Intended for
Ameren Missouri

Date
December 23, 2022

Project No.
1940101997

2022 ANNUAL REPORT

FORMER VENICE POWER PLANT, ASH PONDS 2 & 3

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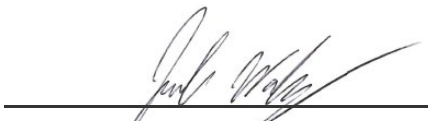

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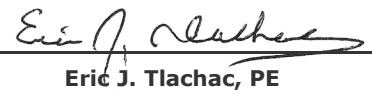

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ACRONYMS AND ABBREVIATIONS

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 both the 2020 and 2021 Annual Reports included plans to cease monitoring for lead and selenium in accordance with the Groundwater Monitoring Plan. Recommendations presented in the 2020 and 2021 Annual Reports included plans to cease monitoring for lead and selenium in accordance with the Groundwater Monitoring Plan. We request written concurrence for ceasing monitoring for lead and selenium.

This 2022 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 2019 through August 2022. Data collected from 2019 to 2021 were included, in addition to data collected in 2022, 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 Post-Closure Overview – 2012 to 2022

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 presented in this report, which are focused on specific compliance criteria. 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 geomembrane; a geocomposite drainage layer constructed of a 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.

1.2.2 Summary of 2012 to 2022 Groundwater Quality Data Review

Appendix C of the Closure Plan identified boron as the primary indicator constituent for coal ash impacts to groundwater at the Site. As such, boron was selected for this groundwater quality data review. Dissolved 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 patterns since closure. It should be noted that the regression lines are not equivalent to the statistical trends discussed in the groundwater compliance section of this report.

Generally, dissolved boron concentrations in most compliance monitoring wells have decreased since 2012. 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 dissolved 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 dissolved 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 dissolved 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 2022 and August 2022 are illustrated in Figure 3-1 and Figure 3-2, respectively. Groundwater was encountered in shallow monitoring wells at elevations between approximately 387 to 391 feet North American Vertical Datum of 1988 (NAVD88) on March 15, 2022 (Figure 3-1) and 389 to 395 feet NAVD88 on August 15, 2022 (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 on March 15, 2022 and August 15, 2022 when river elevation was low. Groundwater elevation was estimated to be below the base of the well screen at MW-3 (less than 386.6 feet NAVD88), and groundwater elevation contours in the vicinity of MW-3 were inferred as illustrated on Figure 3-1 and Figure 3-2 for March 2022 and August 2022, respectively. Groundwater elevation was not measured at MW-5 in August 2022 because the well could not be located following road construction in the vicinity of the well. The sampling team returned to the site in early November to locate and sample MW-5. Groundwater flow directions in March 2022 and August 2022 were generally west to southwest (toward the Mississippi River), and horizontal hydraulic gradients were approximately 0.002 feet/foot and 0.003 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 2022 and August 2022 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 are tabulated in Appendix A for groundwater samples collected on February 4, 2019; September 10, 2019; March 10, 2020; September 8, 2020; March 1, 2021/ April 19, 2021; September 14, 2021/November 2, 2021/December 13, 2021; March 15, 2022/March 28, 2022; and August 15, 2022/November 2, 2022, the most recent eight groundwater monitoring events used to calculate groundwater quality trends for evaluation of compliance with related closure plan requirements. The field data for 2022 are found in Appendix B (field data for previous groundwater monitoring events were presented in previous Annual Reports). Sampling anomalies in 2022, 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 (sampling anomalies for previous groundwater monitoring events were presented in previous Annual Reports):

- MW-3 was not sampled in August 2022 due to the well being dry. Sampling at MW-3 was performed on March 28, 2022.
- Occasional detections were observed in the field blanks during the August 2022 sampling event. Ameren is investigating the cause and will work to lower detections in the field blanks for the subsequent sampling events.

- Groundwater elevation was not measured at MW-5 in August 2022 because the well could not be located following road construction in the vicinity of the well. The sampling team returned to the site in early November to locate and sample MW-5.

Select monitored parameters 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 2019-2022 monitoring period, dissolved boron concentrations ranged from 0.10 to 5.09 milligrams per liter (mg/L) in shallow compliance monitoring wells, except in MW-10 where dissolved boron concentrations ranged from 12.42 to 19.34 mg/L (Figure 3-3). In deep monitoring wells, dissolved boron concentrations ranged from 0.32 to 14 mg/L (Figure 3-3). As discussed in Sections 1.2.2-1.2.3, dissolved boron concentrations have decreased in the majority of compliance monitoring wells across the Site since closure. During the current monitoring period, dissolved boron concentrations are continuing to decrease in the majority of compliance wells from concentrations observed prior to closure 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 increasing concentration trends for dissolved chloride were observed in some monitoring wells (although not statistically significant), and 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, dissolved sulfate concentrations at the Ash Ponds 2 & 3 were highest at MW-6D, MW-10, and MW-11D (Figure 3-5) during the 2019-2022 monitoring period, when dissolved boron concentrations were also highest. However, there are also differences between the spatial distribution of dissolved sulfate concentrations and dissolved boron concentrations at the Site. For example, MW-6 had a median dissolved boron concentration of 4.88 mg/L (above the Class I Groundwater Standard for boron [2.0 mg/L]), suggesting coal ash impacts, even though the median dissolved 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 dissolved boron concentrations (median concentrations below the Class I Groundwater Standard for boron of 0.836 mg/L and 0.729 mg/L, respectively), yet dissolved 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 2019-2022 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 a high or low observation that differs statistically from the other data based upon the parameters of the test, including the presumption that the data are normally distributed. The test methodology and results are listed in Appendix D.

The Grubbs test provides statistical evidence of potential outliers, but cannot be used alone to determine whether or not a value is a true outlier that should be excluded from future statistical analysis. Corroborating evidence needed to exclude values includes a discrete data reporting or analytical error, or potential laboratory bias. Absent corroborating evidence, the flagged values are considered true but extreme values in the data set.

Outliers identified by the Grubbs outlier test based on the date range of 1996-2022 were considered for elimination from further statistical analysis. Ultimately, no new outliers were eliminated from 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 2019-2022 monitoring period (most recent eight monitoring events) show 34 cases with positive slopes, 24 cases with negative slopes, and 194 cases with no slope (Table 3-1). The 34 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 (2019-2022) 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 ten cases of short-term increasing trends in the 2019-2022 dataset. The increasing short-term trends occurred for boron (MW-2, MW-2D, MW-11D), iron (MW-11D), manganese (MW-2, MW-6, MW-11D), and total dissolved solids (TDS) (MW-2, MW-2D, MW-6D). Of these identified short-term trends, no trends were observed to persist over a period of two or more consecutive reporting years.

3.4 Groundwater Monitoring System Maintenance and Inspection

The monitoring wells were inspected during each sampling event of 2022. MW-5 could not be located following road construction in the vicinity of the well. The sampling team returned to the

site in early November to locate and sample MW-5. Groundwater monitoring field data worksheets which contain inspection records for 2022 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 2022 quarterly cover inspections.

4. EVALUATION OF COMPLIANCE

The increasing short-term trends for the most recent eight monitoring events (2019-2022) as identified in Section 3.3.3 and in Table 3-1 were either first-time or non-consecutive occurrences and likely do not indicate a potential release from Ash Ponds 2 & 3.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Statistical analyses of analytical results for the eight rounds of groundwater samples collected between 2019 to 2022 did not identify any cases of increasing trends that recurred over a period of two or more consecutive years.

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 2022 Annual Report, concentrations continue to be low for selenium and lead at upgradient and downgradient wells. Recommendations presented in the 2020 and 2021 Annual Reports included plans to cease monitoring for lead and selenium in accordance with the Groundwater Monitoring Plan. We request written 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
2022 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
2022 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
2022 Annual Report
Former Venice Power Plant - Ash Ponds 2 & 3

Field Parameters	Method
pH	SM, 22nd Edition, Method 4500-H+ B
Specific conductance	SM, 22nd Edition, Method 2510
Temperature	SM, 22nd Edition, Method 4500-H+ B
Water level	--
Well depth	--
Laboratory Parameters	**Method**
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium[1]	--
Boron	SM, 22nd Edition, Method 3120 B
Cadmium	EPA 200.8
Chloride	SM, 22nd Edition, Method 4110 B
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Cyanide	Lachat 10-204-00-1-X
Fluoride	SM, 22nd Edition, Method 4110 B
Iron	SM, 22nd Edition, Method 3120 B
Lead	EPA 200.8
Manganese	SM, 22nd Edition, Method 3120 B
Mercury[1]	--
Nickel	EPA 200.8
Nitrate as N	SM, 22nd Edition, Method 4110 B
Selenium	EPA 200.8
Silver	EPA 200.8
Sulfate	SM, 22nd Edition, Method 4110 B
Thallium[1]	--
Total Dissolved Solids	SM, 22nd Edition, Method 2540 C
Zinc	EPA 200.8

[O: SJC, C: YAD 3/9/18, U: RAB 12/20/22, C: KLT 12/20/22]

Notes:

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

Table 3-1. Trend Analysis Results
2022 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	6	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	increase	increase	none	+	none	none	-	none	none	decrease	+	increase
Cadmium, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Chloride, dissolved	+	-	-	+	-	+	-	-	+	+	+	-
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	+	none	none	increase
Lead, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Manganese, dissolved	increase	none	none	none	none	increase	none	none	none	-	none	increase
Nickel, dissolved	none	none	none	none	none	none	none	none	none	none	none	none
Nitrate nitrogen, dissolved	decrease	+	+	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	+	-	-	+	-	-	-	+	+
Total Dissolved Solids	increase	increase	+	-	none	+	increase	-	+	-	+	+
Zinc, dissolved	none	none	none	none	none	none	none	none	none	none	none	none

|O: RAB 10/11/22, C: KLT 10/18/22||U: RAB 12/22/22, C: KLT 12/22/22|

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 and August 15, 2022
- The most recent eight sampling events were used for analysis; date range for this analysis is 2/4/2019-11/2/2022

Table 3-2. Summary of Trend Analyses
2022 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	-
2022	10	20

[O: RAB 10/11/22 , C: KLT 10/18/22][U: RAB 12/22/22, C: KLT 12/22/22]

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

0 150 300 Feet

SITE MAP

FIGURE 1-1

2022 ANNUAL REPORT FORMER VENICE POWER PLANT ASH PONDS 2 & 3

AMEREN MISSOURI

VENICE, ILLINOIS

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL

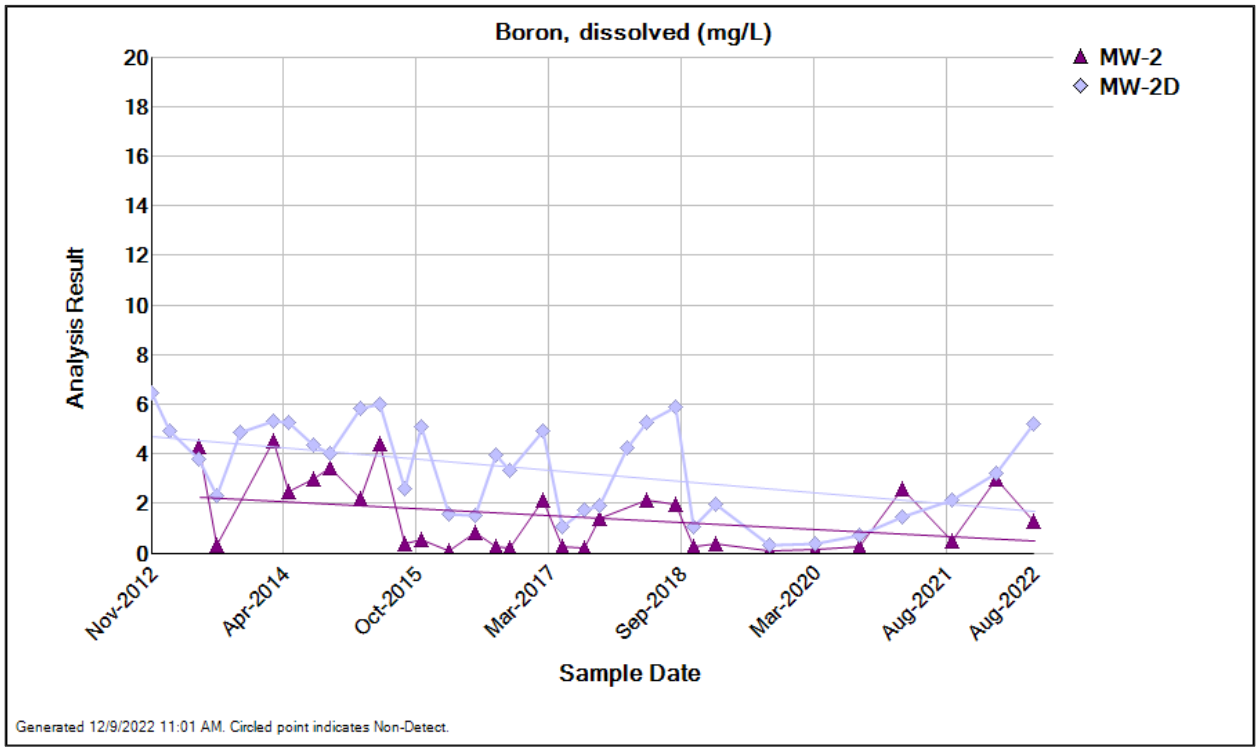


Figure 1-2. Boron concentrations over time since closure completion (2012) at compliance wells MW-2 and MW-2D.

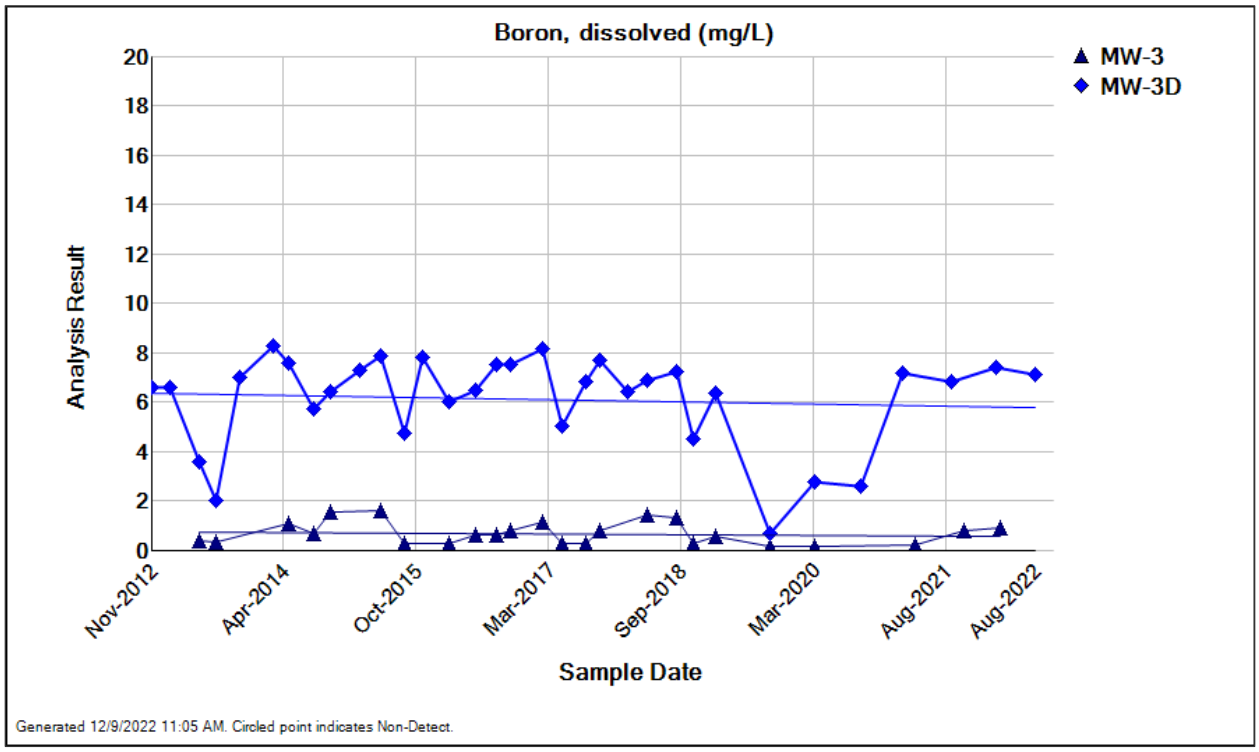


Figure 1-3. Boron concentrations over time since closure completion (2012) at compliance wells MW-3 and MW-3D.

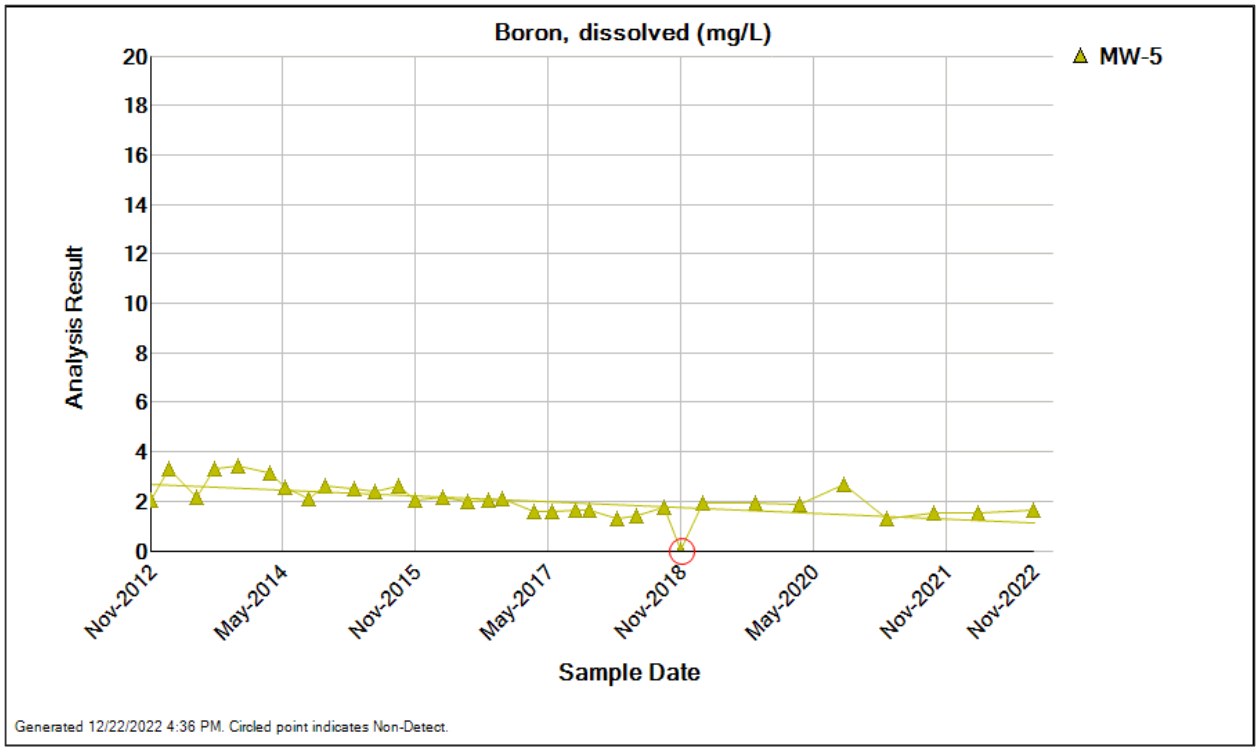


Figure 1-4. Boron concentrations over time since closure completion (2012) at compliance well MW-5.

