disposal Facility / SCS Engineers Project #25221069.00
2021**

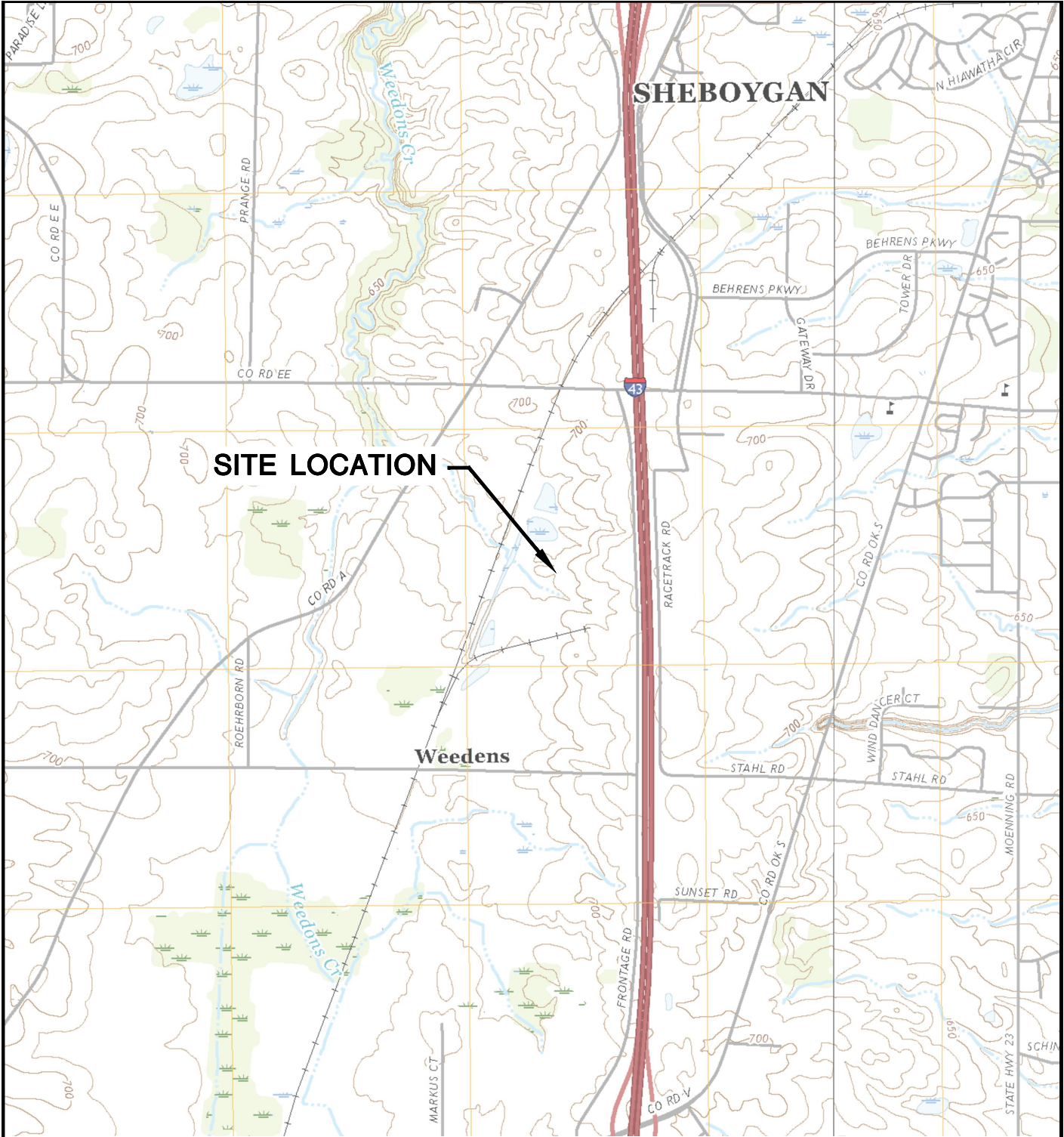
Well	Sample Date	Groundwater Elevation (feet)	Field Temperature (deg C)	Field pH (Std. Units)	Oxygen, Dissolved (mg/L)	Field Specific Conductance (umhos/cm)	Field Oxidation Potential (mV)	Turbidity (NTU)
MW-301	4/13/2021	654.56	9.10	8.48	0.2	387	-16	179.0
	10/26/2021	650.76	11.20	8.23	1.3	356	291	130.0
MW-302	4/13/2021	654.57	9.20	8.36	0.4	412	189	19.6
	6/24/2021	649.75	10.3	8.37	0.6	386	24	18.1
	10/13/2020	650.88	9.8	8.23	0.6	393	207	38.3
MW-303	4/13/2021	654.53	9.4	8.26	0.5	475	154	<0.02
	10/26/2021	650.90	9.7	8.05	0.6	478	244	71.5
MW-304	4/13/2021	656.36	9.1	8.31	0.5	403	216	<0.02
	10/26/2021	652.54	9.60	8.12	0.6	398	205	96.3
MW-305	4/13/2021	659.69	9.4	7.76	0.8	891	128	0.93
	10/26/2021	655.86	11.0	7.76	1.6	863	136	21.7

Created by: MDB
 Last revision by: MDB
 Checked by: JAO

Date: 12/15/2021
 Date: 12/15/2021
 Date: 12/22/2021

Figures

1. Site Location Map
2. Site Plan and Monitoring Well Locations
3. Bedrock Potentiometric Surface Map – April 13, 2021
4. Bedrock Potentiometric Surface Map – October 26, 2021



SHEBOYGAN FALLS QUADRANGLE
 WISCONSIN-SHEBOYGAN CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'

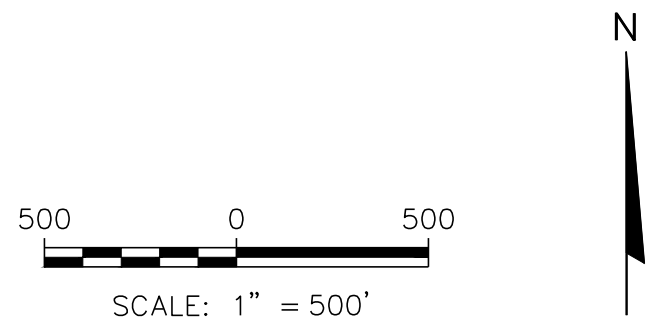


CLIENT	WISCONSIN POWER AND LIGHT CO. 3739 LAKESHORE DRIVE SHEBOYGAN, WI 53081		SITE	ALLIANT ENERGY 1-43 ASH DISPOSAL FACILITY TOWN OF WILSON, WI		SITE LOCATION MAP		
	PROJECT NO.	25219069.00		DRAWN BY:	BSS		ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830
DRAWN:	11/20/2019	CHECKED BY:	MDB	APPROVED BY:	TK 01/30/2020	FIGURE		
REVISED:	01/13/2020					1		



LEGEND	
	APPROXIMATE PROPERTY LINE
	MODULE LIMITS
	GRADE (2' CONTOUR)
	GRADE (10' CONTOUR)
	EDGE OF WATER
	SWALE
	CULVERT
	MANHOLE
	CONTACT WATER TRANSFER PIPE
	ABANDONED 3" DIA. HDPE PIPE
	TREELINE/TREES
	PAVED ROAD
	UNPAVED ACCESS ROAD
	RAILROAD TRACKS
	FENCE
	UTILITY/LIGHT POLE
	MONITORING WELL (UNCONSOLIDATED)
	PIEZOMETER (UNCONSOLIDATED)
	PRIVATE WATER SUPPLY WELL
	CCR PIEZOMETER (BEDROCK)
	CCR RULE BACKGROUND MONITORING WELL
	CCR UNIT
	LIMITS OF FINAL COVER

- NOTE:
- 2018 AERIAL PHOTOGRAPH SOURCES: ESRI, DIGITALGLOBE, GEOEYE, I-CUBED, USDA FSA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO, AND THE GIS USER COMMUNITY.
 - MONITORING WELLS MW-301, MW-302, MW-303, AND MW-304 WERE INSTALLED BETWEEN NOVEMBER 30, 2015 AND JANUARY 26, 2016 BY BADGER STATE DRILLING INC. DRILLING WAS PERFORMED UNDER THE SUPERVISION OF SCS ENGINEERS.
 - MONITORING WELL MW-305 WAS INSTALLED FEBRUARY 2, 2017 BY BADGER STATE DRILLING, INC.

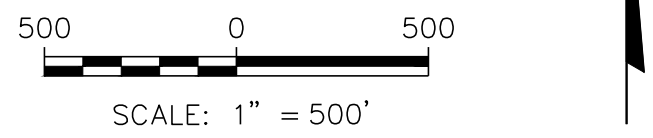


PROJECT NO. 25219069.00	DRAWN BY: BSS	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT WISCONSIN POWER AND LIGHT CO. 3739 LAKESHORE DRIVE SHEBOYGAN, WI 53081	SITE ALLIANT ENERGY I-43 ASH DISPOSAL FACILITY TOWN OF WILSON, WI	FIGURE 2
DRAWN: 11/20/2019	CHECKED BY: MDB				
REVISED: 01/13/2022	APPROVED BY: TK 1/27/2022				



LEGEND	
	APPROXIMATE PROPERTY LINE
	MODULE LIMITS
	GRADE (2' CONTOUR)
	GRADE (10' CONTOUR)
	EDGE OF WATER
	SWALE
	CULVERT
	MANHOLE
	CONTACT WATER TRANSFER PIPE
	ABANDONED 3" DIA. HDPE PIPE
	TREELINE/TREES
	PAVED ROAD
	UNPAVED ACCESS ROAD
	RAILROAD TRACKS
	FENCE
	UTILITY/LIGHT POLE
	MONITORING WELL (UNCONSOLIDATED)
	PIEZOMETER (UNCONSOLIDATED)
	PRIVATE WATER SUPPLY WELL
	CCR RULE PIEZOMETER (BEDROCK)
	CCR RULE BACKGROUND MONITORING WELL
	CCR RULE UNIT
	POTENTIOMETRIC SURFACE ELEVATION
	POTENTIOMETRIC SURFACE CONTOUR
	APPROXIMATE GROUNDWATER FLOW DIRECTION

- NOTE:
1. MONITORING WELLS MW-301, MW-303, AND MW-304 WERE INSTALLED BETWEEN NOVEMBER 30, 2015 AND JANUARY 26, 2016 BY BADGER STATE DRILLING INC. DRILLING WAS PERFORMED UNDER THE SUPERVISION OF SCS ENGINEERS.
 2. MONITORING WELLS MW-301, MW-302, MW-303 AND MW-304 WERE SURVEYED ON FEBRUARY 8, 2016 BY SCS ENGINEERS.
 3. MONITORING WELL MW-305 WAS SURVEYED ON FEBRUARY 15, 2017 BY CQM, INC.
 4. GROUNDWATER ELEVATIONS WERE COLLECTED FROM PIEZOMETERS ON APRIL 13, 2021.
 5. THE BACKGROUND MONITORING WELLS FOR THE I-43 LANDFILL ARE MW-304 AND MW-305.



PROJECT NO.	25221069.00	DRAWN BY:	KP
DRAWN:	05/21/2021	CHECKED BY:	RM
REVISED:	12/17/2021	APPROVED BY:	TK 12/22/2021

SCS ENGINEERS
 2830 DAIRY DRIVE MADISON, WI 53718-6751
 PHONE: (608) 224-2830

CLIENT **ALLIANT ENERGY**
 ALLIANT ENERGY WISCONSIN POWER AND LIGHT COMPANY

SITE WISCONSIN POWER AND LIGHT
 EDGEWATER GENERATING STATION
 I-43 LANDFILL
 TOWN OF WILSON, WISCONSIN

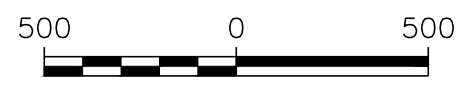
FIGURE BEDROCK POTENTIOMETRIC SURFACE MAP
 APRIL 13, 2021

FIGURE 3



LEGEND	
	APPROXIMATE PROPERTY LINE
	MODULE LIMITS
	GRADE (2' CONTOUR)
	GRADE (10' CONTOUR)
	EDGE OF WATER
	SWALE
	CULVERT
	MANHOLE
	CONTACT WATER TRANSFER PIPE
	ABANDONED 3" DIA. HDPE PIPE
	TREELINE/TREES
	PAVED ROAD
	UNPAVED ACCESS ROAD
	RAILROAD TRACKS
	FENCE
	UTILITY/LIGHT POLE
	MONITORING WELL (UNCONSOLIDATED)
	PIEZOMETER (UNCONSOLIDATED)
	PRIVATE WATER SUPPLY WELL
	CCR RULE PIEZOMETER (BEDROCK)
	CCR RULE BACKGROUND MONITORING WELL
	CCR RULE UNIT
	POTENTIOMETRIC SURFACE ELEVATION
	POTENTIOMETRIC SURFACE CONTOUR
	APPROXIMATE GROUNDWATER FLOW DIRECTION

- NOTE:
1. MONITORING WELLS MW-301, MW-303, AND MW-304 WERE INSTALLED BETWEEN NOVEMBER 30, 2015 AND JANUARY 26, 2016 BY BADGER STATE DRILLING INC. DRILLING WAS PERFORMED UNDER THE SUPERVISION OF SCS ENGINEERS.
 2. MONITORING WELLS MW-301, MW-302, MW-303 AND MW-304 WERE SURVEYED ON FEBRUARY 8, 2016 BY SCS ENGINEERS.
 3. MONITORING WELL MW-305 WAS SURVEYED ON FEBRUARY 15, 2017 BY CQM, INC.
 4. GROUNDWATER ELEVATIONS WERE COLLECTED FROM PIEZOMETERS ON OCTOBER 26, 2021.
 5. THE BACKGROUND MONITORING WELLS FOR THE I-43 LANDFILL ARE MW-304 AND MW-305.



SCALE: 1" = 500'



PROJECT NO.	25221069.00	DRAWN BY:	KP
DRAWN:	12/17/2021	CHECKED BY:	RM
REVISED:	12/20/2021	APPROVED BY:	TK 12/22/2021


SCS ENGINEERS
 2830 DAIRY DRIVE MADISON, WI 53718-6751
 PHONE: (608) 224-2830

ALLIANT ENERGY
 ALLIANT ENERGY WISCONSIN POWER AND LIGHT COMPANY

SITE: WISCONSIN POWER AND LIGHT
 EDGEWATER GENERATING STATION
 I-43 LANDFILL
 TOWN OF WILSON, WISCONSIN

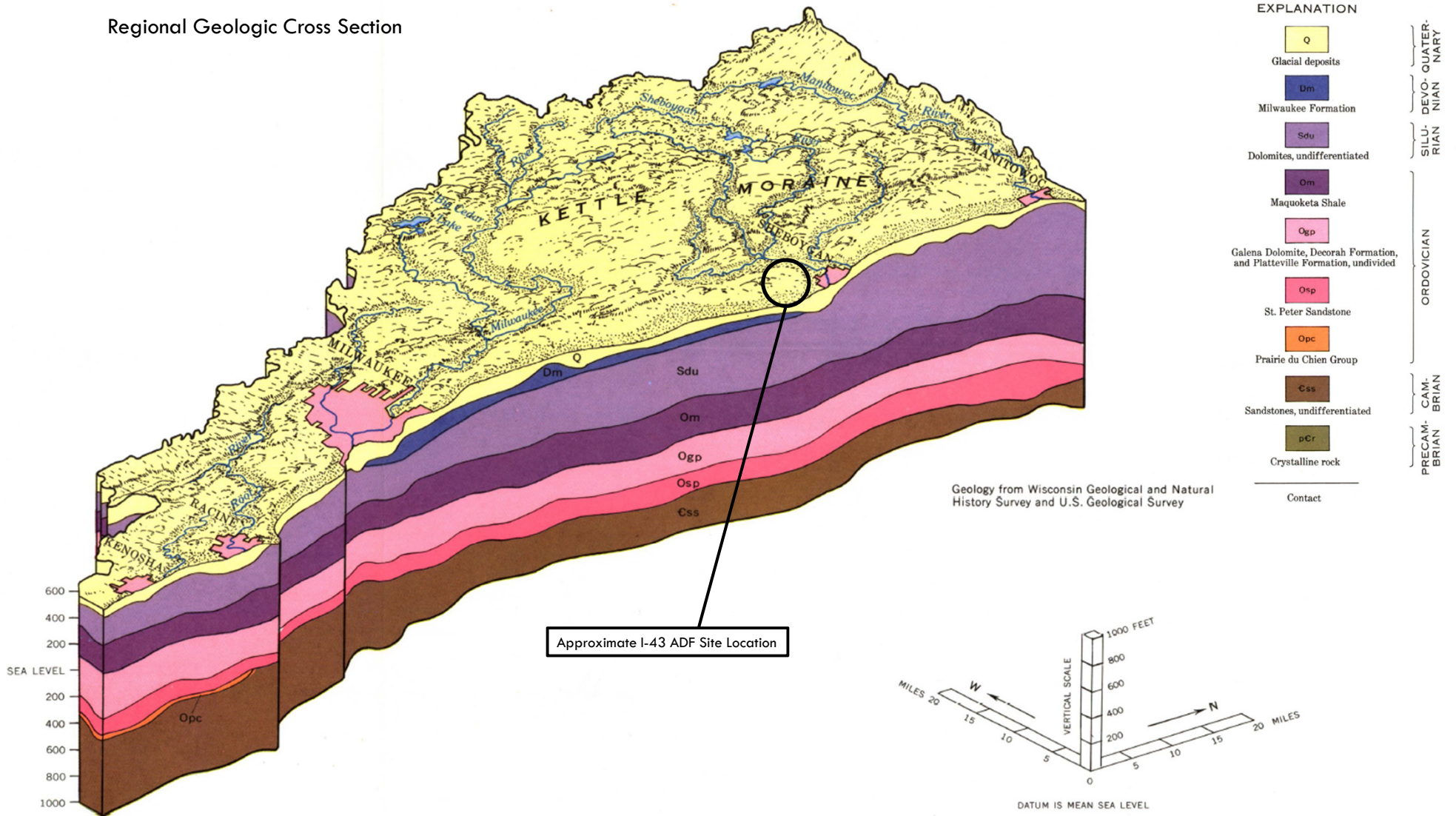
BEDROCK POTENTIOMETRIC SURFACE MAP
 OCTOBER 26, 2021

FIGURE
 4



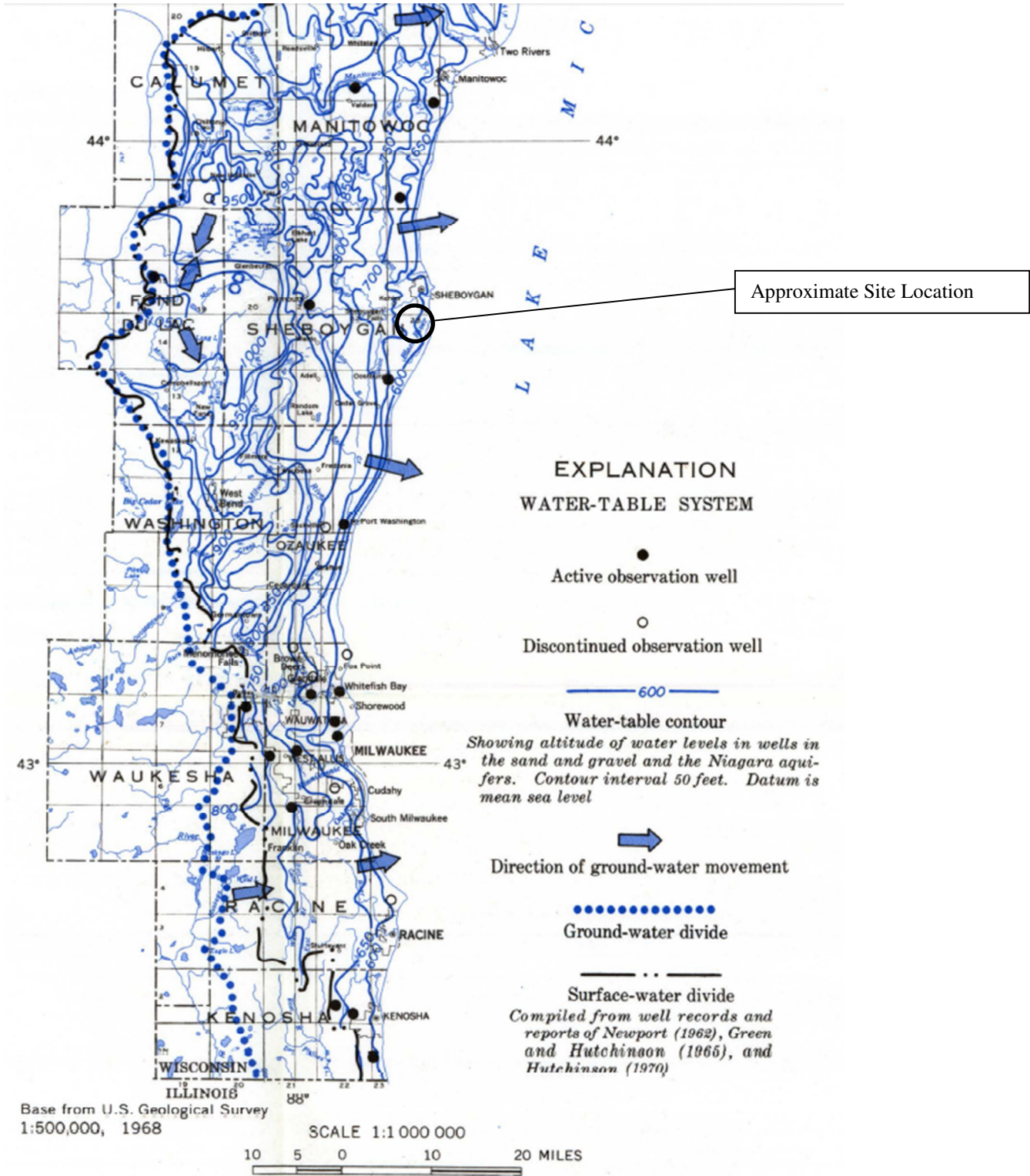
Appendix A
Regional Hydrogeologic Information

Regional Geologic Cross Section



Source: Skinner, Earl L. and Ronald G. Borman, Water Resources of Wisconsin-Lake Michigan Basin, Department of the Interior United States Geological Survey Hydrogeologic Investigations Atlas HA-432, 1973.

Regional Groundwater Flow Map – Uppermost Aquifer




Source: Skinner, Earl L. and Ronald G. Borman, Water Resources of Wisconsin-Lake Michigan Basin, Department of the Interior United States Geological Survey Hydrogeologic Investigations Atlas HA-432, 1973.

**Table I43-3. Regional Hydrogeologic Stratigraphy
Edgewater I-43 Landfill / SCS Engineers Project #25216069**

Age	Hydrogeologic Unit	General Thickness (feet)	Name of Rock Unit*	Predominant Lithology
Quaternary	Sand and Gravel Aquifer	0 to 235	Surface sand and gravel	Sand and Gravel
		0 to 300	Buried sand and gravel	
Devonian	Niagara Dolomite Aquifer	0 to 750	Dolomite (undifferentiated)	Dolomite
Silurian				
Ordovician	Confining Unit	0 to 400	Maquoketa Shale	Shale and dolomite
	Sandstone Aquifer	100 to 340	Galena Decorah Platteville	Dolomite
		0 to 330	St. Peter	Sandstone
		0 to 140	Prairie du Chien	Dolomite
Cambrian		0 to 3,500?	Trempeleau Franconia Galesville Eau Claire Mt. Simon	Sandstone, some Dolomite and Shale
Precambrian	Not an Aquifer	Unknown	Crystalline Rocks	Igneous and metamorphic rocks

Source:

Skinner, Earl L. and Ronald G. Borman, Water Resources of Wisconsin-Lake Michigan Basin, Department of the Interior United States Geological Survey Hydrogeologic Investigations Atlas HA-432, 1973.



Appendix B
Boring Logs and Well Construction Documentation

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL-Edgewater I43		License/Permit/Monitoring Number SCS#: 25215135.20		Boring Number MW-301	
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State			Date Drilling Started 12/15/2015	Date Drilling Completed 12/19/2015	Drilling Method HSA/rotary (mud)
WI Unique Well No. VV864	DNR Well ID No.	Common Well Name	Final Static Water Level Feet	Surface Elevation 694.40 Feet	Borehole Diameter 8.0 in.
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>			Local Grid Location		
State Plane 626,196 N, 2,559,679 E S/C/N			Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
SE 1/4 of NE 1/4 of Section 8, T 14 N, R 23 E			Lat _____ ' _____ '' Long _____ ' _____ ''		
Facility ID		County Sheboygan	County Code 60	Civil Town/City/ or Village Wilson Tn.	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties						RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			1	LEAN CLAY, brown (fill).	cl										
S1	17	25 78	2	LEAN CLAY, red brown (7.5YR 4/6), moist, with fine to coarse sand, fine gravel, stiff, gray coatings on fractures, diamicton (till).					3.0	M					
S2	22	47 911	4						2.25						
S3	24	45 88	7						2.25						
S4		24 55	9	Softer, brittle, crumbles. Color changes to (10.5YR 4/2).	cl				1.5						
S5	22	34 77	14	LEAN CLAY, dark reddish gray (5YR 4/2), trace coarse sand, fine crumbly texture.					2.25						

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Joe Larson <i>[Signature]</i>	Firm SCS Engineers 2830 Dairy Drive Madison, WI 53718	Tel: (608) 224-2830 Fax:
--	---	-----------------------------

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number		MW-301		Use only as an attachment to Form 4400-122.				Page 2 of 6						
Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S6	24	3 5 8 8	16	LEAN CLAY, red brown, trace coarse sand and fine gravel. Same as above.										
			17											
S7	14	5 5 8 8	18	Same except dark brown (7.5YR 4/4). Dark brown (7.5YR 4/2).										
			19											
			20											
			21											
S8	24	4 5 8 8	22	LEAN CLAY, dark brown (7.5YR 4/4), trace medium to coarse sand, few fine sand partings, massive, diamicton (till).	cl.									
			23											
			24											
			25											
S9	23	4 5 9 10	26	Same, massive to indistinctly laminated, trace fine gravel (dolomite), subrounded (till).										
			27											
			28											
			29											
S10	24	5 5 8 10	30	Same										
			31											

Boring Number **MW-301**

Use only as an attachment to Form 4400-122.

Page **3** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S11	24	55 119	41	LEAN CLAY, red brown (7.5YR 4/2).										
			42	Same as above.										
			43											
			44											
			45											
S12	24	57 99	48	Same.	cl.									
			49											
			50											
			51											
			52											
S13	24	67 1011	53											
			54											
			55											
			56											
			57											
S14	24	57 1010	58											
			59											
			60											
			61											
			62											
S15	24	56 78	63	Same, except less sand and fine gravel										
			64											
			65											

Boring Number **MW-301**

Use only as an attachment to Form 4400-122.

Page 5 of 6

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S22	24	10 12 14	91	LEAN CLAY, same as above.	CL									
			92											
			93											
			94	Same.										
			95											
S23	22	9 11 15	98	LEAN CLAY, dark grayish brown (10YR 4/2), massive to very indistinctly laminated, very plastic.										
			99											
			100											
			101											
			102											
S24	24	7 8 10	103	LEAN CLAY, dark grayish brown (10YR 4/2), massive to indistinctly laminated, very plastic (lake sediment).	CL									
			104											
			105											
			106											
			107											
S25	22	8 10 12	108											
			109											
			110											
			111											
			112											
S26	NR	8 10 13	113											
			114											
			115											

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL-Edgewater I43		SCS#: 25215135.20		License/Permit/Monitoring Number		Boring Number MW-302			
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State				Date Drilling Started 12/4/2015		Date Drilling Completed 12/7/2015			
Drilling Method HSA/rotary (mud)		WI Unique Well No. VV863		DNR Well ID No.		Common Well Name			
Final Static Water Level Feet		Surface Elevation 700.24 Feet		Borehole Diameter 8.0 in.					
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 625,788 N, 2,559,719 E S/C/N				Local Grid Location					
NE 1/4 of SE 1/4 of Section 8, T 14 N, R 23 E				Lat _____ ' _____ "		Feet <input type="checkbox"/> N <input type="checkbox"/> E			
				Long _____ ' _____ "		Feet <input type="checkbox"/> S <input type="checkbox"/> W			
Facility ID		County Sheboygan		County Code 60		Civil Town/City/ or Village Wilson Tn.			

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S1	13	3 6 8 10	1 2	LEAN CLAY, strong brown (7.5YR 4/6) to dark brown (7.5YR 3/2) mottled, trace fine to coarse sand.					3.7	M				
S2	11	3 6 9 11	3 4	LEAN CLAY, brown (7.5YR 4/4), trace small, fine to coarse sand and fine gravel, possible clay and gravel fill @5' very hard, dry, diamicton (till).					3.5	M				
S3	18	5 8 10 14	5 6 7	LEAN CLAY, mottled, strong brown (7.5YR 4/6) and brown, trace fine to coarse sand, fine gravel, very slightly moist (till).	cl				2.5-4.0	M				
S4	15	4 4 7 8	8 9						2.0	M				
S5	19	3 6 10 12	10 11 12 13 14	Same as above, except brown (7.5YR 4/4), very hard, cohesive (till).					2.0-4.0	M				

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Meghan Blodgett 	Firm SCS Engineers 2830 Dairy Drive Madison, WI 53718	Tel: (608) 224-2830 Fax:
--	---	-----------------------------

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-302**

Use only as an attachment to Form 4400-122.

Page **2** of **7**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S6	24	3 4	16	LEAN CLAY, brown (7.5YR 4/4), trace fine to coarse sand, fine gravel, as above (till).										
		6 9	19											1.5
S7	24	2 3	23	Same as above, except dark brown (7.5YR 4/2), more moist (till).										
		5 6	24											1.5
S8	20	7 8	28	LEAN CLAY, brown (7.5YR 4/2), massive, trace fine to coarse sand, fine gravel (till).	cl.									
		7 9	29											1.0
S9	6	5 6	33											
		8 8	34											1.0
S10	24	5 8	38											
		10 11	39											1.0

Boring Number **MW-302** Use only as an attachment to Form 4400-122. Page **3** of **7**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S11	19	79	41	LEAN CLAY, brown (7.5YR 4/2), trace fine to coarse sand, fine gravel (till).					1.5-	W				
		11 12	44											2.75
S12	18	6 10	48		cl.				1.5	W				
		12 12	49											
S13	24	7 7	53	Same as above, except less sand and gravel.					1.25	W				
		10 10	54											
S14	24	7 9	58	LEAN CLAY, brown, trace fine to coarse sand, 1/8-3/4" fine to coarse sand seams at 58.5', 59', and 59.75', laminated with very thin silt partings (lake sediment).	cl.				1.5	W				
		11 12	59											
S15	24	7 9	63	SILT, brown (7.5YR 5/2), massive, little clay (lake sediment).	ML				1.5	W				
		12 12	64											

Boring Number **MW-302**

Use only as an attachment to Form 4400-122.

Page **4** of **7**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S16	18	14 18	66	SILT with sand, brown, massive, sand is very fine to fine.	ML									
		30 26	67	SILTY SAND, fine, massive.	SM									
S17	20	14 25	68	SILT WITH SAND, fine, loose, mostly very fine sand (lake sediment).										
		38 32	69											
S18	18	21 30	70	Same.										
		34 34	71											
S19	18	14 12	72	Same.										
		25 24	73											
S20	18	19 27	74		ML									
		28 28	75											
S21	18	21 29	76											
		33 30	77											
S22	16	23 32	78											
		30 28	79											
S23	16	19 21	80	POORLY GRADED SAND WITH SILT, fine with medium, brown to gray, loose (outwash).										
		21 27	81		SP-SM									
S24 A/S24 B	14	9 19	82											
		19 16	83	SILT, brown, little fine sand, massive to indistinctly laminated (lake sediment).										
S25	18		84											
			85		ML									
			86											
			87											
			88											
		10 20	89	LEAN CLAY, dark brown (7.5YR 4/2), massive, trace fine to coarse sand, fine gravel, very stiff, cohesive, diamicton (till).	CL					3.0-4.5				
	23 24	90												

Sand appears barely wet.

Boring Number **MW-302** Use only as an attachment to Form 4400-122. Page **5** of **7**

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S26	20	12 18 21 25	91	LEAN CLAY, brown, massive, trace fine to coarse sand, fine gravel, as above (till). Same.	CL									
			92											
			93											
			94											
			95											
S27	14	17 20 22 12	96	LEAN CLAY, brown (7.5YR 5/2), massive to indistinctly laminated, trace fine gravel, red/gray laminations (lake sediment).										
			97											
			98											
			99											
			100											
S28	24	8 10 13 14	101	LEAN CLAY, grayish brown (10YR 5/2), laminated, with very thin silt partings, very stiff, hard (lake sediment). Same as above, except silt is concentrated in 1 mm layers spaced 2-6" apart.	CL									
			102											
			103											
			104											
			105											
S29	24	7 9 12 14	106	Same except dark grayish brown (10YR 4/2), laminated, fewer silt partings, very plastic (lake sediment).										
			107											
			108											
			109											
			110											
S30		7 9 12 14	111											
			112											
			113											
			114											
			115											

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL-Edgewater I43		SCS#: 25215135.20		License/Permit/Monitoring Number		Boring Number MW-303	
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State				Date Drilling Started 11/30/2015		Date Drilling Completed 12/4/2015	
Drilling Method HSA/rotary (mud)		WI Unique Well No. VV865		DNR Well ID No.		Common Well Name	
Final Static Water Level Feet		Surface Elevation 716.60 Feet		Borehole Diameter 8.0 in.			
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 625,616 N, 2,560,451 E S/C/N NE 1/4 of SE 1/4 of Section 8, T 14 N, R 23 E				Lat _____ " _____ "		Local Grid Location	
Feet <input type="checkbox"/> N		Feet <input type="checkbox"/> E		Feet <input type="checkbox"/> S		Feet <input type="checkbox"/> W	
Facility ID		County Sheboygan		County Code 60		Civil Town/City/ or Village Wilson Tn.	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S1	14	12 24	1 2	LEAN CLAY, strong brown (7.5YR 4/6), med plasticity, mottled coloring, trace coarse sand.	cl				1.5	M				
S2 A, B	14	41 22	4 5	SILTY SAND layer, fine to coarse @ 5-5.5'.	SM				0.75	M				
S3	24	47 1011	6 7	LEAN CLAY, (7.5YR 4/4), trace sand, fine to coarse, fine gravel, very stiff, firm, massive, diamicton (till).					2.8-4.0	W				
S4	18	25 79	9 10	Same.	cl				3.0	W				
S5	22	23 46	14 15						1-1.8	W				

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Zach Watson <i>[Signature]</i> for Z.W.	Firm SCS Engineers 2830 Dairy Drive Madison, WI 53718	Tel: (608) 224-2830 Fax:
--	---	-----------------------------

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-303**

Use only as an attachment to Form 4400-122.

Page **2** of **7**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			16	LEAN CLAY, (7.5YR 4/4), as above.										
S6	24	3 4 6 8	19						2.0	W				
			20											
			21											
			22											
S7	24	3 5 6 7	24	Same.										
			25						1.5- 2.0	W				
			26											
			27		cl.									
			28											
S8	24	3 6 7 8	29	Same.										
			30						1.5	W				
			31											
			32											
			33											
S9	24	3 5 7 9	34											
			35						2.2	W				
			36											
			37											
			38											
S10	6	6 9 11 13	39	Same as above, except very soft and saturated.										
			40						NA	W				

Boring Number **MW-303**

Use only as an attachment to Form 4400-122.

Page 3 of 7

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			41	LEAN CLAY, (7.5YR 4/4).										
			42											
			43											
S11	6	10 12 12 16	44											
			45								W			
			46											
			47											
			48											
S12	24	5 6 8 10	49	(no sample retained)										
			50						1.3	W				
			51											
			52		cl.									
			53											
S13	21	3 7 7 9	54	LEAN CLAY (7.5YR 4/4), fine to coarse sand, fine gravel, firm, massive, diamicton (till).										
			55						1.0	W				
			56											
			57											
			58											
S14	19	10 11 13 10	59	Same.										
			60						1.0	W				
			61											
			62											
			63											
			64											
S15	11	4 6 9 11	65						0.5	W				

Boring Number **MW-303** Use only as an attachment to Form 4400-122. Page **5** of **7**

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S22	18	35 38 23 30	91-94	Same with layers of SANDY SILT, yellowish brown (10YR 5/4), fine, loose (lake sediment).										
S23	18	19 12 12 13	94-97		CL			1.0	W					
S24	16	24 28 34 50/4	104-105	SANDY SILT, yellowish brown (10YR 5/4) fine, mostly very fine sand, loose (lake sediment).					W					
S25	12	36 50/5	105-107		ML				W					
S26	23	32 22 20 24	107-109	LEAN CLAY, with layers of SILT, SAND (lake sediment as above).				3.2	W					
S27	3	50/5	109-114		CL									
			114-115	SILTY SAND, (10YR 5/4).	SM			1.2	W					

Boring Number **MW-303**

Use only as an attachment to Form 4400-122.

Page **7** of **7**

Sample			Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)	Blow Counts							Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			141	DOLOMITE (bedrock).	DOLOMITE									
			142											
			143											
End of boring @ 143.5'														
Checked and edited by: BJS 3/30/2016														

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL-Edgewater I43		SCS#: 25215135.20		License/Permit/Monitoring Number		Boring Number MW-304	
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State				Date Drilling Started 1/25/2016		Date Drilling Completed 1/26/2016	
WI Unique Well No. VV866		DNR Well ID No.		Common Well Name		Final Static Water Level Feet	
						Surface Elevation 689.48 Feet	
						Borehole Diameter 8.0 in.	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>				Local Grid Location			
State Plane 624,204 N, 2,558,156 E S/C/N				Lat _____ "		Feet <input type="checkbox"/> N	
SW 1/4 of SE 1/4 of Section 8, T 14 N, R 23 E				Long _____ "		Feet <input type="checkbox"/> E	
						Feet <input type="checkbox"/> S	
Facility ID		County Sheboygan		County Code 60		Civil Town/City/ or Village Wilson Tn.	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S1	14	25 6 11	1-2	LEAN CLAY, brown (7.5YR 4/6), with fine to coarse sand, fine gravel.	CL				3.5	M				
S2	14	46 5 9	3-4	Same as above, except dark brown.					3.5	M				
S3	24	25 8 11	5-7	LEAN CLAY, brown (7.5YR 4/6), with silt layers, cohesive, stiff.					3.25	M				
S4	24	45 9 10	8-9	LEAN CLAY, brown (7.5YR 4/4), with fine to coarse sand, fine gravel, massive, stiff, diamicton (till). 1 inch interval of sand, fine to medium grained, brown.	CL				3.25	M				
S6	24	24 4 5	13-14	LEAN CLAY, as above (till).					1.5	M				

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Joe Larson <i>Joe Larson</i>	Firm SCS Engineers 2830 Dairy Drive Madison, WI 53718	Tel: (608) 224-2830 Fax:
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This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-304**

Use only as an attachment to Form 4400-122.

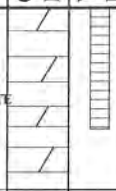
Page **2** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S7	22	3 4 4 6	18-19	LEAN CLAY, brown (7.5YR 4/4), as above (till).					1.25	M				
S8	22	2 3 5 6	23-24											
S9	24	2 4 6 7	28-29		cl.				1.0	M				
S10	24	3 5 6 9	33-34						1.0	M				
S11	24	3 6 8 12	38-39	Same with fine silt partings.					2.5	M				

Boring Number **MW-304**

Use only as an attachment to Form 4400-122.

Page **6** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S36	NA		116 117 118	DOLOMITE, gray (7.5YR 6/1), angular fragments.	DOLOMITE									
				End of boring @ 118'	<p>Logged by: Joe Larson: 0-93' Kyle Kramer: 93-118'</p> <p>Checked and edited by: BJS 3/30/2016</p>									

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL I43		SCS#: 25217032.00		License/Permit/Monitoring Number		Boring Number MW-305			
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Duerst Badger State Drilling				Date Drilling Started 1/30/2017		Date Drilling Completed 2/2/2017			
Drilling Method HSA/Rotary		WI Unique Well No. VY819		DNR Well ID No.		Common Well Name MW-305			
Final Static Water Level Feet		Surface Elevation 715.46 Feet		Borehole Diameter 6.3 in.					
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 623,435 N, 2,559,946 E S/C/N SE 1/4 of SE 1/4 of Section 8, T 14 N, R 23 E				Local Grid Location Lat _____ ' _____ " _____" Long _____ ' _____ " _____"				Feet <input type="checkbox"/> N <input type="checkbox"/> S	
Feet <input type="checkbox"/> E <input type="checkbox"/> W		Facility ID		County Sheboygan		County Code 60			
				Civil Town/City/ or Village Wilson Tn.					

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			1	TOPSOIL.											
S1	8	22 4	2	LEAN CLAY, strong brown (7.5YR 4/6).						1.75					
S2	14	48 11	5							4.5+					
S3	18	71 14	7		CL					4.5+					
S4	18	410 9	9							4.5+					

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711	Tel: (608) 224-2830 Fax:
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This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-305**

Use only as an attachment to Form 4400-122.

Page **2** of **7**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments				
Number and Type	Length: Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200					
S5	18	46 8	13-14	Same as above except, brown (7.5 YR4/3).					2.5									
S6	18	46 9	19-20	Same as above except, trace gravel.					4.5+									
S7	18	46 7	24-25		cl.				3.0									
S8	18	46 7	29-30						2.0									
																		Mud Rotary @ 15 ft bgs.

Boring Number **MW-305**

Use only as an attachment to Form 4400-122.

Page **3** of **7**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S9	18	58 9	33 34 35					2.5						
S10	18	47 9	38 39 40					2.5						
S11	18	37 8	41 42 43 44 45	CL				2.5						
S12	18	39 13	46 47 48 49 50					2.0						

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name WPL-Edgewater I43	Local Grid Location of Well 626196.3 ft. <input checked="" type="checkbox"/> N. <input type="checkbox"/> S. 2559679 ft. <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	Well Name MW-301
Facility License, Permit or Monitoring No. 02853	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input checked="" type="checkbox"/> Lat. " Long. " or	Wis. Unique Well No. VV864
Facility ID 460022090	St. Plane 626196.3 ft. N. 2559679.0 ft. E. S/C/N	DNR Well ID No.
Type of Well Well Code 12 / PZ	Section Location of Waste/Source SW 1/4 of NE 1/4 of Sec. 8, T. 14 N, R. 23 <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	Date Well Installed 1 / 14 / 2016 m m d d y y v v
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input checked="" type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Well Installed By: Name (first, last) and Firm Kevin Durst
Enf. Stds. Apply <input type="checkbox"/>	Gov. Lot Number	Badger State Drilling

- A. Protective pipe, top elevation --- 697.21 ft. MSL
- B. Well casing, top elevation --- 696.96 ft. MSL
- C. Land surface elevation --- 694.40 ft. MSL
- D. Surface seal, bottom --- 693.90 ft. MSL or --- 0.5 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

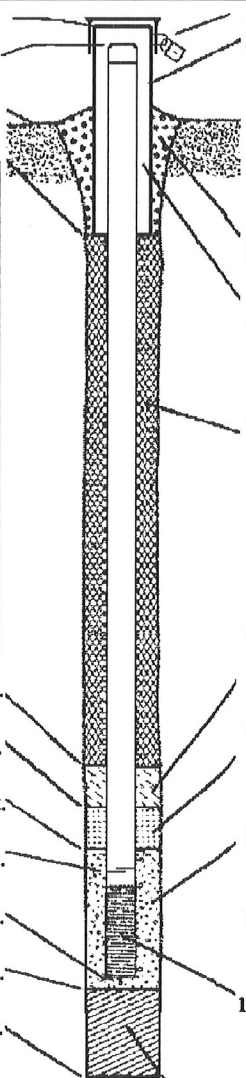
13. Sieve analysis performed? Yes No

14. Drilling method used: Rotary 50
 Hollow Stem Auger 41
 Other

15. Drilling fluid used: Water 02 Air 01
 Drilling Mud 03 None 99

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis, if required):
 Site Supply Well



- 1. Cap and lock? Yes No
- 2. Protective cover pipe:
 - a. Inside diameter: --- 4 in.
 - b. Length: --- 7 ft.
 - c. Material: Steel 04
Other
 - d. Additional protection? Yes No
If yes, describe: yes, bumper posts (3)
- 3. Surface seal: Bentonite 30
Concrete 01
Other 8 bags 3/8in Bentonite chips
- 4. Material between well casing and protective pipe: Bentonite 30
Other Ohio #5 sand- 2 bags
- 5. Annular space seal:
 - a. Granular/Chipped Bentonite 33
 - b. ___ Lbs/gal mud weight ... Bentonite-sand slurry 35
 - c. 200 Lbs/gal mud weight ... Bentonite slurry 31
 - d. ___ % Bentonite ... Bentonite-cement grout 50
 - e. ___ Ft³ volume added for any of the above
 - f. How installed: Tremie 01
Tremie pumped 02
Gravity 08
- 6. Bentonite seal:
 - a. Bentonite granules 33
 - b. 1/4 in. 3/8 in. 1/2 in. Bentonite chips 32
 - c. 2 Bags Other
- 7. Fine sand material: Manufacturer, product name & mesh size
a. Ohio #7
b. Volume added 0.5 lbs ft³
- 8. Filter pack material: Manufacturer, product name & mesh size
a. Ohio #5
b. Volume added 3 lbs ft³
- 9. Well casing: Flush threaded PVC schedule 40 23
Flush threaded PVC schedule 80 24
Other
- 10. Screen material: PVC
a. Screen type: Factory cut 11
Continuous slot 01
Other
b. Manufacturer Monoflex
c. Slot size: 0.01 in.
d. Slotted length: --- 5 ft.
- 11. Backfill material (below filter pack): None 14
Bedrock cuttings/slough

- E. Bentonite seal, top --- 566.40 ft. MSL or --- 118 ft.
- F. Fine sand, top --- 571.40 ft. MSL or --- 123 ft.
- G. Filter pack, top --- 569.40 ft. MSL or --- 125 ft.
- H. Screen joint, top --- 567.40 ft. MSL or --- 127 ft.
- I. Well bottom --- 562.40 ft. MSL or --- 132 ft.
- J. Filter pack, bottom --- 562.40 ft. MSL or --- 132 ft.
- K. Borehole, bottom --- 559.40 ft. MSL or --- 135 ft.
- L. Borehole, diameter --- 8.0 in.
- M. O.D. well casing --- 2.4 in.
- N. I.D. well casing --- 1.9 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *[Signature]* for J.L. Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718-6751

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater Waste Management
 Remediation/Redevelopment Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name WPL-143	Local Grid Location of Well 625788.4 ft. <input checked="" type="checkbox"/> N. <input type="checkbox"/> S. 2559719 ft. <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	Well Name MW-302
Facility License, Permit or Monitoring No. 02853	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input checked="" type="checkbox"/> Lat. _____ " Long. _____ or	Wis. Unique Well No. VV863
Facility ID 460022090	St. Plane 625788.4 ft. N, 2539719.0 ft. E. S/C/N	Date Well Installed 1 / 15 / 2016 m m d d y y v v y y
Type of Well Well Code 12 / PZ	Section Location of Waste/Source SW 1/4 of NE 1/4 of Sec. 8, T. 14 N, R. 23 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Kevin Durst
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number _____ Badger State Drilling

A. Protective pipe, top elevation -- 702.81 ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation -- 702.57 ft. MSL	2. Protective cover pipe: a. Inside diameter: -- 4 in.
C. Land surface elevation -- 700.24 ft. MSL	b. Length: -- 7 ft.
D. Surface seal, bottom -- 699.74 ft. MSL or -- 0.5 ft.	c. Material: Steel <input checked="" type="checkbox"/> 0.4 Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input checked="" type="checkbox"/>	d. Additional protection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: ves. bumper posts (3)
13. Sieve analysis performed? <input type="checkbox"/> Yes <input type="checkbox"/> No	3. Surface seal: Bentonite <input checked="" type="checkbox"/> 3.0 Concrete <input type="checkbox"/> 0.1 Other <input type="checkbox"/>
14. Drilling method used: Rotary <input checked="" type="checkbox"/> 5.0 Hollow Stem Auger <input checked="" type="checkbox"/> 4.1 Other <input type="checkbox"/>	4. Material between well casing and protective pipe: Bentonite <input type="checkbox"/> 3.0 Ohio #5 sand-2 bags Other <input type="checkbox"/>
15. Drilling fluid used: Water <input checked="" type="checkbox"/> 0.2 Air <input type="checkbox"/> 0.1 Drilling Mud <input type="checkbox"/> 0.3 None <input type="checkbox"/> 9.9	5. Annular space seal: a. Granular/Chipped Bentonite <input type="checkbox"/> 3.3 b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 3.5 c. 200 Lbs/gal mud weight . . . Bentonite slurry <input checked="" type="checkbox"/> 3.1 d. ___ % Bentonite Bentonite-cement grout <input type="checkbox"/> 5.0 e. ___ Ft ³ volume added for any of the above
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe _____	f. How installed: Tremie <input checked="" type="checkbox"/> 0.1 Tremie pumped <input checked="" type="checkbox"/> 0.2 Gravity <input type="checkbox"/> 0.8
17. Source of water (attach analysis, if required): Site supply well	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 3.3 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input type="checkbox"/> 3.2 c. 2 Bags Other <input type="checkbox"/>
E. Bentonite seal, top -- 572.24 ft. MSL or -- 128 ft.	7. Fine sand material: Manufacturer, product name & mesh size a. 1 bag Ohio #7 <input type="checkbox"/>
F. Fine sand, top -- 567.24 ft. MSL or -- 133 ft.	b. Volume added 0.5 ft ³
G. Filter pack, top -- 565.24 ft. MSL or -- 135 ft.	8. Filter pack material: Manufacturer, product name & mesh size a. Ohio #5 <input type="checkbox"/>
H. Screen joint, top -- 563.24 ft. MSL or -- 137 ft.	b. Volume added 3 ft ³
I. Well bottom -- 558.24 ft. MSL or -- 142 ft.	9. Well casing: Flush threaded PVC schedule 40 <input type="checkbox"/> 2.3 Flush threaded PVC schedule 80 <input checked="" type="checkbox"/> 2.4 Other <input type="checkbox"/>
J. Filter pack, bottom -- 558.24 ft. MSL or -- 142 ft.	10. Screen material: PVC
K. Borehole, bottom -- 552.24 ft. MSL or -- 148 ft.	a. Screen type: Factory cut <input type="checkbox"/> 1.1 Continuous slot <input checked="" type="checkbox"/> 0.1 Other <input type="checkbox"/>
L. Borehole, diameter -- 8.0 in.	b. Manufacturer Monoflex
M. O.D. well casing -- 2.4 in.	c. Slot size: 0.01 in.
N. I.D. well casing -- 1.9 in.	d. Slotted length: -- 5 ft.
	11. Backfill material (below filter pack): None <input type="checkbox"/> 1.4 Limestone Chips Other <input checked="" type="checkbox"/>

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Kevin Durst* for M.H. Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718-6751

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater Remediation/Redevelopment Waste Management Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name WPL-143	Local Grid Location of Well 625615.5 ft. <input checked="" type="checkbox"/> N. <input type="checkbox"/> S. 2560451 ft. <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	Well Name MW-303
Facility License, Permit or Monitoring No. 02853	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input checked="" type="checkbox"/> N. <input type="checkbox"/> S. <input type="checkbox"/> E. <input type="checkbox"/> W. Lat. " Long. " or " "	Wis. Unique Well No. <input type="checkbox"/> VV865 <input type="checkbox"/> DNR Well ID No. <input type="checkbox"/>
Facility ID 460022090	St. Plane 625615.5 ft. N. 2560451.0 ft. E. S/C/N	Date Well Installed 12 / 03 / 2015 m m d d y y v v v y
Type of Well Well Code 12 / PZ	Section Location of Waste/Source SW ₁ / ₄ of NE ₁ / ₄ of Sec. 8, T. 14 N, R. 23 <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	Well Installed By: Name (first, last) and Firm Kevin Durst Badger State Drilling
Distance from Waste/Source _____ ft.	Enf. Stds. Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known
		Gov. Lot Number _____

- A. Protective pipe, top elevation -- 719.48 ft. MSL
- B. Well casing, top elevation -- 719.25 ft. MSL
- C. Land surface elevation -- 716.60 ft. MSL
- D. Surface seal, bottom -- 716.10 ft. MSL or -- .50 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

13. Sieve analysis performed? Yes No

14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
 Other

15. Drilling fluid used: Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis, if required):
 Site supply well

- 1. Cap and lock? Yes No
- 2. Protective cover pipe:
 - a. Inside diameter: -- 6 in.
 - b. Length: -- 5 ft.
 - c. Material: Steel 0 4
Other
 - d. Additional protection? Yes No
If yes, describe: ves. bumper posts (3)
- 3. Surface seal: Bentonite 3 0
Concrete 0 1
Other
- 4. Material between well casing and protective pipe: Bentonite 3 0
Ohio #5 sand Other
- 5. Annular space seal:
 - a. Granular/Chipped Bentonite 3 3
 - b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry 3 5
 - c. 150 Lbs/gal mud weight Bentonite slurry 3 1
 - d. ___ % Bentonite Bentonite-cement grout 5 0
 - e. ___ Ft³ volume added for any of the above
 - f. How installed: Tremie 0 1
Tremie pumped 0 2
Gravity 0 8
- 6. Bentonite seal:
 - a. Bentonite granules 3 3
 - b. 1/4 in. 3/8 in. 1/2 in. Bentonite chips 3 2
 - c. ___ Other
- 7. Fine sand material: Manufacturer, product name & mesh size
 a. Ohio #7
 b. Volume added 0.5 ft³
- 8. Filter pack material: Manufacturer, product name & mesh size
 a. Ohio #5
 b. Volume added 1.50 ft³
- 9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
- 10. Screen material: PVC
 a. Screen type: Factory cut 1 1
 Continuous slot 0 1
 Other
- b. Manufacturer Model flex
 c. Slot size: 0.01 in.
 d. Slotted length: -- 5 ft.
- 11. Backfill material (below filter pack): None 1 4
 Native Other

- E. Bentonite seal, top -- 588.60 ft. MSL or -- 128 ft.
- F. Fine sand, top -- 583.60 ft. MSL or -- 133 ft.
- G. Filter pack, top -- 581.60 ft. MSL or -- 135 ft.
- H. Screen joint, top -- 579.60 ft. MSL or -- 137 ft.
- I. Well bottom -- 574.60 ft. MSL or -- 142 ft.
- J. Filter pack, bottom -- 574.60 ft. MSL or -- 142 ft.
- K. Borehole, bottom -- 573.60 ft. MSL or -- 143 ft.
- L. Borehole, diameter -- 6.0 in.
- M. O.D. well casing -- 2.4 in.
- N. I.D. well casing -- 1.9 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Zach Watson* Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718-6751

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name WPL-143	Local Grid Location of Well 624204 ft. <input checked="" type="checkbox"/> N. 2558156 ft. <input checked="" type="checkbox"/> E.	Well Name MW-304
Facility License, Permit or Monitoring No. 02853	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input checked="" type="checkbox"/> Lat. " Long. " or	Wis. Unique Well No. <input type="checkbox"/> DNR Well ID No. <input type="checkbox"/>
Facility ID 460022090	St. Plane 624204.0 ft. N, 2558156.0 ft. E. S/C/N	Date Well Installed 1 / 26 / 2016 m m d d y y y y
Type of Well Well Code 12 / PZ	Section Location of Waste/Source SW 1/4 of NE 1/4 of Sec. 8, T. 14 N, R. 23 <input checked="" type="checkbox"/> E <input checked="" type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Kevin Duerst
Distance from Waste/Source ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number
Enf. Stds. Apply <input type="checkbox"/>		Badger State Drilling

A. Protective pipe, top elevation	692.38 ft. MSL	1. Cap and lock?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation	691.97 ft. MSL	2. Protective cover pipe:	
C. Land surface elevation	689.48 ft. MSL	a. Inside diameter:	6 in.
D. Surface seal, bottom	688.98 ft. MSL or 0.5 ft.	b. Length:	5 ft.
12. USCS classification of soil near screen:		c. Material:	Steel <input checked="" type="checkbox"/> 0.4 Other <input type="checkbox"/>
GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/>		d. Additional protection?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/>		If yes, describe:	yes, bumper posts
Bedrock <input checked="" type="checkbox"/>		3. Surface seal:	Bentonite <input checked="" type="checkbox"/> 3.0 Concrete <input type="checkbox"/> 0.1 Other <input type="checkbox"/>
13. Sieve analysis performed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. Material between well casing and protective pipe:	Bentonite <input type="checkbox"/> 3.0 Other <input checked="" type="checkbox"/>
14. Drilling method used:	Rotary <input checked="" type="checkbox"/> 5.0 Hollow Stem Auger <input checked="" type="checkbox"/> 4.1 Other <input type="checkbox"/>	5. Annular space seal:	a. Granular/Chipped Bentonite <input type="checkbox"/> 3.3 b. Lbs/gal mud weight... Bentonite-sand slurry <input type="checkbox"/> 3.5 c. 200 Lbs/gal mud weight... Bentonite slurry <input type="checkbox"/> 3.1 d. % Bentonite... Bentonite-cement grout <input type="checkbox"/> 5.0 e. Ft ³ volume added for any of the above
15. Drilling fluid used: Water <input checked="" type="checkbox"/> 0.2 Air <input type="checkbox"/> 0.1 Drilling Mud <input type="checkbox"/> 0.3 None <input checked="" type="checkbox"/> 9.9		f. How installed:	Tremie <input checked="" type="checkbox"/> 0.1 Tremie pumped <input type="checkbox"/> 0.2 Gravity <input type="checkbox"/> 0.8
16. Drilling additives used?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Bentonite seal:	a. Bentonite granules <input type="checkbox"/> 3.3 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 3.2 c. Black Hills Bentonite Other <input type="checkbox"/>
Describe		7. Fine sand material: Manufacturer, product name & mesh size	a. Ohio #5 <input type="checkbox"/>
17. Source of water (attach analysis, if required): Site supply well		b. Volume added	0.5 ft ³
E. Bentonite seal, top	586.48 ft. MSL or 103 ft.	8. Filter pack material: Manufacturer, product name & mesh size	a. Ohio #7 <input type="checkbox"/>
F. Fine sand, top	581.48 ft. MSL or 108 ft.	b. Volume added	1 ft ³
G. Filter pack, top	579.48 ft. MSL or 110 ft.	9. Well casing:	Flush threaded PVC schedule 40 <input type="checkbox"/> 2.3 Flush threaded PVC schedule 80 <input checked="" type="checkbox"/> 2.4 Other <input type="checkbox"/>
H. Screen joint, top	577.48 ft. MSL or 112 ft.	10. Screen material:	PVC
I. Well bottom	572.48 ft. MSL or 117 ft.	a. Screen type:	Factory cut <input checked="" type="checkbox"/> 1.1 Continuous slot <input type="checkbox"/> 0.1 Other <input type="checkbox"/>
J. Filter pack, bottom	572.48 ft. MSL or 117 ft.	b. Manufacturer	Monoflex
K. Borehole, bottom	571.48 ft. MSL or 118 ft.	c. Slot size:	0.01 in.
L. Borehole, diameter	8.0 in.	d. Slotted length:	5 ft.
M. O.D. well casing	2.4 in.	11. Backfill material (below filter pack):	None <input checked="" type="checkbox"/> 1.4 Other <input type="checkbox"/>
N. I.D. well casing	1.9 in.		

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: *Tyler [Signature]* for Joe Larson Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718-6751

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Facility/Project Name WPL - Edgewater I43	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name MW-305
Facility License, Permit or Monitoring No.	Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input checked="" type="checkbox"/> Lat. _____ " Long. _____ " or _____ "	Wis. Unique Well No. <u>VY819</u> DNR Well ID No. _____
Facility ID	St. Plane <u>623435.13</u> ft. N, <u>2559945.85</u> ft. E. S/C/N	Date Well Installed <u>2</u> / <u>2</u> / <u>2017</u> m m d d y y y y
Type of Well Well Code <u>12</u> / <u>PZ</u>	Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____ T. _____ N, R. _____ <input type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Kevin Duerst
Distance from Waste/Source _____ ft.	Enf. Stds. Apply <input checked="" type="checkbox"/>	Gov. Lot Number _____
Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known		Badger State Drilling

A. Protective pipe, top elevation --- 717.88 ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation --- 717.67 ft. MSL	2. Protective cover pipe: a. Inside diameter: _____ 6.0 in. b. Length: _____ 5 ft.
C. Land surface elevation --- 715.46 ft. MSL	c. Material: Steel <input checked="" type="checkbox"/> 0 4 Other <input type="checkbox"/>
D. Surface seal, bottom --- 713.46 ft. MSL or --- 2 ft.	d. Additional protection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: yes, bumper posts (3)
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input checked="" type="checkbox"/>	3. Surface seal: Bentonite <input type="checkbox"/> 3 0 Concrete <input checked="" type="checkbox"/> 0 1 Other <input type="checkbox"/>
13. Sieve analysis performed? <input type="checkbox"/> Yes <input type="checkbox"/> No	4. Material between well casing and protective pipe: Bentonite <input type="checkbox"/> 3 0 #5 R.W. Sidley Other <input checked="" type="checkbox"/>
14. Drilling method used: Rotary <input checked="" type="checkbox"/> 5 0 Hollow Stem Auger <input checked="" type="checkbox"/> 4 1 Other <input type="checkbox"/>	5. Annular space seal: a. Granular/Chipped Bentonite <input type="checkbox"/> 3 3 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 3 5 c. _____ Lbs/gal mud weight Bentonite slurry <input checked="" type="checkbox"/> 3 1 d. _____ % Bentonite Bentonite-cement grout <input type="checkbox"/> 5 0 e. _____ 9.4 Ft ³ volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 0 1 Tremie pumped <input type="checkbox"/> 0 2 Gravity <input type="checkbox"/> 0 8
15. Drilling fluid used: Water <input checked="" type="checkbox"/> 0 2 Air <input type="checkbox"/> 0 1 Drilling Mud <input type="checkbox"/> 0 3 None <input type="checkbox"/> 9 9	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 3 3 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input type="checkbox"/> 3 2 c. 100 lbs Other <input type="checkbox"/>
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe _____	7. Fine sand material: Manufacturer, product name & mesh size a. #7 R.W. Sidley <input type="checkbox"/> b. Volume added _____ 0.5 ft ³
17. Source of water (attach analysis, if required): Site Supply Well	8. Filter pack material: Manufacturer, product name & mesh size a. #5 R.W. Sidley <input type="checkbox"/> b. Volume added _____ 1.5 ft ³
E. Bentonite seal, top --- 609.46 ft. MSL or --- 106 ft.	9. Well casing: Flush threaded PVC schedule 40 <input type="checkbox"/> 2 3 Flush threaded PVC schedule 80 <input type="checkbox"/> 2 4 Other <input type="checkbox"/>
F. Fine sand, top --- 603.46 ft. MSL or --- 112 ft.	10. Screen material: PVC a. Screen type: Factory cut <input type="checkbox"/> 1 1 Continuous slot <input checked="" type="checkbox"/> 0 1 Other <input type="checkbox"/>
G. Filter pack, top --- 602.46 ft. MSL or --- 113 ft.	b. Manufacturer _____ Monoflex
H. Screen joint, top --- 600.46 ft. MSL or --- 115 ft.	c. Slot size: _____ 0.01 in.
I. Well bottom --- 595.46 ft. MSL or --- 120 ft.	d. Slotted length: _____ 5 ft.
J. Filter pack, bottom --- 594.46 ft. MSL or --- 121 ft.	11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 1 4 Other <input type="checkbox"/>
K. Borehole, bottom --- 594.46 ft. MSL or --- 121 ft.	
L. Borehole, diameter --- 6.25 in.	
M. O.D. well casing --- 2.4 in.	
N. I.D. well casing --- 1.9 in.	

