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Swan Hills Treatment Centre

2024 Groundwater Monitoring Report

Veolia Canada Waste Services Inc.

Project number: 60735747

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Executive Summary

AECOM Canada ULC (AECOM) was retained to conduct the annual groundwater monitoring event in 2024 at the Swan Hills Treatment Centre (the Site). The groundwater monitoring report is completed on an annual basis and submitted to Alberta Environment and Protected Areas (EPA).

The groundwater monitoring sampling program follows the requirements outlined in EPA's Approval No. 1744-03-00.

Three depth intervals are monitored. The shallow and intermediate intervals monitor groundwater in the surficial till deposits. The sandstone interval monitors the groundwater in the Paskapoo Formation between 50 and 70 metres below ground surface (mBGS).

The groundwater flow in the shallow and intermediate intervals is generally to the east at an estimated velocity of 0.0023 metres per year (m/yr) for the shallow till and 0.018 m/yr for the deeper till (intermediate interval wells). The groundwater flow in the sandstone interval is generally to the south. The flow velocity in 2024 is 14.07 m/yr.

Based on the 2024 groundwater monitoring, the following conclusions can be made:

- Petroleum hydrocarbon (BTEX, PHC F1) concentrations were below the laboratory detection limit for all wells sampled in 2024.
- Polychlorinated Biphenyl (PCB) Aroclor and total PCB concentrations were below the laboratory detection limit for all wells sampled in 2024.
- Adsorbable Organic Halogen (AOX) results were below the laboratory detection limit for all select wells tested.
- Twelve of the wells completed in the till interval (shallow and intermediate wells) have Total Dissolved Solids (TDS) concentrations above the Alberta Tier II Potable Groundwater Guidelines. For all twelve wells these concentrations are consistent with baseline and/or historical observations, as well as expected TDS concentrations for a till lithology.
- Manganese concentrations exceeding the Alberta Tier II Potable Groundwater Guideline were observed in all monitoring wells except 03-SH, 03-IN, 05-SH, 08-IN, 13(R)SS, 16-SH, and 17-SH. Manganese concentrations have been measured since the 1990s and have typically exceeded the guideline in both up-gradient and down-gradient wells; therefore, it is likely naturally occurring. Manganese concentrations above the Alberta Tier II Potable Guideline for Commercial/Industrial Land Use (0.02 milligrams per litre; mg/L) in till are of little concern since this source is not capable of supporting a potable water supply.
- Elevated iron and manganese concentrations may be a result of biological activity. Orange and black residues and/or oxidation was noted on several bladder pumps and tubing during well maintenance in May 2014. Iron reducing bacteria (IRB) tests from 2015 confirmed the presence of anaerobic iron related and enteric bacteria in monitoring wells 01A-SH, 01A-IN, 04-IN, 04-SS, 07-SH, 07-IN, and 16-SH.
- The elevated chloride concentrations in 07-SH may be caused by infiltration of run-off containing road salt from the adjacent parking lot and road. Increasing chloride trends are observed in 01A-SH and 07-SH. Monitoring well 07-SH is located in a low-lying area adjacent to a road while 01A-SH is located on the plant site. Monitoring well 17-SH had an increase in chloride concentration in 2015 compared to historical results, but the level is well below the guideline and has been falling in the following years. Monitoring wells 05-SH and 13-SH have increasing trends but both are an order of magnitude below the guideline.
- Monitoring well MW-01A:
    - The TDS and major ion groundwater chemistry of 01A-SH and 01A-IN appears to be affected by rain and surface water infiltration.

- High Dissolved Organic Carbon (DOC) concentrations may be a result of the composition of the engineered fill, as well as activity at the ERT Fire Training Pad. The high DOC probably results in anaerobic conditions in the monitoring well. It is noted that no Aroclor PCBs or petroleum hydrocarbons were detected in this well, thus the elevated DOC concentrations are from other compounds.
- Sulphur odour and reduced pH in 01A-SH indicates the presence of sulphur reducing bacteria that is confirmed by the results of the sulphate reducing bacteria (SRB) test conducted in 2015.

The following recommendations are made based on the above conclusions and observations made during the fieldwork:

- If dry piezometers are encountered, the water level in the corresponding well should be measured with clean equipment to verify if the well is dry or if the piezometer is compromised.
- In connection to the 2022 Annual Groundwater Monitoring Report (AECOM, 2023a), a groundwater monitoring well network condition report and sandstone groundwater monitoring well replacement plan was developed by AECOM (AECOM, 2023b), which summarized well network maintenance recommendations based on 2022 field observations and outlines the sandstone wells needing replacement with locations and rationales provided. Veolia is currently implementing this program by abandoning dry or damaged wells and installing new monitoring wells. It is recommended to include these new wells into the monitoring program by purging and monitoring them during the 2025 monitoring program.
- Review of road salt use at and around the Site and alternative measures implemented in 2025 to address chloride increases at selected locations. Sample surface water in the road ditches upgradient of the Site to investigate the source of the chloride concentration increase in well 07-SH.
- Alberta Environment and Protected Areas has recommended that dioxins and furans should be sampled for in select shallow wells for three years (2022, 2023 and 2024) as part of the annual monitoring program. Since three years of data has been collected and the results are two to three orders of magnitude below the applicable guideline, the monitoring frequency is recommended to be adjusted to once every five years.
- Conduct groundwater monitoring in the fall with the sampling event performed a minimum of one week after the purging event to allow monitoring wells to sufficiently recover.

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1. Introduction

1.1 Background Information

AECOM Canada ULC (AECOM) was retained to conduct the annual groundwater monitoring event in 2024 at the Swan Hills Treatment Centre (the Site). The Site is operated by Veolia North America, LLC. ("Veolia") under Alberta Environment and Protected Areas Approval No. 1744-03-00. The approval was issued to SUEZ Canada Waste Services Inc. (now owned and operated by Veolia) on December 15, 2019 and expires December 14, 2029. The groundwater monitoring report is completed on an annual basis and submitted to Alberta Environment and Protected Areas (EPA).

Baseline data was collected by Stanley Associates Engineering Ltd. between 1985 and September 11, 1987 (the opening date of the facility; Worley Parsons, 2012). Groundwater has been sampled and analyzed in September on an annual basis since then (1989 to 1991 – Stanley Associates Engineering Ltd., 1992 – Integrated Environments Ltd., 1993-2005 – Komex, 2005 to 2012 – Worley Parsons, and 2013 to 2023 – AECOM). This report presents a summary of the groundwater monitoring activities that were completed at the Site in 2024.

1.2 Facility Description

The Site is located northeast of Swan Hills, Alberta (the Town); approximately 9 kilometres (km) north on Highway 33 and 8 km east on Chrystina Lake Road. It is in the west half of Section 06, Township 67, Range 8, West of the 5th Meridian. Water bodies near the Site include Chrystina Lake; approximately 1.5 km to the northwest. The location of the site is illustrated on **Figure 1.0** (**Appendix A**).

The Site's Operating Agreement with Alberta Infrastructure allows for a total of 1,500 tonnes of commercial waste (300 tonnes of high-level Polychlorinated Biphenyl (PCB) waste from facilities across Canada, and 1,200 tonnes of Alberta Biomedical and Pharmaceutical waste) to be processed each fiscal year (April – March). Waste streams that have no alternate option for disposal or waste from special projects must be approved by Alberta Infrastructure through a change order. The Site destroys hazardous waste in several ways. Treatment process includes high temperature incineration; physical/chemical treatment (for the treatment of inorganic liquids such as acids and bases) and stabilization/solidification (for the stabilization of treatment residues before placement in the Site's engineered landfill).

2. Site Characterization

2.1 Regional Setting

The regional setting of the area was determined using the following information sources:

- The Ecological Framework of Canada (1999): ecozones.ca (accessed on December 19, 2013)
- Tokarsky, O. (1977): Hydrogeology of the Whitecourt area, Alberta, Alberta Research Council, Report 76-3
- Carlson, V.A. and Green, R. (1977): Bedrock Topography of the Whitecourt Area, NTS 83J, Alberta, Alberta Research Council, scale 1:250,000
- Prior, G.J., et al. (2013): Bedrock Geology of Alberta, Alberta Geological Survey Map 600, ISBN 978-1-4601-0096-7
- St-Onge, D.A. (1975): Surficial Geology Whitecourt, Alberta, Map 1367A, Geological Survey of Canada

This information was used to define the climate, topography, regional and local geology and hydrogeology in the region of interest.

2.1.1 Topography and Climate

The Site is near the Town of Swan Hills in northern Alberta. The surface topography in the region ranges from 915 to 1220 metres above sea level (mASL). The elevation generally decreases to the east and southeast. The elevation at the Site is approximately 1,080 mASL. The regional topography is illustrated on **Figure 2.0** (**Appendix A**).

The physiographic region near the Site is the Western Alberta Upland region of the Boreal Plains ecozone. The vegetation consists of mixed forests of coniferous (lodgepole pine, white spruce, and fir) and deciduous (aspen, poplar, and birch) trees. The mean annual temperature is approximately 1.5 degrees Celsius (^{o}C).

The region's mean annual precipitation is approximately 450 to 600 millimetres (mm).

2.1.2 Regional Geology

Till, colluvium, and fluvial deposits are the predominant surficial deposits in the area. The till is categorized as hummocky moraine deposits and is typically less than 15 metres (m) thick, and up to 30 m where preglacial buried valleys exist (Tokarsky, 1977). Fluvial deposits exist adjacent to the rivers in the area, such as the Coutts River east of the Site. No existing buried channels were identified within a 5-km radius of the Site, as shown in **Figure 3.0** (**Appendix A**), according to data obtained from Alberta Geological Survey (AGS, 2005).

Bedrock underlies the surficial till deposits. The bedrock stratigraphy consists of the Tertiary-aged Paskapoo Formation, the Tertiary-Cretaceous-aged Scollard Formation, and the Cretaceous-aged Battle River/Whitemud Formation. The Paskapoo Formation consists of continental interbedded mudstones and sandstones. The Scollard Formation consists of continental interbedded fine-grained sandstones and mudstone. The Battle River and Whitemud Formations consist of continental mudstone, shale, and coal.

2.1.3 Regional Hydrogeology

Shallow aquifers may exist in till, in sand and gravel deposits in preglacial valleys, and in fluvial deposits. There are no preglacial valleys or extensive fluvial deposits proximal to the Site. Tokarsky (1977) assigned probable average yields for the regional geology. Quaternary deposits (primarily till) are mapped to have probable yields of 1 to 5 Imperial gallons per minute (Igpm) or 0.1 to 0.4 litres per second (L/s). Bedrock aquifers occur predominantly in the sandstone intervals. The Paskapoo Formation aquifers are

mapped to have probable yields of 1 to 5 Igpm (4.5 to 22.7 L/min) and possible yields of 5 to 25 Igpm (22.7 to 113.7 L/min). The fine-grained sandstones of the Scollard Formations have possible average yields of less than 1 Igpm (4.5 L/min). The Battle River/Whitemud Formation aquifers are mapped to have possible average yields of 1 to 5 Igpm (4.5 to 22.7 L/min). This information indicates that the best aquifers are likely to occur in the sandstones of the Paskapoo Formation. Tokarsky (1977) also indicates that Paskapoo Formation sandstones may be lenticular and will, therefore, have a limited lateral extent.

2.1.3.1 Regional Surface and Groundwater Use

Surface water bodies near the Site are Chrystina Lake, approximately 1.5 km northeast of the Site, and the Coutts River, approximately 0.4 km to the north and 1.6 km to the east of the Site.

Water Well Drilling Reports within an approximate 5 km radius of the Site were searched using AEP's Groundwater Information Centre (GIC) database. The summary report is displayed in **Appendix B** and the relative locations provided by the GIC are illustrated on **Figure 4.0** (**Appendix A**).

For the area of interest, a total of twenty-nine records were obtained from the search. **Table A** is a summary of these wells:

Table A: Groundwater Report Record Breakdown

Type of Well	Number of Records
Industrial Water Well	18
Observation Well/Test Holes/Investigation	10
Unknown	1
Pump Test	4

A review of the water well records show no domestic water users within 5 km of the Site. There are three main well owners: Alberta Special Waste Management, Alberta Environment, and C.E. Moell & Associates. These wells were either installed as part of the original site investigation (C.E. Moell & Associates) or as potential supply wells for the plant (Alberta Special Waste Management).

Seven of the eighteen industrial well records are abandoned test holes. A pump test was conducted on four of the industrial wells (Alberta Environment Water Well ID: 354695, 354696, 354697, and 2097625). All four pump tests are conducted on a sandstone unit with depths ranging between 55.17 metres below ground surface (mBGS) and 75.90 mBGS (Paskapoo Formation) and resulting recommended pump rates are 227.30 litres per minute (L/min) (Well ID 354695), 27.28 L/min (Well ID 354696), and 54.55 L/min (Well ID 354697) and 68.19 L/min (Well ID 2097625).The Swan Hills Treatment Centre, at the time of the 2024 sampling event was using one water supply well, 89-3, located on the east side of the Site with a production interval of 56.7 m to 66.1 m (**Figure 5.1, Appendix A**).

None of the above water wells were field verified to determine their current existence and use.

2.2 Local Setting

2.2.1 Local Geology

Lithology records from the Water Well Drilling Reports (**Section 2.1.3.1**), and replacement wells drilled in 2014 were used to confirm the local stratigraphy. The stratigraphy at the Site typically consists of 10 m to 15 m of till overlying the Paskapoo Formation. The stratigraphy of the Paskapoo Formation proximal to the Site consists of: interbedded shale, mudstone, and sandstone (thin beds) between 15 mBGS and 50 mBGS; sandstone between 50 mBGS and 70 mBGS; and shale or siltstone at 70 mBGS (Worley Parsons, 2012, 2013; **Appendix C**). A geologic cross-section for the vicinity of the Site and borehole locations is provided in **Figures 6.1** and **6.2,** (**Appendix A**). Three replacement shallow piezometers, two replacement intermediate piezometers, one replacement intermediate well, and two replacement sandstone wells were drilled, completed, developed, and recovery tested between May and July of 2014.

The borehole logs are presented in **Appendix C**. The lithology encountered during drilling is consistent with the general lithology description above.

2.2.2 Local Hydrogeology

The till and a sandstone unit within the Paskapoo Formation are monitored at the Site. Two depth intervals are monitored within the till deposit at 14 locations around the Site (**Figure 5.1, Appendix A**): the shallow interval (SH) is between approximately 1 and 5 mBGS; and the intermediate interval (IN) is between approximately 5 and 13 mBGS. The sandstone (SS) is monitored at 10 of the 14 locations at a depth between approximately 56 and 80 mBGS.
Till deposits are typically characterized as aquitards; groundwater does not flow at sufficient rates through these deposits to be a useful aquifer. The typical hydraulic conductivity of till ranges between $1x10^{-6}$ metres per second (m/s) and $1x10^{-12}$ m/s (Freeze and Cherry, 1979). The till is deposited on top of approximately 30 m of shale that is part of the Paskapoo Formation. Shale is typically considered an aquiclude with hydraulic conductivities ranging between $1x10^{-9}$ m/s to $1x10^{-13}$ m/s (Freeze and Cherry, 1979). Sandstone units within the Paskapoo Formation are potential aquifers. The typical hydraulic conductivity of sandstone ranges between $1x10^{-6}$ m/s and $1x10^{-10}$ m/s (Freeze and Cherry, 1979).

Pump test data from three of the water wells in the reconnaissance reports from AEP's GIC database (354695, 354696, and 354697) was analyzed in 2013 using Waterloo Hydrogeologic's Aquifer Test Pro Version 2010.1 to determine the hydraulic conductivity (AECOM, 2014). All three wells (**Appendix B**) are located in the northeast quarter of 06-67-08-W5 (the same section as the Site; **Figure 4.0, Appendix A**).

Recovery tests were conducted on the 2014 replacement wells after the development of each well. The resulting hydraulic conductivities from the GIC wells and the wells drilled in 2014 are reported in **Table B**.

Table B: Hydraulic Conductivities

Well	Lithology	Hydraulic Conductivity – Geometric Mean (m/s)
05-SH	Till (Shallow)	7.6×10^{-7}
06-SH	Till (Shallow)	9.6×10^{-8}
13-SH	Till (Shallow)	1.1×10^{-8}
06(R)IN	Till (Intermediate)	2.2×10^{-7}
11-IN	Till (Intermediate)	4.0×10^{-9}
13-IN	Till (Intermediate)	2.6×10^{-9}
07(R)SS	Sandstone	8.6×10^{-6}
15(2R)SS	Sandstone	1.7×10^{-6}
89-3	Sandstone	2.2×10^{-5}
354695	Sandstone	1.83×10^{-4}
354696	Sandstone	Proximal to the well: 1.98×10^{-6} Influence of a recharge source: 1.23×10^{-5}
354697	Sandstone	Proximal to the well: 8.19×10^{-6} Influence of a recharge source: 4.68×10^{-5}

Monitoring well 06(R)IN was drilled to and completed at a shallower depth (6 mBGS) than 11-IN and 13-IN (~9 mBGS) and has a hydraulic conductivity similar to the shallow wells that are drilled to and completed at approximately 3 mBGS. The hydraulic conductivities from the recovery tests in the shallow and intermediate wells are typical of till. The hydraulic conductivities from 07(R)SS and 15(2R)SS have conductivities typical of sandstone. 89-3 is a production water well and shows a higher hydraulic conductivity that may be a result of the well being pumped and developed over a long period of time.

These values are consistent with 354696 and 354697, but lower than 354695 which intersected a thicker sandstone interval.

The geometric mean of the hydraulic conductivities for each of the units are as follows:

- Shallow till – 9.3 x 10^{-8} m/s
- Intermediate till – 1.3 x 10^{-8} m/s
- Sandstone – 3.2 x 10^{-5} m/s

2.3 Surface Water Drainage

The storm water management system at the Site is designed to collect and retain any surface water that falls on the site during precipitation events. The system is separated from the process water management system to prevent any contamination of clean surface runoff. Careful management of this separation increases the options available for treatment or re-use within the Swan Hills Treatment Centre. A figure detailing the surface water drainage patterns on the site can be found on **Figure 6.0** (**Appendix A**).

There are three drainage zones on plant site:

- The north zone, which extends from the front gate to the south side of the Cold Storage Building #1, drains into the North Retention Pond. Also draining into the North Retention Pond is the treated discharge from the Rotating Biological Contactor (Domestic Wastewater).
- The south zone, which extends from the south side of the Stabilization plant to the Process Make-up Pond and South Retention Pond #1, drains to the Process Make-up Pond/South Retention Pond #1.
- A second south zone collects run off from the unpaved, southern portion of the plant site that extends from the Process Make-up Pond to the south fence line and directs it into South Retention Pond #2.

The North Retention Pond is connected to South Retention Pond #1 via overland piping system. South Retention Pond #1 can be transferred to the Process Make-up Pond or to South Retention Pond #2 when necessary. Precipitation, therefore, is managed on site and re-circulated as process water as required. The North Retention Pond, South Retention Pond #1 and Process Make-up Pond are all lined with high-density polyethylene liners. South Retention Pond #2 has a compacted clay liner.

In addition to the above-mentioned drainage areas, there is a South Drainage Area located east of South Retention Pond #2 and the South Borrow Pit and 2023 Borrow Pit located south of South Retention Pond #2, all three are unlined.

3. Groundwater Monitoring Field Program

There are 14 active monitoring locations (01A, 03 through 08, and 11 through 17; **Figure 5.1, Appendix A**), and four decommissioned locations (01, 02, 09, and 10; **Figure 5.2, Appendix A**). The decommissioning details are reported in the Komex 1997 report (Worley Parsons, 2012). At 10 of the 14 locations, all three intervals, shallow, intermediate, and sandstone, are monitored (01A, 04, 05, 07, 08, 11, 12, 13, 14, and 15); the shallow and intermediate intervals are monitored at the four remaining locations (03, 06, 16, and 17). All wells have stainless steel screens and steel casing (Worley Parsons, 2012, 2013).

3.1 Monitoring and Sampling Methodologies

3.1.1 Groundwater Level Measurements

Piezometers were installed for the shallow and intermediate intervals at all monitoring locations to facilitate water level measurements and prevent cross contamination in the wells. **Table C** summarizes the 2024 groundwater level survey activities, as well as the lithology that the wells were completed in. Static water levels were measured prior to purging activities at each monitoring location using a Solinst water level meter. The water level meter was decontaminated using distilled deionized water between measurements. Well and piezometer stick-ups were also measured and recorded. Total depths were measured in May 2014 during the groundwater monitoring well maintenance program.

Table C: Groundwater Level Survey

Monitoring Location	Measured in Piezometer	Measured in Well	Lithology
01A	SH, IN	SS	SH/IN: Till SS: Sandstone
03	SH, IN	-	SH/IN: Till
04	SH	IN[1], SS	SH/IN: Till SS: Sandstone
05	SH	IN[1], SS	SH/IN: Till SS: Sandstone
06	SH, IN	-	SH/IN: Till
07	SH, IN	SS	SH/IN: Till SS: Sandstone
08	SH, IN	SS	SH/IN: Till SS: Sandstone
11	IN	SH[1], SS	SH/IN: Till SS: Sandstone
12	SH, IN	SS	SH/IN: Till SS: Sandstone
13	SH, IN	SS	SH/IN: Till SS: Sandstone
14	IN	SH[2], SS	SH/IN: Till SS: Sandstone
15	IN	SH[2], SS	SH/IN: Till SS: Sandstone
16	SH, IN	-	SH/IN: Till
17	SH, IN	-	SH/IN: Till

[1] Piezometer compromised or blocked by ice
[2] Piezometer dry/damaged

3.1.2 Purging and Sampling

3.1.2.1 Equipment

Each well is equipped with a dedicated bladder pump (stainless steel body and Teflon bladder), two lines of tubing that extend from the pump to the surface (a gas line to drive the bladder pump and a Teflon-lined sample delivery line), and stainless-steel security cable. The tubing is affixed to the bottom of a well cap; the cap is equipped with a quick coupler for the gas line (M-Style ¼ inch male quick connector) and a push connector for 3/8 inch Teflon-lined sample tubing (adaptors enable the use of ¼ inch tubing). The cap also contains an access opening for water level measurements.

Compressed nitrogen gas is used to inflate and deflate the bladder pump. Generally, the gas does not meet the sample water; however, contact may occur due to deterioration of the pump and tubing assemblage. Nitrogen is used because it is an inert gas and minimizes the impact to the sample if leaks occur in the system (Worley Parsons, 2012, 2013). A Solinst Electronic Control Unit – Model 464 (capable of driving up to 250 pounds per square inch; psi) was used to drive the bladder pumps during purging and sampling.

3.1.2.2 Well Maintenance

In 2024, maintenance was performed on the following piezometers by cutting PVC pipe down to allow protective casings to close and lock.

- 01A-SH Pz
- 01A-IN Pz

Groundwater levels were recorded first, then the piezometers were cut down and new stick-up data was recorded.

In 2023, it was noted that the PVC pipe at monitoring well 13-SH was frost heaved approximately 0.45 m above the protective well casing and samples from the well no longer represent shallow groundwater. The pneumatic pump from the well was moved to the associated piezometer (13-SH_Pz) and a more representative sample was obtained. The piezometer was sampled again in 2024.

3.1.2.3 Purging

Purging operations took place from August 26 to 28, 2024 prior to sampling. Shallow, intermediate and sandstone wells were purged until dry or three well volumes were collected. Purged water was collected in a 20 litre (L) bucket to measure volume then poured on the ground adjacent to the monitoring location. Purging operations are summarized in **Table 1.0** (**Appendix D**).

3.1.2.4 Sampling

Sampling operations were conducted from September 11 and 12, 2024. Samples were collected from all wells that were purged except for 16-IN (32 wells). While 16-IN was purged and water levels taken during the purging event, a sample was unable to be obtained during the sampling event. The sampling program is outlined in **Table 2.0** (**Appendix D**). Samples were collected from the dedicated sampling spouts on each well and were filtered and preserved according to laboratory specifications. Field parameters (temperature, pH, and electrical conductivity) were measured at each location at the time of sampling using a YSI Pro DSS Meter. The probes on the meter were decontaminated with distilled deionized water after each measurement. The samples were placed in coolers with ice and delivered to ALS Environmental Laboratory (ALS) in Edmonton, Alberta with a completed chain of custody form on September 12, 2024.

3.2 Summary of Changes

There was no change in the 2024 monitoring program compared to the 2023 monitoring program.

3.3 Quality Assurance and Quality Control

Quality Assurance and Quality Control (QA/QC) are procedures that are implemented to identify and prevent errors in the groundwater chemistry data. QA/QC procedures are executed by the person collecting samples, the laboratory that analyzes the samples, and the person interpreting and analyzing the results.

Three types of errors are associated with groundwater sampling and analysis: false positive errors, false negative errors, and undetermined errors. False positive errors include leaching from well materials, contaminated sample containers or laboratory derived contamination. False negative errors include volatile losses during sample collection and chemical reactions that occur in the sample between collection and analysis. Undetermined errors include transcription and extraction errors.
In the field, equipment is cleaned between wells with distilled deionized water and a new pair of nitrile gloves are worn for sampling at each well. Sample QA/QC included:

- Duplicate samples, a minimum of one per 10 samples
- Field blank – one per day
- Trip blank
- Spiked samples (polychlorinated biphenyls; PCBs)

Field blanks consist of distilled deionized water that is provided by the laboratory and is poured into sample bottles under field conditions. The purpose of these blanks is to test for field contamination sources, as well as laboratory derived contamination. Trip blanks consist of sample bottles filled with distilled deionized water in the laboratory. These bottles remain sealed and are stored with the other samples. Trip blanks test for cross contamination during storage and transport, in particular cross contamination caused by the vaporization of volatiles. Spiked samples are prepared in a laboratory and contain a known concentration of a single parameter. Spiked samples can be used as an indicator of the accuracy of the analytical results.

Duplicates submitted to the laboratory for the 2024 groundwater monitoring event included: 25-SH (duplicate of 05-SH), 27-SH (duplicate of 07-SH), and 31-SH (duplicate of 11-SH) for all analytes, 25-SS (duplicate of 05-SS) for all analytes except hydrocarbons; and 32-SH (duplicate of 12-SH) for AOX. If the data is over five times the laboratory reporting limit (LRL), the Relative Percent Difference (RPD) is calculated and compared to the alert criteria obtained from the *Guidance Manual For Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment – Volume 1 Analytical Methods* (CCME, 2016).

The Relative Percent Difference (RPD) is a measure of the variability between two duplicate analyses and is calculated using the following equation:

$$RPD = \left(\frac{sample\ result - duplicate\ result}{mean\ of\ sample\ and\ duplicate\ results}\right) x100$$

If one or both of the results are less than five times the LRL, the difference between the parent sample and duplicate sample result is calculated, and that result is compared to two times the LRL. The LRL is two times the detection limit of each parameter. The duplicate field results are considered acceptable if the RPD is less than the alert criteria. Hardness and TDS are not included in RPD calculations as they

are calculated values. RPDs were not calculated for petroleum hydrocarbon (PHC) and PCB results as none of the sample and duplicate results were above the detection limits.

The two field blanks and a trip blank submitted to the laboratory for this sampling event were labelled “10-SH”, “20-SH” and “Trip Blank”, respectively.

Two spiked samples were prepared by ALS, labelled 51-SH and 52-SH.

The laboratory QA/QC data is located with the Certificate of Analysis in **Appendix F**. A review of the laboratory QA/QC data was conducted, and the laboratory analytical results are considered accurate and reliable.

3.4 Regulatory Guidelines

The results of the 2024 groundwater monitoring were compared to the Alberta Environment Tier 2 Groundwater Remediation Guidelines for Commercial/Industrial Land Use (June 2024). These are a set of groundwater quality guidelines derived specifically for the protection of ecological receptors and for human health. They set specific criteria according to land and water uses and are derived using toxicological data. The groundwater samples from each well were compared to the potable or aquatic life pathway. The aquatic life (fine-grained for the shallow and intermediate wells that are completed in the till and coarse-grained for sandstone wells) guideline was used where a monitoring well is within 300 m of a water body; this criterion applies only to monitoring location MW-08 which has a creek approximately 280 m to the north. The remaining wells were compared to the potable water pathway because the sandstone interval is a possible domestic use aquifer and the hydraulic conductivity of the shale between the till and the sandstone has not been used to eliminate this pathway. For instances where an aquatic life guideline did not exist or was higher than the potable water guideline, the potable water guideline was used.

The Canadian Drinking Water Aesthetic Objective (AO) and Maximum Acceptable Concentration (MAC) Guidelines (September 2022) are also shown on all analytical results tables in **Appendix D** for reference.

3.5 Statistics

Statistical analysis of the historical data for each well sampled in 2024 was conducted to identify statistically significant increasing and decreasing trends in parameter concentrations. The program used to complete the analysis was ProUCL Version 5.2 from the United States Environmental Protection Agency (USEPA, 2022). A minimum of four data points is needed to conduct statistical analysis on parameters. Statistical analysis was performed on data sets containing 50% or greater data above the detection limit.

Parameters included in the statistical analysis are:

- Major ions:
  - Bicarbonate (HCO_3), calcium (Ca), magnesium (Mg), and sodium (Na)
- Indicators:
  - pH (Lab), chloride (Cl), sulphate (SO_4), total dissolved solids (TDS), total organic carbon (TOC) and dissolved organic carbon (DOC)
- Dissolved metals:
  - Arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), mercury (Hg), nickel (Ni), and zinc (Zn)

3.5.1 Rosner's/Dixon Outlier Test

A Rosner's or Dixon Outlier test was applied to all current and historical data to identify data points that do not appear to fit the distribution of the rest of the data set within a 95% significance level (i.e. there is only a 1 in 20 chance that the interpretation is wrong). Dixon's Outlier Test is performed on data sets with less than or equal to 25 data points. Rosner's Outlier test is performed on data sets with greater than 25 data points. Identified outliers are then checked for data transcription errors or any other irregularities.

An outlier is considered a data point that is outside of the characteristic distribution of the data set; an outlier test determines if the data point is statistically different from the distribution of the data set (Sanitas Technologies, 2009). An outlier may be a result of an error including cross-contamination, analytical error, or an outlier may be an accurate representation of the sample.

EPA guidance directs that "statistical outliers should not be removed or altered unless independent evidence of an error exists" (Sanitas Technologies, 2009). Identified outliers were checked for possible transcription errors.

3.5.2 Sen's Slope/Mann-Kendall Trend Analysis

The Sen's Slope/Mann-Kendall trend analysis was performed on data sets with a minimum of four data points and if 50% or more of the data set was above the detection limit. This is a nonparametric test (i.e., normal distribution is not assumed) that estimates the trend (slope) of the results over time (i.e., increasing, decreasing, or not significant). The analysis was completed using a 95% confidence level (i.e., there is a 5% chance that the output trend is incorrect).

Statistical values shown in the output that should be noted include:

- n = the number of data points analyzed.
- Slope = rate of increase or decrease of the parameter per year.
- Mann-Kendal statistic = the magnitude of the increasing or decreasing trend. If the Mann-Kendall statistic is a large positive number, measurements taken later in time tend to be larger than those measurements taken earlier. The opposite is true for a large, negative Mann-Kendall statistic.
- α = the probability of making an estimation error. This is an alternative way to indicate the confidence level (i.e., a 95% confidence level is equivalent to $\alpha = 0.05$).

This trend analysis was conducted on all complete data sets. Identified outliers in 2024 were examined for any transcription or lab errors and examined within the context of spatially and temporally proximal results. If the 2024 outlier was determined to be a valid data point, it was not removed from the data set. Historical outliers previously examined within the context of spatially and temporally proximal results and identified to affect the overall trend of the data set were removed and trend analysis run again. The resulting trends were compared.

4. Groundwater Monitoring Results and Interpretation

In May 2014 during well maintenance, it was determined that the well labels for 15-SH and 15-IN had been switched at some point in time. The labels were corrected and since 2014 the results reflect the corrected labels, however, because it is unknown when the mislabelling occurred, the historical results have not been changed or altered.

4.1 Groundwater Level Measurements

Static groundwater levels measured during the September 2024 groundwater monitoring are summarized in **Table 3.1** (**Appendix D**) and the historical static groundwater measurements are presented in **Table 4.1** (**Appendix D**).

4.1.1 Groundwater Flow

Groundwater levels were measured in the piezometers or groundwater monitoring well and groundwater elevations were calculated for the shallow and intermediate intervals (glacial till lithology) (**Table 3.1, Appendix D**). Groundwater elevations were calculated using ground and top of casing elevations surveyed in July 2014. Groundwater contour maps were created for the shallow and intermediate intervals (**Figures 7.0** and **8.0**, respectively, **Appendix A**). Groundwater levels in the sandstone aquifer were measured in six wells (04-SS, 05-SS, 07(R)SS, 11-SS, 13(R)SS, and 15(2R)SS. All remaining sandstone wells are historically dry (01A-SS, 08-SS, 12-SS, and 14-SS). The historically dry wells have a completed depth above the current groundwater level and are most likely too shallow to intersect the groundwater level in the sandstone aquifer. A groundwater contour map for the sandstone wells was created (**Figure 9.0** in **Appendix A**).

The horizontal groundwater flow in the shallow and intermediate intervals is generally to the east (consistent with the 2011 to 2023 groundwater flow). The groundwater flow direction in the sandstone interval is generally to the south/southwest. Shallow monitoring well 14-SH is located on a small topographic high bordered by low marshy land to the north and a small ephemeral stream to the east and south. If the horizontal hydraulic conductivity is higher than the vertical hydraulic conductivity, then the groundwater may be draining into these low-lying areas resulting in a consistently dry intermediate well (14-IN).

The horizontal gradient is calculated for the shallow and intermediate till intervals from the groundwater elevations recorded in the corresponding piezometers at locations 08 and 07 as they are positioned approximately parallel to the groundwater flow direction. These gradients are 0.00026 metres per metre (m/m) for the shallow wells and 0.015 m/m for the intermediate wells. The horizontal gradient in the sandstone interval is typically calculated between the groundwater elevations recorded in the corresponding wells at the locations 07 and 11, with a gradient of 0.0052 m/m.

The average linear groundwater velocity can be calculated from the following equation;

$$V = \frac{Kdh}{ndl}$$

Where V = average linear velocity in m/s
K = hydraulic conductivity in m/s
dh = head difference between two monitoring wells in the same aquifer
dl = distance between the two monitoring wells
n = effective porosity

For the shallow and intermediate till, the effective porosity will be assumed to be 34%[1]. For the sandstone, the effective porosity will be assumed to be 37%[2]. On the basis of the hydraulic conductivities (Section 2.2.2), horizontal gradients and assumed effective porosities, the average linear groundwater velocities for the units are:

- Shallow till – 0.0023 m/yr
- Intermediate till – 0.018 m/yr
- Sandstone – 14.07 m/yr

4.1.2 Hydrographs

Hydrographs showing the groundwater elevation through time in all wells (including decommissioned wells) are shown on **Figures 10.1** to **10.17** (**Appendix A**). The shallow and intermediate hydrographs show that the groundwater elevation in these intervals is variable; this is expected in shallow aquifers that are affected by the water table and seasonal precipitation. Exceptions to this include 04-IN and 14-IN. 04-IN usually has water punctuated by sporadic dry years in 2003, 2004, 2006, and 2013 (**Figure 10.4, Appendix A**). The piezometer at this location was observed to be dry in 2014; however, the well was not dry, indicating that poor wellbore integrity may be the cause of some of the dry observations. Well 14-IN has been consistently dry since 1993 (with the exception of 2007), while the shallow interval (14-SH) is not dry thus indicating the possibility of a perched water table or poor wellbore integrity (**Figure 10.14, Appendix A)**.

The sandstone hydrographs show that 01A-SS, 12-SS, and 14-SS are historically dry (**Figure 10.1, 10.12, and 10.14, Appendix A**), and 08-SS and 11-SS are often dry (**Figures 10.8 and 10.11, Appendix A**). The hydrographs for the rest of the sandstone wells (04-SS, 05-SS, 07(R)SS, 13(R)SS, and 15(2R)SS) show that the water levels are relatively stable, punctuated by periodic dry years (**Figures 10.4, 10.5, 10.7, 10.13, and 10.15, Appendix A**). Dry measurements may occur when the water level drops below the top of the pump. Low water levels may be a result of a completion that is too shallow, borehole and completion integrity, drawdown caused by groundwater withdrawal from water production wells in the area (e.g., 89-3), drought at the recharge location, or any combination of these factors.

4.2 Field Parameters

Field parameters, including pH, electrical conductivity (EC), and temperature, were measured during groundwater sampling on September 10 and 11, 2024. The historical field parameter measurements are reported in **Table 4.2** (**Appendix D**); the 2024 field parameter measurements are reported in **Table 3.2** (**Appendix D**) and are summarized below:

<u>Shallow Wells</u>

- Field pH ranged from 5.63 (01A-SH) to 7.26 (08-SH) with a geometric mean of 6.90
- The temperature ranged from 7.30°C (11-SH and 12-SH) to 14.10°C (13-SH) with a geometric mean of 9.84°C
- EC ranged from 163 µS /cm (01A-SH) to 1034 µS/cm (07-SH) with a geometric mean of 563 µS/cm

<u>Intermediate Wells</u>

- Field pH ranged from 6.64 (01A-IN) to 7.28 (12-IN) with a geometric mean of 7.03
- The temperature ranged from 6.50°C (04-IN) to 11.90°C (03-IN) with a geometric mean of 8.52°C
- EC ranged from 456 µS /cm (04-IN) to 785 µS /cm (05-IN) with a geometric mean of 539 µS /cm

[1] Silty till from Hazel, C.R. 1973.
[2] Medium sandstone from Hazel, C.R. 1973.

Sandstone Wells

- Field pH ranged from 6.79 (89-3) to 7.73 (15(2R)SS) with a geometric mean of 7.15.
- The temperature ranged from 8.40°C (07(R)SS) to 19.50°C (89-3) with a geometric mean of 10.72°C. The high temperature from 89-3 was not used in the calculation of the geometric mean.
- EC ranged from 315 µS/cm (13(R)SS) to 488 µS/cm (07(R)SS) with a geometric mean of 361 µS/cm.

Note that 89-3 was sampled from a tap in the pumphouse, hence, the temperature measured is not a true indication of the temperature of the water in the aquifer.

4.3 Analytical Results

Laboratory analytical reports are presented in **Appendix F**.

The 2024 analytical laboratory results are reported with applicable assessment guidelines and QA/QC results in the following tables located in **Appendix D**:

Table 3.3 Routine Water Analysis (Indicators, Major Ions, etc.)
Table 3.4 Dissolved Metals
Table 3.5 Organics and Petroleum Hydrocarbons
Table 3.6 Polychlorinated Biphenyls Aroclors
Table 3.7 Adsorbable Organic Halogen
Table 3.8 Dioxins and Furans
Table 3.9 QA/QC Results

Historical analytical results (1985 to 2023) are reported in the following tables located in **Appendix D**:

Table 4.3 Routine Water Analysis
Table 4.4 Dissolved Metals
Table 4.5 Organics and Petroleum Hydrocarbons
Table 4.6 Polychlorinated Biphenyls Aroclors

Baseline data collected at the original monitoring wells between 1985 and September 1987 are reported in the following tables located in **Appendix D**:

Table 5.1 Routine Water Analysis
Table 5.2 Dissolved Metals
Table 5.3 Organics

Time series graphs of indicators (TDS, chloride, sulphate, and TOC/DOC) and major ions (calcium, magnesium, sodium, and bicarbonate) for all wells sampled in 2024 are presented on **Figures 12.1 to 12.33** and **Figures 13.1 to 13.33**, respectively (**Appendix A**).

Figures 11.1 to 11.3 (**Appendix A**) and **Table 6.0** (**Appendix D**) summarize the individual parameters that exceeded the Alberta Tier II Guidelines at each monitoring well in 2024. **Figures 14.1 and 14.2** (**Appendix A**) present the time series data for the monitoring wells with a pH or iron result historically above the Alberta Tier II Potable Guidelines.

Analytical results that exceeded guidelines are highlighted in the analytical tables in **Appendix D** and are summarized in **Section 4.3.4**.

4.3.1 Quality Assurance and Quality Control (QA/QC)

Calculated RPD values were within the applicable alert criteria for all samples where calculated. The absolute difference exceeded 2x the LRL for copper in 05-SH (duplicate 25-SH). The absolute difference exceeded 2x the LRL for copper in 05-SS (duplicate 25-SS). Despite these exceedances, results from the groundwater monitoring wells do not exceed the performance guidelines and concentrations are consistent with historical results, so this does not impact the conclusion of this report.

The field blank is collected to ensure there is no contamination due to the conditions at the time of sampling or resulting from the procedure and equipment used to collect the samples. All parameters are expected to have concentrations below the detection limit (**Tables 3.4** to **3.7 Appendix D**). The analytical results reported for the trip blank taken on September 11, 2024 (labelled “Trip Blank”) are consistent with distilled water concentrations. The field blank results are consistent with distilled water concentrations.

Spiked samples were used as an additional test for laboratory accuracy. Two spiked samples were prepared by ALS (**Appendix F**) and submitted to ALS for PCB analysis. The details of ALS spiked samples and the sample name are as follows:

Two samples were spiked with 0.001 mg/L (+/-0.00003 based on the laboratory QA/QC procedures) of Aroclor 1254 and 1260 and labelled 51-SH and 52-SH.

The spiked aroclors were the only aroclors detected for each sample. The results from ALS were:

- 51-SH – Aroclor 1254: 0.000673 mg/L, Aroclor 1260: 0.000702 mg/L
- 52-SH – Aroclor 1254: 0.000654 mg/L, Aroclor 1260: 0.000726 mg/L

The PCB spiked sample results are within the range of acceptable values based on the prepared concentrations, therefore, PCB concentrations for sampled monitoring wells are considered reliable.

The analytical laboratory’s QA/QC report was reviewed, and the laboratory data has been assessed to be reliable. The laboratory’s QA/QC report is included with the analytical data in **Appendix F**.

4.3.2 Statistics

Statistical analysis of the historical data for each well sampled in 2024 was conducted to determine data outliers and statistical trends in the data over time. All statistical analysis was performed using ProUCL software. The results of the Rosner’s/Dixon Outlier test are summarized in **Table 7.1** (**Appendix D**) and the ProUCL output is located in **Appendix G**. The results of the Sen’s Slope/Mann-Kendall trend analysis are summarized in **Table 7.2** (**Appendix D**) and the ProUCL output is in **Appendix G**. **Table D** shows the wells where outliers were removed and the resulting trend analysis outcome:

Table D: Sen’s Slope/Mann-Kendall Trends Affected by Identified Outliers

Monitoring Well	Parameter	Trend – All Data	Trend – Outlier(s) Removed
05-SH	Zinc	Decreasing	Decreasing
06-SH	Manganese	Increasing	Increasing
08-SH	Calcium	Increasing	Increasing
15-SH	TDS	Increasing	Increasing
17-SH	Copper	Decreasing	Decreasing
13(R)SS	Bicarbonate	Decreasing	Decreasing

"EPA guidance directs that statistical outliers should not be removed or altered unless independent evidence of an error exists" (Sanitas Technologies, 2009). This practice was continued with outliers identified in ProUCL, therefore, the outliers (**Table 7.1, Appendix D**) were examined within the context of spatially and temporally proximal results. The observations from this examination are reported in **Table 7.3** (**Appendix D**).

4.3.3 Piper Plot

A piper plot indicates similarities in geochemistry between water samples. The plot identifies similarities by grouping major chemical cations and anions onto a common plot. The plots were created using Grapher by Golden Software (Golden Software, 2023).

Separate piper plots were created for the shallow, intermediate, and sandstone intervals (**Figures 15.1, 15.2, and 15.3,** respectively**, Appendix A**). **Figure 15.1** (**Appendix A**) shows that the groundwater from all shallow interval monitoring wells is calcium bicarbonate type. 01A-SH has a low bicarbonate (102 mg/L) and sulfate (0.46) concentration and 07-SH has a high chloride concentration (220 mg/L) compared to the other wells. **Figure 15.2** (**Appendix A**) shows that the groundwater from all the intermediate samples is calcium bicarbonate type. All the intermediate interval samples have very little chloride and have a range of sulphate concentrations (<0.30 mg/L in 01A-IN to 131 mg/L in 05-IN). **Figure 15.3** (**Appendix A**) shows that the groundwater from the six sandstone wells that were sampled (including 89-3) are calcium bicarbonate type, except for 15(2R)SS, which shows a non dominant cation and a bicarbonate anion.

4.3.4 Specific Parameter Results

4.3.4.1 pH

All pH results for 2024 were within the guideline apart from 01A-SH with a value of 5.69 (field pH of 5.63), and 07-SH with a value of 8.83, however the field pH for the well is 6.77. Since 2018, pH results for 01A-SH have been below the Tier II Potable Water guideline of 6.5 to 8.5. The pH time series graph showing pH values for 01-SH (active from 1985 to 1992) and 01A-SH (active from 1993 to present) is shown in **Figure 14.1** (**Appendix A**). The pH for 01-SH [Decommissioned] ranges between approximately 7.00 and 8.00 including the baseline data. pH values from 01A-SH have been more variable and periodically less than the 6.5 guideline. The Mann-Kendall trend analysis is conducted using laboratory pH data, to be consistent with historical analysis. The Mann-Kendall trend analysis conducted on the combined 01-SH [Decommissioned] and 01A-SH data shows a decreasing trend for pH. The Mann-Kendall trend for pH in 01-IN [Decommissioned] and 01A-IN is also decreasing (2024 pH is 7.01) while all other monitoring wells have increasing or not significant trends. Prior to the 2024 event, historical pH results for 07-SH have all been within the guideline of 6.5 to 8.5. The well shows an insignificant trend for pH.

4.3.4.2 Total Dissolved Solids (TDS)

The 2024 TDS concentration exceeded the Alberta Tier II Potable Guideline (500 mg/L) in:

- Seven shallow monitoring wells (03-SH, 05-SH, 06-SH, 07-SH, 11-SH, 13-SH and 14-SH)
  - Concentrations ranged between 547 mg/L (14-SH) and 840 mg/L (07-SH)
- Four intermediate monitoring wells (01A-IN, 03-IN, 05-IN and 06(R)IN)
  - Concentrations ranged between 526 mg/L (01A-IN) and 747 mg/L (05-IN)

The 2024 TDS concentration exceeded the Alberta Tier II Aquatic Life Guideline (500 mg/L) in:

- One intermediate well (08-IN)
  - Concentration is 519 mg/L

The TDS concentrations in the shallow and intermediate wells are typical of groundwater from till deposits. Furthermore, these wells have historical results, apart from well 08-IN, that exceed the TDS guideline (**Table 4.3, Appendix D**) and the TDS guideline is meant for treated potable water.

4.3.4.3 Dissolved Iron

Figure 14.2 (**Appendix A**) and **Table 3.3** (**Appendix D**) presents the monitoring wells with dissolved iron concentrations that exceed the Alberta Tier II Potable Guideline (0.3 mg/L) in 2024. The results above the guideline are summarized in **Table E** below:

Table E: Dissolved Iron Results Above the Alberta Tier II Potable Groundwater Guideline

Monitoring Well	Well Location	Dissolved Iron (mg/L)	Mann-Kendall Trend
01A-SH	Adjacent to the ERT Fire Training Pad and the Process Make-Up Pond and South Pond	3.22	Not Significant
01A-IN	Adjacent to the ERT Fire Training Pad and the Process Make-Up Pond and South Pond	16.0	Not Significant

The 2024 iron concentrations ranged from below the detection limit to 16 mg/L (01A-IN). The 2024 Mann-Kendall Trend analysis (**Appendix G**) identified increasing iron concentration trends in:

- Two intermediate wells: 06(R)IN and 12-IN

During well maintenance performed in May 2014 a reddish-orange film was observed on several bladder pumps and tubing while others showed signs of oxidation (**Photographs 1 and 2, respectively, Appendix E**). This indicated the presence of iron reducing bacteria (IRB) in the wells which could result in elevated iron concentrations in the groundwater samples. Other possible sources may include: natural iron concentrations in the groundwater, oxidation of the stainless steel casing, or contamination from rusting steel casing protectors.

4.3.4.4 Dissolved Manganese

The 2024 dissolved manganese concentration exceeded the Alberta Tier II Potable Guideline for Commercial/Industrial Land Use (0.02 mg/L) in all of the monitoring wells except 03-SH, 03-IN, 05-SH, 08-IN, 13(R)SS, 16-SH and 17-SH. Manganese concentrations have been measured since the 1990s and have typically exceeded the guideline in both up-gradient and down-gradient wells (**Table 4.3**, **Appendix D**). Manganese concentrations above the Alberta Tier II Potable Guideline for Commercial/Industrial Land Use (0.02 mg/L) in till are of little concern since this groundwater source (clay till) is not capable of supporting a potable water supply.

Furthermore, during well maintenance performed in May 2014, a black residue was observed on several bladder pumps and tubing; the residue may be a result of manganese oxidation by IRB and may contribute to the elevated manganese concentrations (**Photos 3 and 4, Appendix E**).

4.3.4.5 Dissolved Metals

Table 3.4 (**Appendix D**) shows that all groundwater samples in 2024 had concentrations below the applicable Tier 2 guideline, except for 01A-IN, with an arsenic concentration of 0.0112 mg/L that exceeded the guideline of 0.01 mg/L. Historical results show that arsenic has previously exceeded guidelines in this well in 1999, 2001 to 2010, 2013 and 2014 and in 2019.

All of the groundwater samples tested for mercury in 2024 had concentrations below the laboratory detection limit (0.000005 mg/L).

4.3.4.6 Petroleum Hydrocarbons (BTEX, F1)

Table 3.5 (**Appendix D**) shows that all groundwater samples in 2024 had concentrations below the laboratory detection limit.

4.3.4.7 Polychlorinated Biphenyls Aroclors

Table 3.6 (**Appendix D**) shows that all groundwater samples in 2024 had a total PCB concentration below the detection limit (0.000010 mg/L) and Alberta Tier II Potable Water Guideline (0.0094 mg/L). Furthermore, all of the tested Aroclor concentrations were below the laboratory detection limit (0.000010 mg/L).

4.3.4.8 Adsorbable Organic Halogen

All groundwater samples tested for adsorbable organic halogens (AOX) in 2024 had concentrations below the detection limit (0.020 mg/L).

4.3.4.9 Dioxin and Furan

In the wells tested, the majority of dioxin and furan concentrations in 2024 were below the various detection limits. All Total Toxic Equivalent (TEQ) values are under the AEP Tier 1 guideline of 120 pg/L for all sampling locations.

4.3.5 Other Significant Trends

4.3.5.1 Chloride

The chloride concentration for monitoring wells 01A-SH, 05-SH, 07-SH, 08-SH, 13-SH, and 17-SH have increasing Mann Kendall trends (**Table 7.2**, **Appendix D**; and **Appendix G**); individual time series chloride graphs can be found on **Figures 12.1, 12.8, 12.11, 12.13, 12.16, and 12.22** (**Appendix A**). The chloride concentrations in all these wells are below the Alberta Tier II Potable Groundwater Guideline for Commercial/Industrial Land Use (250 mg/L) both in 2024 and historically. Monitoring well 07-SH has a 2024 chloride concentration that is elevated (two orders of magnitude) above the other wells (220 mg/L).

The 2023 chloride concentration for 07-IN was above the laboratory detection limit of 0.50 mg/L with a concentration of 0.84 mg/L. In 2024, the chloride concentration was below the detection limit. Chloride has historically been low or below the detection limit (**Figure 12.14, Appendix A**). Monitoring location 07 is located on the northeast side of the Site, proximal and topographically below the parking lot. The location of the monitoring well and the presence of chloride in the shallow groundwater, but not the intermediate groundwater, indicates that the source of the chloride could have been a result of salt placed on the parking lot and road in the winter.

The chloride concentration in 17-SH has ranged between less than the detection limit of 0.5 mg/L and 2.52 mg/L from 1994 to 2014. Since 2014, the chloride concentration has been an order of magnitude higher with values of 12.2 mg/L, 21.8 mg/L, 18.5 mg/L,14.7 mg/L, 9.75 mg/L, 6.38 mg/L, 6.17 mg/L, 6.46 mg/L and 9.42 in 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022 and 2023 respectively. In 2024, the chloride concentration was 8.11 mg/L. 17-SH is located on the Southeast side of the Site, adjacent to landfill cells B2 and B3.

4.3.5.2 Total Organic Carbon (TOC) and Dissolved Organic Carbon (DOC)

TOC was analyzed until approximately 2006 when the analysis was changed to DOC. The historical results are reported in **Table 4.5** (**Appendix D**) and are graphed in **Figures 12.1 to 12.33** (**Appendix A**).

The TOC and DOC concentrations are typically <15 mg/L in most of the wells. Monitoring wells with higher DOC concentrations in 2024 are:

- 01A-SH – 55.4 mg/L
- 01A-IN – 30.4 mg/L

The TOC concentration in 01-SH/01A-SH and 01-IN/01A-IN had an increase in 1993 (**Figure 12.1 and 12.2, Appendix A)**. This timing was also coincident with sampling at 01A-SH and 01A-IN instead of the corresponding decommissioned monitoring wells (01-SH and 01-IN; **Table 4.5, Appendix D**). The TOC and DOC results have been elevated above baseline levels since that time.

4.4 Interpretation

4.4.1 01A-SH and 01A-IN

Many of the groundwater chemistry changes observed for well location 01 occurred when this monitoring location was replaced by 01A in 1993. **Figures 6.1 and 6.2** (**Appendix A**) show that monitoring well location 01 and 01A are located in approximately the same east-west location; however, 01A is located south of 01. The decommissioning of 01 coincides with the construction of the F.B. & D. Kiln Facility.

The 2024 and the historical results at 01-SH/01A-SH show:

- A TDS concentration (2024 – 202 mg/L) that is significantly lower than the typical TDS for the shallow wells on the Site, and a decreasing Mann Kendall trend (**Table 7.2, Appendix D;** and **Appendix G**)
- Elevated TOC and DOC concentrations in 01A-SH since 1993 (**Figure 12.1, Appendix A**)
- A sulphur odour and white flakes observed during purging and sampling operations
- A laboratory pH of 5.69 in 2024, with a decreasing pH trend (**Table 7.2, Appendix D;** and **Appendix G**)
- Elevated iron concentration (3.22 mg/L in 2024), with a trend that is not significant (**Table 7.2, Appendix D;** and **Appendix G**)

Similarly, the results for 01A-IN show:

- A more typical TDS concentration (526 mg/L in 2024), with a decreasing trend (**Table 7.2, Appendix D;** and **Appendix G**)
- Elevated TOC and DOC concentrations in 01A-IN since 1993 (**Figure 12.2, Appendix A**)
- A more neutral pH (7.01), with a decreasing trend (**Table 7.2, Appendix D;** and **Appendix G**)
- An elevated iron concentration (16 mg/L in 2024), with a trend that is not significant (**Figure 14.2, Appendix A; Table 7.2, Appendix D;** and **Appendix G**)

These monitoring wells are completed in engineered fill, not natural clay till, and are adjacent to the ERT Fire Training Pad, the Process Make-Up Pond and the South Pond on the west side of the Site (**Figure 5.1, Appendix A**). The shallow and intermediate wells sample groundwater that is influenced by the water table. The amount of infiltration of surface water and rainwater may be impacted by the following factors: the engineered fill at this location may have a higher infiltration rate than the natural till, and the proximal ponds contain rainwater and surface run-off water. A greater amount of surface and rainwater infiltration is supported by the TDS concentrations in these wells. Rainwater typically has a very low TDS concentration and monitoring location 01A has a much lower TDS concentration in the shallow interval than in the intermediate interval.

The source of the elevated TOC and DOC concentrations in both 01A-SH and 01A-IN is unknown, however, possible sources may include fires and firefighting materials used at the ERT Fire Training Pad nearby, the composition of the engineered fill, or materials and construction processes used to build the F.B.& D. Kiln Facility between 1994 and 1995. The presence of elevated TOC and DOC in these wells may result in anaerobic conditions when carbon is aerobically decayed (Langmuir, 1997). It is noted that no petroleum hydrocarbons or PCBs were detected in these wells.

A sulphur odour was observed while purging and sampling 01A-SH from 2013 to 2024. The results of the sulphate reducing bacteria (SRB) test in 2015 indicated the presence of aggressive, anaerobic sulphate reducing bacteria in 01A-SH. Sulphate reducing bacteria produce hydrogen sulphide (H_2S) (Langmuir, 1997), which accounts for the sulphur odour and lower pH.

4.4.2 Dissolved Iron

Elevated iron concentrations were observed at seven of the groundwater monitoring wells in 2018 and 2021, 11 in both 2019 and 2020, 5 wells in 2022 and 2 wells in 2023. In 2024, elevated iron concentrations were noted for three groundwater wells (**Section 4.3.4.3**). The highest iron concentrations in 2024 were observed in 01A-SH (3.22 mg/L) and 01A-IN (16 mg/L).

Concentrations in 01A-IN have periodically spiked above 20 mg/L in 2003 (29.6 mg/L), 2006 (32.8 mg/L), 2009 (26.9 mg/L), 2013 (33.8 mg/L), and 2014 (29.9 mg/L). The iron concentration in 01A-SH has been relatively consistent (**Figure 14.2** in **Appendix A**) since the well was first sampled in 1993, ranging between 0.06 mg/L (2004) and 6.79 mg/L (1996; **Table 4.3, Appendix D**). Although these concentrations are lower than those observed in 01A-IN, they are still higher than other concentrations observed at the site (**Table F** in **Section 4.3.4.3**). During well maintenance activities in May 2014, a reddish-orange film was observed on the pump and tubing in 01A-SH and on the tubing in 01A-IN. During the 2015 Groundwater Monitoring Program, nine samples were collected for an IRB test and an SRB test. The number of days until a reaction occurs in the solution can determine whether the water contains aggressive (many) bacteria or not aggressive (few) bacteria. All IRB and SRB reactions occurred within the first day of sampling; therefore, all samples contain aggressive iron related bacteria. These bacteria are the likely cause of the elevated iron concentrations seen in the monitoring wells.

5. Conclusions

The 2024 Groundwater Monitoring Program was conducted as outlined in Approval No. 1744-03-00. Based on the results of the monitoring program, the following conclusions are made:

- Petroleum hydrocarbon (BTEX, PHC F1) concentrations were below the laboratory detection limit for all wells sampled in 2024 therefore the groundwater at the Site is not impacted by petroleum hydrocarbons.
- PCB Aroclor and total PCB concentrations were below the laboratory detection limit for all wells sampled in 2024, therefore the groundwater at the Site is not impacted by PCB.
- Twelve of the wells completed in the till interval (shallow and intermediate wells) have TDS concentrations above the Alberta Tier II Potable Groundwater Guidelines, however, these concentrations are consistent with baseline and/or historical observations, as well as expected TDS concentrations for a till lithology.
- Manganese concentrations exceeding the Alberta Tier II Potable Groundwater Guideline were observed in all monitoring wells except 03-SH, 03-IN, 05-SH, 08-IN, 13(R)-SS, 16-SH, and 17-SH. Manganese concentrations have been measured since the 1990s and have typically exceeded the guideline in both up-gradient and down-gradient wells; therefore, it is likely naturally occurring. Manganese concentrations above the Alberta Tier II Potable Guideline for Commercial/Industrial Land Use (0.02 mg/L) in till are of little concern since this groundwater source (clay till) is not capable of supporting a potable water supply.
- Elevated iron and manganese concentrations may be a result of biological activity. Orange and black residues and/or oxidation was noted on several bladder pumps and tubing during well maintenance in May 2014. IRB tests from 2015 confirmed the presence of anaerobic iron related and enteric bacteria in monitoring wells 01A-SH, 01A-IN, 04-IN, 04-SS, 07-SH, 07-IN, and 16-SH.
- The elevated chloride concentrations in 07-SH may be caused by infiltration of run-off containing road salt from the adjacent parking lot and road. Increasing chloride trends are observed in 01A-SH, and 07-SH. Monitoring well 07-SH is located in a low-lying area adjacent to a road and parking lot while 01A-SH is located on the plant site. Monitoring well 17-SH had an increase in chloride concentration in 2015 compared to historical results, but the level is well below the guideline and has been falling in the following years.
- MW-01A:
    - The TDS and major ion groundwater chemistry of 01A-SH and 01A-IN appears to be affected by rain and surface water infiltration.
    - High DOC concentrations may be a result of the composition of the engineered fill, as well as activity at the ERT Fire Training Pad. The high DOC probably results in anaerobic conditions in the monitoring well. It is noted that no Aroclor PCBs or petroleum hydrocarbons were detected in this well, thus the elevated DOC concentrations are from other compounds.
    - Sulphur odour and reduced pH in 01A-SH indicates the presence of sulphur reducing bacteria that is confirmed by the results of the SRB test conducted in 2015.

6. Recommendations

The current groundwater monitoring program should continue to be followed as dictated by Approval No. 1744-03-00. Based on the results of the 2024 groundwater monitoring program the following additional recommendations are identified:

- If dry piezometers are encountered, the water level in the corresponding well should be measured with clean equipment to verify if the well is dry or if the piezometer is compromised.
- In connection to the 2022 Annual Groundwater Monitoring Report (AECOM, 2023a), a groundwater monitoring well network condition report and sandstone groundwater monitoring well replacement plan was developed by AECOM (AECOM, 2023b), which summarized well network maintenance recommendations based on 2022 field observations and outlines the sandstone wells needing replacement with locations and rationales provided. Veolia is currently implementing this program by abandoning dry or damaged wells and installing new monitoring wells. It is recommended to include these new wells into the monitoring program by purging and monitoring them during the 2025 monitoring program.
- Review of road salt use at and around the Site and alternative measures implemented in 2025 to address chloride increases at selected locations. Sample surface water in the road ditches upgradient of the Site to investigate the source of the chloride concentration increase in well 07-SH.
- Alberta Environment and Protected Areas has recommended that dioxins and furans should be sampled for in select shallow wells for three years (2022, 2023 and 2024) as part of the annual monitoring program. Since three years of data has been collected and the results are two to three orders of magnitude below the applicable guideline, the monitoring frequency is recommended to be adjusted to once every five years.
- Conduct groundwater monitoring in the fall of 2025 with the sampling event performed a minimum of one week after the purging event to allow monitoring wells to sufficiently recover.

7. References

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Worley Parsons (March 2013): 2012 Groundwater, Surface Water, Sediment and Fish Tissue Monitoring – Swan Hills Treatment Centre.

AECOM

Appendix A

Figures

ANSI A 215.9mm x 279.4mm
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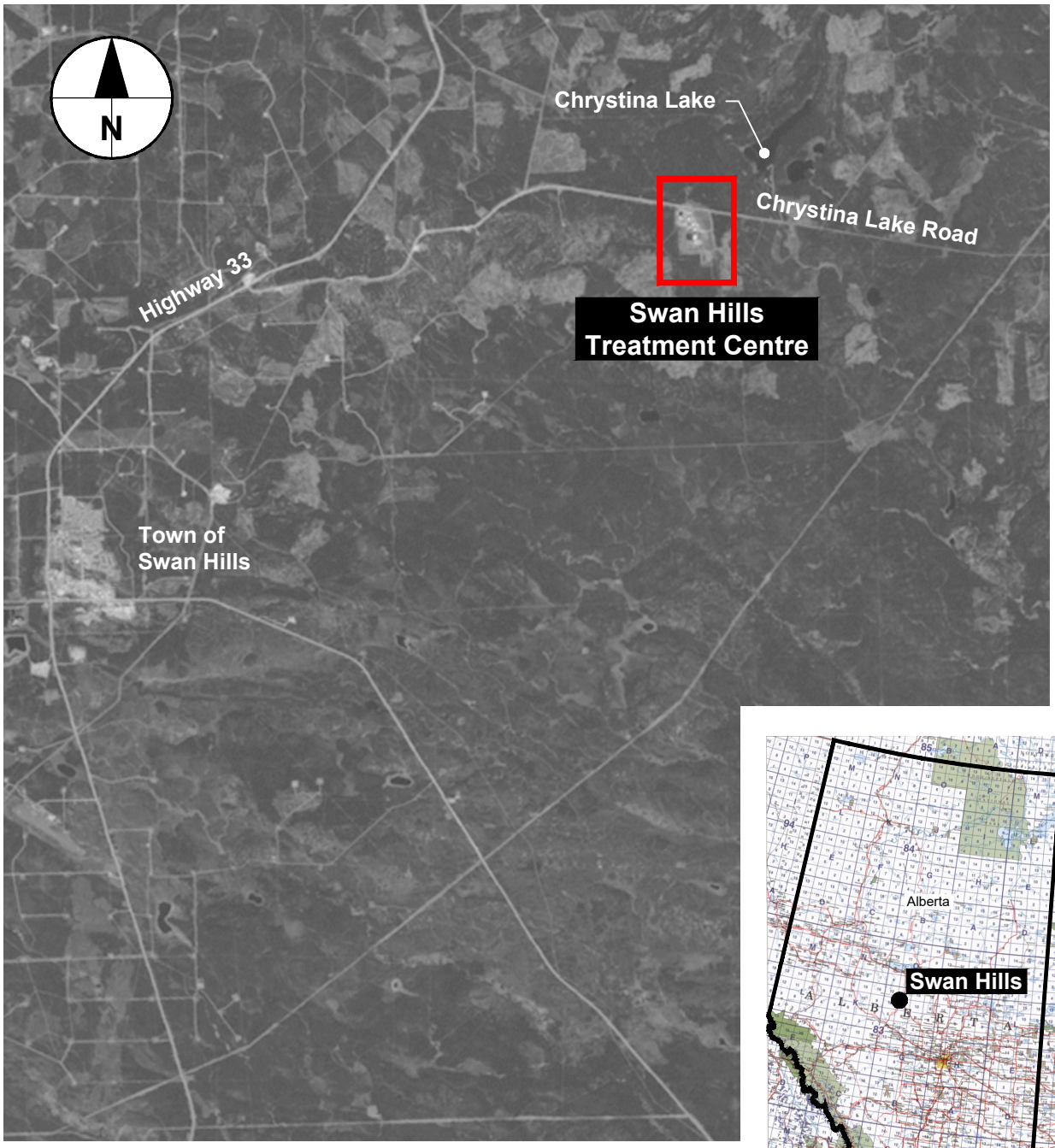

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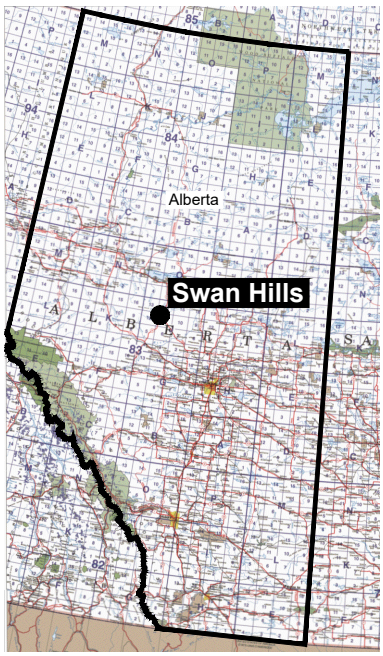

IMAGE SOURCE: Natural Resources Canada

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1:125000

KEY PLAN

Scale NTS

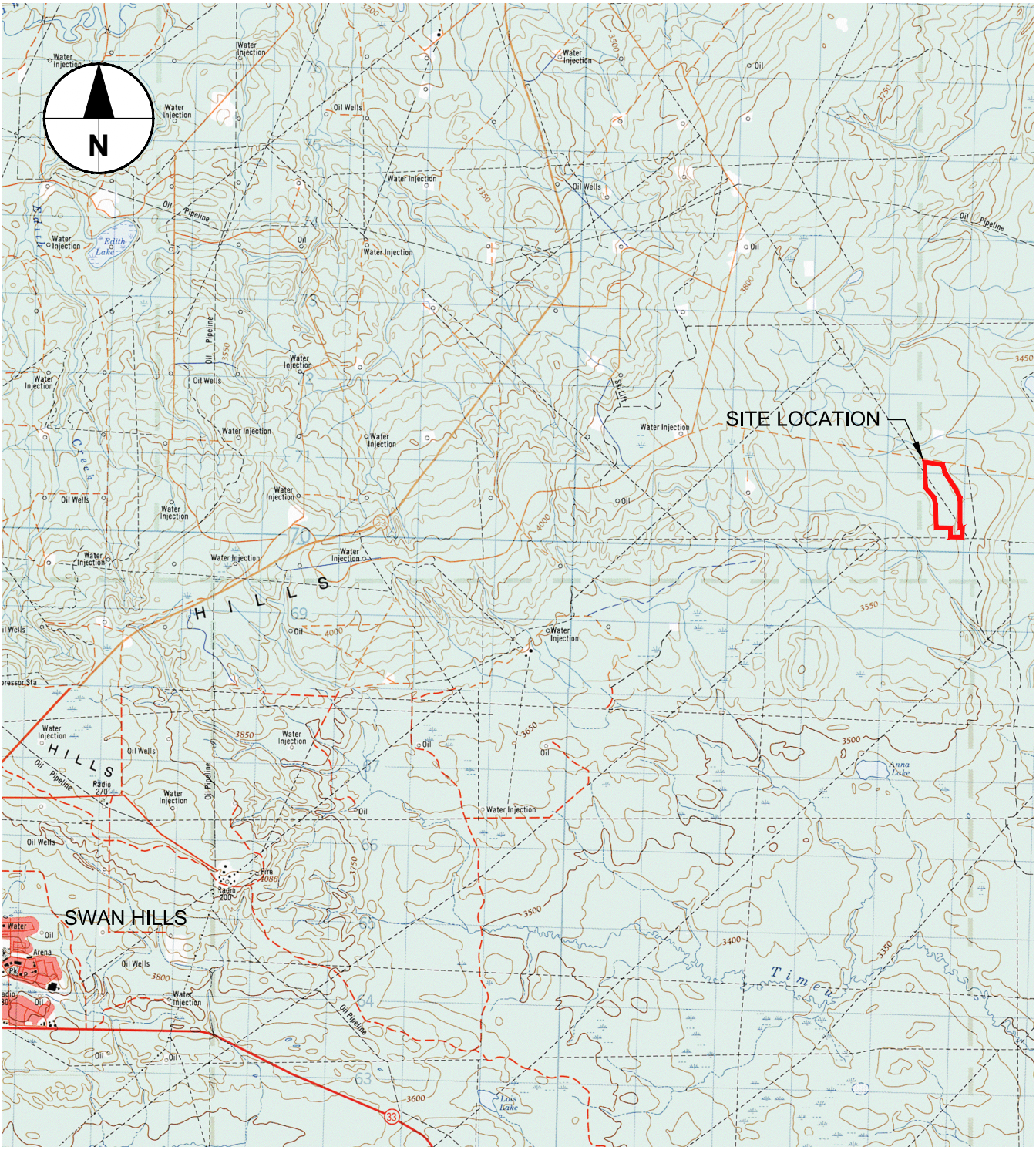
Issue Status: FINAL

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Site Location

AECOM

Figure 1.0



0 1875 3750 m

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NOTES:

CARLSON, V.A. AND GREEN, R. (1997):
BEDROCK TOPOGRAPHY OF THE WHITECOURT AREA,
NTS 83J, ALBERTA RESEARCH COUNCIL,
SCALE 1:250,000

Issue Status: FINAL

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Topography

AECOM

Figure 2.0

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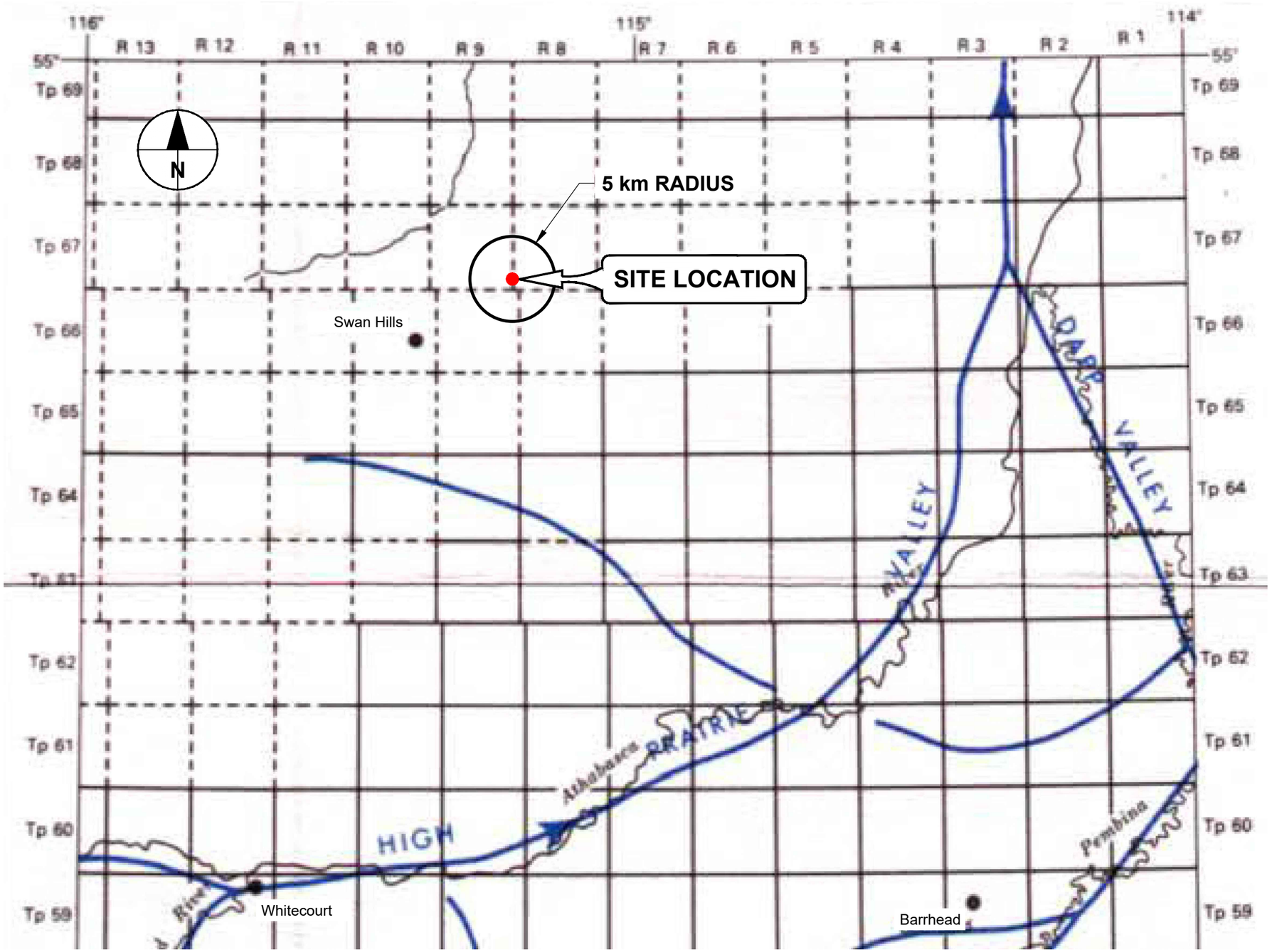

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SOURCE:
Alberta Geological Survey (Map 063)

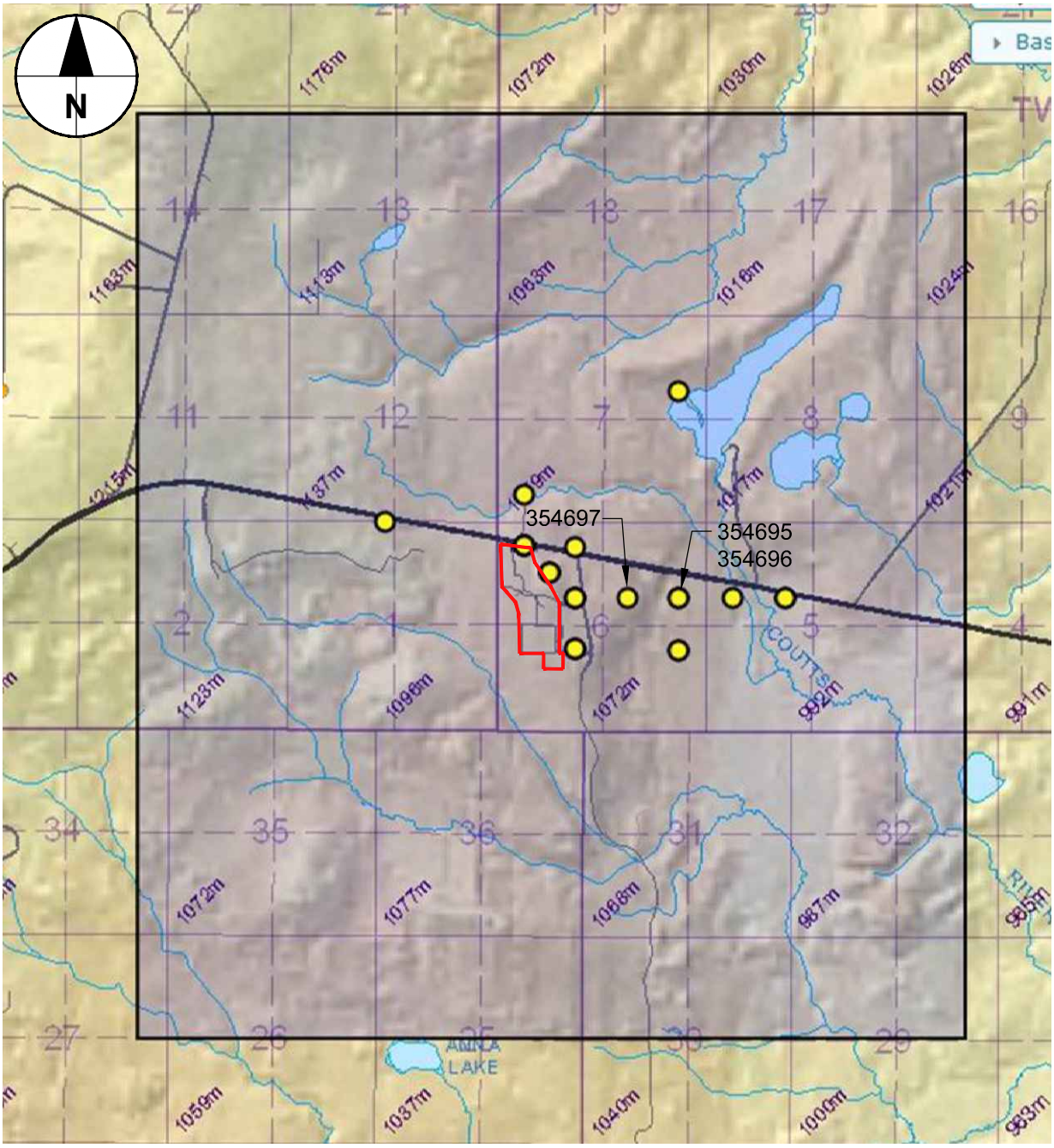
Issue Status: FINAL

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Buried Bedrock Valleys

AECOM

Figure 3.0



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SITE BOUNDARY

SELECTED GROUNDWATER WELL

0 1250 2500 m

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NOTES:

1. INFORMATION FROM ALBERTA ENVIRONMENT'S WATER WELL INFORMATION DATABASE

Issue Status: FINAL

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Historical Groundwater Users

AECOM

Figure 4.0

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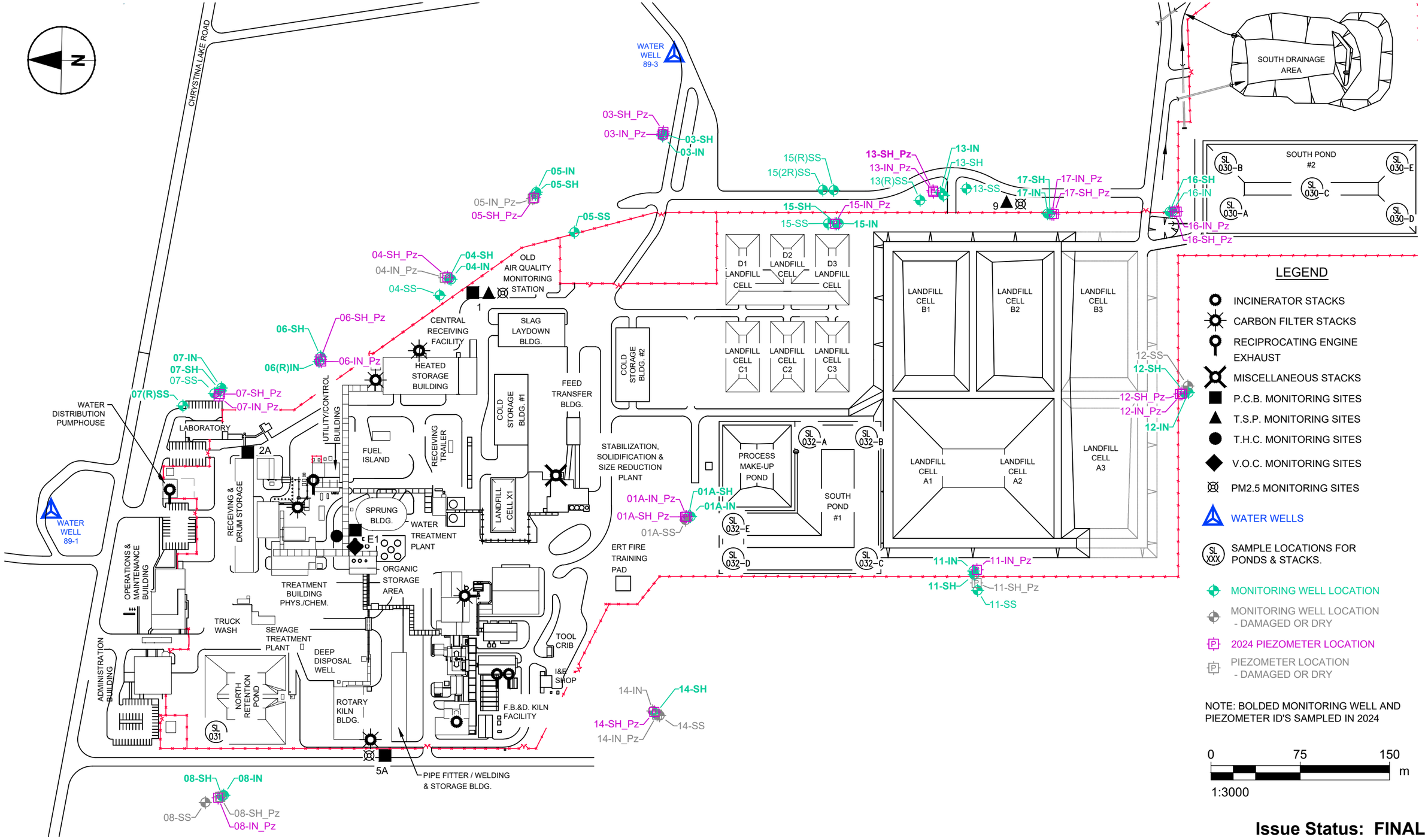

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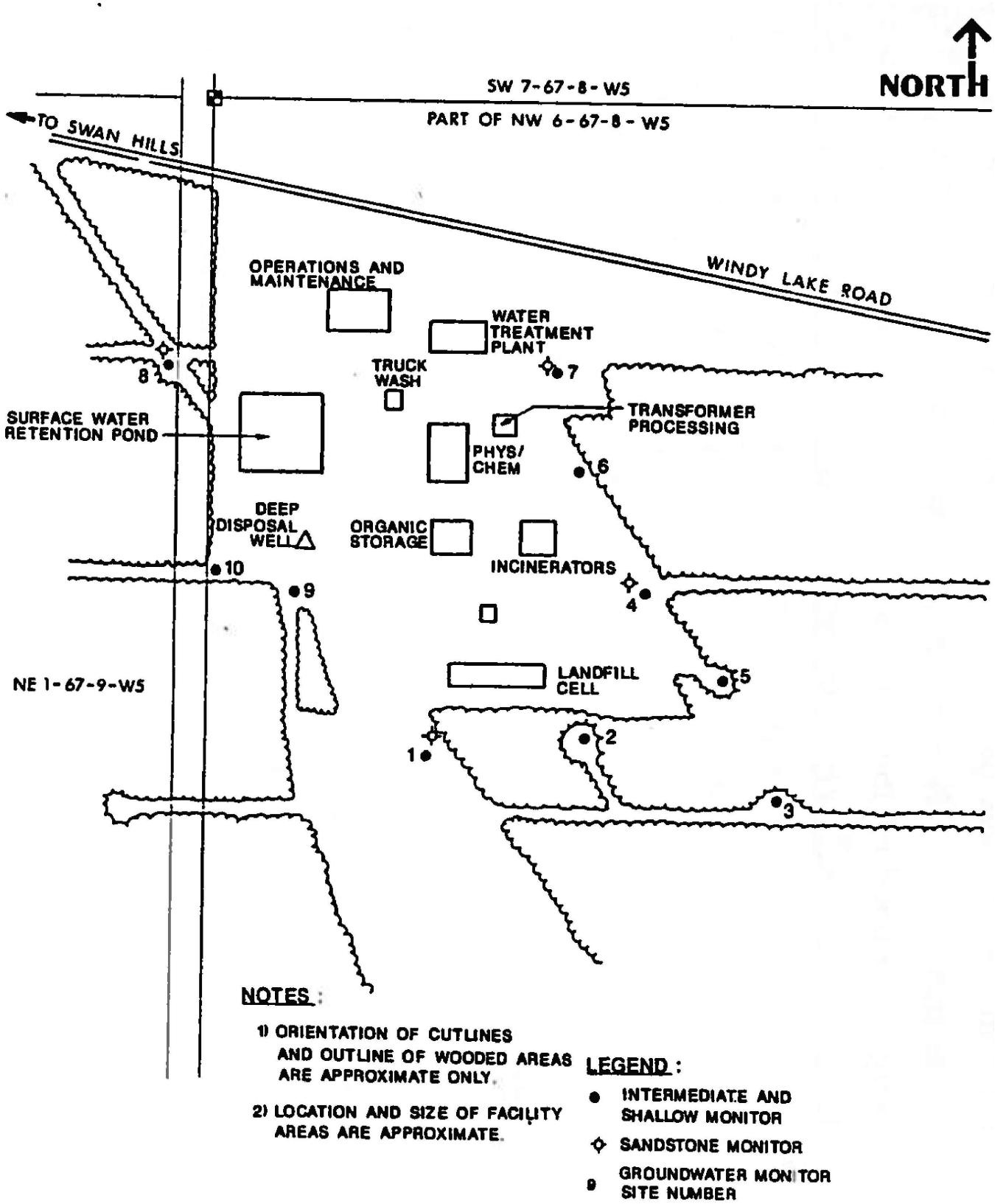
2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Groundwater Monitoring Well Locations

AECOM

Figure 5.1



NOTE: MODIFIED FROM STANLEY (1987)

Issue Status: FINAL

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

1987 Groundwater Monitoring Well Locations

AECOM

Figure 5.2

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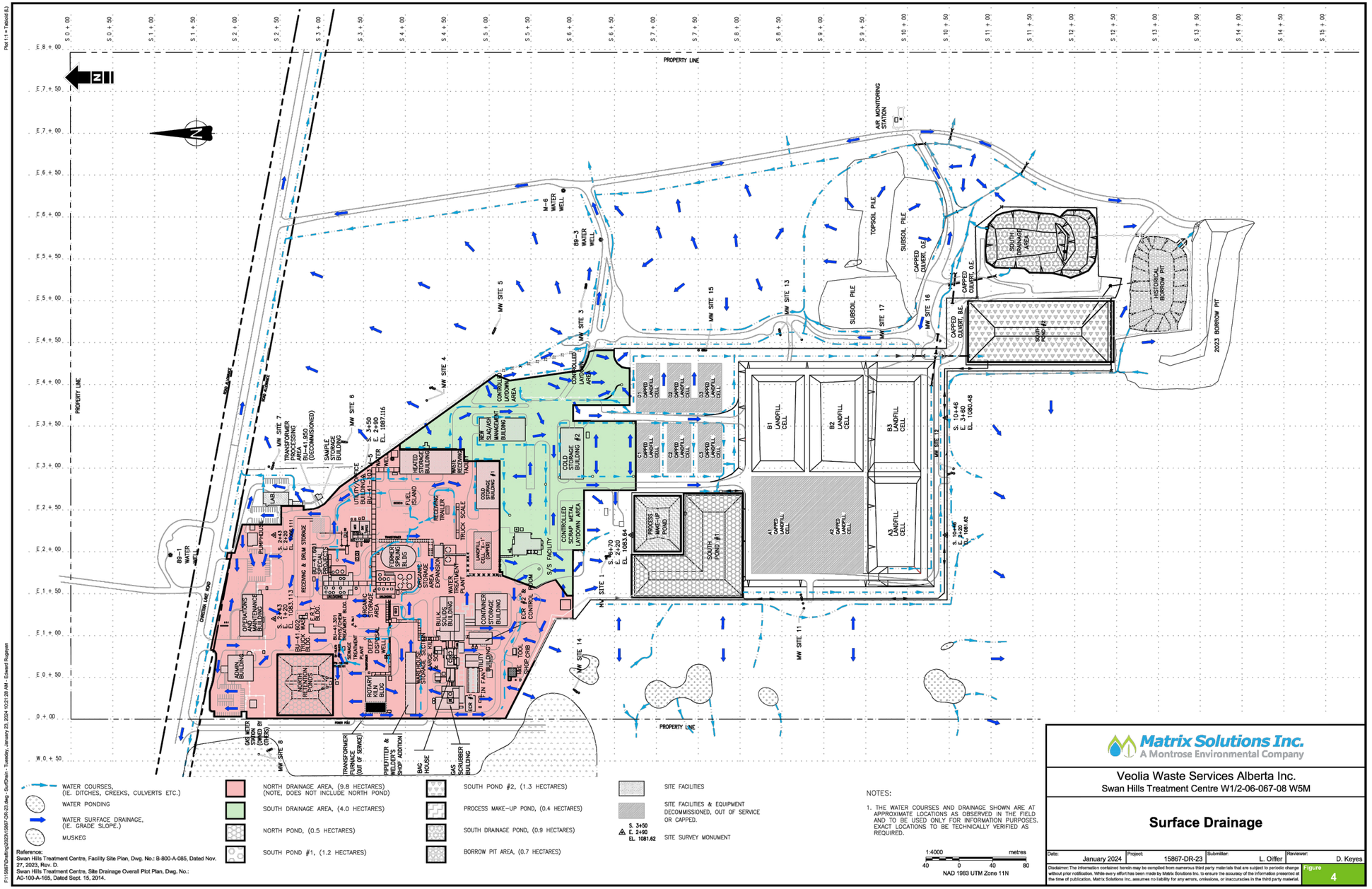

WATER COURSES, (IE. DITCHES, CREEKS, CULVERTS ETC.)
WATER PONDING
WATER SURFACE DRAINAGE, (IE. GRADE SLOPE.)
MUSKEG

NORTH DRAINAGE AREA, (9.8 HECTARES) (NOTE, DOES NOT INCLUDE NORTH POND)
SOUTH DRAINAGE AREA, (4.0 HECTARES)
NORTH POND, (0.5 HECTARES)
SOUTH POND #1, (1.2 HECTARES)

SOUTH POND #2, (1.3 HECTARES)
PROCESS MAKE-UP POND, (0.4 HECTARES)
SOUTH DRAINAGE POND, (0.9 HECTARES)
BORROW PIT AREA, (0.7 HECTARES)

SITE FACILITIES
SITE FACILITIES & EQUIPMENT DECOMMISSIONED, OUT OF SERVICE OR CAPPED.
S. 3+50 E. 2+90 EL. 1081.62 SITE SURVEY MONUMENT

Reference:
Swan Hills Treatment Centre, Facility Site Plan, Dwg. No.: B-800-A-085, Dated Nov. 27, 2023, Rev. D.
Swan Hills Treatment Centre, Site Drainage Overall Plot Plan, Dwg. No.: A0-100-A-165, Dated Sept. 15, 2014.

NOTES:

1. THE WATER COURSES AND DRAINAGE SHOWN ARE AT APPROXIMATE LOCATIONS AS OBSERVED IN THE FIELD AND TO BE USED ONLY FOR INFORMATION PURPOSES. EXACT LOCATIONS TO BE TECHNICALLY VERIFIED AS REQUIRED.

1:4000 metres
40 0 40 80
NAD 1983 UTM Zone 11N

Matrix Solutions Inc.
A Montrose Environmental Company

Veolia Waste Services Alberta Inc.
Swan Hills Treatment Centre W1/2-06-067-08 W5M

Surface Drainage

Date:	Project:	Submitter:	Reviewer:
January 2024	15867-DR-23	L. Oiffer	D. Keyes

Disclaimer: The information contained herein may be compiled from numerous third party materials that are subject to periodic change without prior notification. While every effort has been made by Matrix Solutions Inc. to ensure the accuracy of the information presented at the time of publication, Matrix Solutions Inc. assumes no liability for any errors, omissions, or inaccuracies in the third party material.

Figure 4

SOURCE:
Drawing No.: A0-100-A-165 - Site Drainage Overall Plot Plan. Swan Hills Treatment Centre General Site, Swan Hills Treatment Centre, September 15, 2014.

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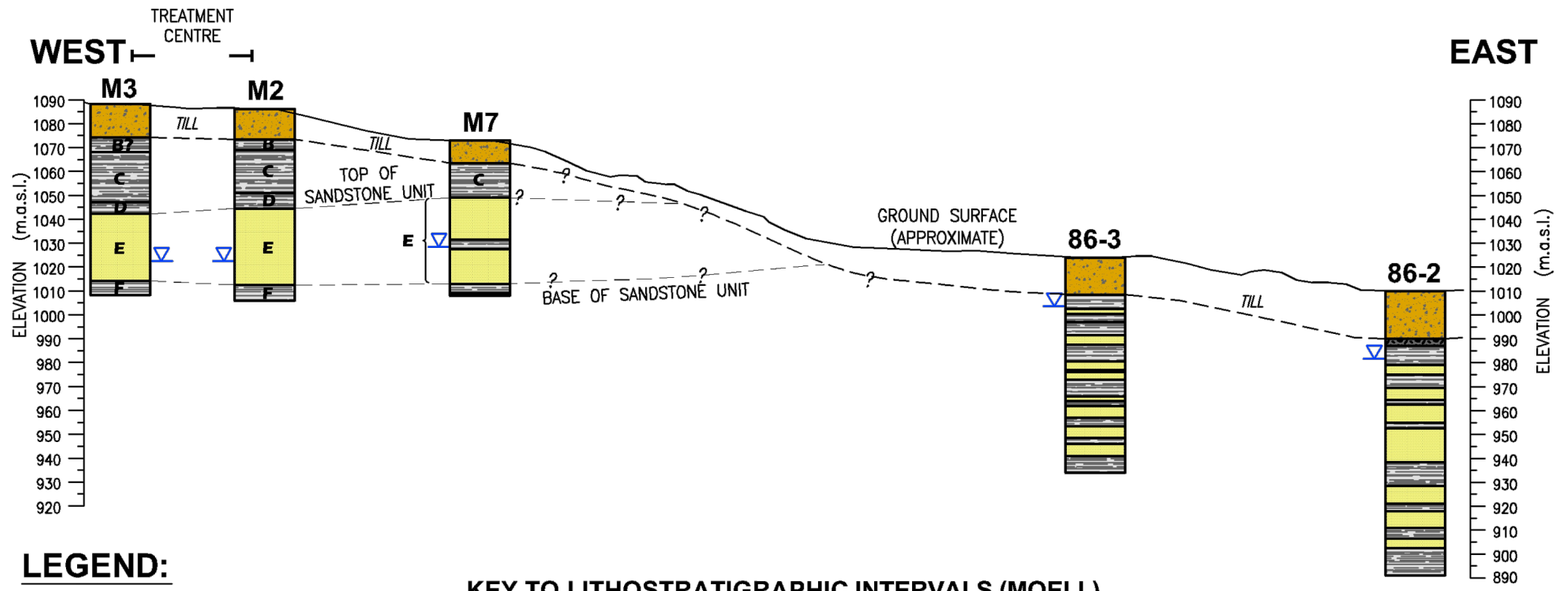

LEGEND:

- TILL
- GRAVEL
- SANDSTONE
- SHALE
- WATER TABLE ELEVATION

KEY TO LITHOSTRATIGRAPHIC INTERVALS (MOELL)

B	UPPER GREY-GREEN SHALE
C	BROWN SHALE
D	LOWER GREY-GREEN SHALE
E	SANDSTONE
F	SHALE WITH MINOR SANDSTONE

VERT. SCALE 1 : 2,500

0 25 50 75 100 125m

0 100 200 300 400 500m

HOR. SCALE 1 : 10,000

(4x VERT. EXAGG.)

SOURCE:
Figure 2.4A - Local Geologic Cross-Section. 2012 Groundwater, Surface Water, Sediment and Fish Tissue Monitoring - Swan Hills Treatment Centre, Worley Parsons, March 2013.

Issue Status: FINAL

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Geologic Cross-Section

AECOM

Figure 6.1

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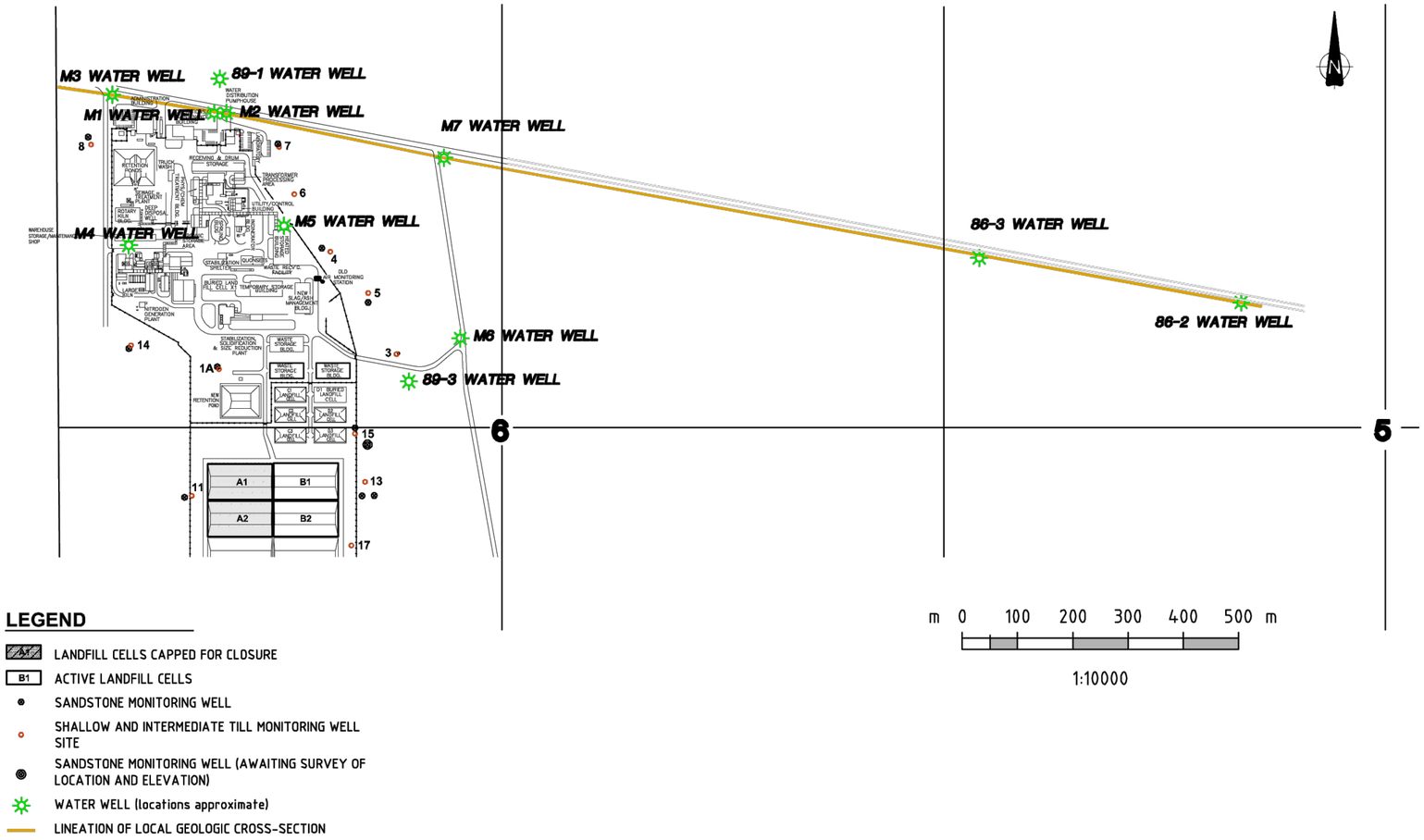


SOURCE:
Figure 2.4B - Lineation of Local Geologic Cross-Section. 2012 Groundwater, Surface Water, Sediment and Fish Tissue Monitoring - Swan Hills Treatment Centre, Worley Parsons, March 2013.

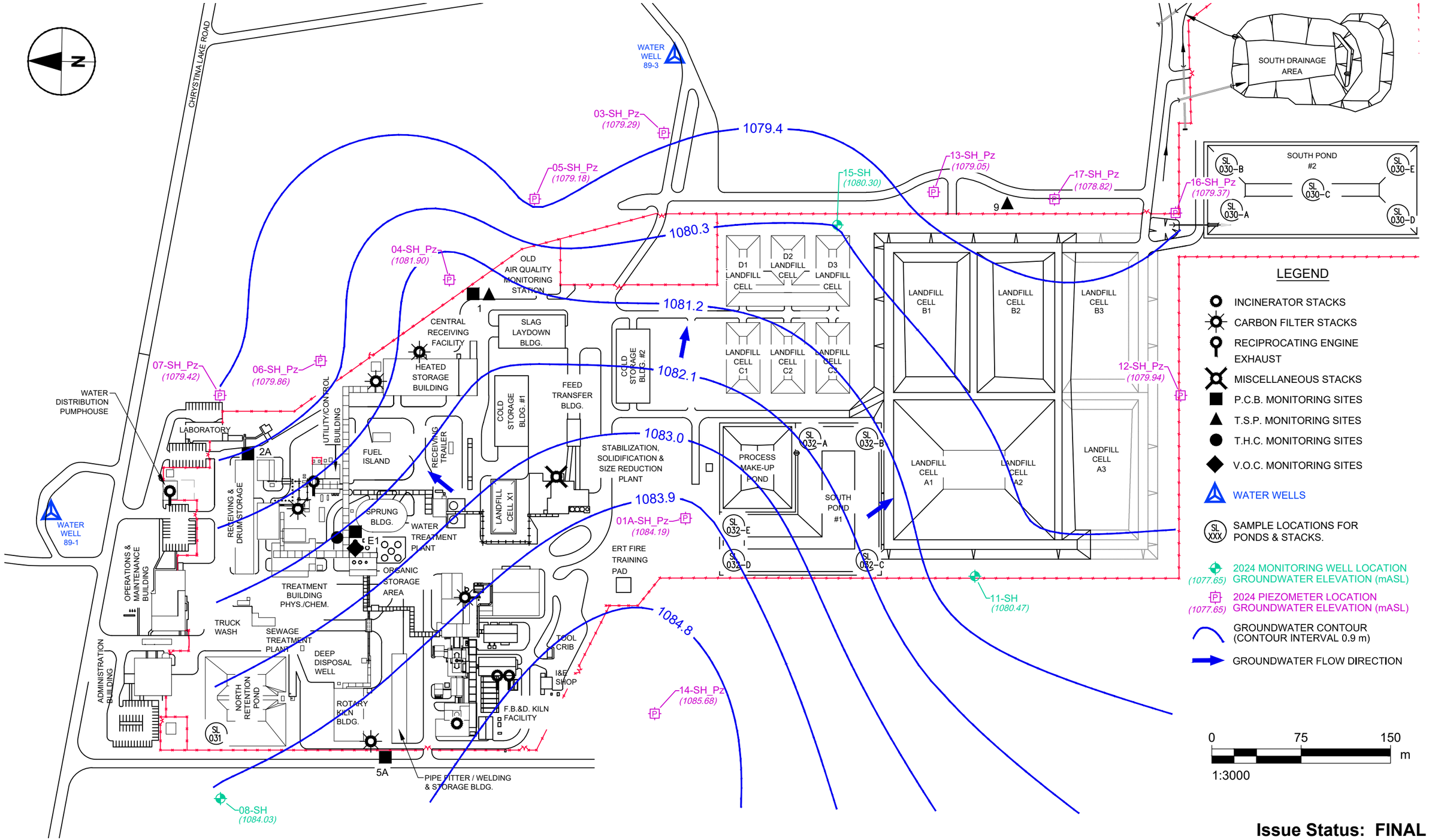
Issue Status: FINAL

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Cross-Section Location

AECOM

Figure 6.2



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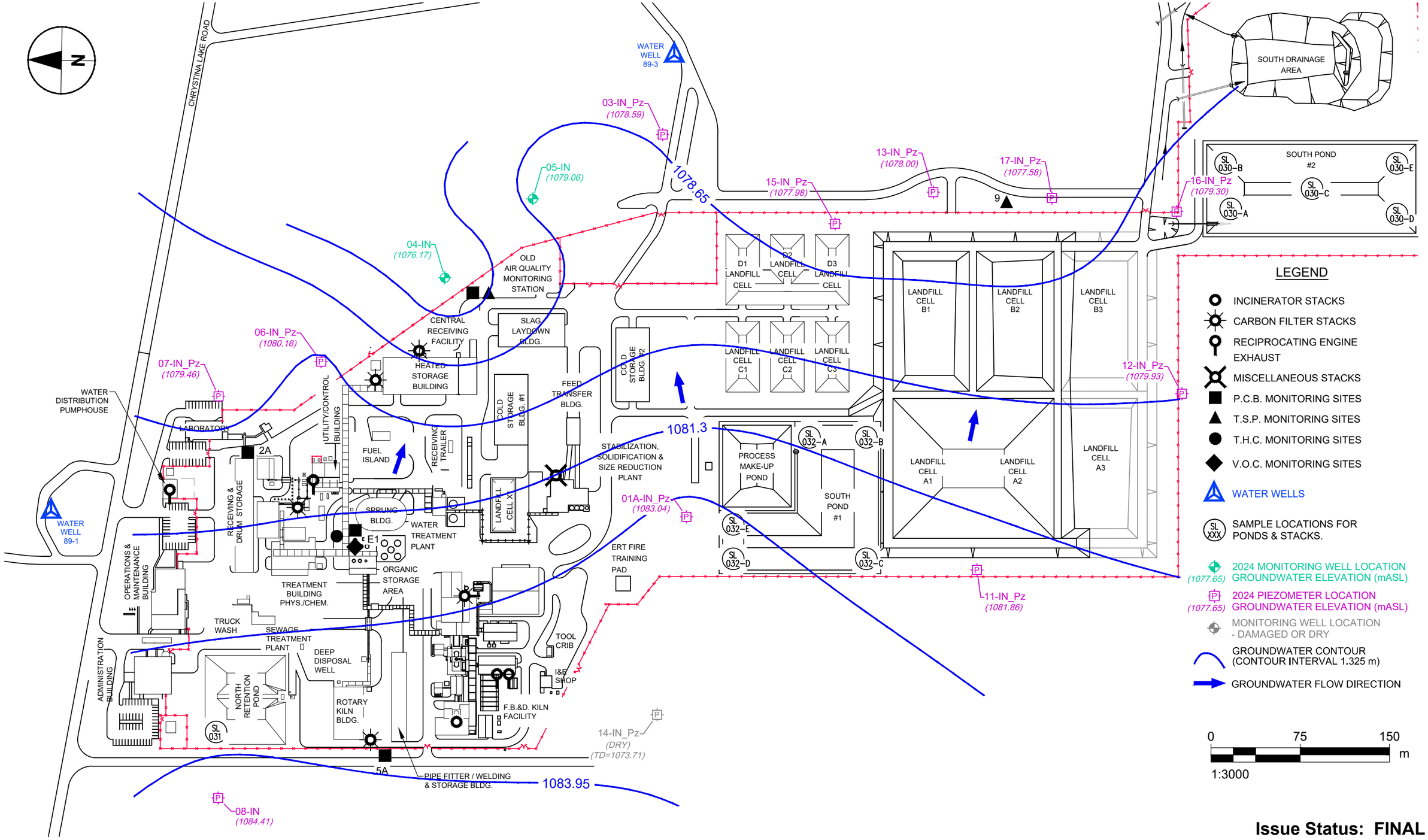
2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

September 2024 Groundwater Flow
Shallow Piezometers

AECOM

Figure 7.0



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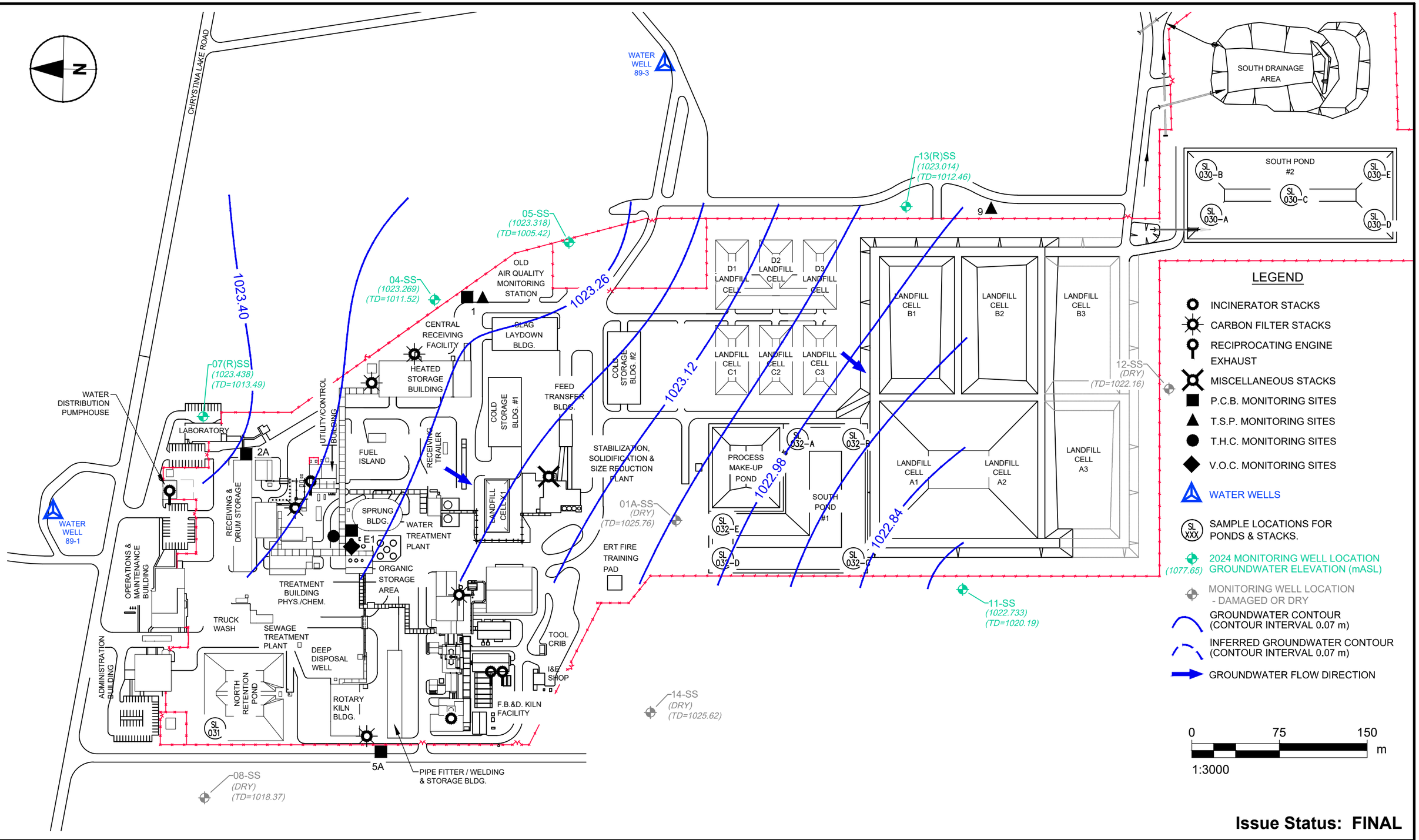
ANSI B 279.4mm x 431.8mm

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

September 2024 Groundwater Flow
Intermediate Piezometers

AECOM

Figure 8.0



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ANSI B 279.4mm x 431.8mm

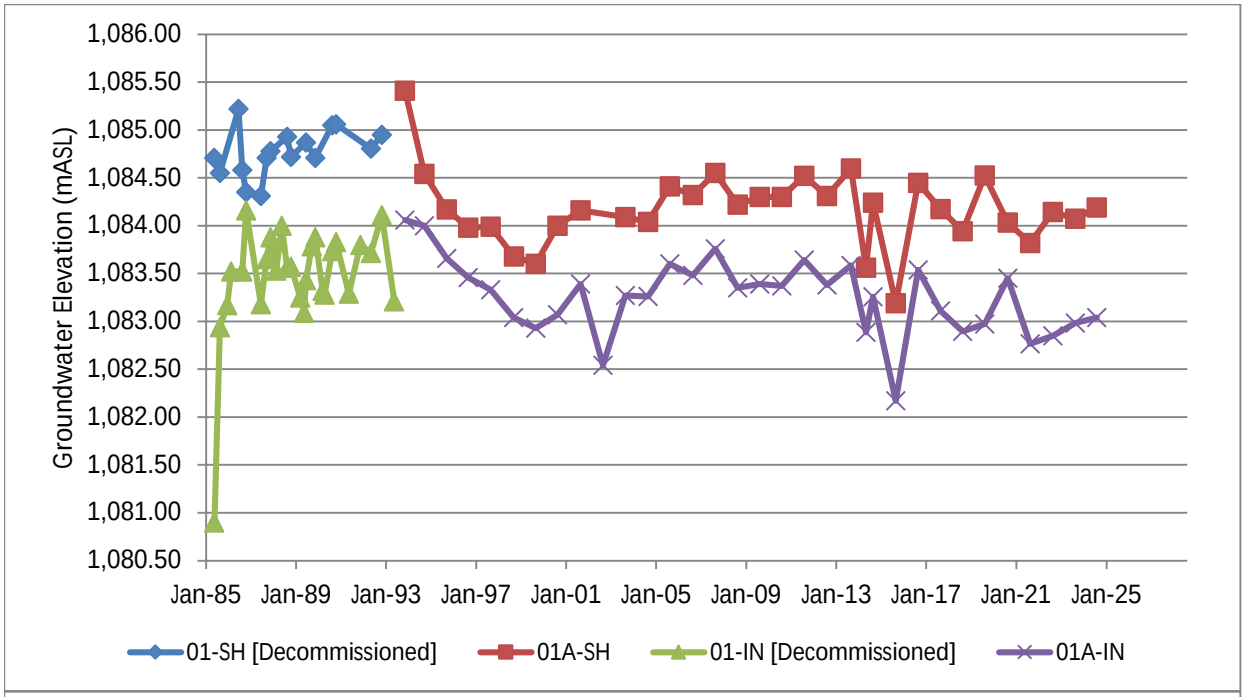
2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

September 2024 Groundwater Flow
Sandstone Wells

AECOM

Figure 9.0

Figure 10.1
VEOLIA, Swan Hills Treatment Centre
MW-01A Hydrographs



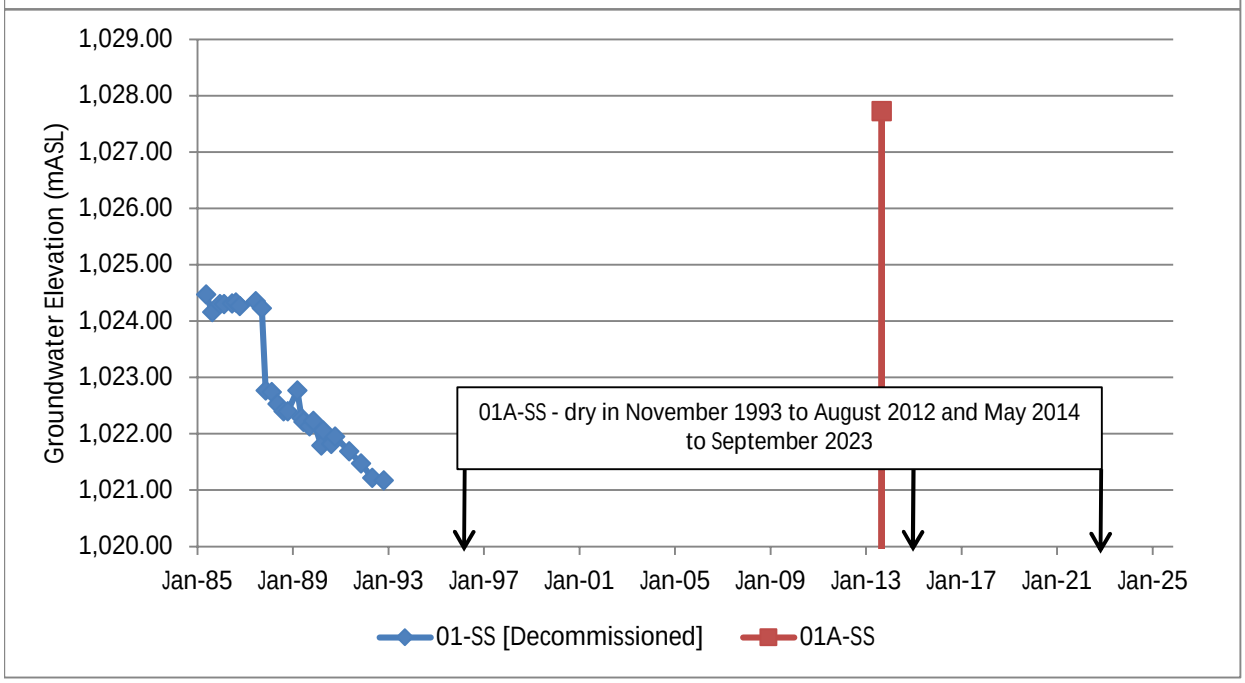


Figure 10.2
VEOLIA, Swan Hills Treatment Centre
MW-02 (Decommissioned) Hydrographs

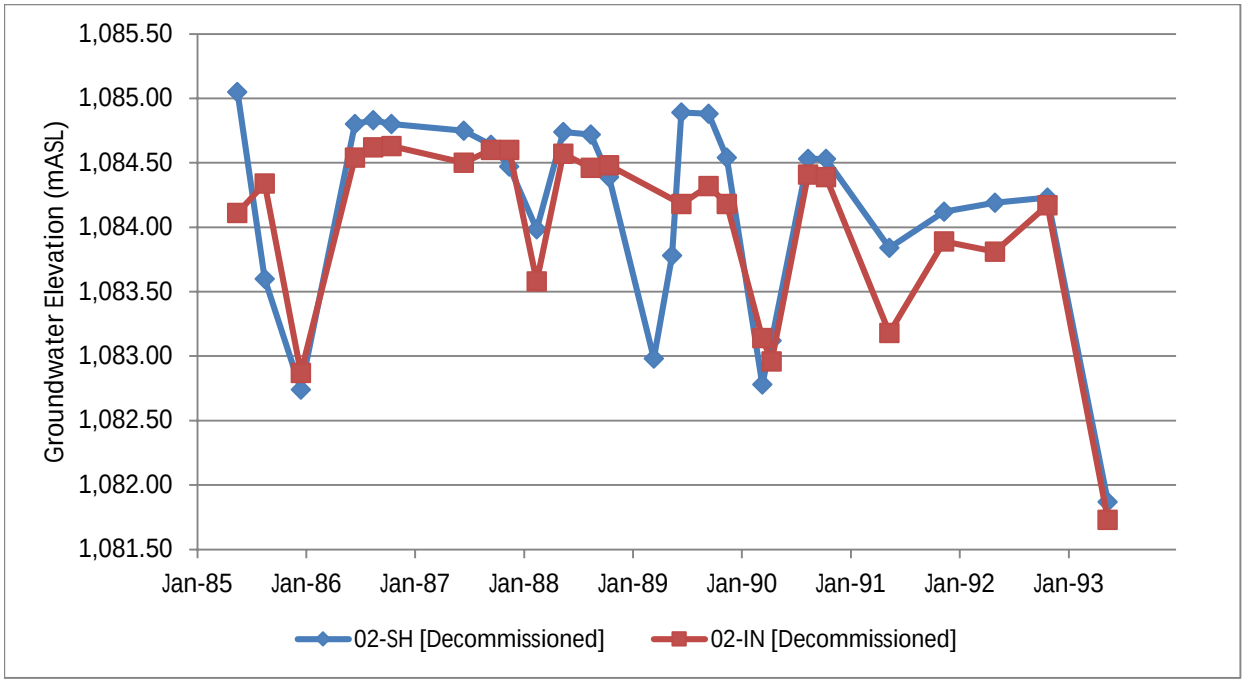


Figure 10.3
VEOLIA, Swan Hills Treatment Centre
MW-03 Hydrograph

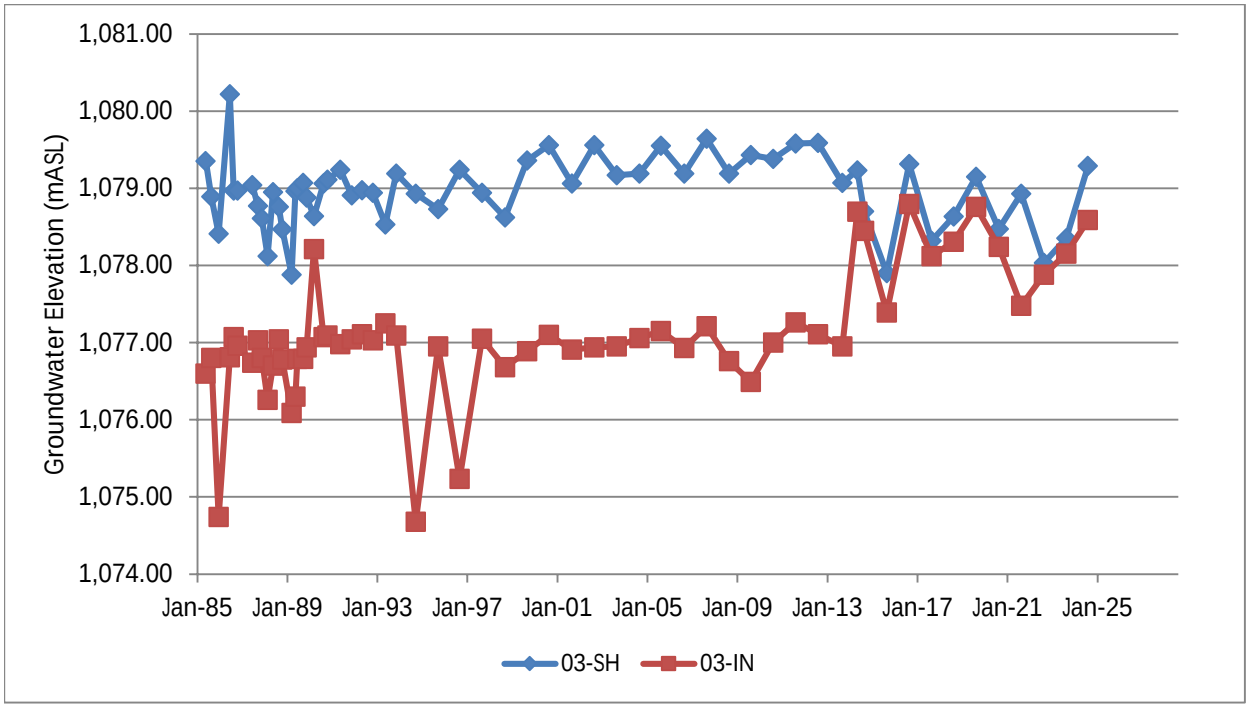


Figure 10.4
VEOLIA, Swan Hills Treatment Centre
MW-04 Hydrographs

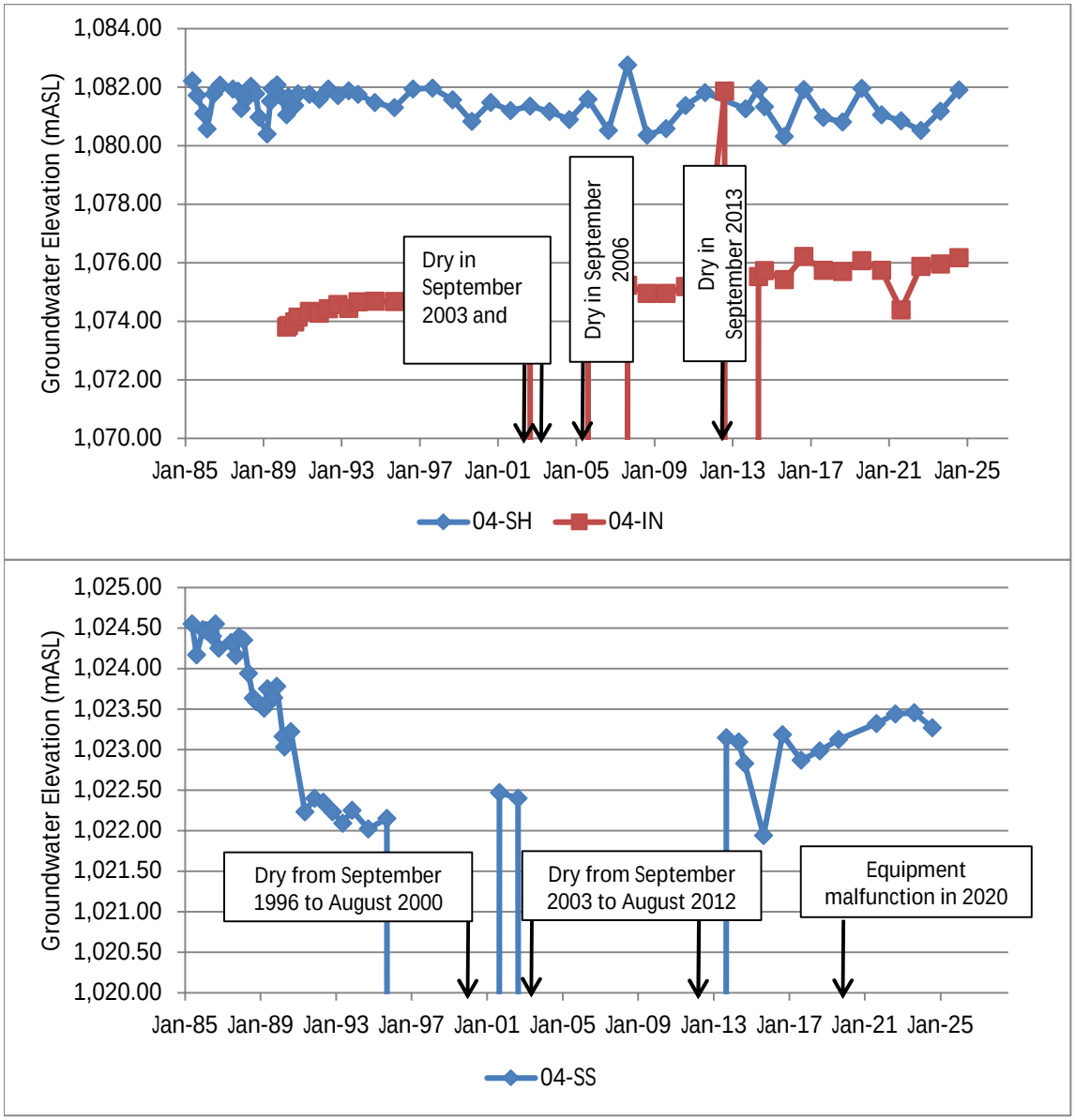
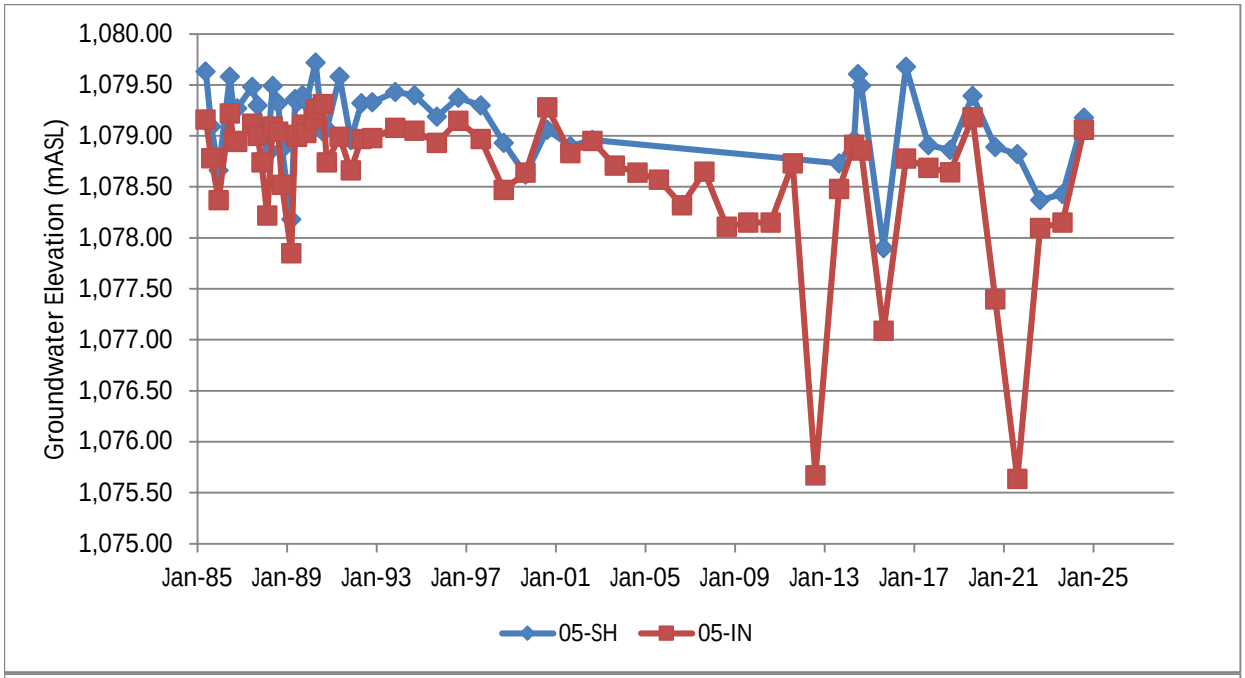


Figure 10.5
VEOLIA, Swan Hills Treatment Centre
MW-05 Hydrographs



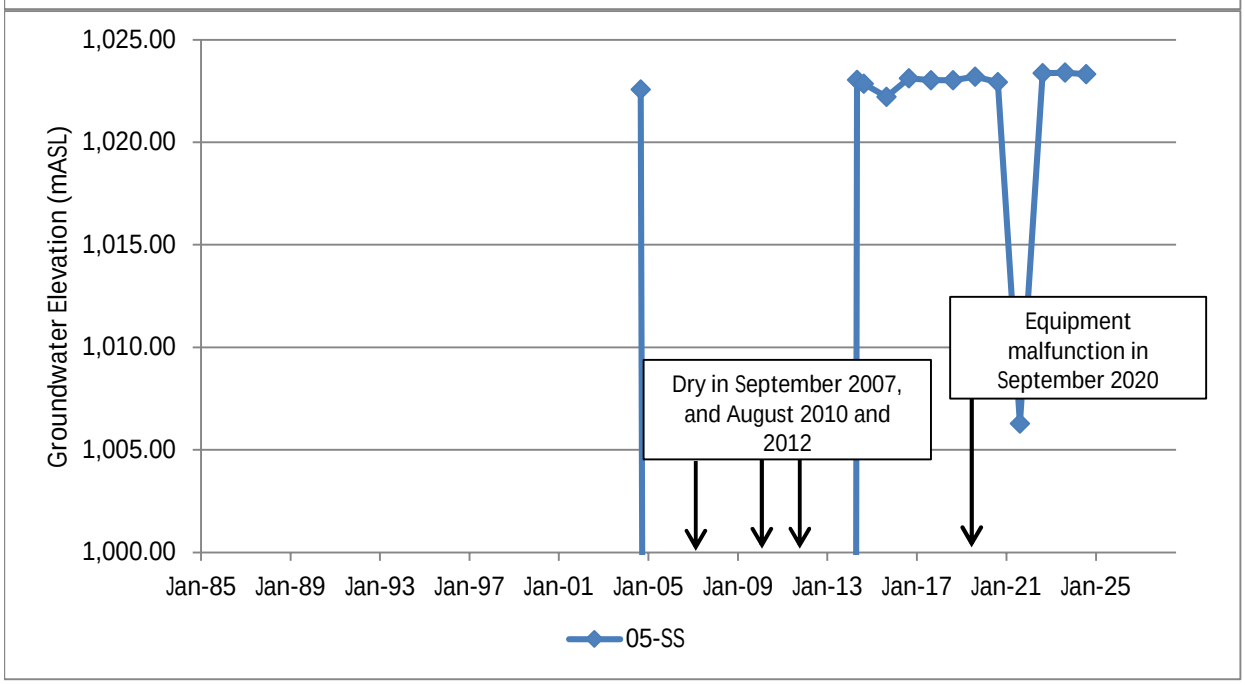


Figure 10.6
VEOLIA, Swan Hills Treatment Centre
MW-06 Hydrographs

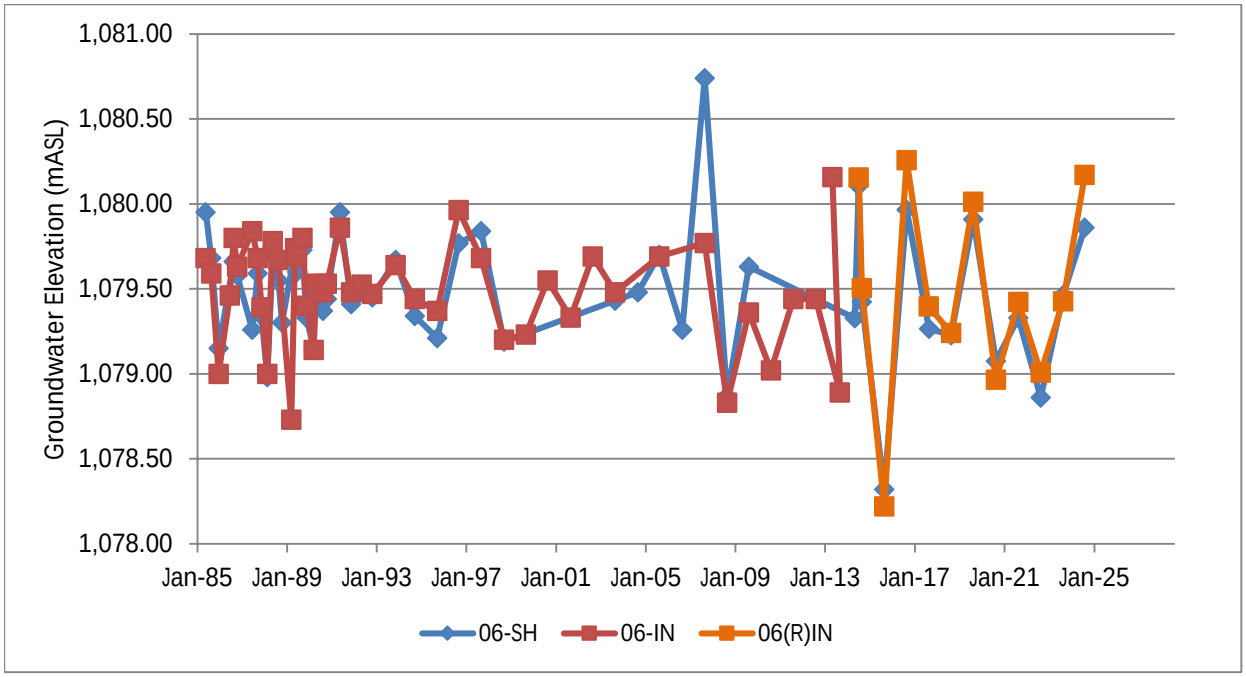


Figure 10.7
VEOLIA, Swan Hills Treatment Centre
MW-07 Hydrographs

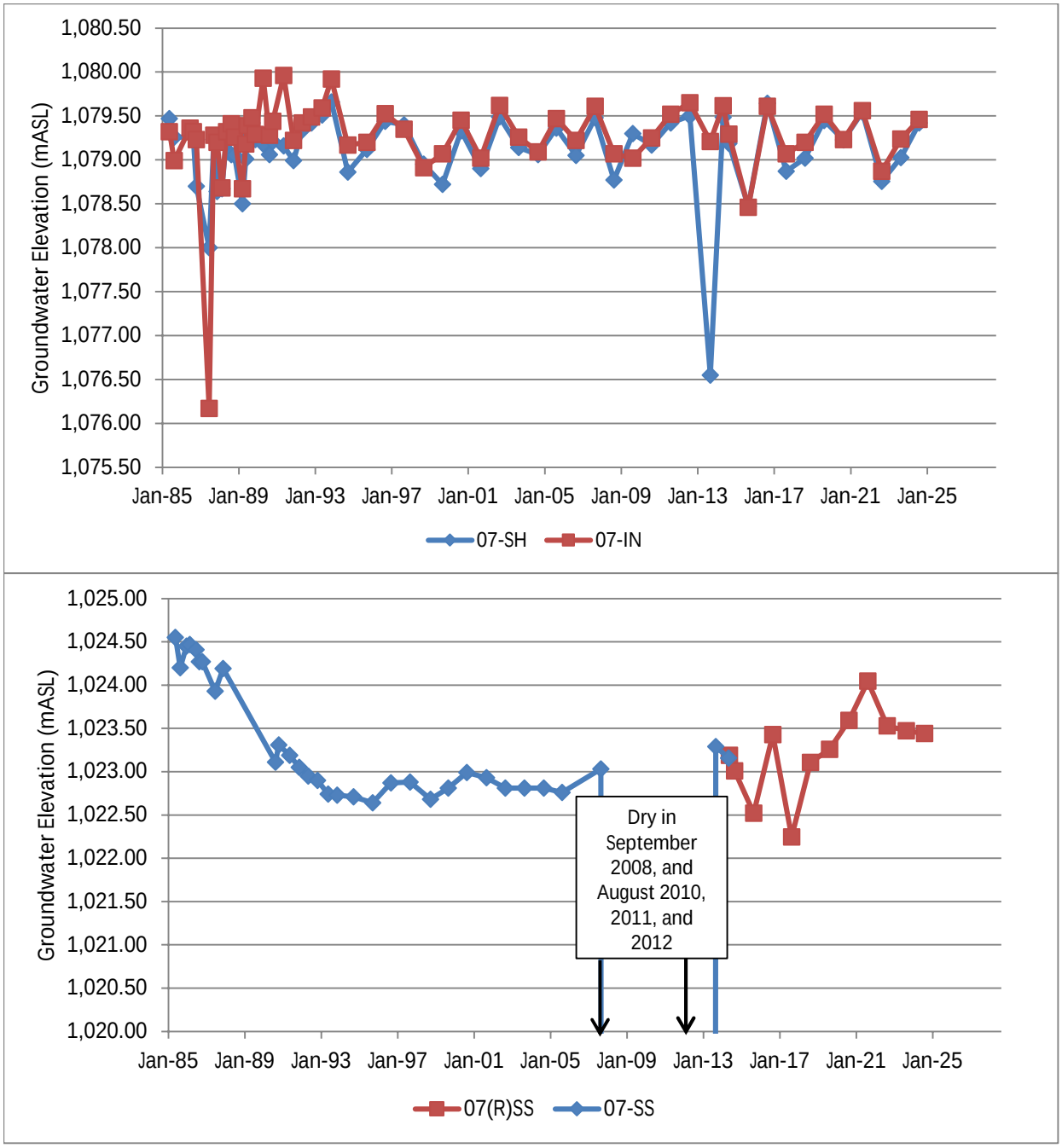


Figure 10.8
VEOLIA, Swan Hills Treatment Centre
MW-08 Hydrographs

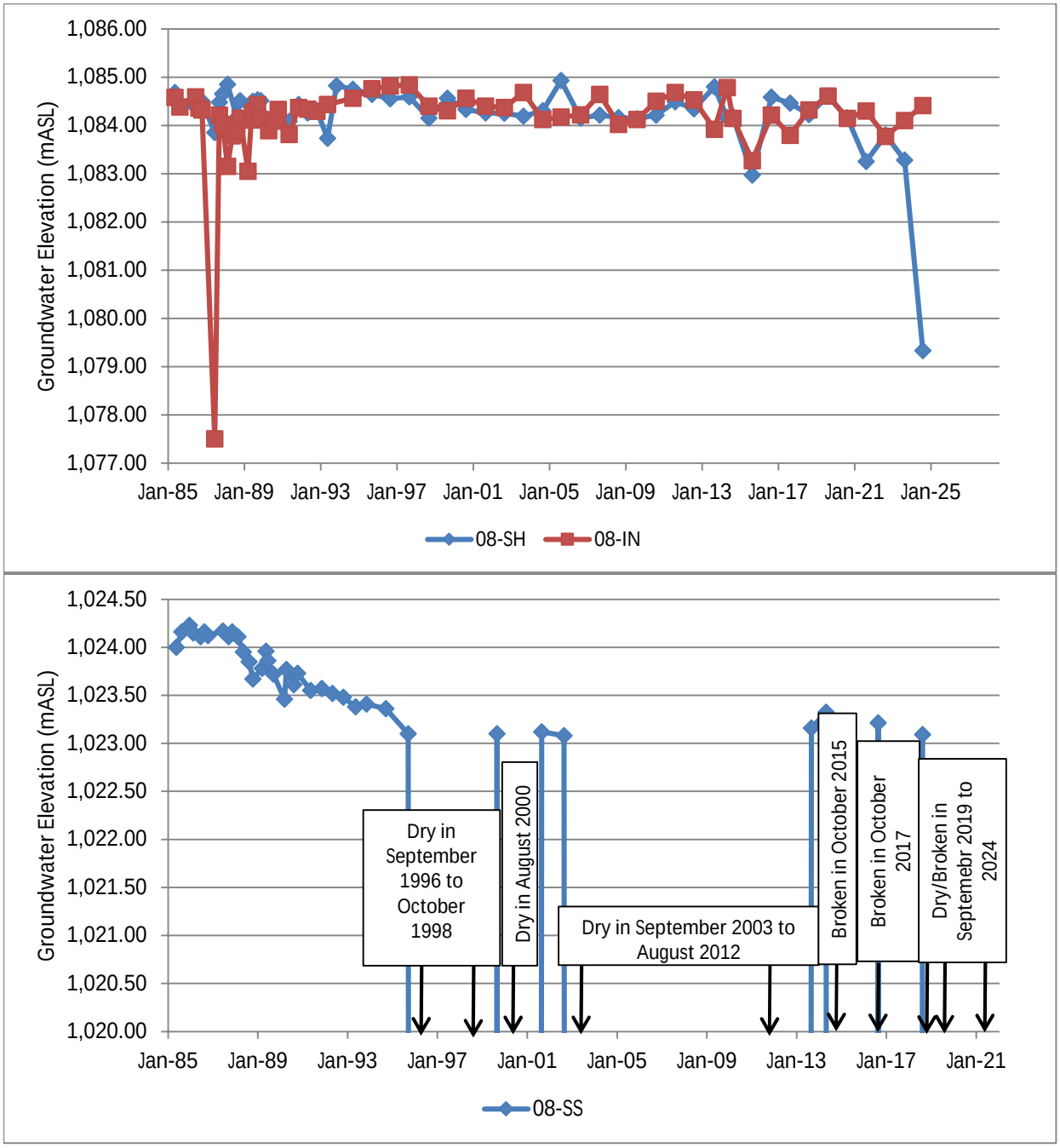


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Figure 10.9
VEOLIA, Swan Hills Treatment Centre
MW-09 (Decommissioned) Hydrographs

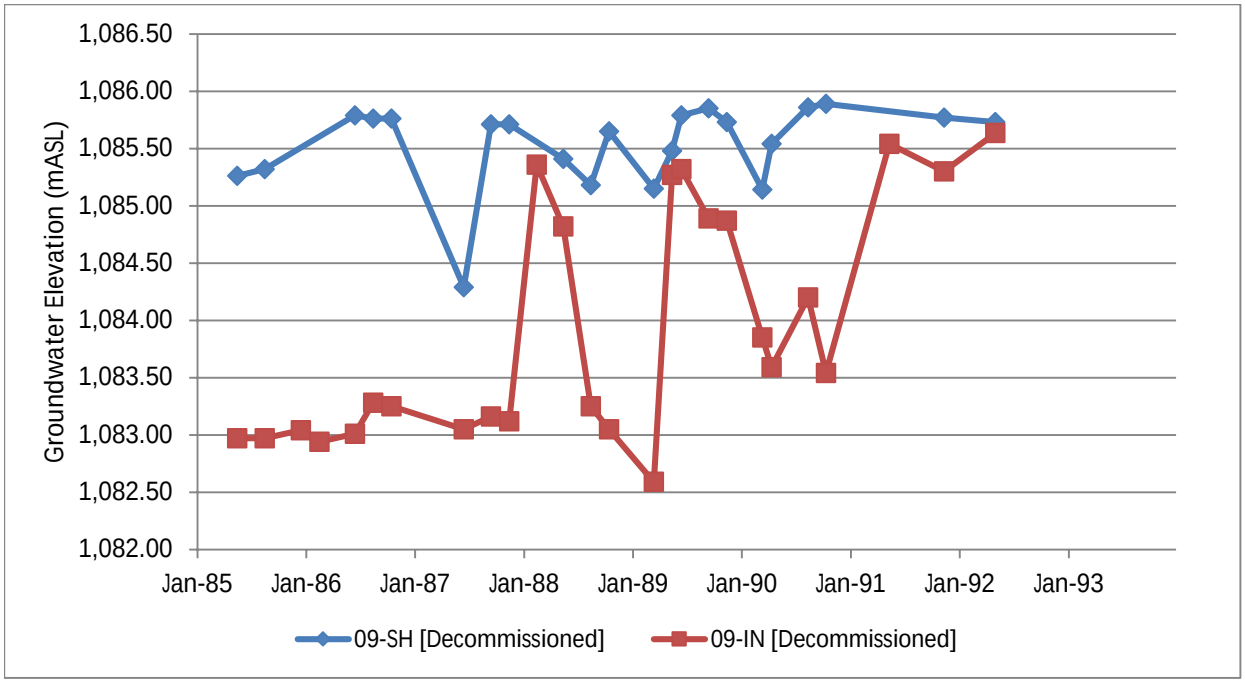

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Figure 10.10
VEOLIA, Swan Hills Treatment Centre
MW-10 (Decommissioned) Hydrographs

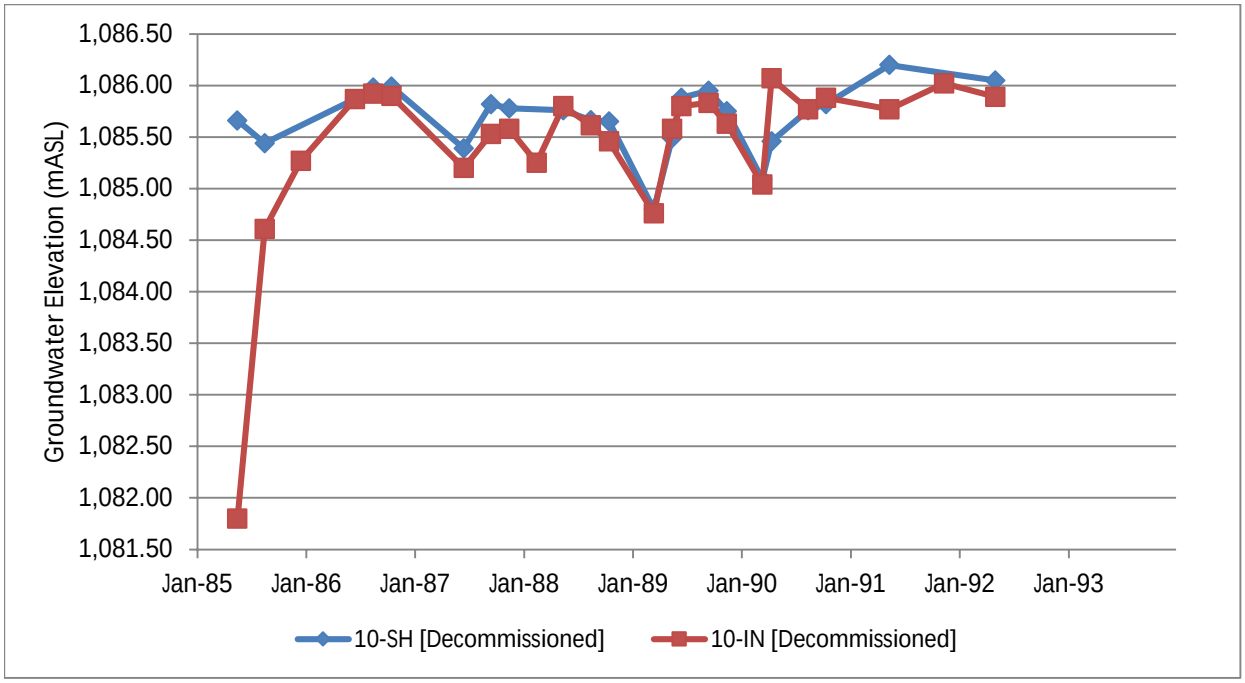

Figure 10.11
VEOLIA, Swan Hills Treatment Centre
MW-11 Hydrographs

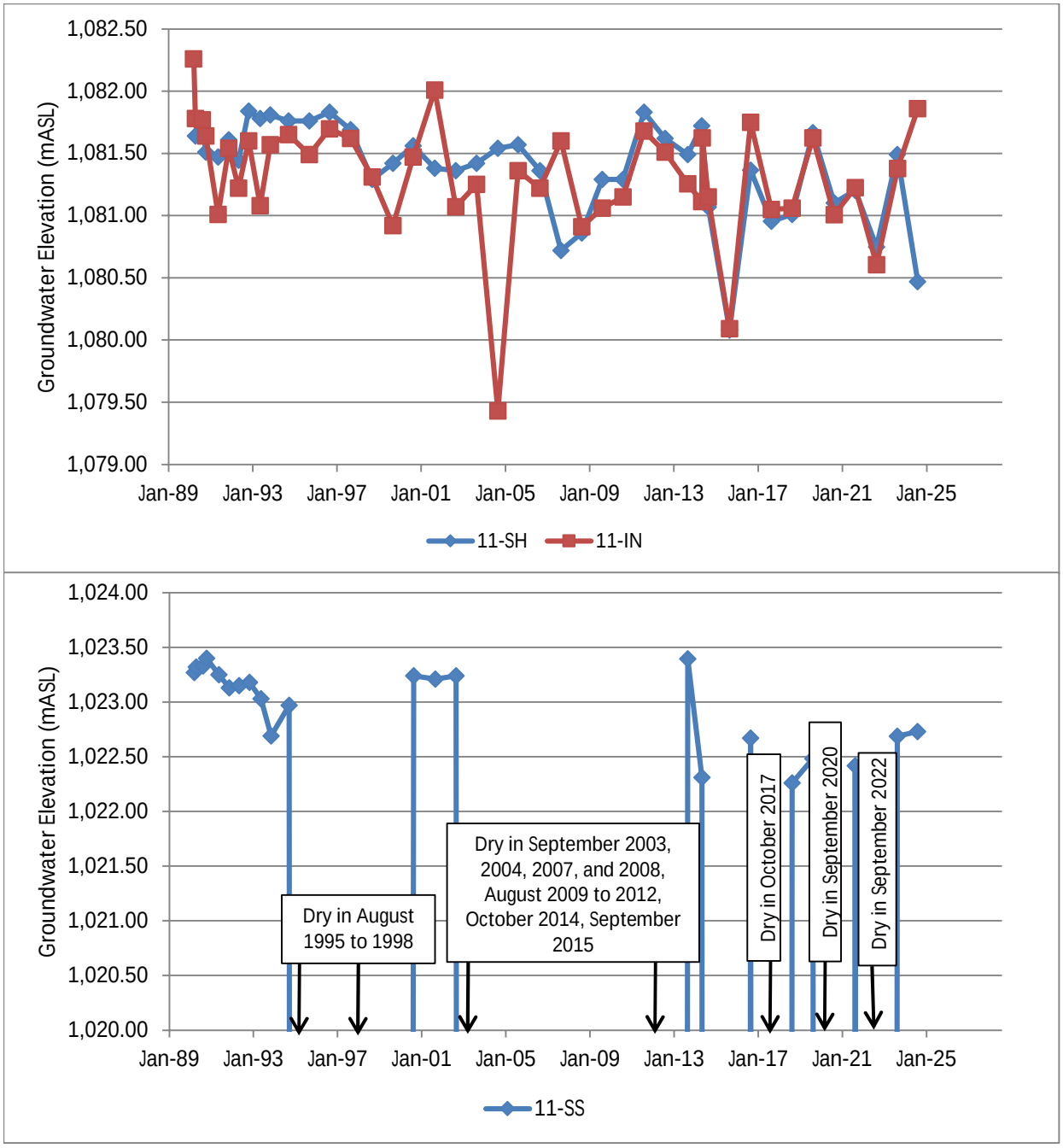

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Figure 10.12
VEOLIA, Swan Hills Treatment Centre
MW-12 Hydrographs

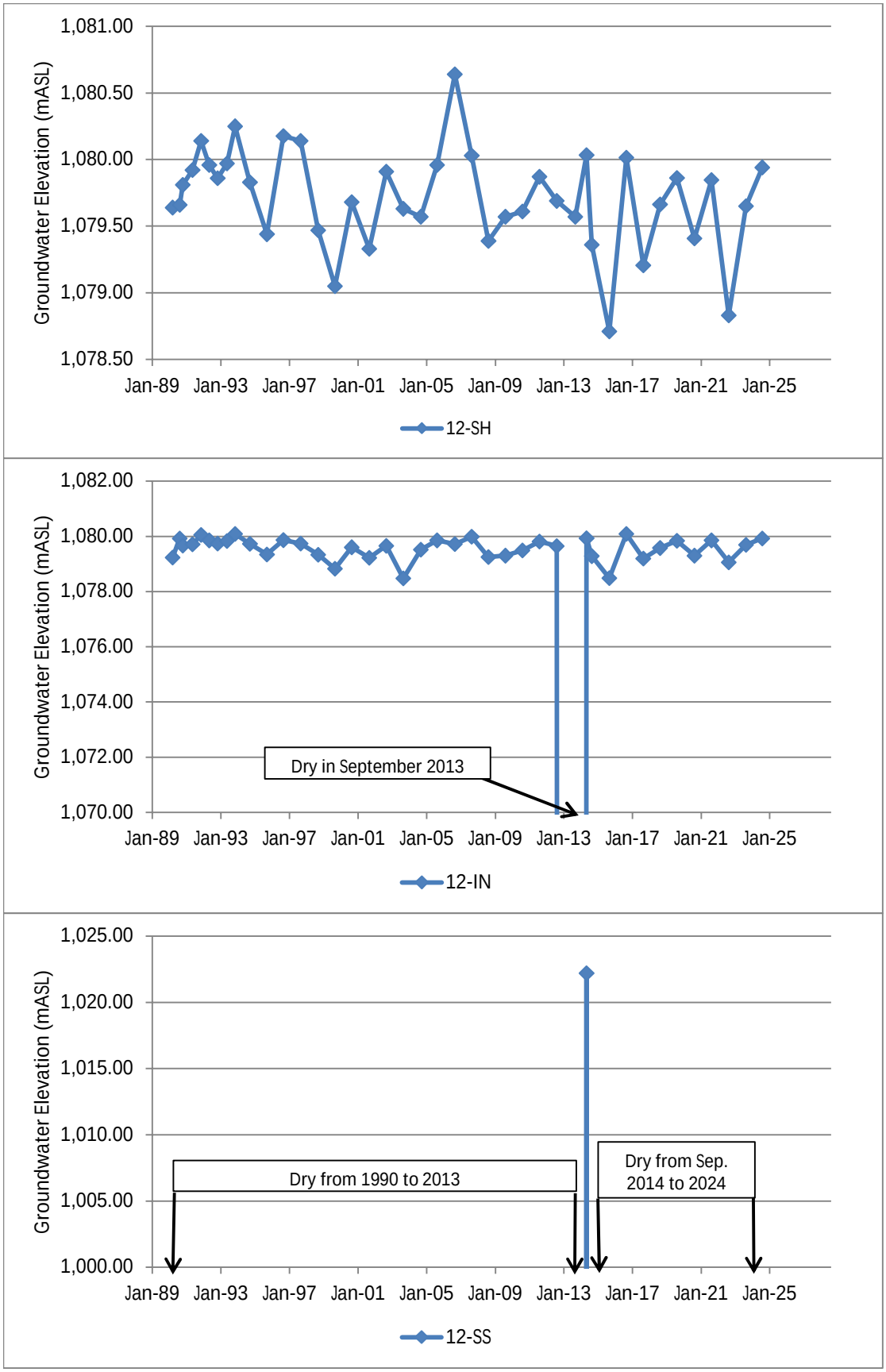
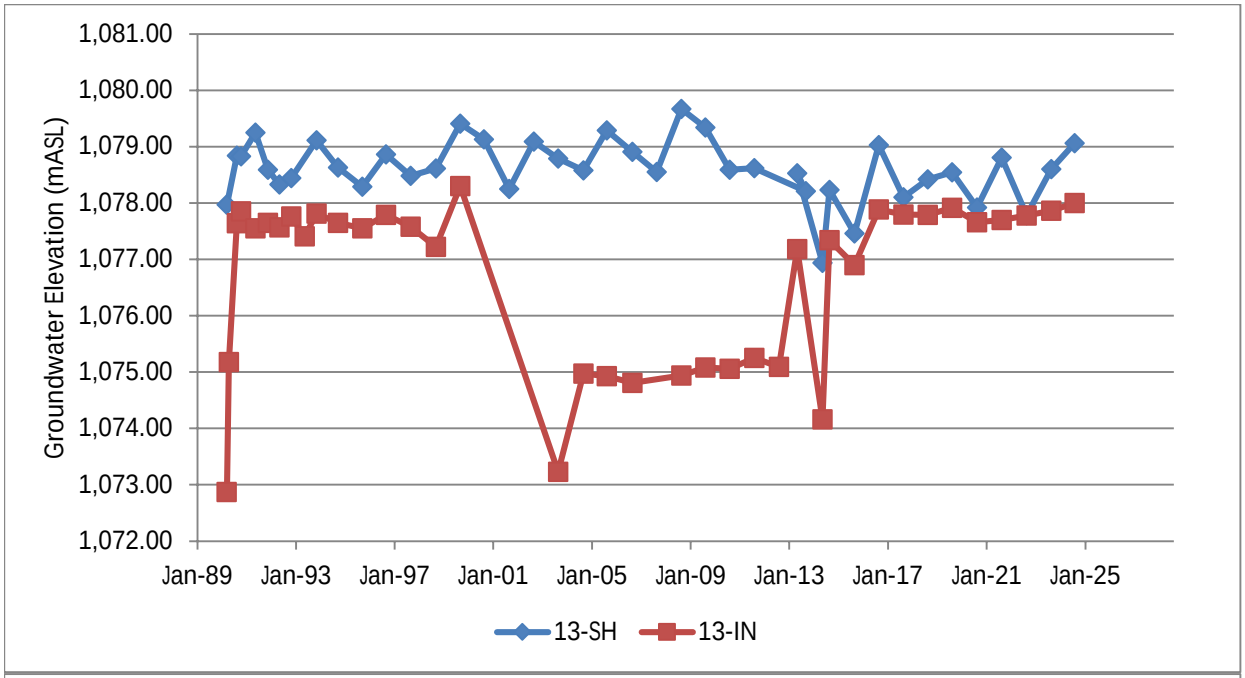


Figure 10.13
VEOLIA, Swan Hills Treatment Centre
MW-13 Hydrographs



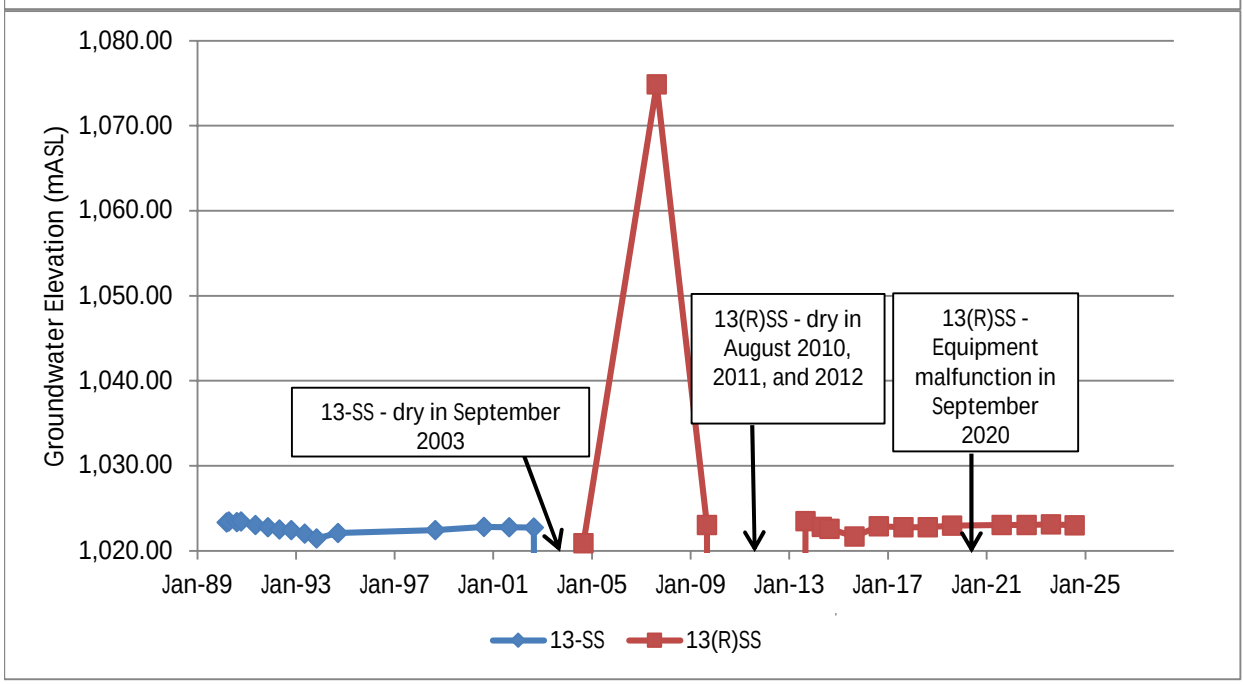
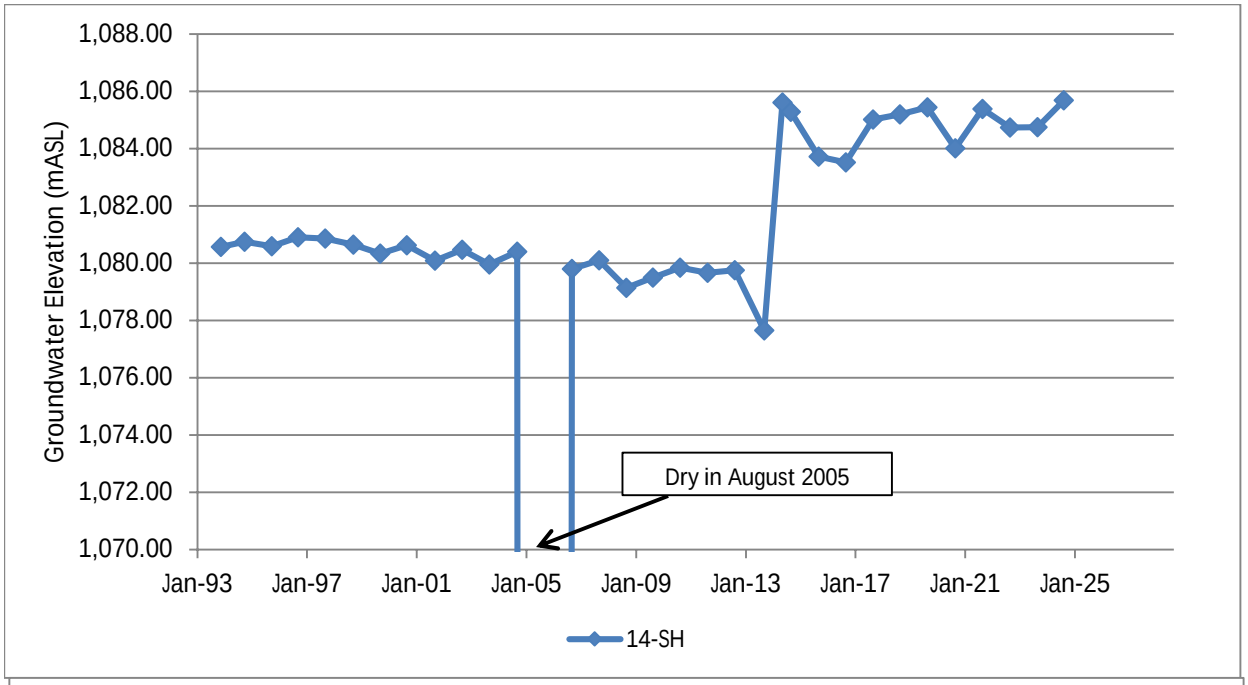


Figure 10.14
VEOLIA, Swan Hills Treatment Centre
MW-14 Hydrographs



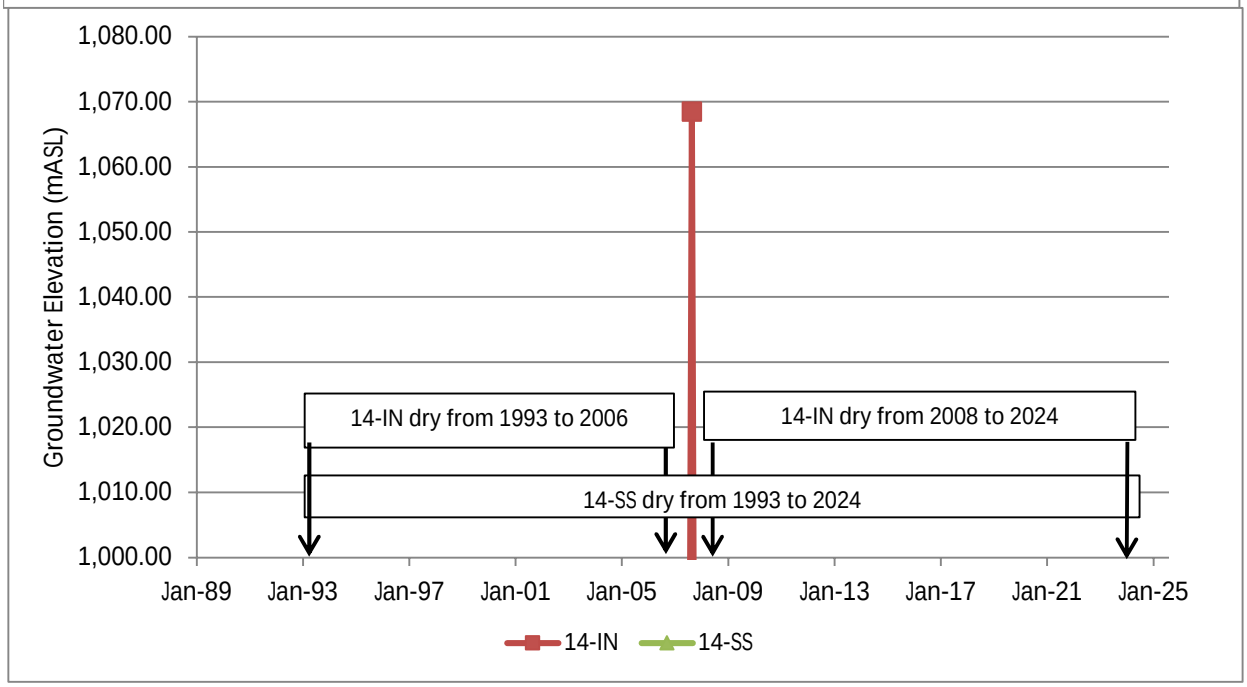


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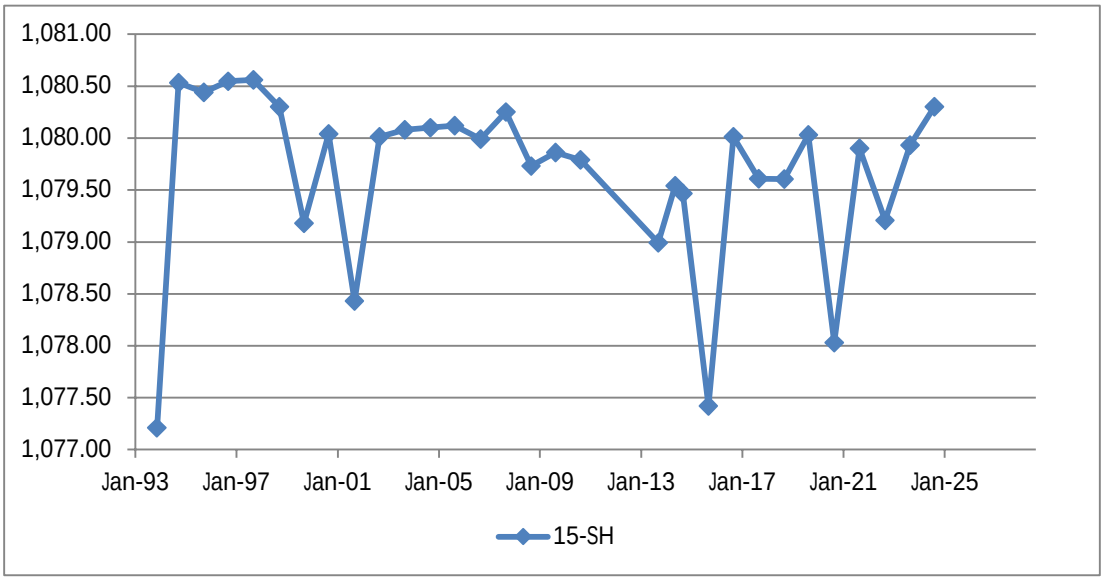
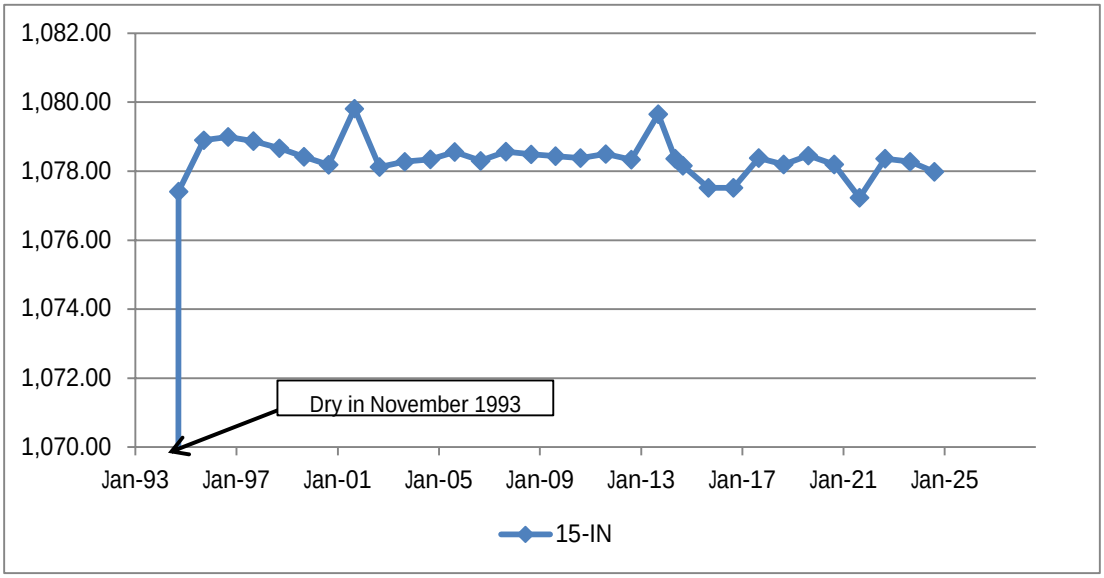
Figure 10.15
VEOLIA, Swan Hills Treatment Centre
MW-15 Hydrographs





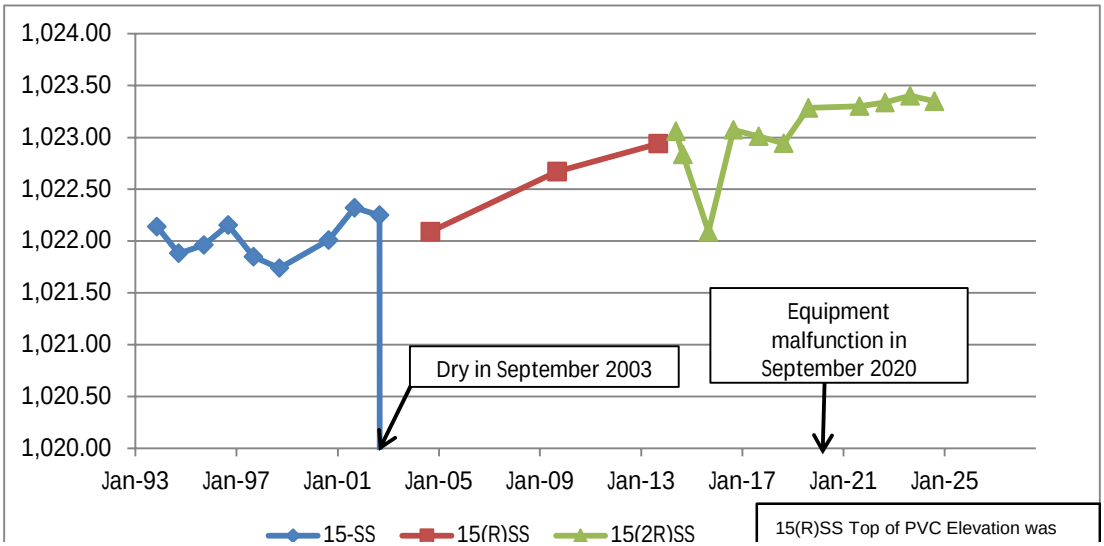
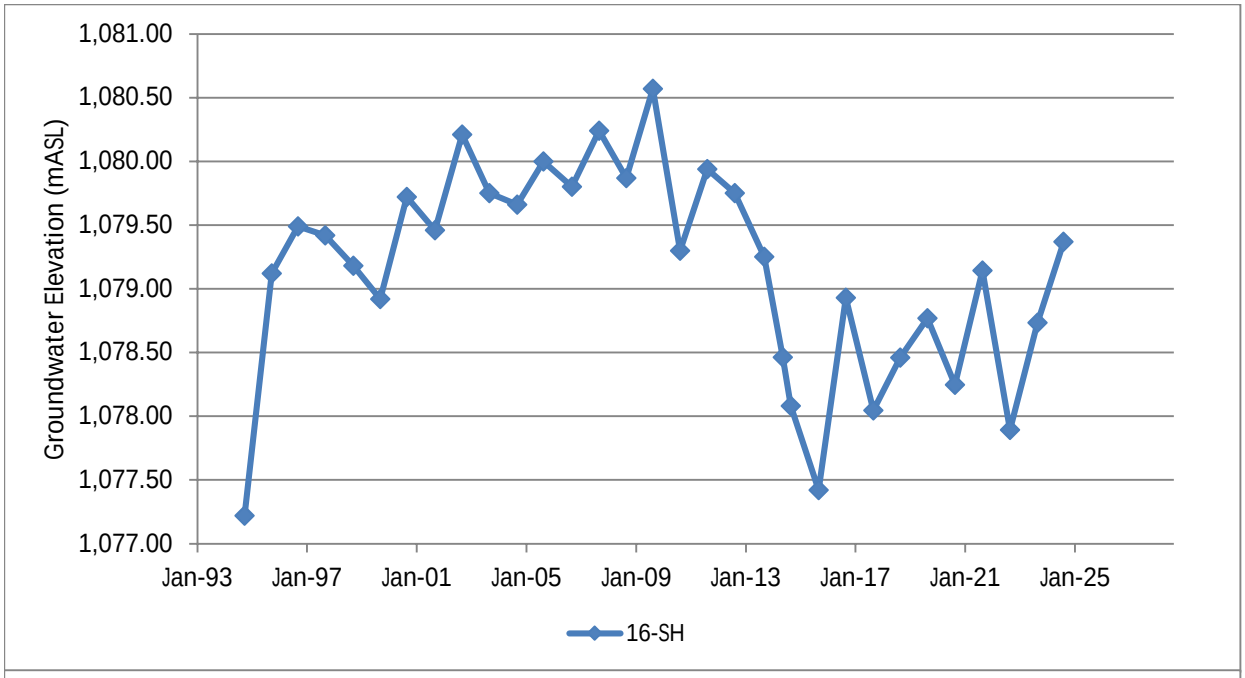


Figure 10.16
VEOLIA, Swan Hills Treatment Centre
MW-16 Hydrographs



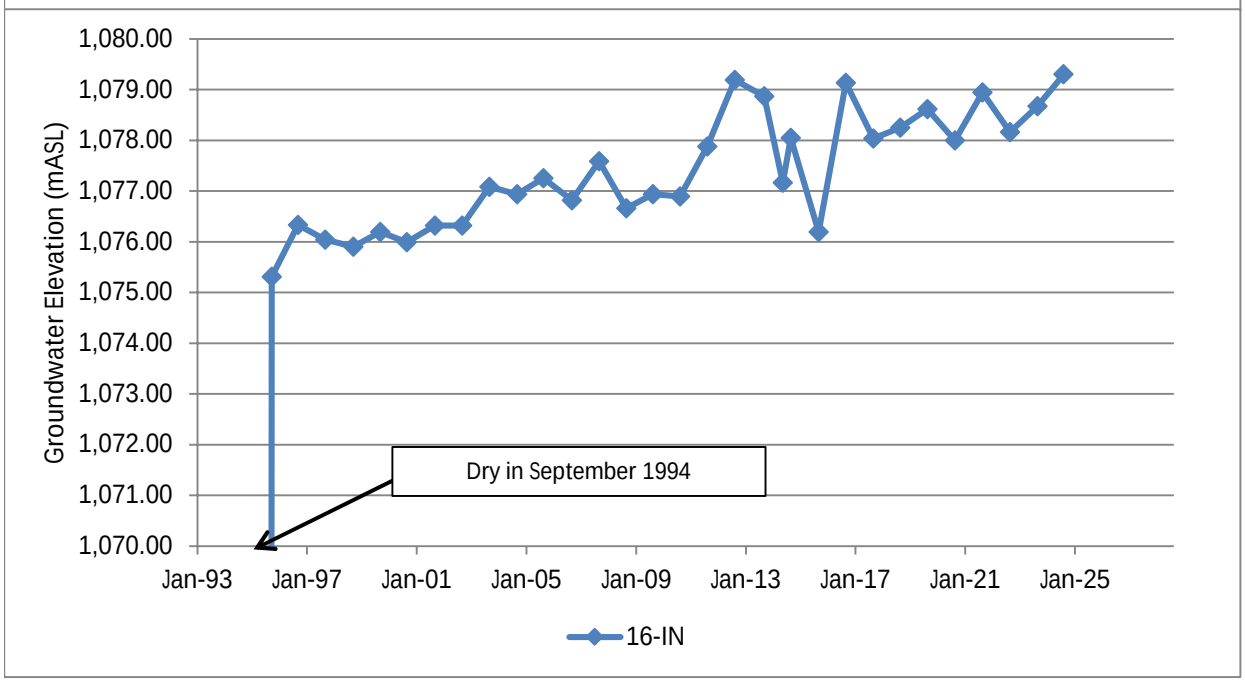


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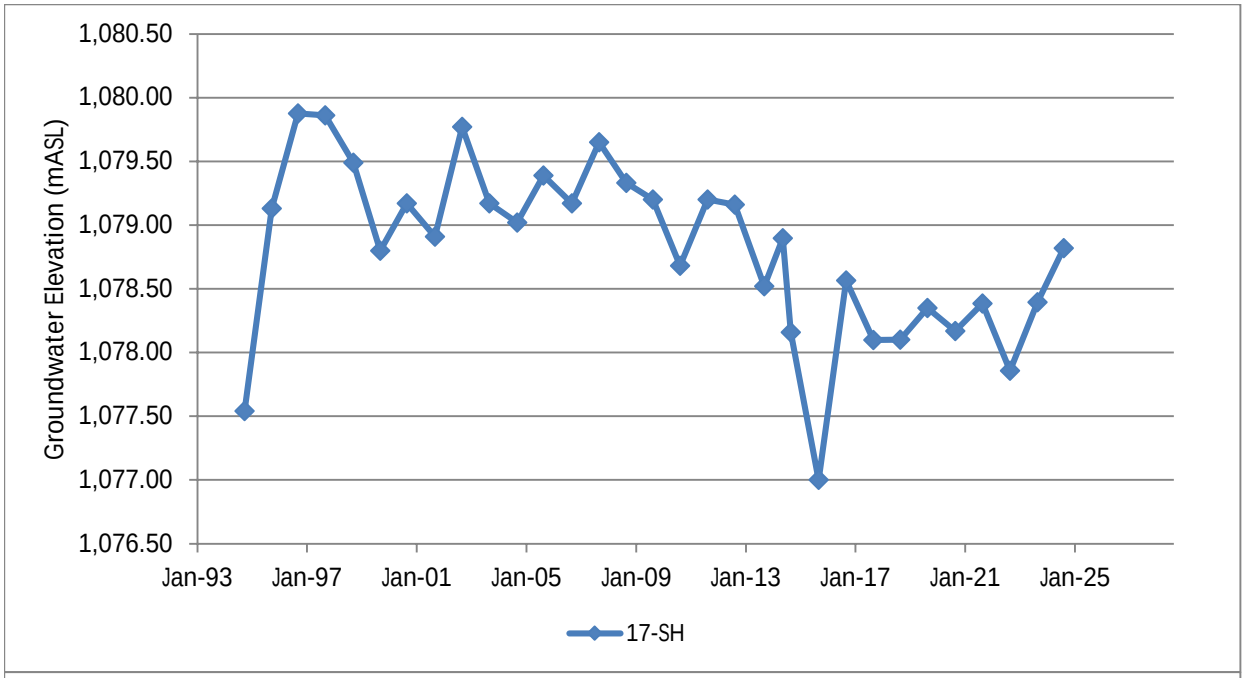
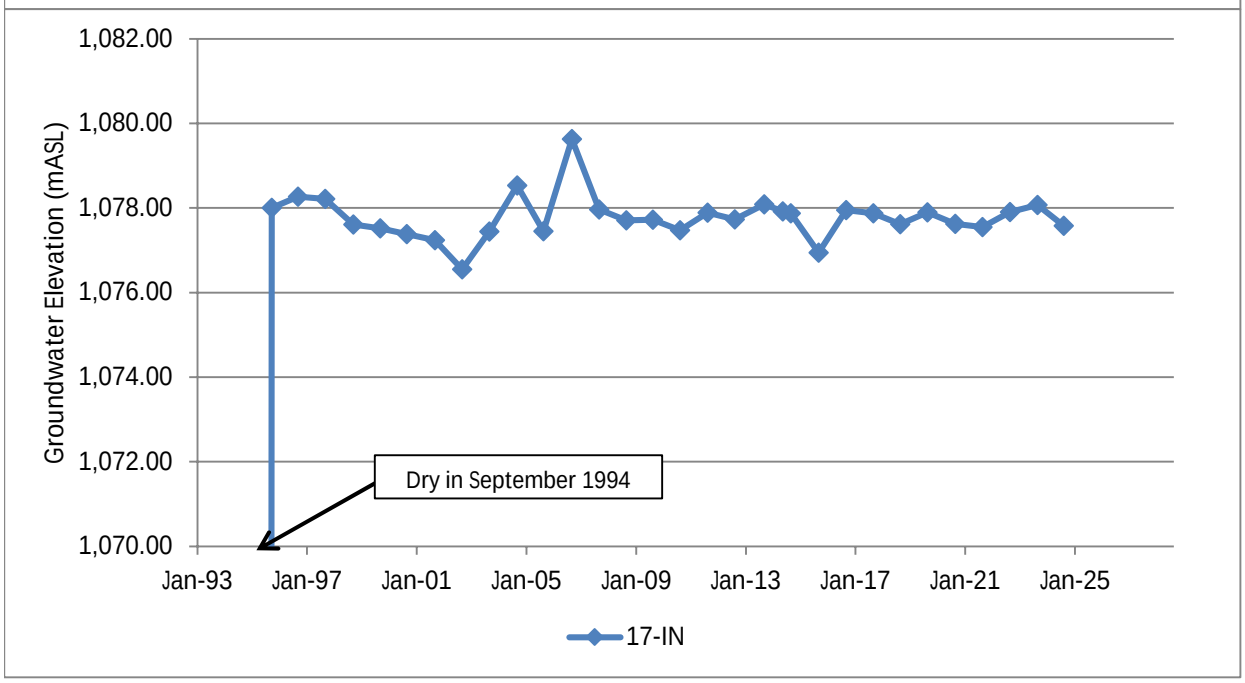
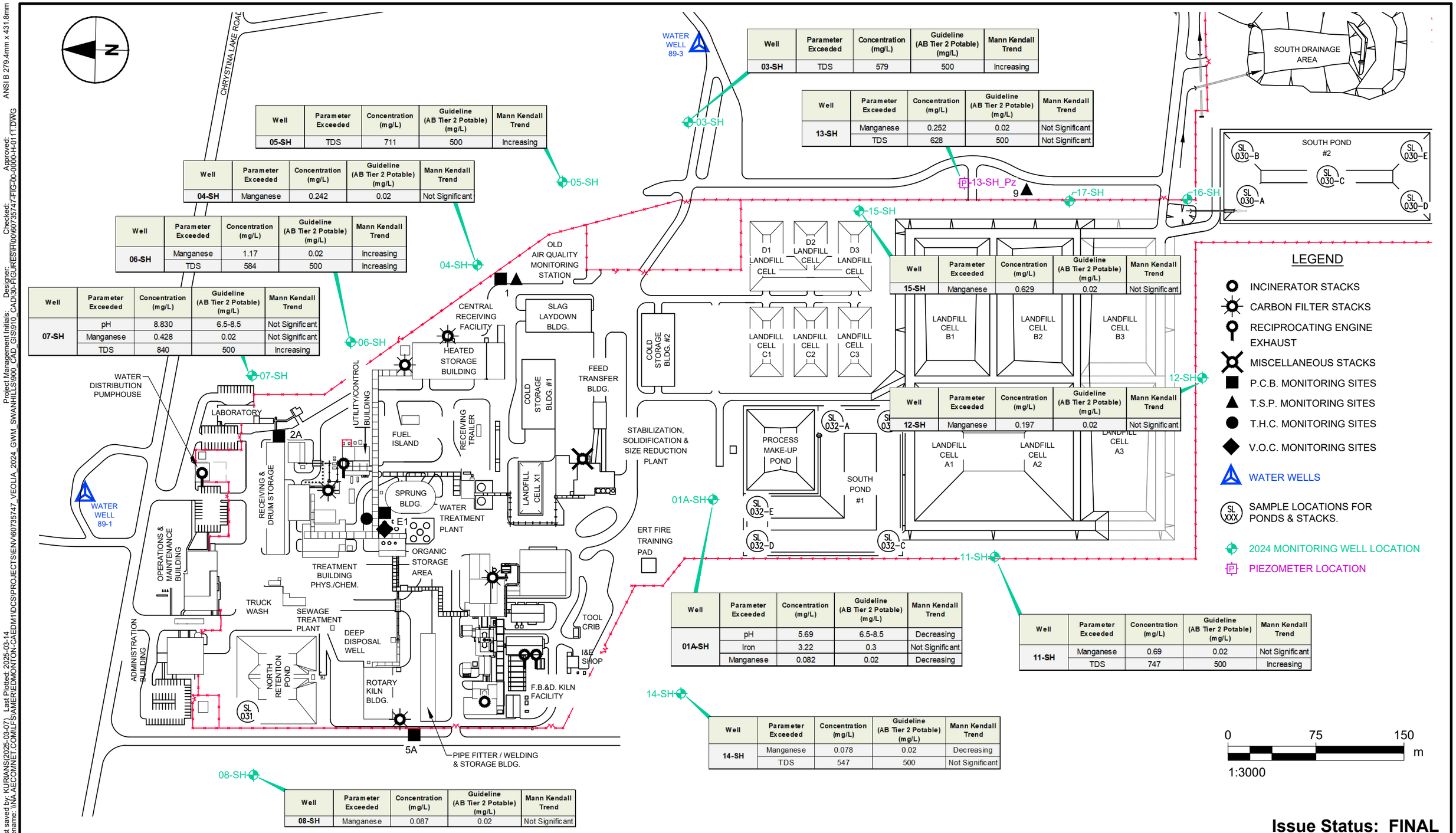
Figure 10.17
VEOLIA, Swan Hills Treatment Centre
MW-17 Hydrographs







Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
03-SH	TDS	579	500	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
13-SH	Manganese	0.252	0.02	Not Significant
	TDS	628	500	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
05-SH	TDS	711	500	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
04-SH	Manganese	0.242	0.02	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
06-SH	Manganese	1.17	0.02	Increasing
	TDS	584	500	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
07-SH	pH	8.830	6.5-8.5	Not Significant
	Manganese	0.428	0.02	Not Significant
	TDS	840	500	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
15-SH	Manganese	0.629	0.02	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
12-SH	Manganese	0.197	0.02	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
01A-SH	pH	5.69	6.5-8.5	Decreasing
	Iron	3.22	0.3	Not Significant
	Manganese	0.082	0.02	Decreasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
11-SH	Manganese	0.69	0.02	Not Significant
	TDS	747	500	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
14-SH	Manganese	0.078	0.02	Decreasing
	TDS	547	500	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
08-SH	Manganese	0.087	0.02	Not Significant

Issue Status: FINAL

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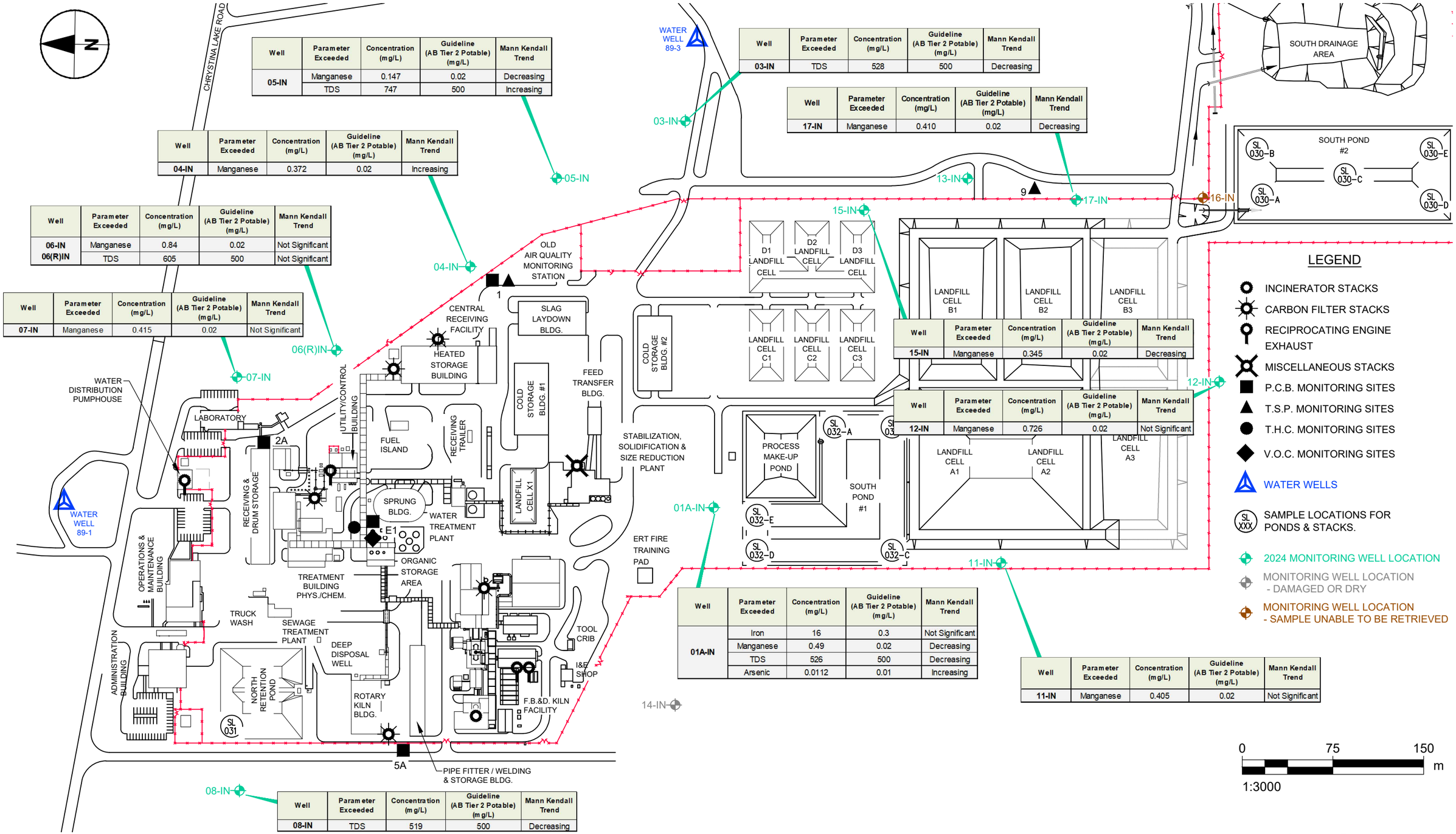
ANSI B 279.4mm x 431.8mm

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

2024 Alberta Tier 2 Potable Groundwater Exceedances
Shallow Interval Wells

AECOM

Figure 11.1



Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
05-IN	Manganese	0.147	0.02	Decreasing
	TDS	747	500	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
04-IN	Manganese	0.372	0.02	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
06-IN 06(R)IN	Manganese	0.84	0.02	Not Significant
	TDS	605	500	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
07-IN	Manganese	0.415	0.02	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
03-IN	TDS	528	500	Decreasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
17-IN	Manganese	0.410	0.02	Decreasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
15-IN	Manganese	0.345	0.02	Decreasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
12-IN	Manganese	0.726	0.02	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
01A-IN	Iron	16	0.3	Not Significant
	Manganese	0.49	0.02	Decreasing
	TDS	526	500	Decreasing
	Arsenic	0.0112	0.01	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
11-IN	Manganese	0.405	0.02	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
08-IN	TDS	519	500	Decreasing

Issue Status: FINAL

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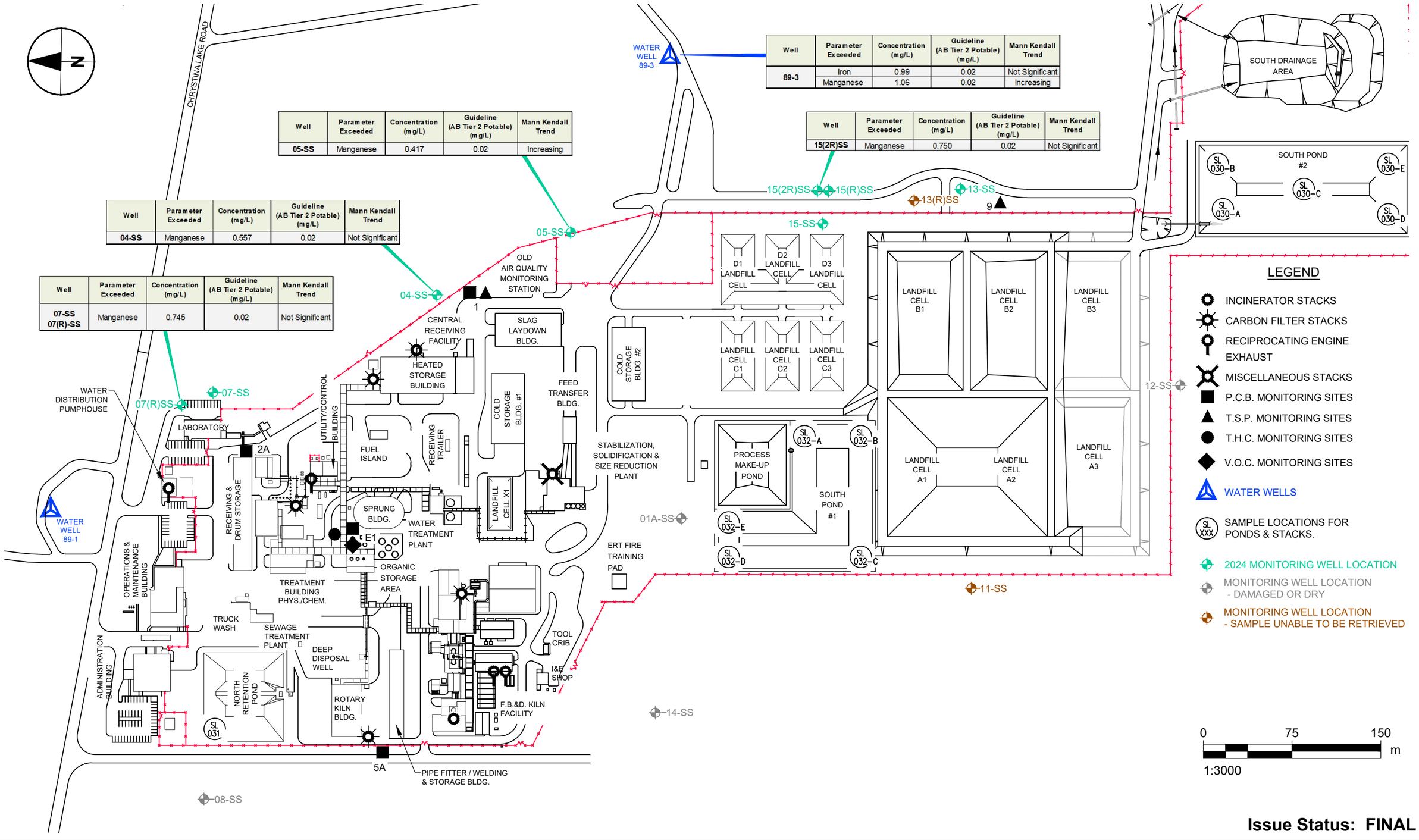
ANSI B 279.4mm x 431.8mm

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

2024 Alberta Tier 2 Potable Groundwater Exceedances
Intermediate Interval Wells

AECOM

Figure 11.2



Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
89-3	Iron	0.99	0.02	Not Significant
	Manganese	1.06	0.02	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
05-SS	Manganese	0.417	0.02	Increasing

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
15(2R)SS	Manganese	0.750	0.02	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
04-SS	Manganese	0.557	0.02	Not Significant

Well	Parameter Exceeded	Concentration (mg/L)	Guideline (AB Tier 2 Potable) (mg/L)	Mann Kendall Trend
07-SS 07(R)-SS	Manganese	0.745	0.02	Not Significant

Issue Status: FINAL

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

2024 Alberta Tier 2 Potable Groundwater Exceedances
Sandstone Interval Wells

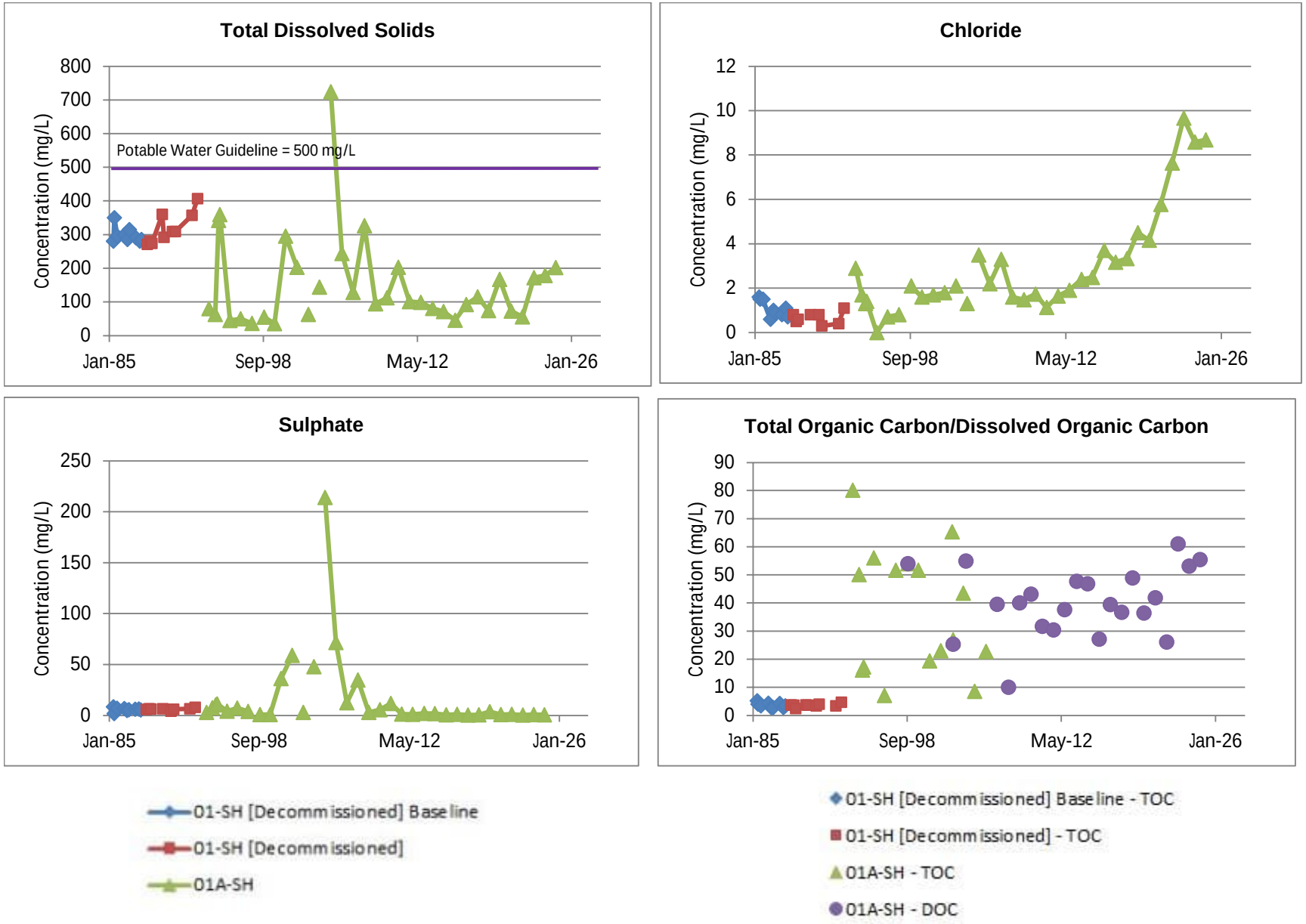
AECOM

Figure 11.3

ANSI B 279.4mm x 431.8mm
Approved: Checked: Designer: Project Management Initials: GWM_SWANHILLS900_CAD_GIS910_CAD\30-FIGURES\FI\60735747-FIG-00-0000-H-0113.DWG
Last saved by: KURIANS(2025-03-07) Last Plotted: 2025-03-14
Filename: \\NA.AECOMNET.COM\LFS\AMER\EDMONTON-CAEDM11\DCS\PROJECTS\ENV\60735747_VEOLIA_2024_GWM_SWANHILLS\

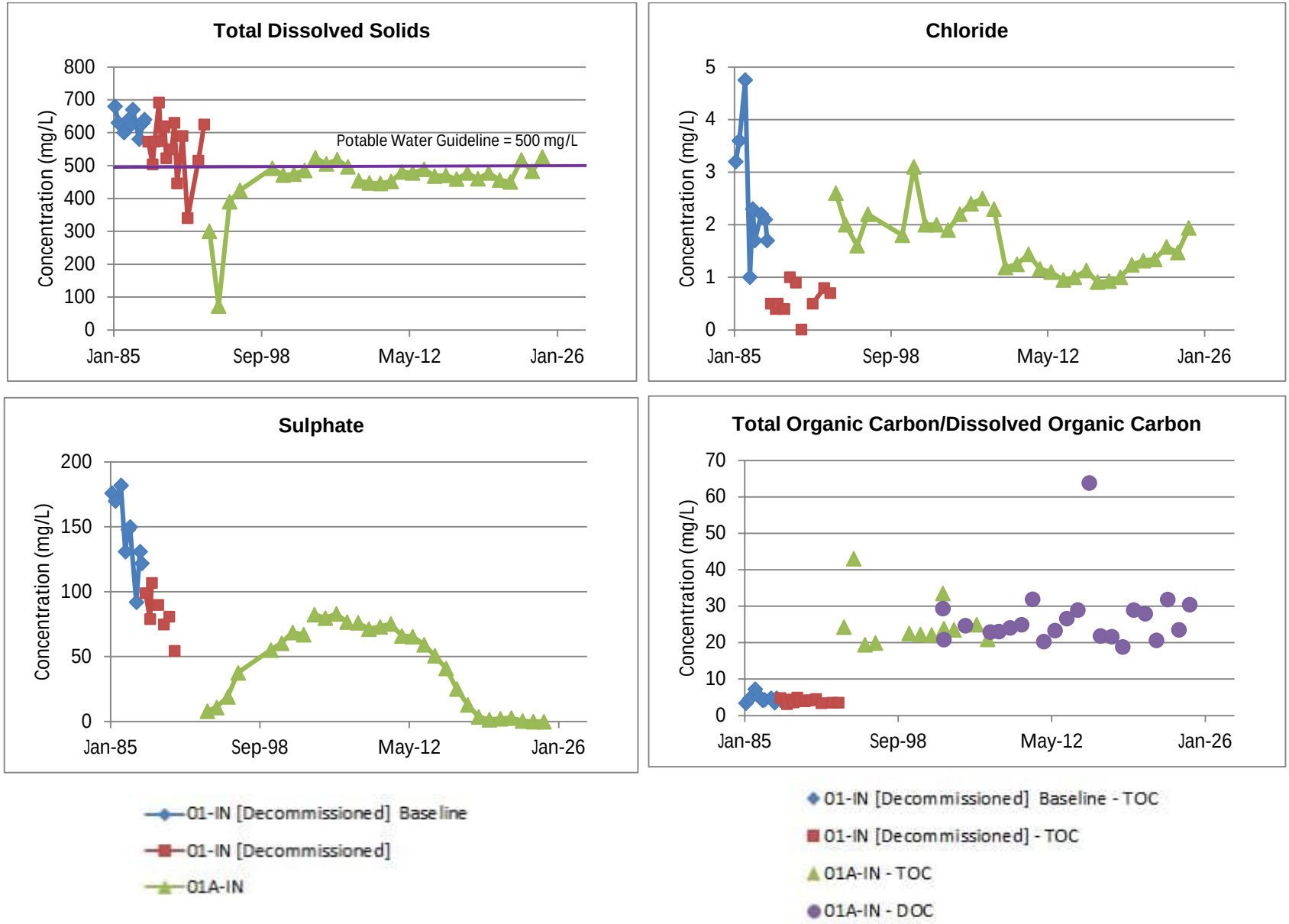
AECOM

Figure 12.1
VEOLIA, Swan Hills Treatment Centre
01-SH and 01A-SH - Indicators



AECOM

Figure 12.2
VEOLIA, Swan Hills Treatment Centre
01-IN and 01A-IN - Indicators



AECOM

Figure 12.3
VEOLIA, Swan Hills Treatment Centre
03-SH - Indicators

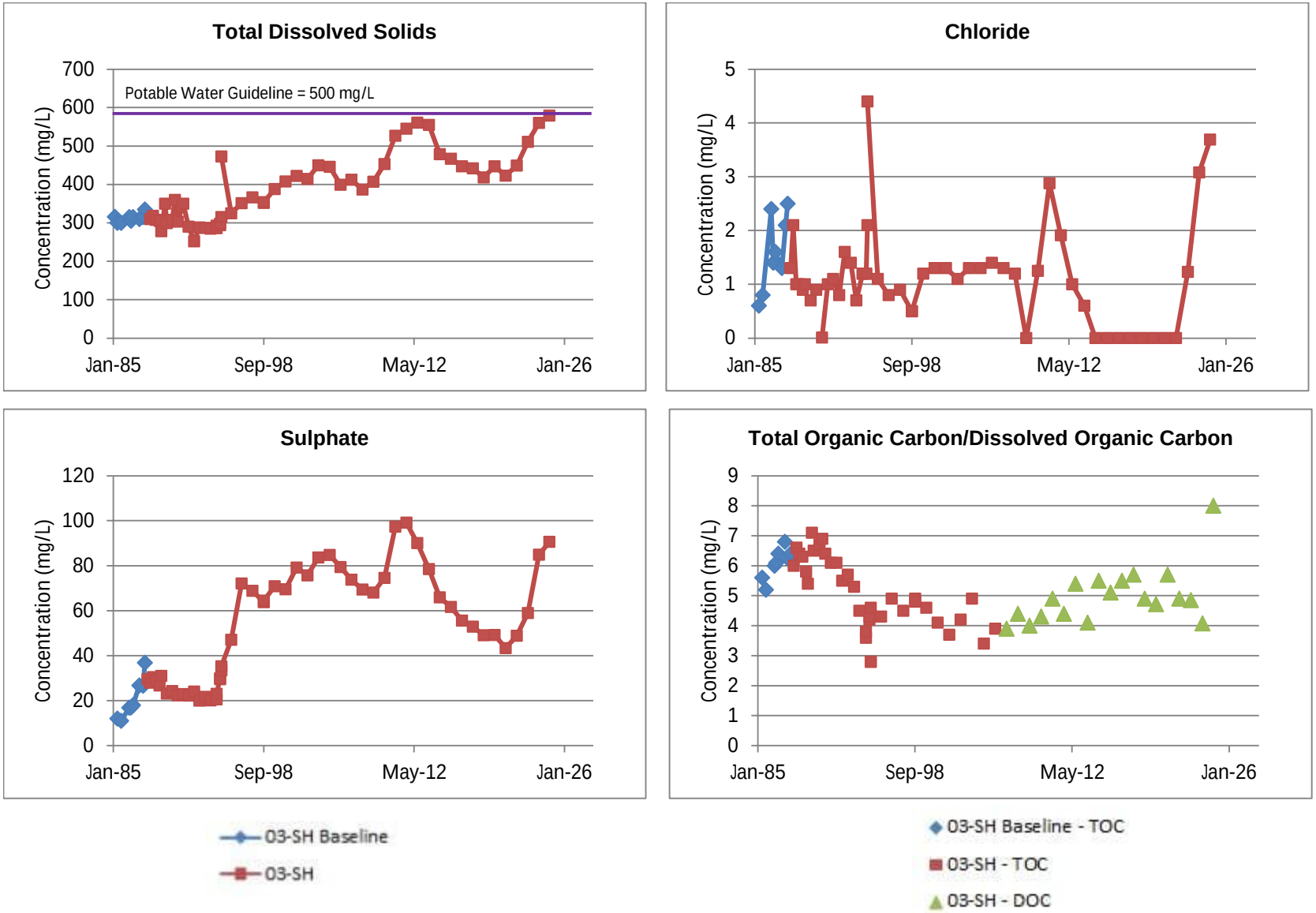


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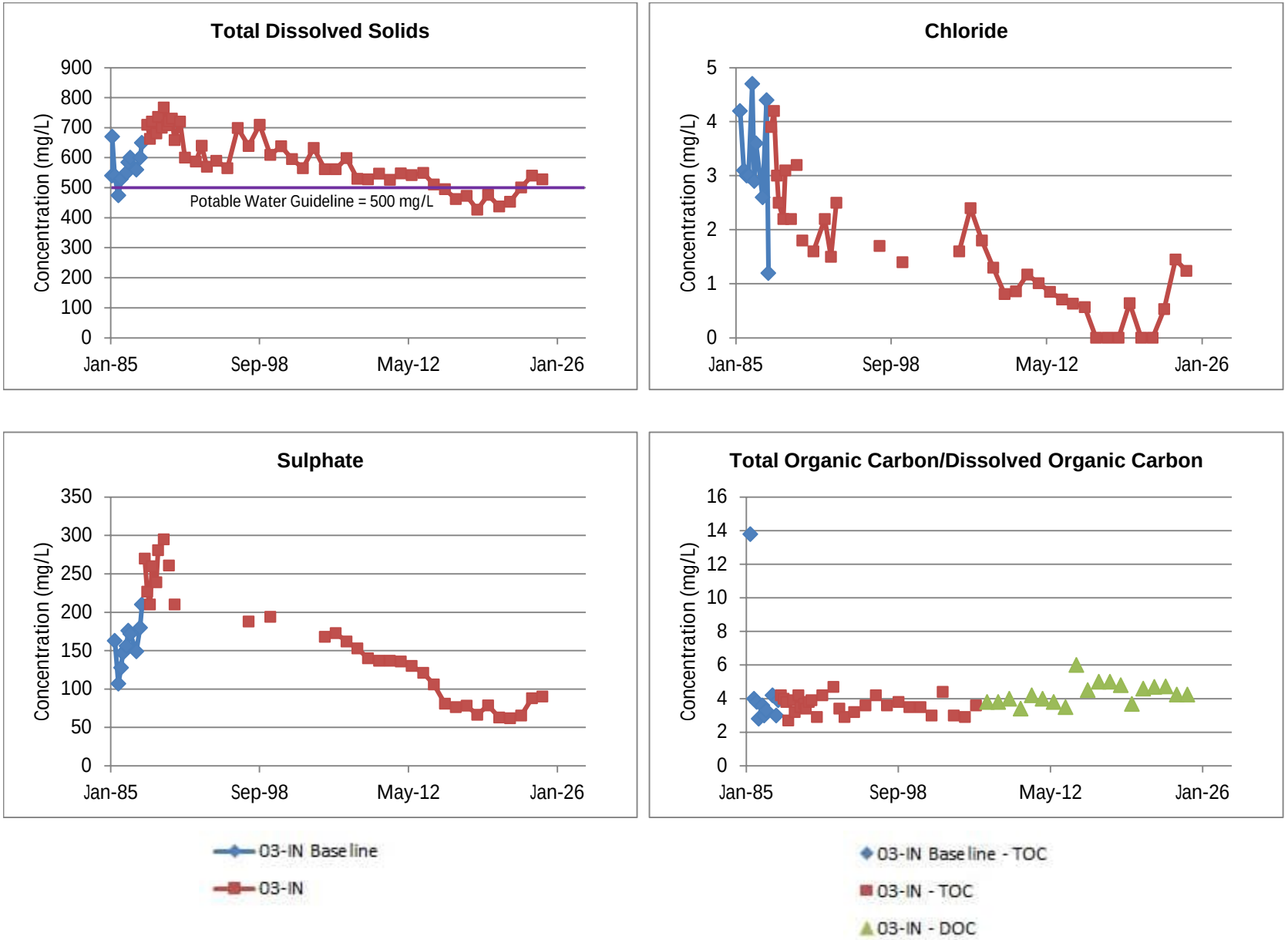
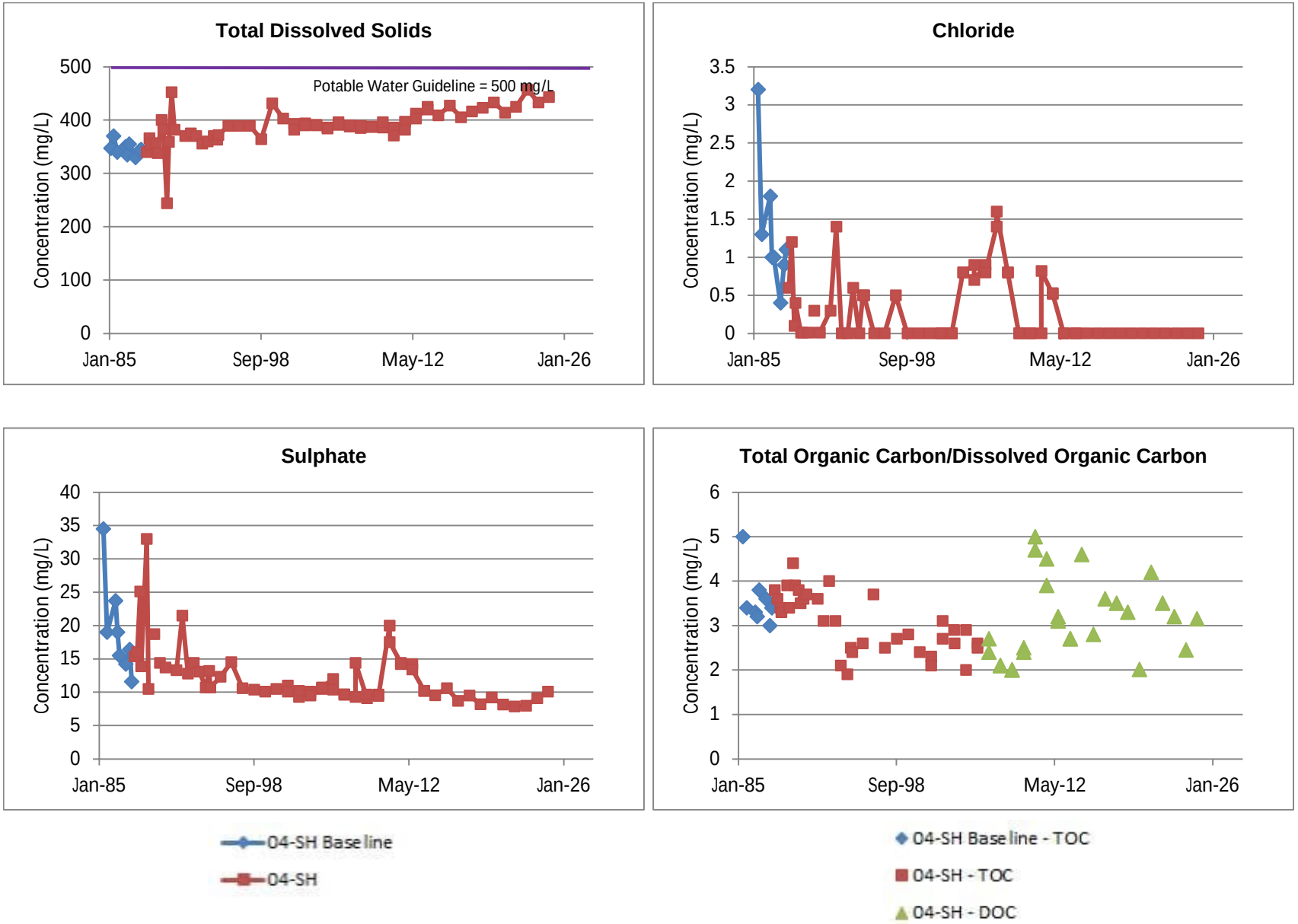
Figure 12.4
VEOLIA, Swan Hills Treatment Centre
03-IN - Indicators



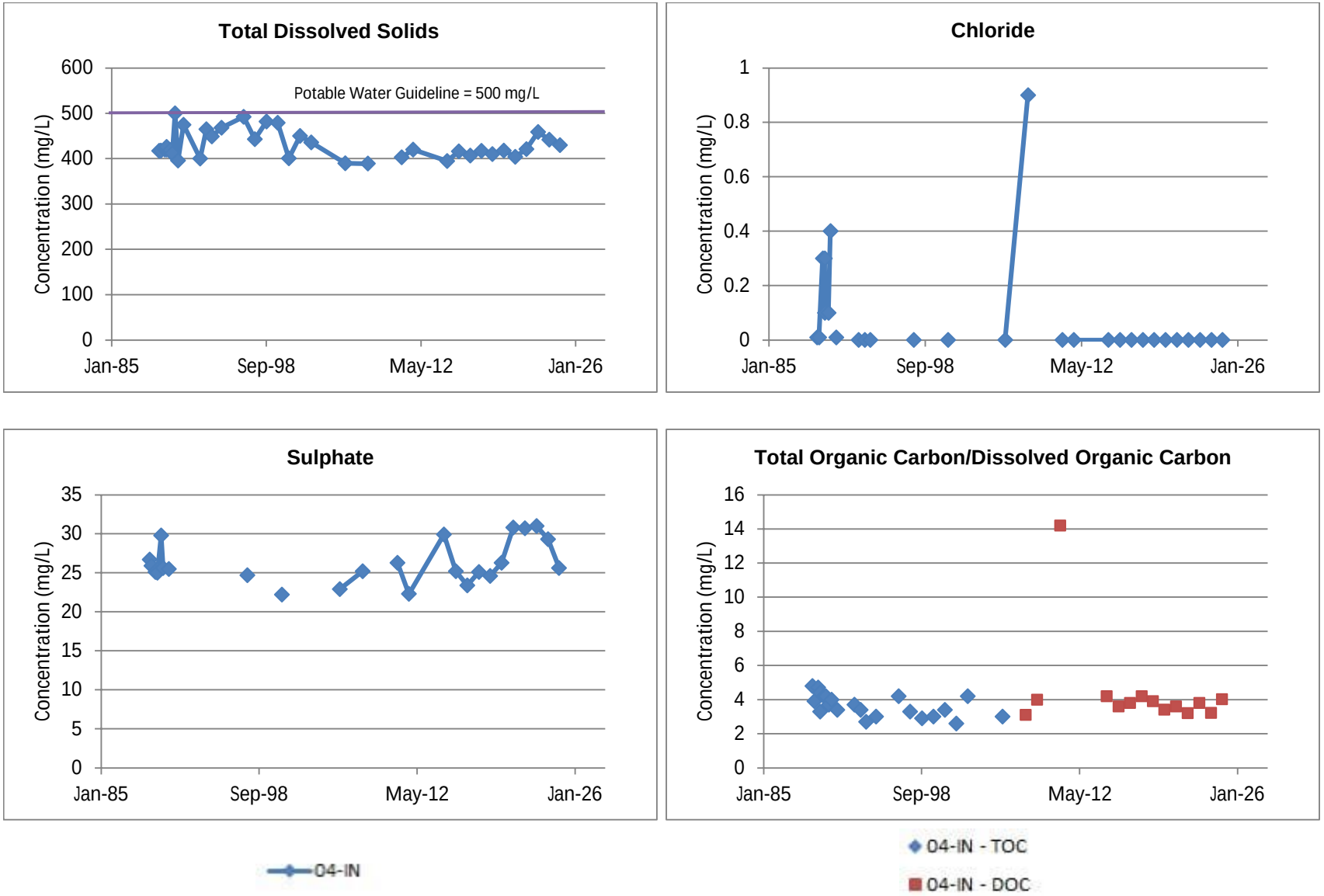
AECOM

Figure 12.5
VEOLIA, Swan Hills Treatment Centre
04-SH - Indicators



AECOM

Figure 12.6
VEOIA, Swan Hills Treatment Centre
04-IN - Indicators



AECOM

Figure 12.7
VEOLIA, Swan Hills Treatment Centre
04-SS - Indicators

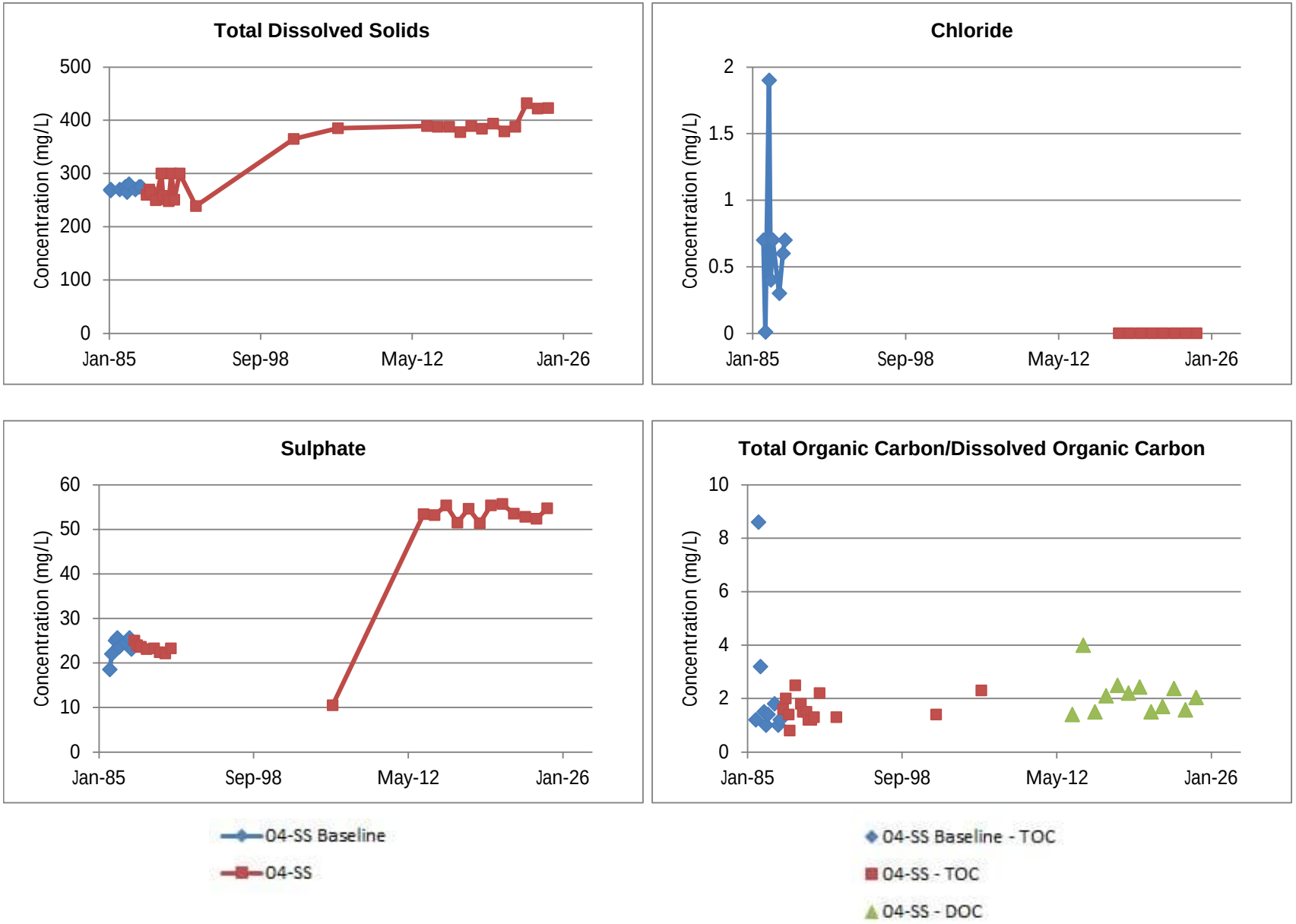


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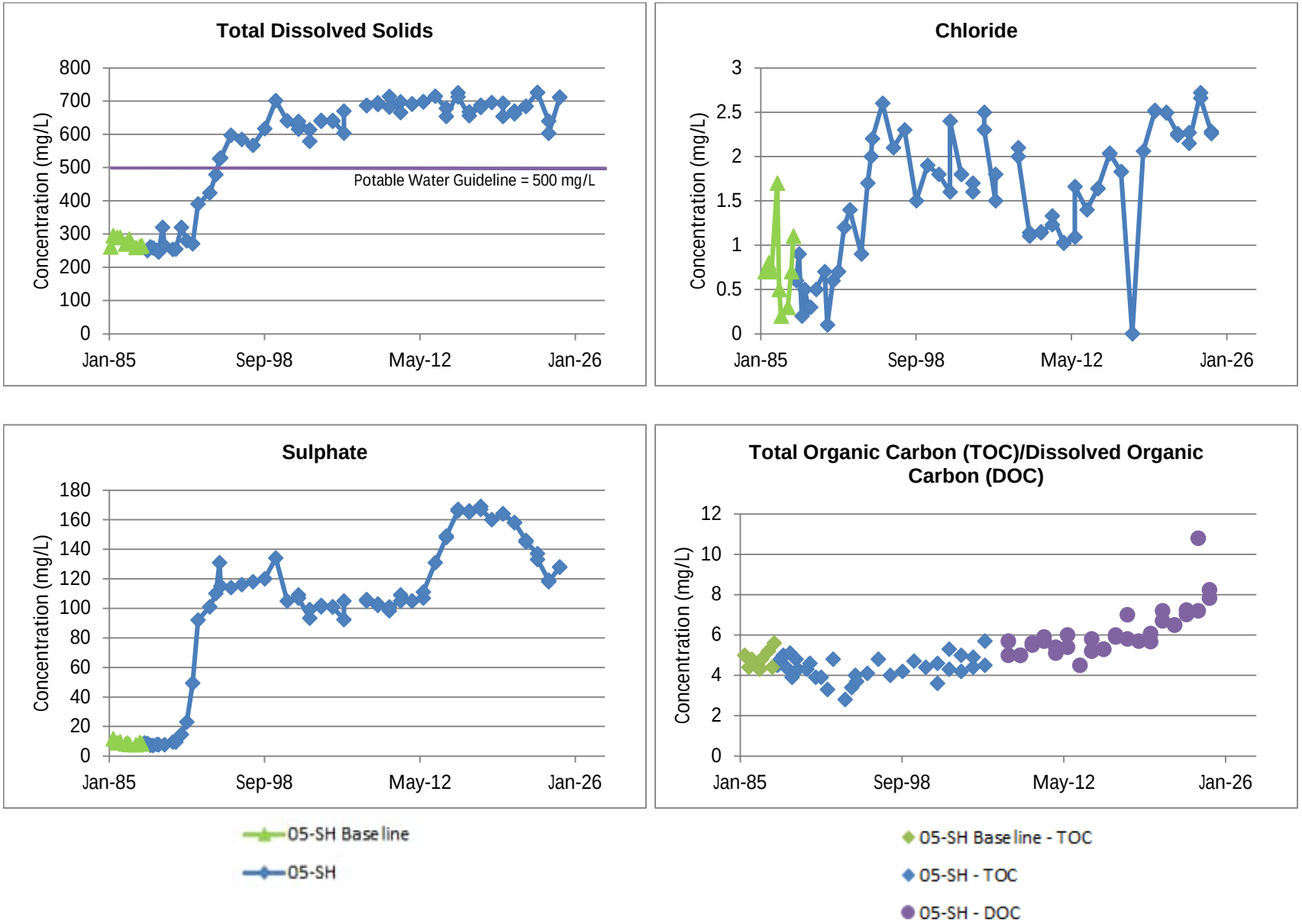
Figure 12.8
VEOLIA, Swan Hills Treatment Centre
05-SH - Indicators



AECOM

Figure 12.9
VEOLIA, Swan Hills Treatment Centre
05-IN - Indicators

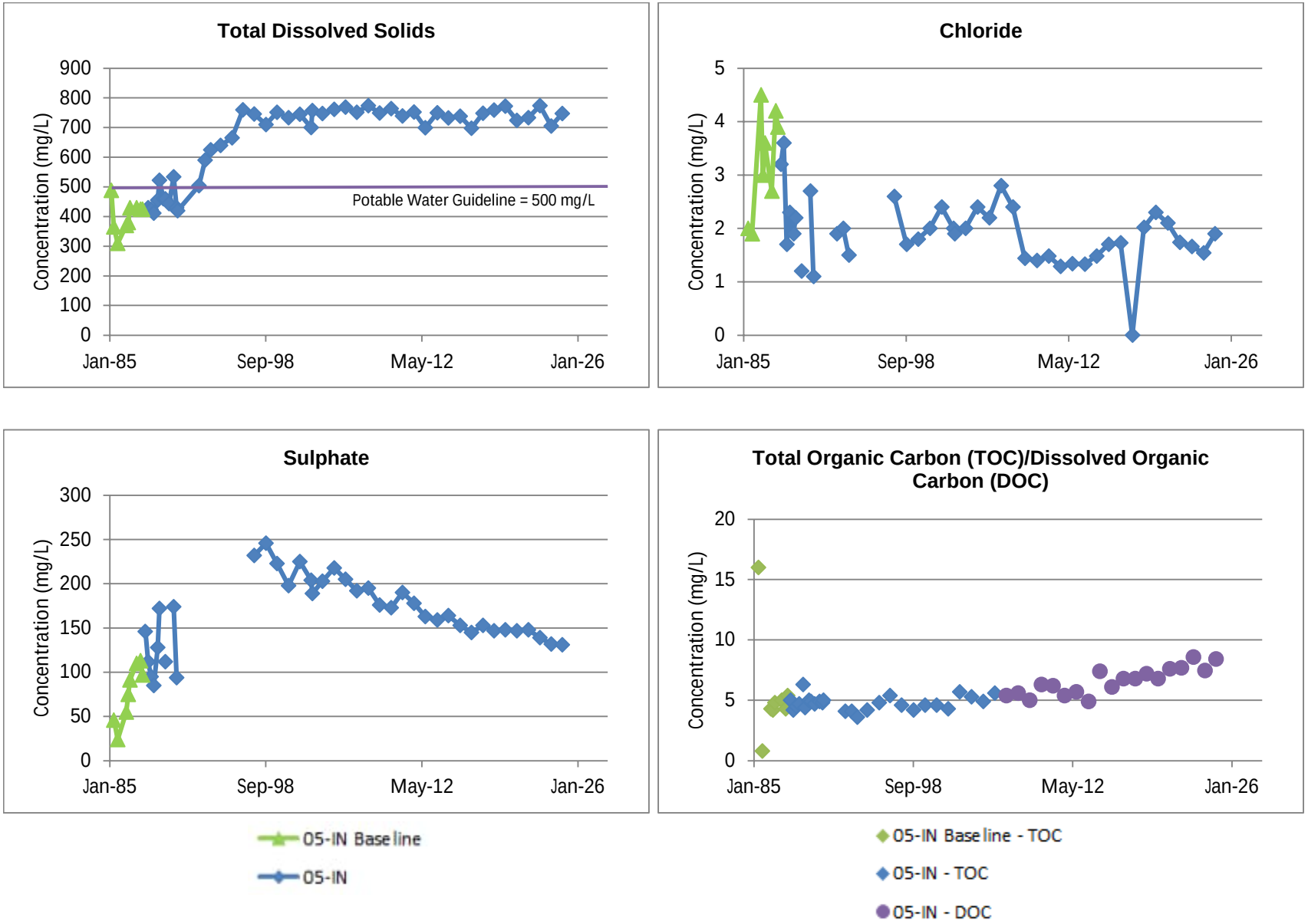


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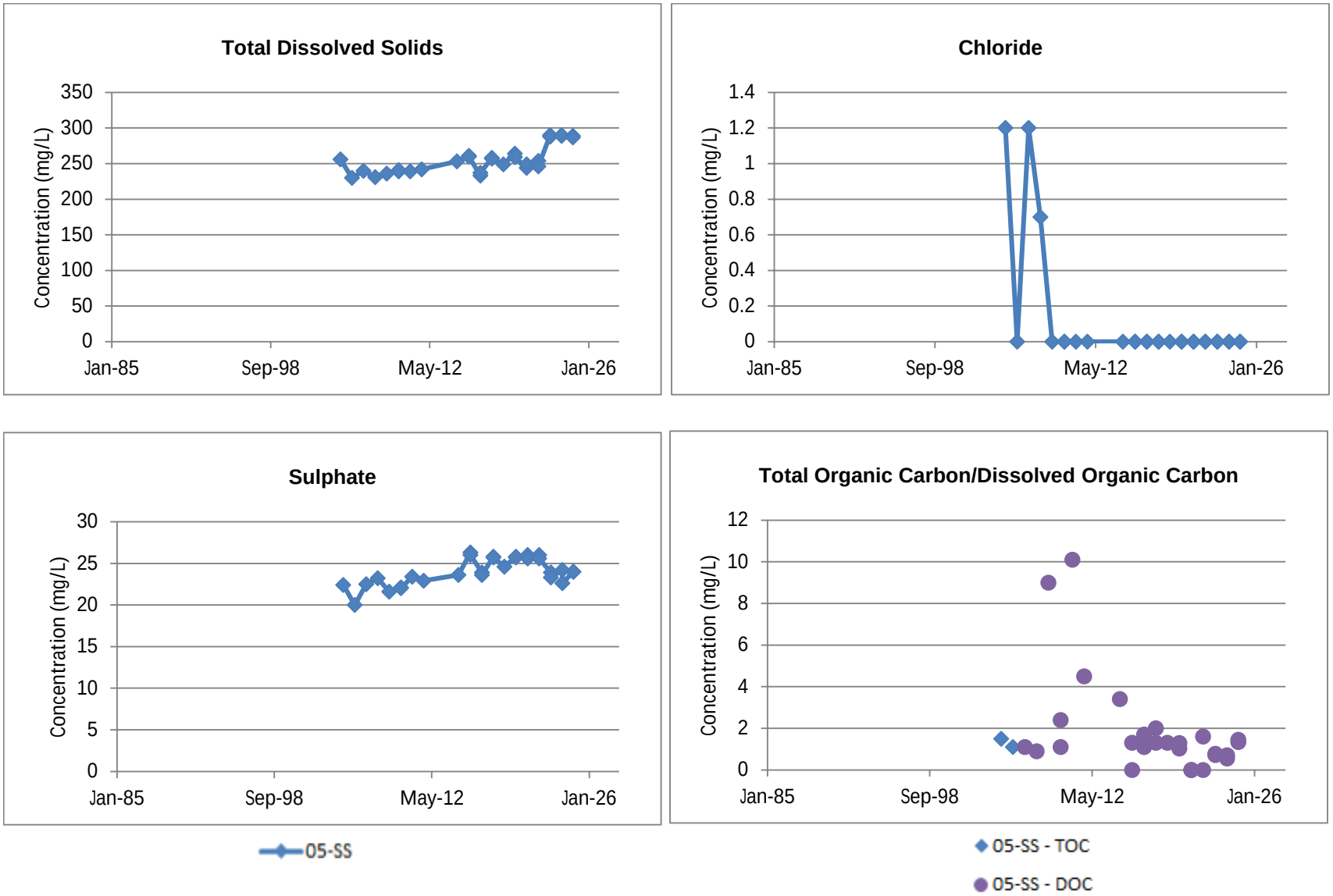
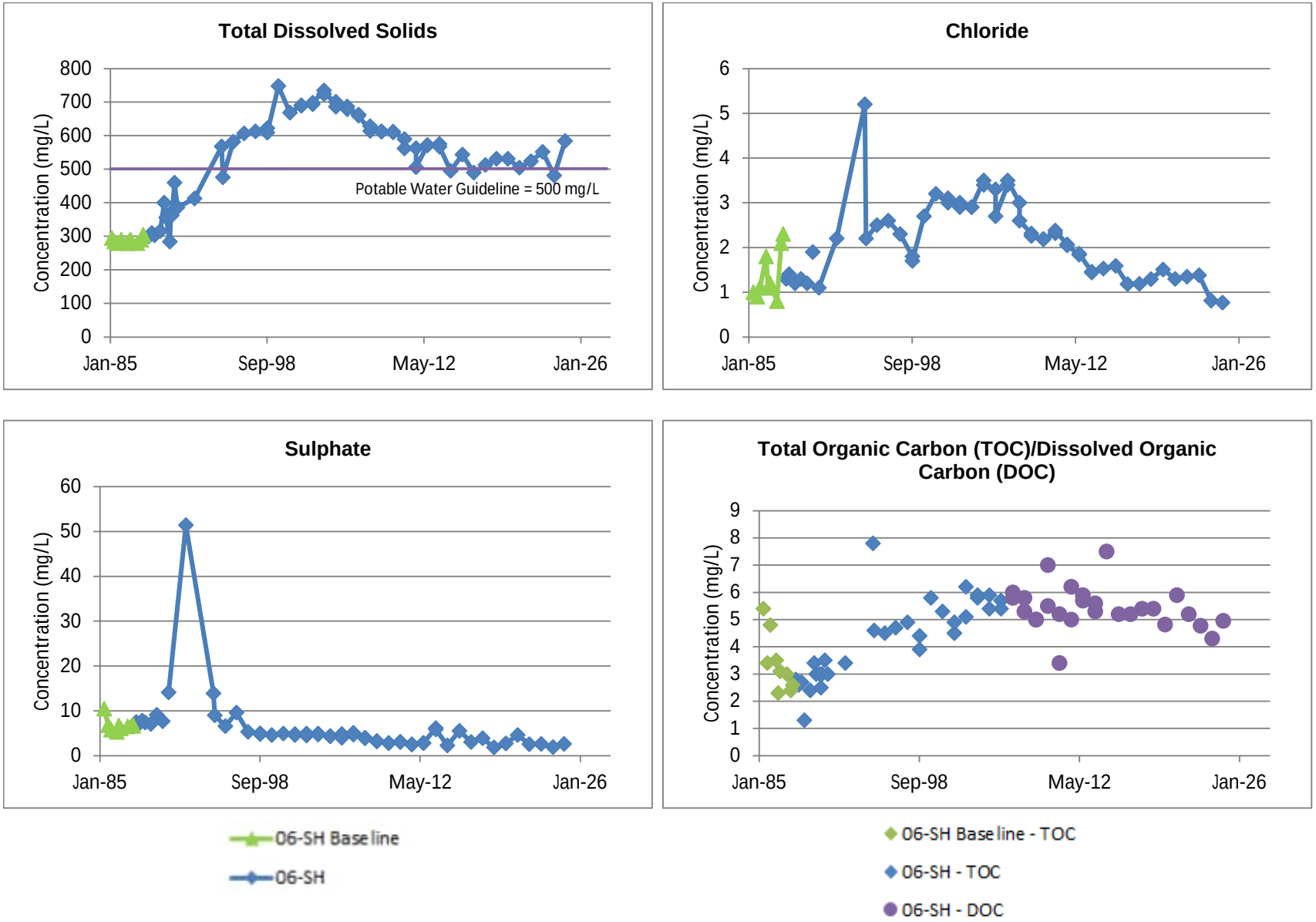
Figure 12.10
VEOLIA, Swan Hills Treatment Centre
05-SS - Indicators



AECOM

Figure 12.11
VEOLIA, Swan Hills Treatment Centre
06-SH - Indicators



AECOM

Figure 12.12
VEOLIA, Swan Hills Treatment Centre
06-IN and 06(R)IN - Indicators

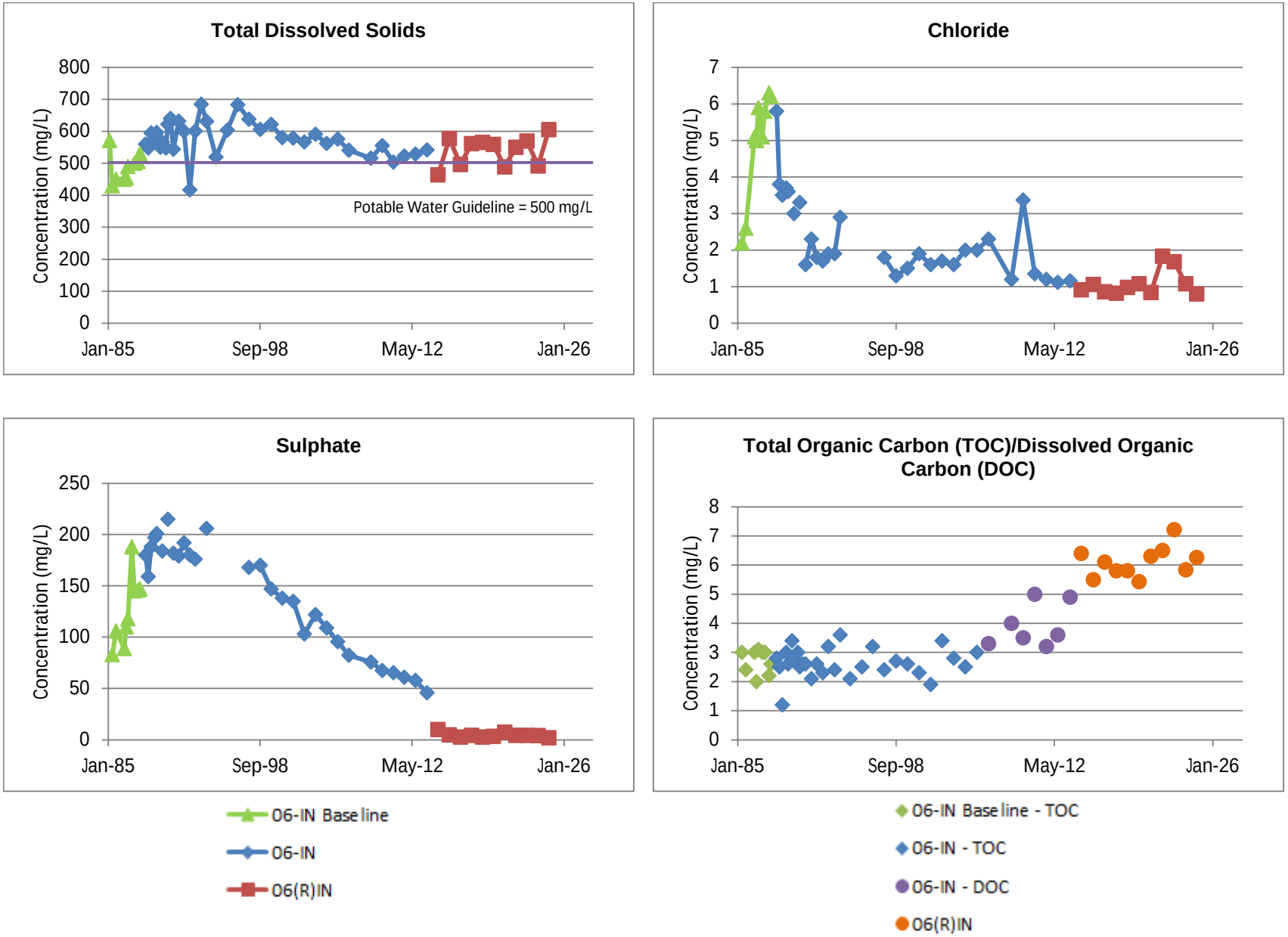


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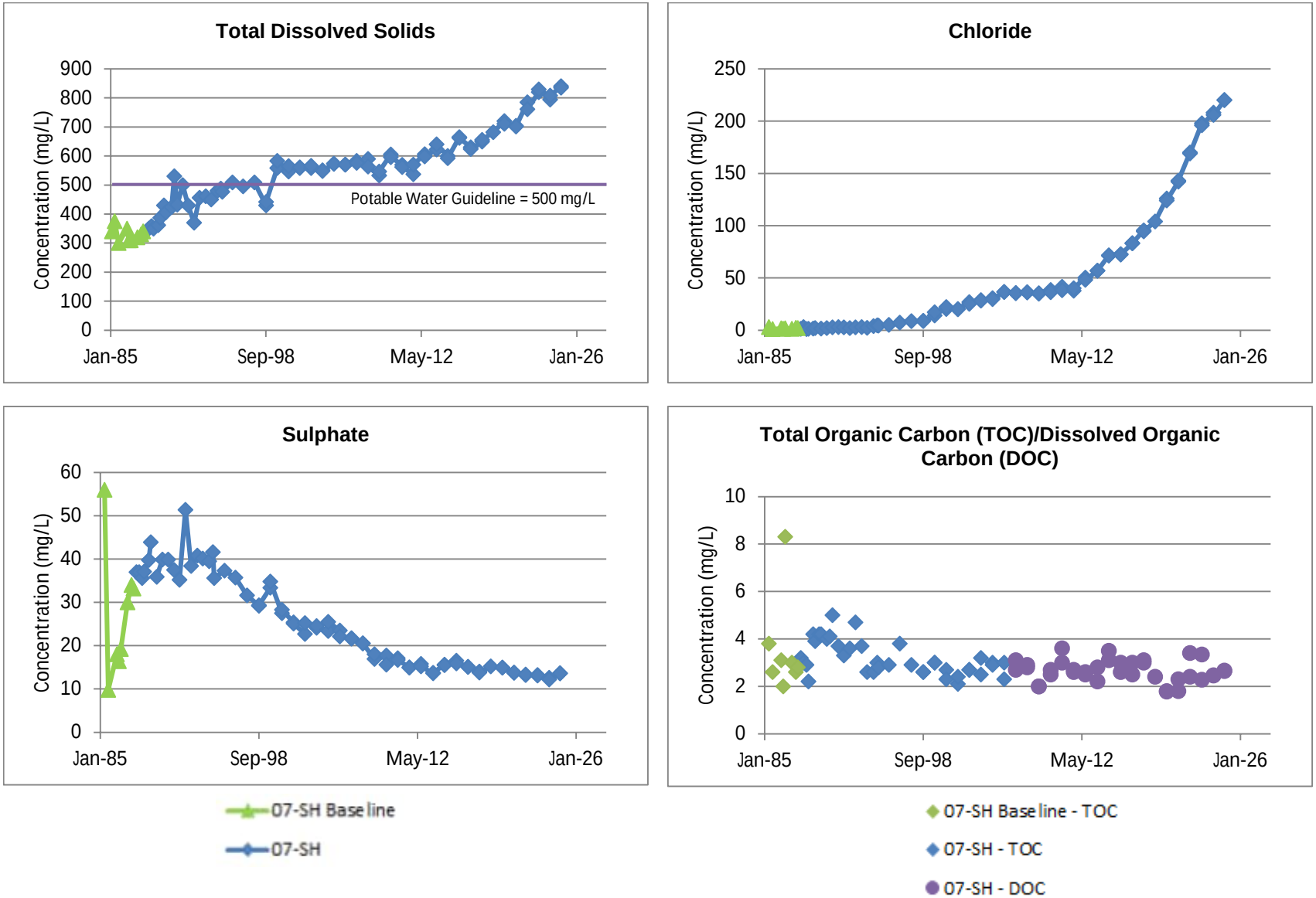
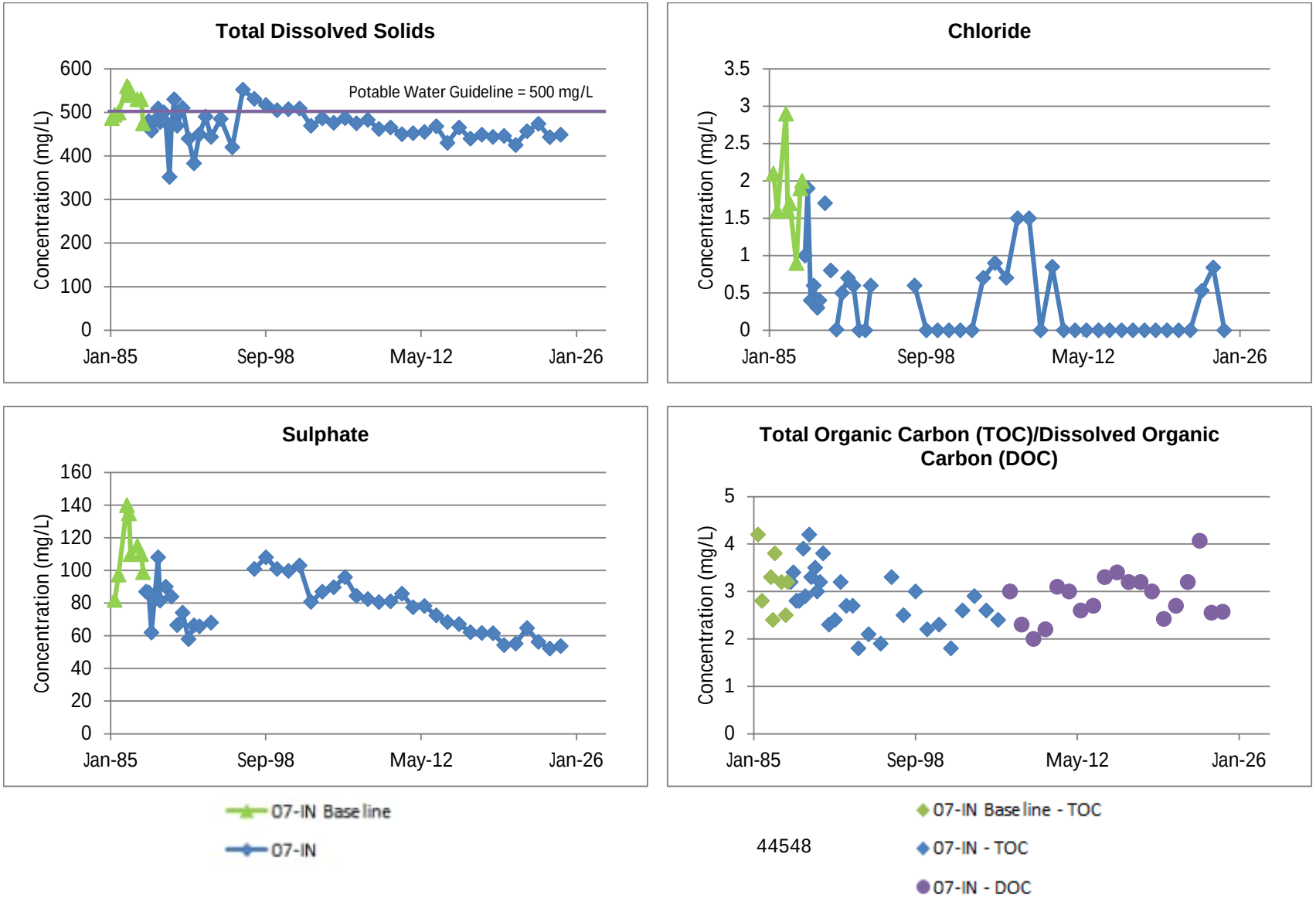
Figure 12.13
VEOLIA, Swan Hills Treatment Centre
07-SH - Indicators



AECOM

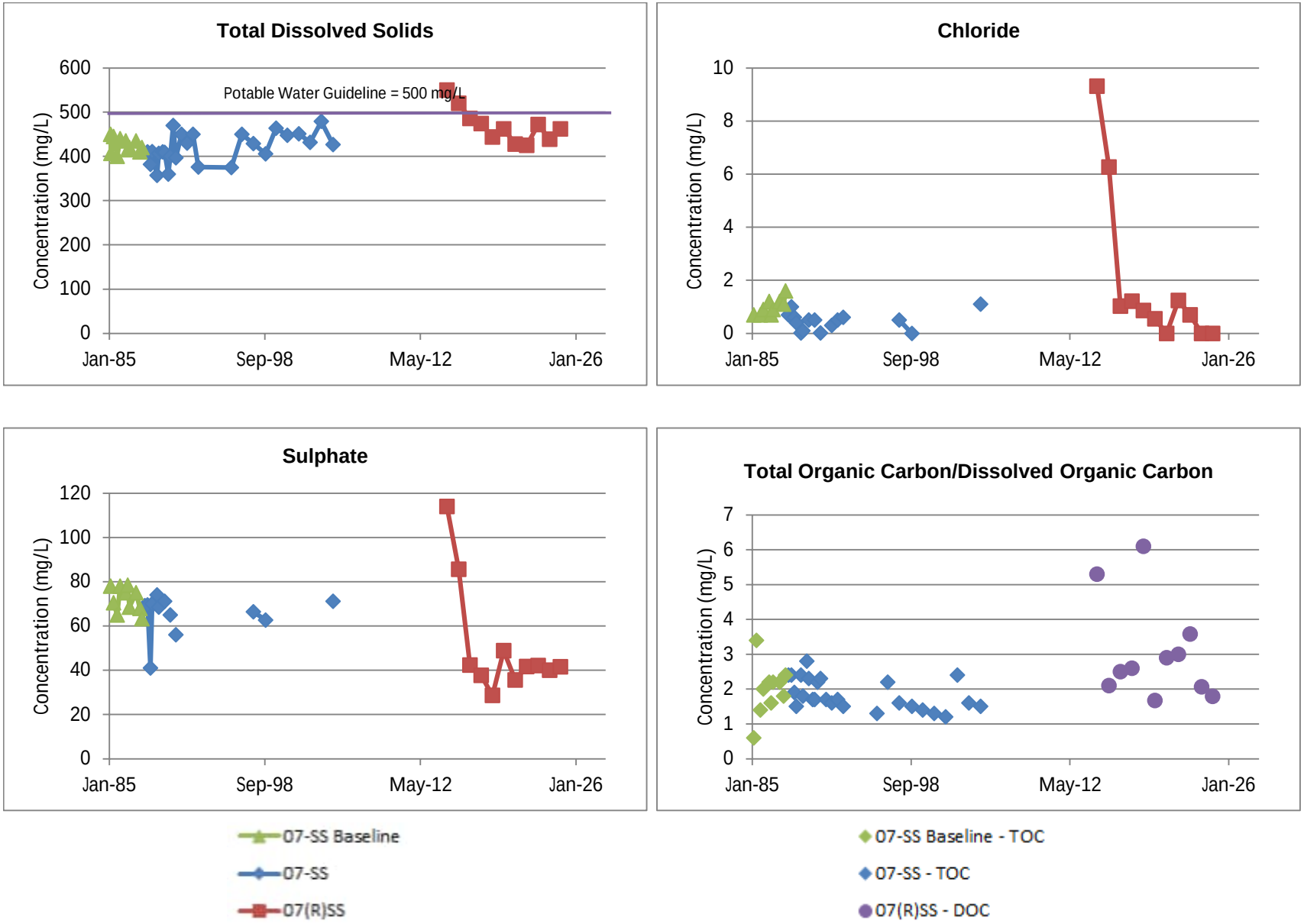
Figure 12.14
VEOLIA, Swan Hills Treatment Centre
07-IN - Indicators



44548

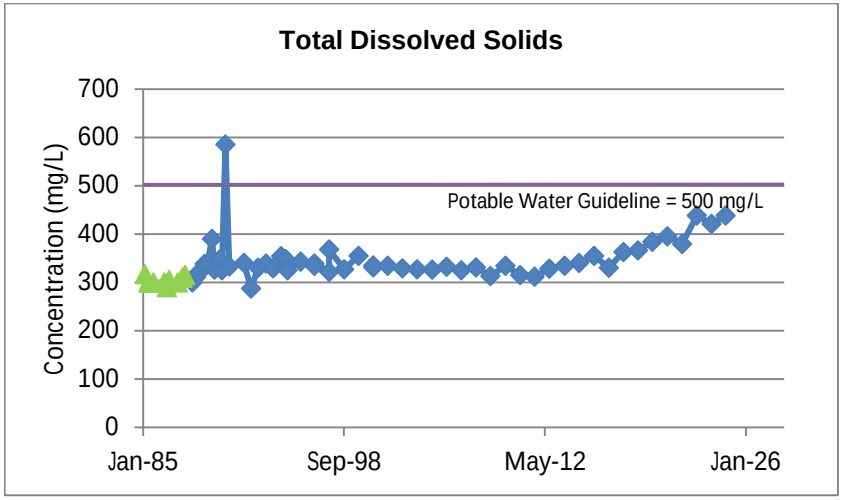
AECOM

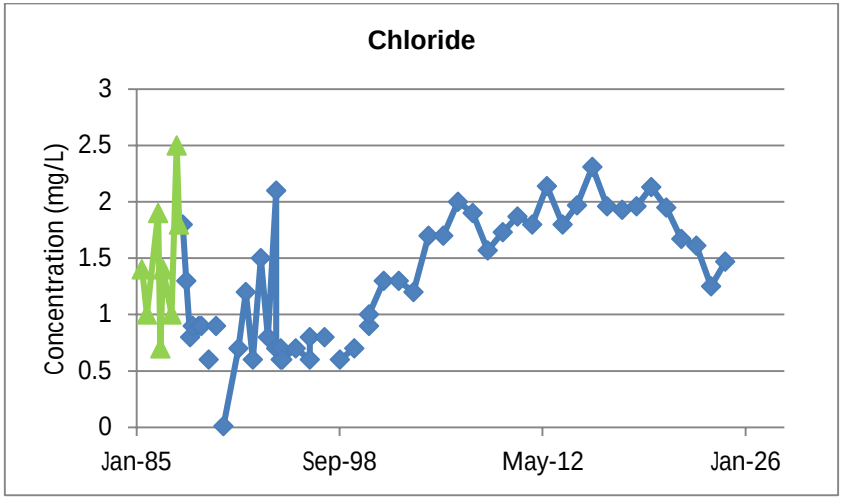
Figure 12.15
VEOLIA, Swan Hills Treatment Centre
07-SS and 07(R)SS - Indicators

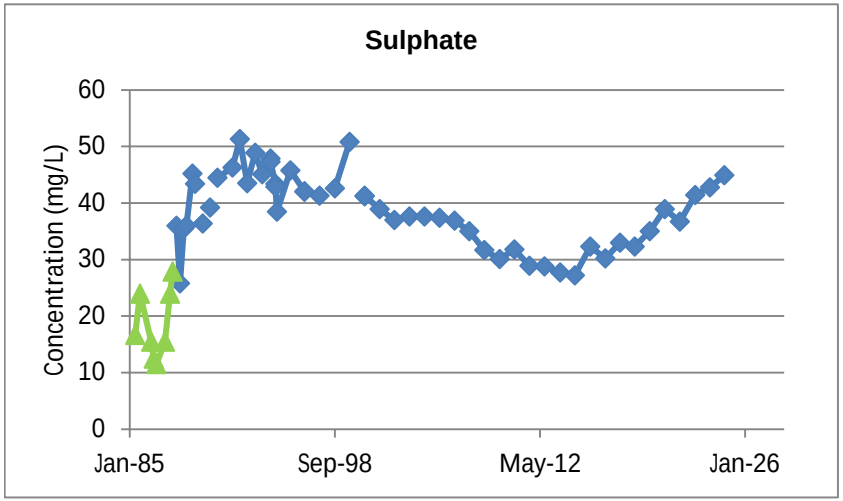


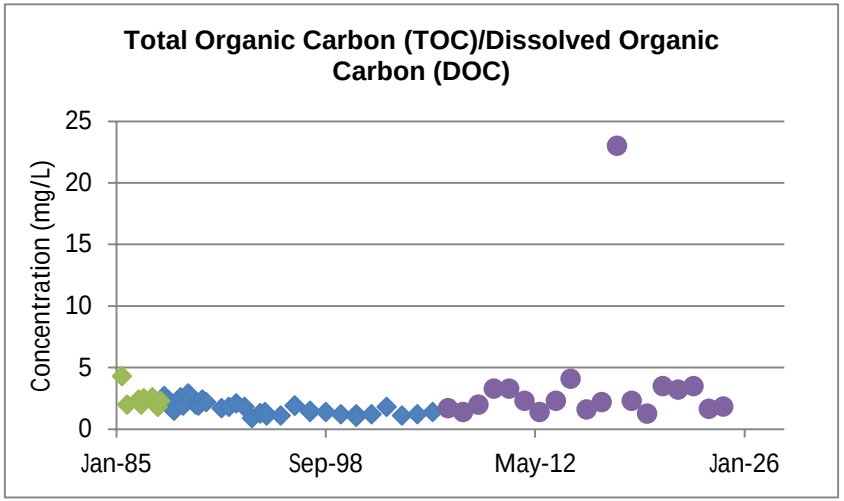
AECOM

Figure 12.16
VEOLIA, Swan Hills Treatment Centre
08-SH - Indicators







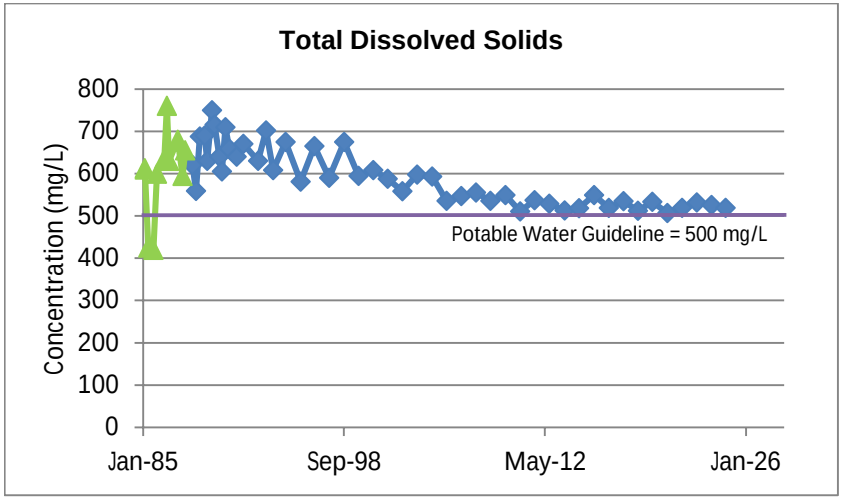


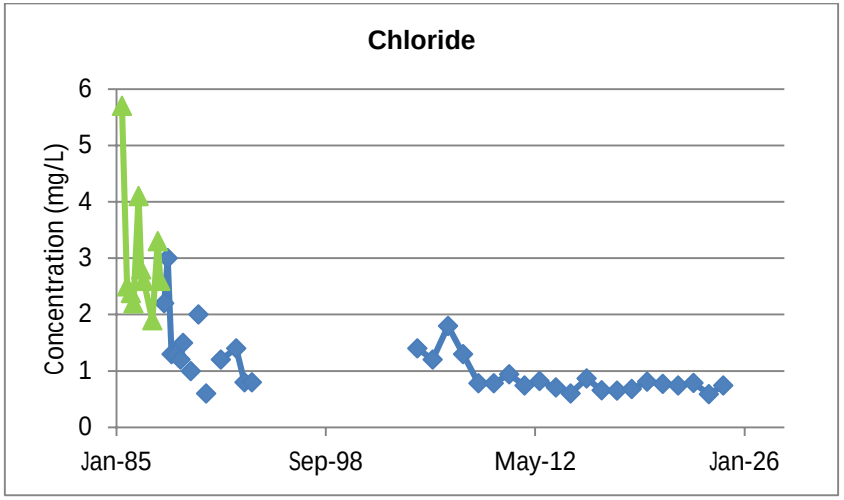
08-SH Baseline
08-SH

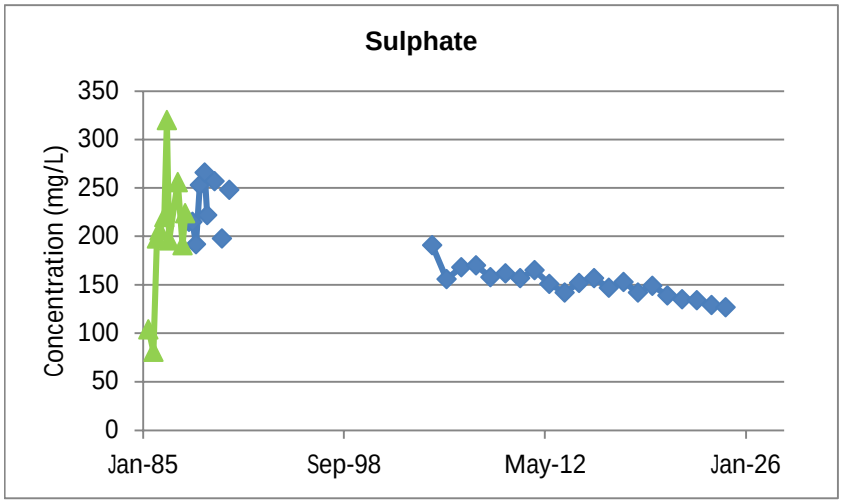
08-SH Baseline - TOC
08-SH - TOC
08-SH - DOC

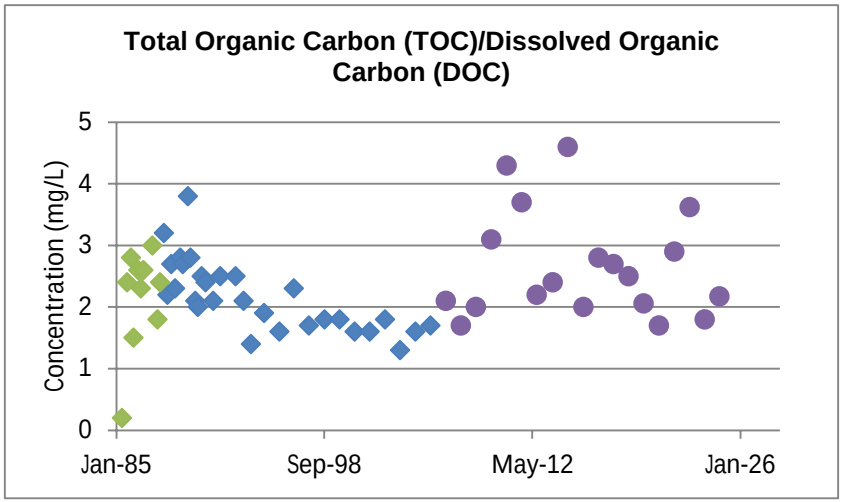
AECOM

Figure 12.17
VEOLIA, Swan Hills Treatment Centre
08-IN - Indicators







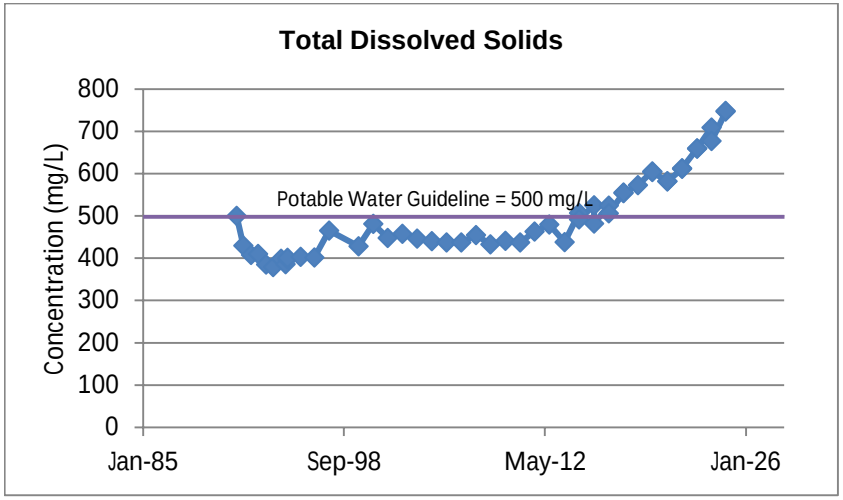


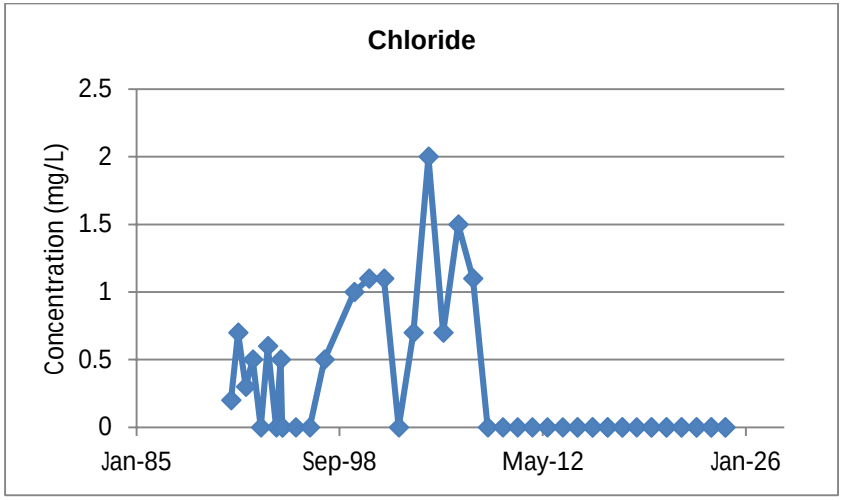
08-IN Baseline
08-IN

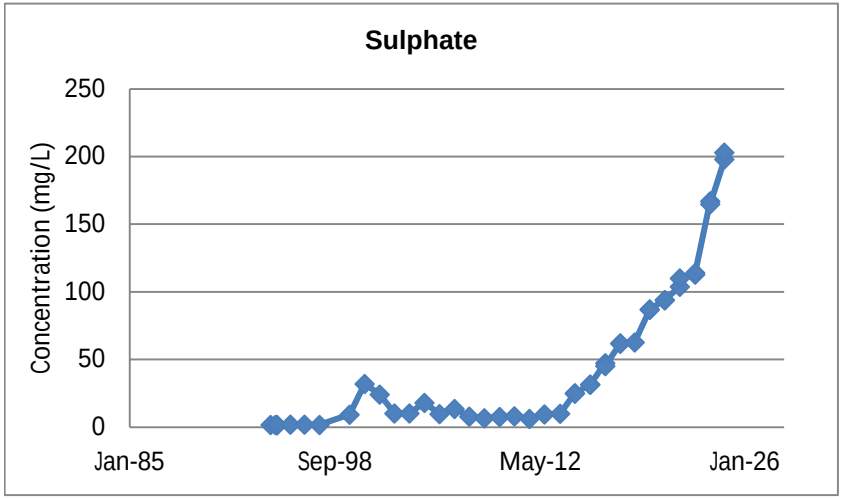
08-IN Baseline - TOC
08-IN - TOC
08-IN - DOC

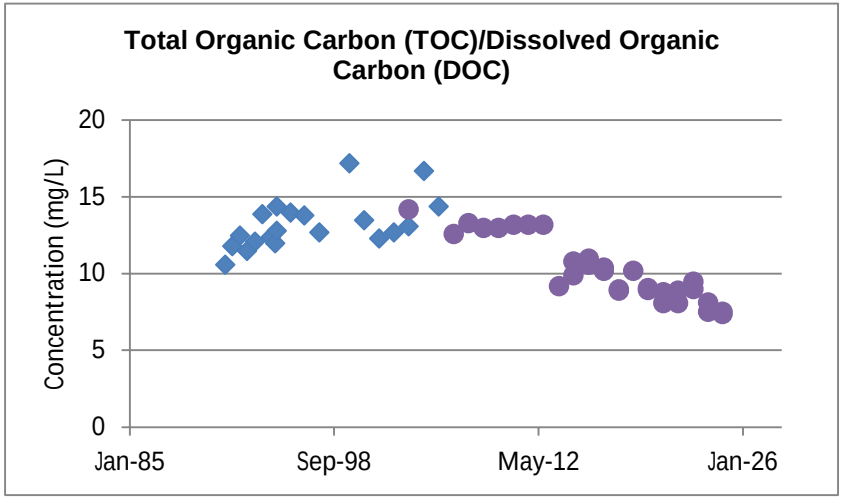
AECOM

Figure 12.18
VEOLIA, Swan Hills Treatment Centre
11-SH - Indicators









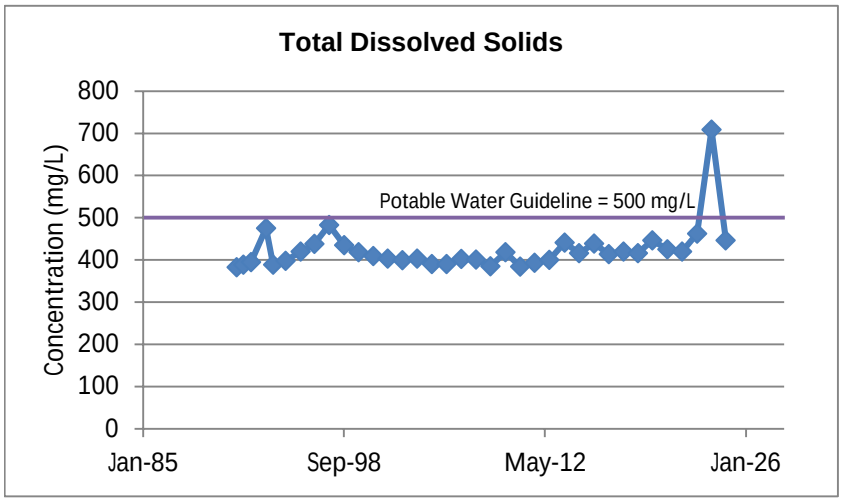
11-SH

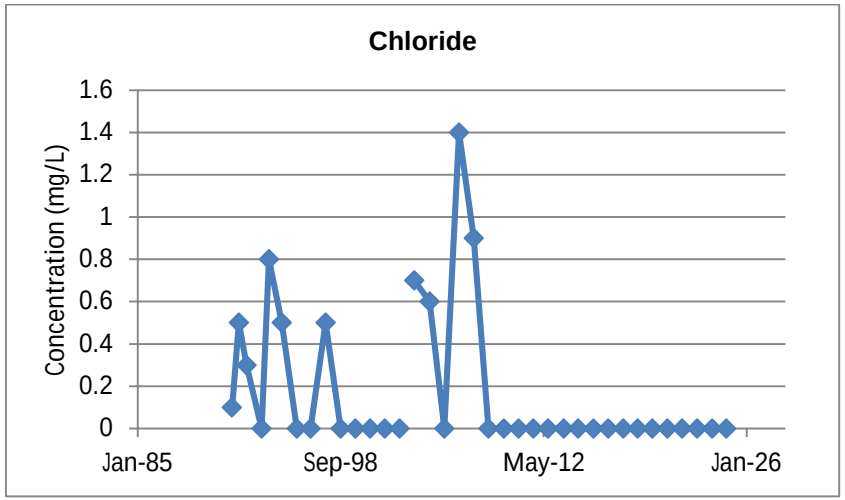
11-SH - TOC

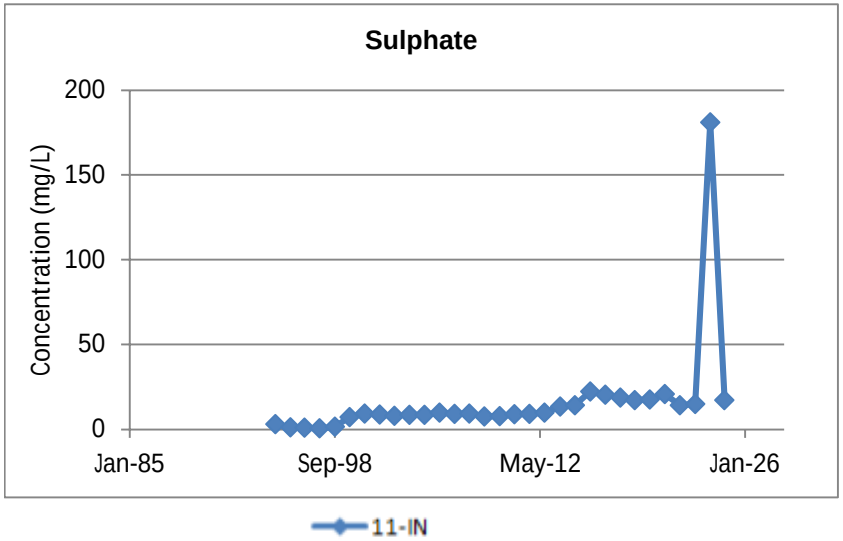
11-SH - DOC

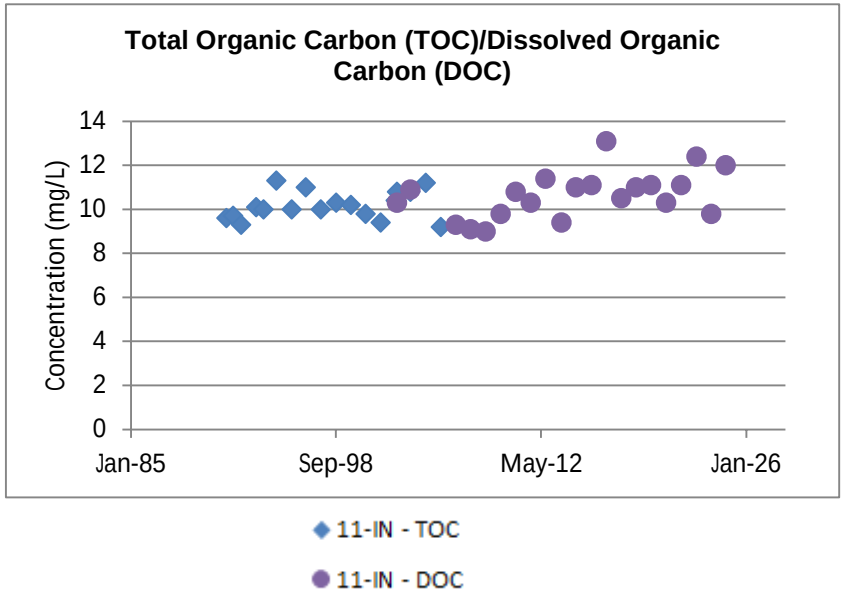
AECOM

Figure 12.19
VEOLIA, Swan Hills Treatment Centre
11-IN - Indicators



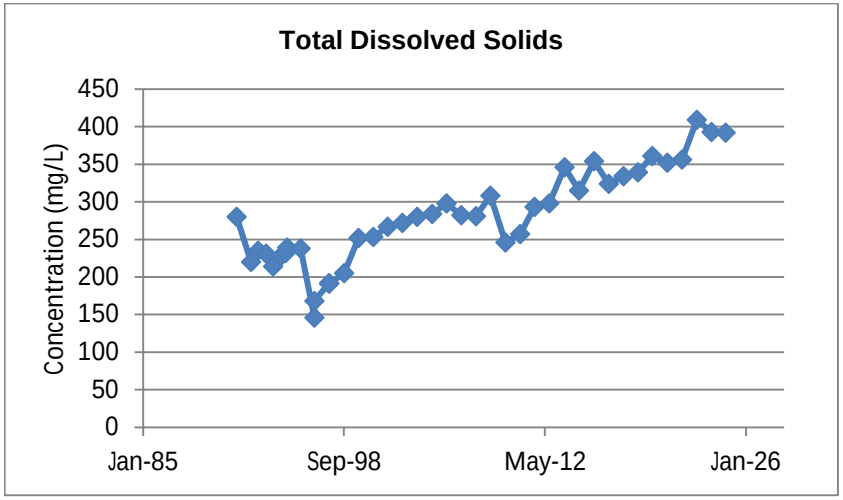


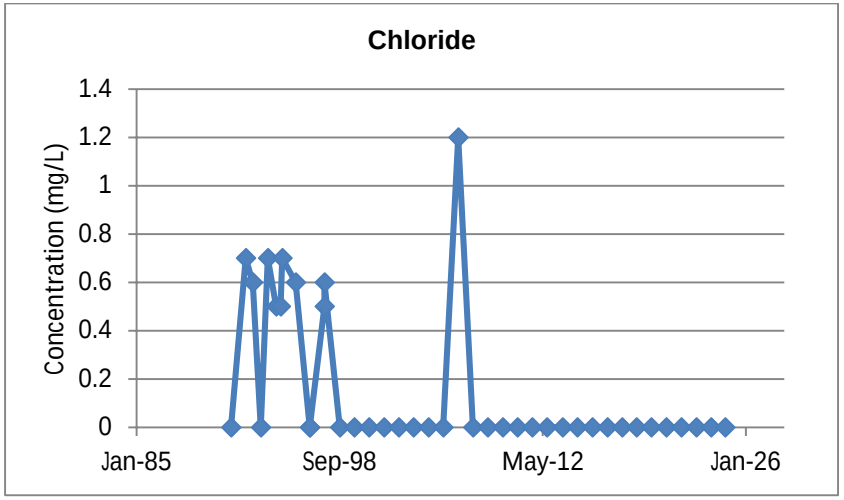


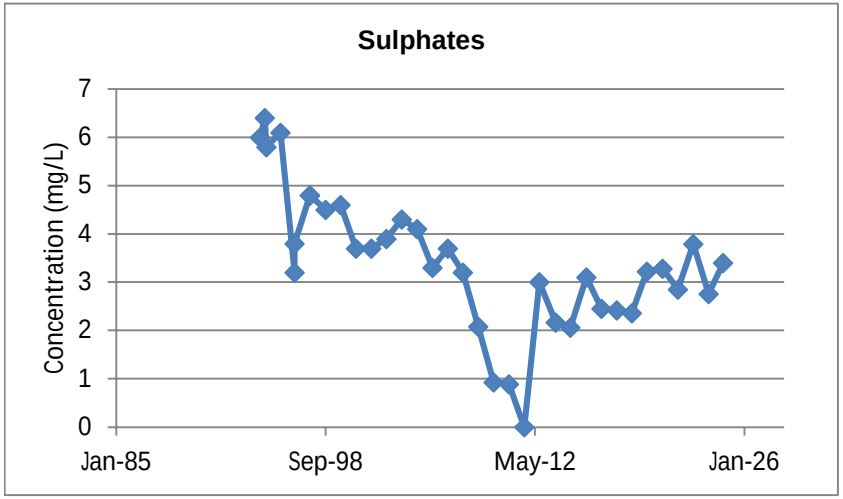


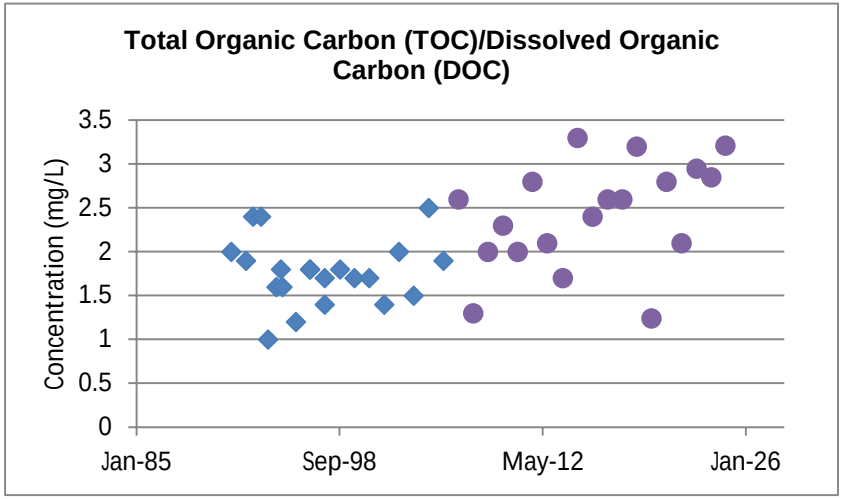
AECOM

Figure 12.20
VEOLIA, Swan Hills Treatment Centre
12-SH - Indicators









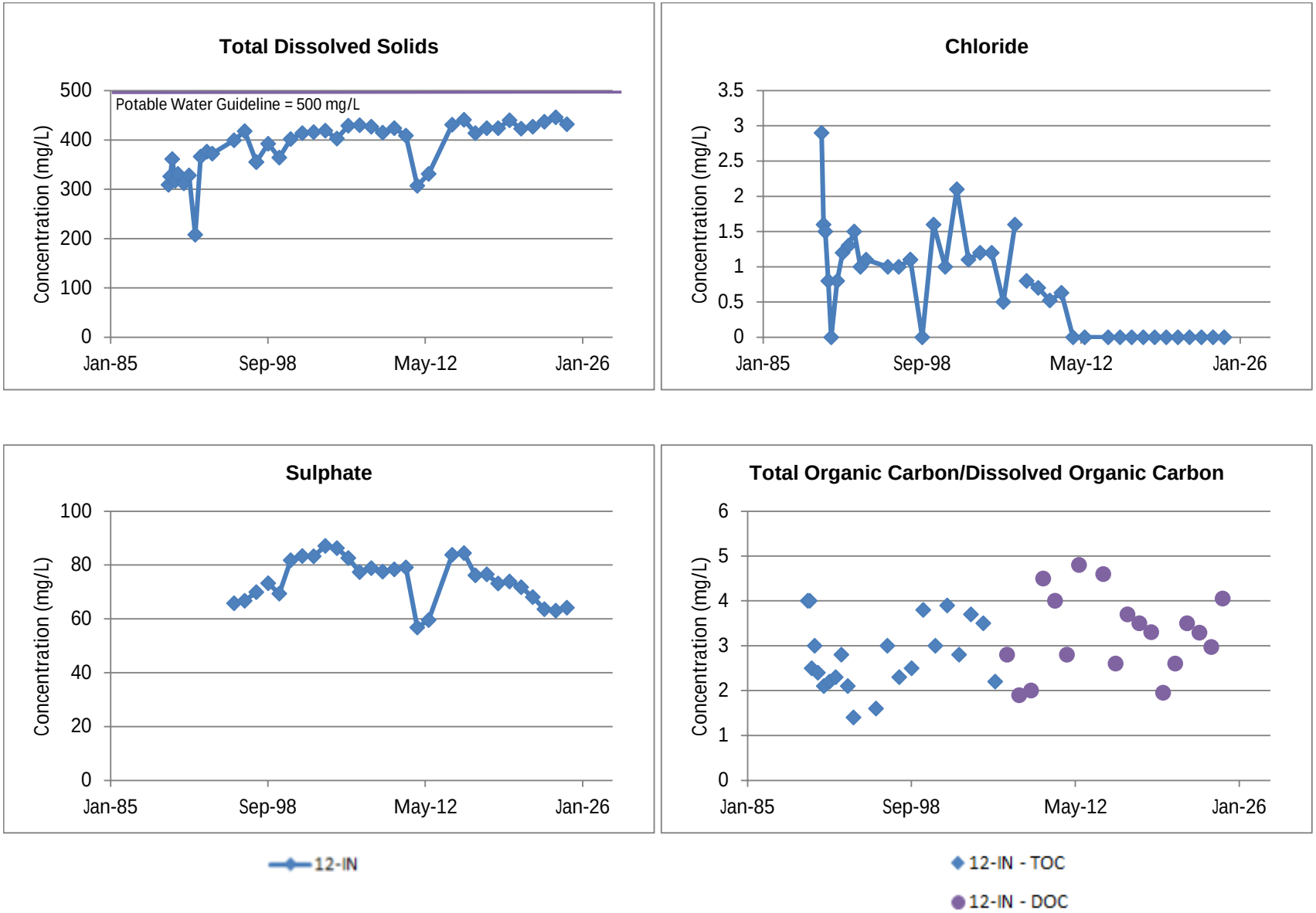
12-SH

12-SH - TOC

12-SH - DOC

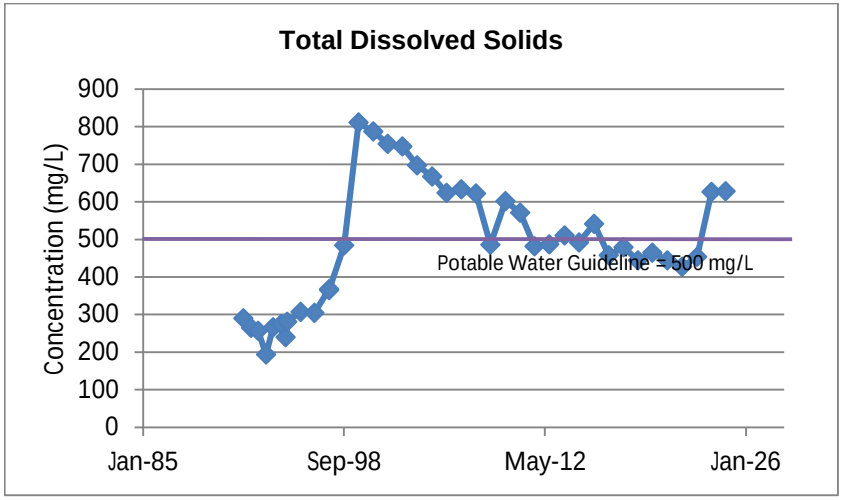
AECOM

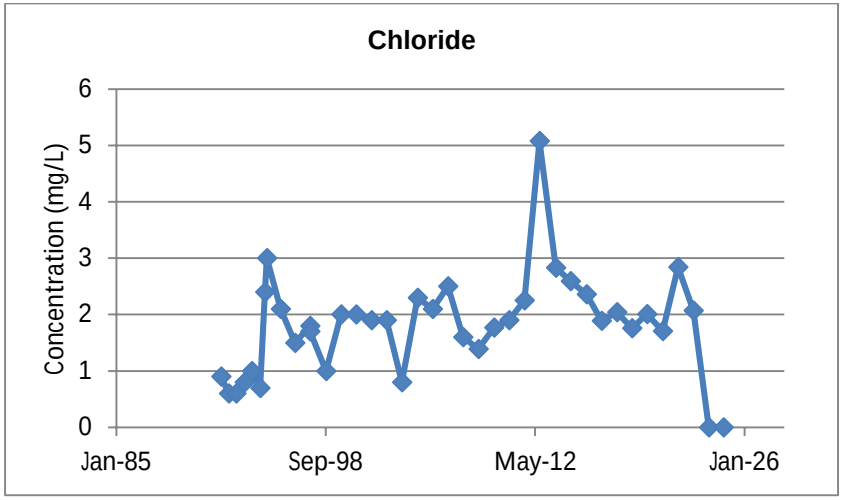
Figure 12.21
VEOLIA, Swan Hills Treatment Centre
12-IN - Indicators

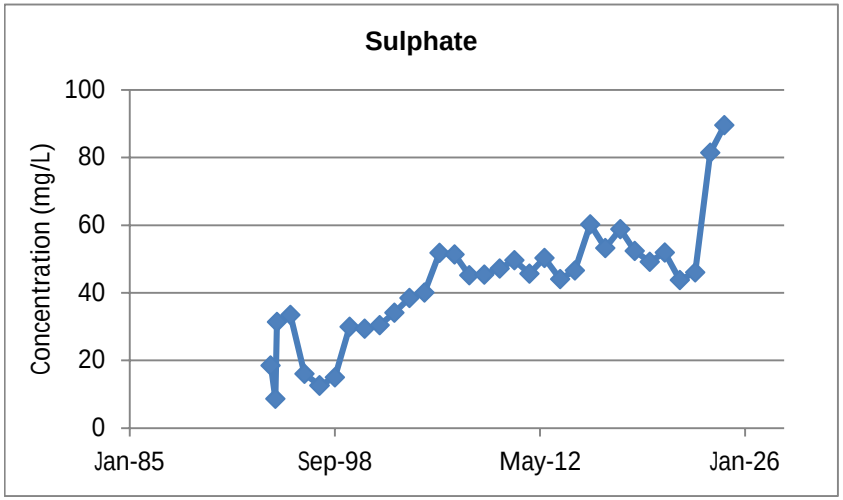


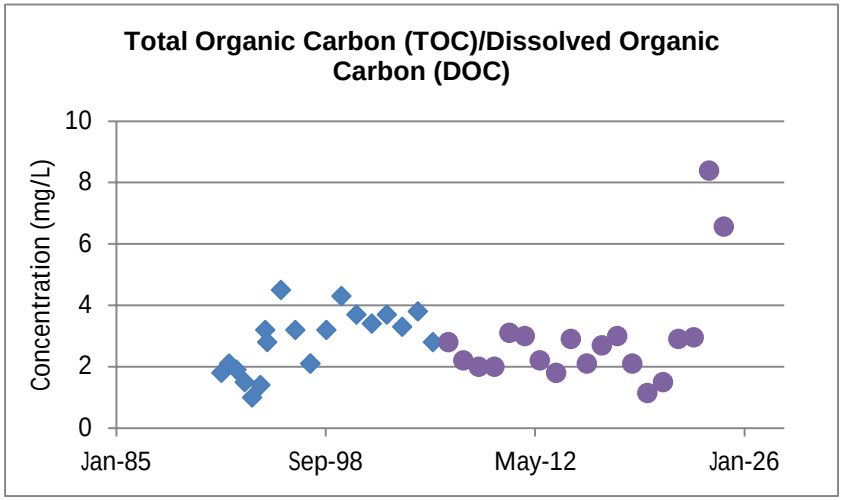
AECOM

Figure 12.22
VEOLIA, Swan Hills Treatment Centre
13-SH - Indicators









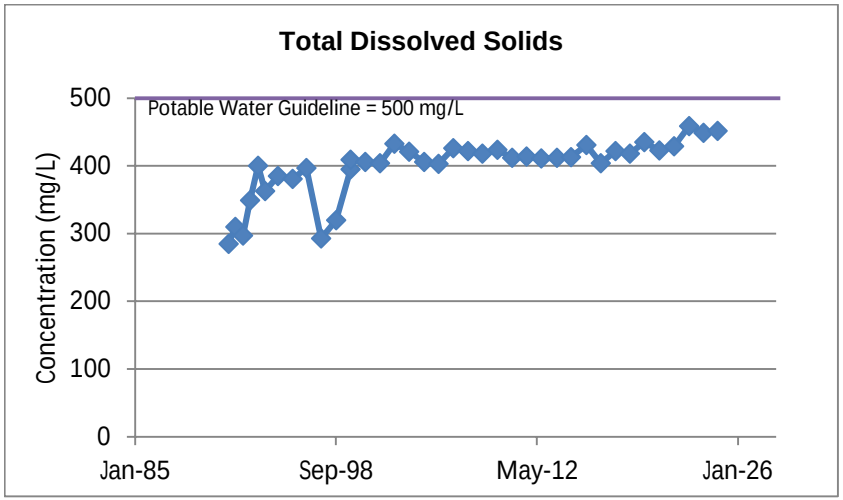
13-SH

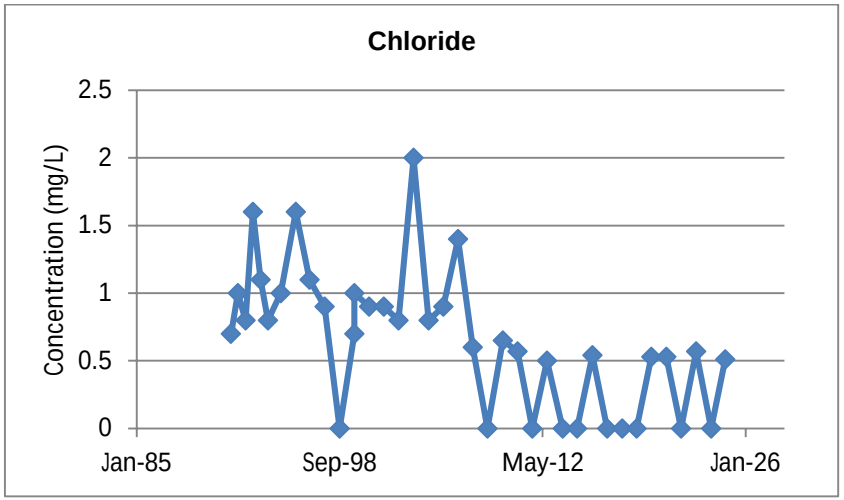
13-SH - TOC

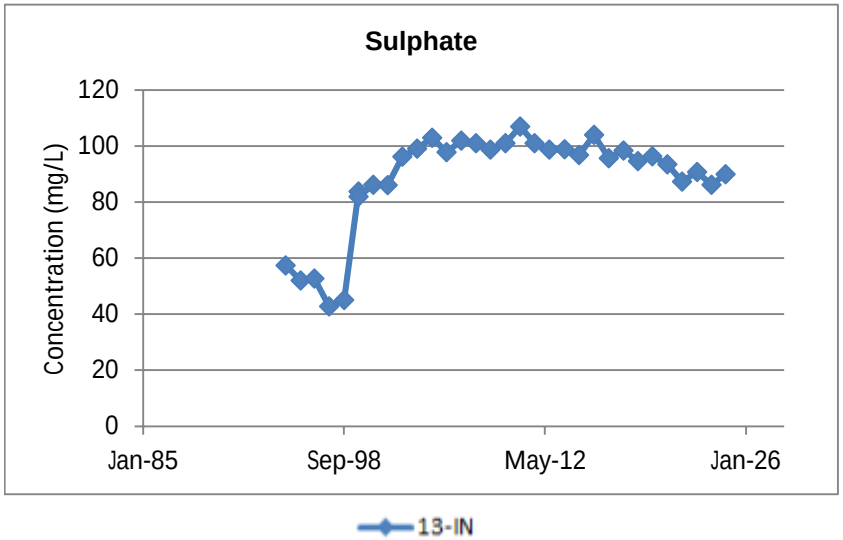
13-SH - DOC

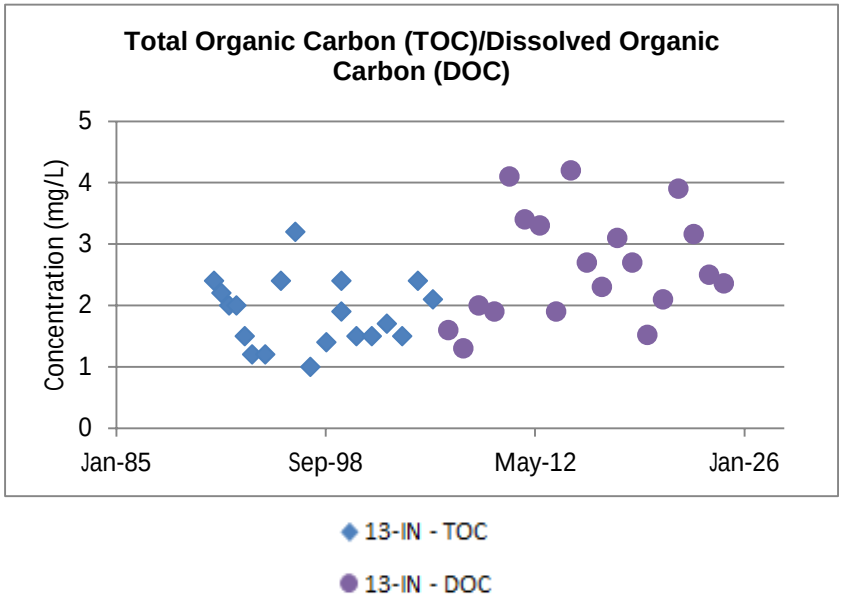
AECOM

Figure 12.23
VEOLIA, Swan Hills Treatment Centre
13-IN - Indicators



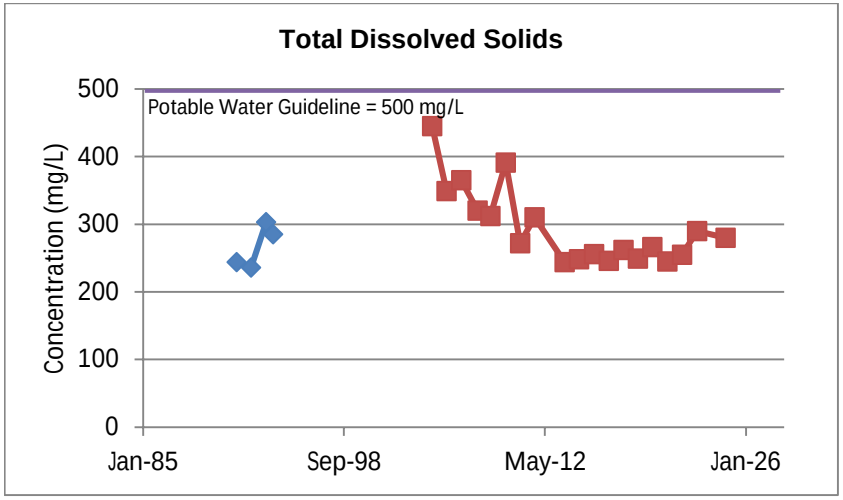


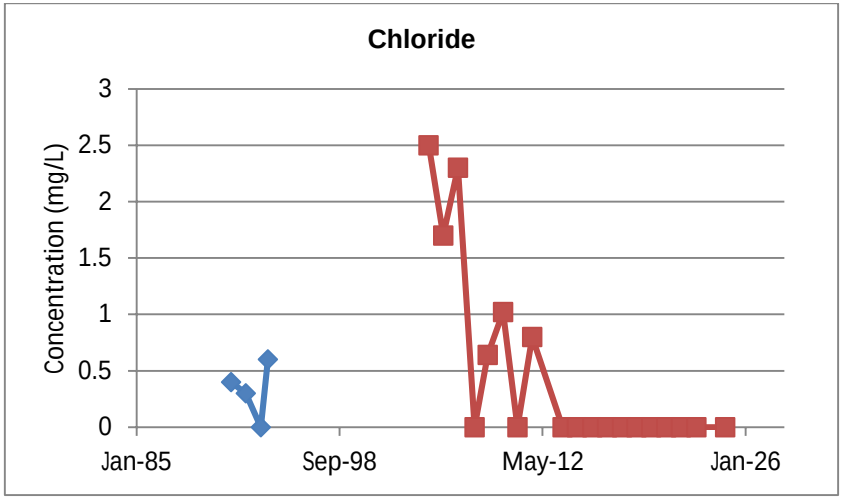


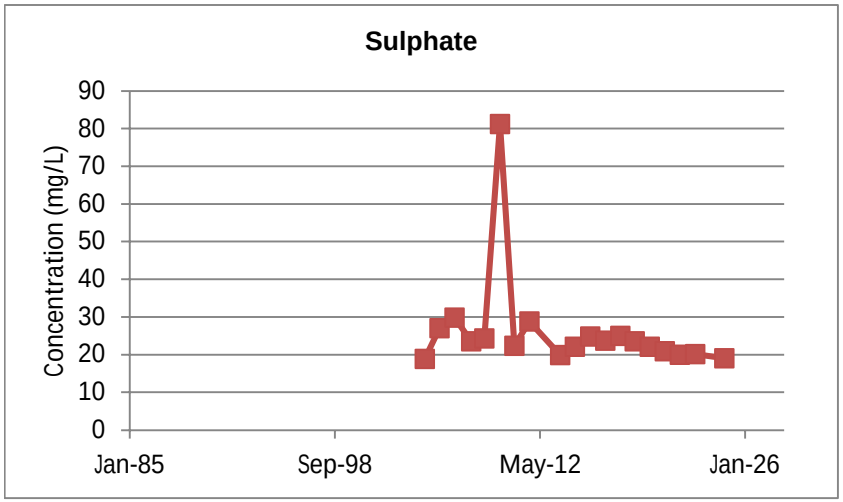


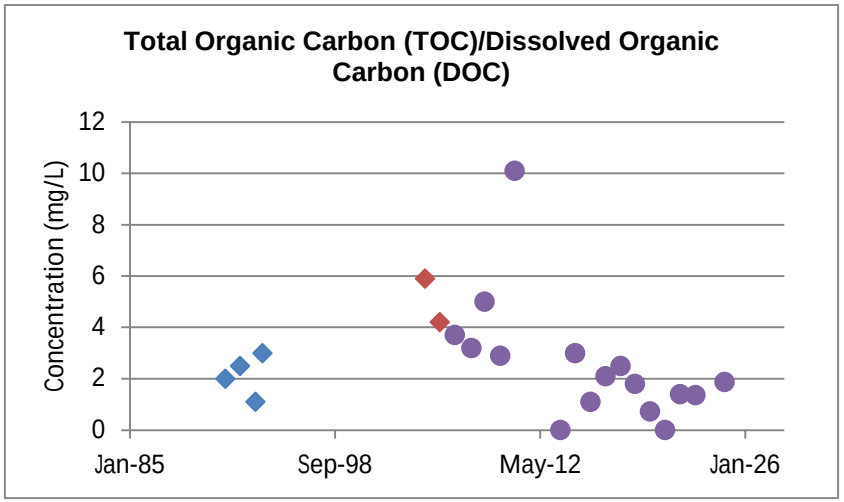
AECOM

Figure 12.24
VEOLIA, Swan Hills Treatment Centre
13-SS and 13(R)SS - Indicators







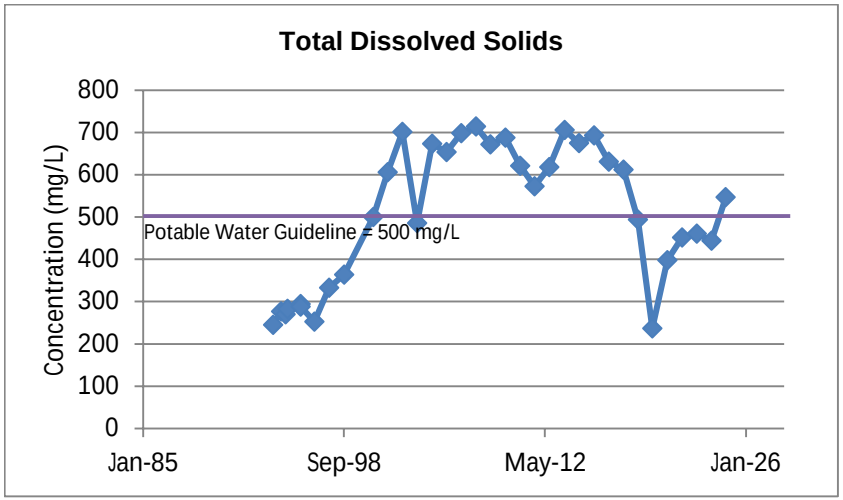


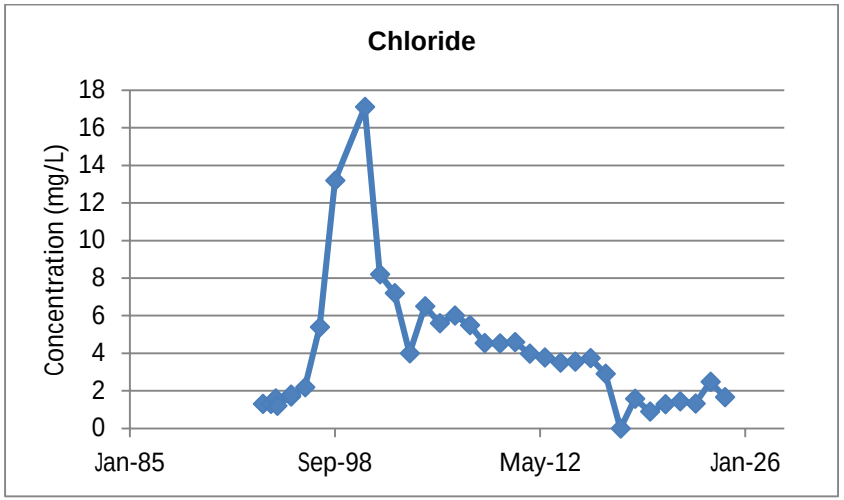
13-SS
13(R)SS

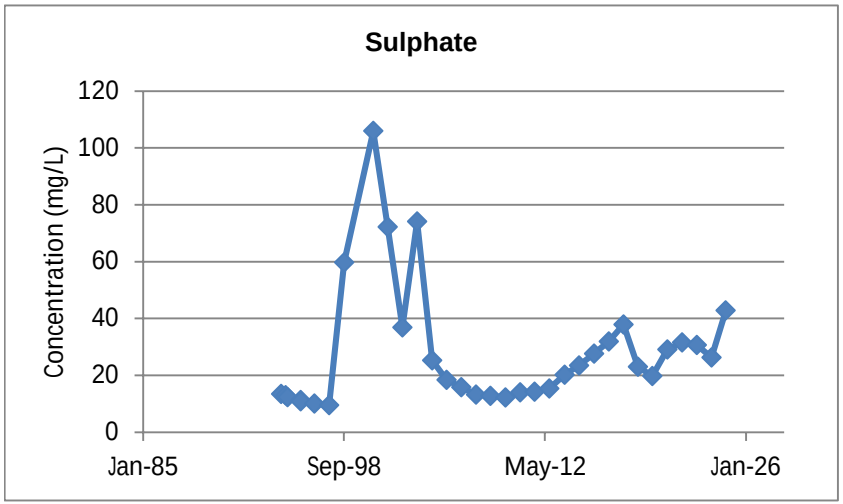
13-SS - TOC
13(R)SS - TOC
13(R)SS - DOC

AECOM

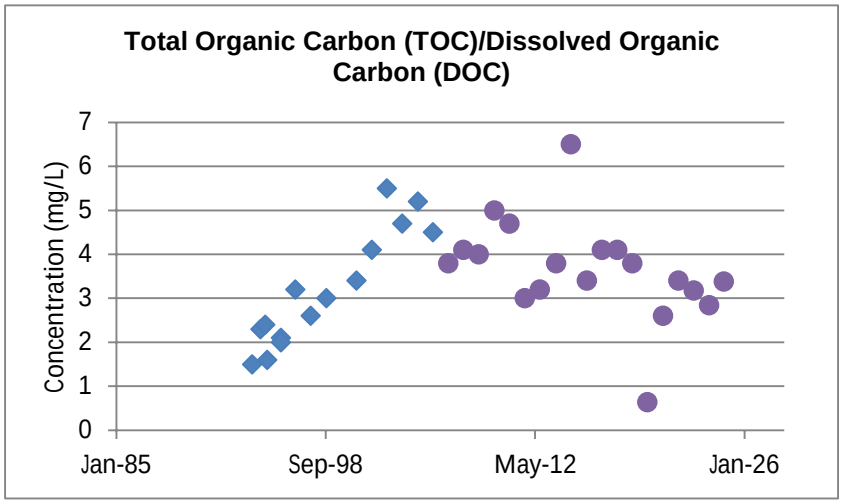
Figure 12.25
VEOLIA, Swan Hills Treatment Centre
14-SH - Indicators







14-SH

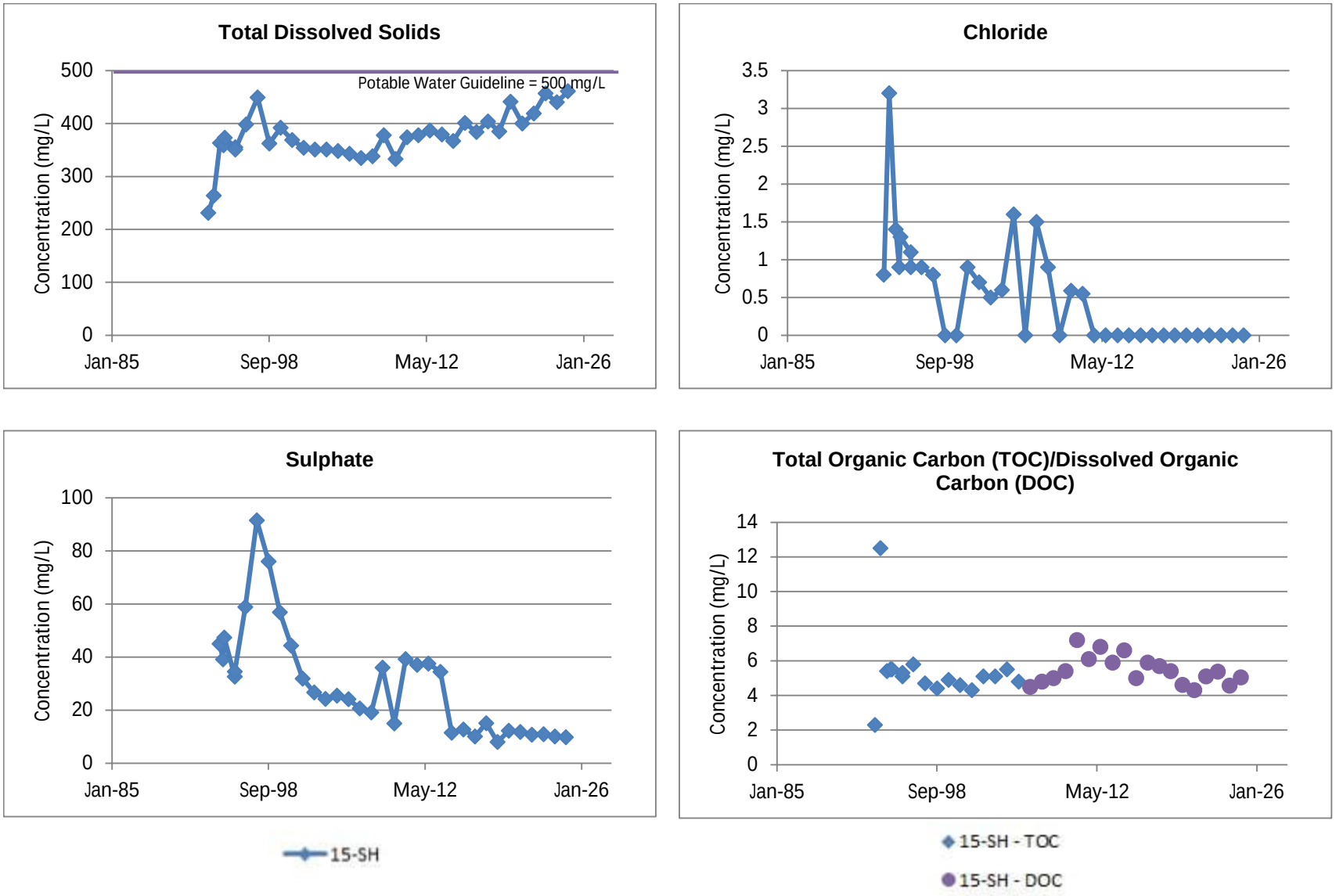


14-SH - TOC

14-SH - DOC

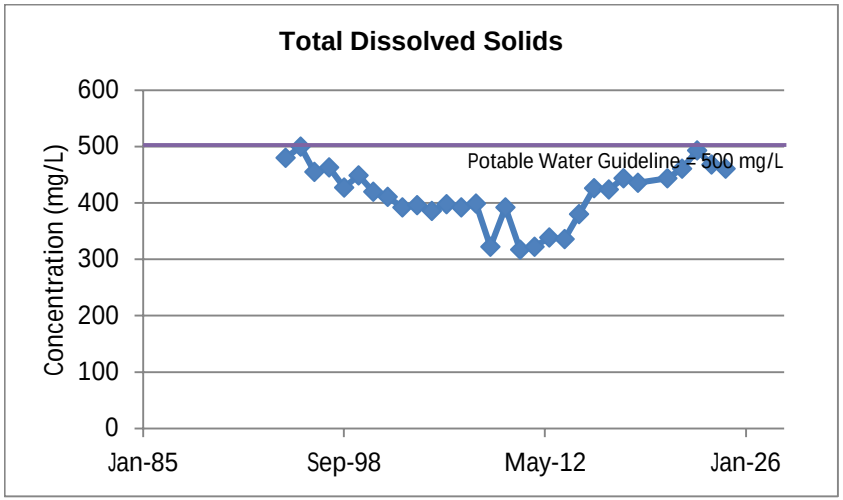
AECOM

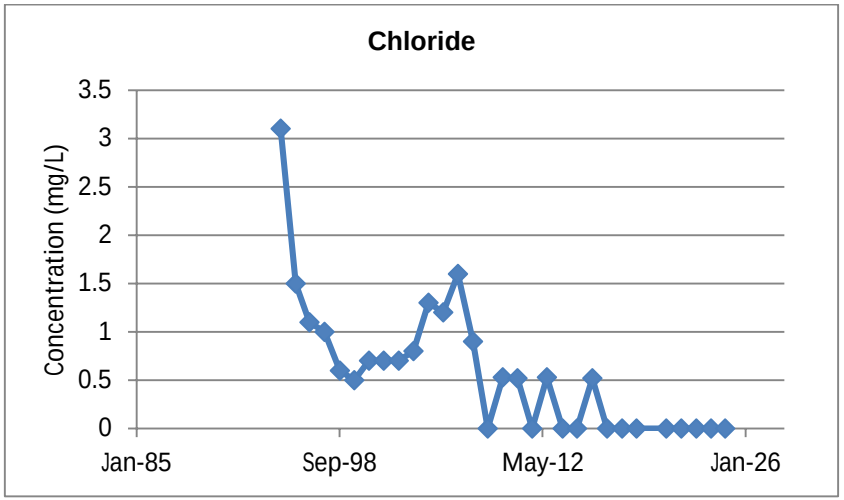
Figure 12.26
VEOLIA, Swan Hills Treatment Centre
15-SH - Indicators

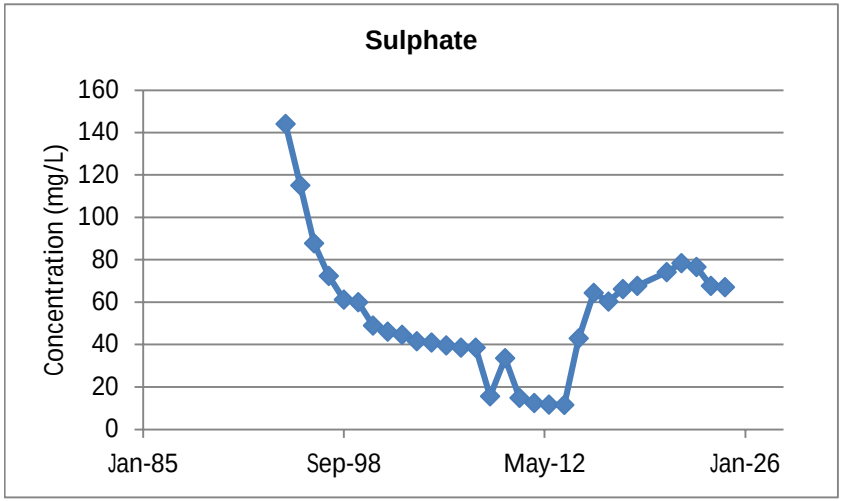


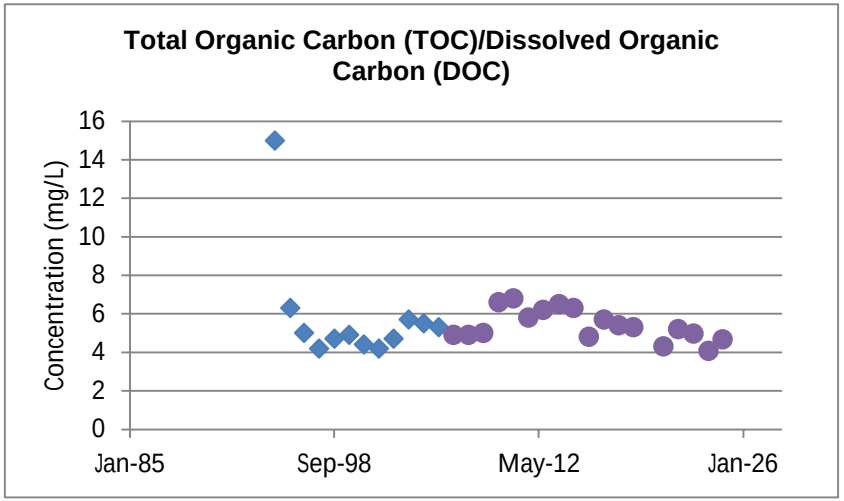
AECOM

Figure 12.27
VEOLIA, Swan Hills Treatment Centre
15-IN - Indicators









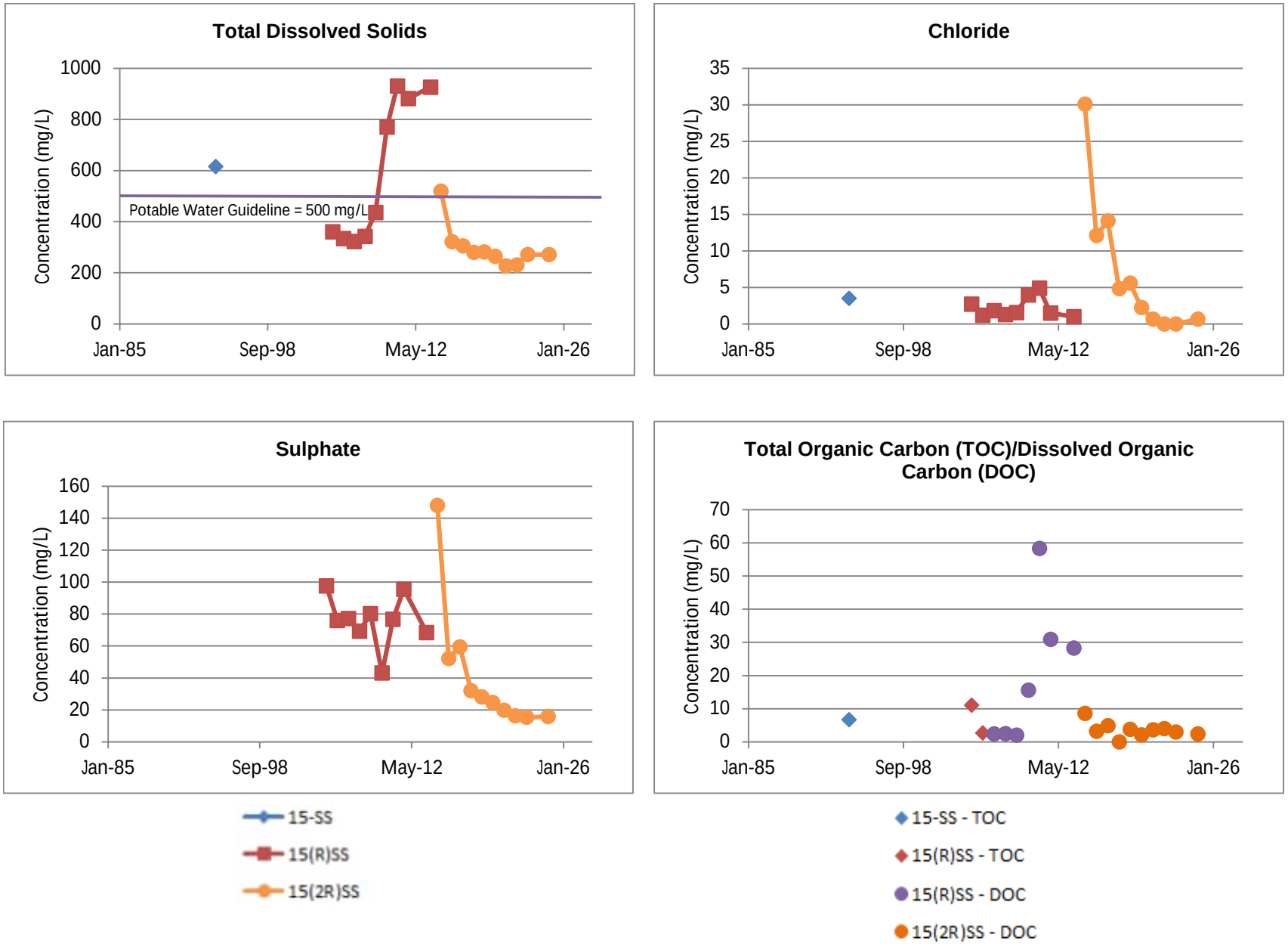
15-IN

15-IN - TOC

15-IN - DOC

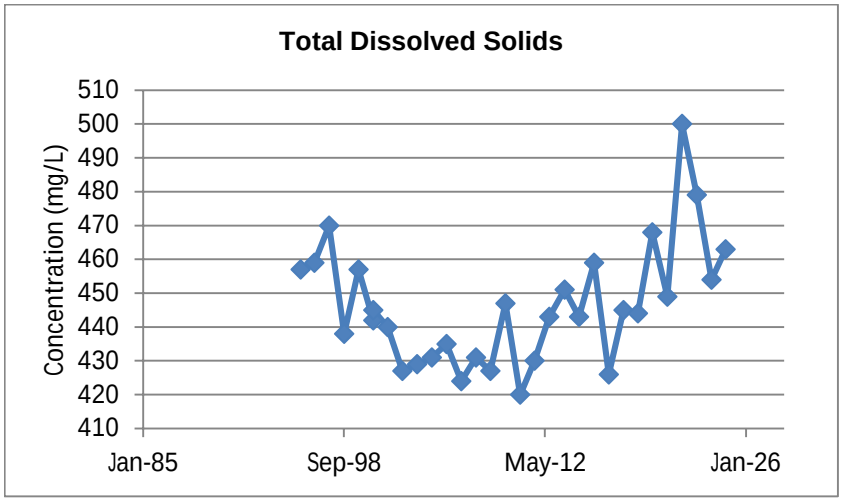
AECOM

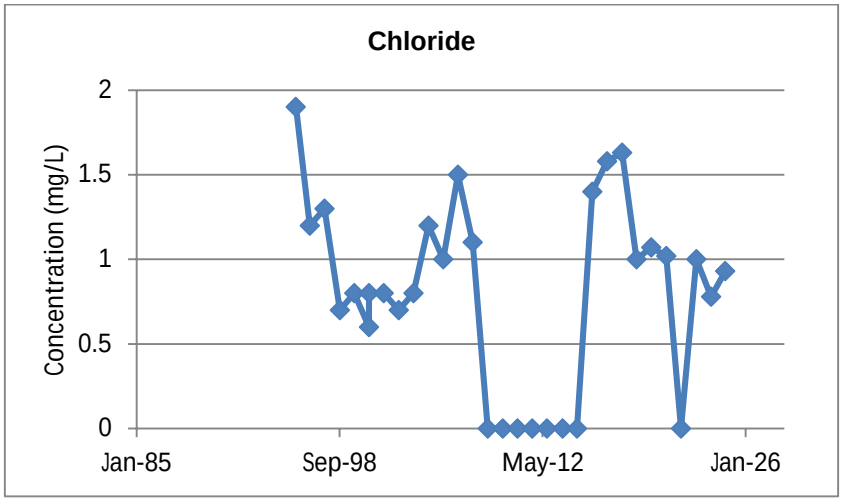
Figure 12.28
VEOLIA, Swan Hills Treatment Centre
15-SS, 15(R)SS, and 15(2R)SS - Indicators

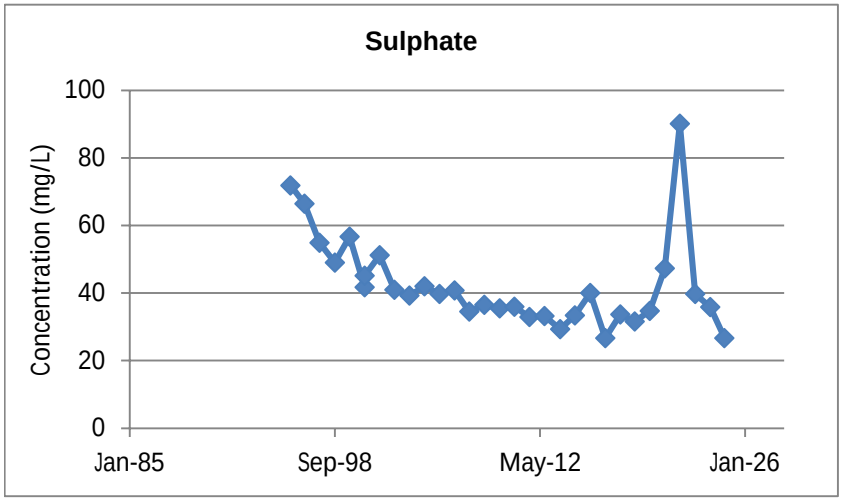


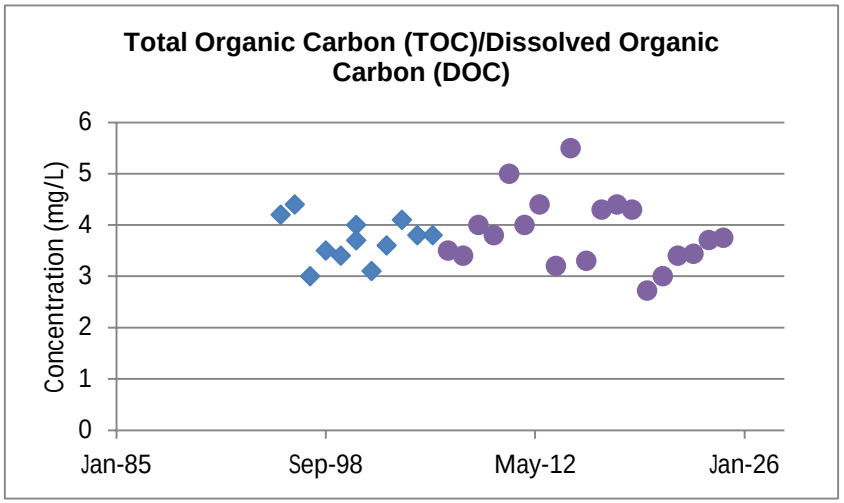
AECOM

Figure 12.29
VEOLIA, Swan Hills Treatment Centre
16-SH - Indicators









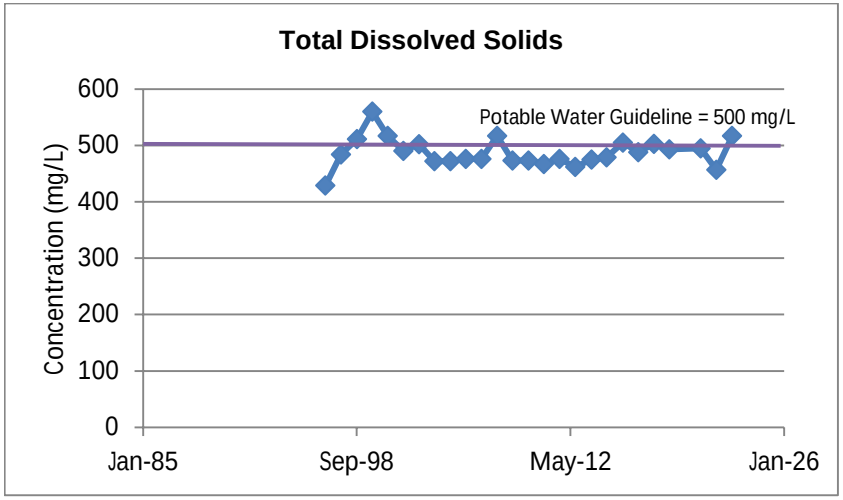
16-SH

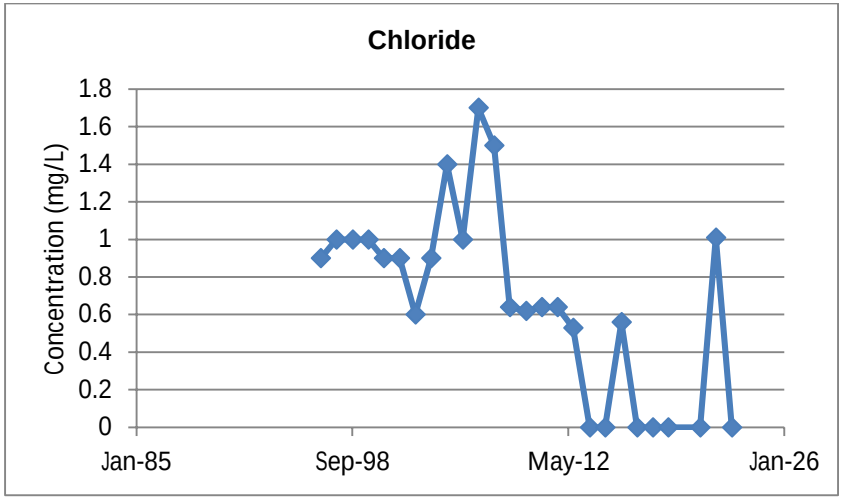
16-SH - TOC

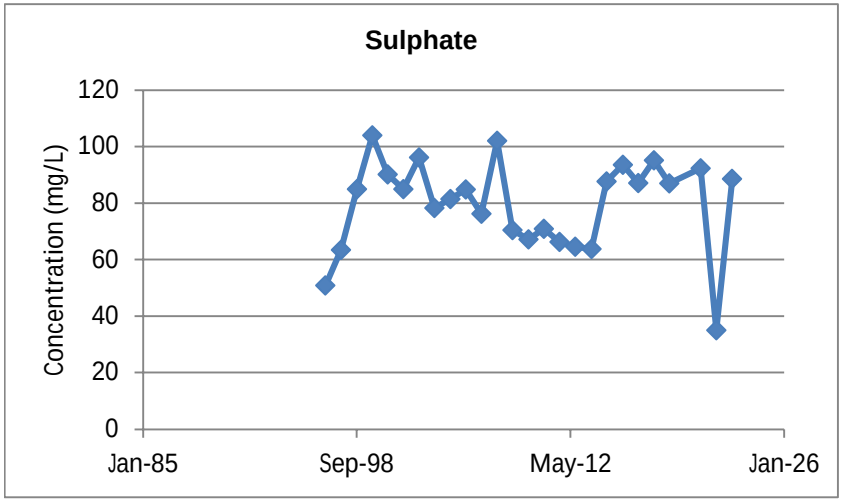
16-SH - DOC

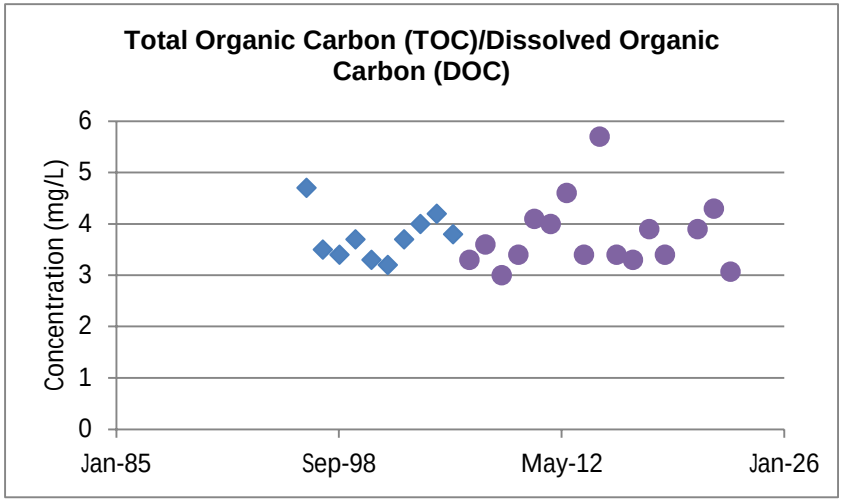
AECOM

Figure 12.30
VEOLIA, Swan Hills Treatment Centre
16-IN - Indicators









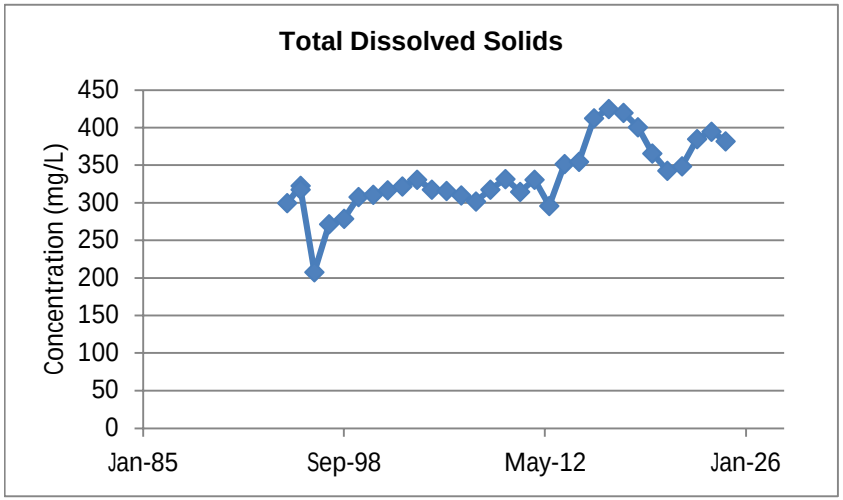
16-IN

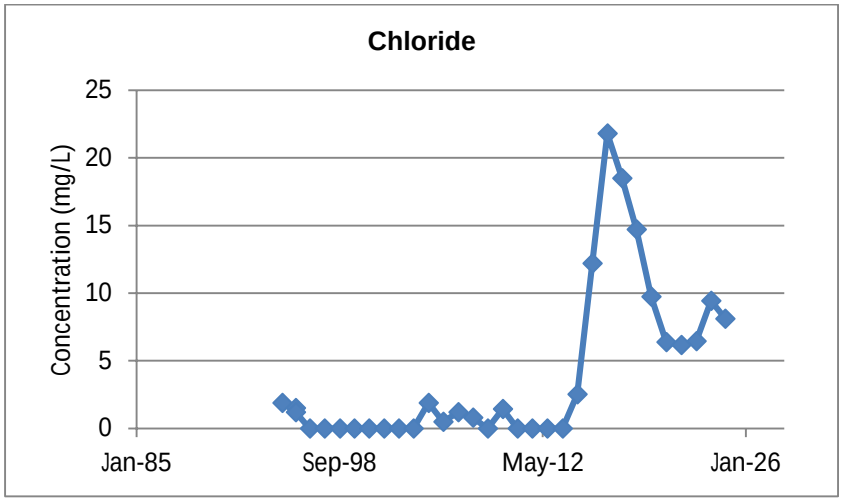
16-IN - TOC

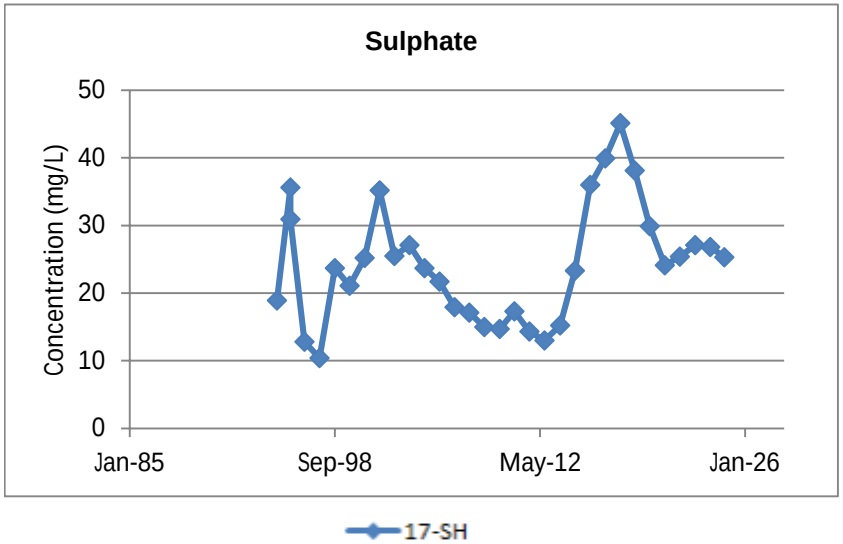
16-IN - DOC

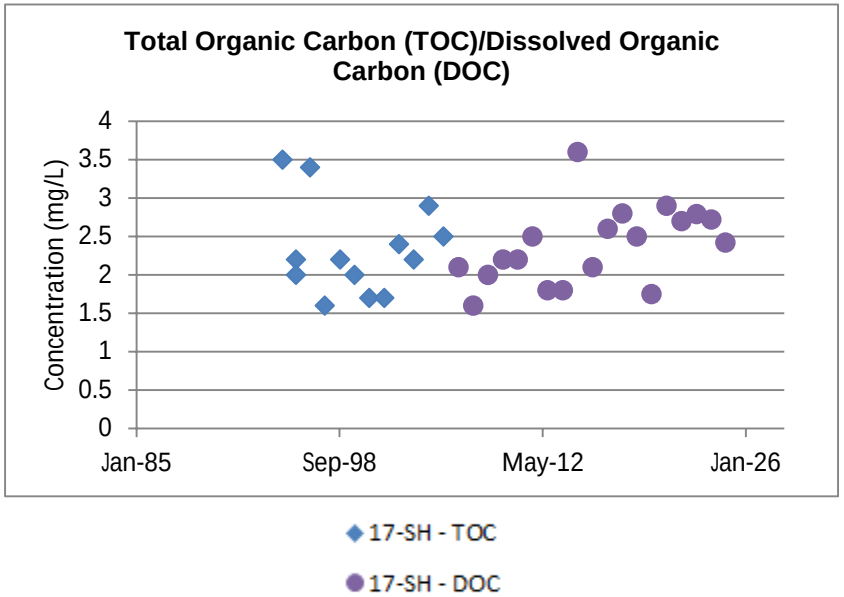
AECOM

Figure 12.31
VEOLIA, Swan Hills Treatment Centre
17-SH - Indicators



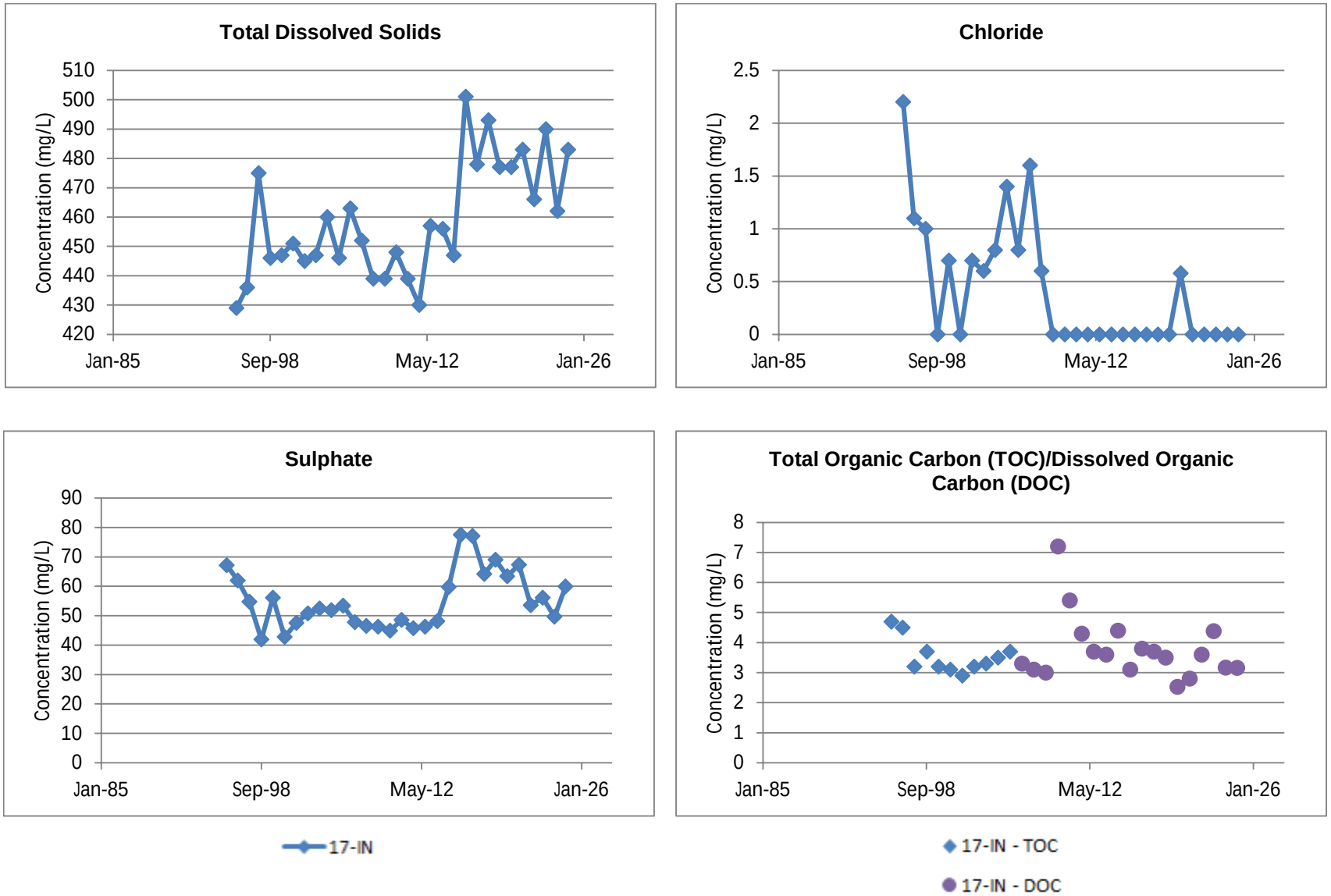






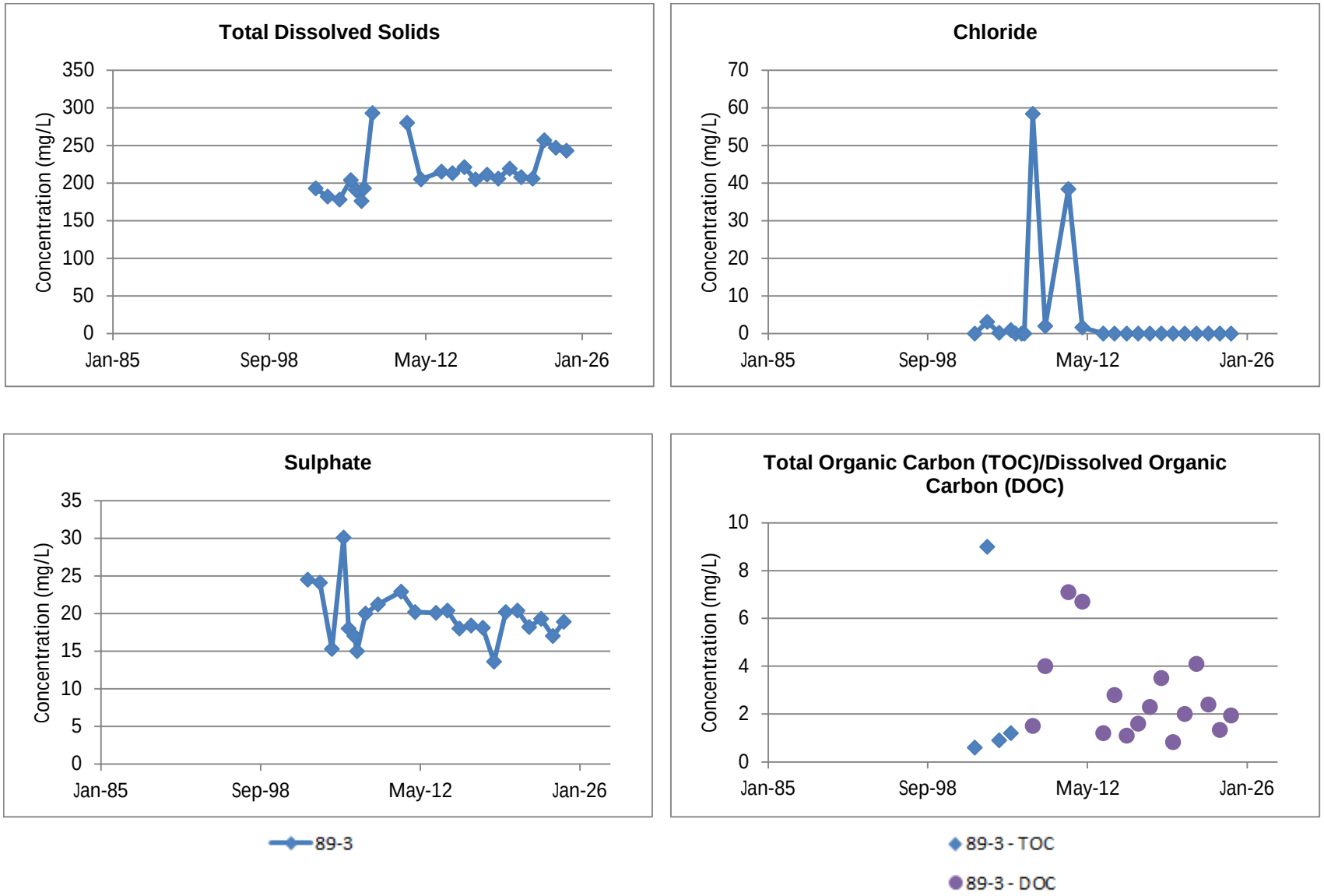
AECOM

Figure 12.32
VEOLIA, Swan Hills Treatment Centre
17-IN - Indicators



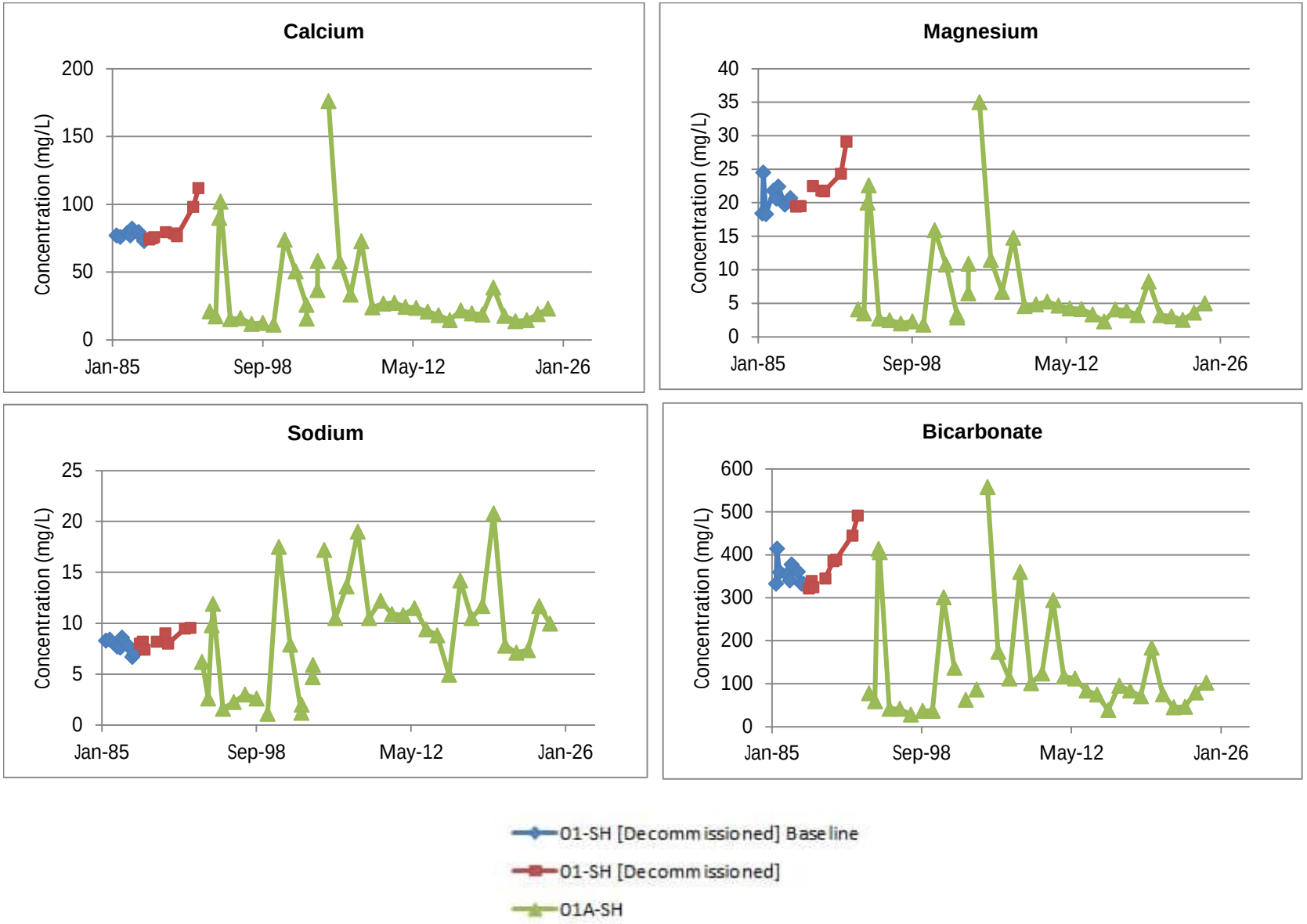
AECOM

Figure 12.33
VEOLIA, Swan Hills Treatment Centre
89-3 - Indicators



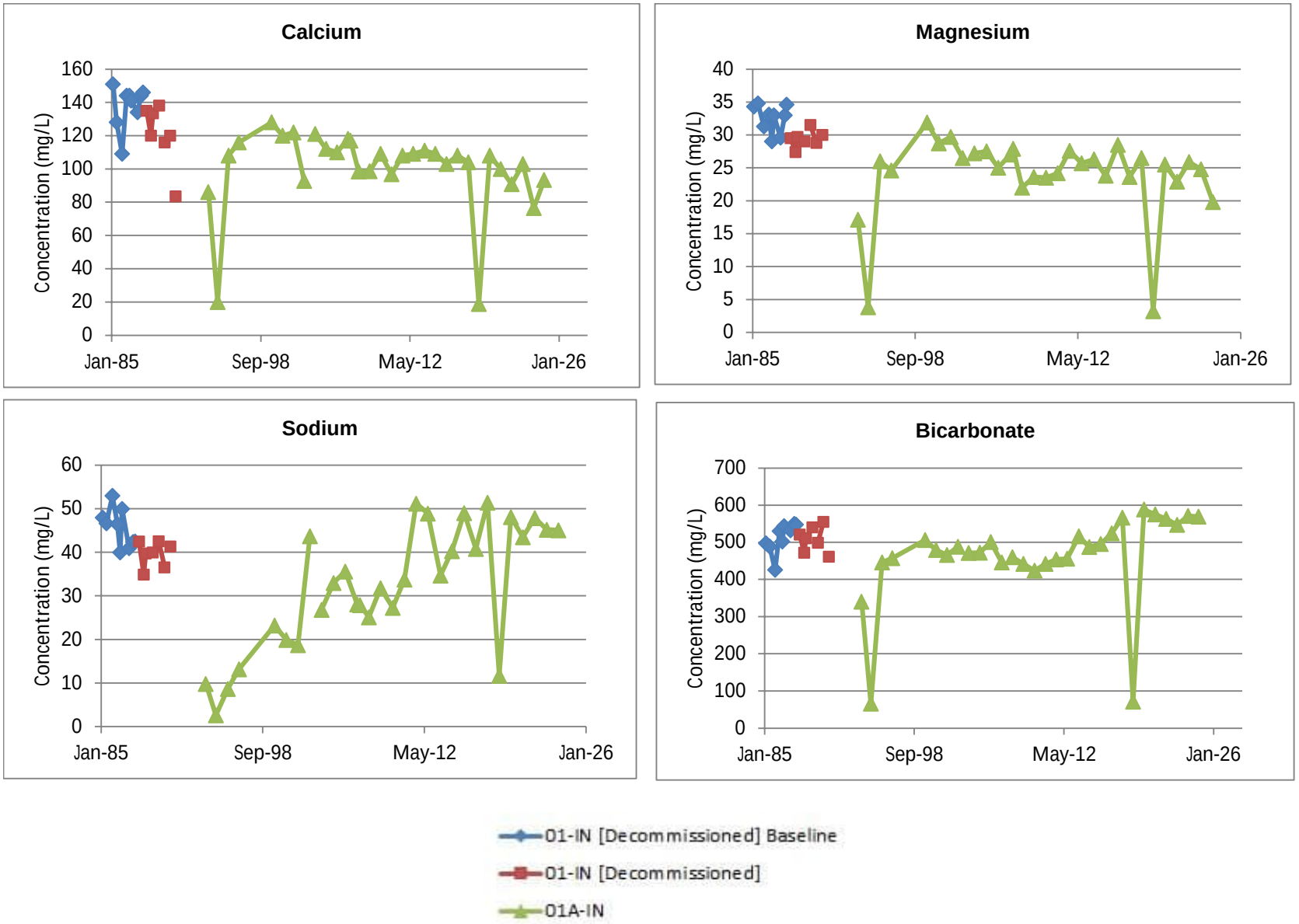
AECOM

Figure 13.1
VEOLIA, Swan Hills Treatment Centre
01-SH and 01A-SH - Major Ions



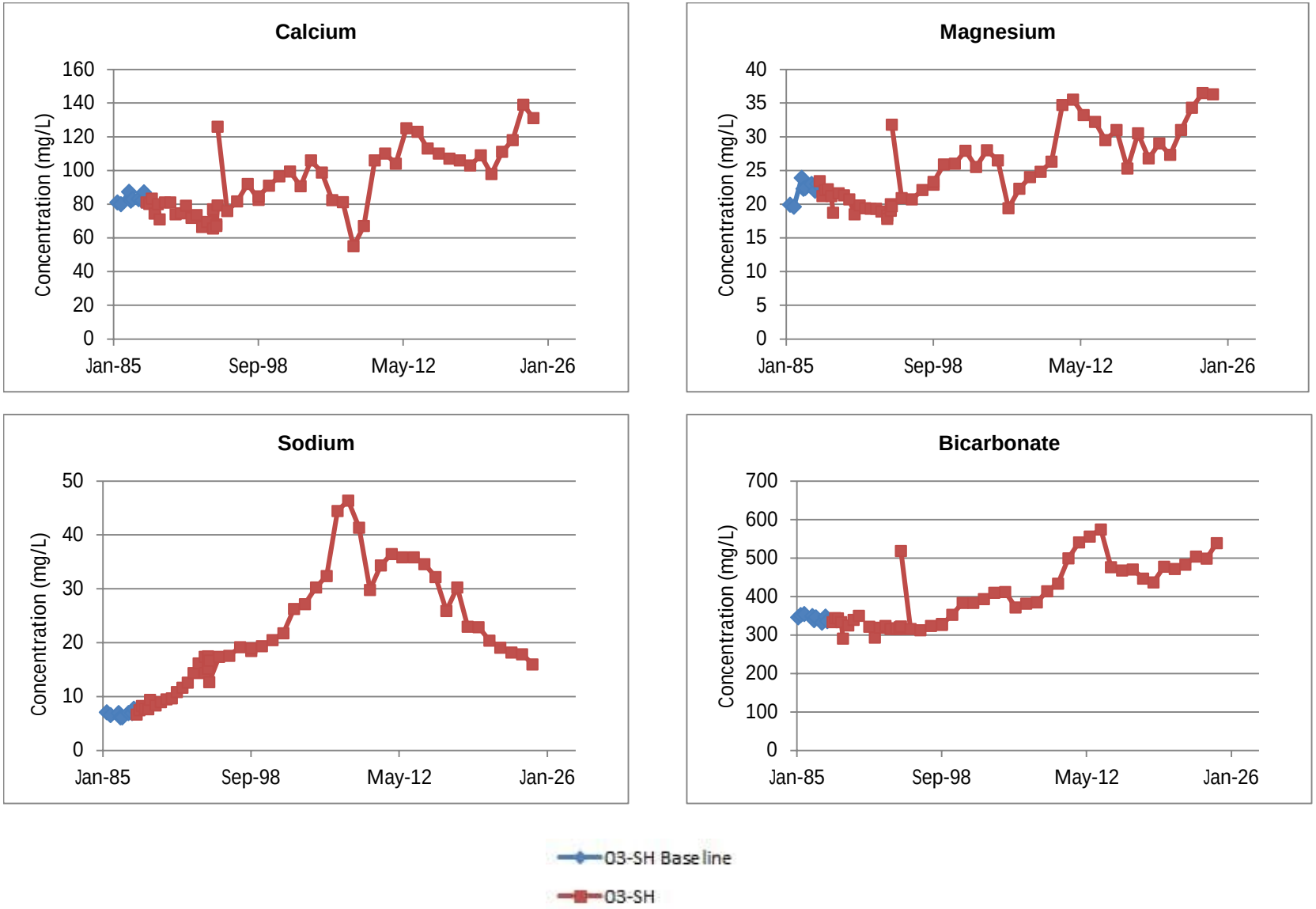
AECOM

Figure 13.2
VEOLIA, Swan Hills Treatment Centre
01-IN and 01A-IN - Major Ions



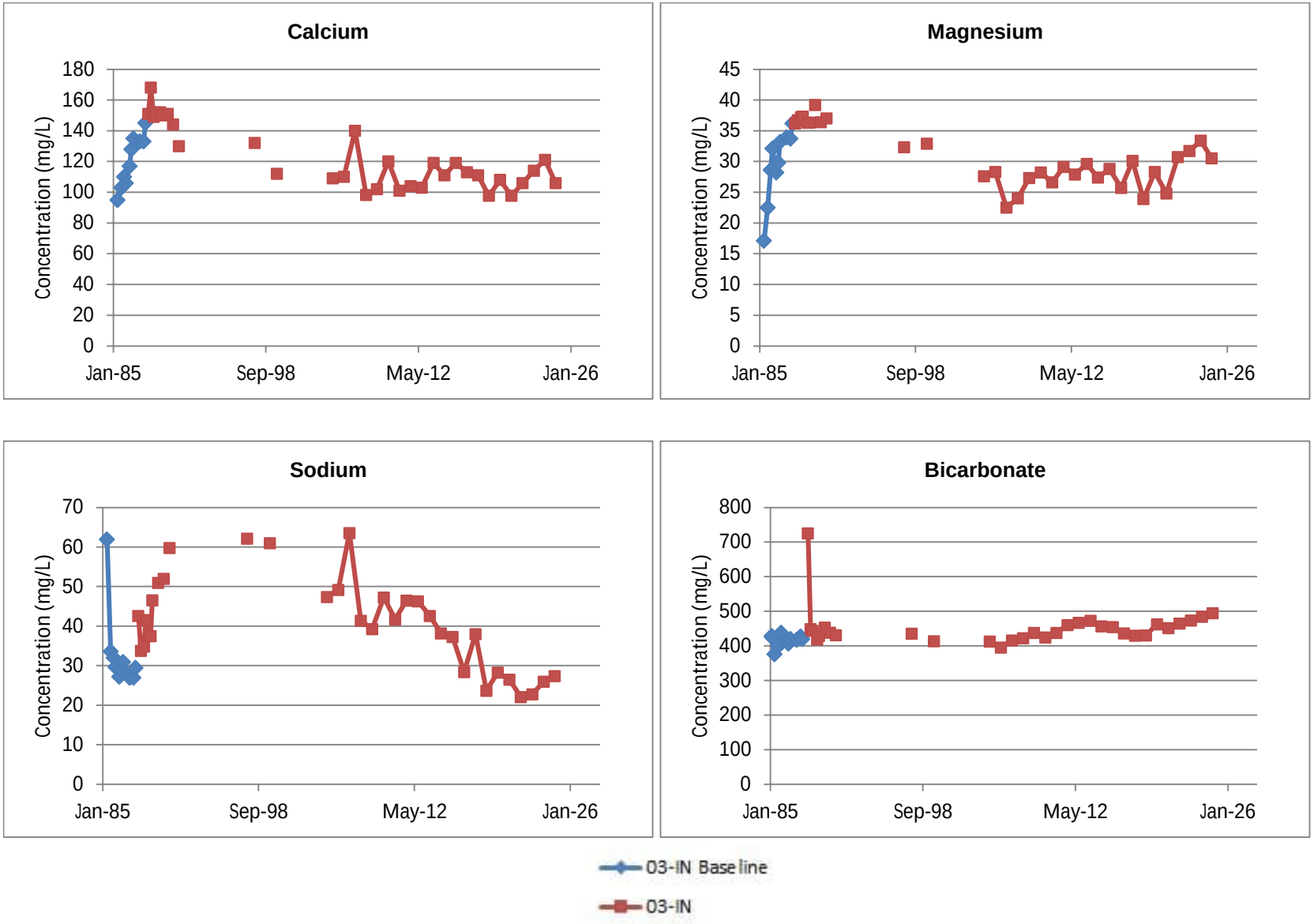
AECOM

Figure 13.3
VEOLIA, Swan Hills Treatment Centre
03-SH - Major Ions



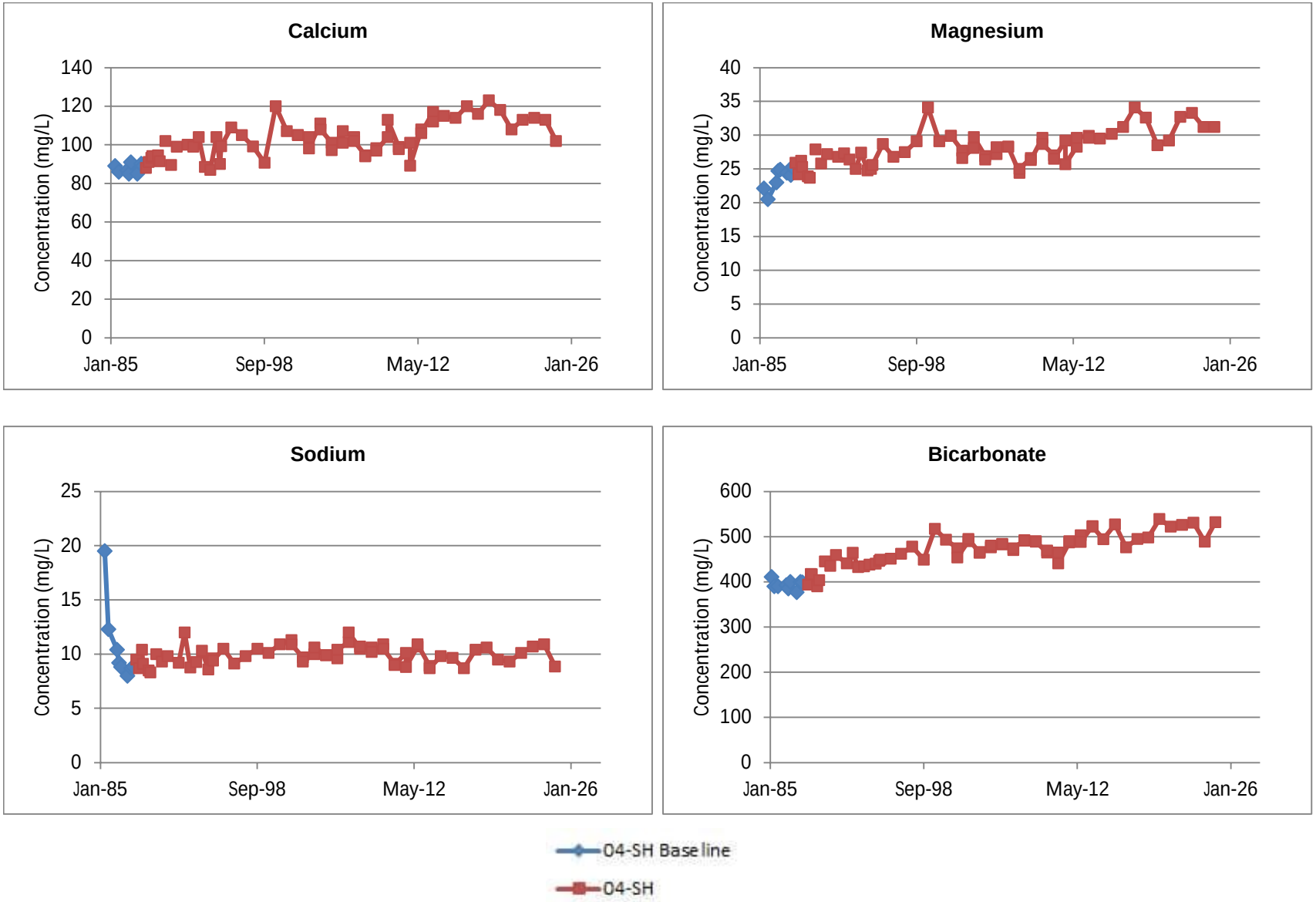
AECOM

Figure 13.4
VEOLIA, Swan Hills Treatment Centre
03-IN - Major Ions



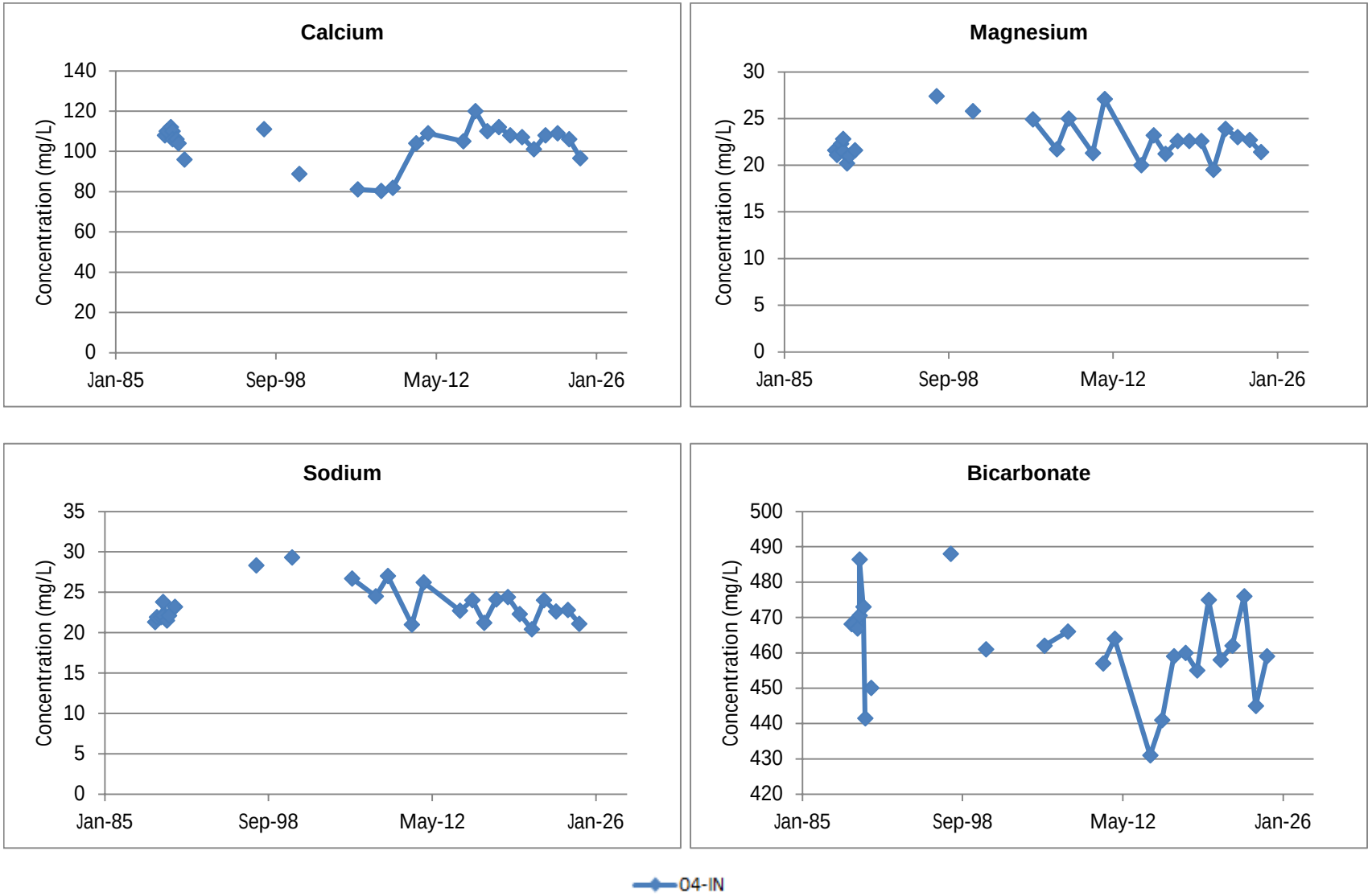
AECOM

Figure 13.5
VEOLIA, Swan Hills Treatment Centre
04-SH - Major Ions



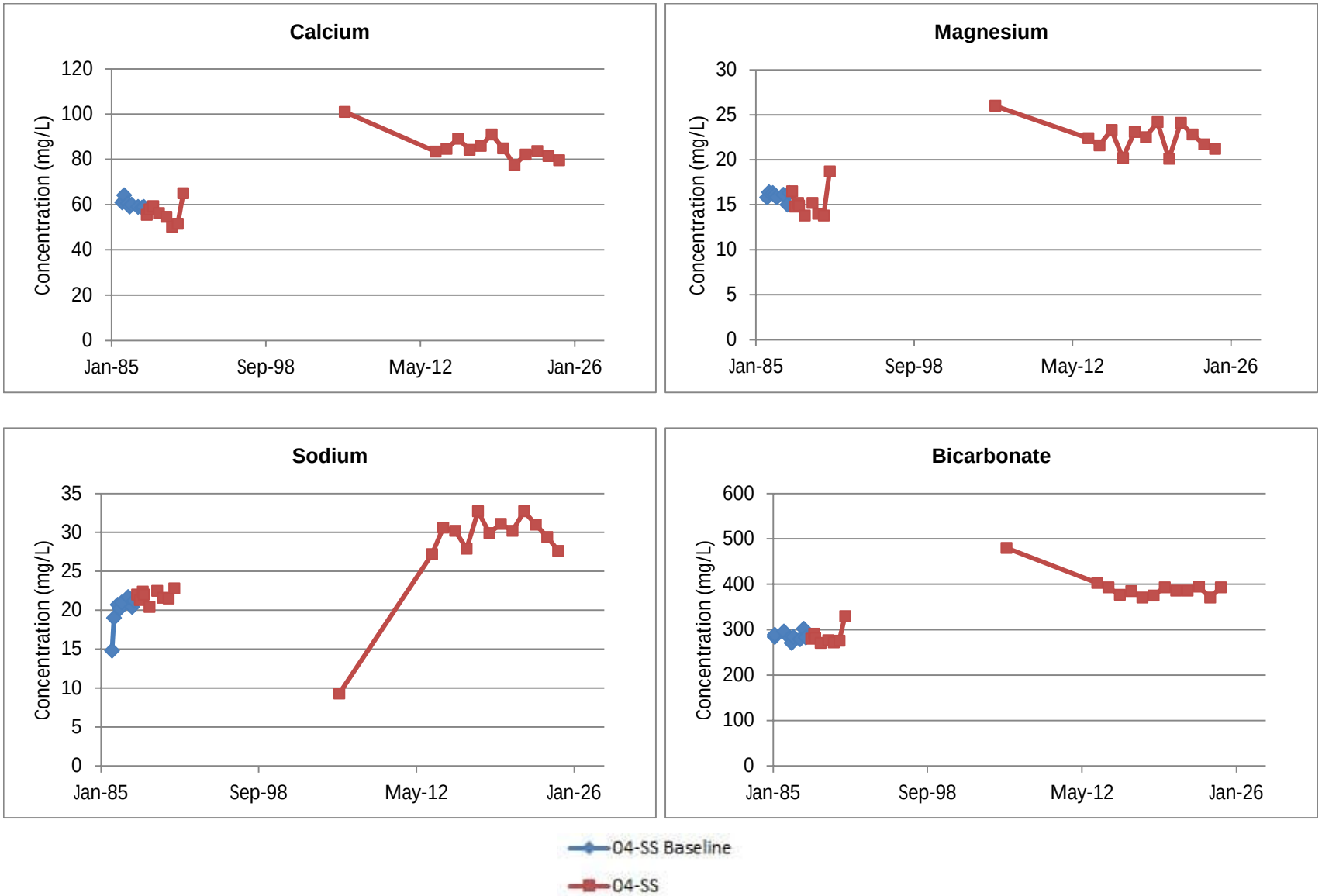
AECOM

Table 13.6
VEOLIA, Swan Hills Treatment Centre
04-IN - Major Ions



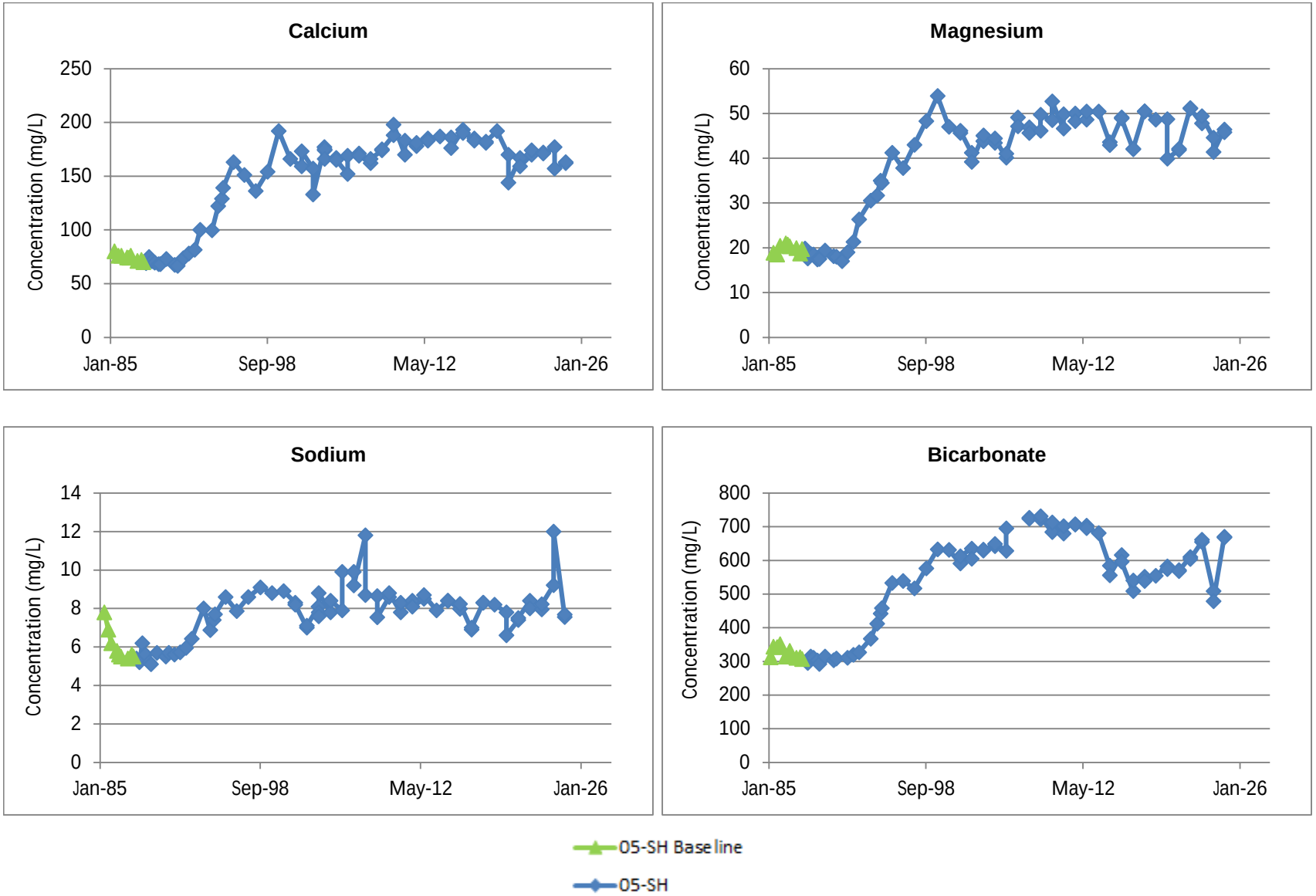
AECOM

Table 13.7
VEOLIA, Swan Hills Treatment Centre
04-SS - Major Ions



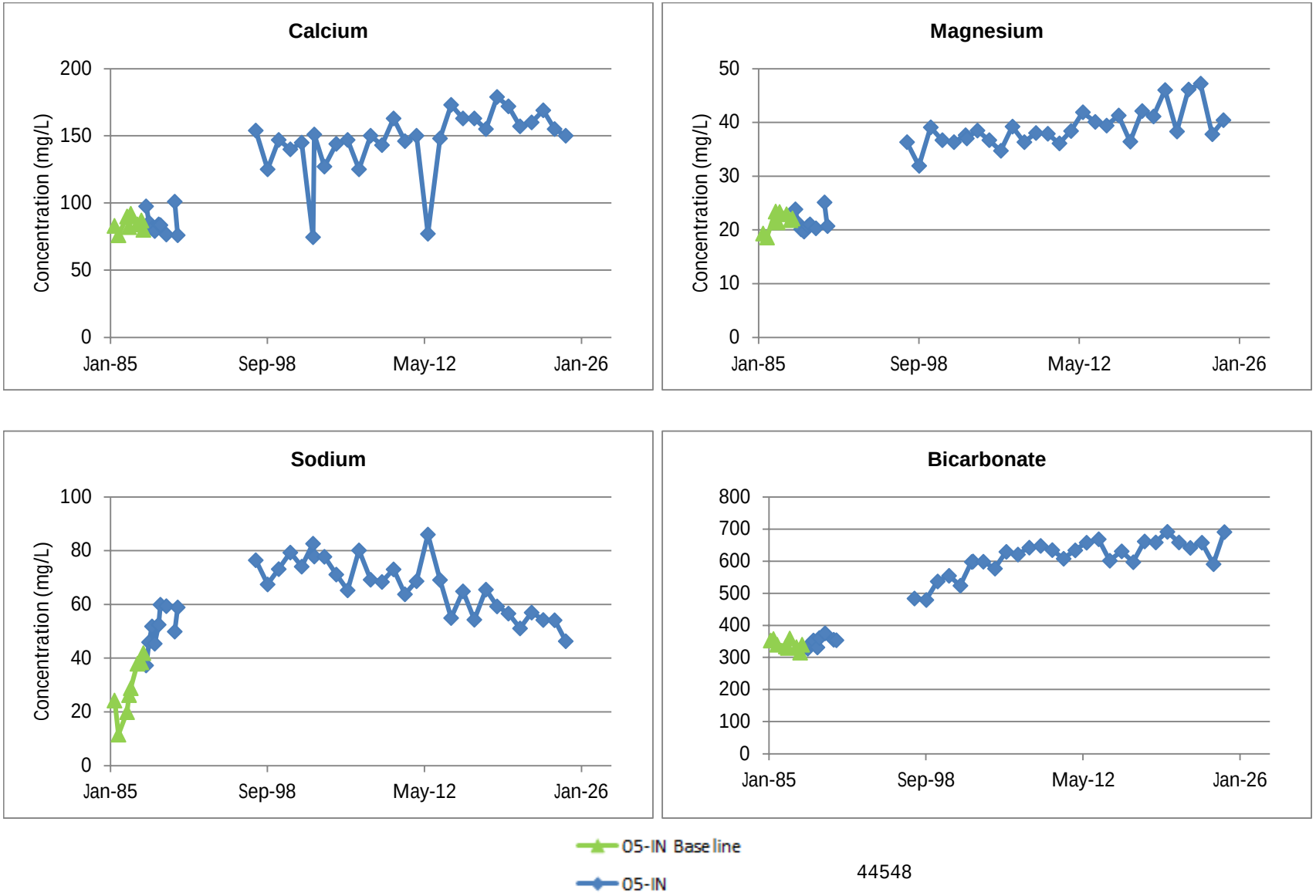
AECOM

Figure 13.8
VEOLIA, Swan Hills Treatment Centre
05-SH - Major Ions



AECOM

Figure 13.9
VEOLIA, Swan Hills Treatment Centre
05-IN - Major Ions



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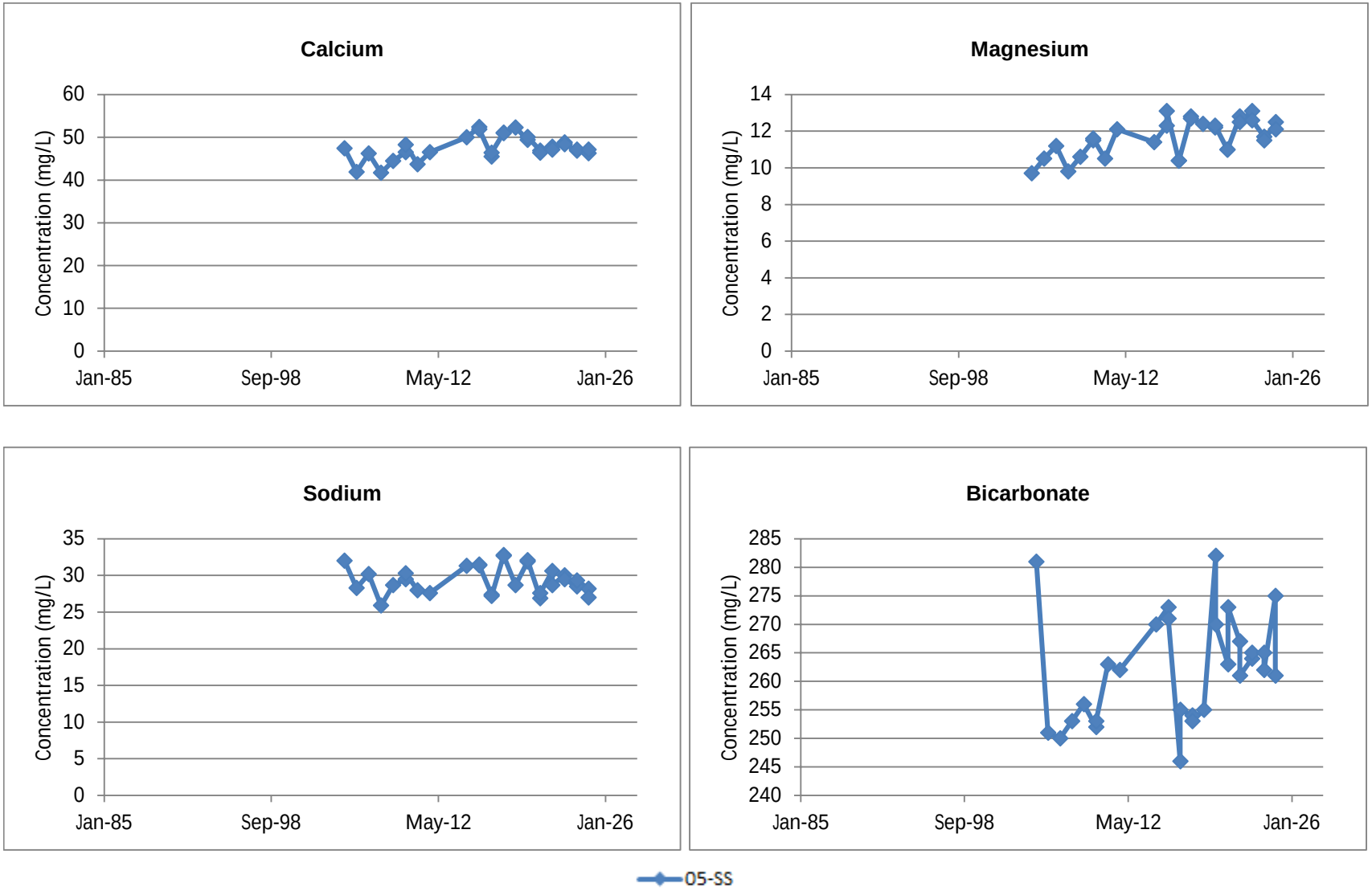
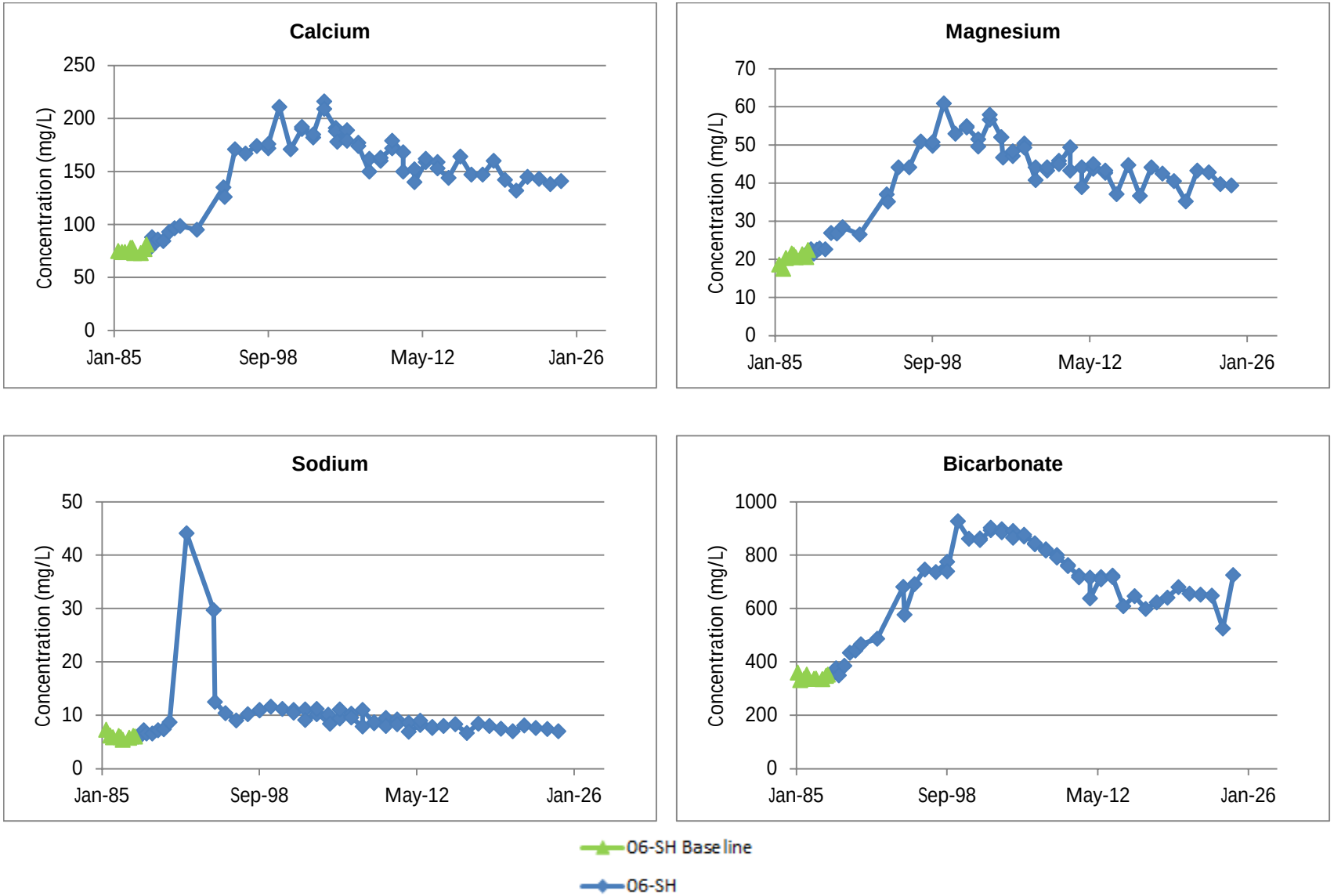
AECOM

