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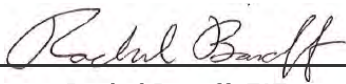
FORMER VENICE POWER PLANT, ASH PONDS 2 & 3

2021 ANNUAL REPORT FORMER VENICE POWER PLANT, ASH PONDS 2 & 3

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ACRONYMS AND ABBREVIATIONS

Ameren	Ameren Missouri
GMZ	Groundwater Management Zone
IAC	Illinois Administrative Code
ILCS	Illinois Compiled Statutes
IEPA	Illinois Environmental Protection Agency
MDL	method detection limit
mg/L	milligrams per liter
NAVD88	North American Vertical Datum of 1988
NRT	Natural Resource Technology, Inc
PQL	practical quantitation limit
PVC	polyvinyl chloride
RL	reporting limit
Site	Former Venice Power Plant Ash Ponds 2 & 3
TDS	total dissolved solids

1. INTRODUCTION

1.1 Background

In May 2011, the Illinois Environmental Protection Agency (IEPA) approved Ameren Missouri's (Ameren) Closure Plan (Natural Resource Technology, Inc. (NRT), 2011) for the Former Venice Power Plant Ash Ponds 2 & 3 (Site) and established a Groundwater Management Zone (GMZ) for the Site. The Closure Plan included specifications for construction of a cover system over Ash Ponds 2 & 3 that conformed to the standards for final cover set forth in Illinois Landfill Regulations and a site-specific rulemaking governing closure of an ash pond at The Hutsonville Power Station, owned by an Ameren-affiliated company. See, generally, 35 Illinois Administrative Code (IAC) 840.126 and 35 IAC 811.314. Cover construction was completed in October 2012.

Groundwater quality has been monitored at the Site since 1996. The Closure Plan included a summary of the groundwater quality at the Site as of 2009 and a revised Groundwater Monitoring Plan that outlined a schedule for monitoring five field and 24 laboratory parameters at 12 groundwater monitoring wells (Tables 1-1, 1-2, and 1-3, Figure 1-1). The new Groundwater Monitoring Plan was implemented in March 2011 with existing groundwater monitoring wells (MW-2, MW-3, MW-5, MW-6, MW-8, and MW-9). In accordance with the approved Closure Plan, additional groundwater monitoring wells were installed in July 2011 (MW-2D, MW-3D, MW-6D, MW-10, MW-11, and MW-11D) and included in the Groundwater Monitoring Plan. In 2019, IEPA approved a request to change the groundwater monitoring schedule from quarterly to semi-annually and to cease monitoring for beryllium, mercury, and thallium in accordance with the Groundwater Monitoring Plan. Recommendations presented in the 2020 Annual Report included plans to cease monitoring for lead and selenium in accordance with the Groundwater Monitoring Plan. We would like to request concurrence for ceasing monitoring for lead and selenium.

This 2021 Annual Report is submitted per Section 5.4 of the Closure Plan and includes a review of the post-closure groundwater quality at the Site to provide an overview of the effectiveness of the cover system in improving groundwater quality downgradient from Ash Ponds 2 & 3. This report also includes the following Groundwater Monitoring Plan compliance elements:

- A summary of groundwater monitoring data collected during August 2018 through December 2021. Data collected from 2018 to 2020 were included, in addition to data collected in 2021, for completeness because they are used in the statistical analysis of groundwater quality data. Data tables are included in Appendix A.
- Short term trend analysis results per Section 3.4 of the Closure Plan.
- Groundwater monitoring field data worksheets which note descriptions of any maintenance or replacement activities performed (Appendix B).
- Final cover site inspection reports and a description of any maintenance activities performed on the cover (Appendix C).

1.2 Groundwater Quality Overview – 2012 to 2021

Groundwater quality data since completion of pond closure in 2012 were reviewed to assess the overall condition of the groundwater and the performance of the cover system. This review was performed independently from the compliance evaluations required by the Closure Plan (NRT, 2011) presented in this report, which are focused on specific compliance criteria and

proposed mitigation actions. This review is intended as a broad view of groundwater quality over time since closure.

1.2.1 Summary of Cover System Construction and Maintenance

As part of closure activities, Ameren removed all standing surface waters from Ash Ponds 2 & 3 and a geosynthetic cover was constructed to provide a barrier to infiltration and subsequent generation and release of leachate from the ponds (NRT, 2011). The cover system consists of (from bottom up) a 40-mil polyvinyl chloride (PVC) geomembrane; a geocomposite drainage layer constructed of high-density polyethylene geonet encapsulated in geotextile; and a 3-foot thick protective soil layer placed over re-graded ash in the ponds. The geocomposite was provided to drain surface water that infiltrates the protective soil layer. Storm water precipitation is routed away from the cover system toward two low areas at the north and south ends of the cover, then pumped over the levee to the Mississippi River. The cover is graded such that there is no off-site contribution, or run-on, of storm water from areas outside of the ash ponds.

Inspections of the cover system are performed on a quarterly schedule. Routine maintenance activities are performed at the Site, as needed and as soon as practicable after issues are identified, and include recontouring the ground surface, repairing drainage channels, repairing and replacing lining material, revegetating areas, and removing woody vegetation. Maintenance activities can be found in more detail in the Closure Plan (NRT, 2011).

1.2.2 Summary of 2012 to 2021 Groundwater Quality Data Review

The Closure Plan identified boron as the primary indicator constituent for coal ash impacts to groundwater at the Site because, while other sources of contamination are present in the area, Ash Ponds 2 & 3 are the only known significant source of boron, and boron is mobile in groundwater. As such, boron was selected for this groundwater quality data review. Boron concentrations over time from closure completion (2012) to the present are presented in Figures 1-2 through 1-7. Best fit linear regression lines are included in the figures to provide a convenient means of evaluating general concentration “trends” over time. It should be noted that the regression lines are not equivalent to the statistical trends discussed in the groundwater compliance section of this report. Numeric standards for Class I: Potable Resource Groundwater set forth in 35 IAC 620.410 (Class I Groundwater Standards) are also shown for reference, although they are not applicable compliance levels within the GMZ.

Generally, boron concentrations in most compliance monitoring wells have decreased since 2012 and are currently below or near the Class I Groundwater Standard. Since completion of closure in 2012, several decreasing trends for various analytical parameters were identified and are discussed in Section 3.3 and summarized on Tables 3-1 and 3-2.

1.2.3 Conclusion

The decreasing boron concentrations in the majority of compliance monitoring wells across the Site is a strong indication that the cover system is functioning to improve overall groundwater quality beneath the ponds. This observation is consistent with the results of groundwater modeling performed in 2010 to simulate changes in groundwater quality resulting from pond closure. Modeling results suggested that boron concentrations in all monitoring wells would stabilize at levels below the Class I Groundwater Standard within 14 to 20 years, with the exception of on-site well MW-6, where boron concentrations were predicted to persist for a longer time period.

2. GROUNDWATER MONITORING PLAN COMPLIANCE

2.1 Applicable Groundwater Quality Standards

As described in Section 3.3 of the Closure Plan:

- On-site, prior to the completion of the post-closure care period, the applicable groundwater quality standards at Ash Ponds 2 & 3 are the concentrations as determined by groundwater monitoring if such concentrations exceed the Class I Groundwater Standards.
- After completion of the post-closure care period, the on-site concentrations of contaminants from Ash Ponds 2 & 3 as determined by groundwater monitoring, are the applicable groundwater standards, if such concentrations exceed the Class I Groundwater Standards, and if:
 - To the extent practicable, the exceedance has been minimized and beneficial use, as appropriate for the class of groundwater, has been returned on-site.
 - Any threat to public health or the environment on-site has been minimized.
 - An institutional control prohibiting potable uses of groundwater is placed on the Former Venice Power Plant site in accordance with the Uniform Environmental Covenants Act [765 Illinois Compiled Statutes (ILCS) 122] or an alternative instrument authorized for environmental uses under Illinois law and approved by IEPA is in effect. Existing potable uses of groundwater may be preserved as long as such uses are consistent with human consumption in accordance with accepted water supply principles.

Off-site standards were not proposed because: 1) Ameren did not receive permission from the adjacent property owner to monitor groundwater on that property; 2) the ponds have been covered, which minimizes exceedances of groundwater quality standards to the extent practical; 3) there are no groundwater receptors in this area; and 4) there is a groundwater restriction ordinance in effect for this area.

2.2 Demonstration of Compliance

As described in Section 3.4 of the Closure Plan:

- Compliance with on-site groundwater quality standards will be achieved when no statistically significant increasing trend that can be attributed to Ash Ponds 2 & 3 is detected in the concentrations of all constituents monitored at the downgradient boundaries of the Site for four consecutive years after changing to an annual monitoring frequency (see Table 1-1).
- If the Sen's non-parametric estimate of slope shows a positive slope at any compliance monitoring well located at the downgradient boundaries of the Site GMZ as specified in Table 1-2, for any parameter (Table 1-3) a Mann-Kendall test will be performed at 95 percent confidence to determine whether the positive slope represents a statistically significant increasing trend. If a statistically significant increasing trend is identified, Ameren will take action as described below, and initiate more frequent inspection of the surface of the cover system and evaluation of background concentrations.
 - If the statistically significant increasing trend can be attributed to a superseding cause, Ameren will notify IEPA in writing, stating the cause of the increasing trend and providing the rationale used in such a determination.

- If there is no superseding cause for the statistically significant increasing trend and sampling frequency is semi-annual or annual sampling, a quarterly sampling schedule will be reestablished. After four consecutive quarterly samples show no statistically significant increasing trend, the frequency of groundwater monitoring will return to either semi-annual or annual, whichever frequency was utilized prior to the return to quarterly sampling.
- Notifications concerning statistically significant increasing trends and revisions of the sampling frequency will be reported to IEPA in writing within 30 days after making the determinations.
- If a statistically significant increasing trend is observed to continue over a period of two or more consecutive years and there are no superseding causes for the trend, then Ameren will perform the following:
 - A hydrogeologic investigation
 - Additional site investigation, if necessary

Based on the outcome of the investigation above, Ameren may take action to mitigate statistically significant increasing trends. Such actions will be proposed as a modification to the Post-Closure Care Plan within 180 days after completion of the investigation activities described above.

3. DATA ANALYSIS

3.1 Groundwater Flow

Groundwater elevation contours and flow directions for the two semi-annual monitoring events which occurred in March 2021 and September 2021 are illustrated in Figures 3-1 and 3-2. Groundwater was encountered in shallow monitoring wells at elevations between approximately 387 to 391 feet North American Vertical Datum of 1988 (NAVD88) in March 2021 (Figure 3-1) and 387 to 395 feet NAVD88 in September 2021 (Figure 3-2). Groundwater elevations and flow directions in the vicinity of the Site are controlled by the Mississippi River, where water levels within the uppermost aquifer rise and fall with river stage. Monitoring well MW-3 was dry in September 2021 when river elevation was low, therefore groundwater elevation was not measured at MW-3 in September 2021. Groundwater flow directions in March 2021 and September 2021 were generally west to southwest (toward the Mississippi River), and horizontal hydraulic gradients were approximately 0.002 feet/foot and 0.005 feet/foot, respectively. This is the predominant flow pattern during most of the year. During periods of high river stage, groundwater flow reversals can occur with groundwater flow away from the river, however, flow reversals were not observed during the March 2021 and September 2021 semi-annual monitoring events.

3.2 Review of Analytical Data

This report includes specific discussion of the analytical data for the most recent eight monitoring events to provide a basis for statistical analyses required for the compliance analysis. All laboratory analytical results for groundwater samples collected on August 27, 2018; November 5, 2018; February 4, 2019; September 10, 2019; March 10, 2020; September 8, 2020; March 1, 2021/ April 19, 2021; and September 14, 2021/November 2, 2021/December 13, 2021, during the most recent eight groundwater monitoring events, are tabulated in Appendix A. The field data for 2021 are found in Appendix B (field data for previous groundwater monitoring events were presented in previous Annual Reports). Sampling anomalies, such as wells that were dry, had water levels too low for sampling, or were not sampled during a sampling event for other reasons, are noted below:

- During the March 2021 sampling event, samples collected for cyanide analysis at all well locations were not analyzed due to storage refrigerator malfunction. Samples were recollected on April 19, 2021 for cyanide analysis.
- MW-3 was not sampled in September 2021 due to the well being dry. Sampling at MW-3 was performed on November 2, 2021.
- A high boron concentration at MW-10 was observed in September 2021 and was identified as a potential outlier concentration through outlier analysis methods described in Section 3.3.1 of this report. The reported September 2021 boron concentration at MW-10 (Appendix A) may have been a result of laboratory error introduced by dilutions. Therefore, a resample of monitoring well MW-10 and analysis for boron was completed in December 2021 which confirmed the September 2021 boron result to be an outlier. The September 2021 boron result was flagged and removed from statistical calculations, illustrations, and water quality evaluations. MW-10 will continue to be monitored for potential outlier boron concentrations in 2022.

Selected analytes are discussed below.

- Boron was identified as the primary indicator constituent for coal ash impacts to groundwater at the Site (see Appendix C of the Closure Plan). In the 2018-2021 monitoring period, boron

concentrations ranged from non-detect at 0.011 to detected at 5.09 milligrams per liter (mg/L) in shallow compliance monitoring wells, except in MW-10 where boron concentrations ranged from 12.42 to 19.62 mg/L (Figure 3-3). In deep monitoring wells, boron concentrations ranged from 0.32 to 7.76 mg/L (Figure 3-3). As discussed in Sections 1.2.2-1.2.3, boron concentrations have decreased in the majority of compliance monitoring wells across the Site since closure. During the current monitoring period, boron concentrations are continuing to decrease over time indicating that the cover system is functioning to improve overall groundwater quality beneath the ponds.

- Chloride is not a coal ash indicator constituent. It is noted here because it has historically had, and continues to have, relatively higher concentrations (but still below the Class I Groundwater Standard of 200 mg/L) in background monitoring wells MW-8 and MW-9 than in the compliance monitoring wells (Figure 3-4).
- Sulfate can be an indicator constituent for coal ash; however, there are other anthropogenic sources for elevated sulfate concentrations in groundwater, and sulfate concentrations can decrease in groundwater under strongly reducing conditions. For these reasons, sulfate is a less reliable indicator for coal ash impacts than boron. As in past monitoring periods, sulfate concentrations at the Ash Ponds 2 & 3 were highest at MW-6D, MW-10, and MW-11D (Figure 3-5) during the 2018-2021 monitoring period, where boron concentrations were also highest. However, there are also differences between the sulfate distribution and the boron distribution at the Site. For example, MW-6 had a median boron concentration of 4.85 mg/L (above the Class I Groundwater Standard for boron [2.0 mg/L]), suggesting coal ash impacts, even though the median sulfate concentration was at 16.3 mg/L (below the Class I Groundwater Standard for sulfate [400 mg/L]). Conversely, background monitoring wells MW-8 and MW-9 had low boron concentrations (median concentrations below the Class I Groundwater Standard for boron of 0.836 mg/L and 0.729 mg/L, respectively), yet sulfate concentrations were similar to or higher than some of the wells which had elevated boron concentrations (i.e., wells MW-2D, MW-3D, MW-5, and MW-6). Due to these differences, which are consistent with previous monitoring periods, boron appears to be a more reliable indicator of coal ash constituents in groundwater and will, therefore, continue to be used as the primary indicator constituent for Ash Ponds 2 & 3.

3.3 Statistical Analysis

Analytical data were evaluated to identify short-term (compliance) data trends in the 2018-2021 dataset. Trends were evaluated following a three-step procedure:

- Test for outliers using the Grubbs outlier test as described in Section 3.3.1 below.
- Determine Sen's estimate of slope (in accordance with Section 3.4 of the Closure Plan).
- Perform a Mann-Kendall trend analysis for any cases (monitoring well/constituent) with a positive Sen's estimate of slope (in accordance with Section 3.4 of the Closure Plan).

3.3.1 Outlier Analysis

The Grubbs outlier test determines whether there is statistical evidence of a high or low observation that differs significantly from the other data and provides statistical evidence of potential outliers. The test methodology and results are listed in Appendix D. Outliers identified by the Grubbs outlier test based on the date range of 1996-2021 were considered for elimination from further statistical analysis.

3.3.2 Sen's Estimate of Slope

Sen's estimate of slope is a non-parametric estimator of trend. It is the median of all slopes between all possible unique pairs of individual data points in the time period being analyzed. The slopes represent the rate of change of the measured parameter, with the y-axis being the parameter value and the x-axis being calendar time. The method is robust, and fairly insensitive to the presence of a small fraction of outliers and non-detect data values. The test methodology is listed in Appendix D.

Data collected within the 2018-2021 monitoring period (most recent eight monitoring events) show 25 cases with positive slopes, 20 cases with negative slopes, and 201 cases with no slope (Table 3-1). The 25 cases with positive slopes were tested using the Mann-Kendall test (described in Section 3.3.3 below) to determine if the positive slopes represented statistically significant short-term (2018-2021) increasing trends.

3.3.3 Mann-Kendall Trend Analysis

The Mann-Kendall test is a non-parametric, one-tailed test to determine whether a dataset has a statistically significant increasing or decreasing trend. The test methodology is in Appendix D. Increasing short-term (compliance) trends are identified in Tables 3-1 and 3-2.

The Mann-Kendall test detected three cases of short-term increasing trends in the 2018-2021 dataset. The increasing short-term trends occurred for boron (MW-6D), iron (MW-9), and TDS (MW-11). Of these identified short-term trends, only the boron in MW-6D represent trends observed to continue over a period of two or more consecutive years. Therefore, the boron trend in MW-6D was evaluated to determine whether it could be attributed to superseding causes (Section 4).

3.4 Groundwater Monitoring System Maintenance and Inspection

The monitoring wells were inspected during each sampling event of 2021. Groundwater monitoring field data worksheets which contain inspection records for 2021 are included in Appendix B.

3.5 Cover Inspection and Maintenance

Fly Ash Pond Final Cover Inspection Reports (Appendix C) are shared with the Venice plant by Ameren upon completion. The plant responds promptly to correct issues (if any) as they are reported. No issues were reported during the 2021 quarterly cover inspections.

4. EVALUATION OF COMPLIANCE

The increasing short-term trends as identified in Section 3.3.3 and in Table 3-1 for the most recent eight monitoring events (2018-2021) were either first-time or non-consecutive occurrences and likely do not indicate a potential release from Ash Ponds 2 & 3. The exception is the short-term boron trend at MW-6D, which represents the second occurrence of a short-term trend. Timeseries concentration plots, illustrating concentrations for the most recent eight monitoring events (2018-2021), were developed for parameters and monitoring wells with consecutive short-term increasing trends (i.e., MW-6D), as identified using the Mann-Kendall test, and graphed along with concentrations in background wells (i.e., MW-8 and MW-9), in Figure 4-1. The consecutive occurrences of short-term increasing trends for boron at MW-6D are further evaluated below and are not attributed to a potential release at Ash Ponds 2 & 3.

4.1 Boron: MW-6D

A short-term increasing trend for boron above the Class I Groundwater Standard (2.0 mg/L) occurred in 2021 at compliance monitoring well MW-6D (Figure 4-1). This is the second occurrence of such a trend at MW-6D in two consecutive years (i.e., 2020 and 2021). Based on modeling results for boron concentrations at nearby and collocated well MW-6, boron concentrations are expected to persist longer in the vicinity of MW-6D than near other onsite monitoring wells following closure. In addition, no long-term post-closure increasing trend (time period from 2012 to 2021) was identified for boron at MW-6D indicating the short-term increasing trends for boron at MW-6D may be sporadic and attributed to natural variation at the Site, and do not indicate that a release from Ash Ponds 2 & 3 has occurred.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Statistical analyses of analytical results for the eight rounds of groundwater samples collected between 2018 to 2021 identified one case of increasing trends that recurred over a period of two or more consecutive years, including:

- Boron in MW-6D

As discussed in Section 4, the one case of reoccurring increasing trends is not indicative of a potential release from Ash Ponds 2 & 3 as summarized below:

- No long-term post-closure increasing trend (time period from 2012 to 2021) was identified for boron at MW-6D, indicating the short-term increasing trends for boron at MW-6D may be sporadic and attributed to natural variation at the Site, and do not indicate that a release from Ash Ponds 2 & 3 has occurred.

5.2 Recommendations

In accordance with Section 3.4 of the Closure Plan, the semi-annual sampling schedule should be continued.

Per Section 3.2.1 of the Closure Plan (Monitoring Parameters), any constituent that is not detectable at the reporting level (RL) or practical quantitation limit (PQL) in the downgradient wells for four consecutive quarters may be removed from the monitoring program in both the upgradient and downgradient wells. As recommended in Section 5.2 of the 2020 Annual Report, lead and selenium have been detected at or below the method detection limit (MDL) and, therefore, were detected below the RL/PQL for four consecutive sampling events. As of the 2021 Annual Report, concentrations continue to be low for selenium and lead at upgradient and downgradient wells. Therefore, removal of lead and selenium from the list of groundwater monitoring program parameters is recommended (Table 1-3). We would like to request concurrence for ceasing monitoring for lead and selenium.

6. REFERENCES

Natural Resource Technology, Inc. (2011). *Closure Plan, Venice Power Plant Ash Ponds 2 & 3*, dated February 4, 2011 and revised on March 25, 2011.

TABLES

Table 1-1. Groundwater Monitoring Program Schedule
2021 Annual Report
Former Venice Power Plant - Ash Ponds 2 & 3

Frequency	Duration
Quarterly	Begins: March 2011
	Ends: 5 years after completion of cap and upon demonstration that monitoring effectiveness is not compromised and that there are no increasing trends attributable to the Venice ash ponds.
Semiannual	Begins: after IEPA approves that quarterly monitoring requirements have been satisfied.
	Ends: 5 years after initiation of semiannual monitoring and upon demonstration that monitoring effectiveness is not compromised and that there are no increasing trends attributable to the Venice ash ponds.
Annual	Begins: after IEPA approves that semiannual monitoring requirements have been satisfied.
	Ends: 4 consecutive years after initiation of annual monitoring if no increasing trends can be attributed to Venice Ash Ponds is detected in the concentrations of all constituents monitored at the downgradient boundaries of the Site and upon IEPA approval of a certified post-closure care report.

[O: SJC, C: YAD 3/9/18, U: RAB 11/20/2020]

Table 1-2. Groundwater Monitoring System Wells
2021 Annual Report
Former Venice Power Plant - Ash Ponds 2 & 3

Monitoring Well	Latitude	Longitude	Date Drilled	Surface Elevation (ft.)	Top of Well Casing Elevation (ft.)	Top of Screen Elevation (ft.)	Bottom of Screen Elevation (ft.)	Objective
MW-2	38-39-12.84	90-10-28.39	4/15/1996	412.75	412.31	394	384	Compliance
MW-2D	38-39-12.83	90-10-29.09	7/21/2011	412.61	412.36	370	365	Compliance
MW-3	38-39-03.34	90-10-30.00	4/15/1996	411.41	410.91	397	387	Compliance
MW-3D	38-39-03.40	90-10-30.00	7/20/2011	411.70	411.48	370	365	Compliance
MW-5	38-39-08.97	90-10-11.93	10/14/1997	433.16	432.93	394	384	Compliance
MW-6	38-39-02.24	90-10-18.17	10/15/1997	433.56	433.09	392	382	Compliance
MW-6D	38-39-02.24	90-10-18.09	7/19/2011	433.85	433.55	370	365	Compliance
MW-8	38-39-14.68	90-10-08.46	7/2/1999	416.50	416.27	383	373	Background
MW-9	39-39-27.23	90-10-15.93	7/2/1999	413.65	413.40	382	372	Background
MW-10	38-39-34.84	90-10-33.78	7/21/2011	422.11	424.99	391	381	Compliance
MW-11	38-39-22.64	90-10-32.25	7/22/2011	413.04	412.74	394	384	Compliance
MW-11D	38-39-22.58	90-10-32.24	7/22/2011	412.84	412.50	369	364	Compliance

[O: SJC, C: YAD 3/9/18]

Note:

Surface and well casing elevations based on survey of July 2012, vertical datum is NAVD 1988.

Table 1-3. Groundwater Monitoring Program Parameters
2021 Annual Report
Former Venice Power Plant - Ash Ponds 2 & 3

Field Parameters	Method
pH	Field
Electrical conductance	Field
Temperature	Field
Water level	Field
Well depth	Field
Laboratory Parameters	Method
Antimony	SW-846 #3015 and #6020
Arsenic	SW-846 #3015 and #6020
Barium	EPA 200.7
Beryllium ¹	EPA 200.7
Boron	EPA 200.7
Cadmium	SW-846 #3015 and #6020
Chloride	ASTM D4327
Chromium	EPA 200.7
Cobalt	EPA 200.7
Copper	EPA 200.7
Cyanide	Std. Meth. 4500-CN
Fluoride	Std. Meth. 4500-F
Iron	EPA 200.7
Lead	SW-846 #3015 and #6020
Manganese	EPA 200.7
Mercury ¹	SW-846 #3015 and #6020
Nickel	EPA 200.7
Nitrate as N	ASTM D4327
Selenium	SW-846 #3015 and #6020
Silver	EPA 200.7
Sulfate	ASTM D4327
Thallium ¹	SW-846 #3015 and #6020
Total Dissolved Solids	EPA 160.1
Zinc	EPA 200.7

[O: SJC, C: YAD 3/9/18]

Notes:

¹ Eliminated from the monitoring program June 5, 2019 by IEPA approval.