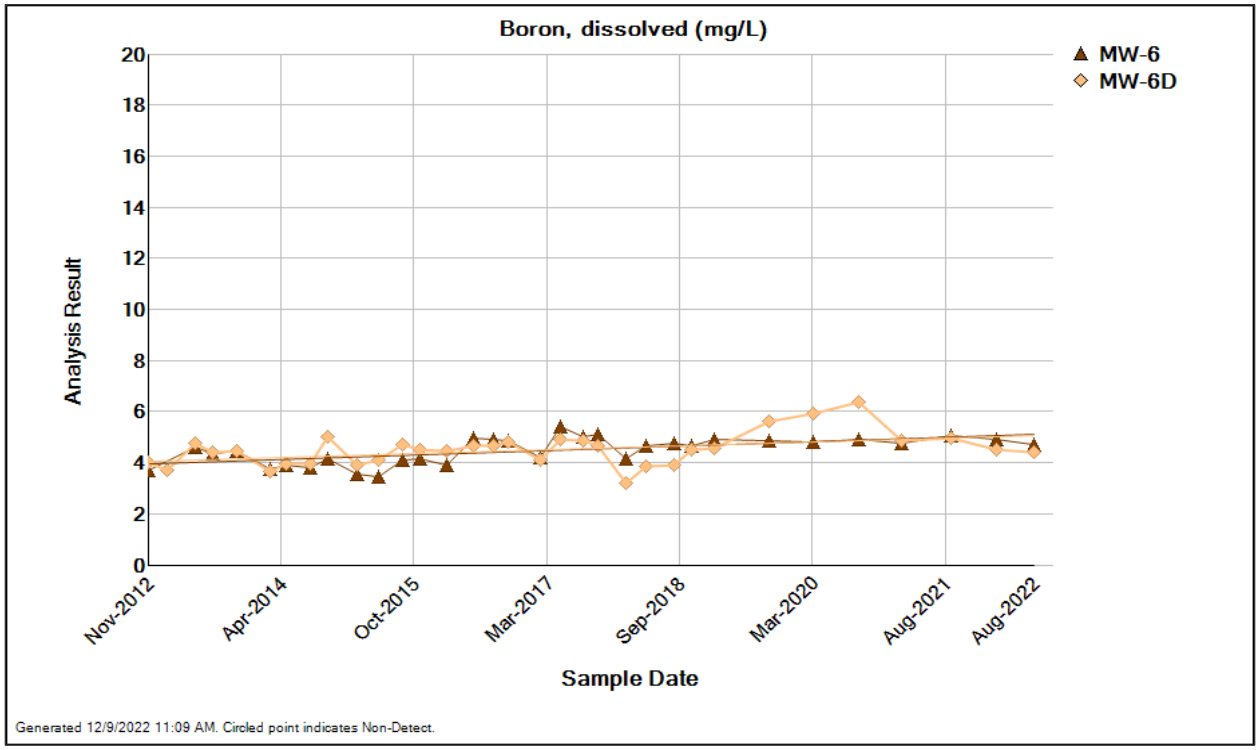


Figure 1-5. Boron concentrations over time since closure completion (2012) at compliance well MW-6 and MW-6D.

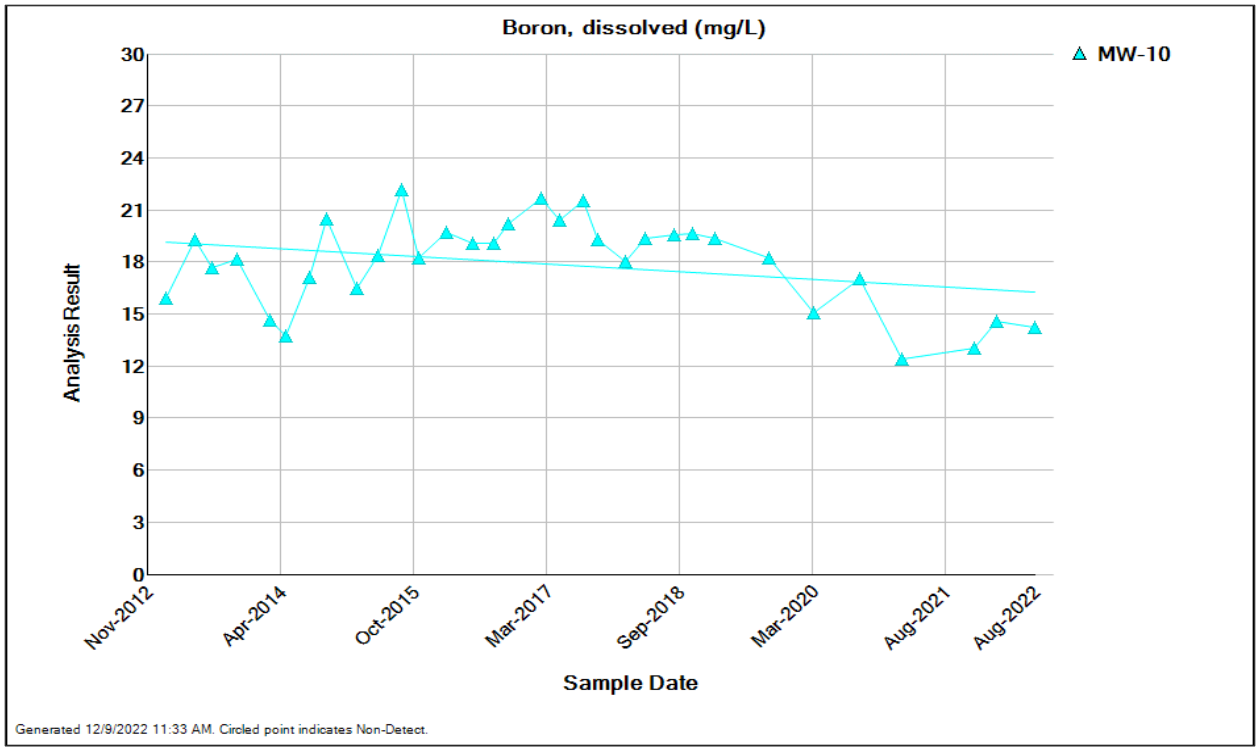


Figure 1-6. Boron concentrations over time since closure completion (2012) at compliance well MW-10.

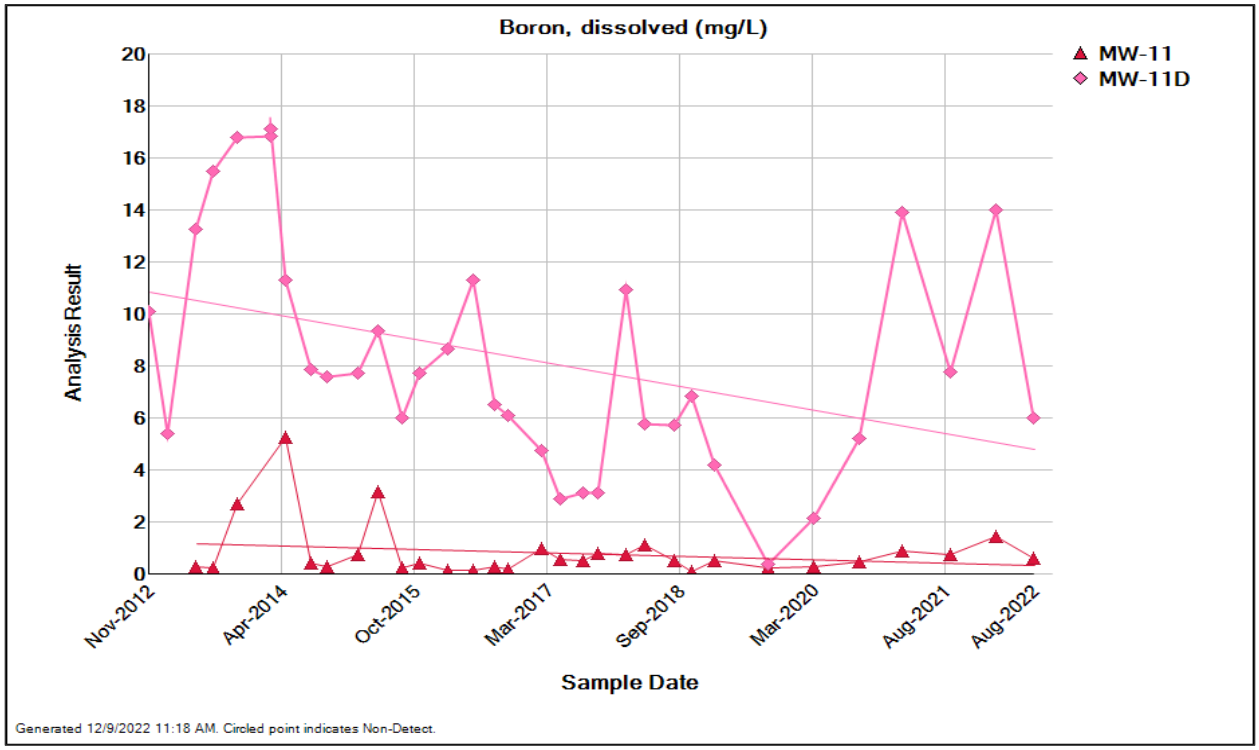


Figure 1-7. Boron concentrations over time since closure completion (2012) at compliance wells MW-11 and MW-11D.

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

0 150 300 Feet

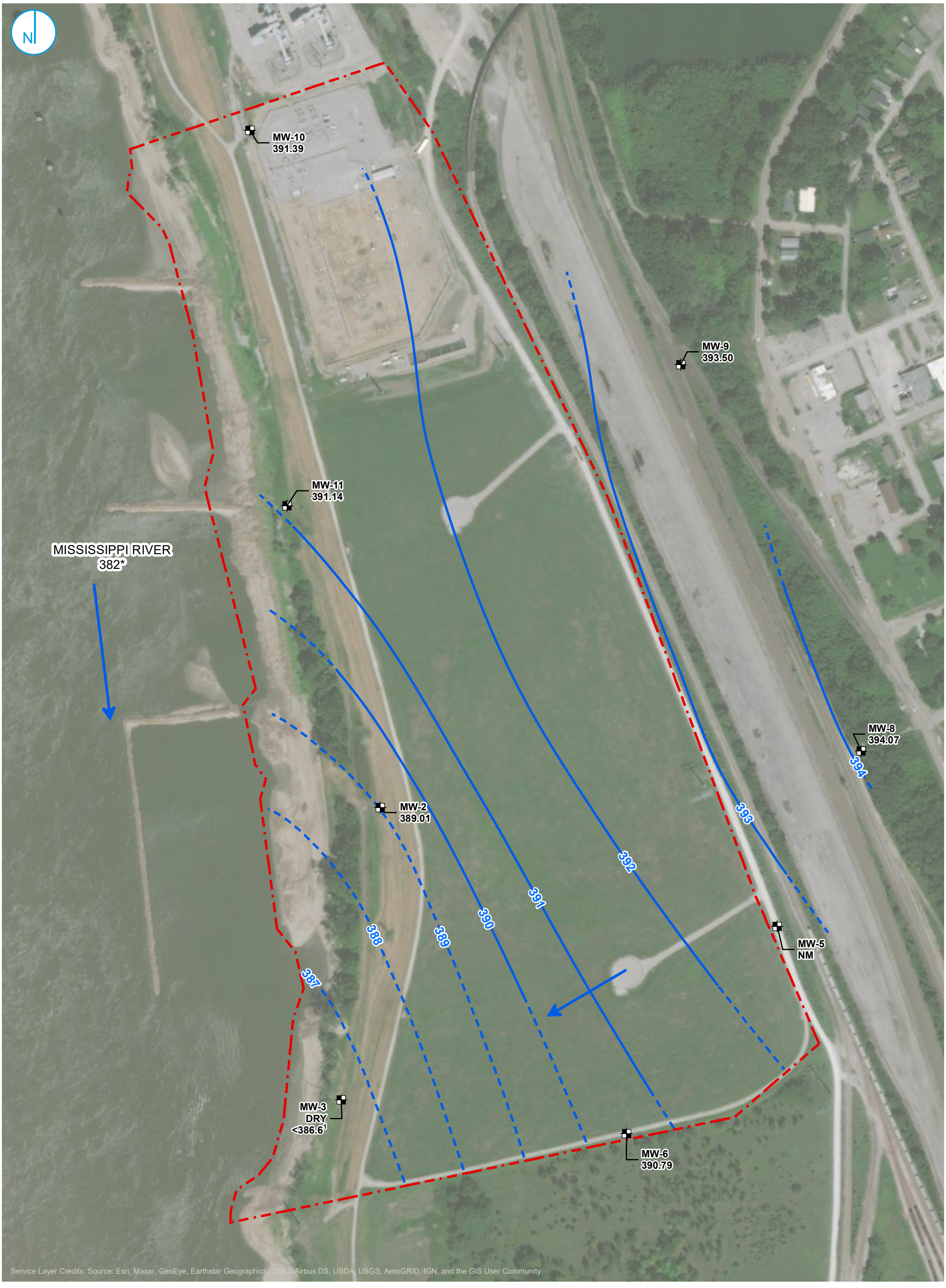
*RIVER ELEVATION OBTAINED FROM SITE STAFF GAGE MARCH 15, 2022.
[1] = WELL DRY, GROUNDWATER LEVEL BELOW BOTTOM OF WELL SCREEN, LESS THAN 386.6 FEET NAVD88.

GROUNDWATER ELEVATION CONTOURS
MARCH 15, 2022

2022 ANNUAL REPORT
FORMER VENICE POWER PLANT
ASH PONDS 2 & 3
AMEREN MISSOURI
VENICE, ILLINOIS

FIGURE 3-1

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



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

0 150 300 Feet

*RIVER ELEVATION OBTAINED FROM SITE STAFF GAGE AUGUST 15, 2022.
NM = NOT MEASURED
[1] = WELL DRY, GROUNDWATER LEVEL BELOW BOTTOM OF WELL SCREEN, LESS THAN 386.6 FEET NAVD88.

GROUNDWATER ELEVATION CONTOURS
AUGUST 15, 2022

2022 ANNUAL REPORT
FORMER VENICE POWER PLANT
ASH PONDS 2 & 3
AMEREN MISSOURI
VENICE, ILLINOIS

FIGURE 3-2

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

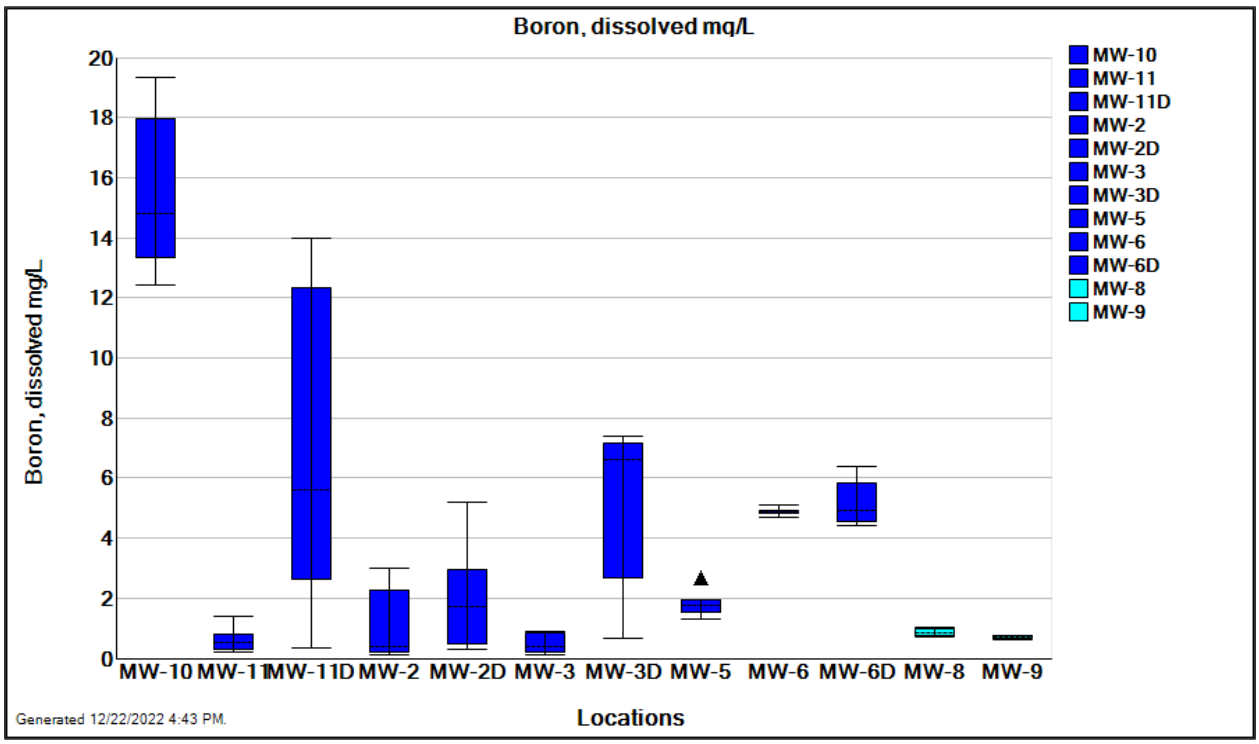


Figure 3-3. Box-whisker plot showing the distribution of boron concentrations by monitoring well for data collected during February 2019 through November 2022.