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [Signature] Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

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Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name Alliant Energy I-43	County Name Sheboygan	Well Name MW-301	
Facility License, Permit or Monitoring Number	County Code 59	Wis. Unique Well Number VV-864	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other

3. Time spent developing well _____ 190 min.

4. Depth of well (from top of well casing) _____ 132 9 ft.

5. Inside diameter of well _____ 2 0 in.

6. Volume of water in filter pack and well casing _____ 18 2 gal.

7. Volume of water removed from well _____ 315 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

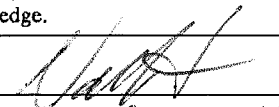
17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 46 _____ 49 ft.	_____ 46 _____ 34 ft.
Date	b. _____ 02 / _____ 16 / _____ 2016	_____ 02 / _____ 16 / _____ 2016
Time	c. _____ 12 : 50 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	_____ 16 : 00 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____
	Medium brown color	Medium brown color
	Very turbid	Slightly to moderately turbid
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	_____ mg/l	_____ mg/l
15. COD	_____ mg/l	_____ mg/l

16. Well developed by: Name (first, last) and Firm
 First Name: Nate Last Name: Harms
 Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Name and Address of Facility Contact /Owner/Responsible Party
 First Name: Jim Last Name: Jakubiak
 Facility/Firm: WP&L Alliant Energy
 Street: 3739 Lakeshore Drive
 City/State/Zip: Sheboygan, WI 53082

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 
 Print Name: Nate Harms
 Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name Alliant Energy I-43	County Name Sheboygan	Well Name MW-302	
Facility License, Permit or Monitoring Number	County Code 59	Wis. Unique Well Number VV-863	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other _____

3. Time spent developing well _____ 145 min.

4. Depth of well (from top of well casing) _____ 143.8 ft.

5. Inside diameter of well _____ 2.0 in.

6. Volume of water in filter pack and well casing _____ 19.3 gal.

7. Volume of water removed from well _____ 296 gal.

8. Volume of water added (if any) _____ - gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 51.23 ft.	_____ 51.24 ft.
Date	b. <u>02</u> / <u>16</u> / <u>2016</u>	<u>02</u> / <u>16</u> / <u>2016</u>
	m m d d y y y y	m m d d y y y y
Time	c. _____ 11:55 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	_____ 14:20 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____
	Medium brown color	Medium brown color
	Very turbid	Very slight turbidity

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids _____ mg/l _____ mg/l

15. COD _____ mg/l _____ mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Nate Last Name: Harms

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Name and Address of Facility Contact/Owner/Responsible Party

First Name: Jim Last Name: Jakubiak

Facility/Firm: WP&L Alliant Energy

Street: 3739 Lakeshore Drive

City/State/Zip: Sheboygan, WI 53082

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 

Print Name: Nate Harms

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name Alliant Energy I-43	County Name Sheboygan	Well Name MW-303	
Facility License, Permit or Monitoring Number	County Code 59	Wis. Unique Well Number VV-865	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other

3. Time spent developing well _____ 150 min.

4. Depth of well (from top of well casing) _____ 145.7 ft.

5. Inside diameter of well _____ 2.0 in.

6. Volume of water in filter pack and well casing _____ 18.4 gal.

7. Volume of water removed from well _____ 250 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

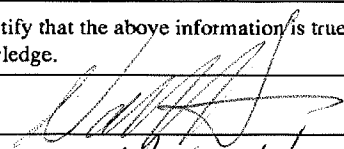
17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 67 _____ 86 ft.	_____ 67 _____ 86 ft.
Date	b. <u>02</u> / <u>16</u> / <u>2016</u>	<u>02</u> / <u>16</u> / <u>2016</u>
	m m d d y y y y	m m d d y y y y
Time	c. _____ 15 : 10 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	_____ 17 : 40 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____ Medium brown color Very turbid _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____ Light brown color very slight turbidity _____
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	_____ mg/l	_____ mg/l
15. COD	_____ mg/l	_____ mg/l

16. Well developed by: Name (first, last) and Firm
First Name: Nate Last Name: Harms
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Name and Address of Facility Contact /Owner/Responsible Party
First Name: Jim Last Name: Jakubiak
Facility/Firm: WP&L Alliant Energy
Street: 3739 Lakeshore Drive
City/State/Zip: Sheboygan, WI 53082

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 
Print Name: Nate Harms
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name Alliant Energy I-43	County Name Sheboygan	Well Name MW-304	
Facility License, Permit or Monitoring Number	County Code 59	Wis. Unique Well Number VV-866	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other

3. Time spent developing well _____ 120 min.

4. Depth of well (from top of well casing) _____ 145.7 ft.

5. Inside diameter of well _____ 2.0 in.

6. Volume of water in filter pack and well casing _____ 18.4 gal.

7. Volume of water removed from well _____ 240 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 39 _____ 15 ft.	_____ 39 _____ 39 ft.
Date	b. <u>02</u> / <u>16</u> / <u>2016</u>	<u>02</u> / <u>16</u> / <u>2016</u>
	m m d d y y y y	m m d d y y y y
Time	c. _____ 16 : 40 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	_____ 18 : 40 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe)	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe)
	Medium brown color	Water mostly clear
	Very turbid	Very slight turbidity

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended _____ mg/l _____ mg/l
solids

15. COD _____ mg/l _____ mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Nate Last Name: Harms

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Name and Address of Facility Contact /Owner/Responsible Party

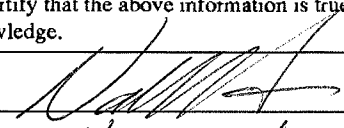
First Name: Jim Last Name: Jakubiak

Facility/Firm: WP&L Alliant Energy

Street: 3739 Lakeshore Drive

City/State/Zip: Sheboygan, WI 53082

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 

Print Name: Nate Harms

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL-I-43	County Name Sheyboygan	Well Name MW-305	
Facility License, Permit or Monitoring Number 02853	County Code 59	Wis. Unique Well Number VY819	DNR Well ID Number _____

1. Can this well be purged dry? Yes No

2. Well development method

surged with bailer and bailed	<input type="checkbox"/>	4 1
surged with bailer and pumped	<input checked="" type="checkbox"/>	6 1
surged with block and bailed	<input type="checkbox"/>	4 2
surged with block and pumped	<input type="checkbox"/>	6 2
surged with block, bailed and pumped	<input type="checkbox"/>	7 0
compressed air	<input type="checkbox"/>	2 0
bailed only	<input type="checkbox"/>	1 0
pumped only	<input type="checkbox"/>	5 1
pumped slowly	<input type="checkbox"/>	5 0
Other _____	<input type="checkbox"/>	

3. Time spent developing well _____ 162 min.

4. Depth of well (from top of well casing) _____ 122.97 ft.

5. Inside diameter of well _____ 1.9 in.

6. Volume of water in filter pack and well casing _____ 14.16 gal.

7. Volume of water removed from well _____ 135.0 gal.

8. Volume of water added (if any) _____ - gal.

9. Source of water added _____ NA

10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 59 _____ 56 ft.	_____ 59 _____ 46 ft.
Date	b. <u>2</u> / <u>7</u> / <u>2017</u> m m d d y y y y	<u>2</u> / <u>7</u> / <u>2017</u> m m d d y y y y
Time	c. _____ 11:00 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	_____ 2:05 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	_____ mg/l	_____ mg/l
15. COD	_____ mg/l	_____ mg/l
16. Well developed by: Name (first, last) and Firm		
First Name: Kyle		Last Name: Kramer
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718		

17. Additional comments on development:
Water clarity was clear before ten well volumes.

Name and Address of Facility Contact/Owner/Responsible Party


First Name: Jim Last Name: Jakubiak

Facility/Firm: Wisconsin Power and Light

Street: 3739 Lakeshore Drive


City/State/Zip: Sheyboygan, WI 53081

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 

Print Name: Kyle Kramer

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718



Appendix C
Laboratory Reports

C1 April 2021 Detection Monitoring

May 03, 2021

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

Dear Meghan Blodgett:

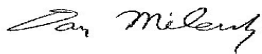
Enclosed are the analytical results for sample(s) received by the laboratory on April 16, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Green Bay

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

Sincerely,



Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS
Nicole Kron, SCS ENGINEERS
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25216069 CCR RULE I-43

Pace Project No.: 40225278

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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SAMPLE SUMMARY

Project: 25216069 CCR RULE I-43

Pace Project No.: 40225278

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40225278001	MW-301	Water	04/13/21 14:15	04/16/21 07:45
40225278002	MW-302	Water	04/13/21 14:40	04/16/21 07:45
40225278003	MW-303	Water	04/13/21 13:10	04/16/21 07:45
40225278004	MW-304	Water	04/13/21 11:45	04/16/21 07:45
40225278005	MW-305	Water	04/13/21 12:30	04/16/21 07:45
40225278006	FIELD BLANK	Water	04/13/21 00:00	04/16/21 07:45

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SAMPLE ANALYTE COUNT

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40225278001	MW-301	EPA 6020	KXS	2
			VGC	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40225278002	MW-302	EPA 6020	KXS	2
			VGC	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40225278003	MW-303	EPA 6020	KXS	2
			VGC	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40225278004	MW-304	EPA 6020	KXS	2
			VGC	7
		SM 2540C	JXM	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40225278005	MW-305	EPA 6020	KXS	2
			VGC	7
		SM 2540C	JXM	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40225278006	FIELD BLANK	EPA 6020	KXS	2
			SM 2540C	JXM
		EPA 9040	ALY	1
		EPA 300.0	HMB	3

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

Sample: MW-301 **Lab ID: 40225278001** Collected: 04/13/21 14:15 Received: 04/16/21 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Green Bay							
Boron	132	ug/L	10.0	3.0	1	04/20/21 06:26	04/22/21 15:11	7440-42-8	
Calcium	53900	ug/L	254	76.2	1	04/20/21 06:26	04/22/21 15:11	7440-70-2	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	8.48	Std. Units			1		04/13/21 14:15		
Field Specific Conductance	387	umhos/cm			1		04/13/21 14:15		
Oxygen, Dissolved	0.2	mg/L			1		04/13/21 14:15	7782-44-7	
REDOX	-16	mV			1		04/13/21 14:15		
Turbidity	179.00	NTU			1		04/13/21 14:15		
Static Water Level	654.56	feet			1		04/13/21 14:15		
Temperature, Water (C)	9.1	deg C			1		04/13/21 14:15		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	238	mg/L	20.0	8.7	1		04/20/21 12:37		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.0	Std. Units	0.10	0.010	1		04/19/21 10:18		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	3.9	mg/L	2.0	0.43	1		04/30/21 13:02	16887-00-6	
Fluoride	0.64	mg/L	0.32	0.095	1		04/30/21 13:02	16984-48-8	
Sulfate	10.2	mg/L	2.0	0.44	1		04/30/21 13:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

Sample: MW-302 **Lab ID: 40225278002** Collected: 04/13/21 14:40 Received: 04/16/21 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Green Bay							
Boron	121	ug/L	10.0	3.0	1	04/20/21 06:26	04/22/21 15:18	7440-42-8	
Calcium	28700	ug/L	254	76.2	1	04/20/21 06:26	04/22/21 15:18	7440-70-2	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	8.36	Std. Units			1		04/13/21 14:40		
Field Specific Conductance	412	umhos/cm			1		04/13/21 14:40		
Oxygen, Dissolved	0.4	mg/L			1		04/13/21 14:40	7782-44-7	
REDOX	189	mV			1		04/13/21 14:40		
Turbidity	19.6	NTU			1		04/13/21 14:40		
Static Water Level	654.57	feet			1		04/13/21 14:40		
Temperature, Water (C)	9.2	deg C			1		04/13/21 14:40		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	232	mg/L	20.0	8.7	1		04/20/21 12:37		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.0	Std. Units	0.10	0.010	1		04/19/21 10:20		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	4.1	mg/L	2.0	0.43	1		04/30/21 13:16	16887-00-6	
Fluoride	0.76	mg/L	0.32	0.095	1		04/30/21 13:16	16984-48-8	
Sulfate	17.4	mg/L	2.0	0.44	1		04/30/21 13:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

Sample: MW-303 **Lab ID: 40225278003** Collected: 04/13/21 13:10 Received: 04/16/21 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	84.7	ug/L	10.0	3.0	1	04/20/21 06:26	04/22/21 15:25	7440-42-8	
Calcium	29600	ug/L	254	76.2	1	04/20/21 06:26	04/22/21 15:25	7440-70-2	
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	8.26	Std. Units			1		04/13/21 13:10		
Field Specific Conductance	475	umhos/cm			1		04/13/21 13:10		
Oxygen, Dissolved	0.5	mg/L			1		04/13/21 13:10	7782-44-7	
REDOX	154	mV			1		04/13/21 13:10		
Turbidity	<0.02	NTU			1		04/13/21 13:10		
Static Water Level	654.53	feet			1		04/13/21 13:10		
Temperature, Water (C)	9.4	deg C			1		04/13/21 13:10		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	260	mg/L	20.0	8.7	1		04/20/21 12:37		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.0	Std. Units	0.10	0.010	1		04/19/21 10:21		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	4.5	mg/L	2.0	0.43	1		04/30/21 13:30	16887-00-6	
Fluoride	0.62	mg/L	0.32	0.095	1		04/30/21 13:30	16984-48-8	
Sulfate	25.6	mg/L	2.0	0.44	1		04/30/21 13:30	14808-79-8	

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ANALYTICAL RESULTS

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

Sample: MW-304 **Lab ID: 40225278004** Collected: 04/13/21 11:45 Received: 04/16/21 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	91.7	ug/L	10.0	3.0	1	04/20/21 06:26	04/22/21 15:32	7440-42-8	
Calcium	19700	ug/L	254	76.2	1	04/20/21 06:26	04/22/21 15:32	7440-70-2	
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	8.31	Std. Units			1		04/13/21 11:45		
Field Specific Conductance	403	umhos/cm			1		04/13/21 11:45		
Oxygen, Dissolved	0.5	mg/L			1		04/13/21 11:45	7782-44-7	
REDOX	216	mV			1		04/13/21 11:45		
Turbidity	<0.02	NTU			1		04/13/21 11:45		
Static Water Level	656.36	feet			1		04/13/21 11:45		
Temperature, Water (C)	9.1	deg C			1		04/13/21 11:45		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	224	mg/L	20.0	8.7	1		04/20/21 15:01		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.0	Std. Units	0.10	0.010	1		04/19/21 10:22		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	2.1	mg/L	2.0	0.43	1		04/30/21 17:49	16887-00-6	
Fluoride	0.53	mg/L	0.32	0.095	1		04/30/21 17:49	16984-48-8	
Sulfate	15.3	mg/L	2.0	0.44	1		04/30/21 17:49	14808-79-8	

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ANALYTICAL RESULTS

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

Sample: MW-305 **Lab ID: 40225278005** Collected: 04/13/21 12:30 Received: 04/16/21 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	66.6	ug/L	10.0	3.0	1	04/20/21 06:26	04/22/21 15:38	7440-42-8	
Calcium	86800	ug/L	254	76.2	1	04/20/21 06:26	04/22/21 15:38	7440-70-2	
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	7.76	Std. Units			1		04/13/21 12:30		
Field Specific Conductance	891	umhos/cm			1		04/13/21 12:30		
Oxygen, Dissolved	0.8	mg/L			1		04/13/21 12:30	7782-44-7	
REDOX	128	mV			1		04/13/21 12:30		
Turbidity	0.93	NTU			1		04/13/21 12:30		
Static Water Level	659.69	feet			1		04/13/21 12:30		
Temperature, Water (C)	9.4	deg C			1		04/13/21 12:30		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	540	mg/L	20.0	8.7	1		04/20/21 15:04		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.6	Std. Units	0.10	0.010	1		04/19/21 10:27		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	25.3	mg/L	2.0	0.43	1		04/30/21 19:07	16887-00-6	
Fluoride	0.67	mg/L	0.32	0.095	1		04/30/21 19:07	16984-48-8	
Sulfate	127	mg/L	20.0	4.4	10		04/30/21 22:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25216069 CCR RULE I-43

Pace Project No.: 40225278

Sample: FIELD BLANK **Lab ID: 40225278006** Collected: 04/13/21 00:00 Received: 04/16/21 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<3.0	ug/L	10.0	3.0	1	04/20/21 06:26	04/22/21 12:33	7440-42-8	
Calcium	261	ug/L	254	76.2	1	04/20/21 06:26	04/22/21 12:33	7440-70-2	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		04/20/21 15:04		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.5	Std. Units	0.10	0.010	1		04/19/21 10:29		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<0.43	mg/L	2.0	0.43	1		04/30/21 19:21	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		04/30/21 19:21	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		04/30/21 19:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

QC Batch: 382877 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40225278001, 40225278002, 40225278003, 40225278004, 40225278005, 40225278006

METHOD BLANK: 2208603 Matrix: Water
Associated Lab Samples: 40225278001, 40225278002, 40225278003, 40225278004, 40225278005, 40225278006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	04/22/21 12:26	
Calcium	ug/L	<76.2	254	04/22/21 12:26	

LABORATORY CONTROL SAMPLE: 2208604

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	500	476	95	80-120	
Calcium	ug/L	5000	5040	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2208605 2208606

Parameter	Units	40225338001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	299	500	500	747	742	90	89	75-125	1	20	
Calcium	ug/L	138000	5000	5000	144000	144000	110	128	75-125	1	20 P6	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

QC Batch: 382941 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40225278001, 40225278002, 40225278003

METHOD BLANK: 2208850 Matrix: Water
Associated Lab Samples: 40225278001, 40225278002, 40225278003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/20/21 12:31	

LABORATORY CONTROL SAMPLE: 2208851

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	564	542	96	80-120	

SAMPLE DUPLICATE: 2208852

Parameter	Units	40225218004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	140	140	0	10	

SAMPLE DUPLICATE: 2208853

Parameter	Units	40225218010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	530	556	5	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

QC Batch: 382972 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40225278004, 40225278005, 40225278006

METHOD BLANK: 2209087 Matrix: Water
Associated Lab Samples: 40225278004, 40225278005, 40225278006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/20/21 14:59	

LABORATORY CONTROL SAMPLE: 2209088

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	564	554	98	80-120	

SAMPLE DUPLICATE: 2209089

Parameter	Units	40225276001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	472	486	3	10	

SAMPLE DUPLICATE: 2209090

Parameter	Units	40225343004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	850	808	5	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25216069 CCR RULE I-43

Pace Project No.: 40225278

QC Batch: 382737

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40225278001, 40225278002, 40225278003, 40225278004, 40225278005, 40225278006

SAMPLE DUPLICATE: 2207896

Parameter	Units	40225270004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.3	6.4	1	20	H6

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

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QUALITY CONTROL DATA

Project: 25216069 CCR RULE I-43

Pace Project No.: 40225278

QC Batch: 383702	Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0	Analysis Description: 300.0 IC Anions
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40225278001, 40225278002, 40225278003

METHOD BLANK: 2213287 Matrix: Water

Associated Lab Samples: 40225278001, 40225278002, 40225278003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	04/30/21 01:17	
Fluoride	mg/L	<0.095	0.32	04/30/21 01:17	
Sulfate	mg/L	<0.44	2.0	04/30/21 01:17	

LABORATORY CONTROL SAMPLE: 2213288

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.5	108	90-110	
Fluoride	mg/L	2	2.1	107	90-110	
Sulfate	mg/L	20	21.6	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2213289 2213290

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40225270001 Result	Spike Conc.	Spike Conc.	Result								
Chloride	mg/L	390	400	400	816	808	107	105	90-110	1	15		
Fluoride	mg/L	<0.095	2	2	1.8	1.9	91	93	90-110	1	15		
Sulfate	mg/L	30.3	20	20	50.5	50.7	101	102	90-110	0	15		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

QC Batch: 383892 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40225278004, 40225278005, 40225278006

METHOD BLANK: 2214475 Matrix: Water

Associated Lab Samples: 40225278004, 40225278005, 40225278006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	04/30/21 17:21	
Fluoride	mg/L	<0.095	0.32	04/30/21 17:21	
Sulfate	mg/L	<0.44	2.0	04/30/21 17:21	

LABORATORY CONTROL SAMPLE: 2214476

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.3	102	90-110	
Fluoride	mg/L	2	2.0	100	90-110	
Sulfate	mg/L	20	20.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2213291 2213292

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40225302001 Result	Spike Conc.	Spike Conc.	Result								
Chloride	mg/L	437	400	400	844	857	102	105	90-110	1	15		
Fluoride	mg/L	<1.9	40	40	32.6	31.7	77	75	90-110	3	15	M0	
Sulfate	mg/L	171	400	400	594	597	106	106	90-110	0	15		

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QUALIFIERS

Project: 25216069 CCR RULE I-43

Pace Project No.: 40225278

DEFINITIONS

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

ND - Not Detected at or above LOD.

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

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

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216069 CCR RULE I-43
Pace Project No.: 40225278

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40225278001	MW-301	EPA 3010	382877	EPA 6020	382963
40225278002	MW-302	EPA 3010	382877	EPA 6020	382963
40225278003	MW-303	EPA 3010	382877	EPA 6020	382963
40225278004	MW-304	EPA 3010	382877	EPA 6020	382963
40225278005	MW-305	EPA 3010	382877	EPA 6020	382963
40225278006	FIELD BLANK	EPA 3010	382877	EPA 6020	382963
40225278001	MW-301				
40225278002	MW-302				
40225278003	MW-303				
40225278004	MW-304				
40225278005	MW-305				
40225278001	MW-301	SM 2540C	382941		
40225278002	MW-302	SM 2540C	382941		
40225278003	MW-303	SM 2540C	382941		
40225278004	MW-304	SM 2540C	382972		
40225278005	MW-305	SM 2540C	382972		
40225278006	FIELD BLANK	SM 2540C	382972		
40225278001	MW-301	EPA 9040	382737		
40225278002	MW-302	EPA 9040	382737		
40225278003	MW-303	EPA 9040	382737		
40225278004	MW-304	EPA 9040	382737		
40225278005	MW-305	EPA 9040	382737		
40225278006	FIELD BLANK	EPA 9040	382737		
40225278001	MW-301	EPA 300.0	383702		
40225278002	MW-302	EPA 300.0	383702		
40225278003	MW-303	EPA 300.0	383702		
40225278004	MW-304	EPA 300.0	383892		
40225278005	MW-305	EPA 300.0	383892		
40225278006	FIELD BLANK	EPA 300.0	383892		

REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: SCS Engineers
 Branch/Location: Madison, WI
 Project Contact: Meghan Blodgett
 Phone: 608-216-7362
 Project Number: 25216069
 Project Name: CR Rule I-43
 Project State: WI
 Sampled By (Print): Michael Kraut
 Sampled By (Sign): *[Signature]*
 PO #:
 Regulatory Program:



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

40225278

CHAIN OF CUSTODY

Preservation Codes
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

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

Y/N	N	N	N															
Pick Letter	D	A	A															
Analyses Requested	Metals - B+C		PH	TDS, Cl, F, SO4														

Data Package Options (billable)
 EPA Level III
 EPA Level IV

MS/MSD
 On your sample (billable)
 NOT needed on your sample

Matrix Codes
 A = Air W = Water
 B = Biota DW = Drinking Water
 C = Charcoal GW = Ground Water
 O = Oil SW = Surface Water
 S = Soil WW = Waste Water
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	Analysis Requested
		DATE	TIME		
001	MW-301	4/13	1415	GW	[X]
002	MW-302	1	1440		
003	MW-303	1	1310		
004	MW-304	1	1145		
005	MW-305	1	1230		
006	Field Blank			W	

Quote #:
 Mail To Contact:
 Mail To Company:
 Mail To Address:
 Invoice To Contact: SCS Engineers
 Invoice To Company:
 Invoice To Address: 2830 Dairy Dr. Madison, WI 53718
 Invoice To Phone:
 CLIENT COMMENTS:
 LAB COMMENTS (Lab Use Only):
 Profile #:

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)
 Date Needed:
 Transmit Prelim Rush Results by (complete what you want):
 Email #1:
 Email #2:
 Telephone:
 Fax:
 Samples on HOLD are subject to special pricing and release of liability

Relinquished By: <i>[Signature]</i> Date/Time: 4/15/21 8:00	Received By: <i>[Signature]</i> Date/Time: 4/15/21 8:35
Relinquished By: <i>[Signature]</i> Date/Time: 4/15/21 1400	Received By: <i>[Signature]</i> Date/Time: 4/16/21 0745
Relinquished By: <i>[Signature]</i> Date/Time: 4/16/21 0745	Received By: <i>[Signature]</i> Date/Time: 4/16/21 0745
Relinquished By: Date/Time: 	Received By: Date/Time:

PACE Project No. 40225278
 Receipt Temp = .5 °C
 Sample Receipt pH (K) Adjusted
 Cooler Custody Seal Present / Not Present Intact / Not Intact

Client Name: SCS Engineers

Sample Preservation Receipt Form

Project # 10725278

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

Lab Lot# of pH paper: 1003led

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


Initial when completed: _____ Date/Time: _____

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

Pace Lab #	Glass	Plastic	Vials	Jars	General	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001	AG1U											2.5/5/10
002	BG1U											2.5/5/10
003	AG1H											2.5/5/10
004	AG4S											2.5/5/10
005	AG4U											2.5/5/10
006	AG5U									X		2.5/5/10
007	AG2S									X		2.5/5/10
008	BG3U											2.5/5/10
009	BP1U											2.5/5/10
010	BP3U											2.5/5/10
011	BP3B											2.5/5/10
012	BP3N											2.5/5/10
013	BP3S											2.5/5/10
014	VG9A											2.5/5/10
015	DG9T											2.5/5/10
016	VG9U											2.5/5/10
017	VG9H											2.5/5/10
018	VG9M											2.5/5/10
019	VG9D											2.5/5/10
020	JG9U											2.5/5/10

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

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9A	40 mL clear ascorbic	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WG9U	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG5U	100 mL amber glass unpres			VG9D	40 mL clear vial DI	ZPLC	ziploc bag
AG2S	500 mL amber glass H2SO4					GN	
BG3U	250 mL clear glass unpres						

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

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS Engineers
 Courier: CS Logistics Fed Ex Speedee UPS Walco
 Client Pace Other: _____

Project #: _____
WO#: 40225278

 40225278

Tracking #: _____
 Custody Seal on Cooler/Box Present: yes no Seals intact: yes no
 Custody Seal on Samples Present: yes no Seals intact: yes no
 Packing Material: Bubble Wrap Bubble Bags None Other
 Thermometer Used SR-90 Type of Ice: Blue Dry None Samples on ice, cooling process has begun
 Cooler Temperature Uncorr: 1 /Corr: 5
 Temp Blank Present: yes no Biological Tissue is Frozen: yes no
 Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Person examining contents: Date: <u>4/16/21</u> / initials: <u>[Signature]</u> Labeled By Initials: <u>[Signature]</u>
--

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2.	<u>Mail, pg#</u> <u>4/16/21</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.	
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:	
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.	
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.	
Sufficient Volume:		8.	
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A			
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.	
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.	
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.	
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12.	
-Includes date/time/ID/Analysis Matrix: <u>W</u>			<u>NO Date/time</u> <u>4/16/21</u>
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.	
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased): _____			

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

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

C2 June 2021 Resample

June 24, 2021

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25221069 ALLIANT I-43
Pace Project No.: 40228570

Dear Meghan Blodgett:

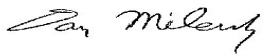
Enclosed are the analytical results for sample(s) received by the laboratory on June 17, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Green Bay

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

Sincerely,



Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS
Nicole Kron, SCS ENGINEERS
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25221069 ALLIANT I-43

Pace Project No.: 40228570

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25221069 ALLIANT I-43

Pace Project No.: 40228570

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40228570001	MW-302	Water	06/16/21 10:55	06/17/21 08:30
40228570002	FIELD BLANK	Water	06/16/21 10:55	06/17/21 08:30

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SAMPLE ANALYTE COUNT

Project: 25221069 ALLIANT I-43
Pace Project No.: 40228570

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40228570001	MW-302		VGC	7
		EPA 300.0	HMB	1
40228570002	FIELD BLANK	EPA 300.0	HMB	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25221069 ALLIANT I-43

Pace Project No.: 40228570

Sample: MW-302 **Lab ID: 40228570001** Collected: 06/16/21 10:55 Received: 06/17/21 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	8.37	Std. Units			1		06/16/21 10:55		
Field Specific Conductance	386	umhos/cm			1		06/16/21 10:55		
Oxygen, Dissolved	0.6	mg/L			1		06/16/21 10:55	7782-44-7	
REDOX	24	mV			1		06/16/21 10:55		
Turbidity	18.1	NTU			1		06/16/21 10:55		
Static Water Level	649.75	feet			1		06/16/21 10:55		
Temperature, Water (C)	10.3	deg C			1		06/16/21 10:55		
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Fluoride	0.77	mg/L	0.32	0.095	1		06/18/21 15:49	16984-48-8	

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ANALYTICAL RESULTS

Project: 25221069 ALLIANT I-43

Pace Project No.: 40228570

Sample: FIELD BLANK **Lab ID: 40228570002** Collected: 06/16/21 10:55 Received: 06/17/21 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Fluoride	<0.095	mg/L	0.32	0.095	1		06/18/21 16:09	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25221069 ALLIANT I-43
Pace Project No.: 40228570

QC Batch: 388363 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40228570001, 40228570002

METHOD BLANK: 2240462 Matrix: Water
Associated Lab Samples: 40228570001, 40228570002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.095	0.32	06/18/21 15:21	

LABORATORY CONTROL SAMPLE: 2240463

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2	1.9	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2240464 2240465

Parameter	Units	2240464		2240465		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40228592001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Fluoride	mg/L	<0.095	2	2	2.0	2.0	102	99	90-110	3	15	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 25221069 ALLIANT I-43

Pace Project No.: 40228570

DEFINITIONS

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

ND - Not Detected at or above LOD.

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

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

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25221069 ALLIANT I-43
Pace Project No.: 40228570

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40228570001	MW-302				
40228570001	MW-302	EPA 300.0	388363		
40228570002	FIELD BLANK	EPA 300.0	388363		

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(Please Print Clearly)

UPPER MIDWEST REGION

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

6028570



CHAIN OF CUSTODY

***Preservation Codes**
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Company Name: SCS
 Branch/Location: Madison WI
 Project Contact: Meg Blodgett
 Phone: 008
 Project Number: 25221069
 Project Name: Alliant 143
 Project State: WI
 Sampled By (Print): ZACH WATSON
 Sampled By (Sign): [Signature]
 PO #: _____ Regulatory Program: _____

FILTERED? (YES/NO)	Y/N	Pick Letter	Analyses Requested
	N	A	Fluoride

Quote #: _____
 Mail To Contact: _____
 Mail To Company: _____
 Mail To Address: _____
 Invoice To Contact: _____
 Invoice To Company: _____
 Invoice To Address: _____
 Invoice To Phone: _____
 CLIENT COMMENTS: _____
 LAB COMMENTS (Lab Use Only): _____
 Profile #: _____

Data Package Options (billable)
 EPA Level III
 EPA Level IV

MS/MSD
 On your sample (billable)
 NOT needed on your sample

Matrix Codes
 A = Air W = Water
 B = Biota DW = Drinking Water
 C = Charcoal GW = Ground Water
 O = Oil SW = Surface Water
 S = Soil WW = Waste Water
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	Analyses Requested
		DATE	TIME		
001	MW302	6-16	1055	W	✓
002	FB	↓	↓	↓	✓

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed:	Relinquished By: <u>[Signature]</u> Date/Time: <u>6-16-22 1400</u>	Received By: _____ Date/Time: _____	PACE Project No. <u>6028570</u> Receipt Temp = <u>3</u> °C Sample Receipt pH <u>OK / Adjusted</u> Cooler Custody Seal Present / Not Present <u>Present</u> Intact / Not Intact <u>Intact</u>
Transmit Prelim Rush Results by (complete what you want):	Relinquished By: <u>CS Logistics</u> Date/Time: <u>6/17/22 0830</u>	Received By: <u>Kendra Spore</u> Date/Time: <u>6/17/22 0830</u>	
Email #1:	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Email #2:	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Telephone:	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Fax:	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	

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

Sample Preservation Receipt Form

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

Client Name: SCS-madison

Project # 6028570

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

Initial when completed:

Date/Time:

Lab Lot# of pH paper:

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

Pace Lab #	Glass							Plastic					Vials					Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)					
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T								ZPLC	GN			
001																																				2.5 / 5 / 10
002										-																										2.5 / 5 / 10
003																																				2.5 / 5 / 10
004																																				2.5 / 5 / 10
005																																				2.5 / 5 / 10
006																																				2.5 / 5 / 10
007																																				2.5 / 5 / 10
008																																				2.5 / 5 / 10
009																																				2.5 / 5 / 10
010																																				2.5 / 5 / 10
011																																				2.5 / 5 / 10
012																																				2.5 / 5 / 10
013																																				2.5 / 5 / 10
014																																				2.5 / 5 / 10
015																																				2.5 / 5 / 10
016																																				2.5 / 5 / 10
017																																				2.5 / 5 / 10
018																																				2.5 / 5 / 10
019																																				2.5 / 5 / 10
020																																				2.5 / 5 / 10

O&G 6/17/12

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

AG1U 1 liter amber glass	BP1U 1 liter plastic unpres	VG9A 40 mL clear ascorbic	JGFU 4 oz amber jar unpres
BG1U 1 liter clear glass	BP3U 250 mL plastic unpres	DG9T 40 mL amber Na Thio	JG9U 9 oz amber jar unpres
AG1H 1 liter amber glass HCL	BP3B 250 mL plastic NaOH	VG9U 40 mL clear vial unpres	WGFU 4 oz clear jar unpres
AG4S 125 mL amber glass H2SO4	BP3N 250 mL plastic HNO3	VG9H 40 mL clear vial HCL	WPFU 4 oz plastic jar unpres
AG4U 120 mL amber glass unpres	BP3S 250 mL plastic H2SO4	VG9M 40 mL clear vial MeOH	SP5T 120 mL plastic Na Thiosulfate
AG5U 100 mL amber glass unpres		VG9D 40 mL clear vial DI	ZPLC ziploc bag
AG2S 500 mL amber glass H2SO4			GN
BG3U 250 mL clear glass unpres			



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

Sample Condition Upon Receipt Form (SCUR)

0830

Project #: _____

Client Name: SCS - madison

WO# : 40228570

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



Tracking #: 2231 0101021

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

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

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR - 9 Type of Ice: Wet Blue Dry None Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 2 /Corr: 3

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

Person examining contents:
Date: <u>6/17/21</u> /Initials: <u>KS</u>
Labeled By Initials: <u>SW</u>

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>pg #, mail + invoice info</u> <u>KS 6/17/21</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

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

C3 October 2021 Detection Monitoring

November 16, 2021

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

Dear Meghan Blodgett:


Enclosed are the analytical results for sample(s) received by the laboratory on October 29, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Green Bay

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

Sincerely,



Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Sherren Clark, SCS Engineers
Tom Karwoski, SCS ENGINEERS
Nicole Kron, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: CCR RULE EDGEWATER I-43 ASH

Pace Project No.: 40236018

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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SAMPLE SUMMARY

Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40236018001	MW-305	Water	10/26/21 12:55	10/29/21 07:20
40236018002	FIELD BLANK	Water	10/26/21 14:00	10/29/21 07:20
40236018003	MW-301	Water	10/26/21 14:05	10/29/21 07:20
40236018004	MW-302	Water	10/26/21 14:35	10/29/21 07:20
40236018005	MW-303	Water	10/26/21 15:40	10/29/21 07:20
40236018006	MW-304	Water	10/26/21 15:05	10/29/21 07:20

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SAMPLE ANALYTE COUNT

Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40236018001	MW-305	EPA 6020B	KXS	2
			MEA	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40236018002	FIELD BLANK	EPA 6020B	KXS	2
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40236018003	MW-301	EPA 6020B	KXS	2
			MEA	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40236018004	MW-302	EPA 6020B	KXS	2
			MEA	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40236018005	MW-303	EPA 6020B	KXS	2
			MEA	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40236018006	MW-304	EPA 6020B	KXS	2
			MEA	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

Sample: MW-305 **Lab ID: 40236018001** Collected: 10/26/21 12:55 Received: 10/29/21 07:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	67.8	ug/L	10.0	3.0	1	11/03/21 05:24	11/11/21 20:36	7440-42-8	
Calcium	87800	ug/L	254	76.2	1	11/03/21 05:24	11/11/21 20:36	7440-70-2	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.76	Std. Units			1		10/26/21 12:55		
Field Specific Conductance	863	umhos/cm			1		10/26/21 12:55		
Oxygen, Dissolved	1.6	mg/L			1		10/26/21 12:55	7782-44-7	
REDOX	136	mV			1		10/26/21 12:55		
Turbidity	21.7	NTU			1		10/26/21 12:55		
Static Water Level	655.86	feet			1		10/26/21 12:55		
Temperature, Water (C)	11.0	deg C			1		10/26/21 12:55		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	556	mg/L	20.0	8.7	1		11/02/21 14:38		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	7.6	Std. Units	0.10	0.010	1		11/05/21 10:10		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	24.9	mg/L	10.0	2.2	5		11/15/21 14:16	16887-00-6	
Fluoride	0.72J	mg/L	1.6	0.48	5		11/15/21 14:16	16984-48-8	D3
Sulfate	125	mg/L	10.0	2.2	5		11/15/21 14:16	14808-79-8	

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ANALYTICAL RESULTS

Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

Sample: FIELD BLANK **Lab ID: 40236018002** Collected: 10/26/21 14:00 Received: 10/29/21 07:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay									
Boron	<3.0	ug/L	10.0	3.0	1	11/03/21 05:24	11/11/21 18:38	7440-42-8	
Calcium	<76.2	ug/L	254	76.2	1	11/03/21 05:24	11/11/21 18:38	7440-70-2	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	18.0J	mg/L	20.0	8.7	1		11/02/21 14:39		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.0	Std. Units	0.10	0.010	1		11/05/21 10:13		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<0.43	mg/L	2.0	0.43	1		11/15/21 15:13	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		11/15/21 15:13	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		11/15/21 15:13	14808-79-8	

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ANALYTICAL RESULTS

Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

Sample: MW-301 **Lab ID: 40236018003** Collected: 10/26/21 14:05 Received: 10/29/21 07:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay									
Boron	130	ug/L	10.0	3.0	1	11/03/21 05:24	11/11/21 20:43	7440-42-8	
Calcium	30200	ug/L	254	76.2	1	11/03/21 05:24	11/11/21 20:43	7440-70-2	
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	8.23	Std. Units			1		10/26/21 14:05		
Field Specific Conductance	356	umhos/cm			1		10/26/21 14:05		
Oxygen, Dissolved	1.3	mg/L			1		10/26/21 14:05	7782-44-7	
REDOX	291	mV			1		10/26/21 14:05		
Turbidity	130.0	NTU			1		10/26/21 14:05		
Static Water Level	650.76	feet			1		10/26/21 14:05		
Temperature, Water (C)	11.2	deg C			1		10/26/21 14:05		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	200	mg/L	20.0	8.7	1		11/02/21 14:39		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.9	Std. Units	0.10	0.010	1		11/05/21 10:20		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	3.3	mg/L	2.0	0.43	1		11/15/21 15:28	16887-00-6	
Fluoride	0.61	mg/L	0.32	0.095	1		11/15/21 15:28	16984-48-8	
Sulfate	10.2	mg/L	2.0	0.44	1		11/15/21 15:28	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CCR RULE EDGEWATER I-43 ASH

Pace Project No.: 40236018

Sample: MW-302 **Lab ID: 40236018004** Collected: 10/26/21 14:35 Received: 10/29/21 07:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Boron	122	ug/L	10.0	3.0	1	11/03/21 05:24	11/11/21 20:50	7440-42-8	
Calcium	27200	ug/L	254	76.2	1	11/03/21 05:24	11/11/21 20:50	7440-70-2	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	8.23	Std. Units			1		10/26/21 14:35		
Field Specific Conductance	393	umhos/cm			1		10/26/21 14:35		
Oxygen, Dissolved	0.6	mg/L			1		10/26/21 14:35	7782-44-7	
REDOX	207	mV			1		10/26/21 14:35		
Turbidity	38.3	NTU			1		10/26/21 14:35		
Static Water Level	644.88	feet			1		10/26/21 14:35		
Temperature, Water (C)	9.8	deg C			1		10/26/21 14:35		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	220	mg/L	20.0	8.7	1		11/02/21 14:39		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.0	Std. Units	0.10	0.010	1		11/05/21 10:21		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	3.8	mg/L	2.0	0.43	1		11/15/21 15:42	16887-00-6	
Fluoride	0.74	mg/L	0.32	0.095	1		11/15/21 15:42	16984-48-8	
Sulfate	15.9	mg/L	2.0	0.44	1		11/15/21 15:42	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

Sample: MW-303 **Lab ID: 40236018005** Collected: 10/26/21 15:40 Received: 10/29/21 07:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	83.3	ug/L	10.0	3.0	1	11/03/21 05:24	11/11/21 20:58	7440-42-8	
Calcium	29300	ug/L	254	76.2	1	11/03/21 05:24	11/11/21 20:58	7440-70-2	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	8.05	Std. Units			1		10/26/21 15:40		
Field Specific Conductance	478	umhos/cm			1		10/26/21 15:40		
Oxygen, Dissolved	0.6	mg/L			1		10/26/21 15:40	7782-44-7	
REDOX	244	mV			1		10/26/21 15:40		
Turbidity	71.5	NTU			1		10/26/21 15:40		
Static Water Level	650.90	feet			1		10/26/21 15:40		
Temperature, Water (C)	9.7	deg C			1		10/26/21 15:40		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	268	mg/L	20.0	8.7	1		11/02/21 14:39		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.0	Std. Units	0.10	0.010	1		11/05/21 10:22		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	4.2	mg/L	2.0	0.43	1		11/15/21 15:56	16887-00-6	
Fluoride	0.61	mg/L	0.32	0.095	1		11/15/21 15:56	16984-48-8	
Sulfate	28.9	mg/L	2.0	0.44	1		11/15/21 15:56	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

Sample: MW-304 **Lab ID: 40236018006** Collected: 10/26/21 15:05 Received: 10/29/21 07:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	89.8	ug/L	10.0	3.0	1	11/03/21 05:24	11/11/21 21:05	7440-42-8	
Calcium	21600	ug/L	254	76.2	1	11/03/21 05:24	11/11/21 21:05	7440-70-2	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	8.12	Std. Units			1		10/26/21 15:05		
Field Specific Conductance	398	umhos/cm			1		10/26/21 15:05		
Oxygen, Dissolved	0.6	mg/L			1		10/26/21 15:05	7782-44-7	
REDOX	205	mV			1		10/26/21 15:05		
Turbidity	96.3	NTU			1		10/26/21 15:05		
Static Water Level	652.54	feet			1		10/26/21 15:05		
Temperature, Water (C)	9.6	deg C			1		10/26/21 15:05		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	218	mg/L	20.0	8.7	1		11/02/21 14:40		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.0	Std. Units	0.10	0.010	1		11/05/21 10:23		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	2.3	mg/L	2.0	0.43	1		11/15/21 16:11	16887-00-6	
Fluoride	0.49	mg/L	0.32	0.095	1		11/15/21 16:11	16984-48-8	
Sulfate	15.6	mg/L	2.0	0.44	1		11/15/21 16:11	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CCR RULE EDGEWATER I-43 ASH

Pace Project No.: 40236018

QC Batch:	400458	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40236018001, 40236018002, 40236018003, 40236018004, 40236018005, 40236018006

METHOD BLANK: 2312698 Matrix: Water

Associated Lab Samples: 40236018001, 40236018002, 40236018003, 40236018004, 40236018005, 40236018006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	11/11/21 18:23	
Calcium	ug/L	<76.2	254	11/11/21 18:23	

LABORATORY CONTROL SAMPLE: 2312699

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	243	97	80-120	
Calcium	ug/L	10000	10200	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2312700 2312701

Parameter	Units	40235995001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	1040	250	250	1240	1250	84	86	75-125	0	20	
Calcium	ug/L	65600	10000	10000	74200	75300	86	98	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CCR RULE EDGEWATER I-43 ASH

Pace Project No.: 40236018

QC Batch: 400426

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40236018001, 40236018002, 40236018003, 40236018004, 40236018005, 40236018006

METHOD BLANK: 2312359

Matrix: Water

Associated Lab Samples: 40236018001, 40236018002, 40236018003, 40236018004, 40236018005, 40236018006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	11/02/21 14:36	

LABORATORY CONTROL SAMPLE: 2312360

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	575	554	96	80-120	

SAMPLE DUPLICATE: 2312362

Parameter	Units	40235914001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	810	834	3	10	

SAMPLE DUPLICATE: 2312363

Parameter	Units	40236018001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	556	584	5	10	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CCR RULE EDGEWATER I-43 ASH

Pace Project No.: 40236018

QC Batch: 400795

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40236018001, 40236018002, 40236018003, 40236018004, 40236018005, 40236018006

SAMPLE DUPLICATE: 2314419

Parameter	Units	40235873001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.3	7.4	1	20	H6

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

QC Batch: 401294 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40236018001, 40236018002, 40236018003, 40236018004, 40236018005, 40236018006

METHOD BLANK: 2316943 Matrix: Water
Associated Lab Samples: 40236018001, 40236018002, 40236018003, 40236018004, 40236018005, 40236018006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	11/13/21 10:50	
Fluoride	mg/L	<0.095	0.32	11/13/21 10:50	
Sulfate	mg/L	<0.44	2.0	11/13/21 10:50	

LABORATORY CONTROL SAMPLE: 2316944

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	18.8	94	90-110	
Fluoride	mg/L	2	1.8	91	90-110	
Sulfate	mg/L	20	18.3	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2316945 2316946

Parameter	Units	40235999003		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	% Rec					
Chloride	mg/L	21.6	100	100	127	132	106	110	110	90-110	4	15	
Fluoride	mg/L	<0.48	10	10	10.0	10.6	100	106	106	90-110	6	15	
Sulfate	mg/L	<2.2	100	100	101	108	101	108	108	90-110	6	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2316947 2316948

Parameter	Units	40236058005		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	% Rec					
Chloride	mg/L	5.4	20	20	28.2	28.2	114	114	114	90-110	0	15 M0	
Fluoride	mg/L	1.2	2	2	3.4	3.4	109	109	109	90-110	0	15	
Sulfate	mg/L	75.2	100	100	183	183	108	108	108	90-110	0	15	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: CCR RULE EDGEWATER I-43 ASH

Pace Project No.: 40236018

DEFINITIONS

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

ND - Not Detected at or above LOD.

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

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

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CCR RULE EDGEWATER I-43 ASH
Pace Project No.: 40236018

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40236018001	MW-305	EPA 3010A	400458	EPA 6020B	400581
40236018002	FIELD BLANK	EPA 3010A	400458	EPA 6020B	400581
40236018003	MW-301	EPA 3010A	400458	EPA 6020B	400581
40236018004	MW-302	EPA 3010A	400458	EPA 6020B	400581
40236018005	MW-303	EPA 3010A	400458	EPA 6020B	400581
40236018006	MW-304	EPA 3010A	400458	EPA 6020B	400581
40236018001	MW-305				
40236018003	MW-301				
40236018004	MW-302				
40236018005	MW-303				
40236018006	MW-304				
40236018001	MW-305	SM 2540C	400426		
40236018002	FIELD BLANK	SM 2540C	400426		
40236018003	MW-301	SM 2540C	400426		
40236018004	MW-302	SM 2540C	400426		
40236018005	MW-303	SM 2540C	400426		
40236018006	MW-304	SM 2540C	400426		
40236018001	MW-305	EPA 9040	400795		
40236018002	FIELD BLANK	EPA 9040	400795		
40236018003	MW-301	EPA 9040	400795		
40236018004	MW-302	EPA 9040	400795		
40236018005	MW-303	EPA 9040	400795		
40236018006	MW-304	EPA 9040	400795		
40236018001	MW-305	EPA 300.0	401294		
40236018002	FIELD BLANK	EPA 300.0	401294		
40236018003	MW-301	EPA 300.0	401294		
40236018004	MW-302	EPA 300.0	401294		
40236018005	MW-303	EPA 300.0	401294		
40236018006	MW-304	EPA 300.0	401294		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

40235018

Section A

Required Client Information:

Company: SCS ENGINEERS
 Address: 2830 Dairy Drive
 Madison, WI 53718
 Email: mblodgett@scsengineers.com
 Phone: 608-216-7362 Fax:
 Requested Due Date:

Section B

Required Project Information:

Report To: Meghan Blodgett
 Copy To:
 Purchase Order #:
 Project Name: CCR Rule Edgewater I-43 Ash (25216069)
 Project #:

Section C

Invoice Information:

Attention:
 Company Name:
 Address:
 Pace Quote:
 Pace Project Manager: dan.milewsky@pacelabs.com.
 Pace Profile #: 3946

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Other OT Tissue TS	CODE DW WT WW P SL OL WP AR OT TS	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Y/N	Requested Analysis Filtered (Y/N)										Residual Chlorine (Y/N)																										
				START				END		Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3		Methanol	Other	Analyses Test	pH	TDS, Cl, F, SO4	Metals, Boron/Calcium																															
				DATE	TIME			DATE	TIME																																												
1	MW-305	WT		10-26	1255		3	2	1									X	X	X																				B/Ca	001												
2	FIELD BLANK	WT		10-26	1400		1	1										X	X	X																						B/Ca	002										
3	MW-301	WT		10-26	1405		1	1										X	X	X																							B/Ca	003									
4	MW-302	WT		10-26	1435		1	1										X	X	X																							B/Ca	004									
5	MW-303	WT		10-26	1540		1	1										X	X	X																							B/Ca	005									
6	MW-304	WT		10-26	1505		1	1										X	X	X																							B/Ca	006									
7																																																					
8																																																					
9																																																					
10																																																					
11																																																					
12																																																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
all samples unfiltered	Zach Watson SCS CS logistics	10/29/21	0720	Mary R. Perce	10/29/21	0720	1.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: ZACH WATSON
 SIGNATURE of SAMPLER: [Signature]
 DATE Signed: 10-29-21

TEMP in C
 Received on Ice (Y/N)
 Custody Sealed Cooler (Y/N)
 Samples Intact (Y/N)

403608

Addresses		Order By :	Ship To :	Return To:	
Company	SCS ENGINEERS	Company	SCS Engineers	Company	Pace Analytical Green Bay
Contact	Blodgett, Meghan	Contact	Zach Watson	Contact	Milewsky, Dan
Email	mbloodgett@scsengineers.com	Email	zwatson@scsengineers.com	Email	dan.milewsky@pacelabs.com
Address	2830 Dairy Drive	Address	N84 W13540 Leon Road	Address	1241 Bellevue Street
Address 2		Address 2		Address 2	Suite 9
City	Madison	City	Menomonee Falls	City	Green Bay
State	WI Zip 53718	State	WI Zip 53051	State	WI Zip 54302
Phone	608-216-7362	Phone	(608) 225-2972	Phone	(920)469-2436

Info							
Project Name	CCR Rule Edgewater I-43 Ash (25216069)	Due Date	10/22/2021	Profile	3946	Quote	
Project Manager	Milewsky, Dan	Return Date		Carrier	FedEx Ground	Location	

Trip Blanks

Include Trip Blanks

Bottle Labels

Blank

Pre-Printed No Sample IDs

Pre-Printed With Sample IDs

Bottles

Boxed Cases

Individually Wrapped

Grouped By Sample ID/Matrix

Return Shipping Labels

No Shipper

With Shipper

Misc

Sampling Instructions

Custody Seal

Temp. Blanks

Coolers

Syringes

Extra Bubble Wrap

Short Hold/Rush Stickers

DI Water

USDA Regulated Soils

COC Options

Number of Blanks

Pre-Printed

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
7	WT	pH	250mL plastic unpres	7	0	M-1-203-03BB	
7	WT	TDS, Cl, F, SO4	250mL plastic unpres	7	0	M-1-203-03BB	
7	WT	Metals, Boron/Calcium	250mL plastic w/HNO3	7	0	M-1-203-04BB	B/Ca

Hazard Shipping Placard In Place : NA

'Sample receiving hours are typically 8am-5pm, but may differ by location. Please check with your Pace Project Manager.

'Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

'Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage/disposal.

'Payment term are net 30 days.

'Please include the proposal number on the chain of custody to insure proper billing.