Table 3-1. Trend Analysis Results
2021 Annual Report
Former Venice Power Plant - Ash Ponds 2 & 3

	MW-2	MW-2D	MW-3	MW-3D	MW-5	MW-6	MW-6D	MW-8	MW-9	MW-10	MW-11	MW-11D
Number of Samples	8	8	7	8	8	8	8	8	8	8	8	8
Antimony, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Arsenic, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Barium, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Boron, dissolved	none	none	none	none	none	none	increase	none	none	decrease	none	+
Cadmium, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Chloride, dissolved	+	+	+	-	-	+	-	decrease	+	-	-	-
Chromium, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Cobalt, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Copper, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Cyanide, total	none	none	none	none	none	none	none	none	none	none	none	none
Fluoride, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Iron, dissolved	+	+	-	+	none	-	none	none	increase	+	none	+
Lead, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Manganese, dissolved	none	none	none	none	+	+	none	none	none	none	none	none
Nickel, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Nitrate nitrogen, dissolved	-	+	none	none	none	none	none	none	none	none	-	none
Selenium, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Silver, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Sulfate, dissolved	-	decrease	-	+	+	-	-	+	+	decrease	+	+
Total Dissolved Solids	+	-	+	+	none	-	-	-	+	-	increase	+
Zinc, dissolved	none	none	none	none	none	none	none	none	none	none	none	none

[O: RAB 11/22/21, C: KLT 11/23/21, U: RAB 12/15/21, C: KLT 12/15/21]

Notes:

- "+" indicates that the Sen's non-parametric estimate of the median slope is positive.
- "-" indicates that the Sen's non-parametric estimate of the median slope is negative.
- "decrease" indicates a statistically significant decreasing trend
- "increase" indicates a statistically significant increasing trend
- Mann Kendall Trend analysis done with non-detects at one half the detection limit.
- Well MW-3 was dry on September 8, 2020
- The most recent eight sampling events were used for analysis; date range for this analysis is 8/1/2018-12/13/2021

Table 3-2. Summary of Trend Analyses
2021 Annual Report
Former Venice Power Plant - Ash Ponds 2 & 3

Reporting Date	Short-Term Increasing Trends	Long-Term Decreasing Trends
2012	15	-
2013	14	-
2014	6	-
2015	1	-
2016	20	-
2017	10	-
2018	2	-
2019	3	-
2020	11	-
2021	3	23

[O: RAB 11/22/21, C: KLT 11/23/21]

Notes:

Short-term trends were calculated on the basis of eight consecutive sampling events.

Long-terms trends were calculated with data since completion of closure in 2012.

FIGURES



 MONITORING WELL LOCATION
 GROUNDWATER MANAGEMENT ZONE

SITE MAP

FIGURE 1-1

0 150 300
Feet

2021 ANNUAL REPORT FORMER
VENICE POWER PLANT ASH
PONDS 2 & 3
AMEREN MISSOURI
VENICE, ILLINOIS

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



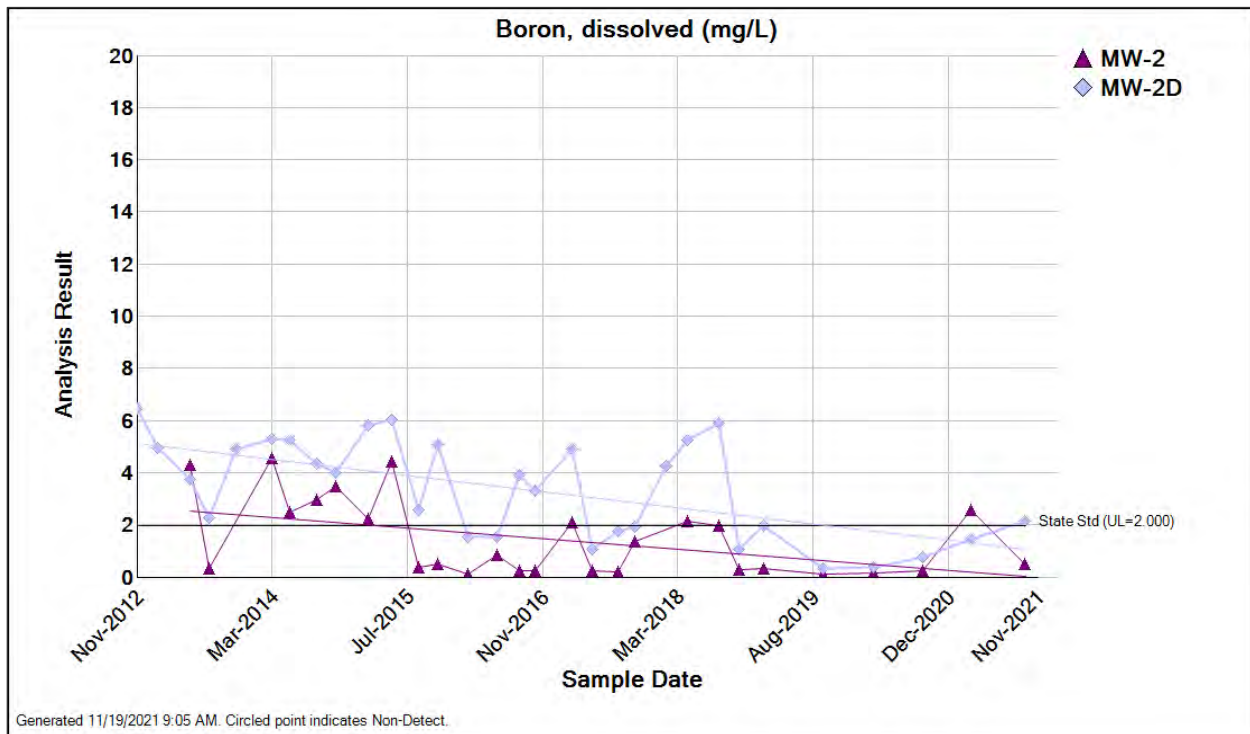


Figure 1-2. Boron concentrations over time since closure completion (2012) at compliance wells MW-2 and MW-2D. The Class I Groundwater Standard is not applicable within the GMZ and is shown for reference only.

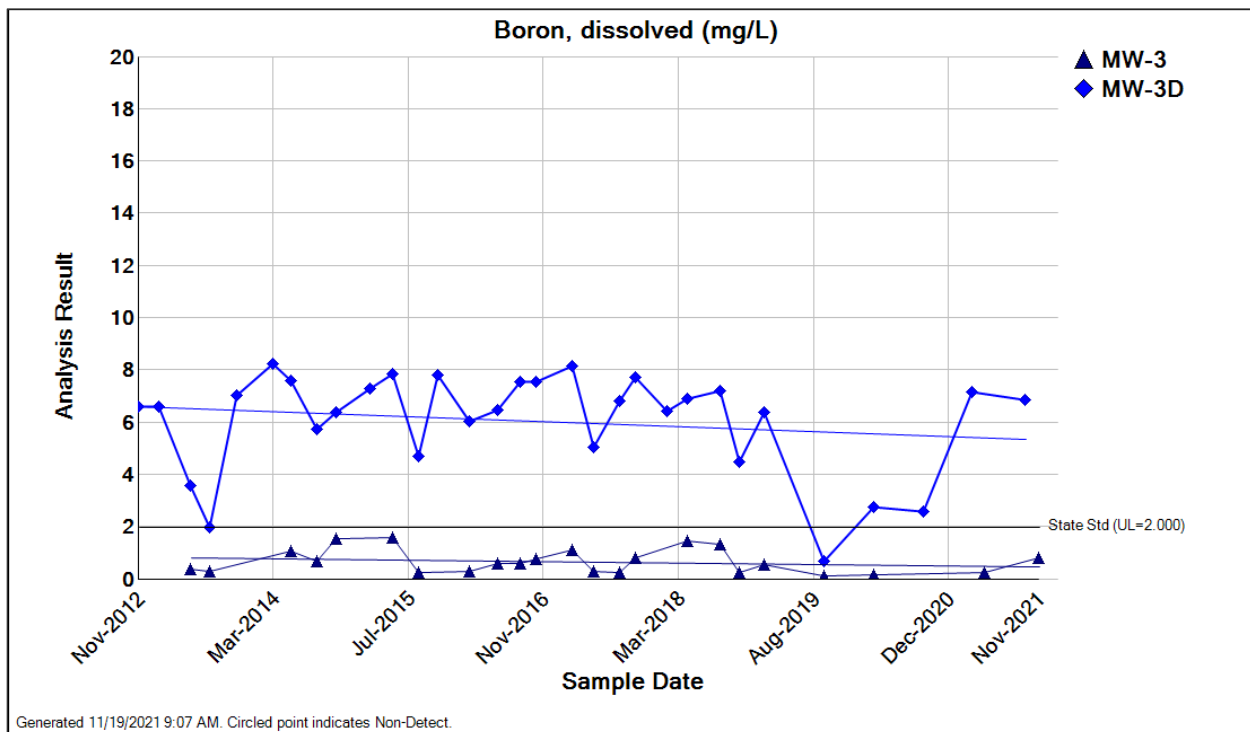


Figure 1-3. Boron concentrations over time since closure completion (2012) at compliance wells MW-3 and MW-3D. The Class I Groundwater Standard is not applicable within the GMZ and is shown for reference only.

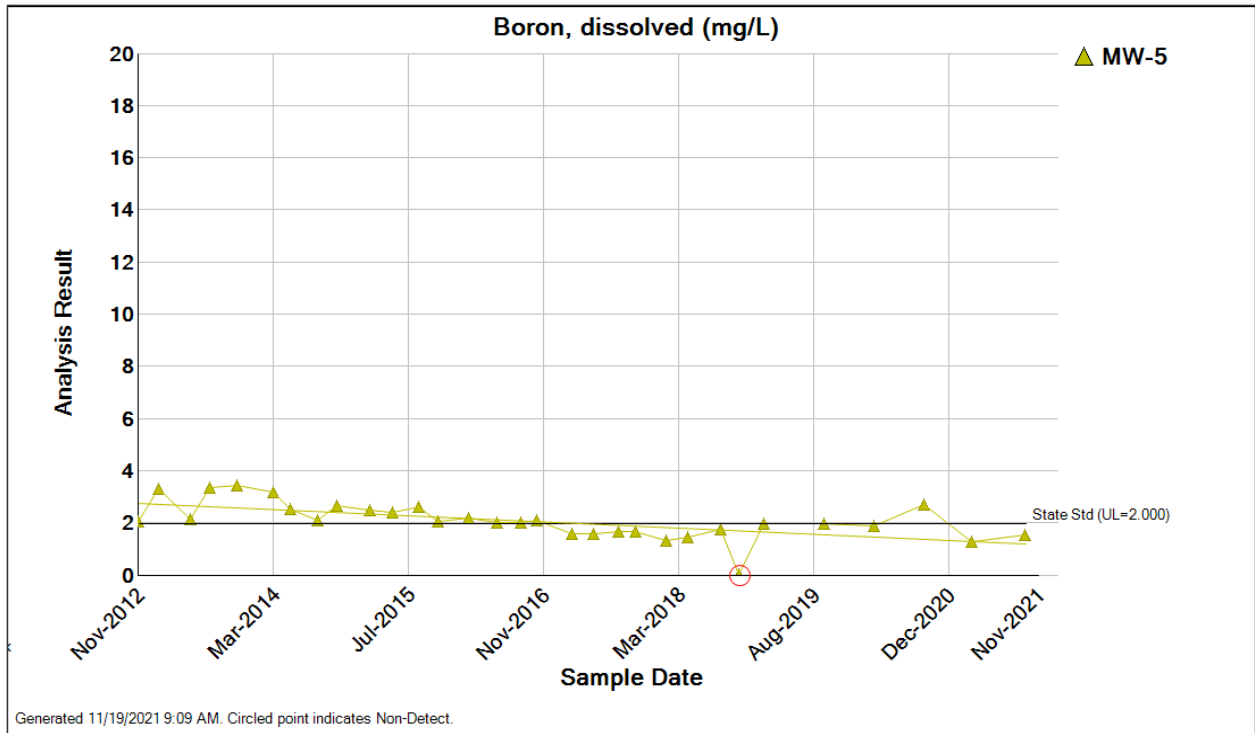


Figure 1-4. Boron concentrations over time since closure completion (2012) at compliance well MW-5. The Class I Groundwater Standard is not applicable within the GMZ and is shown for reference only.

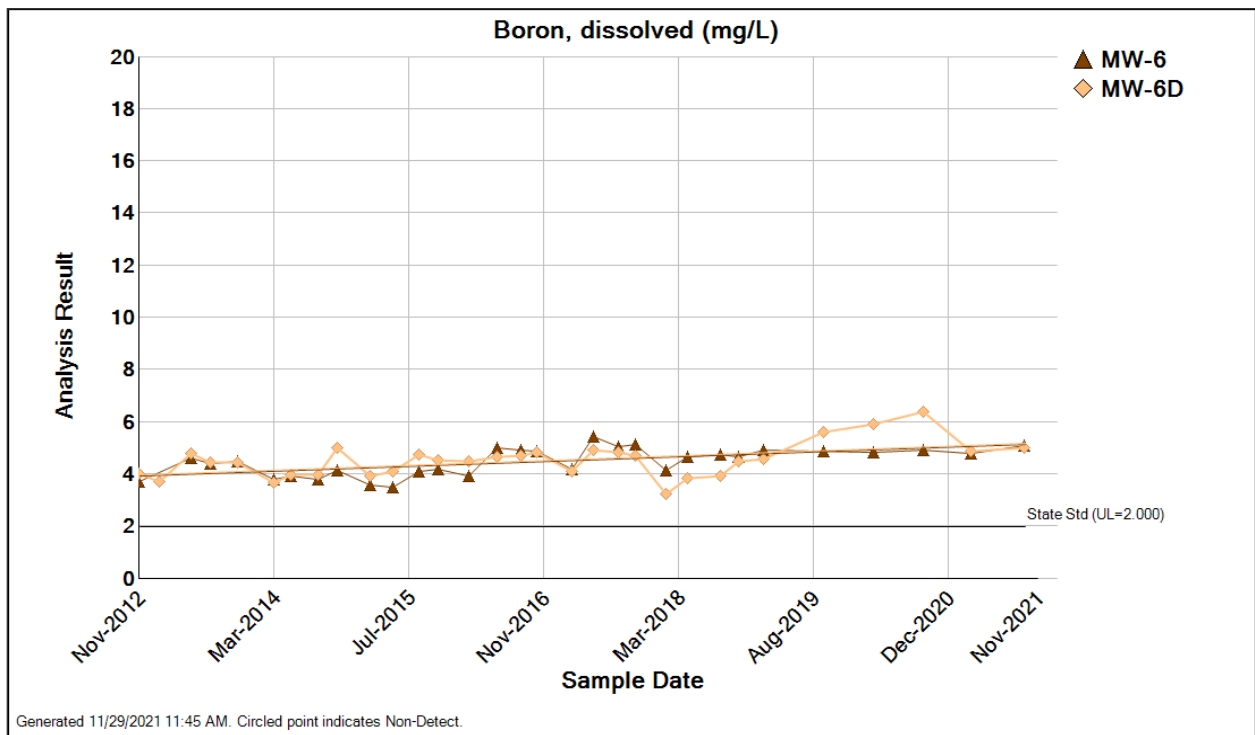


Figure 1-5. Boron concentrations over time since closure completion (2012) at compliance well MW-6 and MW-6D. The Class I Groundwater Standard is not applicable within the GMZ and is shown for reference only.

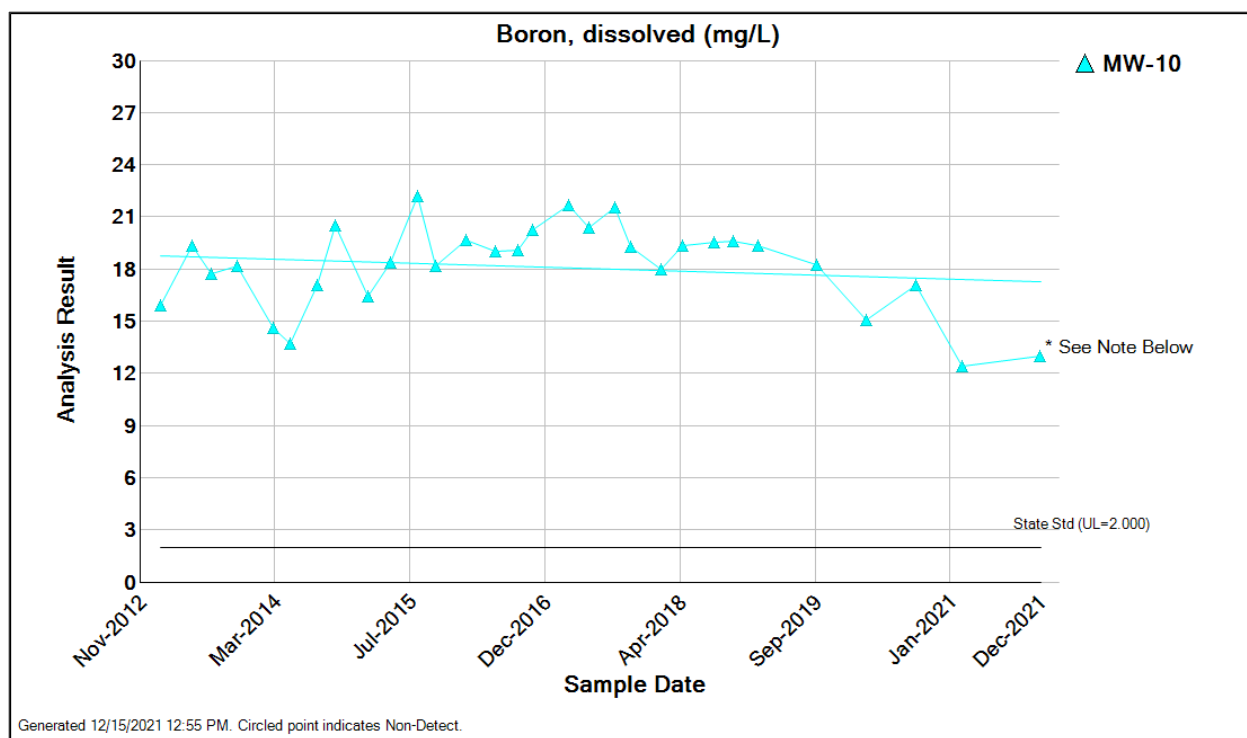


Figure 1-6. Boron concentrations over time since closure completion (2012) at compliance well MW-10. The Class I Groundwater Standard is not applicable within the GMZ and is shown for reference only. *The boron concentration observed at MW-10 in the September/November 2021 sampling event was identified as an outlier and was removed from Figure 1-6. MW-10 was resampled for boron in December 2021 and the result is included in Figure 1-6.

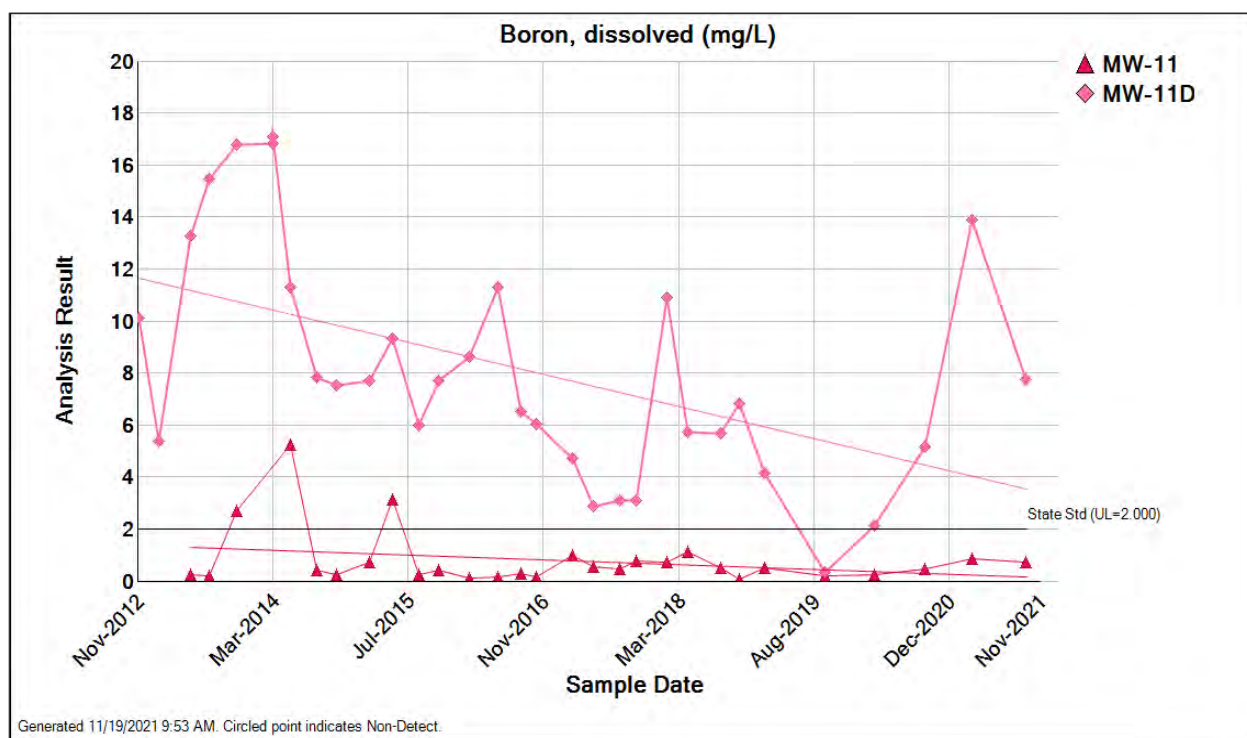
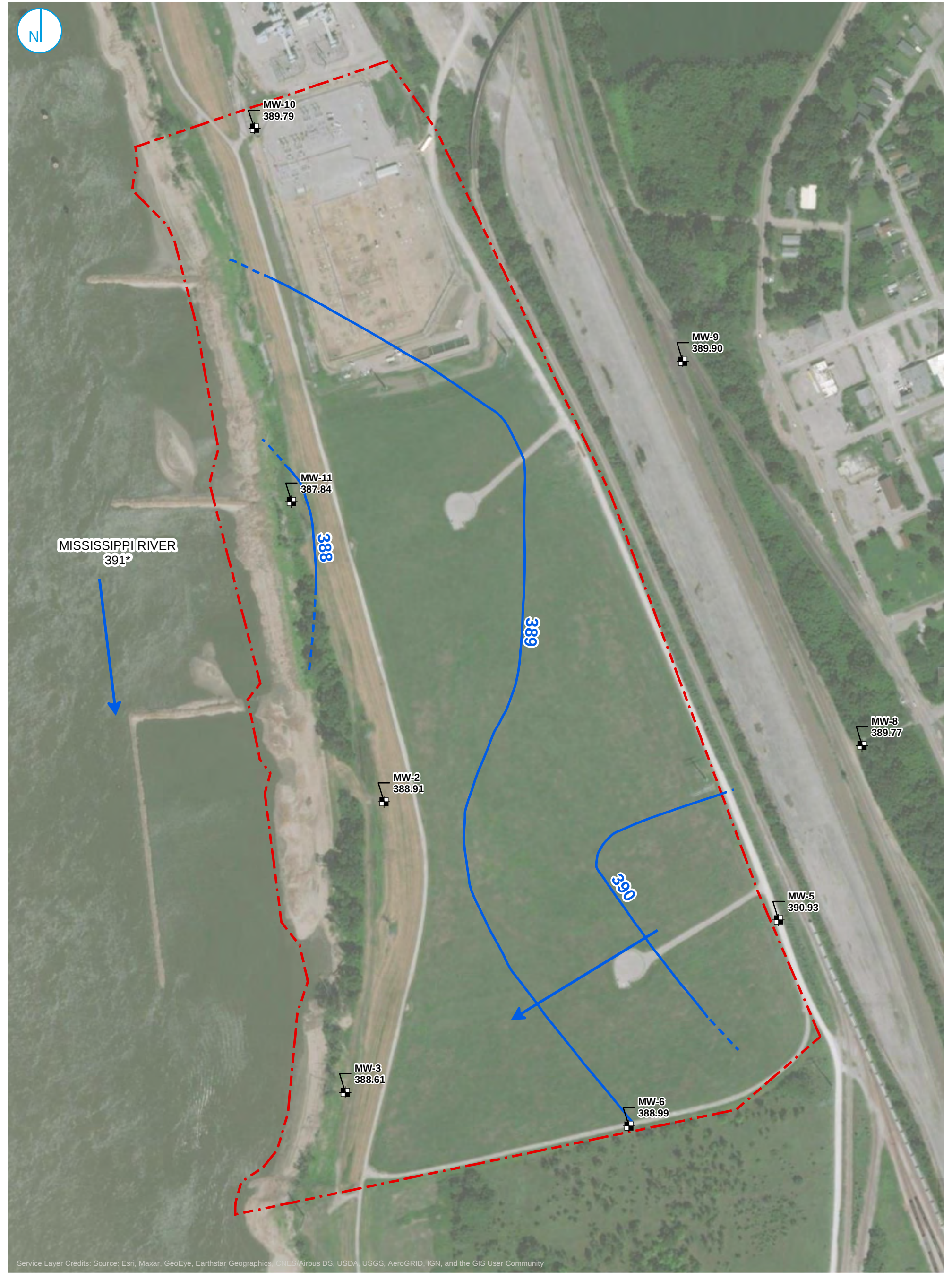


Figure 1-7. Boron concentrations over time since closure completion (2012) at compliance wells MW-11 and MW-11D. The Class I Groundwater Standard is not applicable within the GMZ and is shown for reference only.