Figure 13.10
VEOLIA, Swan Hills Treatment Centre
05-SS - Major Ions



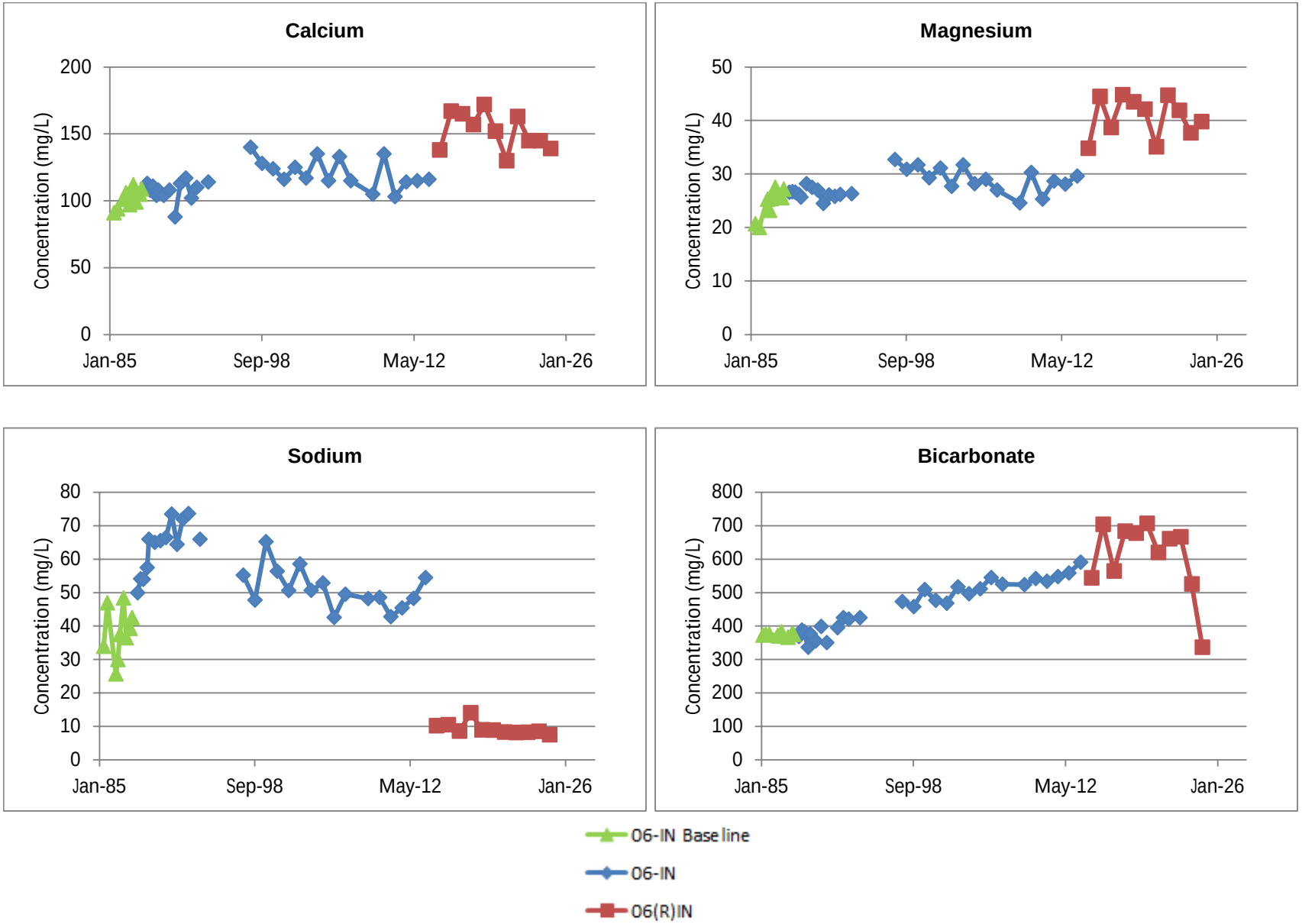
AECOM

Figure 13.11
VEOLIA, Swan Hills Treatment Centre
06-SH - Major Ions



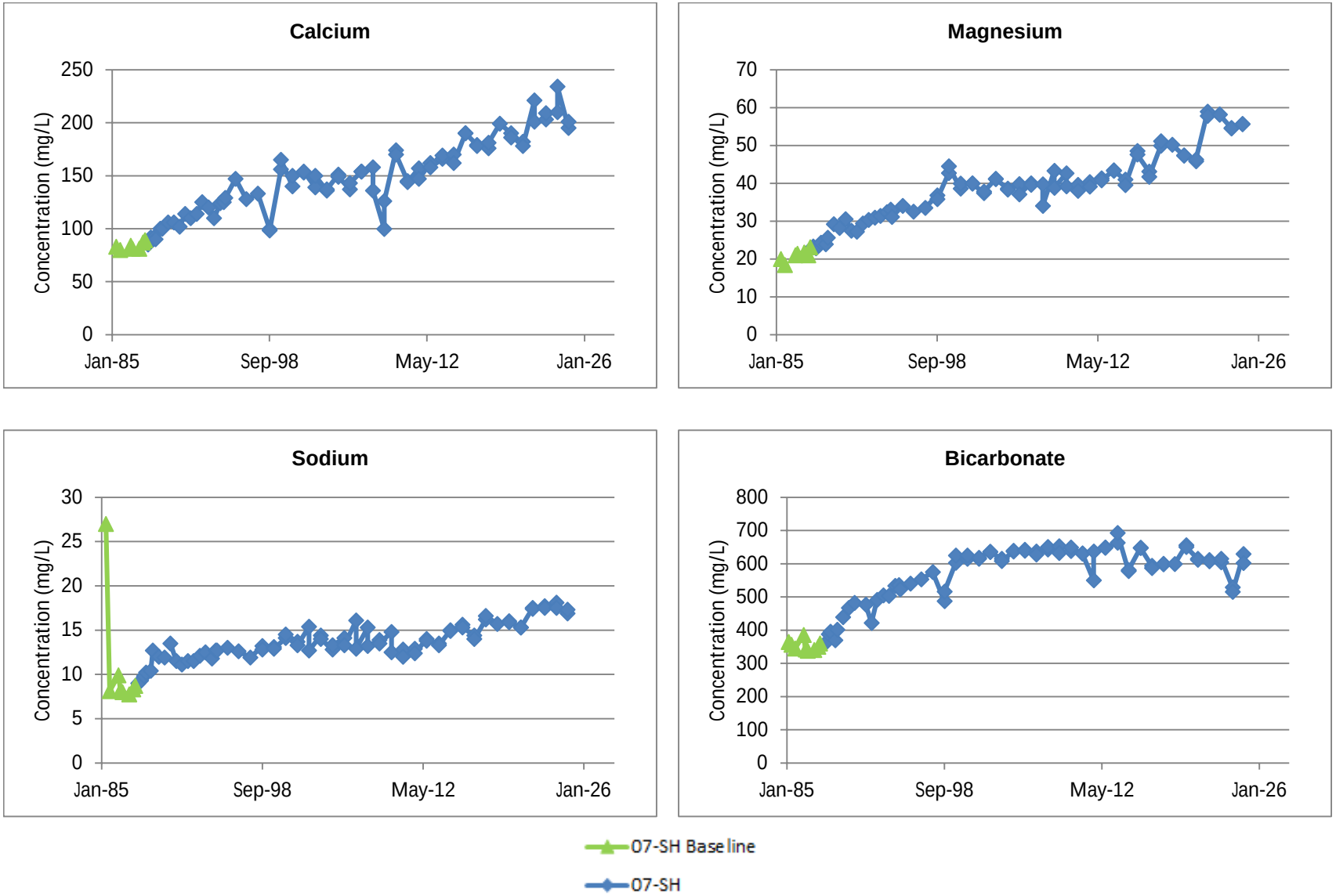
AECOM

Figure 13.12
VEOLIA, Swan Hills Treatment Centre
06-IN and 06(R)IN - Major Ions



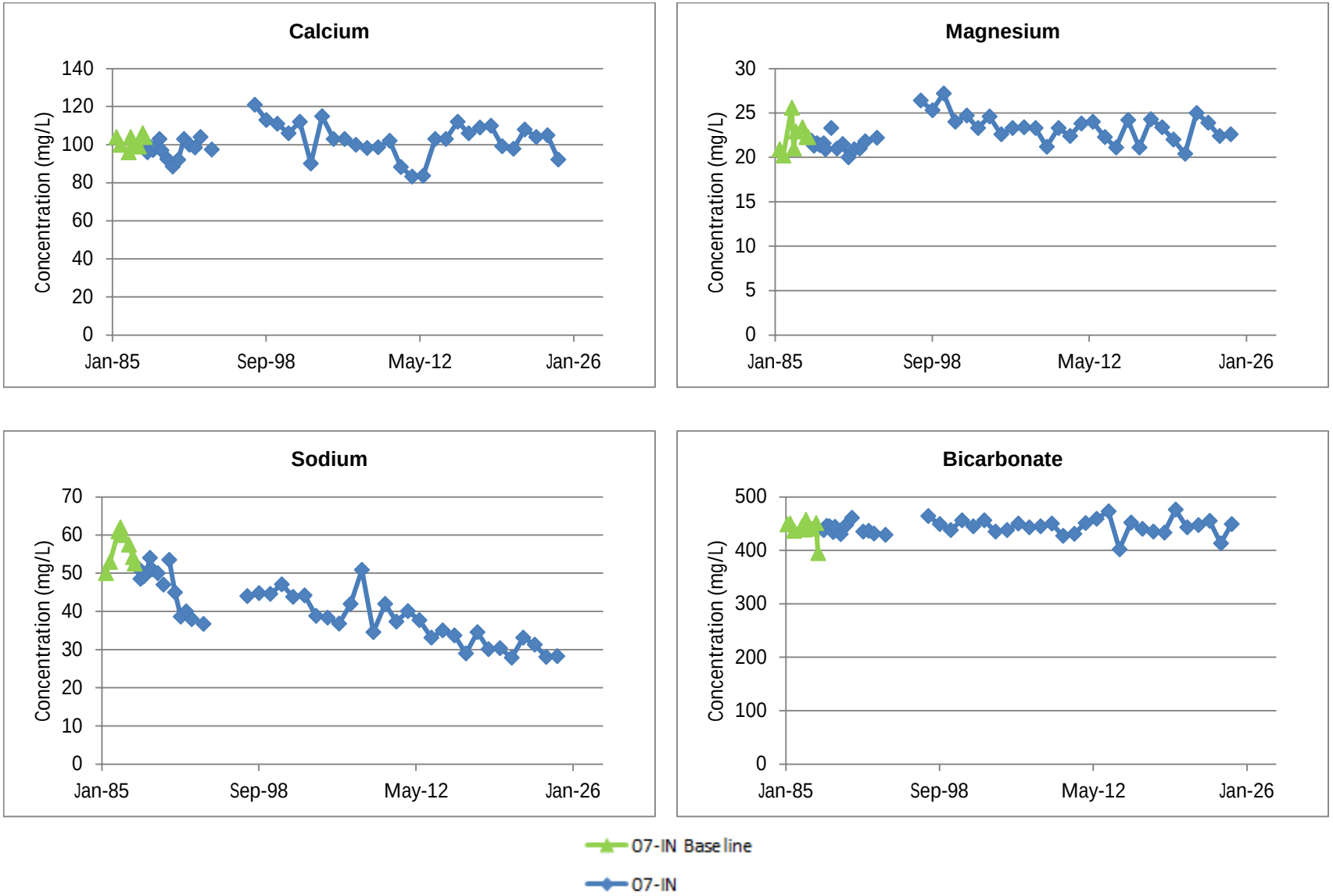
AECOM

Figure 13.13
VEOLIA, Swan Hills Treatment Centre
07-SH - Major Ions



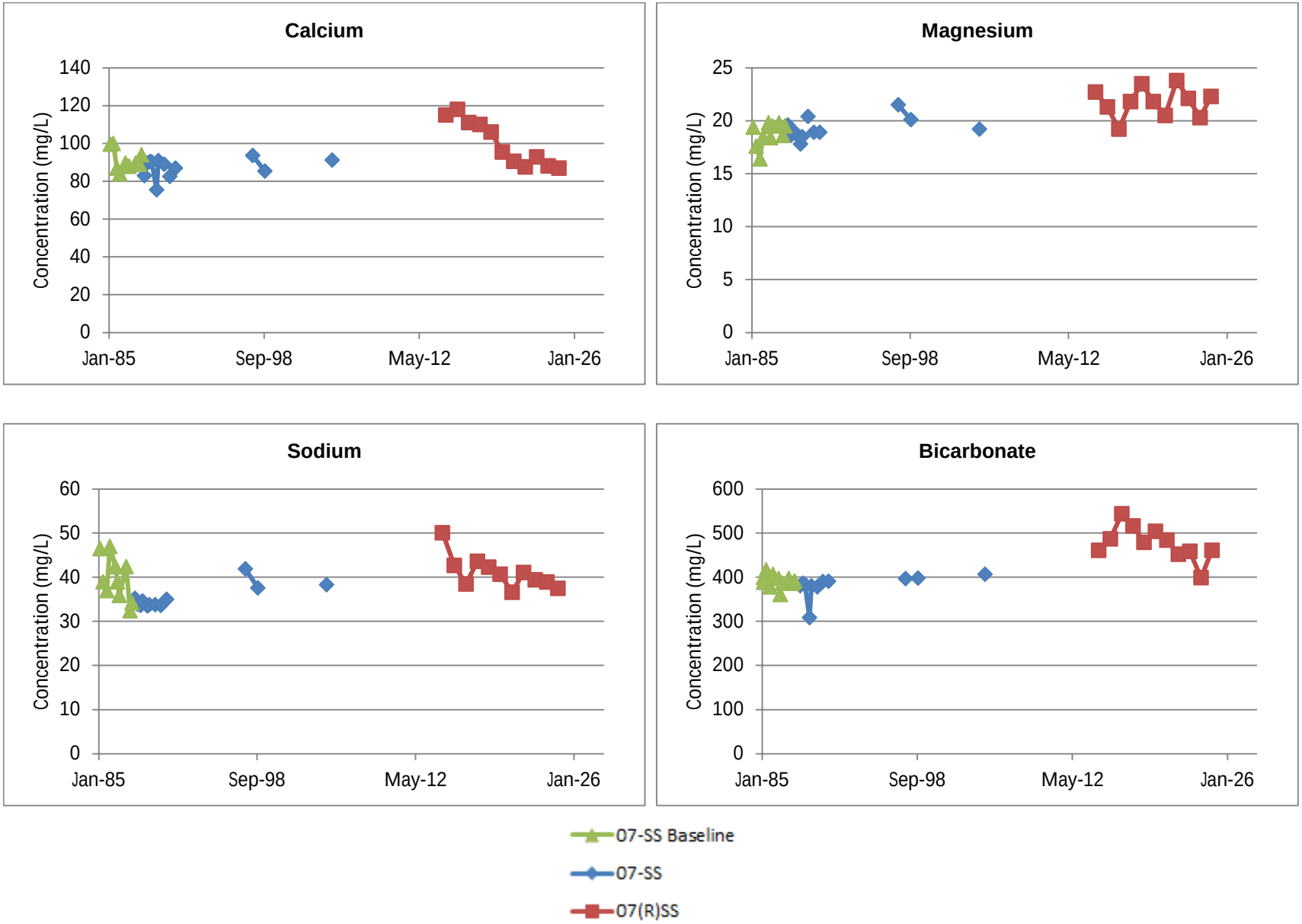
AECOM

Figure 13.14
VEOLIA, Swan Hills Treatment Centre
07-IN - Major Ions



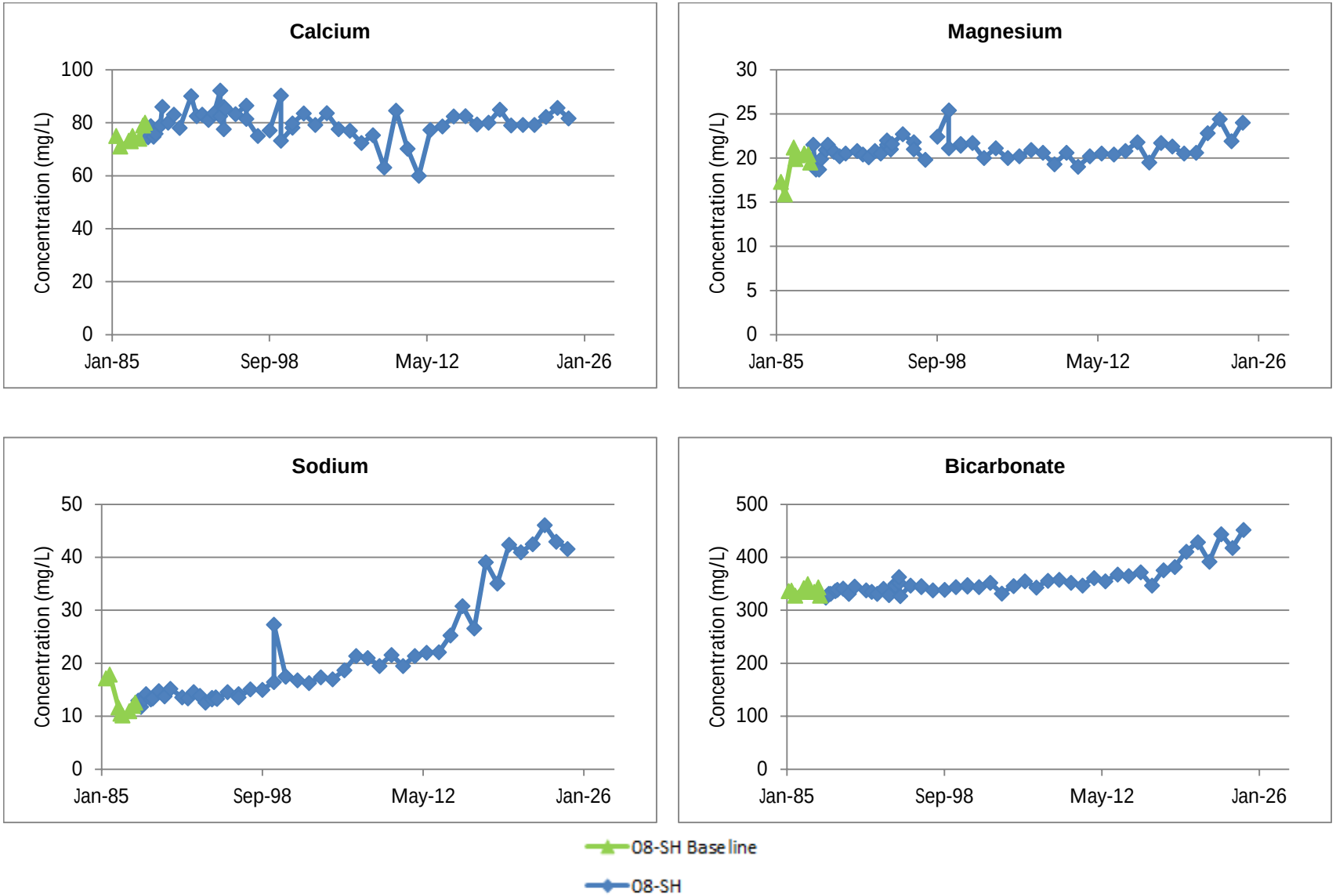
AECOM

Figure 13.15
VEOLIA, Swan Hills Treatment Centre
07-SS and 07(R)SS - Major Ions



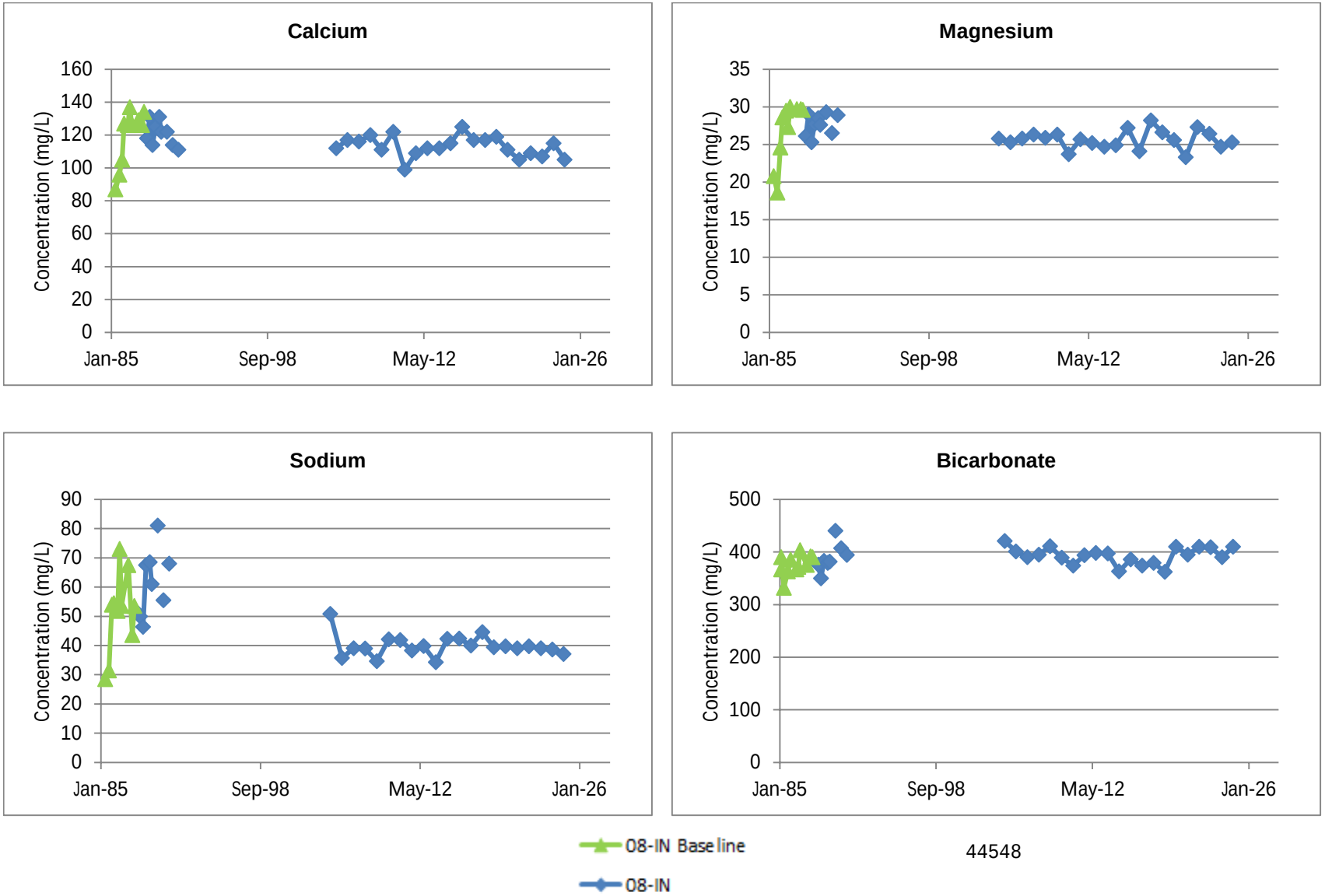
AECOM

Figure 13.16
VEOLIA, Swan Hills Treatment Centre
08-SH - Major Ions



AECOM

Figure 13.17
VEOLIA, Swan Hills Treatment Centre
08-IN - Major Ions



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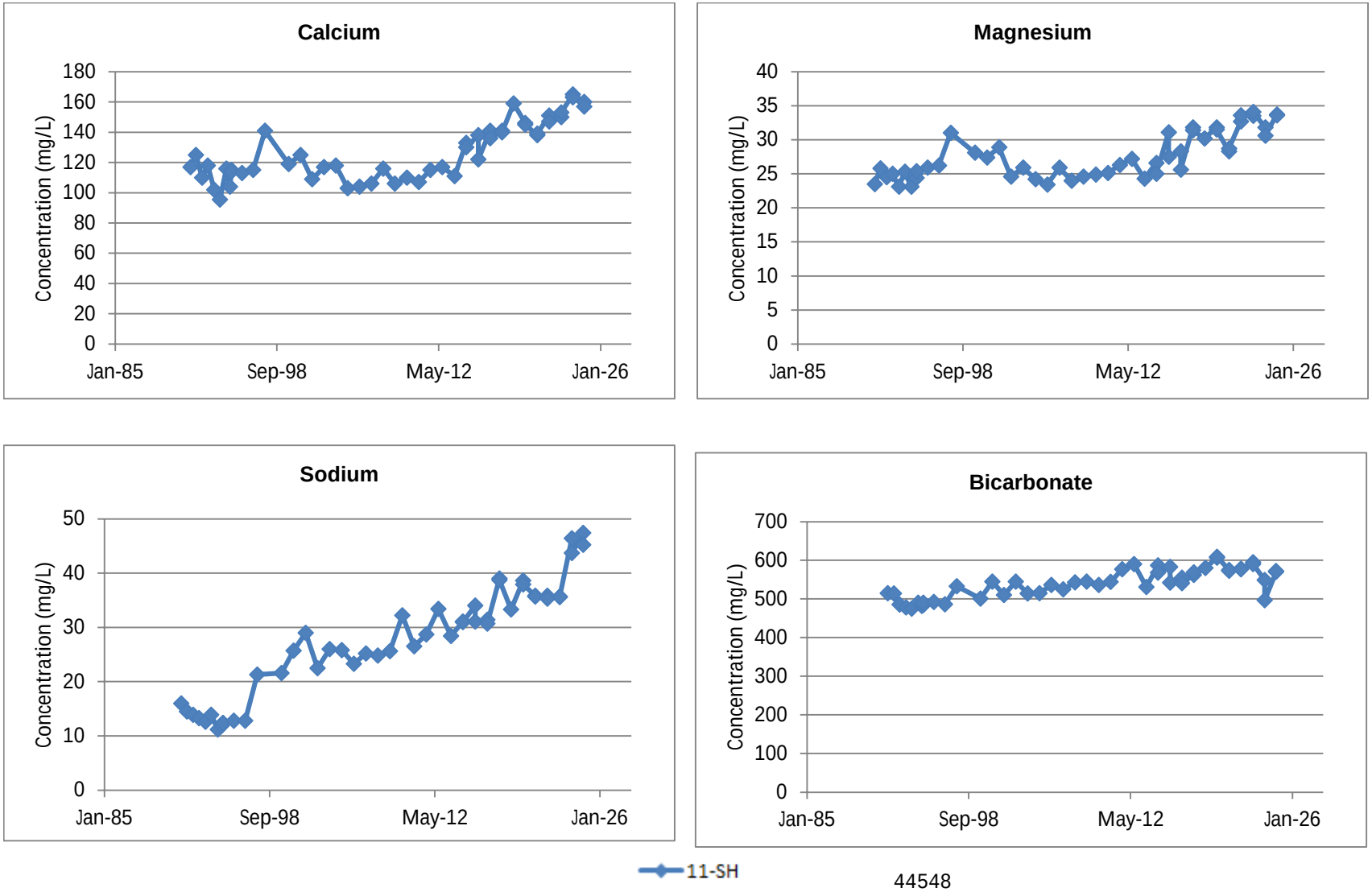
AECOM

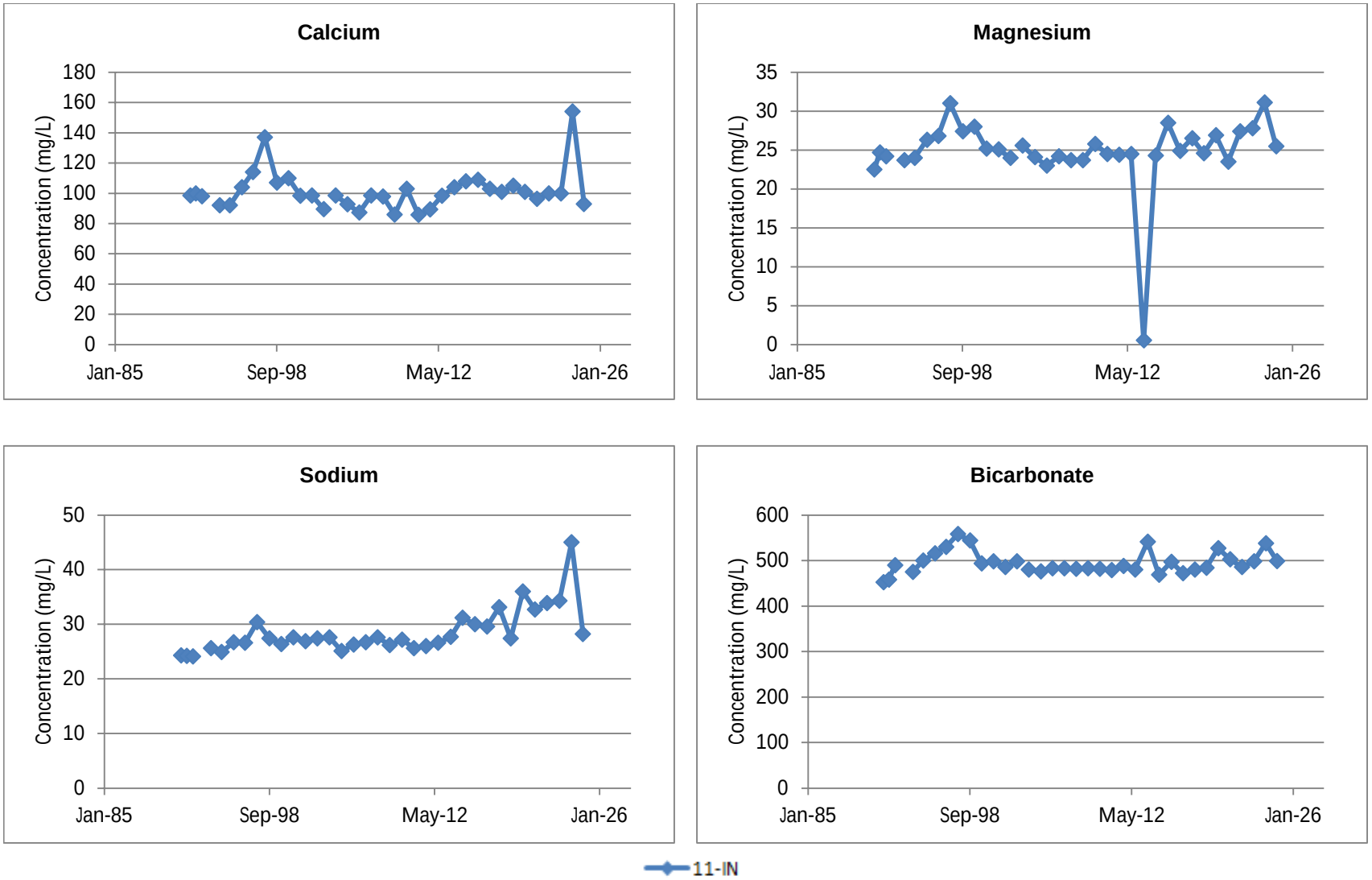
Figure 13.18
VEOLIA, Swan Hills Treatment Centre
11-SH - Major Ions



44548

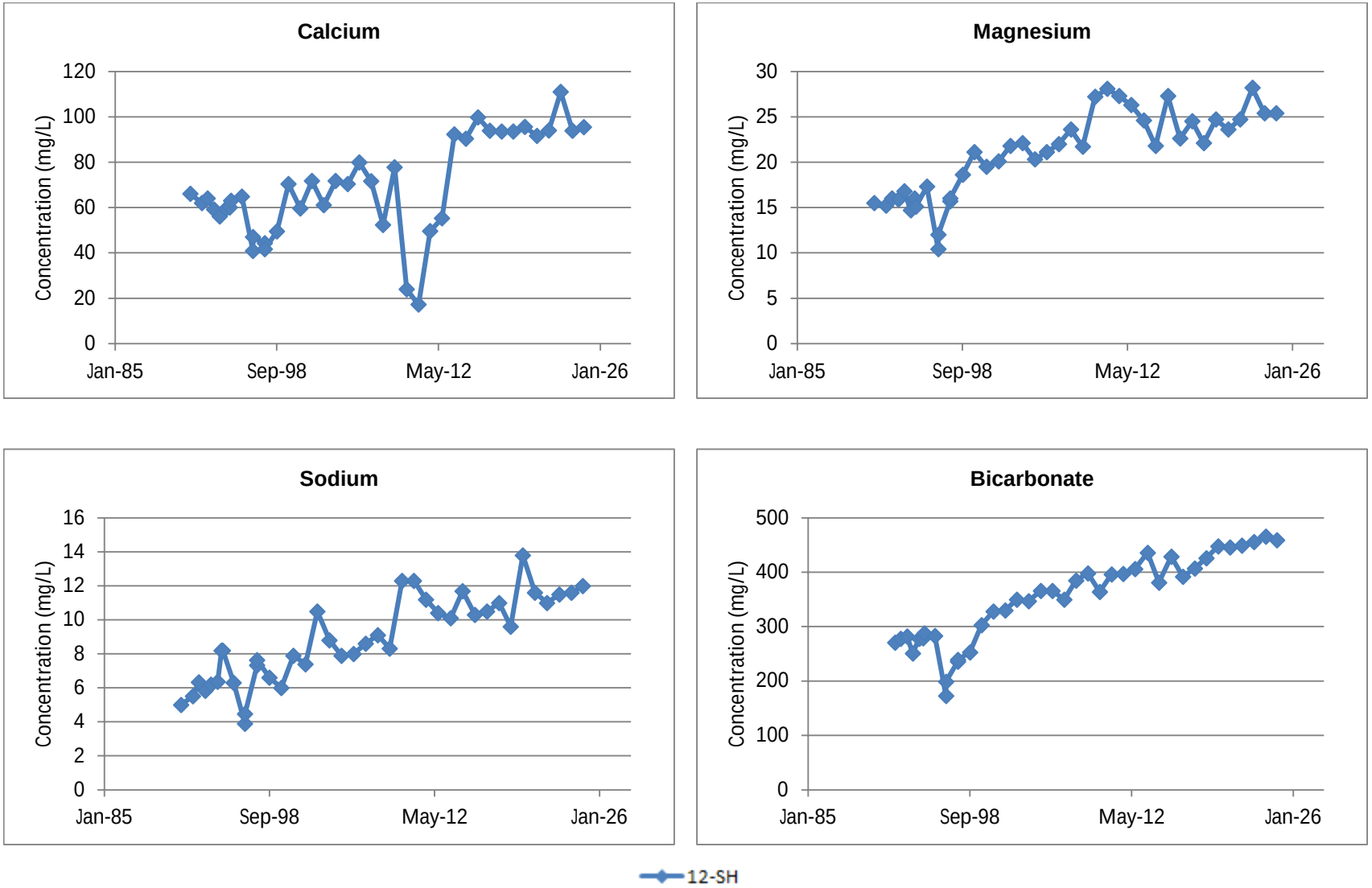
AECOM

Figure 13.19
VEOLIA, Swan Hills Treatment Centre
11-IN - Major Ions



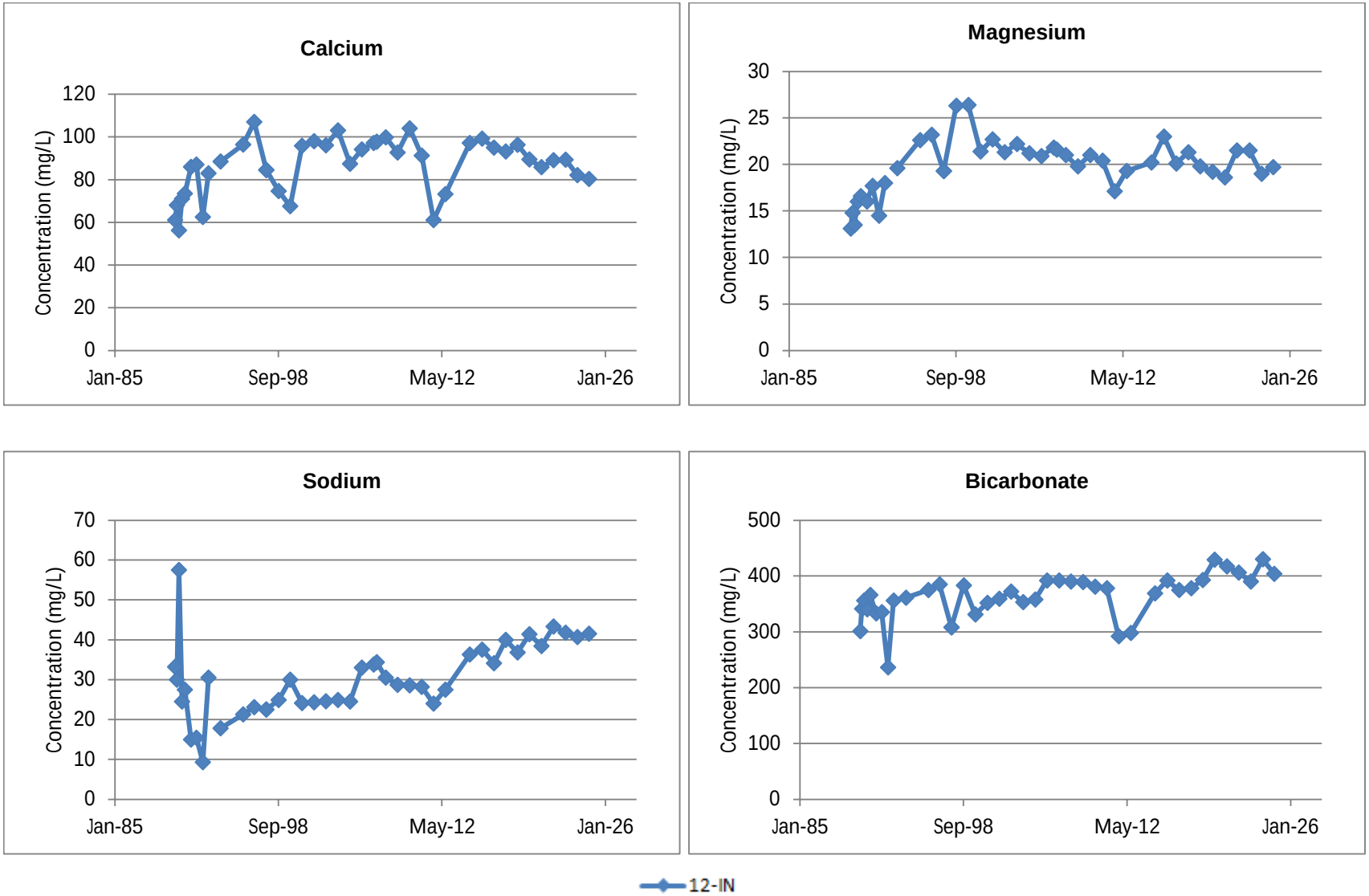
AECOM

Figure 13.20
VEOLIA, Swan Hills Treatment Centre
12-SH - Major Ions



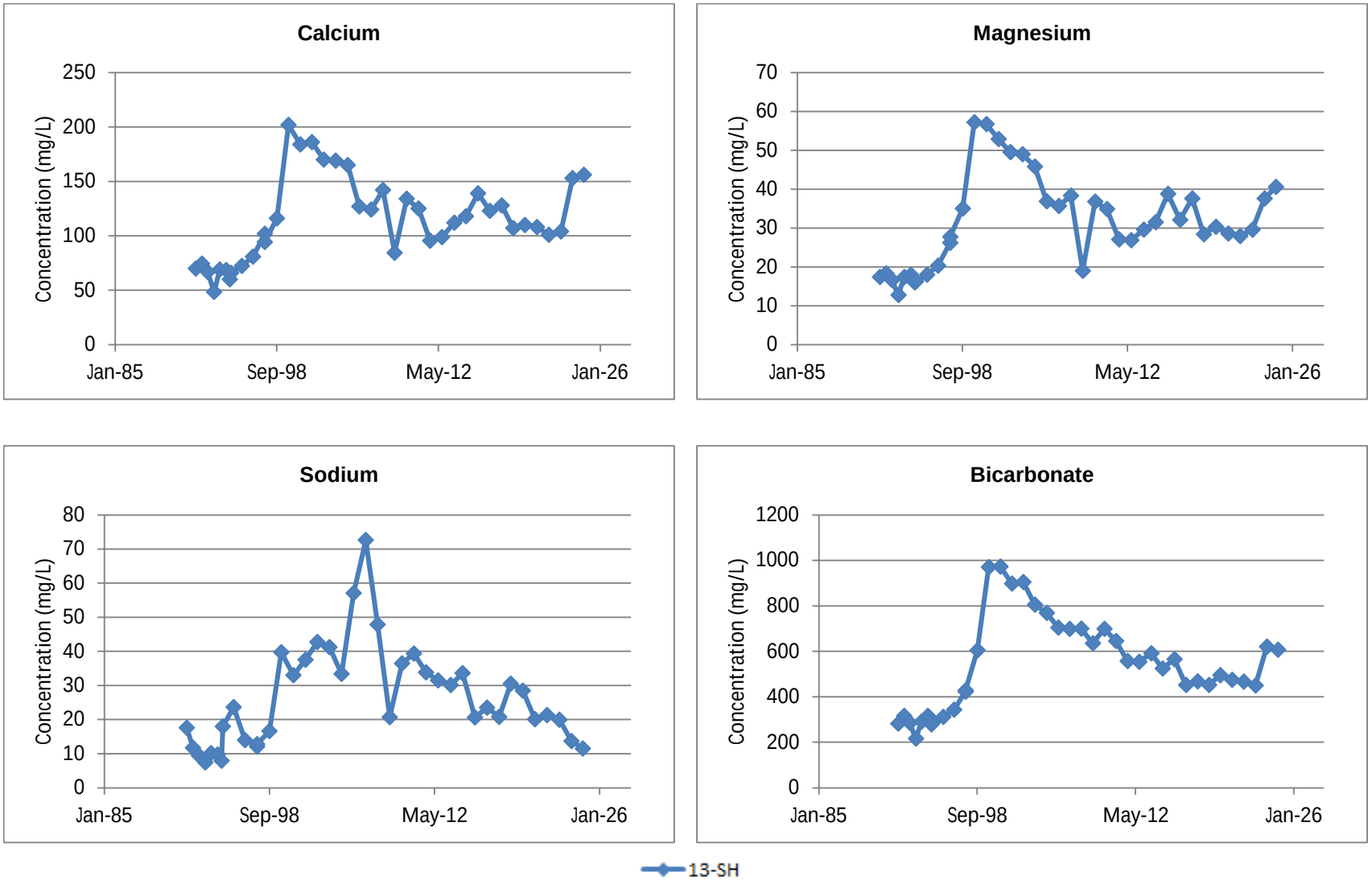
AECOM

Figure 13.21
VEOLIA, Swan Hills Treatment Centre
12-IN - Major Ions



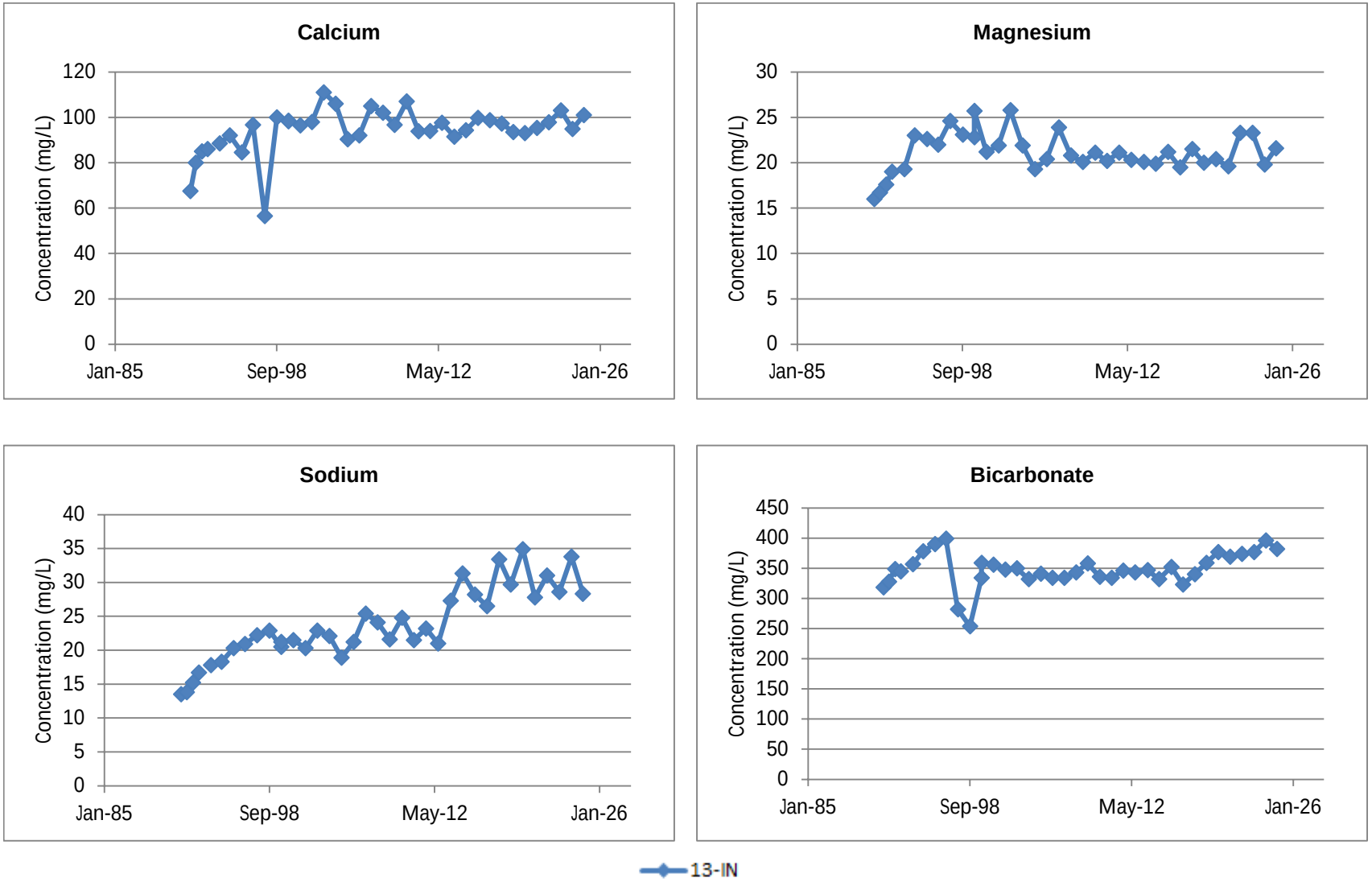
AECOM

Figure 13.22
VEOLIA, Swan Hills Treatment Centre
13-SH - Major Ions



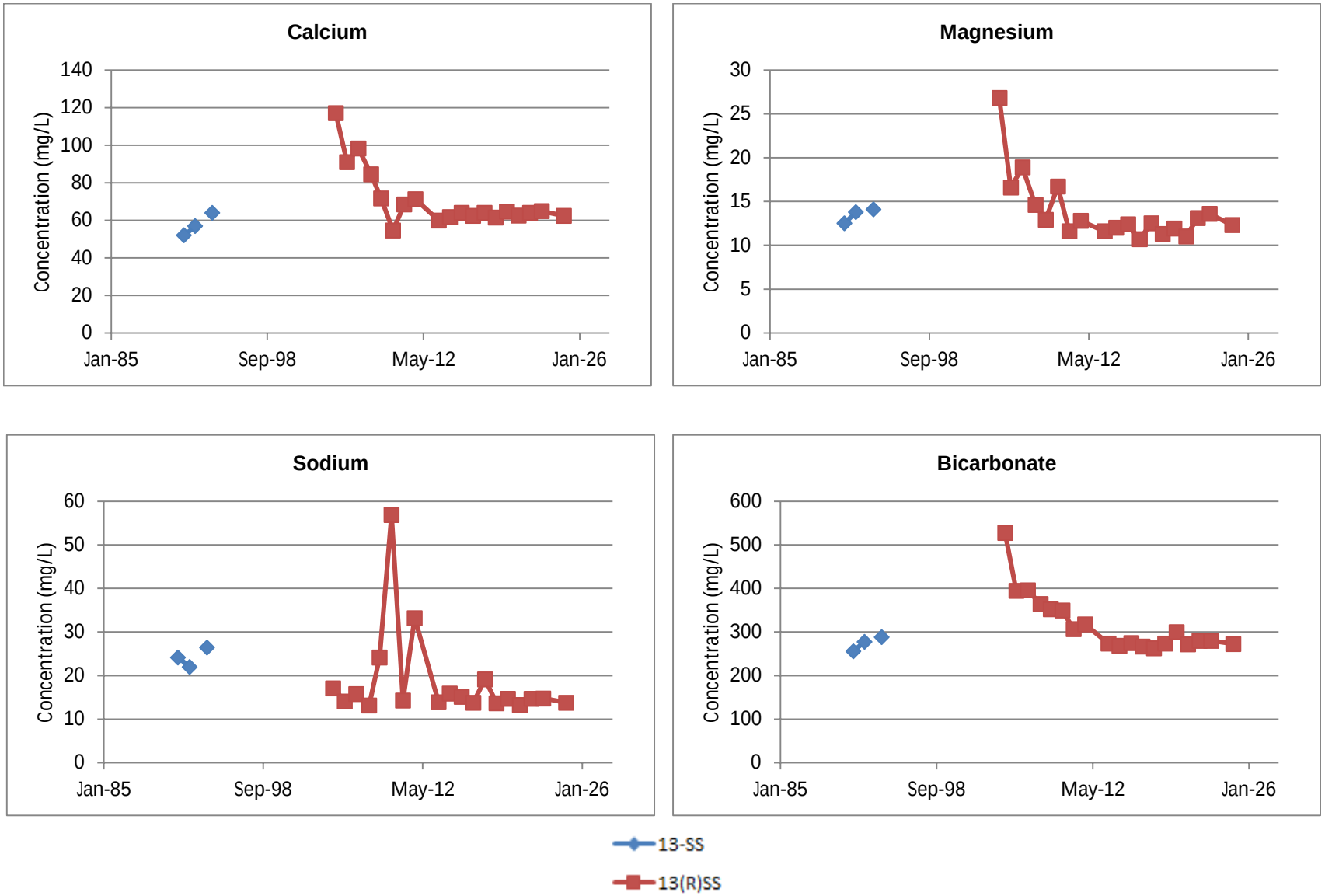
AECOM

Figure 13.23
VEOLIA, Swan Hills Treatment Centre
13-IN - Major Ions



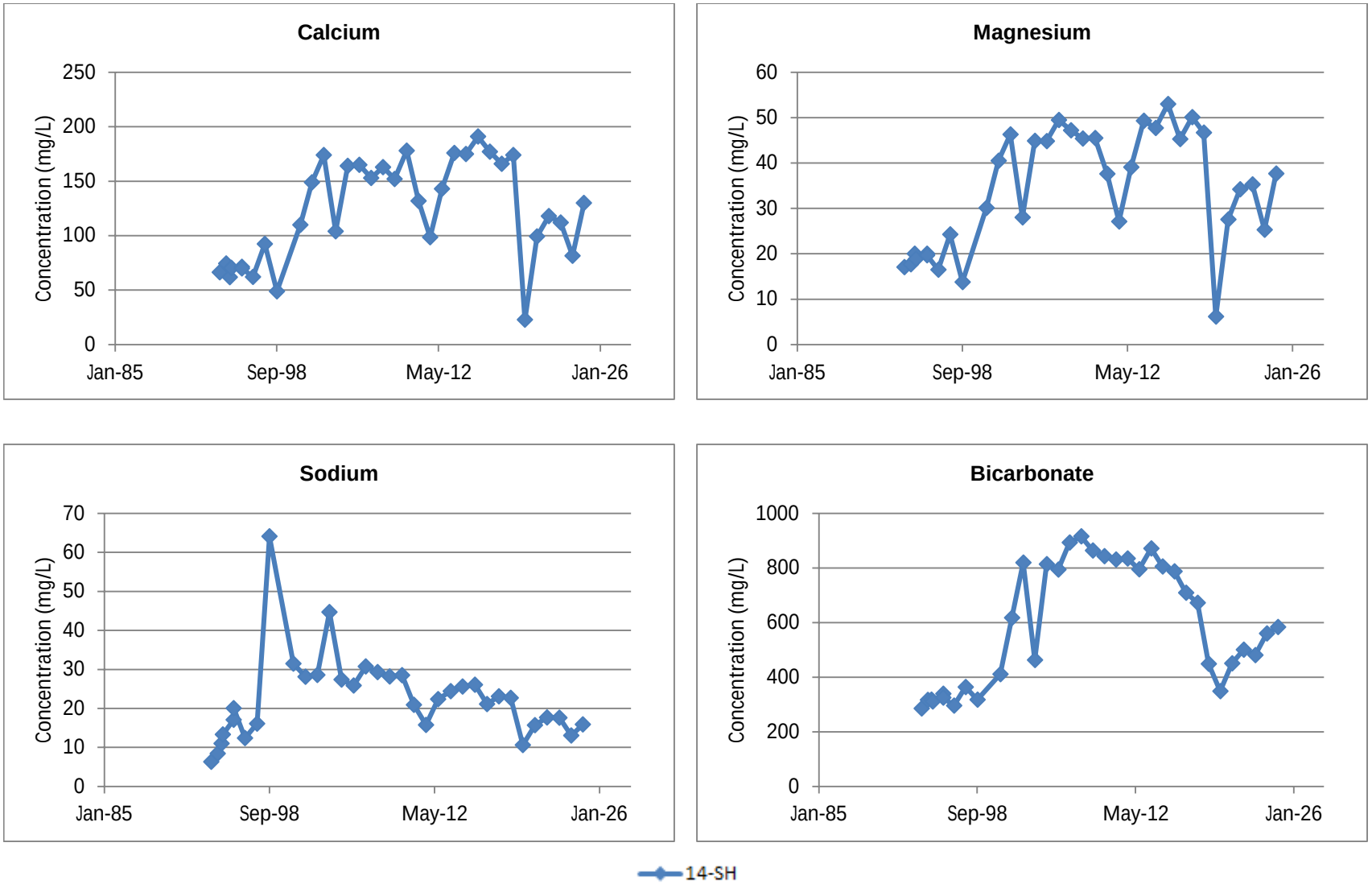
AECOM

Figure 13.24
VEOLIA, Swan Hills Treatment Centre
13-SS and 13(R)SS - Major Ions



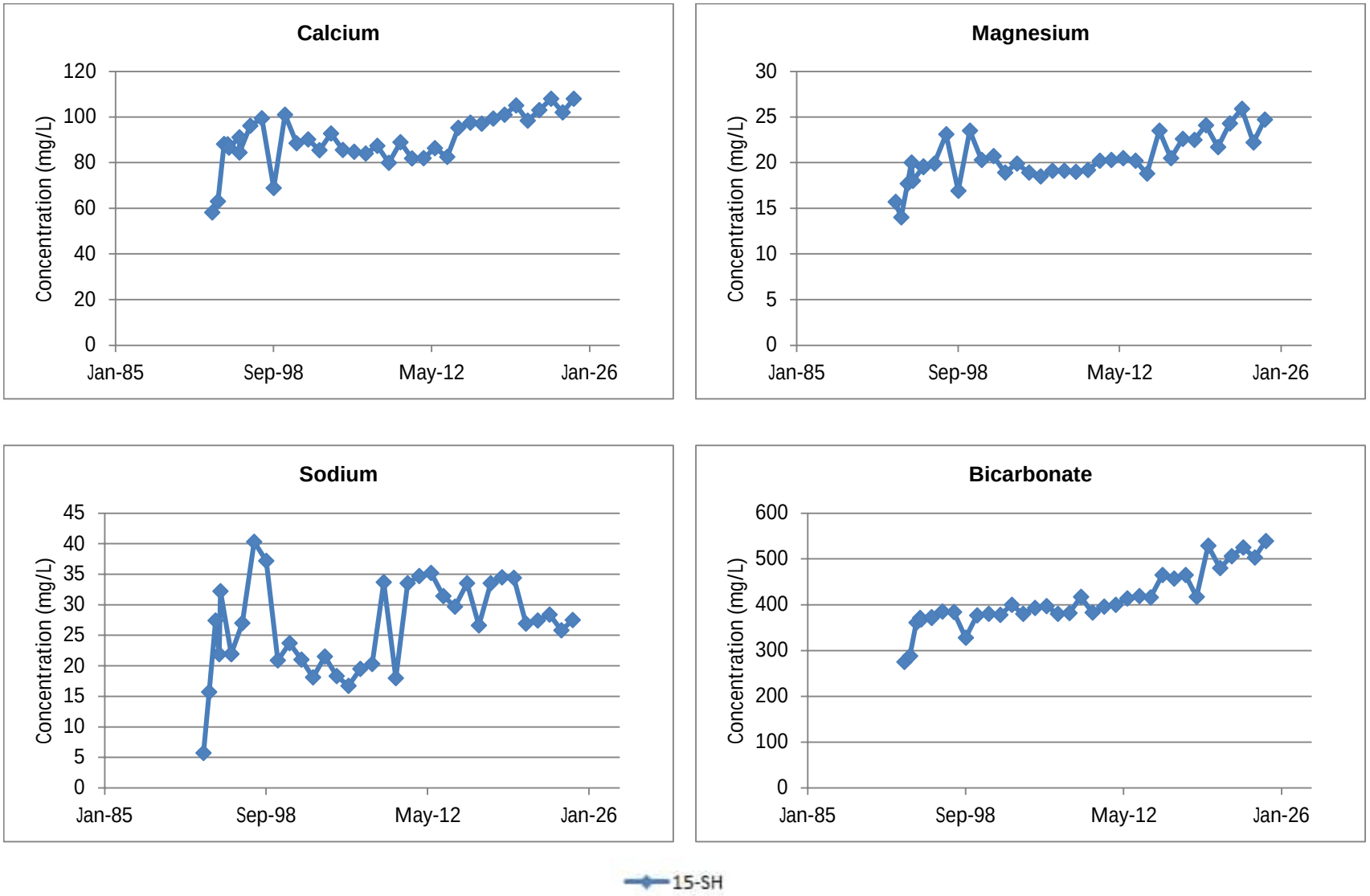
AECOM

Figure 13.25
VEOLIA, Swan Hills Treatment Centre
14-SH - Major Ions



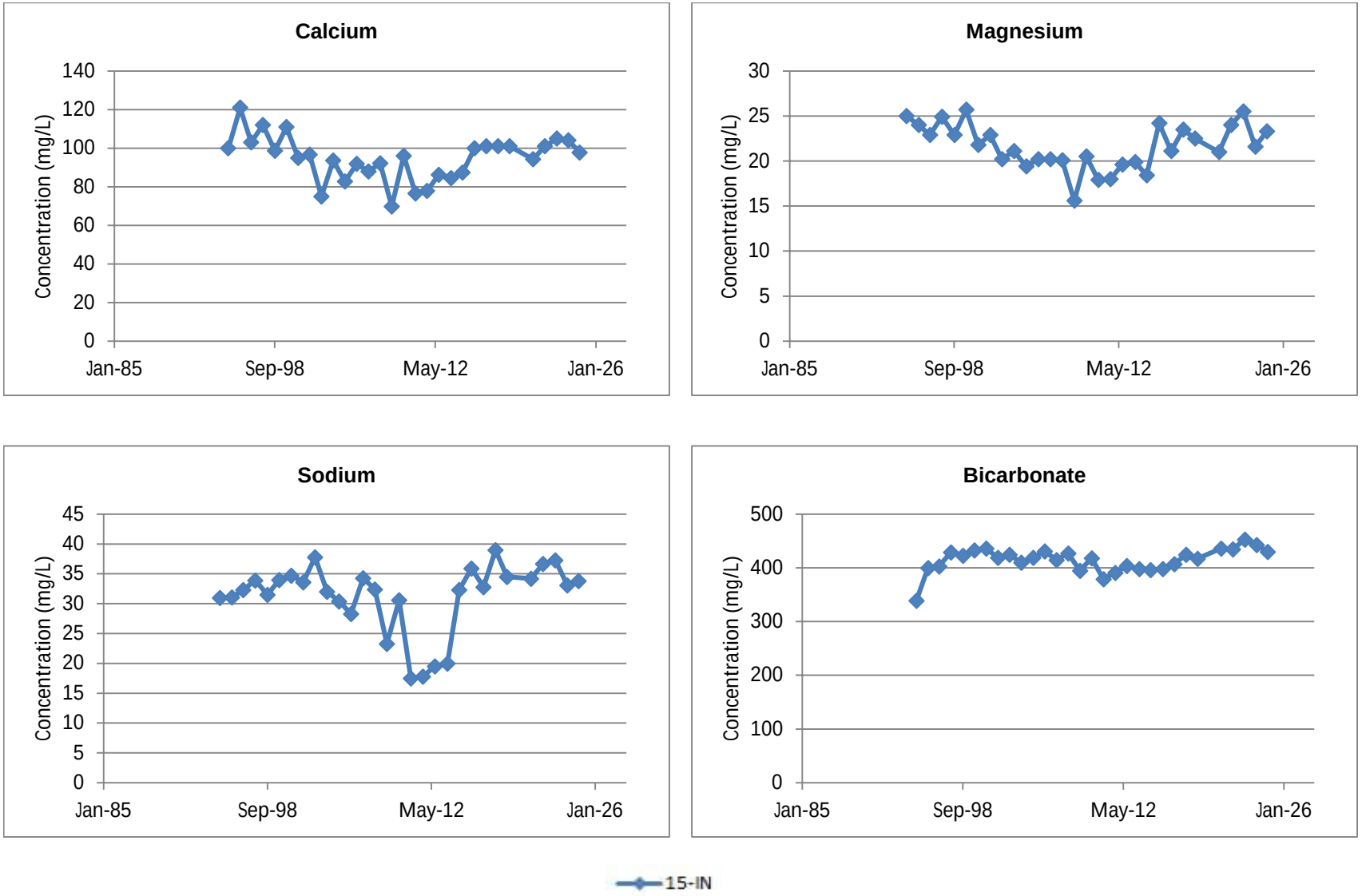
AECOM

Figure 13.26
VEOLIA, Swan Hills Treatment Centre
15-SH - Major Ions



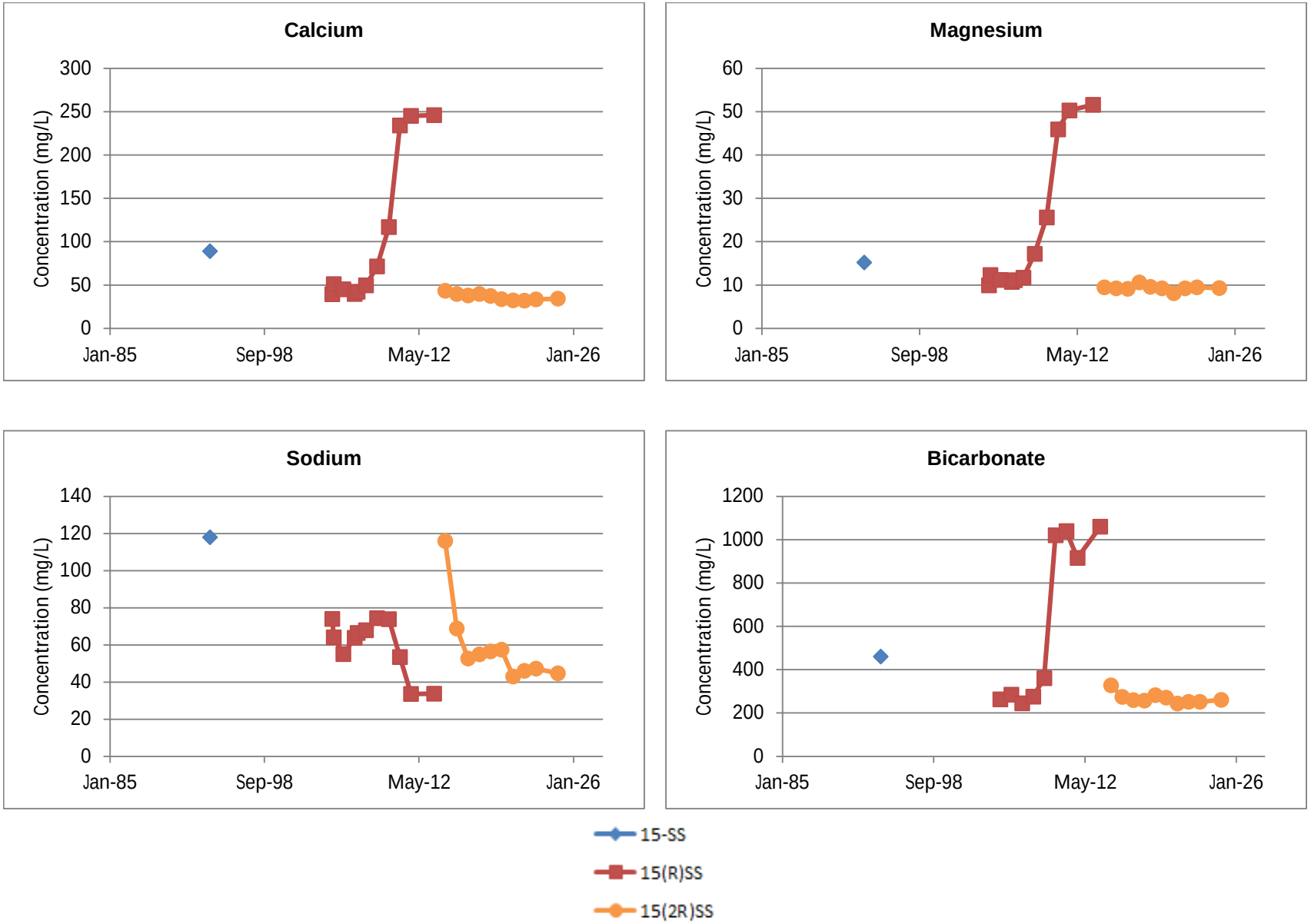
AECOM

Figure 13.27
VEOLIA, Swan Hills Treatment Centre
15-IN - Major Ions



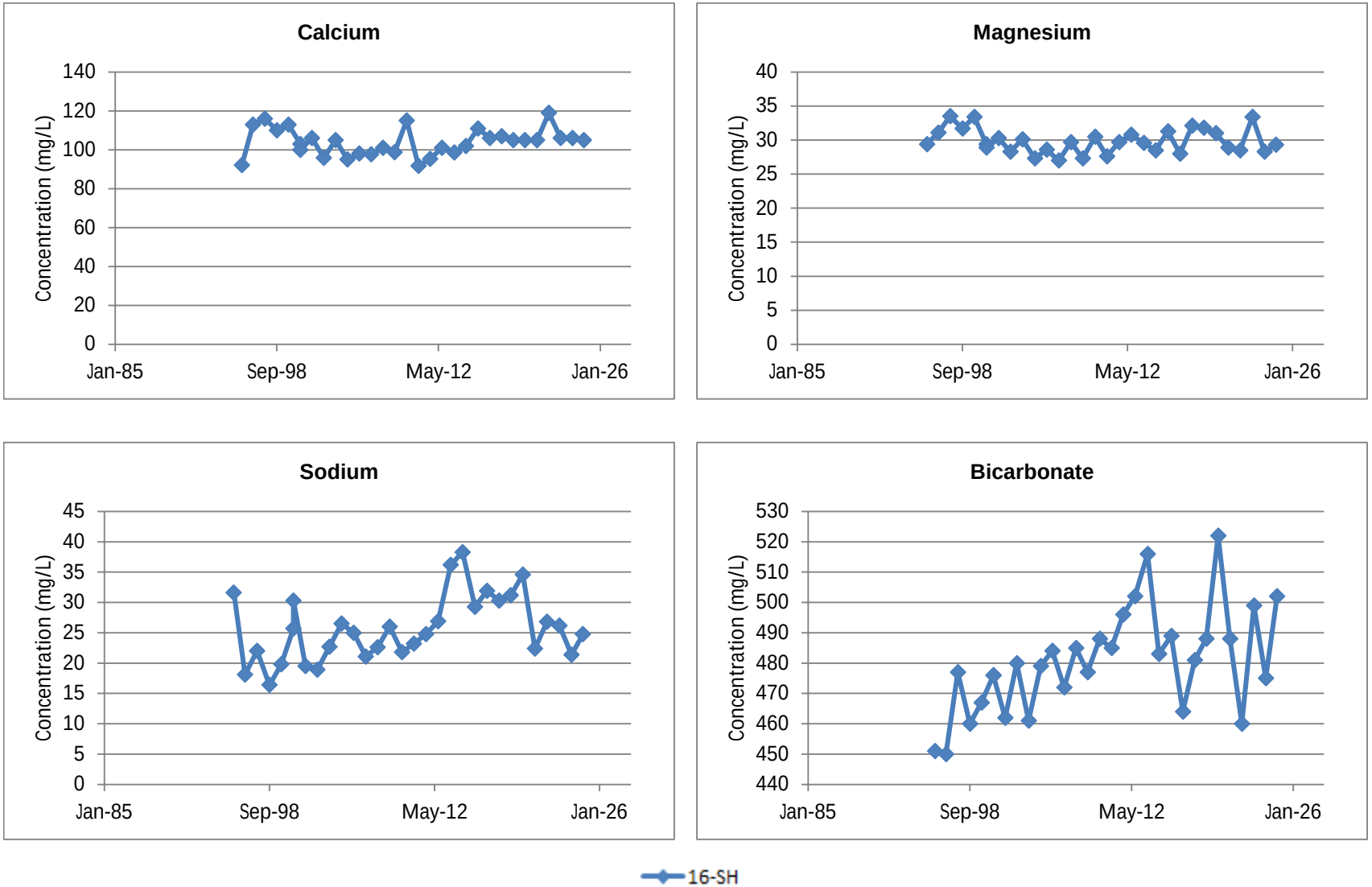
AECOM

Figure 13.28
VEOLIA, Swan Hills Treatment Centre
15-SS, 15(R)SS, and 15(2R)SS - Major Ions



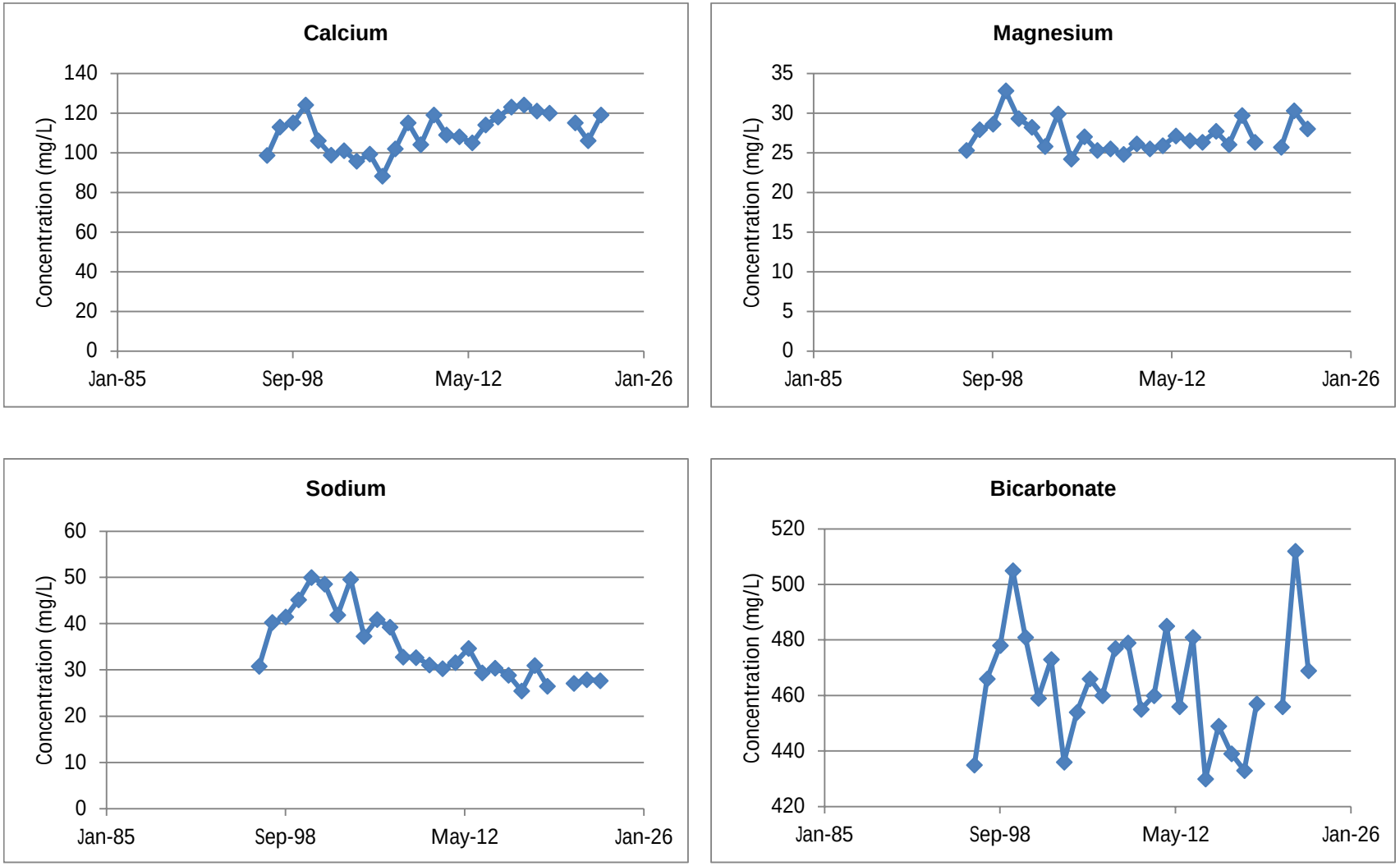
AECOM

Figure 13.29
VEOLIA, Swan Hills Treatment Centre
16-SH - Major Ions



AECOM

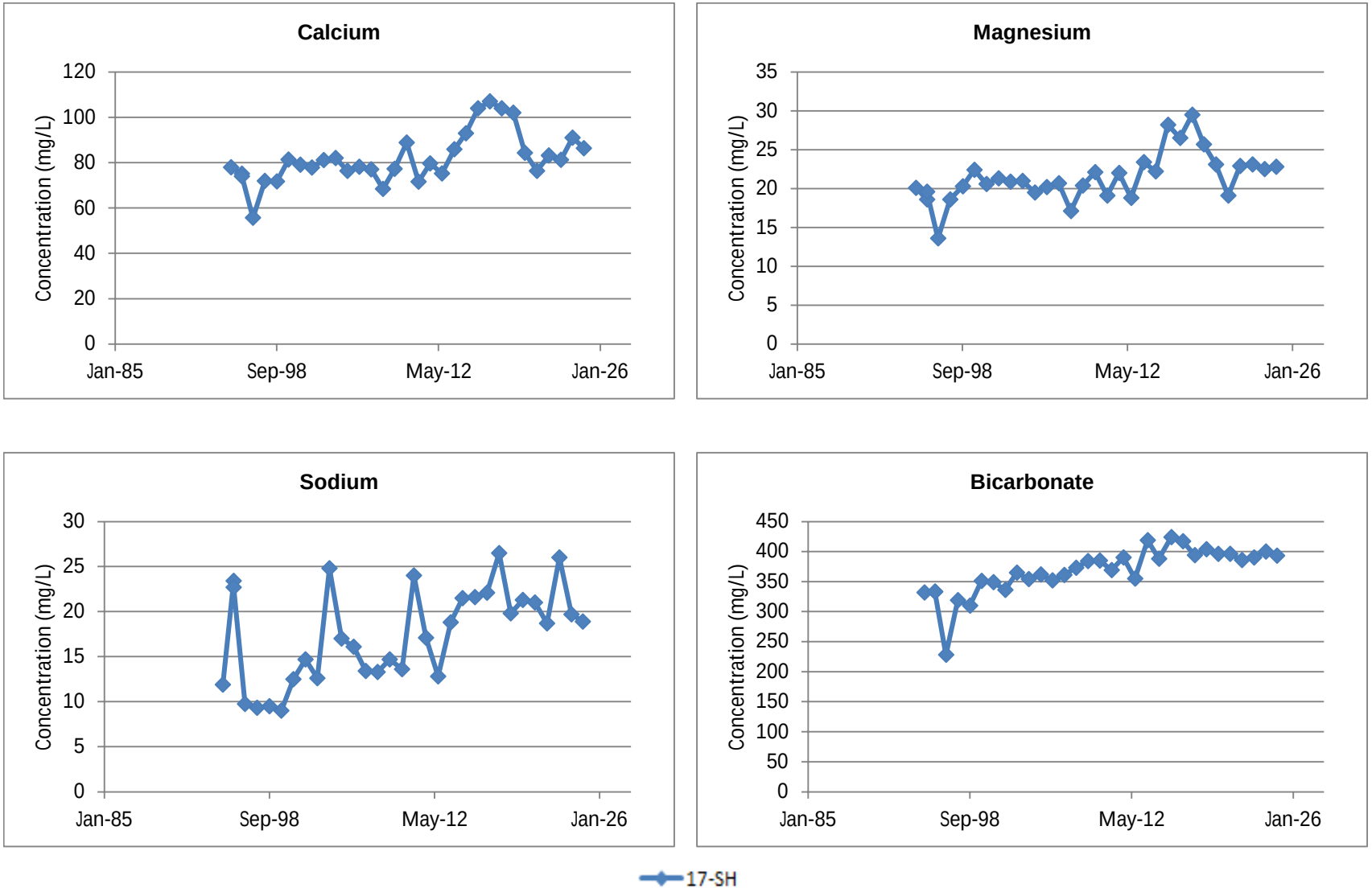
Figure 13.30
VEOLIA, Swan Hills Treatment Centre
16-IN - Major Ions



44548

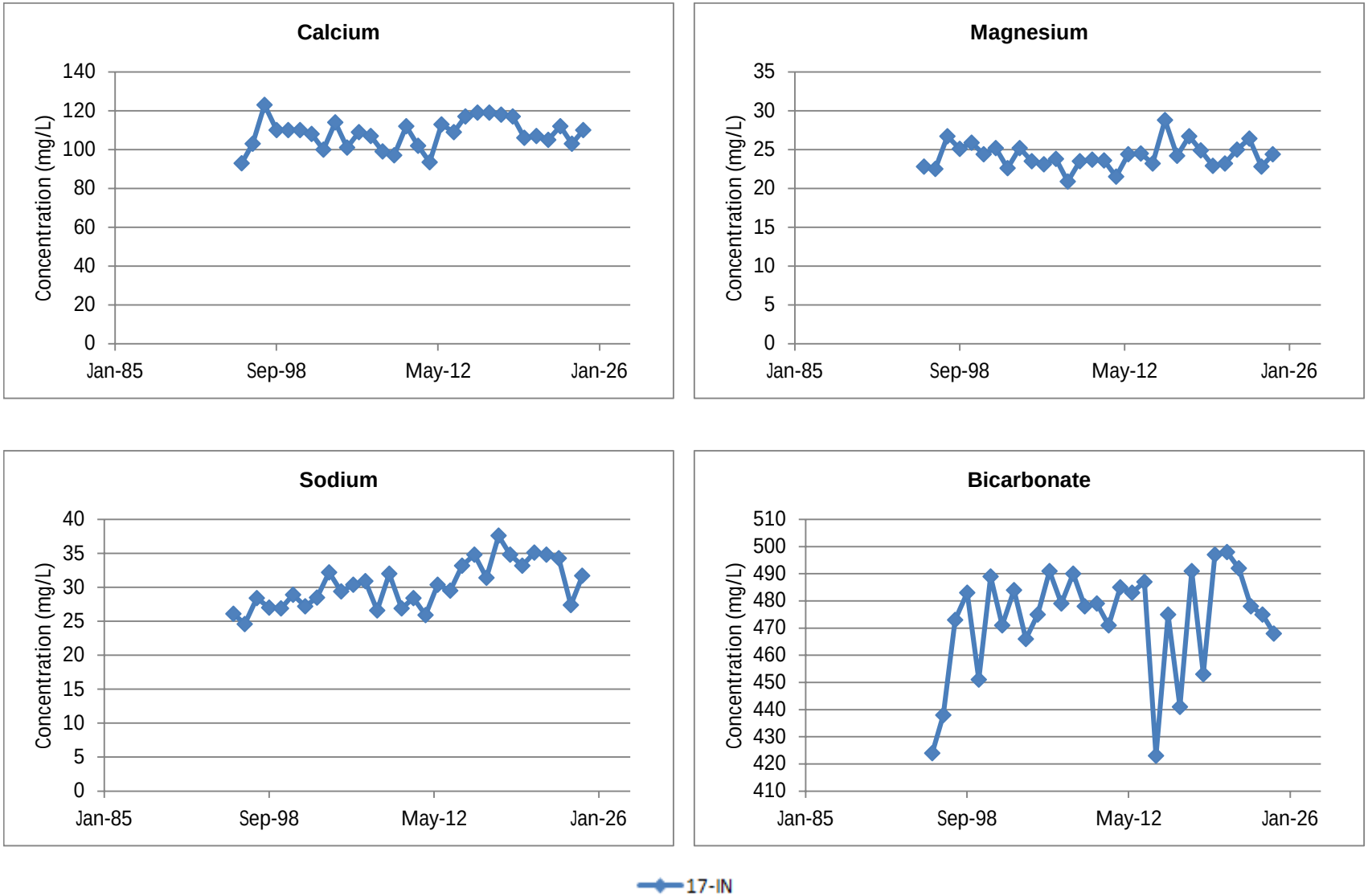
AECOM

Figure 13.31
VEOLIA, Swan Hills Treatment Centre
17-SH - Major Ions



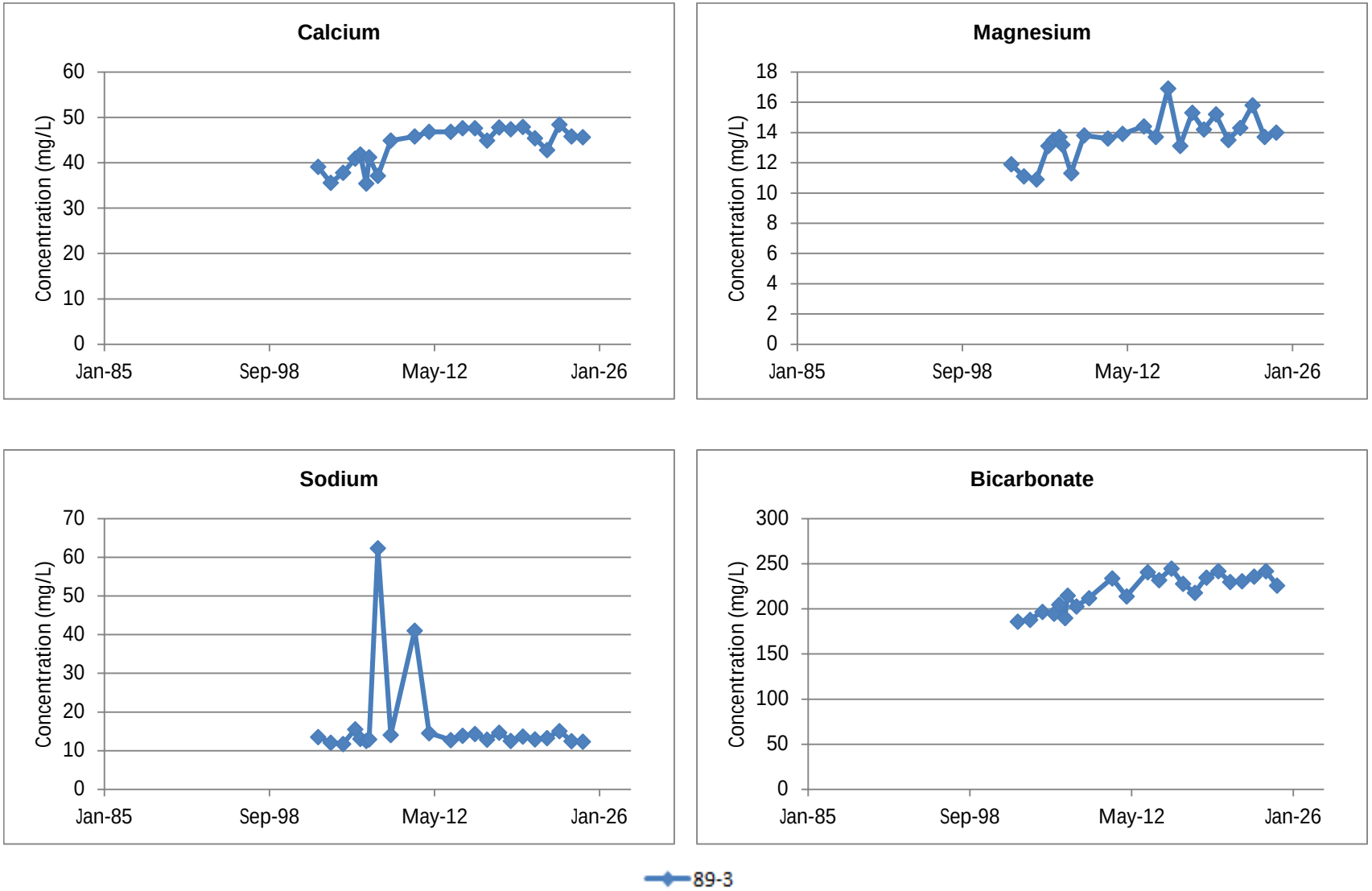
AECOM

Figure 13.32
VEOLIA, Swan Hills Treatment Centre
17-IN - Major Ions



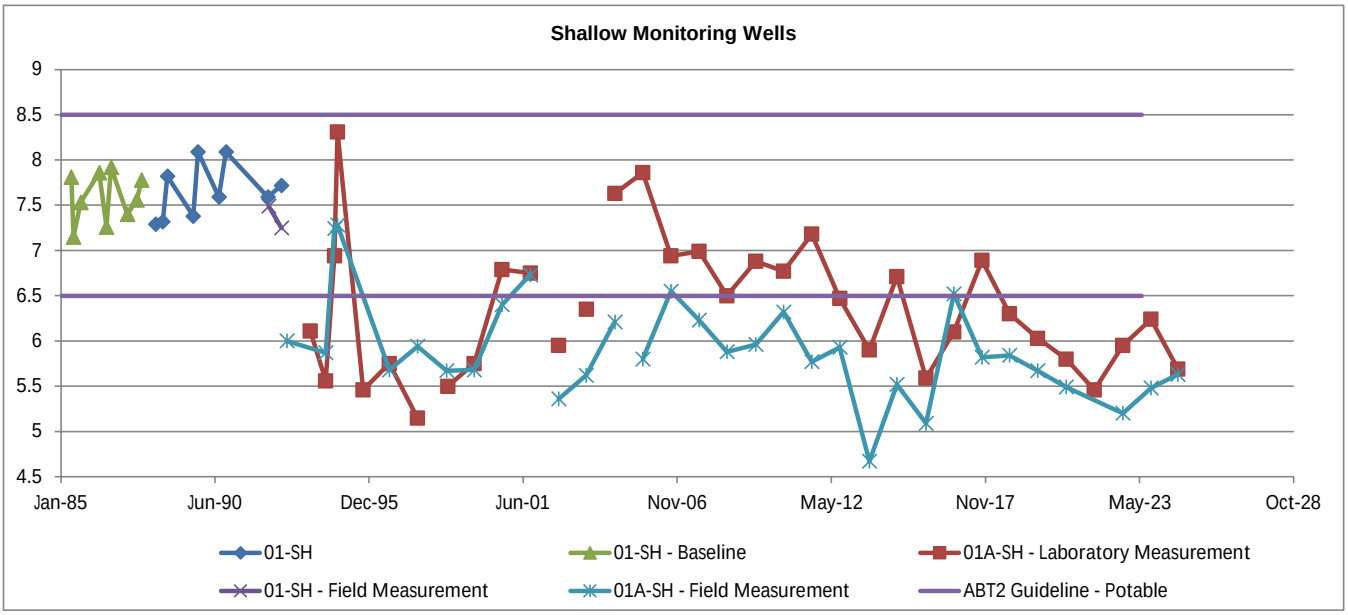
AECOM

Figure 13.33
VEOLIA, Swan Hills Treatment Centre
89-3 - Major Ions



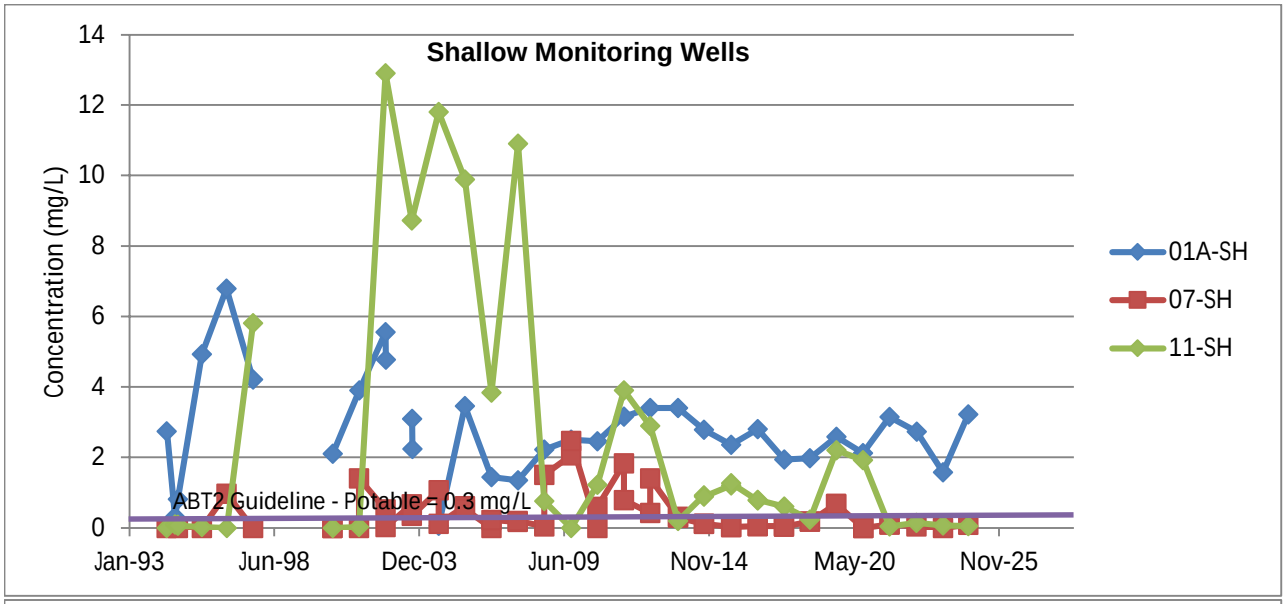
AECOM

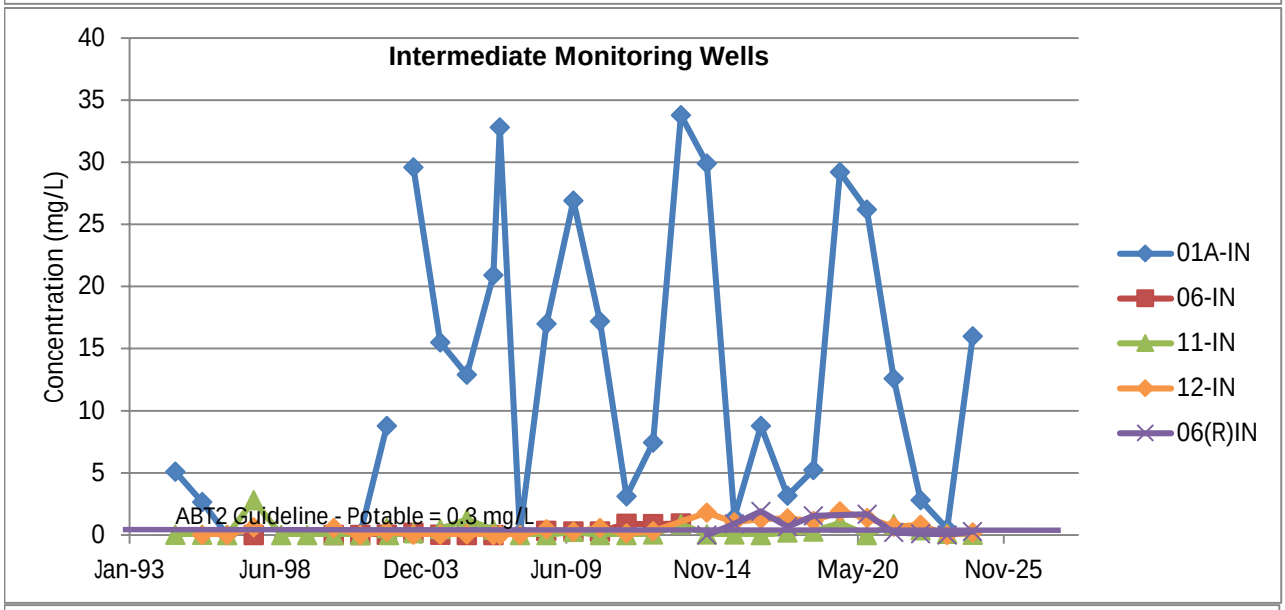
Figure 14.1
VEOLIA, Swan Hills Treatment Centre
2024 pH Results

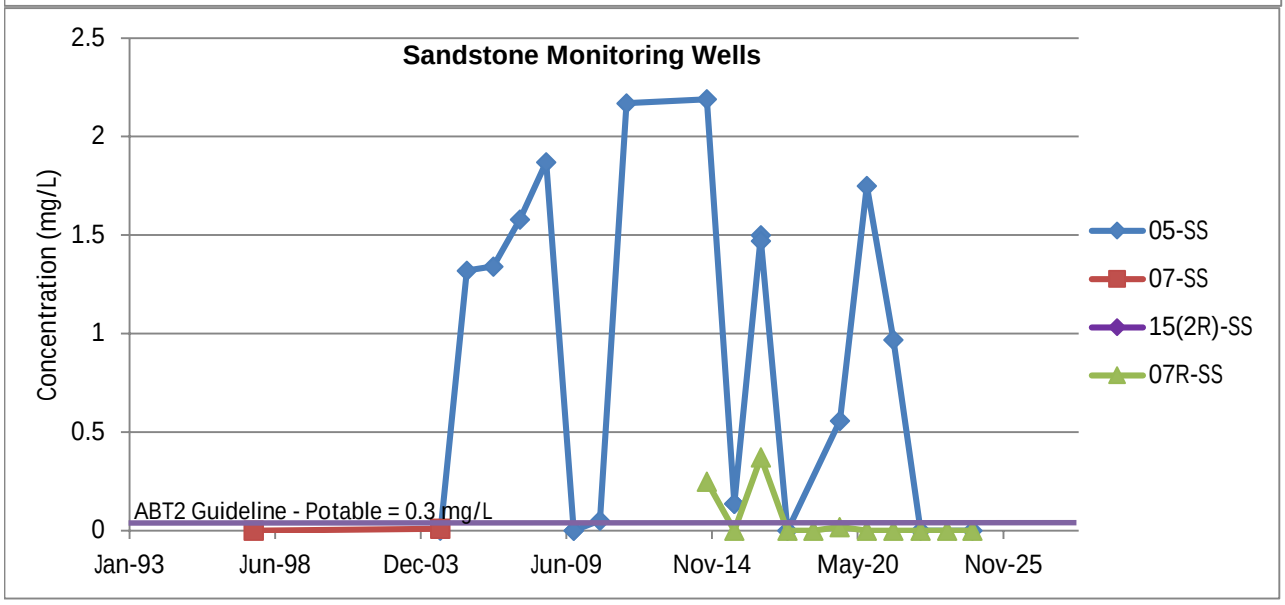


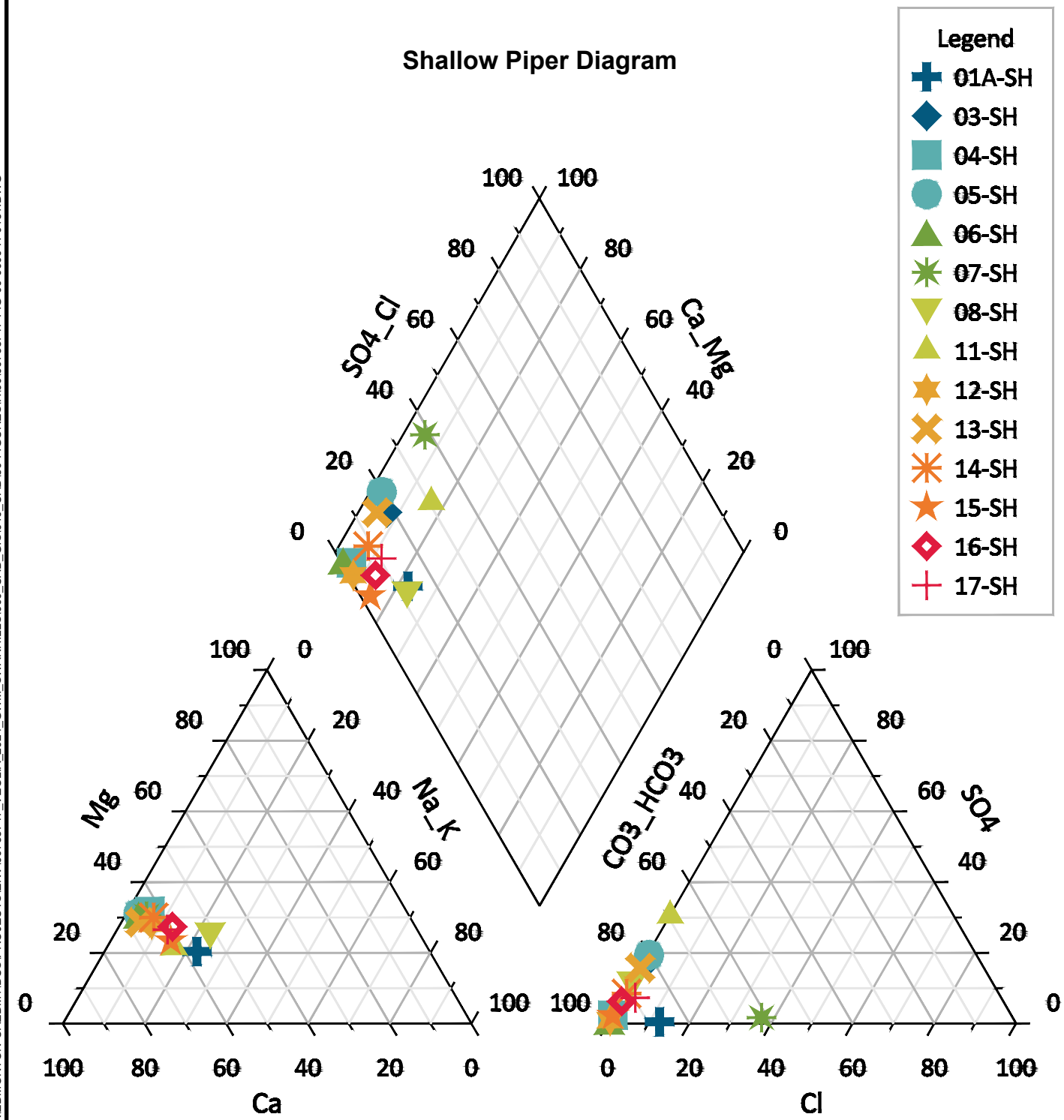
AECOM

Figure 14.2
VEOLIA, Swan Hills Treatment Centre
2023 Dissolved Iron Concentrations









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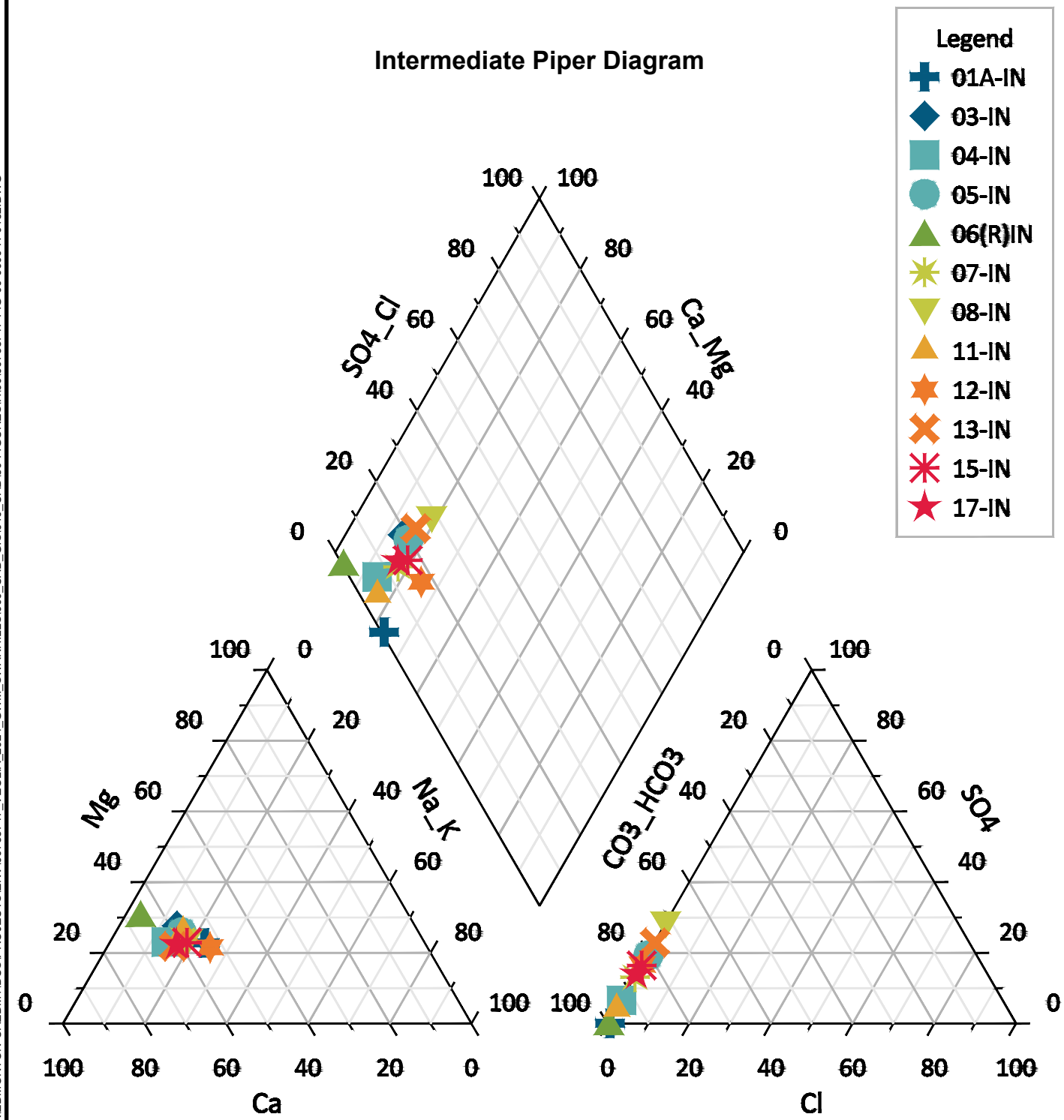
Project Management Initials: Designer: Checked: Approved:
ANSI A 215.9mm x 279.4mm

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Shallow Piper Plot

AECOM

Figure 15.1



Issue Status: FINAL

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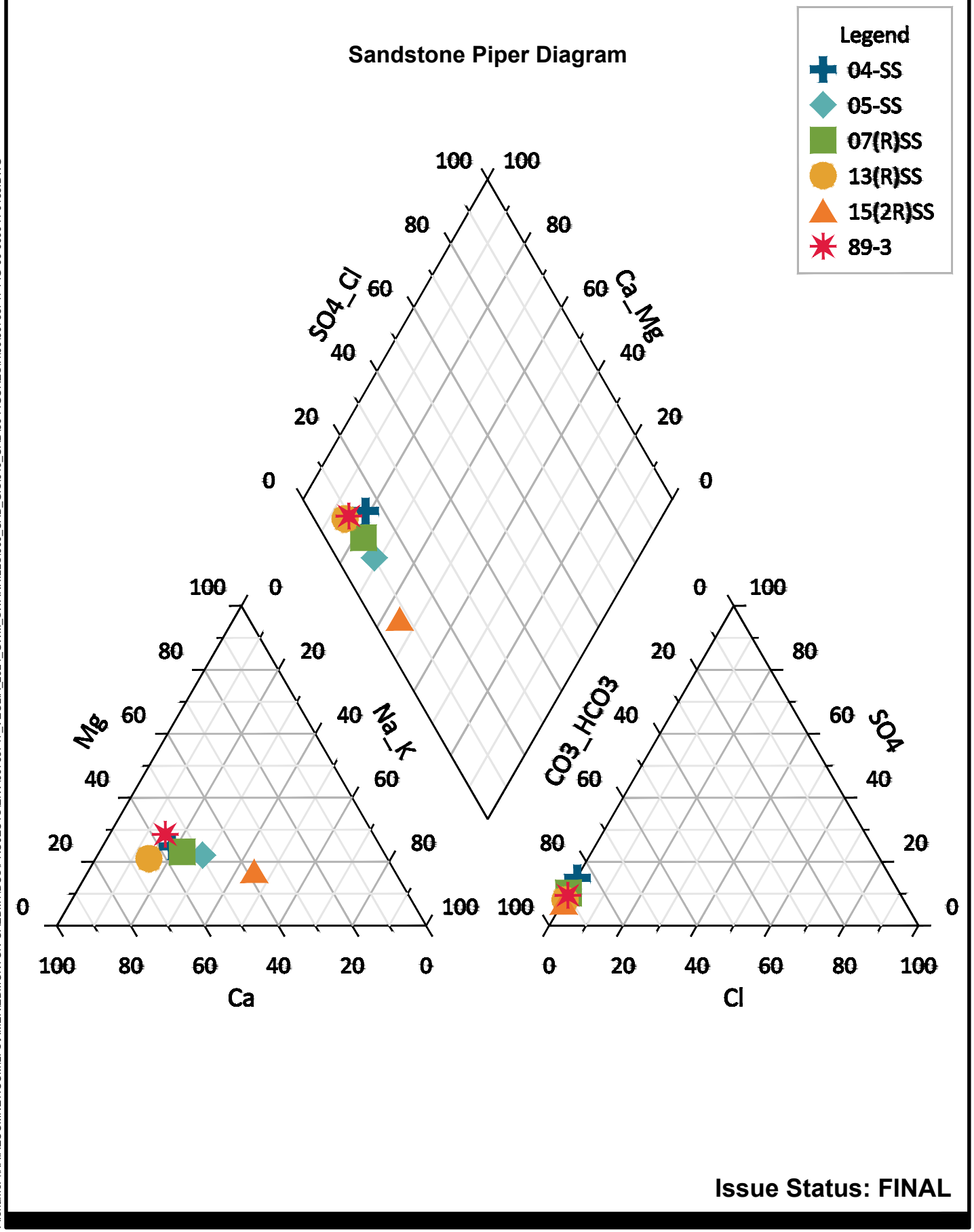
Project Management Initials: Designer: Checked: Approved:
ANSI A 215.9mm x 279.4mm

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Intermediate Piper Plot

AECOM

Figure 15.2



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Project Management Initials: Designer: Checked: Approved:
ANSI A 215.9mm x 279.4mm

2024 Groundwater Monitoring Report
Swan Hills Treatment Centre
VEOLIA
Project No.: 60735747 Date: 2025-03-14

Sandstone Piper Plot

AECOM

Figure 15.3

AECOM

Appendix B

Water Well Drilling Report

Reconnaissance Report

View in Metric

Export to Excel

Groundwater Wells

Please click the water Well ID to generate the Water Well Drilling Report.

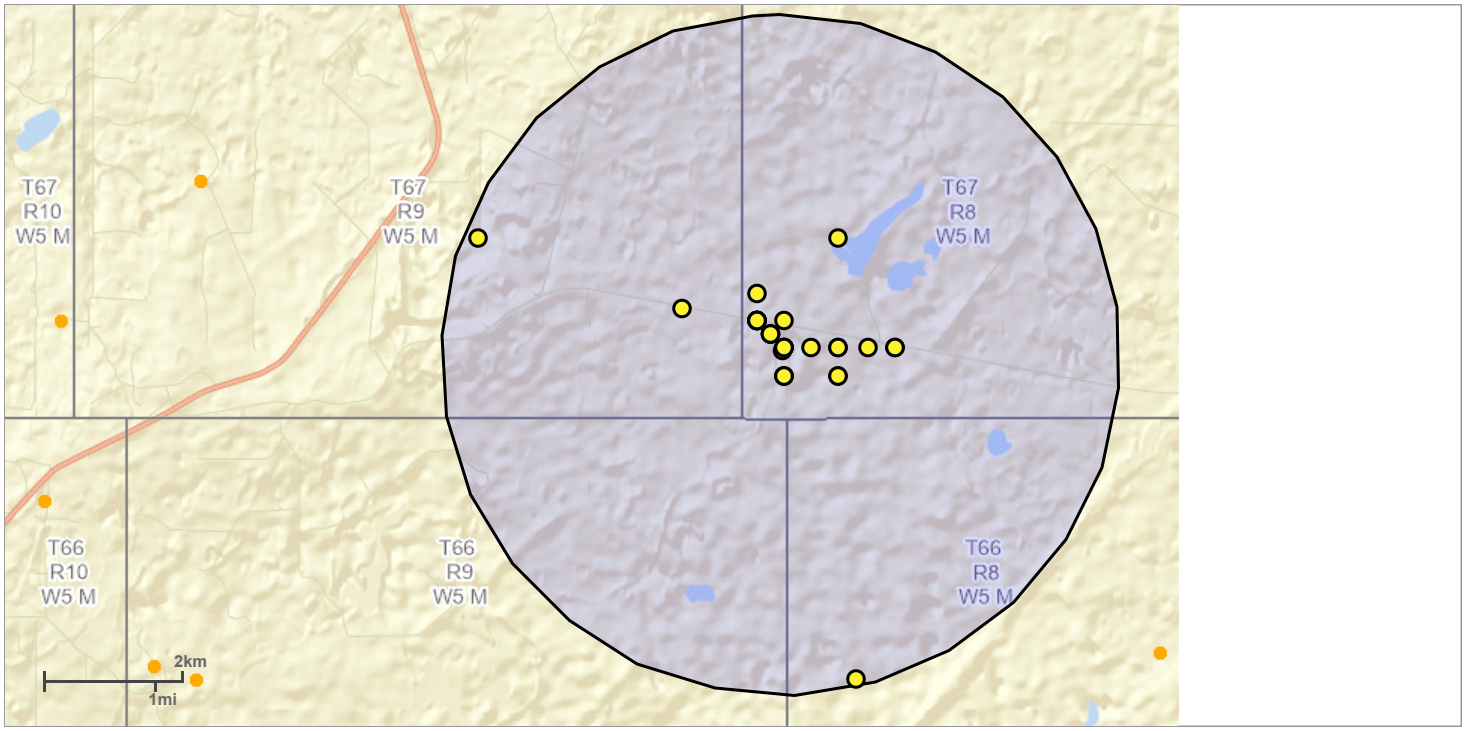
GIC Well ID	LSD	SEC	TWP	RGE	M	DRILLING COMPANY	DATE COMPLETED	DEPTH (ft)	TYPE OF WORK	USE	CHM	LT	PT	WELL OWNER	STATIC LEVEL (ft)	TEST RATE (igpm)	SC_DIA (in)
351361	NW	6	67	8	5	MCALLISTER WATERWELLS LTD.	1990-01-11	240.00	New Well	Observation		4		ALTA SPECIAL WASTE MGMT	179.00	1.00	2.00
351362	NW	6	67	8	5	MCALLISTER WATERWELLS LTD.	1990-01-12	220.00	New Well	Observation		4		ALTA SPECIAL WASTE MGMT	0.00	0.00	2.00
351363	NW	6	67	8	5	MCALLISTER WATERWELLS LTD.	1990-01-13	230.00	New Well	Observation		3		ALTA SPECIAL WASTE MGMT			2.00
353065	10	19	66	8	5	OIL EXPLORATORY	1965-09-02	8,187.00	Test Hole	Industrial				TAURUS OIL CO LTD			0.00
353704	8	6	67	8	5	HI-RATE DRILLING 1985 LTD.	1989-12-17	259.00	New Well	Industrial		5		ALTA SPECIAL WASTE MGMT			7.00
353705	8	6	67	8	5	HI-RATE DRILLING 1985 LTD.	1989-12-19	240.00	Test Hole-Decommissioned	Industrial		10		ALTA SPECIAL WASTE MGMT			0.00
353706	13	6	67	8	5	HI-RATE DRILLING 1985 LTD.	1989-12-16	275.00	Test Hole-Decommissioned	Industrial		8		ALTA SPECIAL WASTE MGMT	212.00	1.00	7.00
354695	9	6	67	8	5	MCALLISTER HOLDINGS LTD.	1985-05-10	224.00	New Well	Industrial		8	27	ALTA SPECIAL WASTE MGMT	168.00	44.00	5.56
354696	9	6	67	8	5	MCALLISTER HOLDINGS LTD.	1985-05-19	220.00	New Well	Industrial		14	27	ALTA SPECIAL WASTE MGMT	155.00	6.00	5.56
354697	10	6	67	8	5	MCALLISTER HOLDINGS LTD.	1985-05-20	249.00	Reconditioned	Industrial		9	27	ALTA SPECIAL WASTE MGMT	201.00	12.00	5.56
356324	13	6	67	8	5	HI-RATE DRILLING 1985 LTD.	1989-10-11	1,748.00	New Well	Industrial		5		ALTA SPECIAL WASTE MGMT	1,213.90	24.70	0.00
358227	11	6	67	8	5	HI-RATE DRILLING 1985 LTD.	1989-12-19	240.00	Test Hole-Decommissioned	Industrial		10		ALTA SPECIAL WASTE MGMT #4			0.00
358228	11	6	67	8	5	HI-RATE DRILLING 1985 LTD.	1989-12-20	259.00	New Well	Industrial		5		ALTA SPECIAL WASTE MGMT #3			7.00
368538	6	6	67	8	5	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-12-02	499.00	Test Hole	Observation		29		ALTA ENV #2239E	0.00	3.00	5.56
395324	11	5	67	8	5	MCALLISTER WATERWELLS LTD.		400.00	New Well	Industrial		19		ALTA SPECIAL WASTE MGMT CORP	105.00	40.00	7.00
395325	11	5	67	8	5	MCALLISTER WATERWELLS LTD.	1986-06-23	98.00	New Well-Decommissioned	Industrial		7		ALTA SPECIAL WASTE MGMT CORP	6.00		5.56
395326	12	5	67	8	5	MCALLISTER WATERWELLS LTD.		300.00	New Well	Industrial		18		ALTA SPECIAL WASTE MGMT CORP	68.00	50.00	10.75
395328	6	6	67	8	5	ALBERTA ENVIRONMENT	1983-12-09	211.00	New Well	Investigation		8		ALTA ENV/SOILS BR#2240			0.00
395329	6	6	67	8	5	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1982-12-22	158.00	New Well	Investigation		6		ALTA ENV/SOILS BR#2241	0.00	0.50	5.56
395330	11	6	67	8	5	BIG QUILL DRILLING LTD.	1983-05-19	298.00	New Well	Investigation		8		C.E. MOELL & ASSOC #2	167.00	7.00	5.56

Reconnaissance Report

View in Metric

Export to Excel

GIC Well ID	LSD	SEC	TWP	RGE	M	DRILLING COMPANY	DATE COMPLETED	DEPTH (ft)	TYPE OF WORK	USE	CHM	LT	PT	WELL OWNER	STATIC LEVEL (ft)	TEST RATE (igpm)	SC_DIA (in)
395331	13	6	67	8	5	BIG QUILL DRILLING LTD.	1983-05-25	298.00	New Well-Decommissioned	Investigation		11		C.E. MOELL & ASSOC#TH3	0.00	2.00	0.00
395332	13	6	67	8	5	ALBERTA ENVIRONMENT	1983-12-14	151.00	New Well	Investigation		5		ALTA ENV/SOILS#SWAN HILLS2242E			0.00
395333	13	6	67	8	5	GERALD MCGINN DRILLING LTD.	1988-03-23	267.00	New Well	Industrial		15		ALTA SPECIAL WASTE SYSTEMS	205.00	15.00	5.56
395334	14	6	67	8	5	BIG QUILL DRILLING LTD.	1983-05-18	298.00	Test Hole-Decommissioned	Industrial		7		C.E. MOELL & ASSOC#1	152.00	6.00	0.00
395335	4	7	67	8	5	MCALLISTER DRILLING LTD.	1986-06-12	240.00	Test Hole-Decommissioned	Industrial		6		ALTA SPECIAL WASTE MGMT CORP#1	51.00	4.00	5.56
395339	14	1	67	9	5	UNKNOWN DRILLER	1980-03-03	50.00	Flowing Shot Hole	Industrial				CHEVRON STANDARD LTD #849			0.00
395341	10	10	67	9	5	UNKNOWN DRILLER	1975-01-19	0.00	Spring	Unknown	1			ARC			0.00
1025506	9	7	67	8	5	ACCESS WATERWELLS INC.	2013-02-25	340.00	Dry Hole-Decommissioned	Industrial		21		HUSKY ENERGY			5.56
2097625	11	6	67	8	5	MAHAR DRILLING LTD.	2022-04-12	250.00	New Well	Industrial		10	15	SUEZ SWAN HILLS TREATMENT CENTER	181.10	15.00	



Alberta Water Well Information Database Map

Projection
Web Mercator (Auxillary Sphere)
Datum
WGS 84
Date
1/20/2025, 8:52:34 AM

Legend
- Groundwater Drilling Report
- Baseline Water Well Report

https://groundwater.alberta.ca/waterwells/d/

Information as depicted is subject to change, therefore the Government of Alberta assumes no responsibility for discrepancies at time of use.
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Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

View in Metric | Export to Excel

GIC Well ID 354695
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1985/06/18

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
ALTA SPECIAL WASTE MGMT	10909 JASPER AVE, EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	9	6	67	8	5				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.772356 Longitude -115.199586
How Location Obtained
Not Verified

Elevation ft
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Industrial

Type of Work
New Well

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
4.00		Brown Till
32.00		Gray Till
70.00		Brown Shale
85.00		Greenish Gray Shale
110.00		Green Shale
160.00		Brown Sandstone
220.00		Brownish Gray Sandstone
224.00		Gray Sandstone

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate 50.00 igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)
1985/05/10	44.00	168.00

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
224.00 ft		1985/05/10	1985/05/10

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	224.00

Surface Casing (if applicable)
Steel
Size OD : 5.56 in
Wall Thickness : 0.188 in
Bottom at : 203.00 ft

Well Casing/Liner
Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal Other
Placed from 0.00 ft to 200.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type Stainless Steel
Size OD : 4.00 in

From (ft)	To (ft)	Slot Size (in)

Attachment Attached To Casing
Top Fittings Coupler
Bottom Fittings Plug

Pack
Type Artificial
Grain Size 12:20
Amount 544.00 Kilograms

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER HOLDINGS LTD.

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

View in Metric | Export to Excel

GIC Well ID 354695
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1985/06/18

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
ALTA SPECIAL WASTE MGMT	10909 JASPER AVE, EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	9	6	67	8	5				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.772356 Longitude -115.199586
How Location Obtained: Not Verified

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate 50.00 igpm
Recommended Pump Intake Depth (From TOC) 0.00 ft
Pump Installed
Type
Depth ft
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth ft
Gas
Depth ft
Well Disinfected Upon Completion
Geophysical Log Taken Electric
Remedial Action Taken
Submitted to ESRD
Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
Seal Type: Sand pack on outside.

Yield Test

Taken From Ground Level
Measurement in Imperial

Test Date 1985/05/10
Start Time 12:00 AM
Static Water Level 168.00 ft

Method of Water Removal
Type Pump
Removal Rate 44.00 igpm
Depth Withdrawn From 219.00 ft

If water removal period was < 2 hours, explain why

Depth to water level

Pumping (ft)	Elapsed Time Minutes:Sec	Recovery (ft)
168.89	0:00	179.52
177.00	0:30	171.58
177.82	1:00	170.99
178.05	1:30	170.80
178.14	2:00	170.70
178.31	3:00	170.57
178.41	4:00	170.43
178.51	5:00	170.37
178.60	6:00	170.30
178.67	7:00	170.24
178.70	8:00	170.17
178.77	9:00	170.11
178.80	10:00	170.07
178.87	12:00	169.98
178.90	15:00	169.88
179.00	18:00	169.78
179.00	20:00	169.78
178.96	25:00	169.71
179.03	30:00	169.65
179.03	35:00	169.61
179.10	40:00	169.58
179.13	50:00	169.52
179.13	60:00	169.48
179.13	75:00	169.42
179.13	90:00	169.38
179.16	105:00	169.38
179.13	120:00	169.35

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER HOLDINGS LTD.

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

View in Metric | Export to Excel

GIC Well ID 354696
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1985/06/18

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
ALTA SPECIAL WASTE MGMT	10909 JASPER AVE, EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	9	6	67	8	5				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.772356 Longitude -115.199586
How Location Obtained: Map

Elevation ft
How Elevation Obtained: Not Obtained

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Industrial

Type of Work
New Well

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
10.00		Brown Till
32.00		Gray Till
65.00		Brown Shale
80.00		Gray Shale
117.00		Brownish Gray Sandstone
140.00		Brown Sandstone & Shale Ledges
153.00		Brown Shale
160.00		Brownish Gray Sandstone
171.00		Brown Sandstone
173.00		Gray Shale
208.00		Gray Sandstone
215.00		Gray Shale
219.00		Gray Sandstone
220.00		Gray Shale

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate 6.00 igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)
1985/05/19	6.00	155.00

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
220.00 ft		1985/05/17	1985/05/19

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	220.00

Surface Casing (if applicable)
Steel
Size OD : 5.56 in
Wall Thickness : 0.188 in
Bottom at : 181.00 ft

Well Casing/Liner
Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal Unknown
Placed from 0.00 ft to 179.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type Stainless Steel
Size OD : 4.00 in

From (ft)	To (ft)	Slot Size (in)
181.00	202.00	0.025

Attachment Attached To Casing
Top Fittings Coupler
Bottom Fittings Plug

Pack
Type Artificial
Grain Size 12-20
Amount 680.00 Kilograms

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER HOLDINGS LTD.

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

View in Metric | Export to Excel

GIC Well ID 354696
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1985/06/18

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
ALTA SPECIAL WASTE MGMT	10909 JASPER AVE, EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	9	6	67	8	5				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.772356 Longitude -115.199586
How Location Obtained: Map

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate 6.00 igpm
Recommended Pump Intake Depth (From TOC) 0.00 ft
Pump Installed
Type
Depth ft
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth ft
Gas
Depth ft
Well Disinfected Upon Completion
Geophysical Log Taken Electric
Remedial Action Taken
Submitted to ESRD
Sample Collected for Potability
Submitted to ESRD
Additional Comments on Well

Yield Test

Taken From Ground Level
Measurement in Imperial

Test Date 1985/05/19
Start Time 12:00 AM
Static Water Level 155.00 ft

Method of Water Removal

Type Pump
Removal Rate 6.00 igpm
Depth Withdrawn From 213.00 ft

If water removal period was < 2 hours, explain why

Depth to water level

Pumping (ft)	Elapsed Time Minutes:Sec	Recovery (ft)
154.56	0:00	175.39
158.85	0:30	172.50
0.00	1:00	170.34
0.00	1:30	168.01
165.15	2:00	166.17
167.51	3:00	0.00
169.29	4:00	161.25
170.57	5:00	159.90
0.00	6:00	158.98
172.27	7:00	158.33
172.86	8:00	157.87
173.32	9:00	157.54
173.68	10:00	157.28
174.21	12:00	155.77
174.73	15:00	156.66
175.03	18:00	156.46
175.19	20:00	156.36
175.49	25:00	156.16
175.72	30:00	156.03
175.88	35:00	156.03
176.01	40:00	155.83
176.24	50:00	155.70
176.41	60:00	155.61
176.57	75:00	155.47
176.73	90:00	155.41
176.83	105:00	155.34
176.87	120:00	155.28

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER HOLDINGS LTD.

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

View in Metric | Export to Excel

GIC Well ID 354697
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1985/06/18

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
ALTA SPECIAL WASTE MGMT	SWAN HILLS				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	10	6	67	8	5				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.772356 Longitude -115.205840
How Location Obtained
Map

Elevation ft
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Industrial

Type of Work
Reconditioned

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
12.00		Brown Till
37.00		Gray Till
52.00		Gray Shale
97.00		Brown Shale
114.00		Brownish Gray Shale
135.00		Gray Shale
234.00		Gray Shaly Sandstone & Coal
242.00		Gray Sandstone
249.00		Brownish Green Shale

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate 12.00 igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)
1985/05/20	12.00	201.00

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
249.00 ft		1985/05/19	1985/05/20

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	249.00

Surface Casing (if applicable)
Steel
Size OD : 5.56 in
Wall Thickness : 0.188 in
Bottom at : 219.00 ft

Well Casing/Liner
Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal Sand Pack
Placed from 0.00 ft to 217.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type Stainless Steel
Size OD : 4.00 in

From (ft)	To (ft)	Slot Size (in)
219.00	240.00	0.020

Attachment Attached To Casing
Top Fittings Coupler
Bottom Fittings Plug

Pack
Type Artificial
Grain Size 12:20
Amount 544.00 Kilograms

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER HOLDINGS LTD.

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

View in Metric | Export to Excel

GIC Well ID 354697
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1985/06/18

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
ALTA SPECIAL WASTE MGMT	SWAN HILLS				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	10	6	67	8	5				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.772356 Longitude -115.205840
How Location Obtained: Map

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate 12.00 igpm
Recommended Pump Intake Depth (From TOC) 0.00 ft
Pump Installed
Type
Depth ft
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS) Depth ft
Gas Depth ft
Well Disinfected Upon Completion
Geophysical Log Taken
Submitted to ESRD
Remedial Action Taken
Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
INITIAL DRILLER REPORT NOT HELD @ GIC.

Yield Test

Taken From Ground Level
Measurement in Imperial

Test Date 1985/05/20
Start Time 12:00 AM
Static Water Level 201.00 ft

Method of Water Removal
Type Pump
Removal Rate 12.00 igpm
Depth Withdrawn From 232.00 ft

If water removal period was < 2 hours, explain why

Depth to water level

Pumping (ft)	Elapsed Time Minutes:Sec	Recovery (ft)
201.04	0:00	220.27
206.98	0:30	215.58
0.00	1:00	212.92
210.79	1:30	210.95
211.97	2:00	209.64
213.61	3:00	207.84
214.73	4:00	206.74
215.48	5:00	206.10
216.14	6:00	205.54
216.56	7:00	205.11
216.92	8:00	204.79
217.25	9:00	204.52
217.51	10:00	204.33
218.01	12:00	203.96
218.56	15:00	203.60
218.96	18:00	203.31
219.16	20:00	203.18
219.55	25:00	202.91
219.88	30:00	202.72
220.04	35:00	202.52
220.17	40:00	202.46
220.43	50:00	202.29
220.60	60:00	202.19
220.73	75:00	202.13
220.80	90:00	202.06
220.83	105:00	202.03
220.83	120:00	202.00

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER HOLDINGS LTD.

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

View in Metric | Export to Excel

GIC Well ID 2097625
GoA Well Tag No. A5619
Drilling Company Well ID
Date Report Received 2022/06/05

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
SUEZ SWAN HILLS TREATMENT CENTER		SWAN HILLS	ALBERTA	CANADA	

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	11	6	67	8	5				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.772107 Longitude -115.212365
How Location Obtained: Map

Elevation ft
How Elevation Obtained: Not Obtained

Drilling Information

Method of Drilling
Rotary - Air

Proposed Well Use
Industrial

Type of Work
New Well

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
24.00		Brown Rocky Clay
40.00		Green Shale
102.00		Brown Shale
125.00		Green Shale
145.00		Brown Sandstone
150.00		Gray Sandstone
208.00		Brown Sandstone
216.00	Yes	Gray Sandstone
244.00	Yes	Gray Mixed Shale & Sandstone
250.00		Green Shale

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate 15.00 igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)
2022/04/13	15.00	181.10

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
250.00 ft	246.00 ft	2022/04/11	2022/04/12

Borehole

Diameter (in)	From (ft)	To (ft)
8.00	0.00	250.00

Surface Casing (if applicable)
Size OD : in
Wall Thickness : in
Bottom at : ft

Well Casing/Liner
Plastic
Size OD : 6.00 in
Wall Thickness : 0.390 in
Top at : 0.00 ft
Bottom at : 201.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal Bentonite Granular
Placed from 0.00 ft to 195.00 ft
Amount 60.00 Bags

Other Seals

Type	At (ft)

Screen Type Stainless Steel
Size OD : 5.00 in

From (ft)	To (ft)	Slot Size (in)
201.00	246.00	0.010

Attachment Attached To Casing
Top Fittings Threaded
Bottom Fittings Plug

Pack
Type Artificial
Grain Size 10/20
Amount 25.00 Bags

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
MATTHEW MAHAR

Certification No
11510NQ

Company Name
MAHAR DRILLING LTD.

Copy of Well report provided to owner
Yes

Date approval holder signed
2022/06/05

Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

View in Metric | Export to Excel

GIC Well ID 2097625
GoA Well Tag No. A5619
Drilling Company Well ID
Date Report Received 2022/06/05

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
SUEZ SWAN HILLS TREATMENT CENTER		SWAN HILLS	ALBERTA	CANADA	

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	11	6	67	8	5				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.772107 Longitude -115.212365
How Location Obtained: Map

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level 20.00 in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate 15.00 igpm
Recommended Pump Intake Depth (From TOC) 216.00 ft
Pump Installed Yes
Type Submersible
Depth 216.00 ft
Make FRANKLIN
H.P. Other
Model (Output Rating) 2HP 15 GPM

Did you Encounter Saline Water (>4000 ppm TDS) Depth ft
Gas Depth ft
Well Disinfected Upon Completion Yes
Geophysical Log Taken
Remedial Action Taken
Submitted to ESRD
Sample Collected for Potability
Submitted to ESRD
Additional Comments on Well

Yield Test

Taken From Top of Casing
Measurement in Imperial

Test Date 2022/04/13
Start Time 11:00 AM
Static Water Level 181.10 ft

Method of Water Removal

Type Pump
Removal Rate 15.00 igpm
Depth Withdrawn From 216.00 ft

If water removal period was < 2 hours, explain why

Depth to water level

Pumping (ft)	Elapsed Time Minutes:Sec	Recovery (ft)
181.10	0:00	195.00
187.00	1:00	186.20
191.00	2:00	183.40
194.30	3:00	182.50
195.00	4:00	182.20
195.00	5:00	181.90
	6:00	181.70
	7:00	181.50
	8:00	181.40
	9:00	181.30
	10:00	181.30
	12:00	181.20
	14:00	181.20
	16:00	181.10
195.00	120:00	181.10

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
SHOP WELL	1200.00 ig	2022/04/06 10:00 AM

Contractor Certification

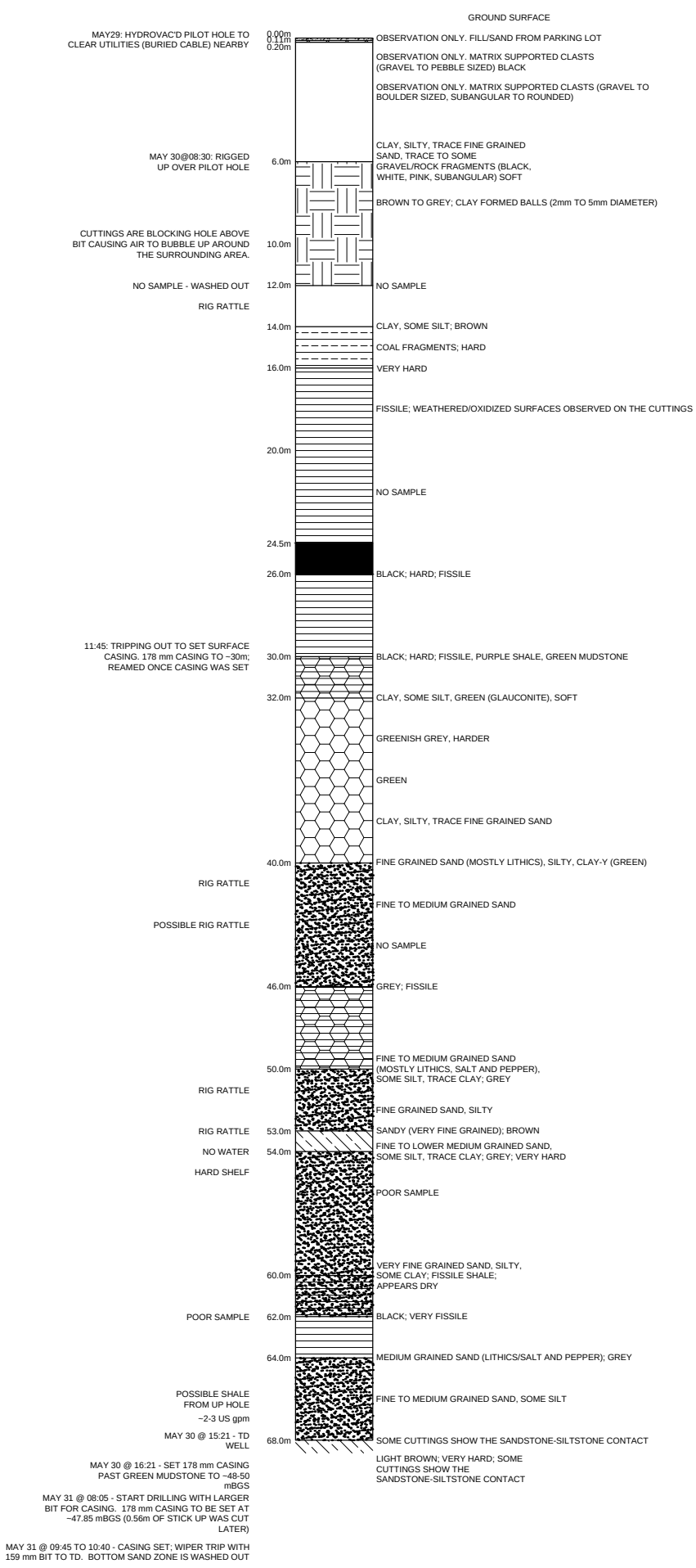
Name of Journeyman responsible for drilling/construction of well: MATTHEW MAHAR
Certification No: 11510NQ
Company Name: MAHAR DRILLING LTD.
Copy of Well report provided to owner: Yes
Date approval holder signed: 2022/06/05

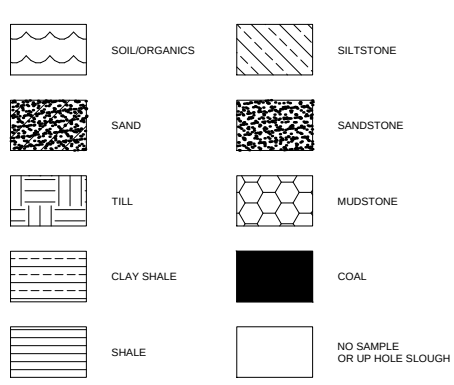
AECOM

Appendix C

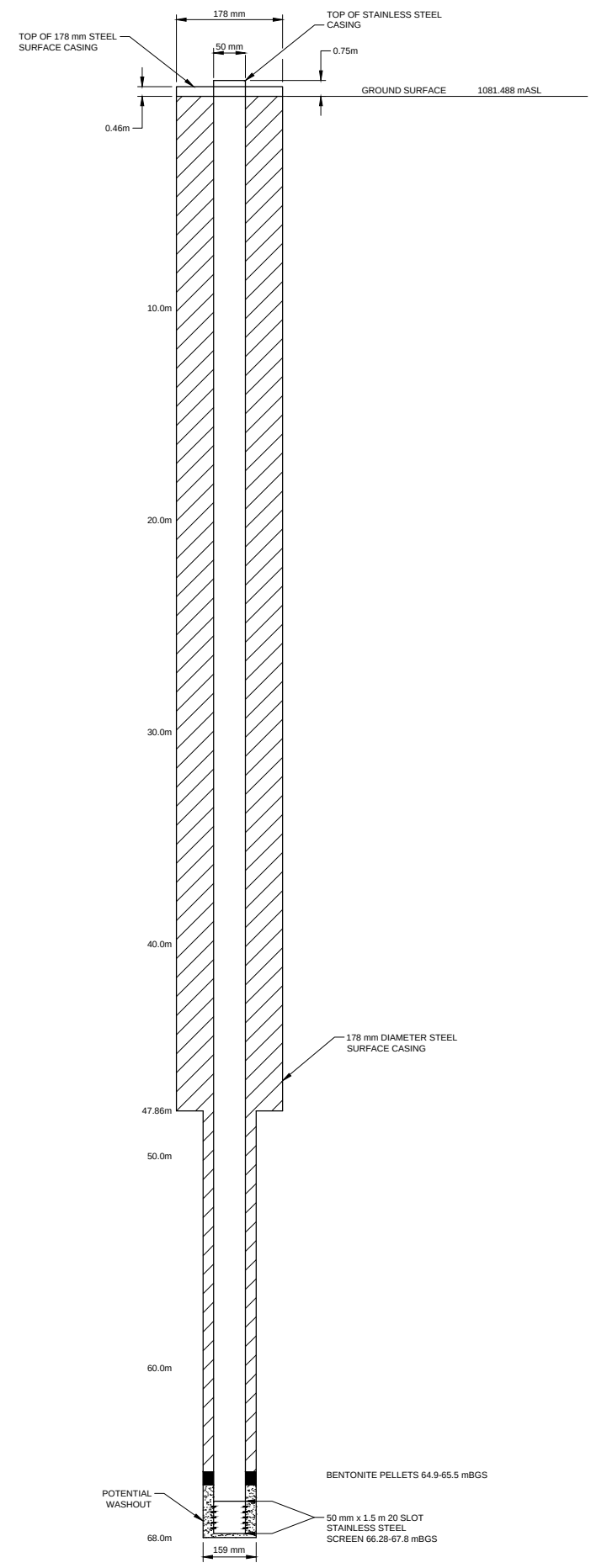
Borehole Logs

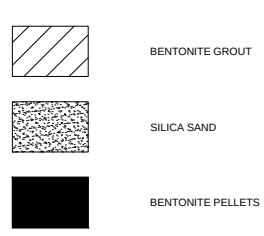
SOIL DESCRIPTION

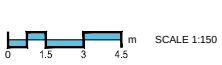




WELL CONSTRUCTION DETAILS







SCALE 1:150

NAD83 UTM Zone 11: 6071291.690, 614684.690

Issue Status: FINAL

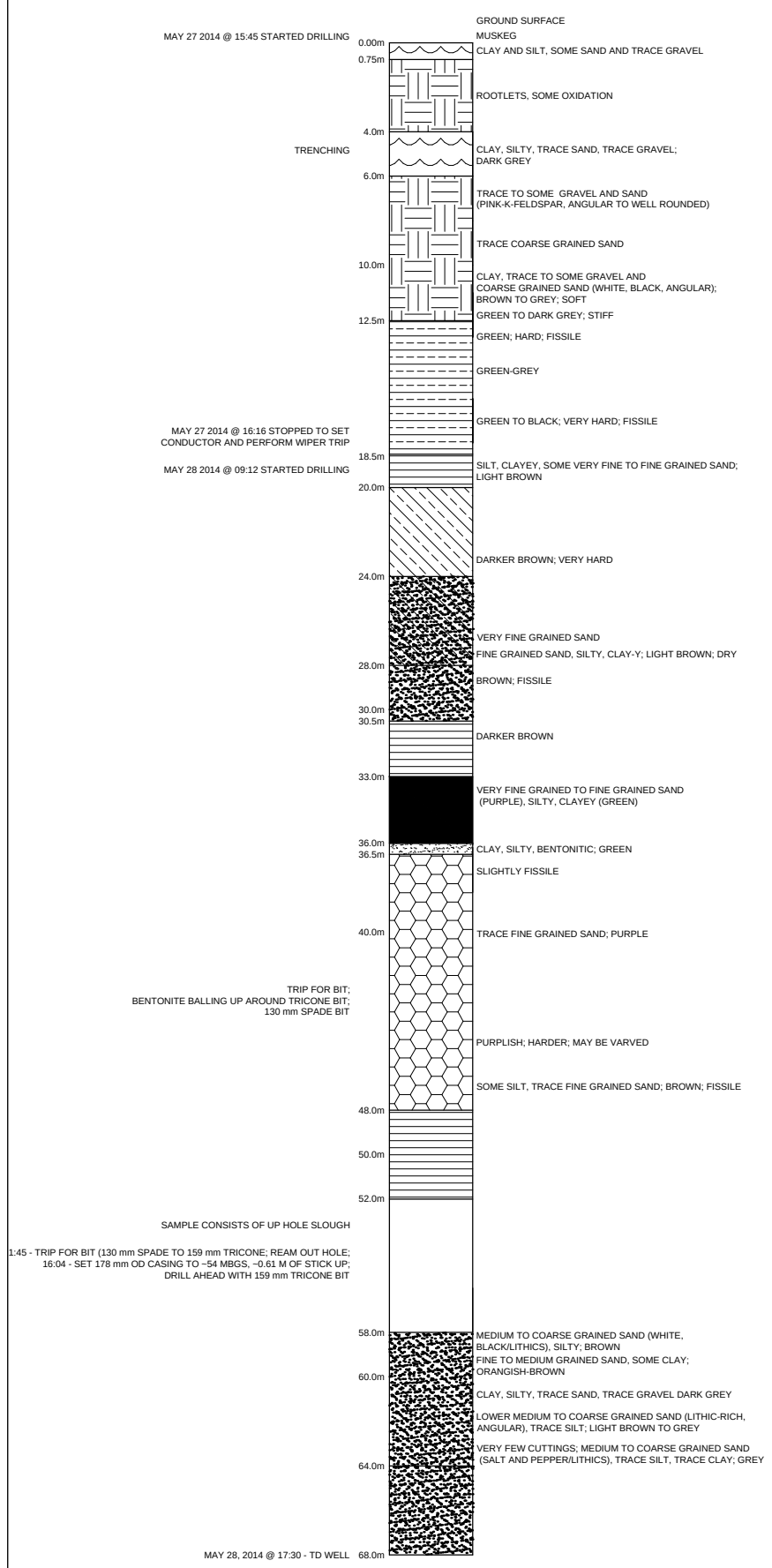
Swan HillsTreatment Centre Well Maintenance
Groundwater Monitoring
SENA Waste Services Inc. - Swan Hills, Alberta
Project No.: 60320044 Date: 2015/06/24

Groundwater Monitoring Well 07(R)SS
Strip Log And Completion

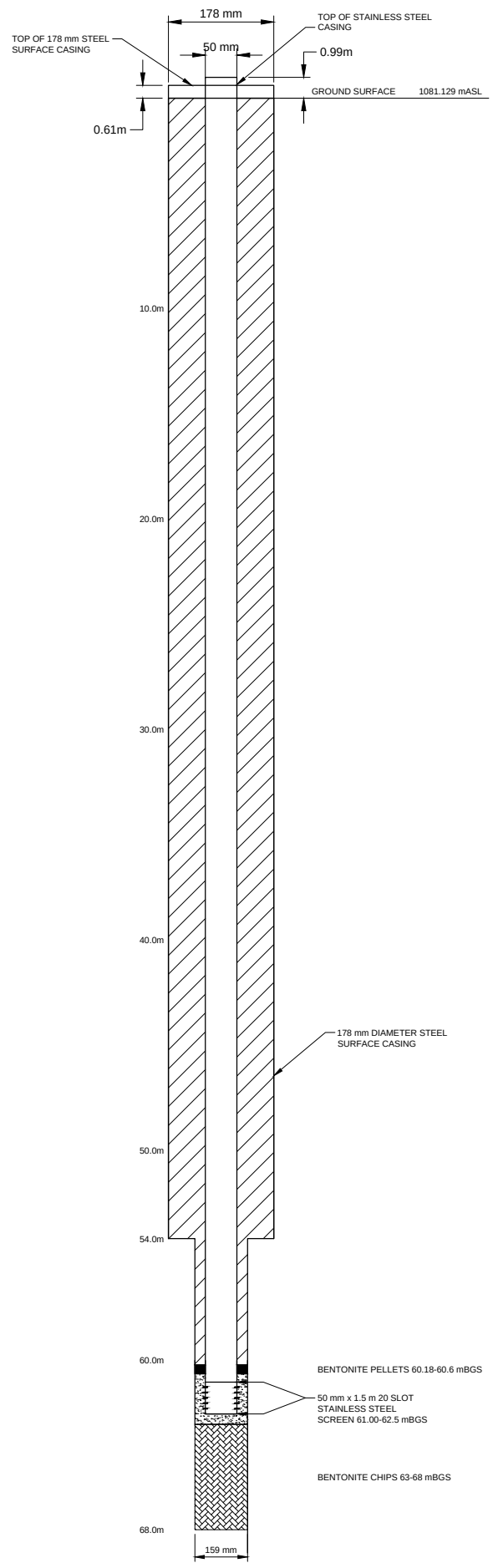
AECOM

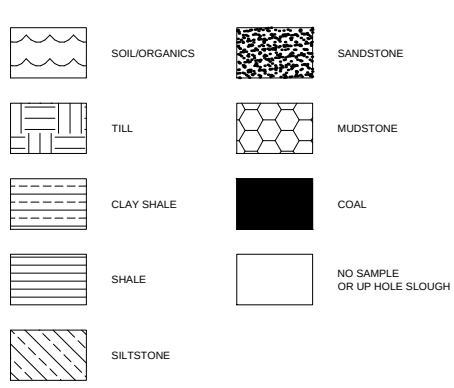
Borehole Log

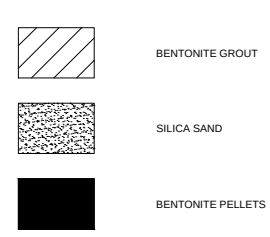
SOIL DESCRIPTION

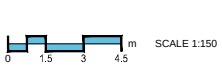


WELL CONSTRUCTION DETAILS









SCALE 1:150

NAD83 UTM Zone 11: 6070775.640, 614873.810

Issue Status: FINAL

Swan HillsTreatment Centre Well Maintenance
Groundwater Monitoring
SENA Waste Services Inc. - Swan Hills, Alberta
Project No.: 60320044 Date: 2015/06/24

Groundwater Monitoring Well 15(2R)SS
Strip Log And Completion

AECOM

Borehole Log

PROJECT: Groundwater Monitoring Well Maintenance	CLIENT: SENA Solid Waste Holdings Inc.	TESTHOLE NO.: **05-SH_Piezometer**
LOCATION: Swan Hills Treatment Centre	COORDINATES: UTM N 6073467.547 E 615148.045	PROJECT NO.: 60320044
CONTRACTOR: AECOM	METHOD: 4" Hand Auger	ELEVATION (m): 1079.856

SAMPLE TYPE: GRAB, SHELBY TUBE, SPLIT SPOON, BULK, NO RECOVERY, CORE

BACKFILL TYPE: BENTONITE, GRAVEL, SLOUGH, GROUT, CUTTINGS, SAND

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	OB		TOPSOIL- organic, silty, rootlets, humid				
	SICL		CLAY - silty, some sand, trace gravel sizes, brown, damp, firm, low plasticity, trace oxidation - hit rocks - medium to fine grained sand pockets/lenses, trace of some gravel				
1	CI		CLAY - trace gravel, trace silty sand, trace coal, trace oxidation, brown, damp, firm, medium plasticity - some sand, moist				1079
2							1078
3	CI		CLAY - some silt, grey, damp, stiff, medium plasticity, some oxidation				1077
4							1076
5							1075
6							1074
7							1073
8							1072
9							1071
10							1070

AECOM

LOGGED BY: BB	COMPLETION DEPTH: 3.10 m
REVIEWED BY:	COMPLETION DATE: 7/10/2014
PROJECT ENGINEER:	Page 1 of 1

PROJECT: Groundwater Monitoring Well Maintenance	CLIENT: SENA Solid Waste Holdings Inc.	TESTHOLE NO.: **06(R)IN**
LOCATION: Swan Hills Treatment Centre	COORDINATES: UTM N 6073647.288 E 615012.123	PROJECT NO.: 60320044
CONTRACTOR: Calibre Drilling Ltd.	METHOD: 4" Solid Stem	ELEVATION (m): 1080.468

SAMPLE TYPE: GRAB, SHELBY TUBE, SPLIT SPOON, BULK, NO RECOVERY, CORE

BACKFILL TYPE: BENTONITE, GRAVEL, SLOUGH, GROUT, CUTTINGS, SAND

06_R_IN

DEPTH (m)	USC	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	OB	TOPSOIL - black				
		TILL - clay, silty, trace sand, brown, damp, organic matter (roots)				1080
	SICL	- sandy lenses (very thin), light brown, oxidation around roots				
1						1079
		TILL - trace coarse sand, trace gravel >2mm <5mm diameter, moist				
2						1078
3		- trace gravel sub angular to sub rounded (~1cm diameter), oxidized very fine sand pockets (~5mm diameter), trace coal - water on outside of auger				1077
	CI	- clay, silty, trace sand, dark grey, moist, stiff, oxidized pockets, oxidized silty pockets (~5mm diameter), light brown very fine sand pockets (2-5mm diameter)				
4						1076
5		- some gravel 0.5-1.5 cm, elongated diameter sub angular to sub rounded				1075
		- trace oxidized silty pockets, trace green glauconitic pockets (~2mm-5mm)				
6						1074
7						1073
8						1072
9						1071
10						

AECOM

LOGGED BY: JS	COMPLETION DEPTH: 6.00 m
REVIEWED BY:	COMPLETION DATE: 7/22/2014
PROJECT ENGINEER:	Page 1 of 1

LOG OF TESTHOLE AUGER BOREHOLE LOGS.GPJ UMA_COC.GDT PRINT: 9/4/14 By:

PROJECT: Groundwater Monitoring Well Maintenance	CLIENT: SENA Solid Waste Holdings Inc.	TESTHOLE NO.: **06-SH_Piezometer**
LOCATION: Swan Hills Treatment Centre	COORDINATES: UTM N 6073646.246 E 615013.946	PROJECT NO.: 60320044
CONTRACTOR: Calibre Drilling Ltd.	METHOD: 4" Solid Stem	ELEVATION (m): 1080.289

SAMPLE TYPE: GRAB, SHELBY TUBE, SPLIT SPOON, BULK, NO RECOVERY, CORE

BACKFILL TYPE: BENTONITE, GRAVEL, SLOUGH, GROUT, CUTTINGS, SAND

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	OB		TOPSOIL				
			TILL - clay and silt, trace subrounded gravel (~5mm diameter), dark brown, damp, soft to firm, trace organic matter, trace oxidation				1080
1							1079
	CI		- some oxidized pockets of very fine sand				
2							1078
			- some coal, light brown silt pockets, trace gravel up to 1 cm diameter, trace sand, some oxidation				
3							1077
4							1076
5							1075
6							1074
7							1073
8							1072
9							1071
10							

AECOM

LOGGED BY: JS	COMPLETION DEPTH: 3.00 m
REVIEWED BY:	COMPLETION DATE: 7/22/2014
PROJECT ENGINEER:	Page 1 of 1

PROJECT: Groundwater Monitoring Well Maintenance	CLIENT: SENA Solid Waste Holdings Inc.	TESTHOLE NO.: **11-IN_Piezometer**
LOCATION: Swan Hills Treatment Centre	COORDINATES: UTM N 6073097.121 E 614835.518	PROJECT NO.: 60320044
CONTRACTOR: Calibre Drilling Ltd.	METHOD: 4" Solid Stem	ELEVATION (m): 1082.705

SAMPLE TYPE: GRAB, SHELBY TUBE, SPLIT SPOON, BULK, NO RECOVERY, CORE

BACKFILL TYPE: BENTONITE, GRAVEL, SLOUGH, GROUT, CUTTINGS, SAND

11-IN

DEPTH (m)	USC	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	OB	TOPSOIL - organic, black, moist, trace rootlets				
	CI-CH	CLAY - some silt, some organics, damp, soft, brown, medium to high plasticity				
		CLAY - trace sand, some silt, trace to rare gravel, grey, no oxidation, firm, medium plasticity, moist				1082
1						1081
2						1080
3						1079
4		- Water on outide of auger sample				
	CI					1078
5		- trace gravel, trace coal, occational green inclusions 5mm diameter, rare to occational 5mm diameter sand pockets, damp, trace oxidation, dry				1077
6		- stiff to firm				1076
7						1075
8						1074
9						1073
10						

AECOM

LOGGED BY: BB	COMPLETION DEPTH: 8.38 m
REVIEWED BY:	COMPLETION DATE: 5/27/2014
PROJECT ENGINEER:	Page 1 of 1

PROJECT: Groundwater Monitoring Well Maintenance	CLIENT: SENA Solid Waste Holdings Inc.	TESTHOLE NO.: **13-IN**
LOCATION: Swan Hills Treatment Centre	COORDINATES: UTM N 6073131.719 E 615151.57	PROJECT NO.: 60320044
CONTRACTOR: Calibre Drilling Ltd.	METHOD: 4" Solid Stem	ELEVATION (m): 1079.338

SAMPLE TYPE: GRAB, SHELBY TUBE, SPLIT SPOON, BULK, NO RECOVERY, CORE

BACKFILL TYPE: BENTONITE, GRAVEL, SLOUGH, GROUT, CUTTINGS, SAND

13-IN

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	CI-CH		CLAY - some silt, brown, moist, soft, medium to high plasticity				1079
1			CLAY - some silt, trace sand, trace to rare coal, grey, soft to firm, medium to high plasticity				1078
2							1077
3			- water on outside of auger sample - silty, trace gravel, occasional green mclusions glacinite (2 - 5mm diameter), medium plasticity				1076
4							1075
5	CI-CH						1074
6			- some sand, trace gravel				1073
7							1072
8							1071
9							1070
10							

AECOM

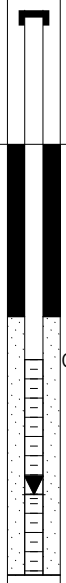
LOGGED BY: BB	COMPLETION DEPTH: 9.10 m
REVIEWED BY:	COMPLETION DATE: 5/28/2014
PROJECT ENGINEER:	Page 1 of 1

PROJECT: Groundwater Monitoring Well Maintenance	CLIENT: SENA Solid Waste Holdings Inc.	TESTHOLE NO.: **13-SH_Piezometer**
LOCATION: Swan Hills Treatment Centre	COORDINATES: UTM N 6073132.023 E 615152.641	PROJECT NO.: 60320044
CONTRACTOR: Calibre Drilling Ltd.	METHOD: 4" Solid Stem	ELEVATION (m): 1079.378

SAMPLE TYPE: GRAB, SHELBY TUBE, SPLIT SPOON, BULK, NO RECOVERY, CORE

BACKFILL TYPE: BENTONITE, GRAVEL, SLOUGH, GROUT, CUTTINGS, SAND

13-SH



DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0			CLAY - some silt, brown, moist, soft, low to medium plasticity				1079
1	CI-CH		some silt, trace sand, trace coal, grey, damp, soft to firm, low to medium plasticity				1078
2							1077
3							1076
4							1075
5							1074
6							1073
7							1072
8							1071
9							1070
10							

AECOM

LOGGED BY: BB	COMPLETION DEPTH: 3.00 m
REVIEWED BY:	COMPLETION DATE: 5/28/2014
PROJECT ENGINEER:	Page 1 of 1

LOG OF TESTHOLE AUGER BOREHOLE LOGS.GPJ UMA_COC.GDT PRINT: 9/4/14 By:

PROJECT: Groundwater Monitoring Well Maintenance	CLIENT: SENA Solid Waste Holdings Inc.	TESTHOLE NO.: **15-SH**
LOCATION: Swan Hills Treatment Centre	COORDINATES:	PROJECT NO.: 60320044
CONTRACTOR: AECOM	METHOD: 4" Hand Auger	ELEVATION (m):

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0	OB		TOPSOIL - dark brown to black, oxidation, roots, humid to dry				
	CI		TILL - clay, silty, some sand (light brown), some cobbles sub rounded to rounded (4 - 8cm diameter), dark brown with oxidation, humid, roots - trace gravel, sandy medium grained - some cobbles, some large sandy pockets (medium to coarse grained), trace coal, brown, humid and damp, organics, mottled oxidation				
1			- backfilled with cuttings and bentonite pellets on July 24, 2014				1
2							2
3							3
4							4
5							5
6							6
7							7
8							8
9							9
10							

AECOM

LOGGED BY: JS	COMPLETION DEPTH: 1.00 m
REVIEWED BY:	COMPLETION DATE: 7/24/2014
PROJECT ENGINEER:	Page 1 of 1

AECOM

Appendix D

Tables

Table 1.0
VEOLIA, Swan Hills Treatment Centre
2024 Purging Summary

AECOM

Monitoring Location	Monitoring Well	Date	Approx. Well Volume (L)	Approx. 3 Well Volumes (L)	Approx. Purge Volume (L)	Comments
MW-01A	01A-SH	27-Aug-2024	6	18	2	Purged to dry; Colour: brown/yellow tint
	01A-IN	27-Aug-2024	16	48	16	Purged to dry; Colour: brown tint
	01A-SS	27-Aug-2024	-	-	-	Historically dry
MW-03	03-SH	26-Aug-2024	6	18	12	Purged to dry; Colour: clear
	03-IN	26-Aug-2024	10	30	18	Purged to dry; Colour: clear
MW-04	04-SH	27-Aug-2024	8	24	18	Purged to dry; Colour: clear
	04-IN	27-Aug-2024	6	18	10	Purged to dry; Colour: clear
	04-SS	27-Aug-2024	23	69	60	Colour: clear
MW-05	05-SH	27-Aug-2024	4	12	9	Purged to dry; Colour: clear
	05-IN	27-Aug-2024	10	30	14	Purged to dry; Colour: clear
	05-SS	27-Aug-2024	35	105	59	Colour: clear
MW-06	06-SH	27-Aug-2024	5	15	10	Purged to dry; Colour: cloudy
	06(R)IN	27-Aug-2024	10	30	24	Purged to dry; Colour: cloudy, grey/brown
MW-07	07-SH	28-Aug-2024	9	27	27	Purged to dry; Colour: clear
	07-IN	28-Aug-2024	16	48	15	Purged to dry; Colour: clear
	07(R)SS	28-Aug-2024	20	60	41	Colour: clear
MW-08	08-SH	27-Aug-2024	7	21	8	Purged to dry; Colour: clear. Well is frost heaved.
	08-IN	27-Aug-2024	13	39	16	Purged to dry; Colour: clear
	08-SS	27-Aug-2024	-	-	-	Well broken/historically dry
MW-11	11-SH	27-Aug-2024	4	12	12	Colour: clear. Removed 5L before measuring water level
	11-IN	27-Aug-2024	16	48	31	Purged to dry; Colour: clear
	11-SS	27-Aug-2024	-	-	-	Historically dry
MW-12	12-SH	27-Aug-2024	6	18	15	Purged to dry; Colour: clear
	12-IN	27-Aug-2024	14	42	16	Purged to dry; Colour: clear
	12-SS	27-Aug-2024	-	-	-	Historically dry
MW-13	13-SH	26-Aug-2024	5	15	8	Purged to dry; *Pneumatic pump switched to piezometer in 2023
	13-IN	26-Aug-2024	16	48	18	Purged to dry; Colour: clear
	13(R)SS	26-Aug-2024	21	63	57	Purged to dry; Colour: clear
MW-14	14-SH	27-Aug-2024	6	18	8	Purged to dry; Colour: slightly yellow. Well is frost heaved.
	14-IN	27-Aug-2024	-	-	-	Historically dry
	14-SS	27-Aug-2024	-	-	-	Historically dry
MW-15	15-SH	27-Aug-2024	9	27	15	Purged to dry; Colour: clear.
	15-IN	27-Aug-2024	12	36	28	Colour: clear
	15(2R)SS	27-Aug-2024	10	30	25	Colour: clear
MW-16	16-SH	26-Aug-2024	10	30	19	Colour: clear
	16-IN	26-Aug-2024	-	-	-	Purged to dry; Colour: clear
MW-17	17-SH	27-Aug-2024	7	21	15	Colour: clear.
	17-IN	27-Aug-2024	12	36	25	Colour: clear.