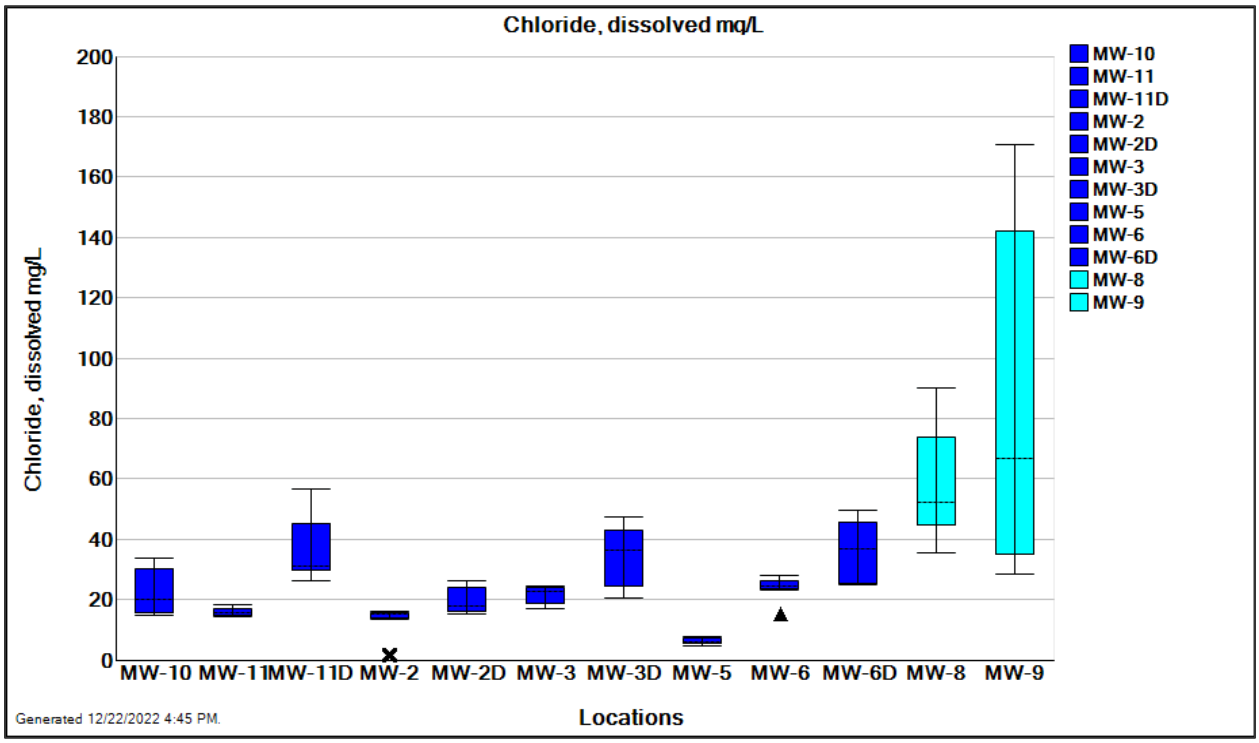


Figure 3-4. Box-whisker plot showing the distribution of chloride concentrations by monitoring well for data collected during February 2019 through November 2022.

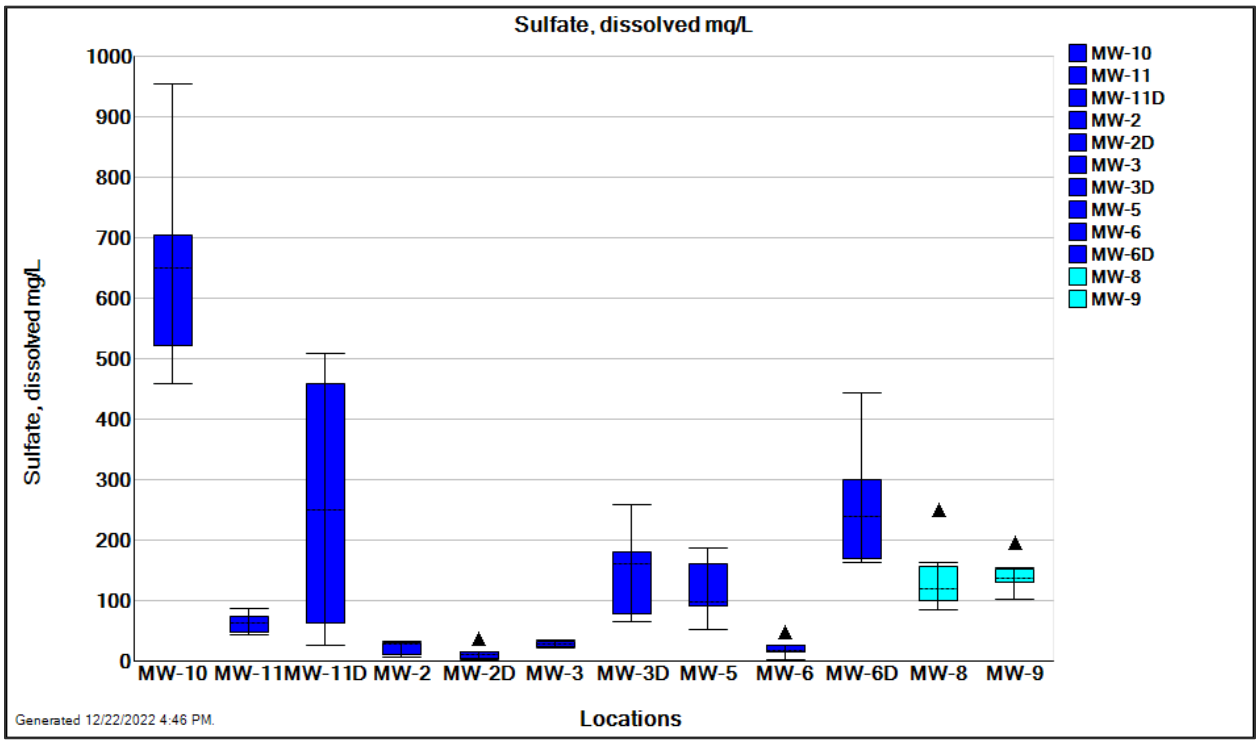


Figure 3-5. Box-whisker plot showing distribution of sulfate concentrations by monitoring well for data collected during February 2019 through November 2022.

APPENDIX A
GROUNDWATER MONITORING RESULTS 2019-2022 MONITORING PERIOD

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-2

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	<0.001	<0.001	0.001	0.001	<0.001		<0.001	<0.000	<0.000
As, diss, mg/L	<0.008	0.008	<0.008	<0.008	0.041		0.033	0.094	0.079
B, diss, mg/L	0.344	0.104	0.134	0.232	2.558		0.478	3.000	1.300
Ba, diss, mg/L	0.248	0.197	0.217	0.207	0.402		0.282	0.461	0.510
Cd, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.000	<0.000
Cl, diss, mg/L	13.6	13.9	15.4	15.3	15.9		15.9	1.6	14.9
CN, tot, mg/L	<0.0010	<0.0010	<0.0010	<0.0010		0.0012	<0.0020	<0.0010	<0.0010
Co, diss, mg/L	<0.001	<0.001	<0.001	0.001	0.066		0.013	0.091	0.035
Cr, diss, mg/L	<0.001	0.002	<0.001	<0.001	0.001		<0.001	<0.000	<0.000
Cu, diss, mg/L	0.001	0.001	0.001	<0.001	<0.001		<0.001	<0.000	<0.000
F, diss, mg/L	0.23	0.22	0.20	0.23	0.21		0.19	0.30	0.16
Fe, diss, mg/L	0.423	0.250	0.024	0.162	3.380		0.745	15.100	10.600
GW Depth (TOC), ft	17.90	14.30	15.30	23.40	23.40	12.70	24.40	23.80	23.30
GW Elv, ft	394.41	398.01	397.01	388.91	388.91	399.61	387.91	388.51	389.01
Mn, diss, mg/L	0.033	0.007	0.005	0.086	3.087		0.773	5.100	2.900
Ni, diss, mg/L	0.003	<0.003	0.006	<0.003	0.029		0.011	0.027	0.019
NO3, diss, mg/L	2.90	9.50	12.50	2.70	<0.10		<0.10	<0.10	<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	<0.000	<0.000
pH (field), STD	6.86	7.00	6.87	6.80	7.00	6.90	6.93	6.90	7.00
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0002		0.0270	<0.0002	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009		0.025	0.001	0.000
SO4, diss, mg/L	30.8	26.8	29.0	31.2	7.5		28.0	5.9	16.2
Spec. Cond. (field), micromho	901	783	885	887	1093	1136	958	1205	1117
TDS, mg/L	580	480	570	520	690		613	763	701
Temp (Celcius), degrees C	16.20	16.40	14.20	16.50	15.90	15.70	17.10	18.00	16.70
Zn, diss, mg/L	0.003	0.004	<0.002	0.009	0.007		0.010	0.001	0.002

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-2D

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	0.002	<0.001	0.001	0.002	0.001		<0.001	<0.000	<0.000
As, diss, mg/L	0.002	0.014	<0.008	0.015	0.010		0.026	<0.000	0.021
B, diss, mg/L	1.984	0.318	0.372	0.738	1.443		2.144	3.200	5.200
Ba, diss, mg/L	0.393	0.227	0.228	0.283	0.338		0.418	0.420	0.423
Cd, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.000	<0.000
Cl, diss, mg/L	15.2	26.2	24.9	21.9	17.8		17.9	15.7	17.4
CN, tot, mg/L	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010	<0.0020	<0.0010	<0.0010
Co, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.000	0.000
Cr, diss, mg/L	<0.001	0.001	<0.001	<0.001	0.001		<0.001	<0.000	<0.000
Cu, diss, mg/L	0.001	<0.001	<0.001	<0.001	0.001		<0.001	<0.000	<0.000
F, diss, mg/L	0.15	0.17	<0.05	0.13	0.24		0.17	0.20	0.17
Fe, diss, mg/L	20.390	14.810	13.450	18.130	18.410		21.930	24.800	21.300
GW Depth (TOC), ft	18.80	13.80	15.00	23.80	22.90	13.00	24.80	24.00	23.80
GW Elv, ft	393.56	398.56	397.36	388.56	389.46	399.36	387.56	388.36	388.56
Mn, diss, mg/L	1.084	0.611	0.554	0.791	0.584		1.017	1.400	1.200
Ni, diss, mg/L	<0.003	<0.003	<0.003	<0.003	<0.003		<0.003	<0.000	0.000
NO3, diss, mg/L	<0.10	<0.10	<0.10	1.00	0.90		1.30	<0.10	1.30
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	<0.000	<0.000
pH (field), STD	6.99	7.00	7.12	7.00	7.40	7.00	7.23	7.20	7.10
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0002		0.0270	<0.0002	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009	<0.000	0.000
SO4, diss, mg/L	1.4	13.7	12.6	5.2	5.4		1.1	12.9	36.7
Spec. Cond. (field), micromho	1173	736	661	878	743	836	1182	1393	1252
TDS, mg/L	740	430	430	460	660		700	903	790
Temp (Celcius), degrees C	15.90	15.40	15.70	17.00	15.30	15.70	16.00	16.20	15.90
Zn, diss, mg/L	0.004	0.003	0.004	0.004	0.004		0.008	0.019	<0.000

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-3

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	11/2/2021	3/28/2022
Ag, diss, mg/L	0.002	0.003	0.001			<0.001	0.001	<0.000
As, diss, mg/L	<0.008	<0.008	<0.008			0.001	0.018	<0.000
B, diss, mg/L	0.523	0.127	0.154			0.228	0.811	0.900
Ba, diss, mg/L	0.259	0.120	0.149			0.223	0.280	0.299
Cd, diss, mg/L	<0.001	<0.001	<0.001			0.001	<0.001	0.000
Cl, diss, mg/L	17.1	24.0	24.4			23.5	21.5	19.1
CN, tot, mg/L	<0.0010	0.0010	<0.0010			<0.0010	<0.0010	<0.0010
Co, diss, mg/L	0.003	0.001	0.001			0.001	0.004	0.001
Cr, diss, mg/L	<0.001	<0.001	<0.001			0.000	0.001	<0.000
Cu, diss, mg/L	0.001	0.001	0.001			0.002	<0.001	0.001
F, diss, mg/L	0.13	0.18	0.18			0.19	0.20	0.22
Fe, diss, mg/L	1.308	0.386	0.886			0.012	0.218	<0.200
GW Depth (TOC), ft	18.20	12.90	13.90	23.70	22.30	11.60	22.50	18.50
GW Elv, ft	392.71	398.01	397.01	387.21	388.61	399.31	388.41	392.41
Mn, diss, mg/L	0.972	0.366	0.452			0.507	1.367	0.900
Ni, diss, mg/L	0.011	0.006	0.010			0.011	0.016	0.010
NO3, diss, mg/L	1.30	<0.10	<0.10			0.30	2.00	1.20
Pb, diss, mg/L	<0.007	<0.007	<0.007			0.001	0.007	<0.000
pH (field), STD	7.61	6.90	6.81			6.70	5.48	6.80
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010			0.0007	0.0270	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009			0.004	0.016	<0.000
SO4, diss, mg/L	34.3	28.5	29.2			20.7	27.5	20.7
Spec. Cond. (field), micromho	1061	763	843			1042	1355	1201
TDS, mg/L	700	440	520			630	657	718
Temp (Celcius), degrees C	16.50	16.90	15.00			16.00	16.00	15.90
Zn, diss, mg/L	0.008	0.002	0.005			<0.000	0.015	0.005

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-3D

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	0.004	<0.001	0.001	0.004	0.001		<0.001	<0.000	<0.000
As, diss, mg/L	<0.008	<0.008	<0.008	<0.008	<0.008		0.013	0.001	0.001
B, diss, mg/L	6.364	0.674	2.737	2.580	7.162		6.837	7.400	7.100
Ba, diss, mg/L	0.178	0.283	0.264	0.273	0.206		0.196	0.100	0.149
Cd, diss, mg/L	<0.001	<0.001	0.001	<0.001	0.001		<0.001	<0.000	<0.000
Cl, diss, mg/L	39.6	20.5	27.6	22.9	35.1		37.9	47.4	44.0
CN, tot, mg/L	<0.0010	0.0017	<0.0010	<0.0010		<0.0010	<0.0020	<0.0010	<0.0010
Co, diss, mg/L	<0.001	<0.001	0.001	<0.001	<0.001		0.003	<0.000	<0.000
Cr, diss, mg/L	<0.001	<0.001	<0.001	<0.001	0.001		0.001	<0.000	<0.000
Cu, diss, mg/L	0.001	<0.001	<0.001	0.003	<0.001		<0.001	<0.000	0.000
F, diss, mg/L	0.11	0.16	<0.05	0.14	0.12		0.12	0.10	0.05
Fe, diss, mg/L	5.076	13.330	13.880	12.620	6.516		6.279	3.100	3.600
GW Depth (TOC), ft	19.00	13.10	14.50	24.40	22.20	12.30	27.00	25.10	26.00
GW Elv, ft	392.48	398.38	396.98	387.08	389.28	399.18	384.48	386.38	385.48
Mn, diss, mg/L	0.361	0.745	0.679	0.606	0.380		0.412	0.300	0.300
Ni, diss, mg/L	<0.003	<0.003	0.003	<0.003	<0.003		<0.003	0.001	0.001
NO3, diss, mg/L	<0.10	<0.10	0.80	<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	0.000	<0.000
pH (field), STD	7.13	6.70	6.79	6.70	7.30	6.90	7.15	7.40	7.40
Sb, diss, mg/L	<0.0010	0.0012	<0.0010	<0.0010	<0.0002		0.0260	<0.0002	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009		0.012	<0.000	<0.000
SO4, diss, mg/L	156.7	69.4	92.3	63.5	183.0		256.6	162.9	166.8
Spec. Cond. (field), micromho	840	1108	1077	1113	938	1045	911	720	770
TDS, mg/L	570	640	700	700	640		606	509	552
Temp (Celcius), degrees C	16.20	15.80	14.80	16.10	15.60	15.90	16.40	16.20	16.30
Zn, diss, mg/L	0.002	0.002	0.004	0.005	0.003		0.002	<0.000	0.000

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-5

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	11/2/2022
Ag, diss, mg/L	0.003	<0.001	0.001	<0.001	0.001		<0.001	<0.000	<0.000
As, diss, mg/L	0.081	0.099	0.074	0.099	0.089		0.120	0.082	0.085
B, diss, mg/L	1.953	1.945	1.867	2.706	1.282		1.513	1.500	1.650
Ba, diss, mg/L	0.111	0.096	0.095	0.153	0.100		0.072	0.087	0.086
Cd, diss, mg/L	<0.001	<0.001	<0.001	0.001	<0.001		<0.001	<0.000	<0.000
Cl, diss, mg/L	6.3	7.5	5.3	5.3	7.4		4.7	6.5	5.1
CN, tot, mg/L	0.0049	0.0058	0.0025	<0.0010		0.0087	0.0074	0.0073	0.0100
Co, diss, mg/L	<0.001	<0.001	<0.001	0.002	<0.001		<0.001	0.000	0.000
Cr, diss, mg/L	<0.001	0.001	<0.001	0.021	0.002		<0.001	<0.000	0.000
Cu, diss, mg/L	0.001	0.002	0.001	0.007	0.001		<0.001	0.000	0.000
F, diss, mg/L	0.26	0.28	0.28	0.29	0.30		0.28	0.30	0.29
Fe, diss, mg/L	1.184	2.314	2.109	4.674	1.316		1.553	2.000	2.060
GW Depth (TOC), ft	34.00	29.80	32.00	37.20	42.00	32.50	38.60	42.70	42.70
GW Elv, ft	398.93	403.13	400.93	395.73	390.93	400.43	394.33	390.23	390.23
Mn, diss, mg/L	2.210	2.530	2.561	3.379	2.397		2.276	2.500	2.860
Ni, diss, mg/L	0.004	<0.003	<0.003	0.013	<0.003		<0.003	0.001	0.001
NO3, diss, mg/L	<0.10	11.40	<0.10	1.20	1.00		<0.10	<0.10	<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	0.007	<0.007		<0.007	0.000	<0.000
pH (field), STD	7.44	7.40	7.43	7.20	7.30	7.20	7.16	7.60	7.50
Sb, diss, mg/L	<0.0010	0.0017	0.0013	0.0022	<0.0002		0.0330	<0.0002	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009		0.022	<0.000	0.000
SO4, diss, mg/L	95.4	88.7	172.1	184.8	99.7		50.7	123.9	91.4
Spec. Cond. (field), micromho	1121	1073	1145	1099	1177	1107	943	1287	1131
TDS, mg/L	800	690	800	760	760		609	874	762
Temp (Celcius), degrees C	16.20	17.70	15.20	18.20	16.20	16.70	17.60	16.80	16.70
Zn, diss, mg/L	0.003	0.006	0.003	0.044	0.005		0.006	0.006	0.000