- MONITORING WELL LOCATION
- GROUNDWATER MANAGEMENT ZONE
- GROUNDWATER ELEVATION CONTOUR (1-FOOT INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

0 150 300 Feet

*RIVER ELEVATION OBTAINED FROM SITE STAFF GAGE MARCH 1, 2021.

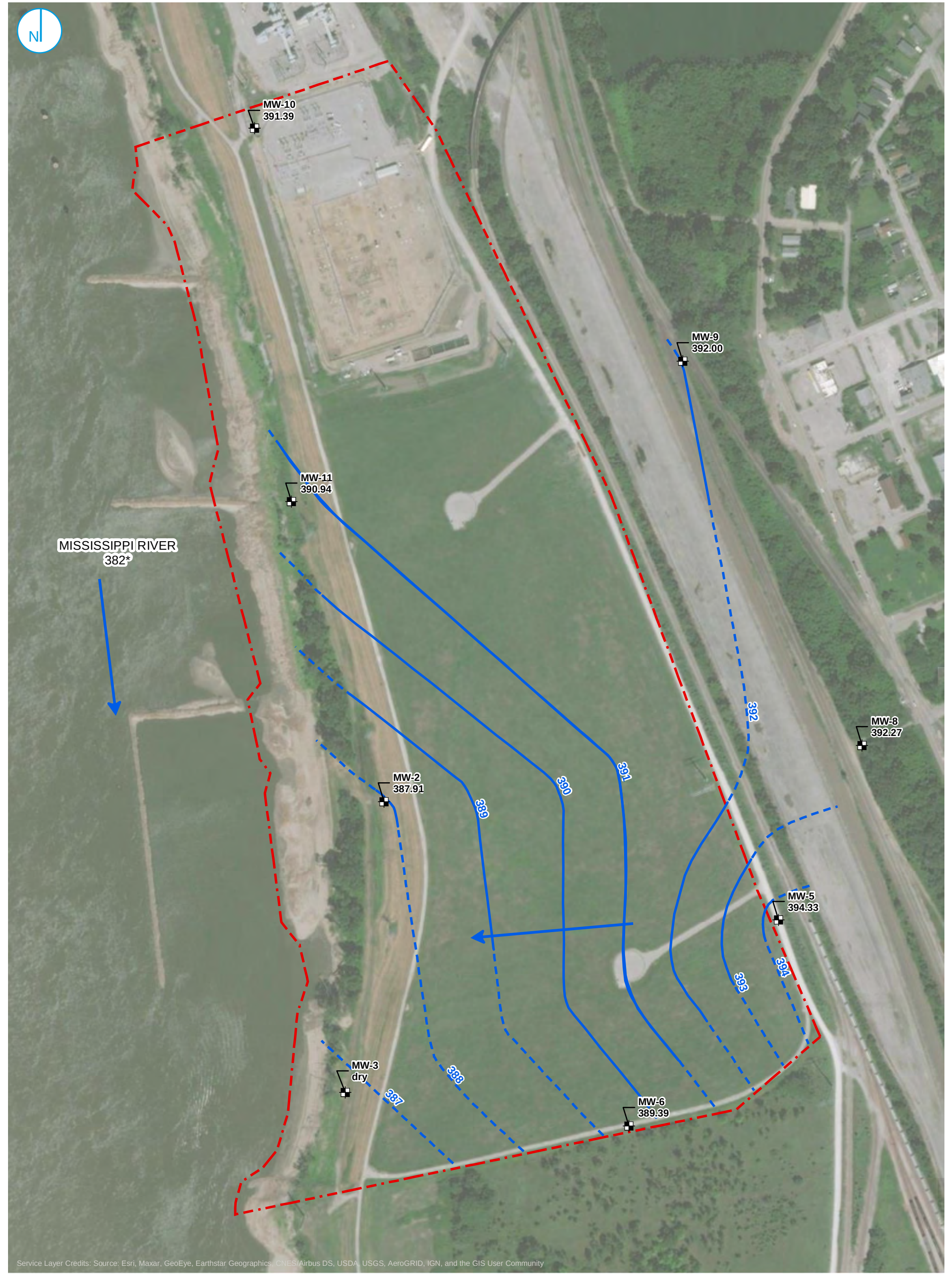
GROUNDWATER ELEVATION
CONTOURS
MARCH 1, 2021

2021 ANNUAL REPORT
FORMER VENICE POWER PLANT
ASH PONDS 2 & 3
AMEREN MISSOURI
VENICE, ILLINOIS

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



FIGURE 3-1



- MONITORING WELL LOCATION
- GROUNDWATER MANAGEMENT ZONE
- GROUNDWATER ELEVATION CONTOUR (1-FOOT INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION



*RIVER ELEVATION OBTAINED FROM SITE STAFF GAGE ON SEPTEMBER 14, 2021.

GROUNDWATER ELEVATION
CONTOURS
SEPTEMBER 14, 2021

2021 ANNUAL REPORT
FORMER VENICE POWER PLANT
ASH PONDS 2 & 3
AMEREN MISSOURI
VENICE, ILLINOIS

FIGURE 3-2

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



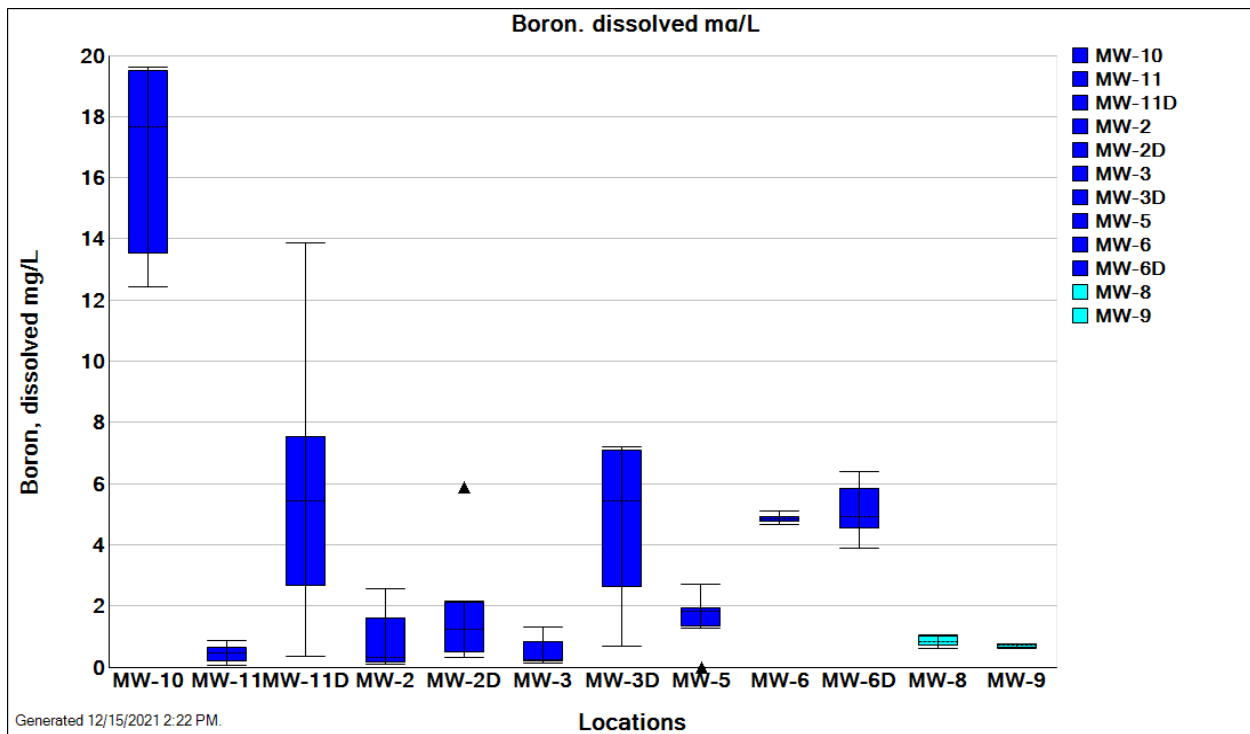


Figure 3-3. Box-whisker plot showing the distribution of boron concentrations by monitoring well for data collected during August 2018 through December 2021.

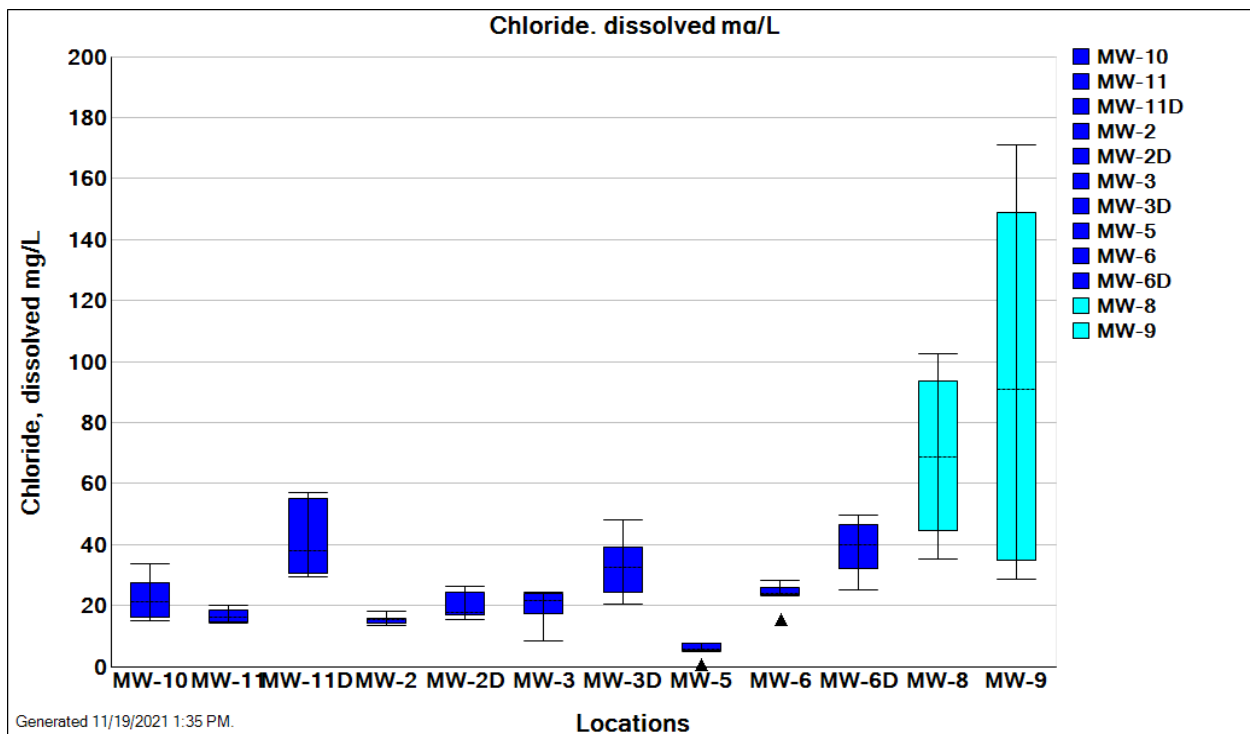


Figure 3-4. Box-whisker plot showing the distribution of chloride concentrations by monitoring well for data collected during August 2018 through December 2021.

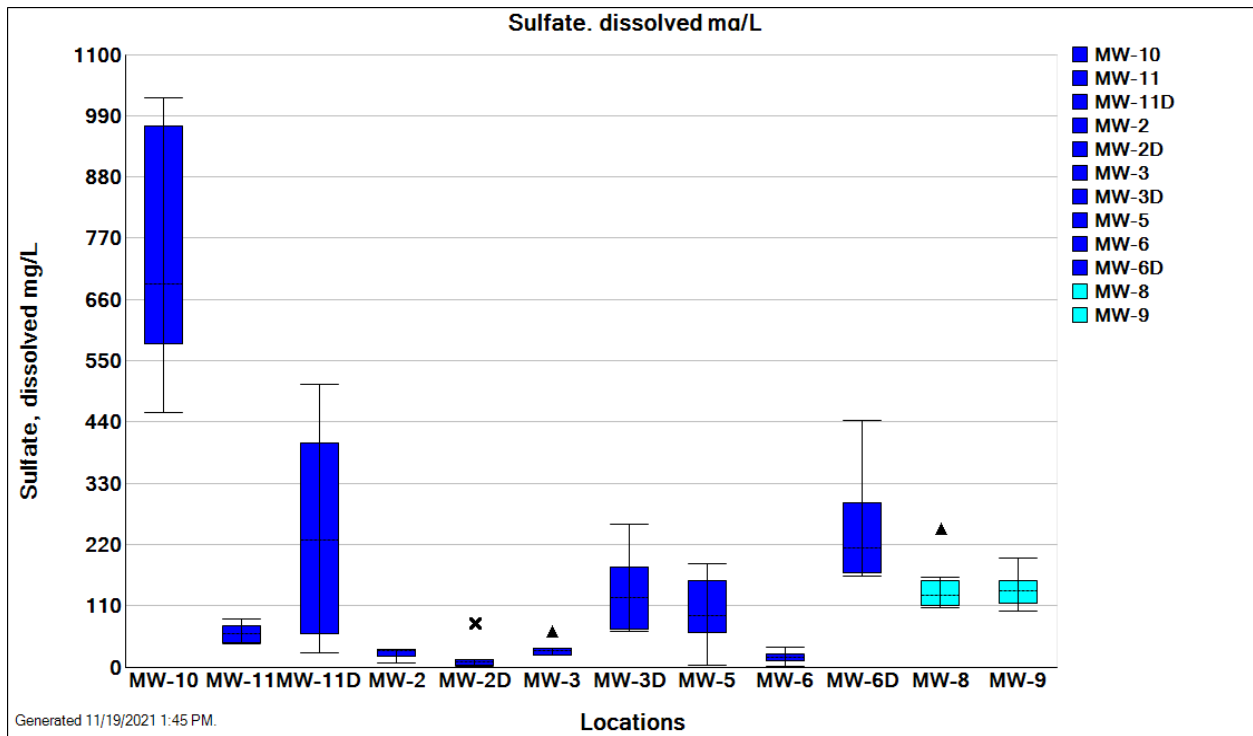


Figure 3-5. Box-whisker plot showing distribution of sulfate concentrations by monitoring well for data collected during August 2018 through December 2021.

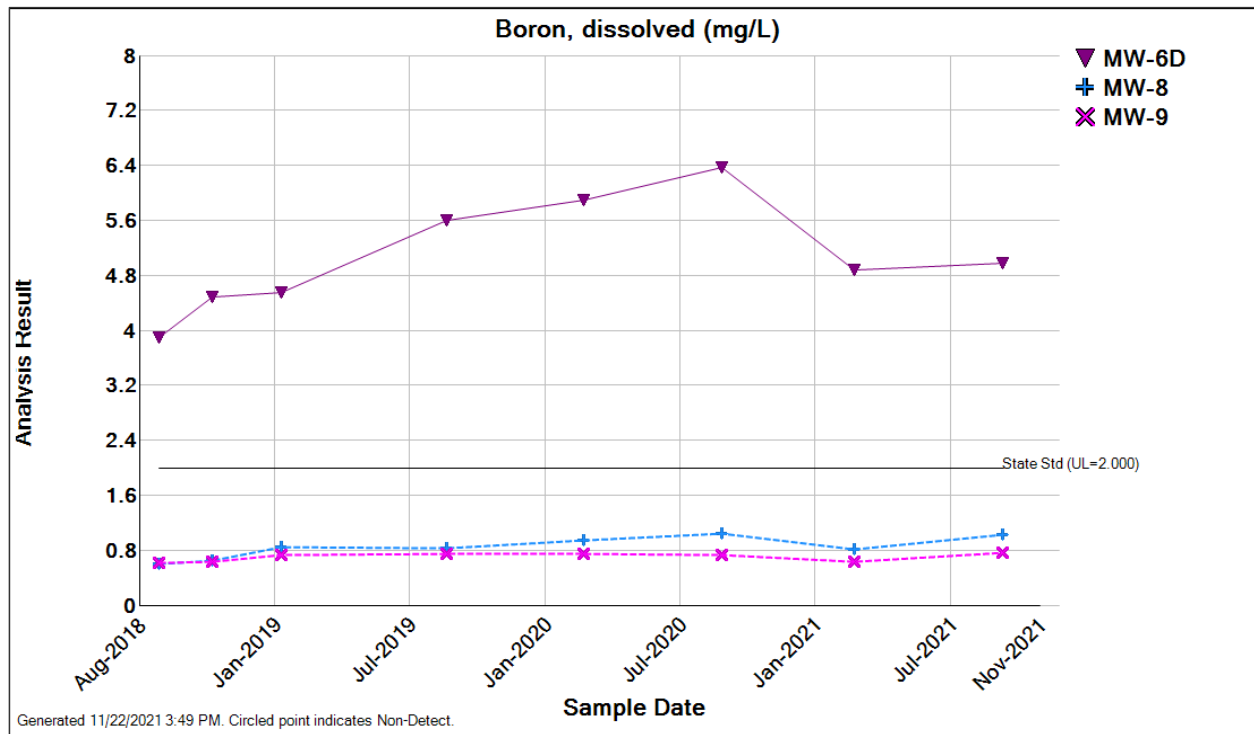


Figure 4-1. Increasing trends for boron at compliance well MW-6D compared to background wells MW-8 and MW-9. The Class I Groundwater Standard is not applicable within the GMZ and is shown for reference only.

APPENDIX A
GROUNDWATER MONITORING RESULTS 2018-2021 MONITORING PERIOD

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-2

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001		<0.001
As, diss, mg/L	<0.008	<0.008	<0.008	0.008	<0.008	<0.008	0.041		0.033
B, diss, mg/L	1.984	0.270	0.344	0.104	0.134	0.232	2.558		0.478
Ba, diss, mg/L	0.313	0.256	0.248	0.197	0.217	0.207	0.402		0.282
Cd, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cl, diss, mg/L	14.8	18.1	13.6	13.9	15.4	15.3	15.9		15.9
CN, total, mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		0.0012	<0.0020
Co, diss, mg/L	0.003	0.003	<0.001	<0.001	<0.001	0.001	0.066		0.013
Cr, diss, mg/L	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.001		<0.001
Cu, diss, mg/L	0.002	0.001	0.001	0.001	0.001	<0.001	<0.001		<0.001
F, diss, mg/L	0.19	0.28	0.23	0.22	0.20	0.23	0.21		0.19
Fe, diss, mg/L	0.011	0.203	0.423	0.250	0.024	0.162	3.380		0.745
GW Depth (TOC), ft	17.50	10.00	17.90	14.30	15.30	23.40	23.40	12.70	24.40
GW Elv, ft	394.81	402.31	394.41	398.01	397.01	388.91	388.91	399.61	387.91
Mn, diss, mg/L	0.295	0.259	0.033	0.007	0.005	0.086	3.087		0.773
Ni, diss, mg/L	0.013	0.005	0.003	<0.003	0.006	<0.003	0.029		0.011
NO3, diss, mg/L	1.20	3.80	2.90	9.50	12.50	2.70	<0.10		<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007
pH (field), STD	6.69	6.90	6.86	7.00	6.87	6.80	7.00	6.90	6.93
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0002		0.0270
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009		0.025
SO4, diss, mg/L	16.3	31.3	30.8	26.8	29.0	31.2	7.5		28.0
Spec. Cond. (field), micromho	1135	777	901	783	885	887	1093	1136	958
TDS, mg/L	700	500	580	480	570	520	690		613
Temp (Celsius), degrees C	16.50	16.50	16.20	16.40	14.20	16.50	15.90	15.70	17.10
Zn, diss, mg/L	0.002	0.002	0.003	0.004	<0.002	0.009	0.007		0.010

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-2D

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	0.002	<0.001	0.002	<0.001	0.001	0.002	0.001		<0.001
As, diss, mg/L	0.022	0.011	0.002	0.014	<0.008	0.015	0.010		0.026
B, diss, mg/L	5.888	1.044	1.984	0.318	0.372	0.738	1.443		2.144
Ba, diss, mg/L	0.396	0.348	0.393	0.227	0.228	0.283	0.338		0.418
Cd, diss, mg/L	0.002	0.001	0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cl, diss, mg/L	16.9	16.3	15.2	26.2	24.9	21.9	17.8		17.9
CN, total, mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010	<0.0020
Co, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cr, diss, mg/L	0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001		<0.001
Cu, diss, mg/L	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	0.001		<0.001
F, diss, mg/L	0.16	0.15	0.15	0.17	<0.05	0.13	0.24		0.17
Fe, diss, mg/L	15.750	15.220	20.390	14.810	13.450	18.130	18.410		21.930
GW Depth (TOC), ft	19.00	10.80	18.80	13.80	15.00	23.80	22.90	13.00	24.80
GW Elv, ft	393.36	401.56	393.56	398.56	397.36	388.56	389.46	399.36	387.56
Mn, diss, mg/L	0.989	0.892	1.084	0.611	0.554	0.791	0.584		1.017
Ni, diss, mg/L	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003		<0.003
NO3, diss, mg/L	<0.10	1.20	<0.10	<0.10	<0.10	1.00	0.90		1.30
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007
pH (field), STD	7.08	7.00	6.99	7.00	7.12	7.00	7.40	7.00	7.23
Sb, diss, mg/L	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0002		0.0270
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009
SO4, diss, mg/L	78.2	12.6	1.4	13.7	12.6	5.2	5.4		1.1
Spec. Cond. (field), micromho	1252	1065	1173	736	661	878	743	836	1182
TDS, mg/L	840	680	740	430	430	460	660		700
Temp (Celsius), degrees C	17.20	15.40	15.90	15.40	15.70	17.00	15.30	15.70	16.00
Zn, diss, mg/L	0.002	0.002	0.004	0.003	0.004	0.004	0.004		0.008

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-3

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	11/2/2021
Ag, diss, mg/L	0.001	<0.001	0.002	0.003	0.001			<0.001	0.001
As, diss, mg/L	<0.008	<0.008	<0.008	<0.008	<0.008			0.001	0.018
B, diss, mg/L	1.300	0.251	0.523	0.127	0.154			0.228	0.811
Ba, diss, mg/L	0.188	0.090	0.259	0.120	0.149			0.223	0.280
Cd, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001			0.001	<0.001
Cl, diss, mg/L	20.2	8.2	17.1	24.0	24.4			23.5	21.5
CN, total, mg/L	<0.0010	<0.0010	<0.0010	0.0010	<0.0010			<0.0010	<0.0010
Co, diss, mg/L	0.005	<0.001	0.003	0.001	0.001			0.001	0.004
Cr, diss, mg/L	<0.001	0.003	<0.001	<0.001	<0.001			0.000	0.001
Cu, diss, mg/L	0.001	0.006	0.001	0.001	0.001			0.002	<0.001
F, diss, mg/L	0.18	0.09	0.13	0.18	0.18			0.19	0.20
Fe, diss, mg/L	0.466	1.744	1.308	0.386	0.886			0.012	0.218
GW Depth (TOC), ft	18.20	10.00	18.20	12.90	13.90	23.70	22.30	11.60	22.50
GW Elv, ft	392.71	400.91	392.71	398.01	397.01	387.21	388.61	399.31	388.41
Mn, diss, mg/L	1.147	0.063	0.972	0.366	0.452			0.507	1.367
Ni, diss, mg/L	0.019	<0.003	0.011	0.006	0.010			0.011	0.016
NO3, diss, mg/L	<0.10	2.70	1.30	<0.10	<0.10			0.30	2.00
Pb, diss, mg/L	0.008	<0.007	<0.007	<0.007	<0.007			0.001	0.007
pH (field), STD	6.56	6.60	7.61	6.90	6.81			6.70	5.48
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			0.0007	0.0270
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009			0.004	0.016
SO4, diss, mg/L	64.7	20.7	34.3	28.5	29.2			20.7	27.5
Spec. Cond. (field), micromho	1160	800	1061	763	843			1042	1355
TDS, mg/L	740	290	700	440	520			630	657
Temp (Celcius), degrees C	16.80	15.40	16.50	16.90	15.00			16.00	16.00
Zn, diss, mg/L	0.005	0.014	0.008	0.002	0.005			<0.000	0.015