Notes:
1: "-" = Value not recorded

Table 2.0
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Sampling Program

AECOM

Parameter	Interval		
	Shallow	Intermediate	Sandstone
Routine Water Analysis (pH, calcium, magnesium, sodium, potassium, chloride, nitrate, sulphate, total dissolved solids, and electrical conductivity)[1]	x	x	x
Dissolved Metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury, and zinc)[1]	x	x	x
Dissolved Organic Carbon (DOC)	x	x	x
Polychlorinated Biphenyls Arcolors (Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268; Total PCBs)[1]	x	x	x
BTEX, F11	x		
Adsorbable Organic Halogen	x[2]		
Dioxins and Furans	x[2]		

Notes:

1: Specific parameters outlined in Alberta Environment Approval No. 1744-03-00

2: Tested on select shallow monitoring wells

Table 3.1
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Levels and Elevations

AECOM

Monitoring Location	Ground Elevation (Piezometer)	Ground Elevation (Well)	Stick-up (Piezometer)	Stick-up (Well)	Date Measured	Static Water Level (Piezometer)	Static Water Level (Piezometer)	Static Water Level (Well)	Static Water Level (Well)	Groundwater Elevation (Piezometer)	Groundwater Elevation (Well)	Comments
	(masl)	(masl)	(m)	(m)	(dd-mmm-yyyy)	(mTOC)	(mBGS)	(mTOC)	(mBGS)	(masl)	(masl)	
01A-SH	1,086.250	1,086.236	0.99	N/M	27-Aug-2024	3.05	2.06	N/A	N/M	1,084.19	N/A	*Brown/yellow tint, sulphur odour*
01A-IN	1,086.262	1,086.146	1.00	N/M	27-Aug-2024	4.22	3.22	N/A	N/M	1,083.04	N/A	*Brown tint*
01A-SS	N/A	1,086.256	N/A	0.83*	27-Aug-2024	N/A	N/A	Dry	Dry	N/A	Dry	*Dry*
03-SH	1,079.444	1,079.457	0.84	N/M	26-Aug-2024	0.99	0.15	N/A	N/M	1,079.29	N/A	*Clear*
03-IN	1,079.547	1,079.609	0.92	N/M	26-Aug-2024	1.88	0.96	N/A	N/M	1,078.59	N/A	*Clear*
04-SH	1,082.563	1,082.520	0.72	N/M	27-Aug-2024	1.39	0.67	N/A	N/M	1,081.90	N/A	*Clear*
04-IN	1,082.807	1,082.457	N/M	0.67	27-Aug-2024	N/A	N/A	6.95	6.29	N/A	1,076.17	*Clear*
04-SS	N/A	1,082.849	N/A	1.06	27-Aug-2024	N/A	N/A	60.64	59.58	N/A	1,023.27	*Clear*
05-SH	1,079.856	1,079.580	1.13	N/M	27-Aug-2024	1.80	0.67	N/A	N/M	1,079.18	N/A	*Clear*
05-IN	1,079.755	1,079.808	N/M	1.37	27-Aug-2024	N/A	N/A	2.12	0.75	N/A	1,079.06	*Clear*
05-SS	N/A	1,085.120	N/A	0.83	27-Aug-2024	N/A	N/A	62.63	61.80	N/A	1,023.32	*Clear*
06-SH	1,080.289	1,080.211	0.99	N/M	27-Aug-2024	1.42	0.43	N/A	N/M	1,079.86	N/A	*Cloudy*
06(R)IN	1,080.570	1,080.468	1.12	N/M	27-Aug-2024	1.53	0.41	N/A	N/M	1,080.17	N/A	*Cloudy, grey/brown*
07-SH	1,079.670	1,079.512	0.77	N/M	28-Aug-2024	1.02	0.25	N/A	N/M	1,079.42	N/A	*Clear*
07-IN	1,079.778	1,079.334	0.75	N/M	28-Aug-2024	1.06	0.31	N/A	N/M	1,079.46	N/A	*Clear*
07(R)SS	N/A	1,081.488	N/A	0.72	28-Aug-2024	N/A	N/A	58.77	58.05	N/A	1,023.44	*Clear*
08-SH	1,084.795	1,084.856	1.44	N/M	27-Aug-2024	1.89	0.45	N/A	N/M	1,079.33	N/A	*Clear*
08-IN	1,084.798	1,084.890	1.14	N/M	27-Aug-2024	1.53	0.39	N/A	N/M	1,084.41	N/A	*Clear*
08-SS	N/A	1,084.181	N/A	N/M	27-Aug-2024	N/A	N/A	Dry	Dry	N/A	Dry	*Well damaged, dry*
11-SH	1,082.708	1,082.685	N/M	1.06	27-Aug-2024	N/A	N/A	3.30	2.24	N/A	1,080.47	*Clear*
11-IN	1,082.705	1,082.771	1.12	N/M	27-Aug-2024	1.97	0.85	N/A	N/M	1,081.86	N/A	*Clear*
11-SS	N/A	1,082.557	N/A	0.61	27-Aug-2024	N/A	N/A	60.43	59.82	N/A	1,022.73	*No water retrieved for sample*
12-SH	1,080.384	1,080.272	0.87	N/M	27-Aug-2024	1.31	0.44	N/A	N/M	1,079.94	N/A	*Clear*
12-IN	1,080.362	1,080.184	1.04	N/M	27-Aug-2024	1.47	0.43	N/A	N/M	1,079.93	N/A	*Clear*
12-SS	N/A	1,080.053	N/A	1.03*	27-Aug-2024	N/A	N/A	Dry	Dry	N/A	Dry	*Dry*
13-SH	1,079.378	1,079.048	1.07	N/M	26-Aug-2024	1.40	0.32	N/A	N/A	1,079.06	N/A	*Pneumatic pump relocated to piezometer, sample taken from piezometer in 2024*
13-IN	1,079.338	1,079.077	0.89	N/M	26-Aug-2024	2.23	1.34	N/A	N/A	1,078.00	N/A	*Clear*
13(R)SS	N/A	1,080.004	N/A	1.11	26-Aug-2024	N/A	N/A	58.10	56.99	N/A	1,023.01	*Clear*
14-SH	1,086.513	1,086.515	N/A	0.81	27-Aug-2024	N/A	N/A	1.65	0.84	N/A	1,085.68	*Yellowish*
14-IN	1,086.539	1,086.529	N/M	N/M	27-Aug-2024	Dry	Dry	N/A	N/M	Dry	N/A	*Dry*
14-SS	N/A	1,086.566	N/A	N/M	27-Aug-2024	N/A	N/A	Dry	Dry	N/A	Dry	*Dry*
15-SH	N/M	1,081.264	N/M	1.21	27-Aug-2024	N/A	N/A	2.17	0.96	N/A	1,080.30	*Clear*
15-IN	1,081.298	1,081.293	0.87	N/M	27-Aug-2024	4.19	3.32	N/A	N/M	1,077.98	N/A	*Clear*
15(2R)SS	N/A	1,081.129	N/A	1.06	27-Aug-2024	N/A	N/A	58.84	57.78	N/A	1,023.35	*Clear*
16-SH	1,079.888	1,079.900	0.68	N/M	26-Aug-2024	1.20	0.52	N/A	N/A	1,079.37	N/A	*Clear*
16-IN	1,079.850	1,079.790	0.82	N/M	26-Aug-2024	1.37	0.55	N/A	N/A	1,079.30	N/A	*No water retrieved for sample*
17-SH	1,079.309	1,079.324	1.20	N/M	27-Aug-2024	1.69	0.49	N/A	N/M	1,078.82	N/A	*Clear*
17-IN	1,079.382	1,079.251	0.96	N/M	27-Aug-2024	2.77	1.81	N/A	N/M	1,077.58	N/A	*Clear*

NOTES:

N/M	Not Measured
N/A	Not Applicable
mBGS	metres Below Ground Surface
mTOC	metres below Top of Casing
masl	metres above sea level
*	12-SS: Stick-up measurement used is from 2014 measurement

Table 3.2
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Monitoring Analytical Results: Field Parameters

AECOM

Monitoring Well	Date	Electrical Conductivity	pH	Temperature	NTU	Sample Comment
	(dd-mmm-yyyy)	(µS/cm)		(°C)	(NTU)	
01A-SH	11-Sep-2024	163	5.63	8.90	149.13	Cut down piezometer, new stick-up height 0.945m
01A-IN	11-Sep-2024	536	6.64	7.40	148.30	Cut down piezometer, new stick-up height 0.94m
01A-SS	---	---	---	---	---	Dry
03-SH	10-Sep-2024	712	7.09	13.90	149.13	Clear
03-IN	10-Sep-2024	616	6.88	11.90	145.90	Clear
04-SH	10-Sep-2024	540	7.06	10.70	149.45	Clear
04-IN	10-Sep-2024	456	7.02	6.50	149.27	Clear
04-SS	---	---	---	---	---	Dry
05-SH	10-Sep-2024	713	6.86	8.30	149.32	Clear
05-IN	10-Sep-2024	785	6.91	9.80	149.36	Clear
05-SS	10-Sep-2024	318	7.03	10.90	139.86	Clear
06-SH	10-Sep-2024	632	6.78	9.50	147.97	Slightly cloudy
06(R)IN	10-Sep-2024	672	6.85	10.10	147.30	Cloudy grey/brown
07-SH	10-Sep-2024	1034	6.77	8.90	148.30	Clear
07-IN	10-Sep-2024	489	7.12	8.20	147.47	Clear
07(R)SS	10-Sep-2024	488	7.28	8.40	149.13	Clear
08-SH	11-Sep-2024	529	7.26	12.1	149.24	Clear
08-IN	11-Sep-2024	541	7.08	7.80	149.16	Clear
08-SS	---	---	---	---	---	Dry
11-SH	11-Sep-2024	727	6.83	7.30	149.18	Clear
11-IN	11-Sep-2024	486	7.15	7.10	147.36	Clear
11-SS	11-Sep-2024	---	---	---	---	No water retrieved for sample
12-SH	11-Sep-2024	459	7.22	7.30	148.79	Clear
12-IN	11-Sep-2024	470	7.28	11.00	149.39	Clear
12-SS	---	---	---	---	---	Dry
13-SH	11-Sep-2024	780	6.88	14.10	149.05	Clear
13-IN	10-Sep-2024	488	7.19	9.90	148.80	Clear
13(R)SS	10-Sep-2024	315	6.96	11.10	149.36	Clear
14-SH	10-Sep-2024	643	6.98	10.00	149.14	Slightly yellow
14-IN	---	---	---	---	---	Dry
14-SS	---	---	---	---	---	Dry
15-SH	11-Sep-2024	532	7.03	9.00	148.80	Clear
15-IN	11-Sep-2024	492	7.08	7.50	148.15	Clear
15(2R)SS	10-Sep-2024	333	7.73	13.00	149.14	Clear
16-SH	10-Sep-2024	541	7.22	10.70	148.49	Clear
16-IN	10-Sep-2024	---	---	---	---	Dry
17-SH	11-Sep-2024	438	7.22	9.80	149.25	Clear
17-IN	11-Sep-2024	525	7.23	7.00	149.12	Clear
89-3	11-Sep-2024	377	6.79	19.50	147.97	Clear and sulphur odour

Table 3.3
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Monitoring Analytical Results: Routine Water (Major Ions, Indicators, etc.)

AECOM

				GENERAL					INDICATORS					CATIONS AND ANIONS								NITROGEN PARAMETERS		
Monitoring Well	Date (dd-mmm-yy)	Lab File	Sample Name	Field pH	Electrical Conductivity (µS/cm)	Lab pH	Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]				7.0-10.5	---	7.0-10.5	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]				---	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	1	10	---
Laboratory Detection Limit				2	0.1	0.5	2	0.5	0.3	0.01	0.0001	1	0.05	0.005	0.05	0.05	1	1	1	0.02	0.01	0.02	0.05	0.050
Alberta Tier 2 Potable Groundwater Guideline[3]				6.5 - 8.5	---	6.5 - 8.5	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	1.0	10	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]				6.5 - 8.5	---	6.5 - 8.5	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	Variable	3	---
01A-SH	11-Sep-24	EO2407951-001	1A-SH	**5.63**	198	**5.69**	78	84	8.68	0.46	**3.22**	**0.082**	202	23	4.99	0.87	10.0	102	<1.0	<1.0	0.029	<0.010	<0.020	<0.0500
01A-IN	11-Sep-24	EO2407951-002	1A-IN	6.64	753	7.01	332	466	1.94	<0.30	**16.0**	**0.490**	**526**	93	24.0	3.33	44.4	569	<1.0	<1.0	0.182	<0.010	<0.020	<0.0500
03-SH	10-Sep-24	EO2407951-003	3-SH	7.09	861	7.63	476	442	3.69	90.6	<0.010	0.006	**579**	131	36.3	1.31	16.0	539	<1.0	<1.0	0.334	<0.010	<0.020	<0.0500
03-IN	10-Sep-24	EO2407951-004	3-IN	6.88	813	7.65	390	406	1.24	90.2	<0.010	0.010	**528**	106	30.5	3.48	27.4	495	<1.0	<1.0	0.228	<0.010	0.030	<0.0500
04-SH	10-Sep-24	EO2407951-005	4-SH	7.06	723	7.61	383	436	<0.50	10.10	<0.010	**0.242**	443	102	31.2	2.32	8.9	532	<1.0	<1.0	0.241	<0.010	<0.020	<0.0500
04-IN	10-Sep-24	EO2407951-006	4-IN	7.02	657	7.76	329	376	<0.50	25.6	0.043	**0.372**	430	97	21.4	5.18	21.1	459	<1.0	<1.0	0.226	<0.010	0.219	0.219
04-SS	10-Sep-24	EO2407951-007	4-SS	6.96	623	7.28	286	322	<0.50	54.7	<0.010	**0.557**	423	79.6	21.2	4.76	27.6	393	<1.0	<1.0	0.087	<0.010	0.226	0.226
05-SH	10-Sep-24	EO2407951-008	5-SH	6.86	1070	7.24	596	549	2.28	128	<0.010	0.004	**711**	162	46.4	1.03	7.6	670	<1.0	<1.0	0.215	<0.010	0.04	<0.0500
05-IN	10-Sep-24	EO2407951-010	5-IN	6.91	1140	7.35	541	567	1.90	131	<0.010	**0.147**	**747**	150	40.4	2.82	46.4	691	<1.0	<1.0	0.176	<0.010	0.058	0.058
05-SS	10-Sep-24	EO2407951-011	5-SS	7.03	416	8.00	167	226	<0.50	24.0	<0.010	**0.417**	289	46.3	12.5	3.98	28.2	275	<1.0	<1.0	0.118	<0.010	0.185	0.185
06-SH	10-Sep-24	EO2407951-013	6-SH	6.78	898	7.63	514	594	0.77	2.59	0.053	**1.170**	**584**	141	39.4	1.72	7.0	725	<1.0	<1.0	0.200	<0.010	<0.020	<0.0500
06(R)IN	10-Sep-24	EO2407951-014	6-IN	6.85	926	8.19	511	628	0.80	2.00	0.277	**0.837**	**605**	139	39.8	1.96	7.6	337	211	<1.0	0.188	<0.010	<0.020	<0.0500
07-SH	10-Sep-24	EO2407951-015	7-SH	6.77	1480	**8.83**	716	515	220	13.6	0.085	**0.428**	**840**	195	55.7	2.96	16.9	629	<1.0	<1.0	0.132	<0.010	<0.020	<0.0500
07-IN	10-Sep-24	EO2407951-017	7-IN	7.12	709	8.49	323	368	<0.50	53.7	0.086	**0.415**	449	92	22.6	5.28	28.3	449	<1.0	<1.0	0.182	<0.010	0.020	<0.0500
07(R)SS	10-Sep-24	EO2407951-018	7-SS	7.28	704	8.29	309	378	<0.50	41.5	<0.010	**0.745**	462	87	22.3	6.00	37.5	461	<1.0	<1.0	0.070	<0.010	0.218	0.218
08-SH	11-Sep-24	EO2407951-019	8-SH	7.26	704	7.58	302	370	1.47	44.9	<0.010	**0.087**	438	81.6	24.0	2.21	41.6	452	<1.0	<1.0	0.245	<0.010	0.038	<0.0500
08-IN	11-Sep-24	EO2407951-020	8-IN	7.08	796	7.26	366	336	0.74	127	<0.010	0.018	**519**	105	25.3	3.84	37.1	410	<1.0	<1.0	0.197	<0.010	0.082	0.082
11-SH	11-Sep-24	EO2407951-021	11-SH	6.83	1100	7.06	538	467	<0.50	198	0.053	**0.690**	**747**	160	33.7	2.34	47.4	570	<1.0	<1.0	0.196	<0.010	0.139	0.139
11-IN	11-Sep-24	EO2407951-023	11-IN	7.15	737	7.57	337	409	<0.50	17	0.014	**0.405**	446	93	25.5	3.77	28.2	499	<1.0	<1.0	0.318	0.012	0.055	0.067
12-SH	11-Sep-24	EO2407951-026	12-SH	7.28	643	7.67	343	376	<0.50	3.40	<0.010	**0.197**	392	95.4	25.4	1.82	12.0	459	<1.0	<1.0	0.390	<0.010	<0.020	<0.0500
12-IN	11-Sep-24	EO2407951-024	12-IN	7.22	688	7.56	282	332	<0.50	64.1	0.189	**0.726**	432	80.3	19.7	3.85	41.5	404	<1.0	<1.0	0.227	0.011	0.062	0.073
13-SH[5]	10-Sep-24	EO2407951-027	13-SH	6.88	967	7.04	557	498	<0.50	89.6	<0.010	**0.252**	**628**	156	40.6	1.75	11.5	607	<1.0	<1.0	0.139	<0.010	0.021	<0.0500
13-IN	10-Sep-24	EO2407951-028	13-IN	7.19	691	7.57	341	313	0.51	89.9	<0.010	**0.210**	452	101	21.6	4.04	28.3	382	<1.0	<1.0	0.198	<0.010	0.066	0.066
13(R)SS[6]	10-Sep-24	EO2407951-029	13-SS	6.96	424	7.50	206	224	<0.50	19.0	<0.010	0.0022	280	62.40	12.30	3.75	13.80	273	<1.0	<1.0	0.16	<0.010	0.19	0.19
14-SH	11-Sep-24	EO2407951-030	14-SH	6.98	864	7.22	480	479	1.66	42.9	<0.010	**0.0776**	**547**	130	37.7	2.24	15.9	584	<1.0	<1.0	0.160	<0.010	0.064	0.064
15-SH	11-Sep-24	EO2407951-032	15-SH	7.08	758	7.44	371	442	<0.50	9.8	<0.010	**0.163**	461	108	24.7	3.40	27.5	539	<1.0	<1.0	0.220	<0.010	0.150	0.15
15-IN	11-Sep-24	EO2407951-031	15-IN	7.03	716	7.42	340	353	<0.50	67.0	<0.010	**0.345**	461	98	23.3	4.48	33.8	430	<1.0	<1.0	0.182	<0.010	0.863	0.863
15(2R)SS[6]	10-Sep-24	EO2407951-033	15-SS	7.73	412	8.11	124	214	0.66	15.80	0.01	**0.75**	271	34.30	9.28	3.01	44.70	261	<1.0	<1.0	0.22	<0.010	0.22	0.22
16-SH	10-Sep-24	EO2407951-034	16-SH	7.22	752	7.61	383	412	0.93	26.7	<0.010	0.00538	463	105	29.3	3.03	24.8	502	<1.0	<1.0	0.288	<0.010	0.118	0.118
16-IN[6]	---	---	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17-SH	11-Sep-24	EO2407951-036	17-SH	7.22	626	7.73	310	322	8.11	25.3	<0.010	0.00074	382	86.4	22.8	1.78	18.9	393	<1.0	<1.0	0.273	<0.010	<0.020	<0.0500
17-IN	11-Sep-24	EO2407951-037	17-IN	7.23	762	7.63	375	384	<0.50	59.9	<0.010	**0.410**	483	110	24.4	4.52	31.7	468	<1.0	<1.0	0.173	<0.010	0.736	0.736
89-3	11-Sep-24	EO2407951-038	89-3	6.79	373	7.34	172	185	<0.50	18.9	**0.990**	**1.060**	243	45.6	14.0	2.71	12.4	226	<1.0	<1.0	0.175	<0.010	<0.020	<0.0500
Trip Blank	11-Sep-24	EO2407951-039	TRIP BLANK	-	<2.0	5.68	<0.50	<2.0	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.050	<0.0050	<0.050	<0.050	<1.0	<1.0	<1.0	<0.020	<0.010	<0.020	<0.0500
Field Blank 1	11-Sep-24	EO2407951-040	10-SH	-	<2.0	5.63	<0.50	<2.0	<0.50	<0.30	<0.010	<0.00010	4.4	0.083	0.0103	<0.050	0.081	<1.0	<1.0	<1.0	<0.020	<0.010	<0.020	<0.0500
Field Blank 2	11-Sep-24	EO2407951-041	20-SH	-	<2.0	5.65	<0.50	<2.0	<0.50	<0.30	<0.010	<0.00010	2.4	0.062	0.0118	<0.050	0.11	<1.0	<1.0	<1.0	<0.020	<0.010	<0.020	<0.0500

NOTES:

1: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Aesthetic Objective (AO)

2: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Maximum Acceptable Concentration (MAC)

3: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guideline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guideline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain Guidelines = Coarse Grain Guidelines for Routine Parameters (Fine Grain for SH and IN wells, Coarse Grain for SS wells)
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

5: 13-SH: Pneumatic pump moved from well to piezometer in 2023 due to frost heave in well, sample taken from piezometer in 2024.
6: 16-IN: No sample collected in 2024 event.
Detection Limit is greater than the guideline
--- Guideline Row: No guideline for that parameter
--- Results: Parameter was not analyzed

Sulphate Guideline Aquatic life (Environmental Quality Guidelines for Alberta Surface Waters (March 2018))

Hardness (mg/L)	Guideline (mg/L)
0-30	128
31-75	218
76-180	309
181-250	429
>250	Need to be determined based on site water

Nitrite-N Guideline Aquatic life (Environmental Quality Guidelines for Alberta Surface Waters (March 2018))

Chloride (mg/L)	Maximum Nitrate as N (mg/L
<2	0.06
2-4	0.12
4-6	0.18
6-8	0.24
8-10	0.30
>10	0.60

Table 3.4
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

				DISSOLVED METALS														
Monitoring Well	Date (dd-mmm-yy)	Lab File	Sample Name	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Uranium (mg/L)	Zinc (mg/L)
king Water AO Guidelines 2022[1]				0.1	---	---	---	---	---	---	1.0	---	---	---	---	---	---	5.0
ing Water MAC Guidelines 2022[2]				2.9	0.006	0.010	2.0	5	0.007	0.05	2	0.005	0.001	---	0.05	---	0.02	---
ratory Detection Limit				0.0010	0.00010	0.00010	0.00010	0.010	0.0000050	0.00050	0.00020	0.000050	0.0000050	0.00050	0.000050	0.000010	0.000010	0.0010
Potable Groundwater Guideline[3]				---	0.006	0.01	1	5	0.005	---	1	0.01	0.001	---	0.05	---	0.02	5
uatic Life Groundwater Guideline[4]				Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	1.5	0.00037 [6]	0.0089 [7]	0.007	0.007 [8]	0.000005	Variable [9]	0.002	0.0001	0.015	0.03
01A-SH	11-Sep-24	EO2407951-001	01A-SH	0.173	<0.00010	0.0004	0.0844	0.013	<0.0000050	0.00093	0.00292	0.000228	<0.0000050	0.00218	0.0001	<0.000010	0.00064	0.0061
01A-IN	11-Sep-24	EO2407951-002	01A-IN	0.0037	<0.00010	**0.0112**	0.527	0.122	<0.0000050	0.00071	0.00087	<0.000050	<0.0000050	0.00067	0.000058	<0.000010	0.000203	0.0028
03-SH	10-Sep-24	EO2407951-003	03-SH	0.0048	<0.00010	0.00017	0.441	0.031	0.0000266	0.00124	0.00098	<0.000050	<0.0000050	0.00257	0.000118	<0.000010	0.00553	0.0018
03-IN	10-Sep-24	EO2407951-004	03-IN	0.0029	<0.00010	0.00016	0.115	0.061	<0.0000050	0.00083	0.00099	<0.000050	<0.0000050	0.00143	<0.000050	<0.000010	0.00426	0.0017
04-SH	10-Sep-24	EO2407951-005	04-SH	0.0019	<0.00010	<0.00010	0.22	0.079	0.000007	0.0008	0.00367	<0.000050	<0.0000050	0.00148	<0.000050	<0.000010	0.00906	0.0017
04-IN	10-Sep-24	EO2407951-006	04-IN	0.0014	<0.00010	0.00321	0.0691	0.202	0.0000111	0.00105	0.00094	<0.000050	<0.0000050	0.00188	<0.000050	<0.000010	0.00821	0.0018
04-SS	10-Sep-24	EO2407951-007	04-SS	0.0016	<0.00010	0.00035	0.104	0.029	0.0000119	<0.00050	0.00352	0.000082	<0.0000050	0.00084	<0.000050	<0.000010	0.000047	0.0042
05-SH	10-Sep-24	EO2407951-008	05-SH	0.0026	<0.00010	0.0002	0.112	0.029	0.0000126	0.00219	0.00083	<0.000050	<0.0000050	0.00117	0.000164	<0.000010	0.00696	0.0013
05-IN	10-Sep-24	EO2407951-010	05-IN	0.0019	<0.00010	0.00059	0.0791	0.047	0.0000082	<0.00050	0.00295	0.00007	<0.0000050	0.00137	0.000051	<0.000010	0.0083	0.0037
05-SS	10-Sep-24	EO2407951-011	05-SS	0.0011	<0.00010	0.00022	0.0984	0.022	0.0000084	<0.00050	0.0014	<0.000050	<0.0000050	0.00076	<0.000050	<0.000010	0.000056	0.022
06-SH	10-Sep-24	EO2407951-013	06-SH	0.002	0.0001	0.00027	0.586	0.047	0.0000146	<0.00050	0.00086	<0.000050	<0.0000050	0.00466	<0.000050	<0.000010	0.00566	0.003
06(R)IN	10-Sep-24	EO2407951-014	06-IN	0.004	<0.00010	0.00054	0.559	0.043	0.0000246	<0.00050	0.00159	<0.000050	<0.0000050	0.00837	0.000058	<0.000010	0.00584	0.0039
07-SH	10-Sep-24	EO2407951-015	07-SH	0.0029	<0.00010	0.00011	0.931	0.059	0.0000083	<0.00050	0.00119	<0.000050	<0.0000050	0.00256	<0.000050	<0.000010	0.00347	0.0034
07-IN	10-Sep-24	EO2407951-017	07-IN	0.0019	<0.00010	0.00279	0.139	0.19	0.0000148	0.00138	0.00244	<0.000050	<0.0000050	0.00377	<0.000050	<0.000010	0.00803	0.0132
07(R)SS	10-Sep-24	EO2407951-018	07-SS	0.0012	<0.00010	0.00026	0.0855	0.036	<0.0000050	<0.00050	0.00119	<0.000050	<0.0000050	0.00173	<0.000050	<0.000010	0.000429	0.0012
08-SH	11-Sep-24	EO2407951-019	08-SH	0.0023	0.00017	0.00098	0.229	0.056	0.000023	0.00186	0.00137	<0.000050	<0.0000050	0.00147	<0.000050	<0.000010	0.00565	0.0017
08-IN	11-Sep-24	EO2407951-020	08-IN	<0.0010	<0.00010	0.0001	0.0583	0.176	0.0000079	0.0112	0.00112	<0.000050	<0.0000050	0.00159	0.000066	<0.000010	0.00373	0.0045
11-SH	11-Sep-24	EO2407951-021	11-SH	0.0019	<0.00010	0.00011	0.146	0.126	0.0000494	<0.00050	0.00136	<0.000050	<0.0000050	0.00288	0.000064	<0.000010	0.00354	0.0032
11-IN	11-Sep-24	EO2407951-023	11-IN	0.0016	<0.00010	0.00073	0.29	0.226	0.0000073	<0.00050	0.00295	<0.000050	<0.0000050	0.00338	0.000076	<0.000010	0.00268	0.0039
12-SH	11-Sep-24	EO2407951-026	12-SH	0.0013	<0.00010	0.00059	0.405	0.036	0.0000061	<0.00050	0.00271	0.000068	<0.0000050	0.00084	<0.000050	<0.000010	0.00612	0.0031
12-IN	11-Sep-24	EO2407951-024	12-IN	0.012	<0.00010	0.00353	0.165	0.122	0.0000593	<0.00050	0.0545	0.000554	<0.0000050	0.00743	<0.000050	<0.000010	0.0024	0.208
13-SH[10]	10-Sep-24	EO2407951-027	13-SH	0.0104	0.00044	0.00059	0.272	0.046	0.0000856	<0.00050	0.00287	0.000062	<0.0000050	0.00647	0.000151	<0.000010	0.00415	0.0054
13-IN	10-Sep-24	EO2407951-028	13-IN	0.0031	<0.00010	0.00037	0.148	0.118	0.0000078	0.00062	0.00083	<0.000050	<0.0000050	0.00237	<0.000050	<0.000010	0.00293	0.0023
13(R)SS	10-Sep-24	EO2407951-029	13-SS	0.0014	<0.00010	0.00044	0.0787	0.017	<0.0000050	<0.00050	0.00079	<0.000050	<0.0000050	0.00063	<0.000050	<0.000010	0.00039	0.0028
14-SH	11-Sep-24	EO2407951-030	14-SH	0.0014	0.00026	0.00037	0.322	0.072	0.00203	0.00132	0.00142	<0.000050	<0.0000050	0.0035	<0.000050	<0.000010	0.00703	0.0084
15-SH	11-Sep-24	EO2407951-032	15-SH	0.0018	<0.00010	0.00017	0.535	0.174	0.0000119	0.00076	0.00526	<0.000050	<0.0000050	0.0049	0.000067	<0.000010	0.00218	0.0023
15-IN	11-Sep-24	EO2407951-031	15-IN	0.002	<0.00010	0.00014	0.139	0.23	0.0000212	<0.00050	0.0026	<0.000050	<0.0000050	0.00434	0.00009	<0.000010	0.00448	0.002
15(2R)SS	11-Sep-24	EO2407951-033	15-SS	0.0028	<0.00010	0.00274	0.0382	0.03	0.0000104	<0.00050	0.00145	<0.000050	<0.0000050	0.0007	<0.000050	<0.000010	0.00134	0.0046
16-SH	10-Sep-24	EO2407951-034	16-SH	0.0016	<0.00010	0.00019	0.164	0.092	<0.0000050	0.00118	0.00264	<0.000050	<0.0000050	0.002	0.00163	<0.000010	0.00874	0.0025
16-IN[11]	-	---	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17-SH	11-Sep-24	EO2407951-036	17-SH	0.0014	0.00013	0.0002	0.268	0.059	0.0000131	0.00088	0.00109	<0.000050	<0.0000050	0.00135	0.000382	<0.000010	0.0044	0.0019
17-IN	11-Sep-24	EO2407951-037	17-IN	0.0013	<0.00010	0.00018	0.0725	0.278	0.0000155	<0.00050	0.00248	<0.000050	<0.0000050	0.00211	0.000077	<0.000010	0.00453	0.004
89-3	11-Sep-24	EO2407951-038	89-3	<0.0010	<0.00010	0.00083	0.12	0.023	0.000013	<0.00050	0.00132	<0.000050	<0.0000050	<0.00050	0.000097	<0.000010	0.00184	0.0093
QA/QC																		
Trip Blank	11-Sep-24	EO2407951-039	TRIP BLANK	<0.0010	<0.00010	<0.00010	<0.00010	<0.010	<0.0000050	<0.00050	<0.00020	<0.000050	<0.0000050	<0.00050	<0.000050	<0.000010	<0.000010	<0.0010
Field Blank 1	11-Sep-24	EO2407951-040	10-SH	0.0018	<0.00010	<0.00010	0.00076	<0.010	<0.0000050	<0.00050	0.00128	<0.000050	<0.0000050	<0.00050	<0.000050	<0.000010	<0.000010	<0.0010
Field Blank 2	11-Sep-24	EO2407951-041	20-SH	0.003	<0.00010	<0.00010	0.00026	<0.010	<0.0000050	<0.00050	0.00031	<0.000050	<0.0000050	<0.00050	<0.000050	<0.000010	<0.000010	<0.0010

NOTES:

1: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Aesthetic Objective (AO

2: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Maximum Acceptable Concentration (MAC

3: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring We	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Site
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guideline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring We	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain Guidelines = Coarse Grain Guidelines for Routine Parameters (Fine Grain for SH and IN wells, Coarse Grain for SS wells)
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

5: Aluminum Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.1. Aluminum guidelines for protection of aquatic life at varying pH. - Long-term (Chronic)

6: Cadmium Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.3. Metals guidelines for Protection of Aquatic Life at varying hardness. - Long-term (Chronic)

7: Chromium (trivalent)

8: Lead Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.3. Metals guidelines for Protection of Aquatic Life at varying hardness. - Long-term (Chronic)

9: Nickel Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.3. Metals guidelines for Protection of Aquatic Life at varying hardness. - Long-term (Chronic) - 08-SH=0.13 mg/L; 08-IN=0.16 mg/L

10: 13-SH: Pneumatic pump moved from well to piezometer in 2023 due to frost heave in well, sample taken from piezometer in 2024.

11: 16-IN: No sample collected in 2024 event.

Detection Limit is greater than the guideline

--- Guideline Row: No guideline for that parameter

--- Results: Parameter was not analyzed

Table 3.5
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

AECOM

				ORGANIC	BTEX						PHC	
Monitoring Wel	Date (dd-mmm-yy)	Lab File	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	F1 (C6-C10) (mg/L)	F1 (C6-C10) - BTEX (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]				---	---	0.024	0.0016	---	---	0.02	---	---
Canadian Drinking Water MAC Guidelines 2022[2]				---	0.005	0.06	0.14	---	---	0.09	---	---
atory Detection Limit				0.50	0.00050	0.00050	0.00050	0.00040	0.00030	0.00050	0.10	0.10
Alberta Tier 2 Potable Groundwater Guideline[3]				---	**0.0050**	**0.024**	**0.0016**	---	---	**0.020**	---	**2.2**
Alberta Tier 2 Aquatic Life Groundwater Guideline (Fine/Coarse)[4]				---	**3.6/0.074**	**12000/0.021**	**---/41**			**---/2.9**		**---/9.8**
01A-SH	11-Sep-24	EO2407951-001	01A-SH	55.4	<0.00050	0.00079	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
01A-IN	11-Sep-24	EO2407951-002	01A-IN	30.4	---	---	---	---	---	---	---	---
03-SH	10-Sep-24	EO2407951-003	03-SH	8.0	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
03-IN	10-Sep-24	EO2407951-004	03-IN	4.24	---	---	---	---	---	---	---	---
04-SH	10-Sep-24	EO2407951-005	04-SH	3.15	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
04-IN	10-Sep-24	EO2407951-006	04-IN	4.02	---	---	---	---	---	---	---	---
04-SS	10-Sep-24	EO2407951-007	04-SS	2.04	---	---	---	---	---	---	---	---
05-SH	10-Sep-24	EO2407951-008	05-SH	7.83	<0.00050	<0.00050	<0.00050	Table T	<0.00030	<0.00050	<0.10	<0.10
05-IN	10-Sep-24	EO2407951-010	05-IN	8.42	---	---	---	---	---	---	---	---
05-SS	10-Sep-24	EO2407951-011	05-SS	1.45	---	---	---	---	---	---	---	---
06-SH	10-Sep-24	EO2407951-013	06-SH	4.95	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
06(R)IN	10-Sep-24	EO2407951-014	06-IN	6.26	---	---	---	---	---	---	---	---
07-SH	10-Sep-24	EO2407951-015	07-SH	2.64	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
07-IN	10-Sep-24	EO2407951-017	07-IN	2.57	---	---	---	---	---	---	---	---
07(R)SS	10-Sep-24	EO2407951-018	07-SS	1.79	---	---	---	---	---	---	---	---
08-SH	11-Sep-24	EO2407951-019	08-SH	1.84	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
08-IN	11-Sep-24	EO2407951-020	08-IN	2.17	---	---	---	---	---	---	---	---
11-SH	11-Sep-24	EO2407951-021	11-SH	7.39	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
11-IN	11-Sep-24	EO2407951-023	11-IN	12	---	---	---	---	---	---	---	---
12-SH	11-Sep-24	EO2407951-026	12-SH	3.21	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
12-IN	11-Sep-24	EO2407951-024	12-IN	4.05	---	---	---	---	---	---	---	---
13-SH[5]	10-Sep-24	EO2407951-027	13-SH	6.56	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
13-IN	10-Sep-24	EO2407951-028	13-IN	2.36	---	---	---	---	---	---	---	---
13(R)SS	10-Sep-24	EO2407951-029	13-SS	1.87	---	---	---	---	---	---	---	---
14-SH	11-Sep-24	EO2407951-030	14-SH	3.38	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
15-SH	11-Sep-24	EO2407951-032	15-SH	5.04	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
15-IN	11-Sep-24	EO2407951-031	15-IN	4.67	---	---	---	---	---	---	---	---
15(2R)SS	11-Sep-24	EO2407951-033	15-SS	2.36	---	---	---	---	---	---	---	---
16-SH	10-Sep-24	EO2407951-034	16-SH	3.75	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
16-IN[6]	-	---	16-IN	---	---	---	---	---	---	---	---	---
17-SH	11-Sep-24	EO2407951-036	17-SH	2.42	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
17-IN	11-Sep-24	EO2407951-037	17-IN	3.16	---	---	---	---	---	---	---	---
89-3	11-Sep-24	EO2407951-038	89-3	1.94	---	---	---	---	---	---	---	---
QA/QC												
Trip Blank	11-Sep-24	EO2407951-039	TRIP BLANI	<0.50	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
Field Blank 1	11-Sep-24	EO2407951-040	10-SH	4.04	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10
Field Blank 2	11-Sep-24	EO2407951-041	20-SH	1.91	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10

NOTES:

1: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Aesthetic Objective (AO)

2: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Maximum Acceptable Concentration (MAC)

3: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring W	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring W	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain for SH and IN wells, Coarse Grain for SS wells
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

5: 13-SH: Pneumatic pump moved from well to piezometer in 2023 due to frost heave in well, sample taken from piezometer in 2024.

6: 16-IN: No sample collected in 2024 event.

Detection Limit is greater than the guideline

--- Guideline Row: No guideline for that parameter

--- Results: Parameter was not analyzed

Table 3.6
VEOLIA, Swan Hill Treatment Centre
2024 Groundwater Monitoring Analytical Results: Polychlorinated Biphenyls Aroclors

AECOM

				POLYCHLORINATED BIPHENYLS AROCLORS									
Monitoring Well	Date (dd-mmm-yy)	Lab File	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Laboratory Detection Limit				**0.000010**	**0.000010**	**0.000010**	**0.000010**	**0.000010**	**0.000010**	**0.000010**	**0.000010**	**0.000010**	**0.000030**
Alberta Tier 2 Potable Groundwater Guideline[1]				---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[2]				---	---	---	---	---	---	---	---	---	---
01A-SH	11-Sep-24	EO2407951-001	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
01A-IN	11-Sep-24	EO2407951-002	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
03-SH	10-Sep-24	EO2407951-003	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
03-IN	10-Sep-24	EO2407951-004	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
04-SH	10-Sep-24	EO2407951-005	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
04-IN	10-Sep-24	EO2407951-006	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
04-SS	10-Sep-24	EO2407951-007	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
05-SH	10-Sep-24	EO2407951-008	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
05-IN	10-Sep-24	EO2407951-010	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
05-SS	10-Sep-24	EO2407951-011	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
06-SH	10-Sep-24	EO2407951-013	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
06(R)IN	10-Sep-24	EO2407951-014	06-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
07-SH	10-Sep-24	EO2407951-015	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
07-IN	10-Sep-24	EO2407951-017	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
07(R)SS	10-Sep-24	EO2407951-018	07-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
08-SH	11-Sep-24	EO2407951-019	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
08-IN	11-Sep-24	EO2407951-020	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
11-SH	11-Sep-24	EO2407951-021	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
11-IN	11-Sep-24	EO2407951-023	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
12-SH	11-Sep-24	EO2407951-026	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
12-IN	11-Sep-24	EO2407951-024	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
13-SH[3]	10-Sep-24	EO2407951-027	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
13-IN	10-Sep-24	EO2407951-028	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
13(R)SS	10-Sep-24	EO2407951-029	13-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
14-SH	11-Sep-24	EO2407951-030	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
15-SH	11-Sep-24	EO2407951-032	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
15-IN	11-Sep-24	EO2407951-031	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
15(2R)SS	11-Sep-24	EO2407951-033	15-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
16-SH	10-Sep-24	EO2407951-034	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
16-IN[4]	---	---	16-IN	---	---	---	---	---	---	---	---	---	---
17-SH	11-Sep-24	EO2407951-036	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
17-IN	11-Sep-24	EO2407951-037	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
89-3	11-Sep-24	EO2407951-038	89-3	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
QA/QC													
Trip Blank	11-Sep-24	EO2407951-039	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
Field Blank 1	11-Sep-24	EO2407951-040	10-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
Field Blank 2	11-Sep-24	EO2407951-041	20-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
Spiked Sample 1[5]	12-Sep-24	EO2308922-038	51-SH	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000673	0.000702	<0.000050	<0.000050	0.00138
Spiked Sample 2[6]	12-Sep-24	EO2308922-039	52-SH	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000654	0.000726	<0.000050	<0.000050	0.00138

NOTES:

1: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

2: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain for SH and IN wells, Coarse Grain for SS wells
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

3: 13-SH: Pneumatic pump moved from well to piezometer in 2023 due to frost heave in well, sample taken from piezometer in 2024.
4: 16-IN: No sample collected in 2024 event.
5: ALS spiked sample - 51-SH - Aroclor 1242, 1254, 1260 = 0.001 mg/L, detection limit adjusted due to sample matrix effects
6: ALS spiked sample - 52-SH - Aroclor 1242, 1254, 1260 = 0.001 mg/L, detection limit adjusted due to sample maxtrix effects
Detection Limit is greater than the guideline
--- Guideline Row: No guideline for that parameter
--- Results: Parameter was not analyzed

Table 3.7
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Monitoring Analytical Results: Adsorbable Organic Halogen

AECOM

Monitoring Well	Date (dd-mmm-yy)	Lab File	Sample Name	Adsorbable Organic Halogen (AOX) (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[1]				---
Alberta Tier 2 Aquatic Life Groundwater Guideline[2]				---
03-SH	10-Sep-24	EO2407951-003	03-SH	<0.020
08-SH	11-Sep-24	EO2407951-019	08-SH	<0.020
12-SH	11-Sep-24	EO2407951-026	12-SH	<0.020
13-SH[3]	10-Sep-24	EO2407951-027	13-SH	<0.020
15-SH	11-Sep-24	EO2407951-032	15-SH	<0.020
16-SH	10-Sep-24	EO2407951-034	16-SH	<0.020
17-SH	11-Sep-24	EO2407951-036	17-SH	<0.020

NOTES:

1: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guideline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

2: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guideline Values f

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain Guidelines = Coarse Grain Guidelines for Routine Parameters (Fine Grain for SH and IN wells, Coarse Grain for SS wells)
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

3: 13-SH: Pneumatic pump moved from well to piezometer in 2023 due to frost heave in well, sample taken from piezometer in 2024.

Detection Limit is greater than the guideline

--- Guideline Row: No guideline for that parameter

--- Results: Parameter was not analyzed

Table 3.8
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Monitoring Analytical Results: Dioxins and Furans

AECOM

					DIOXINS and FURANS																	
Monitoring Well	Date (dd-mmm-yy)	Lab File	Sample Name	Toxicity Equivalence (TEQ)[2]	2,3,7,8-TCDD (pg/L)	1,2,3,7,8-PeCDD (pg/L)	1,2,3,4,7,8-HxCDD (pg/L)	1,2,3,6,7,8-HxCDD (pg/L)	1,2,3,7,8,9-HxCDD (pg/L)	1,2,3,4,6,7,8-HpCDD (pg/L)	OCDD (pg/L)	2,3,7,8-TCDF (pg/L)	1,2,3,7,8-PeCDF (pg/L)	2,3,4,7,8-PeCDF (pg/L)	1,2,3,4,7,8-HxCDF (pg/L)	1,2,3,6,7,8-HxCDF (pg/L)	1,2,3,7,8,9-HxCDF (pg/L)	2,3,4,6,7,8-HxCDF (pg/L)	1,2,3,4,6,7,8-HpCDF (pg/L)	1,2,3,4,7,8,9-HpCDF (pg/L)	OCDF (pg/L)	Total Toxic Equivalency[3] (pg/L)
Toxic Equivalency Factors (TEFs)[1]					**1.00**	**1.00**	**0.10**	**0.10**	**0.10**	**0.01**	**0.000300**	**0.10**	**0.03**	**0.30**	**0.10**	**0.10**	**0.10**	**0.10**	**0.01**	**0.01**	**0.000300**	**---**
Alberta Tier 2 Potable Groundwater Guideline[4]					**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**120**
Alberta Tier 2 Aquatic Life Groundwater Guideline[5]					**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**120**
03-SH	10-Sep-24	L275431	03-SH		<0.48	<0.40	<0.38	<0.40	<0.38	<0.54	4.4	<0.50	0.51	<0.29	<0.19	<0.19	<0.25	<0.19	0.46	<0.60	0.92	
				TEQ	0.48	0.40	0.04	0.04	0.04	0.01	0.00132	0.05	0.01530	0.087	0.019	0.019	0.025	0.019	0.00460	0.0060	0.00028	1.248
08-SH	11-Sep-24	L275431	08-SH		<0.34	<0.37	<0.45	<0.48	<0.45	0.80	3.58	<0.48	<0.40	<0.34	<0.24	<0.21	<0.29	<0.22	0.94	<0.37	<0.50	
				TEQ	0.34	0.37	0.05	0.05	0.05	0.0080	0.0011	0.05	0.01	0.10	0.02	0.02	0.03	0.02	0.0094	0.00	0.00015	1.128
12-SH	11-Sep-24	L275431	12-SH		<0.39	<0.49	<0.36	<0.37	<0.35	0.62	3.3	<0.43	0.68	<0.26	<0.17	0.2	0.23	0.3	1.10	<0.29	<0.63	
				TEQ	0.39	0.49	0.04	0.04	0.04	0.01	0.00099	0.04	0.02	0.08	0.02	0.02	0.02	0.03	0.01	0.0029	0.00019	1.241
13-SH[6]	10-Sep-24	L275431	13-SH		<0.39	<0.49	<0.42	<0.44	<0.41	0.76	5.15	<0.48	0.30	<0.20	<0.17	<0.17	<0.24	<0.18	0.33	<0.38	1.10	
				TEQ	0.39	0.49	0.04	0.04	0.04	0.01	0.0015	0.05	0.01	0.06	0.02	0.02	0.02	0.02	0.00	0.00	0.00033	1.217
15-SH	11-Sep-24	L275431	15-SH		<0.43	<0.42	<0.55	<0.58	<0.55	0.94	3.70	<0.48	0.59	<0.29	<0.33	<0.32	<0.42	<0.32	0.86	<0.44	<0.94	
				TEQ	0.43	0.42	0.06	0.06	0.06	0.01	0.00111	0.05	0.02	0.09	0.03	0.03	0.04	0.03	0.0086	0.0044	0.00028	1.333
16-SH	10-Sep-24	L275431	16-SH		<0.40	<0.43	<0.29	<0.30	<0.29	<0.79	3.92	<0.43	0.45	<0.23	<0.23	<0.22	<0.29	<0.23	0.40	<0.50	<0.71	
				TEQ	0.40	0.43	0.0290	0.0300	0.0290	0.0079	0.00118	0.04	0.01	0.07	0.02	0.02	0.03	0.02	0.0040	0.01	0.00021	1.159
17-SH	11-Sep-24	L275431	17-SH		<0.38	<0.37	<0.58	<0.62	<0.58	<0.50	3.20	<0.44	<0.35	<0.31	<0.26	<0.23	<0.33	<0.25	0.29	<0.40	<0.71	
				TEQ	0.38	0.37	0.06	0.06	0.06	0.0050	0.00096	0.04	0.01	0.09	0.03	0.02	0.03	0.03	0.00290	0.0040	0.00021	1.196

NOTES:

1: Toxic Equivalency Factors (TEFs) from Van der Berg et al. (2006)

2: Toxic Equivalence (TEQ) values are produced by multiplying the TEF's by the analytical result. Where the result was below detection limit, the value of the detection limit was used in the calculation.

3: Total Toxic Equivalency (TTE) is calculated by summing the TEQ values, this result is then compared to the applicable guidelines

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

5: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guideline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain Guidelines = Coarse Grain Guidelines for Routine Parameters (Fine Grain for SH and IN wells, Coarse Grain for SS wells)
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

6: 13-SH: Pneumatic pump moved from well to piezometer in 2023 due to frost heave in well, sample taken from piezometer in 2024.

Detection Limit is greater than the guideline

--- Guideline Row: No guideline for that parameter

--- Results: Parameter was not analyzed

Table 3.9
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Monitoring QA/QC Results

AECOM

				GENERAL			INDICATORS				CATIONS AND ANIONS							
Monitoring Well	Date (dd-mmm-yy)	Lab File	Sample Name	Electrical Conductivity (µS/cm)	Lab pH	Total Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)
Lowest Detection Limit				**2.0**	**0.10**	**2.0**	**0.50**	**0.30**	**0.010**	**0.00010**	**0.050**	**0.0050**	**0.050**	**0.050**	**1.0**	**1.0**	**1.0**	**0.020**
Alert Criteria (%)				**20**	**0.6 ***	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**
Laboratory Reporting Limit (LRL)				**4.0**	**0.20**	**4.0**	**1.0**	**0.60**	**0.020**	**0.00020**	**0.10**	**0.01**	**0.1**	**0.1**	**2.0**	**2.0**	**2.0**	**0.040**
2x LRL				**8.0**	**0.40**	**8.0**	**2.0**	**1.2**	**0.040**	**0.00040**	**0.20**	**0.020**	**0.20**	**0.20**	**4.0**	**4.0**	**4.0**	**0.080**
5x LRL				**20.0**	**1.0**	**20**	**5.0**	**3.0**	**0.10**	**0.0010**	**0.50**	**0.050**	**0.50**	**0.50**	**10**	**10**	**10**	**0.20**
05-SH	10-Sep-24		05-SH	1070	7.24	549	2.28	128	<0.010	0.00384	162	46.4	1.03	7.55	670	<1.0	<1.0	0.215
(Duplicate)	10-Sep-24		25-SH	1080	7.39	548	2.26	128	<0.010	0.0037	163	45.8	1.02	7.68	668	<1.0	<1.0	0.199
RPD [1]				0.9%	n/c	0.2%	---	0%	---	4%	0.6%	1.3%	1.0%	1.7%	0.3%	---	---	---
Difference [2]				---	---	---	0.02	---	---	---	---	---	---	---	---	---	---	0.016
05-SS	10-Sep-24		05-SS	416	8	226	<0.50	24	<0.010	0.417	46.3	12.5	3.98	28.2	275	<1.0	<1.0	0.118
(Duplicate)	10-Sep-24		25-SS	422	7.52	220	<0.50	24	<0.010	0.413	47.1	12.1	4.1	27	261	3.7	<1.0	0.120
RPD				1.4%	n/c	2.7%	---	0.0%	---	1.0%	1.7%	3.3%	3.0%	4.3%	5.2%	---	---	---
Difference [2]				---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.002
07-SH	10-Sep-24		07-SH	1480	8.83	515	220	13.6	0.085	0.428	195	55.7	2.96	16.9	629	<1.0	<1.0	0.132
(Duplicate)	10-Sep-24		27-SH	1470	8.25	494	220	13.6	0.079	0.388	201	55.6	2.94	17.3	602	<1.0	<1.0	0.137
RPD				0.7%	n/c	4.2%	0.0%	0%	---	9.8%	3.0%	0.2%	0.7%	2.3%	4.4%	---	---	---
Difference [2]				---	---	---	---	---	0.0060	---	---	---	---	---	---	---	---	0.0050
11-SH	11-Sep-24		11-SH	1100	7.06	467	<0.50	198	0.053	0.69	160	33.7	2.34	47.4	570	<1.0	<1.0	0.196
(Duplicate)	11-Sep-24		31-SH	1110	7.05	469	<0.50	203	0.061	0.678	157	33.6	2.3	45.2	572	<1.0	<1.0	0.185
RPD				0.9%	n/c	0.4%	---	2.5%	---	1.8%	1.9%	0.3%	1.7%	4.8%	0.4%	---	---	---
Difference [2]				---	---	---	---	---	0.0080	---	---	---	---	---	---	---	---	0.011
12-SH	11-Sep-24		12-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	11-Sep-24		32-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RPD				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Difference [2]				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1: Alert Criteria - Tables 6-1 to 6-16 Guidance Manual For Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment – Volume 1 Analytical Methods (CCME, 2016)

2: LRL = Laboratory Reporting Limit = 2 x detection limit

3: RPD - Relative Percent Difference, calculated when data is over 5x LRL, then compared to alert criteria

4: Difference - absolute value (sample value - duplicate value)
- Only calculated when one or both results are less than five times the LRL

"---" - Value not able to be calculated because one or both values below detection limit

n/c - RPD not calculated for pH

Exceeds Alert Criteria
Exceeds 2x LRL

* Not a percentage

Table 3.9
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Monitoring QA/QC Results

AECOM

				NITROGEN PARAMETERS			DISSOLVED METALS															ORGANICS
Monitoring Well	Date (dd-mmm-yy)	Lab File	Sample Name	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Uranium (mg/L)	Zinc (mg/L)	Dissolved Organic Carbon (DOC) (mg/L)
Lowest Detection Limit				**0.010**	**0.020**	**0.0500**	**0.0010**	**0.00010**	**0.00010**	**0.00010**	**0.010**	**0.0000050**	**0.00050**	**0.00020**	**0.000050**	**0.0000050**	**0.00050**	**0.000050**	**0.000010**	**0.000010**	**0.0010**	**0.50**
Alert Criteria (%)				**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**
Laboratory Reporting Limit (LRL)				**0.020**	**0.040**	**0.10**	**0.0020**	**0.00020**	**0.00020**	**0.00020**	**0.020**	**0.000010**	**0.00100**	**0.00040**	**0.00010**	**0.000010**	**0.0010**	**0.00010**	**0.000020**	**0.000020**	**0.0020**	**1.0**
2x LRL				**0.040**	**0.080**	**0.20**	**0.0040**	**0.00040**	**0.00040**	**0.00040**	**0.040**	**0.000020**	**0.0020**	**0.00080**	**0.00020**	**0.000020**	**0.0020**	**0.00020**	**0.000040**	**0.000040**	**0.0040**	**2.0**
5x LRL				**0.10**	**0.20**	**0.50**	**0.010**	**0.0010**	**0.0010**	**0.0010**	**0.10**	**0.000050**	**0.0050**	**0.0020**	**0.00050**	**0.000050**	**0.0050**	**0.00050**	**0.00010**	**0.00010**	**0.010**	**5.0**
05-SH	10-Sep-24		05-SH	<0.010	0.036	<0.0500	0.0026	<0.00010	0.0002	0.112	0.029	0.0000126	0.00219	0.00083	<0.000050	<0.0000050	0.00117	0.000164	<0.000010	0.00696	0.0013	7.83
(Duplicate)	10-Sep-24		25-SH	<0.010	<0.020	<0.0500	0.0022	<0.00010	0.00021	0.117	0.03	0.0000142	0.0022	0.00229	<0.000050	<0.0000050	0.00133	0.000139	<0.000010	0.00701	0.0024	8.24
RPD [1]				---	---	---	---	---	---	4.4%	---	---	---	---	---	---	---	---	---	0.7%	---	5.1%
Difference [2]				---	---	---	0.0004	---	0.000010	---	0.0010	0.000002	0.00001	0.00146	---	---	0.00016	0.000025	---	---	0.0011	---
05-SS	10-Sep-24		05-SS	<0.010	0.185	0.185	0.0011	<0.00010	0.00022	0.0984	0.022	0.0000084	<0.00050	0.0014	<0.000050	<0.0000050	0.00076	<0.000050	<0.000010	0.000056	0.022	1.45
(Duplicate)	10-Sep-24		25-SS	<0.010	0.175	0.175	0.0017	<0.00010	0.00022	0.102	0.022	0.0000076	<0.00050	0.00666	0.000217	<0.0000050	0.00103	<0.000050	<0.000010	0.000046	0.0252	1.34
RPD				---	---	---	---	---	---	3.6%	---	---	---	---	---	---	---	---	---	---	13.6%	---
Difference [2]				---	0.010	0.010	0.001	---	0	---	0	0.000001	---	0.00526	---	---	0.00027	---	---	0.00001	---	0.11
07-SH	10-Sep-24		07-SH	<0.010	<0.020	<0.0500	0.0029	<0.00010	0.00011	0.931	0.059	0.0000083	<0.00050	0.00119	<0.000050	<0.0000050	0.00256	<0.000050	<0.000010	0.00347	0.0034	2.64
(Duplicate)	10-Sep-24		27-SH	<0.010	<0.020	<0.0500	0.0017	<0.00010	0.0001	0.943	0.06	0.0000087	<0.00050	0.00033	<0.000050	<0.0000050	0.00239	<0.000050	<0.000010	0.00356	0.0026	2.66
RPD				---	---	---	---	---	---	1.3%	---	---	---	---	---	---	---	---	---	2.6%	---	---
Difference [2]				---	---	---	0.001	---	0.00001	---	0.0010	0.0000004	---	0.000860	---	---	0.00017	---	---	---	0.00080	0.02
11-SH	11-Sep-24		11-SH	<0.010	0.139	0.139	0.0019	<0.00010	0.00011	0.146	0.126	0.0000494	<0.00050	0.00136	<0.000050	<0.0000050	0.00288	0.000064	<0.000010	0.00354	0.0032	7.39
(Duplicate)	11-Sep-24		31-SH	<0.010	0.127	0.127	0.0032	<0.00010	0.0001	0.149	0.117	0.0000466	<0.00050	0.00198	<0.000050	<0.0000050	0.00299	0.00005	<0.000010	0.0034	0.0034	7.54
RPD				---	---	---	---	---	---	2.0%	7.4%	---	---	---	---	---	---	---	---	4.0%	---	2.0%
Difference [2]				---	0.012	0.012	---	---	0.000010	---	---	0.0000028	---	0.00062	---	---	0.00011	0.000014	---	---	0.00020	---
12-SH	11-Sep-24		12-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	11-Sep-24		32-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RPD				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Difference [2]				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:
1: Alert Criteria - Tables 6-1 to 6-16 Guidance Manual For Environmental S
2: LRL = Laboratory Reporting Limit = 2 x detection limit
3: RPD - Relative Percent Difference, calculated when data is over 5x LRL
4: Difference - absolute value (sample value - duplicate value)
- Only calculated when one or both results are less than five times the LRL
"---" - Value not able to be calculated because one or both values below detection limit
n/c - RPD not calculated for pH

Exceeds Alert Criteria
Exceeds 2x LRL

* Not a percentage

Table 3.9
VEOLIA, Swan Hills Treatment Centre
2024 Groundwater Monitoring QA/QC Results

AECOM

				BTEX						PHC		PCB AROCLORS										
Monitoring Well	Date (dd-mmm-yy)	Lab File	Sample Name	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	F1 (C6-C10) (mg/L)	F1 (C6-C10) - BTEX (mg/L)	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)	Adsorbable Organic Halide (AOX) (mg/L)
Lowest Detection Limit				0.00050	0.00050	0.00050	0.00040	0.00030	0.00050	0.10	0.025	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000030	10
Alert Criteria (%)				60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	30
Laboratory Reporting Limit (LRL)				0.0010	0.0010	0.0010	0.0008	0.0006	0.0010	0.20	0.05	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.00006	0.010
2x LRL				0.0020	0.0020	0.0020	0.0016	0.0012	0.0020	0.40	0.10	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.00012	0.020
5x LRL				0.0050	0.0050	0.0050	0.0040	0.0030	0.0050	1.0	0.25	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00030	0.050
05-SH	10-Sep-24		05-SH	<0.00050	0.00079	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	---
(Duplicate)	10-Sep-24		25-SH	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	---
RPD [1]				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Difference [2]				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
05-SS	10-Sep-24		05-SS	---	---	---	---	---	---	---	---	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	---
(Duplicate)	10-Sep-24		25-SS	---	---	---	---	---	---	---	---	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	---
RPD				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Difference [2]				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
07-SH	10-Sep-24		07-SH	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	---
(Duplicate)	10-Sep-24		27-SH	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	---
RPD				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Difference [2]				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
11-SH	11-Sep-24		11-SH	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	---
(Duplicate)	11-Sep-24		31-SH	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	<0.10	<0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	---
RPD				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Difference [2]				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12-SH	11-Sep-24		12-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<0.020
(Duplicate)	11-Sep-24		32-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<0.020
RPD				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Difference [2]				---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1: Alert Criteria - Tables 6-1 to 6-16 Guidance Manual For Environmental S

2: LRL = Laboratory Reporting Limit = 2 x detection limit

3: RPD - Relative Percent Difference, calculated when data is over 5x LRL

4: Difference - absolute value (sample value - duplicate value)
- Only calculated when one or both results are less than five times the LRL

"---" - Value not able to be calculated because one or both values below detection limit

n/c - RPD not calculated for pH

Exceeds Alert Criteria

Exceeds 2x LRL

* Not a percentage

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
01-SH [Decommissioned]	N/M	1,086.38	N/M	N/M	15-May-1985	1.67	N/M	1,084.71	
					15-Aug-1985	1.83	N/M	1,084.55	
					15-Jun-1986	1.16	N/M	1,085.22	
					15-Aug-1986	1.80	N/M	1,084.58	
					15-Oct-1986	2.03	N/M	1,084.35	
					15-Jun-1987	2.07	N/M	1,084.31	
					15-Sep-1987	1.67	N/M	1,084.71	
					15-Nov-1987	1.60	N/M	1,084.78	
					15-Aug-1988	1.45	N/M	1,084.93	
					15-Oct-1988	1.66	N/M	1,084.72	
					15-Jun-1989	1.51	N/M	1,084.87	
					15-Nov-1989	1.67	N/M	1,084.71	
					15-Aug-1990	1.33	N/M	1,085.05	
					15-Oct-1990	1.32	N/M	1,085.06	
					15-May-1991	N/M	N/M	N/M	*Frozen*
					15-Nov-1991	N/M	N/M	N/M	*Frozen*
					05-May-1992	1.58	N/M	1,084.81	
					29-Oct-1992	1.43	N/M	1,084.95	
					18-May-1993	N/M	N/M	N/M	*Frozen*
					10-Nov-1993	N/M	N/M	N/M	*Decommissioned*
01A-SH	N/M	1,087.20	N/M	5.18	10-Nov-1993	1.79	N/M	1,085.41	
					21-Sep-1994	2.66	N/M	1,084.54	
					20-Sep-1995	3.03	N/M	1,084.17	
					04-Sep-1996	3.22	N/M	1,083.98	
					05-Sep-1997	3.21	N/M	1,083.99	
					16-Sep-1998	3.52	N/M	1,083.68	
					09-Sep-1999	3.60	N/M	1,083.60	
					28-Aug-2000	3.20	N/M	1,084.00	
					07-Sep-2001	3.04	N/M	1,084.16	
					04-Sep-2002	N/M	N/M	< 0.00	*Dry*
					03-Sep-2003	3.11	N/M	1,084.09	
					08-Sep-2004	3.16	N/M	1,084.04	
					26-Aug-2005	2.79	N/M	1,084.41	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	2.88	N/M	1,084.32	
					06-Sep-2007	2.65	N/M	1,084.55	
					04-Sep-2008	2.98	N/M	1,084.22	
					25-Aug-2009	2.90	N/M	1,084.30	
					23-Aug-2010	2.90	N/M	1,084.30	
					22-Aug-2011	2.68	N/M	1,084.52	
					22-Aug-2012	2.89	N/M	1,084.31	
			0.99		19-Sep-2013	2.60	1.62	1,084.60	
	1,086.250	1,087.243	0.99	5.23	22-May-2014	3.68	2.69	1,083.56	
			1.01	5.23	10-Sep-2014	3.02	2.01	1,084.24	
			0.94	5.23	16-Sep-2015	4.01	3.06	1,083.19	
			0.94	5.23	14-Sep-2016	2.74	1.80	1,084.45	
			0.92	5.23	12-Sep-2017	2.99	2.08	1,084.17	*Yellowish*
			0.93	5.23	06-Sep-2018	3.23	2.31	1,083.94	*Yellowish*
			0.99	5.23	04-Sep-2019	2.71	1.73	1,084.53	
			0.80	5.23	09-Sep-2020	3.03	2.22	1,084.03	
			0.99	5.23	08-Sep-2021	3.41	2.43	1,083.82	
			1.01	5.23	13-Sep-2022	3.12	2.11	1,084.14	*Yellowish, Sulphur odor*
			1.00	5.23	13-Sep-2023	3.17	2.17	1,084.07	
			0.99	5.23	27-Aug-2024	3.05	2.06	1,084.19	
01-IN [Decommissioned]	N/M	1,086.11	N/M	N/M	15-May-1985	5.21	N/M	1,080.90	
					15-Aug-1985	3.17	N/M	1,082.94	
					15-Dec-1985	2.94	N/M	1,083.17	
					15-Feb-1986	2.59	N/M	1,083.52	
					15-Aug-1986	2.59	N/M	1,083.52	
					15-Oct-1986	1.95	N/M	1,084.16	
					15-Jun-1987	2.93	N/M	1,083.18	
					15-Sep-1987	2.46	N/M	1,083.65	
					15-Nov-1987	2.23	N/M	1,083.88	
					15-Feb-1988	2.58	N/M	1,083.53	
					15-May-1988	2.11	N/M	1,084.00	
					15-Aug-1988	2.55	N/M	1,083.56	
					15-Oct-1988	2.54	N/M	1,083.57	
					15-Mar-1989	2.86	N/M	1,083.25	
					15-May-1989	3.02	N/M	1,083.09	
					15-Jun-1989	2.68	N/M	1,083.43	
					15-Sep-1989	2.33	N/M	1,083.79	
					15-Nov-1989	2.23	N/M	1,083.88	
					15-Mar-1990	2.79	N/M	1,083.32	
					15-Apr-1990	2.83	N/M	1,083.28	
					15-Aug-1990	2.38	N/M	1,083.74	
					15-Oct-1990	2.28	N/M	1,083.83	
					15-May-1991	2.82	N/M	1,083.29	
					15-Nov-1991	2.31	N/M	1,083.80	
					05-May-1992	2.40	N/M	1,083.72	
					29-Oct-1992	2.00	N/M	1,084.11	
					18-May-1993	2.90	N/M	1,083.21	
					10-Nov-1993	N/M	N/M	N/M	*Decommissioned*
01A-IN	N/M	1,087.27	N/M	11.27	10-Nov-1993	3.21	N/M	1,084.06	
					21-Sep-1994	3.27	N/M	1,084.00	
					20-Sep-1995	3.61	N/M	1,083.66	
					04-Sep-1996	3.81	N/M	1,083.46	
					05-Sep-1997	3.94	N/M	1,083.33	
					15-Sep-1998	4.23	N/M	1,083.04	*Damaged*
					09-Sep-1999	4.34	N/M	1,082.93	
					28-Aug-2000	4.20	N/M	1,083.07	
					07-Sep-2001	3.88	N/M	1,083.39	
					04-Sep-2002	4.73	N/M	1,082.54	
					03-Sep-2003	4.00	N/M	1,083.27	
					08-Sep-2004	4.01	N/M	1,083.26	
					26-Aug-2005	3.67	N/M	1,083.60	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	3.79	N/M	1,083.48	
					06-Sep-2007	3.51	N/M	1,083.76	
					04-Sep-2008	3.92	N/M	1,083.35	
					25-Aug-2009	3.88	N/M	1,083.39	
					23-Aug-2010	3.90	N/M	1,083.37	
					22-Aug-2011	3.63	N/M	1,083.64	
					22-Aug-2012	3.89	N/M	1,083.38	
			1.02		19-Sep-2013	3.69	2.67	1,083.59	
	1,086.262	1,087.295	1.03	11.14	22-May-2014	4.41	3.38	1,082.88	
			1.04	11.14	10-Sep-2014	4.04	3.00	1,083.26	
			1.02	11.14	16-Sep-2015	5.11	4.09	1,082.17	
			1.02	11.14	14-Sep-2016	3.74	2.72	1,083.54	
			0.99	11.14	12-Sep-2017	4.14	3.15	1,083.11	*Yellowish*
			0.96	11.14	06-Sep-2018	4.32	3.37	1,082.90	*Yellowish*
			1.03	11.14	04-Sep-2019	4.32	3.29	1,082.97	
			1.02	11.14	09-Sep-2020	3.83	2.81	1,083.45	*Sulphur odour, white flakes present*
			1.03	11.14	08-Sep-2021	4.53	3.50	1,082.76	
			1.02	11.14	13-Sep-2022	4.44	3.41	1,082.85	*Brown tint*
			1.03	11.14	13-Sep-2023	4.31	3.28	1,082.98	
			1.00	11.14	27-Aug-2024	4.22	3.22	1,083.04	
01-SS [Decommissioned]	N/M	1,086.11	N/M	N/M	15-May-1985	61.64	N/M	1,024.47	
					15-Aug-1985	61.95	N/M	1,024.16	
					15-Dec-1985	61.81	N/M	1,024.30	
					15-Feb-1986	61.81	N/M	1,024.30	
					15-Jun-1986	61.80	N/M	1,024.31	
					15-Aug-1986	61.78	N/M	1,024.33	
					15-Oct-1986	61.84	N/M	1,024.27	
					15-Jun-1987	61.76	N/M	1,024.35	
					15-Sep-1987	61.88	N/M	1,024.23	
					15-Nov-1987	63.34	N/M	1,022.77	
					15-Feb-1988	63.37	N/M	1,022.74	
					15-May-1988	63.58	N/M	1,022.53	
					15-Aug-1988	63.71	N/M	1,022.40	
					15-Oct-1988	63.71	N/M	1,022.40	
					15-Mar-1989	63.34	N/M	1,022.77	
					15-May-1989	63.83	N/M	1,022.28	
					15-Jun-1989	63.90	N/M	1,022.21	
					15-Sep-1989	63.98	N/M	1,022.13	
					15-Nov-1989	63.88	N/M	1,022.23	
					15-Mar-1990	64.32	N/M	1,021.79	
					15-Apr-1990	64.05	N/M	1,022.06	
					15-Aug-1990	64.29	N/M	1,021.82	
					15-Oct-1990	64.16	N/M	1,021.95	
					15-May-1991	64.42	N/M	1,021.69	
					15-Nov-1991	64.64	N/M	1,021.48	
					05-May-1992	64.89	N/M	1,021.22	
					29-Oct-1992	64.94	N/M	1,021.17	
					18-May-1993	N/M	N/M	N/M	*Pump Lines Frozen*

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					10-Nov-1993	N/M	N/M	N/M	*Decommissioned*
01A-SS	N/M	1,087.40	N/M	60.50	10-Nov-1993	N/M	N/M	< 0.00	*Dry*
					21-Sep-1994	N/M	N/M	< 0.00	*Dry*
					20-Sep-1995	N/M	N/M	< 0.00	*Dry*
					05-Sep-1996	N/M	N/M	< 0.00	*Dry*
					15-Sep-1998	N/M	N/M	< 0.00	*Dry*
					28-Aug-2000	N/M	N/M	< 0.00	*Dry*
					07-Sep-2001	N/M	N/M	< 0.00	*Dry*
					06-Sep-2002	N/M	N/M	< 0.00	*Dry*
					03-Sep-2003	N/M	N/M	< 0.00	*Dry*
					08-Sep-2004	N/M	N/M	< 0.00	*Dry*
					25-Aug-2005	N/M	N/M	< 0.00	*Dry*
					06-Sep-2006	N/M	N/M	< 0.00	*Dry*
					29-Aug-2007	N/M	N/M	< 0.00	*Dry*
					04-Sep-2008	N/M	N/M	< 0.00	*Dry*
					25-Aug-2009	N/M	N/M	< 0.00	*Dry*
					23-Aug-2010	N/M	N/M	< 0.00	*Well Dry*
					22-Aug-2011	N/M	N/M	< 0.00	*Dry*
					22-Aug-2012	N/M	N/M	< 0.00	*Dry*
			0.79		19-Sep-2013	59.68	58.89	1,027.73	*Dry*
	1,086.256	1,087.087	0.83	60.50	22-May-2014	N/M	N/M	< 0.00	*Dry; Measured in the well*
			0.73	60.50	10-Sep-2014	N/M	N/M	< 0.00	*Dry; Measured in the well*
			N/M	60.50	16-Sep-2015	N/M	N/M	< 0.00	*Dry*
			0.83	60.50	14-Sep-2016	N/M	N/M	< 0.00	*Dry*
			0.83	60.50	12-Sep-2017	N/M	N/M	< 0.00	*Dry*
			0.83	60.50	06-Sep-2018	N/M	N/M	< 0.00	*Dry*
			0.83	60.50	04-Sep-2019	N/M	N/M	< 0.00	*Dry*
			0.83	60.50	09-Sep-2020	NM	N/M	< 0.00	*Dry*
			0.83	60.50	08-Sep-2021	NM	N/M	<0.00	*Dry*
			0.83	60.50	13-Sep-2022	NM	N/M	<0.00	*Dry*
			0.83	60.50	13-Sep-2023	NM	N/M	<0.00	*Dry*
			0.83	60.50	27-Aug-2024	NM	N/M	<0.00	*Dry*
02-SH [Decommissioned]	N/M	1,086.42	N/M	N/M	15-May-1985	1.37	N/M	1,085.05	
					15-Aug-1985	2.82	N/M	1,083.60	
					15-Dec-1985	3.68	N/M	1,082.74	
					15-Jun-1986	1.62	N/M	1,084.80	
					15-Aug-1986	1.59	N/M	1,084.83	
					15-Oct-1986	1.62	N/M	1,084.80	
					15-Jun-1987	1.67	N/M	1,084.75	
02-SH [Decommissioned]					15-Sep-1987	1.78	N/M	1,084.64	
					15-Nov-1987	1.95	N/M	1,084.47	
					15-Feb-1988	2.44	N/M	1,083.99	
					15-May-1988	1.68	N/M	1,084.74	
					15-Aug-1988	1.70	N/M	1,084.72	
					15-Oct-1988	2.03	N/M	1,084.39	
					15-Mar-1989	3.44	N/M	1,082.98	
					15-May-1989	2.64	N/M	1,083.78	
					15-Jun-1989	1.53	N/M	1,084.89	
					15-Sep-1989	1.54	N/M	1,084.88	
					15-Nov-1989	1.88	N/M	1,084.54	
					15-Mar-1990	3.64	N/M	1,082.78	
					15-Apr-1990	3.30	N/M	1,083.12	
					15-Aug-1990	1.89	N/M	1,084.53	
					15-Oct-1990	1.89	N/M	1,084.53	
					15-May-1991	2.58	N/M	1,083.84	
					15-Nov-1991	2.30	N/M	1,084.12	
					04-May-1992	2.23	N/M	1,084.19	
					28-Oct-1992	2.19	N/M	1,084.23	
					18-May-1993	4.55	N/M	1,081.87	
					10-Nov-1993	N/M	N/M	N/M	*Decommissioned*
02-IN [Decommissioned]	N/M	1,086.38	N/M	N/M	15-May-1985	2.27	N/M	1,084.11	
					15-Aug-1985	2.04	N/M	1,084.34	
					15-Dec-1985	3.51	N/M	1,082.87	
					15-Jun-1986	1.84	N/M	1,084.54	
					15-Aug-1986	1.76	N/M	1,084.62	
					15-Oct-1986	1.75	N/M	1,084.63	
					15-Jun-1987	1.88	N/M	1,084.50	
					15-Sep-1987	1.78	N/M	1,084.60	
					15-Nov-1987	1.78	N/M	1,084.60	
					15-Feb-1988	2.80	N/M	1,083.58	
					15-May-1988	1.81	N/M	1,084.57	
					15-Aug-1988	1.92	N/M	1,084.46	
					15-Oct-1988	1.90	N/M	1,084.48	
					15-Jun-1989	2.20	N/M	1,084.18	
					15-Sep-1989	2.06	N/M	1,084.32	
					15-Nov-1989	2.20	N/M	1,084.18	
					15-Mar-1990	3.24	N/M	1,083.14	
					15-Apr-1990	3.42	N/M	1,082.96	
					15-Aug-1990	1.97	N/M	1,084.41	
					15-Oct-1990	1.99	N/M	1,084.39	
					15-May-1991	3.20	N/M	1,083.18	
					15-Nov-1991	2.49	N/M	1,083.89	
					04-May-1992	2.57	N/M	1,083.81	
					28-Oct-1992	2.21	N/M	1,084.17	
					18-May-1993	4.65	N/M	1,081.73	
					10-Nov-1993	N/M	N/M	N/M	*Decommissioned*
03-SH	N/M	1,080.61	N/M	3.00	15-May-1985	1.26	N/M	1,079.35	
					15-Aug-1985	1.72	N/M	1,078.89	
					15-Dec-1985	2.20	N/M	1,078.41	
					15-Jun-1986	0.39	N/M	1,080.22	
					15-Aug-1986	1.64	N/M	1,078.97	
					15-Oct-1986	1.64	N/M	1,078.97	
					15-Jun-1987	1.57	N/M	1,079.04	
					15-Sep-1987	1.84	N/M	1,078.77	
					15-Nov-1987	2.00	N/M	1,078.61	
					15-Feb-1988	2.49	N/M	1,078.12	
					15-May-1988	1.66	N/M	1,078.95	
					15-Aug-1988	1.85	N/M	1,078.76	
					15-Oct-1988	2.14	N/M	1,078.47	
					15-Mar-1989	2.73	N/M	1,077.88	
					15-May-1989	1.65	N/M	1,078.96	
					15-Jun-1989	1.61	N/M	1,079.00	
					15-Sep-1989	1.54	N/M	1,079.07	
					15-Nov-1989	1.73	N/M	1,078.88	
					15-Mar-1990	1.97	N/M	1,078.64	
					15-Aug-1990	1.55	N/M	1,079.06	
					15-Oct-1990	1.50	N/M	1,079.11	
					15-May-1991	1.37	N/M	1,079.24	
					15-Nov-1991	1.70	N/M	1,078.91	
					04-May-1992	1.64	N/M	1,078.98	
					28-Oct-1992	1.67	N/M	1,078.94	
					18-May-1993	2.08	N/M	1,078.53	
					10-Nov-1993	1.42	N/M	1,079.19	
					21-Sep-1994	1.68	N/M	1,078.93	
					20-Sep-1995	1.88	N/M	1,078.73	
					04-Sep-1996	1.37	N/M	1,079.24	
					04-Sep-1997	1.67	N/M	1,078.94	
					15-Sep-1998	1.99	N/M	1,078.62	*Resurveyed in Fall 1998*
					09-Sep-1999	1.25	N/M	1,079.36	
					28-Aug-2000	1.05	N/M	1,079.56	
					06-Sep-2001	1.55	N/M	1,079.06	
					06-Sep-2002	1.05	N/M	1,079.56	
					03-Sep-2003	1.44	N/M	1,079.17	
					09-Sep-2004	1.42	N/M	1,079.19	
					25-Aug-2005	1.06	N/M	1,079.55	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.42	N/M	1,079.19	
					05-Sep-2007	0.97	N/M	1,079.64	
					03-Sep-2008	1.42	N/M	1,079.19	
					25-Aug-2009	1.18	N/M	1,079.43	
					23-Aug-2010	1.23	N/M	1,079.38	
					22-Aug-2011	1.03	N/M	1,079.58	
					22-Aug-2012	1.02	N/M	1,079.59	
			0.59		19-Sep-2013	1.54	0.95	1,079.07	
	1,079.444	1,080.106	0.66	2.90	21-May-2014	0.87	0.21	1,079.23	
			0.59	2.90	09-Sep-2014	1.34	0.74	1,078.70	
			0.77	4.45	15-Sep-2015	2.43	1.66	1,077.90	
			0.77	4.45	13-Sep-2016	0.89	0.13	1,079.32	
			0.52	2.90	12-Sep-2017	1.65	1.12	1,078.32	*Clear*
			0.70	2.90	06-Sep-2018	1.50	0.81	1,078.64	*Clear*
			0.79	2.90	03-Sep-2019	1.09	0.30	1,079.15	*Clear*
			0.84	2.90	08-Sep-2020	1.81	0.97	1,078.47	*Clear*
			0.79	2.90	07-Sep-2021	1.31	0.52	1,078.93	*Clear*
			0.84	2.90	13-Sep-2022	2.25	1.41	1,078.03	*Clear*

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
			0.84	2.90	12-Sep-2023	1.75	0.92	1,078.53	
			0.84	2.90	26-Aug-2024	0.99	0.15	1,079.29	
03-IN	N/M	1,078.74	N/M	6.00	15-May-1985	2.14	N/M	1,076.60	
					15-Aug-1985	1.94	N/M	1,076.80	
					15-Dec-1985	4.00	N/M	1,074.74	
					15-Jun-1986	1.93	N/M	1,076.81	
					15-Aug-1986	1.67	N/M	1,077.07	
					15-Oct-1986	1.78	N/M	1,076.96	
					15-Jun-1987	2.00	N/M	1,076.74	
					15-Sep-1987	1.71	N/M	1,077.03	
					15-Nov-1987	1.94	N/M	1,076.80	
					15-Feb-1988	2.48	N/M	1,076.26	
					15-May-1988	2.04	N/M	1,076.70	
					15-Aug-1988	1.70	N/M	1,077.04	
					15-Oct-1988	1.96	N/M	1,076.78	
					15-Mar-1989	2.65	N/M	1,076.09	
					15-May-1989	2.44	N/M	1,076.30	
					15-Jun-1989	1.95	N/M	1,076.79	
					15-Sep-1989	1.95	N/M	1,076.79	
					15-Nov-1989	1.80	N/M	1,076.94	
					15-Mar-1990	0.53	N/M	1,078.21	
					15-Aug-1990	1.67	N/M	1,077.07	
					15-Oct-1990	1.65	N/M	1,077.09	
					15-May-1991	1.76	N/M	1,076.98	
					15-Nov-1991	1.70	N/M	1,077.04	
					04-May-1992	1.63	N/M	1,077.11	
					28-Oct-1992	1.71	N/M	1,077.03	
					18-May-1993	1.49	N/M	1,077.25	
					10-Nov-1993	1.65	N/M	1,077.09	
					21-Sep-1994	4.06	N/M	1,074.68	
					20-Sep-1995	1.79	N/M	1,076.95	
					04-Sep-1996	3.51	N/M	1,075.23	
					04-Sep-1997	1.69	N/M	1,077.05	
					15-Sep-1998	2.06	N/M	1,076.68	*Resurveyed in Fall 1998*
					09-Sep-1999	1.85	N/M	1,076.89	
					28-Aug-2000	1.64	N/M	1,077.10	
					06-Sep-2001	1.83	N/M	1,076.91	
					04-Sep-2002	1.80	N/M	1,076.94	
					03-Sep-2003	1.79	N/M	1,076.95	
					09-Sep-2004	1.68	N/M	1,077.06	
					25-Aug-2005	1.59	N/M	1,077.15	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.81	N/M	1,076.93	
					05-Sep-2007	1.53	N/M	1,077.21	
					03-Sep-2008	1.98	N/M	1,076.76	
					25-Aug-2009	2.25	N/M	1,076.49	
					23-Aug-2010	1.74	N/M	1,077.00	
					22-Aug-2011	1.48	N/M	1,077.26	
					23-Aug-2012	1.63	N/M	1,077.11	
			0.68		19-Sep-2013	1.79	1.11	1,076.95	
	1,079.547	1,080.264	0.72	5.79	21-May-2014	1.57	0.85	1,078.70	
			0.68	5.79	09-Sep-2014	1.79	1.10	1,078.45	
			0.85	8.59	15-Sep-2015	3.02	2.16	1,077.39	
			0.85	8.59	13-Sep-2016	1.60	0.75	1,078.80	
			0.55	5.79	12-Sep-2017	1.97	1.43	1,078.12	*Clear*
			0.79	5.79	06-Sep-2018	2.02	1.24	1,078.31	*Clear*
			0.93	5.79	03-Sep-2019	1.72	0.79	1,078.76	*Cloudy*
			0.95	5.79	08-Sep-2020	2.25	1.31	1,078.24	*Clear*
			0.93	5.79	07-Sep-2021	3.00	2.07	1,077.48	*Clear*
			0.71	5.79	13-Sep-2022	2.38	1.67	1,077.88	*Clear*
			0.89	5.79	12-Sep-2023	2.11	1.22	1,078.33	
			0.92	5.79	26-Aug-2024	1.88	0.96	1,078.59	
04-SH	N/M	1,083.33	N/M	4.00	15-May-1985	1.12	N/M	1,082.21	
					15-Aug-1985	1.61	N/M	1,081.72	
					15-Dec-1985	2.24	N/M	1,081.09	
					15-Feb-1986	2.76	N/M	1,080.57	
					15-Jun-1986	1.57	N/M	1,081.76	
					15-Aug-1986	1.41	N/M	1,081.92	
					15-Oct-1986	1.26	N/M	1,082.07	
					15-Jun-1987	1.40	N/M	1,081.93	
					15-Sep-1987	1.47	N/M	1,081.86	
					15-Nov-1987	2.06	N/M	1,081.27	
					15-Feb-1988	1.72	N/M	1,081.61	
					15-May-1988	1.30	N/M	1,082.03	
					15-Aug-1988	1.56	N/M	1,081.77	
					15-Oct-1988	2.36	N/M	1,080.97	
					15-Mar-1989	2.93	N/M	1,080.40	
					15-May-1989	1.82	N/M	1,081.51	
					15-Jun-1989	1.39	N/M	1,081.94	
					15-Sep-1989	1.25	N/M	1,082.08	
					15-Nov-1989	1.62	N/M	1,081.71	
					15-Mar-1990	2.28	N/M	1,081.05	
					15-Apr-1990	1.66	N/M	1,081.67	
					15-Aug-1990	1.96	N/M	1,081.37	
					15-Oct-1990	1.56	N/M	1,081.77	
					15-May-1991	1.58	N/M	1,081.75	
					15-Nov-1991	1.75	N/M	1,081.58	
					04-May-1992	1.40	N/M	1,081.93	
					28-Oct-1992	1.62	N/M	1,081.71	
					18-May-1993	1.46	N/M	1,081.87	
					10-Nov-1993	1.58	N/M	1,081.75	
					21-Sep-1994	1.86	N/M	1,081.47	
					20-Sep-1995	2.03	N/M	1,081.30	
					04-Sep-1996	1.40	N/M	1,081.93	
					04-Sep-1997	1.37	N/M	1,081.96	
					15-Sep-1998	1.77	N/M	1,081.56	
					09-Sep-1999	2.50	N/M	1,080.83	
					28-Aug-2000	1.86	N/M	1,081.47	
					06-Sep-2001	2.14	N/M	1,081.19	
					04-Sep-2002	1.98	N/M	1,081.35	
					03-Sep-2003	2.17	N/M	1,081.16	
					08-Sep-2004	2.44	N/M	1,080.89	
					25-Aug-2005	1.75	N/M	1,081.58	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	2.81	N/M	1,080.52	
					05-Sep-2007	0.58	N/M	1,082.75	
					03-Sep-2008	2.98	N/M	1,080.35	
					25-Aug-2009	2.75	N/M	1,080.58	
					23-Aug-2010	1.96	N/M	1,081.37	
					22-Aug-2011	1.52	N/M	1,081.81	
					23-Aug-2012	N/M	N/M	N/M	*Blocked at 1.42 m*
			0.66		19-Sep-2013	2.07	1.41	1,081.26	
	1,082.563	1,083.252	0.69	4.63	21-May-2014	1.32	0.63	1,081.94	
			0.67	4.63	11-Sep-2014	1.91	1.24	1,081.33	
			0.65	5.65	15-Sep-2015	2.90	2.26	1,080.31	
			0.65	5.65	13-Sep-2016	1.29	0.65	1,081.92	
			0.56	4.63	12-Sep-2017	2.16	1.61	1,080.96	*Clear*
			0.65	4.63	07-Sep-2018	2.40	1.76	1,080.81	*Clear*
			0.99	4.63	05-Sep-2019	1.60	0.61	1,081.95	*Clear*
			0.75	4.63	10-Sep-2020	2.25	1.51	1,081.06	*Clear*
			0.99	4.63	08-Sep-2021	2.71	1.72	1,080.85	*Clear*
			0.67	4.63	13-Sep-2022	2.71	2.04	1,080.52	*Clear*
			0.64	4.63	13-Sep-2023	2.08	1.44	1,081.13	
			0.72	4.63	27-Aug-2024	1.39	0.67	1,081.90	
04-IN	N/M	1,083.65	N/M	17.00	15-Mar-1990	9.85	N/M	1,073.80	
					15-Apr-1990	9.80	N/M	1,073.85	
					15-Aug-1990	9.67	N/M	1,073.98	
					15-Oct-1990	9.51	N/M	1,074.14	
					15-May-1991	9.32	N/M	1,074.33	
					15-Nov-1991	9.38	N/M	1,074.27	
					04-May-1992	9.22	N/M	1,074.43	
					28-Oct-1992	9.08	N/M	1,074.57	
					18-May-1993	9.21	N/M	1,074.44	
					10-Nov-1993	8.99	N/M	1,074.66	
					21-Sep-1994	8.97	N/M	1,074.68	
					20-Sep-1995	8.98	N/M	1,074.67	
					04-Sep-1996	8.77	N/M	1,074.89	
					04-Sep-1997	9.51	N/M	1,074.14	
					15-Sep-1998	9.88	N/M	1,073.77	
					09-Sep-1999	8.79	N/M	1,074.86	
					28-Aug-2000	8.60	N/M	1,075.05	
					06-Sep-2001	8.56	N/M	1,075.09	
					04-Sep-2002	8.67	N/M	1,074.98	
					03-Sep-2003	N/M	N/M	< 0.00	*Dry*
					09-Sep-2004	N/M	N/M	< 0.00	*Dry*

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					25-Aug-2005	8.50	N/M	1,075.15	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	N/M	N/M	< 0.00	*Dry*
					05-Sep-2007	8.42	N/M	1,075.23	
					03-Sep-2008	8.70	N/M	1,074.95	
					25-Aug-2009	8.70	N/M	1,074.95	
					23-Aug-2010	8.46	N/M	1,075.19	
					22-Aug-2011	8.34	N/M	1,075.31	
					23-Aug-2012	1.79	N/M	1,081.86	*Possible Data Entry Error*
			0.66		19-Sep-2013	N/M	N/M	< 0.00	*Dry*
	1,082.457	1,083.160	0.70	9.25	21-May-2014	7.63	6.93	1,075.53	*Measured in the well*
			0.61	9.25	11-Sep-2014	7.34	6.72	1,075.73	*Measured in the well*
			0.57	8.85	15-Sep-2015	7.96	7.38	1,075.42	*Piezometer*
			0.57	8.85	13-Sep-2016	7.17	6.60	1,076.21	
			0.56	9.25	12-Sep-2017	7.27	6.72	1,075.74	*Clear*
			0.54	9.25	07-Sep-2018	7.30	6.76	1,075.70	*Clear*
			0.61	9.25	05-Sep-2019	7.00	6.39	1,076.06	*Dry*
			0.63	9.25	10-Sep-2020	7.35	6.72	1,075.74	*Measured in the well*
			0.61	9.25	08-Sep-2021	8.67	8.07	1,074.39	*Clear*
			0.67	9.25	13-Sep-2022	7.26	6.59	1,075.87	*Measured in sampling well*
			0.63	9.25	13-Sep-2023	7.21	6.58	1,075.88	
			0.67	9.25	27-Aug-2024	6.95	6.29	1,076.17	
04-SS	N/M	1,084.04	N/M	72.00	15-May-1985	59.49	N/M	1,024.55	
					15-Aug-1985	59.87	N/M	1,024.17	
					15-Dec-1985	59.56	N/M	1,024.48	
					15-Feb-1986	59.57	N/M	1,024.47	
					15-Jun-1986	59.64	N/M	1,024.40	
					15-Aug-1986	59.49	N/M	1,024.55	
					15-Oct-1986	59.79	N/M	1,024.25	
					15-Jun-1987	59.72	N/M	1,024.32	
					15-Sep-1987	59.88	N/M	1,024.16	
					15-Nov-1987	59.65	N/M	1,024.39	
					15-Feb-1988	59.69	N/M	1,024.35	
					15-May-1988	60.10	N/M	1,023.94	
					15-Aug-1988	60.41	N/M	1,023.64	
					15-Oct-1988	60.45	N/M	1,023.59	
					15-Mar-1989	60.53	N/M	1,023.51	
					15-May-1989	60.29	N/M	1,023.75	
					15-Jun-1989	60.45	N/M	1,023.59	
					15-Sep-1989	60.40	N/M	1,023.64	
					15-Nov-1989	60.26	N/M	1,023.78	
					15-Mar-1990	60.88	N/M	1,023.16	
					15-Apr-1990	61.01	N/M	1,023.03	
					15-Aug-1990	60.82	N/M	1,023.22	
					15-May-1991	61.81	N/M	1,022.23	
					15-Nov-1991	61.64	N/M	1,022.40	
					04-May-1992	61.69	N/M	1,022.35	
					28-Oct-1992	61.81	N/M	1,022.23	
					18-May-1993	61.95	N/M	1,022.09	
					10-Nov-1993	61.79	N/M	1,022.25	
					21-Sep-1994	62.02	N/M	1,022.02	
					20-Sep-1995	61.89	N/M	1,022.15	
					05-Sep-1996	N/M	N/M	< 0.00	*Dry*
					04-Sep-1997	N/M	N/M	< 0.00	*Dry*
					15-Sep-1998	N/M	N/M	< 0.00	*Dry*
					28-Aug-2000	N/M	N/M	< 0.00	*Dry*
					06-Sep-2001	61.57	N/M	1,022.47	
					04-Sep-2002	61.64	N/M	1,022.40	
					03-Sep-2003	N/M	N/M	< 0.00	*Dry*
					08-Sep-2004	N/M	N/M	N/M	
					25-Aug-2005	N/M	N/M	N/M	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	N/M	N/M	< 0.00	*Dry*
					29-Aug-2007	N/M	N/M	< 0.00	*Dry*
					03-Sep-2008	N/M	N/M	< 0.00	*Dry*
					25-Aug-2009	N/M	N/M	< 0.00	*Dry*
					23-Aug-2010	N/M	N/M	< 0.00	*Well Dry*
					22-Aug-2011	N/M	N/M	< 0.00	*Dry*
					23-Aug-2012	N/M	N/M	< 0.00	*Dry*
			0.99	71.08	25-Sep-2013	60.90	59.91	1,023.15	
	1,082.849	1,084.045	1.20	71.33	21-May-2014	60.95	59.75	1,023.09	*Measured in the well*
			1.09	71.33	11-Sep-2014	61.11	60.02	1,022.83	*Measured in the well*
			N/M	72.5*	16-Sep-2015	62.11	60.91	1,021.94	*Measured in the well*
			1.20	72.50	14-Sep-2016	60.87	59.67	1,023.18	
			0.92	71.33	12-Sep-2017	60.90	59.98	1,022.87	*Clear*
			1.03	71.33	07-Sep-2018	60.89	59.86	1,022.99	*Clear*
			1.15	71.33	05-Sep-2019	60.871	59.725	1023.124	*Clear*
			1.10	71.33	10-Sep-2020	N/M	N/M	N/M	*Could not get accurate water level reading due to equipment malfunction*
			1.15	71.33	09-Sep-2021	60.68	59.53	1023.319	*Clear*
			1.19	71.33	13-Sep-2022	60.60	59.41	1,023.439	*Clear*
			1.11	71.33	13-Sep-2023	60.59	59.48	1,023.369	
			1.06	71.33	27-Aug-2024	60.64	59.58	1,023.269	
05-SH	N/M	1,080.82	N/M	3.00	15-May-1985	1.19	N/M	1,079.63	
					15-Aug-1985	1.73	N/M	1,079.09	
					15-Dec-1985	2.16	N/M	1,078.66	
					15-Jun-1986	1.24	N/M	1,079.58	
					15-Aug-1986	1.58	N/M	1,079.24	
					15-Oct-1986	1.55	N/M	1,079.27	
					15-Jun-1987	1.34	N/M	1,079.48	
					15-Sep-1987	1.52	N/M	1,079.30	
					15-Nov-1987	1.75	N/M	1,079.07	
					15-Feb-1988	2.00	N/M	1,078.82	
					15-May-1988	1.33	N/M	1,079.49	
					15-Aug-1988	1.50	N/M	1,079.32	
					15-Oct-1988	1.95	N/M	1,078.87	
					15-Mar-1989	2.64	N/M	1,078.18	
					15-May-1989	1.46	N/M	1,079.36	
					15-Jun-1989	1.49	N/M	1,079.33	
					15-Sep-1989	1.42	N/M	1,079.40	
					15-Nov-1989	1.49	N/M	1,079.33	
					15-Apr-1990	1.10	N/M	1,079.72	
					15-Aug-1990	1.78	N/M	1,079.04	
					15-Oct-1990	1.75	N/M	1,079.07	
					15-May-1991	1.24	N/M	1,079.58	
					15-Nov-1991	1.86	N/M	1,078.96	
					04-May-1992	1.50	N/M	1,079.32	
					28-Oct-1992	1.49	N/M	1,079.33	
					18-May-1993	N/M	N/M	N/M	*Frozen*
					10-Nov-1993	1.39	N/M	1,079.43	
					21-Sep-1994	1.42	N/M	1,079.40	
					20-Sep-1995	1.63	N/M	1,079.19	
					04-Sep-1996	1.45	N/M	1,079.38	
					04-Sep-1997	1.52	N/M	1,079.30	
					16-Sep-1998	1.89	N/M	1,078.93	
					09-Sep-1999	2.20	N/M	1,078.62	
					28-Aug-2000	1.76	N/M	1,079.06	
					06-Sep-2001	1.92	N/M	1,078.90	
					04-Sep-2002	1.86	N/M	1,078.96	
					03-Sep-2003	N/M	N/M	N/M	*Blocked*
					08-Sep-2004	N/M	N/M	N/M	*Blocked*
					25-Aug-2005	N/M	N/M	N/M	*Blocked*
					07-Sep-2005	N/M	N/M	N/M	*Blocked*
					05-Sep-2007	N/M	N/M	N/M	*Blocked*
					05-Sep-2008	N/M	N/M	N/M	*Blocked*
					25-Aug-2009	N/M	N/M	N/M	*Blocked*
					23-Aug-2010	N/M	N/M	N/M	*No water level because could not get tape down*
					22-Aug-2011	N/M	N/M	N/M	*Dry*
					23-Aug-2012	N/M	N/M	N/M	*Blocked at 1.0 m*
			1.27		19-Sep-2013	2.09	0.82	1,078.73	
	1079.580*	1081.142*	1.562*	2.52	21-May-2014	2.18	0.62	1,078.96	*Measured in the well*
	1,079.856	1,080.761	0.90	2.52	24-Jul-2014	1.16	0.25	1,079.61	*New piezometer - Drilled July 22, 2014*
			0.93	2.52	10-Sep-2014	1.29	0.36	1,079.49	
			0.86	4.03	15-Sep-2015	2.82	1.96	1,077.90	
			0.86	4.03	13-Sep-2016	1.04	0.18	1,079.68	
			0.89	2.52	12-Sep-2017	1.83	0.95	1,078.91	*Clear*
			1.05	2.52	07-Sep-2018	2.04	0.99	1,078.86	*Clear*
			1.11	2.52	05-Sep-2019	1.57	0.46	1,079.39	*Clear*
			1.07	2.52	09-Sep-2020	2.03	0.97	1,078.89	*Clear*
			1.11	2.52	07-Sep-2021	2.14	1.03	1,078.82	*Clear*
			1.01	2.52	13-Sep-2022	2.49	1.49	1,078.37	*Clear*
			0.93	2.52	13-Sep-2023	2.33	1.40	1,078.45	
			1.13	2.52	27-Aug-2024	1.80	0.67	1,079.18	
05-IN	N/M	1,080.90	N/M	6.00	15-May-1985	1.74	N/M	1,079.16	
					15-Aug-1985	2.12	N/M	1,078.78	
					15-Dec-1985	2.53	N/M	1,078.37	

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					15-Jun-1986	1.68	N/M	1,079.22	
					15-Aug-1986	1.95	N/M	1,078.95	
					15-Oct-1986	1.96	N/M	1,078.94	
					15-Jun-1987	1.78	N/M	1,079.12	
					15-Sep-1987	1.90	N/M	1,079.00	
					15-Nov-1987	2.16	N/M	1,078.74	
					15-Feb-1988	2.68	N/M	1,078.22	
					15-May-1988	1.81	N/M	1,079.09	
					15-Aug-1988	1.86	N/M	1,079.04	
					15-Oct-1988	2.38	N/M	1,078.52	
					15-Mar-1989	3.05	N/M	1,077.85	
					15-May-1989	1.89	N/M	1,079.01	
					15-Jun-1989	1.91	N/M	1,078.99	
					15-Sep-1989	1.79	N/M	1,079.11	
					15-Nov-1989	1.87	N/M	1,079.03	
					15-Mar-1990	1.74	N/M	1,079.16	
					15-Apr-1990	1.64	N/M	1,079.26	
					15-Aug-1990	1.59	N/M	1,079.31	
					15-Oct-1990	2.16	N/M	1,078.74	
					15-May-1991	1.91	N/M	1,078.99	
					15-Nov-1991	2.24	N/M	1,078.66	
					04-May-1992	1.93	N/M	1,078.97	
					28-Oct-1992	1.92	N/M	1,078.98	
					18-May-1993	N/M	N/M	N/M	*Frozen*
					10-Nov-1993	1.82	N/M	1,079.08	
					21-Sep-1994	1.85	N/M	1,079.05	
					20-Sep-1995	1.97	N/M	1,078.93	
					04-Sep-1996	1.75	N/M	1,079.15	
					04-Sep-1997	1.93	N/M	1,078.97	
					16-Sep-1998	2.43	N/M	1,078.47	
					09-Sep-1999	2.26	N/M	1,078.64	
					28-Aug-2000	1.62	N/M	1,079.28	
					06-Sep-2001	2.07	N/M	1,078.83	
					04-Sep-2002	1.95	N/M	1,078.95	
					03-Sep-2003	2.19	N/M	1,078.71	
					08-Sep-2004	2.26	N/M	1,078.64	
					25-Aug-2005	2.33	N/M	1,078.57	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	2.58	N/M	1,078.32	
					05-Sep-2007	2.25	N/M	1,078.65	
					05-Sep-2008	2.79	N/M	1,078.11	
					25-Aug-2009	2.75	N/M	1,078.15	
					23-Aug-2010	2.75	N/M	1,078.15	
					22-Aug-2011	2.17	N/M	1,078.73	
					23-Aug-2012	5.23	N/M	1,075.67	*Possible Data Entry Error*
			1.22		19-Sep-2013	2.42	1.20	1,078.48	
	1,079.755	1,080.889	1.13	5.48	21-May-2014	1.98	0.84	1,078.91	
			1.20	5.48	10-Sep-2014	2.10	0.90	1,078.86	
			1.13	7.23	15-Sep-2015	3.79	2.66	1,077.09	
			1.13	7.23	13-Sep-2016	2.10	0.98	1,078.78	
			1.14	5.48	12-Sep-2017	2.26	1.12	1,078.69	*Clear*
			1.22	5.48	07-Sep-2018	2.39	1.17	1,078.64	*Clear*
			1.31	5.48	05-Sep-2019	1.93	0.63	1,079.18	*Clear*
			0.82	5.48	09-Sep-2020	3.23	2.41	1,077.40	*Measured in sampling well*
			1.31	5.48	07-Sep-2021	2.49	1.18	1,075.64	*Clear*
			1.21	5.48	13-Sep-2022	2.87	1.66	1,078.15	*Measured in sampling well*
			1.31	5.48	13-Sep-2023	2.74	1.43	1,078.33	
			1.37	5.48	27-Aug-2024	2.12	0.75	1,079.06	
05-SS	N/M	1,086.38	N/M	N/M	10-Sep-2004	63.80	N/M	1,022.58	
					25-Aug-2005	N/M	N/M	N/M	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2007	N/M	N/M	< 0.00	*Dry*
					04-Sep-2008	N/M	N/M	N/M	
					17-Sep-2009	N/M	N/M	N/M	
					23-Aug-2010	N/M	N/M	< 0.00	*Well Dry*
					23-Aug-2012	N/M	N/M	< 0.00	*Dry*
					19-Sep-2013	N/M	N/M	N/M	*Equipment blocking WL measurement*
	1,085.120	1,086.020	0.90	79.70	20-May-2014	62.97	62.07	1,023.05	*Measured in the well*
			0.84	79.70	11-Sep-2014	63.10	62.26	1,022.86	*Measured in the well*
			N/M	80.6*	16-Sep-2015	63.80	62.90	1,022.22	*Measured in the well*
			0.90	80.60	14-Sep-2016	62.90	62.00	1,023.13	
			0.83	79.70	13-Sep-2017	62.91	62.09	1,023.03	*Clear*
			0.76	79.70	07-Sep-2018	62.86	62.09	1,023.03	*Clear*
			0.86	79.70	05-Sep-2019	62.77	61.92	1,023.20	*Clear*
			0.60	79.70	10-Sep-2020	62.78	62.18	1,022.94	*Clear*
			0.86	79.70	08-Sep-2021	62.72	61.86	1,006.28	*Clear*
			0.84	79.70	13-Sep-2022	62.59	61.74	1,023.38	*Clear*
			0.90	79.70	13-Sep-2023	62.62	61.72	1,023.40	
			0.83	79.70	27-Aug-2024	62.63	61.80	1,023.32	
06-SH	N/M	1,081.17	N/M	3.00	15-May-1985	1.22	N/M	1,079.95	
					15-Aug-1985	1.49	N/M	1,079.68	
					15-Dec-1985	2.02	N/M	1,079.15	
					15-Aug-1986	1.51	N/M	1,079.66	
					15-Oct-1986	1.59	N/M	1,079.58	
					15-Jun-1987	1.91	N/M	1,079.26	
					15-Sep-1987	1.58	N/M	1,079.59	
					15-Nov-1987	1.83	N/M	1,079.34	
					15-Feb-1988	2.19	N/M	1,078.98	
					15-May-1988	1.47	N/M	1,079.70	
					15-Aug-1988	1.62	N/M	1,079.55	
					15-Oct-1988	1.87	N/M	1,079.30	
					15-May-1989	1.44	N/M	1,079.73	
					15-Jun-1989	1.57	N/M	1,079.60	
					15-Sep-1989	1.44	N/M	1,079.73	
					15-Nov-1989	1.84	N/M	1,079.33	
					15-Mar-1990	2.02	N/M	1,079.15	
					15-Apr-1990	1.71	N/M	1,079.46	
					15-Aug-1990	1.80	N/M	1,079.37	
					15-Oct-1990	1.73	N/M	1,079.44	
					15-May-1991	1.22	N/M	1,079.95	
					15-Nov-1991	1.76	N/M	1,079.41	
					04-May-1992	1.69	N/M	1,079.48	
					28-Oct-1992	1.72	N/M	1,079.45	
					18-May-1993	N/M	N/M	N/M	*Frozen*
					10-Nov-1993	1.50	N/M	1,079.67	
					21-Sep-1994	1.83	N/M	1,079.34	
					20-Sep-1995	1.96	N/M	1,079.21	
					04-Sep-1996	1.40	N/M	1,079.77	
					04-Sep-1997	1.33	N/M	1,079.84	
					15-Sep-1998	1.98	N/M	1,079.19	
					09-Sep-1999	N/M	N/M	N/M	*Blocked*
					28-Aug-2000	N/M	N/M	N/M	*Blocked*
					06-Sep-2001	N/M	N/M	N/M	*Blocked*
					04-Sep-2002	N/M	N/M	N/M	*Blocked*
					03-Sep-2003	1.74	N/M	1,079.43	
					08-Sep-2004	1.69	N/M	1,079.48	
					25-Aug-2005	1.47	N/M	1,079.70	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.91	N/M	1,079.26	
					05-Sep-2007	0.43	N/M	1,080.74	
					03-Sep-2008	2.30	N/M	1,078.87	
					25-Aug-2009	1.54	N/M	1,079.63	
					23-Aug-2010	N/M	N/M	N/M	
					02-Aug-2011	N/M	N/M	N/M	*Frost Jacked*
					23-Aug-2012	N/M	N/M	N/M	
			1.42		19-Sep-2013	N/M	N/M	N/M	*Piezometer Damaged*
	1080.211*	1081.591*	1.38*	3.16	20-May-2014	2.26	0.88	1,079.33	*Measured in the well**
	1,080.289	1,081.288	1.00	3.16	24-Jul-2014	1.18	0.18	1,080.11	*New piezometer - Drilled July 22, 2014*
			0.94	3.16	11-Sep-2014	1.81	0.87	1,079.42	
			1.00	4.17	15-Sep-2015	2.97	1.97	1,078.32	
			1.00	4.17	13-Sep-2016	1.32	0.32	1,079.97	
			0.91	3.16	12-Sep-2017	1.93	1.02	1,079.27	*Clear*
			0.94	3.16	07-Sep-2018	2.01	1.06	1,079.23	*Clear*
			0.99	3.16	05-Sep-2019	1.37	0.38	1,079.91	*Clear*
			0.94	3.16	09-Sep-2020	2.15	1.21	1,079.08	*Clear*
			0.99	3.16	08-Sep-2021	1.95	0.96	1,079.33	*Clear*
			0.99	3.16	13-Sep-2022	2.42	1.43	1,078.86	*Slightly cloudy*
			1.02	3.16	13-Sep-2023	1.83	0.81	1,079.48	
			0.99	3.16	27-Aug-2024	1.42	0.43	1,079.86	
06-IN	N/M	1,081.19	N/M	6.00	15-May-1985	1.51	N/M	1,079.68	
					15-Aug-1985	1.60	N/M	1,079.59	
					15-Dec-1985	2.19	N/M	1,079.00	
					15-Jun-1986	1.73	N/M	1,079.46	
					15-Aug-1986	1.39	N/M	1,079.80	
					15-Oct-1986	1.56	N/M	1,079.63	

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					15-Jun-1987	1.35	N/M	1,079.84	
					15-Sep-1987	1.51	N/M	1,079.68	
					15-Nov-1987	1.80	N/M	1,079.39	
					15-Feb-1988	2.19	N/M	1,079.00	
					15-May-1988	1.41	N/M	1,079.78	
					15-Aug-1988	1.52	N/M	1,079.67	
					15-Mar-1989	2.46	N/M	1,078.73	
					15-May-1989	1.45	N/M	1,079.74	
					15-Jun-1989	1.50	N/M	1,079.69	
					15-Sep-1989	1.39	N/M	1,079.80	
					15-Nov-1989	1.79	N/M	1,079.40	
					15-Mar-1990	2.05	N/M	1,079.14	
					15-Apr-1990	1.66	N/M	1,079.53	
					15-Aug-1990	1.71	N/M	1,079.48	
					15-Oct-1990	1.66	N/M	1,079.53	
					15-May-1991	1.33	N/M	1,079.86	
					15-Nov-1991	1.71	N/M	1,079.48	
					04-May-1992	1.67	N/M	1,079.53	
					28-Oct-1992	1.72	N/M	1,079.47	
					18-May-1993	N/M	N/M	N/M	*Frozen*
					10-Nov-1993	1.55	N/M	1,079.64	
					21-Sep-1994	1.75	N/M	1,079.44	
					20-Sep-1995	1.82	N/M	1,079.37	
					04-Sep-1996	1.23	N/M	1,079.96	
					04-Sep-1997	1.51	N/M	1,079.68	
					15-Sep-1998	1.99	N/M	1,079.20	
					09-Sep-1999	1.96	N/M	1,079.23	
					28-Aug-2000	1.64	N/M	1,079.55	
					06-Sep-2001	1.86	N/M	1,079.33	
					04-Sep-2002	1.50	N/M	1,079.69	
					03-Sep-2003	1.71	N/M	1,079.48	
					08-Sep-2004	N/M	N/M	N/M	*Blocked*
					25-Aug-2005	1.50	N/M	1,079.69	
					07-Sep-2005	N/M	N/M	N/M	
					05-Sep-2007	1.42	N/M	1,079.77	
					03-Sep-2008	2.36	N/M	1,078.83	
					25-Aug-2009	1.83	N/M	1,079.36	
					23-Aug-2010	2.17	N/M	1,079.02	
					22-Aug-2011	1.75	N/M	1,079.44	*Pump leaking*
					23-Aug-2012	1.75	N/M	1,079.44	
			1.17		19-Sep-2013	2.30	1.13	1,078.89	
	1,080.57	1,081.74	1.17	5.27	20-May-2013	1.59	0.41	1,080.16	*Well Decommissioned July 22, 2014*
06(R)IN	1080.468*	1081.189*	0.721*	5.27	24-Jul-2014	1.03	0.31	1,080.16	*Measured in well* - Drilled July 22, 2014*
	1,080.570	1,081.473	1.16	5.27	11-Sep-2014	2.22	1.07	1,079.50	
			1.17	5.07	15-Sep-2015	3.53	2.35	1,078.22	
			1.17	5.07	13-Sep-2016	1.49	0.31	1,080.26	
			1.11	5.27	11-Sep-2017	2.28	1.17	1,079.40	*Cloudy brown/grey*
			1.10	5.27	07-Sep-2018	2.42	1.33	1,079.24	*Cloudy brown/grey*
			1.15	5.27	05-Sep-2019	1.71	0.56	1,080.01	*Cloudy brown/grey*
			0.94	5.27	10-Sep-2020	2.55	1.60	1,078.97	*Cloudy brown/grey*
			1.15	5.27	08-Sep-2021	2.30	1.15	1,079.42	*Cloudy brown/grey*
			1.19	5.27	13-Sep-2022	2.76	1.56	1,079.01	*Cloudy brown/grey*
			1.09	5.27	13-Sep-2023	2.05	0.96	1,079.61	
			1.12	5.27	27-Aug-2024	1.53	0.41	1,080.17	
07-SH	N/M	1,080.42	N/M	4.00	15-May-1985	0.95	N/M	1,079.47	
					15-Aug-1985	1.16	N/M	1,079.26	
					15-Aug-1986	1.16	N/M	1,079.26	
					15-Oct-1986	1.72	N/M	1,078.70	
					15-Jun-1987	2.42	N/M	1,078.00	
					15-Sep-1987	1.19	N/M	1,079.23	
					15-Nov-1987	1.78	N/M	1,078.64	
					15-Feb-1988	1.75	N/M	1,078.67	
					15-May-1988	1.14	N/M	1,079.28	
					15-Aug-1988	1.36	N/M	1,079.06	
					15-Oct-1988	1.37	N/M	1,079.06	
					15-Mar-1989	1.92	N/M	1,078.50	
					15-May-1989	1.41	N/M	1,079.01	
					15-Jun-1989	1.09	N/M	1,079.33	
					15-Sep-1989	1.00	N/M	1,079.42	
					15-Nov-1989	1.19	N/M	1,079.23	
					15-Apr-1990	1.24	N/M	1,079.18	
					15-Aug-1990	1.36	N/M	1,079.06	
					15-Oct-1990	1.21	N/M	1,079.21	
					15-May-1991	1.26	N/M	1,079.16	
					15-Nov-1991	1.43	N/M	1,078.99	
					04-May-1992	1.08	N/M	1,079.34	
					28-Oct-1992	1.00	N/M	1,079.42	
					18-May-1993	0.91	N/M	1,079.51	
					10-Nov-1993	0.76	N/M	1,079.66	
					21-Sep-1994	1.56	N/M	1,078.86	
					20-Sep-1995	1.30	N/M	1,079.12	
					04-Sep-1996	0.98	N/M	1,079.44	
					03-Sep-1997	1.02	N/M	1,079.40	
					15-Sep-1998	1.47	N/M	1,078.95	
					09-Sep-1999	1.70	N/M	1,078.72	
					28-Aug-2000	1.09	N/M	1,079.33	
					06-Sep-2001	1.52	N/M	1,078.90	
					04-Sep-2002	0.93	N/M	1,079.49	
					03-Sep-2003	1.28	N/M	1,079.14	
					08-Sep-2004	1.36	N/M	1,079.06	
					25-Aug-2005	1.06	N/M	1,079.36	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.37	N/M	1,079.05	
					05-Sep-2007	0.94	N/M	1,079.48	
					03-Sep-2008	1.65	N/M	1,078.77	
					25-Aug-2009	1.12	N/M	1,079.30	
					23-Aug-2010	1.25	N/M	1,079.17	
					22-Aug-2011	1.00	N/M	1,079.42	
					23-Aug-2012	0.92	N/M	1,079.50	
			0.66		19-Sep-2013	3.87	3.21	1,076.55	
	1,079.670	1,080.399	0.73	4.61	20-May-2014	0.91	0.19	1,079.49	
			0.58	4.61	11-Sep-2014	1.06	0.48	1,079.19	
			0.88	5.92	15-Sep-2015	2.09	1.21	1,078.47	
			0.88	5.92	13-Sep-2016	0.91	0.03	1,079.64	
			0.80	4.61	11-Sep-2017	1.60	0.80	1,078.87	*Clear*
			0.76	4.61	05-Sep-2018	1.42	0.65	1,079.02	*Clear*
			0.86	4.61	05-Sep-2019	1.08	0.22	1,079.45	*Clear*
			0.85	4.61	10-Sep-2020	1.30	0.44	1,079.23	*Clear*
			0.86	4.61	08-Sep-2021	0.99	0.13	1,079.54	*Clear*
			0.65	4.61	13-Sep-2022	1.56	0.91	1,078.76	*Clear*
			0.58	4.61	13-Sep-2023	1.22	0.64	1,079.03	
			0.77	4.61	28-Aug-2024	1.06	0.31	1,079.46	
07-IN	N/M	1,080.77	N/M	9.00	15-May-1985	1.45	N/M	1,079.32	
					15-Aug-1985	1.78	N/M	1,078.99	
					15-Jun-1986	1.41	N/M	1,079.36	
					15-Aug-1986	1.45	N/M	1,079.32	
					15-Oct-1986	1.54	N/M	1,079.23	
					15-Jun-1987	4.60	N/M	1,076.17	
					15-Sep-1987	1.49	N/M	1,079.28	
					15-Nov-1987	1.57	N/M	1,079.20	
					15-Feb-1988	2.09	N/M	1,078.68	
					15-May-1988	1.45	N/M	1,079.32	
					15-Aug-1988	1.36	N/M	1,079.41	
					15-Oct-1988	1.51	N/M	1,079.26	
					15-Mar-1989	2.10	N/M	1,078.67	
					15-May-1989	1.59	N/M	1,079.18	
					15-Jun-1989	1.38	N/M	1,079.39	
					15-Sep-1989	1.29	N/M	1,079.48	
					15-Nov-1989	1.48	N/M	1,079.29	
					15-Apr-1990	0.84	N/M	1,079.93	
					15-Aug-1990	1.49	N/M	1,079.28	
					15-Oct-1990	1.33	N/M	1,079.44	
					15-May-1991	0.81	N/M	1,079.96	
					15-Nov-1991	1.55	N/M	1,079.22	
					04-May-1992	1.35	N/M	1,079.42	
					28-Oct-1992	1.28	N/M	1,079.49	
					18-May-1993	1.18	N/M	1,079.59	
					10-Nov-1993	0.85	N/M	1,079.92	
					21-Sep-1994	1.60	N/M	1,079.17	
					20-Sep-1995	1.57	N/M	1,079.20	
					04-Sep-1996	1.24	N/M	1,079.53	
					03-Sep-1997	1.42	N/M	1,079.35	
					15-Sep-1998	1.86	N/M	1,078.91	
					09-Sep-1999	1.70	N/M	1,079.07	
					28-Aug-2000	1.32	N/M	1,079.45	

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					06-Sep-2001	1.75	N/M	1,079.02	
					04-Sep-2002	1.15	N/M	1,079.62	
					03-Sep-2003	1.51	N/M	1,079.26	
					08-Sep-2004	1.68	N/M	1,079.09	
					25-Aug-2005	1.30	N/M	1,079.47	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.55	N/M	1,079.22	
					05-Sep-2007	1.16	N/M	1,079.61	
					03-Sep-2008	1.70	N/M	1,079.07	
					25-Aug-2009	1.75	N/M	1,079.02	
					23-Aug-2010	1.52	N/M	1,079.25	
					22-Aug-2011	1.25	N/M	1,079.52	
					23-Aug-2012	1.12	N/M	1,079.65	
			0.87		19-Sep-2013	1.56	0.69	1,079.21	
	1,079.778	1,080.718	0.94	9.06	20-May-2014	1.10	0.16	1,079.62	
			0.86	9.06	11-Sep-2014	1.35	0.49	1,079.29	
			0.96	10.61	15-Sep-2015	2.28	1.32	1,078.46	
			0.96	10.61	13-Sep-2016	1.13	0.17	1,079.61	
			0.87	9.06	11-Sep-2017	1.58	0.71	1,079.07	*Clear*
			0.90	9.06	05-Sep-2018	1.47	0.58	1,079.20	*Cloudy*
			0.95	9.06	05-Sep-2019	1.21	0.26	1,079.52	*Clear*
			0.97	9.06	10-Sep-2020	1.52	0.55	1,079.23	*Clear*
			0.95	9.06	08-Sep-2021	1.17	0.22	1,079.56	*Clear*
			0.85	9.06	13-Sep-2022	1.76	0.91	1,078.87	*Slightly cloudy*
			0.85	9.06	13-Sep-2023	1.48	0.63	1,079.15	
			0.75	9.06	28-Aug-2024	1.06	0.31	1,079.46	
07-SS	N/M	1,080.51	N/M	67.00	15-May-1985	55.96	N/M	1,024.55	
					15-Aug-1985	56.31	N/M	1,024.20	
					15-Dec-1985	56.06	N/M	1,024.45	
					15-Feb-1986	56.04	N/M	1,024.47	
					15-Jun-1986	56.10	N/M	1,024.41	
					15-Aug-1986	56.24	N/M	1,024.27	
					15-Oct-1986	56.24	N/M	1,024.27	
					15-Jun-1987	56.58	N/M	1,023.93	
					15-Nov-1987	56.32	N/M	1,024.19	
					15-Aug-1990	57.40	N/M	1,023.11	
					15-Oct-1990	57.20	N/M	1,023.31	
					15-May-1991	57.32	N/M	1,023.19	
					15-Nov-1991	57.46	N/M	1,023.05	
					04-May-1992	57.56	N/M	1,022.95	
					28-Oct-1992	57.61	N/M	1,022.90	
					18-May-1993	57.77	N/M	1,022.74	
					10-Nov-1993	57.78	N/M	1,022.73	
					21-Sep-1994	57.80	N/M	1,022.71	
					20-Sep-1995	57.87	N/M	1,022.64	
					04-Sep-1996	57.64	N/M	1,022.87	
					03-Sep-1997	57.63	N/M	1,022.88	
					04-Oct-1998	57.83	N/M	1,022.68	
					09-Sep-1999	57.70	N/M	1,022.81	
					28-Aug-2000	57.52	N/M	1,022.99	
					06-Sep-2001	57.58	N/M	1,022.93	
					04-Sep-2002	57.70	N/M	1,022.81	
					03-Sep-2003	57.70	N/M	1,022.81	
					08-Sep-2004	57.70	N/M	1,022.81	
					25-Aug-2005	57.75	N/M	1,022.76	
					05-Sep-2007	57.48	N/M	1,023.03	
					03-Sep-2008	N/M	N/M	< 0.00	*Dry*
					25-Aug-2009	N/M	N/M	N/M	
					23-Aug-2010	N/M	N/M	< 0.00	*Well Dry*
					22-Aug-2011	N/M	N/M	< 0.00	*Dry*
					23-Aug-2012	N/M	N/M	< 0.00	*Dry*
			0.73	66.88	19-Sep-2013	57.22	56.48	1,023.29	
	1,079.593	1,080.382	NM	NM	20-May-2014	57.23	N/M	1,023.16	
07(R)SS	1,081.488	1,082.234	0.75	68.00	03-Jun-2014	59.05	58.30	1,023.19	*Measured in the well - Drilled May 30, 2014*
			0.69	68.00	11-Sep-2014	59.17	58.48	1,023.01	*Measured in the well*
			0.89	68.75	15-Sep-2015	59.86	58.96	1,022.52	*Measured in the well*
			0.89	68.75	14-Sep-2016	58.95	58.06	1,023.43	
			0.66	68.00	11-Sep-2017	59.90	59.24	1,022.25	*Clear*
			0.65	68.00	05-Sep-2018	59.03	58.38	1,023.11	*Clear*
			0.74	68.00	05-Sep-2019	58.97	58.23	1,023.26	*Clear*
			0.70	68.00	10-Sep-2020	58.60	57.90	1,023.59	*Clear*
			0.74	68.00	09-Sep-2021	58.18	57.44	1,024.05	*Clear*
			0.75	68.00	14-Sep-2022	58.71	57.96	1,023.53	*Clear*
			0.70	68.00	13-Sep-2023	58.72	58.02	1,023.47	
			0.72	68.00	28-Aug-2024	58.77	58.05	1,023.44	
08-SH	N/M	1,086.10	N/M	4.00	15-May-1985	1.42	N/M	1,084.68	
					15-Aug-1985	1.68	N/M	1,084.42	
					15-Jun-1986	1.72	N/M	1,084.38	
					15-Aug-1986	1.55	N/M	1,084.55	
					15-Oct-1986	1.60	N/M	1,084.50	
					15-Jun-1987	2.25	N/M	1,083.85	
					15-Sep-1987	1.62	N/M	1,084.48	
					15-Nov-1987	1.45	N/M	1,084.65	
					15-Feb-1988	1.25	N/M	1,084.85	
					15-Aug-1988	1.94	N/M	1,084.16	
					15-Oct-1988	1.59	N/M	1,084.51	
					15-May-1989	1.84	N/M	1,084.26	
					15-Jun-1989	1.60	N/M	1,084.50	
					15-Sep-1989	1.57	N/M	1,084.53	
					15-Nov-1989	1.59	N/M	1,084.51	
					15-Apr-1990	2.15	N/M	1,083.95	
					15-Aug-1990	1.89	N/M	1,084.21	
					15-Oct-1990	1.85	N/M	1,084.25	
					15-May-1991	2.02	N/M	1,084.08	
					15-Nov-1991	1.67	N/M	1,084.43	
					05-May-1992	1.84	N/M	1,084.26	
					28-Oct-1992	1.80	N/M	1,084.30	
					18-May-1993	2.37	N/M	1,083.73	
					10-Nov-1993	1.28	N/M	1,084.82	
					21-Sep-1994	1.35	N/M	1,084.75	
					20-Sep-1995	1.46	N/M	1,084.64	
					05-Sep-1996	1.55	N/M	1,084.55	
					05-Sep-1997	1.51	N/M	1,084.59	
					15-Sep-1998	1.95	N/M	1,084.15	
					09-Sep-1999	1.54	N/M	1,084.56	
					28-Aug-2000	1.77	N/M	1,084.33	
					06-Sep-2001	1.84	N/M	1,084.26	
					05-Sep-2002	1.85	N/M	1,084.25	
					04-Sep-2003	1.91	N/M	1,084.19	
					09-Sep-2004	1.80	N/M	1,084.30	
					26-Aug-2005	1.17	N/M	1,084.93	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.95	N/M	1,084.15	
					05-Sep-2007	1.89	N/M	1,084.21	
					03-Sep-2008	1.94	N/M	1,084.16	
					25-Aug-2009	1.96	N/M	1,084.14	
					23-Aug-2010	1.89	N/M	1,084.21	
					23-Aug-2011	1.61	N/M	1,084.49	*H2O blocked*
					22-Aug-2012	1.76	N/M	1,084.34	
			1.36		19-Sep-2013	1.30	0.47	1,084.80	
	1,084.795	1,086.124	1.33	3.92	20-May-2014	1.97	0.64	1,084.15	
			1.30	3.92	09-Sep-2014	1.91	0.61	1,084.18	
			1.31	3.92	15-Sep-2015	3.14	1.83	1,082.97	
			1.72	3.92	13-Sep-2016	1.99	0.27	1,084.53	
			1.31	3.92	11-Sep-2017	1.64	0.33	1,084.46	*Clear*
			1.22	3.92	05-Sep-2018	1.79	0.57	1,084.22	*Clear*
			1.43	3.92	05-Sep-2019	1.62	0.19	1,084.61	*Clear*
			1.39	3.92	09-Sep-2020	2.03	0.64	1,084.16	*Clear*
			1.43	3.92	07-Sep-2021	2.97	1.55	1,083.25	*Clear*
			1.47	3.92	13-Sep-2022	2.46	0.99	1,083.80	*Clear*
			2.02	3.92	12-Sep-2023	2.84	0.83	1,083.97	
			1.44	3.92	27-Aug-2024	1.89	0.45	1,079.33	
08-IN	N/M	1,086.04	N/M	7.00	15-May-1985	1.46	N/M	1,084.58	
					15-Aug-1985	1.66	N/M	1,084.38	
					15-Jun-1986	1.45	N/M	1,084.59	
					15-Aug-1986	1.68	N/M	1,084.36	
					15-Oct-1986	1.72	N/M	1,084.32	
					15-Jun-1987	N/M	N/M	N/M	*Dry*
					15-Sep-1987	1.83	N/M	1,084.21	
					15-Nov-1987	2.02	N/M	1,084.02	
					15-Feb-1988	2.89	N/M	1,083.15	
					15-May-1988	2.26	N/M	1,083.78	
					15-Aug-1988	2.15	N/M	1,083.89	
					15-Oct-1988	1.89	N/M	1,084.15	

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					15-Mar-1989	2.99	N/M	1,083.05	
					15-May-1989	1.93	N/M	1,084.11	
					15-Jun-1989	1.76	N/M	1,084.28	
					15-Sep-1989	1.61	N/M	1,084.43	
					15-Nov-1989	1.92	N/M	1,084.12	
					15-Apr-1990	2.15	N/M	1,083.89	
					15-Aug-1990	1.95	N/M	1,084.09	
					15-Oct-1990	1.71	N/M	1,084.33	
					15-May-1991	2.23	N/M	1,083.81	
					15-Nov-1991	1.67	N/M	1,084.37	
					05-May-1992	1.71	N/M	1,084.34	
					28-Oct-1992	1.75	N/M	1,084.29	
					18-May-1993	1.61	N/M	1,084.43	
					10-Nov-1993	N/M	N/M	N/M	
					21-Sep-1994	1.48	N/M	1,084.56	
					20-Sep-1995	1.28	N/M	1,084.76	
					05-Sep-1996	1.23	N/M	1,084.81	
					05-Sep-1997	1.20	N/M	1,084.84	
					15-Sep-1998	1.64	N/M	1,084.40	
					09-Sep-1999	1.74	N/M	1,084.30	
					28-Aug-2000	1.48	N/M	1,084.56	
					06-Sep-2001	1.64	N/M	1,084.40	
					05-Sep-2002	1.67	N/M	1,084.37	
					04-Sep-2003	1.36	N/M	1,084.68	
					09-Sep-2004	1.92	N/M	1,084.12	
					26-Aug-2005	1.87	N/M	1,084.17	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.82	N/M	1,084.22	
					05-Sep-2007	1.40	N/M	1,084.64	
					03-Sep-2008	2.02	N/M	1,084.02	
					25-Aug-2009	1.92	N/M	1,084.12	
					23-Aug-2010	1.54	N/M	1,084.50	
					23-Aug-2011	1.36	N/M	1,084.68	*H2O blocked*
					22-Aug-2012	1.51	N/M	1,084.53	
			1.17		19-Sep-2013	2.12	0.96	1,083.92	
	1,084.798	1,085.771	1.22	7.00	20-May-2014	1.24	0.02	1,084.78	
			0.97	7.00	09-Sep-2014	1.63	0.66	1,084.14	
			1.04	8.45	15-Sep-2015	2.57	1.53	1,083.27	
			1.45	8.45	13-Sep-2016	2.13	0.68	1,084.12	
			0.93	7.00	11-Sep-2017	1.94	1.01	1,083.79	*Clear*
			1.06	7.00	05-Sep-2018	1.54	0.48	1,084.32	*Clear*
			1.14	7.00	05-Sep-2019	1.33	0.19	1,084.61	*Clear*
			1.13	7.00	09-Sep-2020	1.78	0.66	1,084.14	*Clear*
			1.14	7.00	07-Sep-2021	1.64	0.50	1,084.30	*Clear*
			1.16	7.00	13-Sep-2022	2.19	1.03	1,083.77	*Clear*
			1.30	7.00	12-Sep-2023	2.00	0.70	1,084.10	
			1.14	7.00	27-Aug-2024	1.53	0.39	1,084.41	
08-SS	N/M	1,085.60	N/M	65.00	15-May-1985	61.60	N/M	1,024.00	
					15-Aug-1985	61.44	N/M	1,024.16	
					15-Dec-1985	61.37	N/M	1,024.23	
					15-Feb-1986	61.45	N/M	1,024.15	
					15-Jun-1986	61.49	N/M	1,024.11	
					15-Aug-1986	61.44	N/M	1,024.16	
					15-Oct-1986	61.48	N/M	1,024.12	
					15-Jun-1987	61.43	N/M	1,024.17	
					15-Sep-1987	61.49	N/M	1,024.11	
					15-Nov-1987	61.44	N/M	1,024.16	
					15-Feb-1988	61.49	N/M	1,024.11	
					15-May-1988	61.65	N/M	1,023.95	
					15-Aug-1988	61.75	N/M	1,023.85	
					15-Oct-1988	61.93	N/M	1,023.67	
					15-Mar-1989	61.82	N/M	1,023.78	
					15-May-1989	61.64	N/M	1,023.96	
					15-Jun-1989	61.74	N/M	1,023.86	
					15-Sep-1989	61.88	N/M	1,023.72	
					15-Mar-1990	62.14	N/M	1,023.46	
					15-Apr-1990	61.83	N/M	1,023.77	
					15-Aug-1990	61.99	N/M	1,023.61	
					15-Oct-1990	61.87	N/M	1,023.73	
					15-May-1991	62.05	N/M	1,023.55	
					15-Nov-1991	62.03	N/M	1,023.57	
					05-May-1992	62.08	N/M	1,023.52	
					28-Oct-1992	62.12	N/M	1,023.48	
					18-May-1993	62.22	N/M	1,023.38	
					10-Nov-1993	62.19	N/M	1,023.41	
					21-Sep-1994	62.24	N/M	1,023.36	
					20-Sep-1995	62.50	N/M	1,023.10	
					05-Sep-1996	N/M	N/M	< 0.00	*Dry*
					05-Sep-1997	N/M	N/M	< 0.00	*Dry*
					04-Oct-1998	N/M	N/M	< 0.00	*Dry*
					09-Sep-1999	62.50	N/M	1,023.10	
					28-Aug-2000	N/M	N/M	< 0.00	*Dry*
					06-Sep-2001	62.48	N/M	1,023.12	
					05-Sep-2002	62.52	N/M	1,023.08	
					04-Sep-2003	N/M	N/M	< 0.00	*Dry*
					09-Sep-2004	N/M	N/M	< 0.00	*Dry*
					26-Aug-2005	N/M	N/M	< 0.00	*Dry*
					05-Sep-2007	N/M	N/M	< 0.00	*Dry*
					03-Sep-2008	N/M	N/M	< 0.00	*Dry*
					25-Aug-2009	N/M	N/M	< 0.00	*Dry*
					23-Aug-2010	N/M	N/M	< 0.00	*Well Dry*
					23-Aug-2011	N/M	N/M	< 0.00	*Dry*
					22-Aug-2012	N/M	N/M	< 0.00	*Dry*
			1.50	66.58	19-Sep-2013	62.44	60.94	1,023.16	
	1,084.181	1,085.769	1.59	65.81	20-May-2014	62.44	60.86	1,023.33	
			1.52	65.81	09-Sep-2014	N/M	N/M	< 0.00	*Dry*
			N/M	N/M	15-Sep-2015	N/M	N/M	N/M	*Dry and Damaged*
			1.54	63.88	13-Sep-2016	62.51	60.97	1,023.21	*Well damaged, cannot purge*
			1.59	65.81	11-Sep-2017	N/M	N/M	N/M	*Well damaged, blocked at 25.879 mTOC*
			1.50	65.81	05-Sep-2018	62.59	61.09	1,023.09	*Well damaged, blocked at 37.5 mTOC*
			1.16	65.81	07-Sep-2021	N/M	N/M	N/M	*Dry and Damaged*
			N/M	65.81	13-Sep-2022	N/M	N/M	N/M	*Dry and Damaged*
			N/M	65.81	12-Sep-2023	N/M	N/M	N/M	*Dry and Damaged*
			N/M	65.81	27-Aug-2024	N/M	N/M	N/M	*Dry and Damaged*
09-SH [Decommissioned]	N/M	1,087.07	N/M	N/M	15-May-1985	1.81	N/M	1,085.26	
					15-Aug-1985	1.75	N/M	1,085.32	
					15-Jun-1986	1.28	N/M	1,085.79	
					15-Aug-1986	1.31	N/M	1,085.76	
					15-Oct-1986	1.31	N/M	1,085.76	
					15-Jun-1987	2.78	N/M	1,084.29	
					15-Sep-1987	1.36	N/M	1,085.71	
					15-Nov-1987	1.36	N/M	1,085.71	
					15-May-1988	1.66	N/M	1,085.41	
					15-Aug-1988	1.89	N/M	1,085.18	
					15-Oct-1988	1.42	N/M	1,085.65	
					15-Mar-1989	1.92	N/M	1,085.15	
					15-May-1989	1.59	N/M	1,085.48	
					15-Jun-1989	1.28	N/M	1,085.79	
					15-Sep-1989	1.22	N/M	1,085.85	
					15-Nov-1989	1.34	N/M	1,085.73	
					15-Mar-1990	1.93	N/M	1,085.14	
					15-Apr-1990	1.53	N/M	1,085.54	
					15-Aug-1990	1.21	N/M	1,085.86	
					15-Oct-1990	1.18	N/M	1,085.89	
					15-May-1991	N/M	N/M	N/M	*Frozen*
					15-Nov-1991	1.30	N/M	1,085.77	
					05-May-1992	1.34	N/M	1,085.73	
					28-Oct-1992	N/M	N/M	N/M	*Decommissioned*
09-IN [Decommissioned]	N/M	1,087.10	N/M	N/M	15-May-1985	4.13	N/M	1,082.97	
					15-Aug-1985	4.13	N/M	1,082.97	
					15-Dec-1985	4.06	N/M	1,083.04	
					15-Feb-1986	4.16	N/M	1,082.94	
					15-Jun-1986	4.09	N/M	1,083.01	
					15-Aug-1986	3.82	N/M	1,083.28	
					15-Oct-1986	3.85	N/M	1,083.25	
					15-Jun-1987	4.05	N/M	1,083.05	
					15-Sep-1987	3.94	N/M	1,083.16	
					15-Nov-1987	3.98	N/M	1,083.12	
					15-Feb-1988	1.74	N/M	1,085.36	
					15-May-1988	2.28	N/M	1,084.82	
					15-Aug-1988	3.85	N/M	1,083.25	
					15-Oct-1988	4.05	N/M	1,083.05	
					15-Mar-1989	4.51	N/M	1,082.59	
					15-May-1989	1.83	N/M	1,085.27	
					15-Jun-1989	1.78	N/M	1,085.32	

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					15-Sep-1989	2.21	N/M	1,084.89	
					15-Nov-1989	2.23	N/M	1,084.87	
					15-Mar-1990	3.25	N/M	1,083.85	
					15-Apr-1990	3.51	N/M	1,083.59	
					15-Aug-1990	2.90	N/M	1,084.20	
					15-Oct-1990	3.56	N/M	1,083.54	
					15-May-1991	1.56	N/M	1,085.54	
					15-Nov-1991	1.80	N/M	1,085.30	
					05-May-1992	1.47	N/M	1,085.64	
					28-Oct-1992	N/M	N/M	N/M	*Decommissioned*
10-SH [Decommissioned]	N/M	1,087.39	N/M	N/M	15-May-1985	1.73	N/M	1,085.66	
					15-Aug-1985	1.95	N/M	1,085.44	
					15-Jun-1986	1.52	N/M	1,085.87	
					15-Aug-1986	1.41	N/M	1,085.98	
					15-Oct-1986	1.40	N/M	1,085.99	
					15-Jun-1987	2.00	N/M	1,085.39	
					15-Sep-1987	1.57	N/M	1,085.82	
					15-Nov-1987	1.61	N/M	1,085.78	
					15-May-1988	1.63	N/M	1,085.76	
					15-Aug-1988	1.73	N/M	1,085.67	
					15-Oct-1988	1.74	N/M	1,085.65	
					15-Mar-1989	2.59	N/M	1,084.80	
					15-May-1989	1.90	N/M	1,085.49	
					15-Jun-1989	1.51	N/M	1,085.88	
					15-Sep-1989	1.44	N/M	1,085.95	
					15-Nov-1989	1.64	N/M	1,085.75	
					15-Mar-1990	2.30	N/M	1,085.09	
					15-Apr-1990	1.93	N/M	1,085.46	
					15-Aug-1990	1.63	N/M	1,085.76	
10-SH [Decommissioned]					15-Oct-1990	1.57	N/M	1,085.82	
					15-May-1991	1.19	N/M	1,086.20	
					15-Nov-1991	N/M	N/M	N/M	*Frozen*
					05-May-1992	1.34	N/M	1,086.05	
					28-Oct-1992	N/M	N/M	N/M	*Decommissioned*
10-IN [Decommissioned]	N/M	1,087.34	N/M	N/M	15-May-1985	5.54	N/M	1,081.80	
					15-Aug-1985	2.73	N/M	1,084.61	
					15-Dec-1985	2.07	N/M	1,085.27	
					15-Jun-1986	1.47	N/M	1,085.87	
					15-Aug-1986	1.42	N/M	1,085.92	
					15-Oct-1986	1.44	N/M	1,085.90	
					15-Jun-1987	2.14	N/M	1,085.20	
					15-Sep-1987	1.81	N/M	1,085.53	
					15-Nov-1987	1.76	N/M	1,085.58	
					15-Feb-1988	2.09	N/M	1,085.25	
					15-May-1988	1.54	N/M	1,085.80	
					15-Aug-1988	1.73	N/M	1,085.62	
					15-Oct-1988	1.88	N/M	1,085.46	
					15-Mar-1989	2.58	N/M	1,084.76	
					15-May-1989	1.76	N/M	1,085.58	
					15-Jun-1989	1.54	N/M	1,085.80	
					15-Sep-1989	1.51	N/M	1,085.83	
					15-Nov-1989	1.71	N/M	1,085.63	
					15-Mar-1990	2.30	N/M	1,085.04	
					15-Apr-1990	1.27	N/M	1,086.07	
					15-Aug-1990	1.57	N/M	1,085.77	
					15-Oct-1990	1.46	N/M	1,085.88	
					15-May-1991	1.57	N/M	1,085.77	
					15-Nov-1991	1.32	N/M	1,086.02	
					05-May-1992	1.45	N/M	1,085.89	
					28-Oct-1992	N/M	N/M	N/M	*Decommissioned*
11-SH	N/M	1,084.16	N/M	4.00	15-Apr-1990	2.52	N/M	1,081.64	
					15-Aug-1990	2.41	N/M	1,081.75	
					15-Oct-1990	2.65	N/M	1,081.51	
					15-May-1991	2.69	N/M	1,081.47	
					15-Nov-1991	2.55	N/M	1,081.61	
					05-May-1992	2.72	N/M	1,081.45	
					29-Oct-1992	2.32	N/M	1,081.84	
					18-May-1993	2.38	N/M	1,081.78	
					10-Nov-1993	2.35	N/M	1,081.81	
					21-Sep-1994	2.40	N/M	1,081.76	
					20-Sep-1995	2.40	N/M	1,081.76	
					05-Sep-1996	2.33	N/M	1,081.83	
					05-Sep-1997	2.47	N/M	1,081.69	
					15-Sep-1998	2.87	N/M	1,081.29	
					09-Sep-1999	2.74	N/M	1,081.42	
					28-Aug-2000	2.60	N/M	1,081.56	
					06-Sep-2001	2.78	N/M	1,081.38	
					05-Sep-2002	2.80	N/M	1,081.36	
					03-Sep-2003	2.74	N/M	1,081.42	
					08-Sep-2004	2.62	N/M	1,081.54	
					26-Aug-2005	2.59	N/M	1,081.57	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	2.80	N/M	1,081.36	
					06-Sep-2007	3.44	N/M	1,080.72	
					04-Sep-2008	3.30	N/M	1,080.86	
					25-Aug-2009	2.87	N/M	1,081.29	
					23-Aug-2010	2.87	N/M	1,081.29	
					23-Aug-2011	2.33	N/M	1,081.83	
					22-Aug-2012	2.54	N/M	1,081.62	
			1.14		19-Sep-2013	2.67	1.53	1,081.49	
	1,082.708	1,083.847	1.14	4.06	22-May-2014	2.13	0.99	1,081.72	
	1082.685*	1083.702*	0.907*	4.06	10-Sep-2014	2.52	1.62	1,081.07	*Measured in the well**
			0.95	5.08	16-Sep-2015	3.58	2.63	1,080.08	
			0.95	5.08	14-Sep-2016	2.35	1.34	1,081.37	
			0.76	4.06	12-Sep-2017	2.52	1.75	1,080.96	*Clear*
			0.93	4.06	06-Sep-2018	2.63	1.70	1,081.01	*Clear*
			0.95	4.06	04-Sep-2019	1.99	1.04	1,081.67	*Clear*
			0.96	4.06	08-Sep-2020	2.57	1.61	1,081.10	*Measured in the sampling well*
			0.95	4.06	08-Sep-2021	2.46	1.51	1,081.20	*Clear*
			1.01	4.06	12-Sep-2022	2.97	1.96	1,080.75	*Measured in the sampling well*
			1.02	4.06	12-Sep-2023	2.23	1.22	1,081.49	
			1.06	4.06	27-Aug-2024	3.30	2.24	1,080.47	
11-IN	N/M	1,084.25	N/M	9.00	15-Mar-1990	1.99	N/M	1,082.26	
					15-Apr-1990	2.47	N/M	1,081.78	
					15-Aug-1990	2.48	N/M	1,081.77	
					15-Oct-1990	2.61	N/M	1,081.64	
					15-May-1991	3.24	N/M	1,081.01	
					15-Nov-1991	2.71	N/M	1,081.54	
					05-May-1992	3.03	N/M	1,081.22	
					29-Oct-1992	2.65	N/M	1,081.60	
					18-May-1993	3.17	N/M	1,081.08	
					10-Nov-1993	2.68	N/M	1,081.57	
					21-Sep-1994	2.60	N/M	1,081.65	
					20-Sep-1995	2.76	N/M	1,081.49	
					05-Sep-1996	2.55	N/M	1,081.70	
					05-Sep-1997	2.63	N/M	1,081.62	
					16-Sep-1998	2.94	N/M	1,081.31	
					09-Sep-1999	3.33	N/M	1,080.92	
					28-Aug-2000	2.78	N/M	1,081.47	
					06-Sep-2001	2.24	N/M	1,082.01	
					05-Sep-2002	3.18	N/M	1,081.07	
					03-Sep-2003	3.00	N/M	1,081.25	
					08-Sep-2004	4.82	N/M	1,079.43	
					26-Aug-2005	2.89	N/M	1,081.36	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	3.03	N/M	1,081.22	
					06-Sep-2007	2.65	N/M	1,081.60	
					04-Sep-2008	3.34	N/M	1,080.91	
					25-Aug-2009	3.19	N/M	1,081.06	
					23-Aug-2010	3.10	N/M	1,081.15	
					23-Aug-2011	2.57	N/M	1,081.68	
					22-Aug-2012	2.74	N/M	1,081.51	
			1.27		19-Sep-2013	3.00	1.73	1,081.26	
	1082.771*	1083.645*	0.87	8.80	22-May-2014	2.53	1.66	1,081.11	*Measured in the well**
	1,082.705	1,083.876	1.17	8.80	30-May-2014	2.25	1.08	1,081.62	
			1.10	8.80	10-Sep-2014	2.65	1.56	1,081.15	
			1.09	8.80	16-Sep-2015	3.70	2.61	1,080.09	
			1.09	8.80	14-Sep-2016	2.08	0.96	1,081.75	
			1.05	8.80	12-Sep-2017	2.71	1.66	1,081.05	*Slightly yellow*
			1.03	8.80	06-Sep-2018	2.67	1.64	1,081.06	
			1.10	8.80	04-Sep-2019	2.18	1.08	1,081.63	
			1.05	8.80	08-Sep-2020	2.75	1.70	1,081.01	
			1.10	8.80	08-Sep-2021	2.58	1.48	1,081.22	
			1.12	8.80	13-Sep-2022	3.21	2.10	1,080.61	*Clear*

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
			1.14	8.80	13-Sep-2023	2.47	1.32	1,081.38	
			1.12	8.80	27-Aug-2024	1.97	0.85	1,081.86	
11-SS	N/M	1,084.04	N/M	62.00	15-Mar-1990	60.77	N/M	1,023.27	
					15-Apr-1990	60.72	N/M	1,023.32	
					15-Aug-1990	60.71	N/M	1,023.33	
					15-Oct-1990	60.64	N/M	1,023.40	
					15-May-1991	60.79	N/M	1,023.25	
					15-Nov-1991	60.91	N/M	1,023.13	
					05-May-1992	60.89	N/M	1,023.15	
					29-Oct-1992	60.86	N/M	1,023.18	
					18-May-1993	61.01	N/M	1,023.03	
					10-Nov-1993	61.35	N/M	1,022.69	
					21-Sep-1994	61.07	N/M	1,022.97	
					20-Sep-1995	N/M	N/M	< 0.00	*Dry*
					05-Sep-1996	N/M	N/M	< 0.00	*Dry*
					05-Sep-1997	N/M	N/M	< 0.00	*Dry*
					15-Sep-1998	N/M	N/M	< 0.00	*Dry*
					28-Aug-2000	60.80	N/M	1,023.24	
					06-Sep-2001	60.83	N/M	1,023.21	
					05-Sep-2002	60.80	N/M	1,023.24	
					03-Sep-2003	N/M	N/M	< 0.00	*Dry*
					08-Sep-2004	N/M	N/M	< 0.00	*Dry*
					25-Aug-2005	N/M	N/M	N/M	
					05-Sep-2007	N/M	N/M	< 0.00	*Dry*
					04-Sep-2008	N/M	N/M	< 0.00	*Dry*
					25-Aug-2009	N/M	N/M	< 0.00	*Dry*
					23-Aug-2010	N/M	N/M	< 0.00	*Well Dry*
					23-Aug-2011	N/M	N/M	< 0.00	*Dry*
					22-Aug-2012	N/M	N/M	< 0.00	*Dry*
			0.46	62.82	19-Sep-2013	60.65	60.18	1,023.39	
	1,082.557	1,083.117	0.56	62.37	22-May-2014	60.81	60.25	1,022.31	*Measured in the well*
			0.45	62.37	10-Sep-2014	N/M	N/M	< 0.00	*Dry*
			N/M	N/M	16-Sep-2015	N/M	N/M	N/M	*Dry (could not open lock)*
			0.78	62.87	14-Sep-2016	60.67	59.89	1,022.67	*Pump re-installed, could not purge or sample*
			0.44	62.37	12-Sep-2017	N/M	N/M	N/M	*Dry*
			0.55	62.37	06-Sep-2018	60.84	60.30	1,022.26	*Could not purge*
			0.58	62.37	04-Sep-2019	61.87	61.29	1,021.26	*Could not purge*
			---	62.37	08-Sep-2020	N/M	N/M	---	*Insufficient water*
			0.58	62.37	---	60.72	60.14	1,022.42	
			N/M	62.37	12-Sep-2022	N/M	N/M	< 0.00	*Dry*
			0.65	62.37	12-Sep-2023	60.52	59.87	1,022.69	
			0.61	62.37	27-Aug-2024	60.43	59.82	1,022.73	
12-SH	N/M	1,081.25	N/M	3.00	15-Mar-1990	1.61	N/M	1,079.64	
					15-Aug-1990	1.59	N/M	1,079.66	
					15-Oct-1990	1.44	N/M	1,079.81	
					15-May-1991	1.33	N/M	1,079.92	
					15-Nov-1991	1.11	N/M	1,080.14	
					05-May-1992	1.29	N/M	1,079.96	
					29-Oct-1992	1.39	N/M	1,079.86	
					18-May-1993	1.28	N/M	1,079.97	
					10-Nov-1993	1.00	N/M	1,080.25	
					21-Sep-1994	1.42	N/M	1,079.83	
					20-Sep-1995	1.81	N/M	1,079.44	
					05-Sep-1996	1.07	N/M	1,080.18	
					05-Sep-1997	1.11	N/M	1,080.14	
					16-Sep-1998	1.78	N/M	1,079.47	
					09-Sep-1999	2.20	N/M	1,079.05	
					28-Aug-2000	1.57	N/M	1,079.68	
					06-Sep-2001	1.92	N/M	1,079.33	
					04-Sep-2002	1.34	N/M	1,079.91	
					04-Sep-2003	1.62	N/M	1,079.63	
					09-Sep-2004	1.68	N/M	1,079.57	
					25-Aug-2005	1.29	N/M	1,079.96	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	0.61	N/M	1,080.64	
					07-Sep-2007	1.22	N/M	1,080.03	
					26-Aug-2008	1.86	N/M	1,079.39	
					25-Aug-2009	1.68	N/M	1,079.57	
					23-Aug-2010	1.64	N/M	1,079.61	
					23-Aug-2011	1.38	N/M	1,079.87	*H2O blocked*
					22-Aug-2012	1.56	N/M	1,079.69	
			0.79		19-Sep-2013	1.68	0.87	1,079.57	
	1,080.384	1,081.243	0.86	3.52	22-May-2014	1.21	0.35	1,080.03	
			0.81	3.52	10-Sep-2014	1.83	1.02	1,079.36	
			0.87	3.52	16-Sep-2015	2.54	1.67	1,078.71	
					14-Sep-2016	1.24	0.37	1,080.01	
			0.81	3.52	12-Sep-2017	1.99	1.18	1,079.21	*Clear*
			0.87	3.52	06-Sep-2018	1.60	0.72	1,079.66	*Clear*
			0.87	3.52	04-Sep-2019	1.40	0.52	1,079.86	*Clear*
			0.88	3.52	08-Sep-2020	1.86	0.98	1,079.41	*Clear*
			0.87	3.52	07-Sep-2021	1.41	0.54	1,079.85	*Clear*
			0.78	3.52	12-Sep-2022	2.33	1.55	1,078.83	*Clear*
			0.70	3.52	12-Sep-2023	1.43	0.73	1,079.65	
			0.87	3.52	27-Aug-2024	1.31	0.44	1,079.94	
12-IN	N/M	1,081.33	N/M	7.00	15-Mar-1990	2.10	N/M	1,079.23	
					15-Aug-1990	1.40	N/M	1,079.93	
					15-Oct-1990	1.66	N/M	1,079.67	
					15-May-1991	1.62	N/M	1,079.71	
					15-Nov-1991	1.28	N/M	1,080.05	
					05-May-1992	1.48	N/M	1,079.86	
					29-Oct-1992	1.59	N/M	1,079.74	
					18-May-1993	1.50	N/M	1,079.83	
					10-Nov-1993	1.24	N/M	1,080.09	
					21-Sep-1994	1.60	N/M	1,079.73	
					20-Sep-1995	1.98	N/M	1,079.35	
					05-Sep-1996	1.47	N/M	1,079.86	
					05-Sep-1997	1.59	N/M	1,079.74	
					16-Sep-1998	1.99	N/M	1,079.34	
					09-Sep-1999	2.50	N/M	1,078.83	
					28-Aug-2000	1.72	N/M	1,079.61	
					06-Sep-2001	2.11	N/M	1,079.22	
					04-Sep-2002	1.67	N/M	1,079.66	
					04-Sep-2003	2.85	N/M	1,078.48	
					09-Sep-2004	1.81	N/M	1,079.52	
					25-Aug-2005	1.47	N/M	1,079.86	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.61	N/M	1,079.72	
					07-Sep-2007	1.34	N/M	1,079.99	
					26-Aug-2008	2.08	N/M	1,079.25	
					25-Aug-2009	2.03	N/M	1,079.30	
					23-Aug-2010	1.84	N/M	1,079.49	
					23-Aug-2011	1.52	N/M	1,079.81	*H2O blocked*
					22-Aug-2012	1.68	N/M	1,079.65	
			0.94		19-Sep-2013	N/M	N/M	< 0.00	*Dry*
	1,080.362	1,081.311	0.95	7.47	22-May-2014	1.37	0.42	1,079.94	
			0.93	7.47	10-Sep-2014	2.01	1.08	1,079.29	
			1.08	7.47	16-Sep-2015	2.94	1.87	1,078.49	
			1.08	7.47	14-Sep-2016	1.35	0.27	1,080.09	
			0.84	7.47	12-Sep-2017	2.01	1.16	1,079.20	*Clear*
			0.97	7.47	06-Sep-2018	1.75	0.78	1,079.58	*Clear*
			1.05	7.47	04-Sep-2019	1.57	0.53	1,079.83	*Clear*
			1.05	7.47	08-Sep-2020	2.11	1.06	1,079.31	*Clear*
			1.05	7.47	07-Sep-2021	1.55	0.51	1,079.86	*Clear*
			0.96	7.47	12-Sep-2022	2.25	1.29	1,079.07	*Clear*
			0.92	7.47	12-Sep-2023	1.61	0.69	1,079.67	
			1.04	7.47	27-Aug-2024	1.47	0.43	1,079.93	
12-SS	N/M	N/M	N/M	58.00	15-Mar-1990	N/M	N/M	< 0.00	*Dry*
					15-Aug-1990	N/M	N/M	N/M	
					15-Oct-1990	N/M	N/M	N/M	
					15-May-1991	N/M	N/M	N/M	
					15-Nov-1991	N/M	N/M	N/M	
					05-May-1992	N/M	N/M	N/M	
					29-Oct-1992	N/M	N/M	N/M	
					21-Sep-1994	N/M	N/M	N/M	
					20-Sep-1995	N/M	N/M	< 0.00	*Dry*
					05-Sep-1996	N/M	N/M	< 0.00	*Dry*
					05-Sep-1997	N/M	N/M	< 0.00	*Dry*
					16-Sep-1998	N/M	N/M	< 0.00	*Dry*
					28-Aug-2000	N/M	N/M	< 0.00	*Dry*
					06-Sep-2001	N/M	N/M	< 0.00	*Dry*
					04-Sep-2002	N/M	N/M	< 0.00	*Dry*
					04-Sep-2003	N/M	N/M	< 0.00	*Dry*
					09-Sep-2004	N/M	N/M	< 0.00	*Dry*
					25-Aug-2005	N/M	N/M	< 0.00	*Dry*

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					06-Sep-2006	N/M	N/M	< 0.00	*Dry*
					07-Sep-2007	N/M	N/M	< 0.00	*Dry*
					27-Aug-2008	N/M	N/M	< 0.00	*Dry*
					25-Aug-2009	N/M	N/M	< 0.00	*Dry*
					23-Aug-2010	N/M	N/M	< 0.00	*Well Dry*
					23-Aug-2011	N/M	N/M	< 0.00	*Dry*
					22-Aug-2012	N/M	N/M	< 0.00	*Dry*
			0.96	57.96	19-Sep-2013	N/M	N/M	< 0.00	*Dry*
	1,080.053	1,081.087	1.03	57.89	22-May-2014	58.89	57.85	1,022.20	*Measured in the well*
			0.92	57.89	10-Sep-2014	N/M	N/M	< 0.00	*Dry*
			N/M	58.92*	16-Sep-2015	N/M	N/M	N/M	*Dry*
			1.03*	58.92	14-Sep-2016	N/M	N/M	N/M	*Dry*
			1.03	57.89	12-Sep-2017	N/M	N/M	N/M	*Dry*
			1.03	57.89	06-Sep-2018	N/M	N/M	N/M	*Dry*
			1.03*	57.89	04-Sep-2019	N/M	N/M	N/M	*Dry*
			---	57.89	08-Sep-2020	N/M	N/M	N/M	*Dry*
			1.03	57.89	07-Sep-2021	N/M	N/M	N/M	*Dry*
			N/M	57.89	12-Sep-2022	N/M	N/M	N/M	*Dry*
			N/M	57.89	12-Sep-2023	N/M	N/M	N/M	*Dry*
			N/M	57.89	27-Aug-2024	N/M	N/M	N/M	*Dry*
13-SH	N/M	1,080.59	N/M	3.00	15-Mar-1990	2.62	N/M	1,077.97	
					15-Aug-1990	1.75	N/M	1,078.84	
					15-Oct-1990	1.76	N/M	1,078.83	
					15-May-1991	1.34	N/M	1,079.25	
					15-Nov-1991	2.00	N/M	1,078.59	
					04-May-1992	2.26	N/M	1,078.33	
					29-Oct-1992	2.15	N/M	1,078.44	
					18-May-1993	N/M	N/M	N/M	*Frozen*
					10-Nov-1993	1.48	N/M	1,079.11	
					21-Sep-1994	1.96	N/M	1,078.63	
					20-Sep-1995	2.30	N/M	1,078.29	
					04-Sep-1996	1.73	N/M	1,078.86	
					04-Sep-1997	2.11	N/M	1,078.48	
					16-Sep-1998	1.98	N/M	1,078.61	
					09-Sep-1999	1.18	N/M	1,079.41	
					28-Aug-2000	1.46	N/M	1,079.13	
					06-Sep-2001	2.34	N/M	1,078.25	
					04-Sep-2002	1.50	N/M	1,079.09	
					04-Sep-2003	1.80	N/M	1,078.79	
					09-Sep-2004	2.01	N/M	1,078.58	
					25-Aug-2005	1.30	N/M	1,079.29	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.68	N/M	1,078.91	
					05-Sep-2007	2.04	N/M	1,078.55	
					03-Sep-2008	0.92	N/M	1,079.67	
					25-Aug-2009	1.25	N/M	1,079.34	
					23-Aug-2010	2.00	N/M	1,078.59	
					22-Aug-2011	1.97	N/M	1,078.62	*Frost Jacked*
					22-Aug-2012	N/M	N/M	N/M	*Blocked at 1.0 m*
			1.67		26-Sep-2013	2.38	0.71	1,078.21	
	1079.048*	1080.784*	1.736*	2.80	21-May-2013	1.694*	0.518*	1,078.53	**Measured in the well*
	1,079.378	1,080.258	0.88	2.80	31-May-2014	3.32	2.44	1,076.94	*New piezometer drilled May 28, 2014*
			0.87	2.80	09-Sep-2014	2.02	1.14	1,078.23	
			0.86	4.04	15-Sep-2015	2.77	1.92	1,077.46	
			0.86	4.04	12-Sep-2016	1.21	0.35	1,079.03	
			0.87	2.80	13-Sep-2017	2.15	1.28	1,078.10	*Cloudy*
			0.91	2.80	06-Sep-2018	1.87	0.96	1,078.42	*Cloudy*
			0.99	2.80	05-Sep-2019	1.50	0.51	1,078.54	*Clear*
			1.07	2.80	08-Sep-2020	2.20	1.13	1,077.92	*Clear*
			0.99	2.80	08-Sep-2021	1.56	0.57	1,078.81	*Clear*
			1.02	2.80	12-Sep-2022	2.61	1.60	1,077.78	*Cloudy*
			1.00	2.80	13-Sep-2023	1.78	0.78	1,078.60	
			1.07	2.80	26-Aug-2024	1.40	0.32	1,079.06	
13-IN	N/M	1,080.33	N/M	9.00	15-Mar-1990	7.46	N/M	1,072.87	
					15-Apr-1990	5.15	N/M	1,075.18	
					15-Aug-1990	2.69	N/M	1,077.64	
					15-Oct-1990	2.48	N/M	1,077.85	
					15-May-1991	2.78	N/M	1,077.55	
					15-Nov-1991	2.68	N/M	1,077.65	
					04-May-1992	2.77	N/M	1,077.57	
					29-Oct-1992	2.57	N/M	1,077.76	
					18-May-1993	2.92	N/M	1,077.41	
					10-Nov-1993	2.52	N/M	1,077.81	
					21-Sep-1994	2.68	N/M	1,077.65	
					20-Sep-1995	2.78	N/M	1,077.55	
					04-Sep-1996	2.54	N/M	1,077.79	
					04-Sep-1997	2.75	N/M	1,077.58	
					16-Sep-1998	3.11	N/M	1,077.22	
					09-Sep-1999	2.03	N/M	1,078.30	
					28-Aug-2000	N/M	N/M	N/M	*Blocked*
					06-Sep-2001	N/M	N/M	N/M	*Blocked*
					04-Sep-2002	N/M	N/M	N/M	*Blocked*
					04-Sep-2003	7.10	N/M	1,073.23	
					09-Sep-2004	5.36	N/M	1,074.97	
					25-Aug-2005	5.40	N/M	1,074.93	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	5.52	N/M	1,074.81	
					05-Sep-2007	N/M	N/M	N/M	*Blocked*
					05-Sep-2008	5.39	N/M	1,074.94	
					25-Aug-2009	5.25	N/M	1,075.08	
					23-Aug-2010	5.27	N/M	1,075.06	
					22-Aug-2011	5.08	N/M	1,075.25	
					22-Aug-2012	5.24	N/M	1,075.09	
			1.10		19-Sep-2013	N/M	N/M	N/M	*Peizometer compromised*
	1079.077*	1079.726*	0.649*	9.47	21-May-2013	2.546*	1.897*	1,077.18	**Measured in the well*
	1,079.338	1,080.230	0.89	9.47	31-May-2014	6.07	5.17	1,074.16	*New piezometer drilled May 28, 2014*
			0.87	9.47	09-Sep-2014	2.87	2.00	1,077.34	
			0.80	2.44	15-Sep-2015	3.24	2.44	1,076.90	
			0.80	2.44	12-Sep-2016	2.26	1.45	1,077.89	
			0.77	9.47	13-Sep-2017	2.32	1.54	1,077.80	*Clear*
			0.86	9.47	06-Sep-2018	2.41	1.55	1,077.79	*Clear*
			0.95	9.47	05-Sep-2019	2.11	1.16	1,077.92	*Clear*
			0.95	9.47	08-Sep-2020	2.37	1.42	1,077.66	*Clear*
			0.95	9.47	08-Sep-2021	2.58	1.64	1,077.70	*Clear*
			0.90	9.47	12-Sep-2022	2.46	1.56	1,077.78	*Clear*
			0.82	9.47	13-Sep-2023	2.30	1.48	1,077.86	
			0.89	9.47	26-Aug-2024	2.23	1.34	1,078.00	
13-SS	N/M	1,080.12	N/M	N/M	15-Mar-1990	56.79	N/M	1,023.33	
					15-Apr-1990	56.69	N/M	1,023.43	
					15-Aug-1990	56.74	N/M	1,023.38	
					15-Oct-1990	56.69	N/M	1,023.44	
					15-May-1991	57.09	N/M	1,023.03	
					15-Nov-1991	57.36	N/M	1,022.76	
					04-May-1992	57.61	N/M	1,022.51	
					29-Oct-1992	57.70	N/M	1,022.42	
					18-May-1993	58.10	N/M	1,022.02	
					10-Nov-1993	58.68	N/M	1,021.44	
					21-Sep-1994	58.02	N/M	1,022.10	
					20-Sep-1995	N/M	N/M	N/M	*Damaged*
					05-Sep-1996	N/M	N/M	N/M	*Damaged*
					04-Sep-1997	N/M	N/M	N/M	*Damaged*
					04-Sep-1998	57.69	N/M	1,022.44	
					28-Aug-2000	57.30	N/M	1,022.82	
					06-Sep-2001	57.35	N/M	1,022.77	
					04-Sep-2002	57.37	N/M	1,022.75	
					04-Sep-2003	N/M	N/M	< 0.00	*Dry*
					09-Sep-2004	N/M	N/M	N/M	*Replaced by 13(R)SS*
			0.89	62.19	19-Sep-2013	56.64	55.74	1,023.48	
13(R)SS	N/M	N/M	N/M	62.00	10-Sep-2004	59.25	N/M	1,020.87	
					25-Aug-2005	N/M	N/M	N/M	
					08-Sep-2005	N/M	N/M	N/M	
					05-Sep-2007	5.27	N/M	1,074.85	*Possible Data Entry Error*
					04-Sep-2008	N/M	N/M	N/M	
					17-Sep-2009	57.07	N/M	1,023.05	
					23-Aug-2010	N/M	N/M	< 0.00	*Well Dry*
					23-Aug-2011	N/M	N/M	< 0.00	*Dry*
					23-Aug-2012	N/M	N/M	< 0.00	*Dry*
			1.19		19-Sep-2013	N/M	N/M	N/M	
	1,080.004	1,081.211	1.21	67.54	21-May-2014	58.39	57.18	1,022.82	*Measured in the well*
			1.12	67.54	09-Sep-2014	58.56	57.44	1,022.56	*Measured in the well*
			N/M	68.75*	16-Sep-2015	59.55	58.34	1,021.67	
			1.21*	68.75	13-Sep-2016	58.32	57.11	1,022.90	
			1.09	67.54	13-Sep-2017	58.33	57.24	1,022.77	*Clear*
			1.12	67.54	06-Sep-2018	58.35	57.23	1,022.78	*Clear*

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
			1.15	67.54	03-Sep-2019	58.22	57.06	1,022.94	*Clear*
			1.14	67.54	09-Sep-2020	N/M	N/M	N/M	*Could not get accurate water level reading due to equipment malfunction*
			1.15	67.54	08-Sep-2021	58.13	56.98	1,023.03	*Clear*
			1.13	67.54	12-Sep-2022	58.10	56.97	1,023.04	*Clear*
			1.14	67.54	12-Sep-2023	58.04	56.90	1,023.10	
			1.11	67.54	26-Aug-2024	58.10	56.99	1,023.01	
14-SH	N/M	1,082.36	N/M	5.20	10-Nov-1993	1.80	N/M	1,080.56	
					21-Sep-1994	1.62	N/M	1,080.74	
					20-Sep-1995	1.77	N/M	1,080.59	
					05-Sep-1996	1.46	N/M	1,080.91	
					03-Sep-1997	1.51	N/M	1,080.85	
					15-Sep-1998	1.72	N/M	1,080.64	
					09-Sep-1999	2.03	N/M	1,080.33	
					28-Aug-2000	1.74	N/M	1,080.62	
					06-Sep-2001	2.28	N/M	1,080.08	
					05-Sep-2002	1.90	N/M	1,080.46	
					04-Sep-2003	2.41	N/M	1,079.95	
					09-Sep-2004	1.96	N/M	1,080.40	
					25-Aug-2005	N/M	N/M	< 0.00	*Dry*
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	2.57	N/M	1,079.79	
					05-Sep-2007	2.26	N/M	1,080.10	
					03-Sep-2008	3.22	N/M	1,079.14	
					25-Aug-2009	2.87	N/M	1,079.49	
					23-Aug-2010	2.52	N/M	1,079.84	
					23-Aug-2011	2.70	N/M	1,079.66	
					23-Aug-2012	2.61	N/M	1,079.75	
			1.41		19-Sep-2013	4.71	3.30	1,077.65	
	1,086.513	1,087.985	1.47	3.75	21-May-2014	2.38	0.91	1,085.60	
			1.43	3.75	09-Sep-2014	2.66	1.23	1,085.28	
			1.45	3.75	15-Sep-2015	4.24	2.79	1,083.72	
			1.45	3.75	13-Sep-2016	4.45	3.00	1,083.51	
			1.44	3.75	11-Sep-2017	2.94	1.50	1,085.01	*Clear*
			1.54	3.75	05-Sep-2018	2.87	1.33	1,085.19	*Yellowish*
			1.72	3.75	05-Sep-2019	2.80	1.07	1,085.44	*Yellowish*
			0.77	3.75	09-Sep-2020	3.28	2.51	1,084.00	
			1.72	3.75	07-Sep-2021	2.86	1.13	1,085.38	
			1.78	3.75	08-Sep-2021	3.56	1.79	1,084.73	*Yellowish*
			0.28	3.75	12-Sep-2023	2.05	1.77	1,084.74	*New Stickup*
			0.81	3.75	27-Aug-2024	1.65	0.84	1,085.68	
14-IN	N/M	1,082.31	N/M	12.80	10-Nov-1993	N/M	N/M	< 0.00	*Dry*
					21-Sep-1994	N/M	N/M	< 0.00	*Dry*
					20-Sep-1995	N/M	N/M	< 0.00	*Dry*
					05-Sep-1996	N/M	N/M	< 0.00	*Dry*
					03-Sep-1997	N/M	N/M	< 0.00	*Dry*
					15-Sep-1998	N/M	N/M	< 0.00	*Dry*
					09-Sep-1999	N/M	N/M	< 0.00	*Dry*
					28-Aug-2000	N/M	N/M	< 0.00	*Dry*
					06-Sep-2001	N/M	N/M	< 0.00	*Dry*
					05-Sep-2002	N/M	N/M	< 0.00	*Dry*
					04-Sep-2003	N/M	N/M	< 0.00	*Dry*
					09-Sep-2004	N/M	N/M	N/M	
					25-Aug-2005	N/M	N/M	< 0.00	*Dry*
					08-Sep-2005	N/M	N/M	< 0.00	*Dry*
					07-Sep-2006	N/M	N/M	< 0.00	*Dry*
					05-Sep-2007	13.84	N/M	1,068.47	
					26-Aug-2008	N/M	N/M	< 0.00	*Dry*
					25-Aug-2009	N/M	N/M	< 0.00	*Dry*
					23-Aug-2010	N/M	N/M	< 0.00	*Dry*
					23-Aug-2011	N/M	N/M	< 0.00	*Dry*
					23-Aug-2012	N/M	N/M	< 0.00	*Dry*
			0.83		19-Sep-2013	N/M	N/M	< 0.00	*Dry*
	1,086.539	1,087.342	0.80	12.82	21-May-2014	N/M	N/M	< 0.00	*Dry*
			0.80	12.82	09-Sep-2014	N/M	N/M	< 0.00	*Dry*
			N/M	12.82	15-Sep-2015	N/M	N/M	< 0.00	*Dry*
			0.80	12.82	13-Sep-2016	N/M	N/M	< 0.00	*Dry*
			0.80	12.82	11-Sep-2017	N/M	N/M	< 0.00	*Dry*
			0.80	12.82	05-Sep-2018	N/M	N/M	< 0.00	*Dry*
			0.93	12.82	05-Sep-2019	N/M	N/M	< 0.00	*Dry*
			---	12.82	09-Sep-2020	N/M	N/M	< 0.00	*Dry*
			0.93	12.82	07-Sep-2021	N/M	N/M	N/M	*Dry*
			0.90	12.82	13-Sep-2022	N/M	N/M	N/M	*Dry*
			0.90	12.82	12-Sep-2023	N/M	N/M	N/M	*Dry*
			0.90	12.82	27-Aug-2024	N/M	N/M	N/M	*Dry*
14-SS	N/M	1,082.38	N/M	61.00	10-Nov-1993	N/M	N/M	< 0.00	*Dry*
					21-Sep-1994	N/M	N/M	< 0.00	*Dry*
					20-Sep-1995	N/M	N/M	< 0.00	*Dry*
					05-Sep-1996	N/M	N/M	< 0.00	*Dry*
					03-Sep-1997	N/M	N/M	< 0.00	*Dry*
					15-Sep-1998	N/M	N/M	< 0.00	*Dry*
					28-Aug-2000	N/M	N/M	< 0.00	*Dry*
					06-Sep-2001	N/M	N/M	< 0.00	*Dry*
					05-Sep-2002	N/M	N/M	< 0.00	*Dry*
					04-Sep-2003	N/M	N/M	< 0.00	*Dry*
					09-Sep-2004	N/M	N/M	< 0.00	*Dry*
					08-Sep-2005	N/M	N/M	< 0.00	*Dry*
					07-Sep-2006	N/M	N/M	< 0.00	*Dry*
					05-Sep-2007	N/M	N/M	< 0.00	*Dry*
					03-Sep-2008	N/M	N/M	< 0.00	*Dry*
					25-Aug-2009	N/M	N/M	< 0.00	*Dry*
					23-Aug-2010	N/M	N/M	< 0.00	*Well Dry*
					23-Aug-2011	N/M	N/M	< 0.00	*Dry*
					23-Aug-2012	N/M	N/M	< 0.00	*Dry*
			0.75	60.35	19-Sep-2013	N/M	N/M	< 0.00	*Dry*
	1,086.566	1,087.344	0.78	60.95	21-May-2014	N/M	N/M	< 0.00	*Dry*
			0.79	60.95	09-Sep-2014	N/M	N/M	< 0.00	*Dry*
			N/M	60.95*	15-Sep-2015	N/M	N/M	< 0.00	*Dry*
			0.78*	60.95*	13-Sep-2016	N/M	N/M	< 0.00	*Dry*
			0.78	60.95	11-Sep-2017	N/M	N/M	< 0.00	*Dry*
			0.78	60.95	05-Sep-2018	N/M	N/M	< 0.00	*Dry*
			0.78	60.95	05-Sep-2019	N/M	N/M	< 0.00	*Dry*
			---	60.95	09-Sep-2020	N/M	N/M	< 0.00	*Dry*
			0.78	60.95	07-Sep-2021	N/M	N/M	N/M	*Dry*
			0.82	60.95	13-Sep-2022	N/M	N/M	N/M	*Dry*
			0.82	60.95	12-Sep-2023	N/M	N/M	N/M	*Dry*
			0.82	60.95	27-Aug-2024	N/M	N/M	N/M	*Dry*
15-SH	N/M	1,082.26	N/M	5.18	10-Nov-1993	5.05	N/M	1,077.21	
					21-Sep-1994	1.73	N/M	1,080.53	
					20-Sep-1995	1.82	N/M	1,080.44	
					04-Sep-1996	1.71	N/M	1,080.55	
					04-Sep-1997	1.70	N/M	1,080.56	
					16-Sep-1998	1.96	N/M	1,080.30	
					09-Sep-1999	3.08	N/M	1,079.18	
					28-Aug-2000	2.22	N/M	1,080.04	
					07-Sep-2001	3.83	N/M	1,078.43	
					05-Sep-2002	2.25	N/M	1,080.01	
					03-Sep-2003	2.18	N/M	1,080.08	
					08-Sep-2004	2.16	N/M	1,080.10	
					26-Aug-2005	2.14	N/M	1,080.12	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	2.27	N/M	1,079.99	
					06-Sep-2007	2.01	N/M	1,080.25	
					04-Sep-2008	2.53	N/M	1,079.73	
					25-Aug-2009	2.40	N/M	1,079.86	
					23-Aug-2010	2.47	N/M	1,079.79	
					22-Aug-2011	N/M	N/M	N/M	*Blocked @1.0 m, replaced*
					22-Aug-2012	N/M	N/M	N/M	*Blocked at 0.82 m*
			1.15		19-Sep-2013	3.27	2.12	1,078.99	
	1,081.264	1,082.354	1.09	5.22	23-May-2014	2.82	1.72	1,079.54	*Measured in the well*
			1.04	5.22	10-Sep-2014	2.84	1.80	1,079.47	*Measured in the well*
			0.81	6.31	16-Sep-2015	4.65	3.84	1,077.42	*Measured in the well*
			0.81	6.31	14-Sep-2016	2.07	1.25	1,080.01	
			1.02	5.22	12-Sep-2017	2.67	1.66	1,079.61	*Clear*
			1.04	5.22	18-Sep-2018	2.69	1.66	1,079.61	*Clear*
			1.11	5.22	04-Sep-2019	2.35	1.23	1,080.03	*Clear*
			0.80	5.22	09-Sep-2020	4.04	3.24	1,078.03	*Measured in the sampling well*
			1.11	5.22	08-Sep-2021	2.48	1.36	1,079.90	*Measured in the sampling well*
			1.09	5.22	13-Sep-2022	3.15	2.06	1,079.21	*Measured in the sampling well*
			1.14	5.22	13-Sep-2023	2.47	1.33	1,079.93	
			1.21	5.22	27-Aug-2024	2.17	0.96	1,080.30	
15-IN	N/M	1,082.14	N/M	9.60	10-Nov-1993	N/M	N/M	< 0.00	*Dry*
					21-Sep-1994	4.73	N/M	1,077.41	
					20-Sep-1995	3.24	N/M	1,078.90	
					04-Sep-1996	3.14	N/M	1,079.00	

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					04-Sep-1997	3.27	N/M	1,078.87	
					16-Sep-1998	3.47	N/M	1,078.67	
					09-Sep-1999	3.72	N/M	1,078.42	
					28-Aug-2000	3.95	N/M	1,078.19	
					06-Sep-2001	2.32	N/M	1,079.82	
					05-Sep-2002	4.02	N/M	1,078.12	
					03-Sep-2003	3.86	N/M	1,078.28	
					08-Sep-2004	3.79	N/M	1,078.35	
					26-Aug-2005	3.58	N/M	1,078.56	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	3.84	N/M	1,078.30	
					06-Sep-2007	3.57	N/M	1,078.57	
					04-Sep-2008	3.65	N/M	1,078.49	
					25-Aug-2009	3.70	N/M	1,078.44	
					23-Aug-2010	3.76	N/M	1,078.38	
					22-Aug-2011	3.64	N/M	1,078.50	
					22-Aug-2012	3.80	N/M	1,078.34	
			0.85		19-Sep-2013	2.48	1.64	1,079.66	
	1,081.298	1,082.191	0.89	9.25	23-May-2014	3.83	2.93	1,078.37	
			0.60	9.25	10-Sep-2014	3.74	3.14	1,078.16	
			0.84	9.25	16-Sep-2015	4.61	3.78	1,077.52	
			0.84	9.25	14-Sep-2016	4.61	3.78	1,077.52	
			0.80	9.25	12-Sep-2017	3.71	2.91	1,078.39	*Clear*
			0.79	9.25	06-Sep-2018	3.89	3.11	1,078.19	*Clear*
			0.90	9.25	04-Sep-2019	3.74	2.84	1,078.46	*Clear*
			0.73	9.25	09-Sep-2020	3.83	3.10	1,078.20	*Clear*
			0.90	9.25	08-Sep-2021	4.96	4.06	1,077.24	*Clear*
			0.93	9.25	13-Sep-2022	3.87	2.93	1,078.36	*Clear*
			0.92	9.25	13-Sep-2023	3.94	3.02	1,078.28	
			0.87	9.25	27-Aug-2024	4.19	3.32	1,077.98	
15-SS	N/M	1,082.16	N/M	N/M	10-Nov-1993	60.02	N/M	1,022.14	
					21-Sep-1994	60.28	N/M	1,021.88	
					20-Sep-1995	60.20	N/M	1,021.96	
					04-Sep-1996	60.01	N/M	1,022.15	
					04-Sep-1997	60.31	N/M	1,021.85	
					16-Sep-1998	60.42	N/M	1,021.74	
					28-Aug-2000	60.15	N/M	1,022.01	
					06-Sep-2001	59.84	N/M	1,022.32	
					05-Sep-2002	59.91	N/M	1,022.25	
					03-Sep-2003	N/M	N/M	< 0.00	*Dry*
					08-Sep-2004	N/M	N/M	N/M	*Replaced by 15(R)SS*
			0.74	61.10	19-Sep-2013	N/M	N/M	< 0.00	*Dry*
15(R)SS	N/M	N/M	N/M	62.50	10-Sep-2004	60.07	N/M	1,022.09	
					08-Sep-2005	N/M	N/M	N/M	
					04-Sep-2008	N/M	N/M	N/M	
					17-Sep-2009	59.49	N/M	1,022.67	
					23-Aug-2010	N/M	N/M	N/M	*No water level, could not get tape down*
					23-Aug-2011	N/M	N/M	N/M	*Dry*
					22-Aug-2012	N/M	N/M	N/M	*Dry*
				65.27	19-Sep-2013	59.22	N/M	1,022.94	
15(2R)SS	1,081.129	1,082.118	0.99	63.00	29-May-2014	59.06	58.07	1,023.06	*New well drilled May 27-29, 2014*
			0.99	62.34	11-Sep-2014	59.28	58.29	1,022.84	
			N/M	63.99*	16-Sep-2015	60.03	59.04	1,022.09	
			0.99*	63.99	13-Sep-2016	59.05	58.06	1,023.07	
			0.94	63.00	13-Sep-2017	59.06	58.12	1,023.01	*Clear*
			0.87	63.00	06-Sep-2018	59.06	58.19	1,022.94	*Clear*
			1.05	63.00	04-Sep-2019	58.89	57.85	1,023.28	*Clear*
			1.00	63.00	09-Sep-2020	N/M	N/M	N/M	*Could not get accurate water level reading due to equipment malfunction*
			1.05	63.00	08-Sep-2021	58.87	57.83	1,023.30	*Clear*
			1.01	63.00	12-Sep-2022	58.80	57.79	1,023.34	*Clear*
			1.04	63.00	13-Sep-2023	58.77	57.73	1,023.40	
			1.06	63.00	27-Aug-2024	58.84	57.78	1,023.35	
16-SH	N/M	1,081.40	N/M	5.33	21-Sep-1994	4.18	N/M	1,077.22	
					20-Sep-1995	2.28	N/M	1,079.12	
					04-Sep-1996	1.91	N/M	1,079.49	
					03-Sep-1997	1.98	N/M	1,079.42	
					15-Sep-1998	2.22	N/M	1,079.18	
					09-Sep-1999	2.48	N/M	1,078.92	
					28-Aug-2000	1.68	N/M	1,079.72	
					06-Sep-2001	1.94	N/M	1,079.46	
					05-Sep-2002	1.19	N/M	1,080.21	
					04-Sep-2003	1.65	N/M	1,079.75	
					09-Sep-2004	1.74	N/M	1,079.66	
					25-Aug-2005	1.40	N/M	1,080.00	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.60	N/M	1,079.80	
					05-Sep-2007	1.16	N/M	1,080.24	
					03-Sep-2008	1.53	N/M	1,079.87	
					25-Aug-2009	0.83	N/M	1,080.57	
					23-Aug-2010	2.10	N/M	1,079.30	
					22-Aug-2011	1.46	N/M	1,079.94	
					22-Aug-2012	1.65	N/M	1,079.75	
			0.69		19-Sep-2013	2.15	1.46	1,079.25	
	1,079.888	1,080.637	0.75	5.33	23-May-2014	2.17	1.42	1,078.46	
			0.70	5.33	09-Sep-2014	2.50	1.81	1,078.08	
			0.69	6.01	15-Sep-2015	3.15	2.47	1,077.42	
			0.69	6.01	13-Sep-2016	1.64	0.96	1,078.93	
			0.64	5.33	12-Sep-2017	2.48	1.84	1,078.05	*Clear*
			0.63	5.33	06-Sep-2018	2.06	1.43	1,078.46	*Clear*
			0.71	5.33	04-Sep-2019	1.84	1.13	1,078.77	*Clear*
			0.72	5.33	08-Sep-2020	2.37	1.65	1,078.25	*Clear*
			0.71	5.33	07-Sep-2021	1.45	0.75	1,079.14	*Clear*
			0.73	5.33	12-Sep-2022	2.72	2.00	1,077.89	*Clear*
			0.71	5.33	13-Sep-2023	1.86	1.15	1,078.74	
			0.68	5.33	26-Aug-2024	1.20	0.52	1,079.37	
16-IN	N/M	1,080.88	N/M	9.90	21-Sep-1994	N/M	N/M	< 0.00	*Dry*
					20-Sep-1995	5.57	N/M	1,075.31	
					04-Sep-1996	4.55	N/M	1,076.33	
					03-Sep-1997	4.84	N/M	1,076.04	
					15-Sep-1998	4.98	N/M	1,075.90	
					09-Sep-1999	4.69	N/M	1,076.19	
					28-Aug-2000	4.89	N/M	1,075.99	
					06-Sep-2001	4.56	N/M	1,076.32	
					05-Sep-2002	4.56	N/M	1,076.32	
					04-Sep-2003	3.80	N/M	1,077.08	
					09-Sep-2004	3.94	N/M	1,076.94	
					25-Aug-2005	3.63	N/M	1,077.25	
					08-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	4.06	N/M	1,076.82	
					05-Sep-2007	3.29	N/M	1,077.59	
					03-Sep-2008	4.22	N/M	1,076.66	
					25-Aug-2009	3.94	N/M	1,076.94	
					23-Aug-2010	3.99	N/M	1,076.89	
					22-Aug-2011	3.00	N/M	1,077.88	
					22-Aug-2012	1.69	N/M	1,079.19	
			0.85		19-Sep-2013	2.02	1.17	1,078.87	
	1,079.850	1,080.725	0.88	9.66	23-May-2014	3.56	2.68	1,077.17	
			0.82	9.66	09-Sep-2014	2.63	1.80	1,078.05	
			0.81	10.31	15-Sep-2015	4.47	3.66	1,076.19	
			0.81	10.31	13-Sep-2016	1.53	0.72	1,079.13	
			0.74	9.66	12-Sep-2017	2.56	1.81	1,078.04	*Clear*
			0.76	9.66	06-Sep-2018	2.35	1.60	1,078.25	*Clear*
			0.84	9.66	04-Sep-2019	2.01	1.17	1,078.62	*Clear*
			0.85	9.66	08-Sep-2020	2.64	1.79	1,078.00	*Clear*
			0.84	9.66	07-Sep-2021	1.74	0.90	1,078.95	*Clear*
			0.84	9.66	12-Sep-2022	2.53	1.69	1,078.16	*Clear*
			0.79	9.66	12-Sep-2023	1.97	1.18	1,078.67	
			0.82	9.66	26-Aug-2024	1.37	0.55	1,079.30	*No water retrieved for sample*
17-SH	N/M	1,080.97	N/M	3.81	21-Sep-1994	3.43	N/M	1,077.54	
					20-Sep-1995	1.84	N/M	1,079.13	
					04-Sep-1996	1.09	N/M	1,079.88	
					03-Sep-1997	1.11	N/M	1,079.86	
					16-Sep-1998	1.48	N/M	1,079.49	
					09-Sep-1999	2.17	N/M	1,078.80	
					28-Aug-2000	1.80	N/M	1,079.17	
					06-Sep-2001	2.06	N/M	1,078.91	
					05-Sep-2002	1.20	N/M	1,079.77	
					03-Sep-2003	1.80	N/M	1,079.17	
					08-Sep-2004	1.95	N/M	1,079.02	
					26-Aug-2005	1.58	N/M	1,079.39	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	1.80	N/M	1,079.17	
					06-Sep-2007	1.32	N/M	1,079.65	