LAB USE:

Ship Date :

Prepared By:

Verified By:

Sample

ALL SAMPLES UNFILTERED

CLIENT USE (Optional):

Date Rec'd:

Received By:

Verified By:

Sample Preservation Receipt Form

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

Client Name: SCS

Project # 4036018

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

Initial when completed: MD Date/Time: _____


Lab Lot# of pH paper: 1050104 Lab Std #ID of preservation (if pH adjusted): _____

Pace Lab #	Glass						Plastic					Vials					Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)								
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU								SP5T	ZPLC	GN					
001									2	-																										X		2.5 / 5 / 10
002									2	-																									X		2.5 / 5 / 10	
003									2	-																									X		2.5 / 5 / 10	
004									2	-																									X		2.5 / 5 / 10	
005									2	-																									X		2.5 / 5 / 10	
006									2	-																									X		2.5 / 5 / 10	
007																																					2.5 / 5 / 10	
008																																					2.5 / 5 / 10	
009																																					2.5 / 5 / 10	
010																																					2.5 / 5 / 10	
011																																					2.5 / 5 / 10	
012																																					2.5 / 5 / 10	
013																																					2.5 / 5 / 10	
014																																					2.5 / 5 / 10	
015																																					2.5 / 5 / 10	
016																																					2.5 / 5 / 10	
017																																					2.5 / 5 / 10	
018																																					2.5 / 5 / 10	
019																																					2.5 / 5 / 10	
020																																					2.5 / 5 / 10	

10/29/21 MD

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

AG1U 1 liter amber glass	BP1U 1 liter plastic unpres	VG9A 40 mL clear ascorbic	JGFU 4 oz amber jar unpres
BG1U 1 liter clear glass	BP3U 250 mL plastic unpres	DG9T 40 mL amber Na Thio	JG9U 9 oz amber jar unpres
AG1H 1 liter amber glass HCL	BP3B 250 mL plastic NaOH	VG9U 40 mL clear vial unpres	WGFU 4 oz clear jar unpres
AG4S 125 mL amber glass H2SO4	BP3N 250 mL plastic HNO3	VG9H 40 mL clear vial HCL	WPFU 4 oz plastic jar unpres
AG4U 120 mL amber glass unpres	BP3S 250 mL plastic H2SO4	VG9M 40 mL clear vial MeOH	SP5T 120 mL plastic Na Thiosulfate
AG5U 100 mL amber glass unpres		VG9D 40 mL clear vial DI	ZPLC ziploc bag
AG2S 500 mL amber glass H2SO4			GN
BG3U 250 mL clear glass unpres			

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

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS
Courier: CS Logistics Fed Ex Speedee UPS Walco
 Client Pace Other: _____

Project #: _____

WO#: 40236018




40236018

Tracking #: N/A
Custody Seal on Cooler/Box Present: yes no **Seals intact:** yes no
Custody Seal on Samples Present: yes no **Seals intact:** yes no
Packing Material: Bubble Wrap Bubble Bags None Other
Thermometer Used: SR-114 **Type of Ice:** Wet Blue Dry None Samples on ice, cooling process has begun
Cooler Temperature: Uncorr: 1 / Corr: 1.1
Temp Blank Present: yes no **Biological Tissue is Frozen:** yes no
 Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Person examining contents:
Date: 10/29/21 **Initials:** MP
Labeled By Initials: WC

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>Proj# 10129/21MP</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

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



Appendix D
Historical Monitoring Results

Single Location

Name: WPL - Edgewater I43

Location ID: MW-301		Number of Sampling Dates: 22																					
Parameter Name	Units	4/26/2016	6/21/2016	8/10/2016	10/19/2016	12/19/2016	1/5/2017	1/23/2017	2/23/2017	4/6/2017	6/6/2017	8/1/2017	10/23/2017	4/3/2018	10/4/2018	4/9/2019	10/8/2019	4/7/2020	10/13/2020	12/18/2020	4/13/2021	6/16/2021	10/26/2021
Boron	ug/L	298	157	151	148	174	--	177	181	144	138	145	149	136	120	126	142	133	142	--	132	--	130
Calcium	ug/L	389000	148000	94900	77800	127000	--	105000	51400	45200	57600	59400	48700	36700	43700	42900	42600	55800	33400	--	53900	--	30200
Chloride	mg/L	28.5	18	6.2	7.4	8.9	--	8.2	6.3	5.6	7.5	5.2	4.7	4.7	4.1	4	3.8	6.9	4.2	--	3.9	--	3.3
Fluoride	mg/L	<2	1.1	0.62	0.65	0.86	--	0.77	0.64	0.61	0.87	0.63	0.62	0.62	0.61	0.63	0.63	0.82	0.83	0.64	0.64	--	0.61
Field pH	Std. Units	8.24	8.01	8.08	8	8.36	--	8.21	8.14	8.12	7.89	7.99	7.82	8.02	8.15	8.18	7.7	8.05	7.96	7.64	8.48	8.14	8.23
Sulfate	mg/L	25.9	15.9	7.4	9.5	9.6	--	9.3	9.1	9.1	9	8.2	8.6	9.3	8.8	9.2	9.3	11.2	19	--	10.2	--	10.2
Total Dissolved Solids	mg/L	343	290	306	312	264	194	254	276	240	264	248	236	214	260	230	256	276	228	--	238	--	200
Antimony	ug/L	0.98	0.58	0.12	<0.36	1	--	<0.36	2.7	1.4	<0.15	<0.15	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/L	20.8	8.1	5.8	4.6	7.3	--	6.8	5.6	4.7	3.7	4.2	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/L	596	236	177	141	195	--	219	128	107	125	115	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/L	3.9	1.1	0.54	<0.63	1.1	--	1.1	4.1	0.49	0.18	0.25	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/L	0.47	<0.44	<0.089	<0.44	0.97	--	<0.44	2.1	1	0.091	<0.081	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/L	133	37.7	20.8	16	27.7	--	28.6	14.2	8.6	10.6	8.6	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/L	36.3	10.6	5.4	4.2	8.4	--	7.6	5.2	2.9	2.7	2.3	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/L	35.9	11.3	6.1	5.1	9.6	--	8.1	5.6	3.3	3.2	3	--	--	--	--	--	--	--	--	--	--	--
Lithium	ug/L	137	49.2	29	24.8	42.2	--	38.6	25.1	16.2	18.1	16.7	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/L	<0.18	<0.13	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/L	12.2	11.5	10.8	9.4	11	--	10.9	13.3	10.6	10.2	9.7	--	--	--	--	--	--	--	--	--	--	--
Selenium	ug/L	12.2	2.6	1.1	<1	2.5	--	<1	3.4	1.5	<0.32	0.39	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/L	0.88	<0.71	<0.14	<0.71	1.2	--	<0.71	2.6	1.3	<0.14	<0.14	--	--	--	--	--	--	--	--	--	--	--
Radium-226	pCi/L	1.9	1.29	-0.088	-0.595	0.446	--	0.432	0.546	-0.084	0.408	0.539	--	--	--	--	--	--	--	--	--	--	--
Radium-228	pCi/L	3.54	0.349	0.462	1.58	1.65	--	0.563	3.3	0.486	1.2	0.557	--	--	--	--	--	--	--	--	--	--	--
Total Radium	pCi/L	5.44	1.64	0.462	1.58	2.09	--	0.995	3.85	0.486	1.61	1.16	--	--	--	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	401	394	387	367	384	--	382	371	390	374	377	378	384	387	395	390	384	354	391	387	358	356
Oxygen, Dissolved	mg/L	1.1	0.9	0.1	0.1	0.09	--	0.1	1.5	0.3	0.2	0	0.6	0.1	0.2	0.2	0.32	0.3	1.1	0.5	0.2	0.3	1.3
Field Oxidation Potential	mV	-94	-178	-155	-135	-143	--	-141	33	-53	-171	-161	-46	-138	-97	-99	97	-69	162	1.7	-16	146	291
Groundwater Elevation	feet	653.54	652.01	649.68	652.32	652.85	--	652.98	653.14	654.43	654.11	652.64	652.03	651.28	650.71	653.06	653.26	656.59	652.16	653.91	654.56	649.78	650.76
Temperature, Water (C)	deg C	8.7	10.9	10.9	11.3	7.5	--	8.5	9	9.9	11.1	10.5	9.7	8.6	9.5	9.4	9.8	9.5	12.5	8.1	9.1	10.2	11.2
Turbidity	NTU	340.1	916.9	739.9	452.6	895.1	--	650.8	264.3	207.4	322.2	349.1	150.6	89.45	136.6	125.8	133.7	259	57.28	69.45	179	--	130
pH, Lab (at 25 Degrees C)	Std. Units	7.8	8	7.6	7.8	7.9	--	8.1	7.9	8	8	7.9	7.8	8	7.2	7.9	7.9	7.9	7.8	--	8	--	7.9

Single Location

Name: WPL - Edgewater I43

Location ID: MW-302		Number of Sampling Dates: 23																						
Parameter Name	Units	4/26/2016	6/21/2016	8/9/2016	10/19/2016	12/19/2016	1/5/2017	1/23/2017	2/23/2017	4/6/2017	6/6/2017	8/1/2017	10/23/2017	4/3/2018	10/4/2018	4/9/2019	10/8/2019	4/8/2020	5/20/2020	10/13/2020	12/18/2020	4/13/2021	6/16/2021	10/26/2021
Boron	ug/L	198	121	131	126	127	--	151	149	132	124	130	128	124	115	118	129	111	--	128	--	121	--	122
Calcium	ug/L	254000	49000	36500	30900	42600	--	59300	41900	40800	38700	33900	31200	30000	28200	28400	29900	27200	--	26900	--	28700	--	27200
Chloride	mg/L	19.5	8.9	7.1	7.6	10	--	8.9	6.9	6.7	6.9	5.6	5.5	5.2	4.5	4.4	3.8	4.4	--	4.3	--	4.1	--	3.8
Fluoride	mg/L	1.1	0.74	0.75	0.69	0.94	--	0.85	0.67	0.68	0.83	0.74	0.71	0.73	0.71	0.73	0.71	0.75	0.7	0.82	0.73	0.76	0.77	0.74
Field pH	Std. Units	8.33	8.05	6.24	12.2	8.31	--	8.16	8.16	8	7.95	7.98	7.7	8.02	8.08	8.14	7.67	7.79	8.19	7.85	8.05	8.36	8.37	8.23
Sulfate	mg/L	81.5	36.4	35	42.6	36.4	--	30.4	27.9	29.6	32.2	24	26.3	22.6	19.6	20.4	18.4	19.4	--	19	--	17.4	--	15.9
Total Dissolved Solids	mg/L	543	346	308	298	302	280	324	344	322	284	262	238	248	250	248	242	254	--	192	--	232	--	220
Antimony	ug/L	4.5	0.73	0.28	0.37	0.97	--	0.75	0.96	0.41	0.4	0.21	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/L	26.7	7.8	6.2	4.5	6.5	--	9	8.5	5.7	7.2	6.3	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/L	309	100	80.1	60.4	77.5	--	119	103	90.2	77.2	78.8	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/L	3.8	0.69	0.22	<0.13	0.35	--	1	0.8	<0.63	<0.18	<0.18	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/L	0.85	<0.18	<0.089	<0.089	0.6	--	<0.44	<0.44	<0.44	<0.081	<0.081	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/L	49.8	5.2	2	0.81	3	--	7	5.5	3.6	1.6	1.2	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/L	14.6	1.8	0.65	0.36	1.1	--	2.5	2.1	1.1	0.52	0.47	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/L	55	7.1	2.3	0.92	3.6	--	8.8	6.5	3.5	1.4	1.7	--	--	--	--	--	--	--	--	--	--	--	--
Lithium	ug/L	79.9	19.2	14.4	14	15.8	--	22.8	19.6	16.8	12.7	11.2	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/L	<0.18	<0.13	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/L	24.4	11.8	11.5	12.7	10.7	--	11.6	9.8	10.3	10.7	8	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	ug/L	21.6	2.3	0.64	0.39	1.4	--	2.1	2.7	1.4	<0.32	0.44	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/L	<0.71	<0.29	<0.14	<0.14	0.68	--	<0.71	<0.71	<0.71	<0.14	<0.14	--	--	--	--	--	--	--	--	--	--	--	--
Radium-226	pCi/L	4.55	1.73	0.0816	0	0.293	--	0.325	1.21	1.49	0.366	1.1	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228	pCi/L	3	1.84	1.24	1.12	0.574	--	2.4	2.64	0.351	0.841	0.208	--	--	--	--	--	--	--	--	--	--	--	--
Total Radium	pCi/L	7.55	3.57	1.32	1.12	0.867	--	2.73	3.85	1.84	1.21	0.844	--	--	--	--	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	648	508	507	510	497	--	486	470	491	419	435	455	434	433	426	423	413	420	418	426	412	386	393
Oxygen, Dissolved	mg/L	2.4	0.5	0.5	0	0	--	0.4	1	0	0.3	0	0.7	0.2	0.3	0.8	0.72	0.7	0.2	0.3	1	0.4	0.6	0.6
Field Oxidation Potential	mV	52	-108	-95	-107	-73	--	-79	25	-12	-14	-115	70	-75	60	18	90	-3.4	-6	37	163	189	24	207
Groundwater Elevation	feet	653.56	651.89	649.3	652.38	652.79	--	664.97	653.1	654.72	654.12	652.55	652.05	651.25	650.7	654.06	653.21	656.47	655.81	652.17	653.88	654.57	649.75	644.88
Temperature, Water (C)	deg C	8.8	10.1	11.3	12.2	8.1	--	8.6	9.1	9.7	12.1	10.7	10.4	8.8	10.1	9.9	9.7	9.3	10	11.9	8.9	9.2	10.3	9.8
Turbidity	NTU	961.9	248.2	85.43	32.08	190.8	--	372.8	296.2	144.2	84.5	56.73	33.56	35.46	23.32	18.41	11.73	25.99	10.15	14.16	9.23	19.6	18.1	38.3
pH, Lab (at 25 Degrees C)	Std. Units	8	8	7.8	7.8	7.9	--	8	7.9	8	7.9	7.9	7.9	8	7.9	7.9	7.9	7.7	--	7.9	--	8	--	8

Single Location

Name: WPL - Edgewater I43

Location ID: MW-303																					
Number of Sampling Dates: 20																					
Parameter Name	Units	4/26/2016	6/21/2016	8/9/2016	10/19/2016	12/19/2016	1/5/2017	1/23/2017	2/23/2017	4/7/2017	6/6/2017	8/1/2017	10/23/2017	4/3/2018	10/4/2018	4/9/2019	10/7/2019	4/8/2020	10/13/2020	4/13/2021	10/26/2021
Boron	ug/L	86.4	85	96	90.8	81.6	--	99.8	93.9	89.8	89.1	95	89	94.6	87.3	88.4	91.2	79	85.8	84.7	83.3
Calcium	ug/L	48300	36900	36700	31600	50500	--	46700	32600	33200	35500	35900	29100	31900	31600	31700	30900	29900	29000	29600	29300
Chloride	mg/L	15.5	6.9	6.8	6.8	22.9	--	8.8	5.3	6.2	6.2	5.7	6.8	5	4.4	4.1	4.7	4.3	5.2	4.5	4.2
Fluoride	mg/L	0.55	0.59	0.59	0.6	0.63	--	0.8	0.55	0.57	0.69	0.6	0.66	0.54	0.56	0.57	0.6	0.6	0.7	0.62	0.61
Field pH	Std. Units	7.96	7.98	6.24	8.03	8.32	--	8.23	8.24	8.15	7.9	7.91	7.59	7.98	8.04	8.05	10.12	7.67	8.31	8.26	8.05
Sulfate	mg/L	131	45.2	70.1	137	38.2	--	113	46.1	79.2	51.1	40.5	67.1	27.3	26.1	23.7	30.3	23.3	33.2	25.6	28.9
Total Dissolved Solids	mg/L	468	314	378	458	312	310	400	300	348	314	290	304	260	270	270	230	274	150	260	268
Antimony	ug/L	0.66	0.1	0.077	0.077	2.3	--	0.59	0.081	<0.073	<0.15	<0.15	--	--	--	--	--	--	--	--	--
Arsenic	ug/L	2.8	5.3	4.4	2.7	3.2	--	3.8	5.5	2.8	4	4.4	--	--	--	--	--	--	--	--	--
Barium	ug/L	134	80.2	91.2	81.6	90.3	--	120	81.1	80.7	80.6	81.1	--	--	--	--	--	--	--	--	--
Beryllium	ug/L	0.18	<0.13	<0.13	<0.13	<0.13	--	0.13	<0.13	<0.13	<0.18	<0.18	--	--	--	--	--	--	--	--	--
Cadmium	ug/L	<0.089	<0.089	<0.089	<0.089	0.22	--	0.098	<0.089	<0.089	<0.081	<0.081	--	--	--	--	--	--	--	--	--
Chromium	ug/L	8.1	1	0.93	0.41	1.3	--	8.6	2.1	0.79	<1	<1	--	--	--	--	--	--	--	--	--
Cobalt	ug/L	2.2	0.5	0.4	0.32	0.63	--	2	0.75	0.34	0.4	0.44	--	--	--	--	--	--	--	--	--
Lead	ug/L	1.9	0.26	0.091	0.16	0.3	--	2.1	0.52	0.082	<0.2	0.22	--	--	--	--	--	--	--	--	--
Lithium	ug/L	19.3	10.2	13.1	14.8	10.3	--	20.1	11.9	13.2	11.4	11.4	--	--	--	--	--	--	--	--	--
Mercury	ug/L	<0.18	<0.13	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	--	--	--	--	--	--	--	--	--
Molybdenum	ug/L	45.4	12.7	23	34	9.4	--	30.5	11	21.2	14.4	12.4	--	--	--	--	--	--	--	--	--
Selenium	ug/L	0.66	<0.21	<0.21	<0.21	0.26	--	0.29	<0.21	<0.21	<0.32	<0.32	--	--	--	--	--	--	--	--	--
Thallium	ug/L	<0.14	0.17	<0.14	<0.14	<0.14	--	<0.14	<0.14	<0.14	<0.14	<0.14	--	--	--	--	--	--	--	--	--
Radium-226	pCi/L	0	0.721	0	0	0.367	--	-0.066	0.233	0.535	0.298	0.198	--	--	--	--	--	--	--	--	--
Radium-228	pCi/L	0.392	0.338	0.426	0.921	0.497	--	0.236	1.37	0.336	0.397	0.454	--	--	--	--	--	--	--	--	--
Total Radium	pCi/L	0.392	1.06	0.426	0.921	0.864	--	0.236	1.6	0.871	0.695	0.603	--	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	586	589	756	567	582	--	681	558	617	486	564	557	494	500	486	497	454	570	475	478
Oxygen, Dissolved	mg/L	1.1	0.8	0.4	2.2	0	--	0.9	0.1	0.6	0.4	0	1	0.2	0.2	0.2	0.56	0.5	0.4	0.5	0.6
Field Oxidation Potential	mV	178	-174	-138	-185	-156	--	-168	-119	-93	-65	-157	88	-125	-105	-65	127	-75.2	128	154	244
Groundwater Elevation	feet	653.59	651.8	649.37	652.18	652.82	--	652.92	653.1	654.55	654.14	652.5	652.03	651.3	650.7	654.06	653.27	656.46	652.2	654.53	650.9
Temperature, Water (C)	deg C	8.6	10.2	11.3	11.3	4.4	--	8.8	8.9	9.7	11	11.7	10.1	8.9	10	9.5	11.8	9.4	10.7	9.4	9.7
Turbidity	NTU	107.6	21.88	13.48	8.9	30.04	--	103.3	51.76	9.79	22.54	16.29	3.06	6.62	17.2	4.92	9.74	21.08	7.21	<0.02	71.5
pH, Lab (at 25 Degrees C)	Std. Units	7.6	7.9	7.8	7.9	7.7	--	8.1	7.9	7.9	7.9	7.9	7.9	7.8	7.9	7.8	7.9	7.8	7.9	8	8

Single Location


Name: WPL - Edgewater I43

Location ID: MW-304																					
Number of Sampling Dates: 20																					
Parameter Name	Units	4/26/2016	6/21/2016	8/9/2016	10/19/2016	12/19/2016	1/5/2017	1/23/2017	2/23/2017	4/7/2017	6/6/2017	8/1/2017	10/23/2017	4/3/2018	10/4/2018	4/8/2019	10/8/2019	4/7/2020	10/15/2020	4/13/2021	10/26/2021
Boron	ug/L	92.1	90.9	102	106	102	--	101	99.8	96.9	102	103	104	98.6	90.2	100	104	100	94.5	91.7	89.8
Calcium	ug/L	24500	25400	26700	23000	24800	--	24300	24500	24800	23500	23000	20100	20200	19400	19100	20600	18600	15800	19700	21600
Chloride	mg/L	3.8	3.9	2.7	1.8	2.2	--	2.1	2.3	1.8	2	1.8	1.7	1.7	1.8	1.8	1.7	5.2	2.1	2.1	2.3
Fluoride	mg/L	0.49	0.55	0.51	0.45	0.59	--	0.5	0.5	0.48	0.6	0.53	0.54	0.5	0.5	0.51	0.48	0.75	0.58	0.53	0.49
Field pH	Std. Units	8.16	8	6.29	8.17	8.29	--	8.14	8.22	7.86	8.03	7.9	7.74	7.99	8.1	8.06	7.68	8.07	8.12	8.31	8.12
Sulfate	mg/L	13.8	14.2	13.2	13.5	14.6	--	14.3	14.6	14.5	14.9	14.2	14.2	15.2	13.5	14.5	13.5	15.4	15.5	15.3	15.6
Total Dissolved Solids	mg/L	222	234	244	232	198	212	214	206	224	218	222	208	222	224	226	172	228	228	224	218
Antimony	ug/L	0.11	0.52	0.36	<0.073	0.23	--	0.3	0.63	<0.073	<0.15	<0.15	--	--	--	--	--	--	--	--	--
Arsenic	ug/L	8.8	10	11.2	10.7	11.4	--	12.2	12.2	10.9	11.8	11.4	--	--	--	--	--	--	--	--	--
Barium	ug/L	77.6	74.7	81.5	73.4	71	--	81.1	73.5	73.7	79.1	75.1	--	--	--	--	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	<0.18	<0.18	--	--	--	--	--	--	--	--	--
Cadmium	ug/L	<0.089	<0.089	<0.089	<0.089	0.17	--	<0.089	0.45	<0.089	<0.081	<0.081	--	--	--	--	--	--	--	--	--
Chromium	ug/L	0.75	0.94	0.78	<0.39	0.7	--	0.8	1	<0.39	<1	<1	--	--	--	--	--	--	--	--	--
Cobalt	ug/L	0.26	0.23	0.12	0.078	0.18	--	0.17	0.53	0.047	0.11	0.088	--	--	--	--	--	--	--	--	--
Lead	ug/L	0.36	0.52	0.24	0.12	0.44	--	0.54	0.78	0.08	<0.2	<0.2	--	--	--	--	--	--	--	--	--
Lithium	ug/L	9.1	9.1	9.4	9.1	10.1	--	9.5	8.9	9.2	9.1	9.2	--	--	--	--	--	--	--	--	--
Mercury	ug/L	<0.18	<0.13	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	--	--	--	--	--	--	--	--	--
Molybdenum	ug/L	4.6	4	3.9	3.8	3.7	--	3.8	4.1	3.6	4.7	3.7	--	--	--	--	--	--	--	--	--
Selenium	ug/L	<0.21	<0.21	<0.21	<0.21	<0.21	--	<0.21	0.32	<0.21	<0.32	<0.32	--	--	--	--	--	--	--	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	0.19	--	<0.14	0.59	<0.14	<0.14	<0.14	--	--	--	--	--	--	--	--	--
Radium-226	pCi/L	-0.215	0.511	0.161	-0.369	0.171	--	0.181	-0.164	0.326	0.604	2.05	--	--	--	--	--	--	--	--	--
Radium-228	pCi/L	0.687	0.288	0.137	0.625	-0.101	--	0.018	1.5	0.274	0.688	0.0736	--	--	--	--	--	--	--	--	--
Total Radium	pCi/L	0.687	0.799	0.298	0.625	0.171	--	0.199	1.5	0.6	1.29	1.1	--	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	4.9	402	399	397	394	--	393	382	399	391	382	387	398	400	395	404	392	411	403	398
Oxygen, Dissolved	mg/L	0.8	0.5	0.1	0	0.3	--	0	1.1	2	0.5	0.4	0.8	0.3	0.2	0.7	0.81	1.9	0.2	0.5	0.6
Field Oxidation Potential	mV	-57	-129	-127	-84	-3	--	-98	14	-100	-104	-107	145	-103	-81	-23	104	190	-10	216	205
Groundwater Elevation	feet	655.9	653.79	651.55	654	654.26	--	654.37	654.49	654.85	655.7	654.49	653.65	652.86	652.26	655.59	654.77	658.16	654.17	656.36	652.54
Temperature, Water (C)	deg C	8.9	11.02	12	11.1	7.6	--	8.6	8.8	12	11.2	14.3	10	8.9	9.5	10.4	11	12.4	9.7	9.1	9.6
Turbidity	NTU	22.36	17.46	7.38	6.77	8.88	--	10.78	5.06	2.56	3	2.88	1.7	9.62	3	6.25	43.61	227.3	9.1	<0.02	96.3
pH, Lab (at 25 Degrees C)	Std. Units	7.8	8	7.8	7.8	7.9	--	8	7.9	8	7.8	8	7.9	8	7.9	7.9	8	7.8	8	8	8

Single Location

Name: WPL - Edgewater I43

Location ID: MW-305		Number of Sampling Dates: 13													
Parameter Name	Units	2/23/2017	4/7/2017	6/6/2017	8/1/2017	10/23/2017	4/3/2018	10/4/2018	4/9/2019	10/8/2019	4/7/2020	10/15/2020	4/13/2021	10/26/2021	
Boron	ug/L	94.4	86.4	78.8	76.5	70	71.7	65.9	68	73	65.8	65.5	66.6	67.8	
Calcium	ug/L	93800	103000	102000	95900	90700	83000	82200	89000	90300	88800	76800	86800	87800	
Chloride	mg/L	20.8	20.4	22.5	21.3	21.5	21.8	22.7	23	22.5	24.9	24.5	25.3	24.9	
Fluoride	mg/L	0.73	0.59	0.72	0.69	0.64	0.63	0.58	0.65	0.63	0.75	0.72	0.67	0.72	
Field pH	Std. Units	7.75	7.62	7.52	7.47	7.55	7.54	7.65	7.85	7.36	7.48	7.63	7.76	7.76	
Sulfate	mg/L	127	131	140	130	134	129	130	136	137	135	139	127	125	
Total Dissolved Solids	mg/L	576	576	598	570	540	566	572	568	548	580	500	540	556	
Antimony	ug/L	0.21	0.088	0.59	0.53	0.23	<0.15	<0.15	0.78	<0.15	--	--	--	--	
Arsenic	ug/L	3	2.5	2.5	2.3	2.4	2.2	2.3	2.9	2.4	--	--	--	--	
Barium	ug/L	230	220	208	200	195	177	169	169	169	--	--	--	--	
Beryllium	ug/L	0.21	0.15	<0.18	<0.18	<0.18	<0.18	<0.18	0.19	<0.25	--	--	--	--	
Cadmium	ug/L	<0.089	<0.089	<0.081	<0.081	0.1	<0.081	<0.15	0.83	<0.15	--	--	--	--	
Chromium	ug/L	10.8	6.8	4	2.7	1.8	<1	<1	1.2	<1	--	--	--	--	
Cobalt	ug/L	2.6	1.5	0.8	0.56	0.5	<0.085	<0.12	0.83	<0.12	--	--	--	--	
Lead	ug/L	2.4	1.6	0.98	0.87	0.44	<0.2	<0.24	0.81	<0.24	--	--	--	--	
Lithium	ug/L	23.2	19.7	15.7	14.8	12.4	12	11.2	11.8	12.4	--	--	--	--	
Mercury	ug/L	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.084	<0.084	<0.084	--	--	--	--	
Molybdenum	ug/L	5	4.6	3.3	3.6	3.2	2.5	2.3	3.3	2.6	--	--	--	--	
Selenium	ug/L	0.56	0.28	<0.32	<0.32	<0.32	<0.32	<0.32	0.92	<0.32	--	--	--	--	
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.8	<0.14	--	--	--	--	
Radium-226	pCi/L	0.35	0.0649	0.51	0.791	0.277	0.597	0.323	0.764	0.238	--	--	--	--	
Radium-228	pCi/L	3.8	0.836	0.555	0.878	0.969	0.73	0.716	0.921	0.473	--	--	--	--	
Total Radium	pCi/L	4.15	0.901	1.07	1.31	1.25	1.33	1.04	1.69	0.711	--	--	--	--	
Field Specific Conductance	umhos/cm	856	922	884	901	886	915	941	942	935	917	911	891	863	
Oxygen, Dissolved	mg/L	1.2	0.7	0.4	0.74	0.2	0.2	0.2	0.3	0.82	0.53	0.3	0.8	1.6	
Field Oxidation Potential	mV	-224	-108	-167	-122	-125	-120	-101	-75	112	28	-41	128	136	
Groundwater Elevation	feet	658.02	659.65	659.7	658.54	657.22	656.24	655.89	659.03	658.77	661.58	658.08	659.69	655.86	
Temperature, Water (C)	deg C	7.9	9.2	11.3	12.4	10.3	8.9	9.9	9.8	12.4	10.5	10	9.4	11	
Turbidity	NTU	613.2	138	140.6	67.21	42.54	13.01	10.56	9.67	6.56	7.35	8.27	0.93	21.7	
pH, Lab (at 25 Degrees C)	Std. Units	7.6	7.6	7.5	7.5	7.7	7.5	7.5	7.5	7.6	7.5	7.6	7.6	7.6	



Appendix E
Statistical Evaluation

January 25, 2021
File No. 25220069.00

TECHNICAL MEMORANDUM

SUBJECT: Statistical Evaluation of Groundwater Monitoring Results – UPL Update
I-43 Ash Disposal Facility October 2020

PREPARED BY: Nicole Kron

CHECKED BY: Sherren Clark

STATISTICAL METHOD

Groundwater monitoring data for the I-43 Ash Disposal Facility (ADF) is evaluated in accordance with 40 CFR 257.93(f)(3), using a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper prediction limit.

Statistical evaluation is performed using commercially available software (*Sanitas for Groundwater*® or similar) in general accordance with the USEPA's *Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* dated March 2009 (Unified Guidance) (USEPA, 2009) and generally accepted procedures.

The I-43 ADF monitoring data includes two background monitoring wells, MW-304 and MW-305, as well three compliance monitoring wells, MW-301, MW-302, and MW-303. The statistical analysis includes intrawell evaluation for boron and Interwell evaluation for the remaining Appendix III parameters.

Following the completion of the April 2018 Alternative Source Demonstration (ASD) Report, dated October 31, 2018, the statistical method for evaluating boron data at the three compliance monitoring wells was modified to an intrawell approach. The April 2018 ASD indicated that the boron levels in the compliance wells that exceeded the interwell UPL were due Following the completion of the April 2018 Alternative Source Demonstration (ASD) Report, dated October 31, 2018, the statistical method for evaluating boron data at the three compliance monitoring wells was modified to an intrawell approach. The April 2018 ASD indicated that the boron levels in the compliance wells that exceeded the interwell UPL were due to natural variability and not to a release from the ADF. Therefore, an intrawell approach was recommended. The UPLs for boron were calculated based on a parametric intrawell approach.

The UPLs for boron were calculated based on a parametric intrawell approach.

The initial UPLs were calculated on an interwell basis based on ten rounds of background monitoring performed prior to the initiation of compliance monitoring for the I-43 CCR units, from April 2016 through August 2017. In the October 2017 and April 2018 monitoring events, boron was detected



at concentrations slightly exceeding the interwell UPL. Alternative Source Demonstrations (ASDs) completed for the two events concluded that natural spatial variability in boron background concentrations in the dolomite aquifer was the most likely cause of the UPL exceedances. Evidence for this conclusion included long term monitoring data from the state monitoring program, boron monitoring results for water supply wells in the area, the site geology, and the CCR unit construction. To allow for natural spatial variability in the background concentrations, the statistical evaluation for boron was transitioned to an intrawell approach beginning with the October 2018 monitoring event.

As part of the evaluation of the October 2020 monitoring results, the background data set for the Appendix III UPL calculations is being updated to include data from the background wells collected through October 2020. For the boron intrawell evaluation, the update includes data collected through May 2020. This memo addresses updated UPLs for Appendix III parameters.

TIME SERIES PLOTS

Time series plots are prepared for the required monitoring parameters to show the concentration variations over time. Time series graphs are included in **Attachment 1**.

OUTLIER ANALYSIS - INTERWELL

For interwell analysis, an outlier evaluation is performed for background monitoring results at the upgradient wells. A statistical outlier is a value that is extremely different from the other values in the data set. The Sanitas outlier tests identify data points that do not appear to fit the distribution of the rest of the data set and determine if they differ significantly from the rest of the data. The outlier analysis performed in Sanitas includes the following steps:

- 1) Run normality test (Shapiro Wilk/Francia).
- 2) If normally distributed, run USEPA's 1989 Outlier Test to identify suspected outliers.
 - a) If number of background samples is less than or equal to 25, run Dixon's test for suspected outliers.
 - b) If number of background samples is more than 25, run Rosner's test for suspected outliers.
- 3) If not normally distributed, run Tukey's test for outliers.
- 4) Review data flagged as possible outliers to evaluate whether they should be removed from the background data set. Also review time series plots for possible outliers that were not picked up in the statistical evaluation (e.g., outlier test may not identify outliers when two values are similar to each other, but very different from all other data).

Results identified as statistical outliers are checked for possible lab instrument failure, field collection problems, or data entry errors; however, outliers may exist naturally in the data if there is an extremely wide inherent or temporal variability in the data. The Unified Guidance states that unless a likely error can be identified, the outlier should not be removed.

For the interwell evaluation of the October 2020 sampling event, the following background values were identified as potential outliers and handled as described:

- **Field pH (MW-304).** One low result from the August 2016 event was flagged as a statistical outlier. This result was removed from the dataset because the pH values recorded on this date for all wells were anomalously low, suggesting a likely field instrument or calibration problem.
- **Fluoride (MW-304).** One high result from the April 2020 event was flagged as a statistical outlier. This result was not removed from the dataset because there was no known explanation for the higher results and it appeared to be within the range of potential natural variation relative to the other observed fluoride concentrations.
- **Total Dissolved Solids (MW-304).** One low result from the October 2019 event was flagged as a statistical outlier. This result was not removed from the dataset because there was no known explanation for the low result and it appeared to be within the range of potential natural variation relative to the other observed Total Dissolved Solids (TDS) concentrations.
- **Total Dissolved Solids (MW-305).** One low result from the October 2020 event was flagged as a statistical outlier. The result was not removed from the dataset because there was no known explanation for high result and it appeared to be within the range of potential natural variation relative to the other observed TDS concentrations.

Outlier analysis of results are included in **Attachment 2**.

OUTLIERS ANALYSIS - INTRAWELL

For the intrawell analysis of boron, an outlier evaluation is performed for background monitoring results at the compliance wells. The outlier analysis is performed in Sanitas using the same steps noted above.

For the October 2020 sampling event, no background values were identified as potential outliers in the compliance monitoring wells (MW-301, MW-302, and MW-303). Outlier analysis of boron results from the compliance wells are included in **Attachment 3**.

BACKGROUND UPDATE

The background data pool was updated in accordance with the Unified Guidance, which recommends updating background every 2 to 3 years for semiannual sampling. Prior to expanding the data pool, the original background data set (4/2016 through 8/2017) and the data to be added (10/2017 through 10/2020 for background wells, 10/2017 through 5/2020 for compliance wells) were compared. The Unified Guidance states that recently collected measurements from the background wells can be added to the existing pool if a Student's t-test or Wilcoxon rank-sum test (inds no significant difference between the two groups at the 1% level of significance).

The Sanitas background group comparison for the I-43 background data sets, included in **Attachment 4**, indicated no significant difference at the 1% level; therefore, the more recent data can be added to the background pool. The comparison uses Welch's t-test for normally distributed data and the Mann-Whitney test for non-normal data. (Note: The Sanitas output labels the earlier background dataset as "Background" and the later background dataset as "Compliance," but all included data will be used as background data to calculate prediction limits.)

INTERWELL PREDICTION LIMITS

Interwell prediction limits were calculated for all parameters except boron. Interwell prediction limits are calculated using background data from the upgradient monitoring wells (MW-304 and MW-305) for each monitored constituent, with outliers removed as noted above. During this evaluation of compliance monitoring groundwater results from April 2016 through October 2020 were included to calculate the intrawell prediction limits. The prediction limit analysis performed in Sanitas includes the following steps:

- 1) If 100% of the background values are non-detect, the Double Quantification rule applies and no prediction limit is calculated.
- 2) If 50% or more of results are non-detect, then a non-parametric prediction limit is calculated.
- 3) If fewer than 50% of the results are non-detect, run normality test (Shapiro Wilk/Francia) to assess whether the data fit a normal distribution or can be transformed to fit a normal distribution (e.g., lognormal).
- 4) If normal or transformed normal, calculate parametric prediction limit.
- 5) If not normal or transformed normal, calculate non-parametric prediction limit.

Consistent with the Unified Guidance, parametric prediction limits are calculated based on a 1-of-2 retesting protocol and a 10 percent site-wide false positive rate. Sanitas establishes the per-test significance level based on user inputs of the number of events per year, number of constituents being evaluated, and number of compliance wells. For the October 2020 event, the following values were used:

Parameter	Value	Comments
Evaluations per year	2	Spring and Fall events
Constituents analyzed	7	Total of 7 constituents analyzed
Compliance wells	3	

Non-parametric prediction limits are also based on a 1-of-2 retesting protocol. The non-parametric limit is the highest value in the background dataset. Due to the small sample size, the false positive rate for the non-parametric tests is higher than for the parametric tests, but will go down as more background data are obtained.

Interwell prediction limit analysis results are included in **Attachment 5**.

INTRAWELL PREDICTION LIMITS

Intrawell prediction limits were calculated for boron. Intrawell prediction limits are calculated using background data from the compliance monitoring wells (MW-301, MW-302, and MW303) for each monitored constituent, with outliers removed as noted above.

TECHNICAL MEMORANDUM

January 25, 2021

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During this evaluation of compliance monitoring, groundwater results from April 2016 through April 2020 were included to calculate the intrawell prediction limits. The intrawell prediction limit analysis performed in Sanitas includes the same steps noted above.

Intrawell prediction limit analysis results are included in **Attachment 6**.

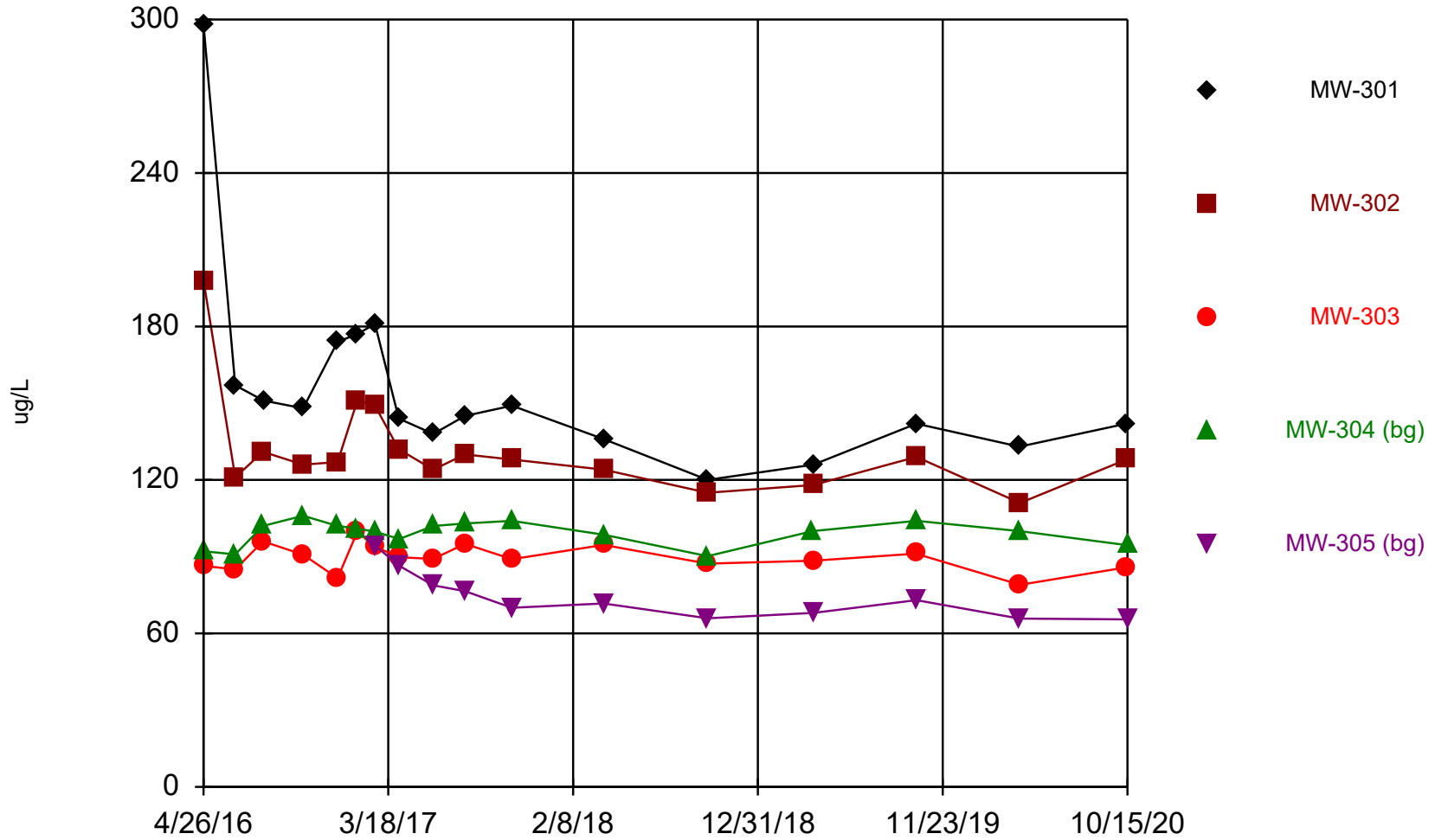
NDK/SCC

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Attachment 1

Times Series Graphs

Boron



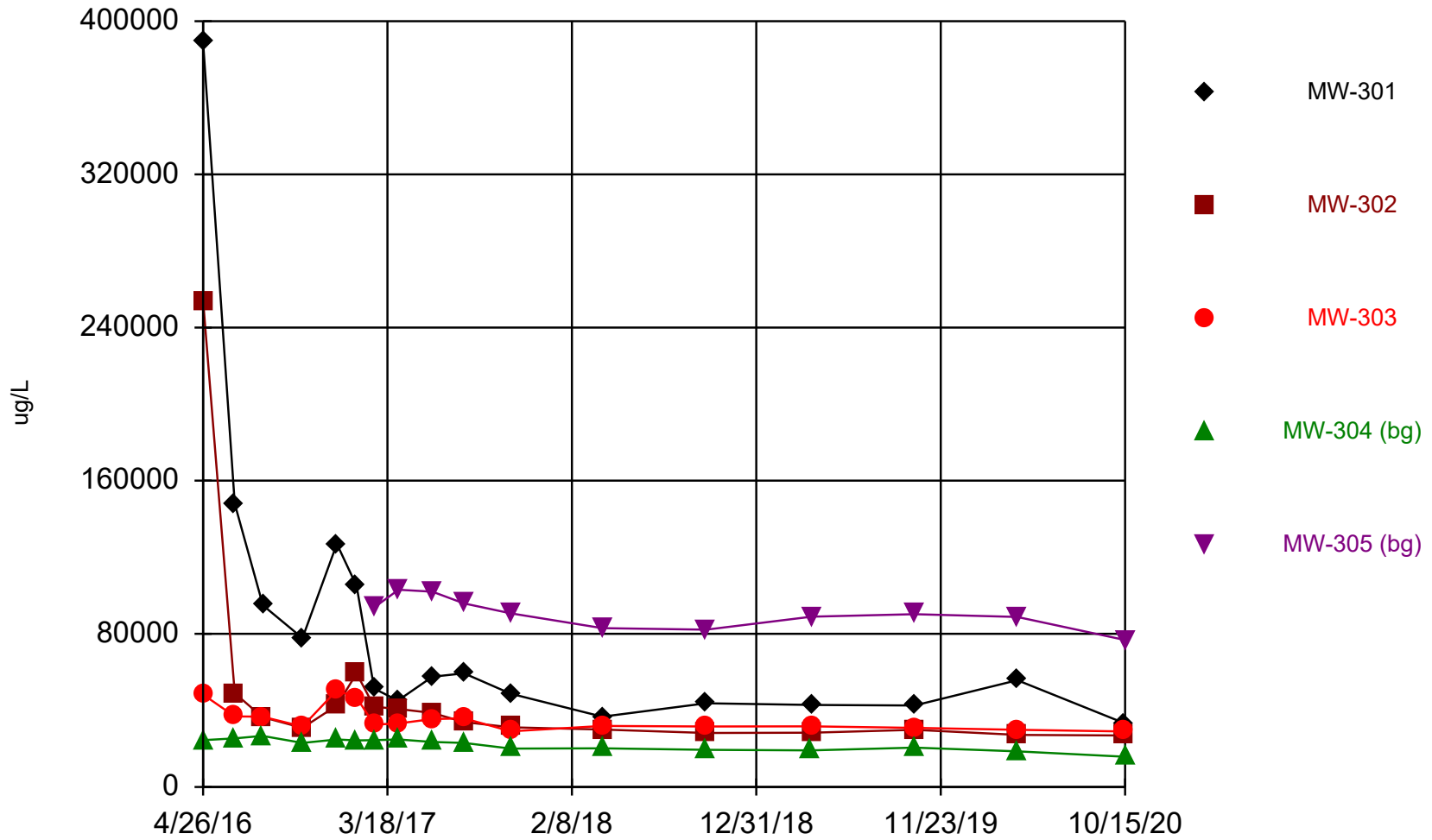
Time Series Analysis Run 12/1/2020 2:02 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series

Constituent: Boron (ug/L) Analysis Run 12/1/2020 2:06 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	298	198	86.4	92.1	
6/21/2016	157	121	85	90.9	
8/9/2016		131	96	102	
8/10/2016	151				
10/19/2016	148	126	90.8	106	
12/19/2016	174	127	81.6	102	
1/23/2017	177	151	99.8	101	
2/23/2017	181	149	93.9	99.8	94.4
4/6/2017	144	132			
4/7/2017			89.8	96.9	86.4
6/6/2017	138	124	89.1	102	78.8
8/1/2017	145	130	95	103	76.5
10/23/2017	149	128	89	104	70
4/3/2018	136	124	94.6	98.6	71.7
10/4/2018	120	115	87.3	90.2	65.9
4/8/2019				100	
4/9/2019	126	118	88.4		68
10/7/2019			91.2		
10/8/2019	142	129		104	73
4/7/2020	133			100	65.8
4/8/2020		111	79		
10/13/2020	142	128	85.8		
10/15/2020				94.5	65.5

Calcium



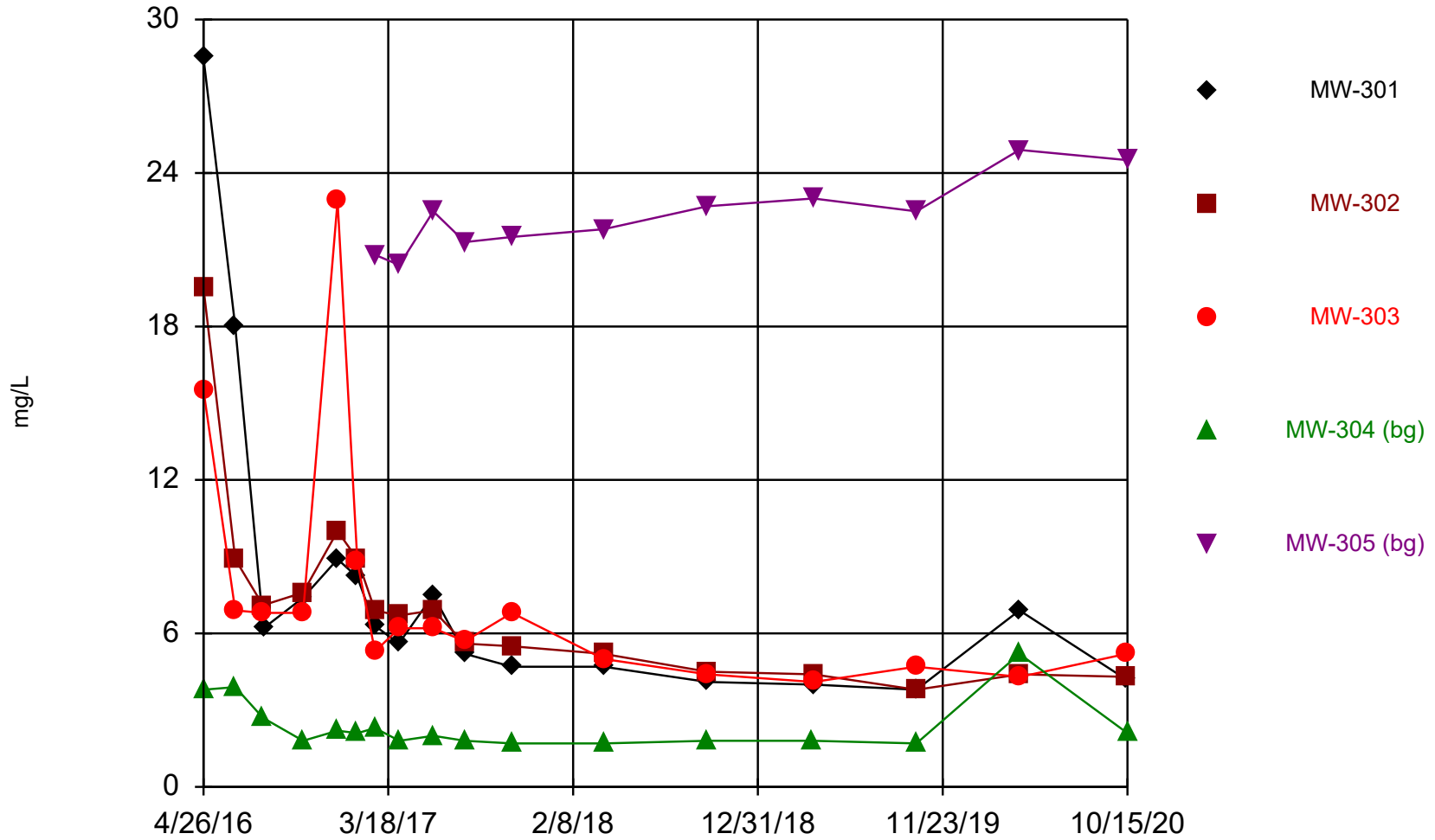
Time Series Analysis Run 12/1/2020 2:02 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series

Constituent: Calcium (ug/L) Analysis Run 12/1/2020 2:06 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	389000	254000	48300	24500	
6/21/2016	148000	49000	36900	25400	
8/9/2016		36500	36700	26700	
8/10/2016	94900				
10/19/2016	77800	30900	31600	23000	
12/19/2016	127000	42600	50500	24800	
1/23/2017	105000	59300	46700	24300	
2/23/2017	51400	41900	32600	24500	93800
4/6/2017	45200	40800			
4/7/2017			33200	24800	103000
6/6/2017	57600	38700	35500	23500	102000
8/1/2017	59400	33900	35900	23000	95900
10/23/2017	48700	31200	29100	20100	90700
4/3/2018	36700	30000	31900	20200	83000
10/4/2018	43700	28200	31600	19400	82200
4/8/2019				19100	
4/9/2019	42900	28400	31700		89000
10/7/2019			30900		
10/8/2019	42600	29900		20600	90300
4/7/2020	55800			18600	88800
4/8/2020		27200	29900		
10/13/2020	33400	26900	29000		
10/15/2020				15800	76800

Chloride



Time Series Analysis Run 12/1/2020 2:03 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

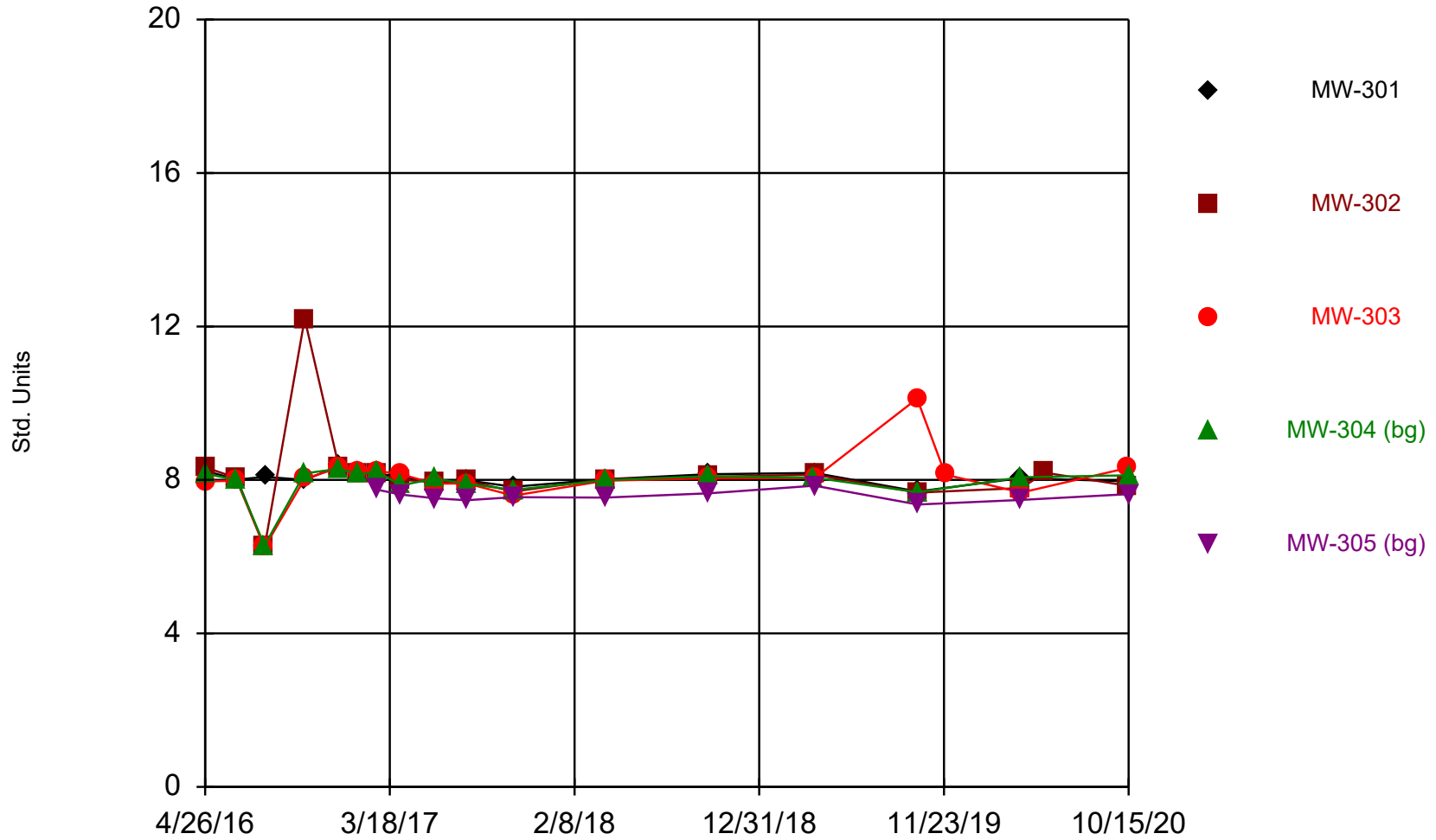
Time Series

Constituent: Chloride (mg/L) Analysis Run 12/1/2020 2:06 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	28.5 (J)	19.5 (J)	15.5	3.8 (J)	
6/21/2016	18 (J)	8.9	6.9	3.9 (J)	
8/9/2016		7.1	6.8	2.7 (J)	
8/10/2016	6.2				
10/19/2016	7.4 (J)	7.6	6.8	1.8 (J)	
12/19/2016	8.9 (J)	10	22.9	2.2	
1/23/2017	8.2 (J)	8.9 (J)	8.8 (J)	2.1	
2/23/2017	6.3	6.9	5.3	2.3	20.8
4/6/2017	5.6	6.7			
4/7/2017			6.2	1.8 (J)	20.4
6/6/2017	7.5 (J)	6.9	6.2	2	22.5
8/1/2017	5.2	5.6	5.7	1.8 (J)	21.3
10/23/2017	4.7	5.5	6.8	1.7 (J)	21.5
4/3/2018	4.7	5.2	5	1.7 (J)	21.8
10/4/2018	4.1	4.5	4.4	1.8 (J)	22.7
4/8/2019				1.8 (J)	
4/9/2019	4	4.4	4.1		23
10/7/2019			4.7		
10/8/2019	3.8	3.8		1.7 (J)	22.5
4/7/2020	6.9 (J)			5.2	24.9
4/8/2020		4.4	4.3		
10/13/2020	4.2	4.3	5.2		
10/15/2020				2.1	24.5

Field pH



Time Series Analysis Run 12/1/2020 2:03 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

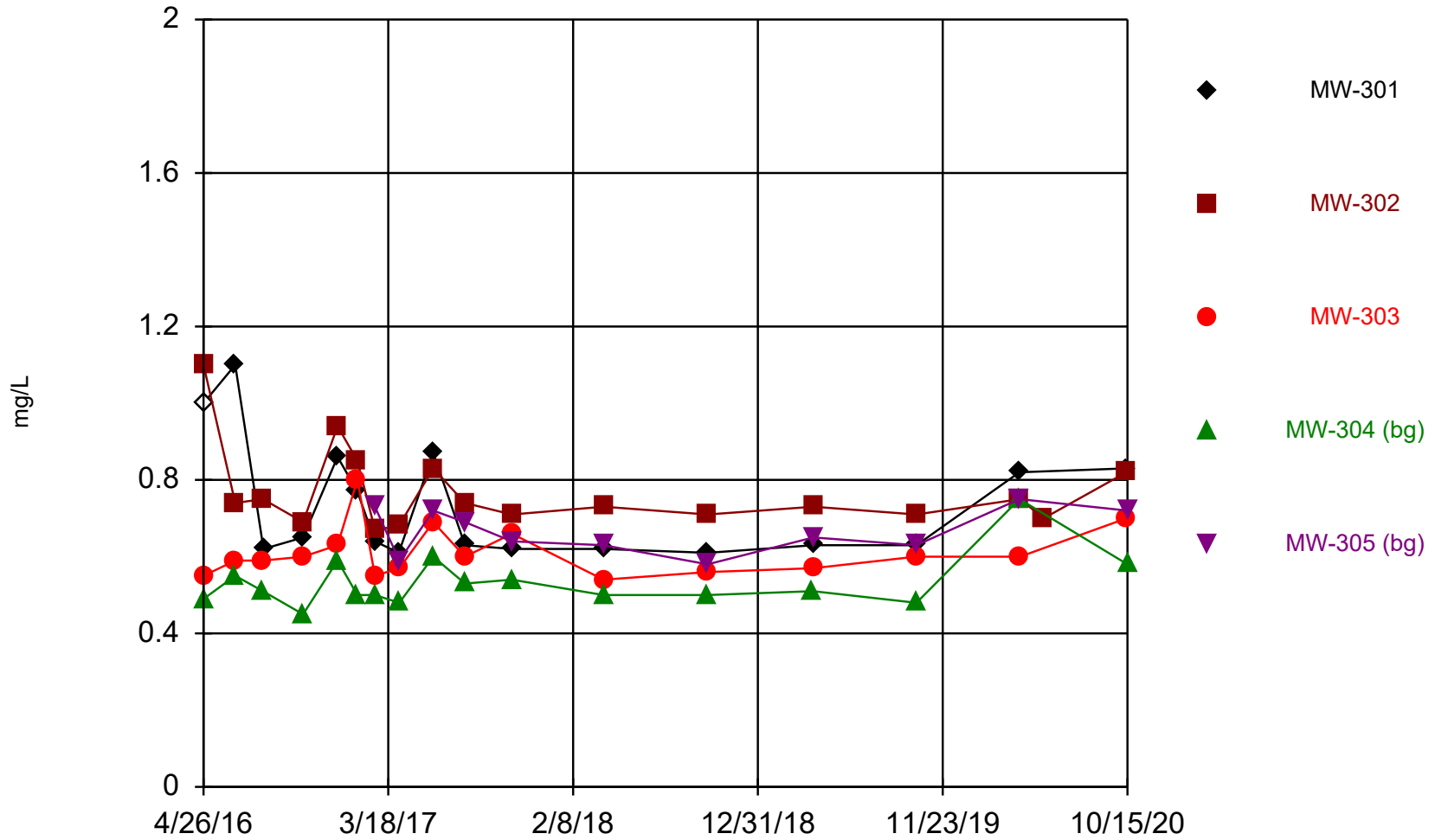
Time Series

Constituent: Field pH (Std. Units) Analysis Run 12/1/2020 2:06 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	8.24	8.33	7.96	8.16	
6/21/2016	8.01	8.05	7.98	8	
8/9/2016		6.24	6.24	6.29	
8/10/2016	8.08				
10/19/2016	8	12.2	8.03	8.17	
12/19/2016	8.36	8.31	8.32	8.29	
1/23/2017	8.21	8.16	8.23	8.14	
2/23/2017	8.14	8.16	8.24	8.22	7.75
4/6/2017	8.12	8			
4/7/2017			8.15	7.86	7.62
6/6/2017	7.89	7.95	7.9	8.03	7.52
8/1/2017	7.99	7.98	7.91	7.9	7.47
10/23/2017	7.82	7.7	7.59	7.74	7.55
4/3/2018	8.02	8.02	7.98	7.99	7.54
10/4/2018	8.15	8.08	8.04	8.1	7.65
4/8/2019				8.06	
4/9/2019	8.18	8.14	8.05		7.85
10/7/2019			10.12		
10/8/2019	7.7	7.67		7.68	7.36
11/26/2019			8.14		
4/7/2020	8.05			8.07	7.48
4/8/2020		7.79	7.67		
5/20/2020		8.19			
10/13/2020	7.96	7.85	8.31		
10/15/2020				8.12	7.63

Fluoride



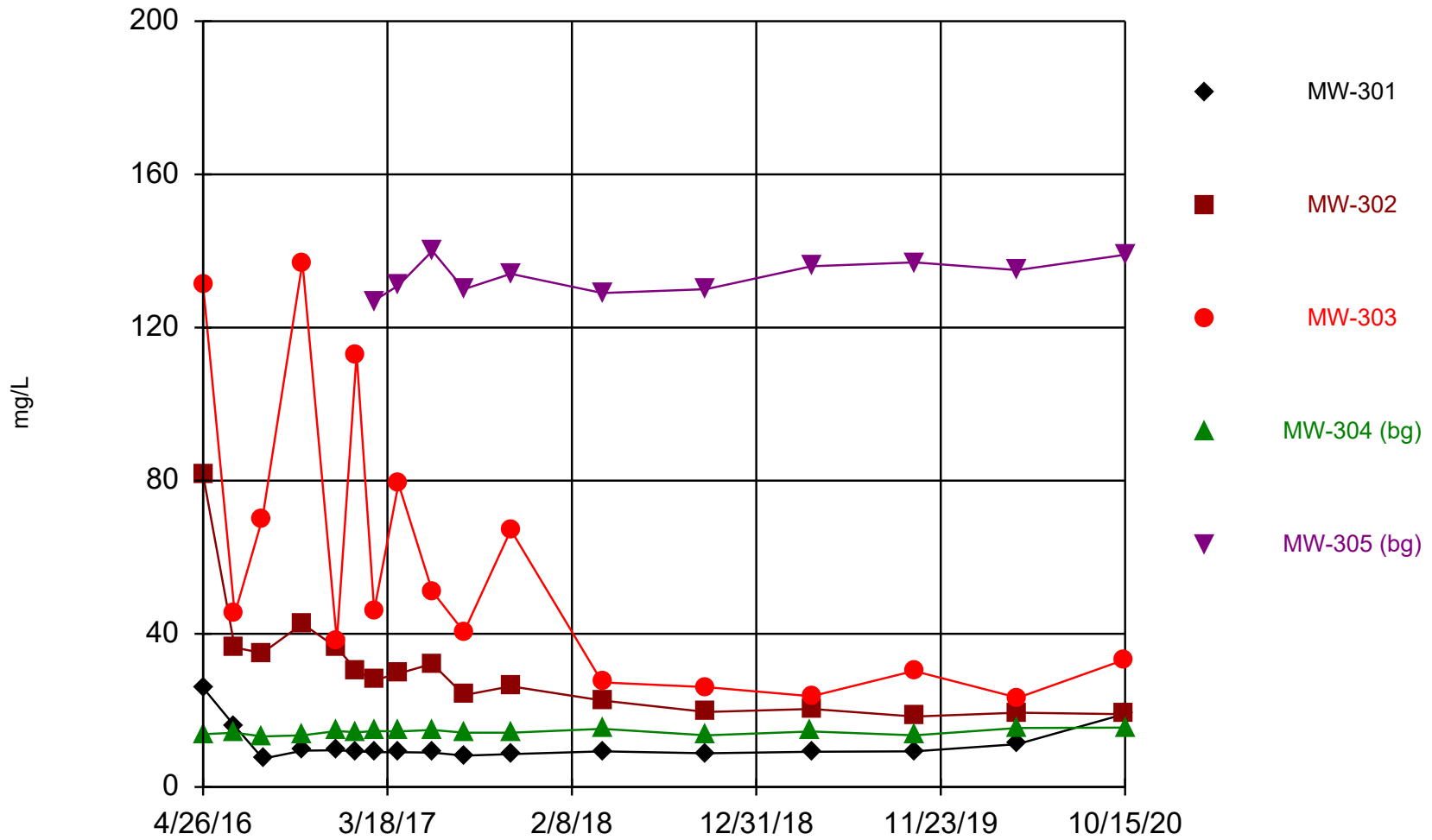
Time Series Analysis Run 12/1/2020 2:03 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series

Constituent: Fluoride (mg/L) Analysis Run 12/1/2020 2:06 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	<2 (U)	1.1 (J)	0.55	0.49	
6/21/2016	1.1 (J)	0.74	0.59	0.55	
8/9/2016		0.75	0.59	0.51	
8/10/2016	0.62				
10/19/2016	0.65 (J)	0.69	0.6	0.45	
12/19/2016	0.86 (J)	0.94 (J)	0.63	0.59	
1/23/2017	0.77 (J)	0.85 (J)	0.8 (J)	0.5	
2/23/2017	0.64	0.67	0.55	0.5	0.73
4/6/2017	0.61	0.68			
4/7/2017			0.57	0.48	0.59
6/6/2017	0.87 (J)	0.83	0.69	0.6	0.72
8/1/2017	0.63	0.74	0.6	0.53	0.69
10/23/2017	0.62	0.71	0.66	0.54	0.64
4/3/2018	0.62	0.73	0.54	0.5	0.63
10/4/2018	0.61	0.71	0.56	0.5	0.58
4/8/2019				0.51	
4/9/2019	0.63	0.73	0.57		0.65
10/7/2019			0.6		
10/8/2019	0.63	0.71		0.48	0.63
4/7/2020	0.82 (J)			0.75	0.75
4/8/2020		0.75	0.6		
5/20/2020		0.7			
10/13/2020	0.83	0.82	0.7		
10/15/2020				0.58	0.72

Sulfate



Time Series Analysis Run 12/1/2020 2:03 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