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-3D

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	0.004	<0.001	0.004	<0.001	0.001	0.004	0.001		<0.001
As, diss, mg/L	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008		0.013
B, diss, mg/L	7.196	4.469	6.364	0.674	2.737	2.580	7.162		6.837
Ba, diss, mg/L	0.139	0.269	0.178	0.283	0.264	0.273	0.206		0.196
Cd, diss, mg/L	0.001	0.001	<0.001	<0.001	0.001	<0.001	0.001		<0.001
Cl, diss, mg/L	48.1	30.0	39.6	20.5	27.6	22.9	35.1		37.9
CN, total, mg/L	0.0013	<0.0010	<0.0010	0.0017	<0.0010	<0.0010		<0.0010	<0.0020
Co, diss, mg/L	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001		0.003
Cr, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001		0.001
Cu, diss, mg/L	0.001	<0.001	0.001	<0.001	<0.001	0.003	<0.001		<0.001
F, diss, mg/L	0.12	0.10	0.11	0.16	<0.05	0.14	0.12		0.12
Fe, diss, mg/L	2.649	7.245	5.076	13.330	13.880	12.620	6.516		6.279
GW Depth (TOC), ft	18.80	9.80	19.00	13.10	14.50	24.40	22.20	12.30	27.00
GW Elv, ft	392.68	401.68	392.48	398.38	396.98	387.08	389.28	399.18	384.48
Mn, diss, mg/L	0.232	0.562	0.361	0.745	0.679	0.606	0.380		0.412
Ni, diss, mg/L	<0.003	<0.003	<0.003	<0.003	0.003	<0.003	<0.003		<0.003
NO3, diss, mg/L	<0.10	1.40	<0.10	<0.10	0.80	<0.10	<0.10		<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007
pH (field), STD	7.38	6.70	7.13	6.70	6.79	6.70	7.30	6.90	7.15
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0002		0.0260
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009		0.012
SO4, diss, mg/L	171.2	67.4	156.7	69.4	92.3	63.5	183.0		256.6
Spec. Cond. (field), micromho	778	1112	840	1108	1077	1113	938	1045	911
TDS, mg/L	550	740	570	640	700	700	640		606
Temp (Celsius), degrees C	16.90	15.40	16.20	15.80	14.80	16.10	15.60	15.90	16.40
Zn, diss, mg/L	<0.002	0.002	0.002	0.002	0.004	0.005	0.003		0.002

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-5

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	0.003	<0.001	0.003	<0.001	0.001	<0.001	0.001		<0.001
As, diss, mg/L	0.086	<0.008	0.081	0.099	0.074	0.099	0.089		0.120
B, diss, mg/L	1.760	<0.011	1.953	1.945	1.867	2.706	1.282		1.513
Ba, diss, mg/L	0.082	0.019	0.111	0.096	0.095	0.153	0.100		0.072
Cd, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001		<0.001
Cl, diss, mg/L	7.4	0.6	6.3	7.5	5.3	5.3	7.4		4.7
CN, total, mg/L	0.0056	<0.0010	0.0049	0.0058	0.0025	<0.0010		0.0087	0.0074
Co, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001		<0.001
Cr, diss, mg/L	<0.001	0.004	<0.001	0.001	<0.001	0.021	0.002		<0.001
Cu, diss, mg/L	0.001	0.002	0.001	0.002	0.001	0.007	0.001		<0.001
F, diss, mg/L	0.25	0.07	0.26	0.28	0.28	0.29	0.30		0.28
Fe, diss, mg/L	2.166	0.944	1.184	2.314	2.109	4.674	1.316		1.553
GW Depth (TOC), ft	36.00	30.00	34.00	29.80	32.00	37.20	42.00	32.50	38.60
GW Elv, ft	396.93	402.93	398.93	403.13	400.93	395.73	390.93	400.43	394.33
Mn, diss, mg/L	2.086	0.044	2.210	2.530	2.561	3.379	2.397		2.276
Ni, diss, mg/L	0.005	<0.003	0.004	<0.003	<0.003	0.013	<0.003		<0.003
NO3, diss, mg/L	<0.10	1.50	<0.10	11.40	<0.10	1.20	1.00		<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	0.007	<0.007		<0.007
pH (field), STD	7.44	9.00	7.44	7.40	7.43	7.20	7.30	7.20	7.16
Sb, diss, mg/L	0.0013	<0.0010	<0.0010	0.0017	0.0013	0.0022	<0.0002		0.0330
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009		0.022
SO4, diss, mg/L	87.6	3.2	95.4	88.7	172.1	184.8	99.7		50.7
Spec. Cond. (field), micromho	1125	60	1121	1073	1145	1099	1177	1107	943
TDS, mg/L	740	50	800	690	800	760	760		609
Temp (Celsius), degrees C	17.20	12.10	16.20	17.70	15.20	18.20	16.20	16.70	17.60
Zn, diss, mg/L	<0.002	0.010	0.003	0.006	0.003	0.044	0.005		0.006

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-6

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	0.002	<0.001	<0.001	<0.001	0.001	0.005	0.001		<0.001
As, diss, mg/L	0.077	0.052	0.066	0.052	0.047	0.053	0.058		0.102
B, diss, mg/L	4.744	4.663	4.924	4.865	4.825	4.912	4.773		5.084
Ba, diss, mg/L	0.308	0.264	0.291	0.267	0.266	0.275	0.303		0.325
Cd, diss, mg/L	0.002	0.001	0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cl, diss, mg/L	24.8	24.8	23.2	23.1	15.4	23.0	26.0		28.1
CN, total, mg/L	0.0025	<0.0010	<0.0010	0.0012	<0.0010	<0.0010		<0.0010	<0.0020
Co, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cr, diss, mg/L	0.001	<0.001	0.001	0.001	<0.001	<0.001	0.001		<0.001
Cu, diss, mg/L	0.001	<0.001	<0.001	<0.001	0.001	0.003	0.002		<0.001
F, diss, mg/L	0.43	0.43	0.45	0.47	0.51	0.53	0.53		0.48
Fe, diss, mg/L	20.160	14.160	17.540	12.860	13.780	14.040	16.910		16.630
GW Depth (TOC), ft	39.50	32.00	39.00	33.90	35.40	43.30	44.10	34.00	43.70
GW Elv, ft	393.59	401.09	394.09	399.19	397.69	389.79	388.99	399.09	389.39
Mn, diss, mg/L	2.680	2.070	2.446	2.240	2.350	2.378	2.688		3.010
Ni, diss, mg/L	0.009	0.005	0.006	0.004	0.006	<0.003	<0.003		0.003
NO3, diss, mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	3.30	<0.10		<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007
pH (field), STD	7.22	7.30	7.21	7.30	7.29	7.20	7.30	7.00	7.19
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0001	<0.0002		<0.0130
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009
SO4, diss, mg/L	13.0	34.9	18.3	24.7	14.2	22.3	1.7		10.6
Spec. Cond. (field), micromho	838	762	807	735	772	827	901	887	894
TDS, mg/L	520	490	520	440	440	460	210		574
Temp (Celsius), degrees C	16.60	15.30	15.60	16.90	15.30	17.20	15.30	16.20	16.40
Zn, diss, mg/L	0.003	0.002	0.003	0.002	0.004	0.005	0.007		0.008

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-6D

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	0.004	<0.001	0.001	0.004	<0.001	0.005	0.002		<0.001
As, diss, mg/L	0.008	<0.008	<0.008	<0.008	<0.008	0.008	<0.008		0.023
B, diss, mg/L	3.898	4.485	4.555	5.603	5.896	6.377	4.872		4.976
Ba, diss, mg/L	0.297	0.277	0.252	0.194	0.176	0.141	0.253		0.299
Cd, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cl, diss, mg/L	31.0	46.2	38.4	41.7	46.8	49.5	35.4		25.1
CN, total, mg/L	<0.0010	<0.0010	<0.0010	0.0016	0.0015	<0.0010		<0.0010	<0.0020
Co, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cr, diss, mg/L	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001		0.001
Cu, diss, mg/L	0.001	0.001	<0.001	0.001	0.001	<0.001	0.003		<0.001
F, diss, mg/L	0.06	<0.05	<0.05	<0.10	<0.05	0.06	0.05		<0.05
Fe, diss, mg/L	0.639	0.448	0.460	0.210	0.196	0.103	0.343		0.446
GW Depth (TOC), ft	40.00	32.00	39.00	34.20	35.80	23.70	44.20	34.40	44.10
GW Elv, ft	393.55	401.55	394.55	399.35	397.75	409.85	389.35	399.15	389.45
Mn, diss, mg/L	0.221	0.166	0.169	0.094	0.086	0.060	0.140		0.190
Ni, diss, mg/L	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003		<0.003
NO3, diss, mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		<0.10
Pb, diss, mg/L	0.008	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007
pH (field), STD	7.96	8.10	8.02	8.20	8.16	8.10	8.40	8.10	8.07
Sb, diss, mg/L	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0001	<0.0002		0.0270
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009
SO4, diss, mg/L	299.0	215.7	212.2	165.3	175.1	162.3	283.9		442.9
Spec. Cond. (field), micromho	1128	1036	957	725	710	598	987	800	1039
TDS, mg/L	850	740	680	470	480	340	620		793
Temp (Celsius), degrees C	16.90	15.30	15.60	17.60	15.60	20.30	15.30	16.10	16.80
Zn, diss, mg/L	<0.002	<0.002	<0.002	<0.002	0.003	0.003	0.003		0.005

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-8

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	0.001	<0.001	<0.001	0.001	0.001	0.004	0.001		0.001
As, diss, mg/L	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008		0.025
B, diss, mg/L	0.602	0.648	0.837	0.834	0.938	1.044	0.818		1.026
Ba, diss, mg/L	0.140	0.117	0.112	0.107	0.117	0.111	0.100		0.115
Cd, diss, mg/L	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cl, diss, mg/L	102.5	94.9	58.5	90.0	79.0	35.4	48.2		43.3
CN, total, mg/L	<0.0010	<0.0010	<0.0010	0.0016	<0.0010	<0.0010		<0.0010	<0.0020
Co, diss, mg/L	0.001	0.002	0.003	0.002	0.003	0.003	0.001		0.004
Cr, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001		<0.001
Cu, diss, mg/L	0.001	0.001	0.001	0.001	0.001	0.001	<0.001		<0.001
F, diss, mg/L	0.22	0.33	0.34	0.28	0.27	0.26	0.32		0.31
Fe, diss, mg/L		0.021	0.035	0.012	0.013	0.041	0.099		0.174
GW Depth (TOC), ft	18.30	14.50		15.30	17.30	23.10	26.50	16.80	24.00
GW Elv, ft	397.97	401.77		400.97	398.97	393.17	389.77	399.47	392.27
Mn, diss, mg/L	0.790	0.679	0.703	0.670	0.804	0.850	0.830		0.880
Ni, diss, mg/L		0.009	0.011	0.010	0.014	0.013	0.010		0.006
NO3, diss, mg/L	<0.10	1.60	1.40	1.20	0.90	3.80	1.50		<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007
pH (field), STD	6.89	6.80	6.92	6.80	6.71	6.70	6.90	6.60	6.68
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	0.0011	0.0023		0.0340
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009
SO4, diss, mg/L	136.7	105.4	117.1	120.1	135.4	161.6	107.0		249.5
Spec. Cond. (field), micromho	1287	1306	1190	1243	1279	1246	1183	1269	1304
TDS, mg/L	980	850	950	870	860	820	640		910
Temp (Celsius), degrees C	16.90	15.50	17.10	16.50	13.30	16.80	15.50	16.10	16.30
Zn, diss, mg/L	0.002	0.002	0.007	0.003	0.004	0.008	0.004		0.007

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-9

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	0.001	<0.001	<0.001	<0.001	0.001	0.004	<0.001		<0.001
As, diss, mg/L	<0.008	<0.008	<0.008	0.012	<0.008	<0.008	<0.008		0.025
B, diss, mg/L	0.611	0.629	0.722	0.743	0.747	0.735	0.637		0.769
Ba, diss, mg/L	0.110	0.155	0.157	0.146	0.154	0.153	0.177		0.184
Cd, diss, mg/L	0.001	0.001	0.001	<0.001	0.001	<0.001	<0.001		<0.001
Cl, diss, mg/L	106.2	104.0	77.8	28.5	30.4	47.8	163.0		170.9
CN, total, mg/L	<0.0010	<0.0010	<0.0010	0.0017	<0.0010	<0.0010		<0.0010	<0.0020
Co, diss, mg/L	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.002
Cr, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001		<0.001
Cu, diss, mg/L	0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001		<0.001
F, diss, mg/L	0.33	0.24	0.22	0.22	0.22	0.24	0.20		0.25
Fe, diss, mg/L		16.780	17.760	17.500	18.540	18.520	19.790		22.020
GW Depth (TOC), ft	21.10	11.60		12.80	14.60	20.40	23.50	14.00	21.40
GW Elv, ft	392.30	401.80		400.60	398.80	393.00	389.90	399.40	392.00
Mn, diss, mg/L	0.750	0.776	0.816	0.786	0.811	0.815	0.941		0.958
Ni, diss, mg/L		<0.003	0.004	<0.003	0.007	<0.003	<0.003		0.006
NO3, diss, mg/L	3.00	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007
pH (field), STD	6.82	6.90	6.98	6.80	6.76	6.80	6.80	6.70	6.86
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	0.0011	0.0011		0.0180
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009		0.018
SO4, diss, mg/L	108.9	154.9	154.2	130.2	128.8	100.2	143.9		194.9
Spec. Cond. (field), micromho	1276	1331	1291	1169	1227	1318	1667	1558	1640
TDS, mg/L	950	890	1100	810	820	930	1010		1087
Temp (Celsius), degrees C	16.60	15.80	16.80	17.00	14.70	16.70	15.60	16.10	16.40
Zn, diss, mg/L	<0.002	0.002	0.005	0.005	0.004	0.005	0.005		0.008

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 12/13/2021

Well: MW-10

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	12/13/2021
Ag, diss, mg/L	0.001	<0.001	<0.001	0.002	<0.001	0.001	0.001		<0.001	
As, diss, mg/L	0.030	0.014	0.030	0.052	0.026	0.023	0.010		0.067	
B, diss, mg/L	19.550	19.620	19.340	18.240	15.050	17.060	12.420		37.190	13.000
Ba, diss, mg/L	0.044	0.060	0.060	0.046	0.046	0.052	0.039		0.071	
Cd, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	
Cl, diss, mg/L	20.9	29.4	21.6	18.6	14.8	15.0	33.8		21.2	
CN, total, mg/L	0.0012	<0.0010	<0.0010	0.0022	<0.0010	<0.0010		<0.0010	<0.0020	
Co, diss, mg/L	0.002	<0.001	0.001	0.001	0.001	<0.001	<0.001		<0.001	
Cr, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001		<0.001	
Cu, diss, mg/L	0.001	0.001	0.001	0.001	<0.001	0.001	0.002		<0.001	
F, diss, mg/L	0.18	0.15	0.17	0.23	0.28	0.27	0.20		0.20	
Fe, diss, mg/L	0.406	0.221	0.539	2.077	1.824	1.963	0.104		2.474	
GW Depth (TOC), ft	30.00	21.40	29.00	24.00	26.20	32.40	35.20	23.10	33.60	38.70
GW Elv, ft	394.99	403.59	395.99	400.99	398.79	392.59	389.79	401.89	391.39	386.29
Mn, diss, mg/L	1.026	1.627	1.449	1.679	1.576	1.801	0.041		1.013	
Ni, diss, mg/L	0.004	0.003	<0.003	<0.003	0.004	<0.003	<0.003		0.003	
NO3, diss, mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	1.20	4.30		<0.10	
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	
pH (field), STD	7.52	7.30	7.39	7.40	7.34	7.30	7.60	7.20	7.22	7.42
Sb, diss, mg/L	0.0039	0.0014	0.0016	0.0022	<0.0010	0.0016	0.0006		0.0320	
Se, diss, mg/L	<0.009	<0.009	0.006	<0.009	<0.009	<0.009	<0.009		0.009	
SO4, diss, mg/L	977.3	1021.7	954.0	662.9	560.5	634.5	457.1		713.9	
Spec. Cond. (field), micromho	1784	1986	1947	1500	1319	1407	1487	1478	1517	1489
TDS, mg/L	1780	1750	1860	1280	1070	1240	1310		1252	
Temp (Celsius), degrees C	17.00	15.80	16.00	17.10	14.10	17.60	15.50	16.50	17.40	15.10
Zn, diss, mg/L	<0.002	0.002	<0.002	0.002	0.003	0.012	0.005		0.007	

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-11

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	<0.001	<0.001	0.002	0.004	0.001	0.004	<0.001		<0.001
As, diss, mg/L	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008		0.030
B, diss, mg/L	0.509	0.048	0.487	0.198	0.247	0.443	0.860		0.712
Ba, diss, mg/L	0.161	0.137	0.183	0.187	0.219	0.175	0.246		0.214
Cd, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cl, diss, mg/L	18.2	20.0	14.4	16.4	14.4	14.2	16.0		18.4
CN, total, mg/L	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010		<0.0010	<0.0020
Co, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cr, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002		<0.001
Cu, diss, mg/L	0.001	0.001	0.001	0.001	0.001	0.001	<0.001		<0.001
F, diss, mg/L	0.25	0.37	0.28	0.28	0.26	0.19	0.21		0.16
Fe, diss, mg/L	0.005	0.011	0.026	0.013	0.009	0.055	1.368		0.103
GW Depth (TOC), ft	18.40	9.40	17.50	12.60	14.90	20.70	24.90	12.50	21.80
GW Elv, ft	394.34	403.34	395.24	400.14	397.84	392.04	387.84	400.24	390.94
Mn, diss, mg/L	0.001	0.001	0.001	0.002	0.004	0.026	0.192		0.006
Ni, diss, mg/L	0.006	0.003	0.003	<0.003	0.005	0.005	0.009		<0.003
NO3, diss, mg/L	4.50	2.20	6.50	9.20	2.00	1.30	0.90		7.80
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007
pH (field), STD	6.79	6.80	6.74	6.80	6.75	6.60	7.00	7.00	6.79
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0004		0.0240
Se, diss, mg/L	0.010	<0.009	0.009	<0.009	<0.009	<0.009	<0.009		<0.009
SO4, diss, mg/L	66.5	41.1	45.4	42.0	85.3	75.3	52.4		68.4
Spec. Cond. (field), micromho	950	731	890	927	1099	1091	1051	1528	1052
TDS, mg/L	690	450	680	640	720	760	1120		736
Temp (Celsius), degrees C	16.40	17.10	16.10	16.20	14.30	16.50	15.80	15.70	15.80
Zn, diss, mg/L	<0.002	0.003	0.002	<0.002	0.007	0.004	0.010		0.007

Venice
Groundwater Monitoring Results 2018-2021 Monitoring Period

Date Range: 08/01/2018 to 11/02/2021

Well: MW-11D

	8/27/2018	11/5/2018	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021
Ag, diss, mg/L	0.001	<0.001	0.002	<0.001	0.001	<0.001	<0.001		<0.001
As, diss, mg/L	<0.008	<0.008	0.009	0.012	<0.008	0.011	<0.008		0.028
B, diss, mg/L	5.678	6.814	4.153	0.346	2.125	5.168	13.880		7.756
Ba, diss, mg/L	0.175	0.177	0.161	0.068	0.115	0.161	0.226		0.219
Cd, diss, mg/L	0.002	0.001	0.001	<0.001	<0.001	0.003	<0.001		0.001
Cl, diss, mg/L	49.8	56.9	56.7	31.9	29.3	30.0	30.3		43.9
CN, total, mg/L	0.0102	0.0067	0.0041	0.0026	0.0011	0.0020		0.0119	0.0152
Co, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cr, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001		0.001
Cu, diss, mg/L	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
F, diss, mg/L	0.21	0.20	0.20	0.26	0.25	0.26	0.21		0.21
Fe, diss, mg/L	18.690	17.610	17.230	5.673	8.890	12.500	20.370		20.760
GW Depth (TOC), ft	19.60	11.00	19.50	12.60	15.30	24.90	22.30	13.70	26.30
GW Elv, ft	392.90	401.50	393.00	399.90	397.20	387.60	390.20	398.80	386.20
Mn, diss, mg/L	2.827	2.657	2.532	0.908	1.380	1.930	2.900		3.213
Ni, diss, mg/L	0.003	0.004	0.003	<0.003	<0.003	<0.003	0.003		<0.003
NO3, diss, mg/L	<0.10	1.20	<0.10	<0.10	<0.10	1.00	<0.10		2.70
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007
pH (field), STD	6.98	6.90	6.96	7.10	7.17	7.00	7.20	7.00	7.18
Sb, diss, mg/L	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0002		0.0360
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009
SO4, diss, mg/L	291.8	272.7	184.6	26.0	63.2	57.6	507.6		439.7
Spec. Cond. (field), micromho	1479	1456	1364	522	737	1021	1691	718	1574
TDS, mg/L	1230	1090	960	280	440	770	1710		1256
Temp (Celsius), degrees C	16.70	15.00	15.70	16.20	15.20	16.30	15.40	12.70	15.80
Zn, diss, mg/L	0.002	<0.002	0.007	<0.002	0.003	0.009	0.006		0.009

APPENDIX B
2021 GROUNDWATER MONITORING FIELD DATA WORKSHEETS

Venice Groundwater Monitoring Field Data Worksheet

(Page 1 of 3)

Sample Date: 03 / 01 / 2021

River Level: 11 feet

	Well #2	Well #2D	Well #3	Well #3D	Well #5	Well #6
Well name sign, lock, and inner cap present (note any deficiency)						
Casing and concrete pad in good condition (note any deficiency)						
Internal piping unobstructed and in good condition (note any deficiency)						
Water Level (± 0.01 feet, from top of casing mark)	<u>23.4</u>	<u>22.9</u>	<u>22.3</u>	<u>22.2</u>	<u>42.0</u>	<u>44.1</u>
Total Well Depth (± 0.01 feet)	<u>28.7</u>	<u>47.5</u>	<u>22.3</u>	<u>47.0</u>	<u>49.0</u>	<u>51.0</u>
Time purging began (24-hour clock)	<u>15:00</u>	<u>15:30</u>	<u> : </u>	<u>14:20</u>	<u>12:30</u>	<u>13:15</u>
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	<u>1047</u>	<u>740</u>	<u>no</u>	<u>939</u>	<u>1112</u>	<u>945</u>
Temperature $^{\circ}\text{C}$	<u>16.3</u>	<u>15.3</u>	<u>sample</u>	<u>15.8</u>	<u>17.1</u>	<u>15.4</u>
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Temperature $^{\circ}\text{C}$	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	<u>1093</u>	<u>743</u>	<u>no</u>	<u>938</u>	<u>1177</u>	<u>901</u>
Time to reach final conductivity (min)	<u>15</u>	<u>15</u>	<u>sample</u>	<u>15</u>	<u>15</u>	<u>15</u>
Temperature $^{\circ}\text{C}$	<u>15.9</u>	<u>15.3</u>	<u> </u>	<u>15.6</u>	<u>16.2</u>	<u>15.3</u>
pH (on site) (± 0.01)	<u>6.99</u>	<u>7.37</u>	<u> </u>	<u>7.27</u>	<u>7.30</u>	<u>7.34</u>

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

Venice Groundwater Monitoring Field Data Worksheet

(Page 2 of 3)

	Well #6D	Well #8	Well #9	Well #10	Well #11	Well #11D
Well name sign, lock, and inner cap present (note any deficiency)						
Casing and concrete pad in good condition (note any deficiency)						
Internal piping unobstructed and in good condition (note any deficiency)						
Water Level (±0.01 feet, from top of casing mark)	44.2	26.5	23.5	35.2	24.9	22.3
Total Well Depth (±0.01 feet)	68.4	42.8	43.4	43.8	28.6	48.7
Time purging began (24-hour clock)	13:20	10:45	10:20	16:40	16:00	16:15
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	988	1211	1648	1497	1069	1687
Temperature $^{\circ}\text{C}$	15.3	15.1	15.8	15.1	15.9	15.3
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)						
Temperature $^{\circ}\text{C}$						
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	987	1183	1667	1487	1051	1691
Time to reach final conductivity (min)	15	15	15	15	15	15
Temperature $^{\circ}\text{C}$	15.3	15.5	15.6	15.5	15.8	15.4
pH (on site) (±0.01)	8.37	6.94	6.84	7.59	6.96	7.21

Sample collectors: SMS KDD

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

Venice Groundwater Monitoring Field Data Worksheet
(Page 3 of 3)

NOTES:

Well # 3 appears to be sinking
or filling in.