Table 4.1
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Levels and Elevations

AECOM

Monitoring Well	Ground Elevation	Top of Casing Elevation	Stickup	Total Depth of Well	Date Measured	Depth To Groundwater from Top of Casing	Depth To Groundwater from Ground Surface	Groundwater Surface Elevation	Comments
	(masl)	*(masl)*	*(m)*	*(mBGS)*	*(dd-mmm-yyyy)*	*(mTOC)*	*(mBGS)*	*(masl)*	
					04-Sep-2008	1.64	N/M	1,079.33	
					25-Aug-2009	1.77	N/M	1,079.20	
					23-Aug-2010	2.29	N/M	1,078.68	
					23-Aug-2011	1.77	N/M	1,079.20	
					22-Aug-2012	1.81	N/M	1,079.16	
			0.95		19-Sep-2013	2.45	1.50	1,078.52	
	1,079.309	1,080.325	1.02	3.81	23-May-2014	1.43	0.41	1,078.90	
			0.95	3.81	10-Sep-2014	2.10	1.15	1,078.16	
			0.99	3.81	16-Sep-2015	3.30	2.31	1,077.00	
			0.99	3.81	14-Sep-2016	1.73	0.74	1,078.57	
			0.96	3.81	12-Sep-2017	2.17	1.21	1,078.10	*Clear*
			0.98	3.81	06-Sep-2018	2.18	1.21	1,078.10	*Clear*
			1.06	3.81	04-Sep-2019	2.02	0.96	1,078.35	*Clear*
			1.15	3.81	09-Sep-2020	2.29	1.14	1,078.17	*Clear*
			1.06	3.81	08-Sep-2021	1.98	0.93	1,078.38	*Clear*
			1.20	3.81	13-Sep-2022	2.65	1.45	1,077.86	*Clear*
			1.10	3.81	13-Sep-2023	2.02	0.92	1,078.39	
			1.20	3.81	27-Aug-2024	1.69	0.49	1,078.82	
17-IN	N/M	1,080.24	N/M	8.38	21-Sep-1994	N/M	N/M	< 0.00	*Dry*
					20-Sep-1995	2.24	N/M	1,078.00	
					04-Sep-1996	1.98	N/M	1,078.26	
					03-Sep-1997	2.03	N/M	1,078.21	
					16-Sep-1998	2.63	N/M	1,077.61	
					09-Sep-1999	2.72	N/M	1,077.52	
					28-Aug-2000	2.86	N/M	1,077.38	
					06-Sep-2001	3.00	N/M	1,077.24	
					05-Sep-2002	3.69	N/M	1,076.55	
					03-Sep-2003	2.80	N/M	1,077.44	
					08-Sep-2004	1.71	N/M	1,078.53	
					26-Aug-2005	2.79	N/M	1,077.45	
					07-Sep-2005	N/M	N/M	N/M	
					07-Sep-2006	0.61	N/M	1,079.63	
					06-Sep-2007	2.28	N/M	1,077.96	
					04-Sep-2008	2.53	N/M	1,077.71	
					25-Aug-2009	2.52	N/M	1,077.72	
					23-Aug-2010	2.77	N/M	1,077.47	
					23-Aug-2011	2.35	N/M	1,077.89	
					22-Aug-2012	2.51	N/M	1,077.73	
			0.84		19-Sep-2013	2.16	1.32	1,078.09	
	1,079.382	1,080.227	0.85	8.05	23-May-2014	2.31	1.46	1,077.92	
			0.86	8.05	10-Sep-2014	2.37	1.51	1,077.87	
			0.88	8.05	16-Sep-2015	3.32	2.44	1,076.94	
			0.88	8.05	14-Sep-2016	2.31	1.43	1,077.95	
			0.85	8.05	12-Sep-2017	2.36	1.51	1,077.87	*Clear*
			0.86	8.05	06-Sep-2018	2.63	1.77	1,077.61	*Clear*
			0.99	8.05	04-Sep-2019	2.48	1.49	1,077.90	*Clear*
			0.93	8.05	09-Sep-2020	2.69	1.76	1,077.62	*Clear*
			0.99	8.05	08-Sep-2021	2.82	1.83	1,077.55	*Clear*
			1.19	8.05	13-Sep-2022	2.67	1.48	1,077.90	*Clear*
			0.89	8.05	13-Sep-2023	2.20	1.31	1,078.07	*Cut down PZ, now locks.*
			0.96	8.05	27-Aug-2024	2.77	1.81	1,077.58	

N/M	Data not available / not measured
mBGS	metres Below Ground Surface
mTOC	metres below Top of Casing
masl	metres above sea level
	Total depths in the first row for each well are taken from well installation information
*	Calculation found using previous years stickup value

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
01-SH [Decommissioned]	21-May-1992	482	7.49	3.5	
	04-Nov-1992	399	7.25	4.5	
01A-SH	13-Jan-1993	193	6	5	
	31-May-1994	151	5.87	6	
	22-Sep-1994	628	7.24	5	
	02-Nov-1994	637	7.28	6	
	04-Sep-1996	117	5.68	3.7	
	05-Sep-1997	123	5.94	6.7	
	16-Sep-1998	119	5.67	7.1	
	09-Sep-1999	133	5.68	8.2	
	06-Sep-2000	561	5.68	9.9	
	07-Sep-2001	311	5.68	10.1	
	04-Sep-2002	---	5.68	---	Dry
	11-Sep-2002	216	5.68	10	
	03-Sep-2003	312	5.68	12	
	08-Sep-2004	924	5.68	6	
	26-Aug-2005	---	5.68	---	Water level only
	07-Sep-2005	383	5.68	13.2	
	06-Sep-2006	307	5.68	8.9	
	06-Sep-2007	570	5.68	8.5	
	04-Sep-2008	173	5.68	8.6	
	10-Sep-2009	228	5.68	9.1	
	09-Sep-2010	437	5.68	9.3	Smells like rotten eggs
	08-Sep-2011	204	5.68	17.8	Re-chcked pH value after re-calibrating probe, Sulphur odour, yellowish
	06-Sep-2012	186.2	5.68	14.2	Yellow tint, sulphurous odour
	26-Sep-2013	182	5.68	10.3	Green tea-colored water; sulphur odour
	17-Sep-2014	373	5.68	8.6	Green tea-colored water; sulphur odour, low volume
	29-Sep-2015	187	5.68	10.7	Very limited sample and green tea color
	27-Sep-2016	198	5.68	5.3	Limited sample and green tea color
	27-Sep-2017	200	5.68	10.28	Limited sample and green tea color
	18-Sep-2018	794	5.68	3.55	Slightly yellow
	17-Sep-2019	134	5.68	8.23	Brown, sulphur odour
	21-Sep-2020	182	5.68	9.00	white flakes, sulphur odor
	22-Sep-2021	152	5.38	7.81	Brown/yellow tint before & after filtering, sulphur odour
	29-Sep-2022	88	5.20	7.49	Brown/yellow, sulphur odour
	28-Sep-2023	189	5.48	7.40	Limited water
	11-Sep-2024	163	5.63	8.90	
01-IN [Decommissioned]	16-May-1991	601	7.18	6	
	06-Nov-1991	667	7.63	5	
	04-Nov-1992	614	7.63	3.5	
	19-May-1993	523	7.25	3	
01A-IN	13-Jan-1993	398	6.97	3	
	22-Sep-1994	246	5.67	9	
	28-Sep-1995	592	6.92	5	
	04-Sep-1996	788	7.11	2	
	04-Sep-1998	788	7.11	2	
	15-Sep-1998	689	7.02	6.8	
	09-Sep-1999	1024	7.1	6.6	
	06-Sep-2000	693	6.55	5.8	
	07-Sep-2001	628	7.15	6.7	
	04-Sep-2002	922	6.22	6	
	11-Sep-2002	864	6.51	7	
	03-Sep-2003	816	6.85	5.6	
	08-Sep-2004	697	6.31	4.7	
	26-Aug-2005	---	---	---	Water level only
	07-Sep-2005	827	6.53	9.8	
	06-Sep-2006	841	6.76	6.5	
	06-Sep-2007	815	6.56	7.7	
	04-Sep-2008	742	6.91	6.9	
	10-Sep-2009	826	6.46	8.7	
	09-Sep-2010	849	6.81	7.6	Metallic odour
	08-Sep-2011	895	6.5	15.9	Metallic odour, yellowish
	06-Sep-2012	853	6.68	10.6	Yellow tint, hydrocarbon odour
	26-Sep-2013	816	5.54	7.1	Green tea-colored water
	17-Sep-2014	1052	6.81	8.3	Green tea-colored water
	29-Sep-2015	691	6.43	7.8	Cloudy light brown colored water
	27-Sep-2016	869	5.06	7.7	Cloudy light brown colored water
	27-Sep-2017	897	6.66	6.18	Slightly yellow
	18-Sep-2018	735	6.24	4.19	Slightly yellow
	17-Sep-2019	514	6.85	5.91	Brown tint
	21-Sep-2020	823	7.02	7.70	
	22-Sep-2021	826	6.57	7.32	Brown tint
	29-Sep-2022	550	6.81	6.40	Brown tint
	28-Sep-2023	749	6.86	8.10	
	11-Sep-2024	536	6.64	7.40	
01-SS [Decommissioned]	16-May-1991	388	7.54	6.5	
	06-Nov-1991	488	7.65	5.5	
	04-Nov-1992	419	7.25	4.5	
01A-SS	07-Sep-2001	---	---	---	Dry
	06-Sep-2002	---	---	---	Dry
	08-Sep-2004	---	---	---	Dry
	26-Aug-2005	---	---	---	Dry
	07-Sep-2006	---	---	---	Dry
	29-Aug-2007	---	---	---	Dry
	04-Sep-2008	---	---	---	Dry
	10-Sep-2009	---	---	---	Dry
	09-Sep-2010	---	---	---	Dry
	09-Sep-2011	---	---	---	Dry
	22-Aug-2012	---	---	---	Dry
	26-Sep-2013	---	---	---	Dry
	17-Sep-2014	---	---	---	Dry
	29-Sep-2015	---	---	---	Dry
	27-Sep-2016	---	---	---	Dry
	27-Sep-2017	---	---	---	Dry
	18-Sep-2018	---	---	---	Dry
	17-Sep-2019	---	---	---	Dry
	21-Sep-2020	---	---	---	Dry
	22-Sep-2021	---	---	---	Dry
	29-Sep-2022	---	---	---	Dry
	28-Sep-2023	---	---	---	Dry

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
02-SH [Decommissioned]	04-Nov-1991	257	7.7	4.5	
	12-May-1992	256	7.41	4	
	03-Nov-1992	254	7.38	4	
	19-May-1993	210	7.31	3	
02-IN [Decommissioned]	16-May-1991	407	7.3	6.5	
	04-Nov-1991	420	7.41	4	
	03-Nov-1992	419	6.93	3.5	
	19-May-1993	371	6.94	4	
03-SH	16-May-1991	312	7.5	6	
	04-Nov-1991	376	7.72	5	
	12-May-1992	394	7.28	3.5	
	03-Nov-1992	337	7.35	4	
	18-May-1993	383	7.6	3	
	10-Nov-1993	347	6.99	2	
	31-May-1994	555	7.21	8	
	21-Sep-1994	555	7.6	11	
	01-Nov-1994	551	7.62	7	
	28-Sep-1995	519	7.34	8	
	04-Sep-1996	600	7.46	5.9	
	04-Sep-1997	612	7.37	6.1	
	15-Sep-1998	643	7.42	7.1	
	09-Sep-1999	654	7.48	10.2	
	06-Sep-2000	635	7.32	9.1	
	06-Sep-2001	676	7.74	9.4	
	06-Sep-2002	821	7.59	8.3	
	03-Sep-2003	721	7.42	10.2	
	09-Sep-2004	590	6.86	5.6	
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	648	7.33	9.6	
	07-Sep-2006	744	7.66	9.8	
	05-Sep-2007	561	7.1	9.9	
	03-Sep-2008	606	7.42	8.6	
	09-Sep-2009	817	7.36	9.7	
	08-Sep-2010	934	7.46	8.9	
	07-Sep-2011	895	7.2	17.9	
	05-Sep-2012	937	7.34	10.1	Clear
	26-Sep-2013	408	5.58	11.2	
	16-Sep-2014	769	7.21	13.9	
	28-Sep-2015	705	7.09	10.0	From protector
	28-Sep-2016	791	6.98	9.1	
	27-Sep-2017	769	7.04	11.24	Clear
	18-Sep-2018	664	7.13	6.86	Clear
	17-Sep-2019	500	7.33	9.19	Clear
	22-Sep-2020	725	7.18	10.20	Clear
	22-Sep-2021	750	7.17	9.69	Clear
	29-Sep-2022	565	7.20	8.27	Clear
	29-Sep-2023	893	7.27	8.60	Clear
	10-Sep-2024	712	7.09	13.90	Clear
03-IN	16-May-1991	640	7.1	6	
	04-Nov-1991	595	7.45	4	
	03-Nov-1992	587	7.02	4	
	18-May-1993	624	7.04	3	
	10-Nov-1993	549	6.72	4	
	21-Sep-1994	739	7.61	9	
	28-Sep-1995	821	6.96	6.5	
	04-Sep-1996	862	7.4	3.4	
	04-Sep-1997	837	7.33	5.9	
	15-Sep-1998	812	7.21	7	
	09-Sep-1999	842	7.27	7.2	
	06-Sep-2000	825	7.28	8.3	
	06-Sep-2001	817	7.42	6.1	
	04-Sep-2002	975	7.53	7.3	
	03-Sep-2003	838	7.65	9.9	
	09-Sep-2004	693	6.99	4.8	
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	818	7.37	7.8	
	07-Sep-2006	927	7.4	10.1	
	05-Sep-2007	709	7.12	8.6	
	03-Sep-2008	849	7.3	6.3	
	09-Sep-2009	868	7.25	8.1	
	08-Sep-2010	920	7.39	7.6	
	07-Sep-2011	882	7.02	13.2	
	05-Sep-2012	903	7.34	8.1	Clear
	26-Sep-2013	812	6.3	7.7	Clear
	16-Sep-2014	757	7.13	12.3	
	28-Sep-2015	767	7.77	7.7	From protector
	26-Sep-2016	830	7.01	7.0	
	27-Sep-2017	771	7.24	8.71	Clear
	18-Sep-2018	712	7.42	5.02	Clear
	17-Sep-2019	518	7.35	9.18	Clear
	22-Sep-2020	753	7.10	8.90	Clear
	22-Sep-2021	779	7.26	9.89	Clear
	29-Sep-2022	533	7.38	6.51	Clear
	29-Sep-2023	806	7.43	7.90	Clear
	10-Sep-2024	616	6.88	11.90	Clear

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
04-SH	05-Nov-1991	446	7.16	3	
	12-May-1992	424	7.33	4	
	03-Nov-1992	432	7.32	3	
	18-May-1993	404	7.57	2.5	
	10-Nov-1993	404	7	4	
	31-May-1994	587	7.01	5.5	
	21-Sep-1994	624	7.45	9	
	01-Nov-1994	621	7.45	7.5	
	28-Sep-1995	560	7.04	8	
	04-Sep-1996	648	7.17	4.4	
	03-Sep-1997	659	7.09	5.8	
	15-Sep-1998	644	7.13	7.5	
	09-Sep-1999	716	7.26	7.9	
	05-Sep-2000	630	6.99	9.2	
	06-Sep-2001	632	7.71	7.6	
	04-Sep-2002	761	7.04	7.9	
	03-Sep-2003	669	7.24	7.9	
	08-Sep-2004	610	6.86	5.6	
	25-Aug-2005	---	---	---	Water level only
	07-Sep-2005	627	7.07	10.8	
	07-Sep-2006	736	7.25	8.9	
	05-Sep-2007	544	6.18	8.7	
	03-Sep-2008	711	7.57	8.1	
	09-Sep-2009	708	7.39	8.9	
	08-Sep-2010	677	7.3	8.2	
	07-Sep-2011	659	7.17	11	
	05-Sep-2012	720	7.38	8.6	Clear
	26-Sep-2013	674	5.93	9	Clear
	17-Sep-2014	646	7.2	12.3	
	28-Sep-2015	669	8.46	8.0	Clear
	26-Sep-2016	798	6.95	7.8	Clear
	27-Sep-2017	772	7.08	7.93	Clear
	17-Sep-2018	689	6.28	5.76	Clear
	17-Sep-2019	483	7.07	7.34	Clear
	22-Sep-2020	760	7.18	8.80	Clear
	22-Sep-2021	749	7.18	10.56	Clear
	29-Sep-2022	498	7.16	7.18	Clear
	29-Sep-2023	736	7.15	6.70	Clear
	10-Sep-2024	540	7.06	10.70	Clear
04-IN	15-May-1991	440	7.05	6.5	
	05-Nov-1991	386	7.21	3	
	03-Nov-1992	401	7.1	3.5	
	18-May-1993	423	7.55	4.5	
	10-Nov-1993	432	7.35	3	
	21-Sep-1994	644	7.7	7	
	04-Sep-1996	685	7.29	3.2	
	03-Sep-1997	699	7.31	5.1	
	15-Sep-1998	703	7.25	7.3	
	09-Sep-1999	580	7.75	8.2	
	05-Sep-2000	603	7.13	7.9	
	06-Sep-2001	634	7.66	7.1	
	04-Sep-2002	770	7.23	8.2	
	03-Sep-2003	---	---	---	Dry
	08-Sep-2004	---	---	---	Dry
	25-Aug-2005	---	---	---	Water level only, little water
	07-Sep-2005	662	7.2	11	
	07-Sep-2006	---	---	---	Dry
	05-Sep-2007	542	6.47	8.4	No PCB sample
	03-Sep-2008	---	---	---	Insufficient water for field parameters
	09-Sep-2009	---	---	---	Dry
	08-Sep-2010	718	7.72	8.3	
	07-Sep-2011	---	---	---	Not enough water
	05-Sep-2012	---	---	---	Insufficient water for field parameters
	26-Sep-2013	---	---	---	Dry
	17-Sep-2014	596	7.06	9	
	28-Sep-2015	649	8.18	5.5	Clear
	26-Sep-2016	739	6.91	8.1	Clear
	27-Sep-2017	724	7.08	6.96	Clear
	17-Sep-2018	666	6.94	4.63	Clear
	17-Sep-2019	439	7.16	6.55	Clear
	22-Sep-2020	722	7.04	7.6	Piezometer dry/damaged
	22-Sep-2021	732	7.11	9.01	Clear
	29-Sep-2022	453	7.23	5.41	Clear
	29-Sep-2023	697	7.22	5.70	Clear
	10-Sep-2024	456	7.02	6.50	Clear
04-SS	03-Nov-1992	238	7.14	4	
	06-Sep-2001	563	7.86	12.6	
	04-Sep-2002	---	---	---	Dry
	03-Sep-2003	---	---	---	Dry
	08-Sep-2004	---	---	---	---
	07-Sep-2005	608	7.02	10.1	
	07-Sep-2006	---	---	---	Dry
	29-Aug-2007	---	---	---	Dry
	03-Sep-2008	---	---	---	Dry
	09-Sep-2009	---	---	---	Dry
	08-Sep-2010	---	---	---	Dry
	23-Aug-2012	---	---	---	Dry
	25-Sep-2013	575	5.06	7.8	Clear
	16-Sep-2014	598	6.8	6.4	
	28-Sep-2015	605	8.17	5.8	
	27-Sep-2016	682	6.97	4.6	
	26-Sep-2017	670	7.04	9.21	Clear
	17-Sep-2018	605	7.23	3.86	Clear
	17-Sep-2019	406	6.81	6.26	Clear
	22-Sep-2020	657	6.81	8.40	
	22-Sep-2021	667	7.08	7.13	
	29-Sep-2022	430	6.92	5.86	
	29-Sep-2023	---	---	---	Dry
	10-Sep-2024	439	6.96	8	Clear

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
05-SH	16-May-1991	293	7.41	5	
	04-Nov-1991	287	7.33	3	
	12-May-1992	361	7.45	3.5	
	03-Nov-1992	431	7.41	2.5	
	10-Nov-1993	456	7.31	2	
	31-May-1994	752	7.28	5.5	
	21-Sep-1994	833	7.35	8	
	01-Nov-1994	831	7.33	7	
	28-Sep-1995	788	7.1	5.5	
	04-Sep-1996	935	7.11	3.9	
	03-Sep-1997	849	7.27	4.9	
	16-Sep-1998	904	7.22	7.6	
	09-Sep-1999	1052	7.23	8.2	
	06-Sep-2000	995	7.04	7.6	
	06-Sep-2001	964	7.52	9.4	
	04-Sep-2002	1115	7.36	8.7	
	03-Sep-2003	1008	7.08	9.8	
	08-Sep-2004	817	6.33	4.8	
	25-Aug-2005	---	---	---	Blocked
	07-Sep-2005	890	6.86	10.4	
	07-Sep-2006	---	---	---	Blocked
	05-Sep-2007	914	6.82	9.7	
	05-Sep-2008	---	---	---	Insufficient water for field parameters
	09-Sep-2009	1127	7.03	10.7	
	08-Sep-2010	1138	7.35	9	
	07-Sep-2011	923	7.05	18	
	05-Sep-2012	1139	7.45	11.1	Clear
	26-Sep-2013	1041	6.59	8.9	Clear
	17-Sep-2014	955	6.94	12.6	
	28-Sep-2015	949	7.89	7.9	
	28-Sep-2016	1149	6.9	6.2	
	27-Sep-2017	1110	7.01	8.74	Clear
	17-Sep-2018	996	6.54	5.31	Clear
	17-Sep-2019	695	7.07	7.81	Clear
	22-Sep-2020	1107	6.85	7.90	
	22-Sep-2021	1097	6.93	8.29	
	29-Sep-2022	730	6.93	6.88	
	28-Sep-2023	930	7.12	8.60	
	10-Sep-2024	713	6.86	8.30	
05-IN	16-May-1991	293	7.41	5	
	06-Nov-1991	411	7.26	4	
	12-May-1992	514	7.76	4	
	03-Nov-1992	515	7.08	3	
	18-May-1993	583	7.55	2.5	
	10-Nov-1993	611	6.39	2	
	21-Sep-1994	730	7.79	6	
	28-Sep-1995	864	7.22	5	
	04-Sep-1996	1012	7.09	2.4	
	03-Sep-1997	939	7.08	3.9	
	16-Sep-1998	1001	7.11	6.8	
	09-Sep-1999	1115	7.25	6.4	
	06-Sep-2000	1050	7.05	7.6	
	06-Sep-2001	1040	7.45	5.9	
	04-Sep-2002	1248	7.28	5.7	
	03-Sep-2003	1087	7.27	7.9	
	08-Sep-2004	910	6.49	4	
	25-Aug-2005	---	---	---	Water level only
	07-Sep-2005	1105	6.89	9.8	
	07-Sep-2006	736	7.14	6.8	
	05-Sep-2007	952	6.94	9	
	05-Sep-2008	1130	7.31	7.6	
	09-Sep-2009	1174	7.01	9.1	
	08-Sep-2010	1191	7.16	6.7	
	07-Sep-2011	1145	7.02	14.5	
	05-Sep-2012	1189	7.13	7.5	Clear
	26-Sep-2013	1103	6.8	7	Clear
	17-Sep-2014	982	6.86	10.4	
	28-Sep-2015	1024	8.00	6.6	Clear
	28-Sep-2016	1233	6.20	5.5	Clear
	27-Sep-2017	1222	6.98	6.41	Clear
	17-Sep-2018	1092	6.19	4.00	Clear
	17-Sep-2019	692	7.12	6.77	Clear
	22-Sep-2020	1151	6.96	8.10	Pizeometer dry/damaged
	22-Sep-2021	1111	7.32	9.10	
	29-Sep-2022	761	6.96	6.46	
	28-Sep-2023	1183	7.02	7.90	
	10-Sep-2024	785	6.91	9.80	
05-SS	10-Sep-2004	398	6.4	3.6	
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	417	6.85	13.2	
	07-Sep-2007	515	6.79	5.8	
	04-Sep-2008	424	7.55	7.2	
	17-Sep-2009	420	7.28	6.5	
	09-Sep-2010	438	7.13	6.9	
	08-Sep-2011	429	6.68	11.2	
	05-Sep-2012	---	---	---	Table
	26-Sep-2013	---	---	---	Unable to sample - sampling tube is lealing in the well
	16-Sep-2014	412	6.93	6.3	
	28-Sep-2015	441	8.42	5.2	
	28-Sep-2016	479	6.95	4.2	
	27-Sep-2017	455	7.02	7.02	Clear
	17-Sep-2018	412	7.00	3.09	Clear
	17-Sep-2019	270	6.91	6.00	Clear
	23-Sep-2020	460	6.81	5.40	
	22-Sep-2021	444	7.09	6.76	
	29-Sep-2022	297	7.03	7.22	
	29-Sep-2023	443	7.56	5.70	
	10-Sep-2024	318	7.03	10.90	

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
06-SH	12-May-1992	474	7.3	5	
	21-Sep-1994	922	7.32	11	
	01-Nov-1994	911	7.3	7	
	28-Sep-1995	843	6.94	8	
	04-Sep-1996	873	7.12	2.4	
	03-Sep-1997	894	7.27	3.8	
	15-Sep-1998	862	7.19	6.6	
	09-Sep-1999	1153	6.85	9.6	Adjacent piezo 6SH blocked
	05-Sep-2000	1036	6.8	9	Adjacent piezo 6SH blocked
	06-Sep-2001	1084	6.95	8.7	Adjacent piezo 6SH blocked
	04-Sep-2002	1273	7	8.6	Adjacent piezo 6SH blocked
	03-Sep-2003	1171	6.74	8.1	
	08-Sep-2004	949	6.49	4.8	
	25-Aug-2005	---	---	---	Water level only
	07-Sep-2005	1103	6.67	11.4	
	07-Sep-2006	1144	7.02	9.9	
	05-Sep-2007	951	6.29	10.7	
	03-Sep-2008	997	6.96	8.6	
	09-Sep-2009	1045	7.02	10.6	
	08-Sep-2010	1028	7.07	9	
	07-Sep-2011	958	6.94	16.1	
	05-Sep-2012	990	7.06	10.2	Clear
	25-Sep-2013	918	6.4	8.8	Slightly cloudy
	17-Sep-2014	768	6.76	11.3	
	29-Sep-2015	766	7.35	9.3	Clear
	28-Sep-2016	969	6.68	6.6	Clear
	26-Sep-2017	958	6.81	9.10	Clear
	17-Sep-2018	837	7.07	6.63	Clear
	17-Sep-2018	837	7.07	6.63	Clear
	17-Sep-2019	609	6.89	8.97	Clear
	22-Sep-2020	913	6.9	10.80	
	22-Sep-2021	914	6.86	10.61	
	28-Sep-2022	707	6.79	12.23	Slightly cloudy
	29-Sep-2023	863	7.01	8.00	
	10-Sep-2024	632	6.78	9.50	
06-IN [Decommissioned]	15-May-1991	544	7.21	6	
	05-Nov-1991	539	7.12	4	
	12-May-1992	593	7.4	4.5	
	03-Nov-1992	616	7.01	3	
	18-May-1993	560	7.74	2	
	10-Nov-1993	612	7.39	4	
	21-Sep-1994	756	7.79	10	
	28-Sep-1995	816	7.36	6	
	04-Sep-1996	1004	6.81	5.1	
	03-Sep-1997	1012	6.59	5	
	15-Sep-1998	989	6.89	6.8	
	09-Sep-1999	955	7.23	6.8	
	05-Sep-2000	835	7.01	8	
	06-Sep-2001	824	7.19	7.8	
	04-Sep-2002	1002	6.98	7.6	
	03-Sep-2003	928	7.4	8.5	
	08-Sep-2004	693	6.91	4.4	
	25-Aug-2005	---	---	---	Water level only
	07-Sep-2005	870	7	9.7	
	07-Sep-2006	933	7.35	8	
	05-Sep-2007	---	---	---	No sample, did not recover
	03-Sep-2008	875	7.64	6.3	
	09-Sep-2009	896	7.24	8.4	
	08-Sep-2010	852	7.54	7.8	
	07-Sep-2011	709	7.2	17.4	
	05-Sep-2012	864	7.4	8.1	Pump airlines leaking
	25-Sep-2013	863	6.62	7.1	Clear
06(R)IN	17-Sep-2014	735	6.95	10.3	Slightly silty
	29-Sep-2015	816	7.32	8.8	Slightly silty, light brown and sulphur odour
	28-Sep-2016	1010	6.85	5.8	Slightly silty
	26-Sep-2017	1032	7.37	7.0	Cloudy grey/brown
	17-Sep-2018	893	7.02	5.7	Cloudy grey/brown
	17-Sep-2019	607	7.13	7.6	Cloudy grey/brown
	22-Sep-2020	935	6.99	9.1	
	22-Sep-2021	940	7.03	7.9	
	28-Sep-2022	690	6.98	11.52	Cloudy grey/brown
	29-Sep-2023	883	7.09	7.70	
	10-Sep-2024	672	6.85	10.1	

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
07-SH	15-May-1991	487	7.17	9	
	05-Nov-1991	546	7.38	4	
	12-May-1992	670	7.1	5	
	03-Nov-1992	413	6.98	4	
	20-May-1993	501	7.14	2.5	
	10-Nov-1993	500	7.02	4.5	
	31-May-1994	744	6.98	5	
	21-Sep-1994	803	7.27	7	
	02-Nov-1994	793	7.21	7	
	28-Sep-1995	690	7.23	6	
	04-Sep-1996	741	6.98	4.1	
	03-Sep-1997	753	7.01	4	
	15-Sep-1998	786	6.99	7	
	09-Sep-1999	901	7.13	7.8	
	05-Sep-2000	930	6.59	9.1	
	06-Sep-2001	840	6.48	7.5	
	04-Sep-2002	1046	6.6	7.7	
	03-Sep-2003	936	7.15	8.8	
	08-Sep-2004	787	6.35	3.6	
	25-Aug-2005	---	---	---	Water level only
	07-Sep-2005	971	6.8	9.8	
	07-Sep-2006	1038	7.12	9.6	
	05-Sep-2007	888	6.21	10.6	
	03-Sep-2008	1063	7.36	11	
	09-Sep-2009	1055	7.14	8.3	
	08-Sep-2010	1050	7.14	7.7	
	07-Sep-2011	916	7.02	14	
	05-Sep-2012	1081	7.13	8.6	Clear
	26-Sep-2013	1035	6.4	7.2	Clear
	17-Sep-2014	900	6.99	11.6	
	29-Sep-2015	970	7.3	8.2	Clear
	27-Sep-2016	1221	6.77	7.0	Clear
	26-Sep-2017	1228	7.06	8.17	Clear
	17-Sep-2018	1107	7.42	6.01	Clear
	16-Sep-2019	783	6.97	9.05	Clear
	22-Sep-2020	1358	6.85	9.20	
	22-Sep-2021	1367	6.95	12.05	
	28-Sep-2022	789	6.61	8.20	
	29-Sep-2023	1439	7.02	8.40	
	10-Sep-2024	1034	6.77	8.90	
07-IN	15-May-1991	494	7.2	8	
	06-Nov-1991	520	7.34	5	
	12-May-1992	459	7.73	4.5	
	03-Nov-1992	458	6.93	4	
	20-May-1993	468	7.17	4	
	10-Nov-1993	470	7.22	3.5	
	21-Sep-1994	796	7.37	6	
	28-Sep-1995	607	7.41	5	
	04-Sep-1996	802	7.03	2.5	
	03-Sep-1997	812	7.09	3.7	
	15-Sep-1998	832	7.11	6.2	
	09-Sep-1999	800	7.11	8	
	05-Sep-2000	755	7.04	8.1	
	06-Sep-2001	712	7.44	6.2	
	04-Sep-2002	869	6.99	6.8	
	03-Sep-2003	753	7.33	6	
	08-Sep-2004	611	6.51	4.3	
	25-Aug-2005	---	---	---	Water level only
	07-Sep-2005	772	7.05	9.6	
	07-Sep-2006	816	7.39	8.7	
	05-Sep-2007	743	6.41	9.8	
	03-Sep-2008	763	7.41	7.1	
	09-Sep-2009	773	7.13	8.5	
	08-Sep-2010	795	7.34	7.5	
	07-Sep-2011	767	7.03	13.1	
	05-Sep-2012	798	7.23	7.8	Clear
	26-Sep-2013	728	6.63	6.6	Clear, slight slough odour
	17-Sep-2014	639	6.97	10.6	
	29-Sep-2015	640	7.69	7.6	Clear
	27-Sep-2016	789	7.13	5.3	Clear
	26-Sep-2017	783	7.19	8.76	Clear
	17-Sep-2018	680	7.44	5.02	Cloudy
	16-Sep-2019	487	7.24	8.04	Cloudy
	22-Sep-2020	772	6.97	6.3	
	22-Sep-2021	753	7.21	10.2	
	28-Sep-2022	519	7.16	8.13	Cloudy
	29-Sep-2023	720	7.25	7.60	
	10-Sep-2024	489	7.12	8.20	
07-SS	15-May-1991	491	6.8	8	
	05-Nov-1991	480	7.74	4	
	14-May-1992	711	7.82	5.5	
	03-Nov-1992	458	6.99	3.5	
	28-Sep-1995	566	7.06	5	
	04-Sep-1996	607	8.11	2.3	
	03-Sep-1997	585	7.89	3.1	
	04-Oct-1998	839	7.21	4.8	
	09-Sep-1999	712	8.05	6.7	
	05-Sep-2000	697	7.64	8.1	
	06-Sep-2001	658	7.41	7.1	
	04-Sep-2002	793	6.99	6.6	
	03-Sep-2003	694	8.13	9.4	
	08-Sep-2004	544	6.88	2.8	Very little water
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	---	---	---	Dry
	05-Sep-2007	---	---	---	No sample, no water on purging
	03-Sep-2008	---	---	---	Damaged, dry
	09-Sep-2009	---	---	---	Dry
	08-Sep-2010	---	---	---	Dry
	23-Aug-2012	---	---	---	Dry
	26-Sep-2013	---	---	---	Not sampled - No bladder pump

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
07(R)SS	16-Sep-2014	805	6.96	6.1	
	29-Sep-2015	712	7.54	7.4	Clear
	27-Sep-2016	904	7.04	4.7	Clear
	26-Sep-2017	802	7.21	8.79	Clear
	17-Sep-2018	668	7.12	5.16	Clear
	16-Sep-2019	509	7.28	9.03	Clear
	23-Sep-2020	740	6.89	5.30	
	22-Sep-2021	724	7.50	12.18	
	28-Sep-2022	515	7.11	9.08	
	29-Sep-2023	743	7.51	6.90	
	10-Sep-2024	488	7.28	8.40	
08-SH	13-May-1992	511	7.56	4.5	
	03-Nov-1992	380	7.7	3.5	
	19-May-1993	320	7.24	2	
	12-Nov-1993	376	7.52	3	
	31-May-1994	621	7.01	6	
	22-Sep-1994	557	7.54	8	
	02-Nov-1994	548	7.57	7	
	28-Sep-1995	505	7.37	6.5	
	05-Sep-1996	556	7.43	3.8	
	05-Sep-1997	545	7.31	4.3	
	15-Sep-1998	576	7.33	6.3	
	09-Sep-1999	567	7.61	7.9	
	06-Sep-2000	528	7.36	7.4	
	06-Sep-2001	420	6.99	7.1	
	05-Sep-2002	723	6.77	7.1	
	04-Sep-2003	594	7.5	7	
	09-Sep-2004	436	7.17	4.4	Very little water
	26-Aug-2005	---	---	---	Water level only
	08-Sep-2005	540	7.33	9.7	
	07-Sep-2006	647	7.61	8.6	
	05-Sep-2007	470	7.39	9.5	
	03-Sep-2008	510	7.47	7.6	
	09-Sep-2009	579	7.37	7.8	
	08-Sep-2010	582	7.47	7.4	
	08-Sep-2011	565	7.22	13.3	
	05-Sep-2012	562	7.67	9.4	Clear
	26-Sep-2013	562	6.86	9.9	
	16-Sep-2014	995	7.49	11.2	
	29-Sep-2015	527	7.81	9.1	Clear
	27-Sep-2016	636	7.16	8.3	Clear
	26-Sep-2017	441	7.31	8.40	Clear
	17-Sep-2018	581	6.71	6.56	Clear
	16-Sep-2019	383	7.50	10.63	Clear
	22-Sep-2020	652	7.54	11.50	
	22-Sep-2021	545	7.94	14.40	
	28-Sep-2022	546	7.15	13.76	
	27-Sep-2023	805	6.45	12.20	
	11-Sep-2024	529	7.26	12.10	
08-IN	17-May-1991	704	7.17	9	
	05-Nov-1991	559	8.08	3	
	03-Nov-1992	435	7.28	4.5	
	19-May-1993	602	6.95	4	
	12-Nov-1993	641	7.19	4	
	22-Sep-1994	809	7.26	7.5	
	28-Sep-1995	705	7.32	5	
	05-Sep-1996	890	7.14	1.9	
	05-Sep-1997	737	7.11	2.7	
	15-Sep-1998	789	7.17	6.3	
	09-Sep-1999	842	7.57	6.4	
	06-Sep-2000	785	7.42	6.6	
	06-Sep-2001	---	---	---	Not measured
	05-Sep-2002	997	6.59	5.7	
	04-Sep-2003	881	7.58	5.8	
	09-Sep-2004	795	7.15	5.2	
	26-Aug-2005	---	---	---	Water level only
	08-Sep-2005	822	7.17	8.2	
	07-Sep-2006	896	7.52	7.1	
	05-Sep-2007	710	7.29	8.9	
	03-Sep-2008	800	7.31	6	
	09-Sep-2009	861	7.35	7.5	
	08-Sep-2010	830	7.32	5.7	
	08-Sep-2011	822	6.95	12.9	
	05-Sep-2012	843	7.31	7.7	Clear
	26-Sep-2013	776	6.76	6.9	
	16-Sep-2014	853	7.24	10.5	Slightly cloudy, low volume
	29-Sep-2015	720	7.98	7.4	Clear
	27-Sep-2016	878	7.25	6.0	Clear
	26-Sep-2017	616	7.35	10.40	Clear
	17-Sep-2018	762	7.60	4.41	Clear
	16-Sep-2019	541	7.22	8.54	Clear
	22-Sep-2020	837	7.03	7.60	
	22-Sep-2021	819	7.44	10.09	
	28-Sep-2022	562	6.92	7.31	
	27-Sep-2023	793	6.96	11.00	
	11-Sep-2024	541	7.08	7.80	

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
08-SS	17-May-1991	438	6.95	7	
	03-Nov-1992	684	6.93	3.5	
	12-Nov-1993	371	7.03	6	
	22-Sep-1994	547	7.84	8	
	28-Sep-1995	497	7.44	4	
	04-Oct-1998	503	8.09	6.1	
	09-Sep-1999	555	8.23	6.2	
	06-Sep-2001	---	---	---	Insufficient water
	05-Sep-2002	---	---	---	Insufficient water
	04-Sep-2003	555	8.21	8.2	Dry
	09-Sep-2004	505	7.7	4	Dry
	26-Aug-2005	---	---	---	Dry
	08-Sep-2005	---	---	---	Dry
	05-Sep-2007	---	---	---	Dry
	03-Sep-2008	---	---	---	Dry
	09-Sep-2009	---	---	---	Dry
	08-Sep-2010	---	---	---	Dry
	22-Aug-2012	---	---	---	Dry
	26-Sep-2013	---	---	---	Not Sampled - Insufficient water
	16-Sep-2014	---	---	---	Dry
	29-Sep-2015	---	---	---	Dry and Damaged
	27-Sep-2016	---	---	---	Dry and Damaged
	26-Sep-2017	---	---	---	Dry and Damaged
	17-Sep-2018	---	---	---	Damaged
	16-Sep-2019	---	---	---	Damaged
	22-Sep-2020	---	---	---	Dry
	22-Sep-2021	---	---	---	Damaged
	28-Sep-2022	---	---	---	Damaged
	28-Sep-2023	---	---	---	Damaged
09-SH [Decommissioned]	06-Nov-1991	194	7.71	3.5	
	12-May-1992	411	7.79	4	
	31-Aug-1992	371	7.29	7	
09-IN [Decommissioned]	16-May-1991	556	7.2	7	
	06-Nov-1991	326	7.71	4	
	31-Aug-1992	566	6.99	6.5	
10-SH [Decommissioned]	17-May-1991	538	7.1	5	
	12-May-1992	629	6.86	3	
	01-Sep-1992	429	7.39	7.5	
10-IN [Decommissioned]	17-May-1991	360	7.03	4	
	06-Nov-1991	591	7.9	4	
	12-May-1992	546	7.24	4	
	01-Sep-1992	569	7.17	7.5	
11-SH	17-May-1991	523	6.95	5.5	
	04-Nov-1991	463	7.05	5	
	12-May-1992	611	6.8	3	
	04-Nov-1992	546	7.43	4.5	
	18-May-1993	488	6.9	3.5	
	11-Nov-1993	472	7.24	3	
	22-Sep-1994	672	7.33	7	
	02-Nov-1994	654	7.3	7	
	28-Sep-1995	617	7	6.5	
	05-Sep-1996	686	7.13	1.8	
	05-Sep-1997	653	7.11	4.1	
	15-Sep-1998	700	7.13	6	
	09-Sep-1999	742	7.18	8	
	06-Sep-2000	702	6.38	7.7	
	06-Sep-2001	593	7.52	7.5	
	05-Sep-2002	908	6.94	6.3	
	03-Sep-2003	786	7.34	7.4	
	08-Sep-2004	634	6.25	4.3	
	26-Aug-2005	---	---	---	Water level only
	07-Sep-2005	726	6.88	9.3	
	07-Sep-2006	748	7.31	8	
	06-Sep-2007	764	6.79	7.2	
	04-Sep-2008	727	7.25	6.5	Gas valve leaking at connection
	10-Sep-2009	760	6.63	10.7	
	09-Sep-2010	819	7.14	7	
	08-Sep-2011	812	6.9	14	
	06-Sep-2012	868	7.04	8.7	Clear
	26-Sep-2013	709	5.88	6.9	Yellowish-green colour
	17-Sep-2014	705	7.48	11.5	
	29-Sep-2015	766	6.75	7.2	Clear
	27-Sep-2016	937	6.58	6.4	Clear
	27-Sep-2017	945	6.90	6.17	Clear
	18-Sep-2018	863	5.37	4.88	Clear
	17-Sep-2019	585	6.78	6.40	Clear
	21-Sep-2020	1007	6.75	6.8	
	22-Sep-2021	949	6.98	6.9	
	29-Sep-2022	627	6.81	5.38	
	28-Sep-2023	1038	6.97	8.20	
	11-Sep-2024	727	6.83	7.30	

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
11-IN	17-May-1991	470	7.01	8.5	
	04-Nov-1991	438	7.04	4	
	12-May-1992	510	7.54	4	
	18-May-1993	440	7.54	3	
	11-Nov-1993	430	7.02	4	
	22-Sep-1994	628	7.5	6	
	28-Sep-1995	605	7.18	5	
	05-Sep-1996	709	7.34	1.1	
	05-Sep-1997	681	7.21	2.9	
	16-Sep-1998	643	7.31	6.2	
	09-Sep-1999	721	7.32	7.3	
	06-Sep-2000	605	6.8	6.9	
	06-Sep-2001	512	7.31	5.9	
	05-Sep-2002	806	6.8	5.9	
	03-Sep-2003	668	7.64	10.9	
	08-Sep-2004	532	6.53	4.4	
	26-Aug-2005	---	---	---	Water level only
	07-Sep-2005	656	7.13	10.5	
	07-Sep-2006	703	7.27	8.7	
	06-Sep-2007	656	7.12	7	
	04-Sep-2008	529	7.37	6.3	
	10-Sep-2009	713	7.1	7.4	
	09-Sep-2010	715	7.28	7.2	
	08-Sep-2011	686	7.17	12.5	
	06-Sep-2012	702	7.32	7.6	Clear
	26-Sep-2013	688	5.7	6.5	Clear
	17-Sep-2014	674	7.61	8.2	
	29-Sep-2015	655	7.22	5.6	Clear
	27-Sep-2016	747	7.04	6.7	Clear
	27-Sep-2017	764	7.07	5.30	Clear
	18-Sep-2018	668	6.73	4.07	Clear
	17-Sep-2019	440	6.90	5.36	Clear
	21-Sep-2020	753	6.72	5.80	
	22-Sep-2021	692	7.10	7.33	
	29-Sep-2022	471	7.03	5.67	
	28-Sep-2023	1081	6.80	8.00	
	11-Sep-2024	486	7.15	7.10	
11-SS	17-May-1991	325	7.01	7.5	
	12-May-1992	395	6.97	4.5	
	06-Sep-2001	---	---	---	Insufficient water
	05-Sep-2002	---	---	---	Insufficient water
	03-Sep-2003	---	---	---	Dry
	08-Sep-2004	---	---	---	Dry
	25-Aug-2005	---	---	---	Insufficient water
	07-Sep-2005	---	---	---	Dry
	05-Sep-2007	---	---	---	Dry
	04-Sep-2008	---	---	---	Dry
	10-Sep-2009	---	---	---	Dry
	09-Sep-2010	---	---	---	Dry
	22-Aug-2012	---	---	---	Dry
	26-Sep-2013	---	---	---	Unable to sample due to leak in air tube on well assembly.
	17-Sep-2014	---	---	---	Dry
	29-Sep-2015	---	---	---	Dry
	27-Sep-2016	---	---	---	Dry
	27-Sep-2017	---	---	---	Dry
	18-Sep-2018	---	---	---	Damaged
	17-Sep-2019	---	---	---	Damaged
	21-Sep-2020	---	---	---	Insufficient water
	22-Sep-2021	---	---	---	Damaged
	29-Sep-2022	---	---	---	Damaged
	28-Sep-2023	---	---	---	Damaged
12-SH	17-May-1991	306	7.2	7.5	
	12-May-1992	328	6.93	4	
	04-Nov-1992	279	7.37	2.5	
	18-May-1993	278	6.82	4.5	
	11-Nov-1993	294	7.41	4	
	31-May-1994	412	7.42	7.5	
	22-Sep-1994	431	7.87	6.5	
	01-Nov-1994	451	7.8	7	
	28-Sep-1995	384	6.95	7	
	05-Sep-1996	422	7.54	4.1	
	05-Sep-1997	413	7.37	4	
	16-Sep-1998	431	7.43	6.1	
	09-Sep-1999	421	7.74	10	
	06-Sep-2000	448	7.4	9.4	
	06-Sep-2001	348	7.59	8	
	04-Sep-2002	553	7.81	9.1	
	04-Sep-2003	569	7.62	7.7	
	09-Sep-2004	408	7.11	4.3	
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	526	7.45	10.7	
	06-Sep-2006	553	7.6	9.3	
	07-Sep-2007	539	7.49	5.2	
	05-Sep-2008	554	7.4	8.5	
	10-Sep-2009	555	7.48	11	
	09-Sep-2010	559	7.84	8.7	
	07-Sep-2011	543	7.42	13.8	
	05-Sep-2012	590	7.57	9.7	Clear
	26-Sep-2013	561	6.42	10	
	17-Sep-2014	525	7.33	13.1	
	29-Sep-2015	538	7.45	8.4	Clear
	27-Sep-2016	638	7.1	9.2	Clear
	27-Sep-2017	624	7.39	9.81	Clear
	18-Sep-2018	563	6.72	6.59	Clear
	16-Sep-2019	471	7.40	9.16	Clear
	22-Sep-2020	622	7.37	7	
	22-Sep-2021	631	7.31	9.72	
	28-Sep-2022	485	7.35	10.49	
	28-Sep-2023	671	7.61	10.70	
	11-Sep-2024	459	7.22	7.30	

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
12-IN	17-May-1991	431	7.11	8	
	04-Nov-1991	368	7.37	5	
	12-May-1992	460	7.23	4	
	04-Nov-1992	459	7.48	4	
	18-May-1993	413	7.48	4.5	
	11-Nov-1993	427	6.91	4	
	21-Sep-1994	687	7.75	7	
	28-Sep-1995	502	6.97	7	
	05-Sep-1996	656	7.5	2.9	
	05-Sep-1997	621	7.37	3.8	
	16-Sep-1998	646	7.42	6.7	
	09-Sep-1999	539	7.59	7.6	
	06-Sep-2000	627	7.29	9.8	
	06-Sep-2001	474	7.65	8	
	04-Sep-2002	770	7.69	7.6	
	04-Sep-2003	707	7.72	8.3	
	08-Sep-2004	519	7.23	6.8	
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	710	7.18	10.6	
	06-Sep-2006	702	7.4	8.9	
	07-Sep-2007	682	7.45	8.5	
	05-Sep-2008	680	7.18	7.5	
	11-Sep-2009	709	7.15	9.5	
	09-Sep-2010	699	7.45	7.5	
	07-Sep-2011	511	7.31	11.9	
	06-Sep-2012	562	7.44	8.9	Clear
	26-Sep-2013	---	---	---	Unable to sample due to equipment attached to well and different fitting
	17-Sep-2014	567	7.15	11.8	
	29-Sep-2015	622	7.49	7.0	Clear
	27-Sep-2016	754	7.15	7.1	Clear
	27-Sep-2017	728	7.20	7.68	Clear
	18-Sep-2018	647	6.34	5.03	Clear
	16-Sep-2019	440	7.34	8.70	Clear
	22-Sep-2020	681	7.31	7.10	Clear
	22-Sep-2021	699	7.24	9.90	Clear
	28-Sep-2022	491	7.04	7.90	Clear
	28-Sep-2023	685	7.42	10.10	Clear
	11-Sep-2024	470	7.28	11.00	Clear
12-SS	06-Sep-2001	---	---	---	Dry
	04-Sep-2002	---	---	---	Dry
	04-Sep-2003	---	---	---	Dry
	08-Sep-2004	---	---	---	Dry
	25-Aug-2005	---	---	---	Dry
	08-Sep-2005	---	---	---	Dry
	06-Sep-2006	---	---	---	Dry
	07-Sep-2007	---	---	---	Dry
	05-Sep-2008	---	---	---	Dry
	11-Sep-2009	---	---	---	Dry
	09-Sep-2010	---	---	---	Dry
	22-Aug-2012	---	---	---	Dry
	26-Sep-2013	---	---	---	Dry
	17-Sep-2014	---	---	---	Dry
	29-Sep-2015	---	---	---	Dry
	27-Sep-2016	---	---	---	Dry
	27-Sep-2017	---	---	---	Dry
	18-Sep-2018	---	---	---	Dry
	16-Sep-2019	---	---	---	Dry
	22-Sep-2020	---	---	---	Dry
	22-Sep-2021	---	---	---	Dry
	28-Sep-2022	---	---	---	Dry
	28-Sep-2023	---	---	---	Dry

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
13-SH	04-Nov-1991	399	7.65	4	
	12-May-1992	384	7.47	4	
	04-Nov-1992	379	6.69	2.5	
	18-May-1993	219	7.33	3	
	11-Nov-1993	311	7.25	3	
	31-May-1994	475	7.37	8	
	22-Sep-1994	433	7.75	10	
	01-Nov-1994	430	7.74	7	
	28-Sep-1995	485	7.31	9	
	04-Sep-1996	557	7.55	5.2	
	04-Sep-1997	531	7.33	5.1	
	16-Sep-1998	548	7.47	6	
	09-Sep-1999	1218	7.21	11.2	
	06-Sep-2000	1192	7.24	9.9	
	06-Sep-2001	1187	7.28	10.1	
	04-Sep-2002	1354	7.39	10.5	
	04-Sep-2003	1148	7.01	9.1	
	09-Sep-2004	868	6.89	6.4	
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	1028	7.02	11.3	
	07-Sep-2006	1038	7.23	11.5	
	05-Sep-2007	848	7.07	11.3	
	03-Sep-2008	938	7.16	10	Frost heave, can't close lid
	10-Sep-2009	1042	6.76	11.3	
	08-Sep-2010	948	7.23	9.1	
	07-Sep-2011	736	7.11	17.3	
	05-Sep-2012	807	7.35	12	Clear
	26-Sep-2013	721	5.81	12.5	Slightly cloudy
	16-Sep-2014	919	7.24	15.4	Slightly silty
	28-Sep-2015	815	7.31	10.0	Slightly cloudy
	26-Sep-2016	866	6.96	9.5	Slightly cloudy
	27-Sep-2017	835	7.11	9.91	Clear
	18-Sep-2018	711	6.98	6.95	Slightly cloudy
	16-Sep-2019	527	7.09	9.28	Slightly cloudy
	22-Sep-2020	795	7.29	9.4	
	21-Sep-2021	722	7.57	15.6	
	29-Sep-2022	570	7.51	12.11	Cloudy - brown tint
	27-Sep-2023	937	7.13	9.80	
	10-Sep-2024	780	6.88	14.10	
13-IN	17-May-1991	336	7.24	6	
	04-Nov-1991	488	7.58	4	
	12-May-1992	463	7.2	3.5	
	04-Nov-1992	473	6.99	3	
	18-May-1993	402	7.11	6	
	11-Nov-1993	377	6.88	4	
	22-Sep-1994	631	7.58	8	
	28-Sep-1995	564	7.64	7.5	
	04-Sep-1996	447	9.22	2.3	
	04-Sep-1997	457	7.84	3.7	
	16-Sep-1998	468	7.78	6.2	
	09-Sep-1999	694	7.33	6.3	
	06-Sep-2000	620	7.18	9	Adjacent piezo 13IN blocked
	06-Sep-2001	639	7.39	7.2	Adjacent piezo 13IN blocked
	04-Sep-2002	795	7.75	7.1	Adjacent piezo 13IN blocked
	04-Sep-2003	730	6.83	6.9	
	09-Sep-2004	531	6.87	3.9	
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	675	7.01	7.5	
	07-Sep-2006	715	7.36	8.1	
	05-Sep-2007	562	7.05	9.6	
	05-Sep-2008	688	7.59	6.7	New installation
	10-Sep-2009	687	6.95	8.4	
	08-Sep-2010	691	7.29	6	
	07-Sep-2011	526	7.01	12.7	
	05-Sep-2012	693	7.27	6.6	Clear
	26-Sep-2013	618	4.81	8.5	Clear
	16-Sep-2014	659	7.19	11	
	28-Sep-2015	660	7.27	8.3	Clear
	26-Sep-2016	731	7.05	5.6	Clear
	27-Sep-2017	717	7.16	5.85	Clear
	18-Sep-2018	643	6.68	4.03	Clear
	16-Sep-2019	440	7.09	6.65	Clear
	22-Sep-2020	715	7.12	6.2	
	21-Sep-2021	698	7.17	8.97	
	29-Sep-2022	462	7.18	6.04	
	27-Sep-2023	715	7.28	7.90	
	10-Sep-2024	488	7.19	9.90	
13-SS	17-May-1991	300	8.05	6	
	13-May-1992	306	7.38	4.5	
	18-May-1993	312	7.65	4	
	11-Nov-1993	314	7.84	4.5	
	06-Sep-2001	---	---	---	Insufficient water
	04-Sep-2002	---	---	---	Insufficient water
	04-Sep-2003	---	---	---	Dry
	09-Sep-2004	---	---	---	Replaced by 13(R)-SS

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
13(R)SS	10-Sep-2004	675	6.47	3.5	
	08-Sep-2005	566	7.2	15.3	
	07-Sep-2006	640	7.44	6	
	04-Sep-2008	535	7.95	8	
	17-Sep-2009	644	7.57	6.3	
	09-Sep-2010	482	7.15	7	
	08-Sep-2011	---	---	---	Insufficient water for field parameters
	23-Aug-2012	---	---	---	Dry
	26-Sep-2013	410	6.48	12.4	Low Volume
	16-Sep-2014	423	7.13	7.6	
	28-Sep-2015	432	7.67	8.0	
	26-Sep-2016	457	7.01	12.5	
	27-Sep-2017	458	7.13	13.20	Clear
	18-Sep-2018	398	6.65	5.19	Clear
	16-Sep-2019	143	7.09	9.85	Clear
	22-Sep-2020	453	7.06	6.0	
	21-Sep-2021	469	6.91	11.7	
	29-Sep-2022	306	7.13	7.94	
	29-Sep-2023	---	---	---	Dry
	10-Sep-2024	315	6.96	11.1	
14-SH	13-Jan-1993	329	7.37	4	
	31-May-1994	421	7.24	7	
	22-Sep-1994	530	7.41	9.5	
	02-Nov-1994	530	7.41	9.5	
	28-Sep-1995	488	7.2	8	
	05-Sep-1996	461	7.37	5.5	
	05-Sep-1997	493	7.24	4.8	
	15-Sep-1998	512	7.32	6.2	
	06-Sep-2000	862	7.12	8.8	
	06-Sep-2001	740	7.52	7.9	
	05-Sep-2002	976	5.71	8	
	04-Sep-2003	1106	7.18	8.7	
	09-Sep-2004	922	6.94	5.2	
	25-Aug-2005	---	---	---	Dry
	08-Sep-2005	1195	7.04	15.3	
	07-Sep-2006	1298	7.09	9.4	
	05-Sep-2007	1041	6.99	10.2	
	03-Sep-2008	1123	7.11	8.5	Frost heaved
	09-Sep-2009	1116	6.98	8.6	
	09-Sep-2010	1193	7.23	7.5	
	08-Sep-2011	856	6.94	17.4	
	05-Sep-2012	796	7.46	11.4	Clear
	26-Sep-2013	1044	6.03	10.4	Slightly cloudy
	16-Sep-2014	2179	7.03	9.7	
	29-Sep-2015	921	7.09	9.5	Clear
	27-Sep-2016	1166	6.72	8.0	Clear
	26-Sep-2017	1113	6.55	9.48	Clear
	17-Sep-2018	619	8.12	7.66	Slightly yellow
	16-Sep-2019	387	7.09	9.85	Slightly yellow
	22-Sep-2020	733	7.01	9.5	
	22-Sep-2021	531	7.12	9.4	
	28-Sep-2022	449	6.99	12.06	
	27-Sep-2023	898	6.87	11.30	
	11-Sep-2024	643	6.98	10.00	
14-IN	06-Sep-2001	---	---	---	Dry
	05-Sep-2002	---	---	---	Dry
	04-Sep-2003	---	---	---	Dry
	09-Sep-2004	---	---	---	Not measured
	25-Aug-2005	---	---	---	Dry
	08-Sep-2005	---	---	---	Dry
	07-Sep-2006	---	---	---	Dry
	26-Aug-2008	---	---	---	Dry
	09-Sep-2009	---	---	---	Dry
	09-Sep-2010	---	---	---	Dry
	08-Sep-2011	---	---	---	Dry
	23-Aug-2012	---	---	---	Dry
	26-Sep-2013	---	---	---	Dry
	16-Sep-2014	---	---	---	Dry
	29-Sep-2015	---	---	---	Dry
	27-Sep-2016	---	---	---	Dry
	26-Sep-2017	---	---	---	Dry
	17-Sep-2018	---	---	---	Dry
	16-Sep-2019	---	---	---	Dry
	22-Sep-2020	---	---	---	Dry
	22-Sep-2021	---	---	---	Dry
	28-Sep-2022	---	---	---	Dry
	28-Sep-2023	---	---	---	Dry

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
14-SS	06-Sep-2001	---	---	---	Dry
	05-Sep-2002	---	---	---	Dry
	04-Sep-2003	---	---	---	Dry
	09-Sep-2004	---	---	---	Dry
	08-Sep-2005	---	---	---	Dry
	07-Sep-2006	---	---	---	Dry
	05-Sep-2007	---	---	---	Dry
	26-Aug-2008	---	---	---	Dry
	09-Sep-2009	---	---	---	Dry
	09-Sep-2010	---	---	---	Dry
	23-Aug-2012	---	---	---	Dry
	26-Sep-2013	---	---	---	Dry
	16-Sep-2014	---	---	---	Dry
	29-Sep-2015	---	---	---	Dry
	27-Sep-2016	---	---	---	Dry
	26-Sep-2017	---	---	---	Dry
	17-Sep-2018	---	---	---	Dry
	16-Sep-2019	---	---	---	Dry
	22-Sep-2020	---	---	---	Dry
	22-Sep-2021	---	---	---	Dry
	28-Sep-2022	---	---	---	Dry
	28-Sep-2023	---	---	---	Dry
15-SH	12-Nov-1993	274	7.91	3	
	31-May-1994	536	7.22	5	
	22-Sep-1994	600	7.49	9	
	01-Nov-1994	547	7.38	8	
	28-Sep-1995	547	7.28	8	
	04-Sep-1996	639	7.01	4.4	
	04-Sep-1997	623	7.13	5.4	
	16-Sep-1998	656	7.17	6.1	
	09-Sep-1999	633	7.5	9.8	
	06-Sep-2000	699	6.66	7.4	
	07-Sep-2001	438	7.94	7.1	
	05-Sep-2002	703	6.75	6.8	
	03-Sep-2003	582	7.37	8.4	
	08-Sep-2004	487	6.41	5.2	
	26-Aug-2005	---	---	---	Water level only
	07-Sep-2005	574	6.89	10.5	
	06-Sep-2006	644	7.43	9.1	
	06-Sep-2007	559	7.16	7.2	
	04-Sep-2008	503	7.55	6.7	Frost heaved a little
	10-Sep-2009	589	6.9	9.6	
	09-Sep-2010	659	7.56	6.3	
	08-Sep-2011	620	7.3	9.8	
	06-Sep-2012	663	7.55	10.1	Clear
	26-Sep-2013	589	5.73	7.9	Clear
	17-Sep-2014	536	7.17	10.2	
	29-Sep-2015	610	7.7	7.0	Clear
	27-Sep-2016	706	6.83	7.9	Clear
	27-Sep-2017	710	7.12	7.70	Clear
	18-Sep-2018	635	7.19	5.52	Clear
	17-Sep-2019	446	7.16	7.84	Clear
	21-Sep-2020	696	6.97	7.80	
	22-Sep-2021	676	7.35	10.12	
	29-Sep-2022	491	7.17	7.15	
	28-Sep-2023	718	7.39	10.30	
	11-Sep-2024	532	7.03	9.00	
15-IN	22-Sep-1994	678	7.57	9	
	28-Sep-1995	649	7.46	6.5	
	04-Sep-1996	670	7.3	1.7	
	04-Sep-1997	694	7.39	2.9	
	16-Sep-1998	706	7.31	6.1	
	09-Sep-1999	692	7.61	6.6	
	06-Sep-2000	582	6.57	5.5	
	06-Sep-2001	474	7.75	5.5	
	05-Sep-2002	759	6.7	5.9	
	03-Sep-2003	644	7.43	7.6	
	08-Sep-2004	537	6.61	4	
	26-Aug-2005	---	---	---	Water level only
	07-Sep-2005	618	7.02	10.1	
	06-Sep-2006	694	7.65	7.1	
	06-Sep-2007	632	7.23	5.9	
	04-Sep-2008	460	7.41	7.6	
	10-Sep-2009	672	7.04	8.5	
	09-Sep-2010	590	7.2	8.1	
	08-Sep-2011	569	7.11	12.1	
	06-Sep-2012	607	7.22	10.2	Clear
	26-Sep-2013	521	5.7	9.8	Clear
	17-Sep-2014	546	7.22	8.8	
	29-Sep-2015	592	7.59	8.2	Clear
	27-Sep-2016	780	6.9	7.9	Clear
	27-Sep-2017	740	7.10	6.04	Clear
	18-Sep-2018	686	6.99	5.61	Clear
	17-Sep-2019	---	---	---	Dry- did not recover
	21-Sep-2020	755	7.03	6.2	
	22-Sep-2021	764	7.44	9.8	
	29-Sep-2022	514	7.23	7.07	
	28-Sep-2023	762	7.31	10.70	
	11-Sep-2024	492	7.08	7.50	
15-SS	12-Nov-1993	579	7.86	5	
	05-Sep-2002	---	---	---	Insufficient water
	03-Sep-2003	---	---	---	Dry
	08-Sep-2004	---	---	---	Replaced by 15(R)-SS

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
15(R)SS	10-Sep-2004	581	6.4	4	
	08-Sep-2005	544	6.88	13.5	
	07-Sep-2006	547	8.46	11.3	
	07-Sep-2007	490	7.53	6	
	04-Sep-2008	683	9.16	8.95	
	17-Sep-2009	1157	7.56	5.7	
	09-Sep-2010	1594	7.57	6.6	Came out cloudy at first then clear, hydrogen sulphide smell
	08-Sep-2011	1394	7.68	14.2	
	06-Sep-2012	---	---	---	Insufficient water for field parameters
	26-Sep-2013	1324	7.82	10.1	Light yellow/green colour, sulphur odour
15(2R)SS	16-Sep-2014	771	7.36	5.6	Slightly silty (very fine)
	28-Sep-2015	520	7.77	6.4	
	26-Sep-2016	519	7.18	8.4	
	27-Sep-2017	481	7.43	8.36	Clear
	18-Sep-2018	448	7.03	4.81	Clear
	16-Sep-2019	305	7.64	8.52	Clear
	22-Sep-2020	429	7.3	6.20	
	22-Sep-2021	413	8.0	6.83	
	29-Sep-2022	281	7.66	8.02	
	29-Sep-2023	---	---	---	
	10-Sep-2024	333	7.73	13	
16-SH	28-Sep-1995	651	7.18	7	
	05-Sep-1996	717	7	2.8	
	04-Sep-1997	727	6.99	4.1	
	15-Sep-1998	743	6.99	5.8	
	09-Sep-1999	756	7.39	9.3	
	06-Sep-2000	686	7.34	11.2	
	06-Sep-2001	458	7.5	7	
	05-Sep-2002	805	7.63	7.8	
	04-Sep-2003	730	7.42	7.1	
	09-Sep-2004	570	6.88	4.7	
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	724	7.18	12.4	
	07-Sep-2006	789	7.44	9.7	
	05-Sep-2007	598	7.21	8.7	
	03-Sep-2008	545	7.29	8.3	
	10-Sep-2009	753	7.02	9.3	
	08-Sep-2010	766	7.26	7.4	
	07-Sep-2011	706	7.03	13	
	05-Sep-2012	772	7.27	8.9	Clear
	26-Sep-2013	724	5.97	7.6	Clear
	16-Sep-2014	808	7.35	12	
	28-Sep-2015	1380	6.77	8.1	Clear
	26-Sep-2016	803	6.84	8.2	Clear
	27-Sep-2017	781	7.13	9.25	Clear
	18-Sep-2018	707	6.91	5.35	Clear
	16-Sep-2019	486	7.37	10.42	Clear
	22-Sep-2020	755	7.13	6.3	
	21-Sep-2021	798	7.34	10.6	
	28-Sep-2022	539	6.85	8.24	
	28-Sep-2023	715	7.39	10.30	
	10-Sep-2024	541	7.22	10.70	
16-IN	05-Sep-1996	684	7.36	1.6	
	04-Sep-1997	724	7.27	3.8	
	15-Sep-1998	729	7.31	6	
	09-Sep-1999	850	7.64	7.3	
	06-Sep-2000	728	7.5	6.8	
	06-Sep-2001	528	7.54	6.8	
	05-Sep-2002	856	7.61	6.8	
	04-Sep-2003	770	7.5	4.9	
	09-Sep-2004	608	7.01	4	
	25-Aug-2005	---	---	---	Water level only
	08-Sep-2005	789	7.21	12.3	
	07-Sep-2006	814	7.67	9.5	
	05-Sep-2007	662	7.24	8.5	
	03-Sep-2008	632	7.46	7.3	
	10-Sep-2009	772	7.12	8	
	08-Sep-2010	796	7.52	5.7	
	07-Sep-2011	734	7.2	11.9	
	05-Sep-2012	769	7.51	7.3	Clear
	26-Sep-2013	730	6.79	11.7	Clear, Low Volume
	16-Sep-2014	926	7.17	10.9	Low volume
	28-Sep-2015	810	7.5	8.2	Clear and limited sample
	26-Sep-2016	848	6.87	9.6	Clear and limited sample
	27-Sep-2017	846	7.14	8.65	Clear and limited sample
	18-Sep-2018	764	6.73	4.13	Clear
	16-Sep-2019	---	---	---	Dry- did not recover
	22-Sep-2020	810	7.32	5.7	
	21-Sep-2021	831	7.15	9.0	
	28-Sep-2022	558	7.040	7.140	
	28-Sep-2023	---	---	---	Dry- did not recover
	10-Sep-2024	---	---	---	Dry- did not recover

Table 4.2
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Field Parameters

Monitoring Well	Date (dd-mmm-yyyy)	Electrical Conductivity (µS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
17-SH	01-Nov-1994	511	7.64	7	
	28-Sep-1995	515	7.41	9	
	04-Sep-1996	512	7.04	5.2	
	04-Sep-1997	589	7.31	4.1	
	16-Sep-1998	557	7.09	5.6	
	09-Sep-1999	518	7.85	10.6	
	06-Sep-2000	490	6.77	10.1	
	06-Sep-2001	426	7.79	8.6	
	05-Sep-2002	658	6.93	9.3	
	03-Sep-2003	580	7.55	11.3	
	08-Sep-2004	460	6.74	6.4	
	26-Aug-2005	---	---	---	Water level only
	07-Sep-2005	485	7.28	11.2	
	06-Sep-2006	605	7.68	10	
	06-Sep-2007	537	7.19	8.5	
	04-Sep-2008	561	7.74	8.8	
	10-Sep-2009	591	7.5	11	
	09-Sep-2010	579	7.51	9	
	08-Sep-2011	564	7.28	12.4	
	06-Sep-2012	538	7.43	12.2	Clear
	26-Sep-2013	547	5.79	11.1	
	17-Sep-2014	540	7.32	13.6	
	29-Sep-2015	612	7.5	8.5	Clear
	27-Sep-2016	786	7.09	7.9	Clear
	27-Sep-2017	750	7.40	9.28	Clear
	18-Sep-2018	683	7.04	6.89	Clear
	17-Sep-2019	397	7.28	7.72	Clear
	21-Sep-2020	625	7.28	9.1	
	22-Sep-2021	613	7.43	9.6	
	29-Sep-2022	429	7.30	7.79	
	28-Sep-2023	671	7.61	10.70	
	11-Sep-2024	438	7.22	9.80	
17-IN	28-Sep-1995	643	7.3	8	
	04-Sep-1996	692	7.14	3.4	
	04-Sep-1997	734	7.21	3.8	
	16-Sep-1998	721	7.22	6.1	
	09-Sep-1999	732	7.39	6.8	
	06-Sep-2000	569	6.46	5.6	
	06-Sep-2001	526	7.49	5.9	
	05-Sep-2002	830	6.8	5.8	
	03-Sep-2003	705	7.4	7.4	
	08-Sep-2004	597	6.73	4.4	
	26-Aug-2005	---	---	---	Water level only
	07-Sep-2005	676	6.94	8.7	
	06-Sep-2006	812	7.22	6.3	
	06-Sep-2007	724	7.18	7.2	
	04-Sep-2008	571	7.4	7.2	
	10-Sep-2009	771	7.45	10.7	
	09-Sep-2010	770	7.2	7.9	
	08-Sep-2011	704	7	10.6	
	06-Sep-2012	761	7.46	10.7	Clear
	26-Sep-2013	700	5.53	7.4	
	17-Sep-2014	667	7.02	11	
	29-Sep-2015	709	7.49	6.2	Clear to slightly cloudy
	27-Sep-2016	842	6.82	5.0	Clear to slightly cloudy
	27-Sep-2017	820	7.19	5.52	Clear
	18-Sep-2018	729	6.95	3.48	Clear
	17-Sep-2019	478	7.04	5.18	Clear
	21-Sep-2020	810	6.87	5.50	
	22-Sep-2021	784	7.09	7.18	
	29-Sep-2022	508	7.18	5.58	
	28-Sep-2023	777	7.20	7.70	
	11-Sep-2024	525	7.23	7.00	
M-5 [Decommissioned]	23-Sep-2002	634	6.96	7	
	17-Oct-2003	626	7.2	6.8	
	26-Oct-2004	392	7.93	4.5	
	25-Nov-2005	435	7.37	6.2	
	10-Sep-2009	561	6.8	11.7	
	28-Sep-2010	---	---	---	Well Offline
M-6	29-Sep-2010	353	6.7	8.3	
89-3	24-Sep-2002	432	7.15	4.4	
	14-Oct-2003	489	7.04	7.5	
	26-Oct-2004	351	7.01	4	
	25-Oct-2005	464	6.88	5.8	
	10-Sep-2009	---	---	---	Down for maintenance
	28-Aug-2010	496	6.92	8.8	
	26-Sep-2013	340	4.88	12	
	17-Sep-2014	405	6.73	7.8	Very slight reddish colour
	29-Sep-2015	355	7.41	22.0	Clear and sulphur odour
	27-Sep-2016	431	6.9	19.7	Clear and sulphur odour
	27-Sep-2017	414	6.94	23.79	Clear and sulphur odour
	18-Sep-2018	385	6.98	27.29	Clear and sulphur odour
	17-Sep-2019	290	7.28	10.60	Clear and sulphur odour
	21-Sep-2020	431	7.25	15.20	Clear and sulphur odour
	22-Sep-2021	412	7.11	21.58	Clear and sulphur odour
	29-Sep-2022	389	7.05	21.38	Clear and sulphur odour
	29-Sep-2023	378	7.24	17.70	Clear and sulphur odour
	11-Sep-2024	378	6.79	19.50	Clear and sulphur odour

NOTES:
--- Parameter not measured

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
01-SH [Decommissioned]	15-May-1985	01-SH [DECOM]	492	7.81	---	---	268.2	273	---	1.6	8.4	---	---	280	77	18.4	1.75	8.3	332.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.014	0.02	---	---	---	---	---	---	---
	15-Jun-1985	01-SH [DECOM]	640	7.15	---	---	333.1	340	---	1.5	1.8	---	---	350	---	24.5	2.22	---	414.5	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	15-Sep-1985	01-SH [DECOM]	539	7.53	---	---	265.3	295	---	1.5	6.9	---	---	295	76	18.3	2.05	8.4	359.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.037	---	---	---	---	---	---	---
	15-May-1986	01-SH [DECOM]	530	7.86	---	---	287.2	291	---	0.6	6.7	---	---	300	79	21.8	1.79	7.7	354.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.026	---	---	---	---	---	---	---
	15-Aug-1986	01-SH [DECOM]	534	7.26	---	---	277.3	279	---	1	4.9	---	---	285	77	20.6	1.78	7.6	340.1	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.005	---	---	---	---	---	---	---
	15-Oct-1986	01-SH [DECOM]	560	7.92	---	---	297.2	310	---	0.9	5.6	---	---	315	82	22.4	2.08	8.6	377.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.007	---	---	---	---	---	---	---
	15-May-1987	01-SH [DECOM]	538	7.4	---	---	280.3	296	---	0.8	6	---	---	290	79.7	19.7	1.85	7.75	360.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.049	---	---	---	---	---	---	---
	15-Sep-1987	01-SH [DECOM]	508	7.56	---	---	273.1	273	---	1.1	6.3	---	---	280	76	20.2	1.54	6.7	332.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.034	---	---	---	---	---	---	---
	15-Nov-1987	01-SH [DECOM]	609	7.78	---	---	267.7	273	---	0.7	5.2	---	---	285	73	20.7	1.68	7	332.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.05	---	---	---	---	---	---	---
	15-May-1988	01-SH [DECOM]	498	7.29	---	---	264.9	264	---	0.8	5.7	---	---	271	74	19.4	1.85	8	321.8	---	---	---	---	---	---	---	Table	---	---	< 0.003	0.039	---	---	---	---	---	---	---
	15-Aug-1988	01-SH [DECOM]	504	7.32	---	---	267	278	---	0.5	6.4	---	---	281	75	19.5	1.8	8.2	339	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.039	---	---	---	---	---	---	---
	15-Oct-1988	01-SH [DECOM]	491	7.82	---	---	269.8	266	---	0.6	6.3	---	---	274	75.8	19.5	1.83	7.4	324.3	---	---	---	---	---	---	---	< 0.0020	---	---	0.005	0.035	---	---	---	---	---	---	---
	15-Sep-1989	01-SH [DECOM]	529	7.38	---	---	---	---	---	---	---	---	---	360	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	01-SH [DECOM]	528	8.09	---	---	291.4	283	---	0.8	6.4	---	---	292	79.5	22.5	2.11	8.2	345	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.02	---	---	---	---	---	---	---
	15-Aug-1990	01-SH [DECOM]	581	7.59	---	---	286	316	---	0.8	4.2	---	---	309	78.5	21.8	2.11	9	385.2	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Nov-1990	01-SH [DECOM]	583	8.09	---	---	280.6	318.8	---	0.3	5.9	---	---	309	76.5	21.7	1.93	8	388.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.01	---	---	---	---	---	---	---
	12-May-1992	01-SH [DECOM]	640	7.59	---	---	345	365	---	0.4	6.4	---	---	357	98	24.3	2.12	9.48	444.9	---	---	---	---	---	---	0.99	< 0.0010	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	04-Nov-1992	01-SH [DECOM]	606	7.72	---	---	---	403	---	1.1	7.8	---	---	407	112	29.1	2.19	9.54	491.3	---	---	---	---	---	---	1.03	< 0.0010	---	---	---	< 0.003	---	---	---	---	---	---	---
01A-SH	13-Nov-1993	01A-SH	164	6.11	---	---	69.6	63.9	---	2.9	2.9	---	---	80	21.1	4.1	3.7	6.2	77.9	---	---	---	---	---	---	---	0.01	---	---	0.012	0.022	---	---	---	---	---	---	---
	31-May-1994	01A-SH	129	5.56	---	---	---	48.4	< 0.1	1.7	7.5	2.74	0.634	63	17.3	3.5	1.08	2.6	59	< 0.5	< 0.5	---	---	---	---	1.1	< 0.001	---	---	0.007	< 0.003	0.007	---	---	---	---	---	---
	22-Sep-1994	01A-SH	627	6.94	---	---	---	340	0.1	1.3	10.3	0.31	0.844	342	90	20	3.45	9.8	414	0.5	0.5	---	---	---	---	0.94	< 0.001	---	---	0.018	0.018	0.018	---	---	---	---	---	---
	02-Nov-1994	01A-SH	650	8.31	---	---	---	339	3.2	1.4	11.3	0.81	0.816	359	102	22.6	3.46	11.9	406	3.8	< 0.5	---	---	---	---	1.07	< 0.001	---	---	0.008	0.005	0.008	---	---	---	---	---	---
	28-Sep-1995	01A-SH	83	5.46	---	---	49.4	33.9	< 0.1	< 0.5	4	4.93	0.163	45	15.3	2.7	0.6	1.6	41.3	< 0.5	< 0.5	---	---	---	---	---	< 0.001	---	---	---	0.007	---	---	---	---	---	---	---
	04-Sep-1996	01A-SH	101	5.75	---	---	50.4	34	< 0.1	0.7	7.1	6.79	0.227	50	16.1	2.47	0.49	2.26	41.5	< 0.5	< 0.5	---	---	---	---	---	0.001	---	---	---	< 0.003	< 0.003	---	---	---	---	---	---
	05-Sep-1997	01A-SH	84.6	5.15	---	---	37.7	23.2	< 0.1	0.8	3.8	4.21	0.122	36	11.8	1.99	0.17	3.01	28.3	< 0.5	< 0.5	---	---	---	---	---	< 0.001	---	---	---	0.02	0.02	---	---	---	---	---	---
	16-Sep-1998	01A-SH	---	---	---	---	---	---	---	---	---	---	---	---	12.6	2.3	< 0.2	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Oct-1998	01A-SH	86.2	5.5	---	---	---	30.3	< 0.1	2.1	0.8	---	---	55	---	---	---	---	37	< 0.5	< 0.5	---	---	---	---	---	< 0.001	---	---	---	0.006	---	---	---	---	---	---	---
	09-Sep-1999	01A-SH	87	5.75	---	---	36	30.2	< 0.1	1.6	0.8	---	---	35.6	11.3	1.8	0.9	1.1	36.9	< 0.5	< 0.5	---	0.665	0.783	---	1.18	---	---	---	---	< 0.003	< 0.003	---	---	---	---	---	---
	06-Sep-2000	01A-SH	518	6.79	---	---	250	247	< 0.1	1.7	36.2	2.1	0.083	295	73.8	15.9	1.3	17.5	301	< 0.5	< 0.5	---	5.74	5.79	---	1.01	0.004	---	---	0.009	< 0.003	0.009	---	---	---	---	---	---
	07-Sep-2001	01A-SH	317	6.75	---	---	170	112	< 0.5	1.8	58.9	3.9	0.148	203	50.6	10.8	1.4	7.9	137	< 0.5	< 0.5	---	---	---	---	1.08	< 0.001	---	---	---	0.009	0.009	---	---	---	---	---	---
	05-Sep-2002	01A-SH	---	---	---	---	---	---	---	---	---	5.55	0.162	---	25.8	3.3	0.8	1.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2.04	---	---	---	1.4	---
	11-Sep-2002	01A-SH	112	5.95	---	---	51	51.3	< 0.5	2.1	3	4.77	0.009	62.6	15.7	2.9	0.6	2	62.6	< 0.5	< 0.5	---	1.16	1.13	---	0.97	---	---	---	< 0.003	0.166	0.166	---	---	---	---	---	---
	08-Oct-2002	01A-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.54	1.18	---	---	---	---
	07-Sep-2003	01A-SH	242	6.35	---	---	120	70.8	< 0.5	1.3	47.9	3.09	0.136	144	36.7	6.5	0.7	4.7	86.4	< 0.5	< 0.5	---	2.45	2.7	---	1.1	---	---	---	< 0.003	0.005	0.005	---	---	---	---	---	---
	11-Sep-2003	01A-SH	---	---	---	---	---	---	---	---	---	2.24	0.182	---	58.2	10.9	1	5.9	---	---	---	---	---	---	---	---	---	---	---	< 0.003	0.006	0.006	---	---	---	---	29.9	---
	02-Dec-2003	01A-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	01A-SH	1180	7.63	---	---	580	457	< 0.5	3.5	214	0.06	0.019	724	176	35	3.7	17.2	558	< 0.5	< 0.5	---	---	---	---	0.91	---	< 0.004	---	< 0.003	0.005	0.005	---	---	---	---	62.2	---
	07-Sep-2005	01A-SH	499	7.86	3.3	---	190	143	< 0.5	2.2	71.5	3.46	0.037	244	57.9	11.5	1.3	10.5	174	< 0.5	< 0.5	---	---	---	---	1.01	---	< 0.004	---	< 0.003	< 0.003	< 0.003	---	---	---	---	23.9	---
	07-Sep-2006	01A-SH	216	6.94	---	---	110	91.6	< 0.5	3.3	12.3	1.44	0.112	128	33.4	6.7	0.8	13.6	112	< 0.5	< 0.5	---	---	---	---	1.34	---	---	---	< 0.003	0.008	0.008	---	---	---	---	5.5	---
	06-Sep-2007	01A-SH	615	6.99	---	---	240	295	< 0.5	1.6	34.7	1.35	0.104	326	72.7	14.8	1.6	19	360	< 0.5	< 0.5	---	---	---	---	0.86	---	---	---	< 0.003	0.684	0.684	---	---	---	---	11.2	---
	04-Sep-2008	01A-SH	182	6.5	---	---	79	82	---	1.48	3	2.22	0.15	94	24.1	4.56	1	10.5	101	< 5	< 5	0.071	---	---	---	1.17	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	10-Sep-2009	01A-SH	229	6.88	---	---	86.6	101	---	1.73	5.52	2.5	0.0857	112	26.7	4.84	0.71	12.2	124	< 5.0	< 5.0	0.06	---	---	---	1.04	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	01A-SH	474	6.77	---	---	90.1	242	---	1.13	11.8	2.46	0.09	203	27.4	5.26	0.64	10.9	295	< 5.0	< 5.0	0.186	---	---	44.7	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2011	01A-SH	197	7.18	---	---	79.8	95.8	---	1.64	1.2	3.16	0.0873	101	24.3	4.65	0.65	10.8	117	< 5.0	< 5.0	0.126	---	---	104	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	06-Sep-2012	01A-SH	193	6.47	---	76.8	76.7	92.1	---	1.9	0.96	3.4	0.0877	98.5	23.7	4.26	0.87	11.5	112	< 5.0	< 5.0	0.084	---	---	107	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	01A-SH	169	5.90	---	69.1	69.2	68.8	---	2.39	1.98	3.40	0.0871	80.70	20.9	4.14	0.51	9.4	83.9	< 5.0	< 5.0	0.064	---	---	121	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	01A-SH	143	6.71	---	---	59.5	61.2	---	2.48	1.80	2.78	0.0726	71.6	18.3	3.36	<0.50	8.8	74.7	< 5.0	<5.0	0.125	---	---	118	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	1.45	---
	29-Sep-2015	01A-SH	102	5.59	---	---	45.6	31.8	---	3.70	0.64	2.36	0.0755	45.7	14.5	2.29	0.490	4.95	38.8	<5.0	<5.0	0.084	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2016	01A-SH	180	6.10	---	---	71.3	78.3	---	3.17	0.90	2.80	0.0774	91.8	21.8	4.08	0.690	14.20	95.5	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	01A-SH	156	6.89	---	---	65.2	68.9	---	3.33	0.34	1.94	0.0820	115	19.6	3.96	<2.5	10.50	84.1	<5.0	<5.0	0.042	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	18-Sep-2018	01A-SH	134	6.30	---	---	60	58.0	---	4.50	0.43	1.98	0.0731	73.9	18.7	3.22	0.520	11.70	70.8	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	17-Sep-2019	01A-SH	273	6.03	---	---	130	151.0	---	4.16	3.68	2.58	0.0810	167	38.6	8.26	0.920	20.80	184.0	<5.0	<5.0	0.150	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	21-Sep-2020	01A-SH	182	5.80	---	---	57.5	61.7	---	5.77	0.87	2.12	0.0729	72.5	17.7	3.23	<0.50	7.80	75.3	<5.0	<5.0	0.066	---	---	105	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	01A-SH	120	5.46	---	---	47	36.9	---	7.64	1.07	3.15	0.0706	55.5	13.8	3.05	0.620	7.10	45.0	<5.0	<5.0	0.114	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	29-Sep-2022	01A-SH	119	5.95	---	---	47	37.8	---	9.66	0.31	2.73	0.0660	172	14.6	2.53	0.54	7.4	46.1	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	0.049	<0.0500	---	---	---	---	---	---
	28-Sep-2023	01A-SH	167	6.24	---	---	62.6	65	---	8.58	0.66	1.58	0.0835	178	19.1	3.62	0.642	11.7	79.3	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	0.047	<0.0500	---	---	---	---	---	---
	11-Sep-2024	01A-SH	198	5.69	---	---	78	84	---	8.68	0.46	3.22	0.082	202	23	4.99	0.87	10.0	102	<1.0	<1.0	0.029	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
01-IN [Decommissioned]	15-Feb-1985	01-IN [DECOM]	1080	7.56	---	---	518.7	408	---	3.2	176	---	---	680	151	34.3	5.5	48	497.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.014	0.095	---	---	---	---	---	---	---
	15-Jun-1985	01-IN [DECOM]	1000	7.95	---	---	463.2	401	---	3.6	170	---	---	630	128	34.8	5.35	46.7	488.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.045	---	---	---	---	---	---	---
	15-Dec-1985	01-IN [DECOM]	1120	7.61	---	---	401.3	349	---	4.75	182	---	---	600	109	31.3	5.7	53	425.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.057	0.021	---	---	---	---	---	---	---
	15-May-1986	01-IN [DECOM]	996	7.7	---	---	496.2	435	---	1	131	---	---	640	144	33.1	5.55	46.5	530.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.184	---	---	---	---	---	---	---
	15-Aug-1986	01-IN [DECOM]	1035	7.71	---	---	479.4	412	---	2.3	148	---	---	625	144	29	5.1	40	502.2	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.004	---	---	---	---	---	---	---
	15-Oct-1986	01-IN [DECOM]	1040	8.1	---	---	488.3	446	---	1.7	150	---	---	670	141	33	5.45	50	543.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.012	---	---	---	---	---	---	---
	15-May-1987	01-IN [DECOM]	942	8.05	---	---	456.5	436	---	2.2	92	---	---	580	134	29.6	4.98	41	532	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.84	---	---	---	---	---	---	---
	15-Sep-1987	01-IN [DECOM]	982	7.75	---	---	495.8	451	---	2.1	131	---	---	630	144	33	5.26	42.4	549.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.66	---	---	---	---	---	---	---
	15-Nov-1987	01-IN [DECOM]	1000	7.85	---	---	507.4	449	---	1.7	122	---	---	640	146	34.6	5.25	42.5	547.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.74	---	---	---	---	---	---	---
	15-Mar-1988	01-IN [DECOM]	946	8.14	---	---	458.9	427	---	0.5	99	---	---	573	135	29.5	4.97	42.5	520.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.78	---	---	---	---	---	---	---
	15-Aug-1988	01-IN [DECOM]	943	7.99	---	---	412.8	387	---	0.4	79	---	---	504	120	27.4	4.7	34.9	471.8	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	1.63	---	---	---	---	---	---	---
	15-Oct-1988	01-IN [DECOM]	941	7.925	---	---	456	419	---	0.5	107	---	---	573	133.5	29.7	5	39.8	510.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	2.04	---	---	---	---	---	---	---
	15-Mar-1989	01-IN [DECOM]	900	8.06	---	---	---	---	---	---	---	---	---	692	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	01-IN [DECOM]	941	7.51	---	---	464.4	443	---	0.4	90	---	---	574	138	29	5.24	40	540	---	---	---	---	---	---	---	< 0.0010	---	---	0.008	1.09	---	---	---	---	---	---	---
	15-Sep-1989	01-IN [DECOM]	931	7.31	---	---	---	---	---	---	---	---	---	620	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	01-IN [DECOM]	907	8.16	---	---	419.7	409	---	1	75	---	---	522	116	31.5	4.96	42.6	498.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	1.64	---	---	---	---	---	---	---
	15-May-1990	01-IN [DECOM]	914	8.14	---	---	418.5	455	---	0.9	81	---	---	550	120	28.8	5	36.6	554.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.72	---	---	---	---	---	---	---
	15-Aug-1990	01-IN [DECOM]	976	7.78	---	---	---	---	---	---	---	---	---	630	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	01-IN [DECOM]	947	8.08	---	---	332.2	378.4	---	0.01	54.5	---	---	446	83.5	30	5	41.4	461.3	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.48	---	---	---	---	---	---	---
	16-May-1991	01-IN [DECOM]	915	7.59	---	---	---	---	---	---	---	---	---	590	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Nov-1991	01-IN [DECOM]	521	7.18	---	---	---	---	---	0.5	---	---	---	340	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	01-IN [DECOM]	793	7.36	---	---	---	---	---	0.8	---	---	---	515	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	01-IN [DECOM]	895	7.38	---	---	---	---	---	0.7	---	---	---	625	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
01A-IN	13-Nov-1993	01A-IN	545	7.49	---	---	285	279	---	2.6	8.1	---	---	300	86	17.1	6.6	9.8	340	---	---	---	---	---	---	1.08	0.003	---	---	0.005	0.119	---	---	---	---	---	---	---
	22-Sep-1994	01A-IN	147	5.57	---	---	65.6	53.8	0.1	2	11	5.1	0.369	73	20	3.8	0.68	2.6	65.6	0.5	0.5	---	---	---	---	1.06	---	---	---	< 0.003	0.003	0.003	---	---	---	0.01	---	---
	28-Sep-1995	01A-IN	636	6.91	---	---	377	366	< 0.1	1.6	19.2	2.65	0.569	390	108	26	3.3	8.7	446	< 0.5	< 0.5	---	---	---	---	1.03	---	---	---	0.008	0.008	---	---	---	---	< 0.01	---	---
	04-Sep-1996	01A-IN	749	6.96	---	---	391	375	< 0.1	2.2	37.6	< 0.01	0.532	425	116	24.6	2.88	13.2	457	< 0.5	< 0.5	---	---	---	---	1.01	---	---	---	0.004	0.031	0.035	---	---	---	< 0.005	---	---
	09-Sep-1999	01A-IN	832	7.21	---	---	450	415	< 0.1	1.8	55.1	---	---	492	128	31.9	2.9	23.2	506	< 0.5	< 0.5	---	9.5	10.1	---	1.06	---	---	---	0.005	0.007	0.012	---	---	---	< 0.01	---	---
	06-Sep-2000	01A-IN	803	7.26	---	---	420	393	< 0.1	3.1	60.5	0.02	0.47	471	120	28.7	3.4	19.9	479	< 0.5	< 0.5	---	9.2	9.31	---	1.01	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	---	---
	07-Sep-2001	01A-IN	766	7.49	---	---	430	382	< 0.5	2	68.7	0.09	0.55	474	122	29.7	3.5	18.7	466	< 0.5	< 0.5	---	---	---	---	1.03	---	---	---	< 0.003	0.006	0.006	---	---	---	< 0.01	---	---
	05-Sep-2002	01A-IN	853	7.06	---	---	340	400	< 0.5	2	67	8.78	0.569	485	92.8	26.5	3.5	43.7	488	< 0.5	< 0.5	---	9.45	8.8	---	0.93	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	18.5	---
	11-Sep-2002	01A-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.85	---	---	---	---	---
	08-Oct-2002	01A-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.36	1.7	---	---	---	---
	03-Sep-2003	01A-IN	822	7.3	---	---	410	386	< 0.5	1.9	82.5	29.6	0.599	524	121	27.2	3.2	26.8	471	< 0.5	< 0.5	---	9.49	10.6	---	1.11	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	25.5	---
	08-Sep-2004	01A-IN	870	7.37	---	---	390	387	< 0.5	2.2	79.9	15.5	0.244	505	112	27.5	3.3	33	472	< 0.5	< 0.5	---	---	---	---	1.05	---	---	---	< 0.003	0.006	0.006	---	---	---	< 0.01	23.7	---
	07-Sep-2005	01A-IN	835	7.72	224	---	380	411	< 0.5	2.4	83	12.9	0.503	518	110	25	3.1	35.6	501	< 0.5	< 0.5	---	---	---	---	0.96	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	0.032	22	---
	07-Sep-2006	01A-IN	788	7.22	---	---	400	365	< 0.5	2.5	76.8	20.9	0.619	496	118	27	3.3	28.1	446	< 0.5	< 0.5	---	---	---	---	1.13	---	---	---	0.003	0.066	0.069	---	---	---	---	25.8	---
	04-Dec-2006	01A-IN	---	---	---	---	---	---	---	---	---	32.8	0.444	---	117	27.9	3.3	27.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	27.3	---
	06-Sep-2007	01A-IN	807	7.28	---	---	340	377	< 0.5	2.3	76.3	0.18	0.495	454	98.5	22	2.9	25.1	460	< 0.5	< 0.5	---	---	---	---	0.86	---	---	---	< 0.003	0.023	0.023	---	---	---	---	20.7	---
	04-Sep-2008	01A-IN	775	7.5	---	---	343	362	---	1.19	71.3	17	0.484	447	98.6	23.6	3.07	31.8	442	< 5	< 5	0.125	---	---	---	0.949	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	10-Sep-2009	01A-IN	751	7.52	---	---	369	348	---	1.25	73	26.9	0.548	446	109	23.5	2.92	27.3	424	< 5.0	< 5.0	0.108	---	---	---	1.01	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	01A IN	786	7.6	---	---	341	363	---	1.44	75.3	17.2	0.456	452	96.8	24.2	2.85	33.8	442	< 5.0	< 5.0	0.154	---	---	94.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2011	01A-IN	789	7.75	---	---	383	372	---	1.16	66	3.12	0.319	481	108	27.6	3.4	51.2	454	< 5.0	< 5.0	0.151	---	---	113	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	06-Sep-2012	01A-IN	783	7.44	---	378	378	373	---	1.1	65.6	7.45	0.278	478	109	25.7	3.47	48.9	456	< 5.0	< 5.0	0.121	---	---	110	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	01A-IN	784	7.15	---	386	385	423	---	0.95	59.3	33.8	0.466	489	111	26.3	3.15	34.7	516	< 5.0	< 5.0	0.089	---	---	95.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	01A-IN	799	8.14	---	---	370	399	---	1.00	50.8	29.9	0.485	468	109	23.8	3.35	40.3	487	< 5.0	< 5.0	0.118	---	---	102	---	---	---	---	< 0.020	0.081	0.081	---	---	---	---	16.3	---
	29-Sep-2015	01A-IN	855	7.02	---	---	375	405	---	1.13	41.1	1.40	0.322	470	103	28.5	3.69	49.0	495	<5.0	<5.0	0.170	---	---	---	---	---	---	---	<0.010	0.047	0.047	---	---	---	---	---	---
	27-Sep-2016	01A-IN	809	7.27	---	---	367	429	---	0.91	25.3	8.78	0.398	459	108	23.6	3.33	40.8	524	<5.0	<5.0	0.070	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	01A-IN	756	8.12	---	---	369	464	---	0.93	12.9	3.17	0.405	478	104	26.5	3.64	51.4	566	<5.0	<5.0	0.088	---	---	---	---	---	---	---	<0.010	0.101	0.101	---	---	---	---	---	---
	18-Sep-2018	01A-IN	744	7.50	---	---	373	448	---	1.00	3.7	5.22	0.372	460	106	26.4	3.65	50.0	546	<5.0	<5.0	0.168	---	---	---	---	---	---	---	<0.010	0.098	0.098	---	---	---	---	---	---
	17-Sep-2019	01A-IN	748	7.12	---	---	375	482	---	1.24	1.4	29.20	0.482	478	108	25.5	3.66	48.1	588	<5.0	<5.0	0.147	---	---	---	---	---	---	---	0.016	0.211	0.227	---	---	---	---	---	---
	21-Sep-2020	01A-IN	823	7.59	---	---	344	471	---	1.32	2.2	26.20	0.455	456	99.9	22.9	3.25	43.5	575	<5.0	<5.0	0.112	---	---	92.9	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	01A-IN	732	7.09	---	---	334	461	---	1.34	2.9	12.60	0.369	450	90.9	25.9	3.62	47.9	563	<5.0	<5.0	0.150	---	---	---	---	---	---	---	<0.010	0.128	0.128	---	---	---	---	---	---
	29-Sep-2022	01A-IN	744	7.75	---	---	359	448	---	1.58	0.47	2.79	0.402	517	103	24.8	3.36	45.2	547	<1.0	<1.0	0.076	---	---	---	---	---	---	---	<0.010	0.560	0.560	---	---	---	---	---	---
	28-Sep-2023	01A-IN	803	8.23	---	---	272	468	---	1.47	<0.30	0.501	0.25	483	76.4	19.8	2.86	45.1	571	<1.0	<1.0	0.027	---	---	---	---	---	---	---	<0.010	0.173	0.173	---	---	---	---	---	---
	11-Sep-2024	01A-IN	753	7.01	---	---	332	466	---	1.94	<0.30	16.0	0.490	526	93	24.0	3.33	44.4	569	<1.0	<1.0	0.182	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
01-SS [Decommissioned]	17-Feb-1985	01-SS [DECOM]	---	---	---	---	168.3	298	---	---	---	---	---	360	---	---	---	---	363.3	---	---	---	---	---	---	---	---	---	---	0.007	0.47	---	---	---	---	---	---	---
	15-Jun-1985	01-SS [DECOM]	580	7.49	---	---	135.8	268	---	1	36	---	---	340	43.6	6.5	7.3	78.6	326.7	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.006	---	---	---	---	---	---	---
	15-Jul-1985	01-SS [DECOM]	434	7.87	---	---	101.2	217	---	1.5	36.2	---	---	285	33.1	4.5	6.7	67	264	---	---	---	---	---	---	---	< 0.0020	---	---	0.008	0.053	---	---	---	---	---	---	---
	15-Dec-1985	01-SS [DECOM]	530	7.62	---	---	110.5	237	---	1.21	42.5	---	---	320	35	5.6	7.4	73	288.9	---	---	---	---	---	---	---	0.045	---	---	< 0.003	0.008	---	---	---	---	---	---	---
	15-May-1986	01-SS [DECOM]	584	7.65	---	---	154.9	286	---	0.6	35.2	---	---	350	48.8	8	7.25	75	348.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Aug-1986	01-SS [DECOM]	588	7.67	---	---	130.8	268	---	0.9	37.1	---	---	335	42.6	5.9	7	74	326.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.019	---	---	---	---	---	---	---
	15-Oct-1986	01-SS [DECOM]	560	8	---	---	148.3	276	---	0.9	30	---	---	340	46.8	7.6	7.4	68	336.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.003	---	---	---	---	---	---	---
	15-Feb-1987	01-SS [DECOM]	601	7.57	---	---	---	---	---	0.7	38.8	---	---	---	52	9.3	7.25	70	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	01-SS [DECOM]	579	7.87	---	---	172.9	290	---	1.3	32.3	---	---	350	55	8.6	7.55	70	353.5	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Nov-1987	01-SS [DECOM]	600	7.95	---	---	167.5	295	---	0.7	27	---	---	360	52	9.1	7.35	71.5	359.6	---	---	---	---	---	---	---	< 0.0020	---	---	0.009	0.53	---	---	---	---	---	---	---
	15-May-1988	01-SS [DECOM]	560	7.8	---	---	162.9	262	---	0.1	34.8	---	---	332	52.3	7.8	9.5	68	319.4	---	---	---	---	---	---	---	< 0.0010	---	---	0.1	0.31	---	---	---	---	---	---	---
(Duplicate)	15-May-1988	01-SS DUP	577	7.53	---	---	153.6	262	---	0.5	31.3	---	---	322	49.9	7	7.5	70	319.4	---	---	---	---	---	---	---	0.003	---	---	0.025	0.139	---	---	---	---	---	---	---
	15-Aug-1988	01-SS [DECOM]	569	7.76	---	---	164.3	286.9	---	0.3	32.1	---	---	339	53.2	7.6	7	64.3	349.7	---	---	---	---	---	---	---	< 0.0010	---	---	0.017	0.061	---	---	---	---	---	---	---
	15-Oct-1988	01-SS [DECOM]	576	7.84	---	---	163.6	274	---	0.5	41.9	---	---	340	52.9	7.61	6.9	63	334	---	---	---	---	---	---	---	< 0.0010	---	---	0.009	0.4	---	---	---	---	---	---	---
	15-Sep-1989	01-SS [DECOM]	578	7.62	---	---	---	---	---	---	---	---	---	360	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	01-SS [DECOM]	588	8.14	---	---	171.2	275	---	0.3	41.6	---	---	349	54.5	8.5	7.25	66.5	335.2	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.44	---	---	---	---	---	---	---
	15-Aug-1990	01-SS [DECOM]	612	7.87	---	---	176.7	309	---	0.4	29.2	---	---	357	56.7	8.5	7.25	66	376.7	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.236	---	---	---	---	---	---	---
	15-Nov-1990	01-SS [DECOM]	638	8.18	---	---	159.7	295.2	---	0.01	26.8	---	---	335	49.4	8.8	7	63	359.8	---	---	---	---	---	---	---	< 0.0010	---	---	0.04	0.31	---	---	---	---	---	---	---
	16-May-1991	01-SS [DECOM]	627	7.88	---	---	---	---	---	---	---	---	---	410	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Nov-1991	01-SS [DECOM]	576	7.97	---	---	---	---	---	0.2	---	---	---	370	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	01-SS [DECOM]	477	7.93	---	---	---	---	---	< 0.01	---	---	---	310	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
02-SH [Decommissioned]	16-Feb-1985	02-SH [DECOM]	---	---	---	---	215.6	205	---	---	---	---	---	210	---	---	---	---	249.9	---	---	---	---	---	---	---	---	---	---	0.006	0.004	---	---	---	---	---	---	---
	18-Feb-1985	02-SH [DECOM]	---	---	---	---	193.1	206	---	---	---	---	---	202	---	---	---	---	251.1	---	---	---	---	---	---	---	---	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-May-1985	02-SH [DECOM]	391	7.91	---	---	203.9	209	---	0.4	4	---	---	215	59	13.7	0.97	4.3	254.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.004	---	---	---	---	---	---	---
	15-Sep-1985	02-SH [DECOM]	381	7.87	---	---	188.9	207	---	0.4	3.4	---	---	205	55	12.5	1.12	4.3	252.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Dec-1985	02-SH [DECOM]	410	7.72	---	---	202.6	202	---	0.6	4	---	---	210	57	14.6	1.05	3.9	246.2	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.006	---	---	---	---	---	---	---
	15-Feb-1986	02-SH [DECOM]	400	7.56	---	---	---	---	---	0.2	4	---	---	---	60.9	15.4	1.23	4.5	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	02-SH [DECOM]	400	7.29	---	---	215.6	208	---	1.1	3.4	---	---	215	60.4	15.7	0.93	4.6	253.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.004	---	---	---	---	---	---	---
	15-Aug-1986	02-SH [DECOM]	414	7.11	---	---	213.8	210	---	0.5	5	---	---	220	60	15.5	1.43	5.4	256	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.027	---	---	---	---	---	---	---
	15-Oct-1986	02-SH [DECOM]	380	7.76	---	---	203.8	200	---	0.7	3.7	---	---	215	57	14.9	1	3.8	243.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.01	---	---	---	---	---	---	---
	15-May-1987	02-SH [DECOM]	381	7.84	---	---	200.1	202	---	0.2	3.7	---	---	210	55	15.2	1	4.1	246.2	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Sep-1987	02-SH [DECOM]	370	7.88	---	---	191	200	---	0.8	3.5	---	---	200	55	13	0.95	3.7	243.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.009	---	---	---	---	---	---	---
	15-Nov-1987	02-SH [DECOM]	375	7.71	---	---	202.6	202	---	1.2	4.3	---	---	215	56	15.2	0.98	4	246.2	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Feb-1988	02-SH [DECOM]	385	7.34	---	---	---	---	---	0.4	3.3	---	---	---	52.7	14.9	1.01	4.1	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	02-SH [DECOM]	380	8.02	---	---	200.4	205	---	0.7	4.1	---	---	210	56.5	14.4	1	4.2	250	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.024	---	---	---	---	---	---	---
	15-Aug-1988	02-SH [DECOM]	366	7.16	---	---	192.9	202.5	---	0.3	3.6	---	---	201	54.6	13.7	1	4.5	246.8	---	---	---	---	---	---	---	< 0.0010	---	---	0.034	0.04	---	---	---	---	---	---	---
	15-Nov-1988	02-SH [DECOM]	387	7.5	---	---	208.4	209	---	0.7	4.6	---	---	213	60	14.2	1.3	5	254.8	---	---	---	---	---	---	---	< 0.0010	---	---	0.023	0.076	---	---	---	---	---	---	---
	15-Mar-1989	02-SH [DECOM]	381	8.1	---	---	209	203	---	0.3	5.9	---	---	209	60.4	14.1	1	4.2	247.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.01	---	---	---	---	---	---	---
	15-May-1989	02-SH [DECOM]	407	7.65	---	---	218.4	209	---	0.3	10.6	---	---	222	62	15.4	1.04	5	254.8	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.017	---	---	---	---	---	---	---
	15-Sep-1989	02-SH [DECOM]	385	7.5	---	---	---	---	---	---	---	---	---	270	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	02-SH [DECOM]	366	8.29	---	---	197.2	192	---	0.3	7.5	---	---	199	53.2	15.6	1.08	4.2	234	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.011	---	---	---	---	---	---	---
	15-Mar-1990	02-SH [DECOM]	397	8.13	---	---	---	---	---	---	---	---	---	216	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	02-SH [DECOM]	415	7.89	---	---	208	215	---	0.5	11.4	---	---	222	58	15.3	1.02	4.8	262.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.005	---	---	---	---	---	---	---
	15-Aug-1990	02-SH [DECOM]	379	7.88	---	---	---	---	---	---	---	---	---	245	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	02-SH [DECOM]	394	7.91	---	---	194.7	216	---	0.01	3.7	---	---	210	55	13.9	1.12	4.5	263.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.005	---	---	---	---	---	---	---
	16-May-1991	02-SH [DECOM]	452	7.72	---	---	---	---	---	1	21.3	---	---	290	55	15.5	1.1	6	---	---	---	---	---	---	---	---	---	---	---	0.011	---	---	---	---	---	---	---	---
	04-Nov-1991	02-SH [DECOM]	351	7.91	---	---	---	191	---	0.3	5.1	---	---	200	57	13.5	1.02	4.25	233	---	---	---	---	---	---	---	< 0.0010	---	---	0.017	---	---	---	---	---	---	---	---
	12-May-1992	02-SH [DECOM]	362	8.25	---	---	189.7	199	---	0.6	4	---	---	495	54.8	12.8	0.96	4.03	242.6	---	---	---	---	---	---	0.98	< 0.0010	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	03-Nov-1992	02-SH [DECOM]	370	7.74	---	---	---	199	---	< 0.01	7.4	---	---	204	56.3	14.2	1.05	4.12	242.6	---	---	---	---	---	---	1.01	< 0.0010	---	---	---	0.004	---	---	---	---	---	---	---
	19-May-1993	02-SH [DECOM]	327	7.64	---	---	185	198	---	< 0.50	4.5	---	---	195	51.6	13.7	0.89	4.02	241	---	---	---	---	---	---	0.96	< 0.0010	---	---	0.008	0.011	---	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	**7.0-10.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.05**	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	**1.0**	---	---	---	---	---	---	---	**0.12**	---	---	---	---	---	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1**	**10**	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	**6.5 - 8.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1.0**	**10**	---	---	---	---	**0.05**	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	**6.5 - 8.5**	---	---	---	---	---	**120**	**Variable**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.0050**	**0.0050**	**0.0050**	**Variable**	**3**	---	---	---	**Variable [13]**	**0.0019**	---	---
02-IN [Decommissioned]	16-Feb-1985	02-IN [DECOM]	---	---	---	---	301.7	314	---	---	---	---	---	370	---	---	---	---	382.8	---	---	---	---	---	---	---	---	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	18-Feb-1985	02-IN [DECOM]	---	---	---	---	295.2	318	---	---	---	---	---	381	---	---	---	---	387.6	---	---	---	---	---	---	---	---	---	---	0.021	0.01	---	---	---	---	---	---	---
	15-May-1985	02-IN [DECOM]	585	8.01	---	---	255	309	---	2.1	24.3	---	---	340	76	15.8	4.36	24.9	376.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.054	0.024	---	---	---	---	---	---	---
	15-Sep-1985	02-IN [DECOM]	616	7.63	---	---	269.1	313	---	1.6	27.5	---	---	350	80	16.8	4.15	24.7	381.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.01	---	---	---	---	---	---	---
	15-Feb-1986	02-IN [DECOM]	640	7.55	---	---	---	---	---	0.9	36	---	---	---	86.1	21	4.02	27.5	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	02-IN [DECOM]	660	7.67	---	---	314.3	319	---	1.9	40	---	---	385	89	22.3	3.91	27.5	388.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.032	---	---	---	---	---	---	---
	15-Aug-1986	02-IN [DECOM]	681	7.35	---	---	305.2	314	---	1.3	52.5	---	---	390	89	20.1	3.95	26.5	382.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.013	---	---	---	---	---	---	---
	15-Oct-1986	02-IN [DECOM]	660	7.96	---	---	303.5	320	---	1	48.5	---	---	400	86	21.5	3.9	27	390.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.003	---	---	---	---	---	---	---
	15-May-1987	02-IN [DECOM]	665	7.74	---	---	308.1	318	---	0.8	50.5	---	---	390	87	22	4	30	387.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Sep-1987	02-IN [DECOM]	661	7.88	---	---	307.3	325	---	1.5	48.8	---	---	390	89	20.6	3.8	27.6	396.2	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Nov-1987	02-IN [DECOM]	656	7.79	---	---	302.2	322	---	0.2	42.4	---	---	385	85	21.8	3.7	27.8	392.5	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.51	---	---	---	---	---	---	---
	15-Feb-1988	02-IN [DECOM]	653	7.67	---	---	---	---	---	0.8	49.4	---	---	---	83.5	21	3.78	28.6	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	02-IN [DECOM]	682	8.01	---	---	301.7	315	---	1.5	47	---	---	380	86.7	20.7	3.88	28.3	385	---	---	---	---	---	---	---	< 0.0010	---	---	0.038	0.011	---	---	---	---	---	---	---
	15-Aug-1988	02-IN [DECOM]	648	7.83	---	---	300.7	311.3	---	0.5	49.4	---	---	378	86.2	20.7	3.8	27.8	379.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.022	0.005	---	---	---	---	---	---	---
	15-Nov-1988	02-IN [DECOM]	666	7.87	---	---	304.3	318	---	0.6	74	---	---	409	87.8	20.6	3.9	28.3	387.6	---	---	---	---	---	---	---	< 0.0010	---	---	0.014	0.019	---	---	---	---	---	---	---
02-IN [Decommissioned]	15-Mar-1989	02-IN [DECOM]	656	7.57	---	---	299.8	313	---	0.4	49.7	---	---	386	86	20.6	3.83	27.2	381.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.01	---	---	---	---	---	---	---
	15-May-1989	02-IN [DECOM]	649	7.68	---	---	300.2	312	---	0.2	43.5	---	---	371	86	20.7	3.8	26.5	380.3	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.044	---	---	---	---	---	---	---
	15-Sep-1989	02-IN [DECOM]	643	7.42	---	---	---	---	---	---	---	---	---	430	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	02-IN [DECOM]	650	8.15	---	---	315.5	319	---	0.5	48.4	---	---	387	87.5	23.5	3.9	28.1	388.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.24	---	---	---	---	---	---	---
	15-Mar-1990	02-IN [DECOM]	643	8.16	---	---	---	---	---	---	---	---	---	360	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	02-IN [DECOM]	647	7.68	---	---	305.2	323	---	0.4	44.9	---	---	382	88.5	20.4	3.85	27.3	393.7	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.015	---	---	---	---	---	---	---
	15-Aug-1990	02-IN [DECOM]	657	7.65	---	---	---	---	---	---	---	---	---	430	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	02-IN [DECOM]	687	7.95	---	---	296	326.4	---	0.1	50.5	---	---	384	84.5	20.6	3.64	25.5	397.9	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.006	---	---	---	---	---	---	---
	16-May-1991	02-IN [DECOM]	662	7.72	---	---	---	---	---	---	---	---	---	430	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	02-IN [DECOM]	603	7.35	---	---	---	---	---	0.5	---	---	---	390	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	02-IN [DECOM]	576	7.34	---	---	---	---	---	0.6	---	---	---	374	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	02-IN [DECOM]	605	7.53	---	---	---	---	---	< 0.50	---	---	---	410	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
03-SH	18-Feb-1985	03-SH	---	---	---	---	298.8	284	---	---	---	---	---	316	---	---	---	---	346.2	---	---	---	---	---	---	---	---	---	---	< 0.003	0.085	---	---	---	---	---	---	---
	15-May-1985	03-SH	516	7.86	---	---	284.4	289	---	0.6	12	---	---	300	81	19.9	1.23	7.1	352.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.041	---	---	---	---	---	---	---
	15-Sep-1985	03-SH	551	7.65	---	---	280.7	291	---	0.8	11	---	---	300	80	19.6	1.26	6.6	354.7	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.082	---	---	---	---	---	---	---
	15-Jun-1986	03-SH	570	7.32	---	---	316.6	287	---	2.4	16.8	---	---	315	87.3	23.9	1.08	7	349.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.13	---	---	---	---	---	---	---
	15-Aug-1986	03-SH	567	7.53	---	---	296.8	278	---	1.4	17	---	---	305	82	22.3	1.25	6.2	338.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.084	---	---	---	---	---	---	---
	15-Oct-1986	03-SH	550	7.91	---	---	299.7	284	---	1.6	18	---	---	315	83	22.4	1.21	6.2	346.2	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.113	---	---	---	---	---	---	---
	15-May-1987	03-SH	554	7.62	---	---	302.2	273	---	1.3	26.7	---	---	310	83	23	1.11	7	332.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.107	---	---	---	---	---	---	---
	15-Sep-1987	03-SH	560	7.76	---	---	295.6	286	---	2.1	26.6	---	---	315	82	22	1.21	7	348.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.044	---	---	---	---	---	---	---
	15-Nov-1987	03-SH	567	7.72	---	---	312.2	276	---	2.5	36.8	---	---	335	87	23	1.05	7.8	336.4	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.048	---	---	---	---	---	---	---
	15-Feb-1988	03-SH	558	7.26	---	---	---	---	---	1.3	29.5	---	---	---	81	23.4	1.08	6.7	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	03-SH	541	7.84	---	---	287.3	274	---	2.1	28	---	---	310	80.1	21.2	1.11	7.5	334	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.056	---	---	---	---	---	---	---
	15-Aug-1988	03-SH	554	8.09	---	---	299	282.5	---	1	30.4	---	---	318	83.2	22.1	1.2	8.3	344.4	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.064	---	---	---	---	---	---	---
	15-Nov-1988	03-SH	565	7.75	---	---	277.4	282	---	1	29.1	---	---	308	74.4	22.2	1.22	7.8	343.8	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.07	---	---	---	---	---	---	---
	15-Mar-1989	03-SH	546	8.26	---	---	287.3	274	---	0.9	26.7	---	---	305	80	21.2	1.05	7.7	334	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.147	---	---	---	---	---	---	---
	15-May-1989	03-SH	495	7.44	---	---	254.5	239	---	1	31	---	---	278	71	18.7	1	9.4	291.3	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.173	---	---	---	---	---	---	---
	15-Sep-1989	03-SH	532	7.81	---	---	---	---	---	---	---	---	---	350	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	03-SH	541	8.25	---	---	291.4	267	---	0.7	23.1	---	---	299	81	21.6	1.2	8.4	325.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.03	---	---	---	---	---	---	---
	15-May-1990	03-SH	545	7.94	---	---	290.2	279	---	0.9	24.2	---	---	308	81	21.3	1.06	9	340.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.054	---	---	---	---	---	---	---
	15-Aug-1990	03-SH	556	7.88	---	---	---	---	---	---	---	---	---	360	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	03-SH	538	8.1	---	---	270.2	287.2	---	0.01	22.4	---	---	303	74	20.7	1.18	9.5	350.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.04	---	---	---	---	---	---	---
	16-May-1991	03-SH	534	7.75	---	---	---	---	---	1	22.9	---	---	350	74.5	18.5	1.1	9.7	---	---	---	---	---	---	---	---	---	---	---	0.047	---	---	---	---	---	---	---	---
	04-Nov-1991	03-SH	505	7.95	---	---	---	264	---	1.1	22.2	---	---	290	79	19.8	1.11	10.9	322	---	---	---	---	---	---	---	< 0.0020	---	---	0.033	---	---	---	---	---	---	---	---
	12-May-1992	03-SH	529	8.27	---	---	259.4	241	---	0.8	24	---	---	252	71.8	19.4	1.03	11.7	293.8	---	---	---	---	---	---	---	0.002	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	03-Nov-1992	03-SH	512	7.71	---	---	---	262	---	1.6	20	---	---	288	73.5	19.3	1.18	12.6	319.4	---	---	---	---	---	---	---	0.002	---	---	---	0.13	---	---	---	---	---	---	---
	18-May-1993	03-SH	456	7.82	---	---	246	266	---	1.4	21.7	---	---	287	66.5	19.3	1.04	14.4	324	---	---	---	---	---	---	---	0.95	---	---	< 0.003	0.499	---	---	---	---	---	---	---
	10-Nov-1993	03-SH	516	7.76	---	---	252	259	---	0.7	20.1	---	---	285	69.5	18.9	1.1	16.2	316	---	---	---	---	---	---	---	1.01	---	---	< 0.003	1.06	---	---	---	---	---	---	---
	31-May-1994	03-SH	526	7.34	---	---	---	261	< 0.1	1.2	20.5	< 0.01	0.005	293	77	18.3	0.99	14.4	318	< 0.5	< 0.5	---	---	---	---	---	1.04	< 0.001	---	---	**1.53**	1.53	1.53	---	---	---	---	---	---
(Duplicate)	31-May-1994	03-SH DUP	530	7.41	---	---	---	260	< 0.1	1.2	23	< 0.01	< 0.001	286	65.5	17.8	1	17.4	317	< 0.5	< 0.5	---	---	---	---	---	0.95	< 0.001	---	---	**1.69**	1.69	1.69	---	---	---	---	---	---
	21-Sep-1994	03-SH	541	7.32	---	---	---	259	0.1	1.2	30	0.01	0.001	294	68	19	1.14	15.2	316	0.5	0.5	---	---	---	---	---	0.95	< 0.001	---	---	**1.34**	1.34	1.34	---	---	---	---	---	---
(Duplicate)	21-Sep-1994	03-SH DUP	543	7.47	---	---	---	263	0.1	1.2	29.5	0.01	0.001	298	67	20	1.17	17.5	321	0.5	0.5	---	---	---	---	---	0.96	0.001	---	---	**1.65**	1.65	1.65	---	---	---	---	---	---
	01-Nov-1994	03-SH	557	7.85	---	---	---	265	< 0.1	2.1	33.5	0.07	0.003	315	79.2	19.7	1.2	16.7	323	< 0.5	< 0.5	---	---	---	---	---	1.03	< 0.001	---	---	**1.32**	1.32	1.32	---	---	---	---	---	---
(Duplicate)	01-Nov-1994	03-SH DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	02-Nov-1994	03-SH DUP	831	7.54	---	---	---	426	< 0.1	4.4	35.3	< 0.01	**0.157**	473	126	31.8	2.63	12.7	519	< 0.5	< 0.5	---	---	---	---	---	1.02	< 0.001	---	---	0.033	0.033	0.033	---	---	---	---	---	---
	28-Sep-1995	03-SH	541	7.45	---	---	276	259	< 0.1	1.1	47.1	< 0.01	0.007	325	75.9	20.9	1.1	17.4	316	< 0.5	< 0.5	---	---	---	---	---	1.01	< 0.001	---	---	---	0.765	---	---	---	---	---	---	---
	04-Sep-1996	03-SH	613	7.5	---	---	289	257	< 0.1	0.8	72.1	< 0.01	0.006	351	81.6	20.7	1.02	17.6	313	< 0.5	< 0.5	---	---	---	---	---	0.98	< 0.001	---	---	---	0.132	0.14	---	---	---	---	---	---
	04-Sep-1997	03-SH	606	7.62	---	---	321	266	< 0.1	0.9	68.8	< 0.01	< 0.001	366	92	22.1	1.03	19.2	324	< 0.5	< 0.5	---	---	---	---	---	1.07	< 0.001	---	---	---	0.04	0.04	---	---	---	---	---	---
	15-Sep-1998	03-SH	612	7.41	---	---	300	270	< 0.1	0.5	63.8	---	---	352	82.5	22.9	1.2	18.5	329	< 0.5	< 0.5	---	6.74	6.84	---	---	1.01	0.001	---	---	---	0.013	0.017	---	---	---	---	---	---
(Duplicate)	15-Sep-1998	03-SH DUP	610	7.49	---	---	310	268	< 0.1	0.5	64.4	---	---	354	84.7	23.3	1.1	19	327	< 0.5	< 0.5	---	6.72	7	---	---	1.04	0.001	---	---	---	0.018	0.023	---	---	---	---	---	---
	09-Sep-1999	03-SH	666	7.71	---	---	330	289	< 0.1	1.2	70.8	---	---	388	91	25.9	0.8	19.4	353	< 0.5	< 0.5	---	7.38	7.54	---	---	1.02	< 0.0010	---	< 0.001	---	1.19	1.2	---	---	---	---	---	---
	05-Sep-2000	03-SH	683	7.77	---	---	350	314	< 0.1	1.3	69.5	< 0.01	**0.028**	408	96.5	26	1.3	20.5	384	< 0.5	< 0.5	---	7.84	7.89	---	---	1.01	0.004	---	---	< 0.003	0.992	0.992	---	---	---	---	---	---
	06-Sep-2001	03-SH	692	7.96	---	---	360	315	< 0.5	1.3	79.2	< 0.01	0.005	422	99.3	27.9	1.4	21.8	384	< 0.5	< 0.5	---	---	---	---	---	1.03	< 0.001	---	---	< 0.003	0.416	0.416	---	---	---	---	---	---
	04-Sep-2002	03-SH	757	7.76	---	---	330	323	< 0.5	1.1	75.7	0.02	**0.081**	414	90.6	25.5	1.3	26.3	394	< 0.5	< 0.5	---	---	---	---	---	0.97	< 0.001	---	---	< 0.003	0.025	0.025	---	---	---	---	25.7	---
	03-Sep-2003	03-SH	743	7.76	---	---	380	336	< 0.5	1.3	83.7	0.03	0.019	450	106	28	1.4	27.2	410	< 0.5	< 0.5	---	---	---	---	---	1.04	---	< 0.004	---	< 0.003	0.024	0.024	---	---	---	---	27.7	---
	09-Sep-2004	03-SH	769	7.97	---	---	360	338	< 0.5	1.3	84.8	0.02	**0.148**	446	98.7	26.5	1.4	30.3	412	< 0.5	< 0.5	---	---	---	---	---	0.99	---	< 0.004	---	< 0.003	< 0.003	< 0.003	---	---	---	---	25.9	---
	08-Sep-2005	03-SH	664	8.14	0.6	---	290	305	< 0.5	1.4	79.4	< 0.01	**0.124**	399	82.4	19.4	1.1	32.4	372	< 0.5	< 0.5	---	---	---	---	---	0.92	---	< 0.004	---	< 0.003	0.088	0.088	---	---	---	---	22.1	---
	07-Sep-2006	03-SH	699	8.03	---	---	290	313	< 0.5	1.3	73.8	< 0.01	0.015	412	81.2	22.3	1.3	44.5	382	< 0.5	< 0.5	---	---	---	---	---	1	---	---	---	< 0.003	0.018	0.018	---	---	---	---	23.8	---
	05-Sep-2007	03-SH	691	8	---	---	240	315	< 0.5	1.2	69.4	< 0.06	**0.032**	387	55.1	24	1.8	46.4	385	< 0.5	< 0.5	---	---	---	---	---	0.87	---	---	---	< 0.003	0.014	0.014	---	---	---	---	19	---
	03-Sep-2008	03-SH	729	8	---	---	270	340	---	< 0.50	68.1	< 0.030	**0.0993**	407	67.1	24.8	1.49	41.4	414	< 5	< 5	0.38	---	---	---	---	0.879	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	03-SH	767	7.99	---	---	373	356	---	1.25	74.6	< 0.030	**0.189**	453	106	26.3	1.29	29.8	434	< 5.0	< 5.0	0.328	---	---	---	---	1.01	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	03-SH	893	7.78	---	---	418	410	---	2.88	97.4	< 0.030	**0.266**	**527**	110	34.7	1.45	34.4	500	< 5.0	< 5.0	0.402	---	---	95.7	---	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	03-SH	950	8.2	---	---	406	443	---	1.91	99.1	0.032	**0.145**	**545**	104	35.5	1.61	36.5	541	< 5.0	< 5.0	0.391	---	---	88.5	---	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	03-SH	948	8	---	448	449	456	---	1	90.1	< 0.030	**0.101**	**561**	125	33.2	1.7	35.9	556	< 5.0	< 5.0	0.372	---	---	95.8	---	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	03-SH	876	7.85	---	440	440	471	---	0.60	78.5	< 0.030	**0.162**	**555**	123	32.2	1.56	35.9	575	< 5.0	< 5.0	0.322	---	---	93.7	---	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Sep-2014	03-SH	803	8.27	---	---	404	391	---	< 0.50	65.9	< 0.010	**0.054**	479	113	29.5	1.49	34.6	477	< 5.0	< 5.0	0.366	---	---	104	---	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	21.4	---
	28-Sep-2015	03-SH	760	8.18	---	---	402	384	---	<0.50	61.6	<0.010	**0.0713**	467	110	31.0	1.50	32.2	468	<5.0	<5.0	0.434	---	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	28-Sep-2016	03-SH	756	8.25	---	---	372	386	---	<0.50	55.6	<0.010	0.0127	447	107	25.3	1.43	25.9	471	<5.0	<5.0	0.364	---	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	03-SH	681	7.92	---	---	390	367	---	<0.50	52.9	<0.030	0.0095	442	106	30.5	1.50	30.3	447	<5.0	<5.0	0.346	---	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	18-Sep-2018	03-SH	670	8.18	---	---	368	358	---	<0.50	49.1	<0.010	0.0020	418	103	26.8	1.29	23.0	437

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
03-IN	16-Feb-1985	03-IN	---	---	---	---	397.1	352	---	---	---	---	---	540	---	---	---	---	429.1	---	---	---	---	---	---	---	---	---	---	< 0.003	0.82	---	---	---	---	---	---	---
	18-Feb-1985	03-IN	---	---	---	---	526.5	349	---	---	---	---	---	670	---	---	---	---	425.4	---	---	---	---	---	---	---	---	---	---	< 0.003	0.28	---	---	---	---	---	---	---
	15-May-1985	03-IN	852	8.09	---	---	307.9	309	---	4.2	163	---	---	540	95	17.1	4.65	62	376.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.13	1.81	---	---	---	---	---	---	---
	15-Sep-1985	03-IN	788	7.64	---	---	350.1	328	---	3.1	107	---	---	475	103	22.5	3.7	33.7	399.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.04	0.36	---	---	---	---	---	---	---
	15-Dec-1985	03-IN	890	7.82	---	---	392.7	360	---	3	128	---	---	530	110	28.6	4.08	32.1	438.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.008	1.02	---	---	---	---	---	---	---
	15-Feb-1986	03-IN	820	7.96	---	---	---	---	---	3	147	---	---	---	106	32.1	4.25	29.7	---	---	---	---	---	---	---	---	0.005	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	03-IN	910	7.46	---	---	408.6	341	---	4.7	156	---	---	550	117	28.2	3.6	27.3	415.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.014	0.61	---	---	---	---	---	---	---
	15-Aug-1986	03-IN	959	7.73	---	---	442.7	334	---	2.9	176	---	---	585	128	29.8	3.95	29.1	407.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.67	---	---	---	---	---	---	---
	15-Oct-1986	03-IN	930	7.69	---	---	474.2	345	---	3.6	172	---	---	600	135	33.2	4	31	420.6	---	---	---	---	---	---	---	< 0.0020	---	---	0.09	0.27	---	---	---	---	---	---	---
	15-May-1987	03-IN	888	7.54	---	---	472	343	---	2.6	149	---	---	560	133	33.9	3.95	27	418.1	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.059	---	---	---	---	---	---	---
	15-Sep-1987	03-IN	920	7.7	---	---	471.2	351	---	4.4	180	---	---	600	133	33.7	3.9	27	427.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.016	---	---	---	---	---	---	---
	15-Nov-1987	03-IN	987	7.9	---	---	511.5	345	---	1.2	210	---	---	650	145	36.2	4.06	29.5	420.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.36	---	---	---	---	---	---	---
	15-Feb-1988	03-IN	1030	7.65	---	---	---	---	---	3.9	270	---	---	---	151	36.2	4.6	42.6	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	03-IN	1010	8.01	---	---	535.6	350	---	4.2	227	---	---	710	168	36.7	4.25	33.8	726	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.21	---	---	---	---	---	---	---
	15-Aug-1988	03-IN	1030	8.29	---	---	525.6	368.4	---	3	210	---	---	663	149	37.2	4.3	34.9	449.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.094	---	---	---	---	---	---	---
	15-Oct-1988	03-IN	1100	7.85	---	---	533.5	364	---	2.5	260	---	---	720	152	37.3	4.45	41.6	443.7	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.12	---	---	---	---	---	---	---
	15-Mar-1989	03-IN	1030	8.09	---	---	529.4	344	---	2.2	239	---	---	681	152	36.3	4	37.5	419.3	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.21	---	---	---	---	---	---	---
	15-May-1989	03-IN	1070	7.31	---	---	524.4	352	---	3.1	281	---	---	736	150	36.3	4.45	46.6	429.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.43	---	---	---	---	---	---	---
	15-Sep-1989	03-IN	1050	7.92	---	---	---	---	---	---	---	---	---	700	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	03-IN	1120	8.1	---	---	538.8	372	---	2.2	295	---	---	767	151	39.2	1.5	51	453.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.195	---	---	---	---	---	---	---
	15-Mar-1990	03-IN	1020	7.74	---	---	---	---	---	---	---	---	---	708	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	03-IN	1110	7.93	---	---	509.8	360	---	3.2	261	---	---	721	144	36.4	4.44	52	438.8	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.246	---	---	---	---	---	---	---
	15-Aug-1990	03-IN	1120	7.7	---	---	---	---	---	---	---	---	---	730	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	03-IN	1120	7.81	---	---	477.3	354	---	1.8	210	---	---	659	130	37	4.43	59.8	431.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.294	---	---	---	---	---	---	---
	16-May-1991	03-IN	1110	7.55	---	---	---	---	---	---	---	---	---	720	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	03-IN	923	7.55	---	---	---	---	---	1.6	---	---	---	600	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	03-IN	903	7.21	---	---	---	---	---	2.2	---	---	---	587	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	03-IN	903	7.44	---	---	---	---	---	1.5	---	---	---	640	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	03-IN	877	7.08	---	---	---	---	---	2.5	---	---	---	570	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	03-IN	903	7.14	---	---	---	---	---	---	---	---	---	590	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	03-IN	836	7.44	---	---	---	---	---	---	---	---	---	565	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	03-IN	1000	7.04	---	---	---	---	---	---	---	---	---	699	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	03-IN	990	7.43	---	---	463	358	< 0.1	1.7	188	< 0.01	0.118	639	132	32.3	4.16	62.2	436	< 0.5	< 0.5	---	---	---	---	1.08	---	---	---	---	---	0.09	---	---	---	---	---	---
	15-Sep-1998	03-IN	1010	7.24	---	---	---	---	---	---	---	---	---	710	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	03-IN	983	7.63	---	---	420	339	< 0.1	1.4	194	---	---	609	112	32.9	3.7	61	414	< 0.5	< 0.5	---	10.9	11.1	---	1.02	---	---	---	< 0.003	0.076	0.076	---	---	---	---	---	---
	05-Sep-2000	03-IN	918	7.32	---	---	---	---	---	---	---	---	---	638	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	03-IN	869	7.95	---	---	---	---	---	---	---	---	---	595	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	03-IN	990	7.62	---	---	---	---	---	---	---	---	---	565	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	03-IN	910	7.94	---	---	---	---	---	---	---	---	---	632	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2004	03-IN	928	7.93	---	---	390	339	< 0.5	1.6	168	0.02	0.005	562	109	27.6	3.8	47.4	413	< 0.5	< 0.5	---	---	---	---	0.96	---	---	---	< 0.003	0.125	0.125	---	---	---	---	---	---
	08-Sep-2005	03-IN	848	8.18	---	---	390	325	< 0.5	2.4	173	< 0.01	0.062	562	110	28.3	3.9	49.2	396	< 0.5	< 0.5	---	---	---	---	0.99	---	---	---	< 0.003	0.156	0.156	---	---	---	---	---	---
	07-Sep-2006	03-IN	899	7.94	---	---	440	341	< 0.5	1.8	162	0.03	0.084	599	140	22.5	4.3	63.6	416	< 0.5	< 0.5	---	---	---	---	1.14	---	---	---	< 0.003	0.07	0.07	---	---	---	---	63.9	---
	05-Sep-2007	03-IN	885	7.86	---	---	340	347	< 0.5	1.3	153	< 0.06	0.035	530	98.2	24	3.9	41.4	423	< 0.5	< 0.5	---	---	---	---	0.86	---	---	---	< 0.003	0.055	0.055	---	---	---	---	40.8	---
	03-Sep-2008	03-IN	882	7.9	---	---	367	359	---	0.81	140	< 0.030	0.0047	528	102	27.3	3.4	39.3	438	< 5	< 5	0.171	---	---	---	0.902	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	03-IN	872	7.98	---	---	416	349	---	0.86	137	< 0.030	0.198	547	120	28.2	4.06	47.3	425	< 5.0	< 5.0	0.162	---	---	---	1.06	---	---	---	< 0.050	0.063	< 0.071	---	---	---	---	---	---
	08-Sep-2010	03-IN	906	7.88	---	---	362	359	---	1.17	137	< 0.030	0.0326	526	101	26.6	3.37	41.7	438	< 5.0	< 5.0	0.217	---	---	90.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	03-IN	916	8.17	---	---	380	378	---	1.01	136	< 0.030	< 0.0050	548	104	29.1	3.98	46.5	461	< 5.0	< 5.0	0.219	---	---	93.1	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	03-IN	908	7.99	---	372	372	383	---	0.85	130	< 0.030	< 0.0050	542	103	27.9	4.09	46.3	467	< 5.0	< 5.0	0.198	---	---	91.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	03-IN	872	7.86	---	419	419	387	---	0.71	121	< 0.030	0.0660	549	119	29.6	3.75	42.6	473	< 5.0	< 5.0	0.160	---	---	100	---	---	---	---	< 0.050	0.064	< 0.071	---	---	---	---	---	---
	16-Sep-2014	03-IN	853	8.29	---	---	390	374	---	0.63	106	< 0.010	0.3470	511	111	27.4	3.55	38.2	457	< 5.0	< 5.0	0.188	---	---	98.2	---	---	---	---	< 0.020	<0 .050	< 0.054	---	---	---	---	27.5	---
	28-Sep-2015	03-IN	780	8.15	---	---	416	373	---	0.57	80.9	<0.010	0.114	495	119	28.8	3.78	37.3	455	<5.0	<5.0	0.251	---	---	---	---	---	---	---	<0.010	0.094	0.094	---	---	---	---	---	---
	28-Sep-2016	03-IN	794	8.19	---	---	387	358	---	<0.50	76.4	<0.010	0.121	462	113	25.7	3.25	28.4	437	<5.0	<5.0	0.210	---	---	---	---	---	---	---	<0.010	0.052	0.052	---	---	---	---	---	---
	27-Sep-2017	03-IN	700	8.02	---	---	401	353	---	<0.50	78.3	<0.030	0.075	473	111	30.1	3.79	38.0	430	<5.0	<5.0	0.188	---	---	---	---	---	---	---	<0.010	0.069	0.069	---	---	---	---	---	---
	18-Sep-2018	03-IN	698	8.13	---	---	342	354	---	<0.50	66.4	<0.010	0.001	427	98	23.9	2.83	23.7	431	<5.0	<5.0	0.232	---	---	---	---	---	---	---	<0.010	0.037	0.037	---	---	---	---	---	---
	17-Sep-2019	03-IN	743	7.55	---	---	386	380	---	0.64	78.7	<0.010	0.068	476	108	28.3	3.16	28.3	463	<5.0	<5.0	0.265	---	---	---	---	---	---	---	<0.010	0.052	0.052	---	---	---	---	---	---
	22-Sep-2020	03-IN	753	7.82	---	---	346	371	---	<0.50	63.0	<0.010	0.00843	438	97.7	24.8	3.17	26.5	452	<5.0	<5.0	0.237	---	---	---	---	---	---	---	<0.010	0.095	0.095	---	---	---	---	---	---
	22-Sep-2021	03-IN	749	7.73	---	---	391	381	---	<0.50	61.8	<0.030	<0.0050	453	106	30.7	2.85	22.1	465	<5.0	<5.0	0.224	---	---	---	---	---	---	---	<0.010	0.066	0.066	---	---	---	---	---	---
	29-Sep-2022	03-IN	752	8.11	---	---	415	389	---	0.53	65.5	<0.030	<0.0050	501	114	31.7	2.92	22.8	474	<1.0	<1.0	0.149	---	---	---	---	---	---	---	<0.010	0.067	0.0670	---	---	---	---	---	---
	29-Sep-2023	03-IN	815	8.23	---	---	440	397	---	1.45	88	<0.010	0.00131	540	121	33.4	3.16	26	485	<1.0	<1.0	0.21	---	---	---	---	---	---	---	<0.010	0.093	0.093	---	---	---	---	---	---
	10-Sep-2024	03-IN	813	7.65	---	---	390	406	---	1.24	90.2	<0.010	0.010	528	106	30.5	3.48	27.4	495	<1.0	<1.0	0.228	---	---	---	---	---	---	---	<0.010	0.030	<0.0500	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	**7.0-10.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.05**	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	**1.0**	---	---	---	---	---	---	---	**0.12**	---	---	---	---	---	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1**	**10**	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	**6.5 - 8.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1.0**	**10**	---	---	---	---	**0.05**	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	**6.5 - 8.5**	---	---	---	---	---	**120**	**Variable**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.0050**	**0.0050**	**0.0050**	**Variable**	**3**	---	---	---	**Variable [13]**	**0.0019**	---	---
04-SH	18-Feb-1985	04-SH	---	---	---	---	326.6	337	---	---	---	---	---	347	---	---	---	---	410.8	---	---	---	---	---	---	---	---	---	---	< 0.003	0.053	---	---	---	---	---	---	---
	15-May-1985	04-SH	601	7.92	---	---	313.5	320	---	3.2	34.5	---	---	370	89	22.1	2.28	19.5	390.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.017	0.43	---	---	---	---	---	---	---
	15-Sep-1985	04-SH	627	8.11	---	---	299.4	320	---	1.3	19	---	---	340	86	20.5	2.01	12.3	390.1	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.169	---	---	---	---	---	---	---
	15-Jun-1986	04-SH	640	7.37	---	---	311.9	322	---	1.8	23.7	---	---	350	86.9	23	2.2	10.4	392.5	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.17	---	---	---	---	---	---	---
	15-Aug-1986	04-SH	632	7.3	---	---	314.2	316	---	1	19	---	---	335	85	24.7	2.09	9.2	385.2	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.161	---	---	---	---	---	---	---
	15-Oct-1986	04-SH	610	7.99	---	---	330	328	---	1	15.5	---	---	355	91	24.9	2.2	8.8	399.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.26	---	---	---	---	---	---	---
	15-May-1987	04-SH	569	7.79	---	---	312.9	309	---	0.4	14.2	---	---	330	85	24.4	1.73	8	376.7	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.115	---	---	---	---	---	---	---
	15-Sep-1987	04-SH	606	7.76	---	---	324.8	328	---	0.9	16.4	---	---	342	90.2	24.1	2.03	8.7	400	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.07	---	---	---	---	---	---	---
	15-Nov-1987	04-SH	603	7.63	---	---	326.6	327	---	1.1	11.6	---	---	345	89	25.3	1.85	8.8	398.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.033	---	---	---	---	---	---	---
	15-Feb-1988	04-SH	617	7.25	---	---	---	---	---	0.6	15.4	---	---	---	88	25.9	2.25	9.5	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	04-SH	596	7.99	---	---	327.1	323	---	1.2	16	---	---	340	91.1	24.2	1.93	8.7	394	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.083	---	---	---	---	---	---	---
	15-Aug-1988	04-SH	637	8.09	---	---	340.8	342.5	---	0.1	25.1	---	---	366	93.2	26.2	1.9	10.4	417.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.052	---	---	---	---	---	---	---
	15-Sep-1988	04-SH	632	7.96	---	---	339.6	342	---	0.4	13.9	---	---	354	94.2	25.3	2.18	9.1	416.9	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.04	---	---	---	---	---	---	---
	15-Mar-1989	04-SH	613	8.11	---	---	334.6	320	---	0.01	33	---	---	357	94.5	23.9	2	8.5	390.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.035	---	---	---	---	---	---	---
	15-May-1989	04-SH	614	7.48	---	---	326.3	331	---	0.01	10.5	---	---	338	91.5	23.7	1.93	8.3	403.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.053	---	---	---	---	---	---	---
	15-Sep-1989	04-SH	646	7.38	---	---	---	---	---	---	---	---	---	400	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	04-SH	665	8.15	---	---	369.8	365	---	0.01	18.7	---	---	383	102	27.9	2.17	10	444.9	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.02	---	---	---	---	---	---	---
	15-Mar-1990	04-SH	631	7.5	---	---	---	---	---	---	---	---	---	244	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	04-SH	652	8.18	---	---	329.9	357	---	0.3	14.4	---	---	359	89.5	25.8	2.14	9.3	435.2	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.039	---	---	---	---	---	---	---
	15-Aug-1990	04-SH	696	7.61	---	---	---	---	---	---	---	---	---	452	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	04-SH	688	7.93	---	---	359.5	376.8	---	0.01	13.7	---	---	382	99	27.2	2.19	9.8	459.3	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.024	---	---	---	---	---	---	---
	05-Nov-1991	04-SH	635	7.74	---	---	---	362	---	0.3	13.3	---	---	370	100	26.8	2.33	9.2	441	---	---	---	---	---	---	---	< 0.0010	---	---	0.037	---	---	---	---	---	---	---	---
	12-May-1992	04-SH	690	7.68	---	---	359.9	381	---	1.4	21.5	---	---	375	99	27.3	2.66	12	464.4	---	---	---	---	---	---	0.96	< 0.0010	---	---	< 0.003	0.035	---	---	---	---	---	---	---
	03-Nov-1992	04-SH	638	7.64	---	---	---	355	---	< 0.01	12.8	---	---	370	104	26.4	2.01	8.77	432.7	---	---	---	---	---	---	1.06	< 0.0010	---	---	---	0.029	---	---	---	---	---	---	---
	18-May-1993	04-SH	596	7.68	---	---	324	356	---	< 0.50	14.4	---	---	356	88.5	25	2.13	9.27	434	---	---	---	---	---	---	0.93	< 0.0010	---	---	< 0.003	0.023	---	---	---	---	---	---	---
	10-Nov-1993	04-SH	653	7.58	---	---	330	359	---	0.6	13.1	---	---	360	87	27.4	2.3	10.3	438	---	---	---	---	---	---	0.95	0.002	---	---	< 0.003	0.015	---	---	---	---	---	---	---
	31-May-1994	04-SH	653	7.12	---	---	---	361	< 0.1	< 0.5	10.7	< 0.01	**0.061**	370	104	24.8	2.04	8.58	440	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	0.018	0.018	0.018	---	---	---	---	---	---
	21-Sep-1994	04-SH	668	7.06	---	---	---	366	0.1	0.5	13.2	0.01	**0.128**	363	90	25	2.43	9.6	446	0.5	0.5	---	---	---	---	0.93	0.001	---	---	0.017	0.017	0.017	---	---	---	---	---	---
	01-Nov-1994	04-SH	675	7.41	---	---	---	368	< 0.1	0.5	10.7	< 0.01	**0.113**	372	99.3	25.6	2.47	9.4	449	< 0.5	< 0.5	---	---	---	---	0.99	< 0.001	---	---	0.019	0.019	0.019	---	---	---	---	---	---
	28-Sep-1995	04-SH	511	7.14	---	---	391	370	< 0.1	< 0.5	12.3	< 0.01	**0.069**	389	109	28.7	2.7	10.5	451	< 0.5	< 0.5	---	---	---	---	1.09	< 0.001	---	---	---	0.024	---	---	---	---	---	---	---
	04-Sep-1996	04-SH	692	7.2	---	---	373	379	< 0.1	< 0.5	14.5	< 0.01	**0.122**	389	105	26.8	2.12	9.13	462	< 0.5	< 0.5	---	---	---	---	1	< 0.001	---	---	---	0.02	0.02	---	---	---	---	---	---
	03-Sep-1997	04-SH	698	7.52	---	---	361	392	< 0.1	0.5	10.6	< 0.01	**0.295**	389	99.2	27.5	2.4	9.8	478	< 0.5	< 0.5	---	---	---	---	0.95	< 0.001	---	---	---	0.04	0.04	---	---	---	---	---	---
	15-Sep-1998	04-SH	651	7.58	---	---	350	368	< 0.1	< 0.5	10.4	---	---	364	90.7	29.1	2.2	10.5	449	< 0.5	< 0.5	---	7.58	7.44	---	0.98	0.001	---	---	---	0.062	0.065	---	---	---	---	---	---
	09-Sep-1999	04-SH	743	7.44	---	---	440	424	< 0.1	< 0.5	10.1	---	---	431	120	34.1	2.2	10.1	517	< 0.5	< 0.5	---	8.69	9.31	---	1.07	< 0.001	---	< 0.001	---	0.03	0.03	---	---	---	---	---	---
	05-Sep-2000	04-SH	705	7.6	---	---	390	404	< 0.1	< 0.5	10.5	< 0.01	**0.032**	403	107	29.1	2.7	10.9	493	< 0.5	< 0.5	---	8.31	8.26	---	0.99	0.003	---	---	< 0.003	0.018	0.018	---	---	---	---	---	---
	06-Sep-2001	04-SH	669	7.92	---	---	380	389	< 0.5	< 0.5	11	< 0.01	**0.092**	393	105	29.9	2.9	11.3	474	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	< 0.003	0.042	0.042	---	---	---	---	---	---
(Duplicate)	06-Sep-2001	04-SH DUP	649	8.1	---	---	390	372	< 0.5	< 0.5	10.1	< 0.01	**0.114**	382	105	29.9	2.7	10.9	454	< 0.5	< 0.5	---	---	---	---	1.08	< 0.001	---	---	< 0.003	0.047	0.047	---	---	---	---	---	---
	04-Sep-2002	04-SH	753	7.58	---	---	370	402	< 0.5	< 0.5	9.3	0.01	**0.329**	394	104	27.7	2.6	9.7	490	< 0.5	< 0.5	---	---	---	---	0.96	< 0.001	---	---	< 0.003	0.023	0.023	---	---	---	---	3.4	---
(Duplicate)	04-Sep-2002	04-SH DUP	756	7.88	---	---	350	405	< 0.5	< 0.5	10.2	0.02	**0.066**	390	98.1	26.6	2.5	9.3	495	< 0.5	< 0.5	---	---	---	---	0.91	0.001	---	---	< 0.003	0.021	0.021	---	---	---	---	3.3	---
	03-Sep-2003	04-SH	685	7.68	---	---	390	380	< 0.5	0.8	10.1	0.02	**0.171**	391	111	28.1	2.7	10	464	< 0.5	< 0.5	---	---	---	---	1.07	---	< 0.004	---	< 0.003	0.023	0.023	---	---	---	---	3.6	---
(Duplicate)	11-Sep-2003	04-SH DUP	693	7.73	---	---	390	382	< 0.5	0.8	9.5	0.03	0.009	390	108	29.7	2.7	10.6	466	< 0.5	< 0.5	---	---	---	---	1.06	---	< 0.004	---	< 0.003	0.019	0.019	---	---	---	---	3.4	---
	08-Sep-2004	04-SH	720	7.87	---	---	360	390	< 0.5	0.9	10.5	0.03	< 0.004	386	101	26.9	2.5	9.9	476	< 0.5	< 0.5	---	---	---	---	0.96	---	< 0.004	---	< 0.003	0.018	0.018	---	---	---	---	3.4	---
(Duplicate)	08-Sep-2004	04-SH DUP	730	7.95	---	---	350	393	< 0.5	0.7	10.7	0.02	< 0.004	384	97.2	26.4	2.4	9.9	480	< 0.5	< 0.5	---	---	---	---	0.93	---	< 0.004	---	< 0.003	0.017	0.017	---	---	---	---	3.5	---
	07-Sep-2005	04-SH	691	8.09	0.7	---	380	396	< 0.5	0.9	12	< 0.01	**0.053**	396	107	27.2	2.4	9.6	483	< 0.5	< 0.5	---	---	---	---	0.98	---	< 0.004	---	< 0.003	0.022	0.022	---	---	---	---	3.3	---
(Duplicate)	07-Sep-2005	04-SH DUP	694	8.13	0.3	---	370	397	< 0.5	0.8	10.4	0.02	**0.106**	391	101	28.2	2.4	10.4	484	< 0.5	< 0.5	---	---	---	---	0.96	---	< 0.004	---	< 0.003	0.021	0.021	---	---	---	---	3.8	---
	07-Sep-2006	04-SH	701	7.95	---	---	380	385	< 0.5	1.4	9.6	< 0.01	**0.022**	388	104	28.3	2.4	11.1	470	< 0.5	< 0.5	---	---	---	---	1.01	---	---	---	< 0.003	0.025	0.025	---	---	---	---	3.1	---
(Duplicate)	07-Sep-2006	04-SH DUP	711	7.96	---	---	370	389	< 0.5	1.6	9.7	0.02	0.012	390	102	28.3	2.6	12	474	< 0.5	< 0.5	---	---	---	---	1	---	---	---	< 0.003	0.023	0.023	---	---	---	---	3.2	---
	05-Sep-2007	04-SH	712	7.88	---	---	340	404	< 0.5	0.8	9.3	< 0.06	**0.031**	385	94.5	24.4	2.4	10.5	492	< 0.5	< 0.5	---	---	---	---	0.87	---	---	---	< 0.003	0.072	0.072	---	---	---	---	3	---
(Duplicate)	05-Sep-2007	04-SH DUP	715	8.05	---	---	340	402	< 0.5	0.8	14.4	< 0.06	**0.029**	389	94	25	2.5	10.7	491	< 0.5	< 0.5	---	---	---	---	0.87	---	---	---	< 0.003	0.023	0.023	---	---	---	---	3	---
	03-Sep-2008	04-SH	711	7.9	---	---	355	401	---	< 0.50	9.1	< 0.030	0.0181	388	98.2	26.6	2.76	10.6	490	< 5	< 5	0.219	---	---	---	0.926	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
(Duplicate)	03-Sep-2008	04-SH DUP	716	8.1	---	---	350	401	---	< 0.50	9.66	< 0.030	0.0176	387	96.9	26.3	2.62	10.2	489	< 5	< 5	0.22	---	---	---	0.913	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	04-SH	688	8.04	---	---	382	381	---	< 0.50	9.64	< 0.030	**0.0387**	386	104	29.6	2.94	10.9	465	< 5.0	< 5.0	0.198	---	---	---	1.04	---	---	---	< 0.050	0.069	< 0.071	---	---	---	---	---	---
(Duplicate)	09-Sep-2009	04-SH DUP	690	8.09	---	---	400	384	---	< 0.50	9.43	< 0.030	**0.151**	396	113	28.7	3	10.5	469	< 5.0	< 5.0	0.192	---	---	---	1.08	---	---	---	< 0.050	0.064	< 0.071	---	---	---	---	---	---
	08-Sep-2010	04 SH	717	7.75	---	---	358	381	---	< 0.50	20	< 0.030	0.0113	386	98.9	27	1.98	9.1	465	< 5.0	< 5.0	0.265	---	---	94.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	08-Sep-2010	SYLVITE 24	679	7.97	---	---	353	362	---	0.82	17.5	< 0.030	0.0117	371	97.7	26.5	2.15	9	441	< 5.0	< 5.0	0.266	---	---	98.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	04-SH	725	8.19	---	---	372	399	---	0.52	14.4	< 0.030	**0.319**	397	101	29.2	2.6	10.1	487	< 5.0	< 5.0	0.269	---	---	95.7	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	07-Sep-2011	ZIRCON 24	725	8.24	---	---	329	401	---	0.53	14.2	< 0.030	**0.0351**	382	89.2	25.7	2.24	8.8	490	< 5.0	< 5.0	0.265	---	---	83.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	04-SH	725	8.06	---	385	386	413	---	< 0.50	14.2	< 0.030	**0.301**	412	108	28.3	2.86	10.7	503	< 5.0	< 5.0	0.244	---	---	96.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	05-Sep-2012	SPINEL 22	712	8.12	---	386	387	400	---	< 0.50	13.4	< 0.030	**0.12**	403	106	29.6	2.86	10.9	488	< 5.0	< 5.0	0.226	---	---	99.8	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	04-SH	730	7.90	---	415	415	428	---	< 0.50	10.2	<0.030	**0.105**	425	117	29.9	2.16	8.9	523	< 5.0	< 5.0	0.235	---	---	99.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	26-Sep-2013	24-SH	731	7.82	---	401	402	428	---	< 0.50	10.2	0.105	**0.111**	420	112	29.6	2.15	8.7	522	< 5.0	< 5.0	0.222	---	---	96.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	04-SH	712	8.27	---	---	409	405	---	< 0.50	09.5	<0.010	**0.088**	409	115	29.5	2.25	9.8	494	< 5.0	< 5.0	0.251	---	---	104	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	3.25	---
	28-Sep-2015	04-SH	749	8.00	---	---	409	432	---	<0.50	10.6	<0.010	**0.0646**	427	114	30.2	2.56	9.66	527	<5.0	<5.0	0.288	---	---	---	---	---	---	---	<0.010	0.032	0.032	---	---	---	---	---	---
	26-Sep-2016	04-SH	748	8.02	---	---	428	390	---	<0.50	8.7	<0.010	**0.0833**	405	120	31.2	2.41	8.70	476	<5.0	<5.0	0.235	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	04-SH	679	7.81	---	---	430	406	---	<0.50	9.5	<0.030	**0.0519**	416	116	34.1	2.50	10.40	495	<5.0	<5.0	0.219	---	---	---	---	---	---	---	<0.010	0.031	<0.050	---	---	---	---	---	---
	17-Sep-2018	04-SH	694	7.90	---	---	441	408	---	<0.50	8.2	<0.010	**0.0851**	423	123	32.6	3.11	10.60	498	<5.0	<5.0	0.239	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	17-Sep-2019	04-SH	712	7.47	---	---	412	442	---	<0.50	9.2	<0.010	**0.2820**	433	118	28.5	2.52	9.5	539	<5.0	<5.0	0.291	---	---	---	---	---	---	---	<0.010	0.024	0.024	---	---	---	---	---	---
	22-Sep-2020	04-SH	760	7.68	---	---	390	428	---	<0.50	8.16	<0.010	**0.5240**	414	108	29.2	2.59	9.3	522	<5.0	<5.0	0.232	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	04-SH	754	7.67	---	---	417	431	---	<0.50	7.86	<0.030	**0.3810**	425	113	32.7	2.83	10.1	526	<5.0	<5.0	0.224	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	29-Sep-2022	04-SH	719	7.92	---	---	422	435	---	<0.50	7.98	<0.030	**0.144**	457	114	33.3	2.80	10.7	531	<1.0	<1.0	0.172	---	---	---	---	---	---	---	<0.010	0.023	<0.0500	---	---	---	---	---	---
	29-Sep-2023	04-SH	684	8.24	---	---	411	401	---	<0.50	9.11	<0.010	**0.0158**	433	113	31.2	2.82	10.9	489	<1.0	<1.0	0.205	---	---	---	---	---	---	---	<0.010	0.022	<0.0500	---	---	---	---	---	---
	10-Sep-2024	04-SH	723	7.61	---	---	383	436	---	<0.50	10.10	<0.010	**0.242**	443	102	31.2	2.32	8.9	532	<1.0	<1.0	0.241	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
04-IN	15-Mar-1989	04-IN	722	8.14	---	---	358.9	384	---	0.01	26.7	---	---	417	108	21.6	4.91	21.3	468.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.012	0.024	---	---	---	---	---	---	---
	15-May-1989	04-IN	736	7.39	---	---	361.8	384	---	0.01	25.9	---	---	418	110	21.1	5.16	21.9	468.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.033	---	---	---	---	---	---	---
	15-Sep-1989	04-IN	740	7.71	---	---	371.8	383	---	0.3	25.1	---	---	420	112	22.3	5.14	21.9	466.9	---	---	---	---	---	---	---	< 0.0010	---	---	0.01	0.117	---	---	---	---	---	---	---
	15-Nov-1989	04-IN	728	7.56	---	---	363.5	386	---	0.3	25.4	---	---	420	110	21.5	5.04	22.1	470.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.008	0.03	---	---	---	---	---	---	---
(Duplicate)	15-Nov-1989	04-IN DUP	727	8.17	---	---	358.8	399	---	0.1	25	---	---	426	106	22.8	5.3	23.8	486.4	---	---	---	---	---	---	---	< 0.0010	---	---	0.008	0.153	---	---	---	---	---	---	---
	15-Mar-1990	04-IN	702	8.25	---	---	348	388	---	0.1	29.8	---	---	419	106	20.2	4.82	21.5	473	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.043	---	---	---	---	---	---	---
	15-May-1990	04-IN	713	8.44	---	---	346.4	382	---	0.4	25.6	---	---	411	104	21	5.15	22.1	441.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.08	---	---	---	---	---	---	---
	15-Aug-1990	04-IN	765	7.6	---	---	---	---	---	---	---	---	---	500	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	04-IN	748	8.03	---	---	328.9	369.2	---	0.01	25.5	---	---	396	96	21.6	4.86	23.2	450.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.13	---	---	---	---	---	---	---
	15-May-1991	04-IN	731	7.38	---	---	---	---	---	---	---	---	---	475	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	04-IN	612	7.3	---	---	---	---	---	0.00001	---	---	---	400	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	04-IN	705	7.86	---	---	---	---	---	< 0.50	---	---	---	465	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	04-IN	691	7.45	---	---	---	---	---	< 0.50	---	---	---	449	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	04-IN	720	7.81	---	---	---	---	---	---	---	---	---	468	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	04-IN	735	7.31	---	---	---	---	---	---	---	---	---	492	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	04-IN	733	7.44	---	---	390	400	< 0.1	< 0.5	24.7	< 0.01	**0.083**	443	111	27.4	6.56	28.3	488	< 0.5	< 0.5	---	---	---	---	1.08	---	---	---	---	---	0.153	---	---	---	---	---	---
	15-Sep-1998	04-IN	726	7.54	---	---	---	---	---	---	---	---	---	482	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	04-IN	715	7.71	---	---	---	---	---	---	---	---	---	479	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	04-IN	686	7.89	---	---	330	378	< 0.1	< 0.5	22.2	< 0.01	**0.044**	401	88.8	25.8	7.4	29.3	461	< 0.5	< 0.5	---	8.03	8.01	---	1	---	---	---	0.011	0.182	0.193	---	---	---	< 0.01	---	---
	06-Sep-2001	04-IN	676	8.11	---	---	---	---	---	---	---	---	---	450	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	04-IN	774	7.78	---	---	---	---	---	---	---	---	---	436	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	04-IN	680	8.17	---	---	310	379	< 0.5	< 0.5	22.9	< 0.01	< 0.004	390	81.1	24.9	6.9	26.7	462	< 0.5	< 0.5	---	---	---	---	0.92	---	---	---	< 0.003	0.13	0.13	---	---	---	---	---	---
	05-Sep-2007	04-IN	722	7.93	---	---	290	382	< 0.5	0.9	25.2	0.16	**0.123**	389	80.4	21.7	6	24.5	466	< 0.5	< 0.5	---	---	---	---	0.86	---	---	---	< 0.003	0.121	0.121	---	---	---	---	6.4	---
	03-Sep-2008	04-IN	---	---	---	---	---	---	---	---	---	< 0.030	**0.0639**	---	81.9	25	7.15	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2010	04 IN	720	7.85	---	---	347	375	---	< 0.50	26.3	< 0.030	**0.416**	403	104	21.3	4.89	21	457	< 5.0	< 5.0	0.201	---	---	99.1	---	---	---	---	< 0.050	0.052	< 0.071	---	---	---	---	---	---
	07-Sep-2011	04-IN	711	8.24	---	---	384	380	---	< 0.50	22.3	< 0.030	**0.135**	420	109	27.1	6.77	26.2	464	< 5.0	< 5.0	0.199	---	---	111	---	---	---	---	< 0.050	0.1	0.1	---	---	---	---	---	---
	17-Sep-2014	04-IN	676	8.18	---	---	345	353	---	< 0.50	29.9	< 0.010	**0.603**	395	105	20.0	5.49	22.7	431	< 5.0	< 5.0	0.188	---	---	104	---	---	---	---	< 0.020	0.060	0.060	---	---	---	---	7.83	---
	28-Sep-2015	04-IN	708	8.12	---	---	395	361	---	<0.50	25.2	<0.010	**0.462**	416	120	23.2	5.44	24.0	441	<5.0	<5.0	0.206	---	---	---	---	---	---	---	<0.010	0.229	0.229	---	---	---	---	---	---
	26-Sep-2016	04-IN	708	8.05	---	---	361	376	---	<0.50	23.4	0.016	**0.222**	407	110	21.2	5.39	21.2	459	<5.0	<5.0	0.160	---	---	---	---	---	---	---	<0.010	0.110	0.11	---	---	---	---	---	---
	27-Sep-2017	04-IN	645	7.73	---	---	373	377	---	<0.50	25.1	<0.030	**0.669**	417	112	22.6	5.59	24.1	460	<5.0	<5.0	0.150	---	---	---	---	---	---	---	<0.010	0.183	0.183	---	---	---	---	---	---
	17-Sep-2018	04-IN	675	7.98	---	---	363	373	---	<0.50	24.6	<0.010	**0.061**	410	108	22.6	5.99	24.4	455	<5.0	<5.0	0.181	---	---	---	---	---	---	---	<0.010	0.040	0.04	---	---	---	---	---	---
	17-Sep-2019	04-IN	671	7.43	---	---	360	389	---	<0.50	26.3	0.051	**0.361**	418	107	22.6	5.77	22.3	475	<5.0	<5.0	0.225	---	---	---	---	---	---	---	<0.010	0.095	0.095	---	---	---	---	---	---
	22-Sep-2020	04-IN	722	7.89	---	---	332	376	---	<0.50	30.8	0.011	**0.678**	404	101	19.5	5.18	20.4	458	<5.0	<5.0	0.180	---	---	---	---	---	---	---	<0.010	0.239	0.239	---	---	---	---	---	---
	22-Sep-2021	04-IN	707	7.68	---	---	368	379	---	<0.50	30.7	<0.030	**0.598**	421	108	23.9	6.08	24	462	<5.0	<5.0	0.185	---	---	---	---	---	---	---	<0.010	0.213	0.213	---	---	---	---	---	---
	29-Sep-2022	04-IN	701	7.98	---	---	367	390	---	<0.50	31.0	<0.030	**0.325**	459	109	23.0	5.62	22.6	476	<1.0	<1.0	0.150	---	---	---	---	---	---	---	<0.010	0.224	0.224	---	---	---	---	---	---
	29-Sep-2023	04-IN	685	8.31	---	---	358	371	---	<0.50	29.3	0.024	**0.727**	442	106	22.7	5.72	22.8	445	3.5	<1.0	0.162	---	---	---	---	---	---	---	<0.010	0.201	0.201	---	---	---	---	---	---
	10-Sep-2024	04-IN	657	7.76	---	---	329	376	---	<0.50	25.6	0.043	**0.372**	430	97	21.4	5.18	21.1	459	<1.0	<1.0	0.226	---	---	---	---	---	---	---	<0.010	0.219	0.219	---	---	---	---	---	---
04-SS	16-Feb-1985	04-SS	---	---	---	---	228	233	---	---	---	---	---	270	---	---	---	---	284	---	---	---	---	---	---	---	---	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	18-Feb-1985	04-SS	---	---	---	---	206.7	237	---	---	---	---	---	268	---	---	---	---	288.9	---	---	---	---	---	---	---	---	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Sep-1985	04-SS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	04-SS	490	7.47	---	---	217.5	243	---	0.7	18.5	---	---	270	61	15.8	2.45	14.8	296.2	---	---	---	---	---	---	---	0.0060	---	---	0.005	0.017	---	---	---	---	---	---	---
	15-Feb-1986	04-SS	480	7	---	---	---	---	---	0.01	22	---	---	---	64.2	16.4	3.26	19	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	04-SS	490	7.02	---	---	218.3	231	---	1.9	25	---	---	275	60.5	16.3	3.5	20.7	281.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Aug-1986	04-SS	485	6.97	---	---	214	222	---	0.4	25.6	---	---	265	59.1	16.1	3.54	20.2	270.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Oct-1986	04-SS	480	7.5	---	---	215	233	---	0.7	23.6	---	---	280	60	15.8	3.47	21	284	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.033	---	---	---	---	---	---	---
	15-May-1987	04-SS	453	7.2	---	---	213.8	229	---	0.3	24.6	---	---	270	59	16.1	3.62	21.7	279.2	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.22	---	---	---	---	---	---	---
	15-Sep-1987	04-SS	471	8.04	---	---	208.1	248	---	0.6	25.6	---	---	275	58.7	15	3.54	20.4	302	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Nov-1987	04-SS	478	7.35	---	---	214.6	232	---	0.7	23.1	---	---	275	59	16.3	3.45	21.2	282.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.016	---	---	---	---	---	---	---
	15-Feb-1988	04-SS	475	7.5	---	---	---	---	---	0.6	25	---	---	---	55.5	16.5	3.59	22	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	04-SS	463	7.31	---	---	205.5	230	---	0.8	24	---	---	260	57.9	14.8	3.66	21.3	280	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.004	---	---	---	---	---	---	---
	15-Aug-1988	04-SS	463	7.24	---	---	210.3	238.6	---	0.3	23.6	---	---	270	59.1	15.2	3.6	22.4	290.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.024	---	---	---	---	---	---	---
	15-Sep-1988	04-SS	467	7.31	---	---	209.6	231	---	0.3	23.6	---	---	265	59.3	14.9	3.58	22	281.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.053	---	---	---	---	---	---	---
	15-Mar-1989	04-SS	448	8.3	---	---	191.8	222	---	0.1	23.1	---	---	250	56.3	13.8	3.33	20.4	270.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.022	---	---	---	---	---	---	---
	15-Sep-1989	04-SS	452	7.07	---	---	---	---	---	---	---	---	---	300	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	04-SS	466	8.21	---	---	199.1	227	---	0.3	23.3	---	---	258	54.6	15.2	3.63	22.5	276.7	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.135	---	---	---	---	---	---	---
	15-Mar-1990	04-SS	451	7.86	---	---	---	---	---	---	---	---	---	252	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	04-SS	449	7.73	---	---	183.1	223	---	0.3	22.4	---	---	248	50.2	14	3.51	21.6	271.8	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.02	---	---	---	---	---	---	---
	15-Aug-1990	04-SS	465	7.26	---	---	---	---	---	---	---	---	---	300	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	04-SS	460	7.98	---	---	185.8	226.4	---	0.01	22.1	---	---	251	51.6	13.8	3.58	21.5	276	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.083	---	---	---	---	---	---	---
	15-May-1991	04-SS	476	7.84	---	---	239	271	---	---	23.3	---	---	300	65	18.7	4.7	22.8	330	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.012	---	---	---	---	---	---	---
	03-Nov-1992	04-SS	368	7.02	---	---	---	---	---	0.00001	---	---	---	239	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	04-SS	557	8.18	---	---	---	---	---	---	---	---	---	365	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	04-SS	676	8.15	---	---	360	393	< 0.5	< 0.5	10.5	< 0.01	**0.124**	385	101	26	2.3	9.3	480	< 0.5	< 0.5	---	---	---	---	0.94	---	---	---	< 0.003	0.02	0.02	---	---	---	---	---	---
	26-Sep-2013	04-SS	663	7.48	---	301	300	331	---	< 0.50	53.4	**1.65**	**0.601**	389	83.4	22.4	4.39	27.2	403	< 5.0	< 5.0	0.067	---	---	94.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Sep-2014	04-SS	668	8.18	---	---	300	322	---	< 0.50	53.2	**3.17**	**0.581**	388	84.6	21.6	4.59	30.6	393	< 5.0	< 5.0	0.096	---	---	98.6	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	17.0	---
	28-Sep-2015	04-SS	665	7.75	---	---	318	309	---	<0.50	55.4	0.084	**0.533**	388	89.1	23.3	4.66	30.2	377	<5.0	<5.0	0.107	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2016	04-SS	656	7.96	---	---	294	316	---	<0.50	51.5	<0.010	**0.498**	378	84.2	20.2	4.54	27.9	385	<5.0	<5.0	0.082	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2017	04-SS	594	8.39	---	---	310	313	---	<0.50	54.6	<0.030	**0.537**	389	86.0	23.1	4.88	32.7	371	5.6	<5.0	0.077	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	17-Sep-2018	04-SS	614	7.59	---	---	320	307	---	<0.50	51.4	0.267	**0.588**	384	91.0	22.5	5.02	29.9	375	<5.0	<5.0	0.104	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	17-Sep-2019	04-SS	624	7.28	---	---	312	322	---	<0.50	55.4	**2.380**	**0.593**	394	84.9	24.2	4.95	31.1	393	<5.0	<5.0	0.117	---	---	---	---	---	---	---	0.020	0.077	0.097	---	---	---	---	---	---
	22-Sep-2020	04-SS	657	7.66	---	---	276	317	---	<0.50	55.7	**2.66**	**0.520**	379	77.5	20.1	4.72	30.2	386	<5.0	<5.0	0.089	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	04-SS	632	7.51	---	---	304	317	---	<0.50	53.5	**1.27**	**0.566**	388	82.1	24.1	5.35	32.7	386	<5.0	<5.0	0.095	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	29-Sep-2022	04-SS	637	7.83	---	---	303	324	---	<0.50	52.8	<0.030	**0.508**	432	83.7	22.8	5.07	31.0	395	<1.0	<1.0	0.073	---	---	---	---	---	---	---	<0.010	0.202	0.202	---	---	---	---	---	---
	29-Sep-2023	04-SS	652	8.49	---	---	293	321	---	<0.50	52.4	<0.010	**0.521**	422	81.5	21.7	4.79	29.4	371	10.3	<1.0	0.085	---	---	---	---	---	---	---	<0.010	0.208	0.208	---	---	---	---	---	---
	10-Sep-2024	04-SS	623	7.28	---	---	286	322	---	<0.50	54.7	<0.010	**0.557**	423	79.6	21.2	4.76	27.6	393	<1.0	<1.0	0.087	---	---	---	---	---	---	---	<0.010	0.226	0.226	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	**7.0-10.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.05**	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	**1.0**	---	---	---	---	---	---	---	**0.12**	---	---	---	---	---	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1**	**10**	---	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	**6.5 - 8.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1.0**	**10**	---	---	---	---	**0.05**	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	**6.5 - 8.5**	---	---	---	---	---	**120**	**Variable**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.0050**	**0.0050**	**0.0050**	**Variable**	**3**	---	---	---	**Variable [13]**	**0.0019**	---	---
05-SH	18-Feb-1985	05-SH	---	---	---	---	254	256	---	---	---	---	---	261	---	---	---	---	312.1	---	---	---	---	---	---	---	---	---	---	0.003	0.061	---	---	---	---	---	---	---
	15-May-1985	05-SH	504	7.97	---	---	277.8	282	---	0.7	11.6	---	---	295	80	18.9	1	7.8	343.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.003	---	---	---	---	---	---	---
	15-Sep-1985	05-SH	530	7.68	---	---	266.1	281	---	0.8	9	---	---	290	76	18.5	1.05	6.9	342.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.006	---	---	---	---	---	---	---
	15-Dec-1985	05-SH	540	7.7	---	---	274	288	---	0.7	9.6	---	---	290	76	20.4	1.02	6.2	351.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.005	---	---	---	---	---	---	---
	15-Jun-1986	05-SH	500	8.18	---	---	272.2	258	---	1.7	8.1	---	---	270	74.3	21	0.91	5.8	314.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.009	---	---	---	---	---	---	---
	15-Aug-1986	05-SH	518	7.64	---	---	270.2	260	---	0.5	8.8	---	---	275	74	20.7	0.95	5.6	316.9	---	---	---	---	---	---	---	< 0.0020	---	---	0.012	0.021	---	---	---	---	---	---	---
	15-Oct-1986	05-SH	500	7.87	---	---	273.6	272	---	0.2	7.8	---	---	285	76	20.3	0.95	5.5	331.6	---	---	---	---	---	---	---	< 0.0020	---	---	0.005	0.043	---	---	---	---	---	---	---
	15-May-1987	05-SH	473	7.71	---	---	259	255	---	0.3	7.6	---	---	260	71	19.9	0.88	5.4	311	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.055	---	---	---	---	---	---	---
	15-Sep-1987	05-SH	484	8.09	---	---	257	256	---	0.7	9.1	---	---	263	72	18.7	0.92	5.6	312	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.064	---	---	---	---	---	---	---
	15-Nov-1987	05-SH	475	7.64	---	---	256.1	252	---	1.1	8.2	---	---	265	70	19.7	0.85	5.5	307.2	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.074	---	---	---	---	---	---	---
	15-Feb-1988	05-SH	473	7.75	---	---	---	---	---	0.6	8.9	---	---	---	69	19.8	0.9	5.4	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	05-SH	464	7.91	---	---	240	242	---	0.9	8.5	---	---	250	74.7	17.6	0.81	5.2	295	---	---	---	---	---	---	---	< 0.0010	---	---	0.003	0.048	---	---	---	---	---	---	---
	15-Aug-1988	05-SH	468	7.76	---	---	253.6	257.9	---	0.2	7.4	---	---	261	70.8	18.6	0.9	6.2	314.4	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.077	---	---	---	---	---	---	---
	15-Nov-1988	05-SH	478	7.55	---	---	249.6	255	---	0.5	7.2	---	---	258	69.4	18.5	0.85	5.6	310.8	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.09	---	---	---	---	---	---	---
	15-Mar-1989	05-SH	462	8.19	---	---	241.6	248	---	0.3	7.8	---	---	251	68	17.4	0.81	5.2	302.3	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.06	---	---	---	---	---	---	---
	15-May-1989	05-SH	452	7.4	---	---	242	240	---	0.3	7.7	---	---	246	68	17.5	0.76	5.1	292.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.037	---	---	---	---	---	---	---
	15-Sep-1989	05-SH	475	7.52	---	---	---	---	---	---	---	---	---	320	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	05-SH	472	8.2	---	---	262.4	258	---	0.5	7.7	---	---	264	73	19.4	0.9	5.7	314.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.033	---	---	---	---	---	---	---
	15-Aug-1990	05-SH	459	7.35	---	---	243.2	249	---	0.7	9.4	---	---	254	67.5	18.1	0.88	5.5	303.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.06	---	---	---	---	---	---	---
	15-Nov-1990	05-SH	476	7.95	---	---	240.3	252.8	---	0.1	9.4	---	---	255	66.5	18	0.85	5.7	308.2	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.033	---	---	---	---	---	---	---
	16-May-1991	05-SH	497	7.76	---	---	---	---	---	0.6	14.6	---	---	320	73.5	17	0.8	5.6	---	---	---	---	---	---	---	---	---	---	---	0.028	---	---	---	---	---	---	---	---
	04-Nov-1991	05-SH	496	7.97	---	---	---	255	---	0.7	23	---	---	280	78	19	0.98	5.72	311	---	---	---	---	---	---	---	< 0.0010	---	---	0.024	---	---	---	---	---	---	---	---
	12-May-1992	05-SH	553	7.72	---	---	291.4	262	---	1.2	49.3	---	---	271	81.5	21.3	0.88	5.95	319.4	---	---	---	---	---	---	0.97	< 0.0010	---	---	0.004	0.003	---	---	---	---	---	---	---
	03-Nov-1992	05-SH	637	7.94	---	---	---	268	---	1.4	92	---	---	391	100	26.3	1	6.43	326.7	---	---	---	---	---	---	1.02	< 0.0010	---	---	---	0.014	---	---	---	---	---	---	---
	10-Nov-1993	05-SH	726	7.52	---	---	374	301	---	0.9	101	---	---	424	99.5	30.5	0.9	8	367	---	---	---	---	---	---	0.96	0.001	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	31-May-1994	05-SH	817	7.26	---	---	---	338	< 0.1	1.7	110	< 0.01	**0.246**	479	122	31.7	0.9	6.87	412	< 0.5	< 0.5	---	---	---	---	0.99	< 0.001	---	---	0.015	0.015	0.015	---	---	---	---	---	---
	21-Sep-1994	05-SH	869	7.23	---	---	---	363	0.1	2	131	0.01	0.002	**527**	129	35	1.1	7.4	442	0.5	0.5	---	---	---	---	0.96	0.001	---	---	0.02	0.02	0.02	---	---	---	---	---	---
	01-Nov-1994	05-SH	800	7.63	---	---	---	376	< 0.1	2.2	115	< 0.01	< 0.001	**529**	139	34.5	1.07	7.7	458	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	0.026	0.026	0.026	---	---	---	---	---	---
	28-Sep-1995	05-SH	771	7.29	---	---	577	437	< 0.1	2.6	114	< 0.01	**0.092**	**597**	163	41.2	1.1	8.6	533	< 0.5	< 0.5	---	---	---	---	1.07	< 0.001	---	---	---	0.01	---	---	---	---	---	---	---
	04-Sep-1996	05-SH	997	7.25	---	---	533	442	< 0.1	2.1	116	< 0.01	**0.196**	**585**	151	37.8	0.98	7.86	539	< 0.5	< 0.5	---	---	---	---	0.97	< 0.001	---	---	---	0.013	0.013	---	---	---	---	---	---
	03-Sep-1997	05-SH	1044	7.71	---	---	517	424	< 0.1	2.3	118	< 0.01	**0.126**	**567**	136	43	1	8.6	517	< 0.5	< 0.5	---	---	---	---	0.98	< 0.001	---	---	---	0.018	0.018	---	---	---	---	---	---
	16-Sep-1998	05-SH	987	7.28	---	---	580	472	< 0.1	1.5	120	---	---	**617**	154	48.3	0.9	9.1	576	< 0.5	< 0.5	---	12	12.1	---	1.01	0.001	---	---	---	0.064	0.064	---	---	---	---	---	---
	09-Sep-1999	05-SH	1110	7.47	---	---	700	519	< 0.1	1.9	134	---	---	**702**	192	53.9	0.6	8.8	633	< 0.5	< 0.5	---	13.2	14.4	---	1.09	< 0.001	---	< 0.001	---	0.016	0.016	---	---	---	---	---	---
	05-Sep-2000	05-SH	1050	7.52	---	---	610	517	< 0.1	1.8	105	< 0.01	**0.453**	**641**	166	47	1.3	8.9	631	< 0.5	< 0.5	---	12.6	12.6	---	1	0.003	---	---	< 0.003	0.011	0.011	---	---	---	---	---	---
	06-Sep-2001	05-SH	956	7.8	---	---	580	484	< 0.5	1.6	109	< 0.01	**0.418**	**616**	159	45.6	1.2	8.3	591	< 0.5	< 0.5	---	---	---	---	1.01	< 0.001	---	---	< 0.003	0.021	0.021	---	---	---	---	---	---
(Duplicate)	06-Sep-2001	05-SH DUP	991	7.92	---	---	620	501	< 0.5	2.4	107	0.03	**0.405**	**639**	173	46.1	1.2	8.2	612	< 0.5	< 0.5	---	---	---	---	1.04	< 0.001	---	---	< 0.003	0.025	0.025	---	---	---	---	---	---
	04-Sep-2002	05-SH	1130	7.45	---	---	560	520	< 0.5	1.8	93.3	0.03	**0.387**	**614**	157	41.2	1.1	7	635	< 0.5	< 0.5	---	---	---	---	0.93	< 0.001	---	---	< 0.003	0.023	0.023	---	---	---	---	32.7	---
(Duplicate)	04-Sep-2002	05-SH DUP	1080	7.77	---	---	490	496	< 0.5	1.8	99.1	0.02	**0.021**	**579**	133	39.2	1.1	7.1	605	< 0.5	< 0.5	---	---	---	---	0.85	0.001	---	---	< 0.003	0.03	0.03	---	---	---	---	30.7	---
	03-Sep-2003	05-SH	---	---	---	---	---	---	---	---	---	0.08	**0.415**	---	177	45	1.2	8.1	---	---	---	---	---	---	---	---	---	< 0.004	---	< 0.003	0.009	0.009	---	---	---	---	34.6	---
	07-Sep-2003	05-SH	1030	7.75	---	---	620	516	< 0.5	1.7	101	0.03	**0.433**	**639**	174	43.8	1.2	7.8	629	< 0.5	< 0.5	---	12.5	12.7	---	1.02	---	---	---	< 0.003	0.008	0.008	---	---	---	---	---	---
(Duplicate)	07-Sep-2003	05-SH DUP	1040	7.63	---	---	620	518	< 0.5	1.6	102	0.02	**0.251**	**642**	175	43.8	1.2	7.6	632	< 0.5	< 0.5	---	12.5	12.7	---	1.02	---	---	---	< 0.003	0.012	0.012	---	---	---	---	---	---
(Duplicate)	11-Sep-2003	05-SH DUP	---	---	---	---	---	---	---	---	---	0.06	**0.18**	---	166	45.1	1.2	8.8	---	---	---	---	---	---	---	---	---	< 0.004	---	< 0.003	0.012	0.012	---	---	---	---	34.7	---
	08-Sep-2004	05-SH	1090	7.77	---	---	600	527	< 0.5	2.5	101	0.07	**0.191**	**639**	167	43.4	1.2	7.8	642	< 0.5	< 0.5	---	---	---	---	0.97	---	< 0.004	---	< 0.003	0.033	0.033	---	---	---	---	32.1	---
(Duplicate)	08-Sep-2004	05-SH DUP	1100	7.83	---	---	590	532	< 0.5	2.3	101	0.05	**0.077**	**642**	165	44.4	1.2	8.4	649	< 0.5	< 0.5	---	---	---	---	0.96	---	< 0.004	---	< 0.003	0.036	0.036	---	---	---	---	32.7	---
	07-Sep-2005	05-SH	977	8.11	1.3	---	540	515	< 0.5	1.5	92.4	0.07	**0.262**	**604**	152	40.1	1.1	7.9	628	< 0.5	< 0.5	---	---	---	---	0.92	---	< 0.004	---	< 0.003	0.02	0.02	---	---	---	---	26.4	---
(Duplicate)	07-Sep-2005	05-SH DUP	1100	8.01	1.1	---	590	570	< 0.5	1.8	105	0.01	**0.048**	**670**	169	41	1.2	9.9	695	< 0.5	< 0.5	---	---	---	---	0.9	---	< 0.004	---	< 0.003	0.004	0.004	---	---	---	---	26.8	---
	07-Sep-2006	05-SH	---	---	---	---	---	---	---	---	---	< 0.01	**0.118**	---	171	49.1	1.1	9.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	32	---
(Duplicate)	07-Sep-2006	05-SH DUP	---	---	---	---	---	---	---	---	---	0.04	**0.118**	---	169	47.1	1.3	9.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	30.8	---
	05-Sep-2007	05-SH	1160	7.88	---	---	600	596	< 0.5	2.1	105	0.08	**0.064**	**688**	162	46.9	1.4	11.8	727	< 0.5	< 0.5	---	---	---	---	0.88	---	---	---	< 0.003	0.029	0.029	---	---	---	---	29.5	---
(Duplicate)	05-Sep-2007	05-SH DUP	1160	7.87	---	---	600	593	< 0.5	2	106	0.09	**0.16**	**686**	166	45.6	1.1	8.7	724	< 0.5	< 0.5	---	---	---	---	0.88	---	---	---	< 0.003	0.01	0.01	---	---	---	---	29	---
	05-Sep-2008	05-SH	1140	7.8	---	---	624	592	---	1.14	103	0.068	**0.178**	**690**	174	46.1	1.31	8.65	722	< 5	< 5	0.198	---	---	---	0.919	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
(Duplicate)	05-Sep-2008	05-SH DUP	1160	7.9	---	---	642	599	---	1.1	102	0.038	**0.0978**	**695**	175	49.7	< 0.50	7.54	731	< 5	< 5	0.196	---	---	---	0.93	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	05-SH	1110	7.94	---	---	669	560	---	1.14	98.4	**0.419**	**0.366**	**682**	188	48.5	1.1	8.6	684	< 5.0	< 5.0	0.155	---	---	---	1.04	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	09-Sep-2009	05-SH DUP	1160	7.94	---	---	711	584	---	1.15	101	< 0.030	< 0.0050	**714**	198	52.7	1.33	8.8	713	< 5.0	< 5.0	0.168	---	---	---	1.06	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	05 SH	1130	7.71	---	---	616	557	---	1.23	105	< 0.030	**0.128**	**666**	170	46.6	0.85	7.8	680	< 5.0	< 5.0	0.213	---	---	94.8	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	08-Sep-2010	SYLVITE 25	1160	7.76	---	---	662	575	---	1.33	109	0.063	**0.429**	**698**	183	49.8	1.2	8.3	702	< 5.0	< 5.0	0.23	---	---	98.5	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	05-SH	1150	8.11	---	---	650	579	---	1.03	105	0.202	**0.406**	**691**	178	50	1.15	8.4	707	< 5.0	< 5.0	0.221	---	---	97	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	07-Sep-2011	ZIRCON 25	1160	8.21	---	---	651	579	---	1.02	105	**0.382**	**0.812**	**692**	181	48.3	1.2	8.1	707	< 5.0	< 5.0	0.209	---	---	96.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	05-SH	1130	7.99	---	662	662	576	---	1.09	107	**0.899**	**0.625**	**697**	185	48.6	1.35	8.5	703	< 5.0	< 5.0	0.204	---	---	98.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	05-Sep-2012	SPINEL 23	1120	8.11	---	665	664	571	---	1.66	111	**0.338**	**0.222**	**699**	183	50.4	1.32	8.7	696	< 5.0	< 5.0	0.173	---	---	99.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	05-SH	1120	7.82	---	673	674	559	---	1.40	131	0.079	**0.488**	**715**	187	50.4	1.21	7.9	681	<5.0	<5.0	0.167	---	---	99.4	---	---	---	---	< 0.050	0.117	0.117	---	---	---	---	---	---
	17-Sep-2014	05-SH	1060	8.14	---	---	644	479	---	1.64	148	< 0.010	**0.442**	**678**	186	43.6	1.12	8.4	584	<5.0	<5.0	0.195	---	---	104	---	---	---	---	< 0.020	0.327	0.327	---	---	---	---	48.2	---
(Duplicate)	17-Sep-2014	25-SH	1040	8.14	---	---	616	455	---	1.64	149	< 0.010	**0.459**	**654**	176	42.9	1.12	8.4	556	<5.0	<5.0	0.193	---	---	103	---	---	---	---	< 0.020	0.328	0.328	---	---	---	---	47.4	---
	28-Sep-2015	05-SH	1110	7.83	---	---	684	505	---	2.03	166	<0.010	**0.0981**	**725**	193	49.1	1.16	7.98	616	<5.0	<5.0	0.233	---	---	---	---	---	---	---	<0.010	0.542	0.542	---	---	---	---	---	---
(Duplicate)	28-Sep-2015	25-SH	1090	7.95	---	---	676	488	---	2.04	167	<0.010	**0.0921**	**713**	190	48.9	1.17	8.24	596	<5.0	<5.0	0.231	---	---	---	---	---	---	---	<0.010	0.538	0.538	---	---	---	---	---	---
	28-Sep-2016	05-SH	1070	7.74	---	---	634	417	---	1.83	166	<0.010	**0.0900**	**656**	185	42.0	1.10	6.90	509	<5.0	<5.0	0.175	---	---	---	---	---	---	---	<0.010	0.591	0.591	---	---	---	---	---	---
(Duplicate)	28-Sep-2016	25-SH	1070	8.11	---	---	630	442	---	1.83	165	<0.010	**0.0869**	**668**	183	42.1	1.09	7.00	540	<5.0	<5.0	0.176	---	---	---	---	---	---	---	<0.010	0.596	0.596	---	---	---	---	---	---
	27-Sep-2017	05-SH	955	7.86	---	---	660	452	---	<2.5	169	<0.030	<0.0050	**688**	181	50.4	1.19	8.30	551	<5.0	<5.0	0.150	---	---	---	---	---	---	---	<0.050	1.480	1.48	---	---	---	---	---	---
(Duplicate)	27-Sep-2017	25-SH	960	7.65	---	---	662	442	---	<2.5	167	<0.030	<0.0050	**681**	182	50.5	1.18	8.30	539	<5.0	<5.0	0.130	---	---	---	---	---	---	---	<0.050	1.420	1.42	---	---	---	---	---	---
	17-Sep-2018	05-SH	992	7.91	---	---	680	454	---	2.06	160	<0.010	**0.0640**	**696**	192	48.6	1.07	8.20	554	<5.0	<5.0	0.198	---	---	---	---	---	---	---	<0.010	2.610	2.61	---	---	---	---	---	---
(Duplicate)	17-Sep-2018	25-SH	990	7.83	---	---	687	455	---	2.07	161	<0.010	**0.0605**	**701**	197	47.4	1.05	7.90	555	<5.0	<5.0	0.199	---	---	---	---	---	---	---	<0.010	2.560	2.56	---	---	---	---	---	---
	17-Sep-2019	05-SH	990	7.44	---	---	625	477	---	2.51	164	0.011	**0.0371**	**694**	170	48.7	1.25	7.80	582	<5.0	<5.0	0.253	---	---	---	---	---	---	---	<0.010	3.100	3.1	---	---	---	---	---	---
(Duplicate)	17-Sep-2019	25-SH	1000	7.54	---	---	524	470	---	2.52	164	<0.010	**0.0294**	**654**	144	39.9	1.04	6.60	574	<5.0	<5.0	0.262	---	---	---	---	---	---	---	<0.010	3.070	3.07	---	---	---	---	---	---
	22-Sep-2020	05-SH	1107	6.85	---	---	589	468	---	2.49	158	<0.010	0.00097	**670**	167	41.8	1.13	7.4	571	<5.0	<5.0	0.189	---	---	---	---	---	---	---	<0.010	2.61	2.61	---	---	---	---	---	---
(Duplicate)	22-Sep-2020	25-SH	1107	6.85	---	---	570	466	---	2.50	158	<0.010	0.00078	**662**	159	42.1	1.12	7.5	568	<5.0	<5.0	0.184	---	---	---	---	---	---	---	<0.010	2.61	2.61	---	---	---	---	---	---
	22-Sep-2021	05-SH	1050	7.66	---	---	635	500	---	2.26	146	<0.030	**0.0299**	**685**	170	51.2	1.24	8.4	610	<5.0	<5.0	0.189	---	---	---	---	---	---	---	<0.010	1.25	1.25	---	---	---	---	---	---
(Duplicate)	22-Sep-2021	25-SH	1030	7.67	---	---	645	495	---	2.24	145	<0.030	**0.0269**	**684**	174	51.1	1.2	8	604	<5.0	<5.0	0.185	---	---	---	---	---	---	---	<0.010	1.21	1.21	---	---	---	---	---	---
	29-Sep-2022	05-SH	1070	7.76	---	---	626	537	---	2.27	137.0	<0.030	**0.1100**	**726**	172	47.8	1.13	8.0	655	<1.0	<1.0	0.162	---	---	---	---	---	---	---	<0.010	0.54	0.536	---	---	---	---	---	---
(Duplicate)	29-Sep-2022	25-SH	1060	7.92	---	---	630	542	---	2.15	133	<0.030	**0.113**	**726**	171	49.4	1.16	8.22	661	<1.0	<1.0	0.141	---	---	---	---	---	---	---	<0.010	0.539	0.539	---	---	---	---	---	---
	28-Sep-2023	05-SH	934	8.11	---	---	626	418	---	2.72	119	<0.010	0.0187	**640**	177	44.6	1.23	9.21	509	<1.0	<1.0	---	---	---	---	---	---	---	0.192	0.010	0.127	0.137	---	---	---	---	---	---
(Duplicate)	28-Sep-2023	25-SH	904	8.13	---	---	562	393	---	2.66	118	<0.010	**0.0715**	**603**	157	41.4	1.1	12	479	<1.0	<1.0	0.189	---	---	---	---	---	---	---	<0.010	0.184	0.184	---	---	---	---	---	---
	10-Sep-2024	05-SH	1070	7.24	---	---	596	549	---	2.28	128	<0.010	0.004	**711**	162	46.4	1.03	7.6	670	<1.0	<1.0	0.215	---	---	---	---	---	---	---	<0.010	0.04	<0.0500	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
05-IN	18-Feb-1985	05-IN	---	---	---	---	341.7	290	---	---	---	---	---	488	---	---	---	---	353.5	---	---	---	---	---	---	---	---	---	---	0.012	0.012	---	---	---	---	---	---	---
	15-May-1985	05-IN	601	7.96	---	---	286.9	294	---	2	46	---	---	365	83	19.3	2.08	24.3	358.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.032	0.36	---	---	---	---	---	---	---
	15-Sep-1985	05-IN	552	7.78	---	---	266.6	279	---	1.9	24	---	---	310	76	18.6	1.56	11.6	340.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.015	0.26	---	---	---	---	---	---	---
	15-Jun-1986	05-IN	640	6.86	---	---	321.1	275	---	4.5	55	---	---	370	89.9	23.4	2	20	335.2	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.167	---	---	---	---	---	---	---
	15-Aug-1986	05-IN	686	7.64	---	---	293.1	271	---	3	75	---	---	380	82	21.4	2.08	26.3	330.3	---	---	---	---	---	---	---	< 0.0020	---	---	0.009	0.24	---	---	---	---	---	---	---
	15-Oct-1986	05-IN	700	7.96	---	---	325.9	295	---	3.6	91.5	---	---	430	92	23.3	2.31	28.9	359.6	---	---	---	---	---	---	---	< 0.0020	---	---	0.015	0.088	---	---	---	---	---	---	---
	15-May-1987	05-IN	682	7.66	---	---	304.3	273	---	2.7	110	---	---	430	84	22.9	2.13	38	332.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.023	---	---	---	---	---	---	---
	15-Sep-1987	05-IN	707	8.14	---	---	307.2	259	---	4.2	113	---	---	425	87	21.8	2.1	38.6	315.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.009	---	---	---	---	---	---	---
	15-Nov-1987	05-IN	684	7.71	---	---	291	279	---	3.9	97	---	---	425	80	22.1	2.02	42	340.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.011	---	---	---	---	---	---	---
	15-Feb-1988	05-IN	789	7.22	---	---	---	---	---	3.2	146	---	---	---	97.5	23.8	2.84	37.4	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	05-IN	698	7.86	---	---	300.5	269	---	3.6	112	---	---	430	85.4	21.2	2.2	46	328	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.008	---	---	---	---	---	---	---
	15-Aug-1988	05-IN	707	7.72	---	---	285.5	282.7	---	1.7	95	---	---	424	81.1	20.1	2.1	51.9	344.6	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.018	---	---	---	---	---	---	---
	15-Nov-1988	05-IN	839	7.47	---	---	278.8	290	---	2.3	85	---	---	411	79.1	19.7	2.92	45.5	353.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.012	0.036	---	---	---	---	---	---	---
	15-Mar-1989	05-IN	749	8.23	---	---	295.2	272	---	1.9	128	---	---	455	84	20.7	2.28	52.5	331.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.021	---	---	---	---	---	---	---
	15-May-1989	05-IN	800	7.48	---	---	295.2	296	---	2.2	172	---	---	522	83.5	21	2.68	60	360.8	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Sep-1989	05-IN	743	7.6	---	---	---	---	---	---	---	---	---	460	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	05-IN	733	8.23	---	---	274.8	308	---	1.2	112	---	---	459	76.5	20.3	2.3	59.4	375.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.012	---	---	---	---	---	---	---
	15-Mar-1990	05-IN	732	7.7	---	---	---	---	---	---	---	---	---	444	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	05-IN	852	8.07	---	---	355.8	292	---	2.7	174	---	---	534	101	25.1	2.92	50	355.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.019	---	---	---	---	---	---	---
	15-Nov-1990	05-IN	758	8	---	---	275.2	290.4	---	1.1	94	---	---	430	76	20.7	2.35	59	354	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.099	---	---	---	---	---	---	---
	15-Dec-1990	05-IN	653	8.19	---	---	---	---	---	---	---	---	---	420	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	05-IN	775	7.28	---	---	---	---	---	1.9	---	---	---	504	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	05-IN	843	7.4	---	---	---	---	---	2	---	---	---	590	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	05-IN	960	7.23	---	---	---	---	---	1.5	---	---	---	625	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	05-IN	977	7.28	---	---	---	---	---	---	---	---	---	640	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	05-IN	981	7.48	---	---	---	---	---	---	---	---	---	665	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	05-IN	1090	7.11	---	---	---	---	---	---	---	---	---	760	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	05-IN	1110	7.14	---	---	534	397	< 0.1	2.6	232	< 0.01	1.15	746	154	36.3	2.95	76.5	484	< 0.5	< 0.5	---	---	---	---	1.1	---	---	---	---	---	0.013	---	---	---	---	---	---
	16-Sep-1998	05-IN	1080	7.37	---	---	440	393	< 0.1	1.7	246	---	---	710	125	31.9	2.3	67.5	480	< 0.5	< 0.5	---	13	11.9	---	0.91	---	---	---	0.007	0.006	0.013	---	---	---	< 0.01	---	---
	09-Sep-1999	05-IN	1190	7.51	---	---	530	440	< 0.1	1.8	223	---	---	751	147	39.1	2.5	73.2	537	< 0.5	< 0.5	---	13.5	13.8	---	1.03	---	---	---	0.009	0.032	0.041	---	---	---	< 0.01	---	---
	05-Sep-2000	05-IN	1140	7.6	---	---	500	455	< 0.1	2	198	< 0.01	1.01	733	140	36.7	3	79.4	555	< 0.5	< 0.5	---	13.3	13.6	---	1.02	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	---	---
	06-Sep-2001	05-IN	1090	7.82	---	---	510	430	< 0.5	2.4	225	< 0.01	1.05	745	145	36.3	3.6	74.1	524	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	< 0.003	0.004	0.004	---	---	---	< 0.01	---	---
	04-Sep-2002	05-IN	1290	7.51	---	---	340	490	< 0.5	2	204	0.02	0.215	700	74.5	37.6	4.2	82.7	598	< 0.5	< 0.5	---	14.1	10.5	---	0.75	---	---	---	< 0.003	0.031	0.031	---	---	---	< 0.01	62.6	---
	08-Oct-2002	05-IN	1090	7.58	---	---	530	492	< 0.5	1.9	189	0.03	1.13	757	151	37	3.4	77.9	600	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	< 0.003	0.129	0.129	---	---	---	---	---	---
	03-Sep-2003	05-IN	1190	7.51	---	---	480	491	< 0.5	2	203	0.1	0.583	747	127	38.5	3.7	77.8	599	< 0.5	< 0.5	---	14.1	13	---	0.92	---	---	---	< 0.003	0.011	0.011	---	---	---	< 0.01	70.2	---
	08-Sep-2004	05-IN	1220	7.82	---	---	510	473	< 0.5	2.4	218	0.42	1.08	761	144	36.7	3.2	71.2	577	< 0.5	< 0.5	---	---	---	---	0.95	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	67.1	---
	07-Sep-2005	05-IN	1170	8.04	9.3	---	510	516	< 0.5	2.2	205	< 0.01	1.05	769	147	34.7	3.3	65.3	630	< 0.5	< 0.5	---	---	---	---	0.9	---	---	---	0.006	0.075	0.081	---	---	---	< 0.005	56.5	---
	07-Sep-2006	05-IN	1180	7.68	---	---	470	509	< 0.5	2.8	192	< 0.01	0.685	751	125	39.2	6	80.2	621	< 0.5	< 0.5	---	---	---	---	0.92	---	---	---	< 0.003	0.049	0.049	---	---	---	---	62.5	---
	05-Sep-2007	05-IN	1220	7.89	---	---	520	527	< 0.5	2.4	195	0.49	1.12	774	150	36.3	3	69.3	643	< 0.5	< 0.5	---	---	---	---	0.93	---	---	---	< 0.003	0.025	0.025	---	---	---	---	58.8	---
	05-Sep-2008	05-IN	1210	8	---	---	514	531	---	1.44	176	0.153	1.06	749	143	38	3.41	68.4	648	< 5	< 5	0.192	---	---	---	0.93	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	05-IN	1160	7.92	---	---	563	520	---	1.4	173	0.173	1.14	764	163	37.9	3.4	73.1	635	< 5.0	< 5.0	0.17	---	---	---	1.03	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	05 IN	1190	7.68	---	---	513	498	---	1.48	190	0.38	0.795	739	146	36.1	2.93	63.8	608	< 5.0	< 5.0	0.236	---	---	93.8	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	05-IN	1200	8.14	---	---	533	520	---	1.29	178	0.443	1.13	752	150	38.4	3.44	68.7	634	< 5.0	< 5.0	0.223	---	---	97	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	05-IN	1190	7.9	---	365	365	540	---	1.34	163	0.075	0.356	699	77	41.9	5.22	86.1	658	< 5.0	< 5.0	0.201	---	---	78.5	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	05-IN	1170	7.83	---	534	535	548	---	1.33	159	0.778	1.20	750	148	40.1	3.10	69.2	669	< 5.0	< 5.0	0.184	---	---	96.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	05-IN	1130	8.15	---	---	594	494	---	1.48	164	0.019	1.07	732	173	39.4	2.66	55.0	602	< 5.0	< 5.0	0.184	---	---	108	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	47.2	---
	28-Sep-2015	05-IN	1180	7.70	---	---	577	517	---	1.7	153	0.011	0.522	738	163	41.3	3.39	64.9	631	<5.0	<5.0	0.185	---	---	---	---	---	---	---	<0.020	0.049	0.049	---	---	---	---	---	---
	28-Sep-2016	05-IN	1170	8.07	---	---	556	490	---	1.7	145	0.122	1.020	698	163	36.4	3.11	54.4	597	<5.0	<5.0	0.170	---	---	---	---	---	---	---	<0.010	0.054	0.054	---	---	---	---	---	---
	27-Sep-2017	05-IN	1060	7.57	---	---	560	543	---	<2.5	153	<0.030	0.919	748	155	42.1	3.38	65.6	662	<5.0	<5.0	0.120	---	---	---	---	---	---	---	<0.050	0.720	0.72	---	---	---	---	---	---
	17-Sep-2018	05-IN	1080	7.88	---	---	616	540	---	2.0	147	<0.010	0.855	759	179	41.1	3.55	59.3	659	<5.0	<5.0	0.187	---	---	---	---	---	---	---	<0.010	0.677	0.677	---	---	---	---	---	---
	17-Sep-2019	05-IN	1080	7.49	---	724	619	568	---	2.3	148	<0.010	0.685	772	172	46.0	3.19	56.7	692	<5.0	<5.0	0.227	---	---	---	---	---	---	---	<0.010	0.650	0.65	---	---	---	---	---	---
	22-Sep-2020	05-IN	1151	6.96	---	---	550	540	---	2.10	147	<0.010	0.179	724	157	38.3	3.01	51.2	659	<5.0	<5.0	0.162	---	---	---	---	---	---	---	<0.010	0.348	0.348	---	---	---	---	---	---
	22-Sep-2021	05-IN	1100	7.60	---	---	589	527	---	1.74	148	<0.030	0.131	733	160	46.1	3.28	57	642	<5.0	<5.0	0.156	---	---	---	---	---	---	---	<0.010	0.114	0.114	---	---	---	---	---	---
	23-Sep-2022	05-IN	1080	7.92	---	---	616	539	---	1.66	139.0	<0.030	0.113	774	169	47.2	3.34	54.3	658	<1.0	<1.0	0.150	---	---	---	---	---	---	---	<0.010	0.145	0.145	---	---	---	---	---	---
	28-Sep-2023	05-IN	1040	8.16	---	---	543	484	---	1.54	132	<0.010	0.0729	705	155	37.8	3.44	54.2	591	<1.0	<1.0	0.157	---	---	---	---	---	---	---	<0.010	0.142	0.142	---	---	---	---	---	---
	10-Sep-2024	05-IN	1140	7.35	---	---	541	567	---	1.90	131	<0.010	0.147	747	150	40.4	2.82	46.4	691	<1.0	<1.0	0.176	---	---	---	---	---	---	---	<0.010	0.058	0.058	---	---	---	---	---	---
05-SS	10-Sep-2004	05-SS	482	7.85	---	---	160	230	< 0.5	1.2	22.4	< 0.01	0.381	256	47.4	9.7	4.6	32	281	< 0.5	< 0.5	---	---	---	---	0.92	---	---	---	0.003	0.005	0.008	---	---	---	---	6.4	---
	08-Sep-2005	05-SS	405	7.71	7.4	---	150	206	< 0.5	< 0.5	20	1.32	0.382	230	41.9	10.5	4.3	28.3	251	< 0.5	< 0.5	---	---	---	---	0.96	---	---	---	< 0.003	0.008	0.008	---	---	---	< 0.005	6.5	---
	07-Sep-2006	05-SS	413	7.53	---	---	160	205	< 0.5	1.2	22.5	1.34	0.395	240	46.2	11.2	4.3	30.2	250	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	< 0.003	0.003	0.003	---	---	---	---	7.3	---
	07-Sep-2007	05-SS	432	7.6	---	---	140	207	< 0.5	0.7	23.2	1.58	0.336	231	41.7	9.8	3.7	25.9	253	< 0.5	< 0.5	---	---	---	---	0.9	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	---	6.2	---
	04-Sep-2008	05-SS	424	7.7	---	---	155	210	---	< 0.50	21.6	1.87	0.351	236	44.5	10.6	4.19	28.7	256	< 5	< 5	0.111	---	---	---	0.956	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	17-Sep-2009	05-SS	424	7.75	---	---	163	207	---	< 0.50	22.1	< 0.030	0.351	239	46.5	11.5	4.35	29.5	252	< 5.0	< 5.0	0.098	---	---	---	1.01	---	---	---	< 0.050	0.066	< 0.071	---	---	---	---	---	---
(Duplicate)	17-Sep-2009	05-SS DUP	420	7.75	---	---	168	207	---	< 0.50	22	< 0.030	0.358	241	48.3	11.6	4.4	30.3	253	< 5.0	< 5.0	0.098	---	---	---	1.04	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	05 (R) SS	444	7.7	---	---	152	215	---	< 0.50	23.4	0.051	0.34	239	43.7	10.5	3.76	28	263	< 5.0	< 5.0	0.135	---	---	90.5	---	---	---	---	< 0.050	0.154	0.154	---	---	---	---	---	---
	08-Sep-2011	05-SS	441	8.03	---	---	166	214	---	< 0.50	22.9	2.17	0.375	242	46.5	12.1	4.1	27.6	262	< 5.0	< 5.0	0.151	---	---	96.7	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Sep-2014	05-SS	448	8.27	---	---	172	221	---	< 0.50	23.6	2.19	0.396	253	50	11.4	4.14	31.3	270	< 5.0	< 5.0	0.126	---	---	99.6	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	7.84	---
	28-Sep-2015	05-SS	446	7.95	---	---	181	224	---	<0.50	26.3	0.137	0.406	261	52.4	12.3	4.30	31.5	273	<5.0	<5.0	0.146	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
(Duplicate)	28-Sep-2015	25-SS	445	7.98	---	---	184	222	---	<0.50	26.0	0.137	0.406	260	51.9	13.1	4.28	31.4	271	<5.0	<5.0	0.135	---	---	---	---	---	---	---	<0.010	0.021	<0.022	---	---	---	---	---	---
	28-Sep-2016	05-SS	440	8.07	---	---	156	202	---	<0.50	23.9	1.500	0.369	233	45.5	10.4	4.17	27.4	246	<5.0	<5.0	0.101	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
(Duplicate)	28-Sep-2016	25-SS	438	8.17	---	---	159	209	---	<0.50	23.6	1.470	0.370	237	46.4	10.4	4.14	27.2	255	<5.0	<5.0	0.098	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	05-SS	419	8.48	---	---	180	218	---	<0.50	25.8	<0.030	0.407	258	51.1	12.8	4.46	32.8	254	6.2	<5.0	0.098	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
(Duplicate)	27-Sep-2017	25-SS	418	8.46	---	---	180	217	---	<0.50	25.7	<0.030	0.409	257	51.0	12.7	4.40	32.7	253	5.4	<5.0	0.099	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	17-Sep-2018	05-SS	415	7.81	---	---	182	209	---	<0.50	24.6	<0.010	0.436	249	52.3	12.4	4.74	28.7	255	<5.0	<5.0	0.117	---	---	---	---	---	---	---	<0.010	0.085	0.085	---	---	---	---	---	---
(Duplicate)	17-Sep-2018	25-SS	411	7.82	---	---	179	207	---	<0.50	24.9	<0.010	0.435	247	51.2	12.4	4.70	29.6	253	<5.0	<5.0	0.117	---	---	---	---	---	---	---	<0.010	0.081	0.081	---	---	---	---	---	---
	17-Sep-2019	05-SS	424	7.41	---	---	174	231	---	<0.50	25.8	0.557	0.391	264	49.4	12.2	4.48	31.9	282	<5.0	<5.0	0.148	---	---	---	---	---	---	---	<0.010	0.27	0.27	---	---	---	---	---	---
(Duplicate)	17-Sep-2019	25-SS	418	7.37	---	---	176	221	---	<0.50	25.7	0.559	0.400	259	50.1	12.3	4.59	32.1	270	<5.0	<5.0	0.148	---	---	---	---	---	---	---	<0.010	0.227	0.227	---	---	---	---	---	---
	23-Sep-2020	05-SS	460	6.81	---	---	162	215	---	<0.50	26.0	1.75	0.381	244	46.9	11.0	4.15	26.9	263	<5.0	<5.0	0.122	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
(Duplicate)	23-Sep-2020	25-SS	460	7.57	---	---	161	224	---	<0.50	25.6	1.84	0.375	249	46.4	11.0	4.10	27.6	273	<5.0	<5.0	0.123	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	05-SS	426	7.6	---	---	172	219	---	<0.50	26	0.969	0.4	254	47.8	12.8	4.6	30.6	267	<5.0	<5.0	0.11	---	---	---	---	---	---	---	<0.010	0.062	0.062	---	---	---	---	---	---
(Duplicate)	22-Sep-2021	25-SS	438	7.77	---	---	169	214	---	<0.50	25.6	0.928	0.392	246	47.1	12.5	4.21	28.7	261	<5.0	<5.0	0.102	---	---	---	---	---	---	---	<0.010	0.109	0.109	---	---	---	---	---	---
	29-Sep-2022	05-SS	422	7.74	---	---	176	216	---	<0.50	23.9	<0.030	0.383	290	48.8	13.1	4.32	30.0	264	<1.0	<1.0	0.112	---	---	---	---	---	---	---	<0.010	0.182	0.182	---	---	---	---	---	---
(Duplicate)	29-Sep-2022	25-SS	426	7.77	---	---	173	217	---	<0.50	23.3	<0.030	0.385	288	48.4	12.6	4.32	29.5	265	<1.0	<1.0	0.115	---	---	---	---	---	---	---	<0.010	0.125	0.125	---	---	---	---	---	---
	28-Sep-2023	05-SS	447	8.45	---	---	165	227	---	<0.50	24.2	0.245	0.39	290	46.9	11.7	4.11	28.5	265	5.9	<1.0	0.108	---	---	---	---	---	---	---	<0.010	0.096	0.096	---	---	---	---	---	---
(Duplicate)	28-Sep-2023	25-SS	443	8.47	---	---	165	226	---	<0.50	22.6	0.474	0.352	289	47.1	11.5	4.18	29.3	262	6.8	<1.0	0.108	---	---	---	---	---	---	---	<0.010	0.067	0.067