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-6

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	<0.001	<0.001	0.001	0.005	0.001		<0.001	<0.000	<0.000
As, diss, mg/L	0.066	0.052	0.047	0.053	0.058		0.102	0.079	0.078
B, diss, mg/L	4.924	4.865	4.825	4.912	4.773		5.084	4.900	4.700
Ba, diss, mg/L	0.291	0.267	0.266	0.275	0.303		0.325	0.336	0.364
Cd, diss, mg/L	0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.000	<0.000
Cl, diss, mg/L	23.2	23.1	15.4	23.0	26.0		28.1	25.7	26.0
CN, tot, mg/L	<0.0010	0.0012	<0.0010	<0.0010		<0.0010	<0.0020	<0.0010	0.0010
Co, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.000	0.000
Cr, diss, mg/L	0.001	0.001	<0.001	<0.001	0.001		<0.001	<0.000	<0.000
Cu, diss, mg/L	<0.001	<0.001	0.001	0.003	0.002		<0.001	0.001	<0.000
F, diss, mg/L	0.45	0.47	0.51	0.53	0.53		0.48	0.40	0.73
Fe, diss, mg/L	17.540	12.860	13.780	14.040	16.910		16.630	24.000	21.700
GW Depth (TOC), ft	39.00	33.90	35.40	43.30	44.10	34.00	43.70	44.30	42.30
GW Elv, ft	394.09	399.19	397.69	389.79	388.99	399.09	389.39	388.79	390.79
Mn, diss, mg/L	2.446	2.240	2.350	2.378	2.688		3.010	2.900	3.000
Ni, diss, mg/L	0.006	0.004	0.006	<0.003	<0.003		0.003	0.005	0.006
NO3, diss, mg/L	<0.10	<0.10	<0.10	3.30	<0.10		<0.10	<0.10	10.30
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	<0.000	<0.000
pH (field), STD	7.21	7.30	7.29	7.20	7.30	7.00	7.19	7.30	7.10
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.0001	<0.0002		<0.0130	<0.0002	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009	<0.000	0.000
SO4, diss, mg/L	18.3	24.7	14.2	22.3	1.7		10.6	12.6	48.7
Spec. Cond. (field), micromho	807	735	772	827	901	887	894	927	937
TDS, mg/L	520	440	440	460	210		574	589	560
Temp (Celcius), degrees C	15.60	16.90	15.30	17.20	15.30	16.20	16.40	16.40	16.30
Zn, diss, mg/L	0.003	0.002	0.004	0.005	0.007		0.008	<0.000	0.000

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-6D

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	0.001	0.004	<0.001	0.005	0.002		<0.001	<0.000	<0.000
As, diss, mg/L	<0.008	<0.008	<0.008	0.008	<0.008		0.023	0.001	0.001
B, diss, mg/L	4.555	5.603	5.896	6.377	4.872		4.976	4.500	4.400
Ba, diss, mg/L	0.252	0.194	0.176	0.141	0.253		0.299	0.291	0.339
Cd, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.000	<0.000
Cl, diss, mg/L	38.4	41.7	46.8	49.5	35.4		25.1	24.8	25.2
CN, tot, mg/L	<0.0010	0.0016	0.0015	<0.0010		<0.0010	<0.0020	0.0005	<0.0010
Co, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.000	<0.000
Cr, diss, mg/L	<0.001	0.001	<0.001	<0.001	0.001		0.001	0.000	<0.000
Cu, diss, mg/L	<0.001	0.001	0.001	<0.001	0.003		<0.001	<0.000	0.000
F, diss, mg/L	<0.05	<0.10	<0.05	0.06	0.05		<0.05	<0.05	<0.05
Fe, diss, mg/L	0.460	0.210	0.196	0.103	0.343		0.446	0.600	0.800
GW Depth (TOC), ft	39.00	34.20	35.80	23.70	44.20	34.40	44.10	44.60	42.70
GW Elv, ft	394.55	399.35	397.75	409.85	389.35	399.15	389.45	388.95	390.85
Mn, diss, mg/L	0.169	0.094	0.086	0.060	0.140		0.190	0.200	0.300
Ni, diss, mg/L	<0.003	<0.003	<0.003	<0.003	<0.003		<0.003	<0.000	0.001
NO3, diss, mg/L	<0.10	<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	1.20
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	<0.000	<0.000
pH (field), STD	8.02	8.20	8.16	8.10	8.40	8.10	8.07	8.00	8.00
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.0001	<0.0002		0.0270	<0.0002	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009	0.000	0.000
SO4, diss, mg/L	212.2	165.3	175.1	162.3	283.9		442.9	304.3	264.5
Spec. Cond. (field), micromho	957	725	710	598	987	800	1039	1143	1239
TDS, mg/L	680	470	480	340	620		793	865	925
Temp (Celcius), degrees C	15.60	17.60	15.60	20.30	15.30	16.10	16.80	16.30	16.20
Zn, diss, mg/L	<0.002	<0.002	0.003	0.003	0.003		0.005	<0.000	0.004

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-8

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	<0.001	0.001	0.001	0.004	0.001		0.001	<0.000	<0.000
As, diss, mg/L	<0.008	<0.008	<0.008	<0.008	<0.008		0.025	0.000	0.000
B, diss, mg/L	0.837	0.834	0.938	1.044	0.818		1.026	0.700	0.700
Ba, diss, mg/L	0.112	0.107	0.117	0.111	0.100		0.115	0.095	0.110
Cd, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.000	<0.000
Cl, diss, mg/L	58.5	90.0	79.0	35.4	48.2		43.3	55.2	49.2
CN, tot, mg/L	<0.0010	0.0016	<0.0010	<0.0010		<0.0010	<0.0020	<0.0010	<0.0010
Co, diss, mg/L	0.003	0.002	0.003	0.003	0.001		0.004	0.002	0.002
Cr, diss, mg/L	<0.001	<0.001	<0.001	<0.001	0.001		<0.001	0.000	<0.000
Cu, diss, mg/L	0.001	0.001	0.001	0.001	<0.001		<0.001	<0.000	0.001
F, diss, mg/L	0.34	0.28	0.27	0.26	0.32		0.31	0.30	0.27
Fe, diss, mg/L	0.035	0.012	0.013	0.041	0.099		0.174	<0.200	<0.200
GW Depth (TOC), ft		15.30	17.30	23.10	26.50	16.80	24.00	26.40	22.20
GW Elv, ft		400.97	398.97	393.17	389.77	399.47	392.27	389.87	394.07
Mn, diss, mg/L	0.703	0.670	0.804	0.850	0.830		0.880	0.700	0.700
Ni, diss, mg/L	0.011	0.010	0.014	0.013	0.010		0.006	0.006	0.007
NO3, diss, mg/L	1.40	1.20	0.90	3.80	1.50		<0.10	1.00	<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	<0.000	<0.000
pH (field), STD	6.92	6.80	6.71	6.70	6.90	6.60	6.68	6.90	6.70
Sb, diss, mg/L	<0.0010	0.0011	<0.0010	0.0011	0.0023		0.0340	<0.0002	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009	0.001	<0.000
SO4, diss, mg/L	117.1	120.1	135.4	161.6	107.0		249.5	84.7	95.0
Spec. Cond. (field), micromho	1190	1243	1279	1246	1183	1269	1304	1154	1178
TDS, mg/L	950	870	860	820	640		910	734	840
Temp (Celcius), degrees C	17.10	16.50	13.30	16.80	15.50	16.10	16.30	16.00	15.80
Zn, diss, mg/L	0.007	0.003	0.004	0.008	0.004		0.007	<0.000	0.001

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-9

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	<0.001	<0.001	0.001	0.004	<0.001		<0.001	<0.000	<0.000
As, diss, mg/L	<0.008	0.012	<0.008	<0.008	<0.008		0.025	0.003	0.004
B, diss, mg/L	0.722	0.743	0.747	0.735	0.637		0.769	0.600	0.600
Ba, diss, mg/L	0.157	0.146	0.154	0.153	0.177		0.184	0.133	0.150
Cd, diss, mg/L	0.001	<0.001	0.001	<0.001	<0.001		<0.001	<0.000	<0.000
Cl, diss, mg/L	77.8	28.5	30.4	47.8	163.0		170.9	78.6	55.8
CN, tot, mg/L	<0.0010	0.0017	<0.0010	<0.0010		<0.0010	<0.0020	<0.0010	<0.0010
Co, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		0.002	<0.000	<0.000
Cr, diss, mg/L	<0.001	<0.001	<0.001	<0.001	0.001		<0.001	<0.000	<0.000
Cu, diss, mg/L	<0.001	0.001	<0.001	<0.001	<0.001		<0.001	<0.000	0.002
F, diss, mg/L	0.22	0.22	0.22	0.24	0.20		0.25	0.20	0.20
Fe, diss, mg/L	17.760	17.500	18.540	18.520	19.790		22.020	16.600	17.400
GW Depth (TOC), ft		12.80	14.60	20.40	23.50	14.00	21.40	23.60	19.90
GW Elv, ft		400.60	398.80	393.00	389.90	399.40	392.00	389.80	393.50
Mn, diss, mg/L	0.816	0.786	0.811	0.815	0.941		0.958	0.800	0.800
Ni, diss, mg/L	0.004	<0.003	0.007	<0.003	<0.003		0.006	<0.000	0.001
NO3, diss, mg/L	<0.10	<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	<0.000	<0.000
pH (field), STD	6.98	6.80	6.76	6.80	6.80	6.70	6.86	7.00	6.80
Sb, diss, mg/L	<0.0010	0.0013	<0.0010	0.0011	0.0011		0.0180	<0.0002	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009		0.018	<0.000	<0.000
SO4, diss, mg/L	154.2	130.2	128.8	100.2	143.9		194.9	127.9	142.0
Spec. Cond. (field), micromho	1291	1169	1227	1318	1667	1558	1640	1288	1274
TDS, mg/L	1100	810	820	930	1010		1087	854	943
Temp (Celcius), degrees C	16.80	17.00	14.70	16.70	15.60	16.10	16.40	16.10	16.10
Zn, diss, mg/L	0.005	0.005	0.004	0.005	0.005		0.008	<0.000	0.001

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-10

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	12/13/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	<0.001	0.002	<0.001	0.001	0.001		<0.001		<0.000	<0.000
As, diss, mg/L	0.030	0.052	0.026	0.023	0.010		0.067		0.007	0.042
B, diss, mg/L	19.340	18.240	15.050	17.060	12.420			13.000	14.600	14.200
Ba, diss, mg/L	0.060	0.046	0.046	0.052	0.039		0.071		0.054	0.068
Cd, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001		<0.000	<0.000
Cl, diss, mg/L	21.6	18.6	14.8	15.0	33.8		21.2		33.2	16.5
CN, tot, mg/L	<0.0010	0.0022	<0.0010	<0.0010		<0.0010	<0.0020		<0.0010	<0.0010
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		<0.000	<0.000
Cu, diss, mg/L	0.001	0.001	<0.001	0.001	0.002		<0.001		0.001	0.001
F, diss, mg/L	0.17	0.23	0.28	0.27	0.20		0.20		0.20	0.15
Fe, diss, mg/L	0.539	2.077	1.824	1.963	0.104		2.474		<0.200	1.400
GW Depth (TOC), ft	29.00	24.00	26.20	32.40	35.20	23.10	33.60	38.70	35.70	33.60
GW Elv, ft	395.99	400.99	398.79	392.59	389.79	401.89	391.39	386.29	389.29	391.39
Mn, diss, mg/L	1.449	1.679	1.576	1.801	0.041		1.013		0.700	1.000
Ni, diss, mg/L	<0.003	<0.003	0.004	<0.003	<0.003		0.003		0.001	0.002
NO3, diss, mg/L	<0.10	<0.10	<0.10	1.20	4.30		<0.10		0.90	<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007		<0.000	<0.000
pH (field), STD	7.39	7.40	7.34	7.30	7.60	7.20	7.22	7.42	7.30	7.40
Sb, diss, mg/L	0.0016	0.0022	<0.0010	0.0016	0.0006		0.0320		0.0002	<0.0002
Se, diss, mg/L	0.006	<0.009	<0.009	<0.009	<0.009		0.009		0.001	0.000
SO4, diss, mg/L	954.0	662.9	560.5	634.5	457.1		713.9		505.4	673.3
Spec. Cond. (field), micromho	1947	1500	1319	1407	1487	1478	1517	1489	1548	1602
TDS, mg/L	1860	1280	1070	1240	1310		1252		1236	1411
Temp (Celcius), degrees C	16.00	17.10	14.10	17.60	15.50	16.50	17.40	15.10	16.50	16.50
Zn, diss, mg/L	<0.002	0.002	0.003	0.012	0.005		0.007		0.013	0.001

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-11

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	0.002	0.004	0.001	0.004	<0.001		<0.001	<0.000	<0.000
As, diss, mg/L	<0.008	<0.008	<0.008	<0.008	<0.008		0.030	0.000	0.001
B, diss, mg/L	0.487	0.198	0.247	0.443	0.860		0.712	1.400	0.600
Ba, diss, mg/L	0.183	0.187	0.219	0.175	0.246		0.214	0.216	0.195
Cd, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.000	<0.000
Cl, diss, mg/L	14.4	16.4	14.4	14.2	16.0		18.4	15.3	16.9
CN, tot, mg/L	<0.0010	0.0010	<0.0010	<0.0010		<0.0010	<0.0020	<0.0010	<0.0010
Co, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.000	0.000
Cr, diss, mg/L	<0.001	<0.001	<0.001	0.001	0.002		<0.001	<0.000	<0.000
Cu, diss, mg/L	0.001	0.001	0.001	0.001	<0.001		<0.001	0.001	0.003
F, diss, mg/L	0.28	0.28	0.26	0.19	0.21		0.16	0.20	0.15
Fe, diss, mg/L	0.026	0.013	0.009	0.055	1.368		0.103	<0.200	<0.200
GW Depth (TOC), ft	17.50	12.60	14.90	20.70	24.90	12.50	21.80	24.80	21.60
GW Elv, ft	395.24	400.14	397.84	392.04	387.84	400.24	390.94	387.94	391.14
Mn, diss, mg/L	0.001	0.002	0.004	0.026	0.192		0.006	0.300	<0.200
Ni, diss, mg/L	0.003	<0.003	0.005	0.005	0.009		<0.003	0.005	0.002
NO3, diss, mg/L	6.50	9.20	2.00	1.30	0.90		7.80	<0.10	2.90
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	0.001	0.000
pH (field), STD	6.74	6.80	6.75	6.60	7.00	7.00	6.79	6.80	6.90
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0004		0.0240	<0.0002	<0.0002
Se, diss, mg/L	0.009	<0.009	<0.009	<0.009	<0.009		<0.009	<0.000	0.004
SO4, diss, mg/L	45.4	42.0	85.3	75.3	52.4		68.4	53.5	69.4
Spec. Cond. (field), micromho	890	927	1099	1091	1051	1528	1052	1133	1006
TDS, mg/L	680	640	720	760	1120		736	720	722
Temp (Celcius), degrees C	16.10	16.20	14.30	16.50	15.80	15.70	15.80	16.70	15.30
Zn, diss, mg/L	0.002	<0.002	0.007	0.004	0.010		0.007	0.002	0.004

Venice
Groundwater Monitoring Results 2019-2022 Monitoring Period

Date Range: 01/01/2019 to 11/02/2022
Well: MW-11D

	2/4/2019	9/10/2019	3/10/2020	9/8/2020	3/1/2021	4/19/2021	9/14/2021	3/15/2022	8/15/2022
Ag, diss, mg/L	0.002	<0.001	0.001	<0.001	<0.001		<0.001	<0.000	<0.000
As, diss, mg/L	0.009	0.012	<0.008	0.011	<0.008		0.028	0.011	0.012
B, diss, mg/L	4.153	0.346	2.125	5.168	13.880		7.756	14.000	6.000
Ba, diss, mg/L	0.161	0.068	0.115	0.161	0.226		0.219	0.250	0.234
Cd, diss, mg/L	0.001	<0.001	<0.001	0.003	<0.001		0.001	<0.000	<0.000
Cl, diss, mg/L	56.7	31.9	29.3	30.0	30.3		43.9	26.2	45.7
CN, tot, mg/L	0.0041	0.0026	0.0011	0.0020		0.0119	0.0152	0.0600	0.0668
Co, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.000	<0.000
Cr, diss, mg/L	<0.001	<0.001	<0.001	<0.001	0.001		0.001	0.001	<0.000
Cu, diss, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.000	<0.000
F, diss, mg/L	0.20	0.26	0.25	0.26	0.21		0.21	0.20	0.19
Fe, diss, mg/L	17.230	5.673	8.890	12.500	20.370		20.760	22.800	20.100
GW Depth (TOC), ft	19.50	12.60	15.30	24.90	22.30	13.70	26.30	24.30	25.40
GW Elv, ft	393.00	399.90	397.20	387.60	390.20	398.80	386.20	388.20	387.10
Mn, diss, mg/L	2.532	0.908	1.380	1.930	2.900		3.213	3.700	3.100
Ni, diss, mg/L	0.003	<0.003	<0.003	<0.003	0.003		<0.003	0.002	0.000
NO3, diss, mg/L	<0.10	<0.10	<0.10	1.00	<0.10		2.70	<0.10	<0.10
Pb, diss, mg/L	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	0.000	<0.000
pH (field), STD	6.96	7.10	7.17	7.00	7.20	7.00	7.18	7.00	7.20
Sb, diss, mg/L	<0.0010	<0.0010	<0.0010	0.0011	<0.0002		0.0360	<0.0002	<0.0002
Se, diss, mg/L	<0.009	<0.009	<0.009	<0.009	<0.009		<0.009	0.001	<0.000
SO4, diss, mg/L	184.6	26.0	63.2	57.6	507.6		439.7	462.3	313.0
Spec. Cond. (field), micromho	1364	522	737	1021	1691	718	1574	1807	1633
TDS, mg/L	960	280	440	770	1710		1256	1469	1310
Temp (Celcius), degrees C	15.70	16.20	15.20	16.30	15.40	12.70	15.80	15.90	16.00
Zn, diss, mg/L	0.007	<0.002	0.003	0.009	0.006		0.009	0.007	<0.000

APPENDIX B
2022 GROUNDWATER MONITORING FIELD DATA WORKSHEETS

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Venice Groundwater Monitoring Field Data Worksheet