**Attach completed form to the Request for Chemical Analysis
for inclusion in the final report.**

Venice Groundwater Monitoring Field Data Worksheet

(Page 1 of 3)

Sample Date: 04/19/21

River Level: _____ feet

	Well #2	Well #2D	Well #3	Well #3D	Well #5	Well #6
Well name sign, lock, and inner cap present (note any deficiency)						
Casing and concrete pad in good condition (note any deficiency)						
Internal piping unobstructed and in good condition (note any deficiency)						
Water Level (±0.01 feet, from top of casing mark)	<u>12.7</u>	<u>13.0</u>	<u>11.6</u>	<u>12.3</u>	<u>32.5</u>	<u>34.0</u>
Total Well Depth (±0.01 feet)	<u>29.0</u>	<u>47.8</u>	<u>22.4</u>	<u>47.0</u>	<u>49.2</u>	<u>51.2</u>
Time purging began (24-hour clock)	<u>15:20</u>	<u>15:40</u>	<u>14:35</u>	<u>14:50</u>	<u>13:15</u>	<u>13:45</u>
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	<u>1119</u>	<u>802</u>	<u>1038</u>	<u>1034</u>	<u>1062</u>	<u>883</u>
Temperature $^{\circ}\text{C}$	<u>16.0</u>	<u>16.0</u>	<u>16.3</u>	<u>15.9</u>	<u>17.3</u>	<u>16.3</u>
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	<u>1136</u>	<u>836</u>	<u>1042</u>	<u>1045</u>	<u>1107</u>	<u>887</u>
Time to reach final conductivity (min)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	<u>15.7</u>	<u>15.7</u>	<u>16.0</u>	<u>15.9</u>	<u>16.7</u>	<u>16.2</u>
pH (on site) (±0.01)	<u>6.85</u>	<u>6.98</u>	<u>6.69</u>	<u>6.89</u>	<u>7.23</u>	<u>7.04</u>

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

Venice Groundwater Monitoring Field Data Worksheet

(Page 2 of 3)

	Well #6D	Well #8	Well #9	Well #10	Well #11	Well #11D
Well name sign, lock, and inner cap present (note any deficiency)						
Casing and concrete pad in good condition (note any deficiency)						
Internal piping unobstructed and in good condition (note any deficiency)						
Water Level (±0.01 feet, from top of casing mark)	34.4	16.8	14.0	23.1	12.5	13.7
Total Well Depth (±0.01 feet)	68.3	42.7	41.4	43.8	29.8	48.7
Time purging began (24-hour clock)	14:05	11:45	12:20	17:30	16:20	16:45
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	795	1262	1519	1458	1513	711
Temperature $^{\circ}\text{C}$	16.1	16.5	16.5	16.6	15.7	12.7
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)						
Temperature $^{\circ}\text{C}$						
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	800	1269	1558	1478	1528	718
Time to reach final conductivity (min)						
Temperature $^{\circ}\text{C}$	16.1	16.1	16.1	16.5	15.7	12.7
pH (on site) (±0.01)	8.09	6.99	6.69	7.23	6.96	6.96

Sample collectors: _____

Note any items requiring maintenance at any well, and report
to supervisor after return to Lab Services.

NOTES:

Rev. 06-15-12 CJT

Venice Groundwater Monitoring Field Data Worksheet

(Page 1 of 3)

Sample Date: 09 / 14 / 2021

River Level: 2.0 feet

	Well #2	Well #2D	Well #3	Well #3D	Well #5	Well #6
Well name sign, lock, and inner cap present (note any deficiency)	✓	✓	✓	✓	✓	✓
Casing and concrete pad in good condition (note any deficiency)	✓	✓	✓	✓	✓	✓
Internal piping unobstructed and in good condition (note any deficiency)	✓	✓	✓	✓	✓	✓
Water Level (±0.01 feet, from top of casing mark)	24.4	24.8	24.0	27.0	38.6	43.7
Total Well Depth (±0.01 feet)	29.0	47.5	24.0	49.0	49.0	51.2
Time purging began (24-hour clock)	13:15	13:45	—:—	14:20	15:45	15:15
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	935	1144	—	901	922	893
Temperature $^{\circ}\text{C}$	16.7	16.1	—	16.8	18.6	16.7
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)	—	—	—	—	—	—
Temperature $^{\circ}\text{C}$	—	—	—	—	—	—
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	958	1182	—	911	943	894
Time to reach final conductivity (min)	—	—	—	—	—	—
Temperature $^{\circ}\text{C}$	17.1	16.0	—	16.4	17.6	16.4
pH (on site) (±0.01)	6.93	7.23	—	7.15	7.16	7.19

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

Venice Groundwater Monitoring Field Data Worksheet

(Page 2 of 3)

	Well #6D	Well #8	Well #9	Well #10	Well #11	Well #11D
Well name sign, lock, and inner cap present (note any deficiency)	✓	✓	✓	✓	✓	✓
Casing and concrete pad in good condition (note any deficiency)	✓	✓	✓	✓	✓	✓
Internal piping unobstructed and in good condition (note any deficiency)	✓	✓	✓	✓	✓	✓
Water Level (±0.01 feet, from top of casing mark)	44.1	24.0	21.4	33.6	21.8	26.3
Total Well Depth (±0.01 feet)	68.6	42.6	41.3	44.0	28.9	49.0
Time purging began (24-hour clock)	15:20	10:45	11:15	16:00	12:45	12:55
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	1005	1298	1629	1507	1037	1602
Temperature $^{\circ}\text{C}$	18.2	16.8	17.1	17.4	16.1	15.7
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)						
Temperature $^{\circ}\text{C}$						
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	1039	1304	1630	1517	1052	1574
Time to reach final conductivity (min)						
Temperature $^{\circ}\text{C}$	16.8	16.3	16.4	17.4	15.8	15.8
pH (on site) (±0.01)	8.07	6.68	6.86	7.22	6.79	7.18

Sample collectors:

SMS / EH

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

NOTES:

Rev. 06-15-12 CJT

Venice Groundwater Monitoring Field Data Worksheet

(Page 1 of 3)

Sample Date: 11/02/21

River Level: 12.0 feet

	Well #2	Well #2D	Well #3	Well #3D	Well #5	Well #6
Well name sign, lock, and inner cap present (note any deficiency)			OK			
Casing and concrete pad in good condition (note any deficiency)			OK			
Internal piping unobstructed and in good condition (note any deficiency)			OK			
Water Level (±0.01 feet, from top of casing mark)			22.5			
Total Well Depth (±0.01 feet)			24.3			
Time purging began (24-hour clock)	___:___	___:___	09:45	___:___	___:___	___:___
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	_____	_____	1355	_____	_____	_____
Temperature °C	_____	_____	16.0°C	_____	_____	_____
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)	_____	_____	_____	_____	_____	_____
Temperature °C	_____	_____	_____	_____	_____	_____
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	_____	_____	_____	_____	_____	_____
Time to reach final conductivity (min)	_____	_____	_____	_____	_____	_____
Temperature °C	_____	_____	_____	_____	_____	_____
pH (on site) (±0.01)			5.48			

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

Venice Groundwater Monitoring Field Data Worksheet

(Page 2 of 3)

	Well #6D	Well #8	Well #9	Well #10	Well #11	Well #11D
Well name sign, lock, and inner cap present (note any deficiency)						
Casing and concrete pad in good condition (note any deficiency)						
Internal piping unobstructed and in good condition (note any deficiency)						
Water Level (±0.01 feet, from top of casing mark)						
Total Well Depth (±0.01 feet)						
Time purging began (24-hour clock)	____:____	____:____	____:____	____:____	____:____	____:____
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	_____	_____	_____	_____	_____	_____
Time to reach final conductivity (min)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
pH (on site) (±0.01)	_____	_____	_____	_____	_____	_____

Sample collectors: _____

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

Venice Groundwater Monitoring Field Data Worksheet
(Page 3 of 3)

NOTES: We filtered & took the samples immediately due to the low water level, removed filter & were only able to get a final pH & conductivity due to the well running dry. SMS

Attach completed form to the Request for Chemical Analysis
for inclusion in the final report.

Venice Groundwater Monitoring Field Data Worksheet

(Page 1 of 3)

Sample Date: 12 / 13 / 2021

River Level: -0.2 feet

	Well #2	Well #2D	Well #3	Well #3D	Well #5	Well #6
Well name sign, lock, and inner cap present (note any deficiency)						
Casing and concrete pad in good condition (note any deficiency)						
Internal piping unobstructed and in good condition (note any deficiency)						
Water Level (±0.01 feet, from top of casing mark)						
Total Well Depth (±0.01 feet)						
Time purging began (24-hour clock)	____:____	____:____	____:____	____:____	____:____	____:____
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	_____	_____	_____	_____	_____	_____
Time to reach final conductivity (min)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
pH (on site) (±0.01)	_____	_____	_____	_____	_____	_____

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

Venice Groundwater Monitoring Field Data Worksheet

(Page 2 of 3)

	Well #6D	Well #8	Well #9	Well #10	Well #11	Well #11D
Well name sign, lock, and inner cap present (note any deficiency)				OK		
Casing and concrete pad in good condition (note any deficiency)				OK		
Internal piping unobstructed and in good condition (note any deficiency)				OK		
Water Level (±0.01 feet, from top of casing mark)				38.7		
Total Well Depth (±0.01 feet)				43.8		
Time purging began (24-hour clock)	___:___	___:___	___:___	08:45	___:___	___:___
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	_____	_____	_____	1500	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	14.2	_____	_____
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	_____	_____	_____	1489	_____	_____
Time to reach final conductivity (min)	_____	_____	_____	5 min	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	15.1	_____	_____
pH (on site) (±0.01)	_____	_____	_____	7.42	_____	_____

Sample collectors: SM S

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

Venice Groundwater Monitoring Field Data Worksheet
(Page 3 of 3)

NOTES: Only Sampled well #10 for metals (Baron)

Attach completed form to the Request for Chemical Analysis
for inclusion in the final report.

APPENDIX C
2021 FINAL COVER SITE INSPECTION REPORTS

Ameren Missouri
Fly Ash Pond Final Cover Site Inspection

Facility Name: Venice Energy Center Inspection Date: 3/4/2021

Facility Address: 701 Main Street, Venice, IL 62090

Inspection Conditions: 50°F, sunny, windy

SECURITY & ACCESS	YES	NO	N/A	Comments
1. Is access controlled?	X			
2. Are "No Trespassing" signs posted?			X	
3. Is there evidence of trespassing?		X		
COVER & VEGETATION				
4. Is cover in acceptable condition?	X			
5. Is vegetation in acceptable condition?	X			
6. Is there any woody species of plant growing (i.e., trees and shrubs greater than 18")?		X		
7. Is there any area with more than 100 square feet of failed or eroded vegetation?		X		
8. Is there any erosion or sloughing of embankment slopes?		X		
DRAINAGE				
9. Are appropriate temporary runoff controls in place?			X	
10. Are there any rills, gullies, or crevices that are 6" or deeper?		X		
11. Are drainage channels in acceptable condition?	X			
12. Are there any low areas or depressions that could facilitate the ponding of water for extended periods of time?		X		
GEO-MEMBRANE				
13. Is there any exposed flexible membrane?		X		
14. If so is the flexible membrane damaged?			X	
PUMP STATION				
15. Are the pump station inlets free of debris?	X			
16. Are there any structural deficiencies at the pump station?		X		

N/A = Not Applicable

Item # Additional Comment(s)

Item # Corrective Actions Taken Since Last Report

Inspector Signature: Julianne Epplin Date: 3/4/2021



North Pump Station, facing north.



North Pump Station, facing south.



South Pump Station, facing north.



South Pump Station, facing south.

Ameren Missouri
Fly Ash Pond Final Cover Site Inspection

Facility Name: Venice Energy Center Inspection Date: 5/12/2021

Facility Address: 701 Main Street, Venice, IL 62090

Inspection Conditions: 65°F, sunny

SECURITY & ACCESS	YES	NO	N/A	Comments
1. Is access controlled?	X			
2. Are "No Trespassing" signs posted?			X	
3. Is there evidence of trespassing?		X		
COVER & VEGETATION				
4. Is cover in acceptable condition?	X			
5. Is vegetation in acceptable condition?	X			
6. Is there any woody species of plant growing (i.e., trees and shrubs greater than 18")?		X		
7. Is there any area with more than 100 square feet of failed or eroded vegetation?		X		
8. Is there any erosion or sloughing of embankment slopes?		X		
DRAINAGE				
9. Are appropriate temporary runoff controls in place?			X	
10. Are there any rills, gullies, or crevices that are 6" or deeper?		X		
11. Are drainage channels in acceptable condition?	X			
12. Are there any low areas or depressions that could facilitate the ponding of water for extended periods of time?		X		
GEO-MEMBRANE				
13. Is there any exposed flexible membrane?		X		
14. If so is the flexible membrane damaged?			X	
PUMP STATION				
15. Are the pump station inlets free of debris?	X			
16. Are there any structural deficiencies at the pump station?		X		

N/A = Not Applicable

Item # Additional Comment(s)

Item # Corrective Actions Taken Since Last Report

Inspector Signature: Julianne Epplin Date: 5/12/2021



North Pump Station, facing north.



North Pump Station, facing south.



South Pump Station, facing north.



South Pump Station, facing south.

Ameren Missouri
Fly Ash Pond Final Cover Site Inspection

Facility Name: Venice Energy Center Inspection Date: 8/27/2021

Facility Address: 701 Main Street, Venice, IL 62090

Inspection Conditions: 94°F, sunny and hot

SECURITY & ACCESS	YES	NO	N/A	Comments
1. Is access controlled?	X			
2. Are "No Trespassing" signs posted?			X	
3. Is there evidence of trespassing?		X		
COVER & VEGETATION				
4. Is cover in acceptable condition?	X			
5. Is vegetation in acceptable condition?	X			
6. Is there any woody species of plant growing (i.e., trees and shrubs greater than 18")?		X		
7. Is there any area with more than 100 square feet of failed or eroded vegetation?		X		
8. Is there any erosion or sloughing of embankment slopes?		X		
DRAINAGE				
9. Are appropriate temporary runoff controls in place?			X	
10. Are there any rills, gullies, or crevices that are 6" or deeper?		X		
11. Are drainage channels in acceptable condition?	X			
12. Are there any low areas or depressions that could facilitate the ponding of water for extended periods of time?		X		
GEO-MEMBRANE				
13. Is there any exposed flexible membrane?		X		
14. If so is the flexible membrane damaged?			X	
PUMP STATION				
15. Are the pump station inlets free of debris?	X			
16. Are there any structural deficiencies at the pump station?		X		

N/A = Not Applicable

Item # Additional Comment(s)

Item # Corrective Actions Taken Since Last Report

Inspector Signature: Julianne Epplin Date: 8/31/2021



North Pump Station, facing north.



North Pump Station, facing south.



South Pump Station, facing north.



South Pump Station, facing south.

Ameren Missouri
Fly Ash Pond Final Cover Site Inspection

Facility Name: Venice Energy Center Inspection Date: 10/5/2021

Facility Address: 701 Main Street, Venice, IL 62090

Inspection Conditions: 66°F, partly cloudy

SECURITY & ACCESS	YES	NO	N/A	Comments
1. Is access controlled?	X			
2. Are "No Trespassing" signs posted?			X	
3. Is there evidence of trespassing?		X		
COVER & VEGETATION				
4. Is cover in acceptable condition?	X			
5. Is vegetation in acceptable condition?	X			
6. Is there any woody species of plant growing (i.e., trees and shrubs greater than 18")?		X		
7. Is there any area with more than 100 square feet of failed or eroded vegetation?		X		
8. Is there any erosion or sloughing of embankment slopes?		X		
DRAINAGE				
9. Are appropriate temporary runoff controls in place?			X	
10. Are there any rills, gullies, or crevices that are 6" or deeper?		X		
11. Are drainage channels in acceptable condition?	X			
12. Are there any low areas or depressions that could facilitate the ponding of water for extended periods of time?		X		
GEO-MEMBRANE				
13. Is there any exposed flexible membrane?		X		
14. If so is the flexible membrane damaged?			X	
PUMP STATION				
15. Are the pump station inlets free of debris?	X			
16. Are there any structural deficiencies at the pump station?		X		

N/A = Not Applicable

Item # Additional Comment(s)

Item # Corrective Actions Taken Since Last Report

Inspector Signature: *Julianne Epplin* Date: 10/5/2021



North Pump Station, facing north.



North Pump Station, facing south.



South Pump Station, facing north.



South Pump Station, facing south.

APPENDIX D
STATISTICAL OUTPUT (ON CD)

APPENDIX D1

OUTLIER ANALYSIS RESULTS

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Antimony, dissolved, mg/L

Location: MW-10

Mean of all data: 0.00248

Standard Deviation of all data: 0.00536

Largest Observation Concentration of all data: $X_n = 0.0320$

Test Statistic, high extreme of all data: $T_n = 5.50$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/14/2021	0.0320	False		1

Antimony, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00153

Standard Deviation of all data: 0.00414

Largest Observation Concentration of all data: $X_n = 0.0240$

Test Statistic, high extreme of all data: $T_n = 5.43$

T Critical of all data: $T_{cr} = 2.77$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/14/2021	0.0240	False		1

Antimony, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00252

Standard Deviation of all data: 0.00586

Largest Observation Concentration of all data: $X_n = 0.0360$

Test Statistic, high extreme of all data: $T_n = 5.71$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/14/2021	0.0360	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Antimony, dissolved, mg/L

Location: MW-2

Mean of all data: 0.00176

Standard Deviation of all data: 0.00452

Largest Observation Concentration of all data: $X_n = 0.0270$

Test Statistic, high extreme of all data: $T_n = 5.59$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.0270	False		1

Antimony, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00179

Standard Deviation of all data: 0.00444

Largest Observation Concentration of all data: $X_n = 0.0270$

Test Statistic, high extreme of all data: $T_n = 5.68$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.0270	False		1

Antimony, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00176

Standard Deviation of all data: 0.00497

Largest Observation Concentration of all data: $X_n = 0.0270$

Test Statistic, high extreme of all data: $T_n = 5.08$

T Critical of all data: $T_{cr} = 2.71$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
11/02/2021	0.0270	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Antimony, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.00151

Standard Deviation of all data: 0.00430

Largest Observation Concentration of all data: $X_n = 0.0260$

Test Statistic, high extreme of all data: $T_n = 5.69$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.0260	False		1

Antimony, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00218

Standard Deviation of all data: 0.00510

Largest Observation Concentration of all data: $X_n = 0.0330$

Test Statistic, high extreme of all data: $T_n = 6.04$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.0330	False		1

Antimony, dissolved, mg/L

Location: MW-6

Mean of all data: 0.000909

Standard Deviation of all data: 0.00124

Largest Observation Concentration of all data: $X_n = 0.00650$

Test Statistic, high extreme of all data: $T_n = 4.49$

T Critical of all data: $T_{cr} = 2.86$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	<0.00650	True		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Antimony, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.00173

Standard Deviation of all data: 0.00444

Largest Observation Concentration of all data: $X_n = 0.0270$

Test Statistic, high extreme of all data: $T_n = 5.69$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.0270	False		1

Antimony, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00207

Standard Deviation of all data: 0.00530

Largest Observation Concentration of all data: $X_n = 0.0340$

Test Statistic, high extreme of all data: $T_n = 6.03$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.0340	False		1

Antimony, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00158

Standard Deviation of all data: 0.00283

Largest Observation Concentration of all data: $X_n = 0.0180$

Test Statistic, high extreme of all data: $T_n = 5.80$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.0180	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Arsenic, dissolved, mg/L

Location: MW-10

Mean of all data: 0.0191

Standard Deviation of all data: 0.0142

Largest Observation Concentration of all data: $X_n = 0.0670$

Test Statistic, high extreme of all data: $T_n = 3.38$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.0670	False		1

Arsenic, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00605

Standard Deviation of all data: 0.00670

Largest Observation Concentration of all data: $X_n = 0.0300$

Test Statistic, high extreme of all data: $T_n = 3.58$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.0300	False		1

Arsenic, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.0121

Standard Deviation of all data: 0.00836

Largest Observation Concentration of all data: $X_n = 0.0340$

Test Statistic, high extreme of all data: $T_n = 2.61$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
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No Outliers

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Arsenic, dissolved, mg/L

Location: MW-2

Mean of all data: 0.00784

Standard Deviation of all data: 0.00973

Largest Observation Concentration of all data: $X_n = 0.0450$

Test Statistic, high extreme of all data: $T_n = 3.82$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/01/2018	0.0450	False		1

Arsenic, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.0201

Standard Deviation of all data: 0.00758

Largest Observation Concentration of all data: $X_n = 0.0430$

Test Statistic, high extreme of all data: $T_n = 3.02$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/23/2011	0.0430	False		1

Arsenic, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00595

Standard Deviation of all data: 0.00804

Largest Observation Concentration of all data: $X_n = 0.0430$

Test Statistic, high extreme of all data: $T_n = 4.61$

T Critical of all data: $T_{cr} = 2.99$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/17/2010	0.0430	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Arsenic, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.00579

Standard Deviation of all data: 0.00687

Largest Observation Concentration of all data: $X_n = 0.0420$

Test Statistic, high extreme of all data: $T_n = 5.27$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/23/2011	0.0420	False		1

Arsenic, dissolved, mg/L

Location: MW-5

Mean of all data: 0.0746

Standard Deviation of all data: 0.0742

Largest Observation Concentration of all data: $X_n = 0.690$

Test Statistic, high extreme of all data: $T_n = 8.29$

T Critical of all data: $T_{cr} = 3.12$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/08/2010	0.690	False		1

Arsenic, dissolved, mg/L

Location: MW-6

Mean of all data: 0.0744

Standard Deviation of all data: 0.0182

Largest Observation Concentration of all data: $X_n = 0.123$

Test Statistic, high extreme of all data: $T_n = 2.68$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
06/20/2002	0.0150	False	-1	

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Arsenic, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.00513

Standard Deviation of all data: 0.00416

Largest Observation Concentration of all data: $X_n = 0.0230$

Test Statistic, high extreme of all data: $T_n = 4.30$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/14/2021	0.0230	False		1

Arsenic, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00524

Standard Deviation of all data: 0.00668

Largest Observation Concentration of all data: $X_n = 0.0350$

Test Statistic, high extreme of all data: $T_n = 4.46$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/17/2010	0.0350	False		1

Arsenic, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00805

Standard Deviation of all data: 0.00856

Largest Observation Concentration of all data: $X_n = 0.0380$

Test Statistic, high extreme of all data: $T_n = 3.50$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/28/2009	0.0380	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Barium, dissolved, mg/L

Location: MW-10

Mean of all data: 0.0754

Standard Deviation of all data: 0.0473

Largest Observation Concentration of all data: $X_n = 0.278$

Test Statistic, high extreme of all data: $T_n = 4.28$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/23/2011	0.278	False		1

Barium, dissolved, mg/L

Location: MW-11

Mean of all data: 0.190

Standard Deviation of all data: 0.0337

Largest Observation Concentration of all data: $X_n = 0.286$

Test Statistic, high extreme of all data: $T_n = 2.84$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
10/28/2013	0.286	False		1

Barium, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.217

Standard Deviation of all data: 0.0498

Largest Observation Concentration of all data: $X_n = 0.292$

Test Statistic, high extreme of all data: $T_n = 1.51$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/10/2019	0.0680	False	-1	

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Barium, dissolved, mg/L

Location: MW-2

Mean of all data: 0.219

Standard Deviation of all data: 0.0605

Largest Observation Concentration of all data: $X_n = 0.402$

Test Statistic, high extreme of all data: $T_n = 3.03$

T Critical of all data: $T_{cr} = 2.86$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/01/2021	0.402	False		1

Barium, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.353

Standard Deviation of all data: 0.0584

Largest Observation Concentration of all data: $X_n = 0.460$

Test Statistic, high extreme of all data: $T_n = 1.83$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Barium, dissolved, mg/L

Location: MW-3

Mean of all data: 0.189

Standard Deviation of all data: 0.0589

Largest Observation Concentration of all data: $X_n = 0.280$

Test Statistic, high extreme of all data: $T_n = 1.55$

T Critical of all data: $T_{cr} = 2.75$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Barium, dissolved, mg/L**Location: MW-3D**

Mean of all data: 0.179

Standard Deviation of all data: 0.0567

Largest Observation Concentration of all data: $X_n = 0.286$ Test Statistic, high extreme of all data: $T_n = 1.88$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Barium, dissolved, mg/L****Location: MW-5**

Mean of all data: 0.0787

Standard Deviation of all data: 0.0201

Largest Observation Concentration of all data: $X_n = 0.153$ Test Statistic, high extreme of all data: $T_n = 3.71$ T Critical of all data: $T_{cr} = 2.91$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/08/2020	0.153	False		1

Barium, dissolved, mg/L**Location: MW-6**

Mean of all data: 0.306

Standard Deviation of all data: 0.0401

Largest Observation Concentration of all data: $X_n = 0.395$ Test Statistic, high extreme of all data: $T_n = 2.23$ T Critical of all data: $T_{cr} = 2.91$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Barium, dissolved, mg/L**Location: MW-6D**

Mean of all data: 0.247

Standard Deviation of all data: 0.0731

Largest Observation Concentration of all data: $X_n = 0.373$ Test Statistic, high extreme of all data: $T_n = 1.72$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Barium, dissolved, mg/L****Location: MW-8**

Mean of all data: 0.111

Standard Deviation of all data: 0.0165

Largest Observation Concentration of all data: $X_n = 0.196$ Test Statistic, high extreme of all data: $T_n = 5.15$ T Critical of all data: $T_{cr} = 2.91$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/01/2018	0.196	False		1

Barium, dissolved, mg/L**Location: MW-9**

Mean of all data: 0.154

Standard Deviation of all data: 0.0248

Largest Observation Concentration of all data: $X_n = 0.203$ Test Statistic, high extreme of all data: $T_n = 1.97$ T Critical of all data: $T_{cr} = 2.91$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Boron, dissolved, mg/L

Location: MW-10

Mean of all data: 18.9

Standard Deviation of all data: 4.00

Largest Observation Concentration of all data: $X_n = 37.2$

Test Statistic, high extreme of all data: $T_n = 4.58$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/14/2021	37.2	False		1

Boron, dissolved, mg/L

Location: MW-11

Mean of all data: 1.31

Standard Deviation of all data: 1.85

Largest Observation Concentration of all data: $X_n = 7.83$

Test Statistic, high extreme of all data: $T_n = 3.53$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/13/2012	7.83	False		1