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
06-SH	18-Feb-1985	06-SH	---	---	---	---	285.5	295	---	---	---	---	---	295	---	---	---	---	359.6	---	---	---	---	---	---	---	---	---	---	0.003	0.009	---	---	---	---	---	---	---
	15-May-1985	06-SH	493	7.82	---	---	264.1	272	---	1	10.5	---	---	285	75	18.6	1.39	7.3	331.6	---	---	---	---	---	---	---	< 0.0020	---	---	0.017	0.003	---	---	---	---	---	---	---
	15-Sep-1985	06-SH	508	7.84	---	---	257	276	---	0.9	6.8	---	---	280	74	17.5	1.45	6.2	336.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.007	---	---	---	---	---	---	---
	15-Dec-1985	06-SH	530	7.49	---	---	268.6	289	---	1.12	5.8	---	---	290	74	20.3	1.35	5.9	352.3	---	---	---	---	---	---	---	< 0.0020	---	---	0.005	0.005	---	---	---	---	---	---	---
	15-Jun-1986	06-SH	520	8.26	---	---	282.7	278	---	1.8	5.3	---	---	280	77.7	21.5	1.2	6.1	---	---	---	---	---	---	---	---	< 0.0020	---	---	0.005	0.013	---	---	---	---	---	---	---
	15-Aug-1986	06-SH	528	7.27	---	---	282.3	276	---	1.1	6.7	---	---	285	78	21.2	1.25	5.9	336.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.014	---	---	---	---	---	---	---
	15-Oct-1986	06-SH	500	7.86	---	---	266.9	277	---	1.2	6.1	---	---	290	73	20.5	1.27	5.4	337.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.066	---	---	---	---	---	---	---
	15-May-1987	06-SH	505	8.15	---	---	270.2	275	---	0.8	6.5	---	---	280	73	21.3	1.2	5.8	335.2	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.057	---	---	---	---	---	---	---
	15-Sep-1987	06-SH	526	8.4	---	---	276	285	---	2.1	6.7	---	---	290	76.8	20.6	1.36	6.1	348	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.068	---	---	---	---	---	---	---
	15-Nov-1987	06-SH	536	7.55	---	---	294.7	289	---	2.3	6.7	---	---	305	81	22.4	1.31	6	352.3	---	---	---	---	---	---	---	< 0.0020	---	---	0.003	0.011	---	---	---	---	---	---	---
	15-Feb-1988	06-SH	543	7.47	---	---	---	---	---	1.3	7.5	---	---	---	77	22.6	1.25	6	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	06-SH	532	7.88	---	---	286.8	294	---	1.4	7.2	---	---	300	88	21.5	1.25	6.2	359	---	---	---	---	---	---	---	< 0.0010	---	---	0.003	0.036	---	---	---	---	---	---	---
	15-Aug-1988	06-SH	546	7.76	---	---	298.6	308	---	1.3	7.8	---	---	310	82.4	22.5	1.4	7.2	375.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.106	---	---	---	---	---	---	---
	15-Nov-1988	06-SH	545	7.89	---	---	308.3	287	---	1.2	7.4	---	---	303	85.8	22.8	1.4	6.6	349.9	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.06	---	---	---	---	---	---	---
	15-May-1989	06-SH	585	7.88	---	---	304.3	316	---	1.3	7.1	---	---	316	84.5	22.6	1.35	6.6	385.2	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.029	---	---	---	---	---	---	---
	15-Sep-1989	06-SH	597	7.49	---	---	---	---	---	---	---	---	---	400	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	06-SH	626	8.2	---	---	343.2	356	---	1.2	9.1	---	---	356	93	26.9	1.62	7.2	434	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.02	---	---	---	---	---	---	---
	15-Mar-1990	06-SH	606	7.92	---	---	---	---	---	---	---	---	---	284	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Apr-1990	06-SH	706	7.36	---	---	---	---	---	---	---	---	---	370	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	06-SH	652	8.03	---	---	351.6	363	---	1.9	7.7	---	---	363	96.5	26.8	1.32	7.4	442.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.011	---	---	---	---	---	---	---
	15-Aug-1990	06-SH	703	7.69	---	---	---	---	---	---	---	---	---	460	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	06-SH	705	8.11	---	---	363.1	382.4	---	1.1	14.1	---	---	386	98.5	28.4	1.63	8.7	466.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.011	---	---	---	---	---	---	---
	12-May-1992	06-SH	779	7.95	---	---	346.6	399	---	2.2	51.4	---	---	413	95	26.5	1.75	44.1	486.4	---	---	---	---	---	---	0.98	< 0.0010	---	---	0.003	0.008	---	---	---	---	---	---	---
	21-Sep-1994	06-SH	992	7.13	---	---	---	559	0.1	5.2	13.9	0.03	**0.583**	**568**	135	37	6.08	29.7	681	0.5	0.5	---	---	---	---	0.97	0.001	---	---	0.153	0.144	0.153	---	---	---	---	---	---
	01-Nov-1994	06-SH	841	7.58	---	---	---	473	< 0.1	2.2	9	0.03	**0.628**	476	126	35.1	2.53	12.5	577	< 0.5	< 0.5	---	---	---	---	1.01	< 0.001	---	---	0.055	0.051	0.055	---	---	---	---	---	---
	28-Sep-1995	06-SH	953	7.02	---	---	609	567	< 0.1	2.5	6.6	< 0.01	**0.059**	**582**	171	44.1	2.1	10.4	691	< 0.5	< 0.5	---	---	---	---	1.1	< 0.001	---	---	---	0.012	---	---	---	---	---	---	---
	04-Sep-1996	06-SH	1080	6.98	---	---	599	612	< 0.1	2.6	9.6	< 0.01	**1.07**	**607**	167	44.1	1.95	9.04	746	< 0.5	< 0.5	---	---	---	---	0.99	0.001	---	---	---	0.007	0.007	---	---	---	---	---	---
	03-Sep-1997	06-SH	1018	7.24	---	---	645	604	< 0.1	2.3	5.3	< 0.01	**0.423**	**613**	174	50.9	1.91	10.2	736	< 0.5	< 0.5	---	----	---	---	1.09	< 0.001	---	---	---	0.04	0.04	---	---	---	---	---	---
	15-Sep-1998	06-SH	1090	6.9	---	---	630	635	< 0.1	1.8	5	---	---	**622**	172	49.8	1.7	10.9	775	< 0.5	< 0.5	---	12.9	13.2	---	1.03	0.001	---	---	---	0.014	0.017	---	---	---	---	---	---
(Duplicate)	15-Sep-1998	06-SH DUP	1100	7.14	---	---	650	606	< 0.1	1.7	4.8	---	---	**609**	176	50.7	1.8	11	739	< 0.5	< 0.5	---	12.3	13.5	---	1.1	0.001	---	---	---	0.014	0.014	---	---	---	---	---	---
	09-Sep-1999	06-SH	1220	7.04	---	---	780	760	< 0.1	2.7	4.6	---	---	**748**	211	60.9	1.6	11.6	927	< 0.5	< 0.5	---	15.4	16.1	---	1.05	< 0.001	---	< 0.001	---	0.011	0.011	---	---	---	---	---	---
	05-Sep-2000	06-SH	1150	7.37	---	---	650	706	< 0.1	3.2	4.9	< 0.01	**0.649**	**669**	171	52.9	2.4	11.2	861	< 0.5	< 0.5	---	14.3	13.5	---	0.94	0.003	---	---	< 0.003	0.02	0.02	---	---	---	---	---	---
	06-Sep-2001	06-SH	1110	7.66	---	---	700	707	< 0.5	3	4.8	< 0.01	**0.619**	**691**	190	54.9	2.3	11	862	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	< 0.003	0.031	0.031	---	---	---	---	---	---
(Duplicate)	06-Sep-2001	06-SH DUP	1130	7.85	---	---	700	702	< 0.5	3.1	4.6	< 0.01	**0.273**	**689**	192	54.6	2.2	10.5	857	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	< 0.003	0.03	0.03	---	---	---	---	---	---
	04-Sep-2002	06-SH	1300	7.32	---	---	670	732	< 0.5	3	4.5	0.03	**0.326**	**694**	182	51.5	2.1	11.1	893	< 0.5	< 0.5	---	---	---	---	0.93	< 0.001	---	---	< 0.003	0.031	0.031	---	---	---	---	2.4	---
(Duplicate)	04-Sep-2002	06-SH DUP	1300	7.53	---	---	670	740	< 0.5	2.9	4.9	0.02	**0.598**	**698**	185	49.6	2.1	9.1	903	< 0.5	< 0.5	---	---	---	---	0.92	0.001	---	---	< 0.003	0.016	0.016	---	---	---	---	1.5	---
	03-Sep-2003	06-SH	1230	7.25	---	---	770	735	< 0.5	2.9	4.9	0.03	**0.356**	**735**	216	56.6	2.3	10.2	897	< 0.5	< 0.5	---	---	---	---	1.07	---	< 0.004	---	< 0.003	0.016	0.016	---	---	---	---	1.8	---
(Duplicate)	03-Sep-2003	06-SH DUP	1230	7.28	---	---	760	726	< 0.5	2.9	4.7	0.03	**0.216**	**724**	209	57.9	2.4	11.2	886	< 0.5	< 0.5	---	---	---	---	1.07	---	< 0.004	---	< 0.003	0.019	0.019	---	---	---	---	1.8	---
	08-Sep-2004	06-SH	1260	7.61	---	---	690	730	< 0.5	3.5	4.4	0.04	**0.318**	**701**	191	52	2.2	9.4	890	< 0.5	< 0.5	---	---	---	---	0.97	---	< 0.004	---	< 0.003	0.026	0.026	---	---	---	---	1.5	---
(Duplicate)	08-Sep-2004	06-SH DUP	1230	7.64	---	---	680	709	< 0.5	3.4	4.3	0.03	**0.074**	**686**	188	52	2.2	10.1	865	< 0.5	< 0.5	---	---	---	---	0.99	---	< 0.004	---	< 0.003	0.02	0.02	---	---	---	---	1.5	---
	30-Oct-2004	06-SH	---	---	---	---	---	---	---	---	---	0.04	**0.935**	---	178	46.7	2.1	8.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.7	---
	07-Sep-2005	06-SH	1150	7.85	16.9	---	670	713	< 0.5	3.3	4.8	0.08	**3.55**	**687**	189	47.1	1.8	9.4	870	< 0.5	< 0.5	---	---	---	---	0.95	---	< 0.004	---	< 0.003	0.004	0.004	---	---	---	---	1.7	---
(Duplicate)	07-Sep-2005	06-SH DUP	1170	7.89	8.4	---	640	718	< 0.5	2.7	4	< 0.01	**2.03**	**679**	179	48.3	2	11.1	876	< 0.5	< 0.5	---	---	---	---	0.92	---	< 0.004	---	< 0.003	0.008	0.008	---	---	---	---	2.4	---
	07-Sep-2006	06-SH	1130	7.62	---	---	650	690	< 0.5	3.4	4.7	0.04	**1.18**	**663**	177	50.4	2.1	10.3	841	< 0.5	< 0.5	---	---	---	---	0.97	---	---	---	< 0.003	0.006	0.006	---	---	---	---	1.4	---
(Duplicate)	07-Sep-2006	06-SH DUP	1190	7.65	---	---	640	692	< 0.5	3.5	5.1	0.07	**1.16**	**660**	174	49.3	2.1	9.6	844	< 0.5	< 0.5	---	---	---	---	0.94	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	---	1.3	---
	05-Sep-2007	06-SH	1130	7.72	---	---	540	674	< 0.5	3	4	**0.36**	**0.541**	**614**	150	40.8	1.8	7.9	822	< 0.5	< 0.5	---	---	---	---	0.82	---	---	---	< 0.003	0.36	0.36	---	---	---	---	1.2	---
(Duplicate)	05-Sep-2007	06-SH DUP	1110	7.97	---	---	590	669	< 0.5	2.6	3.9	0.1	**1.08**	**628**	162	44.1	1.9	11	817	< 0.5	< 0.5	---	---	---	---	0.91	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	---	1.4	---
	03-Sep-2008	06-SH	1080	7.70	---	---	578	656	---	2.31	3.15	< 0.030	**1.19**	**613**	160	43.3	2.06	8.49	800	< 5	< 5	0.169	---	---	---	0.903	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
(Duplicate)	03-Sep-2008	06-SH DUP	1100	7.70	---	---	589	648	---	2.26	3.3	< 0.030	**1.2**	**612**	163	44.1	2.05	8.69	791	< 5	< 5	0.181	---	---	---	0.93	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	06-SH	1050	7.79	---	---	618	625	---	2.19	2.86	< 0.030	**0.79**	**610**	172	45.8	2.14	9.5	763	< 5.0	< 5.0	0.159	---	---	---	1.01	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	09-Sep-2009	06-SH DUP	1050	7.91	---	---	632	622	---	2.18	2.77	0.057	**1.27**	**612**	179	45	1.92	8	759	< 5.0	< 5.0	0.173	---	---	---	1.04	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	06 SH	1030	7.52	---	---	623	593	---	2.32	3.08	< 0.030	**0.157**	**590**	168	49.4	1.75	9.2	723	< 5.0	< 5.0	0.196	---	---	---	108	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	08-Sep-2010	SYLVITE 26	1030	7.74	---	---	553	588	---	2.38	3.06	0.065	**0.695**	**562**	150	43.3	1.75	8.3	717	< 5.0	< 5.0	0.18	---	---	96.3	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	06-SH	1010	8.09	---	---	561	587	---	2.07	2.53	< 0.030	**0.583**	**563**	152	44.1	1.8	8.6	716	< 5.0	< 5.0	0.179	---	---	98.1	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	07-Sep-2011	ZIRCON 26	910	8.10	---	---	510	523	---	2.05	2.51	< 0.030	**0.873**	**506**	140	38.9	1.65	6.9	638	< 5.0	< 5.0	0.179	---	---	99.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	06-SH	993	7.79	---	576	577	588	---	1.84	2.77	0.062	**1.13**	**571**	159	43.7	2.15	8.2	718	< 5.0	< 5.0	0.179	---	---	100	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	05-Sep-2012	SPINEL 25	975	7.93	---	589	590	581	---	1.86	2.81	0.069	**1.05**	**572**	162	45	2.21	9	709	< 5.0	< 5.0	0.174	---	---	104	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	25-Sep-2013	06-SH	978	7.64	---	573	573	593	---	1.46	6.15	0.091	**0.714**	**575**	159	42.7	1.74	7.6	723	< 5.0	< 5.0	0.169	---	---	98.3	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	25-Sep-2013	26-SH	968	7.63	---	560	560	589	---	1.44	5.86	0.079	**0.664**	**567**	153	43.3	1.72	7.8	718	< 5.0	< 5.0	0.155	---	---	97.0	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	06-SH	869	7.89	---	---	512	500	---	1.53	2.29	< 0.010	**0.749**	495	144	37.1	1.65	8.0	609	< 5.0	< 5.0	0.211	---	---	105	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	1.95	---
	29-Sep-2015	06-SH	949	7.78	---	---	594	530	---	1.59	5.51	<0.010	**1.26**	**544**	164	44.7	2.17	8.31	646	<5.0	<5.0	0.216	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	28-Sep-2016	06-SH	866	7.99	---	---	517	490	---	1.18	3.06	<0.010	**0.49**	490	147	36.6	1.79	6.70	598	<5.0	<5.0	0.164	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2017	06-SH	782	7.51	---	---	549	510	---	1.19	3.89	<0.030	**1.25**	**513**	147	44.1	2.17	8.40	623	<5.0	<5.0	0.152	---	---	---	---	---	---	---	<0.010	0.027	<0.050	---	---	---	---	---	---
	17-Sep-2018	06-SH	836	7.63	---	---	575	525	---	1.29	1.84	0.022	**1.22**	**531**	160	42.5	2.17	8.00	641	<5.0	<5.0	0.190	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	17-Sep-2019	06-SH	841	7.35	---	---	521	557	---	1.51	2.74	0.035	**1.02**	**531**	142	40.5	1.98	7.5	680	<5.0	<5.0	0.249	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2020	06-SH	913	6.90	---	---	475	538	---	1.30	4.60	<0.010	**0.713**	**505**	132	35.2	1.81	7.0	656	<5.0	<5.0	0.181	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	06-SH	873	7.54	---	---	543	535	---	1.35	2.55	<0.030	**0.965**	**524**	145	43.3	2.22	8.1	652	<5.0	<5.0	0.185	---	---	---	---	---	---	---	<0.010	0.028	0.028	---	---	---	---	---	---
	28-Sep-2022	06-SH	848	7.77	---	---	533	531	---	1.38	2.60	<0.030	**0.69**	**552**	143	42.8	1.82	7.6	648	<1.0	<1.0	0.137	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	29-Sep-2023	06-SH	732	8.00	---	---	508	430	---	0.81	1.91	<0.010	**0.692**	**481**	138	39.7	1.97	7.44	525	<1.0	<1.0	0.188	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	10-Sep-2024	06-SH	898	7.63	---	---	514	594	---	0.77	2.59	0.053	**1.170**	**584**	141	39.4	1.72	7.0	725	<1.0	<1.0	0.200	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
06-IN	17-Feb-1985	06-IN	---	---	---	---	393.2	306	---	---	---	---	---	571	---	---	---	---	373	---	---	---	---	---	---	---	---	---	---	0.004	0.015	---	---	---	---	---	---	---
	15-May-1985	06-IN	684	7.96	---	---	312.7	308	---	2.2	83	---	---	430	91	20.7	3.11	34	375.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.039	1.08	---	---	---	---	---	---	---
	15-Sep-1985	06-IN	781	8.06	---	---	317.3	308	---	2.6	106	---	---	450	94	20	3.2	47	375.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.019	1.1	---	---	---	---	---	---	---
	15-Jun-1986	06-IN	750	7.18	---	---	369.1	305	---	5.1	89	---	---	450	106	25.3	3.06	25.7	371.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.017	---	---	---	---	---	---	---
	15-Aug-1986	06-IN	763	7.49	---	---	348	304	---	5	110	---	---	455	101	23.2	3	30	370.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.026	---	---	---	---	---	---	---
	15-Oct-1986	06-IN	780	7.85	---	---	347	314	---	5.9	118	---	---	490	97	25.4	2.9	37.5	382.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.058	---	---	---	---	---	---	---
	15-Feb-1987	06-IN	907	7.16	---	---	---	---	---	5.1	188	---	---	---	112	27.5	3.18	48.4	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	06-IN	781	8.09	---	---	356.2	301	---	5.8	145	---	---	500	99	26.4	3.1	36.5	366.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Sep-1987	06-IN	813	8.01	---	---	367.9	308	---	6.3	146	---	---	505	105	25.6	2.99	39.3	375.5	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.06	---	---	---	---	---	---	---
	15-Nov-1987	06-IN	842	7.92	---	---	384.5	308	---	6.2	147	---	---	530	109	27.2	3	42.5	375.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.046	---	---	---	---	---	---	---
	15-May-1988	06-IN	865	7.72	---	---	391.7	302	---	5.8	180	---	---	560	113	26.6	3.1	50	369	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.007	---	---	---	---	---	---	---
	15-Aug-1988	06-IN	874	7.87	---	---	379.9	318	---	3.8	159	---	---	548	108	26.7	3	54.1	387.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.004	---	---	---	---	---	---	---
	15-Nov-1988	06-IN	918	7.68	---	---	387	314	---	3.5	188	---	---	595	111	26.6	3.26	54	382.8	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.033	---	---	---	---	---	---	---
	15-Mar-1989	06-IN	928	8.08	---	---	367.8	276	---	3.7	197	---	---	570	104	26.2	3.1	57.5	336.4	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.049	---	---	---	---	---	---	---
	15-May-1989	06-IN	931	7.43	---	---	375.8	309	---	3.6	201	---	---	596	108	25.7	3.15	66	376.7	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.06	---	---	---	---	---	---	---
	15-Sep-1989	06-IN	904	7.4	---	---	---	---	---	---	---	---	---	550	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	06-IN	952	8.17	---	---	376.1	292	---	3	184	---	---	566	104	28.2	3.5	65	355.9	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.065	---	---	---	---	---	---	---
	15-Mar-1990	06-IN	920	7.41	---	---	---	---	---	---	---	---	---	548	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	06-IN	961	7.1	---	---	383.2	327	---	3.3	215	---	---	622	108	27.5	3.26	65.5	398.6	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.01	---	---	---	---	---	---	---
	15-Aug-1990	06-IN	980	7.77	---	---	---	---	---	---	---	---	---	640	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	06-IN	958	7.93	---	---	331.1	287.6	---	1.6	182	---	---	544	88	27	3.55	66.5	350.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.107	---	---	---	---	---	---	---
	15-May-1991	06-IN	973	7.47	---	---	---	---	---	2.3	179	---	---	632	113	24.5	3.3	73.5	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---	---	---	---	---	---	---
	05-Nov-1991	06-IN	897	7.94	---	---	---	324	---	1.8	192	---	---	600	117	26.1	3.42	64.4	395	---	---	---	---	---	---	---	< 0.0010	---	---	0.067	---	---	---	---	---	---	---	---
	12-May-1992	06-IN	943	7.86	---	---	361.2	349	---	1.7	180	---	---	417	102	25.8	3.2	72	425.4	---	---	---	---	---	---	0.97	< 0.0010	---	---	< 0.003	0.073	---	---	---	---	---	---	---
	03-Nov-1992	06-IN	923	7.53	---	---	---	345	---	1.9	176	---	---	601	110	26.2	3.34	73.6	420.6	---	---	---	---	---	---	1.03	< 0.0010	---	---	---	0.054	---	---	---	---	---	---	---
	18-May-1993	06-IN	958	7.41	---	---	---	---	---	1.9	---	---	---	685	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	06-IN	964	7.61	---	---	393	349	---	2.9	206	---	---	631	114	26.3	3.3	66	425	---	---	---	---	---	---	0.95	0.001	---	---	0.007	0.072	---	---	---	---	---	---	---
	21-Sep-1994	06-IN	802	7.78	---	---	---	---	---	---	---	---	---	520	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	06-IN	902	7.14	---	---	---	---	---	---	---	---	---	604	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	06-IN	990	7.21	---	---	---	---	---	---	---	---	---	683	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	06-IN	979	7.34	---	---	485	388	< 0.1	1.8	168	< 0.01	< 0.001	638	140	32.7	3.79	55.2	473	< 0.5	< 0.5	---	---	---	---	1.08	---	---	---	---	---	0.065	---	---	---	---	---	---
	15-Sep-1998	06-IN	948	7.18	---	---	450	375	< 0.1	1.3	170	---	---	606	128	30.9	3.3	47.8	458	< 0.5	< 0.5	---	11.1	11.1	---	1	---	---	---	0.005	0.08	0.085	---	---	---	< 0.01	---	---
	09-Sep-1999	06-IN	1010	7.58	---	---	440	417	< 0.1	1.5	147	---	---	622	124	31.7	2.2	65.2	509	< 0.5	< 0.5	---	11.4	11.7	---	1.02	---	---	---	0.012	0.024	0.036	---	---	---	< 0.01	---	---
	05-Sep-2000	06-IN	930	7.66	---	---	410	391	< 0.1	1.9	138	< 0.01	**0.039**	580	116	29.3	4.1	56.4	477	< 0.5	< 0.5	---	10.7	10.8	---	1	---	---	---	< 0.003	0.095	0.095	---	---	---	< 0.01	---	---
	06-Sep-2001	06-IN	866	7.92	---	---	440	383	< 0.5	1.6	135	< 0.01	**0.58**	579	125	31.1	3.7	50.6	468	< 0.5	< 0.5	---	---	---	---	1.06	---	---	---	0.004	0.108	0.112	---	---	---	< 0.01	---	---
	04-Sep-2002	06-IN	1010	7.69	---	---	410	424	< 0.5	1.7	103	0.02	**0.46**	567	117	27.7	3.8	58.6	517	< 0.5	< 0.5	---	10.7	10.8	---	1.01	---	---	---	< 0.003	0.085	0.085	---	---	---	< 0.01	37.9	---
	03-Sep-2003	06-IN	915	7.69	---	---	470	408	< 0.5	1.6	122	0.17	**0.34**	591	135	31.7	3.6	50.7	497	< 0.5	< 0.5	---	10.8	11.7	---	1.09	---	---	---	< 0.003	0.05	0.05	---	---	---	< 0.01	35	---
	08-Sep-2004	06-IN	946	7.95	---	---	400	419	< 0.5	2	109	0.02	< 0.004	562	115	28.2	3.6	52.9	511	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	< 0.003	0.067	0.067	---	---	---	< 0.01	35.7	---
	07-Sep-2005	06-IN	905	8.1	1.6	---	450	447	< 0.5	2	95.6	< 0.01	**2.56**	576	133	29	3.2	42.6	545	< 0.5	< 0.5	---	---	---	---	1	---	---	---	< 0.003	0.005	0.005	---	---	---	< 0.005	31.3	---
	07-Sep-2006	06-IN	896	7.86	---	---	400	430	< 0.5	2.3	82.4	< 0.01	**3.34**	541	115	27	3.4	49.5	525	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	< 0.003	0.019	0.019	---	---	---	---	27.9	---
	03-Sep-2008	06-IN	880	8	---	---	363	429	---	1.2	75.8	**0.331**	**1.93**	516	105	24.6	3.4	48.2	524	< 5	< 5	0.218	---	---	---	0.925	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	06-IN	864	7.98	---	---	462	444	---	3.37	67.5	0.278	**2.17**	555	135	30.3	3.82	48.6	542	< 5.0	< 5.0	0.197	---	---	---	1.1	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	06 IN	887	7.8	---	---	361	438	---	1.35	65.3	0.266	**1.77**	504	103	25.3	3.01	42.8	534	< 5.0	< 5.0	0.256	---	---	90.1	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	06-IN	895	8.25	---	---	403	449	---	1.2	60.9	**0.904**	**1.37**	523	114	28.7	3.43	45.4	548	< 5.0	< 5.0	0.248	---	---	98.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	06-IN	882	8.02	---	402	403	458	---	1.12	57.7	**0.878**	**1.21**	529	115	28.1	3.74	48.3	559	< 5.0	< 5.0	0.225	---	---	98.5	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	25-Sep-2013	06-IN	877	7.89	---	411	412	485	---	1.16	45.7	**0.928**	**1.30**	542	116	29.6	3.44	54.5	591	< 5.0	< 5.0	0.207	---	---	100	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
06(R)IN	17-Sep-2014	06(R)IN	803	8.08	---	---	488	446	---	0.91	10.0	<0.010	**1.38**	464	138	34.8	2.33	10.2	544	< 5.0	< 5.0	0.228	---	---	112	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	4.24	---
	29-Sep-2015	06(R)IN	1050	7.40	---	---	600	577	---	1.06	4.68	**0.893**	**2.04**	577	167	44.5	3.11	10.5	704	<5.0	<5.0	0.283	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	28-Sep-2016	06(R)IN	862	8.01	---	---	571	463	---	0.86	2.55	**1.910**	**1.45**	496	165	38.7	2.78	8.6	565	<5.0	<5.0	0.201	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2017	06(R)IN	832	7.60	---	---	577	561	---	0.82	4.17	**0.665**	**1.45**	561	157	44.8	2.84	14.1	684	<5.0	<5.0	0.191	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	17-Sep-2018	06(R)IN	890	7.84	---	---	609	556	---	0.98	2.67	**1.540**	**1.63**	565	172	43.5	3.02	9.0	678	<5.0	<5.0	0.237	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	17-Sep-2019	06(R)IN	875	7.67	---	---	553	580	---	1.08	3.25	**3.050**	**1.69**	559	152	42.1	2.93	8.9	707	<5.0	<5.0	0.288	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2020	06(R)IN	935	6.99	---	---	475	538	---	1.30	4.60	<0.010	**0.713**	505	132	35.2	1.81	7.0	656	<5.0	<5.0	0.181	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	06(R)IN	893	7.7	---	---	591	542	---	1.83	4.23	0.187	**0.799**	550	163	44.7	2.8	8.2	661	<5.0	<5.0	0.194	---	---	---	---	---	---	---	<0.010	0.042	0.042	---	---	---	---	---	---
	28-Sep-2022	06(R)IN	872	7.94	---	---	535	547	---	1.68	4.29	0.105	**1.14**	570	145	41.9	2.86	8.3	667	<1.0	<1.0	0.147	---	---	---	---	---	---	---	<0.010	0.020	<0.0500	---	---	---	---	---	---
	29-Sep-2023	06(R)IN	750	8.01	---	---	517	431	---	1.08	4.13	<0.010	**0.666**	492	145	37.7	2.32	8.52	526	<1.0	<1.0	0.17	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	10-Sep-2024	06(R)IN	926	8.19	---	---	511	628	---	0.80	2.00	0.277	**0.837**	605	139	39.8	1.96	7.6	337	211	<1.0	0.188	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
07-SH	18-Feb-1985	07-SH	---	---	---	---	308.4	299	---	---	---	---	---	340	---	---	---	---	364.5	---	---	---	---	---	---	---	---	---	---	0.004	0.019	---	---	---	---	---	---	---
	15-May-1985	07-SH	708	7.95	---	---	289.8	292	---	3	56	---	---	375	83	20	2.2	27	355.9	---	---	---	---	---	---	---	< 0.0020	---	---	0.01	0.71	---	---	---	---	---	---	---
	15-Sep-1985	07-SH	552	8.06	---	---	275.7	283	---	1.1	9.8	---	---	300	80	18.4	1.85	8.1	345	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.033	---	---	---	---	---	---	---
	15-Jun-1986	07-SH	620	7.17	---	---	333.9	316	---	1.8	18	---	---	350	---	---	2.14	9.9	385.2	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.038	---	---	---	---	---	---	---
	15-Aug-1986	07-SH	567	7.36	---	---	296.4	280	---	1.3	16.4	---	---	310	84	21	1.96	8.2	341.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.092	---	---	---	---	---	---	---
	15-Oct-1986	07-SH	560	7.62	---	---	290.6	277	---	1.8	19.2	---	---	310	81	21.4	2.04	8	337.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.3	---	---	---	---	---	---	---
	15-May-1987	07-SH	562	8.14	---	---	291.8	279	---	1.3	30	---	---	320	81	21.7	1.75	7.74	340.1	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.115	---	---	---	---	---	---	---
	15-Sep-1987	07-SH	571	7.77	---	---	303.9	287	---	2.3	34	---	---	330	87	21	1.9	8.3	349.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.055	---	---	---	---	---	---	---
	15-Nov-1987	07-SH	584	7.88	---	---	317.6	295	---	2.1	33.2	---	---	340	89	23.1	1.91	8.7	359.6	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.03	---	---	---	---	---	---	---
	15-Feb-1988	07-SH	598	7.44	---	---	---	---	---	1.4	37	---	---	---	85	23.3	1.98	9	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	07-SH	599	7.92	---	---	322.6	297	---	3	37	---	---	350	91.6	22.8	1.88	9.3	362	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.034	---	---	---	---	---	---	---
	15-Aug-1988	07-SH	616	8.17	---	---	325.9	317.9	---	1.2	35.6	---	---	358	91.5	23.6	2.1	9.8	387.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.014	---	---	---	---	---	---	---
	15-Oct-1988	07-SH	644	7.63	---	---	342.5	324	---	1.3	37.1	---	---	350	90	24.3	2.03	10.2	395	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.019	---	---	---	---	---	---	---
	15-Mar-1989	07-SH	650	7.99	---	---	348.4	303	---	1.6	39.8	---	---	362	100	23.9	2	10.4	369.4	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.016	---	---	---	---	---	---	---
	15-May-1989	07-SH	688	7.5	---	---	355.4	329	---	2.1	43.9	---	---	387	100	25.6	2.09	12.7	401.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.02	---	---	---	---	---	---	---
	15-Sep-1989	07-SH	665	7.31	---	---	---	---	---	---	---	---	---	430	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	07-SH	702	7.88	---	---	385.2	360	---	1.6	35.9	---	---	406	106	29.2	2.25	12	438.8	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.02	---	---	---	---	---	---	---
	15-May-1990	07-SH	732	7.9	---	---	381.1	383	---	2.2	39.9	---	---	424	106	28.2	2.12	11.9	466.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.017	---	---	---	---	---	---	---
	15-Aug-1990	07-SH	816	7.72	---	---	---	---	---	---	---	---	---	530	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	07-SH	800	7.94	---	---	380.5	395.2	---	2.7	39.9	---	---	432	102	30.5	2.4	13.5	481.7	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.008	---	---	---	---	---	---	---
	15-May-1991	07-SH	775	7.54	---	---	---	---	---	3	37.5	---	---	500	114	27.5	2.26	11.5	---	---	---	---	---	---	---	---	---	---	---	0.009	---	---	---	---	---	---	---	---
	05-Nov-1991	07-SH	715	7.45	---	---	---	391	---	2.7	35.2	---	---	430	110	27.2	2.34	11.1	477	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	---	---	---	---	---	---	---	---
	12-May-1992	07-SH	776	7.95	---	---	406	346	---	2.2	51.4	---	---	370	114	29.4	2.19	11.5	421.8	---	---	---	---	---	---	1.08	< 0.0010	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	03-Nov-1992	07-SH	773	7.42	---	---	---	403	---	2.9	38.4	---	---	456	125	30.3	2.46	11.5	491.3	---	---	---	---	---	---	1.04	< 0.0010	---	---	---	< 0.003	---	---	---	---	---	---	---
	20-May-1993	07-SH	755	7.53	---	---	427	414	---	3.1	40.8	---	---	461	120	30.9	2.23	12.1	505	---	---	---	---	---	---	0.99	< 0.0010	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	10-Nov-1993	07-SH	790	7.57	---	---	404	413	---	2.3	40.1	---	---	450	110	31.4	2.2	12.5	503	---	---	---	---	---	---	0.95	0.001	---	---	< 0.003	0.017	---	---	---	---	---	---	---
	31-May-1994	07-SH	837	7.11	---	---	---	437	< 0.1	3.9	39.5	< 0.01	0.52	480	124	32.4	2.25	11.8	533	< 0.5	< 0.5	---	---	---	---	0.98	< 0.001	---	---	0.01	0.01	0.01	---	---	---	---	---	---
	21-Sep-1994	07-SH	847	7.22	---	---	---	440	0.1	4.8	41.6	0.01	0.995	488	125	33	2.54	12.7	536	0.5	0.5	---	---	---	---	0.98	0.001	---	---	0.007	0.007	0.007	---	---	---	---	---	---
	02-Nov-1994	07-SH	834	7.54	---	---	---	429	< 0.1	4.4	35.6	< 0.01	0.012	477	129	31.1	2.64	12.7	523	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	0.034	0.034	0.034	---	---	---	---	---	---
	28-Sep-1995	07-SH	788	7.76	---	---	507	443	< 0.1	5.2	37.3	< 0.01	0.171	509	147	34	2.7	13	540	< 0.5	< 0.5	---	---	---	---	1.1	< 0.001	---	---	---	0.007	---	---	---	---	---	---	---
	04-Sep-1996	07-SH	860	7.06	---	---	454	454	< 0.1	7.4	35.7	0.97	0.673	495	128	32.5	2.29	12.6	553	< 0.5	< 0.5	---	---	---	---	0.96	< 0.001	---	---	---	0.032	0.032	---	---	---	---	---	---
	03-Sep-1997	07-SH	876	7.25	---	---	470	472	< 0.1	8.6	31.6	< 0.01	< 0.001	509	133	33.5	2.5	11.9	575	< 0.5	< 0.5	---	---	---	---	0.97	< 0.001	---	---	---	0.022	0.022	---	---	---	---	---	---
	15-Sep-1998	07-SH	747	7.28	---	---	400	399	< 0.1	9	29.2	---	---	430	99.4	36.8	2.4	13.2	487	< 0.5	< 0.5	---	8.85	8.62	---	0.97	0.001	---	---	---	0.078	0.084	---	---	---	---	---	---
(Duplicate)	15-Sep-1998	07-SH DUP	756	7.28	---	---	390	423	< 0.1	8.9	29.3	---	---	442	98.4	35.8	2.3	12.8	516	< 0.5	< 0.5	---	9.33	8.47	---	0.91	0.001	---	---	---	0.075	0.08	---	---	---	---	---	---
	09-Sep-1999	07-SH	962	7.48	---	---	560	494	< 0.1	14.2	33.4	---	---	558	156	42.7	2.8	13.1	603	< 0.5	< 0.5	---	11	11.9	---	1.09	< 0.001	---	< 0.001	---	0.017	0.017	---	---	---	---	---	---
(Duplicate)	09-Sep-1999	07-SH DUP	998	7.38	---	---	590	512	< 0.1	17.2	34.8	---	---	583	165	44.5	2.1	12.9	625	< 0.5	< 0.5	---	11.5	12.5	---	1.09	< 0.001	---	< 0.001	---	< 0.003	< 0.003	---	---	---	---	---	---
	05-Sep-2000	07-SH	959	7.54	---	---	510	504	< 0.1	20.4	27.5	< 0.01	0.378	546	140	38.6	3.2	14.1	615	< 0.5	< 0.5	---	11.2	10.8	---	0.97	0.003	---	---	< 0.003	0.014	0.014	---	---	---	---	---	---
(Duplicate)	05-Sep-2000	07-SH DUP	969	7.49	---	---	540	513	< 0.1	22.2	28.3	< 0.01	0.579	565	150	39.9	2.8	14.5	625	< 0.5	< 0.5	---	11.5	11.5	---	1	< 0.001	---	---	< 0.003	0.02	0.02	---	---	---	---	---	---
	06-Sep-2001	07-SH	915	7.81	---	---	550	504	< 0.5	20	25.4	< 0.01	0.475	558	153	39.9	2.8	13.7	615	< 0.5	< 0.5	---	---	---	---	1.04	< 0.001	---	---	< 0.003	0.02	0.02	---	---	---	---	---	---
(Duplicate)	06-Sep-2001	07-SH DUP	934	7.94	---	---	550	506	< 0.5	20.3	25.1	1.4	0.579	561	154	40	2.6	13.3	618	< 0.5	< 0.5	---	---	---	---	1.04	< 0.001	---	---	< 0.003	0.015	0.015	---	---	---	---	---	---
	04-Sep-2002	07-SH	1080	7.49	---	---	500	521	< 0.5	27	22.7	0.52	0.251	558	139	37.4	3	15.4	636	< 0.5	< 0.5	---	---	---	---	0.92	< 0.001	---	---	< 0.003	0.031	0.031	---	---	---	---	9.7	---
(Duplicate)	04-Sep-2002	07-SH DUP	1070	7.74	---	---	530	520	< 0.5	25.3	25.2	0.02	0.399	566	150	37.8	2.7	12.7	635	< 0.5	< 0.5	---	---	---	---	0.96	0.001	---	---	< 0.003	0.027	0.027	---	---	---	---	8	---
	03-Sep-2003	07-SH	989	7.49	---	---	510	504	< 0.5	28.7	24.1	0.67	0.298	551	136	41.1	3.1	14.4	615	< 0.5	< 0.5	---	---	---	---	0.96	---	< 0.004	---	< 0.003	0.017	0.017	---	---	---	---	8.1	---
(Duplicate)	03-Sep-2003	07-SH DUP	994	7.53	---	---	510	498	< 0.5	28.4	24.5	0.34	0.213	548	137	41.2	3.1	14	608	< 0.5	< 0.5	---	---	---	---	0.97	---	< 0.004	---	< 0.003	0.016	0.016	---	---	---	---	8	---
	08-Sep-2004	07-SH	1050	7.82	---	---	540	522	< 0.5	30.7	23.4	1.07	0.401	574	151	38.6	2.7	12.8	637	< 0.5	< 0.5	---	---	---	---	0.96	---	< 0.004	---	< 0.003	0.013	0.013	---	---	---	---	7.5	---
(Duplicate)	08-Sep-2004	07-SH DUP	1040	7.85	---	---	530	524	< 0.5	29.8	25.5	0.11	0.039	573	149	38.3	2.7	13.3	639	< 0.5	< 0.5	---	---	---	---	0.95	---	< 0.004	---	< 0.003	0.027	0.027	---	---	---	---	7.5	---
	07-Sep-2005	07-SH	1000	8.06	18.3	---	510	526	< 0.5	36.7	23.5	0.61	0.273	570	137	39.8	2.9	14.1	642	< 0.5	< 0.5	---	---	---	---	0.9	---	< 0.004	---	< 0.003	0.014	0.014	---	---	---	---	7	---
(Duplicate)	07-Sep-2005	07-SH DUP	1010	8.01	11.8	---	510	524	< 0.5	36.6	22.1	0.53	0.241	570	143	37.1	2.7	13.3	639	< 0.5	< 0.5	---	---	---	---	0.91	---	< 0.004	---	< 0.003	0.01	0.01	---	---	---	---	6.5	---
	07-Sep-2006	07-SH	1040	7.77	---	---	550	522	< 0.5	35.5	21.7	< 0.01	0.034	583	154	40	2.8	16.1	637	< 0.5	< 0.5	---	---	---	---	0.99	---	---	---	< 0.003	0.016	0.016	---	---	---	---	6.7	---
(Duplicate)	07-Sep-2006	07-SH DUP	1040	7.83	---	---	550	515	< 0.5	35.7	21.6	0.22	0.079	576	154	39.6	2.7	12.9	628	< 0.5	< 0.5	---	---	---	---	0.99	---	---	---	< 0.003	0.008	0.008	---	---	---	---	6.4	---
	05-Sep-2007	07-SH	1030	7.77	---	---	560	527	< 0.5	36.4	20.5	0.17	0.113	590	158	39.7	2.8	15.3	643	< 0.5	< 0.5	---	---	---	---	0.99	---	---	---	< 0.003	0.134	0.134	---	---	---	---	6.1	---
(Duplicate)	05-Sep-2007	07-SH DUP	1040	7.88	---	---	480	532	< 0.5	36.1	20.5	0.2	0.101	563	136	34	2.5	13.2	650	< 0.5	< 0.5	---	---	---	---	0.85	---	---	---	0.004	0.011	0.015	---	---	---	---	5.5	---
	03-Sep-2008	07-SH	1030	7.8	---	---	428	535	---	34.9	16.9	0.043	0.1	533	99.8	43.3	2.61	13.9	653	< 5	< 5	0.153	---	---	---	0.765	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
(Duplicate)	03-Sep-2008	07-SH DUP	1030	8	---	---	474	518	---	35.5	18	1.5	0.525	546	126	38.8	3.14	13.5	632	< 5	< 5	0.141	---	---	---	0.864	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	07-SH	1040	7.92	---	---	610	523	---	38.4	17.7	2.06	0.657	605	174	42.6	3.19	14.8	638	< 5.0	< 5.0	0.134	---	---	---	1.08	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	09-Sep-2009	07-SH DUP	1050	8	---	---	586	532	---	36.3	15.6	2.47	0.813	596	170	39.2	2.68	12.5	649	< 5.0	< 5.0	0.134	---	---	---	1.03	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	07 SH	1050	7.68	---	---	525	517	---	41.5	17.1	< 0.030	0.0348	569	145	39.6	2.75	12.8	631	< 5.0	< 5.0	0.179	---	---	93.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	08-Sep-2010	SYLVITE 27	1040	7.88	---	---	516	517	---	38.2	16.7	0.592	0.223	562	144	38	2.43	12	631	< 5.0	< 5.0	0.174	---	---	92.5	---	---	---	---	< 0.050	0.061	< 0.071	---	---	---	---	---	---
	07-Sep-2011	07-SH	932	8.18	---	---	558	451	---	37.8	15	1.83	0.757	537	157	40.3	2.75	12.9	550	< 5.0	< 5.0	0.157	---	---	113	---	---	---	---	< 0.050	0.104	0.104	---	---	---	---	---	---
(Duplicate)	07-Sep-2011	ZIRCON 27	1050	8.28	---	---	528	522	---	40.1	14.9	0.79	0.281	570	147	39.1	2.74	12.4	637	< 5.0	< 5.0	0.166	---	---	93.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	07-SH	1070	7.94	---	575	575	532	---	50.3	15.8	0.421	0.224	606	162	41.3	3.16	14	649	< 5.0	< 5.0	0.134	---	---	98.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	05-Sep-2012	SPINEL 27	1070	8.02	---	562	563	531	---	48.1	15.2	1.4	0.379	598	158	40.8	3.17	13.8	648	< 5.0	< 5.0	0.164	---	---	96.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	25-Sep-2013	07-SH	1080	7.65	---	593	593	543	---	57.0	13.6	0.318	0.277	622	166	43.4	2.54	13.5	663	< 5.0	< 5.0	0.136	---	---	98.0	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Duplicate)	25-Sep-2013	27-SH	1080	7.64	---	600	600	568	---	56.9	13.7	0.287	0.250	640	169	43.3	2.54	13.3	693	< 5.0	< 5.0	0.137	---	---	95.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	07-SH	1060	8.18	---	---	593	474	---	71.7	15.6	0.117	0.421	600	170	41.0	2.54	15.0	578	< 5.0	< 5.0	0.146	---	---	106	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	5.39	---
(Duplicate)	17-Sep-2014	27-SH	1060	8.18	---	---	567	476	---	71.4	15.5	0.113	0.407	592	162	39.5	2.49	14.9	581	< 5.0	< 5.0	0.146	---	---	102	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	5.25	---
	29-Sep-2015	07-SH	1230	7.37	---	---	674	531	---	72.8	16.5	0.021	0.354	665	190	48.5	3.08	15.6	648	<5.0	<5.0	0.137	---	---	---	---	---	---	---	<0.020	<0.040	<0.045	---	---	---	---	---	---
(Duplicate)	29-Sep-2015	27-SH	1230	7.42	---	---	670	530	---	72.4	15.9	0.022	0.335	662	190	47.6	3.02	15.3	647	<5.0	<5.0	0.138	---	---	---	---	---	---	---	<0.020	<0.040	<0.045	---	---	---	---	---	---
	27-Sep-2016	07-SH	1120	7.99	---	---	625	487	---	83.3	15.1	0.050	0.188	630	179	43.1	2.98	14.4	594	<5.0	<5.0	0.126	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
(Duplicate)	27-Sep-2016	27-SH	1120	8.10	---	---	617	481	---	83.3	15.1	0.052	0.176	624	178	41.7	2.89	14.0	587	<5.0	<5.0	0.125	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2017	07-SH	1010	7.41	---	---	645	491	---	95.5	14.0	0.047	0.257	649	176	49.9	2.88	16.2	598	<5.0	<5.0	<0.10	---	---	---	---	---	---	---	<0.050	<0.10	<0.11	---	---	---	---	---	---
(Duplicate)	26-Sep-2017	27-SH	1090	7.93	---	---	662	492	---	94.5	13.8	0.033	0.312	655	181	51.1	2.97	16.6	600	<5.0	<5.0	0.100	---	---	---	---	---	---	---	<0.050	<0.10	<0.11	---	---	---	---	---	---
	17-Sep-2018	07-SH	1070	7.96	---	---	704	491	---	104.0	15.2	0.178	0.638	682	199	50.2	3.46	15.7	599	<5.0	<5.0	0.143	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
(Duplicate)	17-Sep-2018	27-SH	1070	7.79	---	---	685	489	---	104.0	15.0	0.179	0.619	673	193	49.2	3.36	15.2	597	<5.0	<5.0	0.137	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	07-SH	1180	7.21	---	---	669	538	---	126.0	14.9	0.675	0.532	720	190	47.3	3.16	16.0	656	<5.0	<5.0	0.191	---	---	---	---	---	---	---	<0.010	0.033	0.033	---	---	---	---	---	---
(Duplicate)	16-Sep-2019	27-SH	1170	7.25	---	---	659	533	---	124.0	14.9	0.681	0.547	711	186	47.3	3.19	15.9	650	<5.0	<5.0	0.182	---	---	---	---	---	---	---	<0.010	0.022	0.022	---	---	---	---	---	---
	22-Sep-2020	07-SH	1358	6.85	---	---	643	504	---	142	13.7	0.034	0.497	704	182	45.8	2.97	15.3	615	<5.0	<5.0	0.118	---	---	---	---	---	---	---	<0.010	0.031	0.031	---	---	---	---	---	---
(Duplicate)	22-Sep-2020	27-SH	1358	7.68	---	---	635	502	---	143	13.8	0.040	0.527	701	178	46.3	2.95	15.3	612	<5.0	<5.0	0.118	---	---	---	---	---	---	---	<0.010	0.024	0.024	---	---	---	---	---	---
	22-Sep-2021	07-SH	1400	7.47	---	---	794	501	---	170	13.2	0.093	0.903	785	221	58.9	3.62	17.5	611	<5.0	<5.0	0.108	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
(Duplicate)	22-Sep-2021	27-SH	1420	7.47	---	---	740	498	---	169	13.3	0.097	0.855	761	201	57.8	3.34	17.4	607	<5.0	<5.0	0.105	---	---	---	---	---	---	---	<0.010	0.021	<0.022	---	---	---	---	---	---
	28-Sep-2022	07-SH	1380	7.88	---	---	746	495	---	198	13.2	0.043	0.334	820	203	58.2	3.20	17.7	604	<1.0	<1.0	0.088	---	---	---	---	---	---	---	<0.010	0.036	<0.0500	---	---	---	---	---	---
(Duplicate)	28-Sep-2022	27-SH	1370	7.72

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
07-IN	18-Feb-1985	07-IN	---	---	---	---	330.1	368	---	---	---	---	---	487	---	---	---	---	448.6	---	---	---	---	---	---	---	---	---	---	0.005	0.008	---	---	---	---	---	---	---
	15-May-1985	07-IN	786	7.95	---	---	346	369	---	2.1	82	---	---	495	104	20.9	5.5	50	449.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.055	0.48	---	---	---	---	---	---	---
	15-Sep-1985	07-IN	823	8.06	---	---	333.1	358	---	1.6	97.5	---	---	500	100	20.2	5.7	53	436.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.048	0.33	---	---	---	---	---	---	---
	15-Jun-1986	07-IN	870	7.61	---	---	345.4	365	---	2.9	140	---	---	560	96	25.6	5.5	61	444.9	---	---	---	---	---	---	---	< 0.0020	---	---	0.005	0.024	---	---	---	---	---	---	---
	15-Aug-1986	07-IN	910	7.36	---	---	346.4	360	---	1.6	135	---	---	555	104	21	5.3	62	438.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.012	---	---	---	---	---	---	---
	15-Oct-1986	07-IN	850	7.75	---	---	344.3	375	---	1.7	110	---	---	540	100	22.9	5	60	457.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.019	---	---	---	---	---	---	---
	15-May-1987	07-IN	828	7.99	---	---	343.8	361	---	0.9	115	---	---	530	99	23.4	5.25	57.5	440.1	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.014	---	---	---	---	---	---	---
	15-Sep-1987	07-IN	838	7.72	---	---	356.8	370	---	1.9	110	---	---	530	106	22.3	5.06	54.2	451	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.006	---	---	---	---	---	---	---
	15-Nov-1987	07-IN	812	8.22	---	---	351.8	374	---	2	99	---	---	475	104	22.3	4.9	52.5	395	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.01	---	---	---	---	---	---	---
	15-Feb-1988	07-IN	807	7.68	---	---	---	---	---	1	87	---	---	---	96	21.9	5.2	51.5	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	07-IN	786	7.97	---	---	334	359	---	1.9	86.5	---	---	480	98.8	21.3	5	48.5	438	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.006	---	---	---	---	---	---	---
	15-Aug-1988	07-IN	789	7.91	---	---	331.9	365.8	---	0.4	62	---	---	458	97.2	21.6	5	49.1	445.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Nov-1988	07-IN	800	7.76	---	---	334.8	365	---	0.6	82	---	---	480	98.7	21.4	5	50	444.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.03	---	---	---	---	---	---	---
	15-Mar-1989	07-IN	827	8.23	---	---	346.4	356	---	0.3	108	---	---	509	103	21.6	4.85	54	434	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-May-1989	07-IN	798	7.46	---	---	328.5	364	---	0.4	81.5	---	---	478	97	20.9	5.36	51	443.7	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.004	---	---	---	---	---	---	---
	15-Sep-1989	07-IN	775	7.37	---	---	---	---	---	---	---	---	---	500	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	07-IN	802	7.63	---	---	327.2	353	---	1.7	90	---	---	478	92.5	23.3	4.9	50	430.3	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Mar-1990	07-IN	783	7.59	---	---	---	---	---	---	---	---	---	352	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	07-IN	781	8.22	---	---	307.7	367	---	0.8	84	---	---	470	88.5	21	5.1	47	447.4	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.003	---	---	---	---	---	---	---
	15-Aug-1990	07-IN	820	7.56	---	---	---	---	---	---	---	---	---	530	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	07-IN	786	7.96	---	---	318.5	378	---	0.01	66.5	---	---	469	92	21.5	4.9	53.5	460.8	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.005	---	---	---	---	---	---	---
	15-May-1991	07-IN	783	7.51	---	---	---	---	---	0.5	74.1	---	---	510	103	20	5	45	---	---	---	---	---	---	---	---	---	---	---	0.074	---	---	---	---	---	---	---	---
	15-Nov-1991	07-IN	712	7.78	---	---	---	357	---	0.7	57.9	---	---	440	100	20.9	5.06	38.6	435	---	---	---	---	---	---	---	< 0.0010	---	---	0.128	---	---	---	---	---	---	---	---
	12-May-1992	07-IN	754	7.79	---	---	332.7	358	---	0.6	66.4	---	---	383	98.5	21	5.11	40	436.4	---	---	---	---	---	---	1	< 0.0010	---	---	0.016	0.024	---	---	---	---	---	---	---
	03-Nov-1992	07-IN	691	7.72	---	---	---	354	---	0.00001	65.8	---	---	450	104	21.8	5.05	38	431.5	---	---	---	---	---	---	1.04	< 0.0010	---	---	---	0.025	---	---	---	---	---	---	---
	20-May-1993	07-IN	733	7.53	---	---	---	---	---	< 0.50	---	---	---	490	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	07-IN	764	7.3	---	---	335	352	---	0.6	68	---	---	444	97.5	22.2	4.9	36.7	429	---	---	---	---	---	---	0.99	0.001	---	---	0.003	0.003	---	---	---	---	---	---	---
	21-Sep-1994	07-IN	745	7.37	---	---	---	---	---	---	---	---	---	485	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	07-IN	645	7.4	---	---	---	---	---	---	---	---	---	420	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	07-IN	825	7	---	---	---	---	---	---	---	---	---	552	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	07-IN	839	7.19	---	---	411	381	< 0.1	0.6	101	< 0.01	1.2	531	121	26.4	5.6	44	464	< 0.5	< 0.5	---	---	---	---	1.05	---	---	---	---	---	0.004	---	---	---	---	---	---
	15-Sep-1998	07-IN	838	7.1	---	---	390	368	< 0.1	< 0.5	108	---	---	517	113	25.3	4.9	44.8	449	< 0.5	< 0.5	---	9.62	9.79	---	1.02	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	---	---
	09-Sep-1999	07-IN	834	7.63	---	---	390	359	< 0.1	< 0.5	101	---	---	505	111	27.2	5.4	44.6	438	< 0.5	< 0.5	---	9.29	9.86	---	1.06	---	---	---	< 0.003	0.03	0.03	---	---	---	< 0.01	---	---
	05-Sep-2000	07-IN	834	7.59	---	---	360	374	< 0.1	< 0.5	99.7	< 0.01	1.04	507	106	24	5.4	47.1	456	< 0.5	< 0.5	---	9.55	9.46	---	0.99	---	---	---	< 0.003	0.006	0.006	---	---	---	< 0.01	---	---
	06-Sep-2001	07-IN	789	7.82	---	---	380	365	< 0.5	< 0.5	103	< 0.01	1.08	509	112	24.7	5.2	43.8	445	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	< 0.003	0.003	0.003	---	---	---	< 0.01	---	---
	04-Sep-2002	07-IN	860	7.7	---	---	320	373	< 0.5	< 0.5	80.8	0.44	0.63	469	90.1	23.3	5.6	44.2	456	< 0.5	< 0.5	---	9.15	8.48	---	0.93	---	---	---	< 0.003	0.004	0.004	---	---	---	< 0.01	28.8	---
	03-Sep-2003	07-IN	793	7.63	---	---	390	356	< 0.5	0.7	87	0.2	0.832	486	115	24.6	5.3	38.8	435	< 0.5	< 0.5	---	8.95	9.6	---	1.07	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	28.7	---
	08-Sep-2004	07-IN	820	7.87	---	---	350	359	< 0.5	0.9	89.7	0.7	0.835	476	103	22.6	5.1	38.4	438	< 0.5	< 0.5	---	---	---	---	0.97	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	27.9	---
	07-Sep-2005	07-IN	788	8.23	6.0	---	350	369	< 0.5	0.7	95.9	0.23	0.458	487	103	23.3	4.7	36.8	450	< 0.5	< 0.5	---	---	---	---	0.94	---	---	---	< 0.003	0.006	0.006	---	---	---	< 0.005	25.8	---
	07-Sep-2006	07-IN	809	7.83	---	---	350	363	< 0.5	1.5	84.4	0.21	0.666	475	100	23.4	5.2	42	443	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	< 0.003	0.007	0.007	---	---	---	---	28.5	---
	05-Sep-2007	07-IN	798	7.93	---	---	340	365	< 0.5	1.5	82.4	0.7	0.9	483	98.2	23.3	5.5	50.9	445	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	< 0.003	0.217	0.217	---	---	---	---	26.6	---
	03-Sep-2008	07-IN	792	8	---	---	334	369	---	< 0.50	80.6	< 0.030	0.513	462	98.6	21.2	5.11	34.6	450	< 5	< 5	0.177	---	---	---	0.916	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	07-IN	767	8.05	---	---	351	350	---	0.85	81.1	0.06	0.382	465	102	23.3	5.64	42	427	< 5.0	< 5.0	0.151	---	---	---	1.03	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	07 IN	792	7.88	---	---	312	353	---	< 0.50	85.8	0.067	0.464	450	88.2	22.4	4.77	37.3	431	< 5.0	< 5.0	0.202	---	---	90.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	07-IN	798	8.18	---	---	306	370	---	< 0.50	77.4	0.047	0.278	452	83.3	23.8	5.35	40.1	451	< 5.0	< 5.0	0.205	---	---	88.7	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	07-IN	794	8.02	---	308	308	377	---	< 0.50	78.2	0.249	0.383	455	83.6	24	5.34	37.7	459	< 5.0	< 5.0	0.193	---	---	86.5	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	25-Sep-2013	07-IN	782	7.80	---	348	349	387	---	< 0.50	72.4	< 0.030	1.02	468	103	22.3	4.73	33.1	473	< 5.0	<5.0	0.163	---	---	92.1	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	07-IN	714	8.18	---	---	344	329	---	< 0.50	68.3	0.111	1.00	430	103	21.1	5.50	35.0	402	< 5.0	<5.0	0.176	---	---	106	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	21.2	---
	29-Sep-2015	07-IN	810	7.54	---	---	379	371	---	<0.50	67.2	0.167	0.595	465	112	24.2	5.41	33.7	452	<5.0	<5.0	0.211	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2016	07-IN	745	8.23	---	---	351	361	---	<0.50	62.1	0.420	0.928	440	106	21.1	5.21	29.0	440	<5.0	<5.0	0.165	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2017	07-IN	646	7.62	---	---	372	357	---	<0.50	61.7	0.453	1.090	449	109	24.3	5.49	34.6	435	<5.0	<5.0	0.147	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	17-Sep-2018	07-IN	683	7.80	---	---	371	355	---	<0.50	61.5	0.312	0.855	444	110	23.4	5.75	30.1	433	<5.0	<5.0	0.186	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	07-IN	687	7.79	---	---	338	390	---	<0.50	54.3	0.737	1.040	446	99	22.0	5.62	30.4	476	<5.0	<5.0	0.235	---	---	---	---	---	---	---	<0.010	0.089	0.089	---	---	---	---	---	---
	22-Sep-2020	07-IN	772	6.97	---	---	328	363	---	<0.50	55.2	0.249	1.02	425	97.8	20.4	5.16	27.9	443	<5.0	<5.0	0.177	---	---	---	---	---	---	---	0.018	0.041	0.060	---	---	---	---	---	---
	22-Sep-2021	07-IN	753	7.76	---	---	373	367	---	<0.50	64.7	0.07	1.06	457	108	25	6.06	33.1	447	<5.0	<5.0	0.157	---	---	---	---	---	---	---	<0.010	0.046	0.046	---	---	---	---	---	---
	28-Sep-2022	07-IN	699	8.07	---	---	358	373	---	0.53	56.2	0.089	1.02	474	104	23.9	5.52	31.3	455	<1.0	<1.0	0.142	---	---	---	---	---	---	---	<0.010	0.146	0.146	---	---	---	---	---	---
	29-Sep-2023	07-IN	677	8.23	---	---	354	338	---	0.84	52.1	<0.010	0.795	443	105	22.4	5.4	28.1	413	<1.0	<1.0	0.156	---	---	---	---	---	---	---	<0.010	0.052	0.052	---	---	---	---	---	---
	10-Sep-2024	07-IN	709	8.49	---	---	323	368	---	<0.50	53.7	0.086	0.415	449	92	22.6	5.28	28.3	449	<1.0	<1.0	0.182	---	---	---	---	---	---	---	<0.010	0.020	<0.0500	---	---	---	---	---	---
07-SS	15-Feb-1985	07-SS	745	7.39	---	---	328.9	328	---	0.7	78	---	---	450	99.6	19.4	5.85	46.5	399.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.004	---	---	---	---	---	---	---
	18-Feb-1985	07-SS	---	---	---	---	288.2	319	---	---	---	---	---	407	---	---	---	---	388.9	---	---	---	---	---	---	---	---	---	---	< 0.003	0.076	---	---	---	---	---	---	---
	15-May-1985	07-SS	675	7.39	---	---	321	342	---	---	70.5	---	---	445	100	17.6	5.2	39	417	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.053	---	---	---	---	---	---	---
	15-Sep-1985	07-SS	689	7.73	---	---	285	310	---	0.7	65	---	---	400	87	16.4	5.5	37	377.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Dec-1985	07-SS	760	7.37	---	---	285.7	334	---	0.9	78	---	---	440	84	18.4	6	47	407.1	---	---	---	---	---	---	---	0.004	---	---	0.005	0.007	---	---	---	---	---	---	---
	15-Jun-1986	07-SS	720	7	---	---	305.7	326	---	1.2	75	---	---	435	89.7	19.8	5.5	42.4	397.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.003	---	---	---	---	---	---	---
	15-Aug-1986	07-SS	725	6.66	---	---	295.7	296	---	0.7	78.5	---	---	415	88	18.4	5	39	360.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.2	0.04	---	---	---	---	---	---	---
	15-Oct-1986	07-SS	690	7.37	---	---	300.3	317	---	0.9	68.5	---	---	420	88	19.5	5.05	35.9	386.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.2	0.04	---	---	---	---	---	---	---
	15-May-1987	07-SS	720	7	---	---	305.7	326	---	1.2	75	---	---	435	89.7	19.8	5.5	42.4	397.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.003	---	---	---	---	---	---	---
	15-Sep-1987	07-SS	683	7.24	---	---	299.1	317	---	1.1	68	---	---	410	89	18.6	4.6	32.4	386.4	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.009	---	---	---	---	---	---	---
	15-Nov-1987	07-SS	686	7.43	---	---	315.3	321	---	1.6	63.3	---	---	420	94	19.5	4.65	34.2	391.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Feb-1988	07-SS	694	7.56	---	---	---	---	---	0.7	69.2	---	---	---	83	19.6	4.75	35.2	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	07-SS	672	7.48	---	---	300.6	312	---	1	69.5	---	---	410	89.7	18.6	4.83	33.9	381	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.036	---	---	---	---	---	---	---
	15-Aug-1988	07-SS	674	8.26	---	---	304.2	316.9	---	0.6	41	---	---	382	90.4	19	4.7	33.6	386.3	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.032	---	---	---	---	---	---	---
	15-Oct-1988	07-SS	628	7.61	---	---	302.9	315	---	0.4	70	---	---	411	90.2	18.8	4.68	34.6	384	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.21	---	---	---	---	---	---	---
	15-Mar-1989	07-SS	626	8.03	---	---	254.5	253	---	0.01	74	---	---	357	75.5	17.8	4.63	33.5	308.4	---	---	---	---	---	---	---	< 0.0010	---	---	0.01	0.13	---	---	---	---	---	---	---
	15-May-1989	07-SS	689	7.91	---	---	303.6	312	---	0.1	68.5	---	---	407	91	18.5	4.76	33.8	380.3	---	---	---	---	---	---	---	< 0.0010	---	---	0.01	0.031	---	---	---	---	---	---	---
	15-Sep-1989	07-SS	661	7.93	---	---	---	---	---	---	---	---	---	410	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	07-SS	730	8.22	---	---	306.5	310	---	0.5	71.1	---	---	409	89	20.4	4.9	33.8	377.9	---	---	---	---	---	---	---	< 0.0010	---	---	0.008	0.004	---	---	---	---	---	---	---
	15-Mar-1990	07-SS	676	8.04	---	---	---	---	---	---	---	---	---	360	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	07-SS	683	8.21	---	---	284	320	---	0.5	65	---	---	400	82.5	18.9	4.81	33.6	390.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.012	0.055	---	---	---	---	---	---	---
	15-Aug-1990	07-SS	730	7.22	---	---	---	---	---	---	---	---	---	470	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	07-SS	711	8.03	---	---	295.3	320.8	---	0.01	56	---	---	397	87	18.9	4.75	35	391.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.016	0.016	---	---	---	---	---	---	---
	15-May-1991	07-SS	689	7.11	---	---	---	---	---	---	---	---	---	450	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Nov-1991	07-SS	662	7.36	---	---	---	---	---	0.3	---	---	---	430	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	14-May-1992	07-SS	699	7.57	---	---	---	---	---	0.5	---	---	---	450	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	07-SS	578	6.81	---	---	---	---	---	0.6	---	---	---	376	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	07-SS	576	7.39	---	---	---	---	---	---	---	---	---	375	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	07-SS	687	7.92	---	---	---	---	---	---	---	---	---	450	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	07-SS	696	7.83	---	---	322	326	< 0.1	0.5	66.4	< 0.01	0.004	429	93.6	21.5	5.11	41.9	397	< 0.5	< 0.5	---	---	---	---	1.06	---	---	---	---	---	0.251	---	---	---	---	---	---
	04-Oct-1998	07-SS	710	7.84	---	---	300	326	< 0.1	< 0.5	62.7	---	---	406	85.

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable[13]	0.0019	---	---
07(R)SS	16-Sep-2014	07(R)SS	897	8.3	---	---	381	381	---	9.31	114	0.249	1.24	550	115	22.7	9.72	50.1	461	< 5.0	< 5.0	0.149	---	---	98.4	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	35.4	---
	29-Sep-2015	07(R)SS	916	7.23	---	---	382	399	---	6.27	85.6	<0.010	1.99	520	118	21.3	6.22	42.7	487	<5.0	<5.0	0.169	---	---	---	---	---	---	---	<0.010	0.028	0.028	---	---	---	---	---	---
	27-Sep-2016	07(R)SS	848	8.16	---	---	357	446	---	1.03	42.3	0.372	2.13	486	111	19.2	6.04	38.5	544	<5.0	<5.0	0.136	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2017	07(R)SS	721	7.62	---	---	364	423	---	1.21	37.7	<0.030	1.94	474	110	21.8	6.17	43.6	516	<5.0	<5.0	0.106	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	17-Sep-2018	07(R)SS	688	8.02	---	---	361	393	---	0.86	28.6	<0.010	1.33	444	106	23.5	7.05	42.3	479	<5.0	<5.0	0.092	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	07(R)SS	719	7.47	---	---	328	413	---	0.55	48.8	0.018	1.22	462	96	21.8	6.68	40.7	504	<5.0	<5.0	0.108	---	---	---	---	---	---	---	<0.010	0.059	0.059	---	---	---	---	---	---
	23-Sep-2020	07(R)SS	740	6.89	---	---	311	397	---	<0.50	35.6	2.01	1.08	428	90.6	20.5	6.03	36.6	484	<5.0	<5.0	0.074	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	07(R)SS	713	7.88	---	---	317	370	---	1.24	41.7	<0.030	0.995	425	87.6	23.8	6.62	41.1	452	<5.0	<5.0	0.076	---	---	---	---	---	---	---	<0.010	0.153	0.153	---	---	---	---	---	---
	28-Sep-2022	07(R)SS	682	8.16	---	---	323	376	---	0.70	42.1	<0.030	0.85	472	92.9	22.1	6.36	39.4	459	<1.0	<1.0	0.085	---	---	---	---	---	---	---	<0.010	0.249	0.249	---	---	---	---	---	---
	29-Sep-2023	07(R)SS	693	8.46	---	---	304	343	---	<0.50	40	<0.010	0.824	439	88.1	20.3	5.76	38.9	399	9.5	<1.0	0.073	---	---	---	---	---	---	---	<0.010	0.218	0.218	---	---	---	---	---	---
	10-Sep-2024	07(R)SS	704	8.29	---	---	309	378	---	<0.50	41.5	<0.010	0.745	462	87	22.3	6.00	37.5	461	<1.0	<1.0	0.070	---	---	---	---	---	---	---	<0.010	0.218	0.218	---	---	---	---	---	---
08-SH	18-Feb-1985	08-SH	---	---	---	---	274.7	276	---	---	---	---	---	317	---	---	---	---	336.4	---	---	---	---	---	---	---	---	---	---	0.007	0.054	---	---	---	---	---	---	---
	15-May-1985	08-SH	516	7.93	---	---	258.7	277	---	1.4	16.7	---	---	300	75	17.3	2.02	17.2	337.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.016	0.118	---	---	---	---	---	---	---
	15-Sep-1985	08-SH	534	7.77	---	---	242.9	269	---	1	24	---	---	300	71	15.9	2.18	17.9	327.9	---	---	---	---	---	---	---	< 0.0020	---	---	0.005	0.102	---	---	---	---	---	---	---
	15-Jun-1986	08-SH	530	7.69	---	---	270.3	281	---	1.9	15.5	---	---	300	73.2	21.2	2	11.7	342.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.029	---	---	---	---	---	---	---
	15-Aug-1986	08-SH	545	7.49	---	---	264.4	275	---	0.7	12.5	---	---	290	73	19.9	2.05	10.5	335.2	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.006	---	---	---	---	---	---	---
	15-Oct-1986	08-SH	530	7.91	---	---	271.1	287	---	1.4	11.5	---	---	305	75	20.3	2.1	10.2	349.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.027	---	---	---	---	---	---	---
	15-May-1987	08-SH	533	8	---	---	269.4	275	---	1	15.5	---	---	300	74	20.5	2.13	11	335.2	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.017	---	---	---	---	---	---	---
	15-Sep-1987	08-SH	539	7.87	---	---	281.5	282	---	2.5	24	---	---	310	79	20.4	2.2	12	343.8	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.055	---	---	---	---	---	---	---
	15-Nov-1987	08-SH	555	7.68	---	---	280.3	269	---	1.8	27.9	---	---	315	80	19.5	2.1	12.6	327.9	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.072	---	---	---	---	---	---	---
	15-Feb-1988	08-SH	561	7.91	---	---	---	---	---	1.8	36	---	---	---	74.5	21.5	2.06	13	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	08-SH	552	7.67	---	---	273.7	266	---	1.3	25.8	---	---	300	78.7	18.7	2	11.8	324.3	---	---	---	---	---	---	---	0.004	---	---	< 0.003	0.063	---	---	---	---	---	---	---
	15-Aug-1988	08-SH	547	8.15	---	---	263.7	272	---	0.8	35.5	---	---	311	74.7	18.7	1.8	13.2	331.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.066	---	---	---	---	---	---	---
	15-Oct-1988	08-SH	560	7.86	---	---	284.4	272	---	0.9	36	---	---	320	75.8	19.9	2.19	14.2	331.6	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.045	---	---	---	---	---	---	---
	15-Mar-1989	08-SH	579	8.11	---	---	283.5	276	---	0.9	45.2	---	---	338	79	20.9	2.11	13.2	336.4	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.041	---	---	---	---	---	---	---
	15-May-1989	08-SH	590	7.66	---	---	303.5	278	---	0.9	43.4	---	---	337	86	21.5	2.1	13.4	338.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.059	---	---	---	---	---	---	---
	15-Sep-1989	08-SH	576	7.95	---	---	---	---	---	---	---	---	---	390	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	08-SH	568	8.16	---	---	285.2	280	---	0.6	36.4	---	---	326	80	20.7	2.32	14.8	341.3	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.06	---	---	---	---	---	---	---
	15-Mar-1990	08-SH	587	7.37	---	---	---	---	---	---	---	---	---	347	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	08-SH	567	7.84	---	---	290.6	272	---	0.9	39.2	---	---	325	83	20.2	2.09	13.8	331.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.201	---	---	---	---	---	---	---
	15-Aug-1990	08-SH	900	7.72	---	---	---	---	---	---	---	---	---	585	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	08-SH	594	8.16	---	---	279.4	283.2	---	0.01	44.5	---	---	333	78	20.5	2.35	15.2	345.2	---	---	---	---	---	---	---	< 0.0010	---	---	0.046	0.003	---	---	---	---	---	---	---
	15-Nov-1991	08-SH	570	7.79	---	---	---	277	---	0.7	46.3	---	---	340	90	20.8	2.25	13.6	338	---	---	---	---	---	---	---	< 0.0010	---	---	0.042	---	---	---	---	---	---	---	---
	13-May-1992	08-SH	616	8.2	---	---	290.2	275	---	1.2	51.3	---	---	287	82.5	20.4	2.15	13.4	335.2	---	---	---	---	---	---	0.98	< 0.0010	---	---	< 0.003	0.019	---	---	---	---	---	---	---
	03-Nov-1992	08-SH	564	7.76	---	---	---	272	---	0.6	43.5	---	---	330	83	20.1	2.24	14.6	331.6	---	---	---	---	---	---	1.02	< 0.0010	---	---	---	0.06	---	---	---	---	---	---	---
	19-May-1993	08-SH	512	7.66	---	---	288	280	---	1.5	48.9	---	---	339	81	20.8	2.02	13.9	341	---	---	---	---	---	---	0.96	< 0.0010	---	---	< 0.003	0.037	---	---	---	---	---	---	---
	12-Nov-1993	08-SH	573	7.6	---	---	293	270	---	0.8	45.1	---	---	329	83.5	20.5	1.9	12.6	329	---	---	---	---	---	---	1.01	0.002	---	---	< 0.003	0.021	---	---	---	---	---	---	---
	31-May-1994	08-SH	608	7.37	---	---	---	287	< 0.1	2.1	47.9	< 0.01	0.063	354	92.1	21.5	2.01	13.5	350	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	0.016	0.016	0.016	---	---	---	---	---	---
(Duplicate)	31-May-1994	08-SH DUP	602	7.4	---	---	---	285	< 0.1	0.7	47.3	< 0.01	0.071	341	82.5	22	1.99	13.2	347	< 0.5	< 0.5	---	---	---	---	0.98	< 0.001	---	---	0.016	0.016	0.016	---	---	---	---	---	---
	22-Sep-1994	08-SH	601	7.47	---	---	---	289	0.1	0.6	43.4	0.01	0.343	334	77.5	21	2.18	13.6	352	0.5	0.5	---	---	---	---	0.93	0.001	---	---	0.029	0.029	0.029	---	---	---	---	---	---
(Duplicate)	22-Sep-1994	08-SH DUP	600	7.4	---	---	---	298	0.1	0.7	42.9	0.01	0.363	348	86	21	2.14	13.5	363	0.5	0.5	---	---	---	---	0.97	< 0.001	---	---	0.029	0.029	0.029	---	---	---	---	---	---
	02-Nov-1994	08-SH	602	8.21	---	---	---	268	< 0.1	0.6	38.5	< 0.01	0.007	325	85.3	21.6	2.21	13.3	327	< 0.5	< 0.5	---	---	---	---	1.08	< 0.001	---	---	0.042	0.042	0.042	---	---	---	---	---	---
	28-Sep-1995	08-SH	512	7.38	---	---	301	285	< 0.1	0.7	45.8	< 0.01	0.026	343	83.2	22.7	2.4	14.6	347	< 0.5	< 0.5	---	---	---	---	1.01	< 0.001	---	---	---	0.052	---	---	---	---	---	---	---
	05-Sep-1996	08-SH	582	7.58	---	---	306	282	< 0.1	0.6	42.1	< 0.01	0.004	339	86.4	21.8	2.05	14.2	344	< 0.5	< 0.5	---	---	---	---	1.04	0.001	---	---	---	0.048	0.051	---	---	---	---	---	---
(Duplicate)	05-Sep-1996	08-SH DUP	583	7.57	---	---	290	284	< 0.1	0.8	42	< 0.01	0.014	334	81.4	21	2.02	13.6	346	< 0.5	< 0.5	---	---	---	---	0.98	0.001	---	---	---	0.049	0.053	---	---	---	---	---	---
	05-Sep-1997	08-SH	571	7.94	---	---	269	277	< 0.1	0.8	41.3	< 0.01	0.318	322	75	19.8	1.45	15.1	338	< 0.5	< 0.5	---	---	---	---	0.94	< 0.001	---	---	---	0.039	0.039	---	---	---	---	---	---
(Duplicate)	05-Sep-1997	08-SH DUP	570	7.84	---	---	---	---	---	---	---	---	---	368	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	08-SH	570	7.67	---	---	280	278	< 0.1	0.6	42.6	---	---	327	77.1	22.4	1.9	15	339	< 0.5	< 0.5	---	6.47	6.39	---	0.99	0.001	---	---	---	0.046	0.057	---	---	---	---	---	---
	09-Sep-1999	08-SH	597	7.8	---	---	330	282	< 0.1	0.7	50.8	---	---	355	90.2	25.4	1.6	16.5	344	< 0.5	< 0.5	---	6.72	7.35	---	1.09	< 0.0010	---	< 0.001	---	0.023	0.023	---	---	---	---	---	---
(Duplicate)	09-Sep-1999	08-SH DUP	---	---	---	---	---	---	---	---	---	---	---	---	73.2	21.1	3.4	27.3	---	---	---	---	---	---	---	---	< 0.0010	---	< 0.001	---	---	---	---	---	---	---	---	---
	05-Sep-2000	08-SH	574	7.78	---	---	280	283	< 0.1	0.9	41.2	< 0.01	0.027	331	78.1	21.4	2.1	17.5	345	< 0.5	< 0.5	---	6.55	6.48	---	0.99	0.004	---	---	< 0.003	0.019	0.019	---	---	---	---	---	---
(Duplicate)	05-Sep-2000	08-SH DUP	576	7.74	---	---	290	285	< 0.1	1	41.3	< 0.01	0.036	335	79.7	21.6	2.1	17.5	348	< 0.5	< 0.5	---	6.6	6.58	---	1	0.013[7]	---	---	< 0.003	0.041	0.041	---	---	---	---	---	---
	06-Sep-2001	08-SH	567	8.02	---	---	300	282	< 0.5	1.3	38.9	< 0.01	0.086	334	83.5	21.7	2.2	16.8	344	< 0.5	< 0.5	---	---	---	---	1.04	< 0.001	---	---	< 0.003	0.02	0.02	---	---	---	---	---	---
	05-Sep-2002	08-SH	620	7.78	---	---	280	288	< 0.5	1.3	37	0.01	0.009	329	79.2	20	2	16.3	352	< 0.5	< 0.5	---	---	---	---	0.97	< 0.001	---	---	< 0.003	0.017	0.017	---	---	---	---	12.4	---
	04-Sep-2003	08-SH	574	7.82	---	---	300	272	< 0.5	1.2	37.6	0.02	0.009	327	83.6	21.1	2.2	17.4	332	< 0.5	< 0.5	---	---	---	---	1.07	---	< 0.004	---	< 0.003	0.023	0.023	---	---	---	---	13.1	---
	09-Sep-2004	08-SH	594	8.01	---	---	280	284	< 0.5	1.7	37.6	0.02	0.017	326	77.5	20	2	17	346	< 0.5	< 0.5	---	---	---	---	0.97	---	< 0.004	---	< 0.003	0.014	0.014	---	---	---	---	12	---
	08-Sep-2005	08-SH	581	8.16	0.6	---	280	291	< 0.5	1.7	37.4	< 0.01	< 0.004	332	77	20.2	2	18.7	355	< 0.5	< 0.5	---	---	---	---	0.96	---	< 0.004	---	< 0.003	0.018	0.018	---	---	---	---	11.7	---
	07-Sep-2006	08-SH	578	7.97	---	---	270	281	< 0.5	2	36.9	< 0.01	0.035	325	72.3	20.9	2.2	21.4	343	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	0.025	0.06	0.085	---	---	---	---	11.2	---
	05-Sep-2007	08-SH	588	7.99	---	---	270	292	< 0.5	1.9	35	< 0.06	0.061	331	75.3	20.6	2.1	21	356	< 0.5	< 0.5	---	---	---	---	0.97	---	---	---	< 0.003	0.031	0.031	---	---	---	---	10.8	---
	03-Sep-2008	08-SH	580	8.1	---	---	237	293	---	1.57	31.7	< 0.030	0.0157	313	63.1	19.3	2.07	19.5	358	< 5	< 5	0.253	---	---	---	0.856	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	08-SH	579	8.04	---	---	296	289	---	1.73	30.1	< 0.030	0.02	334	84.5	20.6	2.11	21.6	352	< 5.0	< 5.0	0.23	---	---	---	1.07	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	8 SH	582	7.99	---	---	254	285	---	1.87	31.8	< 0.030	< 0.0050	315	70.2	19	1.64	19.5	347	< 5.0	< 5.0	0.289	---	---	92.8	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2011	08-SH	591	8.26	---	---	233	296	---	1.8	28.9	< 0.030	< 0.0050	312	60	20.2	2.09	21.4	361	< 5.0	< 5.0	0.282	---	---	85.7	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	08-SH	578	8.19	---	278	277	291	---	2.14	28.8	< 0.030	0.715	328	77.3	20.5	2.03	22	355	< 5.0	< 5.0	0.225	---	---	101	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	25-Sep-2013	08-SH	568	7.94	---	280	280	302	---	1.80	27.7	<0.030	0.166	334	78.6	20.4	1.97	22.1	368	< 5.0	< 5.0	0.242	---	---	99.1	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Sep-2014	08-SH	595	8.30	---	---	291	301	---	1.97	27.2	<0.010	1.290	340	82.4	20.8	1.95	25.3	365	< 5.0	< 5.0	0.251	---	---	105	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	9.26	---
	29-Sep-2015	08-SH	651	7.73	---	---	296	305	---	2.31	32.3	<0.010	0.601	355	82.5	21.8	2.16	30.8	372	<5.0	<5.0	0.294	---	---	---	---	---	---	---	<0.010	0.048	0.048	---	---	---	---	---	---
	27-Sep-2016	08-SH	604	8.17	---	---	278	284	---	1.96	30.2	<0.010	0.399	330	79.3	19.5	2.11	26.6	347	<5.0	<5.0	0.233	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2017	08-SH	538	7.80	---	---	289	308	---	1.93	33.0	<0.030	0.021	363	80.0	21.7	2.21	39.1	376	<5.0	<5.0	0.224	---	---	---	---	---	---	---	<0.010	0.055	0.055	---	---	---	---	---	---
	17-Sep-2018	08-SH	581	8.04	---	---	300	313	---	1.96	32.3	<0.010	0.232	366	84.9	21.3	2.19	35.1	382	<5.0	<5.0	0.251	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	08-SH	613	7.56	---	---	282	337	---	2.13	35.0	0.024	0.875	384	79.0	20.5	2.45	42.4	411	<5.0	<5.0	0.317	---	---	---	---	---	---	---	<0.010	0.043	0.043	---	---	---	---	---	---
	22-Sep-2020	08-SH	652	7.54	---	---	283	351	---	1.95	38.9	<0.010	0.0187	395	79.2	20.6	2.35	41.0	429	<5.0	<5.0	0.235	---	---	94.7	---	---	---	---	<0.010	0.042	0.042	---	---	---	---	---	---
	22-Sep-2021	08-SH	620	7.91	---	---	292	322	---	1.67	36.7	<0.030	0.368	379	79.2	22.8	2.32	42.5	392	<5.0	<5.0	0.213	---	---	---	---	---	---	---	<0.010	0.058	0.058	---	---	---	---	---	---
	28-Sep-2022	08-SH	679	8.16	---	---	306	364	---	1.61	41.4	<0.030	0.0909	438	82.2	24.4	2.48	46.1	444	<1.0	<1.0	0.205	---	---	---	---	---	---	---	<0.010	0.029	<0.0500	---	---	---	---	---	---
	27-Sep-2023	08-SH	683	8.25	---	---	304	342	---	1.25	42.8	<0.010	0.0113	421	85.6	21.9	2.36	43	418	<1.0	<1.0	0.23	---	---	---	---	---	---	---	<0.010	0.021	<0.0500	---	---	---	---	---	---
	11-Sep-2024	08-SH	704	7.58	---	---	302	370	---	1.47	44.9	<0.010	0.087	438	81.6	24.0	2.21	41.6	452	<1.0	<1.0	0.245	---	---	---	---	---	---	---	<0.010	0.038	<0.0500	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
08-IN	16-Feb-1985	08-IN	---	---	---	---	435.2	301	---	---	---	---	---	610	---	---	---	---	366.9	---	---	---	---	---	---	---	---	---	---	0.012	3.1	---	---	---	---	---	---	---
	18-Feb-1985	08-IN	---	---	---	---	402.4	320	---	---	---	---	---	613	---	---	---	---	390.1	---	---	---	---	---	---	---	---	---	---	0.005	1.79	---	---	---	---	---	---	---
	15-May-1985	08-IN	667	7.76	---	---	302.8	272	---	5.7	104	---	---	425	87	20.8	6	28.5	332	---	---	---	---	---	---	---	< 0.0020	---	---	0.21	0.59	---	---	---	---	---	---	---
	15-Sep-1985	08-IN	729	7.72	---	---	316.6	298	---	2.5	81	---	---	420	96	18.6	4.45	31.5	363.3	---	---	---	---	---	---	---	< 0.0020	---	---	0.028	0.73	---	---	---	---	---	---	---
	15-Dec-1985	08-IN	840	7.73	---	---	363.8	316	---	2.38	198	---	---	600	105	24.6	4.5	54	385.2	---	---	---	---	---	---	---	< 0.0020	---	---	0.021	2.78	---	---	---	---	---	---	---
	15-Feb-1986	08-IN	970	7.46	---	---	---	---	---	2.2	206	---	---	---	127	28.6	4.44	54.5	---	---	---	---	---	---	---	---	0.003	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	08-IN	980	7.36	---	---	436.4	301	---	4.1	220	---	---	635	126	29.5	4.3	51.8	366.9	---	---	---	---	---	---	---	< 0.0020	---	---	0.025	3.46	---	---	---	---	---	---	---
	15-Aug-1986	08-IN	1170	7.74	---	---	454.9	305	---	2.8	320	---	---	760	137	27.3	4.85	73	371.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.023	3.18	---	---	---	---	---	---	---
	15-Oct-1986	08-IN	970	8.07	---	---	441	331	---	2.6	196	---	---	630	127	30	4.65	53.5	403.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.069	4.03	---	---	---	---	---	---	---
	15-May-1987	08-IN	959	7.8	---	---	444.7	308	---	1.9	256	---	---	680	129	29.7	4.85	67.5	375.5	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	3.52	---	---	---	---	---	---	---
	15-Sep-1987	08-IN	920	7.78	---	---	437.2	321	---	3.3	191	---	---	595	126	29.7	4.36	43.6	391.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	2.4	---	---	---	---	---	---	---
	15-Nov-1987	08-IN	986	7.87	---	---	456.8	320	---	2.6	224	---	---	655	134	29.6	4.2	53.5	390.1	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	1.8	---	---	---	---	---	---	---
	15-Feb-1988	08-IN	967	8.06	---	---	---	---	---	2.2	215	---	---	---	118	26.1	4.16	51.2	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	08-IN	956	8.06	---	---	446.5	308	---	3	215	---	---	620	131	29	4.18	50	376	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	1.5	---	---	---	---	---	---	---
	15-Aug-1988	08-IN	938	8.03	---	---	389.1	287	---	1.3	192	---	---	559	114	25.3	3.6	46.4	349.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	1.34	---	---	---	---	---	---	---
	15-Nov-1988	08-IN	1030	7.81	---	---	426.5	314	---	1.3	253	---	---	688	125	27.7	4.3	67.5	382.8	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.99	---	---	---	---	---	---	---
	15-Mar-1989	08-IN	1040	7.8	---	---	444.8	311	---	1.2	266	---	---	690	131	28.5	4.25	68.5	379.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	1.06	---	---	---	---	---	---	---
	15-May-1989	08-IN	996	7.6	---	---	418.6	313	---	1.5	222	---	---	630	122	27.6	4.25	61	381.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	1.1	---	---	---	---	---	---	---
	15-Sep-1989	08-IN	1110	7.59	---	---	---	---	---	---	---	---	---	750	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	08-IN	1070	8.14	---	---	425.6	361	---	1	257	---	---	716	122	29.3	4.85	81	440.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.97	---	---	---	---	---	---	---
	15-Mar-1990	08-IN	1080	7.19	---	---	---	---	---	---	---	---	---	640	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	08-IN	961	8.04	---	---	394.1	334	---	2	198	---	---	605	114	26.5	4.29	55.5	407.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.96	---	---	---	---	---	---	---
	15-Aug-1990	08-IN	1090	7.86	---	---	---	---	---	---	---	---	---	710	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	08-IN	1060	7.99	---	---	396.5	323.6	---	0.6	248	---	---	659	111	28.9	4.25	68	394.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.76	---	---	---	---	---	---	---
	17-May-1991	08-IN	989	7.67	---	---	---	---	---	---	---	---	---	640	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Nov-1991	08-IN	1030	7.48	---	---	---	---	---	1.2	---	---	---	670	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	08-IN	902	7.11	---	---	---	---	---	1.4	---	---	---	630	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	08-IN	1020	7.35	---	---	---	---	---	0.8	---	---	---	702	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Nov-1993	08-IN	935	7.17	---	---	---	---	---	0.8	---	---	---	608	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	08-IN	1030	7.18	---	---	---	---	---	---	---	---	---	675	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	08-IN	855	7.24	---	---	---	---	---	---	---	---	---	581	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1996	08-IN	958	7.06	---	---	---	---	---	---	---	---	---	665	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1997	08-IN	867	7.85	---	---	---	---	---	---	---	---	---	590	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	08-IN	974	7.14	---	---	---	---	---	---	---	---	---	675	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	08-IN	868	8.4	---	---	---	---	---	---	---	---	---	595	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	08-IN	888	7.28	---	---	---	---	---	---	---	---	---	608	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	08-IN	858	8.03	---	---	---	---	---	---	---	---	---	588	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2002	08-IN	966	7.66	---	---	---	---	---	---	---	---	---	558	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2003	08-IN	873	7.92	---	---	---	---	---	---	---	---	---	598	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2004	08-IN	972	7.96	---	---	390	345	< 0.5	1.4	191	0.01	0.005	593	112	25.8	4.1	50.8	421	< 0.5	< 0.5	---	---	---	---	0.92	---	---	---	< 0.003	0.214	0.214	---	---	---	---	---	---
	08-Sep-2005	08-IN	838	8.04	---	---	400	329	< 0.5	1.2	156	< 0.01	< 0.004	536	117	25.3	3.7	35.7	401	< 0.5	< 0.5	---	---	---	---	0.97	---	---	---	< 0.003	0.13	0.13	---	---	---	---	---	---
	07-Sep-2006	08-IN	873	7.87	---	---	400	320	< 0.5	1.8	168	< 0.01	< 0.004	547	116	25.8	3.8	39.1	390	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	< 0.003	0.124	0.124	---	---	---	---	50.7	---
	05-Sep-2007	08-IN	878	7.89	---	---	410	323	< 0.5	1.3	170	0.1	< 0.004	555	120	26.3	3.9	39	395	< 0.5	< 0.5	---	---	---	---	0.99	---	---	---	< 0.003	0.137	0.137	---	---	---	---	47.8	---
	03-Sep-2008	08-IN	873	8	---	---	384	337	---	0.78	158	< 0.030	0.0019	536	111	25.9	3.31	34.6	411	< 5	< 5	0.183	---	---	---	0.92	---	---	---	< 0.050	0.097	0.097	---	---	---	---	---	---
	09-Sep-2009	08-IN	858	7.97	---	---	413	319	---	0.78	162	< 0.030	0.0139	549	122	26.3	4.42	42.1	389	< 5.0	< 5.0	0.17	---	---	---	1.04	---	---	---	< 0.050	0.064	< 0.071	---	---	---	---	---	---
	08-Sep-2010	8 IN	835	7.84	---	---	345	307	---	0.94	157	< 0.030	0.0363	511	99	23.7	3.61	41.9	374	< 5.0	< 5.0	0.221	---	---	93.2	---	---	---	---	< 0.050	0.119	0.119	---	---	---	---	---	---
	08-Sep-2011	08-IN	880	8.16	---	---	378	323	---	0.74	165	< 0.030	1.01	537	109	25.7	3.91	38.3	394	< 5.0	< 5.0	0.217	---	---	93.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	08-IN	850	8.06	---	383	383	326	---	0.82	151	< 0.030	0.973	529	112	25.2	3.98	39.8	398	< 5.0	< 5.0	0.205	---	---	97.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	25-Sep-2013	08-IN	817	7.83	---	382	381	326	---	0.71	142	< 0.030	1.09	513	112	24.7	3.87	34.3	397	< 5.0	< 5.0	0.174	---	---	97.1	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Sep-2014	08-IN	824	8.20	---	---	390	298	---	0.60	152	< 0.010	0.15	518	115	24.9	3.96	42.3	363	< 5.0	< 5.0	0.201	---	---	106	---	---	---	---	< 0.020	0.117	0.117	---	---	---	---	46.9	---
	29-Sep-2015	08-IN	890	7.64	---	---	424	317	---	0.87	157	<0.010	0.121	549	125	27.2	4.19	42.4	386	<5.0	<5.0	0.216	---	---	---	---	---	---	---	<0.010	0.502	0.502	---	---	---	---	---	---
	27-Sep-2016	08-IN	816	8.10	---	---	392	306	---	0.66	147	<0.010	0.187	519	117	24.1	4.10	40.0	374	<5.0	<5.0	0.174	---	---	---	---	---	---	---	<0.010	0.536	0.536	---	---	---	---	---	---
	26-Sep-2017	08-IN	714	7.68	---	---	408	311	---	0.65	153	<0.030	0.096	535	117	28.2	4.23	44.6	379	<5.0	<5.0	0.166	---	---	---	---	---	---	---	<0.010	0.169	0.169	---	---	---	---	---	---
	17-Sep-2018	08-IN	739	8.04	---	---	407	297	---	0.68	142	<0.010	0.105	512	119	26.6	4.40	39.4	362	<5.0	<5.0	0.196	---	---	---	---	---	---	---	<0.010	0.375	0.375	---	---	---	---	---	---
	16-Sep-2019	08-IN	789	7.66	---	---	383	336	---	0.81	149	<0.010	0.037	533	111	25.6	4.27	39.7	410	<5.0	<5.0	0.247	---	---	---	---	---	---	---	<0.010	0.136	0.136	---	---	---	---	---	---
	22-Sep-2020	08-IN	837	7.03	---	---	358	324	---	0.77	139	<0.010	0.0457	507	105	23.3	3.99	39.1	395	<5.0	<5.0	0.200	---	---	---	---	---	---	---	<0.010	0.332	0.332	---	---	---	---	---	---
	22-Sep-2021	08-IN	815	7.73	---	---	385	336	---	0.74	135	<0.030	0.0152	519	109	27.3	4.86	39.7	410	<5.0	<5.0	0.175	---	---	---	---	---	---	---	<0.010	0.165	0.165	---	---	---	---	---	---
	28-Sep-2022	08-IN	785	8.15	---	---	376	335	---	0.79	134	<0.030	0.0531	532	107	26.4	4.09	39.1	409	<1.0	<1.0	0.200	---	---	---	---	---	---	---	<0.010	0.119	0.119	---	---	---	---	---	---
	27-Sep-2023	08-IN	800	8.35	---	---	389	328	---	0.59	129	<0.010	0.002	526	115	24.7	4.16	38.6	390	5	<1.0	0.163	---	---	---	---	---	---	---	<0.010	0.121	0.121	---	---	---	---	---	---
	11-Sep-2024	08-IN	796	7.26	---	---	366	336	---	0.74	127	<0.010	0.018	519	105	25.3	3.84	37.1	410	<1.0	<1.0	0.197	---	---	---	---	---	---	---	<0.010	0.082	0.082	---	---	---	---	---	---
08-SS	16-Feb-1985	08-SS	---	---	---	---	273.8	313	---	---	---	---	---	390	---	---	---	---	381.5	---	---	---	---	---	---	---	---	---	---	< 0.003	0.274	---	---	---	---	---	---	---
	18-Feb-1985	08-SS	---	---	---	---	243.6	340	---	---	---	---	---	384	---	---	---	---	414.5	---	---	---	---	---	---	---	---	---	---	0.004	0.27	---	---	---	---	---	---	---
	15-May-1985	08-SS	728	7.99	---	---	280	335	---	---	105	---	---	505	91	12.7	4.86	78	408	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.83	---	---	---	---	---	---	---
	15-Sep-1985	08-SS	603	7.91	---	---	238.2	331	---	1	40	---	---	400	78	10.5	4.5	60	403.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.087	---	---	---	---	---	---	---
	15-Dec-1985	08-SS	690	7.53	---	---	246	373	---	0.92	37.5	---	---	420	77	13	4.5	58	454.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.031	0.096	---	---	---	---	---	---	---
	15-Feb-1986	08-SS	670	7.77	---	---	---	---	---	0.5	39	---	---	---	88.3	12.9	4.3	50	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	08-SS	610	7.67	---	---	209.9	313	---	1.1	32.1	---	---	360	65.2	11.4	4.1	51.4	381.5	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.3	---	---	---	---	---	---	---
	15-Aug-1986	08-SS	621	7.37	---	---	199.1	285	---	0.4	32.7	---	---	345	64	9.5	4.48	53	347.4	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.34	---	---	---	---	---	---	---
	15-Oct-1986	08-SS	620	7.82	---	---	226.9	317	---	0.7	30	---	---	380	72	11.4	4.4	55	386.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.01	0.35	---	---	---	---	---	---	---
	15-May-1987	08-SS	610	7.67	---	---	209.9	313	---	1.1	32.1	---	---	360	65.2	11.4	4.1	51.4	381.5	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.3	---	---	---	---	---	---	---
	15-Sep-1987	08-SS	612	7.68	---	---	226.1	321	---	1.2	30	---	---	370	73	10.6	4.66	54.6	391.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.149	---	---	---	---	---	---	---
	15-Feb-1988	08-SS	656	7.94	---	---	---	---	---	0.7	30	---	---	---	77.5	12.1	4.5	52	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	08-SS	692	8.22	---	---	275.6	355	---	1	29.5	---	---	400	89.6	12.6	4.52	48	434	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.28	---	---	---	---	---	---	---
	15-Aug-1988	08-SS	669	8.02	---	---	252.7	335	---	0.4	29.6	---	---	380	81.8	11.7	4.1	47.5	408.4	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.228	---	---	---	---	---	---	---
	15-Oct-1988	08-SS	681	7.78	---	---	270	353	---	0.5	29.4	---	---	399	87.6	12.4	4.39	49.5	430.3	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.21	---	---	---	---	---	---	---
	15-May-1989	08-SS	657	7.68	---	---	257.3	332	---	0.2	29.5	---	---	382	83.5	11.8	4.35	50.4	404.7	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.22	---	---	---	---	---	---	---
	15-Sep-1989	08-SS	636	7.69	---	---	---	---	---	---	---	---	---	420	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	08-SS	653	8.17	---	---	233.1	311	---	0.3	29.4	---	---	361	73.5	12	4.65	51.5	379.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.25	---	---	---	---	---	---	---
	15-May-1990	08-SS	629	7.97	---	---	240.7	324	---	0.5	28.6	---	---	372	78	11.1	4.54	52	395	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.132	---	---	---	---	---	---	---
	15-Aug-1990	08-SS	650	7.45	---	---	---	---	---	---	---	---	---	420	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	08-SS	627	7.91	---	---	199.9	301.6	---	0.01	31	---	---	347	64	9.7	4.45	54	367.7	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.252	---	---	---	---	---	---	---
	17-May-1991	08-SS	587	7.31	---	---	---	---	---	---	---	---	---	380	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	08-SS	477	6.93	---	---	---	---	---	0.6	---	---	---	310	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Nov-1993	08-SS	578	6.96	---	---	---	---	---	< 0.50	---	---	---	376	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	08-SS	565	7.75	---	---	---	---	---	---	---	---	---	365	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	08-SS	517	7.75	---	---	---	---	---	---	---	---	---	336	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Oct-1998	08-SS	587	7.96	---	---	---	---	---	---	---	---	---	385	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	08-SS	572	8.18	---	---	---	---	---	---	---	---	---	378	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	08-SS	548	8.37	---	---	---	---	---	---	---	---	---	359	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2003	08-SS	574	8.31	---	---	---	---	---	---	---	---	---	376	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2004	08-SS	570	8.22	---	---	190	274	< 0.5	< 0.5	32.1	< 0.01	0.009	322	59.3	9.4	4.5	51.2	334	< 0.5	< 0.5	---	---	---	---	0.99	---	---	---	< 0.003	0.214	0.214	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	**7.0-10.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.05**	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	**1.0**	---	---	---	---	---	---	---	**0.12**	---	---	---	---	---	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1**	**10**	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	**6.5 - 8.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1.0**	**10**	---	---	---	---	**0.05**	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	**6.5 - 8.5**	---	---	---	---	---	**120**	**Variable**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.0050**	**0.0050**	**0.0050**	**Variable**	**3**	---	---	---	**Variable [13]**	**0.0019**	---	---
09-SH [Decommissioned]	15-May-1985	09-SH [DECOM]	781	7.18	---	---	271.4	151	---	3.2	260	---	---	---	86	13.7	1.58	65	184.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.031	2.77	---	---	---	---	---	---	---
	15-Sep-1985	09-SH [DECOM]	938	6.66	---	---	303.4	165	---	2.7	305	---	---	---	97	14.8	1.64	82	201.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.03	1.91	---	---	---	---	---	---	---
	15-Jun-1986	09-SH [DECOM]	750	6.84	---	---	273.9	178	---	3.3	211	---	---	---	86	14.3	1.4	61.4	217	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.004	---	---	---	---	---	---	---
	15-Aug-1986	09-SH [DECOM]	708	6.72	---	---	229.8	174	---	1.9	197	---	---	---	71	12.7	1.42	57	212.1	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.01	---	---	---	---	---	---	---
	15-Oct-1986	09-SH [DECOM]	710	7.08	---	---	265	208	---	2.6	182	---	---	---	83	14.1	3.9	57	253	---	---	---	---	---	---	---	< 0.0020	---	---	0.01	0.003	---	---	---	---	---	---	---
	15-May-1987	09-SH [DECOM]	715	6.79	---	---	235.2	174	---	1.6	198	---	---	---	72	13.4	1.55	73	212.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.003	---	---	---	---	---	---	---
	15-Sep-1987	09-SH [DECOM]	689	6.7	---	---	211.9	177	---	3.9	195	---	---	---	66	11.4	1.4	73.5	215.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.003	---	---	---	---	---	---	---
	15-Nov-1987	09-SH [DECOM]	659	6.79	---	---	228.5	187	---	5.2	125	---	---	---	71	12.4	1.3	58.5	228	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.01	---	---	---	---	---	---	---
	15-May-1988	09-SH [DECOM]	634	7.39	---	---	192	183	---	3.8	163	---	---	---	67.4	10	1.3	67.5	223	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.007	---	---	---	---	---	---	---
	15-Aug-1988	09-SH [DECOM]	673	6.78	---	---	196.2	180.1	---	4.6	186	---	---	---	62.5	10.2	1.3	72.8	219.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.01	---	---	---	---	---	---	---
	15-Nov-1988	09-SH [DECOM]	645	6.92	---	---	219.6	192	---	2.6	165	---	---	---	69.4	11.2	1.43	63	234	---	---	---	---	---	---	---	< 0.0020	---	---	0.013	0.018	---	---	---	---	---	---	---
	15-Mar-1989	09-SH [DECOM]	600	8.23	---	---	211.5	208	---	2.3	122	---	---	---	67	10.7	1.31	50	253.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.01	---	---	---	---	---	---	---
	15-May-1989	09-SH [DECOM]	596	6.65	---	---	228.6	225	---	3	99	---	---	---	71.5	12.1	1.2	59	274.3	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.003	---	---	---	---	---	---	---
	15-Sep-1989	09-SH [DECOM]	562	**6.44**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	09-SH [DECOM]	621	8.1	---	---	248.1	249	---	0.7	102	---	---	---	76.5	13.8	1.46	42.6	303.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.003	---	---	---	---	---	---	---
	15-Aug-1990	09-SH [DECOM]	553	6.66	---	---	174	179	---	0.8	101	---	---	---	54.3	9.3	1.21	57.5	218.2	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.003	---	---	---	---	---	---	---
	15-Nov-1990	09-SH [DECOM]	552	8	---	---	164.9	188	---	1	91	---	---	---	51.3	8.9	1.2	66.4	229.2	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.006	---	---	---	---	---	---	---
	06-Nov-1991	09-SH [DECOM]	500	7.5	---	---	---	185	---	1.6	90.5	---	---	320	56	8.4	1.2	52.9	226	---	---	---	---	---	---	---	0.01 [3]	---	---	0.04	---	---	---	---	---	---	---	---
09-SH [Decommissioned]	12-May-1992	09-SH [DECOM]	498	7.3	---	---	152.3	188	---	7.06	84.4	---	---	234	48.4	7.6	1.17	55.5	229.2	---	---	---	---	---	---	0.96	< 0.0010	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	31-Aug-1992	09-SH [DECOM]	479	6.7	---	---	---	185	---	2.5	83	---	---	308	47.8	7.4	1.33	52.9	225.5	---	---	---	---	---	---	0.97	---	---	---	0.007	0.006	---	---	---	---	---	---	---
09-IN [Decommissioned]	16-Feb-1985	09-IN [DECOM]	---	---	---	---	391.6	366	---	---	---	---	---	440	---	---	---	---	446.2	---	---	---	---	---	---	---	---	---	---	0.104	0.36	---	---	---	---	---	---	---
	18-Feb-1985	09-IN [DECOM]	---	---	---	---	398.7	386	---	---	---	---	---	**500**	---	---	---	---	463	---	---	---	---	---	---	---	---	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-May-1985	09-IN [DECOM]	582	7.87	---	---	293.3	311	---	6.4	12.5	---	---	350	89	17.2	4.37	16.8	379.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.083	0.34	---	---	---	---	---	---	---
	15-Sep-1985	09-IN [DECOM]	617	7.9	---	---	300.7	322	---	2.8	13.9	---	---	350	90	18.4	3.6	14.6	392.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.06	0.064	---	---	---	---	---	---	---
	15-Dec-1985	09-IN [DECOM]	730	7.61	---	---	355.5	369	---	1.8	33.1	---	---	420	104	23.2	3.4	18	449.8	---	---	---	---	---	---	---	0.006 [2]	---	---	0.036	0.279	---	---	---	---	---	---	---
	15-Feb-1986	09-IN [DECOM]	760	7.6	---	---	---	---	---	1.3	46	---	---	---	115	25.3	3.45	21.7	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	09-IN [DECOM]	780	7.99	---	---	396.1	355	---	2.8	80	---	---	470	114	27	3.3	24.9	432.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.033	0.21	---	---	---	---	---	---	---
	15-Aug-1986	09-IN [DECOM]	806	7.79	---	---	365	358	---	1.2	78.5	---	---	460	106	24.3	3.37	23.8	436.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.051	0.199	---	---	---	---	---	---	---
	15-Oct-1986	09-IN [DECOM]	810	7.9	---	---	407.8	381	---	2	79	---	---	**500**	119	26.8	3.38	25.6	464.4	---	---	---	---	---	---	---	< 0.0020	---	---	0.14	0.012	---	---	---	---	---	---	---
	15-May-1987	09-IN [DECOM]	802	7.9	---	---	412.3	370	---	1.2	90.5	---	---	**500**	119	27.9	3.75	26.5	451	---	---	---	---	---	---	---	< 0.0020	---	---	0.048	0.067	---	---	---	---	---	---	---
	15-Sep-1987	09-IN [DECOM]	814	7.8	---	---	408.2	382	---	2.3	98.1	---	---	**510**	117	28.1	3.1	25.4	465.7	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Nov-1987	09-IN [DECOM]	821	7.8	---	---	419	383	---	2.9	74	---	---	**505**	122	27.7	3.2	27.1	466.9	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.006	---	---	---	---	---	---	---
	15-Feb-1988	09-IN [DECOM]	825	8.15	---	---	---	---	---	1.6	88	---	---	---	116	26.4	3.3	29	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	09-IN [DECOM]	806	8.18	---	---	397.1	376	---	2.6	90	---	---	**500**	117	25.5	3.05	28.6	458	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.005	---	---	---	---	---	---	---
	15-Aug-1988	09-IN [DECOM]	811	8.08	---	---	382.5	383.1	---	0.9	90	---	---	494	112	24.9	3.1	29.3	467	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Nov-1988	09-IN [DECOM]	819	7.92	---	---	377.8	383	---	0.7	81	---	---	469	108	26.2	3.3	31	466.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Mar-1989	09-IN [DECOM]	824	8.38	---	---	401.3	374	---	0.8	91.5	---	---	497	120	24.6	3.74	28.8	455.9	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-May-1989	09-IN [DECOM]	821	7.88	---	---	407.8	382	---	0.8	83	---	---	497	120	26.2	3.4	30.5	465.7	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.005	---	---	---	---	---	---	---
	15-Sep-1989	09-IN [DECOM]	807	7.42	---	---	---	---	---	---	---	---	---	**540**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	09-IN [DECOM]	829	8.21	---	---	402	379	---	0.3	80	---	---	490	117	26.6	3.45	32	462	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.01	---	---	---	---	---	---	---
	15-Mar-1990	09-IN [DECOM]	828	7.88	---	---	---	---	---	---	---	---	---	**508**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	09-IN [DECOM]	817	8.19	---	---	409.9	390	---	1.2	90	---	---	**509**	121	26.1	3.34	29.8	475.4	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.005	---	---	---	---	---	---	---
	15-Aug-1990	09-IN [DECOM]	873	7.89	---	---	---	---	---	---	---	---	---	**570**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	09-IN [DECOM]	855	7.75	---	---	385	400	---	0.6	78.5	---	---	493	110	26.7	3.24	30.4	488	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	16-May-1991	09-IN [DECOM]	854	7.72	---	---	---	---	---	---	---	---	---	**555**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Nov-1991	09-IN [DECOM]	805	7.67	---	---	---	---	---	0.9	---	---	---	**520**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-Aug-1992	09-IN [DECOM]	603	8.05	---	---	---	386	---	1.2	95	---	---	**521**	124	28.6	3.39	33.2	470.5	---	---	---	---	---	---	1.04	---	---	---	0.007	0.057	---	---	---	---	---	---	---
09-PEAT	15-Nov-1987	09-PEAT	51.2	**4.00**	---	---	5.2	0.1	---	2.5	1.2	---	---	6	1.6	0.3	0.18	0.5	0.5	---	---	---	---	---	---	---	0.002	---	---	0.006	0.008	---	---	---	---	---	---	---
	15-May-1988	09-PEAT	57.2	**4.08**	---	---	17.4	0.01	---	7.1	11.6	---	---	30	5.8	0.7	0.2	1.2	0.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.01	---	---	---	---	---	---	---
	15-Aug-1988	09-PEAT	57.1	**4.25**	---	---	14.2	0.01	---	6.1	8.9	---	---	22	4.7	0.6	0.2	1.6	0.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.003	---	---	---	---	---	---	---
	15-Oct-1988	09-PEAT	50.5	**4.16**	---	---	13.7	0.01	---	5.2	7.4	---	---	19	4.5	0.6	0.2	1	0.5	---	---	---	---	---	---	---	0.002	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-May-1989	09-PEAT	88.2	**4.04**	---	---	22.5	0.01	---	12.4	9.7	---	---	33	7.5	0.9	0.4	1.7	0.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.054	0.316	---	---	---	---	---	---	---
	15-Sep-1989	09-PEAT	60.4	**4.15**	---	---	---	---	---	---	---	---	---	45	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	09-PEAT	61.3	**4.16**	---	---	---	0.01	---	4.4	9.1	---	---	21	5.3	0.6	0.27	0.9	0.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.003	---	---	---	---	---	---	---
	15-Mar-1990	09-PEAT	48.3	**3.96**	---	---	---	---	---	---	---	---	---	144	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	09-PEAT	56	**4.02**	---	---	13.8	0.01	---	4.5	7.7	---	---	18	4.7	0.5	0.19	0.8	0.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Aug-1990	09-PEAT	62.3	**4.21**	---	---	---	---	---	---	---	---	---	40	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	09-PEAT	64.9	**4.15**	---	---	15.5	0.01	---	6.2	9.5	---	---	24	5.2	0.6	0.64	1.5	0.5	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.003	---	---	---	---	---	---	---
10-SH [Decommissioned]	15-May-1985	10-SH [DECOM]	624	7.9	---	---	302.4	328	---	2.2	29.4	---	---	375	92	17.6	2.8	26.2	399.8	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.5	---	---	---	---	---	---	---
	15-Sep-1985	10-SH [DECOM]	670	7.94	---	---	303.3	334	---	1.3	38.4	---	---	380	92	17.8	2.83	28.3	407.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	0.36	---	---	---	---	---	---	---
	15-Jun-1986	10-SH [DECOM]	650	7.48	---	---	325.1	320	---	2	14.6	---	---	350	94.8	21.4	2.7	17	390.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.006	---	---	---	---	---	---	---
	15-Aug-1986	10-SH [DECOM]	621	7.42	---	---	297.8	320	---	0.4	8.2	---	---	330	87	19.5	2.67	16	390.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.004	0.005	---	---	---	---	---	---	---
	15-Oct-1986	10-SH [DECOM]	620	7.81	---	---	311.1	336	---	0.8	6.6	---	---	350	91	20.3	2.73	15.7	409.6	---	---	---	---	---	---	---	< 0.0020	---	---	0.011	0.003	---	---	---	---	---	---	---
	15-May-1987	10-SH [DECOM]	607	7.7	---	---	301.9	331	---	0.4	5.9	---	---	340	87	20.5	2.7	16.2	403.5	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.003	---	---	---	---	---	---	---
	15-Sep-1987	10-SH [DECOM]	603	7.64	---	---	307.7	344	---	1.1	6.1	---	---	350	90	20.1	2.8	16	419.3	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.005	---	---	---	---	---	---	---
	15-Nov-1987	10-SH [DECOM]	604	8.11	---	---	309.4	331	---	1.4	5.4	---	---	350	91	19.9	2.7	15.7	403.5	---	---	---	---	---	---	---	< 0.0020	---	---	0.006	0.24	---	---	---	---	---	---	---
	15-May-1988	10-SH [DECOM]	619	7.96	---	---	321.6	344	---	1.7	8.8	---	---	350	96	19.9	2.52	15.5	419	---	---	---	---	---	---	---	< 0.0010	---	---	0.007	0.061	---	---	---	---	---	---	---
	15-Aug-1988	10-SH [DECOM]	599	8.25	---	---	287.7	334	---	0.2	5.3	---	---	336	85.3	18.1	3.5	19.6	407.1	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.035	---	---	---	---	---	---	---
	15-Nov-1988	10-SH [DECOM]	601	7.72	---	---	306.5	334	---	0.4	5.7	---	---	338	91	19.2	2.68	15.6	407.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.006	0.182	---	---	---	---	---	---	---
	15-Mar-1989	10-SH [DECOM]	622	8.3	---	---	311.1	328	---	0.1	8	---	---	338	92.5	19.4	2.8	15	399.8	---	---	---	---	---	---	---	< 0.0010	---	---	0.012	0.123	---	---	---	---	---	---	---
	15-May-1989	10-SH [DECOM]	617	7.46	---	---	318.1	334	---	0.1	4.5	---	---	326	93.5	20.5	2.6	1	407.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.23	---	---	---	---	---	---	---
	15-Sep-1989	10-SH [DECOM]	624	7.24	---	---	---	---	---	---	---	---	---	420	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	10-SH [DECOM]	629	8.13	---	---	329	349	---	0.4	8.2	---	---	359	98.5	20.1	2.87	16.3	425.4	---	---	---	---	---	---	---	< 0.0010	---	---	0.004	0.282	---	---	---	---	---	---	---
	15-Mar-1990	10-SH [DECOM]	649	7.67	---	---	---	---	---	---	---	---	---	380	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	10-SH [DECOM]	604	8.09	---	---	298.6	337	---	0.6	5.6	---	---	337	87.5	19.4	2.67	15.1	410	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.246	---	---	---	---	---	---	---
	15-Aug-1990	10-SH [DECOM]	641	7.81	---	---	---	---	---	---	---	---	---	420	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	10-SH [DECOM]	643	7.9	---	---	318.6	356.4	---	0.01	12	---	---	362	94.5	20	2.82	15.7	434.5	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.201	---	---	---	---	---	---	---
	17-May-1991	10-SH [DECOM]	635	7.46	---	---	---	---	---	< 0.01	14	---	---	410	93	21.5	2.63	15	---	---	---	---	---	---	---	---	---	---	---	0.201	---	---	---	---	---	---	---	---
	12-May-1992	10-SH [DECOM]	665	7.72	---	---	340.6	380	---	0.4	13.9	---	---	373	101	21.4	2.72	15.7	463.2	---	---	---	---	---	---	0.96	< 0.0010	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	01-Sep-1992	10-SH [DECOM]	540	7.54	---	---	---	331	---	0.5	12.4	---	---	353	100	21.4	2.57	14.5	403.5	---	---	---	---	---	---	1.08	---	---	---	0.006	0.043	---	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE															Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable[13]	0.0019	---	---
10-IN [Decommissioned]	16-Feb-1985	10-IN [DECOM]	---	---	---	---	370.5	321	---	---	---	---	---	460	---	---	---	---	391.3	---	---	---	---	---	---	---	---	---	---	0.168	0.622	---	---	---	---	---	---	---
	18-Feb-1985	10-IN [DECOM]	---	---	---	---	378.3	349	---	---	---	---	---	522	---	---	---	---	425.4	---	---	---	---	---	---	---	---	---	---	0.009	0.72	---	---	---	---	---	---	---
	15-Dec-1985	10-IN [DECOM]	800	7.62	---	---	330.6	332	---	4.81	102	---	---	480	96	22	5	42	404.7	---	---	---	---	---	---	---	0.0050	---	---	0.195	0.425	---	---	---	---	---	---	---
	15-Feb-1986	10-IN [DECOM]	780	7.35	---	---	---	---	---	3.7	90	---	---	---	109	23.8	4.9	35	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	10-IN [DECOM]	830	7.94	---	---	381.2	320	---	4.1	114	---	---	495	111	25.2	4.6	38.4	390.1	---	---	---	---	---	---	---	< 0.0020	---	---	0.007	1.06	---	---	---	---	---	---	---
	15-Aug-1986	10-IN [DECOM]	823	7.22	---	---	337.6	323	---	2.3	108	---	---	475	99	21.9	4.8	34.6	393.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.018	1.49	---	---	---	---	---	---	---
	15-Oct-1986	10-IN [DECOM]	810	8.07	---	---	381.7	355	---	2.4	107	---	---	520	112	24.7	3.9	38.5	432.7	---	---	---	---	---	---	---	< 0.0020	---	---	0.011	1.12	---	---	---	---	---	---	---
	15-May-1987	10-IN [DECOM]	819	7.77	---	---	376.2	339	---	1.4	111	---	---	500	108	25.8	5	35	413.2	---	---	---	---	---	---	---	< 0.0020	---	---	0.005	0.88	---	---	---	---	---	---	---
	15-Sep-1987	10-IN [DECOM]	815	7.65	---	---	394.5	349	---	2.5	127	---	---	520	116	25.4	4.7	33.6	425.4	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.46	---	---	---	---	---	---	---
	15-Nov-1987	10-IN [DECOM]	854	7.67	---	---	409.1	353	---	2.5	116	---	---	530	121	25.9	4.8	36.8	430.3	---	---	---	---	---	---	---	< 0.0020	---	---	< 0.003	0.52	---	---	---	---	---	---	---
	15-Feb-1988	10-IN [DECOM]	848	7.93	---	---	---	---	---	1.3	130	---	---	---	111	24.5	4.84	37	---	---	---	---	---	---	---	---	< 0.0020	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	10-IN [DECOM]	839	8.15	---	---	393	338	---	2.3	131	---	---	520	117	24.5	4.95	37	412	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.85	---	---	---	---	---	---	---
	15-Aug-1988	10-IN [DECOM]	828	8.09	---	---	321.7	277	---	1.3	115	---	---	440	90.3	23.3	4.5	35.7	337.7	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.9	---	---	---	---	---	---	---
	15-Nov-1988	10-IN [DECOM]	850	7.95	---	---	391.7	338	---	0.8	139	---	---	531	116	24.7	4.89	38.4	412	---	---	---	---	---	---	---	< 0.0010	---	---	0.008	1.06	---	---	---	---	---	---	---
	15-Mar-1989	10-IN [DECOM]	877	8.25	---	---	386.7	315	---	0.7	142	---	---	522	114	24.7	4.85	42.5	384	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	1.08	---	---	---	---	---	---	---
	15-May-1989	10-IN [DECOM]	852	7.75	---	---	380.4	345	---	0.7	116	---	---	510	112	24.4	4.9	41	420.6	---	---	---	---	---	---	---	< 0.0010	---	---	< 0.003	0.95	---	---	---	---	---	---	---
	15-Sep-1989	10-IN [DECOM]	857	7.45	---	---	---	---	---	---	---	---	---	540	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	10-IN [DECOM]	838	8.04	---	---	368.3	334	---	0.5	111	---	---	495	106	25.1	4.94	42.6	407.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.008	1.36	---	---	---	---	---	---	---
	15-Mar-1990	10-IN [DECOM]	835	8.06	---	---	---	---	---	---	---	---	---	424	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10-IN [Decommissioned]	15-May-1990	10-IN [DECOM]	824	8.15	---	---	357.1	351	---	1.2	115	---	---	504	104	23.6	4.8	40.5	427.9	---	---	---	---	---	---	---	< 0.0010	---	---	0.02	1.35	---	---	---	---	---	---	---
	15-Aug-1990	10-IN [DECOM]	900	7.76	---	---	---	---	---	---	---	---	---	585	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	10-IN [DECOM]	849	8.02	---	---	306.7	305.2	---	0.01	96	---	---	441	82	24.7	4.83	46.6	372	---	---	---	---	---	---	---	< 0.0010	---	---	0.005	0.935	---	---	---	---	---	---	---
	17-May-1991	10-IN [DECOM]	854	7.44	---	---	---	---	---	0.8	---	---	---	555	99.5	22.5	4.97	42.4	---	---	---	---	---	---	---	---	---	---	---	0.84	---	---	---	---	---	---	---	---
	06-Nov-1991	10-IN [DECOM]	823	7.71	---	---	---	365	---	0.5	---	---	---	525	110	23.4	4.88	41.4	445	---	---	---	---	---	---	---	< 0.0010	---	---	0.676	---	---	---	---	---	---	---	---
	12-May-1992	10-IN [DECOM]	823	7.75	---	---	365	369	---	0.3	---	---	---	403	107	23.7	4.84	41.2	449.8	---	---	---	---	---	---	0.94	0.001	---	---	0.006	0.614	---	---	---	---	---	---	---
	01-Sep-1992	10-IN [DECOM]	801	7.76	---	---	---	364	---	1	---	---	---	529	120	25.4	4.86	41.4	443.7	---	---	---	---	---	---	1.03	---	---	---	0.005	0.887	---	---	---	---	---	---	---
11-SH	17-May-1991	11-SH	764	7.63	---	---	---	---	---	0.2	---	---	---	500	117	23.5	2.65	16	---	---	---	---	---	---	---	---	---	---	---	0.007	---	---	---	---	---	---	---	---
	04-Nov-1991	11-SH	722	7.8	---	---	---	422	---	0.7	---	---	---	430	125	25.8	2.64	14.5	515	---	---	---	---	---	---	---	< 0.0010	---	---	0.013	---	---	---	---	---	---	---	---
	12-May-1992	11-SH	729	8.01	---	---	375.8	422	---	0.3	---	---	---	408	110	24.5	2.32	13.9	514.4	---	---	---	---	---	---	0.96	0.0330	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	04-Nov-1992	11-SH	690	7.13	---	---	395	398	---	0.5	---	---	---	410	118	25	2.36	13.3	485.2	---	---	---	---	---	---	1.06	< 0.0010	---	---	< 0.003	0.005	---	---	---	---	---	---	---
	19-May-1993	11-SH	644	7.25	---	---	350	392	---	< 0.50	---	---	---	385	102	23.1	2.16	12.6	478	---	---	---	---	---	---	0.95	< 0.0010	---	---	< 0.003	< 0.003	---	---	---	---	---	---	---
	11-Nov-1993	11-SH	697	7.32	---	---	343	390	---	0.6	---	---	---	379	95.5	25.3	2.2	13.9	475	---	---	---	---	---	---	0.95	< 0.0010	---	---	0.005	0.18	---	---	---	---	---	---	---
	31-May-1994	11-SH	703	6.9	---	---	---	402	< 0.1	< 0.5	1.6	< 0.01	0.681	399	116	23.1	2.05	11.2	490	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	0.013	0.013	0.013	---	---	---	---	---	---
	22-Sep-1994	11-SH	703	7.06	---	---	---	395	0.1	0.5	1.7	0.1	0.801	386	104	25	2.21	11.9	482	0.5	0.5	---	---	---	---	0.99	< 0.001	---	---	0.104	0.095	0.104	---	---	---	---	---	---
	02-Nov-1994	11-SH	712	7.29	---	---	---	397	< 0.1	< 0.5	1.5	0.09	0.718	398	115	24.4	2.38	12.4	484	< 0.5	< 0.5	---	---	---	---	1.05	< 0.001	---	---	0.071	0.067	0.071	---	---	---	---	---	---
(Duplicate)	02-Nov-1994	11-SH DUP	717	7.08	---	---	---	402	< 0.1	< 0.5	1.8	0.06	0.751	401	114	25.4	2.38	12.4	490	< 0.5	< 0.5	---	---	---	---	1.04	< 0.001	---	---	0.063	0.059	0.063	---	---	---	---	---	---
	28-Sep-1995	11-SH	637	7.03	---	---	389	404	< 0.1	< 0.5	2	0.02	0.638	403	113	25.9	2.4	12.8	492	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	---	0.01	---	---	---	---	---	---	---
	05-Sep-1996	11-SH	716	7.19	---	---	395	399	< 0.1	< 0.5	2	< 0.01	0.608	402	115	26.2	2.3	12.8	486	< 0.5	< 0.5	---	---	---	---	1.06	0.001	---	---	---	0.117	0.12	---	---	---	---	---	---
	05-Sep-1997	11-SH	758	7.47	---	---	480	437	< 0.1	0.5	1.6	5.81	0.458	465	141	31	2.7	21.3	533	< 0.5	< 0.5	---	---	---	---	---	< 0.001	---	---	---	0.021	0.025	---	---	---	---	---	---
	09-Sep-1999	11-SH	751	7.39	---	---	410	411	< 0.1	1	9.2	---	---	428	119	28.1	2	21.6	501	< 0.5	< 0.5	---	8.44	9.25	---	1.1	< 0.0010	---	< 0.001	---	0.011	0.02	---	---	---	---	---	---
	06-Sep-2000	11-SH	824	7.53	---	---	420	446	< 0.1	1.1	31.9	< 0.01	0.622	481	125	27.4	2.4	25.7	545	< 0.5	< 0.5	---	9.62	9.66	---	1	0.002	---	---	< 0.003	0.008	0.008	---	---	---	---	---	---
	06-Sep-2001	11-SH	763	7.98	---	---	390	418	< 0.5	1.1	24.1	0.02	0.4	448	109	28.9	3	29	510	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	0.008	0.246	0.254	---	---	---	---	---	---
	05-Sep-2002	11-SH	844	7.51	---	---	390	447	< 0.5	< 0.5	10.2	12.9	0.57	458	117	24.6	2.2	22.5	545	< 0.5	< 0.5	---	---	---	---	0.97	0.001	---	---	< 0.003	0.019	0.019	0.54	---	---	---	4.4	---
	03-Sep-2003	11-SH	772	7.58	---	---	400	421	< 0.5	0.7	10.2	8.72	0.543	446	118	25.9	2.4	26	514	< 0.5	< 0.5	---	---	---	---	1.1	---	< 0.004	---	< 0.003	0.02	0.02	---	---	---	---	4.7	---
	08-Sep-2004	11-SH	805	7.75	---	---	360	422	< 0.5	2	18	11.8	0.457	440	103	24.2	2.2	25.8	515	< 0.5	< 0.5	---	---	---	---	0.98	---	< 0.004	---	< 0.003	0.023	0.023	---	---	---	---	4.6	---
	07-Sep-2005	11-SH	757	8.03	180	---	360	440	< 0.5	0.7	9.7	9.89	0.487	437	104	23.4	2.2	23.3	536	< 0.5	< 0.5	---	---	---	---	0.95	---	< 0.004	---	< 0.003	0.011	0.011	---	---	---	---	3.1	---
	07-Sep-2006	11-SH	768	7.73	---	---	370	430	< 0.5	1.5	13.5	3.84	0.431	437	106	25.9	2.4	25.2	525	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	---	2.8	---
	06-Sep-2007	11-SH	784	7.76	---	---	390	445	< 0.5	1.1	7.9	10.9	0.491	455	116	24	2.3	24.8	543	< 0.5	< 0.5	---	---	---	---	1.03	---	---	---	< 0.003	0.008	0.008	---	---	---	---	2.6	---
	04-Sep-2008	11-SH	787	7.9	---	---	366	446	---	< 0.50	6.59	0.763	0.383	433	106	24.6	2.45	25.6	545	< 5	< 5	0.264	---	---	---	0.935	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	10-Sep-2009	11-SH	786	7.95	---	---	377	439	---	< 0.50	7.74	< 0.030	0.432	441	110	24.9	2.71	32.2	536	< 5.0	< 5.0	0.223	---	---	---	1.01	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	11-SH	804	7.57	---	---	371	446	---	< 0.50	8.04	1.22	0.469	437	107	25.1	2.07	26.5	544	< 5.0	< 5.0	0.296	---	---	94.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2011	11-SH	836	8.08	---	---	395	473	---	< 0.50	6.2	3.9	0.483	463	115	26.3	2.32	28.7	577	< 5.0	< 5.0	0.27	---	---	96	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	06-Sep-2012	11-SH	845	7.92	---	403	404	484	---	< 0.50	9.43	2.89	0.467	480	117	27.2	2.66	33.4	590	< 5.0	< 5.0	0.25	---	---	97.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	11-SH	749	7.75	---	377	377	435	---	< 0.50	9.97	0.196	0.226	438	111	24.3	2.90	28.4	531	< 5.0	< 5.0	0.160	---	---	99.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	11-SH	869	8.22	---	---	442	481	---	< 0.50	25.1	0.925	0.515	507	133	26.6	2.22	31.1	587	< 5.0	< 5.0	0.219	---	---	101	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	7.57	---
(Duplicate)	17-Sep-2014	31-SH	843	8.27	---	---	428	465	---	< 0.50	24.8	0.890	0.490	492	130	25.0	2.16	31.0	568	< 5.0	< 5.0	0.218	---	---	101	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	7.43	---
	29-Sep-2015	11-SH	931	7.32	---	---	473	478	---	<0.50	31.6	1.20	0.515	525	138	31.1	2.48	34.0	583	<5.0	<5.0	0.244	---	---	---	---	---	---	---	0.012	0.150	0.162	---	---	---	---	---	---
(Duplicate)	29-Sep-2015	31-SH	929	7.41	---	---	418	445	---	<0.50	31.6	1.27	0.502	482	122	27.5	2.32	31.1	542	<5.0	<5.0	0.245	---	---	---	---	---	---	---	0.013	0.148	0.162	---	---	---	---	---	---
	27-Sep-2016	11-SH	914	7.81	---	---	470	455	---	<0.50	47.4	0.77	0.455	524	141	28.3	2.40	31.4	555	<5.0	<5.0	0.184	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
(Duplicate)	27-Sep-2016	31-SH	897	8.07	---	---	446	443	---	<0.50	45.3	0.80	0.431	506	136	25.6	2.34	30.7	541	<5.0	<5.0	0.193	---	---	---	---	---	---	---	<0.010	0.068	0.068	---	---	---	---	---	---
	27-Sep-2017	11-SH	804	7.31	---	---	483	461	---	<0.50	61.9	0.60	0.392	554	141	31.8	2.46	39.0	562	<5.0	<5.0	0.169	---	---	---	---	---	---	---	<0.010	0.159	0.159	---	---	---	---	---	---
(Duplicate)	27-Sep-2017	31-SH	810	7.36	---	---	479	466	---	<0.50	62.1	0.59	0.393	555	140	31.4	2.41	38.7	569	<5.0	<5.0	0.167	---	---	---	---	---	---	---	<0.010	0.147	0.147	---	---	---	---	---	---
	18-Sep-2018	11-SH	870	7.93	---	---	521	475	---	<0.50	62.7	0.227	0.535	573	159	30.2	2.52	33.3	580	<5.0	<5.0	0.199	---	---	---	---	---	---	---	<0.010	0.097	0.097	---	---	---	---	---	---
(Duplicate)	18-Sep-2018	31-SH	884	7.91	---	---	501	463	---	<0.50	64.6	0.222	0.537	559	151	30.2	2.50	32.5	565	<5.0	<5.0	0.211	---	---	---	---	---	---	---	<0.010	0.091	0.091	---	---	---	---	---	---
	17-Sep-2019	11-SH	885	7.35	---	---	496	498	---	<0.50	86.8	2.200	0.723	605	146	31.8	2.59	38.6	607	<5.0	<5.0	0.245	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
(Duplicate)	17-Sep-2019	31-SH	891	7.32	---	---	492	499	---	<0.50	87.2	2.150	0.705	604	145	31.5	2.55	37.9	609	<5.0	<5.0	0.239	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	21-Sep-2020	11-SH	1007	6.75	---	---	461	471	---	<0.50	94.0	1.92	0.551	582	138	28.3	2.36	35.8	575	<5.0	<5.0	0.196	---	---	---	---	---	---	---	<0.010	0.096	0.096	---	---	---	---	---	---
(Duplicate)	21-Sep-2020	31-SH	1007	7.60	---	---	465	470	---	<0.50	93.9	1.55	0.565	582	139	28.7	2.39	35.7	573	<5.0	<5.0	0.180	---	---	---	---	---	---	---	<0.010	0.098	0.098	---	---	---	---	---	---
	22-Sep-2021	11-SH	962	7.46	---	---	512	474	---	<0.50	104	0.038	0.456	611	151	32.7	2.64	35.8	578	<5.0	<5.0	0.176	---	---	---	---	---	---	---	<0.010	0.088	0.088	---	---	---	---	---	---
(Duplicate)	22-Sep-2021	31-SH	975	7.41	---	---	505	473	---	<0.50	110	0.037	0.441	613	147	33.6	2.62	35.3	577	<5.0	<5.0	0.168	---	---	---	---	---	---	---	<0.010	0.094	0.094	---	---	---	---	---	---
	29-Sep-2022	11-SH	963	7.84	---	---	512	488	---	<0.50	113.0	0.139	0.540	659	150	33.5	2.49	35.6	595	<1.0	<1.0	0.155	---	---	---	---	---	---	---	<0.010	0.083	0.083	---	---	---	---	---	---
(Duplicate)	29-Sep-2022	31-SH	964	7.87	---	---	522	483	---	<0.50	114	0.136	0.525	660	153	34.1	2.51	35.7	590	<1.0	<1.0	0.169	---	---	---	---	---	---	---	<0.010	0.061	0.061	---	---	---	---	---	---
	28-Sep-2023	11-SH	1030	8.11	---	---	543	450	---	<0.50	167	0.066	0.522	709	165	31.8	2.68	46.4	549	<1.0	<1.0	0.164	---	---	---	---	---	---	---	<0.010	0.151	0.151	---	---	---	---	---	---
(Duplicate)	28-Sep-2023	31-SH	1020	8.16	---	---	533	408	---	<0.50	165	0.062	0.511	677	163	30.6	2.6	43.7	497	<1.0	<1.0	0.168	---	---	---	---	---	---	---	<0.010	0.169	0.169	---	---	---	---	---	---
	11-Sep-2024	11-SH	1100	7.06	---	---	538	467	---	<0.50	198	0.053	0.690	747	160	33.7	2.34	47.4	570	<1.0	<1.0	0.196	---	---	---	---	---	---	---	<0.010	0.139	0.139	---	---	---	---	---	---
(Duplicate)	11-Sep-2024	31-SH	1110	7.05	---	---	530	469	---	<0.50	203	0.061	0.678	748	157	33.6	2.3	45.2	572	<1.0	<1.0	0.185	---	---	---	---	---	---	---	<0.010	0.127	0.127	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
11-IN	17-May-1991	11-IN	700	7.37	---	---	338.7	371	---	0.1	---	---	---	383	98.5	22.5	3.76	24.3	452.2	---	---	---	---	---	---	---	< 0.0010	---	---	0.044	0.005	---	---	---	---	---	---	---
	04-Nov-1991	11-IN	657	7.98	---	---	---	376	---	0.5	---	---	---	389	100	24.7	3.67	24.2	458.3	---	---	---	---	---	---	---	< 0.0020	---	---	0.01	---	---	---	---	---	---	---	---
	12-May-1992	11-IN	686	7.43	---	---	344.6	402	---	0.3	---	---	---	395	98	24.2	3.67	24.1	490	---	---	---	---	---	---	0.98	< 0.0010	---	---	0.007	0.003	---	---	---	---	---	---	---
	18-May-1993	11-IN	698	7.45	---	---	---	---	---	< 0.50	---	---	---	475	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	11-IN	700	7.51	---	---	328	390	---	0.8	---	---	---	389	92	23.7	3.7	25.6	475	---	---	---	---	---	---	0.98	< 0.0010	---	---	0.0127	0.053	---	---	---	---	---	---	---
	22-Sep-1994	11-IN	725	7.24	---	---	329	410	0.1	0.5	3	0.03	0.969	398	92	24	3.89	24.9	500	0.5	0.5	---	---	---	---	0.94	---	---	---	0.004	0.004	0.008	---	---	---	0.27	---	---
	28-Sep-1995	11-IN	651	7.38	---	---	368	423	< 0.1	< 0.5	1.1	0.01	0.744	420	104	26.3	4	26.7	516	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	< 0.003	0.009	0.009	---	---	---	< 0.01	---	---
	05-Sep-1996	11-IN	766	7.52	---	---	395	435	< 0.1	< 0.5	0.9	< 0.01	0.797	438	114	26.8	4.02	26.6	530	< 0.5	< 0.5	---	---	---	---	1.05	---	---	---	< 0.003	0.08	0.08	---	---	---	< 0.005	---	---
	05-Sep-1997	11-IN	787	7.45	---	---	470	458	< 0.1	0.5	0.5	2.79	0.635	483	137	31	4.6	30.4	558	< 0.5	< 0.5	---	---	---	---	---	---	---	---	< 0.003	0.014	0.014	---	---	---	1.5	---	---
	16-Sep-1998	11-IN	765	7.57	---	---	380	446	< 0.1	< 0.5	1.6	---	---	435	107	27.4	3.7	27.4	544	< 0.5	< 0.5	---	8.96	8.87	---	0.99	---	---	---	0.01	0.009	0.019	---	---	---	< 0.01	---	---
	09-Sep-1999	11-IN	737	7.69	---	---	390	405	< 0.1	< 0.5	7.2	---	---	418	110	28	3	26.4	494	< 0.5	< 0.5	---	8.25	9.02	---	1.09	---	---	---	0.014	0.023	0.037	---	---	---	< 0.01	---	---
	06-Sep-2000	11-IN	718	7.69	---	---	350	408	< 0.1	< 0.5	9.3	< 0.01	0.569	409	98.4	25.2	4	27.6	498	< 0.5	< 0.5	---	8.36	8.28	---	0.99	---	---	---	0.004	0.006	0.01	---	---	---	< 0.01	---	---
	06-Sep-2001	11-IN	693	7.92	---	---	350	398	< 0.5	< 0.5	8.7	< 0.01	0.551	403	98.5	25.1	4.2	26.9	486	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	0.003	0.006	0.009	---	---	---	< 0.01	---	---
	05-Sep-2002	11-IN	774	7.65	---	---	320	408	< 0.5	< 0.5	7.9	0.57	0.43	399	89.5	24	3.9	27.4	498	< 0.5	< 0.5	---	8.33	7.73	---	0.93	---	---	---	< 0.003	0.017	0.017	---	---	---	< 0.01	3.3	---
	08-Oct-2002	11-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.89	1.06	---	---	---	---
	03-Sep-2003	11-IN	715	7.74	---	---	350	393	< 0.5	0.7	8.6	0.14	0.438	403	98.6	25.6	4.2	27.6	480	< 0.5	< 0.5	---	8.09	8.35	---	1.03	---	---	---	0.011	0.325	0.336	---	---	---	< 0.01	3.3	---
	08-Sep-2004	11-IN	728	7.88	---	---	330	390	< 0.5	0.6	8.5	0.48	0.44	390	92.8	24.1	3.9	25.1	476	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	< 0.003	0.016	0.016	---	---	---	< 0.01	3	---
	07-Sep-2005	11-IN	683	8.2	1	---	310	396	< 0.5	< 0.5	9.8	1.25	0.401	390	87.4	23	3.6	26.3	483	< 0.5	< 0.5	---	---	---	---	0.93	---	---	---	0.005	0.075	0.08	---	---	---	< 0.005	3	---
	07-Sep-2006	11-IN	714	7.82	---	---	350	396	< 0.5	1.4	9.1	0.44	0.493	402	98.5	24.2	3.7	26.7	483	< 0.5	< 0.5	---	---	---	---	1	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	---	3.1	---
	06-Sep-2007	11-IN	712	8	---	---	340	395	< 0.5	0.9	9.2	< 0.06	0.44	401	97.8	23.7	4	27.6	482	< 0.5	< 0.5	---	---	---	---	1	---	---	---	< 0.003	0.024	0.024	---	---	---	---	3.2	---
	04-Sep-2008	11-IN	707	8	---	---	312	396	---	< 0.50	7.57	< 0.030	0.266	385	85.9	23.7	3.93	26.2	483	< 5	< 5	0.227	---	---	---	0.925	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	10-Sep-2009	11-IN	715	7.99	---	---	390	395	---	< 0.50	7.82	0.243	0.534	418	103	25.8	4.2	27.2	482	< 5.0	< 5.0	0.197	---	---	---	1.14	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	11-IN	717	7.83	---	---	315	393	---	< 0.50	8.89	< 0.030	0.295	384	85.7	24.5	3.72	25.6	479	< 5.0	< 5.0	0.287	---	---	93.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2011	11-IN	719	8.23	---	---	323	400	---	< 0.50	9.04	< 0.030	0.224	393	89.3	24.4	3.91	26	488	< 5.0	< 5.0	0.263	---	---	93.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	06-Sep-2012	11-IN	704	8.07	---	347	347	393	---	< 0.50	9.78	0.039	0.272	400	98.4	24.5	4.31	26.6	480	< 5.0	< 5.0	0.249	---	---	101	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	11-IN	722	7.95	---	369	368	443	---	< 0.50	13.5	0.866	0.553	441	104	0.553	3.68	27.7	541	< 5.0	< 5.0	0.256	---	---	94.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	11-IN	701	8.32	---	---	370	389	---	< 0.50	14.2	0.034	0.357	416	108	24.3	4.85	31.2	469	< 5.0	< 5.0	0.266	---	---	111	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	6.44	---
	29-Sep-2015	11-IN	794	7.58	---	---	390	408	---	<0.50	22.2	0.032	0.449	439	109	28.5	4.31	30.0	497	<5.0	<5.0	0.331	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2016	11-IN	739	8.04	---	---	360	387	---	<0.50	20.4	<0.010	0.401	414	103	24.9	3.98	29.6	472	<5.0	<5.0	0.261	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	11-IN	666	7.63	---	---	361	394	---	<0.50	18.7	0.207	0.482	420	101	26.5	4.11	33.1	480	<5.0	<5.0	0.247	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	18-Sep-2018	11-IN	695	8.11	---	---	363	396	---	<0.50	17.2	0.282	0.452	416	105	24.6	4.02	27.4	484	<5.0	<5.0	0.312	---	---	---	---	---	---	---	<0.010	0.06	0.06	---	---	---	---	---	---
	17-Sep-2019	11-IN	687	7.76	---	---	363	432	---	<0.50	17.6	0.968	0.526	446	101	26.9	4.25	36.0	527	<5.0	<5.0	0.301	---	---	---	---	---	---	---	0.03	0.186	0.216	---	---	---	---	---	---
	21-Sep-2020	11-IN	753	6.72	---	---	337	413	---	<0.50	20.7	0.836	0.478	425	96.4	23.5	3.82	32.7	503	<5.0	<5.0	0.289	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	11-IN	696	7.86	---	---	363	398	---	<0.50	14.1	0.866	0.506	420	100	27.4	4.33	33.9	486	<5.0	<5.0	0.251	---	---	---	---	---	---	---	<0.010	0.208	0.208	---	---	---	---	---	---
	29-Sep-2022	11-IN	696	8.17	---	---	364	409	---	<0.50	14.9	0.380	0.458	462	100	27.8	4.03	34.3	498	<1.0	<1.0	0.245	---	---	---	---	---	---	---	<0.010	0.400	0.419	---	---	---	---	---	---
	28-Sep-2023	11-IN	1080	8.23	---	---	513	441	---	<0.50	181	0.09	0.634	709	154	31.1	2.54	45	538	<1.0	<1.0	0.164	---	---	---	---	---	---	---	<0.010	0.082	0.082	---	---	---	---	---	---
	11-Sep-2024	11-IN	737	7.57	---	---	337	409	---	<0.50	17	0.014	0.405	446	93	25.5	3.77	28.2	499	<1.0	<1.0	0.318	---	---	---	---	---	---	---	0.012	0.055	0.067	---	---	---	---	---	---
11-SS	17-May-1991	11-SS	482	7.69	---	---	124.3	218	---	< 0.01	---	---	---	268	41.5	5	6.75	55	265.7	---	---	---	---	---	---	---	< 0.0010	---	---	0.024	0.009	---	---	---	---	---	---	---
	12-May-1992	11-SS	482	7.46	---	---	142.5	242	---	0.8	---	---	---	261	47.3	5.9	6.15	53	295	---	---	---	---	---	---	0.97	0.001	---	---	0.008	0.502	---	---	---	---	---	---	---
12-SH	17-May-1991	12-SH	429	7.69	---	---	---	---	---	< 0.01	---	---	---	280	66	15.5	1.45	5	---	---	---	---	---	---	---	---	< 0.0010	---	---	0.012	---	---	---	---	---	---	---	---
	12-May-1992	12-SH	424	7.86	---	---	217.6	222	---	0.7	---	---	---	220.2	62	15.2	1.42	5.51	270.6	---	---	---	---	---	---	1	0.003	---	---	< 0.003	0.027	---	---	---	---	---	---	---
	04-Nov-1992	12-SH	360	7.8	---	---	---	228	---	0.6	---	---	---	235	64	16	1.54	6.33	277.9	---	---	---	---	---	---	1.02	< 0.0010	---	---	---	0.032	---	---	---	---	---	---	---
	18-May-1993	12-SH	388	7.66	---	---	213	231	---	< 0.50	---	---	---	231	59.1	15.9	1.5	5.83	282	---	---	---	---	---	---	0.95	< 0.0010	---	---	0.004	0.022	---	---	---	---	---	---	---
	11-Nov-1993	12-SH	390	7.95	---	---	209	206	---	0.7	---	---	---	214	56.1	16.8	1.5	6.2	251	---	---	---	---	---	---	1.04	< 0.0010	---	---	< 0.003	0.105	---	---	---	---	---	---	---
	31-May-1994	12-SH	414	7.49	---	---	---	228	< 0.1	0.5	6	< 0.01	0.584	228	59.5	14.7	1.49	6.37	278	< 0.5	< 0.5	---	---	---	---	0.96	< 0.001	---	---	0.028	0.028	0.028	---	---	---	---	---	---
	22-Sep-1994	12-SH	727	7.53	---	---	---	229	0.1	0.5	6.4	0.01	0.352	232	60	16	1.54	8.2	279	0.5	0.5	---	---	---	---	1	< 0.001	---	---	0.102	0.096	0.102	---	---	---	---	---	---
	01-Nov-1994	12-SH	446	8	---	---	---	236	< 0.1	0.7	5.8	0.04	0.01	239	63	15.1	1.73	8.2	288	< 0.5	< 0.5	---	---	---	---	0.98	< 0.001	---	---	0.254	0.254	0.254	---	---	---	---	---	---
	28-Sep-1995	12-SH	424	7.37	---	---	233	232	< 0.1	0.6	6.1	< 0.01	0.396	238	64.8	17.3	1.6	6.3	283	< 0.5	< 0.5	---	---	---	---	1.04	< 0.001	---	---	---	0.024	---	---	---	---	---	---	---
	05-Sep-1996	12-SH	272	7.38	---	---	145	142	< 0.1	< 0.5	3.2	< 0.01	0.386	146	40.9	10.4	0.91	3.89	173	< 0.5	< 0.5	---	---	---	---	1.06	0.001	---	---	---	0.043	0.048	---	---	---	---	---	---
(Duplicate)	05-Sep-1996	12-SH DUP	312	7.42	---	---	167	163	< 0.1	< 0.5	3.8	< 0.01	0.373	168	47	12	1.05	4.47	199	< 0.5	< 0.5	---	---	---	---	1.07	0.001	---	---	---	0.017	0.017	---	---	---	---	---	---
	05-Sep-1997	12-SH	360	8.02	---	---	175	194	< 0.1	0.5	4.8	0.11	0.171	192	44.2	15.7	1.15	7.34	236	< 0.5	< 0.5	---	---	---	---	0.96	< 0.001	---	---	---	0.052	0.052	---	---	---	---	---	---
(Duplicate)	05-Sep-1997	12-SH DUP	362	7.98	---	---	170	196	< 0.1	0.6	4.8	0.1	0.15	191	41.6	16	0.994	7.64	239	< 0.5	< 0.5	---	---	---	---	0.93	< 0.001	---	---	---	0.059	0.059	---	---	---	---	---	---
	16-Sep-1998	12-SH	388	7.64	---	---	200	207	< 0.1	< 0.5	4.5	---	---	205	49.5	18.6	1.4	6.6	253	< 0.5	< 0.5	---	4.24	4.32	---	1.02	0.001	---	---	---	0.039	0.047	---	---	---	---	---	---
	09-Sep-1999	12-SH	463	7.83	---	---	260	248	< 0.1	< 0.5	4.6	---	---	252	70.3	21.1	1.1	6	303	< 0.5	< 0.5	---	5.06	5.53	---	1.09	< 0.001	---	< 0.001	---	0.014	0.014	---	---	---	---	---	---
	06-Sep-2000	12-SH	486	7.77	---	---	230	268	< 0.1	< 0.5	3.7	0.04	0.129	253	59.6	19.5	1.6	7.9	328	< 0.5	< 0.5	---	5.45	4.96	---	0.91	0.004	---	---	< 0.003	0.021	0.021	---	---	---	---	---	---
	06-Sep-2001	12-SH	474	8.07	---	---	260	271	< 0.5	< 0.5	3.7	< 0.01	0.174	267	71.7	20.1	1.8	7.4	330	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	< 0.003	0.012	0.012	---	---	---	---	---	---
	04-Sep-2002	12-SH	541	7.87	---	---	240	287	< 0.5	< 0.5	3.9	0.1	0.109	272	61	21.8	1.9	10.5	350	< 0.5	< 0.5	---	---	---	---	0.92	< 0.001	---	---	< 0.003	< 0.003	< 0.003	---	---	---	---	2.9	---
	04-Sep-2003	12-SH	521	7.85	---	---	270	285	< 0.5	< 0.5	4.3	0.06	0.097	280	71.7	22.1	1.9	8.8	347	< 0.5	< 0.5	---	---	---	---	1.01	---	< 0.004	---	< 0.003	0.008	0.008	---	---	---	---	1.6	---
	09-Sep-2004	12-SH	556	8.11	---	---	260	300	< 0.5	< 0.5	4.1	0.03	0.012	284	70.3	20.3	1.7	7.9	366	< 0.5	< 0.5	---	---	---	---	0.91	---	< 0.004	---	< 0.003	< 0.003	< 0.003	---	---	---	---	1.4	---
	08-Sep-2005	12-SH	512	8.32	1.7	---	290	305	2.6	< 0.5	3.3	0.17	0.363	298	79.9	21.1	1.9	8	366	3.1	< 0.5	---	---	---	---	0.99	---	0.004	---	< 0.003	0.005	0.005	---	---	---	---	1.4	---
	07-Sep-2006	12-SH	517	8.06	---	---	270	287	< 0.5	1.2	3.7	< 0.01	0.237	282	71.6	22	1.9	8.6	350	< 0.5	< 0.5	---	---	---	---	0.99	---	---	---	< 0.003	0.02	0.02	---	---	---	---	1.2	---
	07-Sep-2007	12-SH	560	8.08	---	---	230	316	< 0.5	< 0.5	3.2	0.1	1.19	281	52.3	23.6	2.1	9.1	385	< 0.5	< 0.5	---	---	---	---	0.79	---	---	---	< 0.003	0.064	0.064	---	---	---	---	0.9	---
	05-Sep-2008	12-SH	558	8.1	---	---	283	327	---	< 0.50	2.08	0.273	0.547	308	77.7	21.7	2.06	8.32	398	< 5	< 5	0.396	---	---	---	0.923	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	10-Sep-2009	12-SH	522	8.17	---	---	172	298	---	< 0.50	0.93	0.057	0.0961	246	23.9	27.2	2.88	12.3	364	< 5.0	< 5.0	0.341	---	---	---	0.673	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	12 SH	580	8.13	---	---	159	325	---	< 0.50	0.89	0.07	0.061	257	17.2	28.1	2.9	12.3	396	< 5.0	< 5.0	0.472	---	---	57.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	12-SH	589	8.36	---	---	236	337	---	< 0.50	< 0.50	0.106	0.12	293	49.6	27.3	2.53	11.2	397	7	< 5.0	0.422	---	---	78	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	12-SH	587	8.17	---	246	246	333	---	< 0.50	3	0.183	0.0997	298	55.3	26.3	2.35	10.4	406	< 5.0	< 5.0	0.406	---	---	80.7	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	12-SH	603	8.02	---	332	332	357	---	< 0.50	2.17	0.168	0.428	346	92.3	24.6	1.84	10.1	436	< 5.0	<5.0	0.357	---	---	98.7	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	12-SH	561	8.16	---	---	315	312	---	< 0.50	2.06	0.018	0.460	315	90.3	21.8	1.79	11.7	381	< 5.0	<5.0	0.376	---	---	109	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	0.93	---
	29-Sep-2015	12-SH	653	7.76	---	---	362	351	---	<0.50	3.10	<0.010	0.245	354	99.8	27.3	2.00	10.3	429	<5.0	<5.0	0.457	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2016	12-SH	599	8.16	---	---	327	321	---	<0.50	2.45	0.022	0.142	324	93.9	22.6	1.92	10.5	392	<5.0	<5.0	0.390	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	12-SH	547	7.91	---	---	334	334	---	<0.50	2.42	0.435	0.329	334	93.5	24.5	1.95	11.0	407	<5.0	<5.0	0.369	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	18-Sep-2018	12-SH	583	8.21	---	---	324	349	---	<0.50	2.36	0.62	0.406	339	93.5	22.1	1.86	9.6	426	<5.0	<5.0	0.416	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	12-SH	605	7.64	---	---	340	368	---	<0.50	3.22	0.037	0.181	361	95.5	24.7	2.20	13.8	448	<5.0	<5.0	0.480	---	---	---	---	---	---	---	<0.010	0.024	0.024	---	---	---	---	---	---
	22-Sep-2020	12-SH	622	7.37	---	---	326	366	---	<0.50	3.28	<0.010	0.286	352	91.6	23.6	1.93	11.6	446	<5.0	<5.0	0.373	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	12-SH	625	7.93	---	---	336	368	---	<0.50	2.85	<0.030	0.296	356	94	24.7	1.88	11	449	<5.0	<5.0	0.341	---	---	---	---	---	---	---	<0.010	0.027	0.027	---	---	---	---	---	---
	28-Sep-2022	12-SH	618	8.21	---	---	393	374	---	<0.50	3.79	<0.030	0.288	409	111.0	28.2	2.08	11.5	456	<1.0	<1.0	0.313	---	---	---	---	---	---	---	<0.010	0.034	<0.0500	---	---	---	---	---	---
	28-Sep-2023	12-SH	614	8.27	---	---	339	382	---	<0.50	2.76	<0.010	0.0788	393	93.9	25.4	2.1	11.6	466	<1.0	<1.0	0.35	---	---	---	---	---	---	---	<0.010	0.099	0.099	---	---	---	---	---	---
	11-Sep-2024	12-SH	643	7.67	---	---	343	376	---	<0.50	3.40	<0.010	0.197	392	95.4	25.4	1.82	12.0	459	<1.0	<1.0	0.390	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
12-IN	15-Jan-1990	12-IN	267	8.15	---	---	206.7	247	---	2.9	---	---	---	309	61.1	13.1	5.1	33.2	301.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.008	0.5	---	---	---	---	---	---	---
	15-Mar-1990	12-IN	553	8.13	---	---	230.9	280	---	1.6	---	---	---	326	68	14.8	4.05	30	341.3	---	---	---	---	---	---	---	< 0.0010	---	---	0.14	0.48	---	---	---	---	---	---	---
	15-May-1990	12-IN	623	8.11	---	---	196.1	292	---	1.5	---	---	---	361	56.2	13.5	4.11	57.5	355.9	---	---	---	---	---	---	---	< 0.0010	---	---	0.023	0.058	---	---	---	---	---	---	---
	15-Aug-1990	12-IN	564	7.5	---	---	243.4	279	---	0.8	---	---	---	317	71	16	4	24.5	340.1	---	---	---	---	---	---	---	< 0.0010	---	---	0.059	0.241	---	---	---	---	---	---	---
	15-Nov-1990	12-IN	585	7.79	---	---	252.1	300.4	---	< 0.01	---	---	---	331	73.5	16.6	3.85	27.5	366.2	---	---	---	---	---	---	---	< 0.0010	---	---	0.016	0.029	---	---	---	---	---	---	---
	17-May-1991	12-IN	572	7.51	---	---	280.9	273	---	0.8	---	---	---	312	86	16	3.68	15	332.8	---	---	---	---	---	---	---	< 0.0010	---	---	0.014	0.005	---	---	---	---	---	---	---
	04-Nov-1991	12-IN	538	8.19	---	---	---	275	---	1.2	---	---	---	328	87	17.7	4.04	15.4	335.2	---	---	---	---	---	---	---	< 0.0020	---	---	0.055	---	---	---	---	---	---	---	---
	12-May-1992	12-IN	441	7.57	---	---	215.9	194	---	1.3	---	---	---	208	62.5	14.5	2.08	9.3	236.5	---	---	---	---	---	---	1	0.001	---	---	0.008	0.155	---	---	---	---	---	---	---
	04-Nov-1992	12-IN	626	7.58	---	---	279.5	292	---	1.5	---	---	---	366	83	18	4.01	30.5	355.9	---	---	---	---	---	---	1.02	< 0.0010	---	---	0.032	0.151	---	---	---	---	---	---	---
	18-May-1993	12-IN	579	7.47	---	---	---	---	---	1	---	---	---	376	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	12-IN	634	7.41	---	---	302	296	---	1.1	---	---	---	372	88.5	19.6	4	17.8	361	---	---	---	---	---	---	0.96	< 0.0010	---	---	0.016	0.034	---	---	---	---	---	---	---
	28-Sep-1995	12-IN	600	7.32	---	---	334	308	< 0.1	1	65.8	< 0.01	**0.702**	399	96.4	22.6	4.3	21.3	375	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	0.006	0.018	0.024	---	---	---	< 0.01	---	---
	05-Sep-1996	12-IN	690	7.63	---	---	363	316	< 0.1	1	66.7	< 0.01	**1.69**	418	107	23.2	4.3	23.1	385	< 0.5	< 0.5	---	---	---	---	1.08	---	---	---	0.004	0.042	0.046	---	---	---	< 0.005	---	---
	05-Sep-1997	12-IN	589	7.76	---	---	291	253	< 0.1	1.1	69.9	**0.62**	**0.239**	355	84.5	19.3	2.99	22.5	308	< 0.5	< 0.5	---	---	---	---	1.05	---	---	---	0.003	0.109	0.112	---	---	---	< 0.01	---	---
	06-Sep-1997	12-IN	589	7.76	---	---	291	253	---	1.1	---	---	---	355	84.5	19.3	2.99	22.5	308	---	---	---	---	---	---	1.05	---	---	---	0.003	0.109	---	---	---	---	---	---	---
	16-Sep-1998	12-IN	581	7.43	---	---	290	314	< 0.1	< 0.5	73.2	---	---	392	74.6	26.3	4.2	24.9	383	< 0.5	< 0.5	---	7.81	7.07	---	0.91	---	---	---	0.028	0.086	0.114	---	---	---	< 0.01	---	---
	09-Sep-1999	12-IN	648	7.64	---	---	280	271	< 0.1	1.6	69.4	---	---	364	67.5	26.4	5.7	30	331	< 0.5	< 0.5	---	6.92	6.99	---	1.01	---	---	---	0.009	0.096	0.105	---	---	---	< 0.01	---	---
	06-Sep-2000	12-IN	668	7.57	---	---	330	289	< 0.1	1	81.8	**0.55**	**1.45**	402	95.8	21.4	3.9	24.1	352	< 0.5	< 0.5	---	7.51	7.69	---	1.02	---	---	---	0.035	0.089	0.124	---	---	---	< 0.01	---	---
	06-Sep-2001	12-IN	655	7.96	---	---	340	294	< 0.5	2.1	83.3	< 0.01	**0.116**	414	98	22.7	5	24.3	359	< 0.5	< 0.5	---	---	---	---	1.03	---	---	---	0.041	0.301	0.342	---	---	---	< 0.01	---	---
	04-Sep-2002	12-IN	754	7.7	---	---	330	305	< 0.5	1.1	83.2	0.26	**0.709**	416	96.1	21.3	4.7	24.6	372	< 0.5	< 0.5	---	7.87	7.74	---	0.98	---	---	---	< 0.003	0.295	0.295	---	---	---	< 0.01	28	---
	04-Sep-2003	12-IN	686	7.8	---	---	350	289	< 0.5	1.2	87.1	0.03	**0.994**	419	103	22.2	5.3	24.9	353	< 0.5	< 0.5	---	7.65	8.17	---	1.07	---	---	---	< 0.003	0.175	0.175	---	---	---	< 0.01	31	---
	09-Sep-2004	12-IN	699	8.12	---	---	310	293	< 0.5	1.2	86.3	0.02	**0.14**	403	87.4	21.2	4.5	24.5	358	< 0.5	< 0.5	---	---	---	---	0.94	---	---	---	0.014	0.247	0.261	---	---	---	< 0.01	27.4	---
	08-Sep-2005	12-IN	705	8.02	0.5	---	320	321	< 0.5	0.5	82.6	0.04	**0.707**	429	94.1	20.9	4.1	33	392	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	< 0.003	0.003	0.003	---	---	---	< 0.005	25.4	---
	07-Sep-2006	12-IN	711	7.9	---	---	330	322	< 0.5	1.6	77.4	< 0.01	**0.67**	430	97.2	21.8	3.9	33.8	392	< 0.5	< 0.5	---	---	---	---	1.01	---	---	---	< 0.003	0.058	0.058	---	---	---	---	25.9	---
	10-Dec-2006	12-IN	---	---	---	---	---	---	---	---	---	< 0.06	**0.398**	---	97.8	21.6	3.9	34.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	25.9
	07-Sep-2007	12-IN	720	7.96	---	---	340	319	< 0.5	0.8	78.8	< 0.06	**0.746**	427	99.8	21	3.7	30.5	390	< 0.5	< 0.5	---	---	---	---	1.01	---	---	---	< 0.003	0.011	0.011	---	---	---	---	25.9	---
	05-Sep-2008	12-IN	711	8.1	---	---	313	319	---	0.7	77.5	**0.469**	**0.808**	415	92.7	19.8	3.94	28.7	389	< 5	< 5	0.209	---	---	---	0.948	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	11-Sep-2009	12-IN	704	7.95	---	---	346	312	---	0.52	78.4	0.267	**0.893**	424	104	21	4.52	28.6	381	< 5.0	< 5.0	0.178	---	---	---	1.05	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	12-IN	702	7.95	---	---	312	310	---	0.63	79.1	**0.559**	**0.799**	409	91.2	20.4	3.63	28.2	378	< 5.0	< 5.0	0.223	---	95.9	---	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	12-IN	547	8.29	---	---	223	240	---	< 0.50	56.8	0.129	**0.314**	307	61	17.1	3.6	24	292	< 5.0	< 5.0	0.176	---	93.4	---	---	---	---	---	< 0.050	0.105	0.105	---	---	---	---	---	---
	06-Sep-2012	12-IN	555	8.16	---	262	262	244	---	< 0.50	59.5	**0.301**	**0.486**	331	73.2	19.3	4.06	27.5	298	< 5.0	< 5.0	0.142	---	107	---	---	---	---	---	< 0.050	0.108	0.108	---	---	---	---	---	---
	17-Sep-2014	12-IN	713	8.41	---	---	326	315	---	< 0.50	83.8	**1.79**	**0.788**	431	97.2	20.2	3.91	36.3	369	7.6	< 5.0	0.21	---	102	---	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	27.2	---
	29-Sep-2015	12-IN	759	7.62	---	---	342	321	---	<0.50	84.4	**1.02**	**0.812**	441	99.2	23.0	4.24	37.5	392	<5.0	<5.0	0.241	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2016	12-IN	710	8.09	---	---	320	307	---	<0.50	76.2	**1.28**	**0.704**	414	95.0	20.1	4.01	34.1	375	<5.0	<5.0	0.194	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	12-IN	640	8.30	---	---	320	314	---	<0.50	76.5	**1.34**	**0.747**	424	93.2	21.3	4.20	40.0	378	<5.0	<5.0	0.188	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	18-Sep-2018	12-IN	669	8.13	---	---	322	323	---	<0.50	73.1	**1.13**	**0.654**	424	96.3	19.8	4.09	36.8	393	<5.0	<5.0	0.223	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	12-IN	671	7.46	---	---	303	352	---	<0.50	73.9	**1.91**	**0.802**	440	89.5	19.2	4.20	41.4	429	<5.0	<5.0	0.276	---	---	---	---	---	---	---	0.011	0.04	0.051	---	---	---	---	---	---
	22-Sep-2020	12-IN	681	7.31	---	---	291	341	---	<0.50	71.8	**1.36**	**0.685**	423	85.8	18.6	3.89	38.4	417	<5.0	<5.0	0.221	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	12-IN	702	7.81	---	---	311	333	---	<0.50	68.1	**0.658**	**0.757**	427	89.1	21.5	4.43	43.3	406	<5.0	<5.0	0.208	---	---	---	---	---	---	---	<0.010	0.028	0.028	---	---	---	---	---	---
	28-Sep-2022	12-IN	662	8.26	---	---	312	320	---	<0.50	63.6	**0.807**	**0.707**	437	89.3	21.5	4.08	41.8	390	<1.0	<1.0	0.191	---	---	---	---	---	---	---	<0.010	0.045	<0.0500	---	---	---	---	---	---
	28-Sep-2023	12-IN	680	8.11	---	---	283	353	---	<0.50	63	<0.010	**0.687**	446	82.1	19	3.85	40.7	430	<1.0	<1.0	0.226	---	---	---	---	---	---	---	<0.010	0.099	0.099	---	---	---	---	---	---
	11-Sep-2024	12-IN	688	7.56	---	---	282	332	---	<0.50	64.1	0.189	**0.726**	432	80.3	19.7	3.85	41.5	404	<1.0	<1.0	0.227	---	---	---	---	---	---	---	0.011	0.062	0.073	---	---	---	---	---	---
13-SH	04-Nov-1991	13-SH	492	7.77	---	---	---	232	---	0.9	---	---	---	290	70	17.4	1.68	17.6	282	---	---	---	---	---	---	---	< 0.0010	---	---	0.154	---	---	---	---	---	---	---	---
	12-May-1992	13-SH	526	8.22	---	---	261.6	259	---	0.6	---	---	---	265	74.5	18.3	1.91	11.7	315.7	---	---	---	---	---	---	0.98	< 0.0010	---	---	0.006	0.026	---	---	---	---	---	---	---
	04-Nov-1992	13-SH	453	7.83	---	---	---	234	---	0.6	---	---	---	257	67	16.6	1.64	9.41	285.2	---	---	---	---	---	---	1.01	< 0.0010	---	---	---	0.047	---	---	---	---	---	---	---
	18-May-1993	13-SH	315	7.58	---	---	174	177	---	0.8	---	---	---	194	48.4	12.8	1.24	7.42	216	---	---	---	---	---	---	0.98	< 0.0010	---	---	0.022	0.036	---	---	---	---	---	---	---
	11-Nov-1993	13-SH	474	7.65	---	---	244	239	---	1	---	---	---	266	69	17.4	1.6	10.1	291	---	---	---	---	---	---	1.02	< 0.0010	---	---	< 0.003	0.17	---	---	---	---	---	---	---
	31-May-1994	13-SH	502	7.51	---	---	---	259	< 0.1	0.7	18.5	< 0.01	**0.261**	275	68.5	18	1.4	9.78	316	< 0.5	< 0.5	---	---	---	---	0.96	< 0.001	---	---	0.02	0.02	0.02	---	---	---	---	---	---
	22-Sep-1994	13-SH	443	7.56	---	---	---	229	0.1	2.4	8.7	0.01	**0.332**	240	60	16	5.46	7.9	279	0.5	0.5	---	---	---	---	0.99	< 0.001	---	---	0.13	0.124	0.13	---	---	---	---	---	---
	01-Nov-1994	13-SH	514	7.61	---	---	---	235	< 0.1	3	31.4	< 0.01	**0.309**	281	66	16.3	2.99	18	286	< 0.5	< 0.5	---	---	---	---	1.01	< 0.001	---	---	0.24	0.24	0.24	---	---	---	---	---	---
	28-Sep-1995	13-SH	523	7.35	---	---	255	255	< 0.1	2.1	33.5	< 0.01	**0.322**	307	72.4	18	1.8	23.6	311	< 0.5	< 0.5	---	---	---	---	1.05	< 0.001	---	---	---	0.055	---	---	---	---	---	---	---
	04-Sep-1996	13-SH	569	7.77	---	---	286	281	< 0.1	1.5	16	< 0.01	**0.039**	305	80.8	20.3	1.43	14	343	< 0.5	< 0.5	---	---	---	---	1.06	< 0.001	---	---	---	0.036	0.042	---	---	---	---	---	---
	04-Sep-1997	13-SH	627	7.91	---	---	363	347	< 0.1	1.8	12.6	< 0.01	**0.442**	368	102	26.2	1.4	12.1	423	< 0.5	< 0.5	---	---	---	---	1.08	< 0.001	---	---	---	0.048	0.048	---	---	---	---	---	---
(Duplicate)	04-Sep-1997	13-SH DUP	633	7.9	---	---	350	351	< 0.1	1.7	12.5	< 0.01	**0.496**	365	94.2	27.7	1.5	12.8	428	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	---	0.049	0.049	---	---	---	---	---	---
	16-Sep-1998	13-SH	791	7.64	---	---	430	496	< 0.1	1	15	---	---	484	116	35	1.7	16.6	605	< 0.5	< 0.5	---	10.3	9.45	---	0.92	0.001	---	---	---	0.072	0.083	---	---	---	---	---	---
	09-Sep-1999	13-SH	1380	7.5	---	---	740	796	< 0.1	2	30	---	---	**811**	202	57.2	2	39.7	971	< 0.5	< 0.5	---	16.6	16.5	---	1	< 0.0010	---	< 0.001	---	0.107	0.107	---	---	---	---	---	---
	05-Sep-2000	13-SH	1320	7.41	---	---	690	797	< 0.1	2	29.4	< 0.01	**0.115**	**787**	184	56.7	2.5	33	973	< 0.5	< 0.5	---	16.6	15.4	---	0.92	0.002	---	---	< 0.003	0.099	0.099	---	---	---	---	---	---
	06-Sep-2001	13-SH	1190	7.8	---	---	680	736	< 0.5	1.9	30.4	< 0.01	**0.079**	**754**	186	52.9	2.8	37.5	898	< 0.5	< 0.5	---	---	---	---	0.99	< 0.001	---	---	< 0.003	0.109	0.109	---	---	---	---	---	---
	04-Sep-2002	13-SH	1330	7.51	---	---	630	742	< 0.5	1.9	34.1	0.03	**0.044**	**747**	170	49.5	2.8	42.7	905	< 0.5	< 0.5	---	---	---	---	0.93	0.001	---	---	< 0.003	0.065	0.065	---	---	---	---	12.3	---
	04-Sep-2003	13-SH	1180	7.47	---	---	620	660	< 0.5	0.8	38.5	0.04	< 0.004	**697**	169	49	2.9	41.2	805	< 0.5	< 0.5	---	---	---	---	1.02	---	< 0.004	---	< 0.003	0.073	0.073	---	---	---	---	12.7	---
	09-Sep-2004	13-SH	1160	7.81	---	---	600	631	< 0.5	2.3	40.1	0.04	0.02	**667**	165	45.8	2.3	33.4	769	< 0.5	< 0.5	---	---	---	---	1	---	< 0.004	---	< 0.003	0.088	0.088	---	---	---	---	13	---
	08-Sep-2005	13-SH	1040	7.95	37.2	---	470	577	< 0.5	2.1	51.8	0.05	0.009	**624**	127	36.9	2.8	57.1	704	< 0.5	< 0.5	---	---	---	---	0.94	---	< 0.004	---	< 0.003	0.068	0.068	---	---	---	---	14	---
	07-Sep-2006	13-SH	1030	7.81	---	---	460	573	< 0.5	2.5	51.3	< 0.01	**0.025**	**633**	124	35.7	2.7	72.6	699	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	< 0.003	0.084	0.084	---	---	---	---	17.2	---
	05-Sep-2007	13-SH	1010	7.83	---	---	510	574	< 0.5	1.6	45.2	< 0.06	**0.058**	**622**	142	38.3	2.6	47.9	700	< 0.5	< 0.5	---	---	---	---	0.99	---	---	---	< 0.003	0.031	0.031	---	---	---	---	14	---
	03-Sep-2008	13-SH	966	7.9	---	---	289	521	---	1.39	45.4	< 0.030	**0.0707**	486	84.4	19	1.39	20.7	635	< 5	< 5	0.13	---	---	---	0.588	---	---	---	< 0.050	0.133	0.133	---	---	---	---	---	---
	10-Sep-2009	13-SH	1060	7.94	---	---	486	573	---	1.77	47.2	< 0.030	< 0.0050	**602**	134	36.8	2.14	36.5	699	< 5.0	< 5.0	0.121	---	---	---	0.909	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	13 SH	1000	7.79	---	---	456	529	---	1.9	49.6	< 0.030	**0.0646**	**571**	125	34.9	2.11	39.3	645	< 5.0	< 5.0	0.192	---	---	93.2	---	---	---	---	< 0.050	0.086	0.086	---	---	---	---	---	---
	07-Sep-2011	13-SH	879	8.23	---	---	350	457	---	2.25	45.7	< 0.030	**0.0262**	482	95.6	27.1	1.7	33.8	557	< 5.0	< 5.0	0.158	---	---	83.6	---	---	---	---	< 0.050	0.426	0.426	---	---	---	---	---	---
	05-Sep-2012	13-SH	878	8.04	---	358	358	454	---	5.08	50.3	< 0.030	< 0.0050	487	98.9	26.9	1.91	31.5	554	< 5.0	< 5.0	0.132	---	---	83.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	13-SH	876	7.86	---	402	402	484	---	2.83	44.1	< 0.030	**0.171**	**511**	112	29.6	1.44	30.1	591	< 5.0	< 5.0	0.146	---	---	87.6	---	---	---	---	< 0.050	0.072	0.072	---	---	---	---	---	---
	16-Sep-2014	13-SH	837	8.02	---	---	424	430	---	2.59	46.6	< 0.010	**0.0602**	492	118	31.5	1.47	33.6	524	< 5.0	< 5.0	0.191	---	---	104	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	18.1	---
	28-Sep-2015	13-SH	896	7.83	---	---	507	463	---	2.36	60.2	<0.010	**0.0392**	**541**	139	38.8	1.62	20.6	565	<5.0	<5.0	0.155	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2016	13-SH	777	7.97	---	---	440	371	---	1.89	53.2	0.012	**0.0791**	458	123	32.1	1.42	23.5	452	<5.0	<5.0	0.102	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	13-SH	710	7.80	---	---	474	384	---	2.04	58.8	<0.030	**0.1500**	479	128	37.6	1.71	20.8	468	<5.0	<5.0	0.090	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	18-Sep-2018	13-SH	701	7.88	---	---	384	371	---	1.76	52.4	<0.010	**0.0454**	444	107	28.4	1.31	30.5	452	<5.0	<5.0	0.117	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	13-SH	749	7.52	---	---	399	405	---	2.01	49.2	<0.010	**0.1180**	465	110	30.3	1.41	28.5	495	<5.0	<5.0	0.192	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2020	13-SH	795	7.29	---	---	387	388	---	<0.50	51.9	0.062	0.210	444	108	28.6	1.25	20.1	474	<5.0	<5.0	0.127	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	21-Sep-2021	13-SH	733	7.89	---	---	367	382	---	2.84	43.8	<0.030	**0.103**	427	101	27.9	1.16	21.3	467	<5.0	<5.0	0.153	---	---	---	---	---	---	---	<0.010	0.021	<0.022	---	---	---	---	---	---
	29-Sep-2022	13-SH	706	8.14	---	---	382	369	---	2.07	46.0	<0.030	**0.021**	454	104	29.6	1.32	19.9	450	<1.0	<1.0	0.121	---	---	---	---	---	---	---	<0.010	0.025	<0.0500	---	---	---	---	---	---
	28-Sep-2023	13-SH	950	7.89	---	---	537	509	---	<0.50	81.4	<0.010	**0.238**	**626**	153	37.6	2	13.7	621	<1.0	<1.0	0.136	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	10-Sep-2024	13-SH	967	7.04	---	---	557	498	---	<0.50	89.6	<0.010	**0.252**	**628**	156	40.6	1.75	11.5	607	<1.0	<1.0	0.139	---	---	---	---	---	---	---	<0.010	0.021	<0.0500	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
13-IN	17-May-1991	13-IN	560	7.59	---	---	234.6	261	---	0.7	---	---	---	285	67.5	16	4.2	13.5	318.2	---	---	---	---	---	---	---	< 0.0010	---	---	0.229	0.005	---	---	---	---	---	---	---
	04-Nov-1991	13-IN	531	7.85	---	---	---	269	---	1	---	---	---	310	80	16.7	3.88	13.8	327.9	---	---	---	---	---	---	---	< 0.0020	---	---	0.051	---	---	---	---	---	---	---	---
	12-May-1992	13-IN	588	7.44	---	---	284.9	286	---	0.8	---	---	---	297	85	17.6	4.05	15.2	348.6	---	---	---	---	---	---	0.98	< 0.0010	---	---	0.053	0.417	---	---	---	---	---	---	---
	04-Nov-1992	13-IN	557	7.89	---	---	---	283	---	1.6	---	---	---	349	86	19	3.89	16.7	345	---	---	---	---	---	---	0.99	< 0.0010	---	---	---	0.166	---	---	---	---	---	---	---
	18-May-1993	13-IN	609	7.55	---	---	---	---	---	1.1	---	---	---	400	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	13-IN	630	7.44	---	---	301	293	---	0.8	---	---	---	363	88.5	19.3	4	17.8	357	---	---	---	---	---	---	0.98	< 0.0010	---	---	0.008	0.091	---	---	---	---	---	---	---
	22-Sep-1994	13-IN	664	7.33	---	---	325	310	0.1	1	57.4	0.01	1.32	385	92	23	4.01	18.3	378	0.5	0.5	---	---	---	---	1	---	---	---	< 0.003	0.015	0.015	---	---	---	0.71	---	---
	28-Sep-1995	13-IN	564	7.44	---	---	305	320	< 0.1	1.6	52	< 0.01	0.316	381	84.6	22.6	4.7	20.3	390	< 0.5	< 0.5	---	---	---	---	0.94	---	---	---	0.003	0.01	0.013	---	---	---	< 0.01	---	---
	04-Sep-1996	13-IN	682	7.64	---	---	332	327	< 0.1	1.1	52.7	< 0.01	0.46	397	96.7	22	4.23	20.9	399	< 0.5	< 0.5	---	---	---	---	1	---	---	---	< 0.003	0.016	0.016	---	---	---	< 0.005	---	---
	04-Sep-1997	13-IN	497	8.17	---	---	243	231	< 0.1	0.9	42.8	0.34	0.45	293	56.5	24.6	4.7	22.2	282	< 0.5	< 0.5	---	---	---	---	1.07	---	---	---	< 0.003	0.104	0.104	---	---	---	0.56	---	---
	16-Sep-1998	13-IN	680	8.20	---	---	350	208	< 0.1	< 0.5	45	---	---	320	100	23.1	4.1	22.9	254	< 0.5	< 0.5	---	5.1	8.02	---	1.57	---	---	---	0.01	0.01	0.02	---	---	---	< 0.01	---	---
	09-Sep-1999	13-IN	666	7.60	---	---	340	274	< 0.1	0.7	83.8	---	---	395	98.5	22.8	4.1	20.5	334	< 0.5	< 0.5	---	7.25	7.79	---	1.08	---	---	---	0.008	0.019	0.027	---	---	---	1.22	---	---
(Duplicate)	09-Sep-1999	13-IN DUP	698	7.66	---	---	350	294	< 0.1	1	82	---	---	409	98.3	25.7	4.4	21.2	359	< 0.5	< 0.5	---	7.62	8.06	---	1.06	< 0.001	---	< 0.001	---	0.037	0.044	---	---	---	---	---	---
	05-Sep-2000	13-IN	668	7.62	---	---	330	292	< 0.1	0.9	86.2	< 0.01	2.28	406	96.5	21.2	4.3	21.5	356	< 0.5	< 0.5	---	7.66	7.61	---	0.99	---	---	---	< 0.003	0.013	0.013	---	---	---	< 0.01	---	---
	06-Sep-2001	13-IN	641	7.90	---	---	330	285	< 0.5	0.9	86.1	< 0.01	1.76	404	97.9	21.9	4.3	20.3	348	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	< 0.003	0.032	0.032	---	---	---	< 0.01	---	---
	04-Sep-2002	13-IN	713	7.61	---	---	380	287	< 0.5	0.8	96.2	0.2	0.972	433	111	25.8	3.6	22.9	350	< 0.5	< 0.5	---	7.76	8.74	---	1.13	---	---	---	< 0.003	0.013	0.013	---	---	---	< 0.01	25.9	---
	04-Sep-2003	13-IN	674	7.64	---	---	360	272	< 0.5	2	99.1	0.77	1.19	421	106	21.9	4.5	22.1	332	< 0.5	< 0.5	---	7.56	8.22	---	1.09	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	35.6	---
	09-Sep-2004	13-IN	707	7.85	---	---	310	280	< 0.5	0.8	103	0.01	1.14	406	90.3	19.3	4.3	18.9	341	< 0.5	< 0.5	---	---	---	---	0.91	---	---	---	< 0.003	0.016	0.016	---	---	---	< 0.01	29.7	---
	08-Sep-2005	13-IN	637	8.28	37.7	---	310	274	< 0.5	0.9	97.8	1.4	0.789	403	92	20.4	4	21.2	334	< 0.5	< 0.5	---	---	---	---	0.97	---	---	---	< 0.003	0.003	0.003	---	---	---	< 0.005	32	---
	07-Sep-2006	13-IN	681	7.87	---	---	360	274	< 0.5	1.4	102	0.15	0.487	426	105	23.9	3.7	25.4	334	< 0.5	< 0.5	---	---	---	---	1.1	---	---	---	< 0.003	0.041	0.041	---	---	---	---	29.9	---
	05-Sep-2007	13-IN	692	7.92	---	---	340	281	< 0.5	0.6	101	0.33	0.887	422	102	20.8	4	24.1	343	< 0.5	< 0.5	---	---	---	---	1.03	---	---	---	< 0.003	0.014	0.014	---	---	---	---	32	---
	03-Sep-2008	13-IN	693	8.00	---	---	324	294	---	< 0.50	98.7	0.163	0.907	418	96.7	20.1	4.17	21.6	358	< 5	< 5	0.18	---	---	---	0.949	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	10-Sep-2009	13-IN	686	7.95	---	---	354	275	---	0.65	101	0.363	0.752	424	107	21.1	4.51	24.8	336	< 5.0	< 5.0	0.172	---	---	---	1.08	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	13 IN	693	7.85	---	---	318	274	---	0.57	107	0.191	0.634	412	93.9	20.2	3.85	21.5	334	< 5.0	< 5.0	0.216	---	---	95.5	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	13-IN	708	8.21	---	---	322	283	---	< 0.50	101	0.188	0.943	414	94	21.1	4.29	23.2	346	< 5.0	< 5.0	0.21	---	---	96.9	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	13-IN	692	8.03	---	327	327	281	---	0.5	98.7	0.568	0.993	411	97.6	20.3	4.19	21	343	< 5.0	< 5.0	0.17	---	---	98.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	13-IN	677	7.81	---	311	311	284	---	< 0.50	98.9	0.299	0.907	412	91.5	20.1	3.93	27.3	347	< 5.0	< 5.0	0.155	---	---	96.8	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Sep-2014	13-IN	687	8.34	---	---	317	277	---	< 0.50	96.8	0.170	0.886	413	94.3	19.9	4.10	31.3	332	< 5.0	< 5.0	0.196	---	---	104	---	---	---	---	< 0.020	0.114	0.114	---	---	---	---	32.4	---
	28-Sep-2015	13-IN	691	8.10	---	---	336	288	---	0.54	104	0.010	0.640	431	99.7	21.2	4.06	28.2	352	<5.0	<5.0	0.223	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2016	13-IN	694	8.09	---	---	327	265	---	<0.50	96	0.088	0.753	404	98.7	19.5	4.01	26.5	323	<5.0	<5.0	0.171	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	13-IN	652	7.94	---	---	331	279	---	<0.50	98	<0.030	0.498	422	97.3	21.5	4.22	33.4	340	<5.0	<5.0	0.167	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	18-Sep-2018	13-IN	662	8.07	---	---	316	294	---	<0.50	95	0.015	0.526	418	93.5	20.0	3.96	29.7	359	<5.0	<5.0	0.197	---	---	---	---	---	---	---	<0.010	0.021	<0.022	---	---	---	---	---	---
	16-Sep-2019	13-IN	672	7.43	---	---	316	309	---	0.53	96	0.022	0.273	435	93.1	20.4	4.23	34.9	377	<5.0	<5.0	0.242	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2020	13-IN	715	7.12	---	---	319	302	---	0.53	93.5	0.082	0.754	423	95.3	19.6	4.02	27.8	369	<5.0	<5.0	0.194	---	---	---	---	---	---	---	<0.010	0.115	0.115	---	---	---	---	---	---
	21-Sep-2021	13-IN	684	7.90	---	---	340	306	---	<0.50	87.3	0.074	0.74	429	97.8	23.3	4.64	31	374	<5.0	<5.0	0.172	---	---	---	---	---	---	---	<0.010	0.176	0.176	---	---	---	---	---	---
	29-Sep-2022	13-IN	687	8.24	---	---	353	309	---	0.57	90.7	0.038	0.878	459	103.0	23.3	4.73	28.6	377	<1.0	<1.0	0.163	---	---	---	---	---	---	---	<0.010	0.231	0.231	---	---	---	---	---	---
	28-Sep-2023	13-IN	705	8.17	---	---	318	324	---	<0.50	86.2	0.016	0.0103	449	94.9	19.8	3.86	33.8	396	<1.0	<1.0	0.167	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	10-Sep-2024	13-IN	691	7.57	---	---	341	313	---	0.51	89.9	<0.010	0.210	452	101	21.6	4.04	28.3	382	<1.0	<1.0	0.198	---	---	---	---	---	---	---	<0.010	0.066	0.066	---	---	---	---	---	---
13-SS	17-May-1991	13-SS	467	8.11	---	---	181.5	210	---	0.4	---	---	---	244	52	12.5	2.7	24.2	256	---	---	---	---	---	---	---	< 0.0010	---	---	0.565	< 0.003	---	---	---	---	---	---	---
	13-May-1992	13-SS	478	8.09	---	---	199.1	228	---	0.3	---	---	---	236	56.9	13.8	4.11	22	277.9	---	---	---	---	---	---	0.97	< 0.0010	---	---	0.023	0.098	---	---	---	---	---	---	---
	18-May-1993	13-SS	466	7.75	---	---	---	---	---	< 0.50	---	---	---	303	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	13-SS	478	7.52	---	---	218	237	---	0.6	---	---	---	285	64	14.1	3.8	26.5	289	---	---	---	---	---	---	1.04	< 0.0010	---	---	< 0.003	0.028	---	---	---	---	---	---	---
13(R)SS	10-Sep-2004	13(R)-SS	822	7.88	---	---	400	433	< 0.5	2.5	18.9	0.04	0.493	445	117	26.8	2.5	17.1	528	< 0.5	< 0.5	---	---	---	---	0.97	---	---	---	0.004	0.047	0.051	---	---	---	---	6.3	---
	08-Sep-2005	13(R)-SS	606	8.08	33.1	---	300	324	< 0.5	1.7	27	0.01	0.406	349	91	16.6	4.2	14.1	395	< 0.5	< 0.5	---	---	---	---	0.94	---	---	---	< 0.003	0.013	0.013	---	---	---	< 0.005	7.7	---
	07-Sep-2006	13(R)-SS	645	7.97	---	---	320	324	< 0.5	2.3	29.8	0.01	0.92	365	98.3	18.9	4.3	15.8	396	< 0.5	< 0.5	---	---	---	---	1.01	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	---	9.4	---
	16-Oct-2007	13(R)-SS	567	8.03	---	---	270	299	< 0.5	< 0.5	23.5	< 0.06	0.612	320	84.5	14.6	3.7	13.2	365	< 0.5	< 0.5	---	---	---	---	0.94	---	---	---	< 0.003	0.024	0.024	---	---	---	---	6.9	---
	04-Sep-2008	13(R)-SS	566	8	---	---	232	289	---	0.64	24.3	< 0.030	0.612	312	71.6	12.9	4.97	24.2	353	< 5	< 5	0.114	---	---	---	0.921	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	17-Sep-2009	13(R)-SS	673	8.14	---	---	205	287	---	1.02	81.2	< 0.030	0.0109	391	54.6	16.7	6.65	56.9	350	< 5.0	< 5.0	0.703	---	---	---	0.899	---	---	---	< 0.050	0.191	0.191	---	---	---	---	---	---
	09-Sep-2010	13 (R) SS	514	7.88	---	---	219	252	---	< 0.50	22.3	< 0.030	0.384	272	68.4	11.6	3.94	14.3	307	< 5.0	< 5.0	0.139	---	---	92.4	---	---	---	---	< 0.050	0.07	< 0.071	---	---	---	---	---	---
	08-Sep-2011	13 (R)-SS	538	8.18	---	---	230	261	---	0.8	28.8	< 0.030	0.2	310	71.2	12.8	5.69	33.2	318	< 5.0	< 5.0	0.134	---	---	106	---	---	---	---	< 0.050	0.238	0.238	---	---	---	---	---	---
	26-Sep-2013	13(R)SS	432	7.93	---	197	197	225	---	< 0.50	19.9	< 0.030	0.309	244	59.8	11.6	3.59	13.9	274	< 5.0	< 5.0	0.118	---	---	94.3	---	---	---	---	< 0.050	0.056	< 0.071	---	---	---	---	---	---
	16-Sep-2014	13(R)SS	449	8.29	---	---	203	221	---	< 0.50	22.1	< 0.010	0.592	248	61.7	12.0	3.86	15.9	269	< 5.0	< 5.0	0.152	---	---	99.6	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	7.27	---
	28-Sep-2015	13(R)SS	462	8.04	---	---	211	226	---	<0.50	24.8	<0.010	0.462	256	64.0	12.4	3.92	15.2	275	<5.0	<5.0	0.166	---	---	---	---	---	---	---	<0.010	0.084	0.084	---	---	---	---	---	---
	26-Sep-2016	13(R)SS	461	8.05	---	---	200	219	---	<0.50	23.7	<0.010	0.150	246	62.4	10.7	3.78	13.8	267	<5.0	<5.0	0.120	---	---	---	---	---	---	---	<0.010	0.043	0.043	---	---	---	---	---	---
	27-Sep-2017	13(R)SS	441	8.49	---	---	211	228	---	<0.50	25.0	<0.030	0.182	262	63.9	12.5	4.25	19.2	263	7.7	<5.0	0.128	---	---	---	---	---	---	---	<0.010	0.080	0.08	---	---	---	---	---	---
	18-Sep-2018	13(R)SS	436	7.93	---	---	200	225	---	<0.50	23.5	<0.010	0.084	249	61.4	11.3	3.66	13.7	274	<5.0	<5.0	0.142	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	13(R)SS	424	7.29	---	---	210	246	---	<0.50	22.1	<0.010	0.251	266	64.6	11.9	4.13	14.7	300	<5.0	<5.0	0.203	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2020	13(R)SS	453	7.06	---	---	201	223	---	<0.50	20.9	<0.010	0.913	245	62.5	11.0	3.62	13.3	272	<5.0	<5.0	0.163	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	21-Sep-2021	13(R)SS	451	7.56	---	---	214	230	---	<0.50	20	<0.030	0.0289	255	64	13.1	4.28	14.7	280	<5.0	<5.0	0.136	---	---	---	---	---	---	---	<0.010	0.139	0.139	---	---	---	---	---	---
	29-Sep-2022	13(R)SS	444	8.06	---	---	218	230	---	<0.50	20.1	<0.030	<0.00500	290	64.9	13.6	3.92	14.8	280	<1.0	<1.0	0.137	---	---	---	---	---	---	---	<0.010	0.194	0.194	---	---	---	---	---	---
Could not obtain sample	28-Sep-2023	13(R)SS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	13(R)SS	424	7.50	---	---	206	224	---	<0.50	19.0	<0.010	0.0022	280	62.40	12.30	3.75	13.80	273	<1.0	<1.0	0.16	---	---	---	---	---	---	---	<0.010	0.19	0.19	---	---	---	---	---	---
14-SH	13-Nov-1993	14-SH	449	7.8	---	---	237	235	---	1.3	---	---	---	245	66.5	17.1	3.4	6.3	286	---	---	---	---	---	---	1.04	0.003	---	---	0.003	0.029	---	---	---	---	---	---	---
	31-May-1994	14-SH	499	7.44	---	---	---	260	< 0.1	1.3	13.5	< 0.01	0.092	277	74.4	17.7	3.09	8.42	317	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	0.016	0.016	0.016	---	---	---	---	---	---
	22-Sep-1994	14-SH	494	7.35	---	---	---	261	0.1	1.6	13	0.01	0.598	270	62	20	3.12	11	318	0.5	0.5	---	---	---	---	0.96	< 0.001	---	---	0.024	0.024	0.024	---	---	---	---	---	---
	02-Nov-1994	14-SH	526	8.35	---	---	---	270	7.4	1.2	12.4	< 0.01	0.412	283	70.5	18.9	2.62	13.3	311	8.8	< 0.5	---	---	---	---	1.01	< 0.001	---	---	0.009	0.009	0.009	---	---	---	---	---	---
	28-Sep-1995	14-SH	478	7.33	---	---	261	279	< 0.1	1.7	11.4	< 0.01	0.485	294	71.4	20	2.2	17.1	340	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	---	0.018	---	---	---	---	---	---	---
(Duplicate)	28-Sep-1995	14-SH DUP	491	7.38	---	---	256	267	< 0.1	1.8	10.9	0.02	0.487	288	70	19.7	2.3	20.1	325	< 0.5	< 0.5	---	---	---	---	1.08	< 0.001	---	---	---	0.015	---	---	---	---	---	---	---
	05-Sep-1996	14-SH	476	7.41	---	---	223	243	< 0.1	2.2	10.1	< 0.01	0.351	253	62.2	16.5	1.71	12.4	296	< 0.5	< 0.5	---	---	---	---	0.98	0.001	---	---	---	0.062	0.062	---	---	---	---	---	---
	05-Sep-1997	14-SH	565	7.57	---	---	331	299	< 0.1	5.4	9.6	< 0.01	0.067	333	92.4	24.3	2.4	16.1	364	< 0.5	< 0.5	---	---	---	---	---	< 0.001	---	---	---	0.084	0.087	---	---	---	---	---	---
	15-Sep-1998	14-SH	616	6.86	---	---	180	261	< 0.1	13.2	59.8	---	---	364	48.8	13.8	1.7	64.1	318	< 0.5	< 0.5	---	6.93	6.4	---	0.92	0.001	---	---	---	1.24	1.24	---	---	---	---	---	---
	05-Sep-2000	14-SH	821	7.36	---	---	400	337	< 0.1	17.1	106	< 0.01	1.07	500	110	30.1	2.7	31.5	411	< 0.5	< 0.5	---	9.44	9.41	---	1	0.003	---	---	0.005	0.042	0.047	---	---	---	---	---	---
	06-Sep-2001	14-SH	953	7.71	---	---	540	506	< 0.5	8.2	72.2	< 0.01	0.852	606	149	40.5	3.2	28.1	618	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	< 0.003	0.011	0.011	---	---	---	---	---	---
	05-Sep-2002	14-SH	1260	7.75	---	---	630	672	< 0.5	7.2	36.9	0.03	0.842	701	174	46.3	3.5	28.6	820	< 0.5	< 0.5	---	---	---	---	0.96	0.001	---	---	< 0.003	0.017	0.017	---	---	---	---	11	---
	04-Sep-2003	14-SH	810	7.41	---	---	380	380	< 0.5	4	74.2	0.08	0.006	486	104	28	2.4	44.7	463	< 0.5	< 0.5	---	---	---	---	1.03	---	< 0.004	---	< 0.003	0.021	0.021	---	---	---	---	25	---
	09-Sep-2004	14-SH	1070	7.65	---	---	590	667	< 0.5	6.5	25.3	0.03	0.309	673	164	44.9	3.3	27.4	814	< 0.5	< 0.5	---	---	---	---	0.93	---	< 0.004	---	< 0.003	0.132	0.132	---	---	---	---	6.4	---
	08-Sep-2005	14-SH	1050	8.13	19.8	---	600	650	< 0.5	5.6	18.4	0.03	0.103	654	165	44.8	3.2	25.9	794	< 0.5	< 0.5	---	---	---	---	0.97	---	0.004	---	0.004	0.085	0.089	---	---	---	---	7.6	---
	07-Sep-2006	14-SH	1270	7.83	---	---	580	732	< 0.5	6	15.8	0.04	0.092	698	153	49.5	3.8	30.8	893	< 0.5	< 0.5	---	---	---	---	0.87	---	---	---	< 0.003	0.092	0.092	---	---	---	---	5.5	---
	05-Sep-2007	14-SH	1280	7.81	---	---	600	751	< 0.5	5.5	13.3	< 0.06	0.19	714	163	47.2	4	29.3	916	< 0.5	< 0.5	---	---	---	---	0.87	---	---	---	< 0.003	0.146	0.146	---	---	---	---	4.5	---
	03-Sep-2008	14-SH	1210	7.8	---	---	567	708	---	4.55	12.8	0.095	0.245	672	152	45.4	3.84	28.2	864	< 5	< 5	0.182	---	---	---	0.868	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	09-Sep-2009	14-SH	1200	7.87	---	---	632	691	---	4.52