Sample Date: 03 / 15 / 2022

River Level: 7.0 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)	23.8	24.0	empty	25.1	42.7	44.3
Total Well Depth (±0.01 feet)	29.0	47.5	24.6	48.8	49.0	50.2
Time purging began (24-hour clock)	14 : 30	14 : 00	:	13 : 20	16 : 45	16 : 00
Conductivity after 10 minutes µS/cm	1206	1400	N/A	707	1244	960
Temperature °C	17.6	16.3		16.2	17.2	17.0
Conductivity after 15 minutes (µS/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, µS/cm	1205	1393	N/A	720	1287	927
Time to reach final conductivity (min)	15	15		15	15	15
Temperature °C	18.0	16.2		16.2	16.8	16.4
pH (on site) (±0.01)	6.92	7.21	N/A	7.36	7.55	7.28

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)	44.6	26.4	23.6	35.7	24.8	24.3
Total Well Depth (±0.01 feet)	68.6	43.0	41.4	44.0	28.9	48.7
Time purging began (24-hour clock)	16:05	11:25	10:40	17:25	15:05	15:10
Conductivity after 10 minutes µS/cm	1123	1181	1216	1534	1134	1799
Temperature °C	16.2	16.0	16.5	16.6	16.6	16.0
Conductivity after 15 minutes (µS/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, µS/cm	1143	1154	1288	1548	1133	1807
Time to reach final conductivity (min)	15	15	15	15	15	15
Temperature °C	16.3	16.0	16.1	16.5	16.7	15.9
pH (on site) (±0.01)	7.96	6.88	6.98	7.32	6.76	7.01

Sample collectors: EPH, SMS

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

Venice Groundwater Monitoring Field Data Worksheet

Sample Date: 28/Mar/2022 (Page 1 of 3)

River Level: _____ feet ~3 ft 5 in

	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)			18.5			
Total Well Depth (±0.01 feet)			24.3			
Time purging began (24-hour clock)	___:___	___:___	09:00	___:___	___:___	___:___
Conductivity after 10 minutes µS/cm			1209			
Temperature °C			15.8			
Conductivity after 15 minutes (µS/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, µS/cm			1201			
Time to reach final conductivity (min)			15 MIN			
Temperature °C			15.9			
pH (on site) (±0.01)			6.77			

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: _____

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con

Temp

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

Venice Groundwater Monitoring Field Data Worksheet

Sample Date: 08/15/22

River Level: 2.5 feet

	Well #2	Well #2D	Well #3	Well #3D	Well #5	Well #6
Well name sign. lock. and inner cap present (note any deficiency)			D		Covered	
Casing and concrete pad in good condition (note any deficiency)			R		Under	
Internal piping unobstructed and in good condition (note any deficiency)			Y		Newly renovated road	
Water Level (±0.01 feet, from top of casing mark)	23.3	23.8	W	26.0		42.3
Total Well Depth (±0.01 feet)	28.7	47.4	C	48.7		50.9
Time purging began (24-hour clock)	15:00	15:30	L	14:20	:	13:15
Conductivity after 10 minutes µS/cm	1105	1221	L	768		942
Temperature °C	16.5	16.4		16.6		16.5
Conductivity after 15 minutes (µS/cm)	1117	1252		770		937
Temperature °C	16.7	15.9		16.3		16.3
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, µS/cm	1117	1252		770		937
Time to reach final conductivity (min)	15	15		15		15
Temperature °C	16.7	15.9		16.3		16.3
pH (on site) (±0.01)	6.95	7.07		7.35		7.11

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)	42.7	22.2	19.9	33.6	21.06	25.4
Total Well Depth (±0.01 feet)	68.3	42.7	41.3	43.8	28.9	49.0
Time purging began (24-hour clock)	13:20	10:45	10:20	16:40	16:00	16:15
Conductivity after 10 minutes µS/cm	1232	1174	1302	1595	1026	1602
Temperature °C	16.2	16.0	16.2	16.6	15.6	16.6
Conductivity after 15 minutes (µS/cm)	1239	1178	1274	1602	1006	1633
Temperature °C	16.2	15.8	16.1	16.5	15.3	16.0
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, µS/cm	1239	1178	1274	1602	1006	1633
Time to reach final conductivity (min)	15	15	15	15	15	15
Temperature °C	16.2	15.8	16.1	16.5	15.3	16.0
pH (on site) (±0.01)	7.98	6.74	6.80	7.37	6.92	7.22

Sample collectors: SMS / EPH

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

Venice Groundwater Monitoring Field Data Worksheet

NOTES: # 3 was again dry,
5 ! concrete barricas have been removed and road has been re-made completely covering the entire sample concrete pad with ≈ 4." of hand packed rock/powdered stone. Metal detector useless due to rebar in concrete pad

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

Venice Groundwater Monitoring Field Data Worksheet

Sample Date: 11 / 02 / 2022

River Level: −0.5 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)					42.7	
Total Well Depth (±0.01 feet)					49.3	
Time purging began (24-hour clock)	___:___	___:___	___:___	___:___	09 25	___:___
Conductivity after 10 minutes µS/cm					1090	
Temperature °C					17°	
Conductivity after 15 minutes (µS/cm)					1131	
Temperature °C					16.7	
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, µS/cm						
Time to reach final conductivity (min)						
Temperature °C					16.7	
pH (on site) (±0.01)					7.51	

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

APPENDIX C
2022 FINAL COVER SITE INSPECTION REPORTS

Ameren Missouri
Fly Ash Pond Final Cover Site Inspection

Facility Name: Venice Energy Center Inspection Date: 03/09/22

Facility Address: 701 Main Street, Venice, IL 62090

Inspection Conditions: 48°F, mostly 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		Moderate amount of debris on both the North and South pump station gratings; Minor ground erosion around both stations.
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: L A Meyer Date: 03/09/22

North Pump Station, facing north.

North Pump Station, facing south.

South Pump Station, facing north.

South Pump Station, facing south.

Moderate amount of debris on both the North and South pump station gratings; Minor ground erosion around both stations.

Ameren Missouri
Fly Ash Pond Final Cover Site Inspection

Facility Name: Venice Energy Center Inspection Date: 05/13/22

Facility Address: 701 Main Street, Venice, IL 62090

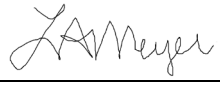
Inspection Conditions: 77°F, mostly sunny

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
15	Plant staff cleaned debros from pump gratings since last inspeciton.

Inspector Signature:  Date: 05/13/22

North Side berm

North Pump Station, facing north.

North Pump Station, facing south.

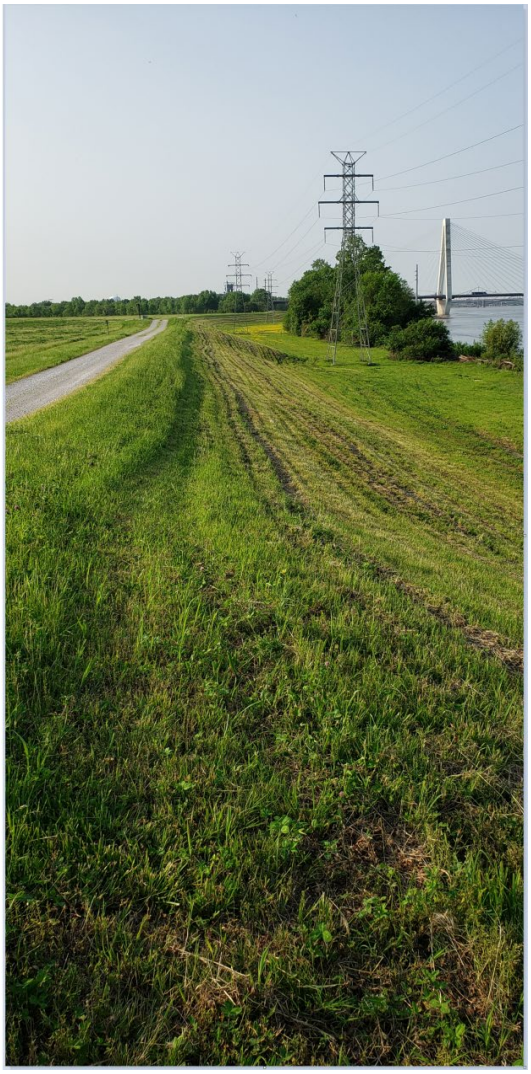
Grating of North Pumps station.

South Pump Station, facing north.

South Pump Station, facing south.

Grating of South Pump Station

South Side berm



River Side Berm

Ameren Missouri
Fly Ash Pond Final Cover Site Inspection

Facility Name: Venice Energy Center Inspection Date: 09/07/22

Facility Address: 701 Main Street, Venice, IL 62090

Inspection Conditions: 83°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			*Mowing in progress 9/7/22*
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: Date: 09/07/22

North Embankment

North Pump Station, facing north

North Pump Station, facing south

North Pump Station, facing east

South Pump Station, facing north

South Pump Station, facing south

South Pump Station, facing east

South Embankment

River (West) Embankment – SW section

River (West) Embankment – center section

River (West) Embankment – NW section

Ameren Missouri
Fly Ash Pond Final Cover Site Inspection

Facility Name: Venice Energy Center Inspection Date: 11/21/22

Facility Address: 701 Main Street, Venice, IL 62090

Inspection Conditions: 59°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: L A Meyer Date: 11/21/22

North Embankment

North Pump Station, facing north

North Pump Station, facing south

North Pump Station, facing east

South Pump Station, facing north

South Pump Station, facing south

South Pump Station, facing east

South Embankment

River (West) Embankment – SW section

River (West) Embankment – center section

River (West) Embankment – NW section

River (West) Embankment – Very Northern most section

APPENDIX D
STATISTICAL OUTPUT (ON CD)

APPENDIX D1
OUTLIER ANALYSIS RESULTS

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00230
Standard Deviation of all data: 0.00516
Largest Observation Concentration of all data: Xn = 0.0320
Test Statistic, high extreme of all data: Tn = 5.75
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0320	False		1

Antimony, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00142
Standard Deviation of all data: 0.00397
Largest Observation Concentration of all data: Xn = 0.0240
Test Statistic, high extreme of all data: Tn = 5.69
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0240	False		1

Antimony, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00233
Standard Deviation of all data: 0.00566
Largest Observation Concentration of all data: Xn = 0.0360
Test Statistic, high extreme of all data: Tn = 5.94
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0360	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00163
Standard Deviation of all data: 0.00435
Largest Observation Concentration of all data: Xn = 0.0270
Test Statistic, high extreme of all data: Tn = 5.83
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0270	False		1

Antimony, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00166
Standard Deviation of all data: 0.00428
Largest Observation Concentration of all data: Xn = 0.0270
Test Statistic, high extreme of all data: Tn = 5.92
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0270	False		1

Antimony, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00170
Standard Deviation of all data: 0.00489
Largest Observation Concentration of all data: Xn = 0.0270
Test Statistic, high extreme of all data: Tn = 5.17
T Critical of all data: Tcr = 2.73

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
11/02/2021	0.0270	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00140
Standard Deviation of all data: 0.00414
Largest Observation Concentration of all data: Xn = 0.0260
Test Statistic, high extreme of all data: Tn = 5.94
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0260	False		1

Antimony, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00204
Standard Deviation of all data: 0.00494
Largest Observation Concentration of all data: Xn = 0.0330
Test Statistic, high extreme of all data: Tn = 6.26
T Critical of all data: Tcr = 2.90

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0330	False		1

Antimony, dissolved, mg/L

Location: MW-6

Mean of all data: 0.000851
Standard Deviation of all data: 0.00122
Largest Observation Concentration of all data: Xn = 0.00650
Test Statistic, high extreme of all data: Tn = 4.64
T Critical of all data: Tcr = 2.89

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	<0.00650	True		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00161
Standard Deviation of all data: 0.00428
Largest Observation Concentration of all data: Xn = 0.0270
Test Statistic, high extreme of all data: Tn = 5.93
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0270	False		1

Antimony, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00198
Standard Deviation of all data: 0.00512
Largest Observation Concentration of all data: Xn = 0.0340
Test Statistic, high extreme of all data: Tn = 6.25
T Critical of all data: Tcr = 2.90

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0340	False		1

Antimony, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00150
Standard Deviation of all data: 0.00275
Largest Observation Concentration of all data: Xn = 0.0180
Test Statistic, high extreme of all data: Tn = 6.01
T Critical of all data: Tcr = 2.90

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0180	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.0194
Standard Deviation of all data: 0.0145
Largest Observation Concentration of all data: Xn = 0.0670
Test Statistic, high extreme of all data: Tn = 3.30
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0670	False		1

Arsenic, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00573
Standard Deviation of all data: 0.00663
Largest Observation Concentration of all data: Xn = 0.0300
Test Statistic, high extreme of all data: Tn = 3.66
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
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: 0.00814
Largest Observation Concentration of all data: Xn = 0.0340
Test Statistic, high extreme of all data: Tn = 2.69
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.0101
Standard Deviation of all data: 0.0164
Largest Observation Concentration of all data: Xn = 0.0942
Test Statistic, high extreme of all data: Tn = 5.12
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/15/2022	0.0942	False		1

Arsenic, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.0196
Standard Deviation of all data: 0.00806
Largest Observation Concentration of all data: Xn = 0.0430
Test Statistic, high extreme of all data: Tn = 2.91
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/23/2011	0.0430	False		1

Arsenic, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00585
Standard Deviation of all data: 0.00800
Largest Observation Concentration of all data: Xn = 0.0430
Test Statistic, high extreme of all data: Tn = 4.64
T Critical of all data: Tcr = 2.99

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/17/2010	0.0430	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00553
Standard Deviation of all data: 0.00677
Largest Observation Concentration of all data: Xn = 0.0420
Test Statistic, high extreme of all data: Tn = 5.39
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/23/2011	0.0420	False		1

Arsenic, dissolved, mg/L

Location: MW-5

Mean of all data: 0.0749
Standard Deviation of all data: 0.0733
Largest Observation Concentration of all data: Xn = 0.690
Test Statistic, high extreme of all data: Tn = 8.39
T Critical of all data: Tcr = 3.13

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/08/2010	0.690	False		1

Arsenic, dissolved, mg/L

Location: MW-6

Mean of all data: 0.0745
Standard Deviation of all data: 0.0179
Largest Observation Concentration of all data: Xn = 0.123
Test Statistic, high extreme of all data: Tn = 2.71
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/20/2002	0.0150	False	-1	

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00489
Standard Deviation of all data: 0.00417
Largest Observation Concentration of all data: Xn = 0.0230
Test Statistic, high extreme of all data: Tn = 4.34
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0230	False		1

Arsenic, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00512
Standard Deviation of all data: 0.00664
Largest Observation Concentration of all data: Xn = 0.0350
Test Statistic, high extreme of all data: Tn = 4.50
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/17/2010	0.0350	False		1

Arsenic, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00794
Standard Deviation of all data: 0.00849
Largest Observation Concentration of all data: Xn = 0.0380
Test Statistic, high extreme of all data: Tn = 3.54
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/28/2009	0.0380	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.0746
Standard Deviation of all data: 0.0461
Largest Observation Concentration of all data: Xn = 0.278
Test Statistic, high extreme of all data: Tn = 4.41
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/23/2011	0.278	False		1

Barium, dissolved, mg/L

Location: MW-11

Mean of all data: 0.191
Standard Deviation of all data: 0.0330
Largest Observation Concentration of all data: Xn = 0.286
Test Statistic, high extreme of all data: Tn = 2.88
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
10/28/2013	0.286	False		1

Barium, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.218
Standard Deviation of all data: 0.0488
Largest Observation Concentration of all data: Xn = 0.292
Test Statistic, high extreme of all data: Tn = 1.51
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/10/2019	0.0680	False	-1	

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.232
Standard Deviation of all data: 0.0831
Largest Observation Concentration of all data: Xn = 0.510
Test Statistic, high extreme of all data: Tn = 3.35
T Critical of all data: Tcr = 2.88

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/15/2022	0.510	False		1

Barium, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.357
Standard Deviation of all data: 0.0589
Largest Observation Concentration of all data: Xn = 0.460
Test Statistic, high extreme of all data: Tn = 1.75
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Barium, dissolved, mg/L

Location: MW-3

Mean of all data: 0.192
Standard Deviation of all data: 0.0612
Largest Observation Concentration of all data: Xn = 0.299
Test Statistic, high extreme of all data: Tn = 1.74
T Critical of all data: Tcr = 2.76

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.176
Standard Deviation of all data: 0.0568
Largest Observation Concentration of all data: Xn = 0.286
Test Statistic, high extreme of all data: Tn = 1.93
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Barium, dissolved, mg/L

Location: MW-5

Mean of all data: 0.0790
Standard Deviation of all data: 0.0197
Largest Observation Concentration of all data: Xn = 0.153
Test Statistic, high extreme of all data: Tn = 3.76
T Critical of all data: Tcr = 2.93

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

Barium, dissolved, mg/L

Location: MW-6

Mean of all data: 0.308
Standard Deviation of all data: 0.0403
Largest Observation Concentration of all data: Xn = 0.395
Test Statistic, high extreme of all data: Tn = 2.16
T Critical of all data: Tcr = 2.92

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.251
Standard Deviation of all data: 0.0729
Largest Observation Concentration of all data: Xn = 0.373
Test Statistic, high extreme of all data: Tn = 1.68
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Barium, dissolved, mg/L

Location: MW-8

Mean of all data: 0.111
Standard Deviation of all data: 0.0163
Largest Observation Concentration of all data: Xn = 0.196
Test Statistic, high extreme of all data: Tn = 5.23
T Critical of all data: Tcr = 2.93

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
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: 0.0245
Largest Observation Concentration of all data: Xn = 0.203
Test Statistic, high extreme of all data: Tn = 2.02
T Critical of all data: Tcr = 2.93

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 17.9
Standard Deviation of all data: 2.60
Largest Observation Concentration of all data: Xn = 22.2
Test Statistic, high extreme of all data: Tn = 1.64
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Boron, dissolved, mg/L

Location: MW-11

Mean of all data: 1.29
Standard Deviation of all data: 1.80
Largest Observation Concentration of all data: Xn = 7.83
Test Statistic, high extreme of all data: Tn = 3.64
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/13/2012	7.83	False		1

Boron, dissolved, mg/L

Location: MW-11D

Mean of all data: 9.42
Standard Deviation of all data: 5.52
Largest Observation Concentration of all data: Xn = 23.5
Test Statistic, high extreme of all data: Tn = 2.55
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 3.18
Standard Deviation of all data: 3.07
Largest Observation Concentration of all data: Xn = 14.0
Test Statistic, high extreme of all data: Tn = 3.54
T Critical of all data: Tcr = 3.08

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

Boron, dissolved, mg/L

Location: MW-2D

Mean of all data: 3.39
Standard Deviation of all data: 1.99
Largest Observation Concentration of all data: Xn = 8.01
Test Statistic, high extreme of all data: Tn = 2.32
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Boron, dissolved, mg/L