Boron, dissolved, mg/L

Location: MW-11D

Mean of all data: 9.39

Standard Deviation of all data: 5.59

Largest Observation Concentration of all data: $X_n = 23.5$

Test Statistic, high extreme of all data: $T_n = 2.53$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Boron, dissolved, mg/L

Location: MW-2

Mean of all data: 3.22

Standard Deviation of all data: 3.10

Largest Observation Concentration of all data: $X_n = 14.0$

Test Statistic, high extreme of all data: $T_n = 3.49$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/11/2007	14.0	False		1

Boron, dissolved, mg/L

Location: MW-2D

Mean of all data: 3.34

Standard Deviation of all data: 2.03

Largest Observation Concentration of all data: $X_n = 8.01$

Test Statistic, high extreme of all data: $T_n = 2.31$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Boron, dissolved, mg/L

Location: MW-3

Mean of all data: 0.625

Standard Deviation of all data: 0.574

Largest Observation Concentration of all data: $X_n = 3.94$

Test Statistic, high extreme of all data: $T_n = 5.78$

T Critical of all data: $T_{cr} = 2.99$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/19/2004	3.94	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Boron, dissolved, mg/L**Location: MW-3D**

Mean of all data: 5.83

Standard Deviation of all data: 2.04

Largest Observation Concentration of all data: $X_n = 8.24$ Test Statistic, high extreme of all data: $T_n = 1.19$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Boron, dissolved, mg/L****Location: MW-5**

Mean of all data: 3.58

Standard Deviation of all data: 1.86

Largest Observation Concentration of all data: $X_n = 7.46$ Test Statistic, high extreme of all data: $T_n = 2.09$ T Critical of all data: $T_{cr} = 3.12$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Boron, dissolved, mg/L****Location: MW-6**

Mean of all data: 4.26

Standard Deviation of all data: 0.725

Largest Observation Concentration of all data: $X_n = 6.17$ Test Statistic, high extreme of all data: $T_n = 2.63$ T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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06/30/2004	2.00	False	-1	
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Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Boron, dissolved, mg/L**Location: MW-6D**

Mean of all data: 4.56

Standard Deviation of all data: 0.645

Largest Observation Concentration of all data: $X_n = 6.38$ Test Statistic, high extreme of all data: $T_n = 2.82$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Boron, dissolved, mg/L****Location: MW-8**

Mean of all data: 0.724

Standard Deviation of all data: 0.310

Largest Observation Concentration of all data: $X_n = 2.03$ Test Statistic, high extreme of all data: $T_n = 4.21$ T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/16/1999	2.03	False		1

Boron, dissolved, mg/L**Location: MW-9**

Mean of all data: 0.674

Standard Deviation of all data: 0.175

Largest Observation Concentration of all data: $X_n = 1.07$ Test Statistic, high extreme of all data: $T_n = 2.28$ T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/13/2001	0.100	False	-1	

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cadmium, dissolved, mg/L

Location: MW-10

Mean of all data: 0.000515

Standard Deviation of all data: 0.0000857

Largest Observation Concentration of all data: $X_n = 0.00100$

Test Statistic, high extreme of all data: $T_n = 5.66$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/01/2018	0.00100	False		1

Cadmium, dissolved, mg/L

Location: MW-11

Mean of all data: 0.000545

Standard Deviation of all data: 0.000146

Largest Observation Concentration of all data: $X_n = 0.00100$

Test Statistic, high extreme of all data: $T_n = 3.11$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/22/2016	0.00100	False		1

Cadmium, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00118

Standard Deviation of all data: 0.000592

Largest Observation Concentration of all data: $X_n = 0.00300$

Test Statistic, high extreme of all data: $T_n = 3.08$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/08/2020	0.00300	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cadmium, dissolved, mg/L**Location: MW-2**

Mean of all data: 0.00107

Standard Deviation of all data: 0.00102

Largest Observation Concentration of all data: $X_n = 0.00400$ Test Statistic, high extreme of all data: $T_n = 2.88$ T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Cadmium, dissolved, mg/L****Location: MW-2D**

Mean of all data: 0.000931

Standard Deviation of all data: 0.000399

Largest Observation Concentration of all data: $X_n = 0.00200$ Test Statistic, high extreme of all data: $T_n = 2.68$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Cadmium, dissolved, mg/L****Location: MW-3**

Mean of all data: 0.00107

Standard Deviation of all data: 0.000974

Largest Observation Concentration of all data: $X_n = 0.00400$ Test Statistic, high extreme of all data: $T_n = 3.01$ T Critical of all data: $T_{cr} = 2.99$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
08/29/2016	0.00400	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cadmium, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.000611

Standard Deviation of all data: 0.000211

Largest Observation Concentration of all data: $X_n = 0.00100$

Test Statistic, high extreme of all data: $T_n = 1.84$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Cadmium, dissolved, mg/L

Location: MW-5

Mean of all data: 0.0309

Standard Deviation of all data: 0.263

Largest Observation Concentration of all data: $X_n = 2.31$

Test Statistic, high extreme of all data: $T_n = 8.66$

T Critical of all data: $T_{cr} = 3.12$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/18/2015	2.31	False		1

Cadmium, dissolved, mg/L

Location: MW-6

Mean of all data: 0.00157

Standard Deviation of all data: 0.00243

Largest Observation Concentration of all data: $X_n = 0.0203$

Test Statistic, high extreme of all data: $T_n = 7.70$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/24/1998	0.0203	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cadmium, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.000542

Standard Deviation of all data: 0.000140

Largest Observation Concentration of all data: $X_n = 0.00100$

Test Statistic, high extreme of all data: $T_n = 3.27$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/12/2018	0.00100	False		1

Cadmium, dissolved, mg/L

Location: MW-8

Mean of all data: 0.000697

Standard Deviation of all data: 0.000545

Largest Observation Concentration of all data: $X_n = 0.00310$

Test Statistic, high extreme of all data: $T_n = 4.41$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/16/1999	0.00310	False		1

Cadmium, dissolved, mg/L

Location: MW-9

Mean of all data: 0.000851

Standard Deviation of all data: 0.000458

Largest Observation Concentration of all data: $X_n = 0.00220$

Test Statistic, high extreme of all data: $T_n = 2.94$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
<i>No Outliers</i>				

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Chloride, dissolved, mg/L**Location: MW-10**

Mean of all data: 48.9

Standard Deviation of all data: 24.1

Largest Observation Concentration of all data: Xn = 94.0

Test Statistic, high extreme of all data: Tn = 1.87

T Critical of all data: Tcr = 2.80

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Chloride, dissolved, mg/L****Location: MW-11**

Mean of all data: 17.1

Standard Deviation of all data: 6.79

Largest Observation Concentration of all data: Xn = 41.5

Test Statistic, high extreme of all data: Tn = 3.59

T Critical of all data: Tcr = 2.79

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
07/22/2013	41.5	False		1

Chloride, dissolved, mg/L**Location: MW-11D**

Mean of all data: 37.9

Standard Deviation of all data: 10.9

Largest Observation Concentration of all data: Xn = 57.3

Test Statistic, high extreme of all data: Tn = 1.79

T Critical of all data: Tcr = 2.84

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Chloride, dissolved, mg/L

Location: MW-2

Mean of all data: 15.5

Standard Deviation of all data: 2.96

Largest Observation Concentration of all data: $X_n = 23.0$

Test Statistic, high extreme of all data: $T_n = 2.52$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Chloride, dissolved, mg/L

Location: MW-2D

Mean of all data: 16.5

Standard Deviation of all data: 4.19

Largest Observation Concentration of all data: $X_n = 27.0$

Test Statistic, high extreme of all data: $T_n = 2.51$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Chloride, dissolved, mg/L

Location: MW-3

Mean of all data: 20.4

Standard Deviation of all data: 4.63

Largest Observation Concentration of all data: $X_n = 33.0$

Test Statistic, high extreme of all data: $T_n = 2.71$

T Critical of all data: $T_{cr} = 2.70$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
10/27/2014	33.0	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Chloride, dissolved, mg/L

Location: MW-3D

Mean of all data: 35.9

Standard Deviation of all data: 7.62

Largest Observation Concentration of all data: $X_n = 48.1$

Test Statistic, high extreme of all data: $T_n = 1.60$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Chloride, dissolved, mg/L

Location: MW-5

Mean of all data: 15.9

Standard Deviation of all data: 9.36

Largest Observation Concentration of all data: $X_n = 39.2$

Test Statistic, high extreme of all data: $T_n = 2.49$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Chloride, dissolved, mg/L

Location: MW-6

Mean of all data: 27.0

Standard Deviation of all data: 3.38

Largest Observation Concentration of all data: $X_n = 33.3$

Test Statistic, high extreme of all data: $T_n = 1.86$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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03/10/2020	15.4	False	-1	
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Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Chloride, dissolved, mg/L

Location: MW-6D

Mean of all data: 33.6

Standard Deviation of all data: 6.72

Largest Observation Concentration of all data: $X_n = 49.5$

Test Statistic, high extreme of all data: $T_n = 2.37$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Chloride, dissolved, mg/L

Location: MW-8

Mean of all data: 59.2

Standard Deviation of all data: 26.8

Largest Observation Concentration of all data: $X_n = 147.$

Test Statistic, high extreme of all data: $T_n = 3.26$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/22/2017	147.	False		1

Chloride, dissolved, mg/L

Location: MW-9

Mean of all data: 78.1

Standard Deviation of all data: 36.1

Largest Observation Concentration of all data: $X_n = 171.$

Test Statistic, high extreme of all data: $T_n = 2.57$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Chromium, dissolved, mg/L

Location: MW-10

Mean of all data: 0.000984

Standard Deviation of all data: 0.000808

Largest Observation Concentration of all data: $X_n = 0.00400$

Test Statistic, high extreme of all data: $T_n = 3.73$

T Critical of all data: $T_{cr} = 2.77$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/18/2015	0.00400	False		1

Chromium, dissolved, mg/L

Location: MW-11

Mean of all data: 0.000806

Standard Deviation of all data: 0.000573

Largest Observation Concentration of all data: $X_n = 0.00300$

Test Statistic, high extreme of all data: $T_n = 3.83$

T Critical of all data: $T_{cr} = 2.76$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/18/2015	0.00300	False		1

Chromium, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00124

Standard Deviation of all data: 0.00171

Largest Observation Concentration of all data: $X_n = 0.0100$

Test Statistic, high extreme of all data: $T_n = 5.13$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/13/2012	0.0100	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Chromium, dissolved, mg/L

Location: MW-2

Mean of all data: 0.00152

Standard Deviation of all data: 0.00510

Largest Observation Concentration of all data: $X_n = 0.0410$

Test Statistic, high extreme of all data: $T_n = 7.75$

T Critical of all data: $T_{cr} = 3.06$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/18/2015	0.0410	False		1

Chromium, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.000765

Standard Deviation of all data: 0.000554

Largest Observation Concentration of all data: $X_n = 0.00300$

Test Statistic, high extreme of all data: $T_n = 4.04$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/18/2015	0.00300	False		1

Chromium, dissolved, mg/L

Location: MW-3

Mean of all data: 0.000742

Standard Deviation of all data: 0.000661

Largest Observation Concentration of all data: $X_n = 0.00400$

Test Statistic, high extreme of all data: $T_n = 4.93$

T Critical of all data: $T_{cr} = 2.97$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/18/2015	0.00400	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Chromium, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.000838

Standard Deviation of all data: 0.000600

Largest Observation Concentration of all data: $X_n = 0.00300$

Test Statistic, high extreme of all data: $T_n = 3.61$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/24/2015	0.00300	False		1

Chromium, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00245

Standard Deviation of all data: 0.00821

Largest Observation Concentration of all data: $X_n = 0.0630$

Test Statistic, high extreme of all data: $T_n = 7.37$

T Critical of all data: $T_{cr} = 3.11$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
06/26/2001	0.0630	False		1

Chromium, dissolved, mg/L

Location: MW-6

Mean of all data: 0.000993

Standard Deviation of all data: 0.000896

Largest Observation Concentration of all data: $X_n = 0.00420$

Test Statistic, high extreme of all data: $T_n = 3.58$

T Critical of all data: $T_{cr} = 3.06$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
06/30/2004	0.00420	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Chromium, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.000779

Standard Deviation of all data: 0.000654

Largest Observation Concentration of all data: $X_n = 0.00400$

Test Statistic, high extreme of all data: $T_n = 4.93$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/18/2015	0.00400	False		1

Chromium, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00131

Standard Deviation of all data: 0.00370

Largest Observation Concentration of all data: $X_n = 0.0329$

Test Statistic, high extreme of all data: $T_n = 8.54$

T Critical of all data: $T_{cr} = 3.13$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
12/21/2004	0.0329	False		1

Chromium, dissolved, mg/L

Location: MW-9

Mean of all data: 0.000975

Standard Deviation of all data: 0.00206

Largest Observation Concentration of all data: $X_n = 0.0184$

Test Statistic, high extreme of all data: $T_n = 8.45$

T Critical of all data: $T_{cr} = 3.13$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/29/2005	0.0184	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cobalt, Dis, mg/L

Location: MW-10

Mean of all data: 0.000926

Standard Deviation of all data: 0.000509

Largest Observation Concentration of all data: $X_n = 0.00200$

Test Statistic, high extreme of all data: $T_n = 2.11$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Cobalt, Dis, mg/L

Location: MW-11

Mean of all data: 0.000591

Standard Deviation of all data: 0.000196

Largest Observation Concentration of all data: $X_n = 0.00100$

Test Statistic, high extreme of all data: $T_n = 2.09$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Cobalt, Dis, mg/L

Location: MW-11D

Mean of all data: 0.000608

Standard Deviation of all data: 0.000356

Largest Observation Concentration of all data: $X_n = 0.00200$

Test Statistic, high extreme of all data: $T_n = 3.91$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
11/05/2012	0.00200	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cobalt, Dis, mg/L

Location: MW-2

Mean of all data: 0.00379

Standard Deviation of all data: 0.0112

Largest Observation Concentration of all data: $X_n = 0.0660$

Test Statistic, high extreme of all data: $T_n = 5.53$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/01/2021	0.0660	False		1

Cobalt, Dis, mg/L

Location: MW-2D

Mean of all data: 0.000597

Standard Deviation of all data: 0.000201

Largest Observation Concentration of all data: $X_n = 0.00100$

Test Statistic, high extreme of all data: $T_n = 2.01$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Cobalt, Dis, mg/L

Location: MW-3

Mean of all data: 0.00295

Standard Deviation of all data: 0.00166

Largest Observation Concentration of all data: $X_n = 0.00700$

Test Statistic, high extreme of all data: $T_n = 2.43$

T Critical of all data: $T_{cr} = 2.71$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cobalt, Dis, mg/L

Location: MW-3D

Mean of all data: 0.000639

Standard Deviation of all data: 0.000441

Largest Observation Concentration of all data: $X_n = 0.00300$

Test Statistic, high extreme of all data: $T_n = 5.35$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/14/2021	0.00300	False		1

Cobalt, Dis, mg/L

Location: MW-5

Mean of all data: 0.000720

Standard Deviation of all data: 0.000742

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 5.77$

T Critical of all data: $T_{cr} = 2.88$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
06/28/2010	<0.00500	True		1

Cobalt, Dis, mg/L

Location: MW-6

Mean of all data: 0.000725

Standard Deviation of all data: 0.000725

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 5.90$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
06/28/2010	<0.00500	True		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cobalt, Dis, mg/L**Location: MW-6D**

Mean of all data: 0.000583

Standard Deviation of all data: 0.000189

Largest Observation Concentration of all data: $X_n = 0.00100$ Test Statistic, high extreme of all data: $T_n = 2.20$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Cobalt, Dis, mg/L****Location: MW-8**

Mean of all data: 0.00237

Standard Deviation of all data: 0.000888

Largest Observation Concentration of all data: $X_n = 0.00500$ Test Statistic, high extreme of all data: $T_n = 2.97$ T Critical of all data: $T_{cr} = 2.88$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
06/28/2010	<0.00500	True		1

Cobalt, Dis, mg/L**Location: MW-9**

Mean of all data: 0.000939

Standard Deviation of all data: 0.00121

Largest Observation Concentration of all data: $X_n = 0.00600$ Test Statistic, high extreme of all data: $T_n = 4.20$ T Critical of all data: $T_{cr} = 2.88$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
12/07/2011	0.00600	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Copper, dissolved, mg/L

Location: MW-10

Mean of all data: 0.00141

Standard Deviation of all data: 0.00154

Largest Observation Concentration of all data: $X_n = 0.00800$

Test Statistic, high extreme of all data: $T_n = 4.27$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
03/13/2012	0.00800	False		1

Copper, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00103

Standard Deviation of all data: 0.000883

Largest Observation Concentration of all data: $X_n = 0.00400$

Test Statistic, high extreme of all data: $T_n = 3.36$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
08/23/2017	0.00400	False		1

Copper, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.000622

Standard Deviation of all data: 0.000298

Largest Observation Concentration of all data: $X_n = 0.00200$

Test Statistic, high extreme of all data: $T_n = 4.62$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/24/2015	0.00200	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Copper, dissolved, mg/L**Location: MW-2**

Mean of all data: 0.00218

Standard Deviation of all data: 0.00257

Largest Observation Concentration of all data: $X_n = 0.0140$ Test Statistic, high extreme of all data: $T_n = 4.60$ T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/31/2007	0.0140	False		1

Copper, dissolved, mg/L**Location: MW-2D**

Mean of all data: 0.000569

Standard Deviation of all data: 0.000175

Largest Observation Concentration of all data: $X_n = 0.00100$ Test Statistic, high extreme of all data: $T_n = 2.46$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Copper, dissolved, mg/L****Location: MW-3**

Mean of all data: 0.00153

Standard Deviation of all data: 0.00303

Largest Observation Concentration of all data: $X_n = 0.0180$ Test Statistic, high extreme of all data: $T_n = 5.43$ T Critical of all data: $T_{cr} = 2.99$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
08/23/2017	0.0180	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Copper, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.000778

Standard Deviation of all data: 0.000579

Largest Observation Concentration of all data: $X_n = 0.00300$

Test Statistic, high extreme of all data: $T_n = 3.84$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/08/2020	0.00300	False		1

Copper, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00282

Standard Deviation of all data: 0.0159

Largest Observation Concentration of all data: $X_n = 0.140$

Test Statistic, high extreme of all data: $T_n = 8.64$

T Critical of all data: $T_{cr} = 3.12$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
06/26/2001	0.140	False		1

Copper, dissolved, mg/L

Location: MW-6

Mean of all data: 0.00253

Standard Deviation of all data: 0.0105

Largest Observation Concentration of all data: $X_n = 0.0850$

Test Statistic, high extreme of all data: $T_n = 7.83$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
03/31/2007	0.0850	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Copper, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.000778

Standard Deviation of all data: 0.000540

Largest Observation Concentration of all data: $X_n = 0.00300$

Test Statistic, high extreme of all data: $T_n = 4.11$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/01/2021	0.00300	False		1

Copper, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00167

Standard Deviation of all data: 0.00575

Largest Observation Concentration of all data: $X_n = 0.0520$

Test Statistic, high extreme of all data: $T_n = 8.75$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/31/2007	0.0520	False		1

Copper, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00190

Standard Deviation of all data: 0.0101

Largest Observation Concentration of all data: $X_n = 0.0930$

Test Statistic, high extreme of all data: $T_n = 8.98$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/31/2007	0.0930	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cyanide, total, mg/L

Location: MW-10

Mean of all data: 0.00169

Standard Deviation of all data: 0.00128

Largest Observation Concentration of all data: $X_n = 0.00690$

Test Statistic, high extreme of all data: $T_n = 4.08$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/12/2018	0.00690	False		1

Cyanide, total, mg/L

Location: MW-11

Mean of all data: 0.00178

Standard Deviation of all data: 0.00231

Largest Observation Concentration of all data: $X_n = 0.0136$

Test Statistic, high extreme of all data: $T_n = 5.12$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
08/23/2017	0.0136	False		1

Cyanide, total, mg/L

Location: MW-11D

Mean of all data: 0.0158

Standard Deviation of all data: 0.0167

Largest Observation Concentration of all data: $X_n = 0.0660$

Test Statistic, high extreme of all data: $T_n = 3.01$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/13/2013	0.0660	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cyanide, total, mg/L**Location: MW-2**

Mean of all data: 0.00154

Standard Deviation of all data: 0.00126

Largest Observation Concentration of all data: $X_n = 0.00500$ Test Statistic, high extreme of all data: $T_n = 2.74$ T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Cyanide, total, mg/L****Location: MW-2D**

Mean of all data: 0.00186

Standard Deviation of all data: 0.00181

Largest Observation Concentration of all data: $X_n = 0.00830$ Test Statistic, high extreme of all data: $T_n = 3.57$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
08/18/2014	0.00830	False		1

Cyanide, total, mg/L**Location: MW-3**

Mean of all data: 0.00152

Standard Deviation of all data: 0.00134

Largest Observation Concentration of all data: $X_n = 0.00500$ Test Statistic, high extreme of all data: $T_n = 2.59$ T Critical of all data: $T_{cr} = 2.71$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cyanide, total, mg/L

Location: MW-3D

Mean of all data: 0.00179

Standard Deviation of all data: 0.00186

Largest Observation Concentration of all data: $X_n = 0.00900$

Test Statistic, high extreme of all data: $T_n = 3.88$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
11/05/2012	0.00900	False		1

Cyanide, total, mg/L

Location: MW-5

Mean of all data: 0.00536

Standard Deviation of all data: 0.00257

Largest Observation Concentration of all data: $X_n = 0.0130$

Test Statistic, high extreme of all data: $T_n = 2.98$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/08/2010	0.0130	False		1

Cyanide, total, mg/L

Location: MW-6

Mean of all data: 0.00171

Standard Deviation of all data: 0.00132

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 2.48$

T Critical of all data: $T_{cr} = 2.86$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Cyanide, total, mg/L

Location: MW-6D

Mean of all data: 0.00148

Standard Deviation of all data: 0.000935

Largest Observation Concentration of all data: $X_n = 0.00250$

Test Statistic, high extreme of all data: $T_n = 1.09$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Cyanide, total, mg/L

Location: MW-8

Mean of all data: 0.00165

Standard Deviation of all data: 0.00120

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 2.79$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Cyanide, total, mg/L

Location: MW-9

Mean of all data: 0.00174

Standard Deviation of all data: 0.00123

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 2.64$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Fluoride, dissolved, mg/L**Location: MW-10**

Mean of all data: 0.565

Standard Deviation of all data: 0.228

Largest Observation Concentration of all data: $X_n = 0.850$ Test Statistic, high extreme of all data: $T_n = 1.25$ T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Fluoride, dissolved, mg/L****Location: MW-11**

Mean of all data: 0.314

Standard Deviation of all data: 0.113

Largest Observation Concentration of all data: $X_n = 0.710$ Test Statistic, high extreme of all data: $T_n = 3.51$ T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/13/2013	0.710	False		1

Fluoride, dissolved, mg/L**Location: MW-11D**

Mean of all data: 0.467

Standard Deviation of all data: 0.170

Largest Observation Concentration of all data: $X_n = 0.760$ Test Statistic, high extreme of all data: $T_n = 1.72$ T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Fluoride, dissolved, mg/L

Location: MW-2

Mean of all data: 0.263

Standard Deviation of all data: 0.0765

Largest Observation Concentration of all data: $X_n = 0.550$

Test Statistic, high extreme of all data: $T_n = 3.75$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
12/07/2011	0.550	False		1

Fluoride, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.253

Standard Deviation of all data: 0.0975

Largest Observation Concentration of all data: $X_n = 0.500$

Test Statistic, high extreme of all data: $T_n = 2.54$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Fluoride, dissolved, mg/L

Location: MW-3

Mean of all data: 0.212

Standard Deviation of all data: 0.0580

Largest Observation Concentration of all data: $X_n = 0.330$

Test Statistic, high extreme of all data: $T_n = 2.03$

T Critical of all data: $T_{cr} = 2.71$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Fluoride, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.298

Standard Deviation of all data: 0.140

Largest Observation Concentration of all data: $X_n = 0.640$

Test Statistic, high extreme of all data: $T_n = 2.43$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Fluoride, dissolved, mg/L

Location: MW-5

Mean of all data: 0.362

Standard Deviation of all data: 0.114

Largest Observation Concentration of all data: $X_n = 0.660$

Test Statistic, high extreme of all data: $T_n = 2.61$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Fluoride, dissolved, mg/L

Location: MW-6

Mean of all data: 0.591

Standard Deviation of all data: 0.105

Largest Observation Concentration of all data: $X_n = 0.830$

Test Statistic, high extreme of all data: $T_n = 2.27$

T Critical of all data: $T_{cr} = 2.86$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Fluoride, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.271

Standard Deviation of all data: 0.150

Largest Observation Concentration of all data: $X_n = 0.570$

Test Statistic, high extreme of all data: $T_n = 1.99$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Fluoride, dissolved, mg/L

Location: MW-8

Mean of all data: 0.442

Standard Deviation of all data: 0.149

Largest Observation Concentration of all data: $X_n = 0.840$

Test Statistic, high extreme of all data: $T_n = 2.68$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
08/18/2014	<0.00500	True	-1	