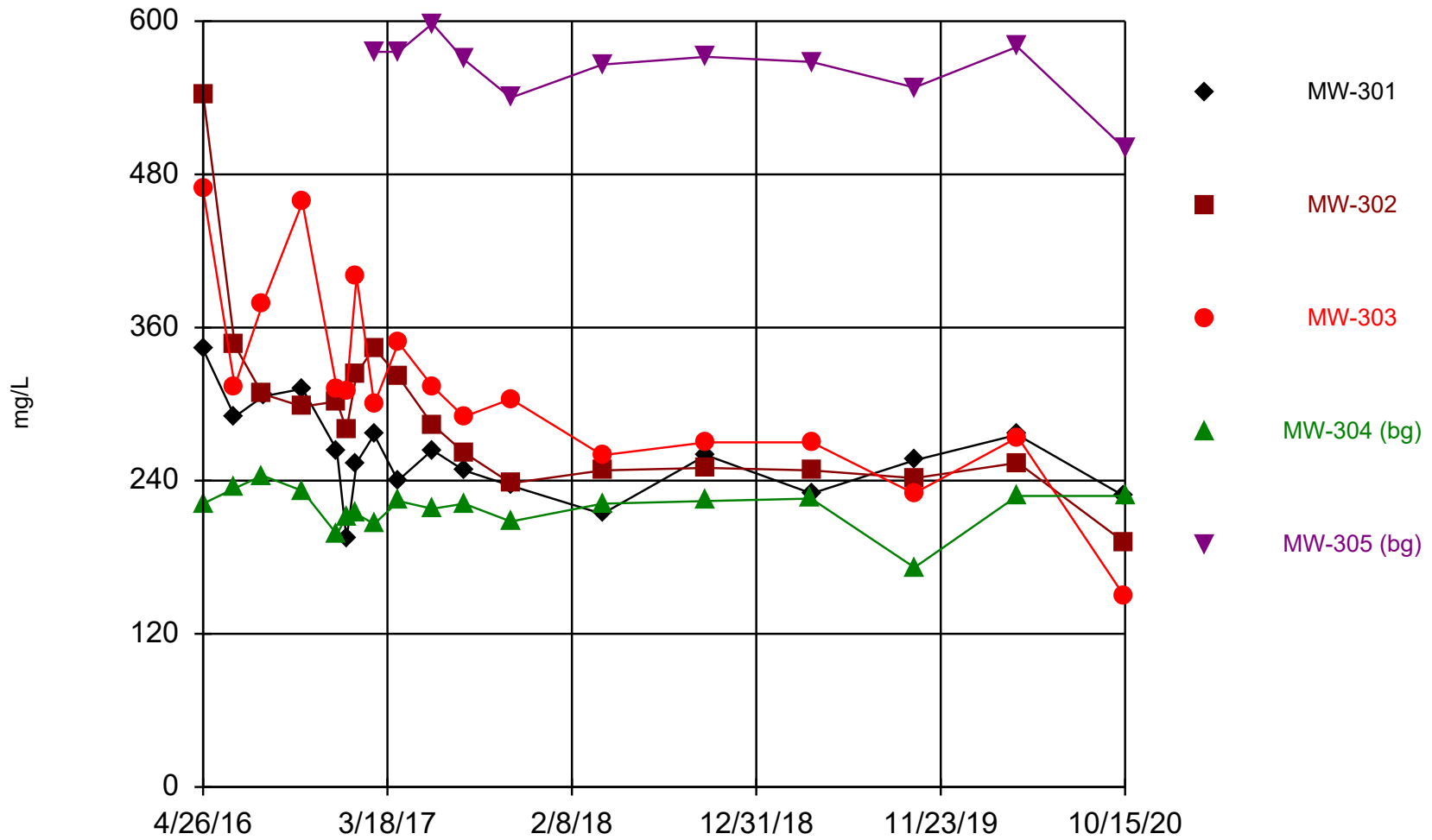
Time Series

Constituent: Sulfate (mg/L) Analysis Run 12/1/2020 2:06 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	25.9 (J)	81.5	131	13.8	
6/21/2016	15.9 (J)	36.4	45.2	14.2	
8/9/2016		35	70.1	13.2	
8/10/2016	7.4				
10/19/2016	9.5 (J)	42.6	137	13.5	
12/19/2016	9.6 (J)	36.4	38.2	14.6	
1/23/2017	9.3 (J)	30.4	113	14.3	
2/23/2017	9.1	27.9	46.1	14.6	127
4/6/2017	9.1	29.6			
4/7/2017			79.2	14.5	131
6/6/2017	9 (J)	32.2	51.1	14.9	140
8/1/2017	8.2	24	40.5	14.2	130
10/23/2017	8.6	26.3	67.1	14.2	134
4/3/2018	9.3	22.6	27.3	15.2	129
10/4/2018	8.8	19.6	26.1	13.5	130
4/8/2019				14.5	
4/9/2019	9.2	20.4	23.7		136
10/7/2019			30.3		
10/8/2019	9.3	18.4		13.5	137
4/7/2020	11.2			15.4	135
4/8/2020		19.4	23.3		
10/13/2020	19	19	33.2		
10/15/2020				15.5	139

Total Dissolved Solids



Time Series Analysis Run 12/1/2020 2:03 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/1/2020 2:06 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	343	543	468	222	
6/21/2016	290	346	314	234	
8/9/2016		308	378	244	
8/10/2016	306				
10/19/2016	312	298	458	232	
12/19/2016	264	302	312	198	
1/5/2017	194	280	310	212	
1/23/2017	254	324	400	214	
2/23/2017	276	344	300	206	576
4/6/2017	240	322			
4/7/2017			348	224	576
6/6/2017	264	284	314	218	598
8/1/2017	248	262	290	222	570
10/23/2017	236	238	304	208	540
4/3/2018	214	248	260	222	566
10/4/2018	260	250	270	224	572
4/8/2019				226	
4/9/2019	230	248	270		568
10/7/2019			230		
10/8/2019	256	242		172	548
4/7/2020	276			228	580
4/8/2020		254	274		
10/13/2020	228	192	150		
10/15/2020				228	500

Attachment 2

Outlier Analysis – Interwell

Outlier Analysis

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All Printed 12/30/2020, 11:46 PM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Calcium (ug/L)	MW-304 (bg)	No	n/a	n/a	EPA 1989	0.05	17	22253	3003	normal	ShapiroWilk
Calcium (ug/L)	MW-305 (bg)	No	n/a	n/a	EPA 1989	0.05	11	90500	8041	normal	ShapiroWilk
Chloride (mg/L)	MW-304 (bg)	No	n/a	n/a	NP (nrm)	NaN	17	2.376	0.9934	unknown	ShapiroWilk
Chloride (mg/L)	MW-305 (bg)	No	n/a	n/a	EPA 1989	0.05	11	22.35	1.416	normal	ShapiroWilk
Field pH (Std. Units)	MW-304 (bg)	Yes	6.29	8/9/2016	Dixon`s	0.05	17	7.931	0.4529	normal	ShapiroWilk
Field pH (Std. Units)	MW-305 (bg)	No	n/a	n/a	EPA 1989	0.05	11	7.584	0.1368	normal	ShapiroWilk
Fluoride (mg/L)	MW-304 (bg)	Yes	0.75	4/7/2020	Dixon`s	0.05	17	0.5329	0.06944	normal	ShapiroWilk
Fluoride (mg/L)	MW-305 (bg)	No	n/a	n/a	EPA 1989	0.05	11	0.6664	0.05853	normal	ShapiroWilk
Sulfate (mg/L)	MW-304 (bg)	No	n/a	n/a	EPA 1989	0.05	17	14.33	0.6835	normal	ShapiroWilk
Sulfate (mg/L)	MW-305 (bg)	No	n/a	n/a	EPA 1989	0.05	11	133.5	4.321	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-304 (bg)	Yes	172	10/8/2019	Dixon`s	0.05	18	218.6	15.94	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-305 (bg)	Yes	500	10/15/2020	Dixon`s	0.05	11	563.1	25.96	normal	ShapiroWilk

EPA Screening (suspected outliers for Dixon's Test)

MW-304 (bg)



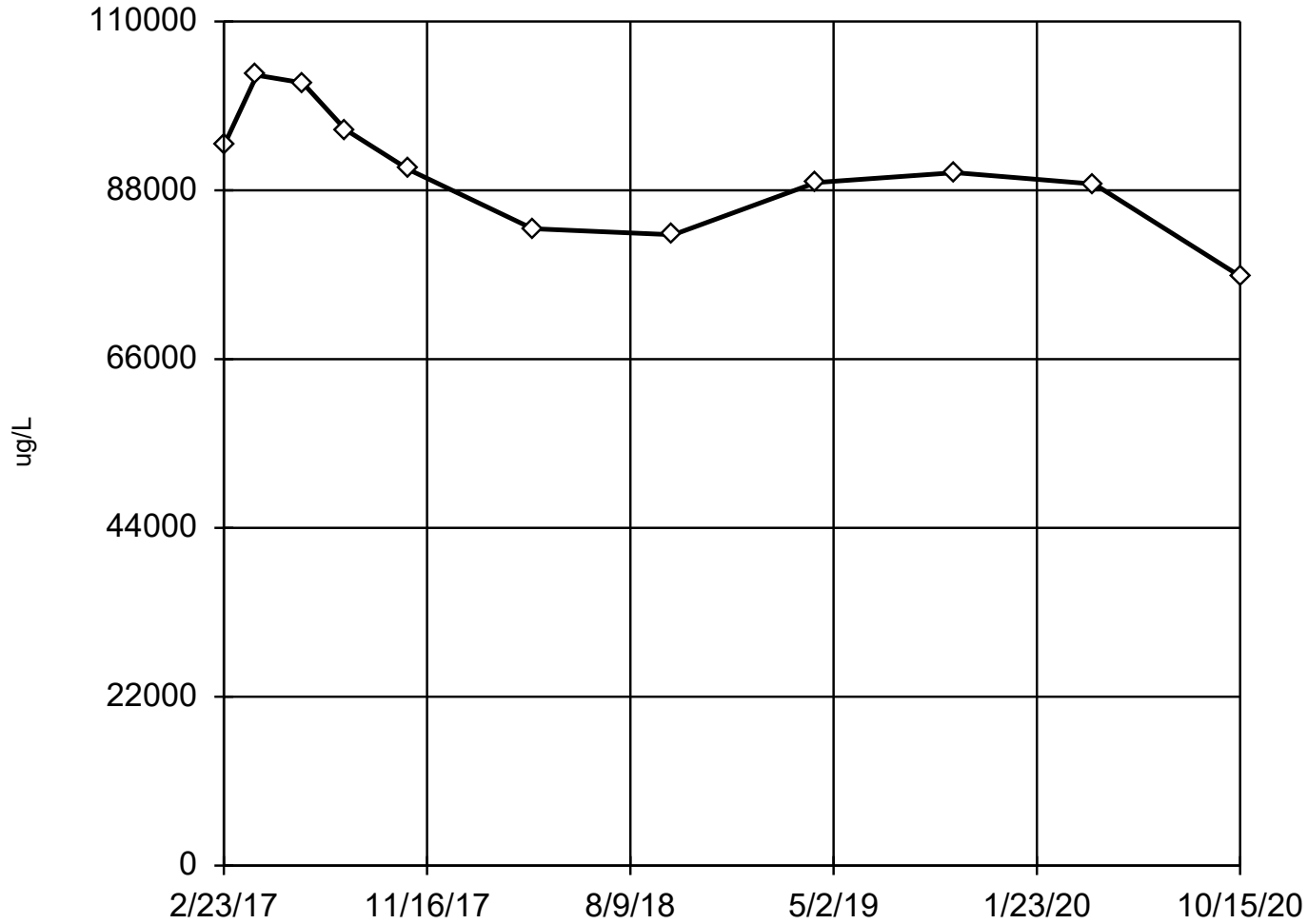
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-304 (bg)
4/26/2016	24500
6/21/2016	25400
8/9/2016	26700
10/19/2016	23000
12/19/2016	24800
1/23/2017	24300
2/23/2017	24500
4/7/2017	24800
6/6/2017	23500
8/1/2017	23000
10/23/2017	20100
4/3/2018	20200
10/4/2018	19400
4/8/2019	19100
10/8/2019	20600
4/7/2020	18600
10/15/2020	15800

EPA Screening (suspected outliers for Dixon's Test)

MW-305 (bg)



n = 11
Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 90500, std. dev. 8041, critical Tn 2.234

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9655
Critical = 0.876
The distribution was found to be normally distributed.

EPA 1989 Outlier Screening

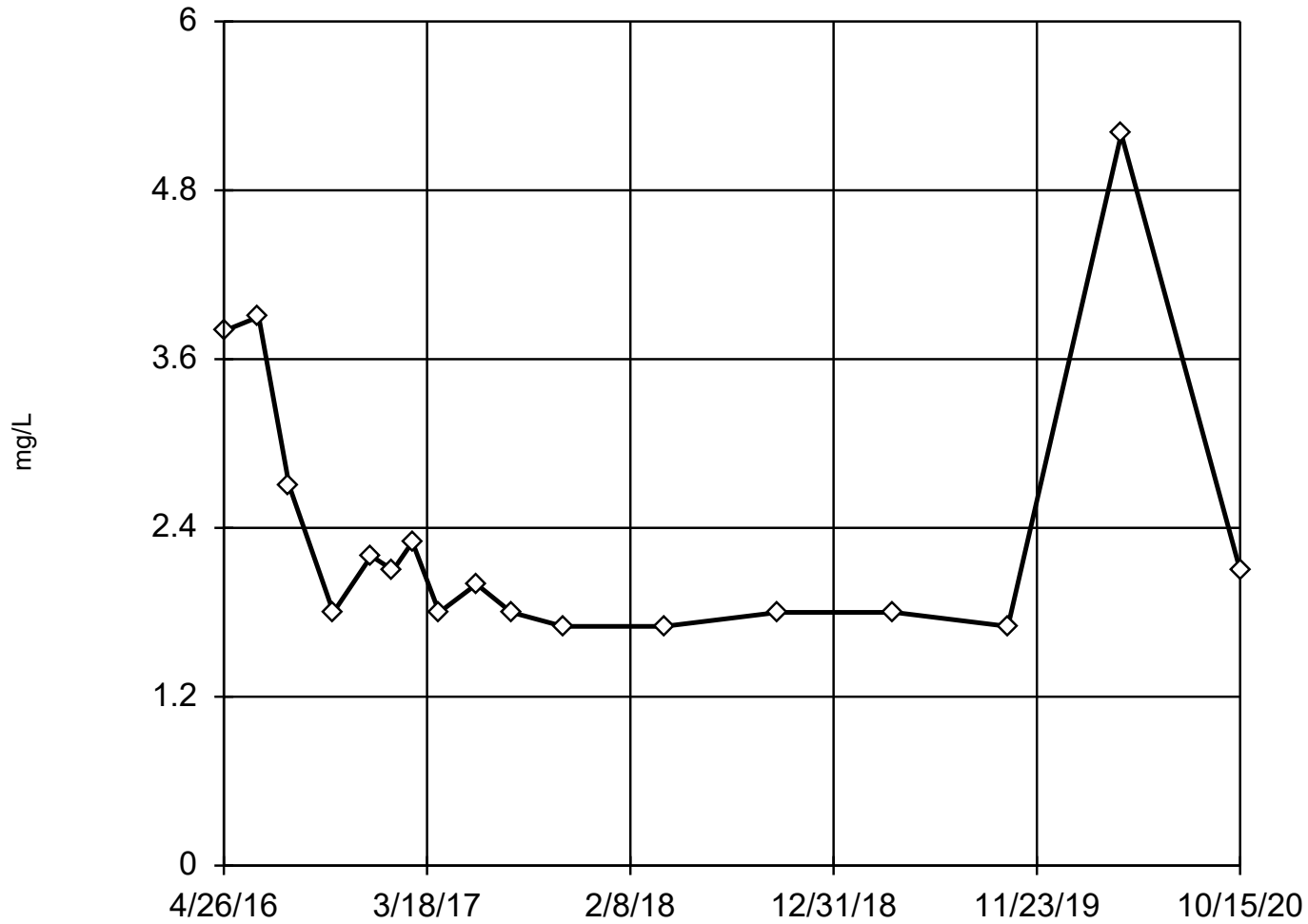
Constituent: Calcium (ug/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

MW-305 (bg)

2/23/2017	93800
4/7/2017	103000
6/6/2017	102000
8/1/2017	95900
10/23/2017	90700
4/3/2018	83000
10/4/2018	82200
4/9/2019	89000
10/8/2019	90300
4/7/2020	88800
10/15/2020	76800

Tukey's Outlier Screening

MW-304 (bg)



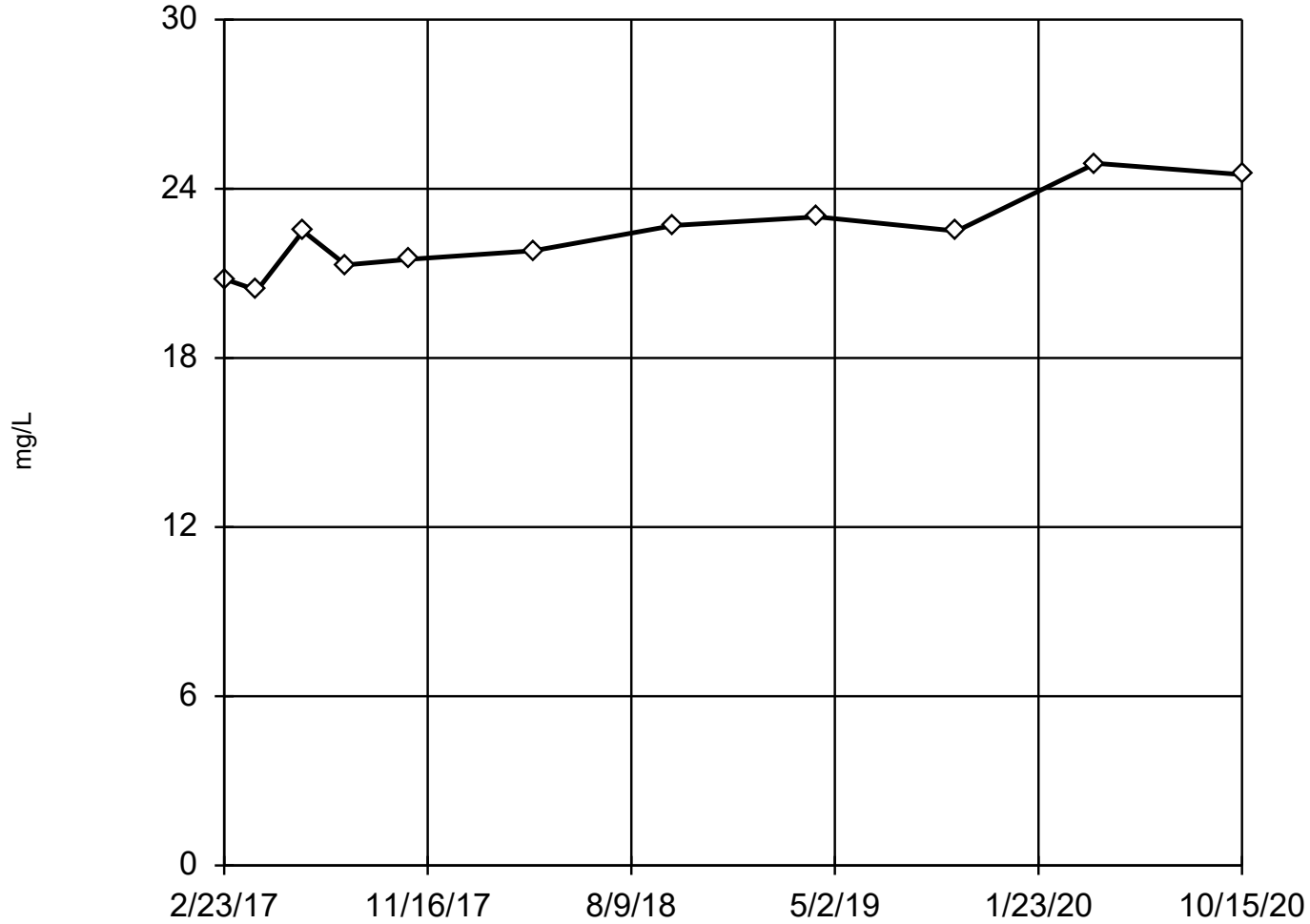
Tukey's Outlier Screening

Constituent: Chloride (mg/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-304 (bg)
4/26/2016	3.8 (J)
6/21/2016	3.9 (J)
8/9/2016	2.7 (J)
10/19/2016	1.8 (J)
12/19/2016	2.2
1/23/2017	2.1
2/23/2017	2.3
4/7/2017	1.8 (J)
6/6/2017	2
8/1/2017	1.8 (J)
10/23/2017	1.7 (J)
4/3/2018	1.7 (J)
10/4/2018	1.8 (J)
4/8/2019	1.8 (J)
10/8/2019	1.7 (J)
4/7/2020	5.2
10/15/2020	2.1

EPA Screening (suspected outliers for Dixon's Test)

MW-305 (bg)



n = 11
Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 22.35, std. dev. 1.416, critical Tn 2.234

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9445
Critical = 0.876
The distribution was found to be normally distributed.

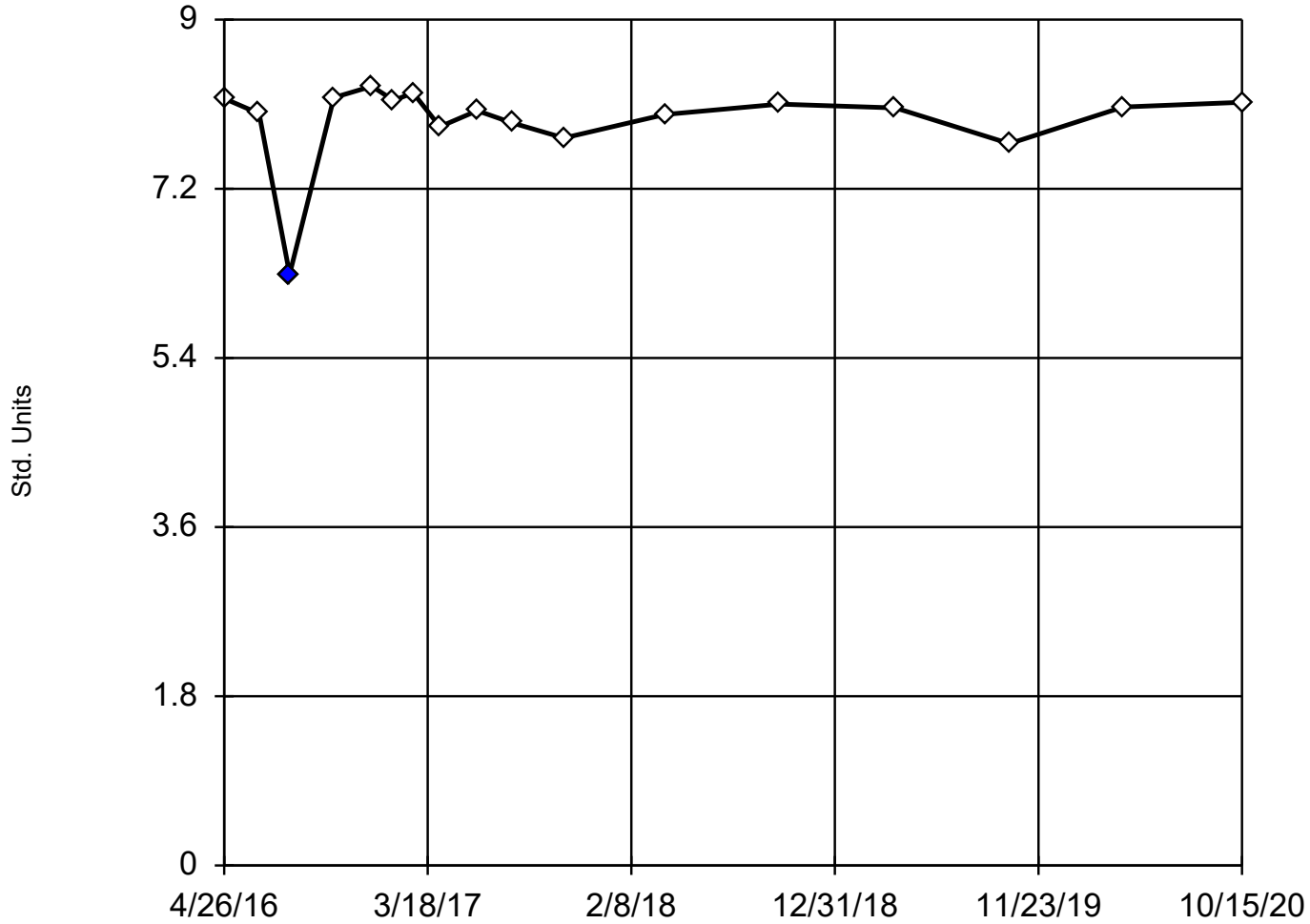
EPA 1989 Outlier Screening

Constituent: Chloride (mg/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-305 (bg)
2/23/2017	20.8
4/7/2017	20.4
6/6/2017	22.5
8/1/2017	21.3
10/23/2017	21.5
4/3/2018	21.8
10/4/2018	22.7
4/9/2019	23
10/8/2019	22.5
4/7/2020	24.9
10/15/2020	24.5

Dixon's Outlier Test

MW-304 (bg)



n = 17

Statistical outlier is drawn as solid.
Testing for 1 low outlier.
Mean = 7.931.
Std. Dev. = 0.4529.
6.29 (O): c = 0.7713
tab1 = 0.49.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9483
Critical = 0.906
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Field pH Analysis Run 12/30/2020 11:44 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

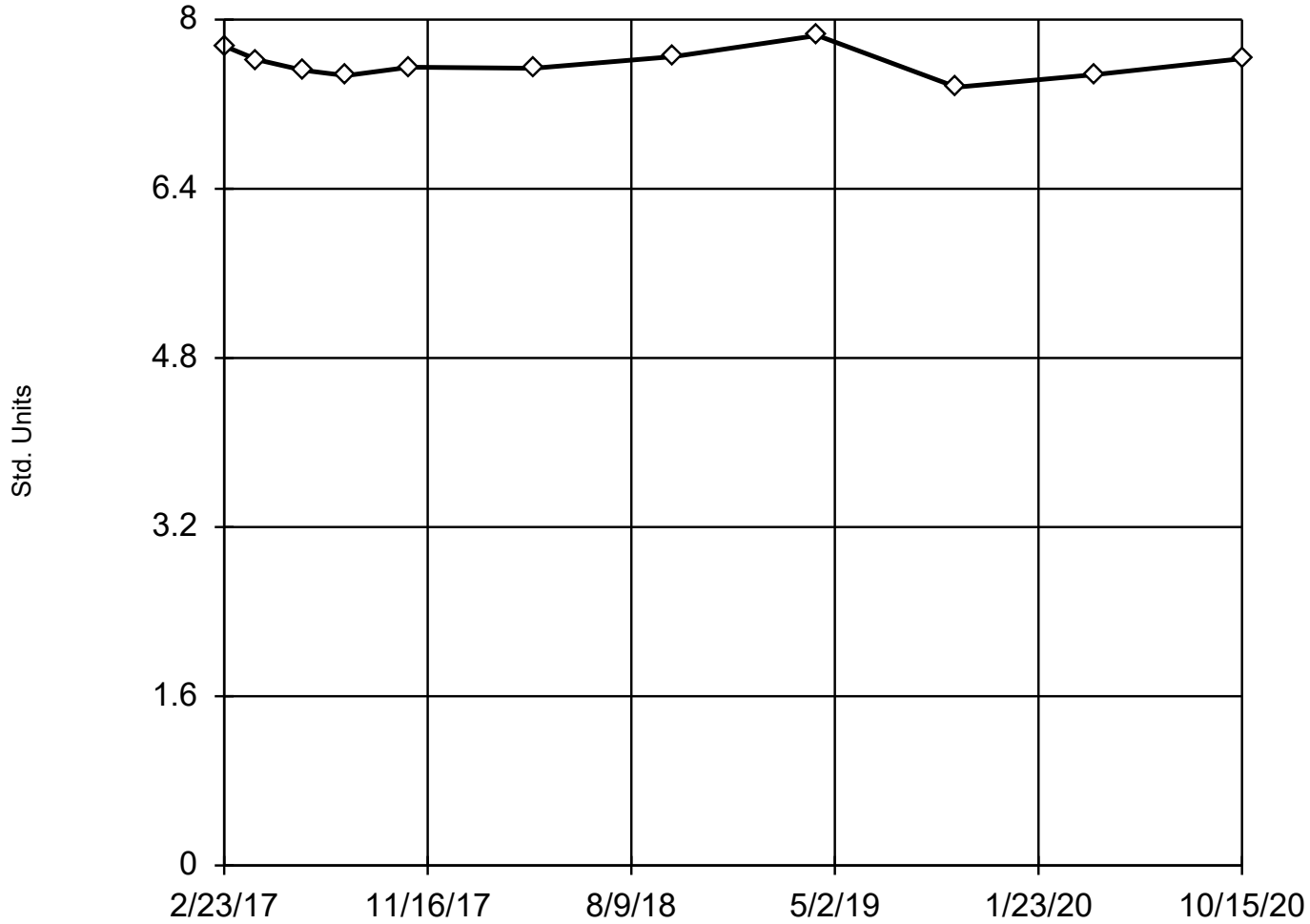
Dixon's Outlier Test

Constituent: Field pH (Std. Units) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-304 (bg)
4/26/2016	8.16
6/21/2016	8
8/9/2016	6.29 (O)
10/19/2016	8.17
12/19/2016	8.29
1/23/2017	8.14
2/23/2017	8.22
4/7/2017	7.86
6/6/2017	8.03
8/1/2017	7.9
10/23/2017	7.74
4/3/2018	7.99
10/4/2018	8.1
4/8/2019	8.06
10/8/2019	7.68
4/7/2020	8.07
10/15/2020	8.12

EPA Screening (suspected outliers for Dixon's Test)

MW-305 (bg)



n = 11
Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 7.584, std. dev. 0.1368, critical Tn 2.234

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9736
Critical = 0.876
The distribution was found to be normally distributed.

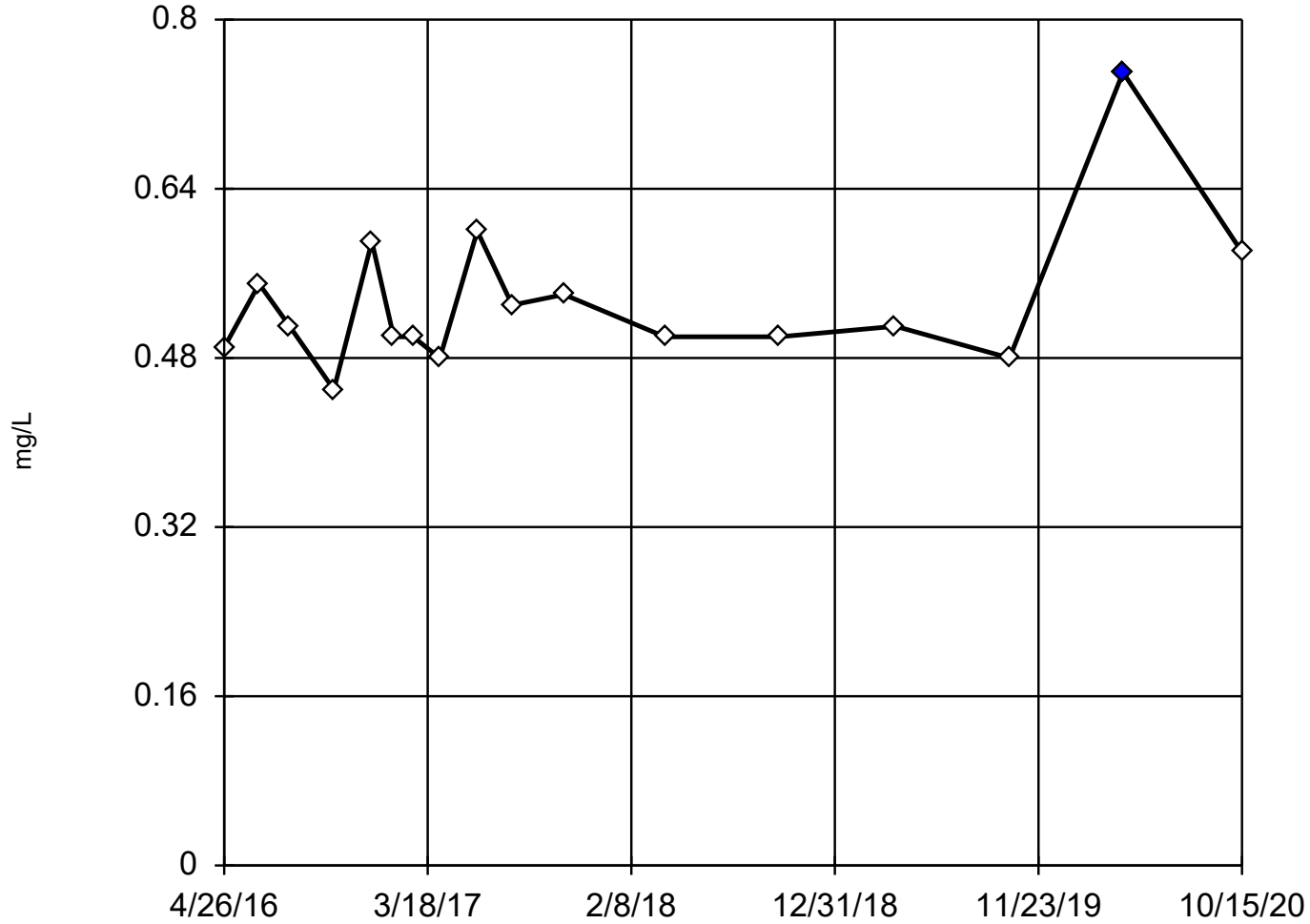
EPA 1989 Outlier Screening

Constituent: Field pH (Std. Units) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-305 (bg)
2/23/2017	7.75
4/7/2017	7.62
6/6/2017	7.52
8/1/2017	7.47
10/23/2017	7.55
4/3/2018	7.54
10/4/2018	7.65
4/9/2019	7.85
10/8/2019	7.36
4/7/2020	7.48
10/15/2020	7.63

Dixon's Outlier Test

MW-304 (bg)



n = 17

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 0.5329.
Std. Dev. = 0.06944.
0.75: c = 0.5926
tab1 = 0.49.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9268
Critical = 0.906
The distribution, after removal of suspect value, was found to be normally distributed.

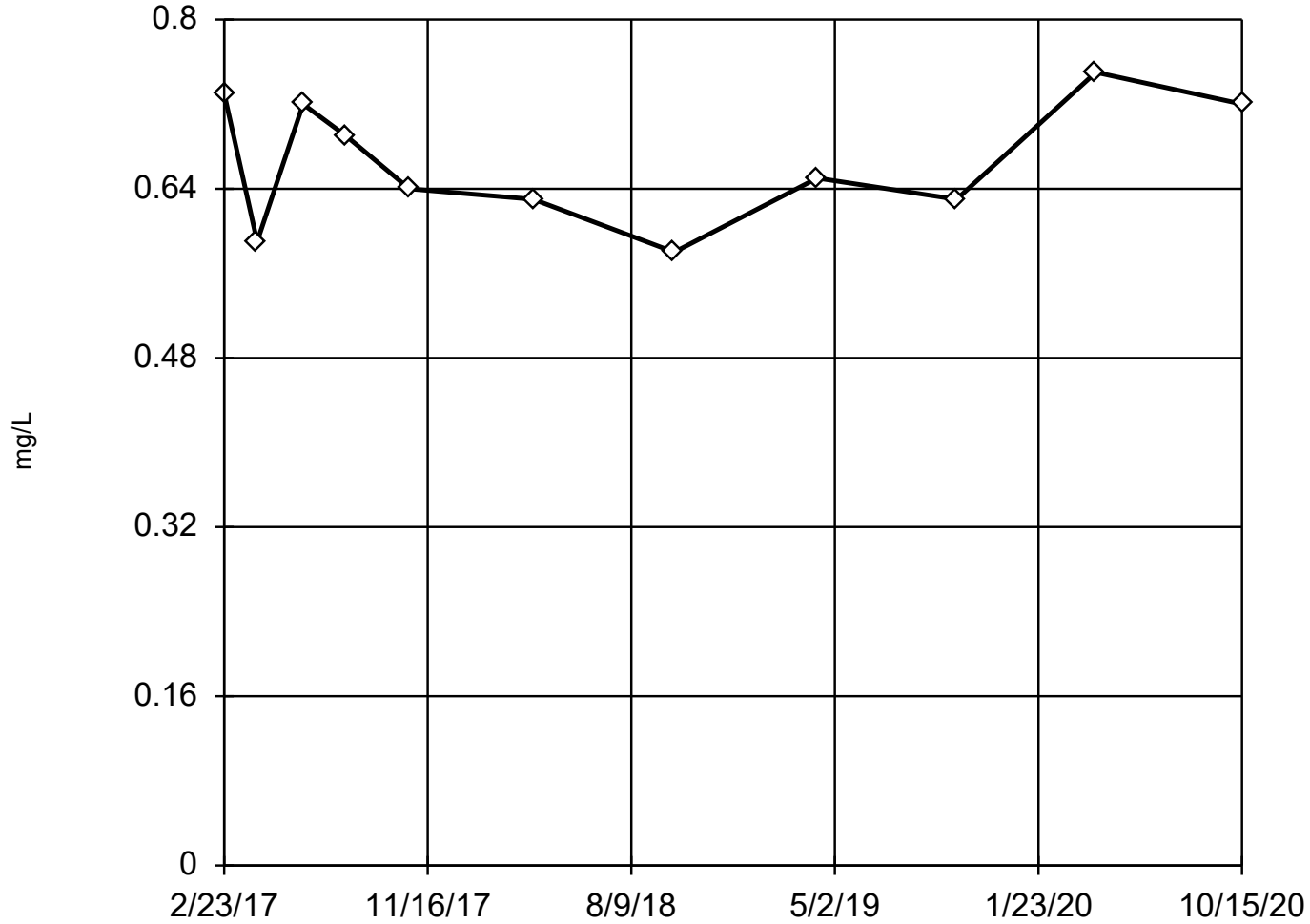
Dixon's Outlier Test

Constituent: Fluoride (mg/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-304 (bg)
4/26/2016	0.49
6/21/2016	0.55
8/9/2016	0.51
10/19/2016	0.45
12/19/2016	0.59
1/23/2017	0.5
2/23/2017	0.5
4/7/2017	0.48
6/6/2017	0.6
8/1/2017	0.53
10/23/2017	0.54
4/3/2018	0.5
10/4/2018	0.5
4/8/2019	0.51
10/8/2019	0.48
4/7/2020	0.75 (O)
10/15/2020	0.58

EPA Screening (suspected outliers for Dixon's Test)

MW-305 (bg)



n = 11
Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 0.6664, std. dev. 0.05853, critical Tn 2.234

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9281
Critical = 0.876
The distribution was found to be normally distributed.

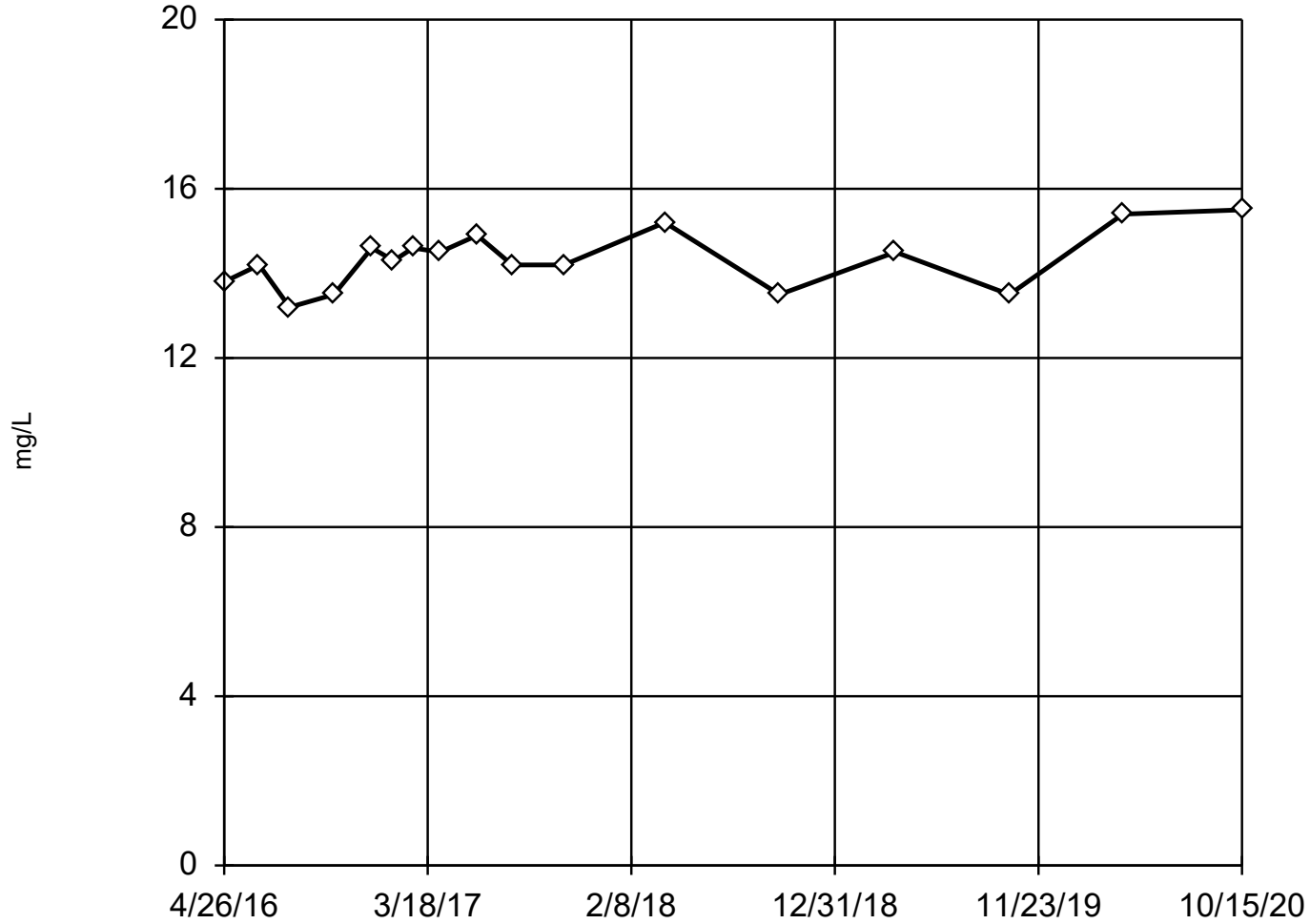
EPA 1989 Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-305 (bg)
2/23/2017	0.73
4/7/2017	0.59
6/6/2017	0.72
8/1/2017	0.69
10/23/2017	0.64
4/3/2018	0.63
10/4/2018	0.58
4/9/2019	0.65
10/8/2019	0.63
4/7/2020	0.75
10/15/2020	0.72

EPA Screening (suspected outliers for Dixon's Test)

MW-304 (bg)



n = 17
Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 14.33, std. dev. 0.6835, critical Tn 2.475
Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9561
Critical = 0.91
The distribution was found to be normally distributed.

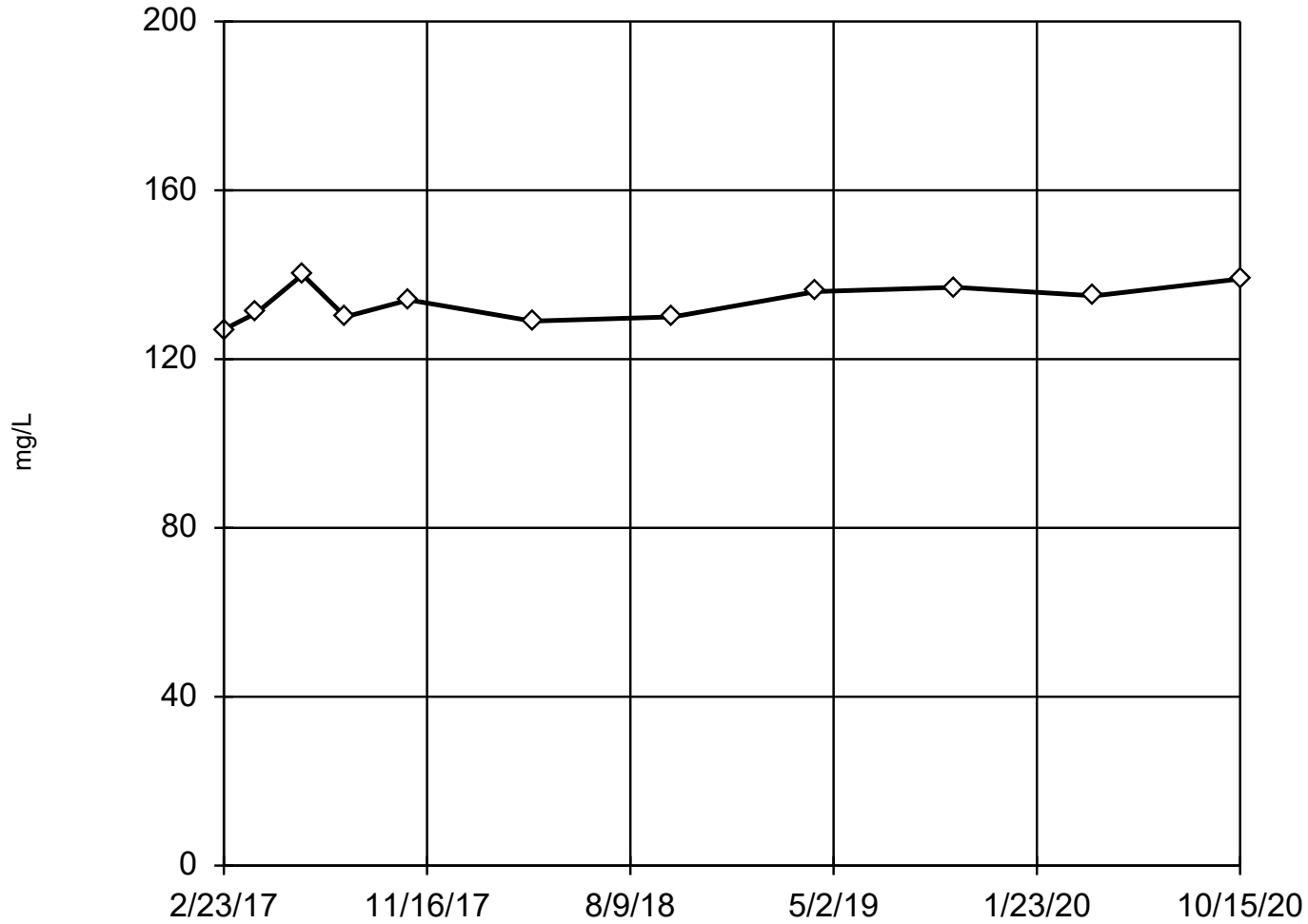
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-304 (bg)
4/26/2016	13.8
6/21/2016	14.2
8/9/2016	13.2
10/19/2016	13.5
12/19/2016	14.6
1/23/2017	14.3
2/23/2017	14.6
4/7/2017	14.5
6/6/2017	14.9
8/1/2017	14.2
10/23/2017	14.2
4/3/2018	15.2
10/4/2018	13.5
4/8/2019	14.5
10/8/2019	13.5
4/7/2020	15.4
10/15/2020	15.5

EPA Screening (suspected outliers for Dixon's Test)

MW-305 (bg)



n = 11
Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 133.5, std. dev. 4.321, critical Tn 2.234

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9493
Critical = 0.876
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 12/30/2020 11:45 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

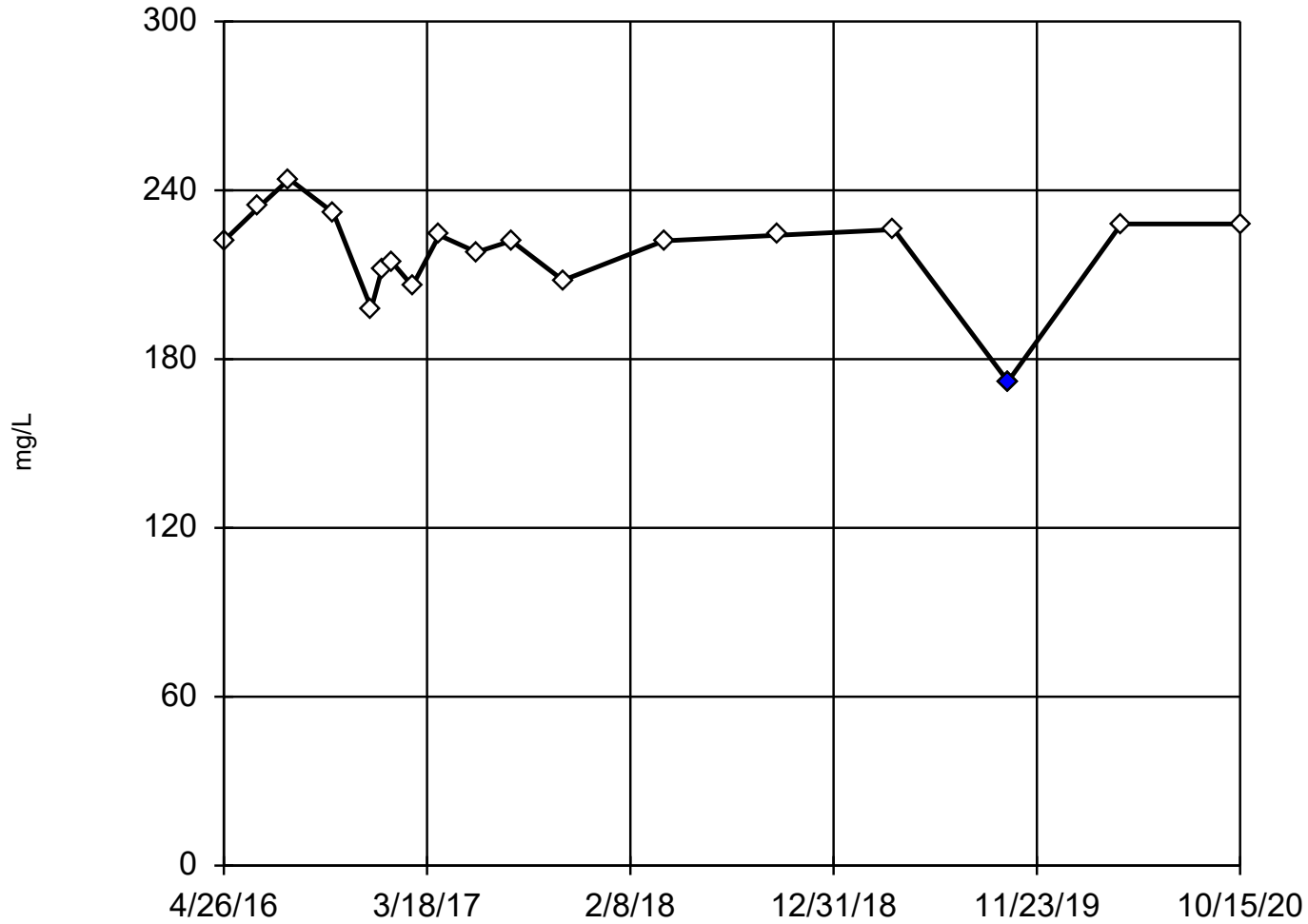
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-305 (bg)
2/23/2017	127
4/7/2017	131
6/6/2017	140
8/1/2017	130
10/23/2017	134
4/3/2018	129
10/4/2018	130
4/9/2019	136
10/8/2019	137
4/7/2020	135
10/15/2020	139

Dixon's Outlier Test

MW-304 (bg)



n = 18

Statistical outlier is drawn as solid.
Testing for 1 low outlier.
Mean = 218.6.
Std. Dev. = 15.94.
172: c = 0.5667
tab1 = 0.475.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.98
Critical = 0.91
The distribution, after removal of suspect value, was found to be normally distributed.

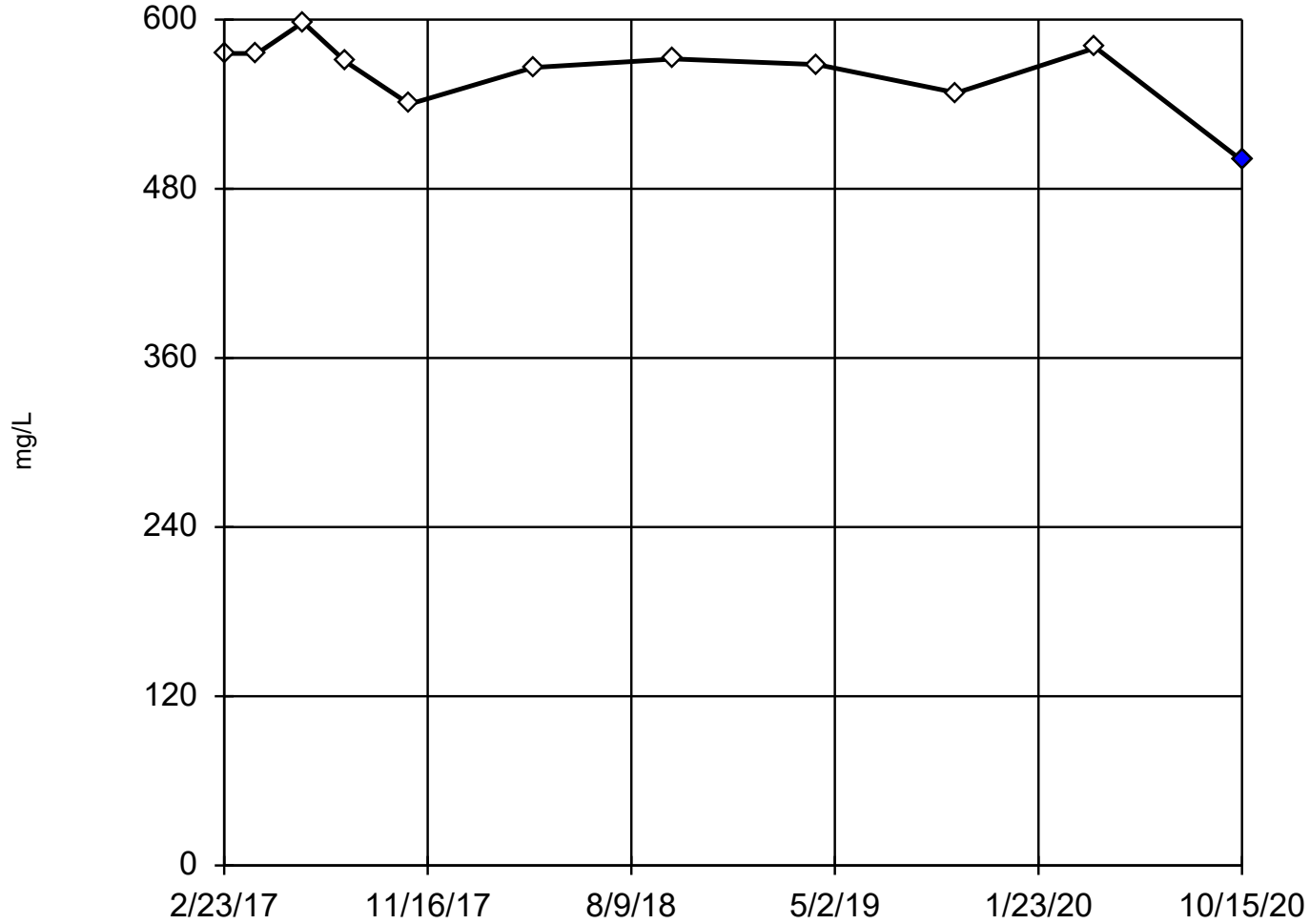
Dixon's Outlier Test

Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-304 (bg)
4/26/2016	222
6/21/2016	234
8/9/2016	244
10/19/2016	232
12/19/2016	198
1/5/2017	212
1/23/2017	214
2/23/2017	206
4/7/2017	224
6/6/2017	218
8/1/2017	222
10/23/2017	208
4/3/2018	222
10/4/2018	224
4/8/2019	226
10/8/2019	172 (O)
4/7/2020	228
10/15/2020	228

Dixon's Outlier Test

MW-305 (bg)



n = 11

Statistical outlier is drawn as solid.
Testing for 1 low outlier.
Mean = 563.1.
Std. Dev. = 25.96.
500: c = 0.6
tab1 = 0.576.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9366
Critical = 0.869
The distribution, after removal of suspect value, was found to be normally distributed.

Dixon's Outlier Test

Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/30/2020 11:46 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-305 (bg)
2/23/2017	576
4/7/2017	576
6/6/2017	598
8/1/2017	570
10/23/2017	540
4/3/2018	566
10/4/2018	572
4/9/2019	568
10/8/2019	548
4/7/2020	580
10/15/2020	500 (O)

Attachment 3

Outlier Analysis – Intrawell

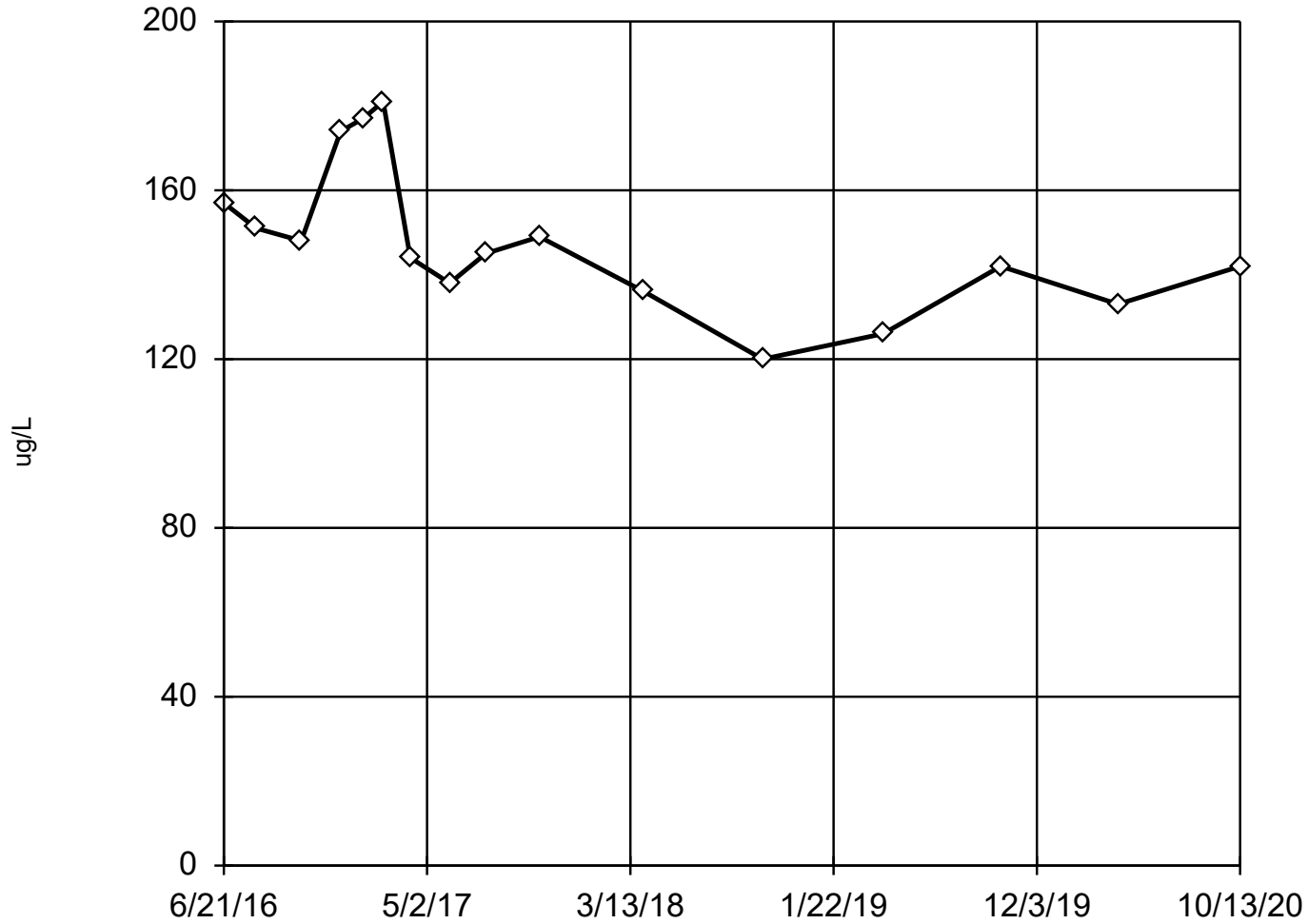
Outlier Analysis

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All Printed 12/1/2020, 2:52 PM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Boron (ug/L)	MW-301	No	n/a	n/a	EPA 1989	0.05	16	147.7	17.38	normal	ShapiroWilk
Boron (ug/L)	MW-302	No	n/a	n/a	EPA 1989	0.05	16	127.8	10.47	ln(x)	ShapiroWilk
Boron (ug/L)	MW-303	No	n/a	n/a	EPA 1989	0.05	17	89.57	5.31	normal	ShapiroWilk

EPA Screening (suspected outliers for Dixon's Test)

MW-301



n = 16

Dixon's will not be run.
No suspect values identified
or unable to establish
suspect values.
Mean 147.7, std. dev.
17.38, critical Tn 2.443

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9325
Critical = 0.906
The distribution was found
to be normally distrib-
uted.