Location: MW-3

Mean of all data: 0.630
Standard Deviation of all data: 0.570
Largest Observation Concentration of all data: Xn = 3.94
Test Statistic, high extreme of all data: Tn = 5.81
T Critical of all data: Tcr = 2.99

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022 | **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: 5.90
Standard Deviation of all data: 2.01
Largest Observation Concentration of all data: Xn = 8.24
Test Statistic, high extreme of all data: Tn = 1.17
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Boron, dissolved, mg/L

Location: MW-5

Mean of all data: 3.53
Standard Deviation of all data: 1.86
Largest Observation Concentration of all data: Xn = 7.46
Test Statistic, high extreme of all data: Tn = 2.11
T Critical of all data: Tcr = 3.13

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Boron, dissolved, mg/L

Location: MW-6

Mean of all data: 4.27
Standard Deviation of all data: 0.721
Largest Observation Concentration of all data: Xn = 6.17
Test Statistic, high extreme of all data: Tn = 2.63
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/30/2004	2.00	False	-1	

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 4.55
Standard Deviation of all data: 0.628
Largest Observation Concentration of all data: Xn = 6.38
Test Statistic, high extreme of all data: Tn = 2.90
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/08/2020	6.38	False		1

Boron, dissolved, mg/L

Location: MW-8

Mean of all data: 0.723
Standard Deviation of all data: 0.307
Largest Observation Concentration of all data: Xn = 2.03
Test Statistic, high extreme of all data: Tn = 4.27
T Critical of all data: Tcr = 3.15

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

Boron, dissolved, mg/L

Location: MW-9

Mean of all data: 0.672
Standard Deviation of all data: 0.173
Largest Observation Concentration of all data: Xn = 1.07
Test Statistic, high extreme of all data: Tn = 2.32
T Critical of all data: Tcr = 3.15

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.000492
Standard Deviation of all data: 0.000127
Largest Observation Concentration of all data: Xn = 0.00100
Test Statistic, high extreme of all data: Tn = 3.99
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/01/2018	0.00100	False		1

Cadmium, dissolved, mg/L

Location: MW-11

Mean of all data: 0.000520
Standard Deviation of all data: 0.000176
Largest Observation Concentration of all data: Xn = 0.00100
Test Statistic, high extreme of all data: Tn = 2.72
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cadmium, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00112
Standard Deviation of all data: 0.000624
Largest Observation Concentration of all data: Xn = 0.00300
Test Statistic, high extreme of all data: Tn = 3.01
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/08/2020	0.00300	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00105
Standard Deviation of all data: 0.00102
Largest Observation Concentration of all data: Xn = 0.00400
Test Statistic, high extreme of all data: Tn = 2.91
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cadmium, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.000887
Standard Deviation of all data: 0.000431
Largest Observation Concentration of all data: Xn = 0.00200
Test Statistic, high extreme of all data: Tn = 2.58
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cadmium, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00106
Standard Deviation of all data: 0.000969
Largest Observation Concentration of all data: Xn = 0.00400
Test Statistic, high extreme of all data: Tn = 3.03
T Critical of all data: Tcr = 2.99

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.000584
Standard Deviation of all data: 0.000235
Largest Observation Concentration of all data: Xn = 0.00100
Test Statistic, high extreme of all data: Tn = 1.77
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cadmium, dissolved, mg/L

Location: MW-5

Mean of all data: 0.0301
Standard Deviation of all data: 0.260
Largest Observation Concentration of all data: Xn = 2.31
Test Statistic, high extreme of all data: Tn = 8.78
T Critical of all data: Tcr = 3.13

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

Cadmium, dissolved, mg/L

Location: MW-6

Mean of all data: 0.00153
Standard Deviation of all data: 0.00241
Largest Observation Concentration of all data: Xn = 0.0203
Test Statistic, high extreme of all data: Tn = 7.79
T Critical of all data: Tcr = 3.08

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.000518
Standard Deviation of all data: 0.000169
Largest Observation Concentration of all data: Xn = 0.00100
Test Statistic, high extreme of all data: Tn = 2.85
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/01/2018	0.00100	False		1

Cadmium, dissolved, mg/L

Location: MW-8

Mean of all data: 0.000683
Standard Deviation of all data: 0.000547
Largest Observation Concentration of all data: Xn = 0.00310
Test Statistic, high extreme of all data: Tn = 4.42
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/16/1999	0.00310	False		1

Cadmium, dissolved, mg/L

Location: MW-9

Mean of all data: 0.000834
Standard Deviation of all data: 0.000467
Largest Observation Concentration of all data: Xn = 0.00220
Test Statistic, high extreme of all data: Tn = 2.93
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 47.5
Standard Deviation of all data: 24.2
Largest Observation Concentration of all data: Xn = 94.0
Test Statistic, high extreme of all data: Tn = 1.92
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Chloride, dissolved, mg/L

Location: MW-11

Mean of all data: 17.1
Standard Deviation of all data: 6.60
Largest Observation Concentration of all data: Xn = 41.5
Test Statistic, high extreme of all data: Tn = 3.71
T Critical of all data: Tcr = 2.81

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

Chloride, dissolved, mg/L

Location: MW-11D

Mean of all data: 37.8
Standard Deviation of all data: 10.8
Largest Observation Concentration of all data: Xn = 57.3
Test Statistic, high extreme of all data: Tn = 1.80
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 15.1
Standard Deviation of all data: 3.71
Largest Observation Concentration of all data: Xn = 23.0
Test Statistic, high extreme of all data: Tn = 2.12
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/15/2022	1.60	False	-1	

Chloride, dissolved, mg/L

Location: MW-2D

Mean of all data: 16.5
Standard Deviation of all data: 4.08
Largest Observation Concentration of all data: Xn = 27.0
Test Statistic, high extreme of all data: Tn = 2.58
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Chloride, dissolved, mg/L

Location: MW-3

Mean of all data: 20.4
Standard Deviation of all data: 4.55
Largest Observation Concentration of all data: Xn = 33.0
Test Statistic, high extreme of all data: Tn = 2.77
T Critical of all data: Tcr = 2.71

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022 | **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: 36.4
Standard Deviation of all data: 7.74
Largest Observation Concentration of all data: Xn = 48.1
Test Statistic, high extreme of all data: Tn = 1.51
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Chloride, dissolved, mg/L

Location: MW-5

Mean of all data: 15.4
Standard Deviation of all data: 9.38
Largest Observation Concentration of all data: Xn = 39.2
Test Statistic, high extreme of all data: Tn = 2.53
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Chloride, dissolved, mg/L

Location: MW-6

Mean of all data: 26.9
Standard Deviation of all data: 3.30
Largest Observation Concentration of all data: Xn = 33.3
Test Statistic, high extreme of all data: Tn = 1.93
T Critical of all data: Tcr = 2.86

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 33.1
Standard Deviation of all data: 6.82
Largest Observation Concentration of all data: Xn = 49.5
Test Statistic, high extreme of all data: Tn = 2.40
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Chloride, dissolved, mg/L

Location: MW-8

Mean of all data: 58.9
Standard Deviation of all data: 26.2
Largest Observation Concentration of all data: Xn = 147.
Test Statistic, high extreme of all data: Tn = 3.35
T Critical of all data: Tcr = 2.87

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

Chloride, dissolved, mg/L

Location: MW-9

Mean of all data: 77.6
Standard Deviation of all data: 35.3
Largest Observation Concentration of all data: Xn = 171.
Test Statistic, high extreme of all data: Tn = 2.64
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.000932
Standard Deviation of all data: 0.000811
Largest Observation Concentration of all data: Xn = 0.00400
Test Statistic, high extreme of all data: Tn = 3.78
T Critical of all data: Tcr = 2.80

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.00400	False		1

Chromium, dissolved, mg/L

Location: MW-11

Mean of all data: 0.000764
Standard Deviation of all data: 0.000580
Largest Observation Concentration of all data: Xn = 0.00300
Test Statistic, high extreme of all data: Tn = 3.85
T Critical of all data: Tcr = 2.79

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.00300	False		1

Chromium, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00121
Standard Deviation of all data: 0.00167
Largest Observation Concentration of all data: Xn = 0.0100
Test Statistic, high extreme of all data: Tn = 5.26
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/13/2012	0.0100	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00148
Standard Deviation of all data: 0.00502
Largest Observation Concentration of all data: Xn = 0.0410
Test Statistic, high extreme of all data: Tn = 7.87
T Critical of all data: Tcr = 3.07

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.0410	False		1

Chromium, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.000728
Standard Deviation of all data: 0.000559
Largest Observation Concentration of all data: Xn = 0.00300
Test Statistic, high extreme of all data: Tn = 4.06
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.00300	False		1

Chromium, dissolved, mg/L

Location: MW-3

Mean of all data: 0.000730
Standard Deviation of all data: 0.000660
Largest Observation Concentration of all data: Xn = 0.00400
Test Statistic, high extreme of all data: Tn = 4.95
T Critical of all data: Tcr = 2.98

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.00400	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.000797
Standard Deviation of all data: 0.000607
Largest Observation Concentration of all data: Xn = 0.00300
Test Statistic, high extreme of all data: Tn = 3.63
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.00300	False		1

Chromium, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00239
Standard Deviation of all data: 0.00811
Largest Observation Concentration of all data: Xn = 0.0630
Test Statistic, high extreme of all data: Tn = 7.47
T Critical of all data: Tcr = 3.12

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/26/2001	0.0630	False		1

Chromium, dissolved, mg/L

Location: MW-6

Mean of all data: 0.000967
Standard Deviation of all data: 0.000896
Largest Observation Concentration of all data: Xn = 0.00420
Test Statistic, high extreme of all data: Tn = 3.61
T Critical of all data: Tcr = 3.07

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/30/2004	0.00420	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.000747
Standard Deviation of all data: 0.000649
Largest Observation Concentration of all data: Xn = 0.00400
Test Statistic, high extreme of all data: Tn = 5.01
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.00400	False		1

Chromium, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00129
Standard Deviation of all data: 0.00366
Largest Observation Concentration of all data: Xn = 0.0329
Test Statistic, high extreme of all data: Tn = 8.65
T Critical of all data: Tcr = 3.14

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
12/21/2004	0.0329	False		1

Chromium, dissolved, mg/L

Location: MW-9

Mean of all data: 0.000954
Standard Deviation of all data: 0.00204
Largest Observation Concentration of all data: Xn = 0.0184
Test Statistic, high extreme of all data: Tn = 8.55
T Critical of all data: Tcr = 3.14

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/29/2005	0.0184	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022 | **LT Multiplier: x 0.50**
Confidence Level: 95% | **Number of Outliers: One Outlier**
Transform: None

Cobalt, dissolved, mg/L
Location: MW-10

Mean of all data: 0.000933
Standard Deviation of all data: 0.000503
Largest Observation Concentration of all data: Xn = 0.00200
Test Statistic, high extreme of all data: Tn = 2.12
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cobalt, dissolved, mg/L
Location: MW-11

Mean of all data: 0.000566
Standard Deviation of all data: 0.000217
Largest Observation Concentration of all data: Xn = 0.00100
Test Statistic, high extreme of all data: Tn = 2.00
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cobalt, dissolved, mg/L
Location: MW-11D

Mean of all data: 0.000585
Standard Deviation of all data: 0.000362
Largest Observation Concentration of all data: Xn = 0.00200
Test Statistic, high extreme of all data: Tn = 3.91
T Critical of all data: Tcr = 2.86

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
LT Multiplier: x 0.50
Confidence Level: 95%
Number of Outliers: One Outlier
Transform: None

Cobalt, dissolved, mg/L

Location: MW-2

Mean of all data: 0.00697
Standard Deviation of all data: 0.0186
Largest Observation Concentration of all data: Xn = 0.0906
Test Statistic, high extreme of all data: Tn = 4.50
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/15/2022	0.0906	False		1

Cobalt, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.000574
Standard Deviation of all data: 0.000220
Largest Observation Concentration of all data: Xn = 0.00100
Test Statistic, high extreme of all data: Tn = 1.94
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cobalt, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00289
Standard Deviation of all data: 0.00167
Largest Observation Concentration of all data: Xn = 0.00700
Test Statistic, high extreme of all data: Tn = 2.47
T Critical of all data: Tcr = 2.73

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
LT Multiplier: x 0.50
Confidence Level: 95%
Number of Outliers: One Outlier
Transform: None

Cobalt, dissolved, mg/L

Location: MW-3D

Mean of all data: 0.000611
Standard Deviation of all data: 0.000446
Largest Observation Concentration of all data: Xn = 0.00300
Test Statistic, high extreme of all data: Tn = 5.36
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.00300	False		1

Cobalt, dissolved, mg/L

Location: MW-5

Mean of all data: 0.000705
Standard Deviation of all data: 0.000727
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 5.91
T Critical of all data: Tcr = 2.90

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

Cobalt, dissolved, mg/L

Location: MW-6

Mean of all data: 0.000705
Standard Deviation of all data: 0.000713
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 6.03
T Critical of all data: Tcr = 2.89

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
LT Multiplier: x 0.50
Confidence Level: 95%
Number of Outliers: One Outlier
Transform: None

Cobalt, dissolved, mg/L

Location: MW-6D

Mean of all data: 0.000558
Standard Deviation of all data: 0.000214
Largest Observation Concentration of all data: Xn = 0.00100
Test Statistic, high extreme of all data: Tn = 2.07
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cobalt, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00235
Standard Deviation of all data: 0.000870
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 3.05
T Critical of all data: Tcr = 2.90

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

Cobalt, dissolved, mg/L

Location: MW-9

Mean of all data: 0.000900
Standard Deviation of all data: 0.00119
Largest Observation Concentration of all data: Xn = 0.00600
Test Statistic, high extreme of all data: Tn = 4.29
T Critical of all data: Tcr = 2.90

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00138
Standard Deviation of all data: 0.00151
Largest Observation Concentration of all data: Xn = 0.00800
Test Statistic, high extreme of all data: Tn = 4.40
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/13/2012	0.00800	False		1

Copper, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00108
Standard Deviation of all data: 0.000928
Largest Observation Concentration of all data: Xn = 0.00400
Test Statistic, high extreme of all data: Tn = 3.15
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/23/2017	0.00400	False		1

Copper, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.000600
Standard Deviation of all data: 0.000306
Largest Observation Concentration of all data: Xn = 0.00200
Test Statistic, high extreme of all data: Tn = 4.57
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/24/2015	0.00200	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00212
Standard Deviation of all data: 0.00255
Largest Observation Concentration of all data: Xn = 0.0140
Test Statistic, high extreme of all data: Tn = 4.65
T Critical of all data: Tcr = 3.08

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

Copper, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.000545
Standard Deviation of all data: 0.000201
Largest Observation Concentration of all data: Xn = 0.00100
Test Statistic, high extreme of all data: Tn = 2.27
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Copper, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00152
Standard Deviation of all data: 0.00301
Largest Observation Concentration of all data: Xn = 0.0180
Test Statistic, high extreme of all data: Tn = 5.48
T Critical of all data: Tcr = 2.99

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.000747
Standard Deviation of all data: 0.000578
Largest Observation Concentration of all data: Xn = 0.00300
Test Statistic, high extreme of all data: Tn = 3.90
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/08/2020	0.00300	False		1

Copper, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00275
Standard Deviation of all data: 0.0157
Largest Observation Concentration of all data: Xn = 0.140
Test Statistic, high extreme of all data: Tn = 8.76
T Critical of all data: Tcr = 3.13

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/26/2001	0.140	False		1

Copper, dissolved, mg/L

Location: MW-6

Mean of all data: 0.00247
Standard Deviation of all data: 0.0104
Largest Observation Concentration of all data: Xn = 0.0850
Test Statistic, high extreme of all data: Tn = 7.95
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/31/2007	0.0850	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.000745
Standard Deviation of all data: 0.000545
Largest Observation Concentration of all data: Xn = 0.00300
Test Statistic, high extreme of all data: Tn = 4.14
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/01/2021	0.00300	False		1

Copper, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00164
Standard Deviation of all data: 0.00569
Largest Observation Concentration of all data: Xn = 0.0520
Test Statistic, high extreme of all data: Tn = 8.86
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/31/2007	0.0520	False		1

Copper, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00188
Standard Deviation of all data: 0.0100
Largest Observation Concentration of all data: Xn = 0.0930
Test Statistic, high extreme of all data: Tn = 9.09
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/31/2007	0.0930	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
Confidence Level: 95%
Transform: None
LT Multiplier: x 0.50
Number of Outliers: One Outlier

Cyanide, total, mg/L

Location: MW-10

Mean of all data: 0.00163
Standard Deviation of all data: 0.00127
Largest Observation Concentration of all data: Xn = 0.00690
Test Statistic, high extreme of all data: Tn = 4.15
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/12/2018	0.00690	False		1

Cyanide, total, mg/L

Location: MW-11

Mean of all data: 0.00171
Standard Deviation of all data: 0.00226
Largest Observation Concentration of all data: Xn = 0.0136
Test Statistic, high extreme of all data: Tn = 5.26
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/23/2017	0.0136	False		1

Cyanide, total, mg/L

Location: MW-11D

Mean of all data: 0.0182
Standard Deviation of all data: 0.0194
Largest Observation Concentration of all data: Xn = 0.0668
Test Statistic, high extreme of all data: Tn = 2.50
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00148
Standard Deviation of all data: 0.00125
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 2.81
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cyanide, total, mg/L

Location: MW-2D

Mean of all data: 0.00178
Standard Deviation of all data: 0.00178
Largest Observation Concentration of all data: Xn = 0.00830
Test Statistic, high extreme of all data: Tn = 3.66
T Critical of all data: Tcr = 2.85

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

Cyanide, total, mg/L

Location: MW-3

Mean of all data: 0.00149
Standard Deviation of all data: 0.00133
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 2.64
T Critical of all data: Tcr = 2.73

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00173
Standard Deviation of all data: 0.00183
Largest Observation Concentration of all data: Xn = 0.00900
Test Statistic, high extreme of all data: Tn = 3.97
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
11/05/2012	0.00900	False		1

Cyanide, total, mg/L

Location: MW-5

Mean of all data: 0.00551
Standard Deviation of all data: 0.00262
Largest Observation Concentration of all data: Xn = 0.0130
Test Statistic, high extreme of all data: Tn = 2.86
T Critical of all data: Tcr = 2.89

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cyanide, total, mg/L

Location: MW-6

Mean of all data: 0.00166
Standard Deviation of all data: 0.00131
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 2.55
T Critical of all data: Tcr = 2.88

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00143
Standard Deviation of all data: 0.000936
Largest Observation Concentration of all data: Xn = 0.00250
Test Statistic, high extreme of all data: Tn = 1.14
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cyanide, total, mg/L