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
15-SH	18-May-1993	15-SH	373	7.54	---	---	210	226	---	0.8	---	---	---	231	58.2	15.7	1.48	5.71	275	---	---	---	---	---	---	0.94	< 0.0010	---	---	0.009	0.021	---	---	---	---	---	---	---
	12-Nov-1993	15-SH	480	7.9	---	---	215	236	---	3.2	---	---	---	264	63	14	6.4	15.7	288	---	---	---	---	---	---	0.99	0.01 [3]	---	---	0.005	0.052	---	---	---	---	---	---	---
	31-May-1994	15-SH	623	7.2	---	---	---	296	< 0.1	1.4	45	< 0.01	0.626	363	88.2	17.7	2.78	27.4	361	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	0.063	0.055	0.063	---	---	---	---	---	---
	22-Sep-1994	15-SH	620	7.29	---	---	---	304	0.1	0.9	39.1	0.01	0.293	359	88	20	3.17	21.9	371	0.5	0.5	---	---	---	---	1.02	< 0.001	---	---	0.345	0.329	0.345	---	---	---	---	---	---
	01-Nov-1994	15-SH	654	7.41	---	---	---	302	< 0.1	1.3	47.3	< 0.01	0.011	373	86.6	18	3.06	32.2	368	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	0.675	0.671	0.675	---	---	---	---	---	---
	28-Sep-1995	15-SH	563	7.01	---	---	308	304	< 0.1	1.1	32.6	< 0.01	0.45	355	91.1	19.5	2.9	21.9	371	< 0.5	< 0.5	---	---	---	---	1.06	< 0.001	---	---	---	0.145	---	---	---	---	---	---	---
(Duplicate)	28-Sep-1995	15-SH DUP	543	7.09	---	---	292	306	< 0.1	0.9	34.5	< 0.01	0.329	351	84.4	19.6	2.9	22	373	< 0.5	< 0.5	---	---	---	---	1	< 0.001	---	---	---	0.148	---	---	---	---	---	---	---
	04-Sep-1996	15-SH	676	7.14	---	---	322	316	< 0.1	0.9	58.8	< 0.01	0.293	398	96.1	19.9	2.88	27	385	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	---	0.035	0.054	---	---	---	---	---	---
	04-Sep-1997	15-SH	726	7.23	---	---	344	315	< 0.1	0.8	91.5	< 0.01	0.091	449	99.4	23.1	1.91	40.3	384	< 0.5	< 0.5	---	---	---	---	1.05	< 0.001	---	---	---	0.023	0.035	---	---	---	---	---	---
	16-Sep-1998	15-SH	564	7.02	---	---	240	269	< 0.1	< 0.5	76	---	---	362	68.9	16.9	1.3	37.2	328	< 0.5	< 0.5	---	6.97	6.48	---	0.93	0.001	---	---	---	0.054	0.077	---	---	---	---	---	---
	09-Sep-1999	15-SH	669	7.58	---	---	350	309	< 0.1	< 0.5	56.9	---	---	392	101	23.5	2.4	20.9	377	< 0.5	< 0.5	---	7.4	7.93	---	1.07	< 0.001	---	< 0.001	---	0.434	0.448	---	---	---	---	---	---
	06-Sep-2000	15-SH	629	7.58	---	---	300	311	< 0.1	0.9	44.3	< 0.01	0.197	369	88.5	20.3	3.5	23.7	380	< 0.5	< 0.5	---	7.19	7.21	---	1	0.004	---	---	0.014	0.188	0.202	---	---	---	---	---	---
	07-Sep-2001	15-SH	590	7.88	---	---	310	310	< 0.5	0.7	31.9	< 0.01	0.227	354	90.2	20.7	3.4	21	378	< 0.5	< 0.5	---	---	---	---	1.05	< 0.001	---	---	0.008	0.082	0.09	---	---	---	---	---	---
	05-Sep-2002	15-SH	664	7.84	---	---	290	328	< 0.5	0.5	26.7	0.02	0.097	351	85.5	18.9	2.9	18.1	400	< 0.5	< 0.5	---	---	---	---	0.93	0.001	---	---	< 0.003	0.325	0.325	---	---	---	---	8.3	---
	03-Sep-2003	15-SH	609	7.71	---	---	310	311	< 0.5	0.6	24.2	0.01	0.268	351	92.8	19.9	3.2	21.5	380	< 0.5	< 0.5	---	---	---	---	1.08	---	< 0.004	---	< 0.003	0.325	0.325	---	---	---	---	9.1	---
	08-Sep-2004	15-SH	642	7.89	---	---	290	322	< 0.5	1.6	25.4	0.01	0.007	348	85.6	18.9	2.9	18.3	393	< 0.5	< 0.5	---	---	---	---	0.95	---	< 0.004	---	0.004	0.366	0.37	---	---	---	---	8	---
	07-Sep-2005	15-SH	607	8.08	3.8	---	290	325	< 0.5	< 0.5	24.1	0.08	0.386	343	84.8	18.5	2.7	16.7	397	< 0.5	< 0.5	---	---	---	---	0.93	---	< 0.004	---	0.008	0.012	0.02	---	---	---	---	7.6	---
	07-Sep-2006	15-SH	603	7.93	---	---	290	311	< 0.5	1.5	20.6	0.03	0.21	335	84	19.1	3	19.5	380	< 0.5	< 0.5	---	---	---	---	1	---	---	---	0.006	0.09	0.096	---	---	---	---	7	---
	06-Sep-2007	15-SH	605	7.99	---	---	300	313	< 0.5	0.9	19.1	< 0.06	0.201	338	87.4	19.1	3	20.3	382	< 0.5	< 0.5	---	---	---	---	1.03	---	---	---	< 0.003	0.021	0.021	---	---	---	---	5.9	---
	04-Sep-2008	15-SH	672	8.1	---	---	278	342	---	< 0.50	36	0.063	0.609	378	79.9	19	4.06	33.7	417	< 5	< 5	0.186	---	---	---	0.938	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	10-Sep-2009	15-SH	563	7.97	---	---	301	314	---	0.59	15	< 0.030	0.235	333	88.9	19.2	3.2	18	383	< 5.0	< 5.0	0.193	---	---	---	1.04	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	15 SH	660	8.03	---	---	287	325	---	0.55	39.2	< 0.030	0.61	374	81.8	20.2	3.93	33.5	396	< 5.0	< 5.0	0.221	---	---	99.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2011	15-SH	662	8.3	---	---	288	332	---	< 0.50	37	< 0.030	0.602	378	82	20.3	4.1	34.7	400	< 5.0	< 5.0	0.211	---	---	101	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	06-Sep-2012	15-SH	663	8.18	---	300	300	339	---	< 0.50	37.5	0.248	0.675	387	86.4	20.5	4.29	35.2	414	< 5.0	< 5.0	0.178	---	---	101	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	15-SH	647	7.85	---	289	289	343	---	< 0.50	34.4	0.461	0.678	379	82.5	20.2	4.05	31.4	419	< 5.0	< 5.0	0.158	---	---	95.5	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
(Previously labeled 15-IN)	17-Sep-2014	15-SH	627	8.33	---	---	315	346	---	< 0.50	11.5	0.016	0.211	367	95.2	18.8	3.33	29.7	416	< 5.0	< 5.0	0.209	---	---	108	---	---	---	---	< 0.020	0.089	0.089	---	---	---	---	5.51	---
	29-Sep-2015	15-SH	727	7.55	---	---	340	381	---	<0.50	12.7	<0.010	0.370	401	97.5	23.5	3.35	33.5	465	<5.0	<5.0	0.257	---	---	---	---	---	---	---	<0.010	0.344	0.344	---	---	---	---	---	---
	27-Sep-2016	15-SH	676	8.06	---	---	327	375	---	<0.50	10.1	<0.010	0.262	384	97.0	20.5	3.32	26.6	457	<5.0	<5.0	0.202	---	---	---	---	---	---	---	<0.010	0.211	0.211	---	---	---	---	---	---
	27-Sep-2017	15-SH	618	7.62	---	---	341	381	---	<0.50	15.1	<0.030	0.031	404	99.3	22.6	3.47	33.5	465	<5.0	<5.0	0.191	---	---	---	---	---	---	---	<0.010	0.346	0.346	---	---	---	---	---	---
	18-Sep-2018	15-SH	643	8.06	---	---	329	380	---	<0.50	8.0	0.034	0.603	385	97.1	20.9	3.19	27.4	464	<5.0	<5.0	0.213	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	15-SH	694	7.63	---	---	361	433	---	<0.50	12.2	<0.010	0.047	441	105.0	24.1	3.67	34.4	529	<5.0	<5.0	0.259	---	---	---	---	---	---	---	<0.010	0.252	0.252	---	---	---	---	---	---
	21-Sep-2020	15-SH	696	6.97	---	---	335	394	---	<0.50	11.8	0.028	0.0707	400	98	21.7	3.32	26.9	480	<5.0	<5.0	0.195	---	---	---	---	---	---	---	<0.010	0.207	0.207	---	---	---	---	---	---
	22-Sep-2021	15-SH	748	7.81	---	---	357	415	---	<0.50	10.7	<0.030	0.215	419	103	24.3	3.31	27.4	506	<5.0	<5.0	0.19	---	---	---	---	---	---	---	<0.010	0.194	0.194	---	---	---	---	---	---
	29-Sep-2022	15-SH	730	8.14	---	---	376	430	---	<0.50	10.9	0.079	0.174	457	108	25.9	3.64	28.4	525	<1.0	<1.0	0.187	---	---	---	---	---	---	---	<0.010	0.216	0.216	---	---	---	---	---	---
	28-Sep-2023	15-SH	750	8.33	---	---	346	421	---	<0.50	10.1	0.049	0.629	440	102	22.2	3.25	25.8	503	5.3	<1.0	0.206	---	---	---	---	---	---	---	<0.010	0.163	0.163	---	---	---	---	---	---
	11-Sep-2024	15-SH	758	7.44	---	---	371	442	---	<0.50	9.8	<0.010	0.163	461	108	24.7	3.40	27.5	539	<1.0	<1.0	0.220	---	---	---	---	---	---	---	<0.010	0.150	0.15	---	---	---	---	---	---
15-IN	22-Sep-1994	15-IN	774	7.57	---	---	353	278	0.1	3.1	144	0.01	0.762	480	100	25	5.36	31	339	0.5	0.5	---	---	---	---	0.97	---	---	---	0.072	1.78	1.85	---	---	---	0.01	---	---
	28-Sep-1995	15-IN	658	7.39	---	---	401	328	< 0.1	1.5	115	< 0.01	0.412	500	121	24	4.9	31.1	400	< 0.5	< 0.5	---	---	---	---	1.05	---	---	---	0.038	0.571	0.609	---	---	---	< 0.01	---	---
	04-Sep-1996	15-IN	761	7.24	---	---	352	331	< 0.1	1.1	87.7	< 0.01	0.906	455	103	22.9	4.59	32.3	403	< 0.5	< 0.5	---	---	---	---	1.01	---	---	---	0.003	0.3	0.303	---	---	---	< 0.005	---	---
	04-Sep-1997	15-IN	756	7.04	---	---	382	352	< 0.1	1	72.4	0.27	1.08	463	112	24.9	4.53	33.9	429	< 0.5	< 0.5	---	---	---	---	1.08	---	---	---	0.015	0.014	0.029	---	---	---	< 0.01	---	---
	16-Sep-1998	15-IN	734	7.32	---	---	340	347	< 0.1	0.6	61.1	---	---	427	98.7	22.9	4.1	31.5	423	< 0.5	< 0.5	---	8.24	8.29	---	1.01	---	---	---	0.017	0.064	0.081	---	---	---	< 0.01	---	---
	09-Sep-1999	15-IN	749	7.74	---	---	380	355	< 0.1	0.5	60	---	---	449	111	25.7	4.5	34	433	< 0.5	< 0.5	---	8.37	9.23	---	1.1	---	---	---	0.033	0.054	0.087	---	---	---	< 0.01	---	---
	06-Sep-2000	15-IN	716	7.6	---	---	330	358	< 0.1	0.7	49	< 0.01	0.86	420	94.9	21.8	4.5	34.7	436	< 0.5	< 0.5	---	8.19	8.16	---	1	---	---	---	0.013	< 0.003	0.013	---	---	---	< 0.01	---	---
	06-Sep-2001	15-IN	671	8	---	---	340	343	< 0.5	0.7	46	< 0.01	0.76	411	96.7	22.9	4.4	33.6	419	< 0.5	< 0.5	---	---	---	---	1.06	---	---	---	0.006	0.022	0.028	---	---	---	< 0.01	---	---
	05-Sep-2002	15-IN	736	7.95	---	---	270	349	< 0.5	0.7	44.5	0.01	0.556	392	74.9	20.2	4.2	37.8	425	< 0.5	< 0.5	---	7.92	7.15	---	0.9	---	---	---	< 0.003	0.018	0.018	---	---	---	< 0.01	15.6	---
	03-Sep-2003	15-IN	683	7.85	---	---	320	336	< 0.5	0.8	41.5	0.02	0.753	396	93.6	21.1	4.4	32	410	< 0.5	< 0.5	---	7.6	7.91	---	1.04	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	14.4	---
	08-Sep-2004	15-IN	707	7.89	---	---	290	343	< 0.5	1.3	40.9	0.01	0.694	386	82.7	19.4	4.1	30.4	419	< 0.5	< 0.5	---	---	---	---	0.92	---	---	---	< 0.003	0.126	0.126	---	---	---	< 0.01	11.4	---
	07-Sep-2005	15-IN	679	8.2	4.1	---	310	353	< 0.5	1.2	39.5	0.06	0.814	398	91.9	20.2	3.7	28.3	431	< 0.5	< 0.5	---	---	---	---	0.96	---	---	---	0.005	< 0.003	0.005	---	---	---	< 0.005	12.9	---
	07-Sep-2006	15-IN	679	7.97	---	---	300	340	< 0.5	1.6	38.5	0.05	0.724	392	87.9	20.2	4.2	34.3	415	< 0.5	< 0.5	---	---	---	---	1	---	---	---	0.005	0.008	0.013	---	---	---	---	13	---
	06-Sep-2007	15-IN	685	7.96	---	---	310	350	< 0.5	0.9	38.5	0.42	0.731	399	92.1	20.1	3.8	32.4	427	< 0.5	< 0.5	---	---	---	---	1	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	---	12.2	---
	04-Sep-2008	15-IN	589	8	---	---	239	324	---	< 0.50	15.6	< 0.030	0.117	322	69.8	15.6	2.43	23.3	395	< 5	< 5	0.214	---	---	---	0.857	---	---	---	< 0.050	0.129	0.129	---	---	---	---	---	---
	10-Sep-2009	15-IN	675	8.04	---	---	324	343	---	0.53	33.5	0.099	0.745	392	96	20.5	4.51	30.6	418	< 5.0	< 5.0	0.157	---	---	---	1.05	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	15 IN	594	7.83	---	---	265	311	---	0.52	14.8	< 0.030	0.22	317	76.5	17.9	2.72	17.5	379	< 5.0	< 5.0	0.255	---	---	93.5	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2011	15-IN	601	8.19	---	---	269	321	---	< 0.50	12.4	< 0.030	0.0443	322	77.9	18	2.75	17.8	391	< 5.0	< 5.0	0.243	---	---	93	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	06-Sep-2012	15-IN	604	8.01	---	296	296	331	---	0.53	11.6	0.371	1.28	339	86.2	19.6	3	19.5	404	< 5.0	< 5.0	0.208	---	---	99.3	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	15-IN	580	7.84	---	293	293	326	---	<0.50	11.5	0.162	0.178	336	84.4	19.9	3.36	20.0	398	< 5.0	< 5.0	0.208	---	---	100	---	---	---	---	< 0.050	0.225	0.225	---	---	---	---	---	---
(Previously labeled 15-SH)	17-Sep-2014	15-IN	653	8.28	---	---	294	324	---	<0.50	42.9	< 0.010	0.609	380	87.4	18.4	4.15	32.3	396	< 5.0	< 5.0	0.172	---	---	99.9	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	13.7	---
	29-Sep-2015	15-IN	758	7.61	---	---	349	326	---	0.52	64.3	<0.010	0.693	426	100	24.2	4.56	35.9	398	<5.0	<5.0	0.201	---	---	---	---	---	---	---	0.020	0.194	0.214	---	---	---	---	---	---
	27-Sep-2016	15-IN	719	8.07	---	---	339	334	---	<0.50	60.3	<0.010	0.681	424	101	21.1	4.38	32.8	407	<5.0	<5.0	0.150	---	---	---	---	---	---	---	<0.010	0.984	0.984	---	---	---	---	---	---
	27-Sep-2017	15-IN	657	7.65	---	---	349	348	---	<0.50	66.2	<0.030	0.731	444	101	23.5	4.64	39.0	425	<5.0	<5.0	0.133	---	---	---	---	---	---	---	<0.010	0.135	0.135	---	---	---	---	---	---
	18-Sep-2018	15-IN	684	8.16	---	---	345	342	---	<0.50	67.7	<0.010	0.725	436	101	22.5	4.46	34.5	417	<5.0	<5.0	0.173	---	---	---	---	---	---	---	<0.010	0.142	0.142	---	---	---	---	---	---
Dry	16-Sep-2019	15-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2020	15-IN	755	7.03	---	---	322	357	---	<0.50	74.2	<0.010	0.614	444	94.3	21	4.28	34.2	436	<5.0	<5.0	0.163	---	---	---	---	---	---	---	0.024	0.255	0.279	---	---	---	---	---	---
	22-Sep-2021	15-IN	760	7.94	---	---	351	357	---	<0.50	78.4	<0.030	0.56	461	101	24	4.83	36.7	435	<5.0	<5.0	0.138	---	---	---	---	---	---	---	<0.010	0.297	0.297	---	---	---	---	---	---
	29-Sep-2022	15-IN	754	8.25	---	---	367	372	---	<0.50	76.5	<0.030	0.470	493	105	25.5	4.80	37.3	453	<1.0	<1.0	0.140	---	---	---	---	---	---	---	0.018	0.173	0.191	---	---	---	---	---	---
	28-Sep-2023	15-IN	756	8.25	---	---	349	363	---	<0.50	67.7	<0.010	0.334	468	104	21.6	4.12	33.1	443	<1.0	<1.0	0.155	---	---	---	---	---	---	---	0.021	0.123	0.144	---	---	---	---	---	---
	11-Sep-2024	15-IN	716	7.42	---	---	340	353	---	<0.50	67.0	<0.010	0.345	461	98	23.3	4.48	33.8	430	<1.0	<1.0	0.182	---	---	---	---	---	---	---	<0.010	0.863	0.863	---	---	---	---	---	---
15-SS	12-Nov-1993	15-SS	990	8.1	---	---	285	377	---	3.5	---	---	---	616	89	15.2	6.9	118	460	---	---	---	---	---	---	1	0.001	---	---	0.032	2.58	---	---	---	---	---	---	---
15(R)SS	10-Sep-2004	15(R)-SS	629	8	---	---	140	216	< 0.5	2.7	97.6	0.09	0.251	360	39.3	9.9	4.9	74	263	< 0.5	< 0.5	---	---	---	---	0.95	---	---	---	0.005	0.358	0.363	---	---	---	---	30.4	---
	30-Oct-2004	15(R)-SS	---	---	---	---	---	---	---	---	---	0.04	0.47	---	51.1	12.3	4.8	64.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	28.2	---
	08-Sep-2005	15(R)-SS	574	7.85	79.7	---	160	233	< 0.5	1.2	75.9	< 0.01	0.443	334	45.1	11.2	5.2	55.1	284	< 0.5	< 0.5	---	---	---	---	0.91	---	---	---	< 0.003	0.061	0.061	---	---	---	< 0.005	20.8	---
	07-Sep-2006	15(R)-SS	549	8.37	---	---	140	206	2.5	1.8	77.2	< 0.01	0.28	322	39.6	10.7	5	63.8	245	3	< 0.5	---	---	---	---	1	---	---	---	0.005	0.007	0.012	---	---	---	---	25.2	---
	10-Dec-2006	15(R)-SS	---	---	---	---	---	---	---	---	---	< 0.06	0.365	---	42.1	11.1	5	66.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	24.6
	07-Sep-2007	15(R)-SS	558	8.35	---	---	170	228	1.6	1.3	69.3	< 0.06	0.404	342	49.6	11.7	4.8	67.9	275	1.9	< 0.5	---	---	---	---	1.08	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	---	24.3	---
	04-Sep-2008	15(R)-SS	710	8.4	---	---	250	309	---	1.56	80.2	< 0.030	1.05	436	71.6	17.2	4.82	74.4	361	8	< 5	0.516	---	---	---	1.05	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	17-Sep-2009	15(R)-SS	1430	8.01	---	---	398	835	---	3.98	43.1	1.75	2.04	770	117	25.6	5.2	73.9	1020	< 5.0	< 5.0	0.338	---	---	---	0.636	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	15 (R) SS	1540	7.88	---	---	773	853	---	4.9	76.7	19.5	3.69	931	234	45.9	4.12	53.4	1040	< 5.0	< 5.0	0.392	---	---	95.1	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2011	15 (R)-SS	1390	8.2	---	---	819	751	---	1.47	95.5	4.02	3.04	881	245	50.3	4.3	33.6	916	< 5.0	< 5.0	0.219	---	---	105	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	15(R)SS	1430	7.98	---	827	827	867	---	1.00	68.4	0.609	3.90	926	246	51.6	4.56	33.7	1060	< 5.0	< 5.0	0.226	---	---	96.1	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
15(2R)SS	16-Sep-2014	15(2R)SS	881	8.45	---	---	147	279	---	30.1	148	0.409	1.26	519	43.4	9.48	4.35	116	328	6.4	< 5.0	0.410	---	---	84.9	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	38.6	---
	28-Sep-2015	15(2R)SS	545	8.19	---	---	137	225	---	12.1	52.2	<0.010	1.61	321	39.6	9.25	3.89	68.8	274	<5.0	<5.0	0.396	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2016	15(2R)SS	556	8.03	---	---	133	213	---	14.1	59.4	<0.010	1.45	305	38.1	9.12	3.43	52.7	260	<5.0	<5.0	0.240	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	15(2R)SS	466	8.51	---	---	143	222	---	4.8	32.1	<0.030	0.99	280	39.6	10.60	3.65	54.9	257	6.7	<5.0	0.292	---	---	---	---	---	---	---	0.043	0.11	0.152	---	---	---	---	---	---
	18-Sep-2018	15(2R)SS	473	8.30	---	---	133	234	---	5.6	28.2	<0.010	0.84	282	37.4	9.57	3.71	56.5	282	<5.0	<5.0	0.281	---	---	---	---	---	---	---	0.024	0.075	0.099	---	---	---	---	---	---
	16-Sep-2019	15(2R)SS	430	7.83	---	---	122	222	---	2.3	24.6	0.043	0.97	265	33.8	9.22	3.67	57.5	271	<5.0	<5.0	0.380	---	---	---	---	---	---	---	0.109	0.056	0.165	---	---	---	---	---	---
	22-Sep-2020	15(2R)SS	429	7.3	---	---	322	357	---	<0.50	74.2	<0.010	0.614	444	94.3	21.0	4.28	34.2	436	<5.0	<5.0	0.163	---	---	---	---	---	---	---	0.024	0.255	0.279	---	---	---	---	---	---
	22-Sep-2021	15(2R)SS	402	8.1	---	---	118	206	---	<0.50	16.3	<0.030	0.808	231	32.1	9.23	3.05	46	251	<5.0	<5.0	0.208	---	---	---	---	---	---	---	0.015	0.122	0.137	---	---	---	---	---	---
	29-Sep-2022	15(2R)SS	402	8.37	---	---	122	210	---	<0.50	15.4	<0.030	0.818	271	33.4	9.47	3.06	47.3	251	2.6	<1.0	0.235	---	---	---	---	---	---	---	<0.010	0.160	0.16	---	---	---	---	---	---
Could not obtain sample	28-Sep-2023	15(2R)SS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	15(2R)SS	412	8.11	---	---	124	214	---	0.66	15.80	0.01	0.75	271	34.30	9.28	3.01	44.70	261	<1.0	<1.0	0.22	---	---	---	---	---	---	---	<0.010	0.22	0.22	---	---	---	---	---	---
16-SH	28-Sep-1995	16-SH	685	7.31	---	---	352	370	< 0.1	1.9	71.8	< 0.01	0.34	457	92.2	29.4	3.8	31.6	451	< 0.5	< 0.5	---	---	---	---	0.95	< 0.001	---	---	---	0.087	---	---	---	---	---	---	---
	05-Sep-1996	16-SH	797	7.46	---	---	411	369	< 0.1	1.2	66.4	< 0.01	0.571	459	113	31.1	3.7	18.1	450	< 0.5	< 0.5	---	---	---	---	1.03	0.001	---	---	---	0.101	0.104	---	---	---	---	---	---
	04-Sep-1997	16-SH	785	7.74	---	---	428	391	< 0.1	1.3	54.9	< 0.01	0.019	470	116	33.5	3.38	22	477	< 0.5	< 0.5	---	---	---	---	1.06	< 0.001	---	---	---	0.176	0.176	---	---	---	---	---	---
	15-Sep-1998	16-SH	760	7.28	---	---	410	377	< 0.1	0.7	49	---	---	438	110	31.7	2.9	16.4	460	< 0.5	< 0.5	---	8.59	8.91	---	1.04	0.001	---	---	---	0.1	0.1	---	---	---	---	---	---
	09-Sep-1999	16-SH	778	7.7	---	---	420	383	< 0.1	0.8	56.7	---	---	457	113	33.4	2.6	19.8	467	< 0.5	< 0.5	---	8.88	9.32	---	1.05	< 0.0010	---	< 0.001	---	0.209	0.209	---	---	---	---	---	---
	05-Sep-2000	16-SH	754	7.65	---	---	380	390	< 0.1	0.6	41.7	< 0.01	0.034	442	103	29.4	3.2	25.7	476	< 0.5	< 0.5	---	8.74	8.79	---	1.01	0.004	---	---	< 0.003	0.759	0.759	---	---	---	---	---	---
(Duplicate)	05-Sep-2000	16-SH DUP	754	7.66	---	---	370	390	< 0.1	0.8	45.1	< 0.01	0.028	445	100	28.9	3.1	30.3	476	< 0.5	< 0.5	---	8.81	8.78	---	1	0.004	---	---	< 0.003	0.691	0.691	---	---	---	---	---	---
	06-Sep-2001	16-SH	723	7.99	---	---	390	379	< 0.5	0.8	51.2	0.69	0.049	440	106	30.3	3.6	19.5	462	< 0.5	< 0.5	---	---	---	---	1.01	< 0.001	---	---	< 0.003	0.12	0.12	---	---	---	---	---	---
	04-Sep-2002	16-SH	809	7.84	---	---	360	393	< 0.5	0.7	41	0.02	0.099	427	95.9	28.3	3.4	18.9	480	< 0.5	< 0.5	---	---	---	---	0.91	0.001	---	---	< 0.003	0.502	0.502	---	---	---	---	14.4	---
	04-Sep-2003	16-SH	753	7.78	---	---	390	378	< 0.5	0.8	39.3	0.03	0.012	429	105	30.1	3.5	22.7	461	< 0.5	< 0.5	---	---	---	---	1.04	---	< 0.004	---	< 0.003	0.21	0.21	---	---	---	---	14.2	---
	08-Sep-2004	16-SH	774	7.96	---	---	350	393	< 0.5	1.2	42	0.02	< 0.004	431	95	27.3	3.2	26.5	479	< 0.5	< 0.5	---	---	---	---	0.94	---	< 0.004	---	< 0.003	0.074	0.074	---	---	---	---	12.7	---
	08-Sep-2005	16-SH	747	8.08	1.5	---	360	397	< 0.5	1	39.7	0.02	0.02	435	98.1	28.6	3.3	25	484	< 0.5	< 0.5	---	---	---	---	0.96	---	< 0.004	---	< 0.003	0.146	0.146	---	---	---	---	12.6	---
	07-Sep-2006	16-SH	760	8.03	---	---	360	387	< 0.5	1.5	40.8	0.03	0.032	424	97.7	27	3.2	21.1	472	< 0.5	< 0.5	---	---	---	---	0.94	---	---	---	< 0.003	0.109	0.109	---	---	---	---	11.7	---
	05-Sep-2007	16-SH	764	7.95	---	---	370	398	< 0.5	1.1	34.5	< 0.06	0.017	431	101	29.7	3.4	22.6	485	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	0.019	0.06	0.079	---	---	---	---	12.2	---
	03-Sep-2008	16-SH	748	8.1	---	---	359	391	---	< 0.50	36.5	< 0.030	0.0328	427	98.8	27.3	3.3	26	477	< 5	< 5	0.198	---	---	---	0.977	---	---	---	< 0.050	0.089	0.089	---	---	---	---	---	---
	10-Sep-2009	16-SH	769	8.02	---	---	413	400	---	< 0.50	35.5	< 0.030	0.0072	447	115	30.5	3.81	21.8	488	< 5.0	< 5.0	0.167	---	---	---	1.06	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	16 SH	773	7.89	---	---	343	397	---	< 0.50	35.9	< 0.030	< 0.0050	420	91.7	27.6	2.85	23.2	485	< 5.0	< 5.0	0.25	---	---	91	---	---	---	---	< 0.050	0.09	0.09	---	---	---	---	---	---
	07-Sep-2011	16-SH	770	8.24	---	---	360	406	---	< 0.50	32.9	< 0.030	0.0176	430	95.3	29.7	3.33	24.8	496	< 5.0	< 5.0	0.235	---	---	94.8	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	16-SH	770	8.07	---	379	379	411	---	< 0.50	33.2	< 0.030	< 0.0050	443	101	30.8	3.68	26.9	502	< 5.0	< 5.0	0.219	---	---	98.9	---	---	---	---	< 0.050	0.068	< 0.071	---	---	---	---	---	---
	26-Sep-2013	16-SH	763	7.95	---	368	368	423	---	< 0.50	29.3	< 0.030	0.0030	451	98.7	29.6	3.12	36.2	516	< 5.0	< 5.0	0.207	---	---	99.3	---	---	---	---	< 0.050	0.086	0.086	---	---	---	---	---	---
	16-Sep-2014	16-SH	751	8.26	---	---	372	396	---	< 0.50	33.4	< 0.010	0.0012	443	102	28.5	3.45	38.3	483	<5.0	<5.0	0.243	---	---	107	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	10.8	---
	28-Sep-2015	16-SH	758	8.12	---	---	406	401	---	1.40	40.0	<0.010	0.00214	459	111	31.3	4.40	29.3	489	<5.0	<5.0	0.282	---	---	---	---	---	---	---	<0.010	0.103	0.103	---	---	---	---	---	---
	26-Sep-2016	16-SH	752	8.02	---	---	380	380	---	1.58	26.7	<0.010	0.00103	426	106	28.0	3.26	31.9	464	<5.0	<5.0	0.233	---	---	---	---	---	---	---	<0.010	0.061	0.061	---	---	---	---	---	---
	27-Sep-2017	16-SH	688	7.87	---	---	399	394	---	1.63	33.7	<0.030	<0.0050	445	107	32.1	3.59	30.3	481	<5.0	<5.0	0.211	---	---	---	---	---	---	---	<0.010	0.112	0.112	---	---	---	---	---	---
	18-Sep-2018	16-SH	724	8.05	---	---	393	400	---	1.00	31.6	<0.010	0.00094	444	105	31.8	3.47	31.2	488	<5.0	<5.0	0.232	---	---	---	---	---	---	---	<0.010	0.040	0.04	---	---	---	---	---	---
	16-Sep-2019	16-SH	739	7.57	---	---	390	428	---	1.07	34.7	<0.010	0.00104	468	105	31.0	3.65	34.6	522	<5.0	<5.0	0.285	---	---	---	---	---	---	---	0.013	0.117	0.13	---	---	---	---	---	---
	22-Sep-2020	16-SH	755	7.13	---	---	322	357	---	<0.50	74.2	<0.010	0.614	444	94.3	21	4.28	34.2	436	<5.0	<5.0	0.163	---	---	---	---	---	---	---	0.024	0.255	0.279	---	---	---	---	---	---
	21-Sep-2021	16-SH	812	7.82	---	---	415	377	---	<0.50	90.1	<0.030	0.128	500	119	28.5	4.68	26.8	460	<5.0	<5.0	0.14	---	---	---	---	---	---	---	<0.010	1.07	1.07	---	---	---	---	---	---
	28-Sep-2022	16-SH	750	8.18	---	---	402	409	---	1.00	39.7	<0.030	<0.0050	479	106	33.4	3.69	26.2	499	<1.0	<1.0	0.216	---	---	---	---	---	---	---	<0.010	0.056	0.056	---	---	---	---	---	---
	28-Sep-2023	16-SH	734	8.21	---	---	381	390	---	0.78	35.8	0.01	0.00123	454	106	28.3	3.6	21.4	475	<1.0	<1.0	0.217	---	---	---	---	---	---	---	<0.010	0.186	0.186	---	---	---	---	---	---
	10-Sep-2024	16-SH	752	7.61	---	---	383	412	---	0.93	26.7	<0.010	0.00538	463	105	29.3	3.03	24.8	502	<1.0	<1.0	0.288	---	---	---	---	---	---	---	<0.010	0.118	0.118	---	---	---	---	---	---
16-IN	05-Sep-1996	16-IN	745	7.46	---	---	351	357	< 0.1	0.9	50.9	< 0.01	0.037	429	98.7	25.3	2.5	30.8	435	< 0.5	< 0.5	---	---	---	---	1.02	---	---	---	0.005	0.521	0.526	---	---	---	< 0.005	---	---
	04-Sep-1997	16-IN	791	7.12	---	---	397	382	< 0.1	1	63.4	< 0.01	0.01	484	113	27.9	3.65	40.3	466	< 0.5	< 0.5	---	---	---	---	1.09	---	---	---	< 0.003	0.348	0.348	---	---	---	< 0.01	---	---
	15-Sep-1998	16-IN	846	7.31	---	---	410	392	< 0.1	1	84.9	---	---	511	115	28.6	3.6	41.5	478	< 0.5	< 0.5	---	9.65	10	---	1.04	---	---	---	0.006	0.167	0.173	---	---	---	< 0.01	---	---
	09-Sep-1999	16-IN	906	7.85	---	---	450	414	< 0.1	1	104	---	---	560	124	32.8	3.3	45.2	505	< 0.5	< 0.5	---	10.5	11	---	1.04	---	---	---	< 0.003	0.075	0.075	---	---	---	< 0.01	---	---
	05-Sep-2000	16-IN	854	7.81	---	---	390	395	< 0.1	0.9	90.1	< 0.01	0.298	517	106	29.3	3.6	50	481	< 0.5	< 0.5	---	9.8	9.98	---	1.02	---	---	---	0.013	0.022	0.035	---	---	---	< 0.01	---	---
	06-Sep-2001	16-IN	777	8.06	---	---	360	377	< 0.5	0.9	84.9	< 0.01	0.007	490	98.8	28.2	2	48.6	459	< 0.5	< 0.5	---	---	---	---	1.01	---	---	---	< 0.003	0.089	0.089	---	---	---	< 0.01	---	---
	04-Sep-2002	16-IN	872	8.01	---	---	360	388	< 0.5	0.6	96.1	0.02	0.129	502	101	25.8	3.1	41.9	473	< 0.5	< 0.5	---	9.78	9.08	---	0.93	---	---	---	< 0.003	0.133	0.133	---	---	---	< 0.01	26.5	---
	04-Sep-2003	16-IN	789	7.94	---	---	360	357	< 0.5	0.9	78.3	0.02	0.027	472	95.7	29.9	2.2	49.6	436	< 0.5	< 0.5	---	8.81	9.45	---	1.07	---	---	---	< 0.003	0.105	0.105	---	---	---	< 0.01	26.7	---
	08-Sep-2004	16-IN	825	7.97	---	---	350	372	< 0.5	1.4	81.4	0.02	0.191	472	99.3	24.2	4.2	37.3	454	< 0.5	< 0.5	---	---	---	---	0.95	---	---	---	< 0.003	0.036	0.036	---	---	---	< 0.01	25.7	---
	08-Sep-2005	16-IN	795	8.14	11.5	---	330	382	< 0.5	1	84.8	0.19	0.563	476	88.2	27	3.5	40.9	466	< 0.5	< 0.5	---	---	---	---	0.9	---	---	---	< 0.003	0.008	0.008	---	---	---	< 0.005	25.5	---
	07-Sep-2006	16-IN	789	7.99	---	---	360	377	< 0.5	1.7	76.2	0.14	0.746	476	102	25.3	4.7	39.3	460	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	0.004	0.04	0.044	---	---	---	---	24.5	---
	05-Sep-2007	16-IN	817	7.99	---	---	390	391	< 0.5	1.5	102	0.47	0.754	517	115	25.5	4.3	32.8	477	< 0.5	< 0.5	---	---	---	---	0.95	---	---	---	< 0.003	0.014	0.014	---	---	---	---	23.1	---
	03-Sep-2008	16-IN	798	8.1	---	---	362	393	---	0.64	70.4	0.952	0.61	473	104	24.8	4.73	32.7	479	< 5	< 5	0.196	---	---	---	0.939	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	10-Sep-2009	16-IN	786	8.05	---	---	405	373	---	0.62	67.2	3.31	0.732	473	119	26.1	4.96	31.1	455	< 5.0	< 5.0	0.184	---	---	---	1.08	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2010	16 IN	798	8	---	---	377	377	---	0.64	70.9	0.614	0.773	467	109	25.5	4.39	30.3	460	< 5.0	< 5.0	0.22	---	---	99.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	07-Sep-2011	16-IN	821	8.25	---	---	376	398	---	0.64	66.2	1.09	0.812	476	108	25.9	4.85	31.6	485	< 5.0	< 5.0	0.231	---	---	96.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	16-IN	765	8.17	---	372	374	374	---	0.53	64.6	0.931	0.679	462	105	27.1	5.33	34.7	456	< 5.0	< 5.0	0.197	---	---	103	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	16-IN	773	8.13	---	393	394	394	---	< 0.50	63.8	0.128	0.574	475	114	26.5	4.84	29.4	481	< 5.0	< 5.0	0.185	---	---	101	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Sep-2014	16-IN	787	8.17	---	---	403	352	---	< 0.50	67.6	< 0.010	0.601	478	118	26.3	4.86	30.4	430	< 5.0	< 5.0	0.171	---	---	107	---	---	---	---	< 0.020	0.168	0.189	---	---	---	---	28.0	---
	28-Sep-2015	16-IN	802	8.05	---	---	421	368	---	0.56	93.5	<0.010	0.528	505	123	27.7	4.87	28.9	449	<5.0	<5.0	0.196	---	---	---	---	---	---	---	<0.010	1.20	1.2	---	---	---	---	---	---
	26-Sep-2016	16-IN	805	8.01	---	---	418	360	---	<0.50	87.1	<0.010	0.406	488	124	26.0	4.70	25.5	439	<5.0	<5.0	0.141	---	---	---	---	---	---	---	<0.010	1.01	1.01	---	---	---	---	---	---
	27-Sep-2017	16-IN	731	7.84	---	---	424	355	---	<0.50	95.1	0.069	0.501	503	121	29.7	5.05	31.0	433	<5.0	<5.0	0.125	---	---	---	---	---	---	---	<0.010	1.72	1.72	---	---	---	---	---	---
	18-Sep-2018	16-IN	779	7.98	---	---	408	375	---	<0.50	87.0	<0.010	0.462	493	120	26.3	4.87	26.5	457	<5.0	<5.0	0.150	---	---	---	---	---	---	---	<0.010	0.72	0.717	---	---	---	---	---	---
Dry	16-Sep-2019	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	16-IN	810	7.32	---	---	393	374	---	<0.50	92.3	<0.010	0.159	495	115	25.7	4.75	27.1	456	<5.0	<5.0	0.148	---	---	---	---	---	---	---	<0.010	1.18	1.18	---	---	---	---	---	---
	21-Sep-2021	16-IN	770	7.86	---	---	389	420	---	1.01	35	<0.030	<0.0050	457	106	30.3	3.75	27.9	512	<5.0	<5.0	0.212	---	---	---	---	---	---	---	<0.010	0.152	0.152	---	---	---	---	---	---
	28-Sep-2022	16-IN	802	8.12	---	---	412	385	---	<0.50	88.6	<0.030	0.08260	517	119	28.0	5.05	27.7	469	<1.0	<1.0	0.116	---	---	---	---	---	---	---	<0.010	0.609	0.609	---	---	---	---	---	---
Dry	28-Sep-2023	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dry	10-Sep-2024	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17-SH	01-Nov-1994	17-SH	508	7.95	---	---	---	272	< 0.1	1.9	18.9	< 0.01	0.441	300	78	20.1	3.02	11.9	332	< 0.5	< 0.5	---	---	---	---	1.04	< 0.001	---	---	0.093	0.085	0.093	---	---	---	---	---	---
	28-Sep-1995	17-SH	515	7.25	---	---	264	273	< 0.1	1.5	35.6	< 0.01	0.208	323	75.1	18.6	2.2	23.4	333	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	---	0.117	---	---	---	---	---	---	---
(Duplicate)	28-Sep-1995	17-SH DUP	549	7.39	---	---	266	273	< 0.1	1.2	30.9	< 0.01	0.117	318	74	19.6	2.3	22.7	333	< 0.5	< 0.5	---	---	---	---	1.03	< 0.001	---	---	---	0.103	---	---	---	---	---	---	---
	04-Sep-1996	17-SH	378	7.39	---	---	195	187	< 0.1	< 0.5	12.8	< 0.01	0.253	208	55.7	13.6	1.47	9.76	228	< 0.5	< 0.5	---	---	---	---	1.09	0.001	---	---	---	0.139	0.143	---	---	---	---	---	---
	04-Sep-1997	17-SH	485	7.69	---	---	256	262	< 0.1	< 0.5	10.4	< 0.01	0.048	272	71.9	18.6	1.25	9.32	319	< 0.5	< 0.5	---	---	---	---	1.02	< 0.001	---	---	---	0.025	0.025	---	---	---	---	---	---
	16-Sep-1998	17-SH	498	7.55	---	---	260	254	< 0.1	< 0.5	23.7	---	---	279	71.7	20.3	1.4	9.5	310	< 0.5	< 0.5	---	5.58	5.7	---	1.02	0.001	---	---	---	0.059	0.065	---	---	---	---	---	---
	09-Sep-1999	17-SH	530	7.64	---	---	300	288	< 0.1	< 0.5	21.1	---	---	308	81.4	22.4	1.1	9	351	< 0.5	< 0.5	---	6.2	6.33	---	1.02	< 0.0010	---	< 0.001	---	0.031	0.031	---	---	---	---	---	---
	06-Sep-2000	17-SH	549	7.78	---	---	280	286	< 0.1	< 0.5	25.2	< 0.01	0.105	311	79.1	20.6	2	12.5	349	< 0.5	< 0.5	---	6.26	6.24	---	1	0.003	---	---	< 0.003	0.052	0.052	---	---	---	---	---	---
	06-Sep-2001	17-SH	539	8.11	---	---	280	275	< 0.5	< 0.5	35.2	< 0.01	0.015	317	77.9	21.3	1.8	14.7	336	< 0.5	< 0.5	---	---	---	---	1.01	< 0.001	---	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE													Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	7.0-10.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	1.0	---	---	---	---	---	---	---	0.12	---	---	---	---	---	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1	10	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	6.5 - 8.5	---	---	---	---	---	250	500	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.2	0.2	0.2	1.0	10	---	---	---	---	0.05	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	6.5 - 8.5	---	---	---	---	---	120	Variable	0.3	0.02	500	---	---	---	200	---	---	---	1.5	---	---	---	---	0.0050	0.0050	0.0050	Variable	3	---	---	---	Variable [13]	0.0019	---	---
17-IN	28-Sep-1995	17-IN	615	7.09	---	---	326	348	< 0.1	2.2	67.2	< 0.01	0.432	429	93	22.8	5.6	26.1	424	< 0.5	< 0.5	---	---	---	---	0.93	---	---	---	0.034	0.073	0.107	---	---	---	< 0.01	---	---
	04-Sep-1996	17-IN	755	7.2	---	---	350	359	< 0.1	1.1	62	< 0.01	0.952	436	103	22.5	4.21	24.6	438	< 0.5	< 0.5	---	---	---	---	0.96	---	---	---	0.021	0.027	0.048	---	---	---	< 0.005	---	---
	04-Sep-1997	17-IN	778	7.05	---	---	417	388	< 0.1	1	54.8	0.1	1.08	475	123	26.7	4.66	28.4	473	< 0.5	< 0.5	---	---	---	---	1.09	---	---	---	0.005	0.008	0.013	---	---	---	< 0.01	---	---
	16-Sep-1998	17-IN	765	7.11	---	---	380	396	< 0.1	< 0.5	41.9	---	---	446	110	25.1	4.1	27	483	< 0.5	< 0.5	---	8.8	8.86	---	1.01	---	---	---	0.018	0.009	0.027	---	---	---	< 0.01	---	---
	09-Sep-1999	17-IN	766	7.63	---	---	380	370	< 0.1	0.7	56.1	---	---	447	110	25.9	4.7	26.9	451	< 0.5	< 0.5	---	8.6	8.91	---	1.04	---	---	---	0.01	0.143	0.153	---	---	---	< 0.01	---	---
	06-Sep-2000	17-IN	769	7.55	---	---	380	400	< 0.1	< 0.5	42.8	0.03	0.945	451	110	24.4	4.5	28.9	489	< 0.5	< 0.5	---	8.9	8.87	---	1	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	---	---
	06-Sep-2001	17-IN	730	7.98	---	---	370	386	< 0.5	0.7	47.5	< 0.01	0.884	445	108	25.2	4.2	27.2	471	< 0.5	< 0.5	---	---	---	---	1	---	---	---	0.006	0.017	0.023	---	---	---	< 0.01	---	---
	05-Sep-2002	17-IN	825	7.9	---	---	340	396	< 0.5	0.6	50.8	0.48	0.791	447	100	22.6	4.4	28.5	484	< 0.5	< 0.5	---	9.01	8.22	---	0.91	---	---	---	< 0.003	0.048	0.048	---	---	---	< 0.01	15.3	---
	03-Sep-2003	17-IN	775	7.68	---	---	390	382	< 0.5	0.8	52.5	0.03	0.565	460	114	25.2	4.9	32.2	466	< 0.5	< 0.5	---	8.75	9.31	---	1.06	---	---	---	0.003	0.004	0.007	---	---	---	< 0.01	18.9	---
	08-Sep-2004	17-IN	804	7.88	---	---	350	389	< 0.5	1.4	51.9	0.03	0.237	446	101	23.5	4.4	29.4	475	< 0.5	< 0.5	---	---	---	---	0.94	---	---	---	< 0.003	0.045	0.045	---	---	---	< 0.01	17	---
	07-Sep-2005	17-IN	771	8.13	1.6	---	370	402	< 0.5	0.8	53.4	0.03	0.728	463	109	23.1	4.2	30.4	491	< 0.5	< 0.5	---	---	---	---	0.95	---	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.005	16	---
	07-Sep-2006	17-IN	794	7.93	---	---	360	392	< 0.5	1.6	47.8	0.13	0.705	452	107	23.8	4.5	30.9	479	< 0.5	< 0.5	---	---	---	---	0.98	---	---	---	< 0.003	0.006	0.006	---	---	---	---	15.5	---
	06-Sep-2007	17-IN	783	7.92	---	---	330	402	< 0.5	0.6	46.5	< 0.06	0.643	439	99	20.9	4	26.6	490	< 0.5	< 0.5	---	---	---	---	0.88	---	---	---	< 0.003	0.008	0.008	---	---	---	---	13.7	---
	04-Sep-2008	17-IN	774	8	---	---	339	392	---	< 0.50	46.3	< 0.030	0.508	439	97	23.5	4.92	32	478	< 5	< 5	0.17	---	---	---	0.942	---	---	---	< 0.050	< 0.050	< 0.070	---	---	---	---	---	---
	10-Sep-2009	17-IN	767	7.99	---	---	377	393	---	< 0.50	44.9	< 0.030	0.611	448	112	23.7	4.81	26.9	479	< 5.0	< 5.0	0.15	---	---	---	1	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	09-Sep-2010	17 IN	774	7.98	---	---	352	386	---	< 0.50	48.6	< 0.030	0.42	439	102	23.6	4.33	28.4	471	< 5.0	< 5.0	0.205	---	---	95.8	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	08-Sep-2011	17-IN	786	8.25	---	---	322	398	---	< 0.50	45.8	< 0.030	0.472	430	93.5	21.5	4.55	25.9	485	< 5.0	< 5.0	0.204	---	---	86.2	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	06-Sep-2012	17-IN	761	8.14	---	383	383	396	---	< 0.50	46.3	< 0.030	0.528	457	113	24.4	4.99	30.4	483	< 5.0	< 5.0	0.202	---	---	102	---	---	---	---	< 0.050	0.102	0.102	---	---	---	---	---	---
	26-Sep-2013	17-IN	762	7.98	---	372	373	399	---	< 0.50	48.1	0.124	0.710	456	109	24.5	4.95	29.5	487	< 5.0	< 5.0	0.180	---	---	98.6	---	---	---	---	< 0.050	0.052	< 0.071	---	---	---	---	---	---
	17-Sep-2014	17-IN	730	8.12	---	---	388	347	---	< 0.50	59.8	0.048	0.679	447	117	23.2	4.97	33.2	423	< 5.0	< 5.0	0.162	---	---	114	---	---	---	---	< 0.020	0.183	0.183	---	---	---	---	20.6	---
	29-Sep-2015	17-IN	867	7.61	---	---	416	389	---	<0.50	77.5	<0.010	0.395	501	119	28.8	5.02	34.8	475	<5.0	<5.0	0.200	---	---	---	---	---	---	---	0.012	0.527	0.538	---	---	---	---	---	---
	27-Sep-2016	17-IN	799	8.04	---	---	397	361	---	<0.50	77.1	<0.010	0.512	478	119	24.2	4.74	31.4	441	<5.0	<5.0	0.142	---	---	---	---	---	---	---	<0.010	1.190	1.19	---	---	---	---	---	---
	27-Sep-2017	17-IN	713	7.45	---	---	405	402	---	<0.50	64.2	<0.030	0.531	493	118	26.7	4.97	37.6	491	<5.0	<5.0	0.137	---	---	---	---	---	---	---	<0.010	0.038	<0.050	---	---	---	---	---	---
	18-Sep-2018	17-IN	738	8.04	---	---	395	371	---	<0.50	69.0	<0.010	0.209	477	117	24.9	4.84	34.8	453	<5.0	<5.0	0.163	---	---	---	---	---	---	---	<0.010	0.773	0.773	---	---	---	---	---	---
	17-Sep-2019	17-IN	746	7.79	---	---	359	408	---	0.58	63.4	<0.010	0.166	477	106	22.9	4.53	33.2	497	<5.0	<5.0	0.199	---	---	---	---	---	---	---	0.012	0.232	0.244	---	---	---	---	---	---
	21-Sep-2020	17-IN	810	6.87	---	---	363	408	---	<0.50	67.3	<0.010	0.358	483	107	23.2	4.55	35.1	498	<5.0	<5.0	0.145	---	---	---	---	---	---	---	<0.010	0.248	0.248	---	---	---	---	---	---
	22-Sep-2021	17-IN	783	7.82	---	---	365	403	---	<0.50	53.6	<0.030	0.496	466	105	25	4.88	34.8	492	<5.0	<5.0	0.139	---	---	---	---	---	---	---	<0.010	0.065	0.065	---	---	---	---	---	---
	29-Sep-2022	17-IN	766	8.14	---	---	388	391	---	<0.50	56.1	<0.030	0.427	490	112	26.4	5.02	34.3	478	1.3	<1.0	0.105	---	---	---	---	---	---	---	<0.010	0.178	0.178	---	---	---	---	---	---
	28-Sep-2023	17-IN	753	8.14	---	---	351	389	---	<0.50	49.7	0.012	0.163	462	103	22.8	3.72	27.4	475	<1.0	<1.0	0.168	---	---	---	---	---	---	---	<0.010	0.257	0.257	---	---	---	---	---	---
	11-Sep-2024	17-IN	762	7.63	---	---	375	384	---	<0.50	59.9	<0.010	0.410	483	110	24.4	4.52	31.7	468	<1.0	<1.0	0.173	---	---	---	---	---	---	---	<0.010	0.736	0.736	---	---	---	---	---	---
M-5	01-Oct-2001	M-5	537	7.64	---	---	230	268	< 0.5	< 0.5	34.3	< 0.01	0.289	---	66.3	15.4	5	37.1	327	< 0.5	< 0.5	---	6.09	6.32	---	1.04	< 0.001	---	---	0.004	0.142	0.146	---	---	---	---	11.4	---
	23-Sep-2002	M-5	611	7.51	---	---	250	304	< 0.5	< 0.5	40.8	12.6	0.342	370	73.9	16.5	5.4	38	370	< 0.5	< 0.5	---	6.92	6.84	---	0.99	0.001	---	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	13.3	---
	18-Oct-2003	M-5	568	8.37	---	---	110	317	4.9	0.6	15.6	0.01	0.329	339	32.1	7.9	2.7	88.7	375	5.9	< 0.5	---	6.68	6.19	---	0.93	---	< 0.004	---	< 0.003	0.069	0.069	---	---	---	2.7	5	---
	26-Oct-2004	M-5	554	7.18	---	---	240	277	< 0.5	1.6	31.3	27.2	0.381	344	71.1	14	3.8	27.7	338	< 0.5	< 0.5	---	---	---	---	1.12	---	< 0.004	---	< 0.003	< 0.003	< 0.003	---	---	---	< 0.01	8.6	---
	24-Oct-2005	M-5	438	8.22	63.5	---	160	226	< 0.5	5.2	7.2	0.02	0.074	251	38.3	16	4.5	44.1	276	< 0.5	< 0.5	---	---	---	---	1.09	---	---	---	< 0.003	0.003	0.003	---	---	---	1.51	14.5	---
	12-Sep-2007	M-5	722	7.75	50	---	200	275	< 0.5	51	41.4	0.06	0.2	395	58.7	12.8	4	62.2	335	< 0.5	< 0.5	0.13	---	---	---	0.87	---	---	---	< 0.003	0.018	0.018	---	---	---	---	11.6	---
	08-Oct-2008	M-5	557	7.8	---	---	215	281	---	2	30.1	3.3	0.414	315	61.1	15.1	4.4	34	342	< 5	< 5	0.1	---	---	---	0.935	---	---	---	< 0.05	< 0.1	< 0.1	---	---	---	---	---	---
	11-Sep-2009	M-5	558	7.67	---	---	245	268	---	< 0.50	33.7	< 0.030	0.131	322	74.3	14.4	4.91	32.9	328	< 5.0	< 5.0	0.079	---	---	---	1.06	---	---	---	< 0.050	0.097	0.097	---	---	---	---	---	---
M-6	02-Oct-2001	M-6	---	---	---	---	---	---	---	---	---	2.89	0.971	---	43.2	13.5	3.5	13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.6	---
	29-Sep-2010	M-6	348	7.83	---	---	141	161	---	5.1	12	0.244	0.828	184	38.1	11.2	2.65	18.3	196	< 5.0	< 5.0	0.126	---	---	---	102	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Dec-2011	M6	240	7.37	---	---	105	88.7	---	1.85	24.9	4.76	0.899	122	28.4	8.18	1.7	4	108	< 5.0	< 5.0	0.089	---	---	98.4	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
89-1	27-Mar-2006	89-1	1070	8.9	---	---	2.5	608	38	1	< 1	0.305	0.005	624	0.98	< 0.05	1	255	650	45	< 1	---	---	---	---	0.92	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	27-Jun-2006	89-1	1020	8.8	---	---	1.5	597	35	< 1	< 1	0.046	0.002	644	0.58	< 0.05	---	284	643	42	< 1	2	---	---	---	1.04	---	---	---	< 0.06	< 0.2	< 0.2	---	---	0.63	---	---	---
	26-Sep-2006	89-1	1020	8.8	---	---	1.6	597	29	< 1	< 1	0.13	< 0.004	637	0.6	< 0.2	1	277	658	35	< 1	---	---	---	---	1.02	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	19-Dec-2006	89-1	1080	8.8	---	---	2.2	622	36	< 1	< 1	< 0.06	< 0.004	635	0.9	< 0.2	1.2	259	671	43	< 1	---	---	---	---	0.91	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	10-Oct-2008	89-1	1070	8.7	---	---	5	608	---	2	< 0.5	0.131	0.01	626	1.7	0.2	0.6	254	648	46	< 5	2.48	12.3	11.2	---	0.905	---	---	---	< 0.05	< 0.1	< 0.1	---	---	---	---	---	---
99-1	27-Mar-2006	99-1	1070	8.9	---	---	2.5	607	37	< 1	< 1	0.284	0.004	629	0.99	< 0.05	1	263	649	45	< 1	---	---	---	---	0.95	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	27-Jun-2006	99-1	1020	8.8	---	---	1.5	603	35	< 1	< 1	0.045	0.002	646	0.6	< 0.05	---	281	652	42	< 1	2	---	---	---	1.02	---	---	---	< 0.06	< 0.2	< 0.2	---	---	0.62	---	---	---
	26-Sep-2006	99-1	1020	8.8	---	---	1.7	592	22	< 1	< 1	0.12	< 0.004	639	0.7	< 0.2	1	282	668	27	< 1	---	---	---	---	1.04	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	19-Dec-2006	99-1	1070	8.8	---	---	2	623	38	< 1	< 1	< 0.06	< 0.004	634	0.8	< 0.2	1.2	258	667	46	< 1	---	---	---	---	0.91	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
86-2	27-Mar-2006	86-2	558	8.6	---	---	18	318	12	< 1	< 1	0.039	0.015	336	5.84	0.81	2.8	136	359	14	< 1	---	---	---	---	1	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	27-Jun-2006	86-2	534	8.5	---	---	17	311	7	< 1	< 1	0.011	0.013	339	5.44	0.77	---	143	362	9	< 1	0.2	---	---	---	1.07	---	---	---	< 0.06	< 0.2	< 0.2	---	---	0.41	---	---	---
	26-Sep-2006	86-2	533	8.5	---	---	17	306	2	< 1	< 1	0.35	0.046	327	5.5	0.9	2.7	133	369	2	< 1	---	---	---	---	1.02	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	19-Dec-2006	86-2	564	8.5	---	---	19	323	5	< 1	1	0.41	0.085	336	6	0.9	2.9	131	382	6	< 1	---	---	---	---	0.95	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
86-3	27-Mar-2006	86-3	581	7.9	---	---	240	250	< 1	< 1	73	5.77	0.606	360	71.6	13.9	6.2	38.4	305	< 1	< 1	---	---	---	---	1.03	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	27-Jun-2006	86-3	568	7.6	---	---	240	254	< 1	< 1	69	0.86	0.604	357	73.9	13.9	---	39.2	310	< 1	< 1	< 0.1	---	---	---	1.03	---	---	---	< 0.06	< 0.2	< 0.2	---	---	0.36	---	---	---
	26-Sep-2006	86-3	555	7.1	---	---	240	241	< 1	< 1	71	5.53	0.59	351	72.4	14.3	6	36.8	294	< 1	< 1	---	---	---	---	1.07	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	19-Dec-2006	86-3	585	7.8	---	---	220	260	< 1	< 1	66	3.56	0.558	350	67.8	13.2	6.2	37.2	317	< 1	< 1	---	---	---	---	0.97	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
89-3	02-Oct-2001	89-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	24-Sep-2002	89-3	325	7.6	---	---	150	152	< 0.5	< 0.5	24.5	8.95	0.904	193	39.1	11.9	3.2	13.6	186	< 0.5	< 0.5	---	3.55	3.6	---	1.01	0.001	---	---	< 0.003	0.004	0.004	---	---	---	7.6	17.1	---
	14-Oct-2003	89-3	315	8.2	---	---	130	154	< 0.5	3.1	24.1	0.15	0.818	182	35.6	11.1	2.6	12.1	188	< 0.5	< 0.5	---	3.67	3.29	---	0.9	---	< 0.004	---	0.004	0.005	0.009	---	---	---	9.7	8.8	---
	26-Oct-2004	89-3	322	7.4	---	---	140	161	< 0.5	0.2	15.3	2.07	0.689	178	37.8	10.9	2.7	11.8	197	< 0.5	< 0.5	---	---	---	---	0.97	---	< 0.004	---	< 0.003	0.019	0.019	---	---	---	< 0.01	3.2	---
	25-Oct-2005	89-3	347	7.9	206	---	160	160	< 0.5	0.9	30.1	3.93	0.992	204	40.9	13.1	2.9	15.6	195	< 0.5	< 0.5	---	---	---	---	1.04	---	---	---	< 0.003	0.007	0.007	---	---	---	0.42	5	---
	27-Mar-2006	89-3	340	8.1	---	---	160	168	< 1	< 1	18	0.014	1.02	191	41.8	13.5	2.8	13.1	205	< 1	< 1	---	---	---	---	1.03	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	26-Sep-2006	89-3	330	7.3	---	---	140	156	< 1	< 1	17	< 0.06	0.879	176	35.4	13.7	2.7	12.6	190	< 1	< 1	---	---	---	---	1.01	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	19-Dec-2006	89-3	348	7.9	---	---	160	176	< 1	< 1	15	0.27	0.873	193	41.2	13.2	2.9	13	215	< 1	< 1	---	---	---	---	0.99	---	---	---	< 0.06	< 0.2	< 0.2	---	---	---	---	---	---
	13-Sep-2007	89-3	531	7.45	3.2	---	140	166	< 0.5	58.4	20	< 0.06	0.318	293	37.1	11.3	3.5	62.4	203	< 0.5	< 0.5	0.22	---	---	---	1.04	---	---	---	< 0.003	0.028	0.028	---	---	---	---	6.6	---
	08-Oct-2008	89-3	355	7.6	---	---	---	173	---	2	21.2	1.74	0.942	---	44.9	13.8	2.9	14.1	212	< 5	< 5	0.22	---	---	---	1.02	---	---	---	< 0.05	< 0.1	< 0.1	---	---	---	---	---	---
	28-Sep-2010	89-3	535	7.83	---	---	170	191	---	38.4	22.9	1.32	0.686	280	45.8	13.6	3.19	41.1	234	< 5.0	< 5.0	0.136	---	---	97.6	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	14-Dec-2011	89-3	381	7.87	---	---	174	175	---	1.62	20.2	1.38	0.997	205	46.8	13.9	3.11	14.6	214	< 5.0	< 5.0	0.149	---	---	105	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	89-3	388	7.60	---	176	176	197	---	< 0.50	20.1	1.14	1.10	215	46.8	14.4	2.72	12.8	241	< 5.0	< 5.0	0.139	---	---	94.8	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	17-Sep-2014	89-3	390	8.26	---	---	175	190	---	< 0.50	20.4	1.33	1.06	213	47.6	13.7	2.77	13.9	232	< 5.0	< 5.0	0.166	---	---	98.6	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	6.84	---
	29-Sep-2015	PW	418	7.42	---	---	188	201	---	<0.50	18.0	8.84	1.18	221	47.6	16.9	3.00	14.4	245	<5.0	<5.0	0.183	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2016	PW	393	7.98	---	---	166	187	---	<0.50	18.4	7.53	1.22	205	44.9	13.1	2.97	12.9	228	<5.0	<5.0	0.141	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	PW	372	8.40	---	---	182	186	---	<0.50	18.1	4.58	1.14	211	47.8	15.3	3.05	14.7	218	<5.0	<5.0	0.140	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	18-Sep-2018	89-3	362	7.92	---	---	177	192	---	<0.50	13.6	8.11	1.00	206	47.4	14.2	2.91	12.6	235	<5.0	<5.0	0.166	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	17-Sep-2019	89-3	369	7.61	---	---	182	198	---	<0.50	20.2	5.61	1.17	219	47.9	15.2	3.14	13.7	242	<5.0	<5.0	0.203	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	21-Sep-2020	89-3	431	7.25	---	---	169	188	---	<0.50	20.4	0.233	0.616	208	45.4	13.5	2.87	13.0	230	<5.0	<5.0	0.171	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	89-3	375	7.83	---	---	166	190	---	<0.50	18.2	0.419	0.232	206	42.8	14.3	2.91	13.3	231	<5.0	<5.0	0.142	---	---	---	---	---	---	---	<0.010	0.036	0.036	---	---	---	---	---	---
	29-Sep-2022	89-3	372	8.10	---	---	186	194	---	<0.50	19.3	1.460	1.270	257	48.4	15.8	3.36	15.1	236	<1.0	<1.0	0.141	---

Table 4.3
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicators, etc.)

			GENERAL							INDICATORS					CATIONS, ANIONS AND ION BALANCE														Cyanide			NITROGEN PARAMETERS						SULPHUR		
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Electrical Conductivity (µS/cm)	pH	Turbidity (ntu)	Dissolved Hardness as CaCO3 (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	PP Alkalinity as CaCO3 (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Anion Sum (meq/L)	Cation Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Cyanide:D (mg/L)	Cyanide:T (mg/L)	Cyanide (WAD):D (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	Nitrate plus nitrite as N (mg/L)	DKN (mg/L)	TKN (mg/L)	Ammonia as N (Unionized) (mg/L)	Sulphide (mg/L)	Sulphur: D (mg/L)	Sulphur: T (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	**7.0-10.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.05**	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	**1.0**	---	---	---	---	---	---	---	**0.12**	---	---	---	---	---	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1**	**10**	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	**6.5 - 8.5**	---	---	---	---	---	**250**	**500**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.2**	**0.2**	**0.2**	**1.0**	**10**	---	---	---	---	**0.05**	---	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	**6.5 - 8.5**	---	---	---	---	---	**120**	**Variable**	**0.3**	**0.02**	**500**	---	---	---	**200**	---	---	---	**1.5**	---	---	---	---	**0.0050**	**0.0050**	**0.0050**	**Variable**	**3**	---	---	---	**Variable [13]**	**0.0019**	---	---
Trip Blank	05-Sep-2012	SPINEL 1	0.44	**6.38**	---	< 1.3	---	< 5.0	---	< 0.50	< 0.50	< 0.030	< 0.0050	---	< 0.50	< 0.10	< 0.50	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	---	---	Low TDS	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	SPINEL 18	0.27	**6.31**	---	< 1.3	---	< 5.0	---	< 0.50	< 0.50	< 0.030	< 0.0050	---	< 0.50	< 0.10	< 0.50	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	---	---	Low TDS	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	05-Sep-2012	SPINEL 28	< 0.20	**5.79**	---	< 1.3	---	< 5.0	---	< 0.50	< 0.50	< 0.030	< 0.0050	---	< 0.50	< 0.10	< 0.50	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	---	---	Low TDS	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	26-Sep-2013	TRIP BLANK	0.59	**5.24**	---	< 1.3	< 1.0	< 2.0	---	< 0.50	< 0.50	< 0.030	< 0.0020	< 1.0	< 0.50	< 0.10	< 0.50	< 1.0	< 5.0	< 5.0	< 5.0	< 0.020	---	---	Low TDS	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Sep-2014	TRIP BLANK	1.45	**5.35**	---	---	< 1.0	< 2.0	---	< 0.50	< 0.50	< 0.010	< 0.000050	< 1.0	< 0.50	< 0.10	< 0.50	< 1.0	< 5.0	< 5.0	< 5.0	< 0.020	---	---	Low TDS	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	< 0.50	---
	29-Sep-2015	TRIP BLANK	0.30	**5.24**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.050	<0.0050	<0.050	<0.050	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	28-Sep-2016	TRIP BLANK	<2.0	**5.15**	---	---	<1.3	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	TRIP BLANK	<2.0	**5.70**	---	---	<1.0	<5.0	---	<0.50	<0.30	<0.030	<0.0050	<1.0	<0.10	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	19-Sep-2018	TRIP BLANK	<2.0	**5.08**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	TRIP BLANK	<2.0	**5.07**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	23-Sep-2020	TRIP BLANK	<2.0	**5.49**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	TRIP BLANK	<2.0	**5.24**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.030	<0.0050	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	28-Sep-2022	TRIP BLANK	<2.0	**5.55**	---	---	<0.50	<2.0	---	<0.50	<0.30	<0.030	<0.0050	<1.0	<0.050	<0.0050	<0.050	<0.050	<1.0	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	29-Sep-2023	TRIP BLANK	<2.0	**5.39**	---	---	<0.50	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.050	<0.0050	<0.050	<0.050	<1.0	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	11-Sep-2024	TRIP BLANK	<2.0	**5.68**	---	---	<0.50	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.050	<0.0050	<0.050	<0.050	<1.0	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
Field Blank	25-Sep-2013	20-SH	0.36	**5.28**	---	< 1.3	< 1.0	< 2.0	---	< 0.50	< 0.50	< 0.030	< 0.0020	< 1.0	< 0.50	< 0.10	< 0.50	< 1.0	<5.0	< 5.0	< 5.0	< 0.020	---	---	Low TDS	---	---	---	---	< 0.050	< 0.050	< 0.071	---	---	---	---	---	---
	16-Sep-2014	41-SH	0.47	**5.16**	---	---	< 1.0	< 2.0	---	< 0.50	< 0.50	< 0.010	0.000092	< 1.0	< 0.50	< 0.10	< 0.50	< 1.0	< 5.0	< 5.0	< 5.0	< 0.020	---	---	Low TDS	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	< 0.50	---
	17-Sep-2014	42-SH	1.02	**5.62**	---	---	< 1.0	< 2.0	---	< 0.50	< 0.50	< 0.010	< 0.000050	< 1.0	< 0.50	< 0.10	< 0.50	< 1.0	< 5.0	< 5.0	< 5.0	< 0.020	---	---	Low TDS	---	---	---	---	< 0.020	< 0.050	< 0.054	---	---	---	---	< 0.50	---
	28-Sep-2015	Field Blank 1	0.82	**5.36**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.050	<0.0050	<0.050	<0.050	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	29-Sep-2015	Field Blank 2	<0.20	**5.34**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	0.082	0.0050	<0.050	<0.050	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	26-Sep-2016	10-SH	<2.0	**5.36**	---	---	<1.3	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	28-Sep-2016	20-SH	<2.0	**5.34**	---	---	<1.3	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	27-Sep-2017	10-SH	<2.0	**5.23**	---	---	<1.0	<5.0	---	<0.50	<0.30	<0.030	<0.0050	<1.0	<0.10	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	27-Sep-2017	20-SH	<2.0	**6.11**	---	---	<1.0	<5.0	---	<0.50	<0.30	<0.030	<0.0050	<1.0	<0.10	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.050	---	---	---	---	---	---
	18-Sep-2018	10-SH	<2.0	**5.87**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	0.00011	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	18-Sep-2018	20-SH	<2.0	**5.10**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	16-Sep-2019	10-SH	<2.0	**5.47**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	17-Sep-2019	20-SH	<2.0	**4.73**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	0.00025	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	21-Sep-2020	10-SH	<2.0	**5.06**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2020	20-SH	<2.0	**5.09**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	23-Sep-2020	30-SH	<2.0	**4.99**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	21-Sep-2021	10-SH	<2.0	**5.47**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.030	<0.0050	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	22-Sep-2021	20-SH	<2.0	**5.37**	---	---	<1.0	<2.0	---	<0.50	<0.30	<0.030	<0.0050	<1.0	<0.50	<0.10	<0.50	<1.0	<5.0	<5.0	<5.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.022	---	---	---	---	---	---
	28-Sep-2022	10-SH	<2.0	**5.53**	---	---	<0.50	<2.0	---	<0.50	<0.30	<0.030	<0.0050	<1.0	<0.050	<0.0050	<0.050	<0.050	<1.0	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	29-Sep-2022	20-SH	<2.0	**5.39**	---	---	<0.50	<2.0	---	<0.50	1.60	<0.030	<0.0050	1.7	<0.050	<0.0050	<0.050	<0.050	<1.0	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	0.020	<0.0500	---	---	---	---	---	---
	29-Sep-2023	Field Blank	<2.0	**5.31**	---	---	<0.50	<2.0	---	<0.50	<0.30	<0.010	<0.00010	<1.0	<0.050	<0.0050	<0.050	<0.050	<1.0	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	11-Sep-2024	10-SH	<2.0	**5.63**	---	---	<0.50	<2.0	---	<0.50	<0.30	<0.010	<0.00010	4.4	0.083	0.0103	<0.050	0.081	<1.0	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---
	11-Sep-2024	20-SH	<2.0	**5.65**	---	---	<0.50	<2.0	---	<0.50	<0.30	<0.010	<0.00010	2.4	0.062	0.0118	<0.050	0.11	<1.0	<1.0	<1.0	<0.020	---	---	---	---	---	---	---	<0.010	<0.020	<0.0500	---	---	---	---	---	---

NOTES:

1: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Aesthetic Objective (AO)

2: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Maximum Acceptable Concentration (MAC)

3: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guideline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain Guidelines = Coarse Grain Guidelines for Routine Parameters (Fine Grain for SH and IN wells, Coarse Grain for SS wells)
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

13: Ammonia Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.2. Ammonia guidelines for protection of aquatic life at varying pH and temperature.

--- Guideline Row: No guideline for that parameter
--- Results: Parameter was not analyzed
Low TDS TDS too low to analyze

Sulphate Guideline Aquatic life (Environmental Quality Guidelines for Alberta Surface Waters (March 2018))

Water Hard	ideline (mg/L)
0-30	128
31-75	218
76-180	309
181-250	429
>250	Need to be determined based on site water

Nitrite-N Guideline Aquatic life (Environmental Quality Guidelines for Alberta Surface Waters (March 2018))

Chloride (m	Nitrate as N (mg/L
<2	0.06
2-4	0.12
4-6	0.18
6-8	0.24
8-10	0.3
>10	0.6