Constituent: Boron Analysis Run 12/1/2020 2:51 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

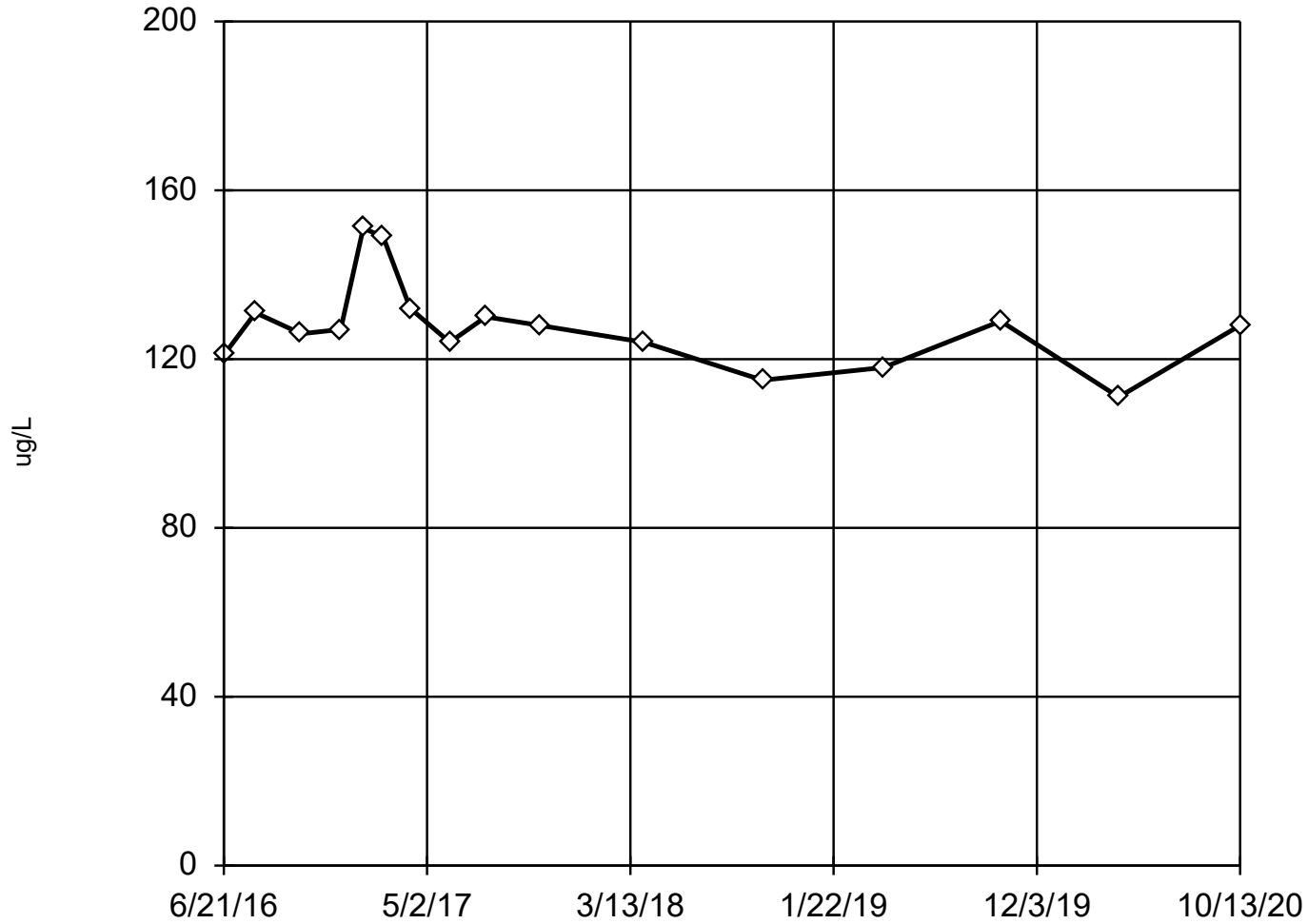
EPA 1989 Outlier Screening

Constituent: Boron (ug/L) Analysis Run 12/1/2020 2:52 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301
4/26/2016	298 (R)
6/21/2016	157
8/10/2016	151
10/19/2016	148
12/19/2016	174
1/23/2017	177
2/23/2017	181
4/6/2017	144
6/6/2017	138
8/1/2017	145
10/23/2017	149
4/3/2018	136
10/4/2018	120
4/9/2019	126
10/8/2019	142
4/7/2020	133
10/13/2020	142

EPA Screening (suspected outliers for Dixon's Test)

MW-302



n = 16

Dixon's will not be run.
No suspect values identified
or unable to establish
suspect values.
Mean 127.8, std. dev.
10.47, critical Tn 2.443

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9183
Critical = 0.906 (after
natural log transforma-
tion)
The distribution was found
to be log-normal.

Constituent: Boron Analysis Run 12/1/2020 2:51 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

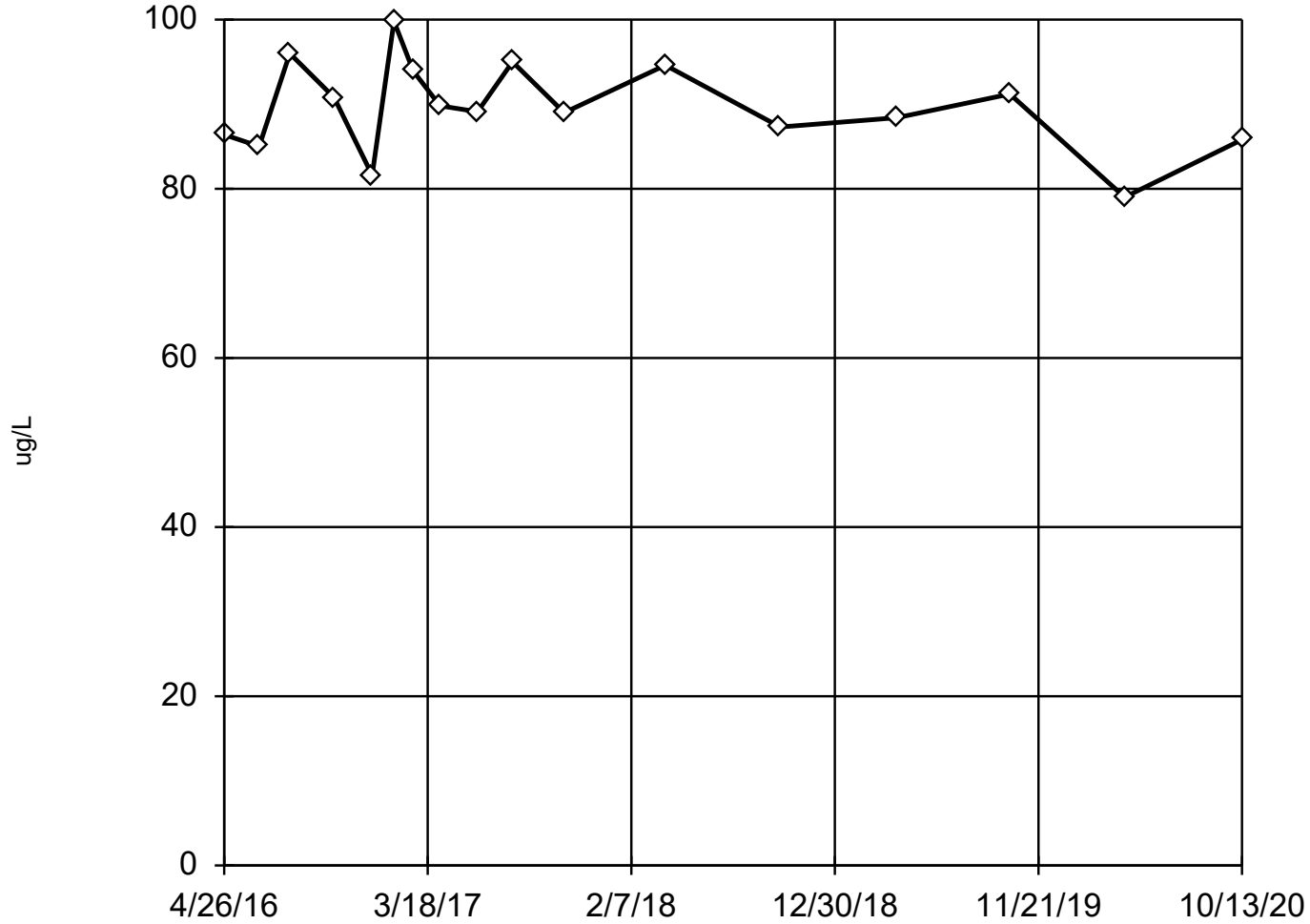
EPA 1989 Outlier Screening

Constituent: Boron (ug/L) Analysis Run 12/1/2020 2:52 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-302
4/26/2016	198 (R)
6/21/2016	121
8/9/2016	131
10/19/2016	126
12/19/2016	127
1/23/2017	151
2/23/2017	149
4/6/2017	132
6/6/2017	124
8/1/2017	130
10/23/2017	128
4/3/2018	124
10/4/2018	115
4/9/2019	118
10/8/2019	129
4/8/2020	111
10/13/2020	128

EPA Screening (suspected outliers for Dixon's Test)

MW-303



n = 17
Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 89.57, std. dev. 5.31, critical Tn 2.475

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.988
Critical = 0.91
The distribution was found to be normally distributed.

EPA 1989 Outlier Screening

Constituent: Boron (ug/L) Analysis Run 12/1/2020 2:52 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

MW-303

4/26/2016	86.4
6/21/2016	85
8/9/2016	96
10/19/2016	90.8
12/19/2016	81.6
1/23/2017	99.8
2/23/2017	93.9
4/7/2017	89.8
6/6/2017	89.1
8/1/2017	95
10/23/2017	89
4/3/2018	94.6
10/4/2018	87.3
4/9/2019	88.4
10/7/2019	91.2
4/8/2020	79
10/13/2020	85.8

Attachment 4

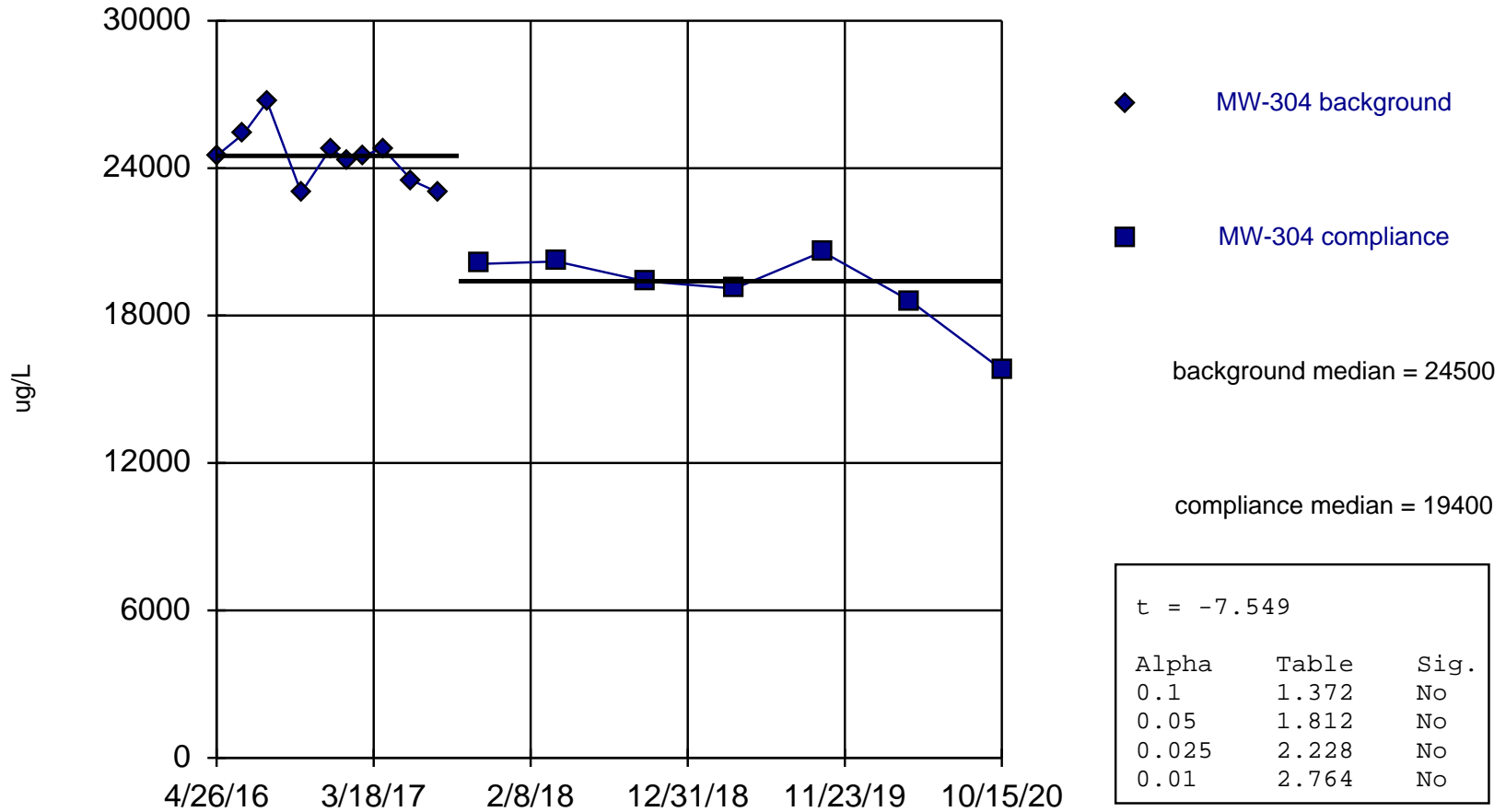
Welch's/Mann-Whitney Comparison

Welch's t-test/Mann-Whitney

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All Printed 1/3/2021, 5:37 PM

<u>Constituent</u>	<u>Well</u>	<u>Calc.</u>	<u>0.1</u>	<u>0.05</u>	<u>0.025</u>	<u>0.01</u>	<u>Alpha</u>	<u>Sig.</u>	<u>Bg. Wells</u>	<u>Method</u>
Calcium (ug/L)	MW-304 (bg)	-7.549	No	No	No	No	0.01	No	(intrawell)	Welch`s
Calcium (ug/L)	MW-305 (bg)	-4.273	No	No	No	No	0.01	No	(intrawell)	Welch`s
Chloride (mg/L)	MW-304 (bg)	-1.784	No	No	No	No	0.01	No	(intrawell)	Mann-W (normality)
Chloride (mg/L)	MW-305 (bg)	2.608	Yes	Yes	Yes	No	0.01	No	(intrawell)	Welch`s
Field pH (Std. Units)	MW-304 (bg)	-1.025	No	No	No	No	0.01	No	(intrawell)	Mann-W (normality)
Field pH (Std. Units)	MW-305 (bg)	-0.118	No	No	No	No	0.01	No	(intrawell)	Welch`s
Fluoride (mg/L)	MW-304 (bg)	0.8173	No	No	No	No	0.01	No	(intrawell)	Welch`s
Fluoride (mg/L)	MW-305 (bg)	-0....	No	No	No	No	0.01	No	(intrawell)	Welch`s
Sulfate (mg/L)	MW-304 (bg)	0.9964	No	No	No	No	0.01	No	(intrawell)	Welch`s
Sulfate (mg/L)	MW-305 (bg)	0.733	No	No	No	No	0.01	No	(intrawell)	Welch`s
Total Dissolved Solids (mg/L)	MW-304 (bg)	-0....	No	No	No	No	0.01	No	(intrawell)	Welch`s
Total Dissolved Solids (mg/L)	MW-305 (bg)	-2.208	No	No	No	No	0.01	No	(intrawell)	Welch`s

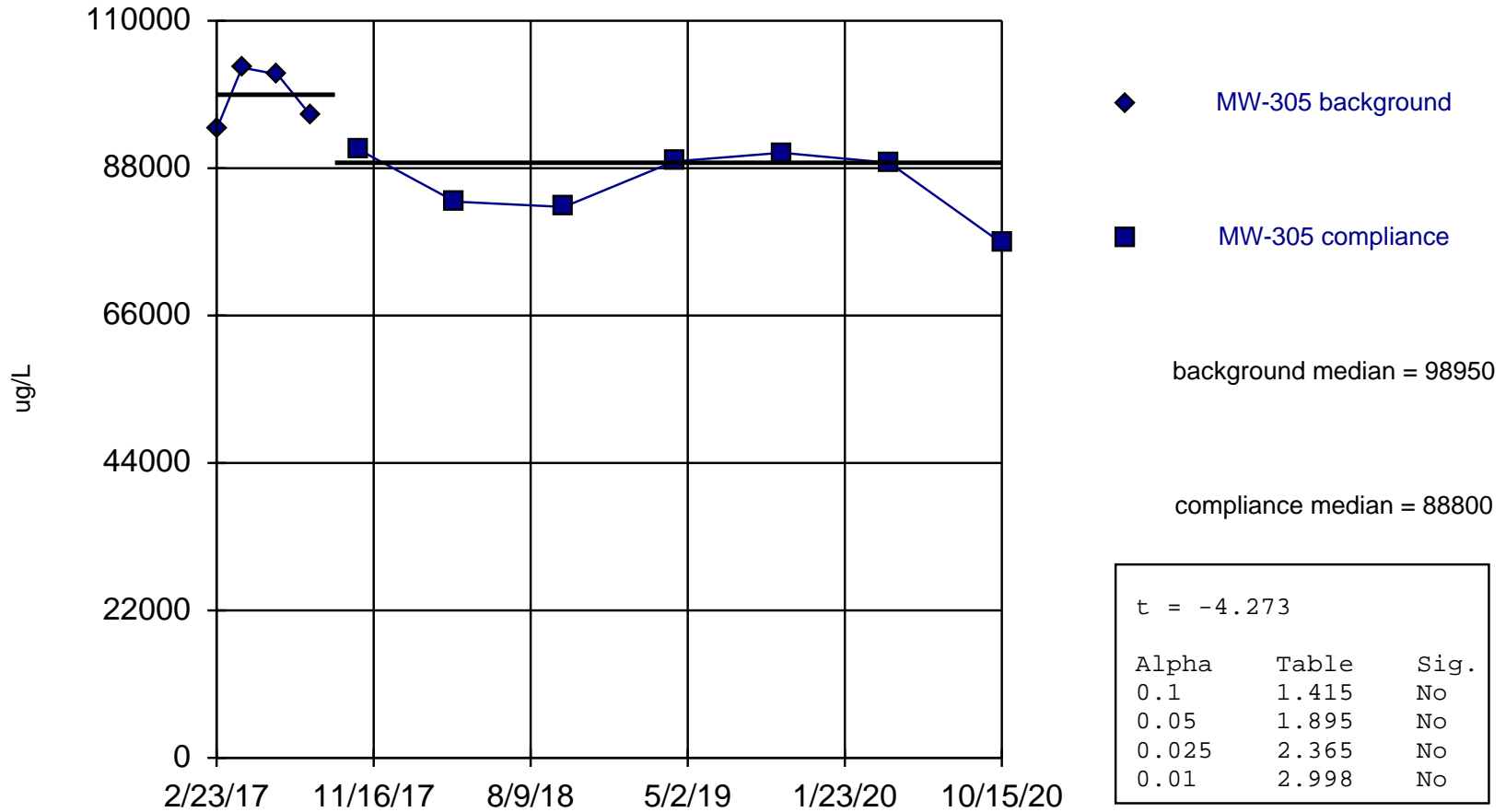
Welch's t-test MW-304 (bg)



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9326, critical = 0.842.

Constituent: Calcium Analysis Run 1/3/2021 5:36 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Welch's t-test MW-305 (bg)

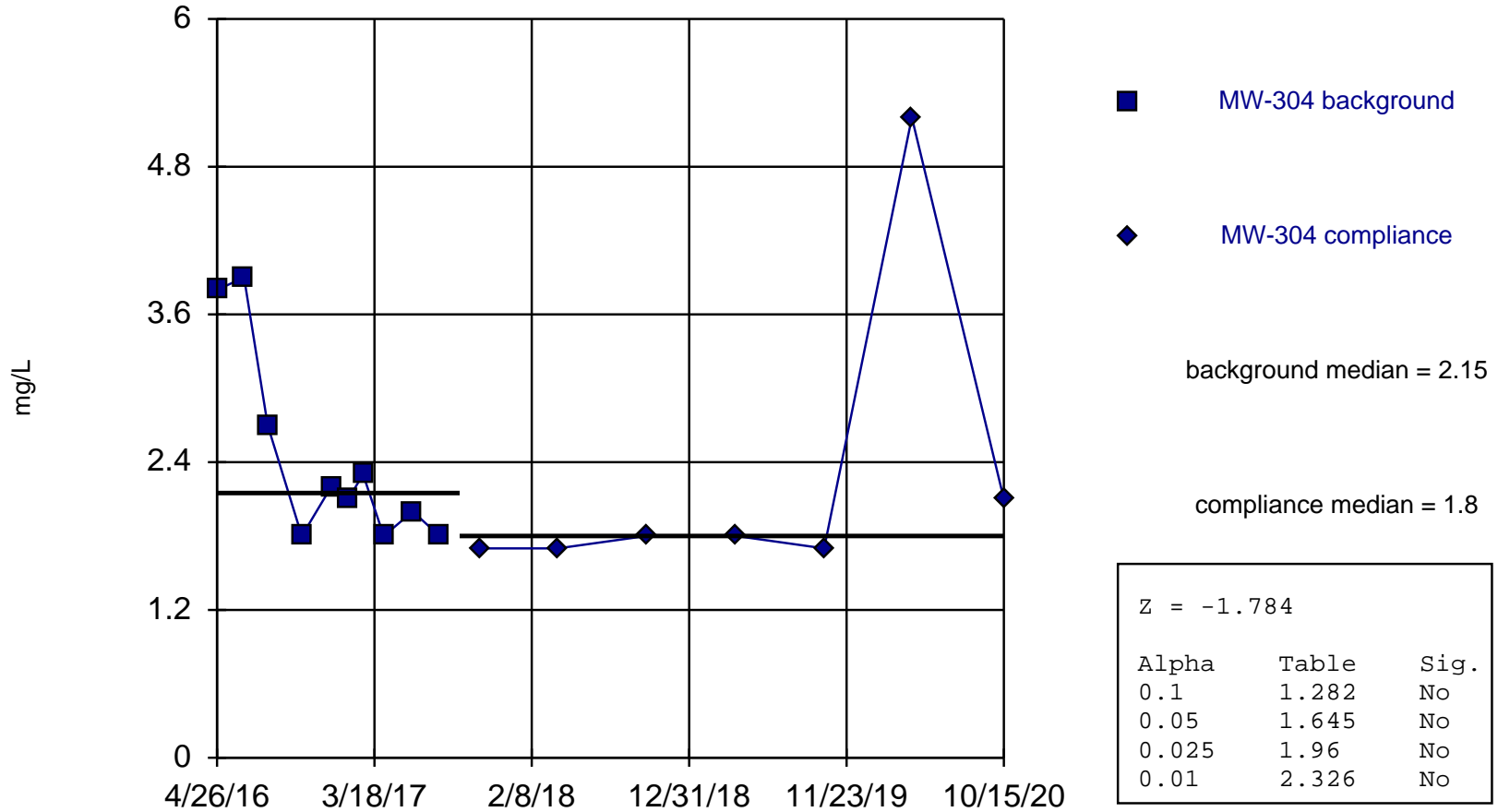


Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8812, critical = 0.748.

Constituent: Calcium Analysis Run 1/3/2021 5:36 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Mann-Whitney (Wilcoxon Rank Sum)

MW-304 (bg)

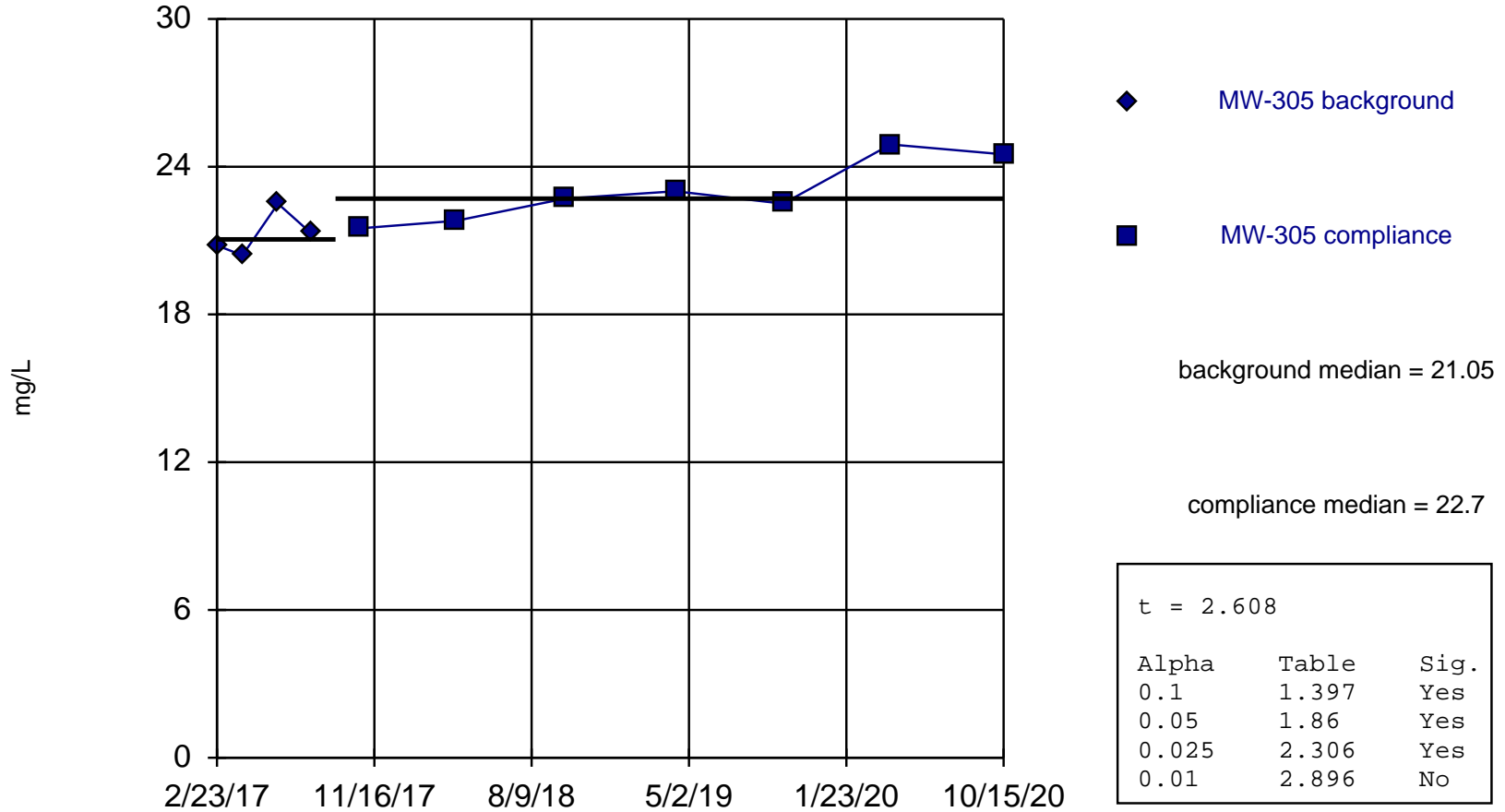


Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Chloride Analysis Run 1/3/2021 5:36 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

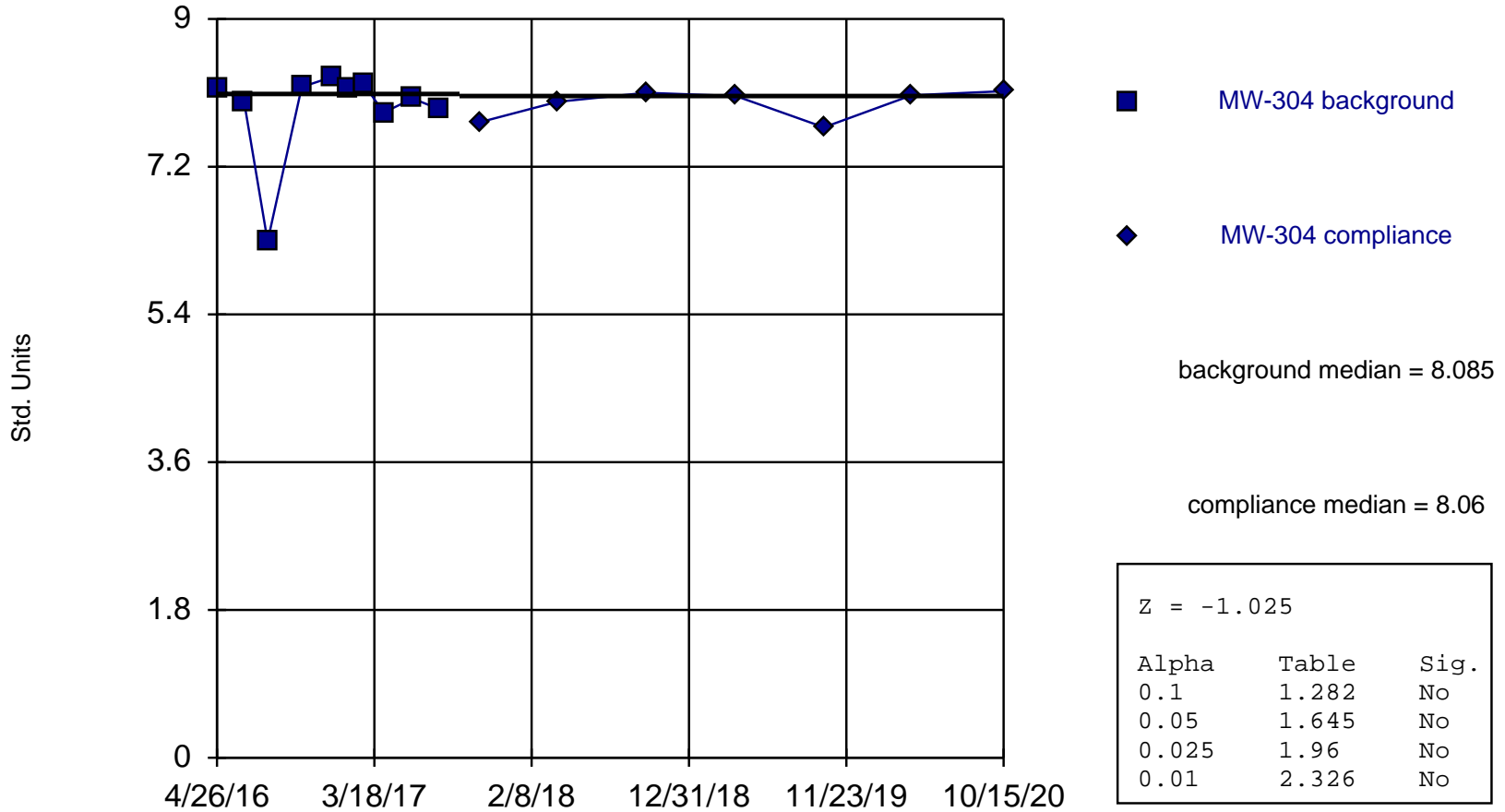
Welch's t-test MW-305 (bg)



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9364, critical = 0.748.

Mann-Whitney (Wilcoxon Rank Sum)

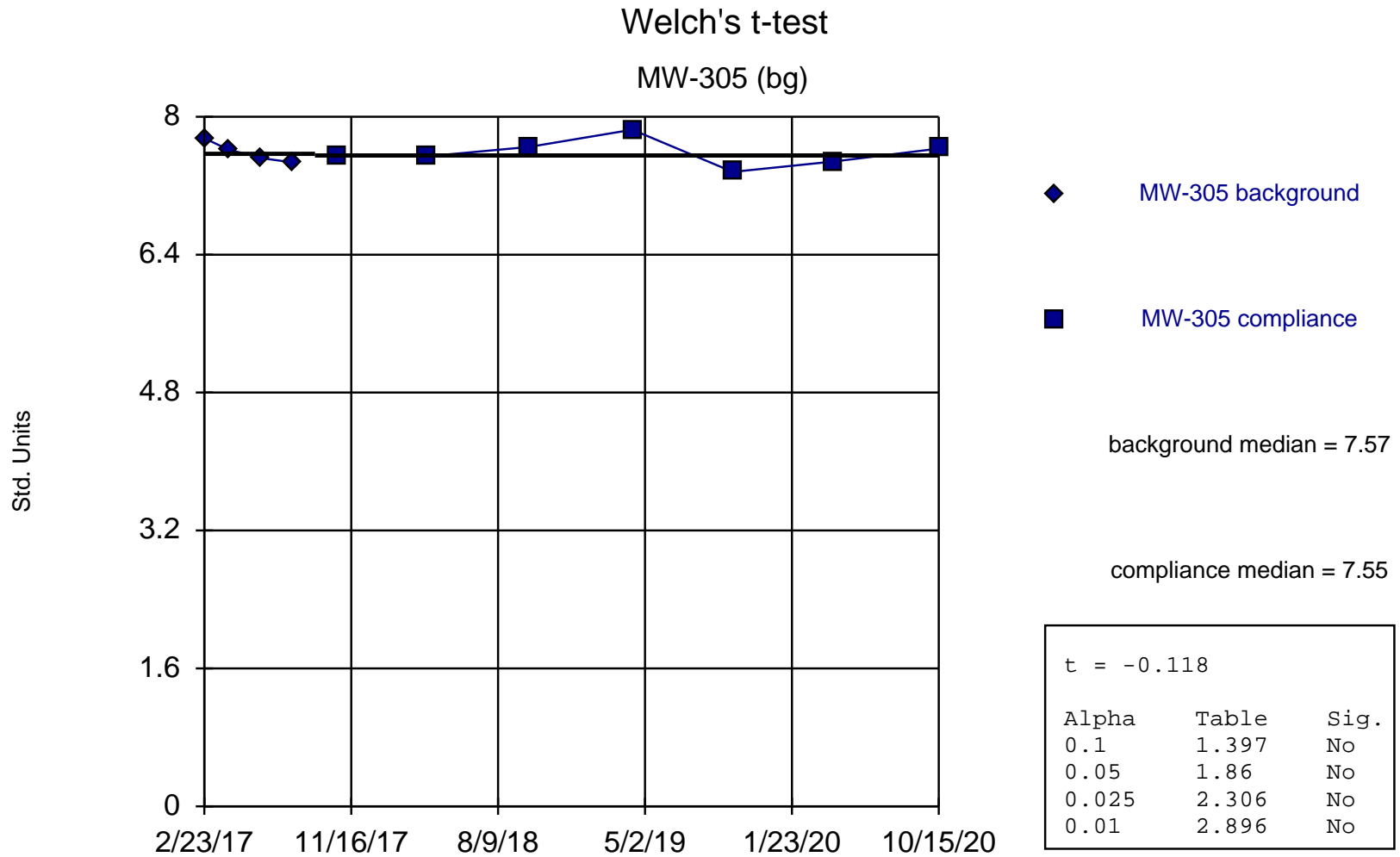
MW-304 (bg)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Field pH Analysis Run 1/3/2021 5:36 PM View: I-43 LF Detection Monitoring

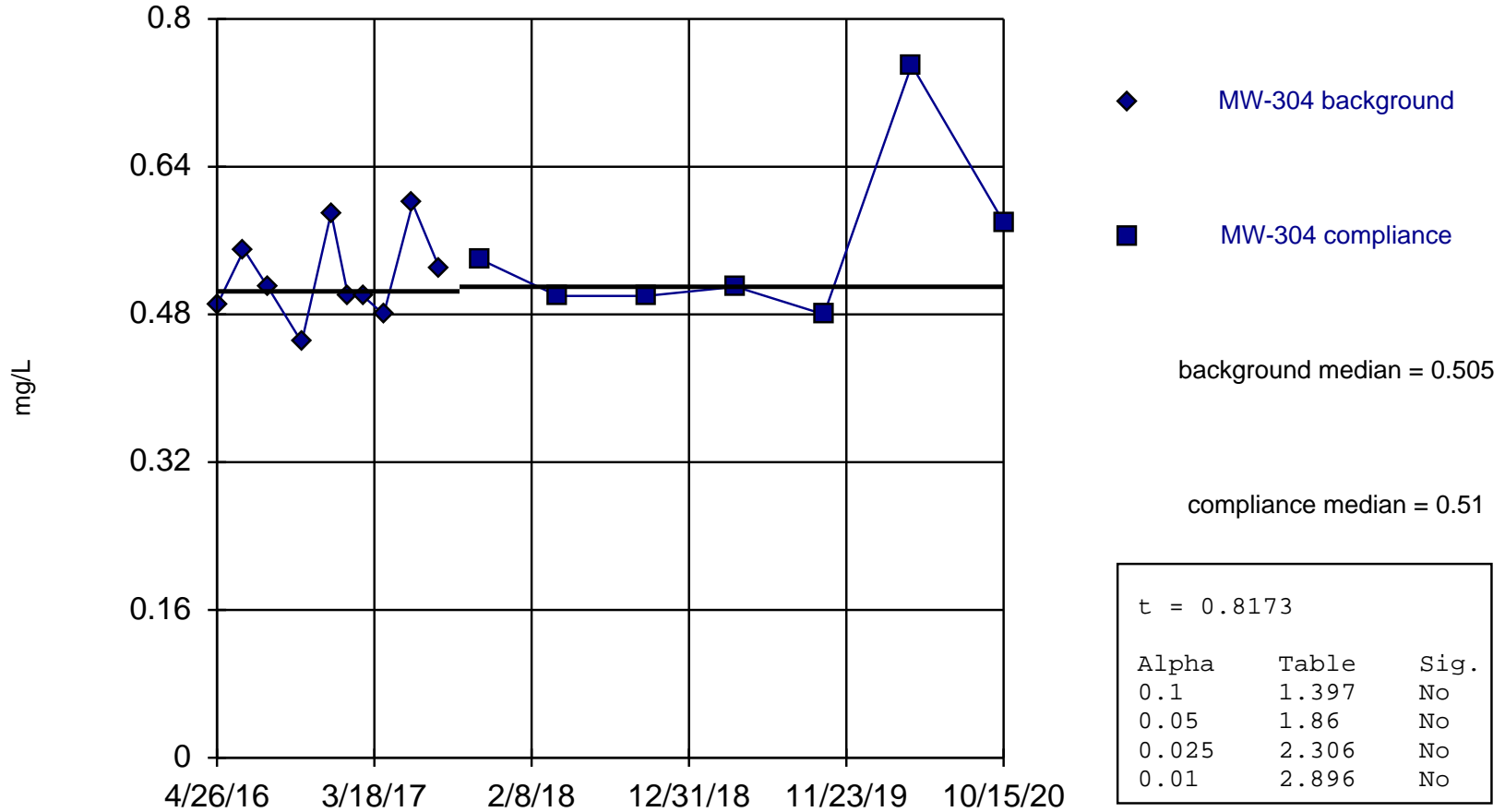
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9554, critical = 0.748.

Constituent: Field pH Analysis Run 1/3/2021 5:36 PM View: I-43 LF Detection Monitoring
 I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

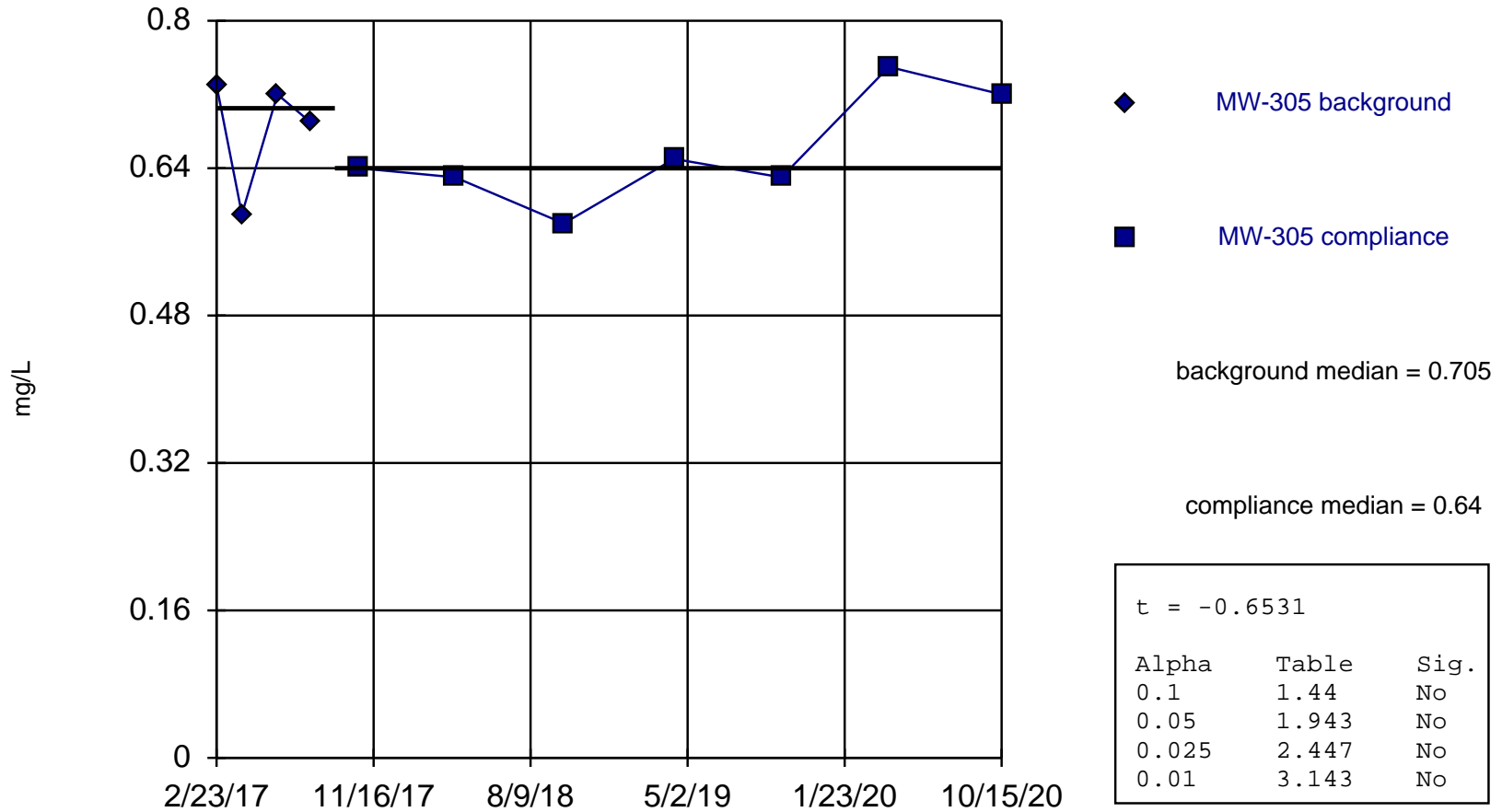
Welch's t-test MW-304 (bg)



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9407, critical = 0.842.

Welch's t-test

MW-305 (bg)

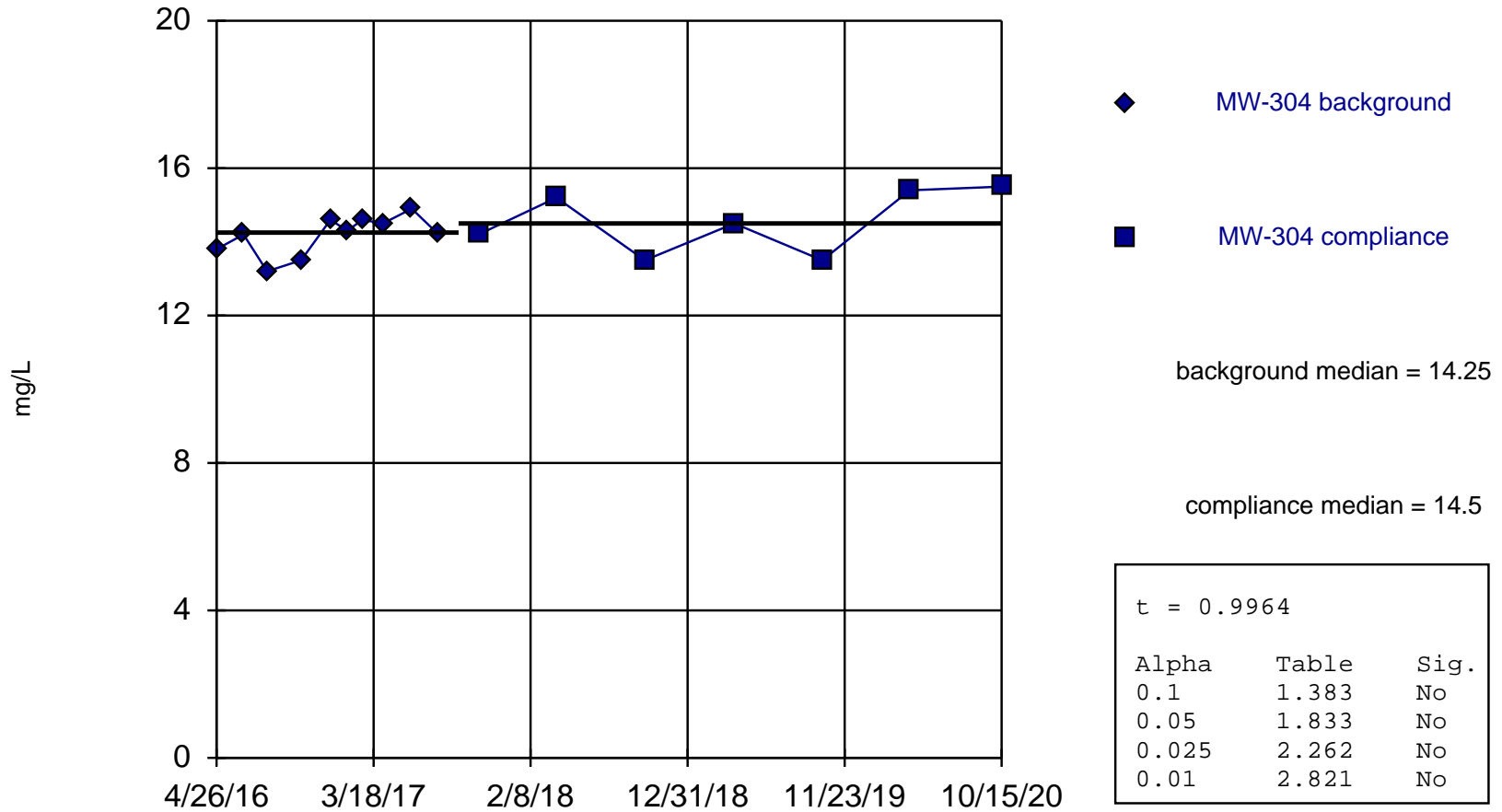


Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.835, critical = 0.748.

Constituent: Fluoride Analysis Run 1/3/2021 5:36 PM View: I-43 LF Detection Monitoring

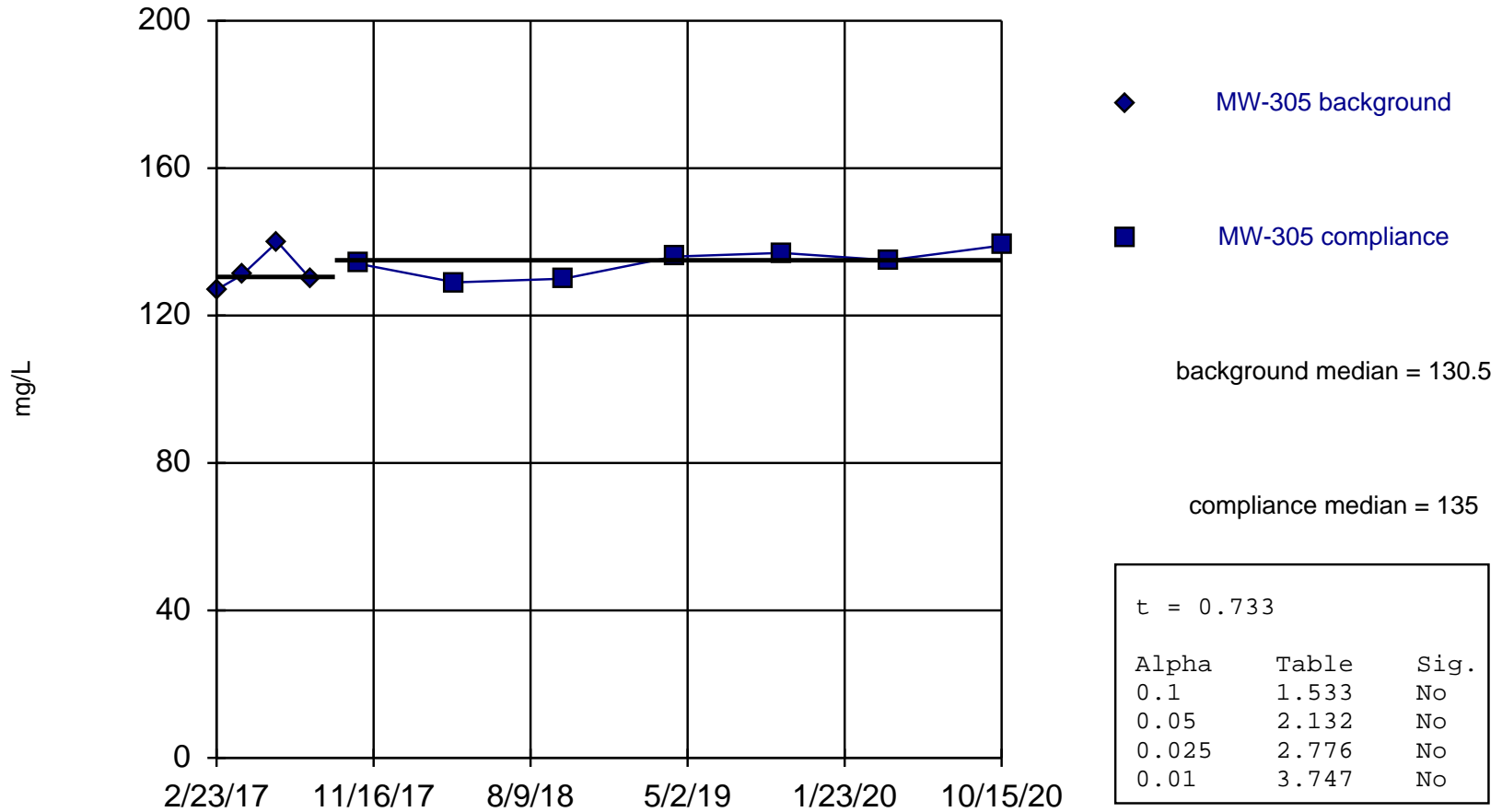
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Welch's t-test MW-304 (bg)



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9395, critical = 0.842.

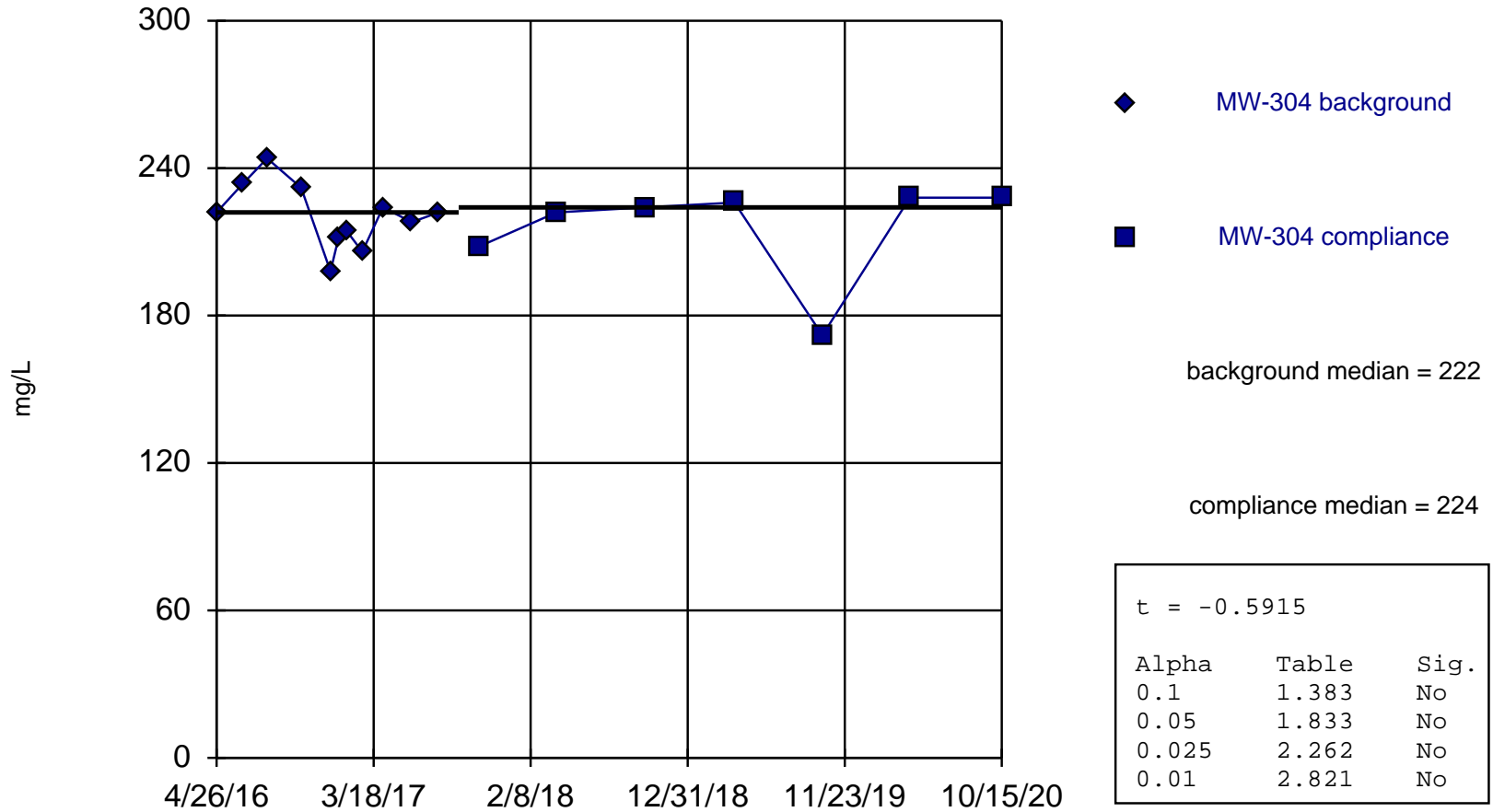
Welch's t-test MW-305 (bg)



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8812, critical = 0.748.

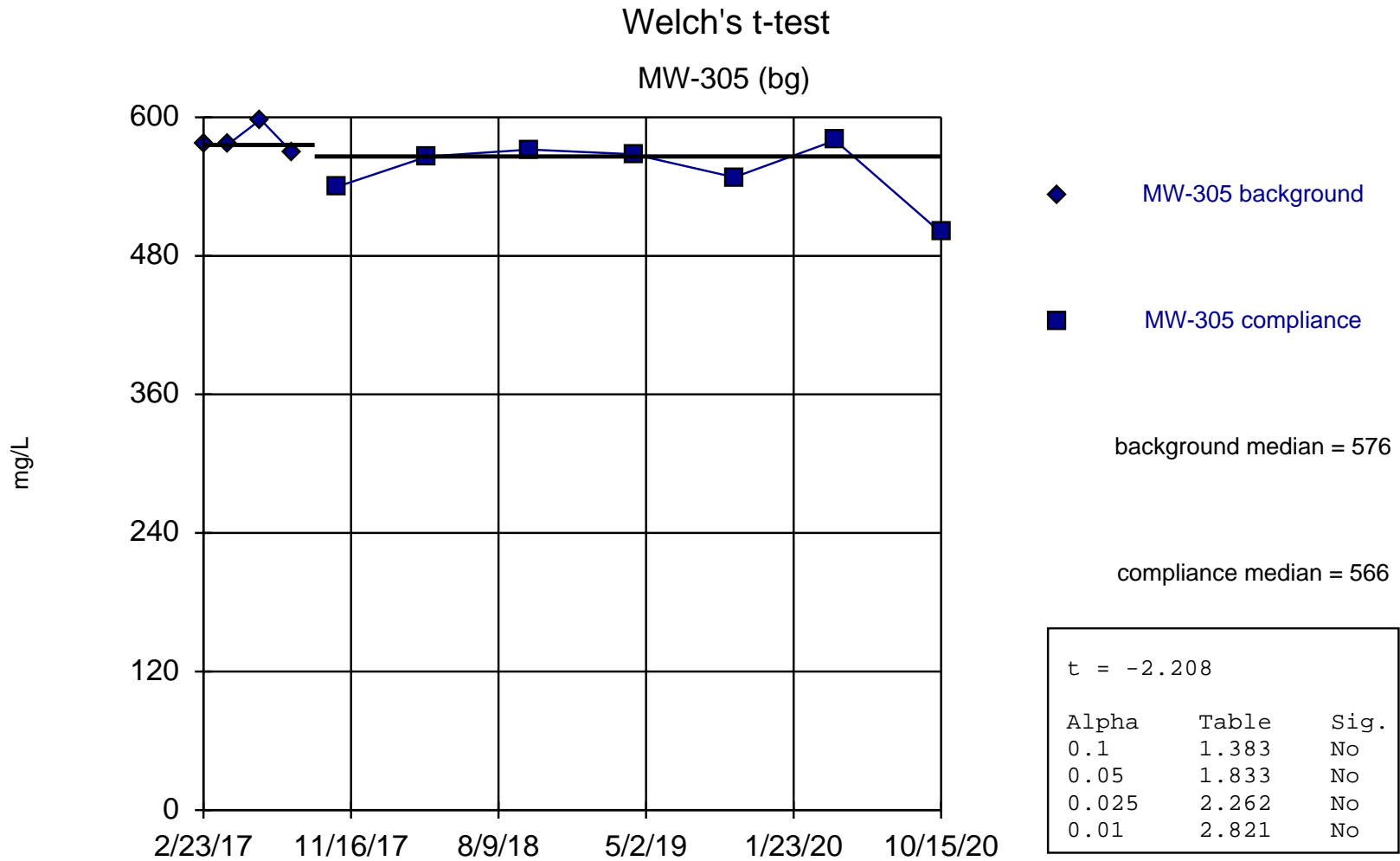
Constituent: Sulfate Analysis Run 1/3/2021 5:36 PM View: I-43 LF Detection Monitoring
 I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Welch's t-test MW-304 (bg)



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.99, critical = 0.85.

Constituent: Total Dissolved Solids Analysis Run 1/3/2021 5:36 PM View: I-43 LF Detection Monitoring
 I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8119, critical = 0.748.

Constituent: Total Dissolved Solids Analysis Run 1/3/2021 5:36 PM View: I-43 LF Detection Monitoring
 I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

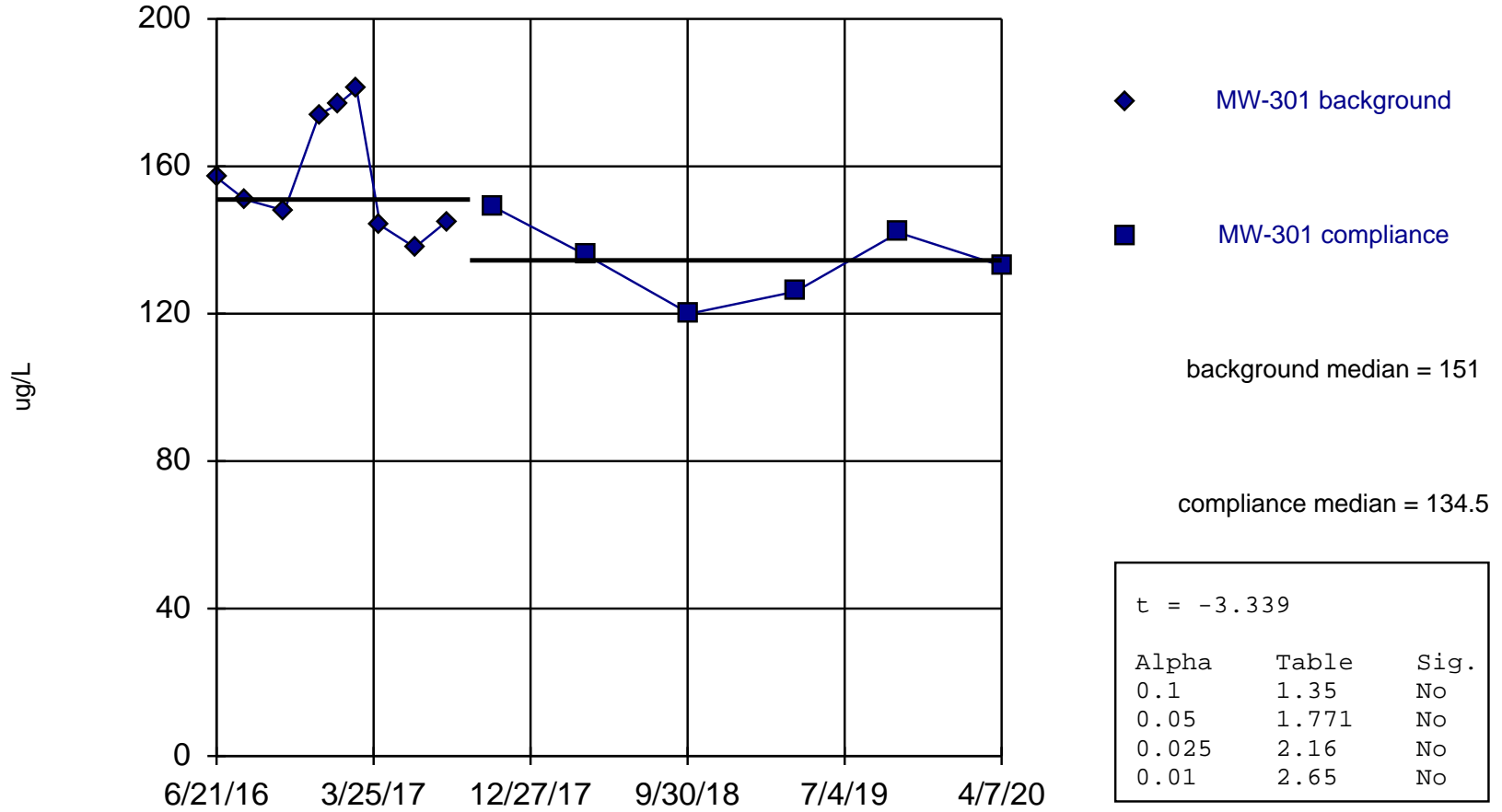
Welch's t-test/Mann-Whitney

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All Printed 1/3/2021, 5:35 PM

<u>Constituent</u>	<u>Well</u>	<u>Calc.</u>	<u>0.1</u>	<u>0.05</u>	<u>0.025</u>	<u>0.01</u>	<u>Alpha</u>	<u>Sig.</u>	<u>Bg. Wells</u>	<u>Method</u>
Boron (ug/L)	MW-301	-3.339	No	No	No	No	0.01	No	(inrawell)	Welch`s
Boron (ug/L)	MW-302	-2.486	No	No	No	No	0.01	No	(inrawell)	Welch`s
Boron (ug/L)	MW-303	-0....	No	No	No	No	0.01	No	(inrawell)	Welch`s

Welch's t-test

MW-301



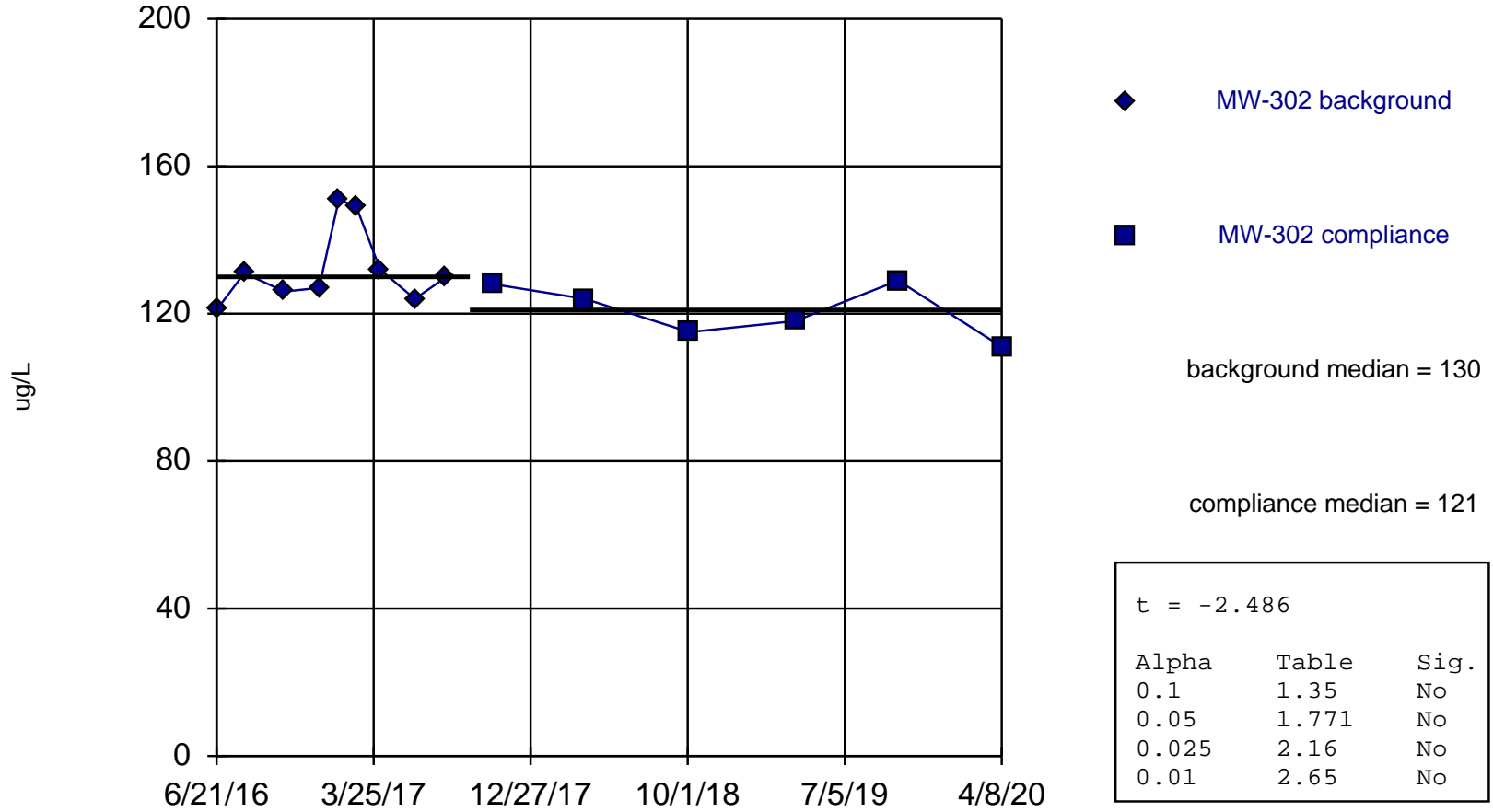
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8831, critical = 0.829.