Location: MW-8

Mean of all data: 0.00160
Standard Deviation of all data: 0.00120
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 2.84
T Critical of all data: Tcr = 2.89

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Cyanide, total, mg/L

Location: MW-9

Mean of all data: 0.00168
Standard Deviation of all data: 0.00123
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 2.69
T Critical of all data: Tcr = 2.89

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.543
Standard Deviation of all data: 0.239
Largest Observation Concentration of all data: Xn = 0.850
Test Statistic, high extreme of all data: Tn = 1.28
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Fluoride, dissolved, mg/L

Location: MW-11

Mean of all data: 0.306
Standard Deviation of all data: 0.114
Largest Observation Concentration of all data: Xn = 0.710
Test Statistic, high extreme of all data: Tn = 3.53
T Critical of all data: Tcr = 2.81

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

Fluoride, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.453
Standard Deviation of all data: 0.176
Largest Observation Concentration of all data: Xn = 0.760
Test Statistic, high extreme of all data: Tn = 1.74
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.262
Standard Deviation of all data: 0.0765
Largest Observation Concentration of all data: Xn = 0.550
Test Statistic, high extreme of all data: Tn = 3.77
T Critical of all data: Tcr = 2.84

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

Fluoride, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.249
Standard Deviation of all data: 0.0961
Largest Observation Concentration of all data: Xn = 0.500
Test Statistic, high extreme of all data: Tn = 2.61
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Fluoride, dissolved, mg/L

Location: MW-3

Mean of all data: 0.212
Standard Deviation of all data: 0.0570
Largest Observation Concentration of all data: Xn = 0.330
Test Statistic, high extreme of all data: Tn = 2.06
T Critical of all data: Tcr = 2.73

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.286
Standard Deviation of all data: 0.146
Largest Observation Concentration of all data: Xn = 0.640
Test Statistic, high extreme of all data: Tn = 2.43
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Fluoride, dissolved, mg/L

Location: MW-5

Mean of all data: 0.359
Standard Deviation of all data: 0.112
Largest Observation Concentration of all data: Xn = 0.660
Test Statistic, high extreme of all data: Tn = 2.68
T Critical of all data: Tcr = 2.89

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Fluoride, dissolved, mg/L

Location: MW-6

Mean of all data: 0.590
Standard Deviation of all data: 0.109
Largest Observation Concentration of all data: Xn = 0.830
Test Statistic, high extreme of all data: Tn = 2.20
T Critical of all data: Tcr = 2.88

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.258
Standard Deviation of all data: 0.156
Largest Observation Concentration of all data: Xn = 0.570
Test Statistic, high extreme of all data: Tn = 2.00
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Fluoride, dissolved, mg/L

Location: MW-8

Mean of all data: 0.434
Standard Deviation of all data: 0.149
Largest Observation Concentration of all data: Xn = 0.840
Test Statistic, high extreme of all data: Tn = 2.72
T Critical of all data: Tcr = 2.89

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Fluoride, dissolved, mg/L

Location: MW-9

Mean of all data: 0.362
Standard Deviation of all data: 0.119
Largest Observation Concentration of all data: Xn = 0.710
Test Statistic, high extreme of all data: Tn = 2.92
T Critical of all data: Tcr = 2.89

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 1.52
Standard Deviation of all data: 1.68
Largest Observation Concentration of all data: Xn = 6.59
Test Statistic, high extreme of all data: Tn = 3.01
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/13/2013	6.59	False		1

Iron, dissolved, mg/L

Location: MW-11

Mean of all data: 0.185
Standard Deviation of all data: 0.437
Largest Observation Concentration of all data: Xn = 1.73
Test Statistic, high extreme of all data: Tn = 3.54
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/12/2018	1.73	False		1

Iron, dissolved, mg/L

Location: MW-11D

Mean of all data: 18.5
Standard Deviation of all data: 3.49
Largest Observation Concentration of all data: Xn = 22.8
Test Statistic, high extreme of all data: Tn = 1.24
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/10/2019	5.67	False	-1	

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.553
Standard Deviation of all data: 2.26
Largest Observation Concentration of all data: Xn = 15.1
Test Statistic, high extreme of all data: Tn = 6.44
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/15/2022	15.1	False		1

Iron, dissolved, mg/L

Location: MW-2D

Mean of all data: 17.0
Standard Deviation of all data: 2.87
Largest Observation Concentration of all data: Xn = 24.8
Test Statistic, high extreme of all data: Tn = 2.71
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Iron, dissolved, mg/L

Location: MW-3

Mean of all data: 1.56
Standard Deviation of all data: 1.43
Largest Observation Concentration of all data: Xn = 4.93
Test Statistic, high extreme of all data: Tn = 2.35
T Critical of all data: Tcr = 2.99

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 5.61
Standard Deviation of all data: 3.33
Largest Observation Concentration of all data: Xn = 13.9
Test Statistic, high extreme of all data: Tn = 2.48
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Iron, dissolved, mg/L

Location: MW-5

Mean of all data: 0.838
Standard Deviation of all data: 0.778
Largest Observation Concentration of all data: Xn = 4.67
Test Statistic, high extreme of all data: Tn = 4.93
T Critical of all data: Tcr = 3.13

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

Iron, dissolved, mg/L

Location: MW-6

Mean of all data: 19.1
Standard Deviation of all data: 5.69
Largest Observation Concentration of all data: Xn = 30.5
Test Statistic, high extreme of all data: Tn = 2.00
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.527
Standard Deviation of all data: 0.205
Largest Observation Concentration of all data: Xn = 0.929
Test Statistic, high extreme of all data: Tn = 1.96
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Iron, dissolved, mg/L

Location: MW-8

Mean of all data: 0.0657
Standard Deviation of all data: 0.0708
Largest Observation Concentration of all data: Xn = 0.339
Test Statistic, high extreme of all data: Tn = 3.86
T Critical of all data: Tcr = 3.14

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
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: 3.60
Largest Observation Concentration of all data: Xn = 24.5
Test Statistic, high extreme of all data: Tn = 1.97
T Critical of all data: Tcr = 3.14

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00236
Standard Deviation of all data: 0.00144
Largest Observation Concentration of all data: Xn = 0.00350
Test Statistic, high extreme of all data: Tn = 0.788
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Lead, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00250
Standard Deviation of all data: 0.00164
Largest Observation Concentration of all data: Xn = 0.00700
Test Statistic, high extreme of all data: Tn = 2.74
T Critical of all data: Tcr = 2.80

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Lead, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00298
Standard Deviation of all data: 0.00145
Largest Observation Concentration of all data: Xn = 0.00600
Test Statistic, high extreme of all data: Tn = 2.08
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00168
Standard Deviation of all data: 0.00181
Largest Observation Concentration of all data: Xn = 0.0110
Test Statistic, high extreme of all data: Tn = 5.14
T Critical of all data: Tcr = 3.07

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

Lead, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00275
Standard Deviation of all data: 0.00126
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 1.79
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Lead, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00185
Standard Deviation of all data: 0.00190
Largest Observation Concentration of all data: Xn = 0.00800
Test Statistic, high extreme of all data: Tn = 3.24
T Critical of all data: Tcr = 2.99

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00239
Standard Deviation of all data: 0.00150
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 1.74
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Lead, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00149
Standard Deviation of all data: 0.00152
Largest Observation Concentration of all data: Xn = 0.00700
Test Statistic, high extreme of all data: Tn = 3.62
T Critical of all data: Tcr = 3.12

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

Lead, dissolved, mg/L

Location: MW-6

Mean of all data: 0.00285
Standard Deviation of all data: 0.00234
Largest Observation Concentration of all data: Xn = 0.0120
Test Statistic, high extreme of all data: Tn = 3.91
T Critical of all data: Tcr = 3.08

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00251
Standard Deviation of all data: 0.00184
Largest Observation Concentration of all data: Xn = 0.00800
Test Statistic, high extreme of all data: Tn = 2.99
T Critical of all data: Tcr = 2.84

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

Lead, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00175
Standard Deviation of all data: 0.00199
Largest Observation Concentration of all data: Xn = 0.0110
Test Statistic, high extreme of all data: Tn = 4.65
T Critical of all data: Tcr = 3.14

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/28/2006	<0.0110	True		1

Lead, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00227
Standard Deviation of all data: 0.00189
Largest Observation Concentration of all data: Xn = 0.0110
Test Statistic, high extreme of all data: Tn = 4.63
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/28/2006	<0.0110	True		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
Confidence Level: 95%
Transform: None

LT Multiplier: x 0.50
Number of Outliers: One Outlier

Manganese, dissolved, mg/L

Location: MW-10

Mean of all data: 1.27
Standard Deviation of all data: 0.649
Largest Observation Concentration of all data: Xn = 2.50
Test Statistic, high extreme of all data: Tn = 1.89
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Manganese, dissolved, mg/L

Location: MW-11

Mean of all data: 0.137
Standard Deviation of all data: 0.273
Largest Observation Concentration of all data: Xn = 1.24
Test Statistic, high extreme of all data: Tn = 4.06
T Critical of all data: Tcr = 2.81

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

Manganese, dissolved, mg/L

Location: MW-11D

Mean of all data: 2.93
Standard Deviation of all data: 0.580
Largest Observation Concentration of all data: Xn = 4.01
Test Statistic, high extreme of all data: Tn = 1.86
T Critical of all data: Tcr = 2.86

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

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.339
Standard Deviation of all data: 0.801
Largest Observation Concentration of all data: Xn = 5.10
Test Statistic, high extreme of all data: Tn = 5.94
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/15/2022	5.10	False		1

Manganese, dissolved, mg/L

Location: MW-2D

Mean of all data: 1.05
Standard Deviation of all data: 0.206
Largest Observation Concentration of all data: Xn = 1.40
Test Statistic, high extreme of all data: Tn = 1.69
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Manganese, dissolved, mg/L

Location: MW-3

Mean of all data: 0.849
Standard Deviation of all data: 0.323
Largest Observation Concentration of all data: Xn = 1.41
Test Statistic, high extreme of all data: Tn = 1.73
T Critical of all data: Tcr = 2.99

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.352
Standard Deviation of all data: 0.146
Largest Observation Concentration of all data: Xn = 0.745
Test Statistic, high extreme of all data: Tn = 2.70
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Manganese, dissolved, mg/L

Location: MW-5

Mean of all data: 1.29
Standard Deviation of all data: 0.692
Largest Observation Concentration of all data: Xn = 3.38
Test Statistic, high extreme of all data: Tn = 3.02
T Critical of all data: Tcr = 3.13

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Manganese, dissolved, mg/L

Location: MW-6

Mean of all data: 2.53
Standard Deviation of all data: 0.535
Largest Observation Concentration of all data: Xn = 3.63
Test Statistic, high extreme of all data: Tn = 2.05
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.182
Standard Deviation of all data: 0.0667
Largest Observation Concentration of all data: Xn = 0.309
Test Statistic, high extreme of all data: Tn = 1.90
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Manganese, dissolved, mg/L

Location: MW-8

Mean of all data: 0.629
Standard Deviation of all data: 0.127
Largest Observation Concentration of all data: Xn = 0.880
Test Statistic, high extreme of all data: Tn = 1.97
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Manganese, dissolved, mg/L

Location: MW-9

Mean of all data: 0.763
Standard Deviation of all data: 0.117
Largest Observation Concentration of all data: Xn = 1.07
Test Statistic, high extreme of all data: Tn = 2.62
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
Confidence Level: 95%
Transform: None

LT Multiplier: x 0.50
Number of Outliers: One Outlier

Nickel, dissolved, mg/L

Location: MW-10

Mean of all data: 0.00245
Standard Deviation of all data: 0.00166
Largest Observation Concentration of all data: Xn = 0.00800
Test Statistic, high extreme of all data: Tn = 3.35
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/13/2012	0.00800	False		1

Nickel, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00447
Standard Deviation of all data: 0.00300
Largest Observation Concentration of all data: Xn = 0.0100
Test Statistic, high extreme of all data: Tn = 1.85
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Nickel, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00249
Standard Deviation of all data: 0.00255
Largest Observation Concentration of all data: Xn = 0.0110
Test Statistic, high extreme of all data: Tn = 3.34
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
07/22/2013	0.0110	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.0118
Standard Deviation of all data: 0.0124
Largest Observation Concentration of all data: Xn = 0.0500
Test Statistic, high extreme of all data: Tn = 3.09
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/27/2007	0.0500	False		1

Nickel, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00125
Standard Deviation of all data: 0.000851
Largest Observation Concentration of all data: Xn = 0.00400
Test Statistic, high extreme of all data: Tn = 3.23
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/01/2018	0.00400	False		1

Nickel, dissolved, mg/L

Location: MW-3

Mean of all data: 0.0182
Standard Deviation of all data: 0.0171
Largest Observation Concentration of all data: Xn = 0.0800
Test Statistic, high extreme of all data: Tn = 3.61
T Critical of all data: Tcr = 2.99

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/12/1997	0.0800	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00168
Standard Deviation of all data: 0.00129
Largest Observation Concentration of all data: Xn = 0.00700
Test Statistic, high extreme of all data: Tn = 4.14
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/06/2017	0.00700	False		1

Nickel, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00562
Standard Deviation of all data: 0.00806
Largest Observation Concentration of all data: Xn = 0.0329
Test Statistic, high extreme of all data: Tn = 3.38
T Critical of all data: Tcr = 3.13

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/26/2001	0.0329	False		1

Nickel, dissolved, mg/L

Location: MW-6

Mean of all data: 0.0104
Standard Deviation of all data: 0.0126
Largest Observation Concentration of all data: Xn = 0.0470
Test Statistic, high extreme of all data: Tn = 2.91
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00146
Standard Deviation of all data: 0.000993
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 3.57
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/01/2018	0.00500	False		1

Nickel, dissolved, mg/L

Location: MW-8

Mean of all data: 0.0132
Standard Deviation of all data: 0.0143
Largest Observation Concentration of all data: Xn = 0.117
Test Statistic, high extreme of all data: Tn = 7.27
T Critical of all data: Tcr = 3.14

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/16/1999	0.117	False		1

Nickel, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00766
Standard Deviation of all data: 0.0102
Largest Observation Concentration of all data: Xn = 0.0410
Test Statistic, high extreme of all data: Tn = 3.26
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/27/2007	0.0410	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
Confidence Level: 95%
Transform: None

LT Multiplier: x 0.50
Number of Outliers: One Outlier

Nitrate nitrogen, dissolved, mg/L

Location: MW-10

Mean of all data: 2.06
Standard Deviation of all data: 3.56
Largest Observation Concentration of all data: Xn = 16.9
Test Statistic, high extreme of all data: Tn = 4.17
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
11/02/2015	16.9	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-11

Mean of all data: 7.31
Standard Deviation of all data: 10.9
Largest Observation Concentration of all data: Xn = 55.6
Test Statistic, high extreme of all data: Tn = 4.43
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/18/2014	55.6	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-11D

Mean of all data: 2.15
Standard Deviation of all data: 7.01
Largest Observation Concentration of all data: Xn = 44.0
Test Statistic, high extreme of all data: Tn = 5.97
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
12/07/2011	44.0	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 4.10
Standard Deviation of all data: 4.28
Largest Observation Concentration of all data: Xn = 15.0
Test Statistic, high extreme of all data: Tn = 2.55
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Nitrate nitrogen, dissolved, mg/L

Location: MW-2D

Mean of all data: 1.47
Standard Deviation of all data: 2.21
Largest Observation Concentration of all data: Xn = 10.0
Test Statistic, high extreme of all data: Tn = 3.86
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/24/2015	10.0	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-3

Mean of all data: 2.93
Standard Deviation of all data: 4.22
Largest Observation Concentration of all data: Xn = 14.2
Test Statistic, high extreme of all data: Tn = 2.67
T Critical of all data: Tcr = 2.71

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 1.32
Standard Deviation of all data: 2.15
Largest Observation Concentration of all data: Xn = 11.2
Test Statistic, high extreme of all data: Tn = 4.60
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/18/2014	11.2	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-5

Mean of all data: 1.46
Standard Deviation of all data: 2.22
Largest Observation Concentration of all data: Xn = 11.4
Test Statistic, high extreme of all data: Tn = 4.47
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/10/2019	11.4	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-6

Mean of all data: 1.31
Standard Deviation of all data: 2.04
Largest Observation Concentration of all data: Xn = 10.3
Test Statistic, high extreme of all data: Tn = 4.40
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/15/2022	10.3	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 1.24
Standard Deviation of all data: 2.47
Largest Observation Concentration of all data: Xn = 14.6
Test Statistic, high extreme of all data: Tn = 5.42
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/18/2014	14.6	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-8

Mean of all data: 2.21
Standard Deviation of all data: 2.68
Largest Observation Concentration of all data: Xn = 10.0
Test Statistic, high extreme of all data: Tn = 2.91
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
10/27/2014	10.0	False		1

Nitrate nitrogen, dissolved, mg/L

Location: MW-9

Mean of all data: 1.03
Standard Deviation of all data: 1.87
Largest Observation Concentration of all data: Xn = 9.27
Test Statistic, high extreme of all data: Tn = 4.41
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/18/2014	9.27	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00535
Standard Deviation of all data: 0.00351
Largest Observation Concentration of all data: Xn = 0.0130
Test Statistic, high extreme of all data: Tn = 2.18
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Selenium, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00556
Standard Deviation of all data: 0.00330
Largest Observation Concentration of all data: Xn = 0.0100
Test Statistic, high extreme of all data: Tn = 1.34
T Critical of all data: Tcr = 2.80

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Selenium, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00452
Standard Deviation of all data: 0.00477
Largest Observation Concentration of all data: Xn = 0.0250
Test Statistic, high extreme of all data: Tn = 4.30
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/24/2015	0.0250	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00520
Standard Deviation of all data: 0.00476
Largest Observation Concentration of all data: Xn = 0.0250
Test Statistic, high extreme of all data: Tn = 4.16
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0250	False		1

Selenium, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00397
Standard Deviation of all data: 0.00340
Largest Observation Concentration of all data: Xn = 0.00900
Test Statistic, high extreme of all data: Tn = 1.48
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Selenium, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00518
Standard Deviation of all data: 0.00386
Largest Observation Concentration of all data: Xn = 0.0160
Test Statistic, high extreme of all data: Tn = 2.81
T Critical of all data: Tcr = 2.71

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
11/02/2021	0.0160	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00469
Standard Deviation of all data: 0.00399
Largest Observation Concentration of all data: Xn = 0.0160
Test Statistic, high extreme of all data: Tn = 2.83
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Selenium, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00510
Standard Deviation of all data: 0.00505
Largest Observation Concentration of all data: Xn = 0.0220
Test Statistic, high extreme of all data: Tn = 3.35
T Critical of all data: Tcr = 2.89