Fluoride, dissolved, mg/L

Location: MW-9

Mean of all data: 0.370

Standard Deviation of all data: 0.116

Largest Observation Concentration of all data: $X_n = 0.710$

Test Statistic, high extreme of all data: $T_n = 2.92$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
11/05/2012	0.710	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Iron, dissolved, mg/L

Location: MW-10

Mean of all data: 1.57

Standard Deviation of all data: 1.71

Largest Observation Concentration of all data: $X_n = 6.59$

Test Statistic, high extreme of all data: $T_n = 2.93$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/13/2013	6.59	False		1

Iron, dissolved, mg/L

Location: MW-11

Mean of all data: 0.190

Standard Deviation of all data: 0.450

Largest Observation Concentration of all data: $X_n = 1.73$

Test Statistic, high extreme of all data: $T_n = 3.43$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/12/2018	1.73	False		1

Iron, dissolved, mg/L

Location: MW-11D

Mean of all data: 18.3

Standard Deviation of all data: 3.49

Largest Observation Concentration of all data: $X_n = 22.6$

Test Statistic, high extreme of all data: $T_n = 1.23$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/10/2019	5.67	False	-1	

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Iron, dissolved, mg/L**Location: MW-2**

Mean of all data: 0.186

Standard Deviation of all data: 0.625

Largest Observation Concentration of all data: $X_n = 3.83$ Test Statistic, high extreme of all data: $T_n = 5.84$ T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/01/2018	3.83	False		1

Iron, dissolved, mg/L**Location: MW-2D**

Mean of all data: 16.7

Standard Deviation of all data: 2.52

Largest Observation Concentration of all data: $X_n = 21.9$ Test Statistic, high extreme of all data: $T_n = 2.09$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Iron, dissolved, mg/L****Location: MW-3**

Mean of all data: 1.58

Standard Deviation of all data: 1.43

Largest Observation Concentration of all data: $X_n = 4.93$ Test Statistic, high extreme of all data: $T_n = 2.33$ T Critical of all data: $T_{cr} = 2.99$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Iron, dissolved, mg/L**Location: MW-3D**

Mean of all data: 5.73

Standard Deviation of all data: 3.38

Largest Observation Concentration of all data: $X_n = 13.9$ Test Statistic, high extreme of all data: $T_n = 2.41$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Iron, dissolved, mg/L****Location: MW-5**

Mean of all data: 0.807

Standard Deviation of all data: 0.764

Largest Observation Concentration of all data: $X_n = 4.67$ Test Statistic, high extreme of all data: $T_n = 5.06$ T Critical of all data: $T_{cr} = 3.12$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/08/2020	4.67	False		1

Iron, dissolved, mg/L**Location: MW-6**

Mean of all data: 18.9

Standard Deviation of all data: 5.73

Largest Observation Concentration of all data: $X_n = 30.5$ Test Statistic, high extreme of all data: $T_n = 2.01$ T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Iron, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.517

Standard Deviation of all data: 0.205

Largest Observation Concentration of all data: $X_n = 0.929$

Test Statistic, high extreme of all data: $T_n = 2.01$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Iron, dissolved, mg/L

Location: MW-8

Mean of all data: 0.0648

Standard Deviation of all data: 0.0715

Largest Observation Concentration of all data: $X_n = 0.339$

Test Statistic, high extreme of all data: $T_n = 3.84$

T Critical of all data: $T_{cr} = 3.13$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
11/02/2015	0.339	False		1

Iron, dissolved, mg/L

Location: MW-9

Mean of all data: 17.4

Standard Deviation of all data: 3.65

Largest Observation Concentration of all data: $X_n = 24.5$

Test Statistic, high extreme of all data: $T_n = 1.95$

T Critical of all data: $T_{cr} = 3.13$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/16/1999	4.21	False	-1	

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Lead, dissolved, mg/L

Location: MW-10

Mean of all data: 0.00250

Standard Deviation of all data: 0.00137

Largest Observation Concentration of all data: $X_n = 0.00350$

Test Statistic, high extreme of all data: $T_n = 0.730$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Lead, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00263

Standard Deviation of all data: 0.00161

Largest Observation Concentration of all data: $X_n = 0.00700$

Test Statistic, high extreme of all data: $T_n = 2.72$

T Critical of all data: $T_{cr} = 2.77$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Lead, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00314

Standard Deviation of all data: 0.00132

Largest Observation Concentration of all data: $X_n = 0.00600$

Test Statistic, high extreme of all data: $T_n = 2.16$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Lead, dissolved, mg/L

Location: MW-2

Mean of all data: 0.00173

Standard Deviation of all data: 0.00182

Largest Observation Concentration of all data: $X_n = 0.0110$

Test Statistic, high extreme of all data: $T_n = 5.10$

T Critical of all data: $T_{cr} = 3.06$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/13/2001	0.0110	False		1

Lead, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00290

Standard Deviation of all data: 0.00112

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 1.88$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Lead, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00188

Standard Deviation of all data: 0.00190

Largest Observation Concentration of all data: $X_n = 0.00800$

Test Statistic, high extreme of all data: $T_n = 3.21$

T Critical of all data: $T_{cr} = 2.98$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
08/27/2018	0.00800	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Lead, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.00251

Standard Deviation of all data: 0.00144

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 1.73$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Lead, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00153

Standard Deviation of all data: 0.00153

Largest Observation Concentration of all data: $X_n = 0.00700$

Test Statistic, high extreme of all data: $T_n = 3.58$

T Critical of all data: $T_{cr} = 3.11$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/08/2020	0.00700	False		1

Lead, dissolved, mg/L

Location: MW-6

Mean of all data: 0.00293

Standard Deviation of all data: 0.00232

Largest Observation Concentration of all data: $X_n = 0.0120$

Test Statistic, high extreme of all data: $T_n = 3.90$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/28/2009	0.0120	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Lead, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.00264

Standard Deviation of all data: 0.00179

Largest Observation Concentration of all data: $X_n = 0.00800$

Test Statistic, high extreme of all data: $T_n = 2.99$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
08/27/2018	0.00800	False		1

Lead, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00179

Standard Deviation of all data: 0.00199

Largest Observation Concentration of all data: $X_n = 0.0110$

Test Statistic, high extreme of all data: $T_n = 4.62$

T Critical of all data: $T_{cr} = 3.13$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
03/28/2006	<0.0110	True		1

Lead, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00232

Standard Deviation of all data: 0.00188

Largest Observation Concentration of all data: $X_n = 0.0110$

Test Statistic, high extreme of all data: $T_n = 4.62$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
03/28/2006	<0.0110	True		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Manganese, dissolved, mg/L**Location: MW-10**

Mean of all data: 1.30

Standard Deviation of all data: 0.658

Largest Observation Concentration of all data: $X_n = 2.50$ Test Statistic, high extreme of all data: $T_n = 1.82$ T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Manganese, dissolved, mg/L****Location: MW-11**

Mean of all data: 0.134

Standard Deviation of all data: 0.280

Largest Observation Concentration of all data: $X_n = 1.24$ Test Statistic, high extreme of all data: $T_n = 3.97$ T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/12/2018	1.24	False		1

Manganese, dissolved, mg/L**Location: MW-11D**

Mean of all data: 2.91

Standard Deviation of all data: 0.581

Largest Observation Concentration of all data: $X_n = 4.01$ Test Statistic, high extreme of all data: $T_n = 1.90$ T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/10/2019	0.908	False	-1	

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Manganese, dissolved, mg/L

Location: MW-2

Mean of all data: 0.230

Standard Deviation of all data: 0.454

Largest Observation Concentration of all data: $X_n = 3.09$

Test Statistic, high extreme of all data: $T_n = 6.29$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/01/2021	3.09	False		1

Manganese, dissolved, mg/L

Location: MW-2D

Mean of all data: 1.04

Standard Deviation of all data: 0.202

Largest Observation Concentration of all data: $X_n = 1.36$

Test Statistic, high extreme of all data: $T_n = 1.58$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Manganese, dissolved, mg/L

Location: MW-3

Mean of all data: 0.848

Standard Deviation of all data: 0.326

Largest Observation Concentration of all data: $X_n = 1.41$

Test Statistic, high extreme of all data: $T_n = 1.71$

T Critical of all data: $T_{cr} = 2.99$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Manganese, dissolved, mg/L**Location: MW-3D**

Mean of all data: 0.355

Standard Deviation of all data: 0.149

Largest Observation Concentration of all data: $X_n = 0.745$ Test Statistic, high extreme of all data: $T_n = 2.62$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Manganese, dissolved, mg/L****Location: MW-5**

Mean of all data: 1.25

Standard Deviation of all data: 0.662

Largest Observation Concentration of all data: $X_n = 3.38$ Test Statistic, high extreme of all data: $T_n = 3.21$ T Critical of all data: $T_{cr} = 3.12$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/08/2020	3.38	False		1

Manganese, dissolved, mg/L**Location: MW-6**

Mean of all data: 2.52

Standard Deviation of all data: 0.538

Largest Observation Concentration of all data: $X_n = 3.63$ Test Statistic, high extreme of all data: $T_n = 2.06$ T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Manganese, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.179

Standard Deviation of all data: 0.0654

Largest Observation Concentration of all data: $X_n = 0.309$

Test Statistic, high extreme of all data: $T_n = 1.99$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Manganese, dissolved, mg/L

Location: MW-8

Mean of all data: 0.628

Standard Deviation of all data: 0.129

Largest Observation Concentration of all data: $X_n = 0.880$

Test Statistic, high extreme of all data: $T_n = 1.96$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Manganese, dissolved, mg/L

Location: MW-9

Mean of all data: 0.762

Standard Deviation of all data: 0.118

Largest Observation Concentration of all data: $X_n = 1.07$

Test Statistic, high extreme of all data: $T_n = 2.60$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Nickel, dissolved, mg/L

Location: MW-10

Mean of all data: 0.00250

Standard Deviation of all data: 0.00169

Largest Observation Concentration of all data: $X_n = 0.00800$

Test Statistic, high extreme of all data: $T_n = 3.26$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
03/13/2012	0.00800	False		1

Nickel, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00452

Standard Deviation of all data: 0.00306

Largest Observation Concentration of all data: $X_n = 0.0100$

Test Statistic, high extreme of all data: $T_n = 1.79$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Nickel, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00257

Standard Deviation of all data: 0.00259

Largest Observation Concentration of all data: $X_n = 0.0110$

Test Statistic, high extreme of all data: $T_n = 3.26$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
07/22/2013	0.0110	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Nickel, dissolved, mg/L

Location: MW-2

Mean of all data: 0.0115

Standard Deviation of all data: 0.0124

Largest Observation Concentration of all data: $X_n = 0.0500$

Test Statistic, high extreme of all data: $T_n = 3.11$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
06/27/2007	0.0500	False		1

Nickel, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00131

Standard Deviation of all data: 0.000839

Largest Observation Concentration of all data: $X_n = 0.00400$

Test Statistic, high extreme of all data: $T_n = 3.21$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/01/2018	0.00400	False		1

Nickel, dissolved, mg/L

Location: MW-3

Mean of all data: 0.0184

Standard Deviation of all data: 0.0173

Largest Observation Concentration of all data: $X_n = 0.0800$

Test Statistic, high extreme of all data: $T_n = 3.57$

T Critical of all data: $T_{cr} = 2.99$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/12/1997	0.0800	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Nickel, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.00172

Standard Deviation of all data: 0.00131

Largest Observation Concentration of all data: $X_n = 0.00700$

Test Statistic, high extreme of all data: $T_n = 4.04$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
03/06/2017	0.00700	False		1

Nickel, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00574

Standard Deviation of all data: 0.00814

Largest Observation Concentration of all data: $X_n = 0.0329$

Test Statistic, high extreme of all data: $T_n = 3.34$

T Critical of all data: $T_{cr} = 3.12$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
06/26/2001	0.0329	False		1

Nickel, dissolved, mg/L

Location: MW-6

Mean of all data: 0.0105

Standard Deviation of all data: 0.0127

Largest Observation Concentration of all data: $X_n = 0.0470$

Test Statistic, high extreme of all data: $T_n = 2.87$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
<i>No Outliers</i>				

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Nickel, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.00150

Standard Deviation of all data: 0.000993

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 3.53$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/01/2018	0.00500	False		1

Nickel, dissolved, mg/L

Location: MW-8

Mean of all data: 0.0134

Standard Deviation of all data: 0.0144

Largest Observation Concentration of all data: $X_n = 0.117$

Test Statistic, high extreme of all data: $T_n = 7.19$

T Critical of all data: $T_{cr} = 3.13$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/16/1999	0.117	False		1

Nickel, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00783

Standard Deviation of all data: 0.0103

Largest Observation Concentration of all data: $X_n = 0.0410$

Test Statistic, high extreme of all data: $T_n = 3.22$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
06/27/2007	0.0410	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Nitrate nitrogen, dissolved, mg/L

Location: MW-10

Mean of all data: 2.16

Standard Deviation of all data: 3.64

Largest Observation Concentration of all data: $X_n = 16.9$

Test Statistic, high extreme of all data: $T_n = 4.05$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
11/02/2015	16.9	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-11

Mean of all data: 7.67

Standard Deviation of all data: 11.1

Largest Observation Concentration of all data: $X_n = 55.6$

Test Statistic, high extreme of all data: $T_n = 4.31$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
08/18/2014	55.6	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-11D

Mean of all data: 2.26

Standard Deviation of all data: 7.19

Largest Observation Concentration of all data: $X_n = 44.0$

Test Statistic, high extreme of all data: $T_n = 5.81$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
12/07/2011	44.0	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Nitrate nitrogen, dissolved, mg/L

Location: MW-2

Mean of all data: 4.34

Standard Deviation of all data: 4.28

Largest Observation Concentration of all data: $X_n = 15.0$ Test Statistic, high extreme of all data: $T_n = 2.49$ T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Nitrate nitrogen, dissolved, mg/L

Location: MW-2D

Mean of all data: 1.51

Standard Deviation of all data: 2.26

Largest Observation Concentration of all data: $X_n = 10.0$ Test Statistic, high extreme of all data: $T_n = 3.75$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/24/2015	10.0	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-3

Mean of all data: 3.00

Standard Deviation of all data: 4.28

Largest Observation Concentration of all data: $X_n = 14.2$ Test Statistic, high extreme of all data: $T_n = 2.62$ T Critical of all data: $T_{cr} = 2.70$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Nitrate nitrogen, dissolved, mg/L

Location: MW-3D

Mean of all data: 1.39

Standard Deviation of all data: 2.18

Largest Observation Concentration of all data: $X_n = 11.2$

Test Statistic, high extreme of all data: $T_n = 4.49$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
08/18/2014	11.2	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-5

Mean of all data: 1.53

Standard Deviation of all data: 2.26

Largest Observation Concentration of all data: $X_n = 11.4$

Test Statistic, high extreme of all data: $T_n = 4.37$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/10/2019	11.4	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-6

Mean of all data: 1.10

Standard Deviation of all data: 1.44

Largest Observation Concentration of all data: $X_n = 6.00$

Test Statistic, high extreme of all data: $T_n = 3.41$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/24/2015	6.00	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Nitrate nitrogen, dissolved, mg/L

Location: MW-6D

Mean of all data: 1.27

Standard Deviation of all data: 2.53

Largest Observation Concentration of all data: $X_n = 14.6$

Test Statistic, high extreme of all data: $T_n = 5.28$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
08/18/2014	14.6	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-8

Mean of all data: 2.30

Standard Deviation of all data: 2.72

Largest Observation Concentration of all data: $X_n = 10.0$

Test Statistic, high extreme of all data: $T_n = 2.83$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Nitrate nitrogen, dissolved, mg/L

Location: MW-9

Mean of all data: 1.08

Standard Deviation of all data: 1.90

Largest Observation Concentration of all data: $X_n = 9.27$

Test Statistic, high extreme of all data: $T_n = 4.30$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
08/18/2014	9.27	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Selenium, dissolved, mg/L**Location: MW-10**

Mean of all data: 0.00565

Standard Deviation of all data: 0.00338

Largest Observation Concentration of all data: $X_n = 0.0130$ Test Statistic, high extreme of all data: $T_n = 2.18$ T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Selenium, dissolved, mg/L****Location: MW-11**

Mean of all data: 0.00578

Standard Deviation of all data: 0.00324

Largest Observation Concentration of all data: $X_n = 0.0100$ Test Statistic, high extreme of all data: $T_n = 1.30$ T Critical of all data: $T_{cr} = 2.77$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Selenium, dissolved, mg/L****Location: MW-11D**

Mean of all data: 0.00474

Standard Deviation of all data: 0.00481

Largest Observation Concentration of all data: $X_n = 0.0250$ Test Statistic, high extreme of all data: $T_n = 4.22$ T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/24/2015	0.0250	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Selenium, dissolved, mg/L**Location: MW-2**

Mean of all data: 0.00548

Standard Deviation of all data: 0.00475

Largest Observation Concentration of all data: $X_n = 0.0250$ Test Statistic, high extreme of all data: $T_n = 4.11$ T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/14/2021	0.0250	False		1

Selenium, dissolved, mg/L**Location: MW-2D**

Mean of all data: 0.00419

Standard Deviation of all data: 0.00337

Largest Observation Concentration of all data: $X_n = 0.00900$ Test Statistic, high extreme of all data: $T_n = 1.43$ T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Selenium, dissolved, mg/L****Location: MW-3**

Mean of all data: 0.00537

Standard Deviation of all data: 0.00380

Largest Observation Concentration of all data: $X_n = 0.0160$ Test Statistic, high extreme of all data: $T_n = 2.80$ T Critical of all data: $T_{cr} = 2.70$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
11/02/2021	0.0160	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Selenium, dissolved, mg/L**Location: MW-3D**

Mean of all data: 0.00496

Standard Deviation of all data: 0.00394

Largest Observation Concentration of all data: $X_n = 0.0160$ Test Statistic, high extreme of all data: $T_n = 2.80$ T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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*No Outliers***Selenium, dissolved, mg/L****Location: MW-5**

Mean of all data: 0.00535

Standard Deviation of all data: 0.00504

Largest Observation Concentration of all data: $X_n = 0.0220$ Test Statistic, high extreme of all data: $T_n = 3.30$ T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/14/2021	0.0220	False		1

Selenium, dissolved, mg/L**Location: MW-6**

Mean of all data: 0.00444

Standard Deviation of all data: 0.00358

Largest Observation Concentration of all data: $X_n = 0.0130$ Test Statistic, high extreme of all data: $T_n = 2.39$ T Critical of all data: $T_{cr} = 2.86$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Selenium, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.00516

Standard Deviation of all data: 0.00332

Largest Observation Concentration of all data: $X_n = 0.0100$

Test Statistic, high extreme of all data: $T_n = 1.46$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Selenium, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00491

Standard Deviation of all data: 0.00347

Largest Observation Concentration of all data: $X_n = 0.0130$

Test Statistic, high extreme of all data: $T_n = 2.34$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Selenium, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00504

Standard Deviation of all data: 0.00435

Largest Observation Concentration of all data: $X_n = 0.0180$

Test Statistic, high extreme of all data: $T_n = 2.98$

T Critical of all data: $T_{cr} = 2.87$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/14/2021	0.0180	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Silver, dissolved, mg/L

Location: MW-10

Mean of all data: 0.000984

Standard Deviation of all data: 0.00138

Largest Observation Concentration of all data: $X_n = 0.00800$

Test Statistic, high extreme of all data: $T_n = 5.10$

T Critical of all data: $T_{cr} = 2.77$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
10/25/2016	0.00800	False		1

Silver, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00105

Standard Deviation of all data: 0.00130

Largest Observation Concentration of all data: $X_n = 0.00600$

Test Statistic, high extreme of all data: $T_n = 3.81$

T Critical of all data: $T_{cr} = 2.76$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/22/2016	0.00600	False		1

Silver, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.000871

Standard Deviation of all data: 0.00120

Largest Observation Concentration of all data: $X_n = 0.00700$

Test Statistic, high extreme of all data: $T_n = 5.12$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/22/2016	0.00700	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Silver, dissolved, mg/L

Location: MW-2

Mean of all data: 0.00104

Standard Deviation of all data: 0.00172

Largest Observation Concentration of all data: $X_n = 0.0100$

Test Statistic, high extreme of all data: $T_n = 5.21$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/08/2010	0.0100	False		1

Silver, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00125

Standard Deviation of all data: 0.00128

Largest Observation Concentration of all data: $X_n = 0.00600$

Test Statistic, high extreme of all data: $T_n = 3.71$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
08/29/2016	0.00600	False		1

Silver, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00143

Standard Deviation of all data: 0.00168

Largest Observation Concentration of all data: $X_n = 0.00600$

Test Statistic, high extreme of all data: $T_n = 2.72$

T Critical of all data: $T_{cr} = 2.70$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
10/25/2016	0.00600	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Silver, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.00128

Standard Deviation of all data: 0.00152

Largest Observation Concentration of all data: $X_n = 0.00700$

Test Statistic, high extreme of all data: $T_n = 3.75$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
10/25/2016	0.00700	False		1

Silver, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00107

Standard Deviation of all data: 0.00110

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 3.57$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/22/2016	0.00500	False		1

Silver, dissolved, mg/L

Location: MW-6

Mean of all data: 0.000939

Standard Deviation of all data: 0.00110

Largest Observation Concentration of all data: $X_n = 0.00500$

Test Statistic, high extreme of all data: $T_n = 3.70$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/22/2016	0.00500	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Silver, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.00175

Standard Deviation of all data: 0.00203

Largest Observation Concentration of all data: $X_n = 0.00700$

Test Statistic, high extreme of all data: $T_n = 2.58$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Silver, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00124

Standard Deviation of all data: 0.00148

Largest Observation Concentration of all data: $X_n = 0.00600$

Test Statistic, high extreme of all data: $T_n = 3.22$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/22/2016	0.00600	False		1

Silver, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00103

Standard Deviation of all data: 0.00143

Largest Observation Concentration of all data: $X_n = 0.00800$

Test Statistic, high extreme of all data: $T_n = 4.87$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/22/2016	0.00800	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Sulfate, dissolved, mg/L

Location: MW-10

Mean of all data: 822.

Standard Deviation of all data: 215.

Largest Observation Concentration of all data: Xn = 1100.

Test Statistic, high extreme of all data: Tn = 1.28

T Critical of all data: Tcr = 2.80

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
02/12/2018	<0.100	True	-1	

Sulfate, dissolved, mg/L

Location: MW-11

Mean of all data: 87.7

Standard Deviation of all data: 72.4

Largest Observation Concentration of all data: Xn = 383.

Test Statistic, high extreme of all data: Tn = 4.08

T Critical of all data: Tcr = 2.79

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
03/13/2012	383.	False		1

Sulfate, dissolved, mg/L

Location: MW-11D

Mean of all data: 441.

Standard Deviation of all data: 227.

Largest Observation Concentration of all data: Xn = 927.

Test Statistic, high extreme of all data: Tn = 2.14

T Critical of all data: Tcr = 2.84

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Sulfate, dissolved, mg/L

Location: MW-2

Mean of all data: 39.7

Standard Deviation of all data: 46.6

Largest Observation Concentration of all data: $X_n = 287$.

Test Statistic, high extreme of all data: $T_n = 5.30$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/23/2011	287.	False		1

Sulfate, dissolved, mg/L

Location: MW-2D

Mean of all data: 39.1

Standard Deviation of all data: 47.5

Largest Observation Concentration of all data: $X_n = 181$.

Test Statistic, high extreme of all data: $T_n = 2.99$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/18/2015	181.	False		1

Sulfate, dissolved, mg/L

Location: MW-3

Mean of all data: 68.6

Standard Deviation of all data: 55.9

Largest Observation Concentration of all data: $X_n = 230$.

Test Statistic, high extreme of all data: $T_n = 2.89$

T Critical of all data: $T_{cr} = 2.70$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
08/18/2014	230.	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Sulfate, dissolved, mg/L

Location: MW-3D

Mean of all data: 168.

Standard Deviation of all data: 95.3

Largest Observation Concentration of all data: $X_n = 638$.

Test Statistic, high extreme of all data: $T_n = 4.93$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
09/23/2011	638.	False		1

Sulfate, dissolved, mg/L

Location: MW-5

Mean of all data: 111.

Standard Deviation of all data: 70.8

Largest Observation Concentration of all data: $X_n = 340$.

Test Statistic, high extreme of all data: $T_n = 3.24$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
03/10/2014	340.	False		1

Sulfate, dissolved, mg/L

Location: MW-6

Mean of all data: 10.9

Standard Deviation of all data: 8.61

Largest Observation Concentration of all data: $X_n = 34.9$

Test Statistic, high extreme of all data: $T_n = 2.78$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Sulfate, dissolved, mg/L

Location: MW-6D

Mean of all data: 258.

Standard Deviation of all data: 77.2

Largest Observation Concentration of all data: $X_n = 443$.

Test Statistic, high extreme of all data: $T_n = 2.39$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Sulfate, dissolved, mg/L

Location: MW-8

Mean of all data: 131.

Standard Deviation of all data: 30.5

Largest Observation Concentration of all data: $X_n = 250$.

Test Statistic, high extreme of all data: $T_n = 3.87$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/14/2021	250.	False		1

Sulfate, dissolved, mg/L

Location: MW-9

Mean of all data: 176.