Constituent: Boron Analysis Run 1/3/2021 5:34 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Welch's t-test

MW-302



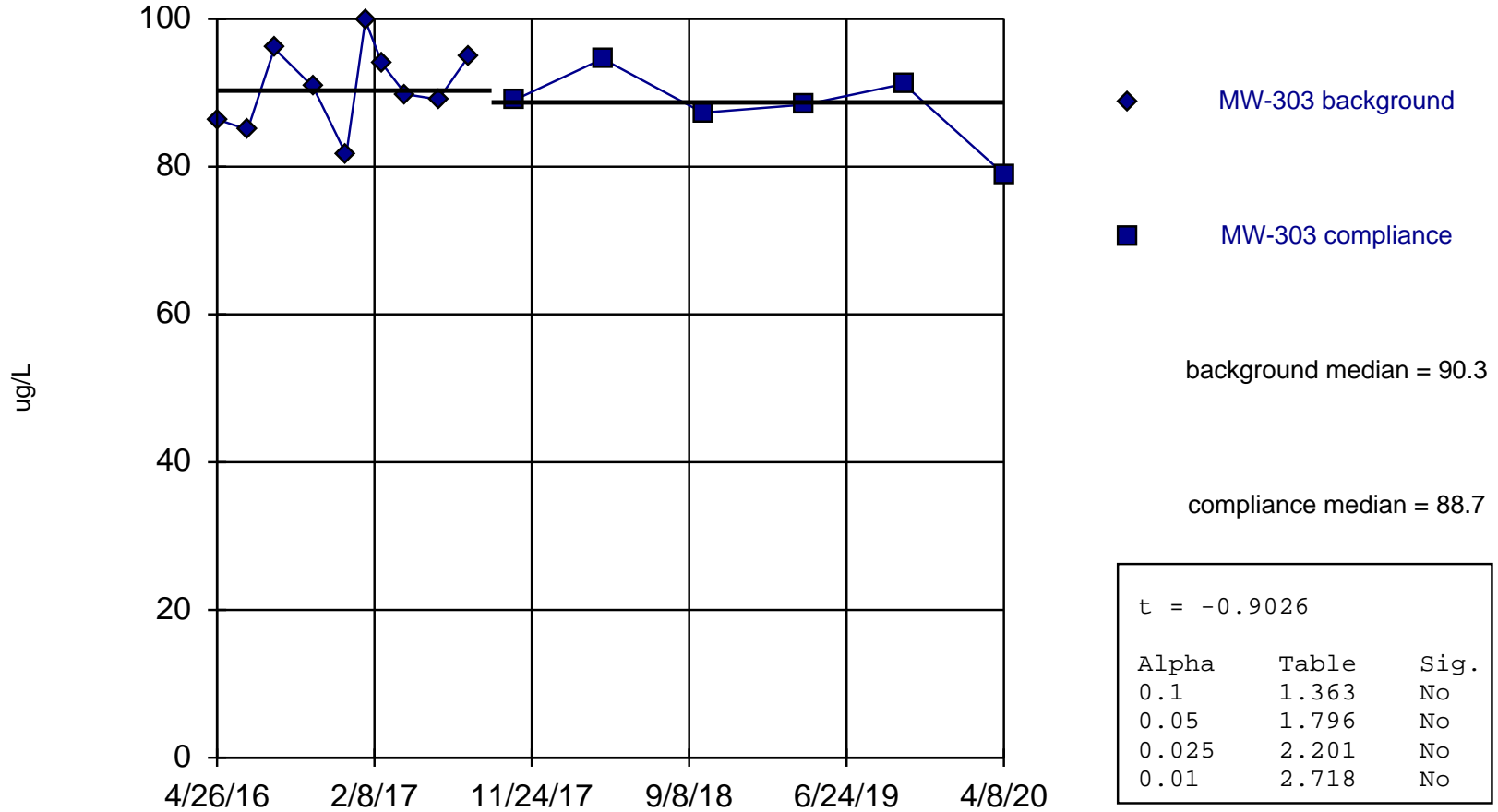
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8304, critical = 0.829.

Constituent: Boron Analysis Run 1/3/2021 5:34 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Welch's t-test

MW-303



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9876, critical = 0.842.

Constituent: Boron Analysis Run 1/3/2021 5:34 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Attachment 5

Interwell Prediction Limit Analysis

Interwell Prediction Limit

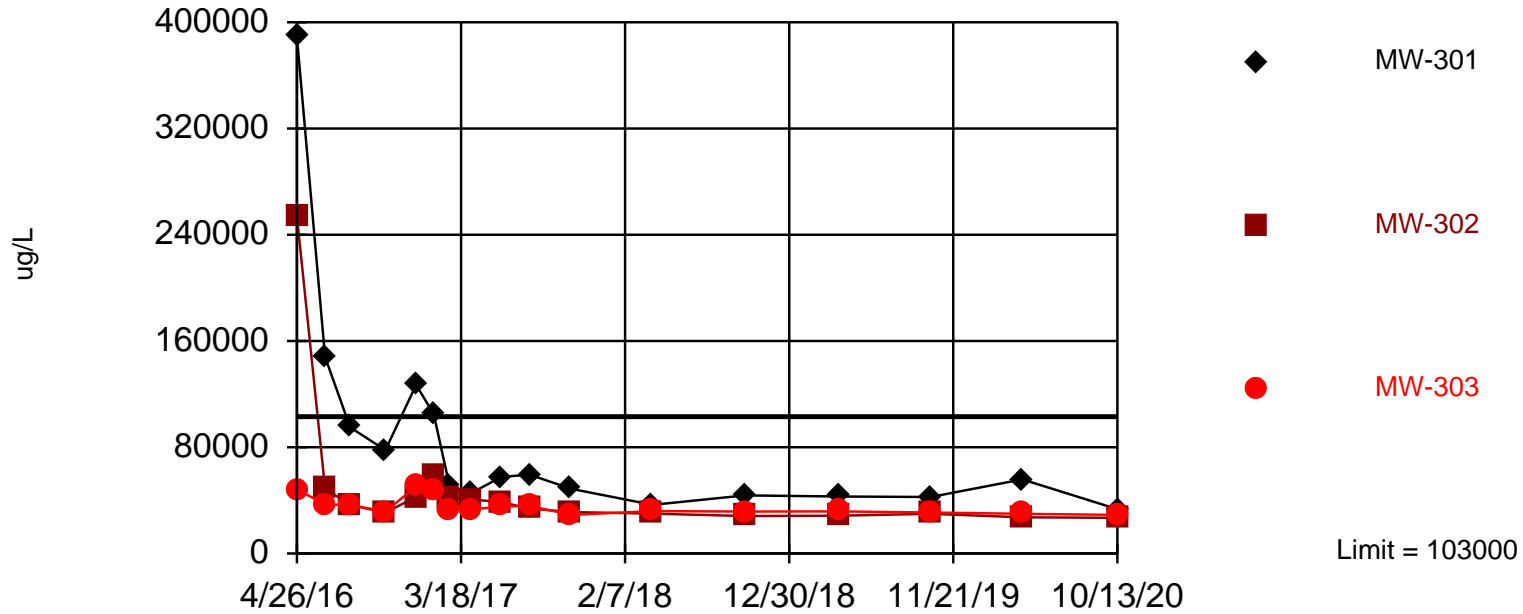
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All Printed 12/28/2020, 11:43 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Calcium (ug/L)	MW-301	103000	n/a	10/13/2020	33400	No	28	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002286	NP (normality) 1 of 2
Calcium (ug/L)	MW-302	103000	n/a	10/13/2020	26900	No	28	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002286	NP (normality) 1 of 2
Calcium (ug/L)	MW-303	103000	n/a	10/13/2020	29000	No	28	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002286	NP (normality) 1 of 2
Chloride (mg/L)	MW-301	24.9	n/a	10/13/2020	4.2	No	28	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002286	NP (normality) 1 of 2
Chloride (mg/L)	MW-302	24.9	n/a	10/13/2020	4.3	No	28	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002286	NP (normality) 1 of 2
Chloride (mg/L)	MW-303	24.9	n/a	10/13/2020	5.2	No	28	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002286	NP (normality) 1 of 2
Field pH (Std. Units)	MW-301	8.34	n/a	12/18/2020	7.64	No	27	MW-304,MW-305	7.85	0.2722	0	None	No	0.002505	Param 1 of 2
Field pH (Std. Units)	MW-302	8.34	n/a	12/18/2020	8.05	No	27	MW-304,MW-305	7.85	0.2722	0	None	No	0.002505	Param 1 of 2
Field pH (Std. Units)	MW-303	8.34	n/a	10/13/2020	8.31	No	27	MW-304,MW-305	7.85	0.2722	0	None	No	0.002505	Param 1 of 2
Fluoride (mg/L)	MW-301	0.753	n/a	12/18/2020	0.64	No	28	MW-304,MW-305	0.5854	0.09236	0	None	No	0.002505	Param 1 of 2
Fluoride (mg/L)	MW-302	0.753	n/a	12/18/2020	0.73	No	28	MW-304,MW-305	0.5854	0.09236	0	None	No	0.002505	Param 1 of 2
Fluoride (mg/L)	MW-303	0.753	n/a	10/13/2020	0.7	No	28	MW-304,MW-305	0.5854	0.09236	0	None	No	0.002505	Param 1 of 2
Sulfate (mg/L)	MW-301	140	n/a	10/13/2020	19	No	28	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002286	NP (normality) 1 of 2
Sulfate (mg/L)	MW-302	140	n/a	10/13/2020	19	No	28	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002286	NP (normality) 1 of 2
Sulfate (mg/L)	MW-303	140	n/a	10/13/2020	33.2	No	28	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002286	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-301	598	n/a	10/13/2020	228	No	29	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002128	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-302	598	n/a	10/13/2020	192	No	29	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002128	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-303	598	n/a	10/13/2020	150	No	29	MW-304,MW-305	n/a	n/a	0	n/a	n/a	0.002128	NP (normality) 1 of 2

Within Limit

Calcium

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 28 background values. Annual per-constituent alpha = 0.01364. Individual comparison alpha = 0.002286 (1 of 2). Comparing 3 points to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

Prediction Limit

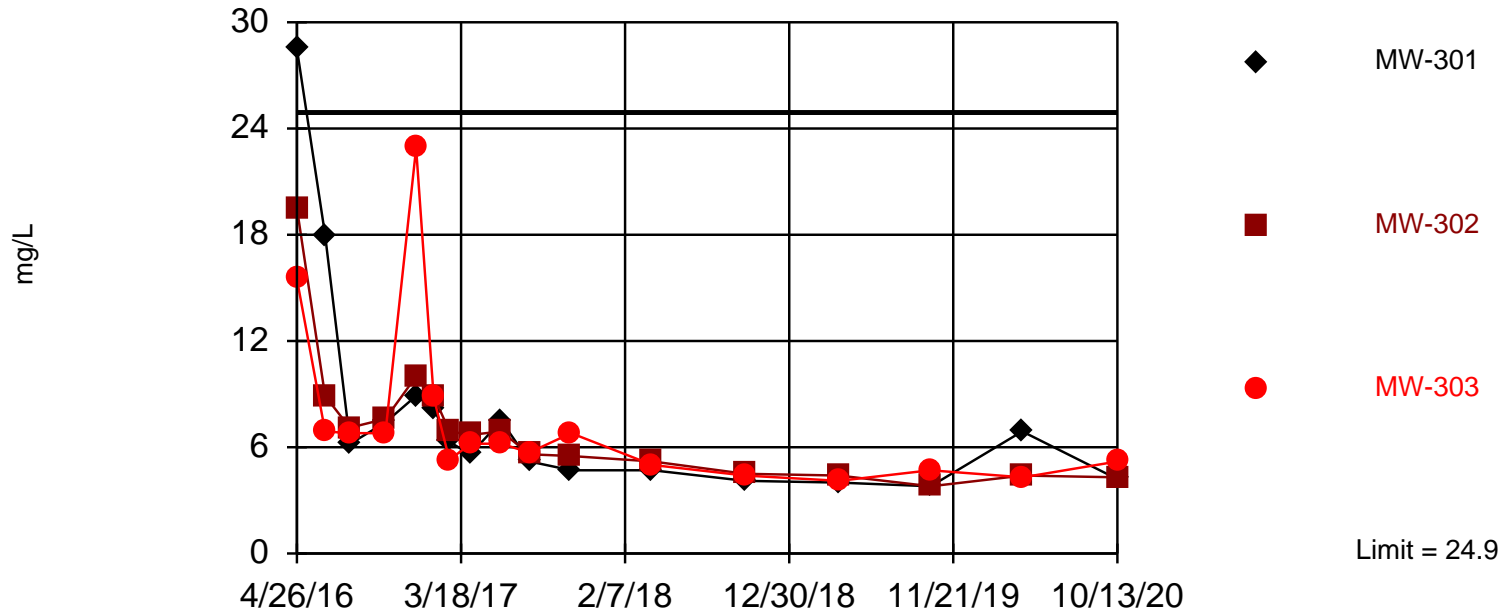
Constituent: Calcium (ug/L) Analysis Run 12/28/2020 11:43 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	389000	254000	48300	24500	
6/21/2016	148000	49000	36900	25400	
8/9/2016		36500	36700	26700	
8/10/2016	94900				
10/19/2016	77800	30900	31600	23000	
12/19/2016	127000	42600	50500	24800	
1/23/2017	105000	59300	46700	24300	
2/23/2017	51400	41900	32600	24500	93800
4/6/2017	45200	40800			
4/7/2017			33200	24800	103000
6/6/2017	57600	38700	35500	23500	102000
8/1/2017	59400	33900	35900	23000	95900
10/23/2017	48700	31200	29100	20100	90700
4/3/2018	36700	30000	31900	20200	83000
10/4/2018	43700	28200	31600	19400	82200
4/8/2019				19100	
4/9/2019	42900	28400	31700		89000
10/7/2019			30900		
10/8/2019	42600	29900		20600	90300
4/7/2020	55800			18600	88800
4/8/2020		27200	29900		
10/13/2020	33400	26900	29000		
10/15/2020				15800	76800

Within Limit

Chloride

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 28 background values. Annual per-constituent alpha = 0.01364. Individual comparison alpha = 0.002286 (1 of 2). Comparing 3 points to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

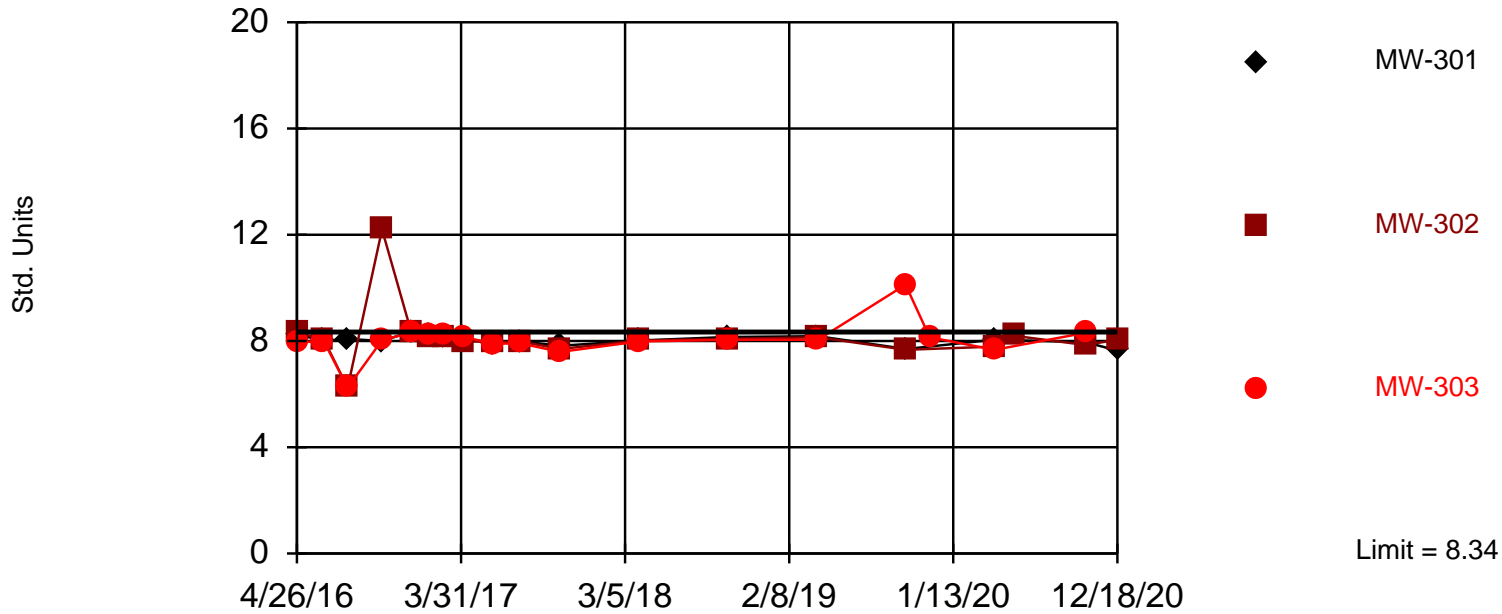
Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 12/28/2020 11:43 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	28.5 (J)	19.5 (J)	15.5	3.8 (J)	
6/21/2016	18 (J)	8.9	6.9	3.9 (J)	
8/9/2016		7.1	6.8	2.7 (J)	
8/10/2016	6.2				
10/19/2016	7.4 (J)	7.6	6.8	1.8 (J)	
12/19/2016	8.9 (J)	10	22.9	2.2	
1/23/2017	8.2 (J)	8.9 (J)	8.8 (J)	2.1	
2/23/2017	6.3	6.9	5.3	2.3	20.8
4/6/2017	5.6	6.7			
4/7/2017			6.2	1.8 (J)	20.4
6/6/2017	7.5 (J)	6.9	6.2	2	22.5
8/1/2017	5.2	5.6	5.7	1.8 (J)	21.3
10/23/2017	4.7	5.5	6.8	1.7 (J)	21.5
4/3/2018	4.7	5.2	5	1.7 (J)	21.8
10/4/2018	4.1	4.5	4.4	1.8 (J)	22.7
4/8/2019				1.8 (J)	
4/9/2019	4	4.4	4.1		23
10/7/2019			4.7		
10/8/2019	3.8	3.8		1.7 (J)	22.5
4/7/2020	6.9 (J)			5.2	24.9
4/8/2020		4.4	4.3		
10/13/2020	4.2	4.3	5.2		
10/15/2020				2.1	24.5

Within Limit

Field pH Interwell Parametric



Background Data Summary: Mean=7.85, Std. Dev.=0.2722, n=27. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9408, critical = 0.894. Kappa = 1.818 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.002505. Comparing 3 points to limit.

Prediction Limit Analysis Run 12/28/2020 11:36 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Prediction Limit

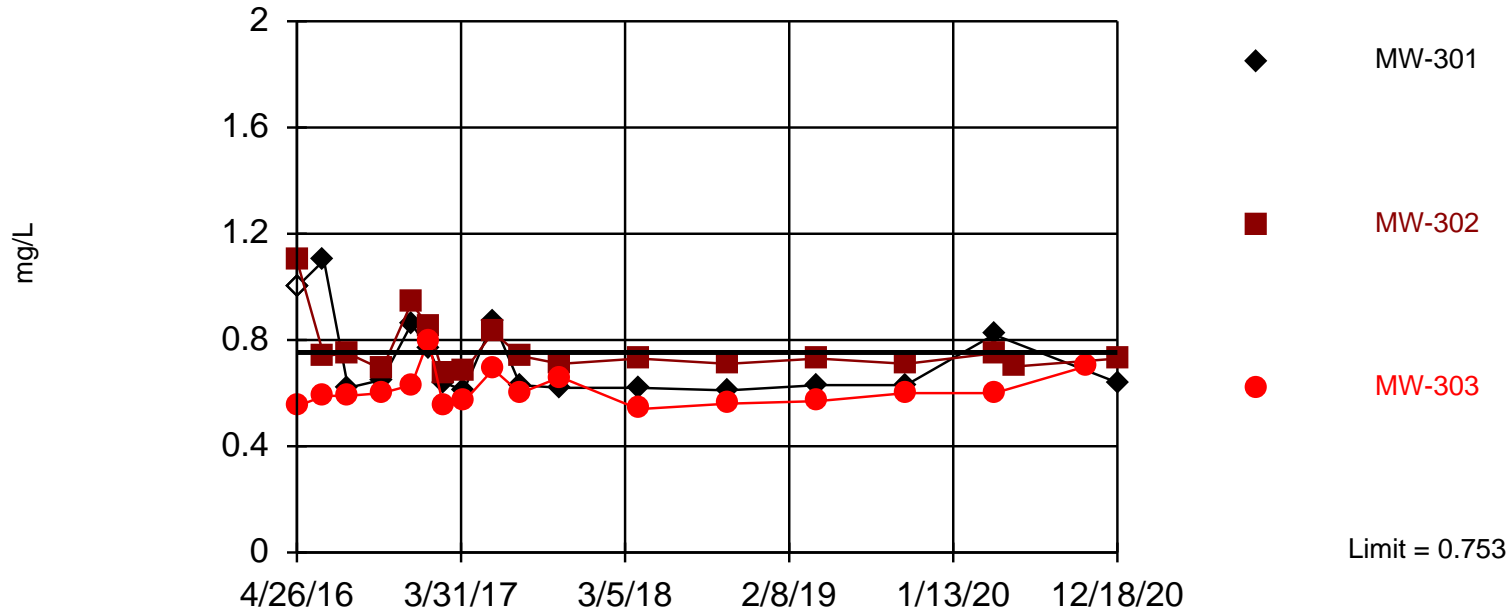
Constituent: Field pH (Std. Units) Analysis Run 12/28/2020 11:43 AM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	8.24	8.33	7.96	8.16	
6/21/2016	8.01	8.05	7.98	8	
8/9/2016		6.24 (O)	6.24 (O)		
8/10/2016	8.08				
10/19/2016	8	12.2 (O)	8.03	8.17	
12/19/2016	8.36	8.31	8.32	8.29	
1/23/2017	8.21	8.16	8.23	8.14	
2/23/2017	8.14	8.16	8.24	8.22	7.75
4/6/2017	8.12	8			
4/7/2017			8.15	7.86	7.62
6/6/2017	7.89	7.95	7.9	8.03	7.52
8/1/2017	7.99	7.98	7.91	7.9	7.47
10/23/2017	7.82	7.7	7.59	7.74	7.55
4/3/2018	8.02	8.02	7.98	7.99	7.54
10/4/2018	8.15	8.08	8.04	8.1	7.65
4/8/2019				8.06	
4/9/2019	8.18	8.14	8.05		7.85
10/7/2019			10.12		
10/8/2019	7.7	7.67		7.68	7.36
11/26/2019			8.14		
4/7/2020	8.05			8.07	7.48
4/8/2020		7.79	7.67		
5/20/2020		8.19			
10/13/2020	7.96	7.85	8.31		
10/15/2020				8.12	7.63
12/18/2020	7.64	8.05			

Within Limit

Fluoride Interwell Parametric



Background Data Summary: Mean=0.5854, Std. Dev.=0.09236, n=28. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9156, critical = 0.896. Kappa = 1.81 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.002505. Comparing 3 points to limit.

Prediction Limit

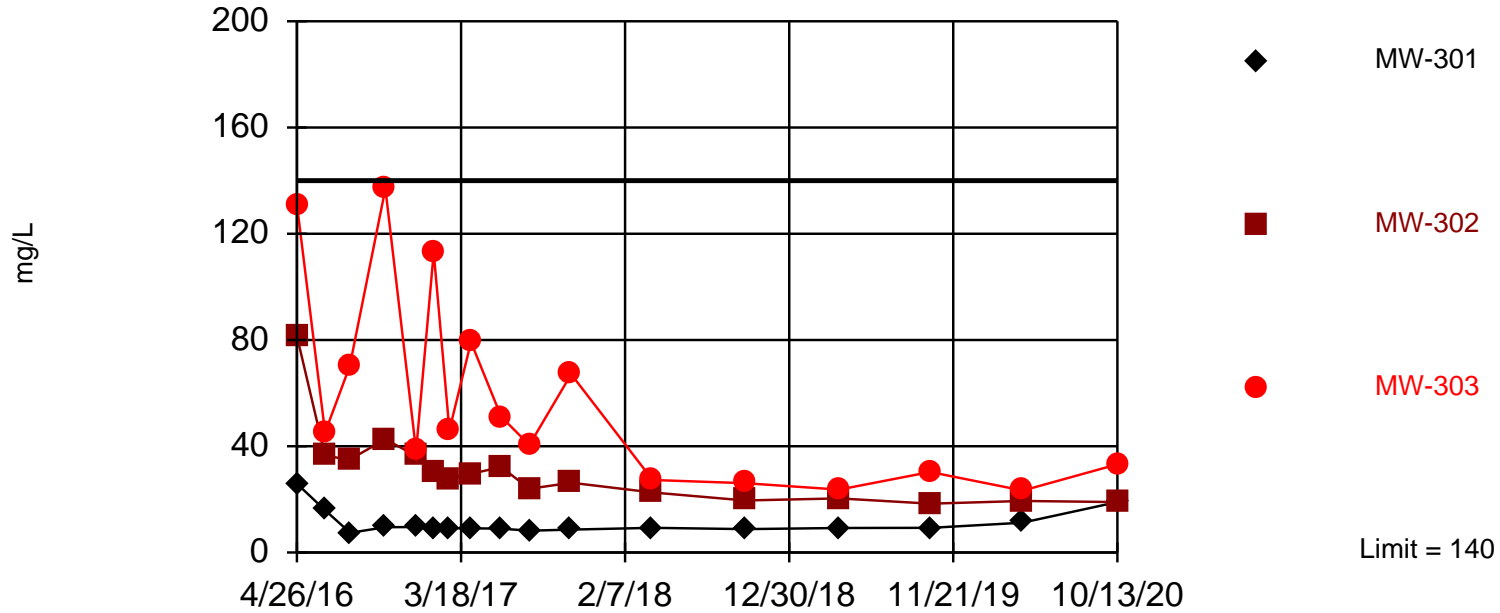
Constituent: Fluoride (mg/L) Analysis Run 12/28/2020 11:43 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	<2 (U)	1.1 (J)	0.55	0.49	
6/21/2016	1.1 (J)	0.74	0.59	0.55	
8/9/2016		0.75	0.59	0.51	
8/10/2016	0.62				
10/19/2016	0.65 (J)	0.69	0.6	0.45	
12/19/2016	0.86 (J)	0.94 (J)	0.63	0.59	
1/23/2017	0.77 (J)	0.85 (J)	0.8 (J)	0.5	
2/23/2017	0.64	0.67	0.55	0.5	0.73
4/6/2017	0.61	0.68			
4/7/2017			0.57	0.48	0.59
6/6/2017	0.87 (J)	0.83	0.69	0.6	0.72
8/1/2017	0.63	0.74	0.6	0.53	0.69
10/23/2017	0.62	0.71	0.66	0.54	0.64
4/3/2018	0.62	0.73	0.54	0.5	0.63
10/4/2018	0.61	0.71	0.56	0.5	0.58
4/8/2019				0.51	
4/9/2019	0.63	0.73	0.57		0.65
10/7/2019			0.6		
10/8/2019	0.63	0.71		0.48	0.63
4/7/2020	0.82 (J)			0.75	0.75
4/8/2020		0.75	0.6		
5/20/2020		0.7			
10/13/2020			0.7		
10/15/2020				0.58	0.72
12/18/2020	0.64 (R)	0.73 (R)			

Within Limit

Sulfate

Interwell Non-parametric



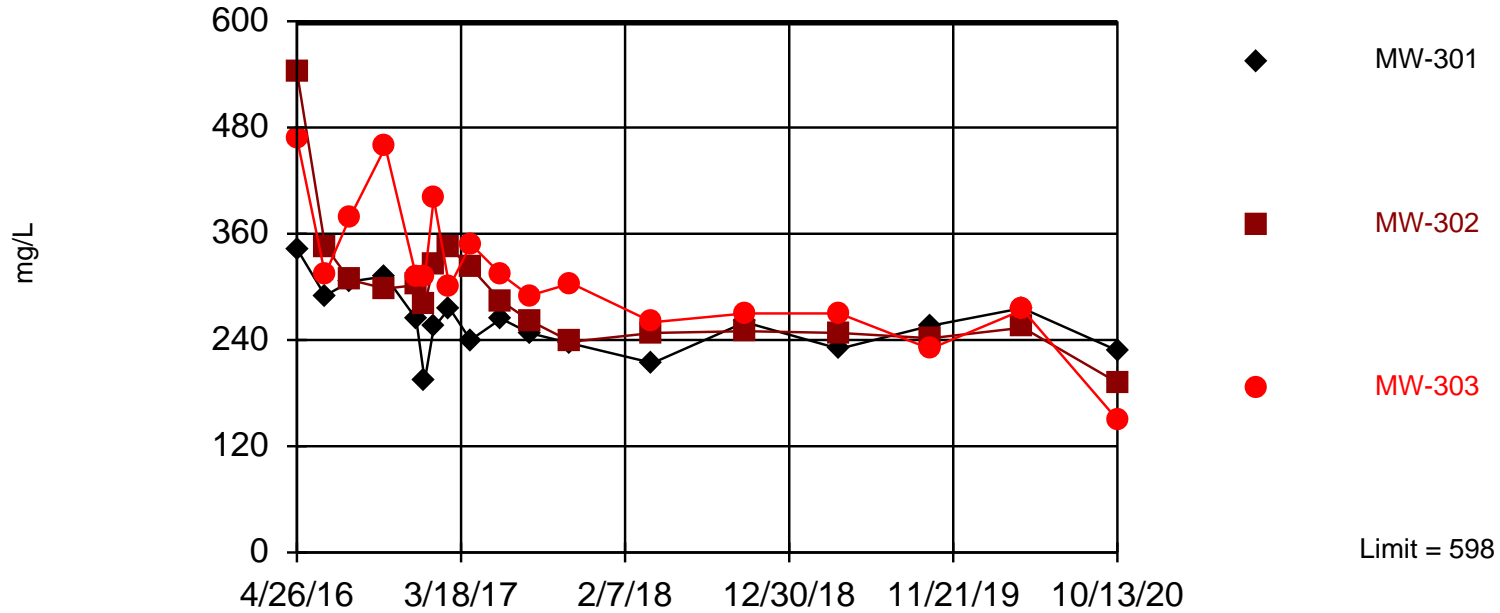
Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 12/28/2020 11:43 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	25.9 (J)	81.5	131	13.8	
6/21/2016	15.9 (J)	36.4	45.2	14.2	
8/9/2016		35	70.1	13.2	
8/10/2016	7.4				
10/19/2016	9.5 (J)	42.6	137	13.5	
12/19/2016	9.6 (J)	36.4	38.2	14.6	
1/23/2017	9.3 (J)	30.4	113	14.3	
2/23/2017	9.1	27.9	46.1	14.6	127
4/6/2017	9.1	29.6			
4/7/2017			79.2	14.5	131
6/6/2017	9 (J)	32.2	51.1	14.9	140
8/1/2017	8.2	24	40.5	14.2	130
10/23/2017	8.6	26.3	67.1	14.2	134
4/3/2018	9.3	22.6	27.3	15.2	129
10/4/2018	8.8	19.6	26.1	13.5	130
4/8/2019				14.5	
4/9/2019	9.2	20.4	23.7		136
10/7/2019			30.3		
10/8/2019	9.3	18.4		13.5	137
4/7/2020	11.2			15.4	135
4/8/2020		19.4	23.3		
10/13/2020	19	19	33.2		
10/15/2020				15.5	139

Within Limit

Total Dissolved Solids Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 29 background values. Annual per-constituent alpha = 0.0127. Individual comparison alpha = 0.002128 (1 of 2). Comparing 3 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/28/2020 11:43 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	343	543	468	222	
6/21/2016	290	346	314	234	
8/9/2016		308	378	244	
8/10/2016	306				
10/19/2016	312	298	458	232	
12/19/2016	264	302	312	198	
1/5/2017	194	280	310	212	
1/23/2017	254	324	400	214	
2/23/2017	276	344	300	206	576
4/6/2017	240	322			
4/7/2017			348	224	576
6/6/2017	264	284	314	218	598
8/1/2017	248	262	290	222	570
10/23/2017	236	238	304	208	540
4/3/2018	214	248	260	222	566
10/4/2018	260	250	270	224	572
4/8/2019				226	
4/9/2019	230	248	270		568
10/7/2019			230		
10/8/2019	256	242		172	548
4/7/2020	276			228	580
4/8/2020		254	274		
10/13/2020	228	192	150		
10/15/2020				228	500

Attachment 6

Intrawell Prediction Limit Analysis

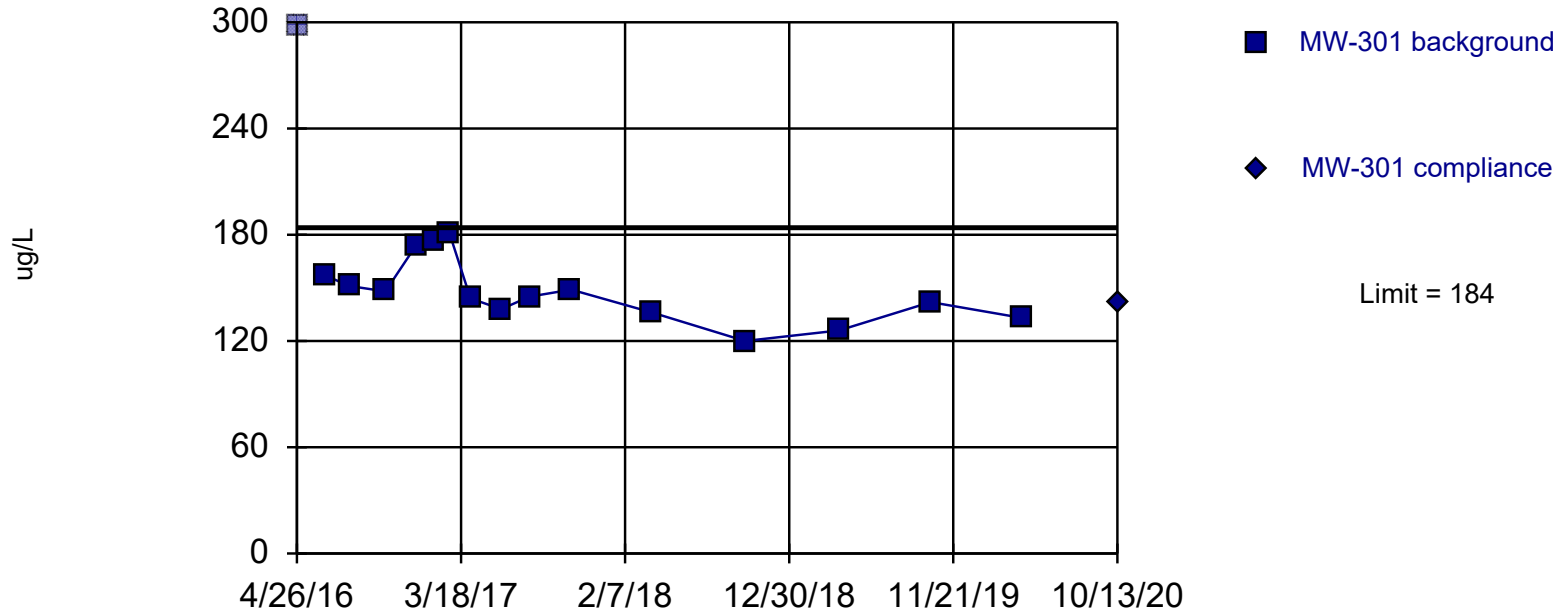
Intrawell Prediction Limit

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All Printed 12/23/2020, 6:01 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Wells</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Boron (ug/L)	MW-301	184	n/a	10/13/2020	142	No	15	n/a	148.1	17.92	0	None	No	0.002505	Param 1 of 2
Boron (ug/L)	MW-302	149	n/a	10/13/2020	128	No	15	n/a	127.7	10.83	0	None	No	0.002505	Param 1 of 2
Boron (ug/L)	MW-303	100	n/a	10/13/2020	85.8	No	16	n/a	89.81	5.392	0	None	No	0.002505	Param 1 of 2

Within Limit

Boron Intrawell Parametric



Background Data Summary: Mean=148.1, Std. Dev.=17.92, n=15. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9399, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

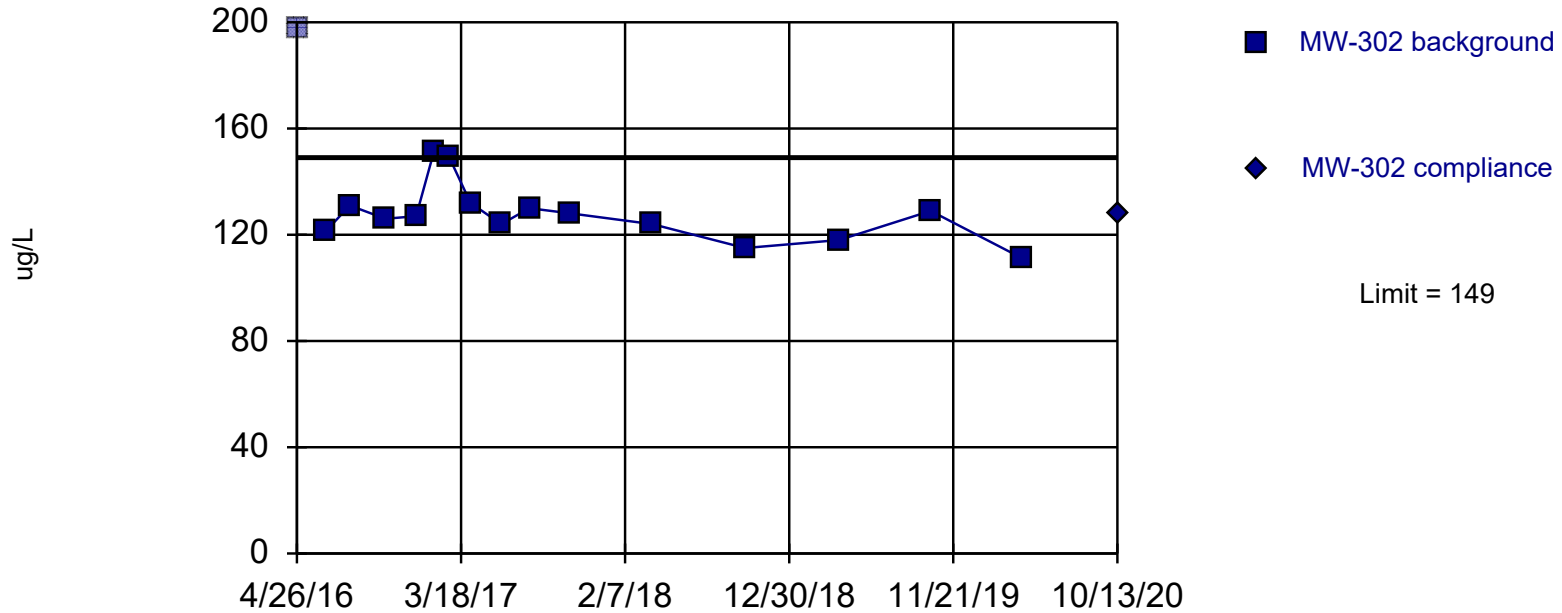
Prediction Limit

Constituent: Boron (ug/L) Analysis Run 12/23/2020 6:01 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-301
4/26/2016	298 (R)	
6/21/2016	157	
8/10/2016	151	
10/19/2016	148	
12/19/2016	174	
1/23/2017	177	
2/23/2017	181	
4/6/2017	144	
6/6/2017	138	
8/1/2017	145	
10/23/2017	149	
4/3/2018	136	
10/4/2018	120	
4/9/2019	126	
10/8/2019	142	
4/7/2020	133	
10/13/2020		142

Within Limit

Boron Intrawell Parametric



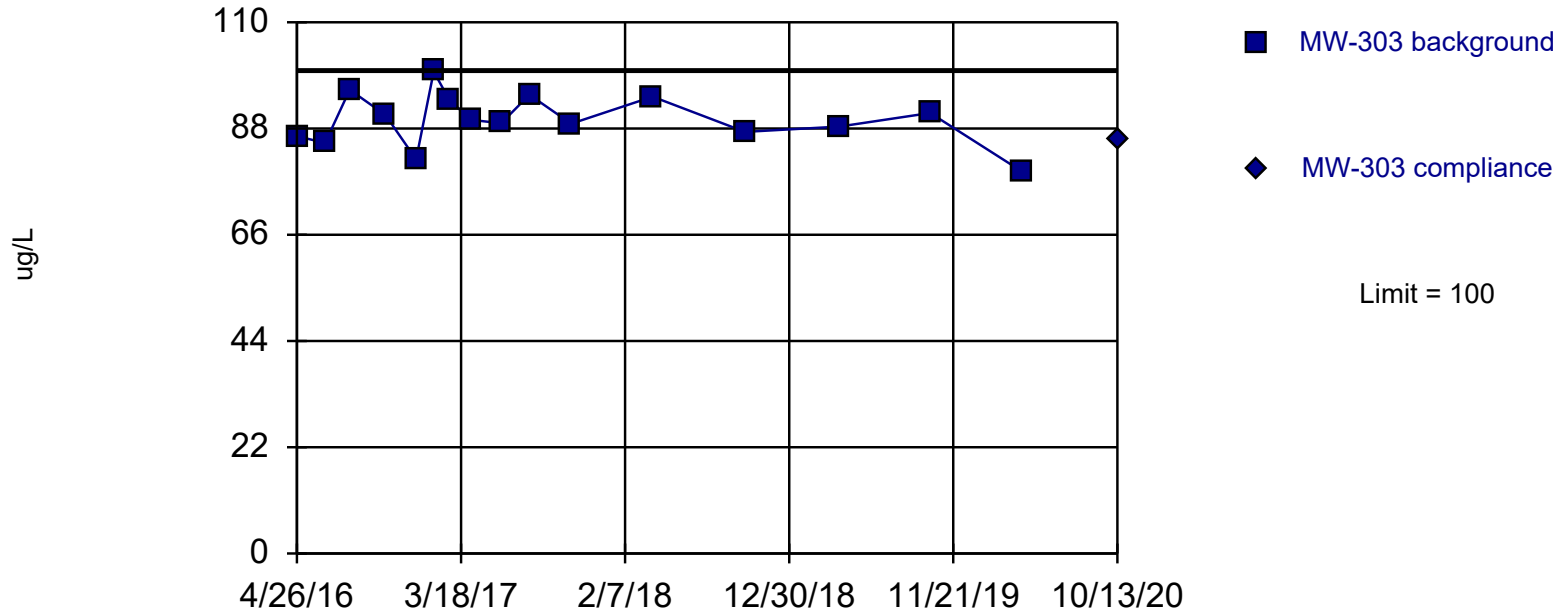
Prediction Limit

Constituent: Boron (ug/L) Analysis Run 12/23/2020 6:01 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-302	MW-302
4/26/2016	198 (R)	
6/21/2016	121	
8/9/2016	131	
10/19/2016	126	
12/19/2016	127	
1/23/2017	151	
2/23/2017	149	
4/6/2017	132	
6/6/2017	124	
8/1/2017	130	
10/23/2017	128	
4/3/2018	124	
10/4/2018	115	
4/9/2019	118	
10/8/2019	129	
4/8/2020	111	
10/13/2020		128

Within Limit

Boron Intrawell Parametric



Prediction Limit

Constituent: Boron (ug/L) Analysis Run 12/23/2020 6:01 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-303	MW-303
4/26/2016	86.4	
6/21/2016	85	
8/9/2016	96	
10/19/2016	90.8	
12/19/2016	81.6	
1/23/2017	99.8	
2/23/2017	93.9	
4/7/2017	89.8	
6/6/2017	89.1	
8/1/2017	95	
10/23/2017	89	
4/3/2018	94.6	
10/4/2018	87.3	
4/9/2019	88.4	
10/7/2019	91.2	
4/8/2020	79	
10/13/2020		85.8

Appendix F

Alternative Source Demonstration – April 2021

Alternative Source Demonstration April 2021 Detection Monitoring

Edgewater Generating Station
I-43 Ash Disposal Facility
Town of Wilson
Sheboygan County, Wisconsin

Prepared for:



SCS ENGINEERS

25221069.00 | October 13, 2021

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

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Tables

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Table 2	Historical Analytical Results for Parameters with SSIs
Table 3	Groundwater Elevation Table – CCR Rule Monitoring Well Network

Figures


- Figure 1 Site Location Map
- Figure 2 Monitoring Well Location Map
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Appendices

- Appendix A CCR Well Fluoride and Field pH Trend Plots
- Appendix B Sheboygan County Fluoride Concentrations - WDNR GRN Table
- Appendix C State Program Background Monitoring Data for Fluoride
- Appendix D Intrawell Statistical Analysis

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PE CERTIFICATION

	<p>I, Sherron Clark, hereby certify that that the information in this alternate source demonstration is accurate and meets the requirements of 40 CFR 257.94(e)(2). This certification is based on my review of the groundwater data and related site information available for the Edgewater Generating Station I-43 Ash Disposal Facility. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.</p>
	<p style="text-align: center;"><i>SC Clark</i> 10-13-2021</p> <p>(signature) (date)</p>
	<p style="text-align: center;">Sherron Clark</p> <p>(printed or typed name)</p>
	<p>License number <u>E-29863</u></p> <p>My license renewal date is July 31, 2022.</p> <p>Pages or sheets covered by this seal:</p>
	<p>Alternative Source Demonstration – April 2021 Detection Monitoring, Edgewater I43 Ash Disposal Facility, Town of Wilson, Sheboygan County, Wisconsin (Entire Document)</p>

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1.0 INTRODUCTION

This Alternative Source Demonstration (ASD) was prepared to support compliance with the groundwater monitoring requirements of the “Coal Combustion Residuals (CCR) Final Rule” published by the U.S. Environmental Protection Agency (U.S. EPA) in the Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule, dated April 17, 2015 (U.S. EPA, 2015), and subsequent amendments. Specifically, this report is prepared to fulfill the requirements of 40 CFR 257.94(e)(2). The applicable sections of the CCR Rule are provided below in italics.

1.1 §257.94(E)(2) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

The owner and operator may demonstrate that a source other than the CCR Unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels.

An ASD is completed when there are exceedances of one or more benchmarks established within the groundwater monitoring program. The ASD is completed to determine if any other sources are likely causes of the identified exceedance(s) of established benchmark(s) at the site. This ASD was performed in response to results indicating a statistically significant increase (SSI) over background levels during detection monitoring under the CCR Rule.

This ASD report is evaluating the SSIs observed in the statistical evaluation of the April 2021 detection monitoring event and June 2021 resampling event at the Edgewater I-43 Ash Disposal Facility (I-43 ADF). ASD reports were previously prepared for this facility evaluating the SSIs observed in the statistical evaluation of the October 2017 and April 2018 detection monitoring events (SCS Engineers [SCS], 2018a and 2018b). Those ASDs concluded that several lines of evidence demonstrated that SSIs reported for boron concentrations in downgradient monitoring wells MW-301 and MW-302 were likely due to naturally occurring boron in the bedrock aquifer at the I-43 ADF. This ASD report has been developed for SSIs for fluoride and field pH at monitoring well MW-302.

1.2 SITE INFORMATION AND MAP

The I-43 ADF is located in the Town of Wilson, Sheboygan County, Wisconsin (**Figure 1**). The I-43 ADF receives CCR from the Edgewater Generating Station. The layout of the site on an aerial photograph base is shown on **Figure 2**. The I-43 ADF is operated under Wisconsin Department of Natural Resources (WDNR) License No. 02853.

The I-43 ADF includes a closed landfill (Phases 1 and 2) and multiple existing CCR Units which are landfill modules in Phases 3 and 4 of the facility. Contact water basins and storm water runoff basins, which do not receive CCR, are also present at the site. The existing CCR Unit evaluated for this ASD is referred to as:

- EDG I-43 Phase 3, Modules 1 & 2, and Phase 4 Module 1 (existing CCR Landfill)

The Phase 3 Module 1, Phase 3 Module 2, and Phase 4 Module 1 units were previously described as separate existing CCR landfills although they are collectively managed and permitted in one footprint as a single existing CCR landfill by the facility and by the WDNR.

The closed landfill (Phase 1 and Phase 2) was completely closed in 2012. The closed landfill did not accept CCR after October 19, 2015; therefore, it is not subject to the requirements of 40 CFR 257.50-107. The closed landfill was constructed with a 5-foot compacted clay liner.

The active landfill, which is the CCR Unit, is constructed with a composite liner system including 2 feet of compacted clay and a 60-mil high density polyethylene (HDPE) geomembrane, overlain by a leachate collection drainage layer. The active landfill first accepted CCR for disposal in October 2011.

A map showing the CCR Unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program and the state monitoring program is provided as **Figure 2**.

1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

SSIs for the April 2021 monitoring event and June 2021 retesting event include fluoride and field pH at monitoring well MW-302. Sample results for MW-302 exceeded upper prediction limits (UPLs) for fluoride and field pH in both the April and June events. Field pH exceeded the UPL in the April 2021 sample at MW-301, but not in the June 2021 resample; therefore, it is not an SSI under the 1-of-2 resampling approach. A summary of the April 2021 and June 2021 constituent concentrations and the established benchmark concentrations is provided in **Table 1**. The constituent concentrations with results above the background concentrations are highlighted in the table.

1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION

This ASD report includes:

- Background information (**Section 2.0**)
- Evaluation of potential that SSIs are due to methodology or analysis (**Section 3.0**)
- Evaluation of potential that SSIs are due to natural sources or man-made sources other than the CCR Units (**Section 4.0**)
- ASD conclusions (**Section 5.0**)
- Monitoring recommendations (**Section 6.0**)

The CCR Rule constituent results from background and compliance sampling in April and June 2021 are provided in **Table 2**, and concentration trends for fluoride and field pH are shown in **Appendix A**. Complete laboratory reports for the background monitoring events and the April 2021 detection monitoring event will be included in the 2021 Annual Groundwater Monitoring and Corrective Action Report for the I-43 ADF.

2.0 BACKGROUND

To provide context for the ASD evaluation, the following background information is provided in this section of the report, prior to the ASD evaluation sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

2.1 REGIONAL GEOLOGY AND HYDROGEOLOGY

2.1.1 Regional Information

For the purposes of groundwater monitoring, the Niagara Dolomite Aquifer is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at the I-43 ADF. The dolomite aquifer is underlain by the Maquoketa shale, which is a confining unit. The Maquoketa shale is underlain by the Cambrian-Ordovician sandstone aquifer. This sequence of sedimentary bedrock units is over 1,500 feet thick in the area of the I-43 ADF. The sedimentary sequence is underlain by Precambrian crystalline rocks that are not considered an aquifer in eastern Wisconsin.

An unconsolidated sand and gravel aquifer is present in some parts of Sheboygan County (Skinner and Borman, 1973), but does not appear laterally extensive.

Regional groundwater flow in the dolomite aquifer in the vicinity of the site is to the east or northeast.

2.1.2 Site Information

Soils at the site are primarily clay with discontinuous layers of sand and silty sand to a depth of at least 100 feet. During drilling of the CCR wells, the unconsolidated materials were identified as consisting primarily of clay. Zones of sand and gravel are known to be present within the clay, but these appear to be discontinuous, and no nearby private wells screened within the unconsolidated material have been identified. Soils encountered in borings MW-301, MW-302, MW-303, and MW-304 were primarily lean clay, silty clay, and silty sand. The upper 70 feet of soils in boring MW-305 were similar, but in approximately the lower 40 feet above bedrock, sand was the primary soil type. The depth to bedrock in the five wells ranged from approximately 109 feet to 133 feet below ground surface (bgs), and the elevation of the top of bedrock ranged from approximately 568 feet above mean sea level (amsl) to 605 feet amsl.

Shallow groundwater at the site generally flows east to west towards Weedens Creek, a tributary of the Sheboygan River. The April 2020 flow direction to the west at the water table is consistent with previous water table maps developed since the site was developed in the mid-1980s.

Groundwater elevations at the CCR wells are summarized in **Table 3**. The April 2021 potentiometric surface map for the dolomite aquifer (**Figure 3**), based on groundwater elevations from monitoring wells MW-301 through MW-305, shows groundwater flow to the north and northeast, consistent with previous potentiometric surface maps. The potentiometric surface map confirms that monitoring wells MW-301 and MW-302 are downgradient from the active CCR Units.

2.2 CCR MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and three downgradient monitoring wells. The background wells include MW-304 and MW-305. The downgradient wells include MW-301, MW-302, and MW-303. The CCR Rule wells are installed in the upper portion of the dolomite aquifer. Well depths range from approximately 119 to 145 feet, measured from the top of the well casing.

2.3 OTHER MONITORING WELLS

Thirty-four groundwater monitoring wells currently exist at the I-43 ADF as part of the monitoring system developed for the state monitoring program. The well locations are shown on **Figure 2**. These monitoring wells and one on-site water supply well (WS-1) are used to monitor groundwater conditions at the site under WDNR License No. 02853, which includes the closed Phase 1/2 Landfill and the active Phase 3/4 Landfill.

Monitoring wells for the state monitoring program are installed in the unconsolidated glacial till unit, which is not the uppermost aquifer as defined under 40 CFR 257.53. This shallow monitoring system includes water table wells, mid-depth piezometers, and deep piezometers. Well depths range from approximately 15 to 49 feet, measured from the top of the well casing.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSI is due to a source other than the regulated CCR Unit, SCS used a two-step evaluation process. First, the sample collection, field and laboratory analysis, and statistical evaluation were reviewed to identify potential errors or analysis that led to an exceedance of the benchmark. Second, potential alternative sources, including natural variation and man-made sources other than the CCR Unit, were evaluated. This section of the report provides the findings of the methodology and analysis review. **Section 4.0** of the report addresses the potential alternative sources.

3.1 SAMPLING AND FIELD ANALYSIS REVIEW

Field notes and sampling results were reviewed to determine if sampling error may have caused or contributed to the observed SSIs for fluoride or field pH. Potential field sampling errors or issues could include mislabeling of samples, improper sample handling, missed holding times, cross contamination during sampling, or other field errors. Field blank sample results were also reviewed for indication of potential contamination from sampling equipment or containers. Based on the review of the field notes and results, SCS did not identify any indication that the fluoride or field pH SSIs were due to a sampling error.

For field analysis of pH, the review of field notes did not identify any apparent errors in the data. However, the readings for which an SSI was indicated during the April 2021 sampling event and June 2021 resampling event exceeded the UPL by only 0.02 to 0.03 pH units. This is within the accuracy range for the YSI pH meter, which is +/- 0.2 pH units. Therefore, the true field pH may or may not have exceeded the UPL and normal instrument error may have contributed to the reported SSI. Because the field pH exceedance of the UPL was well within the range of the instrument accuracy, it cannot be concluded with a high degree of certainty that the true field pH exceeds the UPL.

Because fluoride is a laboratory parameter, there is little potential for a field analysis error to contribute to an SSI.

3.2 LABORATORY ANALYSIS REVIEW

Laboratory reports for the April and June 2021 detection monitoring results were reviewed to determine if a laboratory analysis error or issue may have caused or contributed to the observed SSI for fluoride. The laboratory report review included reviewing the laboratory quality control flags and narrative, verifying that correct methods were used and desired detection limits were achieved, and checking the field and laboratory blank sample results. Laboratory reports for the background

monitoring and the April 2021 detection monitoring event will be included in the 2021 Annual Groundwater Monitoring and Corrective Action Report for the facility.

Based on the review of the laboratory reports, SCS did not identify any indication that the fluoride SSIs were due to a laboratory analysis error. There were no laboratory quality control flags or issues identified in the laboratory report that affect the usability of the data for detection monitoring. Because field pH is a field parameter, there is little potential for a lab analysis error to contribute to an SSI.

A time series plot of the fluoride and field pH analytical data was also reviewed for any anomalous results that might indicate a possible sampling or laboratory error (e.g., dilution error or incorrect sample labeling) (**Appendix A**). The April and June 2021 fluoride and field pH results for MW-302 are consistent with the historical data for this well.

3.3 STATISTICAL EVALUATION REVIEW

The review of the statistical results and methods includes a quality control check of the following:

- Input analytical data vs. laboratory analytical reports
- Review statistical method and outlier concentration lists for each monitoring well/CCR Unit

Based on the review of the statistical evaluation, SCS did not identify any errors or issues in the statistical evaluation that caused or contributed to the determination of interwell SSIs for field pH or fluoride at well MW-302.

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the SSI determinations for the April 2021 monitoring event based on the methodology and analysis review; however, measurement error could have caused or contributed to the field pH SSI. The field pH results at MW-302 were found to be above the UPL, but the differences between the UPL and the well results were within the range of the instrument accuracy. No other errors or issues causing or contributing to the reported field pH and fluoride SSIs were identified.

4.0 ALTERNATIVE SOURCES

This section of the report discusses the potential alternative sources for the field pH or fluoride SSIs at MW-302, identifies the most likely alternative source(s), and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed SSIs for fluoride and field pH.

4.1 POTENTIAL CAUSES OF SSI

4.1.1 Natural Variation

The statistical analysis for field pH and fluoride was completed using an interwell approach, comparing the April 2021 detection monitoring results to the UPLs calculated based on sampling of the background wells (MW-304 and MW-305). If concentrations of a constituent that is naturally

present in the aquifer vary spatially, then the potential exists that the downgradient concentrations may be higher than upgradient concentrations due to natural variation.

Fluoride was detected in both the upgradient (background) and downgradient (compliance) monitoring wells, which is an indication that it is naturally present in the aquifer. Additional regional and site information is discussed below, indicating that natural variation is a likely cause of the fluoride and field pH SSIs for well MW-302.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially contribute to the fluoride SSI at MW-302 include the closed I-43 Phase 1/2 Landfill, the contact water basin, or the ash unloading area. The closed Phase 1/2 Landfill was constructed with a 5-foot-thick compacted clay liner that is designed to inhibit the movement of leachate beyond the footprint of the closed landfill.

4.2 LINES OF EVIDENCES

The lines of evidence indicating that the SSIs for fluoride and pH in compliance well MW-302, relative to the background wells, are due to natural variability include:

1. The hydraulic conductivity of the thick glacial till aquitard overlying the dolomite aquifer is very low, and there is limited hydrogeologic connection between the shallow groundwater and the aquifer.
2. The active Phase 3/4 landfill was constructed with a clay and/or composite liner system, so the potential for a release is very low.
3. Fluoride has been identified as a naturally occurring groundwater constituent in the region encompassing the I-43 ADF.
4. Publicly available data from the WDNR's Groundwater Retrieval Network (GRN) database indicate fluoride is commonly detected in Sheboygan County.
5. Publicly available data from the WDNR's Groundwater and Environmental Monitoring System (GEMS) database show that fluoride concentrations in shallow and deep groundwater at the I-43 ADF site, prior to landfilling, were similar to those detected at MW-302.
6. Intrawell statistical analysis of the field pH and fluoride results from MW-302 shows that the concentrations of these parameters have not increased significantly since background monitoring was performed.