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0220	False		1

Selenium, dissolved, mg/L

Location: MW-6

Mean of all data: 0.00423
Standard Deviation of all data: 0.00361
Largest Observation Concentration of all data: Xn = 0.0130
Test Statistic, high extreme of all data: Tn = 2.43
T Critical of all data: Tcr = 2.88

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00489
Standard Deviation of all data: 0.00342
Largest Observation Concentration of all data: Xn = 0.0100
Test Statistic, high extreme of all data: Tn = 1.49
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Selenium, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00469
Standard Deviation of all data: 0.00352
Largest Observation Concentration of all data: Xn = 0.0130
Test Statistic, high extreme of all data: Tn = 2.36
T Critical of all data: Tcr = 2.89

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Selenium, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00480
Standard Deviation of all data: 0.00437
Largest Observation Concentration of all data: Xn = 0.0180
Test Statistic, high extreme of all data: Tn = 3.02
T Critical of all data: Tcr = 2.89

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	0.0180	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
Confidence Level: 95%
Transform: None
LT Multiplier: x 0.50
Number of Outliers: One Outlier

Silver, dissolved, mg/L

Location: MW-10

Mean of all data: 0.000932
Standard Deviation of all data: 0.00135
Largest Observation Concentration of all data: Xn = 0.00800
Test Statistic, high extreme of all data: Tn = 5.23
T Critical of all data: Tcr = 2.80

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
10/25/2016	0.00800	False		1

Silver, dissolved, mg/L

Location: MW-11

Mean of all data: 0.000991
Standard Deviation of all data: 0.00128
Largest Observation Concentration of all data: Xn = 0.00600
Test Statistic, high extreme of all data: Tn = 3.92
T Critical of all data: Tcr = 2.79

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/22/2016	0.00600	False		1

Silver, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.000830
Standard Deviation of all data: 0.00118
Largest Observation Concentration of all data: Xn = 0.00700
Test Statistic, high extreme of all data: Tn = 5.25
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/22/2016	0.00700	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.000984
Standard Deviation of all data: 0.00168
Largest Observation Concentration of all data: Xn = 0.0100
Test Statistic, high extreme of all data: Tn = 5.35
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/08/2010	0.0100	False		1

Silver, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00119
Standard Deviation of all data: 0.00127
Largest Observation Concentration of all data: Xn = 0.00600
Test Statistic, high extreme of all data: Tn = 3.78
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/29/2016	0.00600	False		1

Silver, dissolved, mg/L

Location: MW-3

Mean of all data: 0.00138
Standard Deviation of all data: 0.00167
Largest Observation Concentration of all data: Xn = 0.00600
Test Statistic, high extreme of all data: Tn = 2.77
T Critical of all data: Tcr = 2.71

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
10/25/2016	0.00600	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00121
Standard Deviation of all data: 0.00150
Largest Observation Concentration of all data: Xn = 0.00700
Test Statistic, high extreme of all data: Tn = 3.85
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
10/25/2016	0.00700	False		1

Silver, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00102
Standard Deviation of all data: 0.00109
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 3.64
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/22/2016	0.00500	False		1

Silver, dissolved, mg/L

Location: MW-6

Mean of all data: 0.000896
Standard Deviation of all data: 0.00109
Largest Observation Concentration of all data: Xn = 0.00500
Test Statistic, high extreme of all data: Tn = 3.78
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/22/2016	0.00500	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00166
Standard Deviation of all data: 0.00201
Largest Observation Concentration of all data: Xn = 0.00700
Test Statistic, high extreme of all data: Tn = 2.66
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Silver, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00119
Standard Deviation of all data: 0.00146
Largest Observation Concentration of all data: Xn = 0.00600
Test Statistic, high extreme of all data: Tn = 3.30
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/22/2016	0.00600	False		1

Silver, dissolved, mg/L

Location: MW-9

Mean of all data: 0.000986
Standard Deviation of all data: 0.00141
Largest Observation Concentration of all data: Xn = 0.00800
Test Statistic, high extreme of all data: Tn = 4.98
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/22/2016	0.00800	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
Confidence Level: 95%
Transform: None
LT Multiplier: x 0.50
Number of Outliers: One Outlier

Sulfate, dissolved, mg/L

Location: MW-10

Mean of all data: 809.
Standard Deviation of all data: 217.
Largest Observation Concentration of all data: Xn = 1100.
Test Statistic, high extreme of all data: Tn = 1.33
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/12/2018	<0.100	True	-1	

Sulfate, dissolved, mg/L

Location: MW-11

Mean of all data: 86.2
Standard Deviation of all data: 70.5
Largest Observation Concentration of all data: Xn = 383.
Test Statistic, high extreme of all data: Tn = 4.21
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/13/2012	383.	False		1

Sulfate, dissolved, mg/L

Location: MW-11D

Mean of all data: 438.
Standard Deviation of all data: 222.
Largest Observation Concentration of all data: Xn = 927.
Test Statistic, high extreme of all data: Tn = 2.20
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 38.1
Standard Deviation of all data: 45.8
Largest Observation Concentration of all data: Xn = 287.
Test Statistic, high extreme of all data: Tn = 5.44
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/23/2011	287.	False		1

Sulfate, dissolved, mg/L

Location: MW-2D

Mean of all data: 38.3
Standard Deviation of all data: 46.4
Largest Observation Concentration of all data: Xn = 181.
Test Statistic, high extreme of all data: Tn = 3.08
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	181.	False		1

Sulfate, dissolved, mg/L

Location: MW-3

Mean of all data: 66.9
Standard Deviation of all data: 55.6
Largest Observation Concentration of all data: Xn = 230.
Test Statistic, high extreme of all data: Tn = 2.93
T Critical of all data: Tcr = 2.71

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/18/2014	230.	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 92.7
Largest Observation Concentration of all data: Xn = 638.
Test Statistic, high extreme of all data: Tn = 5.07
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/23/2011	638.	False		1

Sulfate, dissolved, mg/L

Location: MW-5

Mean of all data: 110.
Standard Deviation of all data: 69.0
Largest Observation Concentration of all data: Xn = 340.
Test Statistic, high extreme of all data: Tn = 3.33
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/10/2014	340.	False		1

Sulfate, dissolved, mg/L

Location: MW-6

Mean of all data: 12.0
Standard Deviation of all data: 10.3
Largest Observation Concentration of all data: Xn = 48.7
Test Statistic, high extreme of all data: Tn = 3.55
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/15/2022	48.7	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 260.
Standard Deviation of all data: 75.5
Largest Observation Concentration of all data: Xn = 443.
Test Statistic, high extreme of all data: Tn = 2.43
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Sulfate, dissolved, mg/L

Location: MW-8

Mean of all data: 129.
Standard Deviation of all data: 31.1
Largest Observation Concentration of all data: Xn = 250.
Test Statistic, high extreme of all data: Tn = 3.86
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/14/2021	250.	False		1

Sulfate, dissolved, mg/L

Location: MW-9

Mean of all data: 174.
Standard Deviation of all data: 61.1
Largest Observation Concentration of all data: Xn = 365.
Test Statistic, high extreme of all data: Tn = 3.12
T Critical of all data: Tcr = 2.87

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
11/05/2012	365.	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 1610.
Standard Deviation of all data: 244.
Largest Observation Concentration of all data: Xn = 2130.
Test Statistic, high extreme of all data: Tn = 2.14
T Critical of all data: Tcr = 2.82

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Total Dissolved Solids, mg/L

Location: MW-11

Mean of all data: 768.
Standard Deviation of all data: 400.
Largest Observation Concentration of all data: Xn = 2770.
Test Statistic, high extreme of all data: Tn = 5.01
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
08/23/2017	2770.	False		1

Total Dissolved Solids, mg/L

Location: MW-11D

Mean of all data: 1260.
Standard Deviation of all data: 327.
Largest Observation Concentration of all data: Xn = 1730.
Test Statistic, high extreme of all data: Tn = 1.43
T Critical of all data: Tcr = 2.86

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
09/10/2019	280.	False	-1	

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 225.
Largest Observation Concentration of all data: Xn = 1560.
Test Statistic, high extreme of all data: Tn = 3.67
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/24/2005	1560.	False		1

Total Dissolved Solids, mg/L

Location: MW-2D

Mean of all data: 741.
Standard Deviation of all data: 161.
Largest Observation Concentration of all data: Xn = 950.
Test Statistic, high extreme of all data: Tn = 1.29
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Total Dissolved Solids, mg/L

Location: MW-3

Mean of all data: 723.
Standard Deviation of all data: 138.
Largest Observation Concentration of all data: Xn = 1130.
Test Statistic, high extreme of all data: Tn = 2.93
T Critical of all data: Tcr = 2.99

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
11/05/2018	290.	False	-1	

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 578.
Standard Deviation of all data: 85.7
Largest Observation Concentration of all data: Xn = 750.
Test Statistic, high extreme of all data: Tn = 2.01
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Total Dissolved Solids, mg/L

Location: MW-5

Mean of all data: 764.
Standard Deviation of all data: 198.
Largest Observation Concentration of all data: Xn = 1320.
Test Statistic, high extreme of all data: Tn = 2.80
T Critical of all data: Tcr = 3.13

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
11/05/2018	50.0	False	-1	

Total Dissolved Solids, mg/L

Location: MW-6

Mean of all data: 502.
Standard Deviation of all data: 103.
Largest Observation Concentration of all data: Xn = 1040.
Test Statistic, high extreme of all data: Tn = 5.24
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
06/30/2004	1040.	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 687.
Standard Deviation of all data: 172.
Largest Observation Concentration of all data: Xn = 960.
Test Statistic, high extreme of all data: Tn = 1.59
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Total Dissolved Solids, mg/L

Location: MW-8

Mean of all data: 739.
Standard Deviation of all data: 132.
Largest Observation Concentration of all data: Xn = 1030.
Test Statistic, high extreme of all data: Tn = 2.21
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Total Dissolved Solids, mg/L

Location: MW-9

Mean of all data: 914.
Standard Deviation of all data: 185.
Largest Observation Concentration of all data: Xn = 1400.
Test Statistic, high extreme of all data: Tn = 2.62
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side

No Outliers

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00632
Standard Deviation of all data: 0.00916
Largest Observation Concentration of all data: Xn = 0.0480
Test Statistic, high extreme of all data: Tn = 4.55
T Critical of all data: Tcr = 2.81

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.0480	False		1

Zinc, dissolved, mg/L

Location: MW-11

Mean of all data: 0.00669
Standard Deviation of all data: 0.00954
Largest Observation Concentration of all data: Xn = 0.0490
Test Statistic, high extreme of all data: Tn = 4.44
T Critical of all data: Tcr = 2.80

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.0490	False		1

Zinc, dissolved, mg/L

Location: MW-11D

Mean of all data: 0.00715
Standard Deviation of all data: 0.00998
Largest Observation Concentration of all data: Xn = 0.0500
Test Statistic, high extreme of all data: Tn = 4.29
T Critical of all data: Tcr = 2.85

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.0500	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.0137
Standard Deviation of all data: 0.0552
Largest Observation Concentration of all data: Xn = 0.454
Test Statistic, high extreme of all data: Tn = 7.98
T Critical of all data: Tcr = 3.07

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.454	False		1

Zinc, dissolved, mg/L

Location: MW-2D

Mean of all data: 0.00629
Standard Deviation of all data: 0.00843
Largest Observation Concentration of all data: Xn = 0.0480
Test Statistic, high extreme of all data: Tn = 4.95
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.0480	False		1

Zinc, dissolved, mg/L

Location: MW-3

Mean of all data: 0.0106
Standard Deviation of all data: 0.0175
Largest Observation Concentration of all data: Xn = 0.108
Test Statistic, high extreme of all data: Tn = 5.55
T Critical of all data: Tcr = 2.99

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/08/2008	0.108	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00637
Standard Deviation of all data: 0.0108
Largest Observation Concentration of all data: Xn = 0.0500
Test Statistic, high extreme of all data: Tn = 4.02
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.0500	False		1

Zinc, dissolved, mg/L

Location: MW-5

Mean of all data: 0.00699
Standard Deviation of all data: 0.00987
Largest Observation Concentration of all data: Xn = 0.0500
Test Statistic, high extreme of all data: Tn = 4.36
T Critical of all data: Tcr = 3.12

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/24/1998	<0.0500	True		1

Zinc, dissolved, mg/L

Location: MW-6

Mean of all data: 0.0154
Standard Deviation of all data: 0.0577
Largest Observation Concentration of all data: Xn = 0.478
Test Statistic, high extreme of all data: Tn = 8.02
T Critical of all data: Tcr = 3.08

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
02/24/1998	0.478	False		1

Based on Grubbs one-sided outlier test

Venice
Outlier Analysis Results

User Supplied Information

Date Range: 06/27/1996 to 11/02/2022
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: 0.00549
Standard Deviation of all data: 0.00984
Largest Observation Concentration of all data: Xn = 0.0420
Test Statistic, high extreme of all data: Tn = 3.71
T Critical of all data: Tcr = 2.84

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
05/18/2015	0.0420	False		1

Zinc, dissolved, mg/L

Location: MW-8

Mean of all data: 0.00693
Standard Deviation of all data: 0.0111
Largest Observation Concentration of all data: Xn = 0.0720
Test Statistic, high extreme of all data: Tn = 5.85
T Critical of all data: Tcr = 3.14

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
03/17/2011	0.0720	False		1

Zinc, dissolved, mg/L

Location: MW-9

Mean of all data: 0.00658
Standard Deviation of all data: 0.00827
Largest Observation Concentration of all data: Xn = 0.0500
Test Statistic, high extreme of all data: Tn = 5.25
T Critical of all data: Tcr = 3.15

Sample Date	Value	LT_Value	Outlier Low Side	Outlier High Side
12/21/2004	<0.0500	True		1

Based on Grubbs one-sided outlier test

APPENDIX D2
TEST DESCRIPTIONS

ELECTRIC POWER RESEARCH INSTITUTE

MANAGES

Groundwater Data Management and Evaluation Software

Software Manual Product ID #1012581

Software Manual, February 2010

EPRI Project Manager
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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 tieds) values (Gilbert, 1987; p. 208)	
Indicator Function $\mathrm{sgn}(x_{ij} - x_{jk})$	= 1 if $(x_{ij} - x_{jk}) > 0$ = 0 if $(x_{ij} - x_{jk}) = 0$ = -1 if $(x_{ij} - x_{jk}) < 0$ where $x_{i1}, x_{i2}, \ldots, x_{in}$ are the time ordered data (n_i is total of data in the i-th season).
Mann-Kendall Statistic, S_i	$= \sum_{k=1}^{n_i-1} \sum_{j=k+1}^{n_i} \mathrm{sgn}(x_{ij} - x_{jk})$
Variance of S_i $VAR(S_i)$	$VAR(S_i) =$ $\frac{1}{18}\left\{ n_i(n_i-1)(2n_i+5) - \sum_{p=1}^{g_i} t_{ip}(t_{ip}-1)(2t_{ip}+5) - \sum_{q=1}^{h_i} u_{iq}(u_{iq}-1)(2u_{iq}+5) \right\}$ $+ \frac{\sum_{p=1}^{g_i} t_{ip}(t_{ip}-1)(t_{ip}-2) \sum_{q=1}^{h_i} u_{iq}(u_{iq}-1)(u_{iq}-2)}{9n_i(n_i-1)(n_i-2)}$ $+ \frac{\sum_{p=1}^{g_i} t_{ip}(t_{ip}-1) \sum_{q=1}^{h_i} u_{iq}(u_{iq}-1)}{2n_i(n_i-1)}.$ 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: $$Z = \begin{cases} \dfrac{S'-1}{[VAR(S')]^{1/2}} & \text{iff } S' > 0 \\ 0 & \text{iff } S' = 0 \\ \dfrac{S'+1}{[VAR(S')]^{1/2}} & \text{iff } S' < 0 \end{cases}$$ Where "iff" is an acroym 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 $\lvert Z \rvert \leq Z_{1-\alpha/2}$ Reject the null hypothesis H_0 if $\lvert Z \rvert > Z_{1-\alpha/2}$ 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 where 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*

Mean of the observed data during the scoping period; $\overline{X}$	$\overline{X} = \frac{1}{n}\sum_{i=1}^{n} X_i$ where X_i is the i-th observation.
Standard deviation of observed data; S_x.	$S_x = \sqrt{\frac{1}{(n-1)}\sum_{i=1}^{n}(X_i - \overline{X})^2}$
Test statistics: T_l & T_n	Sort the data into ascending order, then compute the statistics $T_l = (\overline{X} - X_l)/S_x$ $T_n = (X_n - \overline{X})/S_x$ 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-α) 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 $3 \le n \le 25$.
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., $X_{(j)} = Ln[X_{(j)}]$.
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: $T_s = \frac{X_{(2)} - X_{(1)}}{X_{(n)} - X_{(1)}}$ *for* $3 \le n \le 7$ $T_s = \frac{X_{(2)} - X_{(1)}}{X_{(n-1)} - X_{(1)}}$ *for* $8 \le n \le 10$ $T_s = \frac{X_{(3)} - X_{(1)}}{X_{(n-1)} - X_{(1)}}$ *for* $11 \le n \le 13$ $T_s = \frac{X_{(3)} - X_{(1)}}{X_{(n-2)} - X_{(1)}}$ *for* $14 \le n \le 25$.
Test statistic, T_s, for the maximum data value	Compute the T_s test statistic for $X_{(n)}$ as an outlier:

	$T_s = \frac{X_{(n)} - X_{(n-1)}}{X_{(n)} - X_{(1)}}$ *for* $3 \le n \le 7$ $T_s = \frac{X_{(n)} - X_{(n-1)}}{X_{(n)} - X_{(2)}}$ *for* $8 \le n \le 10$ $T_s = \frac{X_{(n)} - X_{(n-2)}}{X_{(n)} - X_{(2)}}$ *for* $11 \le n \le 13$ $T_s = \frac{X_{(n)} - X_{(n-2)}}{X_{(n)} - X_{(3)}}$ *for* $14 \le n \le 25$.
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-α) 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* $T_s \ge T_c$ or an extreme high-valued outlier: $X_{(n)}$ *is an outlier if* $T_s \ge T_c$. 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	$= \dfrac{x_{i'} - x_i}{i' - i}$ 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

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) $= \frac{1}{18}\left[n(n-1)(2n+5) - \sum_{p=1}^{g} t_p(t_p-1)(2t_p+5)\right]$ 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	$= Z_{1-\alpha/2}\sqrt{VAR(S)}$
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 Evalueation Report, Statistical Overview. Additional information on data normality is given by Montgomery, et al. (1987).