Standard Deviation of all data: 62.0

Largest Observation Concentration of all data: $X_n = 365$.

Test Statistic, high extreme of all data: $T_n = 3.04$

T Critical of all data: $T_{cr} = 2.85$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
11/05/2012	365.	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Total Dissolved Solids, mg/L

Location: MW-10

Mean of all data: 1630.

Standard Deviation of all data: 239.

Largest Observation Concentration of all data: $X_n = 2130$.

Test Statistic, high extreme of all data: $T_n = 2.11$

T Critical of all data: $T_{cr} = 2.80$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Total Dissolved Solids, mg/L

Location: MW-11

Mean of all data: 771.

Standard Deviation of all data: 412.

Largest Observation Concentration of all data: $X_n = 2770$.

Test Statistic, high extreme of all data: $T_n = 4.85$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
08/23/2017	2770.	False		1

Total Dissolved Solids, mg/L

Location: MW-11D

Mean of all data: 1260.

Standard Deviation of all data: 334.

Largest Observation Concentration of all data: $X_n = 1730$.

Test Statistic, high extreme of all data: $T_n = 1.42$

T Critical of all data: $T_{cr} = 2.84$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
09/10/2019	280.	False	-1	

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Total Dissolved Solids, mg/L

Location: MW-2

Mean of all data: 728.

Standard Deviation of all data: 229.

Largest Observation Concentration of all data: $X_n = 1560$.

Test Statistic, high extreme of all data: $T_n = 3.62$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
06/24/2005	1560.	False		1

Total Dissolved Solids, mg/L

Location: MW-2D

Mean of all data: 735.

Standard Deviation of all data: 163.

Largest Observation Concentration of all data: $X_n = 950$.

Test Statistic, high extreme of all data: $T_n = 1.32$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Total Dissolved Solids, mg/L

Location: MW-3

Mean of all data: 723.

Standard Deviation of all data: 139.

Largest Observation Concentration of all data: $X_n = 1130$.

Test Statistic, high extreme of all data: $T_n = 2.90$

T Critical of all data: $T_{cr} = 2.99$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
11/05/2018	290.	False	-1	

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Total Dissolved Solids, mg/L

Location: MW-3D

Mean of all data: 581.

Standard Deviation of all data: 87.2

Largest Observation Concentration of all data: $X_n = 750$.

Test Statistic, high extreme of all data: $T_n = 1.94$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Total Dissolved Solids, mg/L

Location: MW-5

Mean of all data: 762.

Standard Deviation of all data: 201.

Largest Observation Concentration of all data: $X_n = 1320$.

Test Statistic, high extreme of all data: $T_n = 2.78$

T Critical of all data: $T_{cr} = 3.12$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
11/05/2018	50.0	False	-1	

Total Dissolved Solids, mg/L

Location: MW-6

Mean of all data: 499.

Standard Deviation of all data: 103.

Largest Observation Concentration of all data: $X_n = 1040$.

Test Statistic, high extreme of all data: $T_n = 5.23$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
06/30/2004	1040.	False		1

Venice Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Total Dissolved Solids, mg/L

Location: MW-6D

Mean of all data: 675.

Standard Deviation of all data: 169.

Largest Observation Concentration of all data: $X_n = 960$.

Test Statistic, high extreme of all data: $T_n = 1.68$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Total Dissolved Solids, mg/L

Location: MW-8

Mean of all data: 738.

Standard Deviation of all data: 133.

Largest Observation Concentration of all data: $X_n = 1030$.

Test Statistic, high extreme of all data: $T_n = 2.20$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Total Dissolved Solids, mg/L

Location: MW-9

Mean of all data: 915.

Standard Deviation of all data: 187.

Largest Observation Concentration of all data: $X_n = 1400$.

Test Statistic, high extreme of all data: $T_n = 2.59$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT_Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
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No Outliers

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Zinc, dissolved, mg/L

Location: MW-10

Mean of all data: 0.00629

Standard Deviation of all data: 0.00931

Largest Observation Concentration of all data: $X_n = 0.0480$

Test Statistic, high extreme of all data: $T_n = 4.48$

T Critical of all data: $T_{cr} = 2.79$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/18/2015	0.0480	False		1

Zinc, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00692

Standard Deviation of all data: 0.00978

Largest Observation Concentration of all data: $X_n = 0.0490$

Test Statistic, high extreme of all data: $T_n = 4.30$

T Critical of all data: $T_{cr} = 2.77$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/18/2015	0.0490	False		1

Zinc, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00735

Standard Deviation of all data: 0.0102

Largest Observation Concentration of all data: $X_n = 0.0500$

Test Statistic, high extreme of all data: $T_n = 4.18$

T Critical of all data: $T_{cr} = 2.82$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/18/2015	0.0500	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Zinc, dissolved, mg/L

Location: MW-2

Mean of all data: 0.0141

Standard Deviation of all data: 0.0560

Largest Observation Concentration of all data: $X_n = 0.454$

Test Statistic, high extreme of all data: $T_n = 7.86$

T Critical of all data: $T_{cr} = 3.06$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/18/2015	0.454	False		1

Zinc, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00610

Standard Deviation of all data: 0.00832

Largest Observation Concentration of all data: $X_n = 0.0480$

Test Statistic, high extreme of all data: $T_n = 5.04$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/18/2015	0.0480	False		1

Zinc, dissolved, mg/L

Location: MW-3

Mean of all data: 0.0107

Standard Deviation of all data: 0.0177

Largest Observation Concentration of all data: $X_n = 0.108$

Test Statistic, high extreme of all data: $T_n = 5.50$

T Critical of all data: $T_{cr} = 2.98$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
03/08/2008	0.108	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Zinc, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.00673

Standard Deviation of all data: 0.0111

Largest Observation Concentration of all data: $X_n = 0.0500$

Test Statistic, high extreme of all data: $T_n = 3.92$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
05/18/2015	0.0500	False		1

Zinc, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00710

Standard Deviation of all data: 0.00997

Largest Observation Concentration of all data: $X_n = 0.0500$

Test Statistic, high extreme of all data: $T_n = 4.30$

T Critical of all data: $T_{cr} = 3.11$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/24/1998	<0.0500	True		1

Zinc, dissolved, mg/L

Location: MW-6

Mean of all data: 0.0159

Standard Deviation of all data: 0.0585

Largest Observation Concentration of all data: $X_n = 0.478$

Test Statistic, high extreme of all data: $T_n = 7.90$

T Critical of all data: $T_{cr} = 3.07$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	<u>Outlier Low Side</u>	<u>Outlier High Side</u>
02/24/1998	0.478	False		1

Venice

Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

LT Multiplier: x 0.50

Confidence Level: 95%

Number of Outliers: One Outlier

Transform: None

Zinc, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.00569

Standard Deviation of all data: 0.0101

Largest Observation Concentration of all data: $X_n = 0.0420$

Test Statistic, high extreme of all data: $T_n = 3.60$

T Critical of all data: $T_{cr} = 2.81$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
05/18/2015	0.0420	False		1

Zinc, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00709

Standard Deviation of all data: 0.0112

Largest Observation Concentration of all data: $X_n = 0.0720$

Test Statistic, high extreme of all data: $T_n = 5.79$

T Critical of all data: $T_{cr} = 3.13$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
03/17/2011	0.0720	False		1

Zinc, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00673

Standard Deviation of all data: 0.00832

Largest Observation Concentration of all data: $X_n = 0.0500$

Test Statistic, high extreme of all data: $T_n = 5.20$

T Critical of all data: $T_{cr} = 3.14$

<u>Sample Date</u>	<u>Value</u>	<u>LT Value</u>	Outlier <u>Low Side</u>	Outlier <u>High Side</u>
12/21/2004	<0.0500	True		1

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2021

Confidence Level: 95%

Transform: None

LT Multiplier: x 0.50

Number of Outliers: One Outlier

APPENDIX D2

TEST DESCRIPTIONS

MANAGES

Groundwater Data Management and Evaluation Software

Software Manual Product ID #1012581

Software Manual, February 2010

EPRI Project Manager
K. Ladwig

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10

STATISTICAL ANALYSIS

Stand-Alone Statistical Tests

Statistical Evaluation Report

The Statistical Evaluation Report is comprised of a series of subreports as described below.

User Selections:

- One location.
- Sample date range for data selection.
- Interval length: the length of the averaging period in months (1,2,3,4, or 6).
- One parameter.
- Non-detect processing: multiplier between 0 and 1.
- One-sided confidence ($1 - \alpha$) level – 0.90, 0.95 or 0.99.
- Limit type: used in the statistical overview to determine exceedances.

Mann-Kendall Trend and Seasonal Analysis Tests

The Mann-Kendall test for trend is insensitive to the presence or absence of seasonality. The test is non-parametric and does not assume any type of data distribution. Nonetheless, two forms of the test are provided in MANAGES, one ignoring data seasonality even if it is present, and one considering data seasonality. In the test, the null hypothesis, H_0 , is that the Sen trend is zero, and the alternate hypothesis, H_a , is that the trend is non-zero.

In general, the Mann-Kendall test considering seasonality indicates a larger range for allowable Sen estimate of trend when seasonality is actually present than the range indicated by the test performed ignoring seasonality.

In the Mann-Kendall Trend Analysis, available in under the Statistical Evaluation Report and in the Statistical Procedure for Detection Monitoring, and Mann-Kendall Seasonal Analysis, found under the Statistical Evaluation Report, MANAGES first calculates the Sen slope and the upper and lower confidence limits of the Sen slope, and then determines whether the Sen slope is statistically significant. Slope is statistically significant if it is non-zero.

Mann-Kendall Test for Sen Slope Significance – a two-sided, non-parametric method for data sets as small as 10, unless there are many tied (e.g., equal, NDs are treated as ties) values (Gilbert, 1987; p. 208)

Indicator Function

$$\text{sgn}(x_{ij} - x_{jk})$$

$$= 1 \text{ if } (x_{ij} - x_{jk}) > 0$$

$$= 0 \text{ if } (x_{ij} - x_{jk}) = 0$$

$$= -1 \text{ if } (x_{ij} - x_{jk}) < 0$$

where $x_{i1}, x_{i2}, \dots, x_{in}$ are the time ordered data (n_i is total of data in the i -th season).

Mann-Kendall Statistic, S_i

$$= \sum_{k=1}^{n_i-1} \sum_{j=k+1}^{n_i} \text{sgn}(x_{ij} - x_{jk})$$

Variance of S_i $\text{VAR}(S_i)$

$$\text{VAR}(S_i) =$$

$$\frac{1}{18} \left\{ n_i(n_i - 1)(2n_i + 5) - \sum_{p=1}^{g_i} t_{ip}(t_{ip} - 1)(2t_{ip} + 5) - \sum_{q=1}^{h_i} u_{iq}(u_{iq} - 1)(2u_{iq} + 5) \right\}$$

$$+ \frac{\sum_{p=1}^{g_i} t_{ip}(t_{ip} - 1)(t_{ip} - 2) \sum_{q=1}^{h_i} u_{iq}(u_{iq} - 1)(u_{iq} - 2)}{9n_i(n_i - 1)(n_i - 2)}$$

$$+ \frac{\sum_{p=1}^{g_i} t_{ip}(t_{ip} - 1) \sum_{q=1}^{h_i} u_{iq}(u_{iq} - 1)}{2n_i(n_i - 1)}.$$

The variable g_i is the number of tied groups (equal-valued) data in the i -th season, t_{ip} is the number of tied data in the p -th group for the i -th season, h_i is the number of sampling times (or time periods) in the i -th season that contain multiple data, u_{iq} is the number of multiple data in the q -th time period in the i -th season, and n_i is the number of data values in the i -th season.

Test Statistic, Z	If $S' = \sum_{i=1}^K S_i$, where K is the number of seasons, then the test statistic Z is computed as: $Z = \begin{cases} \frac{S'-1}{[\text{VAR}(S')]^{1/2}} & \text{iff } S' > 0 \\ 0 & \text{iff } S' = 0 \\ \frac{S'+1}{[\text{VAR}(S')]^{1/2}} & \text{iff } S' < 0 \end{cases}$ Where “iff” is an acronym meaning: if-and-only-if. A positive Z value means an upward trend and a negative Z value means a negative trend.
Hypothesis Test: H_0 = no trend H_a = trend present This is a two-sided test at the α significance level.	Accept the null hypothesis H_0 of no trend if $Z \leq Z_{1-\alpha/2}$ Reject the null hypothesis H_0 if $Z > Z_{1-\alpha/2}$ where $Z_{1-\alpha/2}$ is obtained from Table A1 in Gilbert (1987; p. 254).

Kruskal-Wallis Analysis (Test for Seasonality)

To perform the Kruskal-Wallis test for data seasonality, data points are first segmented according to season (Gilbert, 1987). The null hypothesis, H_0 , is that all seasons have the same mean value. The alternative hypothesis, H_a , is that at least one season has a mean larger or smaller than the mean of at least one other season. Montgomery et al. (1987) provide additional information on groundwater data seasonality. This is a two-sided, non-parametric test.

In MANAGES, the Kruskal-Wallis Test for Seasonality is found under Data Review // Non-Parametric Methods // Kruskal-Wallis Analysis. It determines whether the seasonal means for the specified parameter at the specified location are statistically the same.

	or $Z_i \geq SCL$.
--	---------------------

Outlier Tests

Outlier tests are useful in detecting inconsistencies of measurement within a data set. An outlier is defined as an observation that appears to deviate markedly from other values of a sample set. There are many possible reasons for the presence of an outlier, including 1) the presence of a true but extreme value from a single population, resulting from random variability inherent in the data; 2) an improper identification of the underlying distribution describing the population from which the sample set comes from; 3) the occurrence of some unknown event(s) such as a spill, creating a mixture of two or more populations; 4) a gross deviation from prescribed sampling procedures or laboratory analysis; 5) a transcription error in the data value or data unit of measurement.

USEPA (1989; p. 8-11) states that the purpose of a test for outliers is to determine whether or not there is statistical evidence that an observation that appears extreme does not fit the distribution of the rest of the data. If an observation is identified as an outlier, then steps need to be taken to determine whether it is the result of an error or a valid extreme observation. If a true error, such as in transcription, dilution, or analytical procedure, can be identified, then the suspect value should be replaced with its corrected value. If the source of the error can be determined but no correction is possible, then the observation is deleted and the reason for deletion is reported along with any statistical analysis. If no source of error can be documented, then it must be assumed that the observation is a true but extreme value of the data set. If this is the case, the outlier observation(s) must not be altered or excluded from any statistical analysis. Identification of an observation as an outlier but with no error documented could be used to suggest resampling to confirm the value (USEPA, 1989; p. 8-13).

The outlier tests provided in MANAGES are based on either the single outlier test of Grubbs (1969), which is used by USEPA (1989; pp. 8-10 to 8-13) or the single outlier test of Dixon (1951, 1953), which is used by USEPA (2000; pp. 4-24) and by ASTM (1998). The outlier tests assume the data come from a normal distribution. Only one outlier, either an extreme low or an extreme high, can be detected during a single analysis of a data set. Additional outliers can be detected by temporarily removing a previously detected outlier from a data set and then repeating the test on the remaining, reduced, data set. During each pass of the outlier test, the sample mean, standard deviation, and sample size used in the test statistics are computed using only the data remaining in the set. The process can be continued until there is either an insufficient amount of data remaining (a minimum of 3 values) or when no additional outliers are found. When using MANAGES, the user will be asked how many outliers are to be checked and it will then automatically perform all of the recursive calls and data reductions with the Grubbs or Dixon routine. When done, a report can be generated that will show each outlier marked with a flag indicating the sequential order in which the outliers were identified.

Critical values used in the one-sided Grubbs test are taken directly from those in Grubbs and Beck (1972) for sample sizes smaller than 147 observations. Critical values for sample sizes larger than 147 were generated numerically using a Monte Carlo routine, where each sampling event was simulated 100,000 times. Sample sizes ranging from 148 to 5,000 were used and then their resultant test statistic T_n curve fitted at specific significance levels. By this method, it was possible to match Grubbs results to at least four significant digits for corresponding tabulated values.

Critical values used in the one-sided Dixon outlier test are taken directly from tables given in Dixon (1951), Dixon (1953; page 89), and USEPA (2000; p. A-5, Table A-3). The critical values were then curve fitted for every sample size between 3 and 25 as a function of the significance level. By this method, it was possible to match Dixon's results to at least four significant digits for corresponding tabulated values. Note that the Dixon test assumes the data are either normally or lognormally distributed. Hence, sample sizes can only range between 3 and 25, inclusive. Dixon never developed an outlier test for sample sizes larger than 25.

User Selections:

- One or up to 100 locations: a separate test is performed for each location.
- One or up to 100 parameters: a separate test is performed for each parameter.
- Evaluation date range.
- Confidence ($1 - \alpha$) level: 0.90, 0.95 or 0.99.
- Non-detect processing: multiplier between 0 and 1.
- Data transformation option: none and log (base e).
- Number of outliers: one, two, first 5%, first 10%. Selecting any option other than one causes MANAGES to rerun the test, with outliers from prior tests removed, until either no outliers are detected or the specified number of outliers are detected.

Technical Details

Grubbs Outlier Test – The Grubbs outlier test determines whether there is statistical evidence that an observation does not fit the remaining data (USEPA, 1989; p. 8-11). This significance test looks at either the highest or the lowest observation in normal samples.

The number of observations taken during a specified scoping period; n

n

Statistical Analysis

Mean of the observed data during the scoping period; $\bar{X}$	$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i$ where X_i is the i-th observation.
Standard deviation of observed data; S_x .	$S_x = \sqrt{\frac{1}{(n-1)} \sum_{i=1}^n (X_i - \bar{X})^2}$
Test statistics: T_l & T_n	Sort the data into ascending order, then compute the statistics $T_l = (\bar{X} - X_l) / S_x$ $T_n = (X_n - \bar{X}) / S_x$ where X_l is the smallest value of the n observations and X_n is the largest value of the n observations.
One-sided test with a $(1-\alpha)$ confidence level that there is a single extreme outlier within the n observations.	Grubbs single, one-sided test of either an extreme low outlier : X_l is an outlier if $T_l \geq T_{cr(1-\alpha, n)}$ or an extreme high outlier: X_n is an outlier if $T_n \geq T_{cr(1-\alpha, n)}$. The function $T_{cr(1-\alpha, n)}$ is the critical value, given in Grubbs and Beck (1972; Table 1) and USEPA (1989; p. B-11, Table 8) . Note that the critical value assumes that the mean and standard deviation are computed from the sample being tested.

Dixon Outlier Test – The Dixon outlier test determines whether there is statistical evidence that an extreme observation does not fit the remaining data (USEPA, 2000; p. 4-24 and ASTM D6312, 1998). This significance test looks at both the highest and the

lowest observations in a sample data set. However, the routine will only perform the outlier tests if several conditions are first satisfied. For example, the Dixon outlier algorithm checks the distribution of the sample data for both normality and lognormality using the Shapiro-Wilk W-test. The outlier routine will not proceed with a data set if the W-test fails. In addition, the Dixon outlier test is limited to a minimum of 3 and a maximum sample size n of 25 data values.	
The number of observations taken during a specified scoping period; n	Number of observations, n , where $3 \leq n \leq 25$.
Sorting the sample data	Sort the data into ascending order, with the minimum data value $X_{(1)}$ first and the maximum data value $X_{(n)}$ last. Use the natural log of the data values if data are lognormally distributed, i.e., $X_{(j)} = \text{Ln}[X_{(j)}]$.
Goodness-of fit tests	After temporarily excluding either the minimum or maximum value of the data set, the Shapiro-Wilk's W-test is used to determine if the remaining $n-1$ values are normally or lognormally distributed. If not, the Dixon outlier test can't be used.
Test statistic, T_s , for the minimum data value	Compute the T_s test statistic for $X_{(1)}$ as an outlier: $T_s = \frac{X_{(2)} - X_{(1)}}{X_{(n)} - X_{(1)}} \quad \text{for } 3 \leq n \leq 7$ $T_s = \frac{X_{(2)} - X_{(1)}}{X_{(n-1)} - X_{(1)}} \quad \text{for } 8 \leq n \leq 10$ $T_s = \frac{X_{(3)} - X_{(1)}}{X_{(n-1)} - X_{(1)}} \quad \text{for } 11 \leq n \leq 13$ $T_s = \frac{X_{(3)} - X_{(1)}}{X_{(n-2)} - X_{(1)}} \quad \text{for } 14 \leq n \leq 25.$
Test statistic, T_s , for the maximum data value	Compute the T_s test statistic for $X_{(n)}$ as an outlier:

	$T_s = \frac{X_{(n)} - X_{(n-1)}}{X_{(n)} - X_{(1)}} \quad \text{for } 3 \leq n \leq 7$ $T_s = \frac{X_{(n)} - X_{(n-1)}}{X_{(n)} - X_{(2)}} \quad \text{for } 8 \leq n \leq 10$ $T_s = \frac{X_{(n)} - X_{(n-2)}}{X_{(n)} - X_{(2)}} \quad \text{for } 11 \leq n \leq 13$ $T_s = \frac{X_{(n)} - X_{(n-2)}}{X_{(n)} - X_{(3)}} \quad \text{for } 14 \leq n \leq 25.$
Critical value T_c	USEPA (2000; p. A-5, Table A-3) lists the critical values of the Dixon test as a function of sample size for a one-sided extreme value test at the significance levels α of 0.1, 0.05, and 0.01.
One-sided test with a $(1-\alpha)$ confidence level that there is a single extreme outlier within the n observations.	Dixon's single, one-sided test for statistical evidence of either an extreme low-valued outlier: $X_{(1)}$ is an outlier if $T_s \geq T_c$ or an extreme high-valued outlier: $X_{(n)}$ is an outlier if $T_s \geq T_c$. The function T_c is the critical value, given in Dixon (1953; page 89) and USEPA (2000; p. A-5, Table A-3). Note that the critical value assumes that the data are either normally or lognormally distributed.

Other Statistical Calculations Used in MANAGES

Sen Estimate of Slope

The Sen estimate of slope is the median of all slopes between all possible unique pairs of individual data points in the time period being analyzed (Gilbert, 1987). The slopes represent the rate of change of the measured parameter, with the y-axis being the parameter value and the x-axis being calendar days. Sen's estimate of slope is a non-parametric estimator of trend. The method is robust, and fairly insensitive to the presence of a small fraction of outliers and non-detect data values. In contrast, linear regression and other least squares estimators of slope are significantly more sensitive, and more likely to give erroneous slope indications, even when only a few outlier values are present.

When data averaging is not activated, the Sen slope is calculated using individual data points and actual sampling dates. When data averaging is activated, multiple data points within each specified season period are reduced to one data point by arithmetic averaging over each of the season periods. These averaged values are then assigned to the day that corresponds to the middle of that season's period.

The approximate lower and upper confidence limits for the Sen slope can also be calculated using normal theory (Gilbert, 1987). It should be noted that confidence limits for the Sen slope are not necessarily symmetrical about the estimated slope since ranked values of slope are used in the calculation.

MANAGES calculates Sen slope in the Sen Slope Overlay Graph, Statistical Summary reports and in the two Mann-Kendall tests performed under the Statistical Evaluation Report.

Sen's Estimate of Slope – two-sided, non-parametric method that calculates the trend of a single data series. It is less sensitive to outliers and non-detect values than linear regression (Gilbert, 1987; p. 217).	
Slope, Q	$= \frac{x_{i'} - x_i}{i' - i}$ where $x_{i'}$ and x_i are data values at times i' and i, respectively, and where $i' > i$. Typically, i' and i are expressed in units of either days for trend analysis or years for seasonal analysis.
N'	Number of unique data point pairs that can be made for the observations in the data set, for $i' > i$. For n monitoring events, N' is given as: $N' = n(n-1)/2$

Statistical Analysis

Sen's Slope Estimate	Sen's slope estimator = median slope = $Q_{[(N'+1)/2]}$ if N' is odd = $\frac{1}{2}(Q_{[N'/2]} + Q_{[(N'+2)/2]})$ if N' is even where the Q values have first been ranked from smallest to largest.
$Z_{1-\alpha/2}$	Statistic for the cumulative normal distribution (Gilbert, 1987; p. 254) for the two-sided, α significance level.
Variance estimate of the Mann-Kendall S Statistic, VAR(S)	VAR(S) = $\frac{1}{18}[n(n-1)(2n+5) - \sum_{p=1}^g t_p(t_p-1)(2t_p+5)]$ where g is the number of tied groups, t_p is the number of data in the pth group, and n is the number of data values.
C_α	= $Z_{1-\alpha/2} \sqrt{\text{VAR}(S)}$
Sen's Slope, a two-sided test at the α significance level	$M_1 = \frac{(N' - C_\alpha)}{2}$ $M_2 = \frac{(N' + C_\alpha)}{2}$ Lower limit of confidence interval is the M_1-th largest slope, and upper limit of confidence interval is the $(M_2 + 1)$-th largest of the N' ordered slope estimates.

Coefficient of Skewness for Normality

The coefficient of skewness is another measure for data normality (Gilbert, 1987). MANAGES provides the value of the coefficient of skewness in the Statistical Evaluation Report, Statistical Overview. Additional information on data normality is given by Montgomery, et al. (1987).