Each of these lines of evidence and the supporting data are discussed in more detail in the following sections.

4.2.1 Glacial Clay Till Hydraulic Conductivity

The glacial clay till at the I-43 ADF is an aquitard with very low vertical hydraulic conductivity. A site review completed by Weston for the U.S. EPA in 2010 found that samples of the native upper clay till collected by Warzyn Engineering, Inc. (Warzyn) in 1981 contained 65 to 85 percent clay size particles, indicating low hydraulic conductivity.

Vertical hydraulic conductivity tests of the clay till, completed as part of the 1981 Warzyn study, found the upper clay till ranged from 5 to 9 x 10⁻⁸ cm/s. The 1981 Warzyn study estimated the time required for groundwater to traverse vertically through the till to be “on the order of hundreds if not thousands of years” (Warzyn, 1981). Observed high vertical gradients provide further documentation of very low vertical hydraulic conductivity at the site (Weston, 2010). These results suggest there is limited hydrogeologic connection between the upper shallow till aquitard and the uppermost bedrock aquifer.

4.2.2 Liner Construction

The active landfill, which comprises the three CCR Units, is constructed with a low permeability liner system that minimizes potential leakage. Phase 4 Module 1 was constructed with a 5-foot compacted clay liner. Phase 3 Modules 1 and 2 were constructed with a composite liner system including 2 feet of compacted clay and a 60-mil HDPE geomembrane. The compacted clay hydraulic conductivity is less than 10⁻⁷ centimeter per second for all modules, documented through construction quality assurance testing. All constructed modules have a leachate collection drainage layer overlying the liner. The collected leachate flows by gravity and/or is pumped to the contact water basin. The leachate/contact water swales and contact water basin have composite liners, consisting of compacted clay overlain by a 60-mil HDPE geomembrane.

4.2.3 Fluoride in Wisconsin Groundwater

Elevated natural fluoride concentrations above those reported for the downgradient wells (above 2 milligrams per liter [mg/L]) have been observed in a region in eastern Wisconsin extending along the Lake Michigan shoreline from Kewaunee County in the north to the Illinois border in the south, as described Luczaj, J., and Masarik, K, 2015, *Groundwater Quantity and Quality Issues in a Water-Rich Region: Examples from Wisconsin, USA*. The authors note that most of the wells with elevated fluoride appear to be drawing from the Pleistocene glacial sediments and Silurian dolomite units. Skinner and Borman (1973) and Kammerer (1995) also identify the Lake Michigan shoreline area of eastern Wisconsin as having somewhat elevated fluoride concentrations in groundwater.

4.2.4 Fluoride in Sheboygan County Groundwater

Publicly available data from the WDNR’s GRN database indicate fluoride is commonly detected in Sheboygan County. Data retrieved from the GRN database included a total of 527 Sheboygan County water supply well samples analyzed for fluoride. Fluoride was detected in 94 percent of the samples. For the samples with fluoride detections, the average result for fluoride was 0.31 mg/L and the maximum result was 1.3 mg/L. Of the 424 results where fluoride was above the limit of quantitation, 5.2 percent of the results were at or above the UPL concentration of 0.753 mg/L. The fluoride concentrations reported for MW-302 in April and June 2021, 0.76 and 0.77 mg/L, are within the range of concentrations in the GRN database for Sheboygan County. WDNR GRN fluoride concentrations for Sheboygan County are provided in **Appendix B**.

4.2.5 State Program Background Data for Fluoride

Publicly available data from the WDNR’s GEMS database show that fluoride concentrations in shallow and deep groundwater at the I-43 ADF site, prior to landfilling, were similar to those detected at MW-302. Fluoride is not included in the state monitoring program for the shallow monitoring wells; however, a limited number of samples were collected in 1978 during baseline monitoring prior to the I-43 landfill construction. The baseline samples indicated fluoride concentrations ranging from 0.43 to 0.84 mg/L in the glacial till. The fluoride concentrations in the samples from MW-302 fall

within this range, indicating they are consistent with a natural source. The baseline monitoring data downloaded from the GEMS database are provided in **Appendix C**.

The GEMS database download also includes results for two water supply wells that were previously located on site. Fluoride results for samples from these two wells in 1978, prior to the I-43 landfill construction, were 0.7 and 0.74 mg/L. These results are very similar to the concentrations detected in 2021 samples from MW-302, indicating that fluoride at these levels was historically present in the aquifer prior to CCR disposal at the site.

4.2.6 Intrawell Evaluation

Intrawell statistical analysis of the field pH and fluoride results from MW-302 shows that the concentrations of these parameters have not increased significantly since background monitoring was completed prior to October 2017. The intrawell analysis for these two parameters at MW-302 is provided in **Appendix D**.

ASDs previously prepared for the October 2017 and April 2018 detection monitoring events concluded that interwell SSIs reported for boron concentrations in downgradient monitoring wells MW-301 and MW-302 were likely due to naturally occurring boron in the bedrock aquifer at the I-43 ADF (SCS, 2018a and 2018b). This conclusion was based on several lines of evidence, including the site geology and historical boron monitoring results for the glacial till and bedrock aquifer. Following these ASDs, the statistical method for boron was modified to an intrawell prediction limit approach to account for natural variation. Since that change, boron levels have remained below the intrawell UPLs indicating no impact from the CCR Unit or the closed CCR landfill.

Review of time series plots for MW-302, included in **Appendix D**, indicates that the other Appendix III parameters, including calcium, chloride, sulfate and total dissolved solids, have had stable or decreasing concentrations background sampling was completed in 2016 and 2017. Based on the results for all Appendix III parameters, it is very unlikely that the interwell SSIs for field pH and fluoride at MW-302 are due to the CCR Unit. The monitoring well concentrations are consistent with regional and historic site background for the bedrock aquifer and the intrawell analyses and time series plots indicate no impact from the CCR Unit.

5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for field pH and fluoride concentrations in downgradient monitoring well MW-302 demonstrate that the SSIs are likely due to natural variation in groundwater quality in the bedrock aquifer at the I-43 ADF. Field instrument error could also be a contributing factor for the field pH SSI, given that the results exceed the interwell UPL by less than the stated instrument accuracy range.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.94(e)(2) of the CCR Rule, the I-43 site may continue with detection monitoring based on this ASD. The ASD report will be included in the 2021 Annual Report due January 31, 2022.

7.0 REFERENCES

Kammerer, Jr., P.A., Ground-Water Flow and Quality in Wisconsin's Shallow Aquifer System. U.S. Geological Survey Water-Resources Investigations Report 90-4171, 1995.

Luczaj, J., and Masarik, K, 2015, Groundwater Quantity and Quality Issues in a Water-Rich Region: Examples from Wisconsin, USA: Resources, 2015, 4, 323-357.

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Tables

- 1 Groundwater Analytical Results Summary
- 2 Historical Analytical Results for Parameters with SSIs
- 3 Groundwater Elevation Table – CCR Rule Monitoring Well Network

**Table 1. Groundwater Analytical Results Summary
Edgewater I-43 Ash Disposal Facility, Sheboygan, WI / SCS Engineers Project #25221069.00**

Parameter Name	Interwell UPL	Background Wells		Compliance Wells							
		MW-304	MW-305	MW-301			MW-302			MW-303	
		4/13/2021	4/13/2021	Intrawell UPL	4/13/2021	6/16/2021	Intrawell UPL	4/13/2021	6/16/2021	Intrawell UPL	4/13/2021
Boron, ug/L		91.7	66.6	184	132	--	149	121	--	100	84.7
Calcium, ug/L	103,000	19,700	86,800		53,900	--		28,700	--		29,600
Chloride, mg/L	24.9	2.1	25.3		3.9	--		4.1	--		4.5
Fluoride, mg/L	0.753	0.53	0.67		0.64	--		0.76	0.77		0.62
Field pH, Std. Units	8.34	8.31	7.76		8.48	8.14		8.36	8.37		8.26
Sulfate, mg/L	140	15.3	127		10.2	--		17.4	--		25.6
Total Dissolved Solids, mg/L	598	224	540		238	--		232	--		260

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:

UPL = Upper Prediction Limit

SSI = Statistically Significant Increase

-- = Not Analyzed

ug/L = micrograms per liter

mg/L = milligrams per liter

LOQ = Limit of Quantitation

LOD = Limit of Detection

Notes:

1. An individual result above the UPL does not constitute an SSI above background. See the accompanying letter text for identification of statistically significant results.

2. Interwell UPLs calculated based on results from background wells MW-304 and MW-305. Interwell UPLs based on 1-of-2 retesting approach. Interwell UPLs were calculated with background results from the May 2016 through the October 2020 sampling event.

3. Following the completion of the April 2018 Alternative Source Demonstration (ASD) Report, dated October 31, 2018, the statistical method for evaluating boron data at the three compliance monitoring wells was modified to an intrawell approach. Intrawell UPLs were calculated using results from the May 2016 through the April 2020 sampling events.

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 Last revision by: NDK
 Checked by: ZTW
 Proj Mgr QA/QC: TK

Date: 1/7/2021
 Date: 6/24/2021
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 Date: 6/25/2021

I:\25221069.00\Deliverables\2021 I43 LF April Results Letter\Table\[Table 1-April 2021 GW Analytical Summary.xlsx]Table 1

**Table 2. Historical Analytical Results for Parameters with SSIs
WPL-Edgewater I-43 Ash Disposal Facility
Sheboygan, Wisconsin**

Well Group	Well	Collection Date	Fluoride (mg/L)	Field pH (St. Units)
Background	MW-304	4/26/2016	0.49	8.16
		6/21/2016	0.55	8.00
		8/9/2016	0.51	6.29
		10/19/2016	0.45	8.17
		12/19/2016	0.59	8.29
		1/23/2017	0.50	8.14
		2/23/2017	0.50	8.22
		4/7/2017	0.48	7.86
		6/6/2017	0.60	8.03
		8/1/2017	0.53	7.90
		10/23/2017	0.54	7.74
		4/3/2018	0.50	7.99
		10/4/2018	0.50	8.10
		4/8/2019	0.51	8.06
		10/8/2019	0.48	7.68
	4/7/2020	0.75	8.07	
	10/15/2020	0.58	8.12	
	4/13/2021	0.53	8.31	
	MW-305	2/23/2017	0.73	7.75
		4/7/2017	0.59	7.62
		6/6/2017	0.72	7.52
		8/1/2017	0.69	7.47
		10/23/2017	0.64	7.55
		4/3/2018	0.63	7.54
		10/4/2018	0.58	7.65
		4/9/2019	0.65	7.85
10/8/2019		0.63	7.36	
4/7/2020		0.75	7.48	
10/15/2020		0.72	7.63	
4/13/2021	0.67	7.76		
Compliance	MW-301	4/26/2016	<2.0	8.24
		6/21/2016	1.10 J	8.01
		8/10/2016	0.62	8.08
		10/19/2016	0.65 J	8.00
		12/19/2016	0.86 J	8.36
		1/23/2017	0.77 J	8.21
		2/23/2017	0.64	8.14
		4/6/2017	0.61	8.12
		6/6/2017	0.87 J	7.89
		8/1/2017	0.63	7.99
		10/23/2017	0.62	7.82
		4/3/2018	0.62	8.02
		10/4/2018	0.61	8.15
		4/9/2019	0.63	8.18
		10/8/2019	0.63	7.70
		4/7/2020	0.82 J	8.05
		10/13/2020	0.83	7.96
		12/18/2020	0.64	7.64
		4/13/2021	0.64	8.48
		6/16/2021	--	8.14

**Table 2. Historical Analytical Results for Parameters with SSIs
WPL-Edgewater I-43 Ash Disposal Facility
Sheboygan, Wisconsin**

Well Group	Well	Collection Date	Fluoride (mg/L)	Field pH (St. Units)
Compliance	MW-302	4/26/2016	1.10 J	8.33
		6/21/2016	0.74	8.05
		8/9/2016	0.75	6.24
		10/19/2016	0.69	12.20
		12/19/2016	0.94 J	8.31
		1/23/2017	0.85 J	8.16
		2/23/2017	0.67	8.16
		4/6/2017	0.68	8.00
		6/6/2017	0.83	7.95
		8/1/2017	0.74	7.98
		10/23/2017	0.71	7.70
		4/3/2018	0.73	8.02
		10/4/2018	0.71	8.08
		4/9/2019	0.73	8.14
		10/8/2019	0.71	7.67
		4/8/2020	0.75	7.79
		5/20/2020	0.70	8.19
		10/13/2020	0.82	7.85
12/18/2020	0.73	8.05		
4/13/2021	0.76	8.36		
6/16/2021	0.77	8.37		
Compliance	MW-303	4/26/2016	0.55	7.96
		6/21/2016	0.59	7.98
		8/9/2016	0.59	6.24
		10/19/2016	0.60	8.03
		12/19/2016	0.63	8.32
		1/23/2017	0.80 J	8.23
		2/23/2017	0.55	8.24
		4/7/2017	0.57	8.15
		6/6/2017	0.69	7.90
		8/1/2017	0.60	7.91
		10/23/2017	0.66	7.59
		4/3/2018	0.54	7.98
		10/4/2018	0.56	8.04
		4/9/2019	0.57	8.05
		10/7/2019	0.60	10.12
		11/26/2019	--	8.14
		4/8/2020	0.60	7.67
		10/13/2020	0.70	8.31
4/13/2021	0.62	8.26		

Abbreviations:

mg/L = milligrams per liter or parts per million (ppm)

LOD = Limit of Detection

LOQ = Limit of Quantitation

Notes:

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

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7/6/2021

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Date: 9/16/2021

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Date: 9/17/2021

**Table 3. Groundwater Elevation Table - CCR Rule Monitoring Well Network
WPL - I43 / SCS Engineers Project #25221069.00**

Well Number	Ground Water Elevation in feet above mean sea level (amsl)				
	MW-301	MW-302	MW-303	MW-304	MW-305
Top of Casing Elevation (feet amsl)	696.96	702.57	719.25	691.97	717.67
Screen Length (ft)	5.00	5.00	5.00	5.00	5.00
Total Depth (ft from top of casing)	134.56	144.33	144.65	119.49	122.97
Top of Well Screen Elevation (ft)	567.40	563.24	579.60	577.48	600.46
Measurement Date					
April 8, 2016	692.29	683.61	696.30	--	--
April 26, 2016	653.54	653.56	653.59	655.90	
June 20, 2016	652.01	651.89	651.80	653.79	--
August 9, 2016	649.68	649.30	649.37	651.55	--
October 19, 2016	652.32	652.38	652.18	654.00	--
December 19, 2016	652.85	652.79	652.82	654.26	--
January 5, 2017	652.86	652.82	652.80	654.15	
January 23, 2017	652.98	664.97	652.92	654.37	--
February 23, 2017	653.14	653.10	653.10	654.49	658.02
April 7, 2017	654.43	654.72	654.55	654.85	659.65
June 6, 2017	654.11	654.12	654.14	655.70	659.70
August 1, 2017	652.64	652.55	652.50	654.49	658.54
October 23, 2017	652.03	652.05	652.03	653.65	657.22
April 3, 2018	651.28	651.25	651.30	652.86	656.24
October 4, 2018	650.71	650.70	650.70	652.26	655.89
April 8-9, 2019	653.06	654.06	654.06	655.59	659.03
October 8, 2019	653.26	653.21	653.27	654.77	658.77
November 26, 2019	--	--	655.56	--	--
April 7, 2020	656.59	656.47	656.46	658.16	661.58
May 20, 2020	--	655.81	--	--	--
October 13, 2020	652.16	652.17	652.20	654.17	658.08
December 18, 2020	653.91	653.88	--	--	--
April 13, 2021	654.56	654.57	654.53	656.36	659.69
June 16, 2021	649.78	649.75	--	--	--
Bottom of Well Elevation (ft)	562.40	558.24	574.60	572.48	594.70

Notes: -- = not measured

Created by: NDK

Date: 1/10/2020

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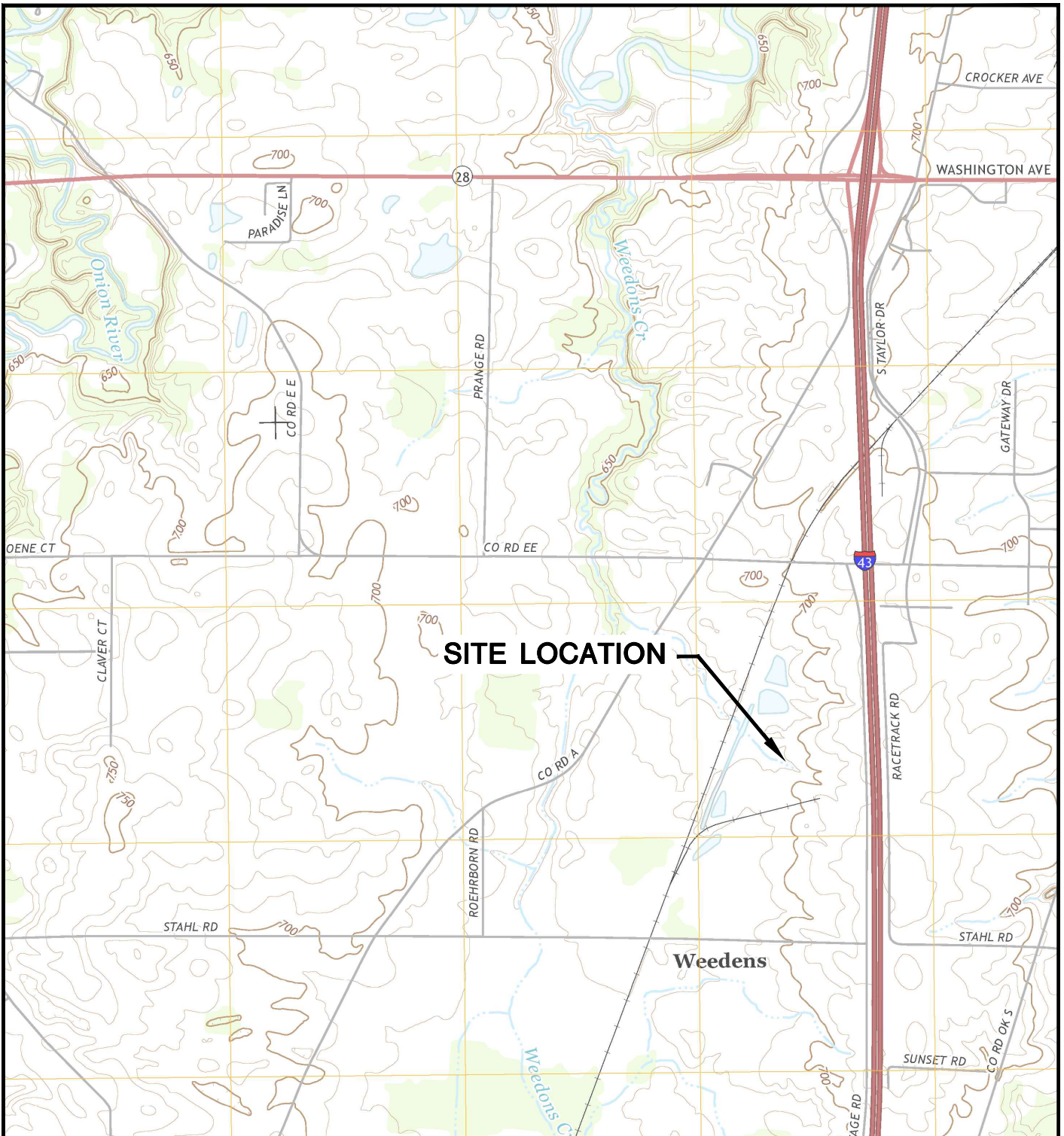
Checked by: JR

Date: 6/21/2021

I:\25221069.00\Deliverables\2021 April ASD\Tables\[Table 3 - I43_wlstat_CCR.xls]levels

Figures

- 1 Site Location Map
- 2 Monitoring Well Location Map
- 3 Bedrock Potentiometric Surface Map – April 2021



SHEBOYGAN FALLS QUADRANGLE
 WISCONSIN-SHEBOYGAN CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2015
 SCALE: 1" = 2,000'

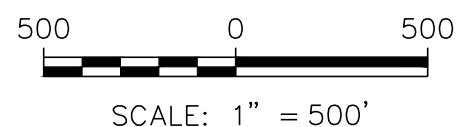


CLIENT	ALLIANT ENERGY WISCONSIN POWER AND LIGHT COMPANY		SITE	WISCONSIN POWER AND LIGHT EDGEWATER GENERATING STATION I-43 LANDFILL TOWN OF WILSON, WISCONSIN		SITE LOCATION MAP
	PROJECT NO.	25215135.20		DRAWN BY:	BJM	
DRAWN:	02/08/16	CHECKED BY:	KK	FIGURE		
REVISED:	03/06/18	APPROVED BY:	TK 03/06/18	1		



LEGEND	
---	APPROXIMATE PROPERTY LINE
- - - -	MODULE LIMITS
---	GRADE (2' CONTOUR)
---	GRADE (10' CONTOUR)
---	EDGE OF WATER
---	SWALE
---	CULVERT
○	MANHOLE
W	CONTACT WATER TRANSFER PIPE
AB	ABANDONED 3" DIA. HDPE PIPE
---	TREELINE/TREES
---	PAVED ROAD
---	UNPAVED ACCESS ROAD
	RAILROAD TRACKS
- x - x - x - x -	FENCE
○ *	UTILITY/LIGHT POLE
●	MONITORING WELL (UNCONSOLIDATED)
⊕	PIEZOMETER (UNCONSOLIDATED)
■	PRIVATE WATER SUPPLY WELL
⊕	CCR RULE PIEZOMETER (BEDROCK)
---	CCR RULE UNITS

- NOTE:
1. MONITORING WELLS MW-301, MW-303, AND MW-304 WERE INSTALLED BETWEEN NOVEMBER 30, 2015 AND JANUARY 26, 2016 BY BADGER STATE DRILLING INC. DRILLING WAS PERFORMED UNDER THE SUPERVISION OF SCS ENGINEERS.
 2. MONITORING WELLS MW-301, MW-302, MW-303 AND MW-304 WERE SURVEYED ON FEBRUARY 8, 2016 BY SCS ENGINEERS.
 3. MONITORING WELL MW-305 WAS SURVEYED ON FEBRUARY 15, 2017 BY CQM, INC.



PROJECT NO.	25216069.00	DRAWN BY:	JMO/BJM
DRAWN:	02/12/16	CHECKED BY:	KK
REVISED:	03/06/18	APPROVED BY:	TK 03/06/18

SCS ENGINEERS
 2830 DAIRY DRIVE MADISON, WI 53718-6751
 PHONE: (608) 224-2830

ALLIANT ENERGY
 ALLIANT ENERGY WISCONSIN POWER AND LIGHT COMPANY

SITE
 WISCONSIN POWER AND LIGHT
 EDGEWATER GENERATING STATION
 1-43 LANDFILL
 TOWN OF WILSON, WISCONSIN

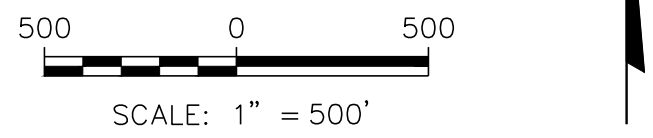
MONITORING WELL LOCATION MAP

FIGURE
 2



- LEGEND
- APPROXIMATE PROPERTY LINE
 - - - - - MODULE LIMITS
 - GRADE (2' CONTOUR)
 - 690--- GRADE (10' CONTOUR)
 - EDGE OF WATER
 - SWALE
 - CULVERT
 - MH MANHOLE
 - W --- CONTACT WATER TRANSFER PIPE
 - AB --- ABANDONED 3" DIA. HDPE PIPE
 - TREELINE/TREES
 - PAVED ROAD
 - UNPAVED ACCESS ROAD
 - ++++ RAILROAD TRACKS
 - x - x - x - x - FENCE
 - * UTILITY/LIGHT POLE
 - MONITORING WELL (UNCONSOLIDATED)
 - ⊕ PIEZOMETER (UNCONSOLIDATED)
 - PRIVATE WATER SUPPLY WELL
 - ⊕ CCR RULE PIEZOMETER (BEDROCK)
 - ⊕ CCR RULE BACKGROUND MONITORING WELL
 - CCR RULE UNIT
 - 654.56 POTENTIOMETRIC SURFACE ELEVATION
 - POTENTIOMETRIC SURFACE CONTOUR
 - APPROXIMATE GROUNDWATER FLOW DIRECTION

- NOTE:
1. MONITORING WELLS MW-301, MW-303, AND MW-304 WERE INSTALLED BETWEEN NOVEMBER 30, 2015 AND JANUARY 26, 2016 BY BADGER STATE DRILLING INC. DRILLING WAS PERFORMED UNDER THE SUPERVISION OF SCS ENGINEERS.
 2. MONITORING WELLS MW-301, MW-302, MW-303 AND MW-304 WERE SURVEYED ON FEBRUARY 8, 2016 BY SCS ENGINEERS.
 3. MONITORING WELL MW-305 WAS SURVEYED ON FEBRUARY 15, 2017 BY CQM, INC.
 4. GROUNDWATER ELEVATIONS WERE COLLECTED FROM PIEZOMETERS ON APRIL 13, 2021.
 5. THE BACKGROUND MONITORING WELL FOR THE I-43 LANDFILL IS MW-305.



PROJECT NO.	25221069.00	DRAWN BY:	KP
DRAWN:	05/21/2021	CHECKED BY:	RM
REVISED:	06/29/2021	APPROVED BY:	TK 9/23/2021

SCS ENGINEERS
 2830 DAIRY DRIVE MADISON, WI 53718-6751
 PHONE: (608) 224-2830

CLIENT ALLIANT ENERGY
 ALLIANT ENERGY WISCONSIN POWER AND LIGHT COMPANY

SITE WISCONSIN POWER AND LIGHT
 EDGEWATER GENERATING STATION
 I-43 LANDFILL
 TOWN OF WILSON, WISCONSIN

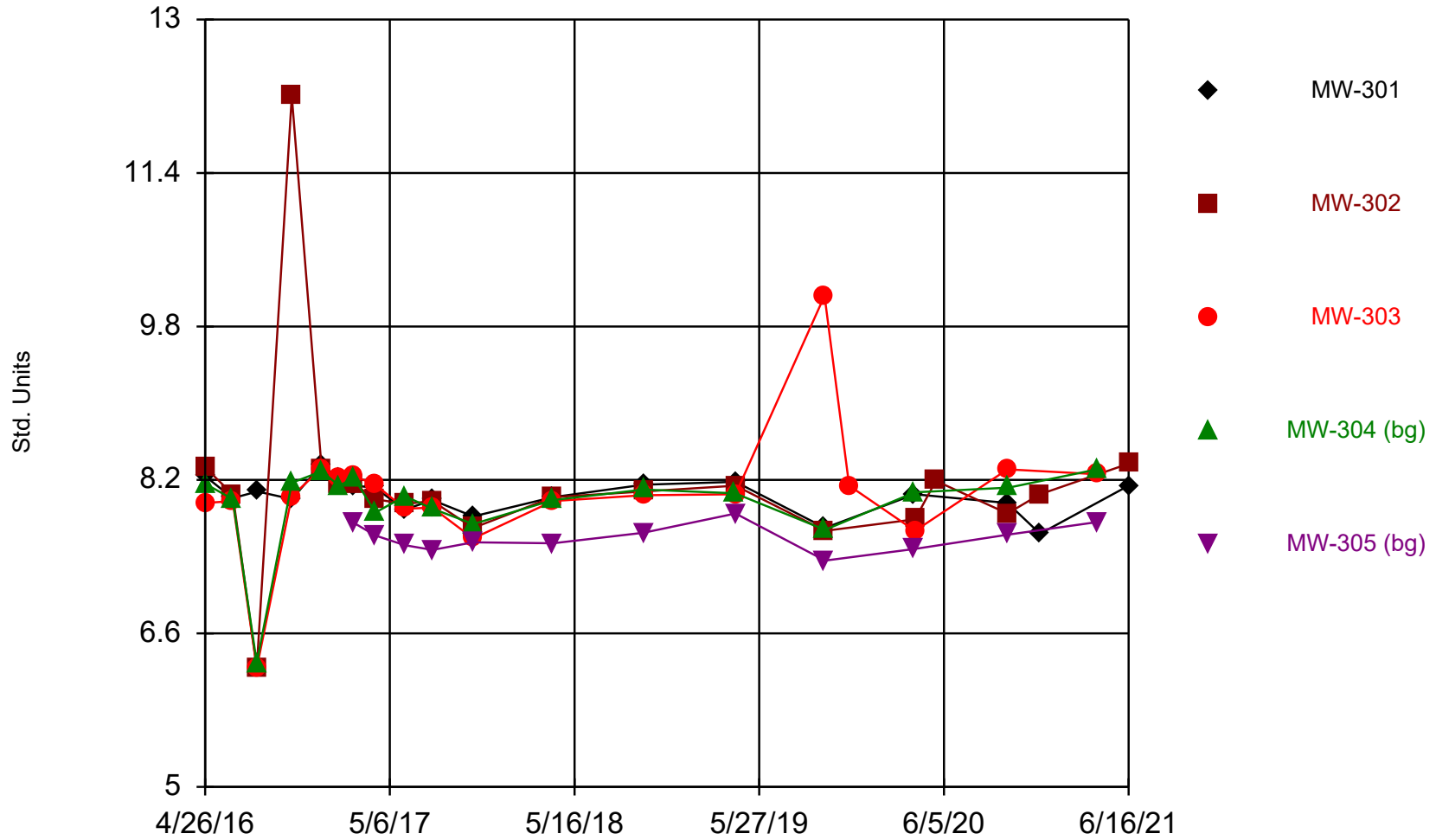
FIGURE BEDROCK POTENTIOMETRIC SURFACE MAP
 APRIL 13, 2021

FIGURE 3

Appendix A

CCR Well Fluoride and Field pH Trend Plots

Time Series



Constituent: Field pH Analysis Run 7/7/2021 12:52 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

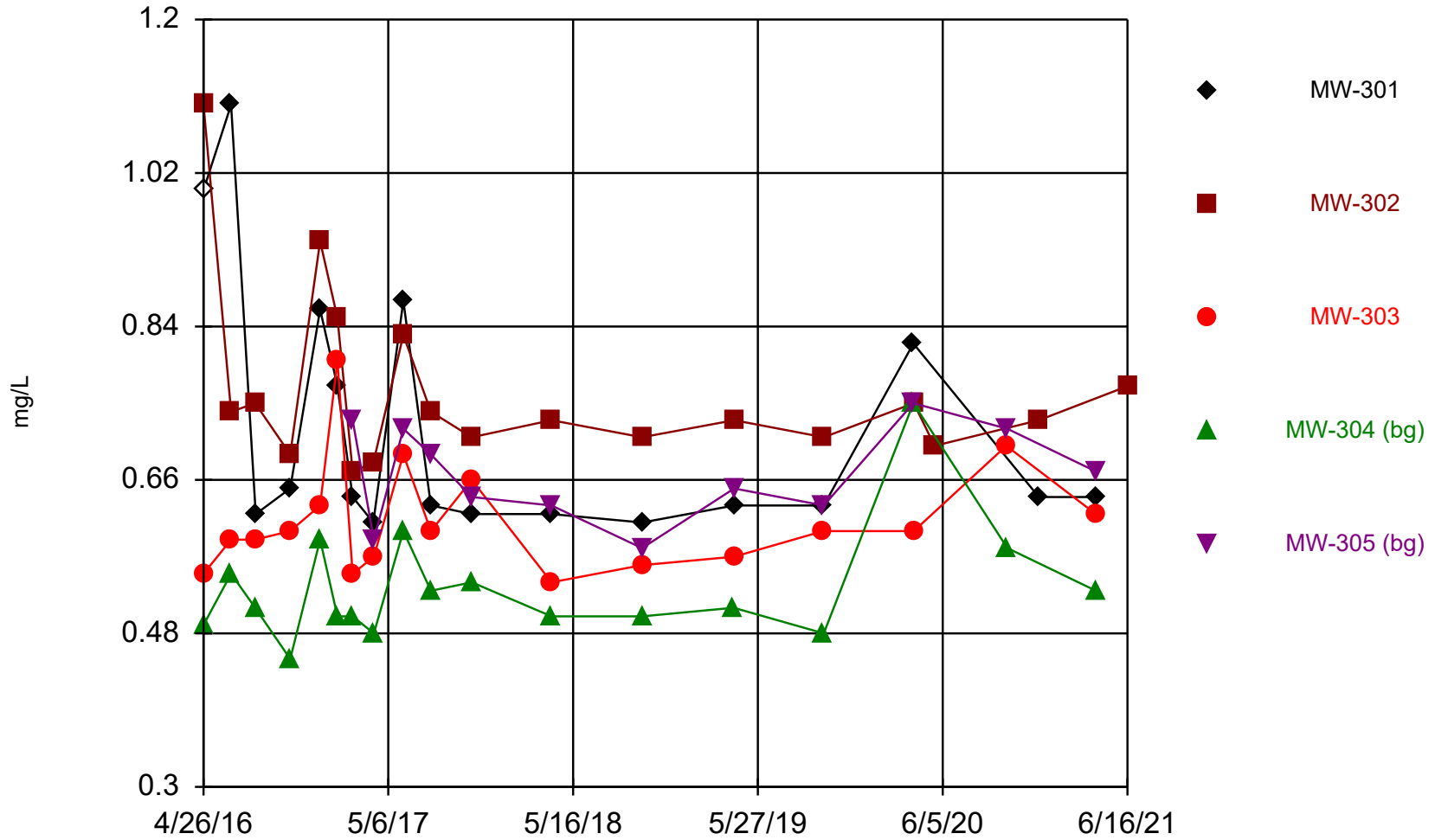
Time Series

Constituent: Field pH (Std. Units) Analysis Run 7/7/2021 12:53 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	8.24	8.33	7.96	8.16	
6/21/2016	8.01	8.05	7.98	8	
8/9/2016		6.24 (O)	6.24 (O)	6.29 (O)	
8/10/2016	8.08				
10/19/2016	8	12.2 (O)	8.03	8.17	
12/19/2016	8.36	8.31	8.32	8.29	
1/23/2017	8.21	8.16	8.23	8.14	
2/23/2017	8.14	8.16	8.24	8.22	7.75
4/6/2017	8.12	8			
4/7/2017			8.15	7.86	7.62
6/6/2017	7.89	7.95	7.9	8.03	7.52
8/1/2017	7.99	7.98	7.91	7.9	7.47
10/23/2017	7.82	7.7	7.59	7.74	7.55
4/3/2018	8.02	8.02	7.98	7.99	7.54
10/4/2018	8.15	8.08	8.04	8.1	7.65
4/8/2019				8.06	
4/9/2019	8.18	8.14	8.05		7.85
10/7/2019			10.12		
10/8/2019	7.7	7.67		7.68	7.36
11/26/2019			8.14		
4/7/2020	8.05			8.07	7.48
4/8/2020		7.79	7.67		
5/20/2020		8.19			
10/13/2020	7.96	7.85	8.31		
10/15/2020				8.12	7.63
12/18/2020	7.64	8.05			
4/13/2021			8.26	8.31	7.76
6/16/2021	8.14 (R)	8.37 (R)			

Time Series




Constituent: Fluoride Analysis Run 7/7/2021 12:52 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series

Constituent: Fluoride (mg/L) Analysis Run 7/7/2021 12:53 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-301	MW-302	MW-303	MW-304 (bg)	MW-305 (bg)
4/26/2016	<2 (U)	1.1 (J)	0.55	0.49	
6/21/2016	1.1 (J)	0.74	0.59	0.55	
8/9/2016		0.75	0.59	0.51	
8/10/2016	0.62				
10/19/2016	0.65 (J)	0.69	0.6	0.45	
12/19/2016	0.86 (J)	0.94 (J)	0.63	0.59	
1/23/2017	0.77 (J)	0.85 (J)	0.8 (J)	0.5	
2/23/2017	0.64	0.67	0.55	0.5	0.73
4/6/2017	0.61	0.68			
4/7/2017			0.57	0.48	0.59
6/6/2017	0.87 (J)	0.83	0.69	0.6	0.72
8/1/2017	0.63	0.74	0.6	0.53	0.69
10/23/2017	0.62	0.71	0.66	0.54	0.64
4/3/2018	0.62	0.73	0.54	0.5	0.63
10/4/2018	0.61	0.71	0.56	0.5	0.58
4/8/2019				0.51	
4/9/2019	0.63	0.73	0.57		0.65
10/7/2019			0.6		
10/8/2019	0.63	0.71		0.48	0.63
4/7/2020	0.82 (J)			0.75	0.75
4/8/2020		0.75	0.6		
5/20/2020		0.7			
10/13/2020			0.7		
10/15/2020				0.58	0.72
12/18/2020	0.64 (R)	0.73 (R)			
4/13/2021	0.64		0.62	0.53	0.67
6/16/2021		0.77 (R)			



Appendix B

Sheboygan County Fluoride Concentrations – WDNR GRN Table

**Fluoride Data from WDNR's Groundwater Retrieval Network (GRN) Database for Water Supply Wells
Sheboygan County, Wisconsin
Summary of Fluoride Detections**

Row Labels	Count of Analytical Result
FLUORIDE TOTAL	527
DETECT BETWEEN LOD & LOQ	74
NON-DETECT	29
NORMAL QUANTIFIED RESULT	424
Grand Total	527

Percent with Fluoride Detected 94%

Sample Analytical Qualifier	(Multiple Items)
-----------------------------	------------------

Count of Sample Analytical Result	Average of Sample Analytical Result	Max of Sample Analytical Result2
498	0.31	1.3

Data downloaded by SCS on 9/20/2021

I:\25221069.00\Deliverables\2021 April ASD\Appendix B Sheboygan Co Fluoride Concentrations\[WDNR_GRN_Fluoride_SheboyganCo_210920-NDK.xlsx]Detects

Sheboygan County Water Supply Well Results from WDNR's Groundwater Retrieval Network (GRN) Database - Fluoride

WI Unique Well #	Sample		Storet		Sample Analytical Result	Units	Limit of Detection	Limit of Quantitation
	Collection Date	Labslip # / Sample ID	Parameter Code	Parameter Description				
BH038	6/8/1977	I0000896	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L		
BH037	6/8/1977	I0000895	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.25 MG/L		
BH005	8/17/1977	I0000736	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L		
BH021	5/20/1980	I0000657	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		
BH003	2/5/1985	I0000134	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L		
BH040	9/12/1985	I0000882	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L		
CZ365	8/20/1990	BB019178	951	FLUORIDE TOTAL	NON-DETECT	MG/L		
CW708	1/18/1991	I8059335	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	1.1 MG/L		
AK890	8/13/1991	IC019849	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.3 MG/L		
DE281	9/4/1991	IC027667	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	1.1 MG/L		
AF628	2/3/1992	IC068693	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.38 MG/L		
BH037	2/3/1993	4186-1	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.49 MG/L	0.003	
BH038	2/3/1993	4186-2	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.56 MG/L	0.003	
BH039	2/10/1993	I4266-1	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L	0.003	
BH024	2/17/1993	I12171	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.62 MG/L	0.1	
AY324	2/17/1993	I12170	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.41 MG/L	0.1	
JA221	3/29/1993	I12945	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L	0.1	
BH008	3/30/1993	I12968	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.51 MG/L	0.1	
BH007	3/30/1993	I12967	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.75 MG/L	0.1	
DB283	4/8/1993	ID083426	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L		
BH028	9/8/1993	I917	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.65 MG/L	0.1	
BH029	9/8/1993	I918	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.42 MG/L	0.1	
BH036	10/4/1993	I4092997	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22 MG/L	0.1	
BH033	10/4/1993	I4092994	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.1	
BH034	10/4/1993	I4092995	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.14 MG/L	0.1	
BH031	10/4/1993	I4092992	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L	0.1	
BH035	10/4/1993	I4092996	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L	0.1	
BH030	10/4/1993	I4092991	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.11 MG/L	0.1	
BH032	10/4/1993	I4092993	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.11 MG/L	0.1	
BH040	10/4/1993	I4092998	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L	0.1	
BH022	10/22/1993	I1758	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.1	
BH027	11/9/1993	I2202030	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L	0.1	
BH003	11/29/1993	IE014429	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.09 MG/L		
BH004	11/29/1993	IE014430	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.09 MG/L		
BH004	11/29/1993	IE014430	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.09 MG/L	0.1	
BH003	11/29/1993	IE014429	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.09 MG/L	0.1	
BH020	12/28/1993	I3398	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L	0.1	
BH021	12/28/1993	34333399	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.27 MG/L	0.1	
BH005	12/29/1993	I46175	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.5 MG/L	0.1	
BH006	12/29/1993	I46176	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L	0.1	
BP300	2/21/1994	I4080	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.36 MG/L	0.1	
BH025	3/29/1994	I4646	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19 MG/L	0.1	
BH026	3/29/1994	I4647	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.1	
GM365	4/12/1994	IE022511	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.08 MG/L	0.1	
ET893	5/2/1994	BE080593	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.14 MG/L		
GS070	7/27/1994	BF008958	951	FLUORIDE TOTAL	NON-DETECT	MG/L	0.023	0.085
BP305	11/9/1994	I3894851	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.1	
JA221	11/10/1994	I4025765	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.1	
GM370	11/10/1994	I4025766	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.1	
BP301	11/15/1994	I4051214	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.1	
EQ831	2/8/1995	BF054999	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.6 MG/L		
BM458	2/28/1995	IF019742	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.33 MG/L		
EF758	3/1/1995	I6993	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L	0.1	
FX054	3/14/1995	I75996	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.37 MG/L	0.1	
BP317	3/21/1995	I63121	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.1	
ES728	3/26/1995	I005164	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.46		
FH035	3/27/1995	I76608	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L	0.1	
FX589	3/27/1995	I76607	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.33 MG/L	0.1	
BH590	3/27/1995	I76609	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.23 MG/L	0.1	
BP313	3/27/1995	I9750881	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.1	
BP309	4/12/1995	I68387	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.1	
ES865	4/17/1995	IF023130	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.42 MG/L		
AY032	4/17/1995	IF023129	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.42 MG/L		
ES738	4/18/1995	I9760630	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	1.3	0.1	
EZ004	4/26/1995	I69705	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L	0.1	
GT012	5/1/1995	I95W1111	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.23 MG/L		
GH435	6/6/1995	BF078838	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.09 MG/L	0.06	0.2
ES715	6/7/1995	I81867	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L	0.1	
AK340	6/7/1995	I81868	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19 MG/L	0.1	
BP307	6/14/1995	I134105	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.54 MG/L		
ES716	6/20/1995	I82986	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.1	
BP306	7/25/1995	I8859	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.31 MG/L	0.1	
GO596	8/1/1995	I4902	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.85 MG/L		
ES724	9/26/1995	I50806	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.274 MG/L	0.003	
ES771	10/31/1995	I92848	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.48 MG/L	0.1	
EZ003	12/18/1995	IG018850	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.09 MG/L	0.06	0.2
GM370	3/18/1996	I20933436	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.1	
BP300	4/9/1996	I21208588	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L	0.1	
BP309	5/6/1996	I104525	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L	0.1	
KU372	5/22/1996	I217549	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.6 MG/L	0.1	
GM365	10/7/1996	IHO10120	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.07 MG/L	0.06	0.2
KU372	1/13/1997	I24634446	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.6 MG/L	0.1	
KX779	3/3/1997	IHO19228	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.51 MG/L		
KY852	5/7/1997	IHO24636	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L		

Sheboygan County Water Supply Well Results from WDNR's Groundwater Retrieval Network (GRN) Database - Fluoride

WI Unique Well #	Sample		Storet		Sample Analytical Result	Units	Limit of Detection	Limit of Quantitation
	Collection Date	Labslip # / Sample ID	Parameter Code	Parameter Description				
KT498	7/14/1997	81003516	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.06 MG/L	0.031	0.10
KX159	2/2/1998	30438183	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.6 MG/L		0.1
FX054	2/3/1998	28002511	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.39 MG/L		0.1
EF758	2/3/1998	185929	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.11 MG/L		0.05
BP313	2/9/1998	8260408	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
BP317	6/4/1998	32815860	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L		0.1
ES771	6/18/1998	8300775	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L		0.1
ES728	7/19/1998	8310756	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.5 MG/L		0.1
BP307	7/30/1998	1175243	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.34 MG/L		0.1
AY032	8/11/1998	1004628	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.45 MG/L		
ES865	8/11/1998	1004629	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.44 MG/L		
ES715	8/17/1998	28010845	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.26 MG/L		
ES716	8/17/1998	28010846	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.23 MG/L		
AK340	8/17/1998	28010847	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22 MG/L		
BM458	9/1/1998	1006314	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.3 MG/L		
KS415	9/28/1998	1008222	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.26 MG/L		
FH035	11/5/1998	219266	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.21 MG/L		0.002
FX589	11/5/1998	219265	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L		0.002
BH590	11/5/1998	219264	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L		0.002
PT012	11/10/1998	1184981	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L		0.1
EZ003	11/10/1998	10011156	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.06 MG/L		0.031 0.10
ES724	11/16/1998	173926	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.37 MG/L		0.002
BP309	11/30/1998	10012438	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.11 MG/L		
GT012	12/2/1998	887240-1	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.21 MG/L		0.015
GO596	12/3/1998	23146	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.88 MG/L		
EZ004	12/9/1998	37526667	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L		0.1
IZ671	12/15/1998	188438	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.72 MG/L		0.1
BH039	3/17/1999	1194987	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L		0.1
BH037	4/12/1999	1197629	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.36 MG/L		0.1
BH038	4/12/1999	1197631	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.42 MG/L		0.1
BH004	4/13/1999	1197602	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.089 MG/L		0.1
GM365	4/13/1999	1197601	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.092 MG/L		0.1
FR455	4/15/1999	81057963	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.21 MG/L		
GM370	5/5/1999	1200120	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L		0.1
JA221	5/5/1999	1200119	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L		0.1
MM036	6/8/1999	10024508	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.08 MG/L		0.031 0.10
BH006	6/10/1999	415306-07	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L		0.1
IZ671	6/21/1999	204472	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.73 MG/L		0.1
BH028	7/21/1999	9931582	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.83 MG/L		0.076
BH029	7/21/1999	993158	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.71 MG/L		0.076
MW184	7/26/1999	8K006730	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.04 MG/L		0.031 0.10
KU372	8/24/1999	1210085	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.65 MG/L		0.1
AY324	8/24/1999	210083	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.5 MG/L		0.1
BH024	8/24/1999	1210084	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.75 MG/L		0.1
BH025	9/2/1999	249386	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.08 MG/L		0.002
BH020	9/22/1999	1212900	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13 MG/L		0.1
BH021	9/22/1999	1212901	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.11 MG/L		0.1
BH005	9/22/1999	439416-17	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L		0.1
BH005	9/22/1999	43941617	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L		0.1
BH032	9/28/1999	44167374	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
BH034	9/28/1999	44165152	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L		0.1
BH040	9/28/1999	44169394	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
BH033	9/28/1999	44163334	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L		0.1
BH030	9/28/1999	44166263	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
BH035	9/28/1999	44168485	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L		0.1
BH022	9/29/1999	017424	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.74 MG/L		
BH027	10/4/1999	1213961	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.071 MG/L		0.1
BH007	11/2/1999	1217076	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	1.2 MG/L		0.1
BH008	11/2/1999	1217077	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.48 MG/L		0.1
LK037	11/10/1999	1218077	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.073 MG/L		0.1
IZ056	11/18/1999	45397880	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L		0.1
ES724	11/29/1999	180874	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.33 MG/L		0.002
BH026	12/6/1999	1787	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.09 MG/L		0.002
BP300	3/6/2000	475751-52	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.3 MG/L		0.1
IZ056	5/9/2000	492731-33	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.5 MG/L		0.1
NG912	6/27/2000	1K031738	951	FLUORIDE TOTAL	NON-DETECT	MG/L		0.031 0.10
IN090	11/2/2000	1L010968	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.25 MG/L		
BP305	12/6/2000	246470	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L		0.1
EZ004	4/10/2001	593221+23	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L		0.1 4
EF758	4/17/2001	1253485	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L		0.1
BP317	4/24/2001	598160+62	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
BM458	5/21/2001	1L024467	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.32 MG/L		0.031 0.10
AY032	6/25/2001	1L028791	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.48 MG/L		0.031 0.10
BP309	6/25/2001	1L028680	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.11 MG/L		0.031 0.10
ES865	6/25/2001	1L028790	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.52 MG/L		0.031 0.10
FX054	7/24/2001	31012095	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.32 MG/L		
FX589	8/20/2001	83121	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.27 MG/L		0.002
FH035	8/20/2001	83143	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.23 MG/L		0.002
BH590	8/20/2001	83136	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L		0.002
KC243	8/20/2001 16:35	1M004566	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.48 MG/L		
ES728	8/22/2001	1A0079433	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.63 MG/L		0.1
ES771	8/24/2001	263216	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.5 MG/L		0.1
ES716	8/29/2001	31014230	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L		
AK340	8/29/2001	31014231	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L		

Sheboygan County Water Supply Well Results from WDNR's Groundwater Retrieval Network (GRN) Database - Fluoride

WI Unique Well #	Sample		Storet		Sample Analytical Result	Units	Limit of Detection	Limit of Quantitation
	Collection Date	Labslip # / Sample ID	Parameter Code	Parameter Description				
ES715	8/29/2001	31014229	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L		
IQ706	9/4/2001	IM006146	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L	0.031	0.10
IZ671	9/4/2001	263888	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.8 MG/L		0.1
ES724	9/11/2001	92193	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.3 MG/L	0.002	
IZ047	9/17/2001	I264974	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19 MG/L		0.1
BP307	9/27/2001	IM009195	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.31 MG/L		0.1
GT012	9/28/2001	266362	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17 MG/L		0.1
KX159	12/5/2001	992503-04	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.6 MG/L		0.1
BP306	1/21/2002	I273745	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.29 MG/L		0.1
BH037	2/11/2002	274732	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.35 MG/L		0.1
BH038	2/11/2002	I274733	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.48 MG/L		0.1
BH028	2/19/2002	5037537A	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.47 MG/L		
BH029	2/19/2002	5037538A	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.31 MG/L		
BH020	3/6/2002	I276004	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L		0.1
BH021	3/6/2002	I276005	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13 MG/L		0.1
KX159	3/12/2002	712767-68	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.5 MG/L		0.1
GM370	3/18/2002	I276904	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17 MG/L		0.1
JA221	3/18/2002	276903	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22 MG/L		0.1
KU372	5/2/2002	I280799	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.68 MG/L		0.1
AY324	5/2/2002	I280798	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.47 MG/L		0.1
BH024	5/2/2002	I280797	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.72 MG/L		0.1
BH027	6/26/2002	285343	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.068 MG/L		0.1
BH006	8/20/2002	I289014	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L		0.1
BH005	8/20/2002	289013	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L		0.1
BH039	8/22/2002	289465	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.26 MG/L		0.1
BH025	8/29/2002	145825	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L	0.002	
LK037	8/29/2002	145826	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L	0.002	
GM365	9/17/2002	I291361	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.082 MG/L		0.1
BH004	9/17/2002	291360	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.082 MG/L		0.1
PT012	9/26/2002	I292536	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L		0.1
BH034	10/22/2002	805158-59	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
BH040	10/22/2002	805164-65	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
BH030	10/22/2002	805139-40	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
BH035	10/22/2002	805161-62	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L		0.1
BH033	10/22/2002	805154-55	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L		0.1
BH032	10/22/2002	805143-44	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
OO270	11/7/2002 7:55	INO10944	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.27 MG/L		
BH022	6/12/2003	312497	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.32 MG/L		0.1
GT012	6/24/2003	I313750	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19 MG/L		0.1
RD045	8/14/2003	3175251	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17 MG/L		0.1
GO596	8/25/2003	318297	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.95 MG/L		0.1
ES715	1/22/2004	330117	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L		0.1
ES716	1/28/2004	I330343	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L		0.1
BM458	2/16/2004	IO015386	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.25 MG/L		0.031 0.10
BP317	2/24/2004	1004239-40	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.1
ES716	3/3/2004	I332172	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L		0.1
RM262	3/8/2004	IO016631	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.25 MG/L		0.031 0.10
RM262	3/8/2004 6:00	IO016631	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.25 MG/L		
EZ004	3/16/2004	1013343-44	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L		0.1
IZ671	3/17/2004	I333585	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.75 MG/L		0.1
ES724	3/23/2004	I334018	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.31 MG/L		0.1
RU937	4/12/2004	IO018615	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.53 MG/L		0.031 0.10
RU937	4/12/2004 10:00	IO018615	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.53 MG/L		
ES771	5/12/2004	338824	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.48 MG/L		0.1
FX054	6/8/2004	I341603	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.41 MG/L		0.1
ES865	7/6/2004	IP000636	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.53 MG/L		0.031 0.10
AY032	7/6/2004	IP000514	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.46 MG/L		0.031 0.10
IQ706	8/17/2004	347245	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17 MG/L		0.1
GO596	8/18/2004	347370	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.87 MG/L		0.05 0.10
FH035	8/30/2004	271584	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.424 MG/L		0.17 0.56
FX589	8/30/2004	271579	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.324 MG/L		0.17 0.56
BH590	8/30/2004	271582	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.227 MG/L		0.17 0.56
BP309	9/13/2004	IP007779	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.08 MG/L		0.031 0.10
KX159	9/21/2004	1106860-61	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.6 MG/L		0.1
RD045	9/21/2004	351109	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L		0.1
PT012	9/22/2004	351014	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.21 MG/L		0.1
BP307	9/29/2004	I351687	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.3 MG/L		0.1
BP306	10/5/2004	352358	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.31 MG/L		0.1
AK340	12/15/2004	358680	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L		0.05 0.10
FA105	1/11/2005	BP038275	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.72 MG/L		0.031 0.10
FA105	1/11/2005 8:35	BP038275	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.72 MG/L		
BH038	2/21/2005	362328	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.48 MG/L		0.05 0.10
BH037	2/21/2005	362326	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.36 MG/L		0.05 0.10
BH004	3/15/2005	364324	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.092 MG/L		0.05 0.10
GM365	3/15/2005	364327	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.098 MG/L		0.05 0.10
GM370	4/12/2005	367352	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17 MG/L		0.05 0.10
JA221	4/12/2005	367351	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.24 MG/L		0.05 0.10
BH027	6/1/2005	372633	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.081 MG/L		0.05 0.10
LK037	6/22/2005	323828	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L		0.15 0.50
BH025	6/22/2005	323827	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.16 MG/L		0.15 0.50
BH028	7/28/2005	35014297	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.8 MG/L		
BH005	7/28/2005	380641	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L		0.05 0.10
BH029	7/28/2005	35014298	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.7 MG/L		
RZ848	7/28/2005	35014299	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.9 MG/L		

Sheboygan County Water Supply Well Results from WDNR's Groundwater Retrieval Network (GRN) Database - Fluoride

WI Unique Well #	Sample		Storet		Sample Analytical Qualifier	Sample Analytical Result	Units	Limit of Detection	Limit of Quantitation
	Collection Date	Labslip # / Sample ID	Parameter Code	Storet Parameter Description					
BH006	7/28/2005	380642	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15	MG/L	0.05	0.10
BH021	8/25/2005	383260	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13	MG/L	0.05	0.10
BH020	8/25/2005	383258	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.27	MG/L	0.05	0.10
BH039	8/30/2005	383562	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.27	MG/L	0.05	0.10
BH024	9/20/2005	385929	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.71	MG/L	0.05	0.10
KU372	9/20/2005	385932	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.73	MG/L	0.05	0.10
AY324	9/20/2005	385926	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.5	MG/L	0.05	0.10
BH032	9/22/2005	1315594-97	951	FLUORIDE TOTAL	NON-DETECT	0	MG/L	0.1	
BH035	9/22/2005	1315607-10	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13	MG/L	0.1	
BH034	9/22/2005	1315568-71	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1	MG/L	0.1	
BH033	9/22/2005	1315581-84	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15	MG/L	0.1	
BH040	9/22/2005	1315620-23	951	FLUORIDE TOTAL	NON-DETECT	0	MG/L	0.1	
BH030	9/28/2005	1318533-36	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0	MG/L		0.1
BH022	9/30/2005	387532	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.29	MG/L	0.05	0.10
TV908	10/31/2005	351632	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.45	MG/L	0.002	
QS360	2/3/2006	IQ015413	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.09	MG/L	0.031	0.10
GT012	8/17/2006	415207	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18	MG/L	0.05	0.10
ES771	2/21/2007	431916	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.55	MG/L	0.05	0.10
TF666	2/22/2007	IR016077	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12	MG/L		
FX054	3/19/2007	434197	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.38	MG/L	0.05	0.10
RD045	3/19/2007	0703260-01	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.28	MG/L	0.1	
BM458	4/2/2007	IR017921	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.27	MG/L	0.031	0.10
ES865	4/16/2007	IR018780	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.46	MG/L	0.031	0.10
AY032	4/16/2007	IR018781	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.37	MG/L	0.031	0.10
BP306	5/1/2007	469693	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.49	MG/L	0.06	0.19
BP309	5/14/2007	IR021407	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.09	MG/L	0.031	0.10
HBO22	7/10/2007	I5000866	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.28	MG/L		
ES724	7/17/2007	447136	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.29	MG/L	0.05	0.10
BP317	7/31/2007	1677214	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19	MG/L		0.1
BP307	8/8/2007	AC47300	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.313	MG/L		
TE954	8/13/2007	449966	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.59	MG/L	0.05	0.10
IQ706	9/5/2007	452566	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19	MG/L	0.05	0.10
PT012	9/11/2007	453547	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22	MG/L	0.05	0.10
RZ873	9/19/2007	454864	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19	MG/L	0.05	0.10
AK340	9/19/2007	454876	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18	MG/L	0.05	0.10
ES716	9/19/2007	454872	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17	MG/L	0.05	0.10
SA121	9/19/2007	454868	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.21	MG/L	0.05	0.10
TB898	9/25/2007	1713521	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19	MG/L	0.1	
FX589	9/25/2007	505127	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.44	MG/L	0.13	0.45
BH590	9/25/2007	505121	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.38	MG/L	0.13	0.45
TQ043	10/3/2007	456571	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.14	MG/L	0.05	0.10
TQ726	10/3/2007	456579	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13	MG/L	0.05	0.10
IZ671	12/12/2007	7120395-01	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.82	MG/L	0.1	
BH037	3/4/2008	469363	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.39	MG/L	0.05	0.10
BH038	3/4/2008	469361	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.48	MG/L	0.05	0.10
BH027	3/13/2008	470617	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.11	MG/L	0.05	0.10
GT012	4/22/2008	475526	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22	MG/L	0.05	0.10
GM365	6/3/2008	480375	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.084	MG/L	0.05	0.10
VL312	6/3/2008	480378	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1	MG/L	0.05	0.10
BH039	7/9/2008	485960	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.3	MG/L	0.05	0.10
JA221	7/21/2008	487057	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.21	MG/L	0.05	0.10
GM370	7/21/2008	487059	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.14	MG/L	0.05	0.10
BH029	7/22/2008	38015406	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4	MG/L	0.1	
BH028	7/22/2008	38015405	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.6	MG/L	0.1	
RZ848	7/22/2008	38015407	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.7	MG/L	0.1	
BH025	8/13/2008	490125	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.092	MG/L	0.05	0.10
LK037	8/13/2008	490127	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.073	MG/L	0.05	0.10
BH032	9/3/2008	IT006090	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.05	MG/L	0.031	0.10
BH033	9/3/2008	IT006093	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12	MG/L	0.031	0.10
BH030	9/3/2008	IT006091	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.07	MG/L	0.031	0.10
BH035	9/3/2008	IT006088	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12	MG/L	0.031	0.10
BH040	9/3/2008	IT006092	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.08	MG/L	0.031	0.10
BH034	9/3/2008	IT006089	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.07	MG/L	0.031	0.10
BH005	9/4/2008	493046	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12	MG/L	0.05	0.10
BH006	9/4/2008	493048	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12	MG/L	0.05	0.10
BH020	9/16/2008	494926	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.14	MG/L	0.05	0.10
BH021	9/16/2008	494925	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15	MG/L	0.05	0.10
AY324	9/23/2008	496064	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.43	MG/L	0.05	0.10
KU372	9/23/2008	496068	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.63	MG/L	0.05	0.10
BH024	9/23/2008	496066	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.57	MG/L	0.05	0.10
TU514	9/26/2008	496495	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.25	MG/L	0.05	0.10
BH022	9/30/2008	497195	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.23	MG/L	0.05	0.10
US905	10/19/2008	IT010729	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.32	MG/L		
TF691	4/22/2009	IT019701	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.49	MG/L		
GT012	8/19/2009	533335	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16	MG/L	0.05	0.10
BP305	9/16/2009	536595	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17	MG/L	0.05	0.10
BP300	9/22/2009	302985	951	FLUORIDE TOTAL	NON-DETECT	0	MG/L	0.3	
ES716	2/3/2010	551181	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16	MG/L	0.05	0.10
SA121	2/3/2010	551191	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17	MG/L	0.05	0.10
TQ043	2/3/2010	551189	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13	MG/L	0.05	0.10
RZ873	2/3/2010	551194	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17	MG/L	0.05	0.10
TQ726	2/3/2010	551186	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.14	MG/L	0.05	0.10
AK340	3/8/2010	554765	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16	MG/L	0.05	0.10
BM458	3/10/2010	307897	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.59	MG/L	0.3	

Sheboygan County Water Supply Well Results from WDNR's Groundwater Retrieval Network (GRN) Database - Fluoride

WI Unique Well #	Sample		Storet		Sample Analytical Result	Units	Limit of Detection	Limit of Quantitation
	Collection Date	Labslip # / Sample ID	Parameter Code	Parameter Description				
IZ671	3/24/2010	0030897-01	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.71 MG/L	0.13	
ES865	4/20/2010	IU017149	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.53 MG/L	0.031	.1
AY032	4/20/2010	IU017148	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.41 MG/L	0.031	.1
BP309	5/3/2010	IU018151	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L	0.031	.1
BP317	6/1/2010	IU021140	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L	0.031	.1
RD045	6/7/2010	0060255-01	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.21 MG/L	0.14	
BP307	7/28/2010	AD17547	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.3 MG/L		
BP306	8/19/2010	1008306-01	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.37 MG/L	0.1	
GO596	8/23/2010	578016	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.49 MG/L	0.05	.1
TE954	8/23/2010	578014	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.47 MG/L	0.05	.1
IQ706	8/25/2010	578638	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.14 MG/L	0.05	.1
ES724	9/7/2010	580581	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.28 MG/L	0.05	.1
ES771	9/17/2010	583225	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.5 MG/L	0.05	.1
PT012	9/21/2010	583439	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.068 MG/L	0.05	.1
TB898	9/22/2010	1009429-01	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.3 MG/L	0.1	
BH590	9/22/2010	1009428-01	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.25 MG/L	0.1	
FX589	9/22/2010	1009427-01	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.31 MG/L	0.1	
BH027	1/25/2011	598624	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.065 MG/L	0.05	.1
BH038	1/26/2011	598779	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.43 MG/L	0.05	.1
BH037	1/26/2011	598776	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.34 MG/L	0.05	.1
TU514	6/7/2011	614913	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.23 MG/L	0.05	.1
BH039	6/7/2011	614917	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.27 MG/L	0.05	.1
GM370	6/7/2011	614910	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L	0.05	.1
JA221	6/7/2011	614908	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.05	.1
BH029	6/21/2011	41014372	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.37 MG/L	0.1	
BH028	6/21/2011	41014374	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.56 MG/L	0.1	
RZ848	6/21/2011	41014373	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.78 MG/L	0.1	
BH025	6/22/2011	618024	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.076 MG/L	0.05	.1
LK037	6/22/2011	618027	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.065 MG/L	0.05	.1
BH005	8/24/2011	628663	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13 MG/L	0.05	.1
BH006	8/24/2011	628664	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13 MG/L	0.05	.1
GM365	9/15/2011	633036	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.098 MG/L	0.05	.1
VL312	9/15/2011	633039	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.11 MG/L	0.05	.1
BH034	9/19/2011	IW006642	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.11 MG/L	0.031	.1
BH022	9/20/2011	IW006734	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.27 MG/L	0.031	.1
BH033	9/21/2011	IW007052	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17 MG/L	0.031	.1
BH032	9/21/2011	IW007056	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L	0.031	.1
BH030	9/21/2011	IW007053	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.1 MG/L	0.031	.1
BH035	9/21/2011	IW007054	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L	0.031	.1
BH040	9/21/2011	IW007055	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.21 MG/L	0.031	.1
BH020	9/26/2011	634855	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L	0.05	.1
BH021	9/26/2011	634858	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13 MG/L	0.05	.1
AY324	9/27/2011	635188	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.49 MG/L	0.05	.1
BH024	9/27/2011	635195	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.66 MG/L	0.05	.1
KU372	11/8/2011	641303	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.72 MG/L	0.05	.1
TK065	1/10/2012	BW031157	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.33 MG/L		
SN152	5/29/2012	IW019431	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	1.01 MG/L		
WU998	9/10/2012	340488	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.35 MG/L	0.3	.9
GT012	9/11/2012	682644	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L	0.05	.1
TU517	9/11/2012	682665	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L	0.05	.1
BP317	3/5/2013	I0016320	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22 MG/L	0.031	.1
PT012	3/25/2013	711249	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17 MG/L	0.05	.1
AY032	4/15/2013	I0018898	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.4 MG/L	0.031	.1
ES865	4/15/2013	I0018897	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.52 MG/L	0.031	.1
BP309	6/11/2013	78819001	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.107 MG/L	0.03	.3
BM458	7/23/2013	352165	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.31 MG/L	0.3	.9
BP307	7/29/2013	AD68760	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.277 MG/L	0.01	
TE954	8/6/2013	735501	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.51 MG/L	0.05	.1
RD045	9/9/2013	3090291-01A	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.18 MG/L	0.13	
TB898	9/9/2013	3090287-01	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.22 MG/L	0.13	
BH590	9/9/2013	3090285-01	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.14 MG/L	0.14	
FX589	9/9/2013	3090283-01	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.21 MG/L	0.13	
ES771	9/23/2013	747137	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.51 MG/L	0.05	.1
IZ671	9/24/2013	3091079-01	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	1.28 MG/L	0.13	
IQ706	9/25/2013	748089	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L	0.05	.1
ES724	11/26/2013	358414	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.3	.9
WQ175	12/19/2013	114422001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.0956 MG/L	0.03	.3
BH027	2/24/2014	771669	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.052 MG/L	0.05	.1
BH037	3/10/2014	773637	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.31 MG/L	0.05	0.10
BH038	3/10/2014	773640	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.37 MG/L	0.05	0.10
BH033	3/24/2014	124636005	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.192 MG/L	0.03	0.300
BH032	3/24/2014	124636006	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.0879 MG/L	0.03	0.300
BH040	3/24/2014	124636002	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.0976 MG/L	0.03	0.300
BH030	3/24/2014	124636004	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.0844 MG/L	0.03	0.300
BH035	3/24/2014	124636001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.163 MG/L	0.03	0.300
BH034	3/24/2014	124636003	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.102 MG/L	0.03	0.300
BH022	4/8/2014	126687001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.27 MG/L	0.03	0.300
JA221	4/9/2014	779162	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22 MG/L	0.05	0.10
GM370	4/9/2014	779165	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.05	0.10
TU514	4/9/2014	779168	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22 MG/L	0.05	0.10
BH028	5/28/2014	793271	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.69 MG/L	0.05	0.10
RZ848	5/28/2014	793273	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.95 MG/L	0.05	0.10
BH029	5/28/2014	793272	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.45 MG/L	0.05	0.10
RZ511	7/8/2014	143830001	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.0751 MG/L	0.03	0.300

Sheboygan County Water Supply Well Results from WDNR's Groundwater Retrieval Network (GRN) Database - Fluoride

WI Unique Well #	Sample		Storet		Sample Analytical Result	Units	Limit of Detection	Limit of Quantitation
	Collection Date	Labslip # / Sample ID	Parameter Code	Parameter Description				
BH025	7/16/2014	803910	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.078 MG/L	0.05	0.10
LK037	7/16/2014	803913	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.068 MG/L	0.05	0.10
VL312	7/23/2014	805279	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.086 MG/L	0.05	0.10
GM365	7/23/2014	805275	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.07 MG/L	0.05	0.10
BH039	7/24/2014	805781	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.23 MG/L	0.05	0.10
BH006	8/13/2014	4080509-02	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L	0.005	
BH005	8/13/2014	4080509-01	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L	0.006	
BH021	8/27/2014	813711	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L	0.05	0.10
BH020	8/27/2014	813710	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.14 MG/L	0.05	0.10
KU372	9/16/2014	819202	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.67 MG/L	0.05	0.10
AY324	9/16/2014	819198	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.43 MG/L	0.05	0.10
BH024	9/16/2014	819200	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.7 MG/L	0.05	0.10
WU998	7/28/2015	389212	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.46 MG/L		0.3 .9
GT012	8/25/2015	5081033-02	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L	0.004	
TU517	8/25/2015	5081033-01	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19 MG/L	0.004	
MW167	1/26/2016	903148	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.55 MG/L	0.05	.1
XP679	2/23/2016	906486	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.76 MG/L	0.05	.1
PU277	2/23/2016	906482	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.76 MG/L	0.05	.1
BP307	4/5/2016	AE11318	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.294 MG/L		
ES865	6/6/2016	258379001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.572 MG/L	0.03	.1
AY032	6/6/2016	258378001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.414 MG/L	0.03	.1
RD045	6/7/2016	6060308-06	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L	0.004	
ES724	6/15/2016	411352	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.27 MG/L	0.11	.36
BM458	6/15/2016	411343	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.19 MG/L	0.11	.36
BP309	8/23/2016	273859001	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.075 MG/L	0.03	.1
BH590	9/7/2016	6090252-01	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L	0.003	
TE954	9/12/2016	944497	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.55 MG/L	0.05	.1
GO596	9/12/2016	944494	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.55 MG/L	0.05	.1
PT012	9/20/2016	946819	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.05	.1
FX589	9/20/2016	6090816-06	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.003	
TB898	9/20/2016	6090827-06	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19 MG/L	0.003	
IQ706	9/21/2016	947474	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L	0.05	.1
YR115	11/16/2016	1611C78-001C	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.17 MG/L	0.017	.053
SI161	12/20/2016	967211	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.54 MG/L	0.05	.1
BH032	1/16/2017	296326004	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.0795 MG/L	0.03	.1
BH034	1/16/2017	296326006	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.0966 MG/L	0.03	.1
BH033	1/16/2017	296326003	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.175 MG/L	0.03	.1
BH040	1/16/2017	296326002	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.0834 MG/L	0.03	.1
WQ175	1/16/2017	296326005	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.0843 MG/L	0.03	.1
BH035	1/16/2017	296326001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.157 MG/L	0.03	.1
BH030	1/30/2017	297917001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.108 MG/L	0.03	.1
BH027	2/13/2017	973320	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.085 MG/L	0.05	.1
BH020	3/20/2017	1703D23-001B	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L	0.017	.053
BH021	3/20/2017	1703D30-001B	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.13 MG/L	0.017	.053
AY324	5/1/2017	1705208-001B	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.47 MG/L	0.017	.053
BH024	5/1/2017	1705208-002B	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.64 MG/L	0.017	.053
FW168	6/1/2017	438196	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.23 MG/L	0.12	.4
BH028	6/20/2017	999087	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.7 MG/L	0.05	.1
RZ848	6/20/2017	999093	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	1 MG/L	0.05	.1
BH029	6/20/2017	999090	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.47 MG/L	0.05	.1
KU372	7/19/2017	1707F53-001B	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.73 MG/L	0.017	.053
GM365	8/1/2017	1007981	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.086 MG/L	0.05	.1
VL312	8/1/2017	1007984	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.099 MG/L	0.05	.1
BH037	8/2/2017	1008433	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.33 MG/L	0.05	.1
BH038	8/2/2017	1008438	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.44 MG/L	0.05	.1
BH022	8/15/2017	336271001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.244 MG/L	0.03	.1
GM370	8/21/2017	1012757	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.14 MG/L	0.05	.1
TU514	8/21/2017	1012762	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.25 MG/L	0.05	.1
BH006	8/21/2017	1012884	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.15 MG/L	0.05	.1
JA221	8/21/2017	1012755	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19 MG/L	0.05	.1
BH005	8/21/2017	1012887	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.12 MG/L	0.05	.1
BH039	8/21/2017	1012772	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.26 MG/L	0.05	.1
LK037	9/12/2017	1017515	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.067 MG/L	0.05	.1
YP984	9/12/2017	1017643	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.8 MG/L	0.05	.1
YP985	9/12/2017	1017646	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.54 MG/L	0.05	.1
BH025	9/12/2017	1017512	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.08 MG/L	0.05	.1
WU998	1/30/2018	458304	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.31 MG/L	0.12	.4
BP300	1/30/2018	458291	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.38 MG/L	0.12	.4
FW168	1/31/2018	458356	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.34 MG/L	0.12	.4
TU517	8/20/2018	1074827	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L	0.05	.1
GT012	11/12/2018	1811807-001A	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.2 MG/L	0.017	.053
GT012	11/12/2018	1811807-001A	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.18 MG/L	0.0217	.069
ES724	2/18/2019	489675	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.2	.67
BP305	2/26/2019	490295	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.2	.67
FW168	3/4/2019	490574	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.2	.67
BM458	3/6/2019	490804	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.2	.67
TE954	3/22/2019	491868	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.4 MG/L	0.2	.67
RD045	4/5/2019	493015	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.2	.67
IQ706	4/16/2019	493782	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.2	.67
YR115	4/23/2019	1116845	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.16 MG/L	0.046	.16
PT012	4/23/2019	494294	951	FLUORIDE TOTAL	NON-DETECT	0 MG/L	0.2	.67
MW167	5/14/2019	1120996	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.49 MG/L	0.046	.16
AY032	5/22/2019	447769001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.409 MG/L	0.03	.1
ES865	5/22/2019	447769002	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.585 MG/L	0.03	.1

Sheboygan County Water Supply Well Results from WDNR's Groundwater Retrieval Network (GRN) Database - Fluoride

WI Unique Well #	Sample		Storet Parameter Code	Storet Parameter Description	Sample Analytical Qualifier	Sample	Limit of Detection	Limit of Quantitation
	Collection Date	Labslip # / Sample ID				Analytical Result		
BP307	5/29/2019	1905208-01	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.32	MG/L	
XP679	6/11/2019	1126874	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.66	MG/L	0.046 .16
PU277	6/11/2019	1126870	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.66	MG/L	0.046 .16
BP307	6/12/2019	1127378	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.28	MG/L	0.046 .16
IN260	6/18/2019	500174	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.24	MG/L	0.17 .57
SJ161	6/18/2019	1128775	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.54	MG/L	0.046 .16
YP984	7/23/2019	1136220	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.61	MG/L	0.046 .16
YP985	7/23/2019	1136222	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.74	MG/L	0.046 .16
TB898	8/12/2019	1139995	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22	MG/L	0.046 .16
BH590	8/13/2019	1140414	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.14	MG/L	0.046 .16
FX589	8/14/2019	1140884	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.22	MG/L	0.046 .16
BH035	1/21/2020	490304001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.164	MG/L	0.03 .1
BH040	1/21/2020	490307001	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.0929	MG/L	0.03 .1
WQ175	1/21/2020	490305001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.107	MG/L	0.03 .1
BH030	1/21/2020	490310001	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.0937	MG/L	0.03 .1
BH033	1/21/2020	490309001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.145	MG/L	0.03 .1
BH032	1/21/2020	490306001	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.0866	MG/L	0.03 .1
BH034	1/21/2020	490308001	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.104	MG/L	0.03 .1
FW168	2/24/2020	522752	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.2	MG/L	0.17 .57
BH027	5/4/2020	1186150	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.052	MG/L	0.046 .16
GM370	6/1/2020	1190744	951	FLUORIDE TOTAL	DETECT BETWEEN LOD & LOQ	0.14	MG/L	0.046 .16
TU514	6/1/2020	1190745	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.23	MG/L	0.046 .16
JA221	6/1/2020	1190743	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.19	MG/L	0.046 .16
RZ848	7/23/2020	1201843	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.99	MG/L	0.046 .16
BH029	7/23/2020	1201841	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.44	MG/L	0.046 .16
BH028	7/23/2020	1201842	951	FLUORIDE TOTAL	NORMAL QUANTIFIED RESULT	0.69	MG/L	0.046 .16


Appendix C

State Program Background Monitoring Data for Fluoride

GEMS Data Download - Edgewater I-43 Landfill, License 2853, Fluoride Results

Total Rows: 12

Lic#	Point ID	Dup Samp No	Point Name	Point Type Description	Parm Code	Parameter Description	Sample Date	Result Value	Result Unit	Rslt Qual Code	Point Status	QC1	QC2	QC3	LOD	LOQ	RL	Analysis Method Code	Report Period Date	Lab Anal. Date	Sample ID	Lab ID	Pt Key
2853	201	01	W-002	WT Obs Well-Non Sub D	951	FLUORIDE, TOTAL (MG/L F)	6/21/1978	0.52	mg/L	D	A							NOT REPORTED					5108
2853	201	01	W-002	WT Obs Well-Non Sub D	951	FLUORIDE, TOTAL (MG/L F)	5/15/1978	0.43	mg/L	D	A							NOT REPORTED					5108
2853	202	01	W-009	WT Obs Well-Non Sub D	951	FLUORIDE, TOTAL (MG/L F)	6/21/1978	0.84	mg/L	D	I							NOT REPORTED					5109
2853	202	01	W-009	WT Obs Well-Non Sub D	951	FLUORIDE, TOTAL (MG/L F)	5/15/1978	0.5	mg/L	D	I							NOT REPORTED					5109
2853	203	01	W-010B	Piezometer-Non Sub D Well	951	FLUORIDE, TOTAL (MG/L F)	6/21/1978	0.71	mg/L	D	A							NOT REPORTED					5110
2853	203	01	W-010B	Piezometer-Non Sub D Well	951	FLUORIDE, TOTAL (MG/L F)	5/15/1978	0.5	mg/L	D	A							NOT REPORTED					5110
2853	204	01	W-019B	Piezometer-Non Sub D Well	951	FLUORIDE, TOTAL (MG/L F)	6/21/1978	0.49	mg/L	D	P							NOT REPORTED					5111
2853	204	01	W-019B	Piezometer-Non Sub D Well	951	FLUORIDE, TOTAL (MG/L F)	5/15/1978	0.43	mg/L	D	P							NOT REPORTED					5111
2853	205	01	W-022B	Piezometer-Non Sub D Well	951	FLUORIDE, TOTAL (MG/L F)	6/21/1978	0.47	mg/L	D	A							NOT REPORTED					5112
2853	205	01	W-022B	Piezometer-Non Sub D Well	951	FLUORIDE, TOTAL (MG/L F)	5/15/1978	0.48	mg/L	D	A							NOT REPORTED					5112
2853	226	01	GOEBEL WELL	Private Well - Potable	951	FLUORIDE, TOTAL (MG/L F)	5/15/1978	0.74	mg/L	D	A							NOT REPORTED					5133
2853	227	01	BEECK WELL	Private Well - Potable	951	FLUORIDE, TOTAL (MG/L F)	6/21/1978	0.7	mg/L	D	A							NOT REPORTED					5134



Appendix D
Intrawell Statistical Analysis

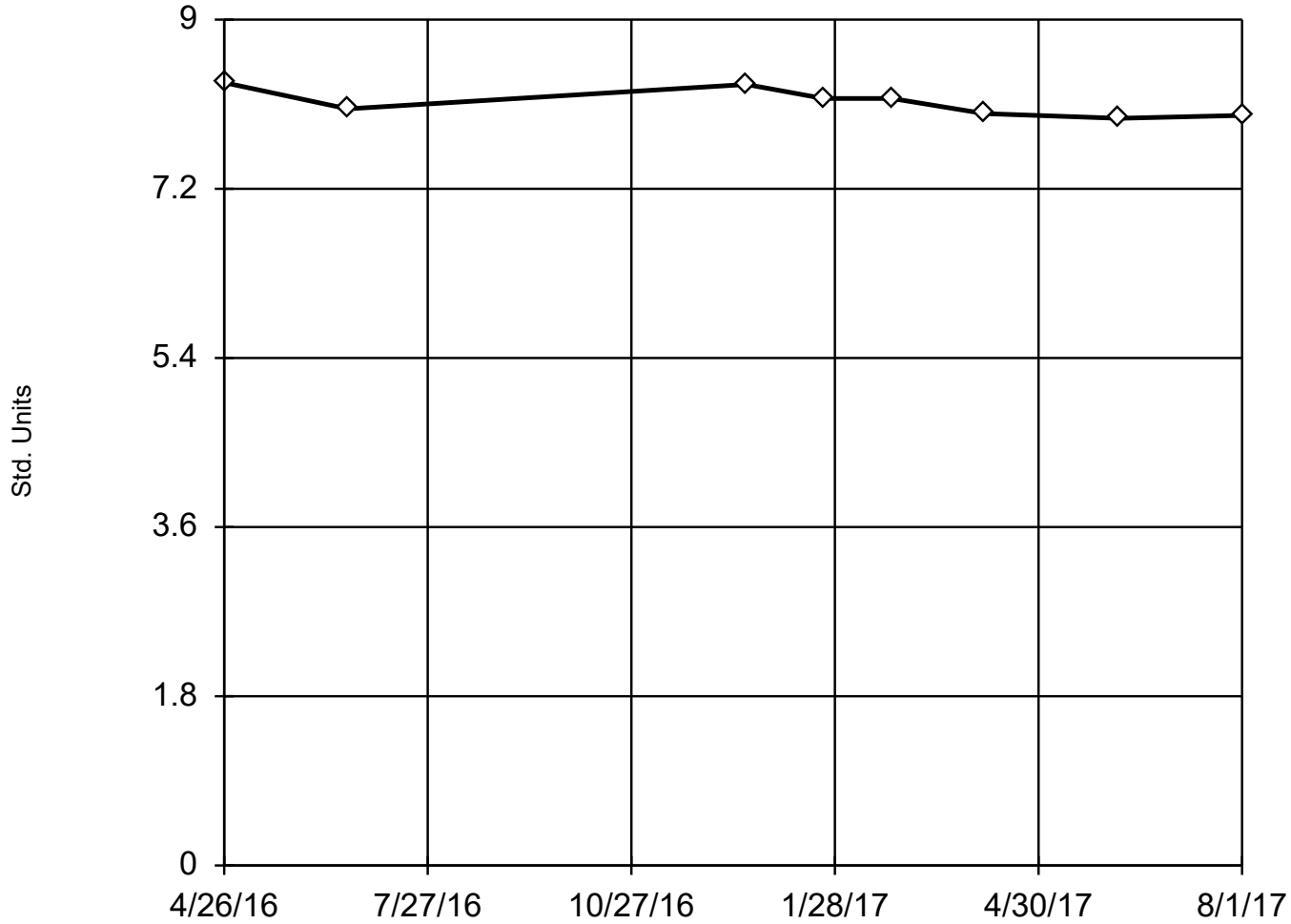
Outlier Analysis

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All Printed 9/30/2021, 7:40 PM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Field pH (Std. Units)	MW-302	No	n/a	n/a	EPA 1989	0.05	8	8.118	0.1469	normal	ShapiroWilk
Fluoride (mg/L)	MW-302	No	n/a	n/a	EPA 1989	0.05	9	0.7656	0.09043	normal	ShapiroWilk

EPA Screening (suspected outliers for Dixon's Test)

MW-302



n = 8

Dixon's will not be run.
No suspect values identified
or unable to establish
suspect values.
Mean 8.118, std. dev.
0.1469, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.8981
Critical = 0.851
The distribution was found
to be normally distrib-
uted.

Constituent: Field pH Analysis Run 9/30/2021 7:39 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

EPA 1989 Outlier Screening

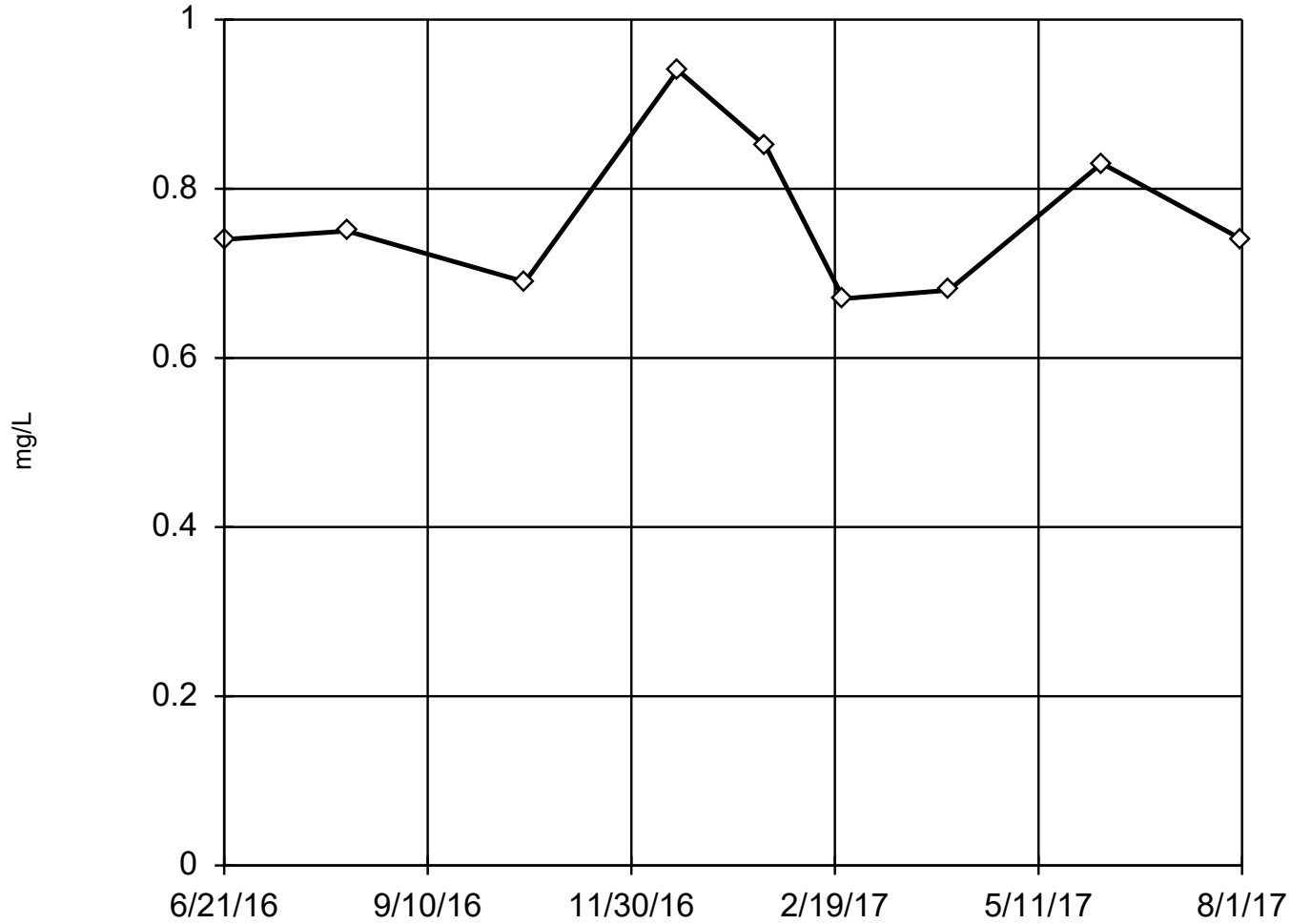
Constituent: Field pH (Std. Units) Analysis Run 9/30/2021 7:40 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

MW-302

4/26/2016	8.33
6/21/2016	8.05
8/9/2016	6.24 (X)
10/19/2016	12.2 (X)
12/19/2016	8.31
1/23/2017	8.16
2/23/2017	8.16
4/6/2017	8
6/6/2017	7.95
8/1/2017	7.98

EPA Screening (suspected outliers for Dixon's Test)

MW-302



n = 9

Dixon's will not be run.
No suspect values identified
or unable to establish
suspect values.
Mean 0.7656, std. dev.
0.09043, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9006
Critical = 0.859
The distribution was found
to be normally distrib-
uted.

Constituent: Fluoride Analysis Run 9/30/2021 7:39 PM View: I-43 LF Detection Monitoring

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

EPA 1989 Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 9/30/2021 7:40 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

MW-302

4/26/2016	1.1 (J,X)
6/21/2016	0.74
8/9/2016	0.75
10/19/2016	0.69
12/19/2016	0.94 (J)
1/23/2017	0.85 (J)
2/23/2017	0.67
4/6/2017	0.68
6/6/2017	0.83
8/1/2017	0.74

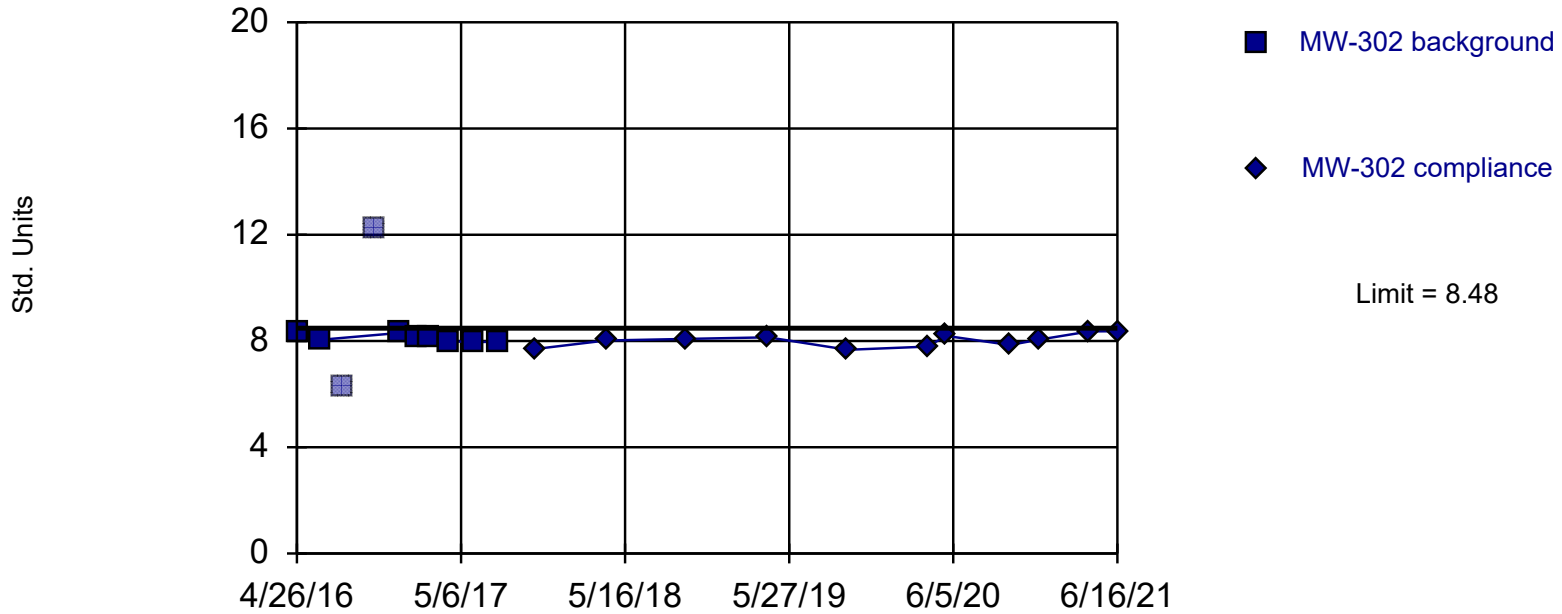
Intrawell Prediction Limit

I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All Printed 9/30/2021, 7:43 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Wells</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Field pH (Std. Units)	MW-302	8.48	n/a	6/16/2021	8.37	No	8	n/a	8.118	0.1469	0	None	No	0.002505	Param 1 of 2
Fluoride (mg/L)	MW-302	0.978	n/a	6/16/2021	0.77	No	9	n/a	0.7656	0.09043	0	None	No	0.002505	Param 1 of 2

Within Limit

Prediction Limit Intrawell Parametric



Background Data Summary: Mean=8.118, Std. Dev.=0.1469, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8981, critical = 0.818. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Constituent: Field pH Analysis Run 9/30/2021 7:41 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

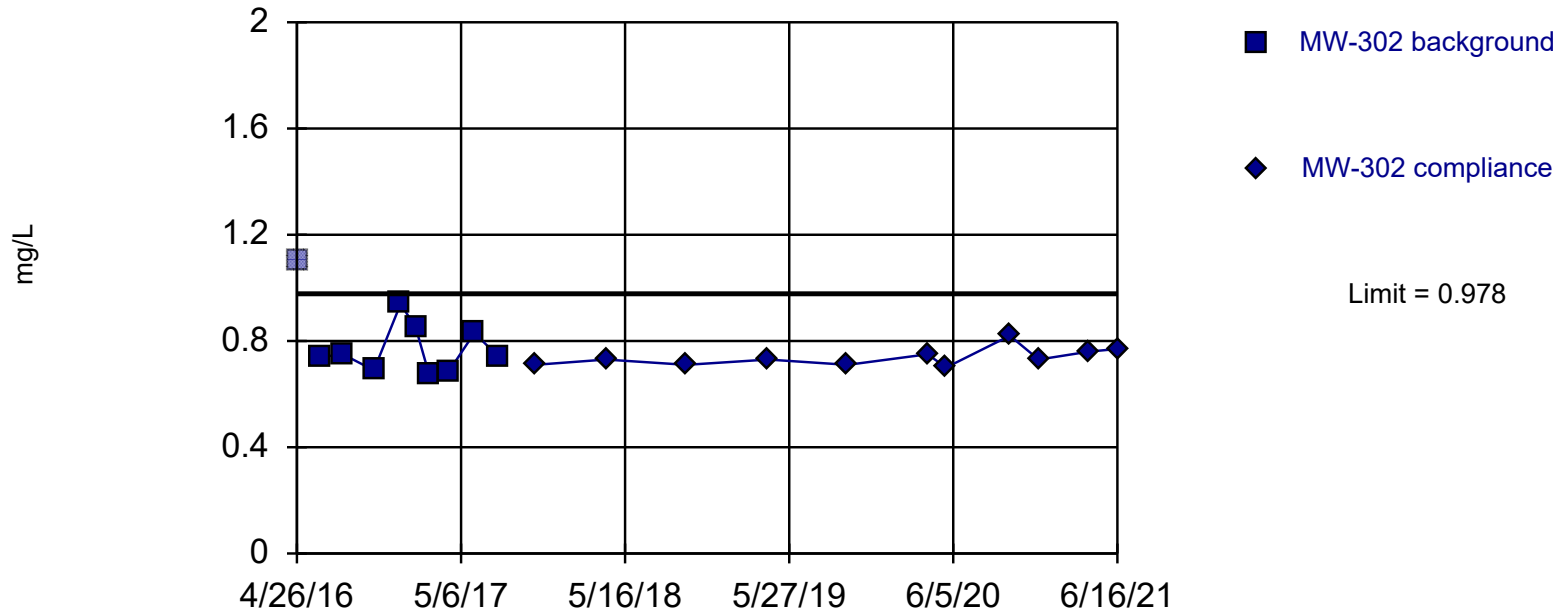
Prediction Limit

Constituent: Field pH (Std. Units) Analysis Run 9/30/2021 7:43 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

	MW-302	MW-302
4/26/2016	8.33	
6/21/2016	8.05	
8/9/2016	6.24 (X)	
10/19/2016	12.2 (X)	
12/19/2016	8.31	
1/23/2017	8.16	
2/23/2017	8.16	
4/6/2017	8	
6/6/2017	7.95	
8/1/2017	7.98	
10/23/2017		7.7
4/3/2018		8.02
10/4/2018		8.08
4/9/2019		8.14
10/8/2019		7.67
4/8/2020		7.79
5/20/2020		8.19
10/13/2020		7.85
12/18/2020		8.05
4/13/2021		8.36
6/16/2021		8.37 (R)

Within Limit

Prediction Limit Intrawell Parametric



Background Data Summary: Mean=0.7656, Std. Dev.=0.09043, n=9. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9006, critical = 0.829. Kappa = 2.348 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

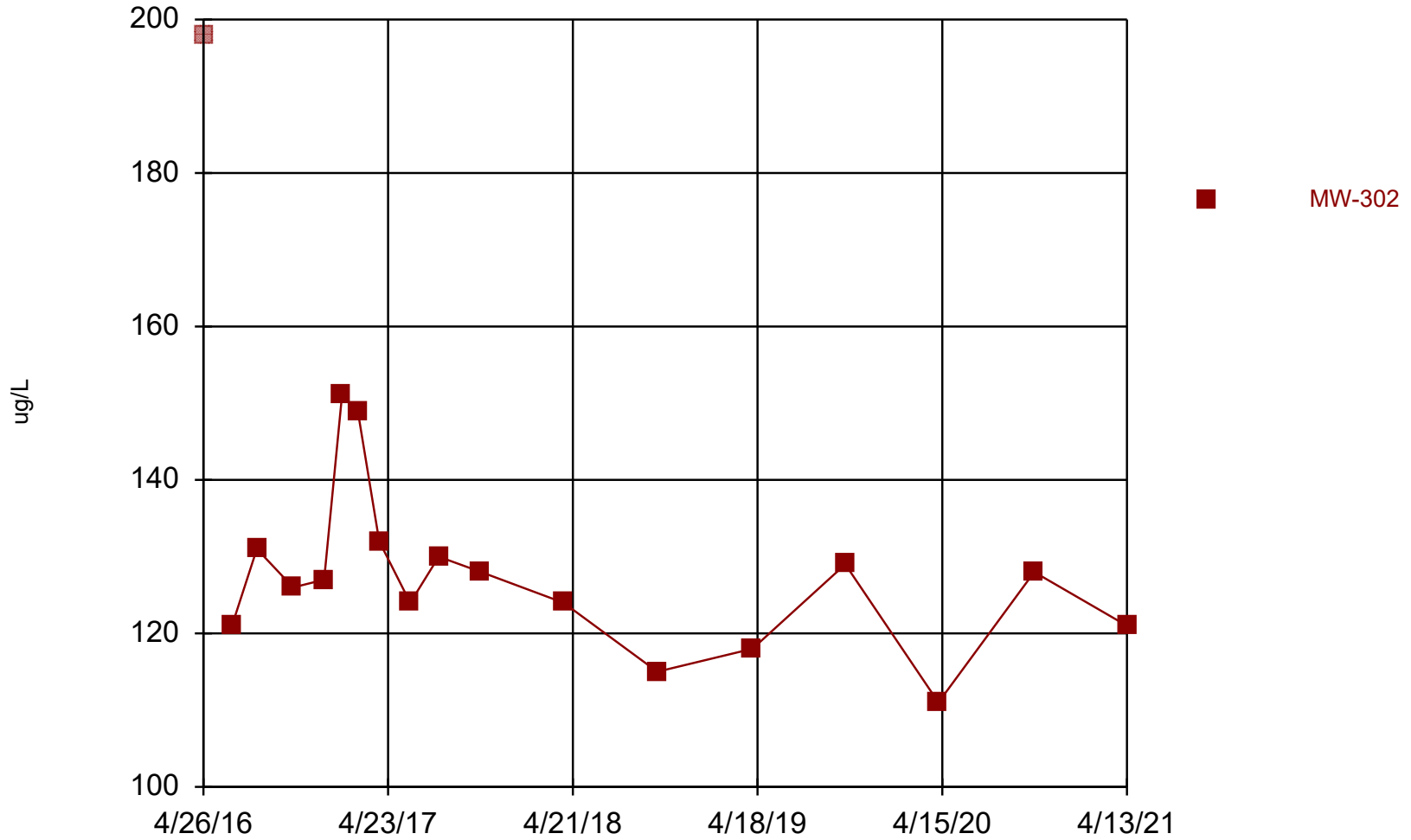
Constituent: Fluoride Analysis Run 9/30/2021 7:41 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 9/30/2021 7:43 PM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

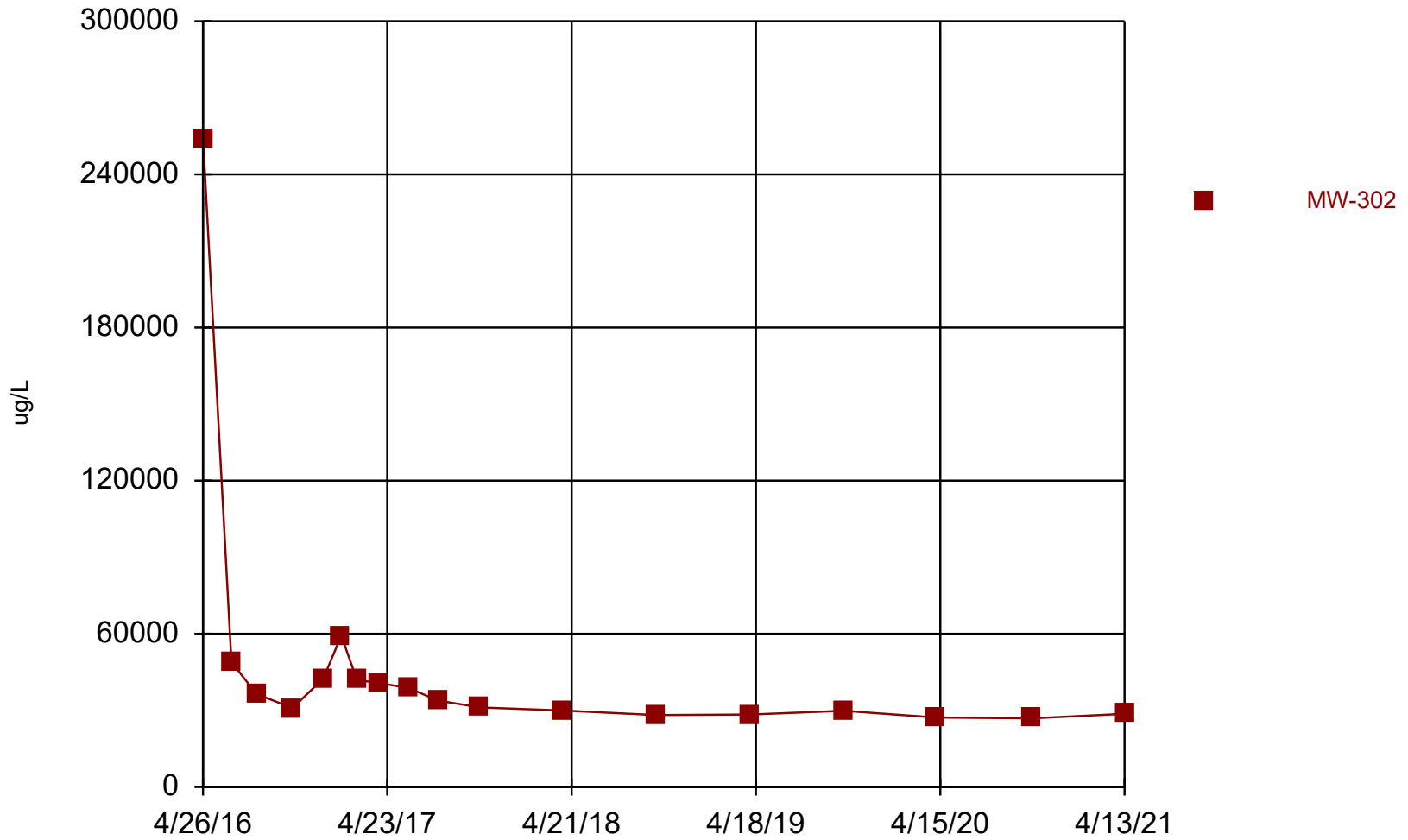
	MW-302	MW-302
4/26/2016	1.1 (J,X)	
6/21/2016	0.74	
8/9/2016	0.75	
10/19/2016	0.69	
12/19/2016	0.94 (J)	
1/23/2017	0.85 (J)	
2/23/2017	0.67	
4/6/2017	0.68	
6/6/2017	0.83	
8/1/2017	0.74	
10/23/2017		0.71
4/3/2018		0.73
10/4/2018		0.71
4/9/2019		0.73
10/8/2019		0.71
4/8/2020		0.75
5/20/2020		0.7
10/13/2020		0.82
12/18/2020		0.73 (R)
4/13/2021		0.76
6/16/2021		0.77 (R)

Time Series

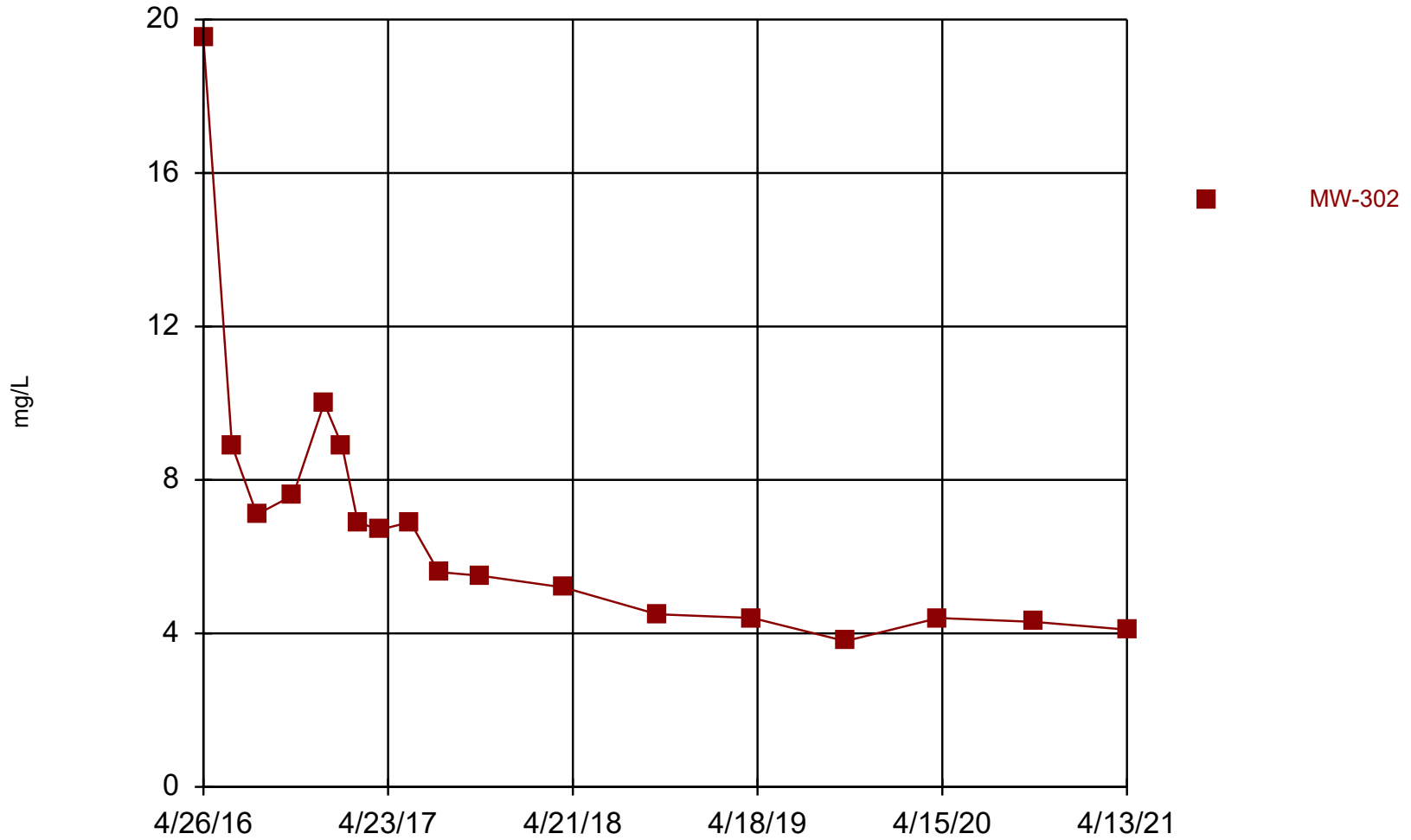


Constituent: Boron Analysis Run 10/12/2021 10:44 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series

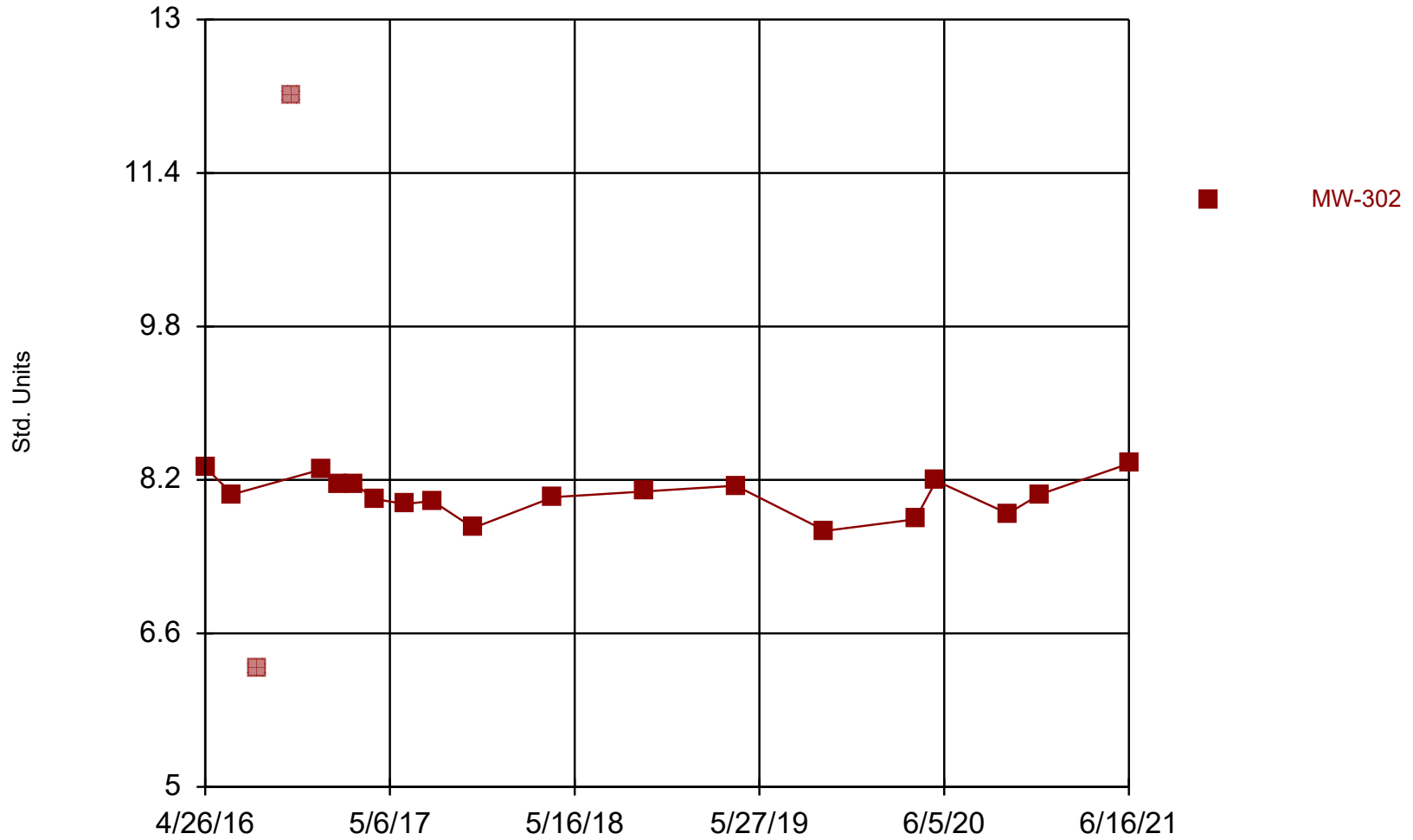


Time Series



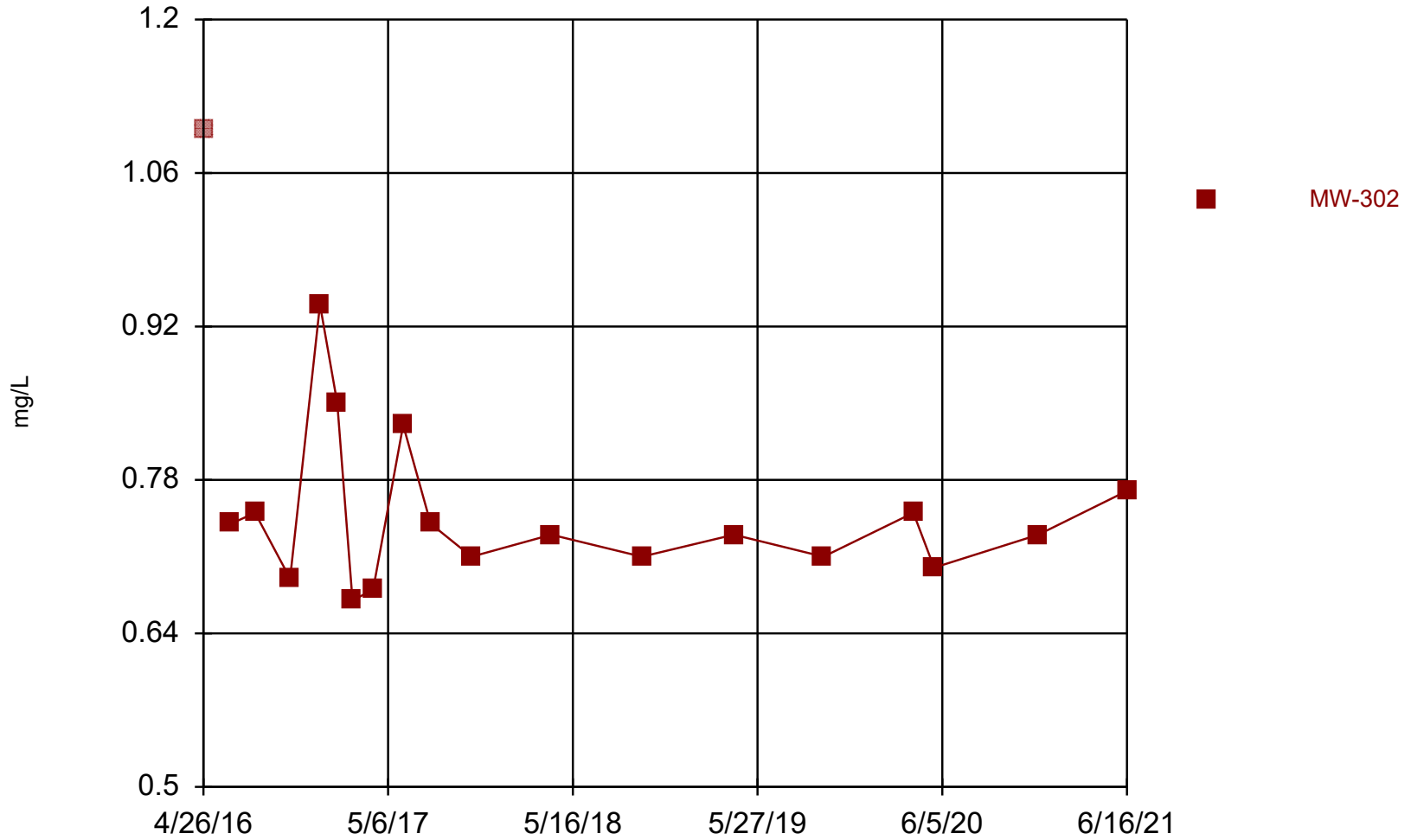
Constituent: Chloride Analysis Run 10/12/2021 10:44 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series



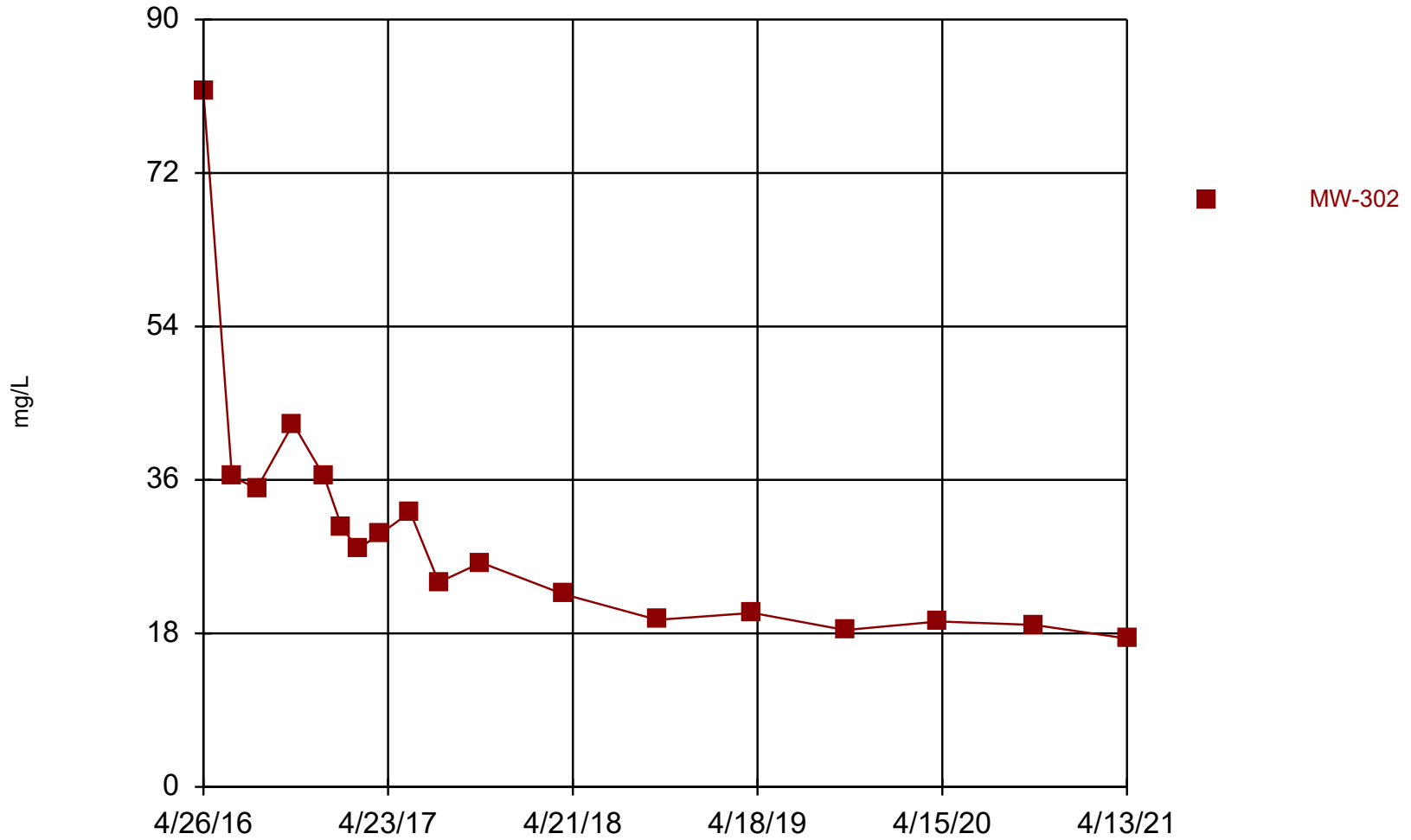
Constituent: Field pH Analysis Run 10/12/2021 10:44 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series



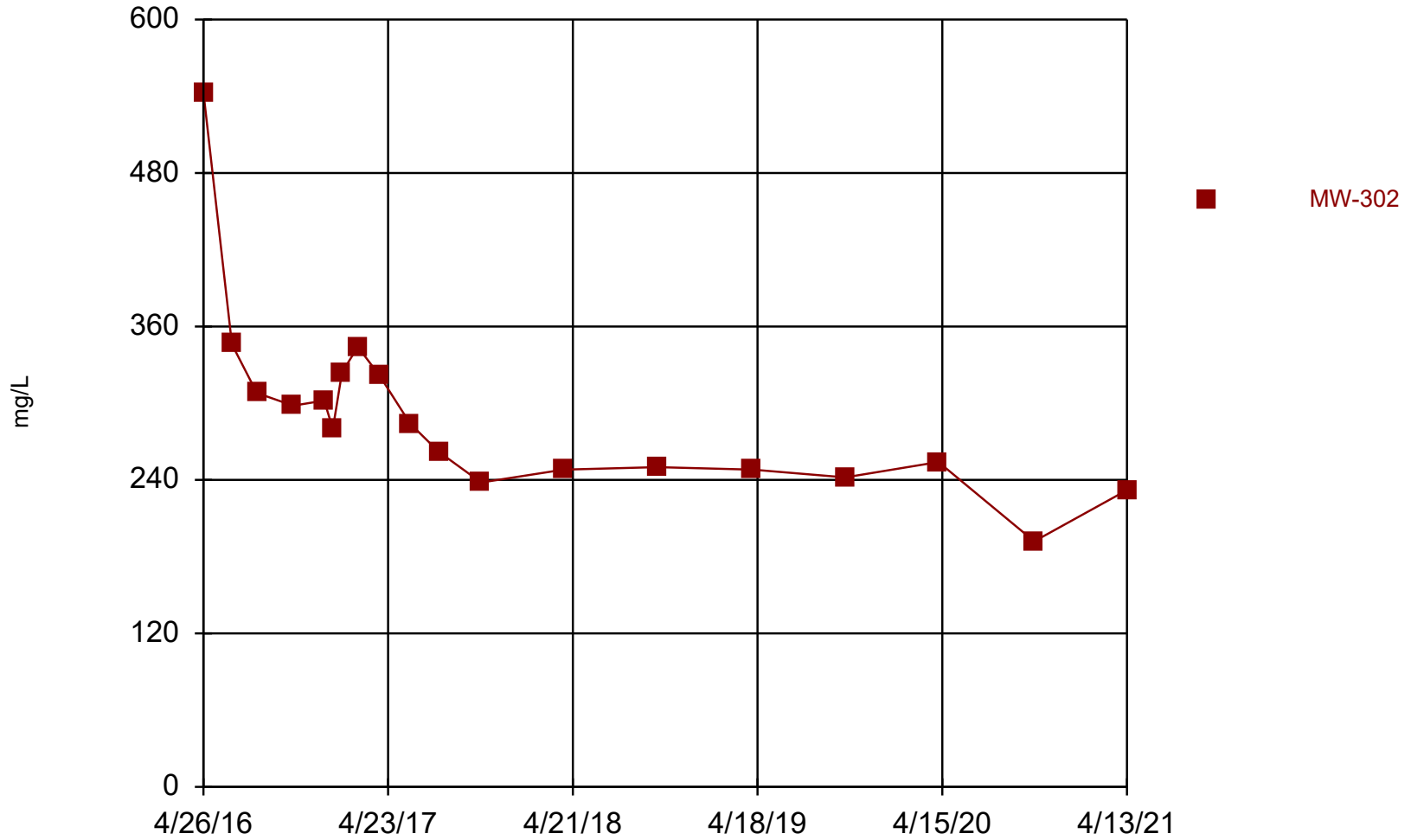
Constituent: Fluoride Analysis Run 10/12/2021 10:44 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series



Constituent: Sulfate Analysis Run 10/12/2021 10:44 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All

Time Series



Constituent: Total Dissolved Solids Analysis Run 10/12/2021 10:44 AM View: I-43 LF Detection Monitoring
I-43 Ash Disposal Facility Client: SCS Engineers Data: I43_2020_Oct_All