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
01-SH [Decommissioned]	15-May-1985	01-SH [DECOM]	---	0.0002	0.0014	---	< 0.001	---	< 0.001	< 0.001	---	0.008	< 0.002	---	< 0.0001	---	0.035	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1985	01-SH [DECOM]	---	0.0003	0.0015	0.37	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	0.008	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	01-SH [DECOM]	---	0.0008	0.0003	---	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	0.018	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1986	01-SH [DECOM]	---	0.0004	0.0015	0.24	---	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	0.02	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	01-SH [DECOM]	---	0.0005	0.0029	0.27	---	---	---	0.005	---	0.002	< 0.002	---	< 0.0001	---	0.041	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	01-SH [DECOM]	---	0.0007	0.0019	0.25	---	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	0.056	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	01-SH [DECOM]	---	0.0006	0.0012	0.25	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	0.009	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	01-SH [DECOM]	---	0.0002	0.002	0.24	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	0.0118	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	01-SH [DECOM]	---	0.0002	0.0006	0.25	< 0.001	---	< 0.001	< 0.001	---	0.002	0.003	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	01-SH [DECOM]	---	0.0002	0.0003	0.25	< 0.001	---	< 0.001	< 0.001	---	0.007	< 0.002	---	< 0.00005	---	0.005	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	01-SH [DECOM]	---	0.0002	0.0015	0.25	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	0.007	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	01-SH [DECOM]	---	0.0002	0.0005	0.25	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	0.005	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	01-SH [DECOM]	---	0.0002	0.0006	0.25	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	0.006	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	01-SH [DECOM]	---	0.0002	0.13	0.28	0.002	---	< 0.001	0.002	---	0.002	< 0.002	---	< 0.00005	---	0.014	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	01-SH [DECOM]	---	0.0006	0.0027	0.26	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	0.01	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	01-SH [DECOM]	---	< 0.0002	0.001	0.18	0.001	---	< 0.003	< 0.002	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.001	0.007	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	01-SH [DECOM]	---	< 0.0002	0.0011	0.36	0.001	---	0.003	0.006	< 0.003	0.002	< 0.002	---	< 0.00005	< 0.003	0.015	---	---	---	---	---	---	---	---	---	---	---	---
01A-SH	13-Nov-1993	01A-SH	---	< 0.0002	0.0003	0.32	< 0.001	---	< 0.003	0.002	0.006	0.102	< 0.002	---	< 0.00005	0.008	0.16	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	01A-SH	---	< 0.0002	< 0.0002	0.12	0.001	---	< 0.003	< 0.002	0.006	0.006	0.002	---	< 0.00005	< 0.003	0.016	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.005	0.072	---
	22-Sep-1994	01A-SH	---	0.0004	0.0006	0.49	< 0.001	---	< 0.003	0.004	0.008	0.005	0.001	---	0.00005	0.012	0.06	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.014	---
	02-Nov-1994	01A-SH	---	0.0008	0.0014	0.49	0.002	---	< 0.003	< 0.002	0.003	0.003	< 0.001	---	< 0.00005	0.009	0.065	---	< 0.0002	---	0.002	---	< 0.001	---	---	---	0.005	0.099	---
	28-Sep-1995	01A-SH	---	0.0002	0.0006	0.06	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.001	0.0018	---	< 0.00005	< 0.003	0.014	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.014	---
	04-Sep-1996	01A-SH	---	< 0.0002	0.0002	0.06	< 0.001	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	0.0001	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.005	0.009	---
	05-Sep-1997	01A-SH	---	< 0.0002	0.0002	0.04	< 0.001	---	< 0.0002	0.005	< 0.003	0.005	0.0006	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.008	0.021	---
	16-Sep-1998	01A-SH	---	< 0.0002	< 0.0002	0.06	0.004	---	< 0.0002	0.013	0.009	< 0.001	< 0.0003	---	< 0.00005	< 0.003	0.018	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.035	---
	09-Sep-1999	01A-SH	---	< 0.0002	< 0.0002	0.06	0.001	---	< 0.0002	0.017	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	---	---	---	---	< 0.002	0.011	---
	06-Sep-2000	01A-SH	---	< 0.0002	0.0003	0.157	< 0.0002	---	< 0.0002	< 0.001	0.0007	0.0004	0.0005	---	< 0.00005	0.0003	0.0033	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0054	---
	07-Sep-2001	01A-SH	---	< 0.0002	0.0002	0.119	< 0.0002	---	< 0.0002	< 0.001	0.0008	0.0013	0.0004	0.009	< 0.00005	0.0005	0.0041	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0208	---
	05-Sep-2002	01A-SH	0.184	0.0002	0.0003	0.0784	< 0.0002	0.01	< 0.0002	0.002	0.0012	0.0014	0.0004	---	< 0.00005	< 0.0002	0.0042	---	< 0.0002	13.1	< 0.0001	0.064	< 0.0002	< 0.001	0.004	< 0.0004	< 0.001	0.0079	0.0005
	11-Sep-2003	01A-SH	0.079	< 0.0002	< 0.0002	0.0929	< 0.0002	0.01	< 0.0002	< 0.001	0.0012	0.0007	< 0.0003	< 0.004	< 0.00005	0.0022	0.0011	< 0.1	0.0003	11.4	< 0.0001	0.17	< 0.0002	< 0.001	0.002	0.0005	< 0.001	0.0079	0.0012
	08-Sep-2004	01A-SH	0.105	< 0.0002	0.0003	0.0741	0.0008	0.45	< 0.0002	0.01	0.0008	0.001	0.0003	0.018	< 0.00005	< 0.0002	0.0031	< 0.1	0.0004	3.26	< 0.0001	0.59	< 0.0002	< 0.001	0.01	0.0028	0.001	0.0039	0.0011
	07-Sep-2005	01A-SH	0.016	< 0.0002	0.0004	0.13	< 0.0002	0.02	< 0.0002	0.014	0.0011	0.0008	< 0.0003	0.014	< 0.00005	0.0002	0.0021	< 0.1	0.0003	9.49	< 0.0001	0.2	< 0.0002	< 0.001	0.001	0.0004	0.004	0.0041	0.0007
	07-Sep-2006	01A-SH	0.071	< 0.0002	< 0.0002	0.088	< 0.0002	0.02	< 0.0002	< 0.001	0.0011	0.0006	< 0.0003	< 0.004	< 0.00005	< 0.0002	0.0019	< 0.1	< 0.0002	11.1	< 0.0001	0.11	< 0.0002	< 0.001	0.004	0.0004	< 0.001	0.0062	0.0007
	06-Sep-2007	01A-SH	0.028	< 0.0002	< 0.0002	0.17	< 0.001	0.04	0.00003	< 0.001	0.0023	0.0023	< 0.0002	< 0.02	< 0.00005	0.0002	0.0091	< 0.1	< 0.0002	5.4	< 0.0001	0.24	< 0.0002	< 0.001	0.012	0.0014	< 0.001	0.01	---
	04-Sep-2008	01A-SH	0.14	< 0.0004	0.0004	0.08	< 0.001	< 0.05	< 0.00002	< 0.005	< 0.002	< 0.001	< 0.0001	< 0.003	< 0.00010	< 0.005	0.003	---	0.0005	---	< 0.0001	---	0.0001	< 0.05	0.003	0.0004	0.001	0.002	---
	10-Sep-2009	01A-SH	0.106	< 0.00040	< 0.00040	0.0686	< 0.0010	< 0.050	0.000012	< 0.0050	< 0.0020	< 0.0010	0.0002	< 0.010	< 0.000020	< 0.0050	0.0025	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0037	0.00049	< 0.0010	0.0052	---
	09-Sep-2010	01A SH	0.0938	< 0.00040	< 0.00040	0.0839	< 0.0010	< 0.050	0.000167	< 0.0010	< 0.0020	0.0012	0.00021	< 0.010	< 0.000020	< 0.0050	0.003	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0036	0.00051	< 0.0010	0.0064	---
	08-Sep-2011	01A-SH	0.122	< 0.00040	0.00049	0.0893	< 0.0010	< 0.050	0.000017	< 0.0010	< 0.0020	0.0014	0.00013	< 0.010	< 0.000020	< 0.0050	0.0021	---	< 0.00040	10.9	< 0.000020	---	< 0.00010	< 0.050	0.0025	0.00046	< 0.0010	0.0064	---
	06-Sep-2012	01A-SH	0.149	< 0.00040	0.00058	0.0807	< 0.0010	< 0.050	< 0.000010	0.0012	< 0.0020	< 0.0010	0.00015	< 0.010	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	12.6	< 0.000020	---	< 0.00010	< 0.050	0.0028	0.00048	< 0.0010	0.0115	---
	26-Sep-2013	01A-SH	0.181	< 0.00040	0.00073	0.0808	< 0.0010	< 0.050	< 0.000010	0.0010	< 0.0020	< 0.0010	0.00018	< 0.010	< 0.000020	< 0.0050	< 0.0050	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	0.0031	0.00102	0.0010	0.0069	---
	17-Sep-2014	01A-SH	0.256	< 0.00010	0.00049	0.0658	< 0.00050	0.010	< 0.000010	0.00095	0.00078	0.00024	0.000123	0.0033	< 0.0000050	< 0.000050	0.00308	< 0.30	0.00017	14.1	< 0.000010	0.0587	< 0.000050	< 0.00010	0.00342	0.000923	0.00065	0.0052	---
	29-Sep-2015	01A-SH	0.502	<0.00010	0.00046	0.0513	---	0.010	0.0000360	0.00230	---	0.00087	0.000465	---	<0.0000050	---	0.00377	---	0.000107	---	<0.000010	---	---	---	---	0.000964	---	0.0133	---
	27-Sep-2016	01A-SH	0.198	<0.00010	0.00046	0.0728	---	0.016	0.0000070	0.00090	---	<0.00020	0.000077	---	<0.0000050	---	0.00194	---	0.000155	---	<0.000010	---	---	---	---	0.000889	---	0.0031	---
	27-Sep-2017	01A-SH	0.160	<0.00050	<0.00050	0.0722	---	<0.050	<0.000025	0.00084	---	<0.0010	<0.00025	---	<0.000050	---	0.00260	---	<0.00025	---	<0.000050	---	---	---	---	0.000782	---	<0.0050	---
	18-Sep-2018	01A-SH	0.224	<0.00050	<0.00050	0.0660	---	<0.050	<0.000025	0.00203	---	<0.0010	<0.00025	---	<0.0000050	---	0.00310	---	<0.00025	---	<0.000050	---	---	---	---	0.000738	---	0.0050	---
	17-Sep-2019	01A-SH	0.161	<0.00010	0.00046	0.1440	---	0.013	<0.0000050	0.00080	---	0.00168	0.000148	---	<0.0000050	---	0.00204	---	0.000385	---	<0.000010	---	---	---	---	0.000836	---	0.0030	---
	21-Sep-2020	01A-SH	0.279	<0.00010	0.00047	0.0647	<0.00010	<0.010	<0.0000050	0.00061	0.00076	0.00229	0.000193	0.0034	<0.0000050	0.000119	0.00238	---	0.000129	---	<0.000010	---	<0.000010	<0.00010	0.00187	0.000792	<0.00050	0.0050	---
	22-Sep-2021	01A-SH	0.215	<0.00010	0.0005	0.0521	<0.00010	<0.010	<0.0000050	0.00093	0.00076	0.00042	0.000052	0.0028	<0.0000050	0.000086	0.00273	---	0.000127	---	<0.000010	---	<0.000010	<0.00010	0.00313	0.000725	0.00054	0.0036	---
	29-Sep-2022	01A-SH	0.283	<0.00010	0.00065	0.0498	---	<0.010	<0.0000050	0.00062	---	0.00038	0.000066	---	<0.0000050	---	0.00227	---	0.000126	---	<0.000010	---	---	---	---	0.000887	---	0.0038	---
	28-Sep-2023	01A-SH	0.175	<0.00010	0.00047	0.0607	---	<0.010	0.0000068	0.00284	---	0.00082	0.000106	---	<0.0000050	---	0.00405	---	0.000133	---	<0.000010	---	---	---	---	0.000499	---	0.0063	---
	11-Sep-2024	01A-SH	0.173	<0.00010	0.0004	0.0844	---	0.013	<0.0000050	0.00093	---	0.00292	0.000228	---	<0.0000050	---	0.00218	---	0.0001	---	<0.000010	---	---	---	---	0.00064	---	0.0061	---
01-IN [Decommissioned]	15-Feb-1985	01-IN [DECOM]	---	0.0008	0.0006	---	< 0.001	---	< 0.001	0.004	---	0.018	0.004	---	< 0.0001	---	0.05	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1985	01-IN [DECOM]	---	0.0002	0.0005	0.27	< 0.001	---	< 0.001	< 0.001	---	0.009	< 0.002	---	< 0.0001	---	0.038	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	01-IN [DECOM]	---	0.0002	0.0005	---	< 0.001	---	< 0.001	< 0.001	---	0.002	0.003	---	< 0.0001	---	0.13	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1986	01-IN [DECOM]	---	---	0.0005	0.1	---	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.0001	---	0.02	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	01-IN [DECOM]	---	0.0005	0.0006	0.12	---	---	---	< 0.001	---	0.007	0.003	---	< 0.0001	---	0.015	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	01-IN [DECOM]	---	0.0005	0.0004	0.13	---	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.0001	---	0.012	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	01-IN [DECOM]	---	0.0004	0.0004	0.11	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	0.014	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	01-IN [DECOM]	---	0.0002	0.0007	0.11	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	0.012	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	01-IN [DECOM]	---	0.0002	0.0004	0.12	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	0.012	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1988	01-IN [DECOM]	---	0.0002	0.0002	0.11	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	---	---	0.007	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	01-IN [DECOM]	---	0.0002	0.0006	0.12	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	0.006	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	01-IN [DECOM]	---	0.0002	0.0003	0.12	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	0.005	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	01-IN [DECOM]	---	0.0003	0.0002	0.11	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	0.006	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	01-IN [DECOM]	---	0.0002	0.0006	0.12	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	0.006	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	01-IN [DECOM]	---	0.0002	0.0002	0.11	< 0.001	---	< 0.001	< 0.001	---	0.009	< 0.002	---	< 0.00005	---	0.008	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	01-IN [DECOM]	---	0.0046	0.0004	0.12	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	0.00092	---	0.006	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
01A-IN	13-Nov-1993	01A-IN	---	0.001	0.0004	0.51	0.001	---	< 0.003	0.003	< 0.003	0.109	< 0.002	---	< 0.00005	0.018	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	01A-IN	---	< 0.0002	0.0009	0.11	0.001	---	< 0.003	0.008	0.011	0.002	0.001	---	0.00005	< 0.003	0.036	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.021	---
	28-Sep-1995	01A-IN	---	< 0.0002	0.0004	0.53	< 0.001	---	< 0.0002	< 0.002	0.006	< 0.001	< 0.0003	---	< 0.00005	0.015	0.011	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.005	---
	04-Sep-1996	01A-IN	---	0.0003	0.0006	0.47	< 0.001	---	0.0044	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	0.013	0.026	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.005	---
	09-Sep-1999	01A-IN	---	0.0021	**0.050**	0.67	< 0.001	---	< 0.0002	0.032	< 0.003	0.005	0.0003	---	< 0.00005	0.012	0.02	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	0.005	0.01	---
	06-Sep-2000	01A-IN	---	< 0.0002	0.0019	0.485	< 0.0002	---	< 0.0002	< 0.001	0.0013	0.0003	< 0.0003	---	< 0.00005	0.0062	0.0063	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0033	---
	07-Sep-2001	01A-IN	---	< 0.0002	**0.0125**	0.525	< 0.0002	---	< 0.0002	< 0.001	0.0017	0.0006	< 0.0003	0.018	< 0.00005	0.007	0.0098	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0069	---
	05-Sep-2002	01A-IN	0.006	< 0.0002	**0.0103**	0.411	< 0.0002	0.11	< 0.0002	0.047	0.0015	0.0019	< 0.0003	---	< 0.00005	0.0066	0.0123	0.2	0.0002	7.95	< 0.0001	0.606	< 0.0002	< 0.001	0.002	0.0006	0.013	0.0059	0.0004
	03-Sep-2003	01A-IN	0.005	< 0.0002	**0.0335**	0.565	< 0.0002	0.14	< 0.0002	0.006	0.0019	0.0008	0.0003	< 0.004	< 0.00005	0.0246	0.0051	0.3	< 0.0002	9.79	0.0009	0.73	< 0.0002	< 0.001	< 0.001	< 0.0004	< 0.001	0.0081	0.0009
	08-Sep-2004	01A-IN	0.057	< 0.0002	**0.0384**	0.694	0.0003	0.15	< 0.0002	0.002	0.001	0.0013	< 0.0003	0.014	< 0.00005	0.0057	0.0071	0.5	< 0.0002	8.6	< 0.0001	0.71	< 0.0002	< 0.001	0.018	< 0.0004	< 0.001	0.0067	0.0008
	07-Sep-2005	01A-IN	0.001	< 0.0002	**0.0101**	0.505	< 0.0002	0.11	< 0.0002	0.001	0.0011	0.0015	< 0.0003	0.021	< 0.00005	0.0047	0.0046	0.3	0.0002	8.3	< 0.0001	0.72	< 0.0002	< 0.001	0.002	< 0.0004	< 0.001	0.0056	0.0009
	07-Sep-2006	01A-IN	0.003	< 0.0002	**0.049**	0.575	< 0.0002	0.12	< 0.0002	0.001	0.0018	0.0025	< 0.0003	0.022	< 0.00005	0.0036	0.0048	0.6	< 0.0002	10.2	< 0.0001	0.75	< 0.0002	< 0.001	0.004	< 0.0004	< 0.001	0.0078	0.0007
	04-Dec-2006	01A-IN	< 0.04	0.0004	**0.095**	0.71	< 0.001	0.12	0.00006	< 0.01	0.0018	0.0018	< 0.0002	< 0.02	< 0.00005	0.0039	0.0082	1.2	< 0.0002	10.7	< 0.0001	0.75	< 0.0002	< 0.001	0.01	< 0.0001	< 0.001	0.015	---
	06-Sep-2007	01A-IN	0.006	< 0.0002	**0.0263**	0.35	< 0.001	0.11	0.00003	< 0.001	0.0034	0.003	< 0.0002	< 0.02	< 0.00005	0.0024	0.0118	< 0.1	< 0.0002	8.8	< 0.0001	0.62	< 0.0002	< 0.001	0.016	< 0.0001	< 0.001	0.014	---
	04-Sep-2008	01A-IN	< 0.01	< 0.0004	**0.013**	0.503	< 0.001	0.13	< 0.00005	< 0.005	< 0.002	0.003	< 0.0001	0.022	< 0.00010	< 0.005	0.005	---	0.0008	---	< 0.0001	---	< 0.0001	< 0.05	0.001	< 0.0001	0.001	0.006	---
	10-Sep-2009	01A-IN	< 0.0050	< 0.00040	**0.0297**	0.497	< 0.0010	0.126	0.000013	< 0.0050	< 0.0020	< 0.0010	0.00013	0.023	< 0.000020	< 0.0050	0.0055	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0024	< 0.00010	< 0.0010	0.0078	---
	09-Sep-2010	01A IN	< 0.0050	< 0.00040	**0.0174**	0.446	< 0.0010	0.133	0.000011	< 0.0010	< 0.0020	0.0012	< 0.00010	0.025	< 0.000020	< 0.0050	0.0045	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0025	0.00013	< 0.0010	0.0041	---
	08-Sep-2011	01A-IN	< 0.0050	< 0.00040	0.00151	0.377	< 0.0010	0.11	0.000013	< 0.0010	< 0.0020	0.0016	< 0.00010	0.026	< 0.000020	< 0.0050	0.0028	---	< 0.00040	11.8	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00031	< 0.0010	0.0051	---
	06-Sep-2012	01A-IN	< 0.0050	< 0.00040	0.00749	0.433	< 0.0010	0.126	< 0.000010	< 0.0010	< 0.0020	0.0013	< 0.00010	0.029	< 0.000020	< 0.0050	0.0022	---	< 0.00040	12	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00026	< 0.0010	< 0.0040	---
	26-Sep-2013	01A-IN	0.0053	< 0.00040	**0.0408**	0.697	< 0.0010	0.123	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.023	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	< 0.00010	< 0.0010	0.0048	---
	17-Sep-2014	01A-IN	0.0043	< 0.00010	**0.0298**	0.711	< 0.00050	0.127	< 0.000010	0.00038	0.00031	< 0.00010	< 0.000050	0.024	< 0.0000050	0.000646	0.00052	1.31	< 0.00010	13.1	< 0.000010	0.678	< 0.000050	< 0.00010	0.00064	0.000041	0.00065	0.0017	---
	29-Sep-2015	01A-IN	0.0015	<0.00010	0.00142	0.334	---	0.088	<0.0000050	0.00031	---	0.00039	<0.000050	---	0.0000056	---	0.00121	---	<0.000050	---	<0.000010	---	---	---	---	0.000101	---	0.0034	---
	27-Sep-2016	01A-IN	0.0021	<0.00010	0.00528	0.452	---	0.122	<0.0000050	0.00034	---	0.00027	<0.000050	---	<0.0000050	---	0.00079	---	0.000065	---	<0.000010	---	---	---	---	0.000071	---	0.0013	---
	27-Sep-2017	01A-IN	0.0012	<0.00010	0.00087	0.423	---	0.115	0.0000064	0.00034	---	0.00054	<0.000050	---	<0.0000050	---	0.00107	---	<0.000050	---	<0.000010	---	---	---	---	0.000087	---	0.0016	---
	18-Sep-2018	01A-IN	0.0020	<0.00010	0.00173	0.380	---	0.123	<0.0000050	0.00041	---	0.00043	<0.000050	---	0.0000118	---	0.00078	---	0.000062	---	<0.000010	---	---	---	---	0.000146	---	0.0014	---
	17-Sep-2019	01A-IN	0.0056	<0.00010	**0.018**	0.731	---	0.116	<0.0000050	0.00061	---	0.00053	<0.000050	---	<0.0000050	---	<0.00050	---	0.00013	---	<0.000010	---	---	---	---	0.000134	---	<0.0010	---
	21-Sep-2020	01A-IN	0.0039	<0.00010	0.0194	0.619	<0.00010	0.110	<0.0000050	0.00054	<0.00010	<0.00020	<0.000050	0.0234	<0.0000050	0.000377	<0.00050	---	0.000072	---	<0.000010	---	<0.000010	<0.00010	0.00054	0.000068	0.00071	<0.0010	---
	22-Sep-2021	01A-IN	0.0026	<0.00010	0.00441	0.421	<0.00010	0.117	<0.0000050	0.0005	<0.00010	0.00097	<0.000050	0.0261	<0.0000050	0.000297	<0.00050	---	0.000052	---	<0.000010	---	<0.000010	<0.00010	0.00036	0.00012	<0.00050	0.0013	---
	29-Sep-2022	01A-IN	0.0010	<0.00010	0.00380	0.379	---	0.112	<0.0000050	<0.00050	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	0.000070	---	<0.000010	---	---	---	---	0.000203	---	<0.0010	---
	28-Sep-2023	01A-IN	0.0416	<0.00010	0.00047	0.266	---	0.088	<0.0000050	0.00204	---	0.0005	<0.000050	---	<0.0000050	---	0.0018	---	0.000061	---	<0.000010	---	---	---	---	0.000337	---	0.0027	---
	11-Sep-2024	01A-IN	0.0037	<0.00010	**0.0112**	0.527	---	0.122	<0.0000050	0.00071	---	0.00087	<0.000050	---	<0.0000050	---	0.00067	---	0.000058	---	<0.000010	---	---	---	---	0.000203	---	0.0028	---
01-SS [Decommissioned]	15-Jun-1985	01-SS [DECOM]	---	0.0059	**0.07**	0.1	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	0.037	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jul-1985	01-SS [DECOM]	---	**0.0077**	**0.022**	---	< 0.001	---	< 0.001	0.003	---	0.019	0.003	---	< 0.0001	---	0.041	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	01-SS [DECOM]	---	0.0024	**0.057**	---	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	0.019	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1986	01-SS [DECOM]	---	0.0049	**0.014**	0.08	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	0.028	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	01-SS [DECOM]	---	0.0022	**0.056**	0.08	---	---	---	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	0.032	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	01-SS [DECOM]	---	0.0022	**0.085**	0.08	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	0.025	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1987	01-SS [DECOM]	---	0.0048	**0.09**	0.09	< 0.001	---	< 0.001	0.002	---	< 0.001	< 0.002	---	< 0.0001	---	0.039	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	01-SS [DECOM]	---	0.0044	**0.099**	0.08	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	0.03	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	01-SS [DECOM]	---	0.0051	**0.099**	0.09	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	0.032	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	01-SS [DECOM]	---	0.0003	**0.107**	0.07	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	0.015	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	15-May-1988	01-SS DUP	---	0.0058	**0.096**	0.09	< 0.001	---	< 0.001	< 0.001	---	0.004	0.005	---	< 0.00005	---	0.018	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	01-SS [DECOM]	---	0.0025	**0.09**	0.08	< 0.001	---	< 0.001	0.005	---	< 0.001	< 0.002	---	< 0.00005	---	0.02	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	01-SS [DECOM]	---	0.0008	**0.11**	0.07	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	0.015	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	01-SS [DECOM]	---	0.0007	**0.05**	0.08	< 0.001	---	< 0.001	0.003	---	< 0.001	< 0.002	---	< 0.00005	---	0.016	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	01-SS [DECOM]	---	**0.018**	**0.062**	0.08	0.002	---	< 0.001	0.003	---	< 0.001	< 0.002	---	< 0.00005	---	0.008	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	01-SS [DECOM]	---	**0.0082**	**0.07**	0.07	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	0.005	---	---	---	---	---	---	---	---	---	---	---	---
02-SH [Decommissioned]	15-May-1985	02-SH [DECOM]	---	0.0019	0.0044	---	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	02-SH [DECOM]	---	0.0002	0.0008	---	< 0.001	---	< 0.001	0.002	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	02-SH [DECOM]	---	0.0002	0.0028	---	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	02-SH [DECOM]	---	0.0005	0.0039	---	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	02-SH [DECOM]	---	0.0002	0.0037	0.26	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	02-SH [DECOM]	---	0.0002	0.0028	0.23	---	---	---	< 0.001	---	< 0.001	0.005	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	02-SH [DECOM]	---	0.0003	0.0057	0.24	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	02-SH [DECOM]	---	0.0002	0.006	0.23	---	---	< 0.001	0.003	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	02-SH [DECOM]	---	0.0006	0.0055	0.22	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	02-SH [DECOM]	---	0.0004	0.0048	0.24	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	02-SH [DECOM]	---	0.0002	0.0064	0.23	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	02-SH [DECOM]	---	0.0002	0.0019	0.24	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	02-SH [DECOM]	---	0.0002	0.0051	0.23	< 0.001	---	< 0.001	0.007	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	02-SH [DECOM]	---	0.0002	0.0039	0.24	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	02-SH [DECOM]	---	0.0002	0.0024	0.23	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	02-SH [DECOM]	---	0.0002	0.0019	0.25	< 0.001	---	< 0.001	< 0.001	---	0.002	0.003	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	02-SH [DECOM]	---	0.0002	**0.025**	0.23	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	02-SH [DECOM]	---	0.0002	0.0041	0.25	< 0.001	---	< 0.001	0.003	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	02-SH [DECOM]	---	0.001	0.0036	0.23	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	02-SH [DECOM]	---	0.002	0.001	0.24	< 0.001	---	< 0.001	0.005	< 0.001	0.003	< 0.002	---	< 0.0001	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	02-SH [DECOM]	---	< 0.0002	0.0006	0.15	< 0.001	---	< 0.003	< 0.002	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	02-SH [DECOM]	---	< 0.0002	0.0009	0.25	0.001	---	< 0.003	< 0.002	< 0.003	0.003	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	02-SH [DECOM]	---	< 0.0002	0.0008	0.24	0.001	---	< 0.003	< 0.002	< 0.003	0.003	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
02-IN [Decommissioned]	15-May-1985	02-IN [DECOM]	---	0.0007	0.0009	---	< 0.001	---	< 0.001	0.002	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	02-IN [DECOM]	---	0.0005	0.0009	---	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	02-IN [DECOM]	---	0.0004	0.0038	---	< 0.001	---	< 0.001	0.004	---	0.002	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	02-IN [DECOM]	---	0.0023	0.0044	0.15	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	02-IN [DECOM]	---	0.0002	0.0031	0.13	---	---	---	< 0.001	---	0.002	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
02-IN [Decommissioned]	15-Oct-1986	02-IN [DECOM]	---	0.0004	0.0041	0.12	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	02-IN [DECOM]	---	0.0002	0.0079	0.12	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	02-IN [DECOM]	---	0.001	0.0072	0.11	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	02-IN [DECOM]	---	0.0005	0.0074	0.12	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	02-IN [DECOM]	---	0.0002	0.0067	0.12	< 0.001	---	< 0.001	0.003	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	02-IN [DECOM]	---	0.0002	0.0071	0.12	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	02-IN [DECOM]	---	0.0011	0.0081	0.12	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	02-IN [DECOM]	---	0.0002	0.0021	0.11	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	02-IN [DECOM]	---	0.0002	0.0044	0.11	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	02-IN [DECOM]	---	0.0002	0.0018	0.11	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	02-IN [DECOM]	---	0.0002	**0.01**	0.12	< 0.001	---	< 0.001	0.003	---	< 0.001	0.004	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	02-IN [DECOM]	---	0.0002	0.0034	0.11	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	02-IN [DECOM]	---	0.0052	0.0078	0.11	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
03-SH	15-May-1985	03-SH	---	0.001	0.0002	---	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	03-SH	---	0.0002	**0.014**	---	< 0.001	---	< 0.001	< 0.001	---	0.008	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	03-SH	---	0.0002	0.0004	0.27	< 0.001	---	< 0.001	< 0.001	---	0.007	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	03-SH	---	0.0002	0.0002	0.26	---	---	---	< 0.001	---	0.006	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	03-SH	---	0.0003	0.0005	0.26	---	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	03-SH	---	0.0002	0.0004	0.25	---	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	03-SH	---	0.0005	0.0004	0.26	< 0.001	---	< 0.001	0.002	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	03-SH	---	0.0002	0.0003	0.28	< 0.001	---	< 0.001	0.002	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	03-SH	---	0.0002	0.0002	0.25	< 0.001	---	< 0.001	0.006	---	0.008	0.008	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	03-SH	---	0.0002	0.0003	0.25	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	03-SH	---	0.0002	0.0002	0.27	< 0.001	---	< 0.001	0.01	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	03-SH	---	0.0002	0.0002	0.26	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	03-SH	---	0.0002	0.0002	0.24	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	03-SH	---	0.0002	0.0002	0.25	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	03-SH	---	0.0002	0.0002	0.25	< 0.001	---	< 0.001	0.004	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	03-SH	---	0.0002	0.0002	0.24	< 0.001	---	< 0.001	0.006	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	03-SH	---	0.0027	0.0003	0.25	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	03-SH	---	0.0002	0.0003	0.28	< 0.001	---	< 0.001	0.004	< 0.001	< 0.001	< 0.002	---	< 0.00005	0.012	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	03-SH	---	0.002	0.0004	0.26	< 0.001	---	< 0.001	< 0.001	< 0.001	0.003	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	03-SH	---	0.0004	0.0007	0.21	< 0.001	---	< 0.003	< 0.002	0.003	0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	03-SH	---	< 0.0002	0.0002	0.27	0.001	---	< 0.003	0.009	< 0.003	0.004	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	03-SH	---	< 0.0002	0.0002	0.26	0.001	---	< 0.003	< 0.002	< 0.003	0.004	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	03-SH	---	< 0.0002	< 0.0002	0.29	0.001	---	< 0.003	< 0.002	< 0.003	0.005	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	03-SH	---	< 0.0002	< 0.0002	0.24	0.001	---	< 0.003	< 0.002	0.003	0.002	< 0.001	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.002	0.005	---
(Duplicate)	31-May-1994	03-SH DUP	---	< 0.0002	< 0.0002	0.25	0.001	---	< 0.003	< 0.002	< 0.003	0.001	0.001	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.003	0.003	---
	21-Sep-1994	03-SH	---	< 0.0002	< 0.0002	0.26	0.002	---	< 0.003	0.014	0.004	0.002	< 0.001	---	0.00005	0.004	0.015	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.004	---
(Duplicate)	21-Sep-1994	03-SH DUP	---	< 0.0002	< 0.0002	0.26	0.001	---	< 0.003	< 0.002	0.004	0.006	0.002	---	0.00005	< 0.003	0.006	---	< 0.0002	---	< 0.002	---	0.001	---	---	---	0.002	0.01	---
	01-Nov-1994	03-SH	---	0.0002	0.0002	0.26	0.002	---	< 0.003	0.002	< 0.003	0.005	< 0.001	---	< 0.00005	< 0.003	0.007	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.003	0.007	---
(Duplicate)	02-Nov-1994	03-SH DUP	---	0.0006	0.0003	0.52	0.001	---	< 0.003	0.004	< 0.003	0.002	< 0.001	---	< 0.00005	< 0.003	0.009	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.016	---
	28-Sep-1995	03-SH	---	< 0.0002	< 0.0002	0.29	< 0.001	---	< 0.0002	0.003	< 0.003	0.001	< 0.0003	---	< 0.00005	< 0.003	0.006	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.004	---
	04-Sep-1996	03-SH	---	< 0.0002	< 0.0002	0.29	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.003	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.016	---
	04-Sep-1997	03-SH	---	< 0.0002	< 0.0002	0.33	< 0.001	---	< 0.0002	0.018	< 0.003	0.004	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.006	---
	15-Sep-1998	03-SH	---	< 0.0002	< 0.0002	0.29	0.002	---	< 0.0002	< 0.002	< 0.003	0.015	< 0.0003	---	< 0.00005	0.004	< 0.005	---	< 0.0002	---	0.01	---	< 0.001	---	---	---	0.017	< 0.001	---
(Duplicate)	15-Sep-1998	03-SH DUP	---	< 0.0002	< 0.0002	0.3	0.002	---	0.0004	< 0.002	0.003	0.004	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.001	---
	09-Sep-1999	03-SH	---	0.0034	0.0002	0.32	< 0.001	---	< 0.0002	0.018	0.011	0.009	< 0.0003	---	< 0.00005	0.008	< 0.005	---	< 0.0002	---	< 0.002	---	---	---	---	---	0.009	0.013	---
	05-Sep-2000	03-SH	---	< 0.0002	0.0003	0.339	< 0.0002	---	< 0.0002	0.002	< 0.0003	0.0025	< 0.0003	---	< 0.00005	< 0.0002	0.0077	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0032	---
	06-Sep-2001	03-SH	---	< 0.0002	< 0.0002	0.312	< 0.0002	---	< 0.0002	0.005	< 0.0003	0.002	< 0.0003	0.027	< 0.00005	0.0012	0.0074	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0076	---
	04-Sep-2002	03-SH	0.006	0.0002	0.0011	0.29	< 0.0002	0.02	< 0.0002	0.004	< 0.0003	0.0024	< 0.0003	---	< 0.00005	0.0016	0.0055	< 0.1	< 0.0002	6.45	< 0.0001	0.354	< 0.0002	< 0.001	< 0.001	0.0046	< 0.001	0.0084	0.0024
	03-Sep-2003	03-SH	0.015	< 0.0002	0.0002	0.333	< 0.0002	0.03	< 0.0002	0.002	< 0.0003	0.0022	< 0.0003	0.004	< 0.00005	0.0082	0.0041	< 0.1	< 0.0002	7.31	< 0.0001	0.35	< 0.0002	< 0.001	< 0.001	0.0039	< 0.001	0.0259	0.001
	09-Sep-2004	03-SH	0.054	< 0.0002	< 0.0002	0.383	< 0.0002	0.03	< 0.0002	0.008	< 0.0003	0.0032	< 0.0003	0.02	< 0.00005	0.0024	0.0148	< 0.1	< 0.0002	6.95	< 0.0001	0.36	< 0.0002	< 0.001	0.016	0.0046	< 0.001	0.0054	0.0006
	08-Sep-2005	03-SH	0.004	< 0.0002	0.0003	0.295	< 0.0002	0.02	< 0.0002	< 0.001	0.0003	0.0034	< 0.0003	0.022	< 0.00005	0.0012	0.0132	< 0.1	< 0.0002	5.88	< 0.0001	0.26	< 0.0002	< 0.001	< 0.001	0.0028	< 0.001	0.0072	0.0004
	07-Sep-2006	03-SH	0.002	< 0.0002	0.0013	0.305	< 0.0002	0.03	< 0.0002	0.001	< 0.0003	0.0035	< 0.0003	0.03	0.00018	0.0013	0.0034	< 0.1	< 0.0002	6.98	< 0.0001	0.3	< 0.0002	< 0.001	0.002	0.0031	< 0.001	0.0058	0.0004
	05-Sep-2007	03-SH	0.003	< 0.0002	0.0002	0.23	< 0.001	0.03	< 0.00001	0.002	< 0.0003	0.0034	< 0.0002	0.02	< 0.00005	0.0014	0.0047	< 0.1	< 0.0002	7	< 0.0001	0.27	< 0.0002	< 0.001	0.003	0.0032	< 0.001	0.005	---
	03-Sep-2008	03-SH	< 0.01	< 0.0004	< 0.0004	0.289	< 0.001	< 0.05	< 0.00005	< 0.005	< 0.002	0.003	< 0.0001	0.028	< 0.00010	< 0.005	0.004	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0035	< 0.001	0.007	---
	09-Sep-2009	03-SH	< 0.0050	< 0.00040	< 0.00040	0.351	< 0.0010	< 0.050	0.000109	< 0.0050	< 0.0020	0.0012	0.00012	0.028	< 0.000020	< 0.0050	0.005	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00446	< 0.0010	0.0057	---
	08-Sep-2010	03-SH	< 0.0050	< 0.00040	< 0.00040	0.383	< 0.0010	< 0.050	0.000136	< 0.0010	< 0.0020	0.0014	< 0.00010	0.034	< 0.000020	< 0.0050	0.01	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.001	0.00517	< 0.0010	0.0088	---
	07-Sep-2011	03-SH	< 0.0050	< 0.00040	0.00167	0.389	< 0.0010	< 0.050	0.000084	< 0.0010	< 0.0020	0.0018	< 0.00010	0.033	< 0.000020	< 0.0050	0.0043	---	< 0.00040	8.29	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00596	< 0.0010	0.0046	---
	05-Sep-2012	03-SH	< 0.0050	< 0.00040	< 0.00040	0.48	< 0.0010	< 0.050	0.000053	< 0.0010	< 0.0020	0.002	< 0.00010	0.034	< 0.000020	< 0.0050	0.0038	---	< 0.00040	8.68	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00563	< 0.0010	0.009	---
	26-Sep-2013	03-SH	< 0.0050	< 0.00040	< 0.00040	0.464	< 0.0010	< 0.050	0.000049	< 0.0010	< 0.0020	0.0021	< 0.00010	0.036	< 0.000020	< 0.0050	0.0034	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00535	< 0.0010	0.0216	---
	16-Sep-2014	03-SH	0.0069	< 0.00010	0.00012	0.428	< 0.00050	0.029	0.000044	0.00033	< 0.00010	0.0020	< 0.000050	0.035	< 0.0000050	0.000838	0.00331	< 0.30	< 0.00010	9.73	< 0.000010	0.399	< 0.000050	< 0.00010	< 0.00030	0.00467	0.00018	0.0028	---
	28-Sep-2015	03-SH	0.0022	<0.00010	0.00013	0.365	---	0.025	0.0000580	0.00032	---	0.00225	<0.000050	---	<0.0000050	---	0.00297	---	0.000095	---	<0.000010	---	---	---	---	0.00490	---	0.0038	---
	28-Sep-2016	03-SH	0.0045	<0.00010	0.00012	0.367	---	0.023	0.0000333	0.00074	---	0.00136	<0.000050	---	<0.0000050	---	0.00218	---	0.000101	---	<0.000010	---	---	---	---	0.00441	---	0.0016	---
	27-Sep-2017	03-SH	0.0151	<0.00010	0.00013	0.413	---	0.025	0.0000238	0.00118	---	0.00123	<0.000050	---	0.0000071	---	0.00250	---	0.000089	---	<0.000010	---	---	---	---	0.00408	---	0.0015	---
	18-Sep-2018	03-SH	0.0052	<0.00010	0.00013	0.374	---	0.027	0.0000497	0.00122	---	0.00104	<0.000050	---	<0.0000050	---	0.00275	---	0.000174	---	<0.000010	---	---	---	---	0.00384	---	0.0022	---
	17-Sep-2019	03-SH	0.0393	<0.00010	0.00014	0.406	---	0.027	0.0000457	0.00029	---	0.00156	<0.000050	---	<0.0000050	---	0.00298	---	0.000066	---	<0.000010	---	---	---	---	0.00401	---	0.0013	---
	22-Sep-2020	03-SH	0.0051	0.00010	0.00017	0.346	<0.00010	0.023	0.0000264	0.00058	<0.00010	0.00102	<0.000050	0.0313	<0.0000050	0.000919	0.00178	---	<0.000050	---	<0.000010	---	0.000015	<0.00010	<0.00030	0.00387	<0.00050	0.0021	---
	22-Sep-2021	03-SH	0.0029	<0.00010	0.00018	0.362	<0.00010	0.024	0.0000305	0.00058	<0.00010	0.0009	<0.000050	0.0332	<0.0000050	0.00104	0.00191	---	0.000081	---	<0.000010	---	0.000016	<0.00010	<0.00030	0.00444	<0.00050	<0.0010	---
	29-Sep-2022	03-SH	0.0021	0.00018	0.00027	0.364	---	0.027	0.0000310	0.00098	---	0.00435	0.000065	---	<0.0000050	---	0.00149	---	0.000169	---	<0.000010	---	---	---	---	0.00633	---	0.0030	---
	29-Sep-2023	03-SH	0.0102	0.00015	0.00028	0.406	---	0.027	0.0000383	0.00205	---	0.00199	<0.000050	---	<0.0000050	---	0.00273	---	0.000118	---	<0.000010	---	---	---	---	0.00603	---	0.0019	---
	10-Sep-2024	03-SH	0.0048	<0.00010	0.00017	0.441	---	0.031	0.0000266	0.00124	---	0.00098	<0.000050	---	<0.0000050	---	0.00257	---	0.000118	---	<0.000010	---	---	---	---	0.00553	---	0.0018	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
03-IN	15-May-1985	03-IN	---	0.0002	0.0009	---	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	03-IN	---	0.0002	0.0008	---	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	03-IN	---	0.0002	0.0005	---	< 0.001	---	< 0.001	< 0.001	---	0.009	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	03-IN	---	0.0007	0.0009	---	< 0.001	---	< 0.001	0.003	---	0.009	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	03-IN	---	0.0002	0.0006	---	< 0.001	---	< 0.001	< 0.001	---	0.007	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	03-IN	---	0.0002	0.0006	0.11	---	---	---	< 0.001	---	0.002	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	03-IN	---	0.0004	0.0007	0.1	---	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	03-IN	---	0.0002	0.0005	0.1	---	---	< 0.001	0.002	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	03-IN	---	0.0005	0.0002	0.09	< 0.001	---	< 0.001	< 0.001	---	0.021	0.016	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	03-IN	---	0.0002	0.0006	0.09	< 0.001	---	< 0.001	0.013	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	03-IN	---	0.0002	0.0003	0.08	< 0.001	---	< 0.001	0.007	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	03-IN	---	0.0002	0.0007	0.07	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	03-IN	---	0.0004	0.0005	0.06	< 0.001	---	< 0.001	0.01	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	03-IN	---	0.0002	0.0003	0.07	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	03-IN	---	0.0002	0.0002	0.06	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	03-IN	---	0.0002	0.0003	0.07	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	03-IN	---	0.0002	0.0008	0.05	< 0.001	---	< 0.001	0.002	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	03-IN	---	0.0002	0.0006	0.05	< 0.001	---	< 0.001	0.003	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	03-IN	---	0.0033	0.0005	0.01	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	03-IN	---	< 0.0002	0.0002	0.06	< 0.001	---	< 0.0002	0.088	0.017	< 0.001	< 0.0003	---	< 0.00005	0.004	0.036	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	< 0.002	0.005	---
	07-Sep-2006	03-IN	< 0.001	< 0.0002	0.0014	0.0481	< 0.0002	0.09	< 0.0002	0.018	0.0003	0.0027	< 0.0003	0.043	0.00028	0.0018	0.0024	< 0.1	< 0.0002	6.59	< 0.0001	0.74	< 0.0002	< 0.001	0.002	0.0042	< 0.001	0.0056	< 0.0002
	05-Sep-2007	03-IN	0.002	< 0.0002	0.0002	0.03	< 0.001	0.07	0.00001	0.009	< 0.0003	0.007	< 0.0002	0.06	< 0.00005	0.0023	0.0075	< 0.1	< 0.0002	4.8	< 0.0001	0.51	< 0.0002	< 0.001	0.004	0.0038	< 0.001	0.036	---
	03-Sep-2008	03-IN	< 0.01	< 0.0004	< 0.0004	0.042	< 0.001	0.07	< 0.0001	0.012	< 0.002	0.004	< 0.0001	0.059	< 0.00010	< 0.005	0.002	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0043	< 0.001	0.008	---
	09-Sep-2009	03-IN	< 0.0050	< 0.00040	< 0.00040	0.0522	< 0.0010	0.07	0.00001	< 0.0050	< 0.0020	0.0015	< 0.00010	0.065	< 0.000020	< 0.0050	0.0033	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00436	< 0.0010	0.0041	---
	08-Sep-2010	03-IN	< 0.0050	< 0.00040	< 0.00040	0.0459	< 0.0010	0.074	0.000012	0.0101	< 0.0020	0.0024	< 0.00010	0.066	< 0.000020	< 0.0050	0.0041	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00427	< 0.0010	0.0062	---
	07-Sep-2011	03-IN	< 0.0050	< 0.00040	0.00245	0.0485	< 0.0010	0.069	0.00001	0.0118	< 0.0020	0.0017	< 0.00010	0.058	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	6.07	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0047	< 0.0010	0.0052	---
	05-Sep-2012	03-IN	< 0.0050	< 0.00040	< 0.00040	0.0528	< 0.0010	0.068	< 0.000010	0.0215	< 0.0020	0.0014	< 0.00010	0.065	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	6.24	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00474	< 0.0010	< 0.0040	---
	26-Sep-2013	03-IN	< 0.0050	< 0.00040	< 0.00040	0.0662	< 0.0010	0.074	< 0.000010	< 0.0010	< 0.0020	0.0011	< 0.00010	0.073	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	<0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00475	< 0.0010	0.0045	---
	16-Sep-2014	03-IN	0.0271	< 0.00010	0.00019	0.0643	< 0.00050	0.059	0.000016	0.00034	< 0.00010	0.00089	< 0.000050	0.058	< 0.0000050	0.00144	0.00246	< 0.30	< 0.00010	7.6	< 0.000010	0.544	< 0.000050	< 0.00010	< 0.00030	0.00441	0.00012	0.0027	---
	28-Sep-2015	03-IN	0.0036	<0.00010	0.00019	0.0649	---	0.052	0.0000255	0.00444	---	0.00091	<0.000050	---	<0.0000050	---	0.00334	---	0.000053	---	<0.000010	---	---	---	---	0.00475	---	0.0041	---
	28-Sep-2016	03-IN	0.0038	<0.00010	0.00019	0.0835	---	0.050	0.0000252	0.00134	---	0.00100	<0.000050	---	<0.0000050	---	0.00302	---	0.000064	---	<0.000010	---	---	---	---	0.00420	---	0.0027	---
	27-Sep-2017	03-IN	0.0012	<0.00010	0.00016	0.0805	---	0.066	<0.0000050	0.00067	---	0.00075	<0.000050	---	<0.0000050	---	0.00113	---	0.000051	---	<0.000010	---	---	---	---	0.00441	---	0.0015	---
	18-Sep-2018	03-IN	0.0024	0.00014	0.00020	0.0756	---	0.050	<0.0000050	0.00731	---	0.00061	<0.000050	---	0.0000206	---	0.00070	---	0.000069	---	<0.000010	---	---	---	---	0.00353	---	0.0015	---
	17-Sep-2019	03-IN	0.0072	0.00011	0.00021	0.0868	---	0.048	0.0000114	0.00066	---	0.00089	0.00132	---	<0.0000050	---	0.00115	---	<0.000050	---	<0.000010	---	---	---	---	0.00395	---	0.0011	---
	22-Sep-2020	03-IN	0.0032	0.00012	0.00021	0.0883	<0.00010	0.048	0.0000079	0.00149	<0.00010	0.00280	0.000357	0.0464	<0.0000050	0.00128	0.00084	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00376	<0.00050	0.0016	---
	22-Sep-2021	03-IN	0.0019	0.0001	0.00024	0.123	<0.00010	0.04	<0.0000050	0.00149	<0.00010	0.00077	0.000294	0.0419	<0.0000050	0.000703	0.00071	---	0.000067	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00383	<0.00050	<0.0010	---
	29-Sep-2022	03-IN	0.0044	0.00010	0.00022	0.127	---	0.048	<0.0000050	0.00080	---	0.00169	0.000157	---	<0.0000050	---	0.00073	---	0.000073	---	<0.000010	---	---	---	---	0.00392	---	0.0022	---
	29-Sep-2023	03-IN	0.0057	<0.00010	0.00021	0.127	---	0.049	0.0000554	0.0024	---	0.00095	0.000058	---	<0.0000050	---	0.00162	---	0.000062	---	<0.000010	---	---	---	---	0.00451	---	0.0031	---
	10-Sep-2024	03-IN	0.0029	<0.00010	0.00016	0.115	---	0.061	<0.0000050	0.00083	---	0.00099	<0.000050	---	<0.0000050	---	0.00143	---	<0.000050	---	<0.000010	---	---	---	---	0.00426	---	0.0017	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
04-SH	15-May-1985	04-SH	---	0.0004	0.0004	---	< 0.001	---	< 0.001	< 0.001	---	0.009	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	04-SH	---	0.0003	0.0004	---	< 0.001	---	< 0.001	< 0.001	---	0.013	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	04-SH	---	0.0002	0.0008	0.18	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	04-SH	---	0.0002	0.0005	0.15	---	---	---	< 0.001	---	0.004	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	04-SH	---	0.0006	0.0008	0.16	---	---	< 0.001	< 0.001	---	0.007	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	04-SH	---	0.0005	0.0003	0.15	---	---	< 0.001	0.003	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	04-SH	---	0.0002	0.0004	0.14	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	04-SH	---	0.0002	0.0003	0.15	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	04-SH	---	0.0002	0.0002	0.15	< 0.001	---	< 0.001	0.006	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	04-SH	---	0.0002	0.0003	0.14	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	04-SH	---	0.0002	0.0002	0.15	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1988	04-SH	---	0.0002	0.0002	0.16	< 0.001	---	< 0.001	< 0.001	---	0.007	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	04-SH	---	0.0002	0.0002	0.13	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	04-SH	---	0.0002	0.0002	0.16	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	04-SH	---	0.0002	0.0002	0.17	< 0.001	---	< 0.001	0.004	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	04-SH	---	0.0002	0.0002	0.15	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	04-SH	---	0.001	0.0003	0.15	< 0.001	---	< 0.001	0.003	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Nov-1991	04-SH	---	0.0002	0.0002	0.16	< 0.001	---	< 0.001	< 0.001	< 0.001	0.002	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	04-SH	---	0.0002	0.0002	0.08	< 0.001	---	< 0.003	0.005	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	04-SH	---	< 0.0002	0.0002	0.18	0.001	---	< 0.003	0.005	< 0.003	0.004	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	04-SH	---	< 0.0002	< 0.0002	0.15	0.001	---	< 0.003	< 0.002	< 0.003	0.008	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	04-SH	---	< 0.0002	< 0.0002	0.17	< 0.001	---	< 0.003	0.006	< 0.003	0.006	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	04-SH	---	< 0.0002	< 0.0002	0.16	0.001	---	< 0.003	< 0.002	< 0.003	0.002	< 0.001	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	0.003	---	< 0.001	---	---	---	< 0.002	0.007	---
	21-Sep-1994	04-SH	---	< 0.0002	< 0.0002	0.16	< 0.001	---	< 0.003	0.008	< 0.003	< 0.001	< 0.001	---	0.00005	< 0.003	0.013	---	< 0.0002	---	< 0.002	---	0.001	---	---	---	< 0.002	0.007	---
	01-Nov-1994	04-SH	---	< 0.0002	< 0.0002	0.16	0.001	---	< 0.003	0.008	0.004	0.002	< 0.001	---	< 0.00005	< 0.003	0.018	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.003	0.004	---
	28-Sep-1995	04-SH	---	< 0.0002	< 0.0002	0.17	< 0.001	---	< 0.0002	0.012	0.003	< 0.001	< 0.0003	---	< 0.00005	0.006	0.01	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.001	---
	04-Sep-1996	04-SH	---	< 0.0002	< 0.0002	0.18	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.003	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.004	0.005	---
	03-Sep-1997	04-SH	---	0.0002	< 0.0002	0.19	< 0.001	---	< 0.0002	0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.001	---
	15-Sep-1998	04-SH	---	< 0.0002	0.0002	0.14	0.003	---	< 0.0002	0.04	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	04-SH	---	0.0025	0.0002	0.2	< 0.001	---	< 0.0002	0.006	< 0.003	0.005	< 0.0003	---	< 0.00005	0.007	< 0.005	---	< 0.0002	---	< 0.002	---	---	---	---	---	< 0.002	0.004	---
	05-Sep-2000	04-SH	---	< 0.0002	0.0002	0.155	< 0.0002	---	< 0.0002	0.004	< 0.0003	0.0007	< 0.0003	---	< 0.00005	< 0.0002	0.0042	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0016	---
	06-Sep-2001	04-SH	---	< 0.0002	< 0.0002	0.148	< 0.0002	---	< 0.0002	0.021	< 0.0003	0.0014	< 0.0003	0.054	< 0.00005	0.001	0.0054	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0081	---
(Duplicate)	06-Sep-2001	04-SH DUP	---	< 0.0002	0.0002	0.152	< 0.0002	---	< 0.0002	0.011	< 0.0003	0.0012	< 0.0003	---	< 0.00005	0.0006	0.0041	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0075	---
	04-Sep-2002	04-SH	0.001	< 0.0002	0.0004	0.167	< 0.0002	0.09	< 0.0002	0.006	< 0.0003	0.0017	< 0.0003	---	< 0.00005	0.0008	0.0052	< 0.1	< 0.0002	6.84	< 0.0001	0.526	< 0.0002	< 0.001	< 0.001	0.0063	< 0.001	0.0033	0.0009
(Duplicate)	04-Sep-2002	04-SH DUP	0.002	0.0003	0.0002	0.173	< 0.0002	0.08	< 0.0002	0.011	< 0.0003	0.0017	< 0.0003	---	< 0.00005	0.0008	0.0038	< 0.1	< 0.0002	6.61	< 0.0001	0.506	< 0.0002	< 0.001	< 0.001	0.0059	< 0.001	0.004	0.0026
	03-Sep-2003	04-SH	0.001	< 0.0002	< 0.0002	0.152	< 0.0002	0.09	< 0.0002	0.004	< 0.0003	0.0018	< 0.0003	0.025	< 0.00005	0.0029	0.0012	< 0.1	0.0003	7.24	< 0.0001	0.49	< 0.0002	< 0.001	< 0.001	0.0060	< 0.001	0.0029	0.0003
(Duplicate)	11-Sep-2003	04-SH DUP	0.002	< 0.0002	< 0.0002	0.15	< 0.0002	0.08	< 0.0002	0.015	< 0.0003	0.0012	0.0008	0.038	< 0.00005	0.0261	0.0016	< 0.1	< 0.0002	7.47	< 0.0001	0.55	< 0.0002	< 0.001	< 0.001	0.0059	< 0.001	0.0035	0.0008
	08-Sep-2004	04-SH	0.019	< 0.0002	< 0.0002	0.158	0.0005	0.23	< 0.0002	0.02	< 0.0003	0.0018	< 0.0003	0.041	< 0.00005	0.0032	0.0042	< 0.1	< 0.0002	6.76	< 0.0001	0.5	< 0.0002	< 0.001	0.015	0.0073	< 0.001	0.0235	0.0002
(Duplicate)	08-Sep-2004	04-SH DUP	0.016	< 0.0002	< 0.0002	0.166	0.0008	0.11	< 0.0002	0.025	< 0.0003	0.0014	< 0.0003	0.044	< 0.00005	0.0033	0.0026	< 0.1	< 0.0002	6.8	< 0.0001	0.5	< 0.0002	< 0.001	0.009	0.0077	< 0.001	0.0116	< 0.0002
	07-Sep-2005	04-SH	< 0.001	< 0.0002	0.0003	0.152	< 0.0002	0.08	< 0.0002	0.019	< 0.0003	0.001	< 0.0003	0.047	0.00005	0.0011	0.0027	< 0.1	< 0.0002	6.9	< 0.0001	0.5	< 0.0002	< 0.001	< 0.001	0.0069	< 0.001	0.0029	< 0.0002
(Duplicate)	07-Sep-2005	04-SH DUP	< 0.001	< 0.0002	< 0.0002	0.162	< 0.0002	0.08	< 0.0002	0.005	< 0.0003	0.0009	< 0.0003	0.054	< 0.00005	0.0011	0.0034	< 0.1	< 0.0002	6.71	< 0.0001	0.53	< 0.0002	< 0.001	0.001	0.0072	< 0.001	0.0045	< 0.0002
	07-Sep-2006	04-SH	< 0.001	< 0.0002	< 0.0002	0.162	< 0.0002	0.08	< 0.0002	0.013	< 0.0003	0.0018	< 0.0003	0.054	0.0001	0.0011	0.0039	< 0.1	< 0.0002	6.94	< 0.0001	0.52	< 0.0002	< 0.001	0.002	0.0072	< 0.001	0.0043	< 0.0002
(Duplicate)	07-Sep-2006	04-SH DUP	< 0.001	< 0.0002	< 0.0002	0.163	< 0.0002	0.08	< 0.0002	0.011	< 0.0003	0.0022	< 0.0003	0.05	< 0.00005	0.001	0.0034	< 0.1	< 0.0002	6.86	< 0.0001	0.52	< 0.0002	< 0.001	0.002	0.0071	< 0.001	0.0061	0.0015
	05-Sep-2007	04-SH	0.008	< 0.0002	< 0.0002	0.15	< 0.001	0.08	0.00002	0.007	< 0.0003	0.002	< 0.0002	0.04	< 0.00005	0.0009	0.0064	< 0.1	< 0.0002	6.5	< 0.0001	0.48	< 0.0002	< 0.001	0.006	0.0079	< 0.001	0.003	---
(Duplicate)	05-Sep-2007	04-SH DUP	0.002	< 0.0002	< 0.0002	0.15	< 0.001	0.08	0.00004	0.009	< 0.0003	0.002	< 0.0002	0.04	< 0.00005	0.0007	0.0059	< 0.1	< 0.0002	6.6	< 0.0001	0.47	< 0.0002	< 0.001	0.003	0.0074	< 0.001	0.006	---
	03-Sep-2008	04-SH	< 0.01	< 0.0004	< 0.0004	0.164	< 0.001	0.08	< 0.00005	0.015	< 0.002	0.003	< 0.0001	0.055	< 0.00010	< 0.005	0.003	---	0.0005	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0074	< 0.001	0.002	---
(Duplicate)	03-Sep-2008	04-SH DUP	< 0.01	< 0.0004	< 0.0004	0.164	< 0.001	0.09	< 0.00005	0.017	< 0.002	0.003	< 0.0001	0.056	< 0.00010	< 0.005	0.003	---	0.0005	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0081	< 0.001	0.002	---
	09-Sep-2009	04-SH	< 0.0050	< 0.00040	< 0.00040	0.152	< 0.0010	0.087	0.000023	0.0333	< 0.0020	0.0026	0.00011	0.052	< 0.000020	< 0.0050	0.004	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0013	0.00712	< 0.0010	0.0068	---
(Duplicate)	09-Sep-2009	04-SH DUP	< 0.0050	< 0.00040	< 0.00040	0.152	< 0.0010	0.083	0.000018	0.0214	< 0.0020	0.0019	< 0.00010	0.053	< 0.000020	< 0.0050	0.0042	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0013	0.00734	< 0.0010	< 0.0040	---
	08-Sep-2010	04 SH	< 0.0050	< 0.00040	< 0.00040	0.157	< 0.0010	0.067	< 0.000010	0.0101	< 0.0020	0.0018	< 0.00010	0.048	< 0.000020	< 0.0050	0.0046	---	0.00595	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.0102	< 0.0010	0.004	---
(Duplicate)	08-Sep-2010	SYLVITE 24	< 0.0050	< 0.00040	< 0.00040	0.154	< 0.0010	0.07	0.000012	0.01	< 0.0020	0.002	< 0.00010	0.048	< 0.000020	< 0.0050	0.005	---	0.00619	---	< 0.00010	---	< 0.00010	< 0.050	0.001	0.00992	< 0.0010	0.0056	---
	07-Sep-2011	04-SH	< 0.0050	< 0.00040	0.0016	0.158	< 0.0010	0.079	0.000017	0.0126	< 0.0020	0.0012	< 0.00010	0.049	< 0.000020	< 0.0050	0.003	---	0.00134	7.55	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0095	< 0.0010	< 0.0040	---
(Duplicate)	07-Sep-2011	ZIRCON 24	< 0.0050	< 0.00040	< 0.00040	0.15	< 0.0010	0.077	< 0.000010	0.0238	< 0.0020	0.0014	< 0.00010	0.045	< 0.000020	< 0.0050	0.0025	---	0.00229	6.94	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00864	< 0.0010	< 0.0040	---
	05-Sep-2012	04-SH	< 0.0050	< 0.00040	< 0.00040	0.17	< 0.0010	0.081	0.000015	0.0117	< 0.0020	< 0.0010	< 0.00010	0.054	< 0.000020	< 0.0050	0.0025	---	0.00045	7.51	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00827	< 0.0010	< 0.0040	---
(Duplicate)	05-Sep-2012	SPINEL 22	< 0.0050	< 0.00040	< 0.00040	0.161	< 0.0010	0.086	< 0.000010	0.0183	< 0.0020	< 0.0010	< 0.00010	0.054	< 0.000020	< 0.0050	< 0.0020	---	0.0011	8.06	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00863	< 0.0010	0.0041	---
	26-Sep-2013	04-SH	< 0.0050	< 0.00040	< 0.00040	0.195	< 0.0010	0.073	0.000014	< 0.0010	< 0.0020	0.0012	< 0.00010	0.054	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00898	< 0.0010	0.0079	---
(Duplicate)	26-Sep-2013	24-SH	< 0.0050	< 0.00040	< 0.00040	0.206	< 0.0010	0.072	< 0.000010	< 0.0010	< 0.0020	0.0015	< 0.00010	0.052	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00900	< 0.0010	< 0.0040	---
	17-Sep-2014	04-SH	< 0.0010	< 0.00010	0.00012	0.225	< 0.00050	0.073	< 0.000010	< 0.00010	0.00126	0.00228	< 0.000050	0.0501	< 0.0000050	0.000793	0.00224	< 0.30	< 0.00010	8.76	< 0.000010	0.552	< 0.000050	< 0.00010	< 0.00030	0.0121	0.00021	0.0043	---
	28-Sep-2015	04-SH	0.0017	<0.00010	<0.00010	0.234	---	0.082	0.0000108	0.00138	---	0.00070	<0.000050	---	<0.0000050	---	0.00118	---	0.000087	---	0.000015	---	---	---	---	0.00941	---	0.0016	---
	26-Sep-2016	04-SH	<0.0010	<0.00010	<0.00010	0.205	---	0.077	0.0000077	0.00138	---	0.00069	<0.000050	---	<0.0000050	---	0.00134	---	<0.000050	---	<0.000010	---	---	---	---	0.00952	---	<0.0010	---
	27-Sep-2017	04-SH	<0.0010	<0.00010	0.0001	0.241	---	0.077	0.0000081	0.00091	---	0.00068	<0.000050	---	<0.0000050	---	0.00194	---	0.000126	---	<0.000010	---	---	---	---	0.00954	---	0.0017	---
	17-Sep-2018	04-SH	<0.0010	<0.00010	0.00014	0.217	---	0.095	0.0000224	0.00628	---	0.00061	<0.000050	---	0.0000091	---	0.00334	---	0.000070	---	<0.000010	---	---	---	---	0.00824	---	0.0019	---
	17-Sep-2019	04-SH	<0.0010	<0.00010	0.00012	0.214	---	0.077	0.0000131	0.00068	---	0.00276	0.000113	---	<0.0000050	---	0.00223	---	<0.000050	---	<0.000010	---	---	---	---	0.00786	---	0.0017	---
	22-Sep-2020	04-SH	<0.0010	<0.00010	<0.00010	0.209	<0.00010	0.074	0.0000134	0.00038	0.00011	0.00077	<0.000050	0.0522	<0.0000050	0.000717	0.00264	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00868	<0.00050	<0.0010	---
	22-Sep-2021	04-SH	<0.0010	<0.00010	0.00012	0.223	<0.00010	0.082	0.0000116	0.0007	<0.00010	0.00077	<0.000050	0.0565	<0.0000050	0.000524	0.00168	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00912	<0.00050	0.001	---
	29-Sep-2022	04-SH	<0.0010	<0.00010	0.00014	0.214	---	0.089	0.0000073	0.00100	---	0.00090	<0.000050	---	<0.0000050	---	0.00105	---	0.000073	---	<0.000010	---	---	---	---	0.00887	---	<0.0010	---
	29-Sep-2023	04-SH	<0.0010	<0.00010	0.00018	0.207	---	0.088	<0.0000050	0.00552	---	0.00058	<0.000050	---	<0.0000050	---	0.00335	---	0.000065	---	<0.000010	---	---	---	---	0.0086	---	<0.0010	---
	10-Sep-2024	04-SH	0.0019	<0.00010	<0.00010	0.22	---	0.079	0.000007	0.0008	---	0.00367	<0.000050	---	<0.0000050	---	0.00148	---	<0.000050	---	<0.000010	---	---	---	---	0.00906	---	0.0017	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
04-IN	15-Mar-1989	04-IN	---	0.0002	0.0024	0.07	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	04-IN	---	0.0002	0.0019	0.07	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	04-IN	---	0.0002	0.005	0.08	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	04-IN	---	0.0002	0.002	0.07	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	15-Nov-1989	04-IN DUP	---	0.0002	0.0024	0.07	< 0.001	---	< 0.001	0.003	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	04-IN	---	0.0004	0.0021	0.07	< 0.001	---	< 0.001	0.003	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	04-IN	---	0.0002	0.0025	0.07	< 0.001	---	< 0.001	0.002	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	04-IN	---	0.0017	0.0025	0.07	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	04-IN	---	< 0.0002	0.0052	0.0312	< 0.0002	---	< 0.0002	0.009	< 0.0003	0.0007	< 0.0003	---	< 0.00005	0.0017	0.0021	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0024	---
	05-Sep-2007	04-IN	0.076	< 0.0002	< 0.0002	0.04	< 0.001	0.18	< 0.00001	0.003	0.0005	0.0015	< 0.0002	0.04	< 0.00005	0.0017	0.0047	< 0.1	0.0036	8.5	< 0.0001	0.61	< 0.0002	< 0.001	0.009	0.0081	< 0.001	< 0.003	---
	03-Sep-2008	04-IN	0.01	< 0.0004	0.0022	0.049	< 0.001	0.19	< 0.00005	< 0.005	< 0.002	0.002	< 0.0001	0.044	< 0.00010	< 0.005	< 0.002	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0074	< 0.001	0.002	---
	08-Sep-2010	04 IN	< 0.0050	< 0.00040	0.00314	0.067	< 0.0010	0.201	0.000012	< 0.0010	< 0.0020	0.0025	< 0.00010	0.043	< 0.000020	< 0.0050	0.0046	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0014	0.00778	< 0.0010	0.0048	---
	17-Sep-2014	04-IN	0.0022	< 0.00010	0.00390	0.0758	< 0.00050	0.199	< 0.000010	0.00073	< 0.00010	0.00077	< 0.000050	0.0504	< 0.0000050	0.000403	0.00074	< 0.30	< 0.00010	10.5	< 0.000010	0.578	< 0.000050	< 0.00010	< 0.00030	0.00896	< 0.00010	< 0.0010	---
	28-Sep-2015	04-IN	<0.0010	<0.00010	0.00317	0.0654	---	0.177	0.0000179	0.00067	---	0.00068	<0.000050	---	<0.0000050	---	0.00224	---	<0.000050	---	<0.000010	---	---	---	---	0.00903	---	0.0028	---
	26-Sep-2016	04-IN	<0.0010	<0.00010	0.00274	0.0688	---	0.203	0.0000292	0.00378	---	0.00043	<0.000050	---	<0.0000050	---	0.00152	---	<0.000050	---	<0.000010	---	---	---	---	0.00879	---	0.0013	---
	27-Sep-2017	04-IN	<0.0010	<0.00010	0.00273	0.0742	---	0.203	0.0000238	0.00043	---	0.00026	<0.000050	---	<0.0000050	---	0.00197	---	<0.000050	---	<0.000010	---	---	---	---	0.00844	---	0.0012	---
	17-Sep-2018	04-IN	0.0013	<0.00010	0.00288	0.0642	---	0.213	0.0000753	0.01240	---	0.00084	<0.000050	---	0.0000285	---	0.00147	---	<0.000050	---	<0.000010	---	---	---	---	0.00891	---	0.0027	---
	17-Sep-2019	04-IN	<0.0010	<0.00010	0.00312	0.0760	---	0.196	<0.0000050	0.00103	---	0.00034	<0.000050	---	<0.0000050	---	0.00142	---	<0.000050	---	<0.000010	---	---	---	---	0.00775	---	<0.0010	---
	22-Sep-2020	04-IN	<0.0010	<0.00010	0.00341	0.0716	<0.00010	0.192	0.0000065	0.00020	0.00090	0.00221	<0.000050	0.0401	<0.0000050	0.00265	0.00235	---	0.000054	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00785	<0.00050	0.0014	---
	22-Sep-2021	04-IN	<0.0010	<0.00010	0.00298	0.0786	<0.00010	0.192	0.0000074	0.00027	0.00073	0.00097	<0.000050	0.0373	<0.0000050	0.00226	0.00189	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00799	<0.00050	0.0019	---
	29-Sep-2022	04-IN	0.0025	<0.00010	0.00290	0.0726	---	0.201	0.0000428	<0.00050	---	0.00480	0.000104	---	<0.0000050	---	0.00189	---	<0.000050	---	<0.000010	---	---	---	---	0.00878	---	0.0040	---
	29-Sep-2023	04-IN	<0.0010	<0.00010	0.0031	0.0723	---	0.198	0.0000076	0.00257	---	0.00039	<0.000050	---	<0.0000050	---	0.0028	---	0.00006	---	<0.000010	---	---	---	---	0.00781	---	<0.0010	---
	10-Sep-2024	04-IN	0.0014	<0.00010	0.00321	0.0691	---	0.202	0.0000111	0.00105	---	0.00094	<0.000050	---	<0.0000050	---	0.00188	---	<0.000050	---	<0.000010	---	---	---	---	0.00821	---	0.0018	---
04-SS	15-May-1985	04-SS	---	0.0023	0.029	---	< 0.001	---	< 0.001	0.003	---	0.014	< 0.002	---	0.0012	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	04-SS	---	0.0002	0.0004	---	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	04-SS	---	0.0002	0.0074	---	< 0.001	---	< 0.001	0.006	---	0.005	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	04-SS	---	0.0008	0.0018	---	< 0.001	---	< 0.001	0.002	---	0.005	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	04-SS	---	0.0002	0.002	0.09	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	04-SS	---	0.0002	0.011	0.08	---	---	---	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	04-SS	---	0.0007	0.012	0.07	---	---	< 0.001	0.002	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	04-SS	---	0.0005	0.0004	0.06	---	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	04-SS	---	0.0002	0.0008	0.06	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	04-SS	---	0.0005	0.0006	0.07	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	04-SS	---	0.0002	0.0003	0.06	< 0.001	---	< 0.001	0.004	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	04-SS	---	0.0002	0.0006	0.07	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	04-SS	---	0.0002	0.001	0.06	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1988	04-SS	---	0.0002	0.0002	0.06	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	04-SS	---	0.0002	0.0004	0.06	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	04-SS	---	0.0002	0.0008	0.06	< 0.001	---	< 0.001	0.005	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	04-SS	---	0.0002	0.0032	0.06	< 0.001	---	< 0.001	0.003	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	04-SS	---	0.0039	0.0016	0.06	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	04-SS	< 0.0050	< 0.00040	0.00064	0.108	< 0.0010	< 0.050	0.000023	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.101	< 0.000020	< 0.0050	0.0054	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	< 0.00010	< 0.0010	0.0108	---
	16-Sep-2014	04-SS	< 0.0010	< 0.00010	0.00202	0.114	< 0.00050	0.02	< 0.000010	< 0.00010	< 0.00010	0.00170	0.000055	0.105	< 0.0000050	0.000324	0.00028	< 0.30	< 0.00010	14.5	< 0.000010	0.389	< 0.000050	< 0.00010	< 0.00030	0.000034	< 0.00010	0.0030	---
	28-Sep-2015	04-SS	<0.0010	<0.00010	0.00038	0.0891	---	0.017	0.0000083	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	0.00071	---	<0.000050	---	<0.000010	---	---	---	---	0.000061	---	0.0217	---
	27-Sep-2016	04-SS	<0.0010	<0.00010	0.00044	0.0960	---	0.023	0.0000125	<0.00010	---	0.00027	<0.000050	---	<0.0000050	---	0.00082	---	<0.000050	---	<0.000010	---	---	---	---	0.000045	---	0.0022	---
	26-Sep-2017	04-SS	<0.0010	<0.00010	0.00041	0.1060	---	0.021	0.0000698	<0.00010	---	0.00023	<0.000050	---	<0.0000050	---	0.00077	---	<0.000050	---	<0.000010	---	---	---	---	0.000037	---	0.0045	---
	17-Sep-2018	04-SS	<0.0010	<0.00010	0.00054	0.1020	---	0.027	0.0000175	<0.00010	---	0.00038	<0.000050	---	<0.0000050	---	0.00182	---	<0.000050	---	<0.000010	---	---	---	---	0.000075	---	0.0021	---
	17-Sep-2019	04-SS	0.0048	<0.00010	0.00069	0.1180	---	0.023	0.0000405	0.00047	---	0.00096	<0.000050	---	<0.0000050	---	0.00405	---	<0.000050	---	0.00371	---	---	---	---	0.000256	---	0.0046	---
	22-Sep-2020	04-SS	<0.0010	<0.00010	0.00162	0.104	<0.00010	0.020	<0.0000050	<0.00010	<0.00010	0.00201	<0.000050	0.101	<0.0000050	0.000391	0.00066	---	<0.000050	---	0.000079	---	<0.000010	<0.00010	<0.00030	0.000045	<0.00050	0.0020	---
	22-Sep-2021	04-SS	0.0017	<0.00010	0.00057	0.117	<0.00010	0.031	0.0000635	<0.00010	0.00015	0.00152	<0.000050	0.111	<0.0000050	0.000434	0.00249	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.000167	<0.00050	0.0061	---
	29-Sep-2022	04-SS	<0.0010	<0.00010	0.00058	0.104	---	0.027	0.0000114	<0.00050	---	0.00060	<0.000050	---	<0.0000050	---	0.00058	---	<0.000050	---	<0.000010	---	---	---	---	0.000129	---	0.0018	---
	29-Sep-2023	04-SS	<0.0010	<0.00010	0.00038	0.0989	---	0.029	0.0000147	0.00147	---	0.00054	<0.000050	---	<0.0000050	---	0.00121	---	<0.000050	---	<0.000010	---	---	---	---	0.000438	---	0.0015	---
	10-Sep-2024	04-SS	0.0016	<0.00010	0.00035	0.104	---	0.029	0.0000119	<0.00050	---	0.00352	0.000082	---	<0.0000050	---	0.00084	---	<0.000050	---	<0.000010	---	---	---	---	0.000047	---	0.0042	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
05-SH	15-May-1985	05-SH	---	0.0005	0.0006	---	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	05-SH	---	0.0002	0.0014	---	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	05-SH	---	0.0002	0.0004	---	< 0.001	---	< 0.001	0.006	---	0.008	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	05-SH	---	0.0002	0.0007	0.27	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	05-SH	---	0.0002	0.0005	0.26	---	---	---	< 0.001	---	0.005	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	05-SH	---	0.0006	0.0005	0.27	---	---	< 0.001	< 0.001	---	0.009	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	05-SH	---	0.0003	0.0002	0.23	---	---	< 0.001	< 0.001	---	0.009	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	05-SH	---	0.0002	0.0005	0.14	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	05-SH	---	0.0002	0.0004	0.25	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	05-SH	---	0.0003	0.0002	0.24	< 0.001	---	< 0.001	0.002	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	05-SH	---	0.0002	0.0005	0.24	< 0.001	---	0.01	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	05-SH	---	0.0002	0.0002	0.27	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	05-SH	---	0.0002	0.0002	0.25	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	05-SH	---	0.0002	0.0002	0.24	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	05-SH	---	0.0002	0.0002	0.22	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	05-SH	---	0.0002	0.0004	0.25	< 0.001	---	< 0.001	0.002	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	05-SH	---	0.0002	0.0005	0.24	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	05-SH	---	0.0009	0.0002	0.25	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	05-SH	---	0.0002	< 0.0002	0.27	< 0.001	---	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	---	< 0.0001	0.008	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	05-SH	---	0.0002	0.0003	0.28	< 0.001	---	< 0.001	< 0.001	< 0.001	0.003	< 0.002	---	< 0.0001	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	05-SH	---	< 0.0002	0.0003	0.18	< 0.001	---	< 0.003	< 0.002	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	05-SH	---	< 0.0002	0.0002	0.4	0.001	---	0.003	0.006	< 0.003	0.006	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	05-SH	---	< 0.0002	0.0003	0.51	< 0.001	---	< 0.003	< 0.002	< 0.003	0.002	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	05-SH	---	< 0.0002	< 0.0002	0.41	0.002	---	< 0.003	< 0.002	0.003	0.004	< 0.001	---	< 0.00005	< 0.003	0.006	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.002	0.078	---
	21-Sep-1994	05-SH	---	< 0.0002	< 0.0002	0.4	0.001	---	< 0.003	< 0.002	< 0.003	0.002	< 0.001	---	0.00005	< 0.003	0.015	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.004	---
	01-Nov-1994	05-SH	---	< 0.0002	0.0002	0.42	0.001	---	< 0.003	< 0.002	< 0.003	0.003	< 0.001	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.002	---
	28-Sep-1995	05-SH	---	< 0.0002	0.0002	0.38	< 0.001	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.001	---
	04-Sep-1996	05-SH	---	< 0.0002	< 0.0002	0.33	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.003	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.015	---
	03-Sep-1997	05-SH	---	< 0.0002	< 0.0002	0.38	< 0.001	---	< 0.0002	0.033	0.004	0.005	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	16-Sep-1998	05-SH	---	< 0.0002	0.0002	0.26	0.002	---	0.0007	0.045	< 0.003	0.004	< 0.0003	---	< 0.00005	0.003	< 0.005	---	< 0.0002	---	0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	05-SH	---	< 0.0002	< 0.0002	0.32	< 0.001	---	< 0.0002	0.023	0.006	0.002	< 0.0003	---	< 0.00005	0.005	0.014	---	< 0.0002	---	< 0.002	---	---	---	---	---	< 0.002	0.003	---
	05-Sep-2000	05-SH	---	< 0.0002	0.0003	0.26	< 0.0002	---	< 0.0002	< 0.001	0.0009	0.0012	< 0.0003	---	< 0.00005	< 0.0002	0.0062	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0031	---
	06-Sep-2001	05-SH	---	< 0.0002	< 0.0002	0.239	< 0.0002	---	< 0.0002	0.002	0.0009	0.0011	< 0.0003	0.027	< 0.00005	0.0007	0.0076	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0288	---
(Duplicate)	06-Sep-2001	05-SH DUP	---	< 0.0002	< 0.0002	0.235	< 0.0002	---	< 0.0002	< 0.001	0.0007	0.0009	< 0.0003	---	< 0.00005	0.0005	0.0067	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0073	---
	04-Sep-2002	05-SH	0.002	< 0.0002	0.0005	0.228	< 0.0002	0.04	< 0.0002	0.009	0.0006	0.0011	< 0.0003	---	< 0.00005	0.0006	0.004	< 0.1	< 0.0002	7.74	< 0.0001	0.5	< 0.0002	< 0.001	< 0.001	0.0043	< 0.001	0.0035	0.0009
(Duplicate)	04-Sep-2002	05-SH DUP	0.002	0.0003	0.0002	0.197	< 0.0002	0.04	< 0.0002	0.004	< 0.0003	0.0013	< 0.0003	---	< 0.00005	0.0007	0.0028	< 0.1	< 0.0002	7.28	< 0.0001	0.47	< 0.0002	< 0.001	< 0.001	0.0041	< 0.001	0.0056	0.0004
	03-Sep-2003	05-SH	0.003	0.0002	< 0.0002	0.208	< 0.0002	0.04	< 0.0002	0.001	0.0006	0.0015	< 0.0003	0.005	< 0.00005	0.0019	0.0022	< 0.1	0.0002	8.65	< 0.0001	0.5	< 0.0002	< 0.001	< 0.001	0.0045	< 0.001	0.0097	0.0004
(Duplicate)	11-Sep-2003	05-SH DUP	< 0.001	0.0004	< 0.0002	0.191	< 0.0002	0.04	< 0.0002	0.001	< 0.0003	0.0014	< 0.0003	0.014	< 0.00005	0.0009	0.0015	< 0.1	0.0003	8.5	< 0.0001	0.53	< 0.0002	< 0.001	< 0.001	0.0043	< 0.001	0.0019	0.0002
	08-Sep-2004	05-SH	0.028	< 0.0002	< 0.0002	0.192	0.0006	0.33	< 0.0002	0.006	0.0006	0.0014	< 0.0003	0.02	< 0.00005	0.001	0.004	< 0.1	< 0.0002	8.38	< 0.0001	0.51	< 0.0002	< 0.001	0.026	0.0054	< 0.001	0.003	0.0004
(Duplicate)	08-Sep-2004	05-SH DUP	0.024	< 0.0002	< 0.0002	0.206	0.001	0.08	< 0.0002	0.011	< 0.0003	0.0015	0.0004	0.024	< 0.00005	0.0013	0.0022	< 0.1	< 0.0002	8.5	< 0.0001	0.52	< 0.0002	< 0.001	0.014	0.0056	< 0.001	0.0128	0.0005
	07-Sep-2005	05-SH	< 0.001	0.0003	0.0004	0.22	< 0.0002	0.03	< 0.0002	< 0.001	0.0004	0.001	< 0.0003	0.025	< 0.00005	0.0005	0.0027	< 0.1	0.0005	7.42	< 0.0001	0.51	< 0.0002	< 0.001	0.001	0.0054	< 0.001	0.0021	0.0008
(Duplicate)	07-Sep-2005	05-SH DUP	0.001	< 0.0002	0.0004	0.195	< 0.0002	0.03	< 0.0002	0.001	< 0.0003	0.0027	< 0.0003	0.027	0.00006	0.0004	0.0022	0.1	0.0004	7.21	< 0.0001	0.47	< 0.0002	< 0.001	0.001	0.0052	< 0.001	0.0024	< 0.0002
	07-Sep-2006	05-SH	0.002	< 0.0002	< 0.0002	0.213	< 0.0002	0.03	< 0.0002	0.008	0.0004	0.0021	< 0.0003	0.033	0.0001	0.0007	0.0037	< 0.1	< 0.0002	8.77	< 0.0001	0.54	< 0.0002	0.001	0.002	0.0068	< 0.001	0.0118	0.0028
(Duplicate)	07-Sep-2006	05-SH DUP	0.001	< 0.0002	< 0.0002	0.205	< 0.0002	0.05	< 0.0002	0.008	0.0007	0.0022	< 0.0003	0.031	0.00016	0.0007	0.004	< 0.1	< 0.0002	8.4	< 0.0001	0.54	< 0.0002	< 0.001	0.003	0.0059	< 0.001	0.0049	0.0009
	05-Sep-2007	05-SH	0.001	< 0.0002	< 0.0002	0.2	< 0.001	0.03	0.00003	0.007	0.0004	0.0026	< 0.0002	0.03	< 0.00005	0.0007	0.0069	0.1	< 0.0002	8.4	< 0.0001	0.53	< 0.0002	< 0.001	0.006	0.0062	< 0.001	0.004	---
(Duplicate)	05-Sep-2007	05-SH DUP	0.005	< 0.0002	< 0.0002	0.21	< 0.001	0.03	0.00007	0.007	0.0005	0.0016	< 0.0002	0.03	< 0.00005	0.0003	0.0069	< 0.1	< 0.0002	8.3	< 0.0001	0.53	< 0.0002	< 0.001	0.005	0.0062	< 0.001	0.003	---
	05-Sep-2008	05-SH	< 0.01	< 0.0004	< 0.0004	0.228	< 0.001	< 0.05	< 0.0001	< 0.005	< 0.002	0.001	< 0.0001	0.029	< 0.00010	< 0.005	0.003	---	0.0007	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0061	< 0.001	< 0.002	---
(Duplicate)	05-Sep-2008	05-SH DUP	< 0.01	< 0.0004	< 0.0004	0.217	< 0.001	< 0.05	< 0.0001	< 0.005	< 0.002	0.003	< 0.0001	0.035	< 0.00010	< 0.005	0.003	---	0.0008	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0066	< 0.001	0.005	---
	09-Sep-2009	05-SH	< 0.0050	< 0.00040	< 0.00040	0.214	< 0.0010	< 0.050	< 0.000010	< 0.0050	< 0.0020	0.0011	0.00011	0.032	< 0.000020	< 0.0050	0.0059	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0012	0.00582	< 0.0010	< 0.0040	---
(Duplicate)	09-Sep-2009	05-SH DUP	< 0.0050	< 0.00040	< 0.00040	0.193	< 0.0010	< 0.050	< 0.000010	< 0.0050	< 0.0020	0.0022	< 0.00010	0.034	< 0.000020	< 0.0050	0.0047	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0015	0.00567	< 0.0010	0.0057	---
	08-Sep-2010	05 SH	< 0.0050	< 0.00040	< 0.00040	0.202	< 0.0010	< 0.050	< 0.000010	0.0053	< 0.0020	0.0011	< 0.00010	0.034	< 0.000020	< 0.0050	0.006	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0014	0.00558	< 0.0010	0.0081	---
(Duplicate)	08-Sep-2010	SYLVITE 25	< 0.0050	< 0.00040	< 0.00040	0.206	< 0.0010	< 0.050	< 0.000010	0.0028	< 0.0020	< 0.0010	< 0.00010	0.034	< 0.000020	< 0.0050	0.0082	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0015	0.0056	< 0.0010	< 0.0040	---
	07-Sep-2011	05-SH	< 0.0050	< 0.00040	0.0019	0.213	< 0.0010	< 0.050	< 0.000010	0.0015	< 0.0020	< 0.0010	< 0.00010	0.03	< 0.000020	< 0.0050	0.0029	---	< 0.00040	9.71	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00583	< 0.0010	< 0.0040	---
(Duplicate)	07-Sep-2011	ZIRCON 25	< 0.0050	< 0.00040	0.00051	0.229	< 0.0010	< 0.050	< 0.000010	< 0.0010	0.0032	< 0.0010	< 0.00010	0.028	< 0.000020	< 0.0050	0.0048	---	< 0.00040	9.39	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00546	< 0.0010	< 0.0040	---
	05-Sep-2012	05-SH	< 0.0050	< 0.00040	< 0.00040	0.214	< 0.0010	0.052	< 0.000010	< 0.0010	0.0031	< 0.0010	< 0.00010	0.032	< 0.000020	< 0.0050	0.0042	---	< 0.00040	10.5	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00545	< 0.0010	< 0.0040	---
(Duplicate)	05-Sep-2012	SPINEL 23	< 0.0050	< 0.00040	< 0.00040	0.208	< 0.0010	0.06	0.000013	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.033	< 0.000020	< 0.0050	0.0026	---	< 0.00040	10.5	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00536	< 0.0010	< 0.0040	---
	26-Sep-2013	05-SH	< 0.0050	< 0.00040	< 0.00040	0.215	< 0.0010	< 0.050	0.000018	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.035	< 0.000020	< 0.0050	0.0032	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00542	< 0.0010	0.0111	---
	17-Sep-2014	05-SH	0.0037	< 0.00010	0.00023	0.213	< 0.00050	0.034	0.000075	0.00021	0.00066	0.00121	< 0.000050	0.033	< 0.0000050	0.000391	0.00447	< 0.30	< 0.00010	10.1	< 0.000010	0.552	< 0.000050	< 0.00010	< 0.00030	0.00554	0.00015	0.0013	---
(Duplicate)	17-Sep-2014	25-SH	0.0036	< 0.00010	0.00021	0.213	< 0.00050	0.035	0.000074	0.00019	0.00066	0.00130	< 0.000050	0.031	< 0.0000050	0.000408	0.00446	< 0.30	< 0.00010	10.2	< 0.000010	0.538	< 0.000050	< 0.00010	< 0.00030	0.00580	0.00018	0.0015	---
	28-Sep-2015	05-SH	0.0031	<0.00010	0.00016	0.182	---	0.026	0.0000584	0.00018	---	0.00095	<0.000050	---	<0.0000050	---	0.00204	---	0.000064	---	<0.000010	---	---	---	---	0.00650	---	0.0019	---
(Duplicate)	28-Sep-2015	25-SH	0.0025	<0.00010	0.00018	0.177	---	0.025	0.0000602	0.00023	---	0.00104	0.000055	---	<0.0000050	---	0.00205	---	0.000083	---	<0.000010	---	---	---	---	0.00666	---	0.0039	---
	28-Sep-2016	05-SH	0.0019	<0.00010	0.00017	0.158	---	0.030	0.0000377	0.00040	---	0.00102	<0.000050	---	<0.0000050	---	0.00111	---	0.000127	---	<0.000010	---	---	---	---	0.00590	---	0.0012	---
(Duplicate)	28-Sep-2016	25-SH	0.0013	<0.00010	0.00019	0.157	---	0.029	0.0000318	0.00044	---	0.00104	<0.000050	---	<0.0000050	---	0.00110	---	0.000114	---	<0.000010	---	---	---	---	0.00580	---	0.0011	---
	27-Sep-2017	05-SH	0.0013	<0.00010	0.00015	0.177	---	0.030	0.0000180	0.00083	---	0.00072	<0.000050	---	<0.0000050	---	0.00102	---	0.000114	---	<0.000010	---	---	---	---	0.00553	---	0.0011	---
(Duplicate)	27-Sep-2017	25-SH	0.0015	<0.00010	0.00016	0.182	---	0.030	0.0000187	0.00062	---	0.00074	<0.000050	---	<0.0000050	---	0.00102	---	0.000095	---	<0.000010	---	---	---	---	0.00565	---	0.0079	---
	17-Sep-2018	05-SH	0.0014	<0.00010	0.00021	0.155	---	0.030	0.0000811	0.00053	---	0.00105	<0.000050	---	<0.0000050	---	0.00132	---	0.000162	---	<0.000010	---	---	---	---	0.00612	---	0.0019	---
(Duplicate)	17-Sep-2018	25-SH	0.0014	<0.00010	0.00022	0.148	---	0.030	0.0000814	0.00045	---	0.00102	<0.000050	---	0.000009	---	0.00136	---	0.000179	---	<0.000010	---	---	---	---	0.00613	---	0.0016	---
	17-Sep-2019	05-SH	0.0038	<0.00010	0.00019	0.154	---	0.029	0.0000178	0.00075	---	0.00104	<0.000050	---	<0.0000050	---	0.00117	---	0.000145	---	<0.000010	---	---	---	---	0.00578	---	<0.0010	---
(Duplicate)	17-Sep-2019	25-SH	0.0014	<0.00010	0.00022	0.148	---	0.030	0.0000814	0.00045	---	0.00102	<0.000050	---	0.000009	---	0.00136	---	0.000179	---	<0.000010	---	---	---	---	0.00613	---	0.0016	---
	22-Sep-2020	05-SH	0.0020	<0.00010	0.00018	0.136	<0.00010	0.024	0.0000131	0.00119	<0.00010	0.00135	<0.000050	0.0300	<0.0000050	0.000317	0.00074	---	0.000133	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00606	<0.00050	<0.0010	---
(Duplicate)	22-Sep-2020	25-SH	0.0022	<0.00010	0.00017	0.134	<0.00010	0.023	0.0000147	0.00121	<0.00010	0.00072	<0.000050	0.0298	<0.0000050	0.000333	0.00071	---	0.000176	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00590	<0.00050	<0.0010	---
	22-Sep-2021	05-SH	0.0036	<0.00010	0.00023	0.14	<0.00010	0.033	0.0000276	0.00352	<0.00010	0.00191	<0.000050	0.0307	<0.0000050	0.000402	0.00129	---	0.000186	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00635	<0.00050	0.0017	---
(Duplicate)	22-Sep-2021	25-SH	0.0029	<0.00010	0.00019	0.148	<0.00010	0.032	0.0000299	0.00364	<0.00010	0.00092	<0.000050	0.0309	<0.0000050	0.000414	0.00112	---	0.000169	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.0064	<0.00050	<0.0010	---
	29-Sep-2022	05-SH	0.0023	0.00333	0.00022	0.126	---	0.034	0.0000571	0.00306	---	0.00428	0.000102	---	<0.0000050	---	0.00197	---	0.000165	---	<0.000010	---	---	---	---	0.00716	---	0.0025	---
(Duplicate)	29-Sep-2022	25-SH	0.0019	<0.00010	0.00019	0.135	---	0.031	0.0000613	0.00298	---	0.00225	<0.000050	---	<0.0000050	---	0.00197	---	0.000164	---	<0.000010	---	---	---	---	0.00693	---	0.0014	---
	28-Sep-2023	05-SH	<0.0010	<0.00010	0.00021	0.118	---	0.031	0.0000128	0.00266	---	0.00090	<0.000050	---	<0.0000050	---	0.00192	---	0.000195	---	<0.000010	---	---	---	---	0.00682	---	0.0014	---
(Duplicate)	28-Sep-2023	25-SH	0.0034	<0.00010	0.0003	0.101	---	0.027	0.0000237	0.00503	---	0.00208	<0.000050	---	<0.0000050	---	0.00202	---	0.000245	---	<0.000010	---	---	---	---	0.00618	---	0.0012	---
	10-Sep-2024	05-SH	0.0026	<0.00010	0.0002	0.112	---	0.029	0.0000126	0.00219	---	0.00083	<0.000050	---	<0.0000050	---	0.00117	---	0.000164	---	<0.000010	---	---	---	---	0.00696	---	0.0013	---
(Duplicate)	10-Sep-2024	25-SH	0.0022	<0.00010	0.00021	0.117	---	0.03	0.0000142	0.0022	---	0.00229	<0.000050	---	<0.0000050	---	0.00133	---	0.000139	---	<0.000010	---	---	---	---	0.00701	---	0.0024	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																									
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
05-IN	15-May-1985	05-IN	---	0.0002	0.0007	---	< 0.001	---	< 0.001	< 0.001	---	0.016	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	05-IN	---	0.0002	0.0002	---	< 0.001	---	< 0.001	0.002	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	05-IN	---	0.0002	0.0008	0.22	< 0.001	---	< 0.001	0.006	---	0.013	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	05-IN	---	0.0002	0.0004	0.21	---	---	---	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	05-IN	---	0.0006	0.0008	0.21	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	05-IN	---	0.0003	0.0005	0.17	---	---	< 0.001	0.008	---	0.009	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	05-IN	---	---	0.0004	0.17	< 0.001	---	< 0.001	0.002	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	05-IN	---	0.0002	0.0007	0.17	< 0.001	---	< 0.001	0.003	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	05-IN	---	0.0002	0.0006	0.16	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	05-IN	---	0.0002	0.0007	0.16	< 0.001	---	< 0.001	0.007	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	05-IN	---	0.0002	0.0008	0.15	< 0.001	---	< 0.001	0.006	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	05-IN	---	0.0002	0.0006	0.14	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	05-IN	---	0.0002	0.0003	0.14	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	05-IN	---	0.0002	0.0007	0.14	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	05-IN	---	0.0002	0.0013	0.11	< 0.001	---	< 0.001	0.004	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	05-IN	---	0.0002	0.0007	0.09	< 0.001	---	< 0.001	0.003	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	05-IN	---	0.001	0.0006	0.09	< 0.001	---	< 0.001	< 0.001	---	0.007	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	05-IN	---	< 0.0002	0.0004	0.07	0.007	---	0.0009	< 0.002	0.007	< 0.001	< 0.0003	---	< 0.00005	< 0.003	0.007	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	05-IN	---	< 0.0002	0.001	0.06	< 0.001	---	< 0.0002	0.007	< 0.003	0.003	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	0.005	0.009	---
	05-Sep-2000	05-IN	---	< 0.0002	0.0005	0.0578	< 0.0002	---	< 0.0002	< 0.001	0.0014	0.0012	< 0.0003	---	< 0.00005	< 0.0002	0.0045	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0031	---
	06-Sep-2001	05-IN	---	< 0.0002	0.0008	0.064	< 0.0002	---	< 0.0002	< 0.001	0.0013	0.0006	< 0.0003	0.047	< 0.00005	0.0015	0.0079	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0345	---
	04-Sep-2002	05-IN	0.002	< 0.0002	0.0011	0.0355	< 0.0002	0.04	< 0.0002	0.033	0.0004	0.003	< 0.0003	---	< 0.00005	0.0013	0.0081	< 0.1	< 0.0002	6.72	---	0.546	< 0.0002	< 0.001	0.001	0.0048	0.009	0.015	< 0.0002
	03-Sep-2003	05-IN	0.007	< 0.0002	0.0005	0.0433	< 0.0002	0.05	< 0.0002	< 0.001	0.0005	0.0021	< 0.0003	0.029	< 0.00005	0.0129	0.0033	< 0.1	< 0.0002	7.35	< 0.0001	0.58	< 0.0002	< 0.001	< 0.001	0.0046	< 0.001	0.0273	0.0002
	08-Sep-2004	05-IN	0.058	< 0.0002	0.0008	0.0559	< 0.0002	0.07	< 0.0002	< 0.001	0.0014	0.0034	< 0.0003	0.044	< 0.00005	0.0015	0.0047	< 0.1	< 0.0002	6.99	< 0.0001	0.63	< 0.0002	< 0.001	0.021	0.0066	< 0.001	0.0057	0.0004
	07-Sep-2005	05-IN	< 0.001	< 0.0002	0.0025	0.055	< 0.0002	0.05	< 0.0002	< 0.001	0.0009	0.0669	< 0.0003	0.048	< 0.00005	0.0013	0.0082	0.2	0.0004	6.85	< 0.0001	0.61	< 0.0002	< 0.001	0.001	0.0055	< 0.001	0.0095	0.0004
	07-Sep-2006	05-IN	0.002	< 0.0002	0.0033	0.0503	< 0.0002	0.05	< 0.0002	< 0.001	0.0009	0.0342	< 0.0003	0.059	0.00019	0.0016	0.007	< 0.1	< 0.0002	7.05	< 0.0001	0.63	< 0.0002	< 0.001	0.001	0.0069	< 0.001	0.0273	0.001
	05-Sep-2007	05-IN	0.033	< 0.0002	< 0.0002	0.06	< 0.001	0.05	< 0.00001	< 0.001	0.0017	0.0169	< 0.0002	0.05	< 0.00005	0.0014	0.0074	0.1	< 0.0002	7.2	< 0.0001	0.65	< 0.0002	< 0.001	0.011	0.0068	< 0.001	< 0.003	---
	05-Sep-2008	05-IN	< 0.01	< 0.0004	0.0004	0.06	< 0.001	< 0.05	< 0.0001	< 0.005	< 0.002	0.002	< 0.0001	0.045	< 0.00010	< 0.005	0.003	---	0.0007	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0074	< 0.001	0.004	---
	09-Sep-2009	05-IN	< 0.0050	< 0.00040	0.00052	0.0549	< 0.0010	< 0.050	< 0.000010	< 0.0050	< 0.0020	0.0013	0.00011	0.055	< 0.000020	< 0.0050	0.0051	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0012	0.00667	< 0.0010	0.0042	---
	08-Sep-2010	05 IN	< 0.0050	< 0.00040	0.00104	0.0564	< 0.0010	0.053	< 0.000010	< 0.0010	< 0.0020	0.0024	< 0.00010	0.06	< 0.000020	< 0.0050	0.0064	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0011	0.00642	< 0.0010	0.0117	---
	07-Sep-2011	05-IN	< 0.0050	< 0.00040	0.00341	0.0575	< 0.0010	< 0.050	0.000011	< 0.0010	< 0.0020	0.001	< 0.00010	0.048	< 0.000020	< 0.0050	0.0027	---	< 0.00040	8.19	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00663	< 0.0010	0.0043	---
	05-Sep-2012	05-IN	< 0.0050	< 0.00040	0.00079	0.0337	< 0.0010	0.055	0.000019	< 0.0010	< 0.0020	0.0049	< 0.00010	0.057	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	8.58	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00612	< 0.0010	0.0095	---
	26-Sep-2013	05-IN	< 0.0050	< 0.00040	0.00108	0.0647	< 0.0010	< 0.050	0.000012	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.055	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0103	< 0.0010	0.0065	---
	17-Sep-2014	05-IN	0.0102	0.00011	0.00081	0.100	< 0.00050	0.045	0.000037	< 0.00010	0.00126	0.00228	< 0.000050	0.0501	< 0.0000050	0.000793	0.00224	< 0.30	< 0.00010	9.95	< 0.000010	0.671	< 0.000050	< 0.00010	< 0.00030	0.0121	0.00021	0.0043	---
	28-Sep-2015	05-IN	0.0039	<0.00010	0.00040	0.0584	---	0.039	0.0000217	0.00035	---	0.00116	<0.000050	---	<0.0000050	---	0.00291	---	<0.000050	---	<0.000010	---	---	---	---	0.0118	---	0.0068	---
	28-Sep-2016	05-IN	0.0016	<0.00010	0.00066	0.0713	---	0.043	0.0000193	<0.00010	---	0.00112	<0.000050	---	<0.0000050	---	0.00225	---	<0.000050	---	<0.000010	---	---	---	---	0.0086	---	0.0038	---
	27-Sep-2017	05-IN	0.0014	<0.00010	0.00045	0.0614	---	0.049	0.0000226	<0.00010	---	0.00089	<0.000050	---	<0.0000050	---	0.00188	---	<0.000050	---	<0.000010	---	---	---	---	0.0085	---	0.0026	---
	17-Sep-2018	05-IN	0.0020	<0.00010	0.00084	0.0689	---	0.052	0.0000256	0.00015	---	0.00302	<0.000050	---	0.000101	---	0.00199	---	0.000051	---	<0.000010	---	---	---	---	0.0083	---	0.0027	---
	17-Sep-2019	05-IN	0.0029	<0.00010	0.00045	0.0854	---	0.043	0.0000239	0.00016	---	0.00245	<0.000050	---	<0.0000050	---	0.00209	---	0.000058	---	<0.000010	---	---	---	---	0.0083	---	0.0017	---
	22-Sep-2020	05-IN	0.0023	<0.00010	0.00062	0.0699	<0.00010	0.040	0.0000104	0.00015	0.00012	0.00362	<0.000050	0.0481	<0.0000050	0.000699	0.00246	---	0.000059	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00816	<0.00050	0.0022	---
	22-Sep-2021	05-IN	0.0018	<0.00010	0.0006	0.0725	<0.00010	0.048	0.0000193	0.00021	<0.00010	0.002	<0.000050	0.0504	<0.0000050	0.00065	0.00126	---	0.000052	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00813	<0.00050	0.0011	---
	29-Sep-2022	05-IN	0.0016	<0.00010	0.00062	0.0705	---	0.049	0.0000059	<0.00050	---	0.00177	<0.000050	---	<0.0000050	---	0.00111	---	0.000070	---	<0.000010	---	---	---	---	0.00870	---	0.0012	---
	28-Sep-2023	05-IN	<0.0010	<0.00010	0.00042	0.0586	---	0.051	0.0000090	0.00176	---	0.00161	<0.000050	---	<0.0000050	---	0.00150	---	<0.000050	---	<0.000010	---	---	---	---	0.00902	---	0.0025	---
	10-Sep-2024	05-IN	0.0019	<0.00010	0.00059	0.0791	---	0.047	0.0000082	<0.00050	---	0.00295	0.00007	---	<0.0000050	---	0.00137	---	0.000051	---	<0.000010	---	---	---	---	0.0083	---	0.0037	---
05-SS	10-Sep-2004	05-SS	0.042	< 0.0002	0.0011	0.093	0.0002	0.04	< 0.0002	< 0.001	0.0013	0.0026	0.0004	0.052	< 0.00005	0.0011	0.0033	< 0.1	< 0.0002	9.12	< 0.0001	0.26	< 0.0002	< 0.001	0.004	< 0.0004	< 0.001	0.0295	0.0002
	08-Sep-2005	05-SS	0.012	< 0.0002	0.0097	0.106	< 0.0002	0.02	< 0.0002	< 0.001	0.0008	0.001	< 0.0003	0.055	< 0.00005	0.0007	0.272	< 0.1	< 0.0002	11.7	< 0.0001	0.23	< 0.0002	< 0.001	0.001	< 0.0004	< 0.001	0.0106	< 0.0002
	12-Apr-2006	05-SS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0285	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	12-Apr-2006	05-SS DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0287	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	05-SS	0.003	< 0.0002	0.0066	0.105	< 0.0002	0.02	< 0.0002	< 0.001	0.0007	0.0032	< 0.0003	0.06	0.00013	0.0006	0.0077	< 0.1	< 0.0002	12.3	< 0.0001	0.24	< 0.0002	< 0.001	0.002	< 0.0004	< 0.001	0.0168	< 0.0002
	07-Sep-2007	05-SS	0.004	< 0.0002	0.0066	0.09	< 0.001	0.02	< 0.00001	< 0.001	0.0004	0.0004	0.0003	0.05	< 0.00005	0.0005	0.0102	< 0.1	< 0.0002	11.6	< 0.0001	0.22	< 0.0002	< 0.001	0.004	< 0.001	< 0.001	0.027	---
	04-Sep-2008	05-SS	< 0.01	< 0.0004	0.0034	0.106	< 0.001	< 0.05	< 0.00002	< 0.005	< 0.002	0.013	0.0004	0.05	< 0.00010	0.008	0.007	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	< 0.0001	0.004	0.029	---
	17-Sep-2009	05-SS	< 0.0050	< 0.00040	0.00043	0.0919	< 0.0010	< 0.050	0.000011	< 0.0050	< 0.0020	0.0039	0.00014	0.058	< 0.000020	< 0.0050	0.0054	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0015	< 0.00010	< 0.0010	0.0197	---
(Duplicate)	17-Sep-2009	05-SS DUP	< 0.0050	< 0.00040	0.00043	0.0937	< 0.0010	< 0.050	0.000011	< 0.0050	< 0.0020	0.0018	< 0.00010	0.056	< 0.000020	< 0.0050	0.0055	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0016	< 0.00010	< 0.0010	0.0145	---
	09-Sep-2010	05 (R) SS	< 0.0050	< 0.00040	< 0.00040	0.0993	< 0.0010	< 0.050	0.000113	< 0.0010	< 0.0020	0.101	0.00046	0.062	< 0.000020	< 0.0050	0.185	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0017	0.00022	< 0.0010	0.667	---
	08-Sep-2011	05-SS	< 0.0050	< 0.00040	0.00787	0.112	< 0.0010	< 0.050	0.000018	< 0.0010	< 0.0020	0.0103	0.00223	0.052	< 0.000020	< 0.0050	0.0071	---	< 0.00040	13.6	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	< 0.00010	< 0.0010	0.0838	---
	16-Sep-2014	05-SS	< 0.0010	< 0.00010	0.00403	0.113	< 0.00050	0.023	< 0.000010	< 0.00010	0.00014	0.00247	0.000055	0.0624	< 0.0000050	0.000427	0.00046	< 0.30	< 0.00010	14.4	< 0.000010	0.250	< 0.000050	< 0.00010	< 0.00030	0.000072	< 0.00010	0.0044	---
	28-Sep-2015	05-SS	0.0012	<0.00010	0.00071	0.101	---	0.018	0.0000116	<0.00010	---	0.00600	<0.000050	---	<0.0000050	---	0.00208	---	<0.000050	---	<0.000010	---	---	---	---	0.000076	---	0.0306	---
(Duplicate)	28-Sep-2015	25-SS	<0.0010	<0.00010	0.00069	0.101	---	0.018	0.0000143	<0.00010	---	0.00589	<0.000050	---	<0.0000050	---	0.00211	---	<0.000050	---	<0.000010	---	---	---	---	0.000073	---	0.0322	---
	28-Sep-2016	05-SS	<0.0010	<0.00010	0.00205	0.104	---	0.020	0.0000111	<0.00010	---	0.00574	<0.000050	---	<0.0000050	---	0.00190	---	<0.000050	---	<0.000010	---	---	---	---	0.000094	---	0.0297	---
(Duplicate)	28-Sep-2016	25-SS	<0.0010	<0.00010	0.00194	0.104	---	0.022	0.0000138	<0.00010	---	0.00559	<0.000050	---	<0.0000050	---	0.00185	---	<0.000050	---	<0.000010	---	---	---	---	0.000091	---	0.0293	---
	27-Sep-2017	05-SS	<0.0010	<0.00010	0.00030	0.117	---	0.025	0.0000072	<0.00010	---	0.00215	<0.000050	---	<0.0000050	---	0.00075	---	<0.000050	---	<0.000010	---	---	---	---	0.000048	---	0.0087	---
(Duplicate)	27-Sep-2017	25-SS	<0.0010	<0.00010	0.00031	0.116	---	0.023	0.0000075	<0.00010	---	0.00210	<0.000050	---	<0.0000050	---	0.00074	---	<0.000050	---	<0.000010	---	---	---	---	0.000043	---	0.0082	---
	17-Sep-2018	05-SS	<0.0010	<0.00010	0.00031	0.116	---	0.026	0.0000860	<0.00010	---	0.00229	<0.000050	---	0.0000373	---	0.00177	---	<0.000050	---	<0.000010	---	---	---	---	0.000076	---	0.0242	---
(Duplicate)	17-Sep-2018	25-SS	<0.0010	<0.00010	0.00034	0.117	---	0.026	0.0000940	<0.00010	---	0.00226	<0.000050	---	0.0000206	---	0.00176	---	<0.000050	---	<0.000010	---	---	---	---	0.000061	---	0.0247	---
	17-Sep-2019	05-SS	<0.0010	0.00015	0.00064	0.107	---	0.022	0.0000220	<0.00010	---	0.01240	0.000166	---	<0.0000050	---	0.00286	---	<0.000050	---	<0.000010	---	---	---	---	0.000566	---	0.0869	---
(Duplicate)	17-Sep-2019	25-SS	<0.0010	0.00015	0.00069	0.109	---	0.022	0.0000254	<0.00010	---	0.01260	0.000163	---	<0.0000050	---	0.00286	---	<0.000050	---	<0.000010	---	---	---	---	0.000592	---	0.0888	---
	23-Sep-2020	05-SS	<0.0010	<0.00010	0.00351	0.105	<0.00010	0.016	<0.0000050	<0.00010	0.00018	0.00045	<0.000050	0.0568	<0.0000050	0.000472	0.00075	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.000052	<0.00050	0.0032	---
(Duplicate)	23-Sep-2020	25-SS	0.0021	<0.00010	0.00363	0.105	<0.00010	0.016	<0.0000050	<0.00010	0.00018	0.00047	<0.000050	0.0563	<0.0000050	0.000432	0.00075	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.000054	<0.00050	0.0032	---
	22-Sep-2021	05-SS	<0.0010	<0.00010	0.00168	0.108	<0.00010	0.024	0.0000095	<0.00010	0.00019	0.00121	<0.000050	0.0621	<0.0000050	0.000477	0.00316	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.000048	<0.00050	0.0454	---
(Duplicate)	22-Sep-2021	25-SS	<0.0010	<0.00010	0.00187	0.106	<0.00010	0.018	0.0000096	<0.00010	0.00019	0.00118	<0.000050	0.0583	<0.0000050	0.000506	0.00299	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.000046	<0.00050	0.043	---
	29-Sep-2022	05-SS	0.0011	<0.00010	0.00019	0.113	---	0.024	<0.0000050	<0.00050	---	0.00158	<0.000050	---	<0.0000050	---	0.00070	---	<0.000050	---	<0.000010	---	---	---	---	0.000166	---	0.0208	---
(Duplicate)	29-Sep-2022	25-SS	<0.0010	<0.00010	0.00018	0.133	---	0.023	0.0000073	<0.00050	---	0.00255	<0.000050	---	<0.0000050	---	0.00086	---	<0.000050	---	<0.000010	---	---	---	---	0.000141	---	0.0228	---
	28-Sep-2023	05-SS	0.0807	<0.00010	0.00067	0.0994	---	0.022	0.0000221	0.00153	---	0.00213	<0.000050	---	<0.0000050	---	0.00218	---	<0.000050	---	<0.000010	---	---	---	---	0.000059	---	0.0316	---
(Duplicate)	28-Sep-2023	25-SS	<0.0010	<0.00010	0.00119	0.0981	---	0.022	0.0000109	0.00129	---	0.00265	<0.000050	---	<0.0000050	---	0.00325	---	<0.000050	---	<0.000010	---	---	---	---	0.000133	---	0.0414	---
	10-Sep-2024	05-SS	0.0011	<0.00010	0.00022	0.0984	---	0.022	0.0000084	<0.00050	---	0.0014	<0.000050	---	<0.0000050	---	0.00076	---	<0.000050	---	<0.000010	---	---	---	---	0.000056	---	0.022	---
(Duplicate)	10-Sep-2024	25-SS	0.0017	<0.00010	0.00022	0.102	---	0.022	0.0000076	<0.00050	---	0.00666	0.000217	---	<0.0000050	---	0.00103	---	<0.000050	---	<0.000010	---	---	---	---	0.000046	---	0.0252	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
06-SH	15-May-1985	06-SH	---	0.0003	0.001	---	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	06-SH	---	0.0004	0.0011	---	< 0.001	---	< 0.001	0.003	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	06-SH	---	0.0002	0.0003	---	< 0.001	---	< 0.001	0.004	---	0.006	0.008	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	06-SH	---	0.0002	0.0009	0.29	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	06-SH	---	0.0002	0.0006	0.27	---	---	---	< 0.001	---	0.006	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	06-SH	---	0.0004	0.0002	0.28	---	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	06-SH	---	0.0002	0.0004	0.26	---	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	06-SH	---	0.0004	0.0004	0.29	< 0.001	---	< 0.001	< 0.001	---	0.004	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	06-SH	---	0.0002	0.0004	0.31	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	06-SH	---	0.0002	0.0002	0.3	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	06-SH	---	0.0002	0.0004	0.3	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	06-SH	---	0.0002	0.0002	0.31	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	06-SH	---	0.0002	0.0009	0.32	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	06-SH	---	0.0002	0.0003	0.34	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	06-SH	---	0.0002	0.0005	0.34	< 0.001	---	< 0.001	0.002	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	06-SH	---	0.0002	0.0002	0.32	< 0.001	---	< 0.001	0.003	---	0.003	0.004	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	06-SH	---	0.0002	0.0003	0.39	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	06-SH	---	< 0.0002	0.0005	0.19	< 0.001	---	< 0.003	< 0.001	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	06-SH	---	0.0003	0.0007	0.56	0.001	---	< 0.003	< 0.002	0.008	0.128	< 0.001	---	0.00005	0.005	0.167	---	0.0002	---	< 0.002	---	< 0.001	---	---	---	0.004	0.054	---
	01-Nov-1994	06-SH	---	< 0.0002	0.0004	0.44	0.002	---	< 0.003	0.002	< 0.003	0.037	< 0.001	---	< 0.00005	< 0.003	0.026	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.017	---
	28-Sep-1995	06-SH	---	< 0.0002	0.0002	0.58	< 0.001	---	< 0.0002	< 0.002	0.005	< 0.001	< 0.0003	---	< 0.00005	< 0.003	0.005	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.001	---
	04-Sep-1996	06-SH	---	< 0.0002	< 0.0002	0.64	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.004	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.01	---
	03-Sep-1997	06-SH	---	< 0.0002	0.0002	0.65	< 0.001	---	< 0.0002	0.024	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	0.003	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	15-Sep-1998	06-SH	---	< 0.0002	0.0002	0.66	0.005	---	< 0.0002	< 0.002	< 0.003	0.006	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
(Duplicate)	15-Sep-1998	06-SH DUP	---	< 0.0002	0.0002	0.68	0.004	---	0.0011	0.017	0.009	0.007	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	0.002	---	< 0.001	---	---	---	0.002	< 0.001	---
	09-Sep-1999	06-SH	---	0.0005	0.0002	0.86	< 0.001	---	< 0.0002	0.011	0.005	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	---	---	---	---	< 0.002	0.002	---
	05-Sep-2000	06-SH	---	< 0.0002	0.0005	0.654	< 0.0002	---	< 0.0002	< 0.001	0.0004	0.0014	< 0.0003	---	< 0.00005	0.0003	0.0085	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0043	---
	06-Sep-2001	06-SH	---	< 0.0002	< 0.0002	0.731	< 0.0002	---	< 0.0002	0.01	0.0014	0.0013	< 0.0003	0.036	< 0.00005	0.0006	0.0102	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0123	---
(Duplicate)	06-Sep-2001	06-SH DUP	---	0.0003	< 0.0002	0.718	< 0.0002	---	< 0.0002	0.018	0.0006	0.0013	< 0.0003	---	< 0.00005	0.0008	0.0091	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0077	---
	04-Sep-2002	06-SH	0.006	< 0.0002	0.0005	0.761	< 0.0002	0.06	< 0.0002	0.005	0.0006	0.002	< 0.0003	---	< 0.00005	0.0006	0.0081	< 0.1	< 0.0002	10.1	< 0.0001	0.692	< 0.0002	< 0.001	0.001	0.0061	< 0.001	0.0042	0.0007
(Duplicate)	04-Sep-2002	06-SH DUP	0.002	0.0002	0.0004	0.809	< 0.0002	0.06	< 0.0002	0.004	0.0006	0.002	< 0.0003	---	< 0.00005	0.0007	0.0086	---	< 0.0002	10.1	< 0.0001	0.707	< 0.0002	< 0.001	< 0.001	0.006	< 0.001	0.0048	0.0005
	03-Sep-2003	06-SH	0.002	< 0.0002	< 0.0002	0.772	< 0.0002	0.07	< 0.0002	0.007	0.0005	0.0019	< 0.0003	0.015	< 0.00005	0.0044	0.0064	< 0.1	< 0.0002	11.3	< 0.0001	0.73	< 0.0002	< 0.001	< 0.001	0.0065	< 0.001	0.006	0.0003
(Duplicate)	03-Sep-2003	06-SH DUP	0.001	0.0004	< 0.0002	0.75	< 0.0002	0.08	< 0.0002	0.014	< 0.0003	0.0018	0.0004	0.026	< 0.00005	0.0195	0.0052	< 0.1	< 0.0002	11.3	< 0.0001	0.79	< 0.0002	< 0.001	< 0.001	0.0064	< 0.001	0.0049	0.0007
	08-Sep-2004	06-SH	0.058	< 0.0002	< 0.0002	0.915	< 0.0002	0.08	< 0.0002	0.061	0.001	0.0018	< 0.0003	0.03	< 0.00005	0.0076	0.0075	< 0.1	< 0.0002	10.5	< 0.0001	0.74	< 0.0002	< 0.001	0.031	0.0087	< 0.001	0.0031	0.0004
(Duplicate)	08-Sep-2004	06-SH DUP	0.016	< 0.0002	< 0.0002	0.825	0.0019	0.11	< 0.0002	0.072	< 0.0003	0.0014	0.0004	0.033	< 0.00005	0.0072	0.0027	< 0.1	< 0.0002	10.6	< 0.0001	0.72	< 0.0002	< 0.001	0.018	0.0085	< 0.001	0.0072	0.0003
	30-Oct-2004	06-SH	0.017	< 0.0002	< 0.0002	0.75	< 0.0002	0.14	< 0.0002	0.001	0.0021	0.0025	< 0.0003	0.029	< 0.00005	0.0004	0.0102	< 0.1	< 0.0002	9.78	< 0.0001	0.7	< 0.0002	< 0.001	0.016	0.0073	0.001	0.0069	0.0003
	07-Sep-2005	06-SH	0.001	0.0003	0.0007	0.849	< 0.0002	0.04	< 0.0002	0.003	0.0038	0.0018	< 0.0003	0.034	0.00005	0.0038	0.0494	< 0.1	0.0004	9.7	< 0.0001	0.65	< 0.0002	< 0.001	0.001	0.0066	< 0.001	0.005	0.0004
(Duplicate)	07-Sep-2005	06-SH DUP	< 0.001	< 0.0002	0.0003	0.713	< 0.0002	0.05	< 0.0002	0.015	0.0021	0.0013	< 0.0003	0.034	0.00005	0.0043	0.0422	< 0.1	0.0004	9.46	< 0.0001	0.66	< 0.0002	< 0.001	0.002	0.0061	< 0.001	0.0022	0.0005
	07-Sep-2006	06-SH	0.002	< 0.0002	0.0004	0.698	< 0.0002	0.05	< 0.0002	< 0.001	0.0025	0.0027	< 0.0003	0.039	0.00009	0.001	0.0116	< 0.1	< 0.0002	10.2	< 0.0001	0.69	< 0.0002	< 0.001	0.002	0.0084	< 0.001	0.0016	0.0004
(Duplicate)	07-Sep-2006	06-SH DUP	0.002	< 0.0002	< 0.0002	0.767	< 0.0002	0.07	< 0.0002	< 0.001	0.0026	0.003	< 0.0003	0.036	0.00011	0.001	0.0131	< 0.1	< 0.0002	10.1	< 0.0001	0.68	< 0.0002	< 0.001	0.004	0.0072	< 0.001	0.0061	0.0005
	05-Sep-2007	06-SH	0.002	< 0.0002	0.0005	0.57	< 0.001	0.05	0.00007	< 0.001	0.0031	0.0012	< 0.0002	0.03	< 0.00005	0.001	0.029	0.2	0.0004	9.4	< 0.0001	0.61	< 0.0002	< 0.001	0.009	0.0072	< 0.001	< 0.003	---
(Duplicate)	05-Sep-2007	06-SH DUP	0.001	< 0.0002	0.0003	0.7	< 0.001	0.04	0.00011	0.002	0.0013	0.0027	< 0.0002	0.03	< 0.00005	0.001	0.0332	< 0.1	< 0.0002	9.9	< 0.0001	0.61	< 0.0002	< 0.001	0.006	0.0061	< 0.001	0.005	---
	03-Sep-2008	06-SH	< 0.01	< 0.0004	< 0.0004	0.684	< 0.001	< 0.05	< 0.0001	< 0.005	0.003	0.003	< 0.0001	0.032	< 0.00010	< 0.005	0.008	---	0.0007	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0078	< 0.001	0.003	---
(Duplicate)	03-Sep-2008	06-SH DUP	< 0.01	< 0.0004	< 0.0004	0.688	< 0.001	0.05	< 0.0001	< 0.005	0.003	0.003	< 0.0001	0.036	< 0.00010	< 0.005	0.008	---	0.0007	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0081	< 0.001	0.003	---
	09-Sep-2009	06-SH	< 0.0050	< 0.00040	0.00049	0.584	< 0.0010	< 0.050	0.000038	< 0.0050	< 0.0020	0.0017	0.00013	0.034	< 0.000020	< 0.0050	0.0091	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0016	0.00588	< 0.0010	0.0047	---
(Duplicate)	09-Sep-2009	06-SH DUP	< 0.0050	< 0.00040	< 0.00040	0.609	< 0.0010	< 0.050	0.000024	< 0.0050	0.0026	< 0.0010	0.00011	0.037	< 0.000020	< 0.0050	0.0081	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0018	0.00714	< 0.0010	< 0.0040	---
	08-Sep-2010	06 SH	< 0.0050	< 0.00040	0.0013	0.503	< 0.0010	< 0.050	0.000033	< 0.0010	< 0.0020	0.0015	< 0.00010	0.03	< 0.000020	< 0.0050	0.0083	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0015	0.00578	< 0.0010	0.0063	---
(Duplicate)	08-Sep-2010	SYLVITE 26	< 0.0050	< 0.00040	0.00186	0.586	< 0.0010	0.052	0.00004	< 0.0010	< 0.0020	0.0012	0.00024	0.034	< 0.000020	< 0.0050	0.0096	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0018	0.0072	< 0.0010	0.0112	---
	07-Sep-2011	06-SH	< 0.0050	< 0.00040	0.00208	0.569	< 0.0010	< 0.050	0.000056	< 0.0010	< 0.0020	0.0014	< 0.00010	0.028	< 0.000020	< 0.0050	0.0063	---	< 0.00040	10.5	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0059	< 0.0010	< 0.0040	---
(Duplicate)	07-Sep-2011	ZIRCON 26	< 0.0050	< 0.00040	0.00118	0.683	< 0.0010	0.05	0.000041	< 0.0010	0.002	< 0.0010	< 0.00010	0.03	< 0.000020	< 0.0050	0.0061	---	< 0.00040	10.1	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00654	< 0.0010	< 0.0040	---
	05-Sep-2012	06-SH	< 0.0050	< 0.00040	0.00073	0.627	< 0.0010	0.051	0.000023	< 0.0010	0.0021	< 0.0010	< 0.00010	0.037	< 0.000020	< 0.0050	0.0041	---	< 0.00040	10.9	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00666	< 0.0010	< 0.0040	---
(Duplicate)	05-Sep-2012	SPINEL 25	< 0.0050	< 0.00040	0.00084	0.615	< 0.0010	0.05	0.000029	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.035	< 0.000020	< 0.0050	0.0044	---	< 0.00040	11.8	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00645	< 0.0010	< 0.0040	---
	25-Sep-2013	06-SH	<0.0050	0.00057	0.00112	0.645	<0.0010	0.051	0.000064	<0.0010	<0.0020	<0.0010	0.00014	0.032	<0.000020	<0.0050	0.0269	---	<0.00040	---	<0.000020	---	<0.00010	<0.050	<0.0010	0.00568	<0.0010	<0.0040	---
(Duplicate)	25-Sep-2013	26-SH	<0.0050	0.00069	0.00138	0.655	<0.0010	<0.050	0.000065	<0.0010	<0.0020	0.0013	0.00022	0.031	<0.000020	<0.0050	0.0258	---	<0.00040	---	<0.000020	---	<0.00010	<0.050	<0.0010	0.00570	<0.0010	0.0174	---
	17-Sep-2014	06-SH	0.0010	0.00074	0.00076	0.636	<0.00050	0.048	0.000090	0.00032	0.00105	0.00177	0.000149	0.0307	0.0000052	0.00146	0.00868	<0.30	0.00019	11.0	<0.000010	0.584	<0.000050	<0.00010	<0.00030	0.00547	0.00016	0.0029	---
	29-Sep-2015	06-SH	0.0014	0.00014	0.00040	0.519	---	0.039	0.0000285	0.00014	---	0.00081	<0.000050	---	<0.0000050	---	0.00733	---	<0.000050	---	<0.000010	---	---	---	---	0.00744	---	0.0021	---
	28-Sep-2016	06-SH	0.0062	0.00042	0.00105	0.608	---	0.042	0.0000196	0.00288	---	0.00053	0.000056	---	<0.0000050	---	0.00583	---	0.000057	---	<0.000010	---	---	---	---	0.00555	---	0.0017	---
	26-Sep-2017	06-SH	0.0016	<0.00010	0.00025	0.639	---	0.047	0.0000091	<0.00010	---	0.00060	<0.000050	---	<0.0000050	---	0.00507	---	<0.000050	---	<0.000010	---	---	---	---	0.00652	---	0.0023	---
	17-Sep-2018	06-SH	<0.0010	0.00016	0.00057	0.623	---	0.054	0.0000164	<0.00010	---	0.00024	<0.000050	---	0.0000081	---	0.00510	---	<0.000050	---	<0.000010	---	---	---	---	0.00634	---	0.0024	---
	17-Sep-2019	06-SH	0.0020	0.00027	0.00103	0.592	---	0.045	0.0000230	0.00015	---	0.00205	0.000142	---	<0.0000050	---	0.00467	---	<0.000050	---	<0.000010	---	---	---	---	0.00535	---	0.0030	---
	22-Sep-2020	06-SH	0.0010	0.00036	0.00067	0.547	<0.00010	0.038	0.0000293	<0.00010	0.00117	0.00066	<0.000050	0.0301	<0.0000050	0.00129	0.00452	---	0.000079	---	<0.000010	---	0.000020	<0.00010	<0.00030	0.00579	<0.00050	0.0014	---
	22-Sep-2021	06-SH	0.0043	<0.00010	0.00027	0.6	<0.00010	0.044	0.0000123	0.0002	0.00159	0.00079	<0.000050	0.031	<0.0000050	0.000611	0.00432	---	<0.000050	---	<0.000010	---	0.000014	<0.00010	<0.00030	0.00623	<0.00050	0.0023	---
	28-Sep-2022	06-SH	<0.0010	0.00027	0.00077	0.614	---	0.048	0.0000120	<0.00050	---	0.00048	<0.000050	---	<0.0000050	---	0.00453	---	0.000071	---	<0.000010	---	---	---	---	0.00582	---	0.0016	---
	29-Sep-2023	06-SH	<0.0010	<0.00010	0.00032	0.545	---	0.046	0.0000167	0.00158	---	0.0005	<0.000050	---	<0.0000050	---	0.00483	---	0.000055	---	<0.000010	---	---	---	---	0.00609	---	0.0018	---
	10-Sep-2024	06-SH	0.002	0.0001	0.00027	0.586	---	0.047	0.0000146	<0.00050	---	0.00086	<0.000050	---	<0.0000050	---	0.00466	---	<0.000050	---	<0.000010	---	---	---	---	0.00566	---	0.003	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																									
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
06-IN	15-May-1985	06-IN	---	0.001	0.0011	---	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	06-IN	---	0.0002	0.0005	---	< 0.001	---	< 0.001	0.003	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	06-IN	---	0.0002	0.0005	0.25	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	06-IN	---	0.0002	0.0009	0.19	---	---	---	0.002	---	0.004	0.005	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	06-IN	---	0.0002	0.0006	0.19	---	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1987	06-IN	---	0.0002	0.0007	0.17	< 0.001	---	< 0.001	0.003	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	06-IN	---	0.0002	0.0008	0.17	---	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	06-IN	---	0.001	0.0014	0.16	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	06-IN	---	0.0002	0.0011	0.17	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	06-IN	---	0.0002	0.0011	0.15	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	06-IN	---	0.0002	0.0026	0.14	< 0.001	---	< 0.001	0.009	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	06-IN	---	0.0002	0.002	0.13	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	06-IN	---	0.0002	0.0005	0.12	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	06-IN	---	0.0002	0.0006	0.12	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	06-IN	---	0.0002	0.0006	0.1	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	06-IN	---	0.0002	0.0006	0.09	< 0.001	---	< 0.001	0.002	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	06-IN	---	0.0014	0.0005	0.04	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1991	06-IN	---	0.0002	0.0005	0.08	< 0.001	---	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	---	< 0.00005	0.008	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Nov-1991	06-IN	---	0.0002	0.0006	0.08	< 0.001	---	< 0.001	< 0.001	< 0.001	0.003	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	06-IN	---	< 0.0002	0.0005	0.05	< 0.001	---	< 0.003	< 0.002	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	06-IN	---	< 0.0002	0.0005	0.08	0.001	---	< 0.003	0.011	< 0.003	0.004	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	06-IN	---	< 0.0002	0.0012	0.12	< 0.001	---	< 0.003	< 0.002	< 0.003	< 0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	06-IN	---	---	---	---	---	---	< 0.0002	---	---	---	< 0.0003	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	06-IN	---	< 0.0002	0.0004	0.07	0.002	---	< 0.0002	0.016	< 0.003	0.012	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.035	---
	09-Sep-1999	06-IN	---	< 0.0002	0.0004	0.1	< 0.001	---	< 0.0002	0.016	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	< 0.002	0.201	---
	05-Sep-2000	06-IN	---	< 0.0002	0.0004	0.0747	< 0.0002	---	< 0.0002	0.005	< 0.0003	0.0026	< 0.0003	---	< 0.00005	0.0003	0.0039	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0165	---
	06-Sep-2001	06-IN	---	< 0.0002	0.0003	0.0778	0.0002	---	< 0.0002	0.041	< 0.0003	0.0066	0.0009	0.042	< 0.00005	0.0021	0.0058	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.033	---
	04-Sep-2002	06-IN	0.003	0.0002	0.0005	0.0831	< 0.0002	0.07	< 0.0002	0.044	0.0007	0.0049	< 0.0003	---	< 0.00005	0.0019	0.0089	< 0.1	< 0.0002	6.44	< 0.0001	0.574	< 0.0002	< 0.001	0.002	0.0056	0.01	0.0341	< 0.0002
	03-Sep-2003	06-IN	0.002	0.0005	< 0.0002	0.138	< 0.0002	0.08	< 0.0002	0.017	0.0003	0.003	< 0.0003	0.041	< 0.00005	0.0025	0.0016	< 0.1	< 0.0002	7.14	< 0.0001	0.58	< 0.0002	< 0.001	< 0.001	0.0046	< 0.001	0.0121	< 0.0002
	08-Sep-2004	06-IN	0.044	< 0.0002	< 0.0002	0.0806	< 0.0002	0.08	< 0.0002	0.026	< 0.0003	0.0029	0.0004	0.037	< 0.00005	0.0019	0.0028	< 0.1	< 0.0002	6.19	< 0.0001	0.58	< 0.0002	< 0.001	0.017	0.0058	< 0.001	0.0085	0.0002
	07-Sep-2005	06-IN	< 0.001	0.0003	0.0005	0.131	0.0002	0.09	0.0004	0.001	0.0004	0.0171	< 0.0003	0.044	< 0.00005	0.0056	0.0256	< 0.1	0.0003	6.41	0.0003	0.59	< 0.0002	< 0.001	< 0.001	0.0051	< 0.001	0.196	0.0016
	07-Sep-2006	06-IN	0.001	< 0.0002	0.0034	0.111	< 0.0002	0.07	< 0.0002	< 0.001	0.001	0.0151	< 0.0003	0.047	0.00009	0.0045	0.0366	< 0.1	< 0.0002	6.06	< 0.0001	0.56	< 0.0002	< 0.001	< 0.001	0.0063	< 0.001	0.0577	0.0002
	03-Sep-2008	06-IN	< 0.01	< 0.0004	< 0.0004	0.108	< 0.001	0.07	< 0.0001	< 0.005	0.002	0.004	< 0.0001	0.043	< 0.00010	< 0.005	0.011	---	0.0007	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0064	< 0.001	0.023	---
	09-Sep-2009	06-IN	< 0.0050	< 0.00040	0.00052	0.149	< 0.0010	0.067	0.000016	< 0.0050	0.0023	0.003	0.00011	0.045	< 0.000020	< 0.0050	0.0151	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0011	0.00575	< 0.0010	0.0348	---
	08-Sep-2010	06 IN	< 0.0050	< 0.00040	0.00069	0.0919	< 0.0010	0.073	0.000014	< 0.0010	0.0027	0.0032	< 0.00010	0.048	< 0.000020	< 0.0050	0.0192	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.001	0.00574	< 0.0010	0.0507	---
	07-Sep-2011	06-IN	< 0.0050	< 0.00040	0.00239	0.138	< 0.0010	0.069	< 0.000010	< 0.0010	0.0022	0.0015	< 0.00010	0.042	< 0.000020	< 0.0050	0.0109	---	< 0.00040	7.44	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00672	< 0.0010	0.0147	---
	05-Sep-2012	06-IN	< 0.0050	< 0.00040	0.00131	0.111	< 0.0010	0.067	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.046	< 0.000020	< 0.0050	0.0076	---	< 0.00040	7.83	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00599	< 0.0010	0.0153	---
	25-Sep-2013	06-IN	< 0.0050	< 0.00040	0.00258	0.121	< 0.0010	0.069	< 0.000010	< 0.0010	0.0035	< 0.0010	< 0.00010	0.052	< 0.000020	< 0.0050	0.0048	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00665	< 0.0010	0.0163	---
06(R)IN	17-Sep-2014	06(R)IN	0.0020	0.00038	0.00082	0.387	< 0.00050	0.059	0.000151	0.00054	0.00482	0.00057	0.000098	0.0316	< 0.0000050	0.00911	0.108	< 0.30	0.00014	10.7	< 0.000010	0.541	< 0.000050	< 0.00010	< 0.00030	0.00884	0.00055	0.0070	---
	29-Sep-2015	06(R)IN	0.0030	0.00010	0.00117	0.420	---	0.047	0.0000111	0.00021	---	<0.00020	<0.000050	---	<0.0000050	---	0.0221	---	0.000123	---	<0.000010	---	---	---	---	0.00658	---	0.0019	---
	28-Sep-2016	06(R)IN	<0.0010	0.00013	0.00152	0.646	---	0.056	<0.0000050	0.00032	---	<0.00020	<0.000050	---	<0.0000050	---	0.0149	---	0.000057	---	<0.000010	---	---	---	---	0.01230	---	0.0011	---
	26-Sep-2017	06(R)IN	0.0011	0.00029	0.00415	0.640	---	0.053	0.0000243	<0.00010	---	0.00027	<0.000050	---	<0.0000050	---	0.0336	---	0.000067	---	<0.000010	---	---	---	---	**0.02070**	---	0.0021	---
	17-Sep-2018	06(R)IN	0.0033	0.00026	0.00948	0.659	---	0.062	0.0000235	0.00015	---	<0.00020	<0.000050	---	0.0000057	---	0.0261	---	0.000114	---	<0.000010	---	---	---	---	**0.02000**	---	0.0016	---
	17-Sep-2019	06(R)IN	0.0013	<0.00010	**0.01510**	0.705	---	0.058	0.0000084	0.00030	---	0.00036	<0.000050	---	<0.0000050	---	0.0127	---	0.000051	---	<0.000010	---	---	---	---	**0.0451**	---	<0.0010	---
	22-Sep-2020	06(R)IN	0.0022	0.00011	0.0119	0.558	<0.00010	0.055	0.0000104	<0.00010	0.00170	0.00030	<0.000050	0.0336	<0.0000050	0.00405	0.0172	---	0.000061	---	<0.000010	---	<0.000010	<0.00010	<0.00030	**0.0326**	<0.00050	0.0019	---
	22-Sep-2021	06(R)IN	0.0012	0.00017	**0.00208**	0.667	<0.00010	0.053	0.0000546	<0.00010	0.00266	0.00072	<0.000050	<0.000050	<0.0000050	0.00157	0.0189	---	0.000089	---	<0.000010	---	0.00001	<0.00010	<0.00030	0.0097	<0.00050	0.0059	---
	28-Sep-2022	06(R)IN	<0.0010	0.00010	0.00178	0.564	---	0.064	0.0000287	<0.00050	---	0.00067	<0.000050	---	<0.0000050	---	0.0397	---	0.000057	---	0.000061	---	---	---	---	0.0090	---	0.0036	
	29-Sep-2023	06(R)IN	<0.0010	<0.00010	0.00056	0.507	---	0.05	0.000028	0.00183	---	0.00119	<0.000050	---	<0.0000050	---	0.0123	---	0.000093	---	0.0001	---	---	---	---	0.00669	---	0.0028	---
	10-Sep-2024	06(R)IN	0.004	<0.00010	0.00054	0.559	---	0.043	0.0000246	<0.00050	---	0.00159	<0.000050	---	<0.0000050	---	0.00837	---	0.000058	---	<0.000010	---	---	---	---	0.00584	---	0.0039	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS																									
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
07-SH	15-May-1985	07-SH	---	0.0011	0.0008	---	< 0.001	---	< 0.001	< 0.001	---	0.012	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	07-SH	---	0.0004	0.0007	---	< 0.001	---	< 0.001	< 0.001	---	0.007	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	07-SH	---	0.0002	0.0009	0.4	< 0.001	---	< 0.001	0.018	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	07-SH	---	0.0002	0.0005	0.36	---	---	---	0.003	---	0.006	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	07-SH	---	0.0005	0.0008	0.37	---	---	< 0.001	< 0.001	---	0.007	0.005	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	07-SH	---	0.0002	0.0003	0.33	---	---	< 0.001	0.004	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	07-SH	---	0.0007	0.0009	0.36	< 0.001	---	< 0.001	0.004	---	0.008	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	07-SH	---	0.0002	0.0005	0.39	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	07-SH	---	0.0002	0.0008	0.38	< 0.001	---	< 0.001	< 0.001	---	0.004	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	07-SH	---	0.0002	0.0003	0.38	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	07-SH	---	0.0002	0.0002	0.4	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	07-SH	---	0.0002	0.0008	0.41	< 0.001	---	< 0.001	0.003	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	07-SH	---	0.0002	0.0005	0.38	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	07-SH	---	0.0002	0.0004	0.44	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	07-SH	---	0.0002	0.0004	0.44	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	07-SH	---	0.0002	0.0003	0.44	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	07-SH	---	0.0022	0.0004	0.52	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1991	07-SH	---	0.002	0.0006	0.49	< 0.001	---	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	---	< 0.00005	0.013	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Nov-1991	07-SH	---	0.002	0.0006	0.5	< 0.001	---	< 0.001	< 0.001	< 0.001	0.003	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	07-SH	---	< 0.0002	0.0008	0.3	0.001	---	< 0.003	0.004	< 0.003	< 0.001	< 0.002	---	< 0.00005	0.004	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	07-SH	---	< 0.0002	0.0005	0.56	0.001	---	< 0.003	0.011	< 0.003	0.004	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	20-May-1993	07-SH	---	< 0.0002	0.0004	0.56	0.001	---	< 0.003	0.01	< 0.003	0.003	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	07-SH	---	< 0.0002	0.0003	0.57	0.001	---	< 0.003	< 0.002	< 0.003	0.004	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	07-SH	---	< 0.0002	0.0002	0.55	0.002	---	< 0.003	< 0.002	< 0.003	0.002	< 0.001	---	< 0.00005	< 0.003	0.013	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.004	---
	21-Sep-1994	07-SH	---	0.0002	0.0002	0.58	0.002	---	< 0.003	< 0.002	< 0.003	0.004	< 0.001	---	0.00005	< 0.003	0.017	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.005	---
	02-Nov-1994	07-SH	---	0.0015	0.0003	0.52	0.002	---	< 0.003	0.01	0.003	0.003	< 0.001	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.002	0.01	---
	28-Sep-1995	07-SH	---	< 0.0002	0.0002	0.56	< 0.001	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	0.01	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	< 0.001	---
	04-Sep-1996	07-SH	---	0.0004	0.0006	0.58	< 0.001	---	< 0.0002	< 0.002	0.006	0.005	0.0006	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.004	0.026	---
	03-Sep-1997	07-SH	---	0.0002	< 0.0002	0.56	< 0.001	---	< 0.0002	0.022	< 0.003	0.002	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.003	---
	15-Sep-1998	07-SH	---	0.0003	< 0.0002	0.46	0.002	---	< 0.0002	< 0.002	< 0.003	0.003	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
(Duplicate)	15-Sep-1998	07-SH DUP	---	< 0.0002	0.0002	0.45	0.002	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	07-SH	---	< 0.0002	0.0003	0.69	< 0.001	---	< 0.0002	0.017	0.005	0.035	< 0.0003	---	< 0.00005	0.023	< 0.005	---	< 0.0002	---	0.023	---	---	---	---	---	0.043	0.011	---
(Duplicate)	09-Sep-1999	07-SH DUP	---	0.0002	0.0011	0.71	< 0.001	---	< 0.0002	< 0.002	0.005	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	---	---	---	---	< 0.002	0.002	---
	05-Sep-2000	07-SH	---	< 0.0002	0.0004	0.78	< 0.0002	---	< 0.0002	< 0.001	0.0005	< 0.0002	< 0.0003	---	< 0.00005	< 0.0002	0.005	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0029	---
(Duplicate)	05-Sep-2000	07-SH DUP	---	0.0004	0.001	0.837	< 0.0002	---	< 0.0002	< 0.001	0.0008	< 0.0002	< 0.0003	---	< 0.00005	< 0.0002	0.0047	---	0.0004	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0034	---
	06-Sep-2001	07-SH	---	< 0.0002	0.0002	0.574	< 0.0002	---	< 0.0002	< 0.001	0.0005	0.0005	< 0.0003	0.027	< 0.00005	0.0009	0.006	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0086	---
(Duplicate)	06-Sep-2001	07-SH DUP	---	< 0.0002	< 0.0002	0.546	< 0.0002	---	< 0.0002	< 0.001	0.0006	0.0007	< 0.0003	---	< 0.00005	0.0007	0.0056	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0067	---
	04-Sep-2002	07-SH	< 0.001	< 0.0002	0.0012	0.532	< 0.0002	0.08	< 0.0002	< 0.001	0.0003	0.0014	< 0.0003	---	< 0.00005	0.001	0.002	< 0.1	< 0.0002	6.82	< 0.0001	0.676	< 0.0002	< 0.001	< 0.001	0.0031	< 0.001	0.0033	0.0004
(Duplicate)	04-Sep-2002	07-SH DUP	0.002	0.0003	0.0007	0.558	< 0.0002	0.07	< 0.0002	< 0.001	0.0003	0.0013	< 0.0003	---	< 0.00005	0.001	0.002	< 0.1	< 0.0002	7.09	< 0.0001	0.678	< 0.0002	< 0.001	< 0.001	0.0032	< 0.001	0.0043	0.0003
	03-Sep-2003	07-SH	0.004	< 0.0002	< 0.0002	0.505	< 0.0002	0.08	< 0.0002	< 0.001	< 0.0003	0.0013	0.0005	0.007	< 0.00005	0.0229	0.0009	< 0.1	< 0.0002	7.46	0.0001	0.66	< 0.0002	< 0.001	< 0.001	0.0027	< 0.001	0.0111	< 0.0002
(Duplicate)	03-Sep-2003	07-SH DUP	0.005	0.0005	< 0.0002	0.51	< 0.0002	0.07	< 0.0002	< 0.001	< 0.0003	0.0012	< 0.0003	0.02	< 0.00005	0.004	0.0006	< 0.1	< 0.0002	7.39	< 0.0001	0.7	< 0.0002	< 0.001	< 0.001	0.0028	< 0.001	0.0106	< 0.0002
	08-Sep-2004	07-SH	0.111	< 0.0002	0.0002	0.765	< 0.0002	0.09	< 0.0002	< 0.001	0.0008	0.0011	< 0.0003	0.022	0.00026	0.001	0.004	< 0.1	< 0.0002	6.96	< 0.0001	0.68	< 0.0002	< 0.001	0.024	0.0041	< 0.001	0.0061	0.0002
(Duplicate)	08-Sep-2004	07-SH DUP	0.055	< 0.0002	0.0045	0.327	0.0022	0.19	< 0.0002	0.002	0.0021	0.0009	0.0005	0.027	< 0.00005	0.0007	0.0026	< 0.1	< 0.0002	7.02	< 0.0001	0.68	< 0.0002	< 0.001	0.019	0.0009	< 0.001	0.0044	0.0009
	07-Sep-2005	07-SH	< 0.001	0.0004	0.0005	0.589	0.0002	0.06	0.0003	< 0.001	< 0.0003	0.0012	< 0.0003	0.033	0.00006	0.0013	0.0022	< 0.1	0.0003	7.04	0.0003	0.68	< 0.0002	< 0.001	< 0.001	0.0035	< 0.001	0.0054	0.0019
(Duplicate)	07-Sep-2005	07-SH DUP	< 0.001	< 0.0002	0.0004	0.555	< 0.0002	0.07	< 0.0002	< 0.001	< 0.0003	0.0008	< 0.0003	0.03	< 0.00005	0.001	0.0019	< 0.1	0.0002	6.46	< 0.0001	0.63	< 0.0002	< 0.001	0.002	0.0035	< 0.001	0.0024	0.0002
	07-Sep-2006	07-SH	0.001	< 0.0002	< 0.0002	0.536	< 0.0002	0.07	< 0.0002	< 0.001	< 0.0003	0.0024	< 0.0003	0.035	0.00021	0.0008	0.0026	< 0.1	< 0.0002	6.88	< 0.0001	0.71	< 0.0002	< 0.001	0.001	0.0042	< 0.001	0.0026	0.0029
(Duplicate)	07-Sep-2006	07-SH DUP	< 0.001	< 0.0002	< 0.0002	0.598	< 0.0002	0.08	< 0.0002	< 0.001	0.0005	0.0017	< 0.0003	0.033	< 0.00005	0.0007	0.0031	< 0.1	< 0.0002	6.83	< 0.0001	0.7	< 0.0002	< 0.001	0.003	0.0036	< 0.001	0.0022	< 0.0002
	05-Sep-2007	07-SH	0.005	< 0.0002	< 0.0002	0.59	< 0.001	0.07	0.00001	< 0.001	0.0004	0.0021	< 0.0002	0.03	< 0.00005	0.0007	0.0056	< 0.1	< 0.0002	7.3	< 0.0001	0.69	< 0.0002	< 0.001	0.006	0.0039	< 0.001	< 0.003	---
(Duplicate)	05-Sep-2007	07-SH DUP	0.012	< 0.0002	< 0.0002	0.53	< 0.001	0.06	0.00006	< 0.001	0.0028	0.0047	< 0.0002	0.03	< 0.00005	0.0009	0.0258	< 0.1	< 0.0002	6.4	< 0.0001	0.64	< 0.0002	< 0.001	0.013	0.0036	< 0.001	0.009	---
	03-Sep-2008	07-SH	< 0.01	< 0.0004	< 0.0004	0.459	< 0.001	0.06	< 0.0001	< 0.005	< 0.002	0.003	< 0.0001	0.033	< 0.00010	< 0.005	< 0.002	---	0.0005	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0034	< 0.001	0.005	---
(Duplicate)	03-Sep-2008	07-SH DUP	< 0.01	< 0.0004	< 0.0004	0.594	< 0.001	0.06	< 0.0001	< 0.005	< 0.002	< 0.001	< 0.0001	0.031	< 0.00010	< 0.005	0.002	---	0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0037	< 0.001	< 0.002	---
	09-Sep-2009	07-SH	< 0.0050	< 0.00040	0.00054	0.589	< 0.0010	0.062	< 0.000010	< 0.0050	< 0.0020	< 0.0010	< 0.00010	0.034	< 0.000020	< 0.0050	0.0036	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0012	0.00344	< 0.0010	< 0.0040	---
(Duplicate)	09-Sep-2009	07-SH DUP	< 0.0050	< 0.00040	0.00056	0.649	< 0.0010	0.063	< 0.000010	< 0.0050	< 0.0020	< 0.0010	< 0.00010	0.034	< 0.000020	< 0.0050	0.0045	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0013	0.00331	< 0.0010	< 0.0040	---
	08-Sep-2010	07 SH	< 0.0050	< 0.00040	< 0.00040	0.591	< 0.0010	0.071	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.034	< 0.000020	< 0.0050	0.0055	---	0.0006	---	< 0.00010	---	< 0.00010	< 0.050	0.0013	0.00385	< 0.0010	0.0086	---
(Duplicate)	08-Sep-2010	SYLVITE 27	< 0.0050	< 0.00040	0.0004	0.629	< 0.0010	0.07	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.034	< 0.000020	< 0.0050	0.0052	---	0.00052	---	< 0.00010	---	< 0.00010	< 0.050	0.0014	0.00375	< 0.0010	0.0058	---
	07-Sep-2011	07-SH	< 0.0050	< 0.00040	0.00066	0.719	< 0.0010	0.069	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.034	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	8.15	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0034	< 0.0010	< 0.0040	---
(Duplicate)	07-Sep-2011	ZIRCON 27	< 0.0050	< 0.00040	< 0.00040	0.683	< 0.0010	0.065	0.000011	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.03	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	7.93	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00347	< 0.0010	< 0.0040	---
	05-Sep-2012	07-SH	< 0.0050	< 0.00040	< 0.00040	0.715	< 0.0010	0.081	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.034	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	8.59	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00326	< 0.0010	0.0053	---
(Duplicate)	05-Sep-2012	SPINEL 27	< 0.0050	< 0.00040	< 0.00040	0.145	< 0.0010	< 0.050	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	< 0.010	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	8.61	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00065	< 0.0010	< 0.0040	---
	25-Sep-2013	07-SH	< 0.0050	< 0.00040	< 0.00040	0.733	< 0.0010	0.066	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.038	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00371	< 0.0010	< 0.0040	---
(Duplicate)	25-Sep-2013	27-SH	< 0.0050	< 0.00040	< 0.00040	0.736	< 0.0010	0.067	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.040	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00382	< 0.0010	0.0049	---
	17-Sep-2014	07-SH	0.0073	< 0.00010	0.00020	0.785	< 0.00050	0.066	< 0.000010	0.00019	0.00028	0.00026	< 0.000050	0.0355	< 0.0000050	0.000788	0.00144	< 0.30	< 0.00010	9.24	< 0.000010	0.717	< 0.000050	< 0.00010	< 0.00030	0.00394	< 0.00010	0.0019	---
(Duplicate)	17-Sep-2014	27-SH	0.0074	< 0.00010	0.00024	0.773	< 0.00050	0.062	< 0.000010	0.00019	0.00027	0.00027	< 0.000050	0.0335	< 0.0000050	0.000687	0.00137	< 0.30	< 0.00010	9.14	< 0.000010	0.722	< 0.000050	< 0.00010	< 0.00030	0.00383	< 0.00010	0.0017	---
	29-Sep-2015	07-SH	0.0021	<0.00010	0.00012	0.648	---	0.051	0.0000113	0.00012	---	<0.00020	<0.000050	---	<0.0000050	---	0.00145	---	<0.000010	---	<0.000010	---	---	---	---	0.00413	---	0.0021	---
(Duplicate)	29-Sep-2015	27-SH	0.0014	<0.00010	0.00013	0.665	---	0.049	0.0000124	0.00015	---	<0.00020	<0.000050	---	<0.0000050	---	0.00139	---	<0.000050	---	<0.000010	---	---	---	---	0.00411	---	0.0021	---
	27-Sep-2016	07-SH	0.0012	<0.00010	0.00012	0.815	---	0.064	0.0000087	0.00018	---	0.00031	<0.000050	---	<0.0000050	---	0.00098	---	<0.000050	---	<0.000010	---	---	---	---	0.00384	---	0.0017	---
(Duplicate)	27-Sep-2016	27-SH	0.0016	<0.00010	0.00011	0.830	---	0.058	0.0000137	0.00024	---	0.00031	<0.000050	---	<0.0000050	---	0.00093	---	<0.000050	---	<0.000010	---	---	---	---	0.00390	---	0.0015	---
	26-Sep-2017	07-SH	<0.0010	<0.00010	<0.00010	0.838	---	0.061	0.0000398	0.00028	---	0.00036	<0.000050	---	<0.0000050	---	0.00110	---	<0.000050	---	<0.000010	---	---	---	---	0.00398	---	0.0018	---
(Duplicate)	26-Sep-2017	27-SH	<0.0010	<0.00010	<0.00010	0.884	---	0.065	0.0000476	0.00018	---	0.00037	<0.000050	---	<0.0000050	---	0.00117	---	<0.000050	---	<0.000010	---	---	---	---	0.00396	---	0.0018	---
	17-Sep-2018	07-SH	<0.0010	<0.00010	<0.00010	0.850	---	0.073	0.0000185	<0.00010	---	0.00022	<0.000050	---	0.0000178	---	0.00156	---	<0.000050	---	<0.000010	---	---	---	---	0.00374	---	0.0018	---
(Duplicate)	17-Sep-2018	27-SH	<0.0010	<0.00010	<0.00010	0.829	---	0.067	0.0000239	<0.00010	---	0.00022	<0.000050	---	0.0000115	---	0.00160	---	<0.000050	---	<0.000010	---	---	---	---	0.00355	---	0.0020	---
	16-Sep-2019	07-SH	0.0036	<0.00010	0.00022	0.955	---	0.065	0.0000108	0.00014	---	0.00212	0.000055	---	<0.0000050	---	0.00209	---	<0.000050	---	<0.000010	---	---	---	---	0.00344	---	0.0037	---
(Duplicate)	16-Sep-2019	27-SH	0.0021	<0.00010	0.00019	0.954	---	0.065	0.0000078	0.00010	---	0.00064	<0.000050	---	<0.0000050	---	0.00206	---	<0.000050	---	<0.000010	---	---	---	---	0.00348	---	0.0025	---
	22-Sep-2020	07-SH	<0.0010	<0.00010	0.00011	0.811	<0.00010	0.060	0.0000059	<0.00010	0.00033	0.00047	<0.000050	0.0376	<0.0000050	0.000722	0.00151	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00365	<0.00050	0.0011	---
(Duplicate)	22-Sep-2020	27-SH	0.0018	<0.00010	0.00011	0.804	<0.00010	0.061	0.0000067	<0.00010	0.00035	0.00210	<0.000050	0.0376	<0.0000050	0.000752	0.00176	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00360	<0.00050	0.0018	---
	22-Sep-2021	07-SH	<0.0010	<0.00010	<0.00010	0.928	<0.00010	0.061	0.0000345	<0.00010	0.00056	0.00039	<0.000050	0.0363	<0.0000050	0.000772	0.0053	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00363	<0.00050	0.0017	---
(Duplicate)	22-Sep-2021	27-SH	<0.0010	<0.00010	<0.00010	0.925	<0.00010	0.063	0.0000261	<0.00010	0.00057	0.00031	<0.000050	0.0366	<0.0000050	0.000762	0.00525	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00353	<0.00050	0.0017	---
	28-Sep-2022	07-SH	<0.0010	<0.00010	<0.00010	0.919	---	0.070	<0.0000050	<0.00050	---	0.00027	<0.000050	---	<0.0000050	---	0.00190	---	<0.000050	---	<0.000010	---	---	---	---	0.00385	---	0.0010	---
(Duplicate)	28-Sep-2022	27-SH	<0.0010	<0.00010	<0.00010	0.988	---	0.070	<0.0000050	<0.00050	---	0.00029	<0.000050	---	<0.0000050	---	0.00187	---	<0.000050	---	<0.000010	---	---	---	---	0.00380	---	0.0029	---
	29-Sep-2023	07-SH	<0.0010	<0.00010	<0.00010	0.864	---	0.063	0.0000131	0.00164	---	0.00027	<0.000050	---	<0.0000050	---	0.00296	---	<0.000050	---	<0.000010	---	---	---	---	0.0036	---	0.0013	---
(Duplicate)	29-Sep-2023	27-SH	0.0019	<0.00010	<0.00010	0.861	---	0.069	0.0000068	0.00174	---	0.00025	<0.000050	---	<0.0000050	---	0.00319	---	<0.000050	---	<0.000010	---	---	---	---	0.00426	---	0.0014	---
	10-Sep-2024	07-SH	0.0029	<0.00010	0.00011	0.931	---	0.059	0.0000083	<0.00050	---	0.00119	<0.000050	---	<0.0000050	---	0.00256	---	<0.000050	---	<0.000010	---	---	---	---	0.00347	---	0.0034	---
(Duplicate)	10-Sep-2024	27-SH	0.0017	<0.00010	0.0001	0.943	---	0.06	0.0000087	<0.00050	---	0.00033	<0.000050	---	<0.0000050	---	0.00239	---	<0.000050	---	<0.000010	---	---	---	---	0.00356	---	0.0026	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
07-IN	15-May-1985	07-IN	---	0.0006	0.0011	---	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	07-IN	---	0.0008	0.0008	---	< 0.001	---	< 0.001	0.002	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	07-IN	---	0.0002	0.0008	0.2	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	07-IN	---	0.0002	0.0007	0.17	---	---	---	0.002	---	0.003	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	07-IN	---	0.0003	0.0006	0.17	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	07-IN	---	0.0002	0.0037	0.16	---	---	< 0.001	0.004	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	07-IN	---	0.0007	0.0032	0.16	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	07-IN	---	0.0002	0.016	0.17	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	07-IN	---	0.0002	0.0018	0.16	< 0.001	---	< 0.001	0.006	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	07-IN	---	0.0006	0.0043	0.16	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	07-IN	---	0.0005	0.0035	0.17	< 0.001	---	< 0.001	0.005	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	07-IN	---	0.0002	0.0028	0.16	< 0.001	---	< 0.001	0.003	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	07-IN	---	0.0002	0.007	0.16	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	07-IN	---	0.0002	0.0035	0.17	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	07-IN	---	0.0002	0.0051	0.16	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	07-IN	---	0.0002	0.0032	0.15	< 0.001	---	< 0.001	0.004	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	07-IN	---	0.001	0.002	0.13	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1991	07-IN	---	0.002	0.0012	0.16	< 0.001	---	< 0.001	< 0.001	< 0.001	0.003	< 0.002	---	< 0.00005	0.014	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1991	07-IN	---	0.002	0.0017	0.16	< 0.001	---	< 0.001	0.007	< 0.001	0.003	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	07-IN	---	< 0.0002	0.0009	0.09	< 0.001	---	< 0.003	< 0.002	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	07-IN	---	< 0.0002	0.0015	0.17	0.001	---	< 0.003	0.008	< 0.003	0.002	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	07-IN	---	0.0002	0.0023	0.18	0.001	---	< 0.003	< 0.002	< 0.003	< 0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	07-IN	---	< 0.0002	0.0008	0.15	0.002	---	< 0.0002	< 0.002	0.003	0.002	< 0.0003	---	< 0.00005	0.004	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.009	---
	09-Sep-1999	07-IN	---	0.0028	0.0072	0.17	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.002	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	< 0.002	0.016	---
	05-Sep-2000	07-IN	---	< 0.0002	0.0034	0.158	< 0.0002	---	< 0.0002	< 0.001	0.0017	< 0.0002	< 0.0003	---	< 0.00005	0.0014	0.0043	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0037	---
	06-Sep-2001	07-IN	---	< 0.0002	0.0028	0.16	0.0002	---	< 0.0002	< 0.001	0.0013	0.0011	< 0.0003	0.04	< 0.00005	0.003	0.0059	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0107	---
	04-Sep-2002	07-IN	0.003	0.0002	0.0005	0.144	< 0.0002	0.18	< 0.0002	0.032	0.001	0.0024	< 0.0003	---	< 0.00005	0.0028	0.0078	< 0.1	< 0.0002	6.96	< 0.0001	0.611	< 0.0002	< 0.001	< 0.001	0.0058	0.009	0.0195	0.0006
	03-Sep-2003	07-IN	0.001	< 0.0002	0.0017	0.166	< 0.0002	0.21	< 0.0002	< 0.001	0.0007	0.0031	< 0.0003	0.016	< 0.00005	0.0035	0.0021	< 0.1	< 0.0002	7.53	< 0.0001	0.58	< 0.0002	< 0.001	< 0.001	0.0046	< 0.001	0.008	0.0005
	08-Sep-2004	07-IN	0.071	< 0.0002	0.0041	0.141	0.0003	0.23	< 0.0002	< 0.001	0.0013	0.001	< 0.0003	0.032	< 0.00005	0.0033	0.0039	< 0.1	< 0.0002	7.05	< 0.0001	0.59	< 0.0002	< 0.001	0.014	0.0058	< 0.001	0.0043	0.0006
	07-Sep-2005	07-IN	< 0.001	< 0.0002	0.0013	0.212	< 0.0002	0.18	0.0003	< 0.001	0.0006	0.0005	< 0.0003	0.036	< 0.00005	0.0029	0.0032	< 0.1	< 0.0002	6.67	0.0003	0.6	< 0.0002	< 0.001	< 0.001	0.0059	< 0.001	0.0049	0.0017
	07-Sep-2006	07-IN	< 0.001	< 0.0002	0.0022	0.151	< 0.0002	0.15	< 0.0002	< 0.001	0.0011	0.0026	< 0.0003	0.045	0.00021	0.0032	0.004	< 0.1	< 0.0002	7.13	< 0.0001	0.59	< 0.0002	< 0.001	0.001	0.0069	< 0.001	0.0027	0.0013
	05-Sep-2007	07-IN	0.026	< 0.0002	0.0076	0.15	< 0.001	0.18	0.00007	< 0.001	0.0028	0.0061	< 0.0002	0.04	< 0.00005	0.0032	0.0191	< 0.1	< 0.0002	7.4	< 0.0001	0.58	< 0.0002	< 0.001	0.01	0.0061	< 0.001	0.011	---
	03-Sep-2008	07-IN	< 0.01	< 0.0004	0.0021	0.16	< 0.001	0.18	< 0.00005	< 0.005	< 0.002	0.005	< 0.0001	0.041	< 0.00010	< 0.005	0.004	---	0.0006	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0057	< 0.001	0.005	---
	09-Sep-2009	07-IN	< 0.0050	< 0.00040	0.00242	0.13	< 0.0010	0.172	0.000015	< 0.0050	< 0.0020	0.0037	0.00013	0.042	< 0.000020	< 0.0050	0.0039	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00582	< 0.0010	0.0301	---
	08-Sep-2010	07 IN	< 0.0050	< 0.00040	0.00325	0.131	< 0.0010	0.189	0.000012	< 0.0010	< 0.0020	0.0026	< 0.00010	0.044	< 0.000020	< 0.0050	0.0054	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0011	0.00601	< 0.0010	0.0064	---
	07-Sep-2011	07-IN	< 0.0050	< 0.00040	0.0031	0.131	< 0.0010	0.182	0.000034	< 0.0010	< 0.0020	0.0028	< 0.00010	0.038	< 0.000020	< 0.0050	0.0027	---	< 0.00040	7.68	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00608	< 0.0010	0.0085	---
	05-Sep-2012	07-IN	< 0.0050	< 0.00040	0.00424	0.12	< 0.0010	0.19	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.037	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	8.03	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00524	< 0.0010	< 0.0040	---
	25-Sep-2013	07-IN	< 0.0050	< 0.00040	0.00532	0.169	< 0.0010	0.178	0.000012	< 0.0010	< 0.0020	0.0021	< 0.00010	0.040	< 0.000020	< 0.0050	0.0030	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00654	< 0.0010	0.0061	---
	17-Sep-2014	07-IN	< 0.0010	< 0.00010	0.00389	0.192	< 0.00050	0.180	0.000011	< 0.00010	0.00145	0.00039	< 0.000050	0.0403	< 0.0000050	0.00329	0.00359	< 0.30	< 0.00010	8.21	< 0.000010	0.587	< 0.000050	< 0.00010	< 0.00030	0.00621	0.00019	0.0041	---
	29-Sep-2015	07-IN	<0.0010	<0.00010	0.00381	0.149	---	0.170	0.0000258	0.00055	---	0.00126	<0.000050	---	<0.0000050	---	0.00392	---	<0.000050	---	<0.000010	---	---	---	---	0.00672	---	0.0086	---
	27-Sep-2016	07-IN	0.0035	<0.00010	0.00656	0.163	---	0.177	0.0000226	0.00040	---	0.00079	<0.000050	---	<0.0000050	---	0.00315	---	<0.000050	---	<0.000010	---	---	---	---	0.00467	---	0.0025	---
	26-Sep-2017	07-IN	0.0011	<0.00010	0.00800	0.185	---	0.181	0.0000059	0.00040	---	0.00021	<0.000050	---	<0.0000050	---	0.00408	---	<0.000050	---	<0.000010	---	---	---	---	0.00721	---	0.0042	---
	17-Sep-2018	07-IN	<0.0010	<0.00010	0.00414	0.164	---	0.205	0.0000939	0.00056	---	0.00033	<0.000050	---	0.0000094	---	0.00497	---	<0.000050	---	<0.000010	---	---	---	---	0.00587	---	0.0055	---
	16-Sep-2019	07-IN	0.0018	<0.00010	0.00929	0.163	---	0.186	0.0000072	0.00058	---	0.00029	<0.000050	---	<0.0000050	---	0.01300	---	<0.000050	---	<0.000010	---	---	---	---	0.00637	---	0.0013	---
	22-Sep-2020	07-IN	0.0031	<0.00010	0.00557	0.163	<0.00010	0.180	0.0000225	0.00016	0.00143	0.00440	<0.000050	0.0358	<0.0000050	0.00342	0.00446	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00589	<0.00050	0.0102	---
	22-Sep-2021	07-IN	0.0023	<0.00010	0.00353	0.185	<0.00010	0.183	0.0000928	<0.00010	0.00159	0.00519	<0.000050	0.0372	<0.0000050	0.00359	0.00506	---	<0.000050	---	<0.000010	---	0.000014	<0.00010	<0.00030	0.00857	<0.00050	0.159	---
	28-Sep-2022	07-IN	<0.0010	<0.00010	0.00344	0.172	---	0.196	0.0000965	<0.00050	---	0.00122	<0.000050	---	<0.0000050	---	0.00380	---	<0.000050	---	<0.000010	---	---	---	---	0.00742	---	0.0163	---
	29-Sep-2023	07-IN	<0.0010	<0.00010	0.00252	0.15	---	0.184	0.00014	0.0016	---	0.00259	<0.000050	---	<0.0000050	---	0.00414	---	<0.000050	---	<0.000010	---	---	---	---	0.00528	---	0.0092	---
	10-Sep-2024	07-IN	0.0019	<0.00010	0.00279	0.139	---	0.19	0.0000148	0.00138	---	0.00244	<0.000050	---	<0.0000050	---	0.00377	---	<0.000050	---	<0.000010	---	---	---	---	0.00803	---	0.0132	---
07-SS	15-Feb-1985	07-SS	---	0.0004	0.0029	---	< 0.001	---	< 0.001	0.004	---	0.003	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1985	07-SS	---	0.001	0.0012	---	< 0.001	---	< 0.001	< 0.001	---	0.009	< 0.002	---	0.0000013	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	07-SS	---	0.0007	0.0008	---	< 0.001	---	< 0.001	0.002	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	07-SS	---	0.0002	0.0018	---	< 0.001	---	< 0.001	< 0.001	---	0.005	0.005	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	07-SS	---	0.0002	0.0008	0.08	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	07-SS	---	0.0002	0.0022	0.06	---	---	---	< 0.001	---	0.007	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	07-SS	---	0.0005	0.0008	0.06	---	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	07-SS	---	0.0002	0.0034	0.06	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	07-SS	---	0.0007	0.0031	0.05	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	07-SS	---	0.0003	0.0029	0.06	< 0.001	---	< 0.001	0.003	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	07-SS	---	0.0002	0.0019	0.05	< 0.001	---	< 0.001	0.005	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	07-SS	---	0.0002	0.0008	0.05	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	07-SS	---	0.0002	0.0006	0.06	< 0.001	---	< 0.001	0.012	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	07-SS	---	0.0002	0.0002	0.05	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	07-SS	---	0.0002	0.0007	0.05	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	07-SS	---	0.0002	0.0008	0.06	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	07-SS	---	0.0002	0.0005	0.05	< 0.001	---	< 0.001	0.002	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	07-SS	---	0.0002	0.0005	0.05	< 0.001	---	< 0.001	0.003	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	07-SS	---	0.0016	0.0002	0.05	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	07-SS	---	---	---	---	---	---	< 0.0002	---	---	---	< 0.0003	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Oct-1998	07-SS	---	< 0.0002	0.0011	0.05	0.004	---	< 0.0002	0.021	0.018	< 0.001	< 0.0003	---	< 0.00005	< 0.003	0.026	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			**0.1**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**5.0**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**2.9**	**0.006**	**0.010**	**2.0**	**---**	**5**	**0.007**	**0.05**	**---**	**2**	**0.005**	**---**	**0.001**	**---**	**---**	**---**	**0.05**	**---**	**---**	**7.0**	**---**	**---**	**---**	**0.02**	**---**	**---**	**---**
Alberta Tier 2 Potable Groundwater Guideline[3]			**---**	**0.006**	**0.01**	**1**	**---**	**5**	**0.005**	**---**	**---**	**1**	**0.01**	**---**	**0.001**	**---**	**---**		**0.05**		**---**		**---**	**---**	**---**	**0.02**	**---**	**5**	**---**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**Variable (pH<6.5) 0.05 (pH>6.5) [5]**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00037 [6]**	**0.0089 [7]**	**---**	**0.007**	**0.007 [8]**	**---**	**0.000005**	**---**	**Variable [9]**		**0.002**		**0.0001**		**---**	**---**	**---**	**0.015**	**---**	**0.03**	**---**
07(R)SS	16-Sep-2014	07(R)SS	0.0036	0.00039	0.00303	0.0627	< 0.00050	0.038	0.000029	0.00015	0.00529	0.00017	0.000063	0.0714	< 0.0000050	0.00363	0.0196	< 0.30	0.00015	9.56	< 0.000010	0.428	< 0.000050	< 0.00010	< 0.00030	0.00183	< 0.00010	0.0043	---
	29-Sep-2015	07(R)SS	0.0023	0.00014	0.00131	0.0546	---	0.028	0.0000261	<0.00010	---	0.00034	<0.000050	---	<0.0000050	---	0.0103	---	0.000050	---	<0.000010	---	---	---	---	0.00196	---	0.0040	---
	27-Sep-2016	07(R)SS	0.0016	<0.00010	0.00116	0.0644	---	0.035	0.0000078	0.00018	---	<0.00020	<0.000050	---	<0.0000050	---	0.0065	---	<0.000050	---	<0.000010	---	---	---	---	0.00218	---	0.0012	---
	26-Sep-2017	07(R)SS	<0.0010	<0.00010	0.00093	0.0705	---	0.036	0.0000113	<0.00010	---	0.00025	<0.000050	---	<0.0000050	---	0.0046	---	<0.000050	---	<0.000010	---	---	---	---	0.00148	---	0.0015	---
	17-Sep-2018	07(R)SS	0.0031	<0.00010	0.00057	0.0899	---	0.040	0.0003640	<0.00010	---	0.00029	<0.000050	---	0.0000189	---	0.0024	---	<0.000050	---	<0.000010	---	---	---	---	0.00088	---	0.0033	---
	16-Sep-2019	07(R)SS	<0.0010	<0.00010	0.00088	0.0931	---	0.038	0.0000691	0.00014	---	0.00134	<0.000050	---	<0.0000050	---	0.0026	---	<0.000050	---	<0.000010	---	---	---	---	0.00070	---	0.0016	---
	23-Sep-2020	07(R)SS	0.0015	<0.00010	0.00380	0.0971	<0.00010	0.032	<0.0000050	<0.00010	0.00156	<0.00020	<0.000050	0.118	<0.0000050	0.000483	0.00171	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.000533	<0.00050	<0.0010	---
	22-Sep-2021	07(R)SS	0.001	<0.00010	0.00023	0.092	<0.00010	0.036	0.0000068	<0.00010	0.0013	0.00027	<0.000050	0.123	<0.0000050	0.000728	0.00175	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.000621	<0.00050	0.001	---
	28-Sep-2022	07(R)SS	0.0056	<0.00010	0.00018	0.0832	---	0.040	0.0000055	<0.00050	---	0.00035	<0.000050	---	<0.0000050	---	0.00191	---	<0.000050	---	<0.000010	---	---	---	---	0.000716	---	0.0010	---
	29-Sep-2023	07(R)SS	<0.0010	<0.00010	0.0002	0.078	---	0.038	<0.0000050	0.00129	---	<0.00020	<0.000050	---	<0.0000050	---	0.00203	---	<0.000050	---	<0.000010	---	---	---	---	0.000553	---	<0.0010	---
	10-Sep-2024	07(R)SS	0.0012	<0.00010	0.00026	0.0855	---	0.036	<0.0000050	<0.00050	---	0.00119	<0.000050	---	<0.0000050	---	0.00173	---	<0.000050	---	<0.000010	---	---	---	---	0.000429	---	0.0012	---
08-SH	15-May-1985	08-SH	---	0.001	0.0022	---	< 0.001	---	< 0.001	< 0.001	---	**0.012**	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	08-SH	---	0.0005	0.0019	---	< 0.001	---	< 0.001	< 0.001	---	**0.008**	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	08-SH	---	0.0002	0.0015	0.3	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	08-SH	---	0.0002	0.0019	0.28	---	---	---	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	08-SH	---	0.0004	0.0013	0.29	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	08-SH	---	0.0011	0.0012	0.27	---	---	< 0.001	< 0.001	---	**0.008**	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	08-SH	---	0.0005	0.0014	0.27	< 0.001	---	< 0.001	0.002	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	08-SH	---	0.0002	0.0011	0.29	< 0.001	---	< 0.001	< 0.001	---	**0.007**	0.005	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	08-SH	---	0.0003	0.0006	0.3	< 0.001	---	< 0.001	0.004	---	**0.01**	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	08-SH	---	0.0005	0.0008	0.29	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	08-SH	---	0.0002	0.0008	0.3	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	08-SH	---	0.0002	0.001	0.3	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	08-SH	---	0.0002	0.0005	0.28	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	08-SH	---	0.0002	0.0006	0.28	< 0.001	---	< 0.001	0.003	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	08-SH	---	0.0002	0.0007	0.28	< 0.001	---	< 0.001	0.004	---	0.002	0.005	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	08-SH	---	0.0002	0.0006	0.25	< 0.001	---	< 0.001	0.005	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	08-SH	---	0.0012	0.0008	0.3	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1991	08-SH	---	0.0002	0.0015	0.3	< 0.001	---	< 0.001	**0.015**	< 0.001	0.005	0.003	---	< 0.00005	0.019	---	---	---	---	---	---	---	---	---	---	---	---	---
	13-May-1992	08-SH	---	0.0003	0.0005	0.21	0.001	---	< 0.003	< 0.001	< 0.003	0.003	< 0.002	---	< 0.00005	0.007	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	08-SH	---	< 0.0002	0.0005	0.31	0.001	---	< 0.003	0.008	< 0.003	0.003	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	08-SH	---	0.0002	0.0004	0.29	0.001	---	< 0.003	0.004	< 0.003	0.004	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Nov-1993	08-SH	---	< 0.0002	0.0005	0.29	0.001	---	**0.003**	0.004	< 0.003	**0.008**	< 0.002	---	< 0.00005	0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	08-SH	---	< 0.0002	0.0003	0.28	0.001	---	**0.003**	< 0.002	< 0.003	0.002	0.001	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.005	---
(Duplicate)	31-May-1994	08-SH DUP	---	< 0.0002	0.0004	0.28	0.001	---	< 0.003	0.003	< 0.003	0.003	< 0.001	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.003	0.008	---
	22-Sep-1994	08-SH	---	< 0.0002	0.0007	0.29	< 0.001	---	< 0.003	< 0.002	0.007	< 0.001	< 0.001	---	**0.00005**	< 0.003	0.016	---	< 0.0002	---	< 0.002	---	0.001	---	---	---	< 0.002	0.004	---
(Duplicate)	22-Sep-1994	08-SH DUP	---	< 0.0002	0.0008	0.29	0.002	---	< 0.003	**0.01**	0.011	0.002	< 0.001	---	**0.00005**	0.007	0.019	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.005	---
	02-Nov-1994	08-SH	---	0.0006	0.0011	0.27	0.001	---	< 0.003	< 0.002	< 0.003	0.003	< 0.001	---	< 0.00005	0.004	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.005	0.014	---
	28-Sep-1995	08-SH	---	< 0.0002	0.0003	0.3	< 0.001	---	< 0.0002	0.004	0.003	< 0.001	< 0.0003	---	< 0.00005	0.005	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.001	---
	05-Sep-1996	08-SH	---	< 0.0002	0.0004	0.28	< 0.001	---	< 0.0002	**0.023**	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.004	---
(Duplicate)	05-Sep-1996	08-SH DUP	---	< 0.0002	0.0003	0.26	< 0.001	---	< 0.0002	**0.018**	< 0.003	0.003	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.003	0.004	---
	05-Sep-1997	08-SH	---	< 0.0002	0.0002	0.23	0.002	---	< 0.0002	< 0.002	0.013	0.004	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.002	---
	15-Sep-1998	08-SH	---	< 0.0002	0.0005	0.24	0.001	---	**0.0014**	**0.027**	0.005	< 0.001	< 0.0003	---	< 0.00005	< 0.003	0.011	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	08-SH	---	0.0046	0.0003	0.31	< 0.001	---	< 0.0002	**0.016**	0.013	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	---	---	---	---	< 0.002	0.013	---
(Duplicate)	09-Sep-1999	08-SH DUP	---	0.0004	0.0002	0.24	0.027	---	0.0002	**0.025**	< 0.003	0.002	< 0.0003	---	< 0.00005	0.025	0.013	---	< 0.0002	---	**0.016**	---	---	---	---	---	< 0.002	0.005	---
	05-Sep-2000	08-SH	---	< 0.0002	0.0004	0.227	< 0.0002	---	< 0.0002	**0.022**	0.0004	0.0006	< 0.0003	---	< 0.00005	0.0009	0.0027	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	< 0.0006	---
(Duplicate)	05-Sep-2000	08-SH DUP	---	< 0.0002	0.0004	0.228	< 0.0002	---	< 0.0002	**0.039**	0.0009	0.0012	< 0.0003	---	< 0.00005	0.0008	< 0.0005	---	0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	< 0.0006	---
	06-Sep-2001	08-SH	---	< 0.0002	0.0003	0.235	< 0.0002	---	< 0.0002	**0.017**	< 0.0003	0.0009	< 0.0003	0.02	< 0.00005	0.0023	0.0036	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0092	---
	05-Sep-2002	08-SH	0.002	< 0.0002	0.0008	0.25	< 0.0002	0.07	< 0.0002	**0.013**	< 0.0003	0.0014	< 0.0003	---	< 0.00005	0.0016	0.002	< 0.1	< 0.0002	4.69	< 0.0001	0.38	< 0.0002	< 0.001	< 0.001	0.0024	< 0.001	0.0041	0.0034
	04-Sep-2003	08-SH	< 0.001	0.0002	< 0.0002	0.223	< 0.0002	0.08	< 0.0002	**0.012**	< 0.0003	0.0008	< 0.0003	< 0.004	< 0.00005	0.0145	0.0005	< 0.1	< 0.0002	5.15	< 0.0001	0.36	< 0.0002	< 0.001	< 0.001	0.0021	< 0.001	0.002	0.0002
	09-Sep-2004	08-SH	0.079	< 0.0002	< 0.0002	0.242	< 0.0002	0.09	< 0.0002	**0.018**	< 0.0003	**0.0123**	< 0.0003	0.014	**0.00026**	0.0035	0.0033	< 0.1	< 0.0002	4.89	< 0.0001	0.37	< 0.0002	< 0.001	0.011	0.0026	< 0.001	0.0179	0.0003
	08-Sep-2005	08-SH	< 0.001	0.0003	0.0003	0.246	0.0002	0.07	0.0003	**0.013**	< 0.0003	0.0015	< 0.0003	0.024	< 0.00005	0.0022	0.0019	< 0.1	< 0.0002	4.74	**0.0003**	0.37	< 0.0002	< 0.001	< 0.001	0.0027	< 0.001	0.0062	0.0016
	07-Sep-2006	08-SH	0.003	< 0.0002	0.0007	0.226	< 0.0002	0.07	< 0.0002	**0.012**	< 0.0003	0.0042	< 0.0003	0.024	**0.00024**	0.0027	0.0022	< 0.1	< 0.0002	4.8	< 0.0001	0.36	< 0.0002	< 0.001	0.001	0.0031	< 0.001	0.0111	0.0006
	05-Sep-2007	08-SH	0.032	< 0.0002	0.0003	0.23	< 0.001	0.07	0.00006	0.007	0.0012	0.004	< 0.0002	0.02	< 0.00005	0.0022	0.013	< 0.1	< 0.0002	5.2	< 0.0001	0.36	< 0.0002	< 0.001	0.005	0.0027	< 0.001	0.011	---
	03-Sep-2008	08-SH	< 0.01	< 0.0004	< 0.0004	0.219	< 0.001	0.06	< 0.00005	**0.009**	< 0.002	0.002	< 0.0001	0.023	< 0.00010	< 0.005	< 0.002	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0028	< 0.001	0.002	---
	09-Sep-2009	08-SH	< 0.0050	< 0.00040	< 0.00040	0.215	< 0.0010	0.065	0.000016	< 0.0050	< 0.0020	< 0.0010	< 0.00010	0.023	< 0.000020	< 0.0050	0.0023	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00257	< 0.0010	< 0.0040	---
	08-Sep-2010	8 SH	< 0.0050	< 0.00040	< 0.00040	0.211	< 0.0010	0.068	0.000091	**0.0095**	< 0.0020	0.0011	< 0.00010	0.023	< 0.000020	< 0.0050	0.0034	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00271	< 0.0010	0.0043	---
	08-Sep-2011	08-SH	< 0.0050	< 0.00040	0.00135	0.198	< 0.0010	0.065	0.000014	**0.019**	< 0.0020	0.0017	< 0.00010	0.021	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	5.29	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00271	< 0.0010	< 0.0040	---
	05-Sep-2012	08-SH	< 0.0050	< 0.00040	< 0.00040	0.251	< 0.0010	0.064	0.000078	0.0051	< 0.0020	0.0015	< 0.00010	0.024	< 0.000020	< 0.0050	0.0335	---	< 0.00040	5.62	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00288	< 0.0010	< 0.0040	---
	25-Sep-2013	08-SH	< 0.0050	< 0.00040	< 0.00040	0.281	< 0.0010	0.063	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.025	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00245	< 0.0010	0.0041	---
	16-Sep-2014	08-SH	0.0077	< 0.00010	0.00022	0.295	< 0.00050	0.074	0.000060	0.00041	0.00013	0.00155	< 0.000050	0.0259	< 0.0000050	0.00273	0.0182	< 0.30	< 0.00010	6.21	< 0.000010	0.380	< 0.000050	< 0.00010	< 0.00030	0.00284	< 0.00010	0.0054	---
	29-Sep-2015	08-SH	0.0029	<0.00010	0.00021	0.221	---	0.050	0.0000496	0.00013	---	0.00132	<0.000050	---	<0.0000050	---	0.00961	---	<0.000050	---	<0.000010	---	---	---	---	0.00373	---	0.0046	---
	27-Sep-2016	08-SH	0.0084	<0.00010	0.00021	0.242	---	0.066	0.0000249	<0.00010	---	0.00052	<0.000050	---	<0.0000050	---	0.00429	---	<0.000050	---	<0.000010	---	---	---	---	0.00342	---	0.0017	---
	26-Sep-2017	08-SH	0.0041	<0.00010	0.00023	0.244	---	0.063	0.0000412	0.00052	---	0.00066	<0.000050	---	<0.0000050	---	0.00215	---	<0.000050	---	<0.000010	---	---	---	---	0.00427	---	0.0013	---
	17-Sep-2018	08-SH	0.0028	<0.00010	0.00030	0.230	---	0.066	0.0000285	0.00062	---	0.00078	<0.000050	---	**0.0000052**	---	0.00264	---	<0.000050	---	<0.000010	---	---	---	---	0.00421	---	0.0014	---
	16-Sep-2019	08-SH	0.0029	<0.00010	0.00061	0.231	---	0.065	0.0000159	0.00037	---	0.00229	0.000067	---	<0.0000050	---	0.00372	---	<0.000050	---	<0.000010	---	---	---	---	0.00459	---	0.0023	---
	22-Sep-2020	08-SH	0.0029	0.00040	0.00075	0.225	<0.00010	0.059	<0.0000050	0.00117	<0.00010	0.00118	<0.000050	0.0296	<0.0000050	0.00322	0.00398	---	0.000109	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00578	<0.00050	<0.0010	---
	22-Sep-2021	08-SH	0.0014	0.00016	0.00087	0.212	<0.00010	0.059	0.0000138	0.00024	0.00017	0.00044	<0.000050	0.0312	<0.0000050	0.00336	0.0027	---	<0.000050	---	<0.000010	---	0.000016	<0.00010	<0.00030	0.00501	<0.00050	<0.0010	---
	28-Sep-2022	08-SH	0.0025	0.00026	0.00107	0.239	---	0.066	0.0000074	<0.00050	---	0.00058	<0.000050	---	<0.0000050	---	0.00157	---	<0.000050	---	<0.000010	---	---	---	---	0.00604	---	<0.0010	---
	27-Sep-2023	08-SH	<0.0010	<0.00010	0.00059	0.204	---	0.062	0.0000567	0.00171	---	0.00058	<0.000050	---	<0.0000050	---	0.00247	---	<0.000050	---	<0.000010	---	---	---	---	0.00528	---	0.0019	---
	11-Sep-2024	08-SH	0.0023	0.00017	0.00098	0.229	---	**0.056**	**0.000023**	**0.00186**	---	0.00137	<0.000050	---	<0.0000050	---	0.00147	---	<0.000050	---	<0.000010	---	---	---	---	0.00565	---	0.0017	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
08-IN	15-May-1985	08-IN	---	0.0002	0.0004	---	< 0.001	---	< 0.001	0.045	---	0.025	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	08-IN	---	0.0002	0.0009	---	< 0.001	---	< 0.001	< 0.001	---	0.011	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	08-IN	---	0.0054	0.0004	---	< 0.001	---	< 0.001	< 0.001	---	0.01	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	08-IN	---	0.0008	0.0011	---	< 0.001	---	< 0.001	0.002	---	0.007	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	08-IN	---	0.0002	0.0005	0.17	< 0.001	---	< 0.001	0.019	---	0.017	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	08-IN	---	0.0002	< 0.0002	0.12	---	---	---	< 0.001	---	< 0.001	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	08-IN	---	0.0006	< 0.0002	0.11	---	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	08-IN	---	0.0002	0.0003	0.1	---	---	< 0.001	0.075	---	0.028	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	08-IN	---	0.0006	0.0007	0.07	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	08-IN	---	0.0002	0.0003	0.08	< 0.001	---	< 0.001	< 0.001	---	0.004	0.007	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	08-IN	---	0.0002	< 0.0002	0.07	< 0.001	---	< 0.001	0.002	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	08-IN	---	0.0002	< 0.0002	0.07	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	08-IN	---	0.0002	< 0.0002	0.06	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	08-IN	---	0.0002	0.0004	0.06	< 0.001	---	< 0.001	0.009	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	08-IN	---	0.0002	< 0.0002	0.07	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	08-IN	---	0.0002	< 0.0002	0.06	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	08-IN	---	0.0002	0.0003	0.07	< 0.001	---	< 0.001	0.003	---	0.007	0.005	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	08-IN	---	0.0002	0.0004	0.06	< 0.001	---	< 0.001	0.005	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	08-IN	---	0.0048	0.0005	0.06	< 0.001	---	< 0.001	0.003	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	08-IN	---	---	---	---	---	---	< 0.0002	---	---	---	< 0.0003	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	08-IN	0.001	< 0.0002	0.0005	0.0565	< 0.0002	0.14	< 0.0002	0.004	< 0.0003	0.0019	< 0.0003	0.041	0.00013	0.0006	0.0031	< 0.1	< 0.0002	4.63	< 0.0001	0.67	< 0.0002	< 0.001	< 0.001	0.0039	< 0.001	0.0034	0.0004
	05-Sep-2007	08-IN	0.076	< 0.0002	< 0.0002	0.06	< 0.001	0.17	0.00004	0.003	0.002	0.0051	< 0.0002	0.04	< 0.00005	0.0005	0.0202	< 0.1	< 0.0002	4.9	< 0.0001	0.66	< 0.0002	< 0.001	0.014	0.0033	< 0.001	0.007	---
	03-Sep-2008	08-IN	< 0.01	< 0.0004	< 0.0004	0.056	< 0.001	0.17	< 0.0001	< 0.005	< 0.002	0.002	< 0.0001	0.037	< 0.00010	< 0.005	0.003	---	0.0006	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0034	< 0.001	0.002	---
	09-Sep-2009	08-IN	< 0.0050	< 0.00040	< 0.00040	0.0493	< 0.0010	0.171	0.00001	< 0.0050	< 0.0020	0.0013	0.0001	0.04	< 0.000020	< 0.0050	0.0048	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00304	< 0.0010	< 0.0040	---
	08-Sep-2010	8 IN	< 0.0050	< 0.00040	< 0.00040	0.0509	< 0.0010	0.168	0.000124	0.0146	< 0.0020	0.0021	< 0.00010	0.045	< 0.000020	< 0.0050	0.0059	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00418	< 0.0010	0.0051	---
	08-Sep-2011	08-IN	< 0.0050	< 0.00040	0.00126	0.054	< 0.0010	0.178	0.000126	0.001	< 0.0020	0.0029	< 0.00010	0.037	< 0.000020	< 0.0050	0.0341	---	< 0.00040	5.31	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00305	< 0.0010	0.016	---
	05-Sep-2012	08-IN	< 0.0050	< 0.00040	< 0.00040	0.0546	< 0.0010	0.18	0.000074	0.0012	< 0.0020	0.002	< 0.00010	0.04	< 0.000020	< 0.0050	0.0218	---	< 0.00040	5.64	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00282	< 0.0010	0.0197	---
	25-Sep-2013	08-IN	< 0.0050	< 0.00040	< 0.00040	0.0639	< 0.0010	0.162	0.000033	< 0.0010	< 0.0020	0.0017	< 0.00010	0.040	< 0.000020	< 0.0050	0.0080	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00289	< 0.0010	0.0198	---
	16-Sep-2014	08-IN	0.0014	< 0.00010	< 0.00010	0.0605	< 0.00050	0.185	0.000013	0.00066	0.00012	0.00129	< 0.000050	0.0437	0.0000059	0.00108	0.00465	< 0.30	0.00015	5.77	< 0.000010	0.645	< 0.000050	< 0.00010	< 0.00030	0.00370	< 0.00010	0.0031	---
	29-Sep-2015	08-IN	<0.0010	<0.00010	<0.00010	0.0547	---	0.156	0.0000189	0.00114	---	0.00122	<0.000050	---	<0.0000050	---	0.00242	---	0.000132	---	<0.000010	---	---	---	---	0.00389	---	0.0100	---
	27-Sep-2016	08-IN	<0.0010	<0.00010	<0.00010	0.0591	---	0.167	0.0000337	0.00068	---	0.00094	<0.000050	---	<0.0000050	---	0.00280	---	0.000157	---	<0.000010	---	---	---	---	0.00379	---	0.0044	---
	26-Sep-2017	08-IN	<0.0010	<0.00010	0.0001	0.0576	---	0.169	0.0000160	0.00089	---	0.00086	<0.000050	---	<0.0000050	---	0.00195	---	0.000098	---	<0.000010	---	---	---	---	0.00372	---	0.0023	---
	17-Sep-2018	08-IN	<0.0010	<0.00010	0.00011	0.0581	---	0.193	0.0000312	0.00096	---	0.00115	<0.000050	---	0.0000123	---	0.00458	---	0.000098	---	<0.000010	---	---	---	---	0.00332	---	0.0188	---
	16-Sep-2019	08-IN	<0.0010	<0.00010	<0.00010	0.0699	---	0.170	<0.0000050	0.00124	---	0.00095	<0.000050	---	<0.0000050	---	0.00144	---	0.000128	---	<0.000010	---	---	---	---	0.00435	---	0.0010	---
	22-Sep-2020	08-IN	0.0024	<0.00010	0.00012	0.0588	<0.00010	0.164	0.0000106	0.00493	<0.00010	0.00268	<0.000050	0.0387	<0.0000050	0.000998	0.00139	---	0.000112	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00551	<0.00050	0.0023	---
	22-Sep-2021	08-IN	<0.0010	<0.00010	<0.00010	0.0584	<0.00010	0.179	<0.0000050	0.00155	<0.00010	0.00072	<0.000050	0.0433	<0.0000050	0.000725	0.00083	---	0.000112	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00346	<0.00050	0.0017	---
	28-Sep-2022	08-IN	<0.0010	<0.00010	<0.00010	0.0651	---	0.178	0.0000084	0.00102	---	0.00077	<0.000050	---	<0.0000050	---	0.00175	---	0.000159	---	<0.000010	---	---	---	---	0.00428	---	0.0013	---
	27-Sep-2023	08-IN	<0.0010	<0.00010	<0.00010	0.0572	---	0.172	0.0000143	0.0046	---	0.00193	<0.000050	---	<0.0000050	---	0.00194	---	0.000095	---	<0.000010	---	---	---	---	0.0035	---	0.0041	---
	11-Sep-2024	08-IN	<0.0010	<0.00010	0.0001	0.0583	---	0.176	0.0000079	0.0112	---	0.00112	<0.000050	---	<0.0000050	---	0.00159	---	0.000066	---	<0.000010	---	---	---	---	0.00373	---	0.0045	---
08-SS	15-May-1985	08-SS	---	0.0043	0.0086	---	< 0.001	---	< 0.001	< 0.001	---	0.014	0.003	---	0.0014	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	08-SS	---	0.0002	0.023	---	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	08-SS	---	0.0002	0.032	---	< 0.001	---	< 0.001	< 0.001	---	0.003	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
08-SS (continued)	15-Feb-1986	08-SS	---	0.0016	0.025	---	< 0.001	---	< 0.001	< 0.001	---	0.003	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	08-SS	---	0.0034	0.037	0.11	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	08-SS	---	0.0014	0.032	0.09	---	---	---	< 0.001	---	0.004	0.003	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	08-SS	---	0.0026	0.034	0.09	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	08-SS	---	0.0012	0.027	0.09	---	---	< 0.001	< 0.001	---	0.01	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	08-SS	---	0.005	0.017	0.08	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	08-SS	---	0.0016	0.018	0.1	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	08-SS	---	0.0013	0.02	0.11	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	08-SS	---	0.0021	0.016	0.1	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	08-SS	---	0.0002	0.012	0.1	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	08-SS	---	0.0005	0.012	0.09	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	08-SS	---	0.0002	0.018	0.09	< 0.001	---	< 0.001	0.004	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	08-SS	---	0.0024	0.026	0.09	< 0.001	---	< 0.001	0.004	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	08-SS	---	0.0037	0.03	0.08	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	08-SS	---	---	---	---	---	---	< 0.0002	---	---	---	< 0.0003	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
09-SH [Decommissioned]	15-May-1985	09-SH [DECOM]	---	0.0002	0.001	---	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	09-SH [DECOM]	---	0.001	0.0059	---	< 0.001	---	< 0.001	0.002	---	0.007	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	09-SH [DECOM]	---	0.0002	0.0014	0.43	< 0.001	---	< 0.001	0.003	---	0.016	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	09-SH [DECOM]	---	0.0002	0.0012	0.42	---	---	---	< 0.001	---	0.009	0.006	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	09-SH [DECOM]	---	0.0005	0.0016	0.42	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	09-SH [DECOM]	---	0.0002	0.0021	0.38	---	---	< 0.001	0.002	---	0.006	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	09-SH [DECOM]	---	0.0006	0.0018	0.37	< 0.001	---	< 0.001	0.003	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	09-SH [DECOM]	---	0.0002	0.0017	0.4	< 0.001	---	< 0.001	0.002	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	09-SH [DECOM]	---	0.0002	0.0015	0.36	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	09-SH [DECOM]	---	0.0002	0.0015	0.37	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	09-SH [DECOM]	---	0.0002	0.0023	0.33	< 0.001	---	< 0.001	< 0.001	---	0.005	0.003	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	09-SH [DECOM]	---	0.0002	0.0014	0.26	< 0.001	---	< 0.001	0.003	---	0.013	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	09-SH [DECOM]	---	0.0002	0.0011	0.27	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	09-SH [DECOM]	---	0.0002	0.0015	0.32	< 0.001	---	< 0.001	0.005	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	09-SH [DECOM]	---	0.0002	0.0024	0.31	0.002	---	< 0.001	0.004	---	0.002	0.004	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	09-SH [DECOM]	---	0.0004	0.0015	0.4	< 0.001	---	< 0.001	0.002	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Nov-1991	09-SH [DECOM]	---	0.0002	0.0015	0.34	< 0.001	---	< 0.001	0.006	< 0.001	< 0.001	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	09-SH [DECOM]	---	< 0.0002	0.0012	0.17	< 0.001	---	0.007	0.006	< 0.003	0.003	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-Aug-1992	09-SH [DECOM]	---	< 0.0002	0.0004	0.3	0.002	---	< 0.003	0.003	< 0.003	0.01	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
09-IN [Decommissioned]	15-May-1985	09-IN [DECOM]	---	0.0004	0.0009	---	< 0.001	---	< 0.001	< 0.001	---	0.012	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	09-IN [DECOM]	---	0.0007	0.0013	---	< 0.001	---	< 0.001	0.002	---	0.006	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	09-IN [DECOM]	---	0.0002	0.0007	---	< 0.001	---	< 0.001	< 0.001	---	0.005	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	09-IN [DECOM]	---	0.0007	0.002	---	< 0.001	---	< 0.001	0.003	---	0.003	0.006	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	09-IN [DECOM]	---	0.0002	0.0031	0.47	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	09-IN [DECOM]	---	0.0005	0.0048	0.48	---	---	---	0.003	---	< 0.001	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	09-IN [DECOM]	---	0.0005	0.0048	0.45	---	---	< 0.001	0.021	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	09-IN [DECOM]	---	0.0003	0.009	0.43	---	---	< 0.001	0.003	---	0.01	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	09-IN [DECOM]	---	0.0006	0.0098	0.39	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	09-IN [DECOM]	---	0.0012	0.0018	0.48	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	09-IN [DECOM]	---	0.0003	0.0005	0.44	< 0.001	---	< 0.001	0.004	---	0.011	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	09-IN [DECOM]	---	0.0012	**0.023**	0.47	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	09-IN [DECOM]	---	0.003	**0.018**	0.44	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	09-IN [DECOM]	---	0.0002	**0.012**	0.41	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	09-IN [DECOM]	---	0.0002	**0.025**	0.41	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	09-IN [DECOM]	---	0.0002	**0.013**	0.4	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	09-IN [DECOM]	---	0.0004	**0.033**	0.42	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	09-IN [DECOM]	---	0.0017	**0.037**	0.43	< 0.001	---	< 0.001	0.006	---	0.002	0.004	---	0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	09-IN [DECOM]	---	0.0036	**0.035**	0.42	< 0.001	---	< 0.001	0.005	---	< 0.001	< 0.002	---	0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-Aug-1992	09-IN [DECOM]	---	0.0002	0.0004	0.42	0.002	---	< 0.003	0.006	0.005	0.009	< 0.002	---	< 0.00005	0.04	---	---	---	---	---	---	---	---	---	---	---	---	---
09-PEAT	15-Nov-1987	09-PEAT	---	0.0002	0.0007	0.03	< 0.001	---	< 0.001	< 0.001	---	0.005	0.005	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	09-PEAT	---	0.0002	0.0004	0.04	< 0.001	---	< 0.001	< 0.001	---	0.008	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	09-PEAT	---	0.0006	0.0008	0.04	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	09-PEAT	---	0.0002	0.0006	0.04	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	09-PEAT	---	0.0002	< 0.0002	0.03	< 0.001	---	< 0.001	0.002	---	0.002	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	09-PEAT	---	0.0002	0.0005	0.04	< 0.001	---	< 0.001	0.006	---	0.003	0.006	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	09-PEAT	---	0.0002	< 0.0002	0.03	< 0.001	---	< 0.001	0.007	---	0.007	0.003	---	0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	09-PEAT	---	0.0042	< 0.0002	0.02	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10-SH [Decommissioned]	15-May-1985	10-SH [DECOM]	---	0.0005	0.0026	---	< 0.001	---	< 0.001	< 0.001	---	0.009	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	10-SH [DECOM]	---	0.0003	0.0008	---	< 0.001	---	< 0.001	< 0.001	---	0.008	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	10-SH [DECOM]	---	0.0002	0.0019	0.41	< 0.001	---	< 0.001	< 0.001	---	0.003	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	10-SH [DECOM]	---	0.0005	0.0027	0.39	---	---	---	< 0.001	---	0.003	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	10-SH [DECOM]	---	0.0003	0.0072	0.4	---	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	10-SH [DECOM]	---	0.0002	0.003	0.35	---	---	< 0.001	0.002	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	10-SH [DECOM]	---	0.0013	0.0047	0.36	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	10-SH [DECOM]	---	0.0002	0.0018	0.36	< 0.001	---	< 0.001	< 0.001	---	0.002	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	10-SH [DECOM]	---	0.0002	0.0019	0.36	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	10-SH [DECOM]	---	0.0002	0.0048	0.36	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	10-SH [DECOM]	---	0.0002	0.0011	0.34	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	10-SH [DECOM]	---	0.0002	0.001	0.36	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	10-SH [DECOM]	---	0.0002	0.0006	0.33	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	10-SH [DECOM]	---	0.0002	0.0008	0.35	< 0.001	---	< 0.001	0.002	---	0.003	0.005	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	10-SH [DECOM]	---	0.0002	0.0005	0.33	< 0.001	---	< 0.001	0.003	---	0.006	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	10-SH [DECOM]	---	0.0032	0.0004	0.39	< 0.001	---	< 0.001	< 0.001	---	< 0.001	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-May-1991	10-SH [DECOM]	---	0.0002	0.0004	0.39	< 0.001	---	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	---	< 0.00005	0.011	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	10-SH [DECOM]	---	0.0007	0.0013	0.29	0.001	---	< 0.003	< 0.002	0.004	< 0.001	< 0.002	---	< 0.00005	0.005	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Sep-1992	10-SH [DECOM]	---	< 0.0002	0.0016	0.54	0.002	---	< 0.003	< 0.002	< 0.003	0.003	< 0.002	---	< 0.00005	0.004	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
10-IN [Decommissioned]	15-Dec-1985	10-IN [DECOM]	---	0.0002	0.0004	---	< 0.001	---	< 0.001	0.023	---	0.01	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	10-IN [DECOM]	---	0.0005	0.0005	---	< 0.001	---	< 0.001	0.005	---	0.003	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	10-IN [DECOM]	---	0.0002	0.0004	0.22	< 0.001	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	10-IN [DECOM]	---	0.0002	0.0005	0.2	---	---	---	< 0.001	---	0.007	0.004	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	10-IN [DECOM]	---	0.0005	0.0007	0.22	---	---	< 0.001	< 0.001	---	0.006	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	10-IN [DECOM]	---	0.0002	0.0004	0.19	---	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	10-IN [DECOM]	---	0.0005	0.0006	0.17	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	10-IN [DECOM]	---	0.0002	0.0005	0.21	< 0.001	---	< 0.001	0.008	---	0.005	< 0.002	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	10-IN [DECOM]	---	0.0005	< 0.0002	0.19	< 0.001	---	< 0.001	0.016	---	0.006	0.02	---	< 0.0001	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	10-IN [DECOM]	---	0.0002	0.0003	0.19	< 0.001	---	< 0.001	0.002	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	10-IN [DECOM]	---	0.0002	< 0.0002	0.18	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	10-IN [DECOM]	---	0.0002	0.0004	0.18	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	10-IN [DECOM]	---	0.0002	< 0.0002	0.17	< 0.001	---	< 0.001	< 0.001	---	0.013	< 0.002	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	10-IN [DECOM]	---	0.0002	< 0.0002	0.17	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	10-IN [DECOM]	---	0.0002	0.0004	0.16	< 0.001	---	< 0.001	0.002	---	0.003	0.003	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	10-IN [DECOM]	---	0.0002	< 0.0002	0.15	< 0.001	---	< 0.001	0.006	---	0.021	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	10-IN [DECOM]	---	0.0049	0.0003	0.15	< 0.001	---	< 0.001	0.002	---	0.006	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-May-1991	10-IN [DECOM]	---	0.0002	0.0002	0.15	< 0.001	---	< 0.001	0.008	< 0.001	0.006	< 0.002	---	< 0.00005	0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Nov-1991	10-IN [DECOM]	---	0.0002	0.0002	0.15	< 0.001	---	< 0.001	0.005	< 0.001	0.004	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	10-IN [DECOM]	---	0.0002	0.0002	0.1	0.001	---	< 0.003	0.003	< 0.003	0.004	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Sep-1992	10-IN [DECOM]	---	< 0.0002	0.0003	0.2	0.002	---	< 0.003	0.006	< 0.003	0.012	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
11-SH	17-May-1991	11-SH	---	0.0002	0.0003	0.47	< 0.001	---	< 0.001	0.019	0.004	< 0.001	< 0.002	---	< 0.00005	0.02	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	11-SH	---	0.0002	0.0005	0.47	< 0.001	---	< 0.001	< 0.001	< 0.001	0.003	< 0.002	---	< 0.00005	0.007	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	11-SH	---	0.0019	0.0003	0.28	0.001	---	< 0.003	0.002	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	11-SH	---	< 0.0002	0.0004	0.47	0.001	---	< 0.003	0.015	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	11-SH	---	< 0.0002	0.0005	0.46	0.001	---	0.003	0.006	< 0.003	0.007	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	11-SH	---	< 0.0002	0.0004	0.49	0.001	---	< 0.003	< 0.002	0.004	0.007	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	11-SH	---	< 0.0002	0.0009	0.38	0.001	---	< 0.003	< 0.002	< 0.003	0.003	< 0.001	---	< 0.00005	< 0.003	0.01	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.004	---
	22-Sep-1994	11-SH	---	< 0.0002	< 0.0002	0.42	0.002	---	< 0.003	0.011	0.004	0.005	< 0.001	---	0.00005	0.006	0.027	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.006	---
	02-Nov-1994	11-SH	---	0.0013	0.0013	0.42	0.001	---	< 0.003	< 0.002	0.005	0.001	< 0.001	---	< 0.00005	< 0.003	0.012	---	< 0.0002	---	0.002 [3]	---	< 0.001	---	---	---	< 0.002	0.097	---
(Duplicate)	02-Nov-1994	11-SH DUP	---	0.0003	0.001	0.42	0.002	---	< 0.003	< 0.002	0.007	0.002	< 0.001	---	< 0.00005	< 0.003	0.014	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.02	---
	28-Sep-1995	11-SH	---	< 0.0002	0.0006	0.45	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.001	< 0.0003	---	< 0.00005	0.008	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.004	---
	05-Sep-1996	11-SH	---	< 0.0002	0.0003	0.41	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.004	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.007	---
	05-Sep-1997	11-SH	---	< 0.0002	0.003	0.33	0.002	---	< 0.0002	0.004	0.007	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	11-SH	---	0.001	**0.013**	0.6	< 0.001	---	< 0.0002	0.014	0.017	0.004	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	---	---	---	---	< 0.002	0.01	---
	06-Sep-2000	11-SH	---	0.0003	0.0016	0.502	< 0.0002	---	< 0.0002	< 0.001	0.002	< 0.0002	< 0.0003	---	< 0.00005	0.0021	0.006	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0016	---
	06-Sep-2001	11-SH	---	< 0.0002	0.0011	0.385	< 0.0002	---	< 0.0002	< 0.001	0.0012	0.0028	< 0.0003	0.019	< 0.00005	0.0026	0.0069	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0146	---
	05-Sep-2002	11-SH	0.021	< 0.0002	0.0046	0.508	< 0.0002	0.1	< 0.0002	0.002	0.0014	0.0008	< 0.0003	---	< 0.00005	0.0025	0.0027	< 0.1	< 0.0002	6.66	< 0.0001	0.576	0.0003	< 0.001	0.001	0.0017	< 0.001	0.0031	0.0041
	03-Sep-2003	11-SH	0.002	< 0.0002	0.0044	0.443	< 0.0002	0.14	< 0.0002	< 0.001	0.0012	0.0011	< 0.0003	< 0.004	< 0.00005	0.0116	0.0041	< 0.1	< 0.0002	7.01	0.0001	0.59	< 0.0002	< 0.001	< 0.001	0.0015	< 0.001	0.0072	0.0005
	08-Sep-2004	11-SH	0.017	< 0.0002	0.0079	0.533	0.0009	0.44	< 0.0002	0.002	0.0014	0.0011	< 0.0003	0.012	< 0.00005	0.0035	0.0057	< 0.1	< 0.0002	6.79	< 0.0001	0.54	< 0.0002	< 0.001	0.014	0.0016	< 0.001	0.0038	0.0007
	07-Sep-2005	11-SH	< 0.001	< 0.0002	0.0036	0.499	0.0002	0.11	0.0003	0.002	0.0011	0.0009	< 0.0003	0.018	< 0.00005	0.0034	0.005	< 0.1	< 0.0002	6.33	0.0003	0.56	< 0.0002	< 0.001	0.001	0.0016	< 0.001	0.0065	0.002
	07-Sep-2006	11-SH	0.005	< 0.0002	0.0045	0.353	< 0.0002	0.11	< 0.0002	< 0.001	0.0012	0.0027	< 0.0003	0.023	0.00011	0.0029	0.0041	< 0.1	< 0.0002	6.29	< 0.0001	0.55	< 0.0002	< 0.001	0.001	0.0014	< 0.001	0.0107	0.0007
	06-Sep-2007	11-SH	0.004	< 0.0002	**0.0111**	0.49	< 0.001	0.11	0.00005	< 0.001	0.003	0.0042	< 0.0002	< 0.02	< 0.00005	0.0025	0.0213	0.2	< 0.0002	7.5	< 0.0001	0.55	< 0.0002	< 0.001	0.01	0.001	< 0.001	0.011	---
	04-Sep-2008	11-SH	< 0.01	< 0.0004	0.0005	0.366	< 0.001	0.11	< 0.0001	< 0.005	< 0.002	0.006	< 0.0001	0.024	< 0.00010	< 0.005	0.004	---	0.0006	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.001	< 0.001	0.005	---
	10-Sep-2009	11-SH	< 0.0050	< 0.00040	0.00048	0.325	< 0.0010	0.112	0.00001	< 0.0050	< 0.0020	0.0048	0.00011	0.024	< 0.000020	< 0.0050	0.0042	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.001	0.00117	< 0.0010	0.0078	---
	09-Sep-2010	11 SH	< 0.0050	< 0.00040	0.00052	0.402	< 0.0010	0.123	0.000078	< 0.0010	< 0.0020	0.0029	< 0.00010	0.024	< 0.000020	< 0.0050	0.0055	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0012	0.00124	< 0.0010	0.0041	---
	08-Sep-2011	11-SH	< 0.0050	< 0.00040	0.00158	0.478	< 0.0010	0.126	0.000013	< 0.0010	< 0.0020	0.0023	< 0.00010	0.021	< 0.000020	< 0.0050	0.0025	---	< 0.00040	8.27	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00131	< 0.0010	0.0068	---
	06-Sep-2012	11-SH	< 0.0050	< 0.00040	0.00064	0.464	< 0.0010	0.128	< 0.000010	< 0.0010	< 0.0020	0.0011	< 0.00010	0.024	< 0.000020	< 0.0050	0.0029	---	< 0.00040	8.42	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00115	< 0.0010	0.0051	---
	26-Sep-2013	11-SH	< 0.0050	0.00044	0.00084	0.691	< 0.0010	0.148	0.000032	< 0.0010	0.0060	0.0017	< 0.00010	0.024	< 0.000020	< 0.0050	0.0172	---	< 0.00040	---	< 0.000020	---	0.00011	< 0.050	< 0.0010	0.0150	< 0.0010	0.0122	---
	17-Sep-2014	11-SH	< 0.0010	< 0.00010	0.00032	0.687	< 0.00050	0.135	0.000047	< 0.00010	0.00283	0.00238	< 0.000050	0.0259	< 0.0000050	0.00127	0.0060	< 0.30	0.00012	7.31	< 0.000010	0.633	0.000056	< 0.00010	< 0.00030	0.00382	< 0.00010	0.0080	---
(Duplicate)	17-Sep-2014	31-SH	< 0.0010	< 0.00010	0.00028	0.692	< 0.00050	0.125	0.000048	< 0.00010	0.00280	0.00235	< 0.000050	0.0247	< 0.0000050	0.00121	0.00591	< 0.30	0.00011	7.23	< 0.000010	0.621	0.000056	< 0.00010	< 0.00030	0.00381	< 0.00010	0.0079	---
	29-Sep-2015	11-SH	<0.0010	<0.00010	0.00017	0.513	---	0.090	0.0000299	<0.00010	---	0.00268	<0.000050	---	<0.0000050	---	0.00342	---	0.000074	---	<0.000010	---	---	---	---	0.00315	---	0.0059	---
(Duplicate)	29-Sep-2015	31-SH	<0.0010	<0.00010	0.00019	0.623	---	0.116	0.0000348	<0.00010	---	0.00230	<0.000050	---	<0.0000050	---	0.00320	---	0.000084	---	<0.000010	---	---	---	---	0.00268	---	0.0052	---
	27-Sep-2016	11-SH	0.0068	<0.00010	0.00034	0.651	---	0.137	0.0000426	<0.00010	---	0.00262	<0.000050	---	<0.0000050	---	0.00322	---	0.000065	---	<0.000010	---	---	---	---	0.00225	---	0.0063	---
(Duplicate)	27-Sep-2016	31-SH	0.0026	<0.00010	0.00032	0.662	---	0.114	0.0000362	<0.00010	---	0.00266	<0.000050	---	<0.0000050	---	0.00233	---	<0.000050	---	<0.000010	---	---	---	---	0.00223	---	0.0059	---
	27-Sep-2017	11-SH	<0.0010	<0.00010	0.00033	0.694	---	0.118	0.0000484	<0.00010	---	0.00217	<0.000050	---	<0.0000050	---	0.00194	---	0.000067	---	<0.000010	---	---	---	---	0.00222	---	0.0065	---
(Duplicate)	27-Sep-2017	31-SH	<0.0010	<0.00010	0.00032	0.698	---	0.120	0.0000449	<0.00010	---	0.00225	<0.000050	---	<0.0000050	---	0.00198	---	0.000054	---	<0.000010	---	---	---	---	0.00216	---	0.0073	---
	18-Sep-2018	11-SH	<0.0010	<0.00010	<0.00010	0.850	---	0.073	0.0000185	<0.00010	---	0.00022	<0.000050	---	0.0000178	---	0.00156	---	<0.000050	---	<0.000010	---	---	---	---	0.00374	---	0.0018	---
(Duplicate)	18-Sep-2018	31-SH	<0.0010	<0.00010	<0.00010	0.829	---	0.067	0.0000239	<0.00010	---	0.00022	<0.000050	---	0.0000115	---	0.00160	---	<0.000050	---	<0.000010	---	---	---	---	0.00355	---	0.0020	---
	17-Sep-2019	11-SH	<0.0010	<0.00010	0.00068	0.684	---	0.125	0.0000304	0.00013	---	0.00212	<0.000050	---	<0.0000050	---	0.00229	---	<0.000050	---	<0.000010	---	---	---	---	0.00183	---	0.0056	---
(Duplicate)	17-Sep-2019	31-SH	0.0013	<0.00010	0.00066	0.676	---	0.127	0.0000307	0.00010	---	0.00232	<0.000050	---	<0.0000050	---	0.00231	---	0.000063	---	<0.000010	---	---	---	---	0.00181	---	0.0061	---
	21-Sep-2020	11-SH	0.0013	<0.00010	0.00016	0.595	<0.00010	0.123	0.0000130	<0.00010	0.00168	0.00231	<0.000050	0.0255	<0.0000050	0.000623	0.00223	---	0.000068	---	<0.000010	---	0.000011	<0.00010	<0.00030	0.00171	<0.00050	0.0034	---
(Duplicate)	21-Sep-2020	31-SH	<0.0010	<0.00010	0.00016	0.604	<0.00010	0.120	0.0000128	<0.00010	0.00168	0.00078	<0.000050	0.0254	<0.0000050	0.000602	0.00225	---	0.000069	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00169	<0.00050	0.0025	---
	22-Sep-2021	11-SH	0.0012	<0.00010	0.00013	0.683	<0.00010	0.131	0.0000533	<0.00010	0.00117	0.00226	<0.000050	0.0267	<0.0000050	0.000649	0.00168	---	0.000074	---	<0.000010	---	0.000011	<0.00010	<0.00030	0.00189	<0.00050	0.0039	---
(Duplicate)	22-Sep-2021	31-SH	<0.0010	<0.00010	0.00013	0.641	<0.00010	0.138	0.0000451	<0.00010	0.0012	0.00216	<0.000050	0.0275	<0.0000050	0.000662	0.0017	---	0.000083	---	<0.000010	---	0.000013	<0.00010	<0.00030	0.00186	<0.00050	0.0037	---
	29-Sep-2022	11-SH	<0.0010	<0.00010	0.00015	0.488	---	0.124	0.0000317	<0.00050	---	0.00111	<0.000050	---	<0.0000050	---	0.00204	---	0.000067	---	<0.000010	---	---	---	---	0.00214	---	0.0028	---
(Duplicate)	29-Sep-2022	31-SH	<0.0010	<0.00010	0.00017	0.500	---	0.126	0.0000298	<0.00050	---	0.00108	<0.000050	---	<0.0000050	---	0.00207	---	0.000054	---	<0.000010	---	---	---	---	0.00214	---	0.0028	---
	28-Sep-2023	11-SH	0.0013	<0.00010	0.00018	0.244	---	0.133	0.0000268	0.00145	---	0.00114	<0.000050	---	<0.0000050	---	0.00233	---	0.000099	---	<0.000010	---	---	---	---	0.00389	---	0.003	---
(Duplicate)	28-Sep-2023	31-SH	<0.0010	<0.00010	0.00017	0.23	---	0.132	0.0000259	0.00131	---	0.001	<0.000050	---	<0.0000050	---	0.00248	---	0.000118	---	<0.000010	---	---	---	---	0.00382	---	0.0025	---
	11-Sep-2024	11-SH	0.0019	<0.00010	0.00011	0.146	---	0.126	0.0000494	<0.00050	---	0.00136	<0.000050	---	<0.0000050	---	0.00288	---	0.000064	---	<0.000010	---	---	---	---	0.00354	---	0.0032	---
(Duplicate)	11-Sep-2024	31-SH	0.0032	<0.00010	0.0001	0.149	---	0.117	0.0000466	<0.00050	---	0.00198	<0.000050	---	<0.0000050	---	0.00299	---	0.00005	---	<0.000010	---	---	---	---	0.0034	---	0.0034	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

Monitoring Well	Date	Sample Name	DISSOLVED METALS																										
			Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
11-IN	17-May-1991	11-IN	---	0.0002	0.0004	0.31	< 0.001	---	< 0.001	0.006	0.006	0.004	< 0.002	---	< 0.00005	0.01	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	11-IN	---	0.0002	0.0006	0.3	0.002	---	< 0.001	< 0.001	0.003	0.007	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	11-IN	---	0.0005	< 0.0002	0.2	0.001	---	< 0.003	< 0.002	0.004	0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	11-IN	---	< 0.0002	0.0011	0.31	0.002	---	0.005	< 0.002	0.006	0.003	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	11-IN	---	< 0.0002	0.0009	0.32	0.002	---	< 0.003	0.008	0.006	< 0.001	< 0.001	---	0.00005	0.007	0.042	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.003	---
	28-Sep-1995	11-IN	---	< 0.0002	0.0019	0.32	< 0.001	---	< 0.0002	< 0.002	0.003	< 0.001	< 0.0003	---	< 0.00005	0.008	0.007	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	< 0.001	---
	05-Sep-1996	11-IN	---	< 0.0002	0.0012	0.31	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.001	0.0006	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.03	---
	05-Sep-1997	11-IN	---	< 0.0002	0.0018	0.26	0.003	---	< 0.0002	0.007	0.01	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	16-Sep-1998	11-IN	---	< 0.0002	0.0014	0.29	0.003	---	< 0.0002	< 0.002	< 0.003	0.002	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.003	< 0.001	---
	09-Sep-1999	11-IN	---	0.0002	0.0033	0.4	< 0.001	---	< 0.0002	0.019	0.01	< 0.001	< 0.0003	---	< 0.00005	0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	< 0.002	0.004	---
	06-Sep-2000	11-IN	---	< 0.0002	0.0009	0.305	< 0.0002	---	< 0.0002	< 0.001	0.0009	< 0.0002	< 0.0003	---	< 0.00005	0.0027	0.0044	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0008	---
	06-Sep-2001	11-IN	---	< 0.0002	0.0002	0.278	< 0.0002	---	< 0.0002	< 0.001	0.0007	0.0008	< 0.0003	0.03	< 0.00005	0.0038	0.0071	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0078	---
	05-Sep-2002	11-IN	0.004	< 0.0002	0.0015	0.288	< 0.0002	0.24	< 0.0002	0.035	0.001	0.003	< 0.0003	---	< 0.00005	0.0042	0.0127	< 0.1	< 0.0002	6.14	< 0.0001	0.603	< 0.0002	< 0.001	0.001	0.0043	0.01	0.0013	< 0.0002
	03-Sep-2003	11-IN	0.007	< 0.0002	0.0009	0.26	< 0.0002	0.27	< 0.0002	< 0.001	0.0007	0.0032	< 0.0003	0.007	< 0.00005	0.0154	0.007	< 0.1	0.0005	6.59	< 0.0001	0.6	< 0.0002	< 0.001	0.001	0.0031	< 0.001	0.0168	< 0.0002
	08-Sep-2004	11-IN	0.03	< 0.0002	0.0005	0.276	0.0004	0.27	< 0.0002	< 0.001	0.0009	0.0015	< 0.0003	0.021	0.0002	0.0044	0.0069	< 0.1	< 0.0002	6.08	< 0.0001	0.6	< 0.0002	< 0.001	0.013	0.0036	< 0.001	0.0009	0.0002
	07-Sep-2005	11-IN	< 0.001	< 0.0002	0.0017	0.299	< 0.0002	0.19	0.0003	< 0.001	0.0004	0.0017	< 0.0003	0.026	0.00008	0.0039	0.0057	< 0.1	< 0.0002	5.99	0.0003	0.59	< 0.0002	< 0.001	< 0.001	0.0033	< 0.001	0.0032	0.0016
	07-Sep-2006	11-IN	0.002	< 0.0002	0.0009	0.275	< 0.0002	0.2	< 0.0002	< 0.001	0.001	0.0014	< 0.0003	0.034	0.00022	0.0038	0.0273	< 0.1	< 0.0002	6.62	< 0.0001	0.61	< 0.0002	< 0.001	0.001	0.0032	< 0.001	0.0015	< 0.0002
	06-Sep-2007	11-IN	0.006	< 0.0002	0.0004	0.25	< 0.001	0.23	0.00003	< 0.001	0.0023	0.004	< 0.0002	0.03	< 0.00005	0.0036	0.0465	< 0.1	< 0.0002	6.8	< 0.0001	0.59	< 0.0002	< 0.001	0.009	0.0027	< 0.001	0.011	---
	04-Sep-2008	11-IN	0.01	< 0.0004	0.0006	0.238	< 0.001	0.23	< 0.00005	< 0.005	< 0.002	0.006	< 0.0001	0.035	< 0.00010	< 0.005	0.014	---	0.0006	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0032	< 0.001	0.004	---
	10-Sep-2009	11-IN	< 0.0050	< 0.00040	0.00048	0.251	< 0.0010	0.23	0.000014	< 0.0050	0.0029	< 0.0010	< 0.00010	0.032	< 0.000020	< 0.0050	0.0494	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0011	0.00254	< 0.0010	< 0.0040	---
	09-Sep-2010	11 IN	< 0.0050	< 0.00040	0.00078	0.218	< 0.0010	0.247	0.000071	< 0.0010	< 0.0020	0.0034	< 0.00010	0.032	< 0.000020	< 0.0050	0.0187	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00282	< 0.0010	0.0046	---
	08-Sep-2011	11-IN	< 0.0050	< 0.00040	0.00142	0.241	< 0.0010	0.248	0.000019	< 0.0010	< 0.0020	0.0036	< 0.00010	0.03	< 0.000020	< 0.0050	0.0119	---	< 0.00040	7.15	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00265	< 0.0010	0.0062	---
	06-Sep-2012	11-IN	< 0.0050	< 0.00040	0.00053	0.258	< 0.0010	0.259	0.000012	< 0.0010	< 0.0020	0.0017	< 0.00010	0.033	< 0.000020	< 0.0050	0.0092	---	< 0.00040	7.54	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00248	< 0.0010	0.0052	---
	26-Sep-2013	11-IN	< 0.0050	< 0.00040	0.00285	0.279	< 0.0010	0.273	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.033	< 0.000020	0.0054	0.0026	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00285	< 0.0010	0.0053	---
	17-Sep-2014	11-IN	< 0.0010	0.00031	0.00067	0.417	< 0.00050	0.236	0.000018	< 0.00010	0.0308	0.00148	< 0.000050	0.0316	< 0.0000050	0.00787	0.0744	< 0.30	0.00025	5.58	< 0.000010	0.640	0.000081	< 0.00010	< 0.00030	0.00416	0.00017	0.0033	---
	29-Sep-2015	11-IN	<0.0010	<0.00010	0.00086	0.297	---	0.217	0.0000188	<0.00010	---	0.00198	<0.000050	---	0.0000059	---	0.0141	---	0.000095	---	<0.000010	---	---	---	---	0.00338	---	0.0045	---
	27-Sep-2016	11-IN	<0.0010	<0.00010	0.00045	0.317	---	0.238	0.0000384	<0.00010	---	0.00318	<0.000050	---	<0.0000050	---	0.0089	---	0.000095	---	<0.000010	---	---	---	---	0.00283	---	0.0045	---
	27-Sep-2017	11-IN	<0.0010	<0.00010	0.00036	0.329	---	0.230	0.0000245	0.00015	---	<0.00020	<0.000050	---	<0.0000050	---	0.0044	---	0.000062	---	<0.000010	---	---	---	---	0.00289	---	0.0038	---
	18-Sep-2018	11-IN	0.0075	<0.00010	0.00177	0.298	---	0.267	0.0000110	0.00046	---	0.00051	<0.000050	---	0.0000117	---	0.0050	---	0.000074	---	<0.000010	---	---	---	---	0.00269	---	0.0036	---
	17-Sep-2019	11-IN	<0.0010	<0.00010	0.00125	0.335	---	0.238	<0.0000050	0.00017	---	0.00037	<0.000050	---	<0.0000050	---	0.0021	---	0.000086	---	<0.000010	---	---	---	---	0.00309	---	0.0026	---
	21-Sep-2020	11-IN	0.0015	<0.00010	0.00109	0.291	<0.00010	0.234	0.0000109	0.00017	0.00159	0.00820	<0.000050	0.0296	<0.0000050	0.00492	0.00217	---	0.000058	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00321	<0.00050	0.0032	---
	22-Sep-2021	11-IN	0.0014	<0.00010	0.00065	0.329	<0.00010	0.253	0.0000251	<0.00010	0.00162	0.00034	<0.000050	0.0325	<0.0000050	0.00479	0.00232	---	0.000094	---	<0.000010	---	0.00001	<0.00010	<0.00030	0.00314	<0.00050	0.0034	---
	29-Sep-2022	11-IN	0.0227	<0.00010	0.00039	0.296	---	0.243	0.0000058	<0.00050	---	0.00027	<0.000050	---	<0.0000050	---	0.00203	---	0.000074	---	<0.000010	---	---	---	---	0.00320	---	0.0041	---
	28-Sep-2023	11-IN	<0.0010	<0.00010	0.00016	0.288	---	0.129	0.0000217	0.00135	---	0.00113	<0.000050	---	<0.0000050	---	0.00255	---	<0.000050	---	<0.000010	---	---	---	---	0.00312	---	0.0031	---
	11-Sep-2024	11-IN	0.0016	<0.00010	0.00073	0.29	---	0.226	0.0000073	<0.00050	---	0.00295	<0.000050	---	<0.0000050	---	0.00338	---	0.000076	---	<0.000010	---	---	---	---	0.00268	---	0.0039	---
11-SS	17-May-1991	11-SS	---	0.0002	0.012	0.08	< 0.001	---	< 0.001	< 0.001	0.002	0.002	< 0.002	---	< 0.00005	0.008	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	11-SS	---	0.0014	0.0032	0.06	< 0.001	---	< 0.003	< 0.001	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
12-SH	17-May-1991	12-SH	---	0.0002	0.0002	0.25	< 0.001	---	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	---	< 0.00005	0.009	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	12-SH	---	0.0005	0.0008	0.21	0.001	---	< 0.003	< 0.001	< 0.003	0.003	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	12-SH	---	< 0.0002	0.0004	0.27	0.001	---	< 0.003	0.022	< 0.003	0.005	< 0.002	---	< 0.00005	0.005	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	12-SH	---	0.0003	0.0004	0.25	0.001	---	0.003	< 0.002	< 0.003	0.012	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	12-SH	---	< 0.0002	0.0004	0.23	0.002	---	< 0.003	< 0.002	< 0.003	< 0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	12-SH	---	< 0.0002	0.0002	0.24	0.001	---	< 0.003	< 0.002	< 0.003	0.003	< 0.001	---	< 0.00005	< 0.003	0.01	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.004	0.014	---
	22-Sep-1994	12-SH	---	< 0.0002	0.0006	0.28	0.001	---	< 0.003	0.003	< 0.003	0.007	< 0.001	---	0.00005	0.006	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.004	0.016	---
	01-Nov-1994	12-SH	---	0.0031	0.0003	0.24	0.001	---	< 0.003	< 0.002	< 0.003	0.006	< 0.001	---	< 0.00005	< 0.003	0.009	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.004	0.02	---
	28-Sep-1995	12-SH	---	< 0.0002	0.0004	0.27	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.001	< 0.0003	---	< 0.00005	0.004	0.01	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.006	---
	05-Sep-1996	12-SH	---	< 0.0002	0.0006	0.26	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.017	---
(Duplicate)	05-Sep-1996	12-SH DUP	---	< 0.0002	0.0005	0.25	< 0.001	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.002	0.004	---
	05-Sep-1997	12-SH	---	< 0.0002	0.0005	0.17	0.002	---	< 0.0002	< 0.002	0.004	0.011	0.0007	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	0.003	---	< 0.001	---	---	---	0.008	0.007	---
(Duplicate)	05-Sep-1997	12-SH DUP	---	< 0.0002	0.0005	0.16	0.002	---	< 0.0002	0.003	0.005	< 0.001	< 0.0003	---	< 0.00005	< 0.003	0.006	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.004	---
	16-Sep-1998	12-SH	---	0.0002	0.0004	0.21	0.001	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	0.005	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	12-SH	---	0.0021	< 0.0002	0.31	< 0.001	---	< 0.0002	0.023	0.003	0.001	< 0.0003	---	< 0.00005	< 0.003	0.015	---	< 0.0002	---	< 0.002	---	---	---	---	---	0.005	0.001	---
	06-Sep-2000	12-SH	---	< 0.0002	0.0007	0.233	< 0.0002	---	< 0.0002	< 0.001	0.0006	< 0.0002	< 0.0003	---	< 0.00005	0.0002	0.0029	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0008	---
	06-Sep-2001	12-SH	---	< 0.0002	0.0011	0.255	< 0.0002	---	< 0.0002	< 0.001	0.0004	0.0009	< 0.0003	0.017	< 0.00005	0.0015	0.0026	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.008	---
	04-Sep-2002	12-SH	0.005	< 0.0002	0.0011	0.236	< 0.0002	0.04	< 0.0002	< 0.001	< 0.0003	0.0023	< 0.0003	---	< 0.00005	0.0015	0.0016	< 0.1	< 0.0002	7	< 0.0001	0.348	< 0.0002	< 0.001	< 0.001	0.0032	< 0.001	0.0064	0.0017
	04-Sep-2003	12-SH	0.002	< 0.0002	0.0006	0.262	< 0.0002	0.05	< 0.0002	< 0.001	< 0.0003	0.0015	0.0006	< 0.004	< 0.00005	0.023	< 0.0005	< 0.1	< 0.0002	7.53	< 0.0001	0.33	< 0.0002	< 0.001	< 0.001	0.0032	< 0.001	0.0055	< 0.0002
	09-Sep-2004	12-SH	0.093	< 0.0002	0.0007	0.281	< 0.0002	0.05	< 0.0002	< 0.001	< 0.0003	0.0016	< 0.0003	0.013	< 0.00005	0.0017	0.0013	< 0.1	< 0.0002	6.99	< 0.0001	0.34	< 0.0002	< 0.001	0.011	0.0042	< 0.001	0.0226	< 0.0002
	08-Sep-2005	12-SH	0.003	< 0.0002	0.0012	0.212	0.0002	0.04	0.0003	< 0.001	< 0.0003	0.0028	< 0.0003	0.025	0.00008	0.002	0.0009	< 0.1	< 0.0002	7.5	0.0003	0.38	< 0.0002	< 0.001	0.002	0.0044	< 0.001	0.012	0.0015
	07-Sep-2006	12-SH	0.002	< 0.0002	0.0017	0.233	< 0.0002	0.04	< 0.0002	< 0.001	< 0.0003	0.0042	< 0.0003	0.025	0.00043	0.002	0.0011	< 0.1	< 0.0002	6.85	< 0.0001	0.34	< 0.0002	< 0.001	0.001	0.0051	< 0.001	0.0038	0.0025
	07-Sep-2007	12-SH	0.005	< 0.0002	0.0017	0.22	< 0.001	0.03	0.00004	0.003	0.0017	0.0025	< 0.0002	0.02	< 0.00005	0.0027	0.0153	< 0.1	< 0.0002	6.8	< 0.0001	0.3	< 0.0002	< 0.001	0.007	0.0018	< 0.001	0.008	---
	05-Sep-2008	12-SH	< 0.01	< 0.0004	0.0011	0.293	< 0.001	< 0.05	< 0.00005	< 0.005	< 0.002	0.003	< 0.0001	0.027	< 0.00010	< 0.005	0.002	---	0.0005	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.006	< 0.001	0.003	---
	10-Sep-2009	12-SH	< 0.0050	< 0.00040	0.00163	0.136	< 0.0010	< 0.050	< 0.000010	< 0.0050	< 0.0020	< 0.0010	< 0.00010	0.029	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0011	0.00494	< 0.0010	< 0.0040	---
	09-Sep-2010	12 SH	0.0072	< 0.00040	0.00209	0.0902	< 0.0010	< 0.050	0.000018	0.0028	< 0.0020	0.001	< 0.00010	0.031	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00383	< 0.0010	< 0.0040	---
	07-Sep-2011	12-SH	< 0.0050	< 0.00040	0.00182	0.234	< 0.0010	< 0.050	0.00001	< 0.0010	< 0.0020	0.0015	< 0.00010	0.024	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	7.18	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00521	< 0.0010	< 0.0040	---
	05-Sep-2012	12-SH	< 0.0050	< 0.00040	0.00109	0.269	< 0.0010	< 0.050	< 0.000010	< 0.0010	< 0.0020	0.0013	< 0.00010	0.025	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	7.63	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00595	< 0.0010	< 0.0040	---
	26-Sep-2013	12-SH	< 0.0050	< 0.00040	0.00090	0.454	< 0.0010	< 0.050	0.000012	< 0.0010	< 0.0020	0.0012	< 0.00010	0.027	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00555	< 0.0010	0.0048	---
	17-Sep-2014	12-SH	< 0.0010	< 0.00010	0.00068	0.455	< 0.00050	0.040	0.000020	< 0.00010	0.00090	0.00079	< 0.000050	0.0264	< 0.0000050	0.00136	0.00194	< 0.30	< 0.00010	9.55	< 0.000010	0.400	< 0.000050	< 0.00010	< 0.00030	0.00481	0.00012	0.0027	---
	29-Sep-2015	12-SH	<0.0010	<0.00010	0.00061	0.374	---	0.032	0.0000163	<0.00010	---	0.00078	<0.000050	---	<0.0000050	---	0.00160	---	<0.000050	---	<0.000010	---	---	---	---	0.00630	---	0.0044	---
	27-Sep-2016	12-SH	<0.0010	<0.00010	0.00072	0.388	---	0.040	0.0000087	<0.00010	---	0.00079	<0.000050	---	<0.0000050	---	0.00074	---	<0.000050	---	<0.000010	---	---	---	---	0.00528	---	0.0025	---
	27-Sep-2017	12-SH	<0.0010	<0.00010	0.00235	0.462	---	0.033	0.0000107	<0.00010	---	0.00064	<0.000050	---	<0.0000050	---	0.00090	---	<0.000050	---	<0.000010	---	---	---	---	0.00567	---	0.0017	---
	18-Sep-2018	12-SH	<0.0010	<0.00010	0.00282	0.405	---	0.042	0.0000133	0.00029	---	0.00043	<0.000050	---	<0.0000050	---	0.00092	---	<0.000050	---	<0.000010	---	---	---	---	0.00933	---	0.0027	---
	16-Sep-2019	12-SH	<0.0010	<0.00010	0.00078	0.467	---	0.037	0.0000159	0.00015	---	0.00095	<0.000050	---	<0.0000050	---	0.00099	---	<0.000050	---	<0.000010	---	---	---	---	0.00541	---	0.0018	---
	22-Sep-2020	12-SH	0.0010	<0.00010	0.00063	0.402	<0.00010	0.037	0.0000082	<0.00010	0.00030	0.00059	<0.000050	0.0271	<0.0000050	0.00104	0.00092	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00551	<0.00050	<0.0010	---
	22-Sep-2021	12-SH	0.0014	<0.00010	0.00056	0.397	<0.00010	0.033	0.0000434	<0.00010	0.00029	0.00047	<0.000050	0.0258	<0.0000050	0.00127	0.00066	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00541	<0.00050	0.0024	---
	28-Sep-2022	12-SH	<0.0010	<0.00010	0.00070	0.437	---	0.043	0.0000177	<0.00050	---	0.00113	<0.000050	---	<0.0000050	---	0.00126	---	<0.000050	---	<0.000010	---	---	---	---	0.00654	---	0.0040	---
	28-Sep-2023	12-SH	<0.0010	<0.00010	0.00082	0.39	---	0.04	0.0000279	0.00182	---	0.00107	0.000053	---	<0.0000050	---	0.0015	---	<0.000050	---	<0.000010	---	---	---	---	0.00606	---	0.0307	---
	11-Sep-2024	12-SH	0.0013	<0.00010	0.00059	0.405	---	0.036	0.0000061	<0.00050	---	0.00271	0.000068	---	<0.0000050	---	0.00084	---	<0.000050	---	<0.000010	---	---	---	---	0.00612	---	0.0031	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
12-IN	15-Jan-1990	12-IN	---	0.0002	0.0005	0.17	< 0.001	---	< 0.001	0.003	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	12-IN	---	0.0003	0.0024	0.18	< 0.001	---	< 0.001	< 0.001	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	12-IN	---	0.0003	0.0017	0.17	< 0.001	---	< 0.001	0.002	---	0.003	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	12-IN	---	0.0002	0.0005	0.18	< 0.001	---	< 0.001	0.005	---	0.004	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	12-IN	---	---	0.0007	0.17	< 0.001	---	< 0.001	< 0.001	---	0.005	< 0.002	---	< 0.00005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-May-1991	12-IN	---	0.0002	0.0005	0.2	< 0.001	---	< 0.001	0.007	< 0.001	< 0.001	< 0.002	---	< 0.00005	0.013	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	12-IN	---	0.0002	0.0007	0.19	< 0.001	---	< 0.001	0.005	< 0.001	< 0.001	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	12-IN	---	0.0004	0.0003	0.09	0.001	---	< 0.003	0.004	< 0.003	0.005	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	12-IN	---	< 0.0002	0.0005	0.18	0.001	---	< 0.003	0.006	< 0.003	0.004	< 0.002	---	< 0.00005	0.004	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	12-IN	---	< 0.0002	0.0005	0.17	0.001	---	< 0.003	< 0.002	< 0.003	< 0.001	< 0.002	---	< 0.00005	0.005	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	12-IN	---	< 0.0002	0.0004	0.19	< 0.001	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	0.004	0.013	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.001	---
	05-Sep-1996	12-IN	---	0.0003	0.0009	0.17	< 0.001	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.005	---
	05-Sep-1997	12-IN	---	< 0.0002	0.0007	0.12	0.001	---	< 0.0002	0.007	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.001	---
	16-Sep-1998	12-IN	---	< 0.0002	0.0005	0.12	0.001	---	0.0003	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	0.004	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	12-IN	---	0.0006	0.0007	0.16	0.018	---	< 0.0002	0.008	< 0.003	0.015	< 0.0003	---	< 0.00005	< 0.003	0.01	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	< 0.002	0.013	---
	06-Sep-2000	12-IN	---	< 0.0002	0.0014	0.188	< 0.0002	---	< 0.0002	< 0.001	0.0052	< 0.0002	< 0.0003	---	< 0.00005	0.0021	0.0448	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.007	---
	06-Sep-2001	12-IN	---	< 0.0002	< 0.0002	0.172	0.0002	---	< 0.0002	< 0.001	0.0007	0.0073	0.0004	0.033	< 0.00005	0.003	0.0171	0.4	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0193	---
	04-Sep-2002	12-IN	0.004	0.0002	0.0013	0.18	< 0.0002	0.13	< 0.0002	0.028	0.0016	0.008	< 0.0003	---	< 0.00005	0.0036	0.0176	0.1	< 0.0002	5.57	< 0.0001	0.555	< 0.0002	< 0.001	0.002	0.0027	0.007	0.0271	0.0002
	04-Sep-2003	12-IN	0.002	< 0.0002	0.0006	0.154	< 0.0002	0.16	0.0004	< 0.001	0.0016	0.0103	0.0005	0.009	< 0.00005	0.025	0.0111	0.3	< 0.0002	5.93	< 0.0001	0.55	< 0.0002	< 0.001	< 0.001	0.002	< 0.001	0.0295	< 0.0002
	09-Sep-2004	12-IN	0.171	< 0.0002	0.0003	0.158	0.0002	0.16	< 0.0002	0.001	< 0.0003	0.0067	0.0022	0.025	< 0.00005	0.0034	0.007	0.1	< 0.0002	5.56	< 0.0001	0.53	< 0.0002	< 0.001	0.012	0.0025	< 0.001	0.0114	< 0.0002
	08-Sep-2005	12-IN	< 0.001	0.0005	0.0007	0.209	0.0002	0.13	0.0006	< 0.001	0.0031	0.0035	0.0014	0.039	0.00009	0.0062	1.52	< 0.1	< 0.0002	5.84	0.0003	0.7	< 0.0002	< 0.001	< 0.001	0.0033	< 0.001	0.114	0.0015
	12-Apr-2006	12-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.113	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	12-Apr-2006	12-IN DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.108	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	12-Apr-2006	12-IN DUP2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.155	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	12-IN	0.003	< 0.0002	0.0044	0.179	< 0.0002	0.12	0.0002	< 0.001	0.0013	0.0177	0.0017	0.036	0.00012	0.0038	0.143	< 0.1	< 0.0002	5.91	< 0.0001	0.54	< 0.0002	< 0.001	0.001	0.0031	< 0.001	0.667	0.0026
	10-Dec-2006	12-IN	0.004	0.0004	0.0009	0.18	< 0.001	0.13	0.00026	< 0.001	0.0011	0.0726	0.0002	0.03	---	0.0037	0.153	< 0.1	< 0.0002	6.8	< 0.0001	0.55	< 0.0002	< 0.001	0.004	0.0028	< 0.001	0.907	---
	07-Sep-2007	12-IN	0.005	< 0.0002	0.0002	0.17	< 0.001	0.13	0.00011	0.001	0.0036	0.005	0.0024	0.03	< 0.00005	0.0038	0.344	< 0.1	< 0.0002	6.4	< 0.0001	0.53	< 0.0002	< 0.001	0.009	0.0025	< 0.001	0.656	---
	05-Sep-2008	12-IN	< 0.01	< 0.0004	0.0011	0.176	< 0.001	0.13	< 0.00005	< 0.005	0.003	0.001	0.0026	0.036	< 0.00010	< 0.005	0.232	---	0.0006	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0025	< 0.001	0.378	---
	11-Sep-2009	12-IN	< 0.0050	< 0.00040	0.00114	0.166	< 0.0010	0.121	0.000088	< 0.0050	0.0028	0.0033	0.00102	0.035	< 0.000020	< 0.0050	0.675	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0012	0.00244	< 0.0010	1.19	---
	09-Sep-2010	12 IN	< 0.0050	< 0.00040	0.00222	0.162	< 0.0010	0.133	0.000086	0.0011	0.0028	0.0013	0.00539	0.036	< 0.000020	< 0.0050	0.448	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00232	< 0.0010	1.04	---
	07-Sep-2011	12-IN	0.0051	0.00073	0.00185	0.127	< 0.0010	0.101	0.000158	< 0.0010	< 0.0020	0.0541	0.00062	0.026	< 0.000020	< 0.0050	0.137	---	< 0.00040	7.75	0.000349	---	< 0.00010	< 0.050	< 0.0010	0.00172	< 0.0010	1.19	---
	06-Sep-2012	12-IN	0.0055	0.00059	0.00234	0.145	< 0.0010	0.12	0.000129	< 0.0010	< 0.0020	0.0244	0.00057	0.031	< 0.000020	< 0.0050	0.0687	---	< 0.00040	6.16	0.000312	---	< 0.00010	< 0.050	< 0.0010	0.00181	< 0.0010	0.927	---
	17-Sep-2014	12-IN	0.0030	< 0.00010	0.00874	0.191	< 0.00050	0.136	0.000031	< 0.00010	0.00125	0.00159	0.00236	0.0363	< 0.0000050	0.00345	0.0129	< 0.30	< 0.00010	7.09	< 0.000010	0.531	< 0.000050	< 0.00010	< 0.00030	0.00216	< 0.00010	0.1710	---
	29-Sep-2015	12-IN	0.0034	0.00025	0.00590	0.160	---	0.095	0.000397	<0.00010	---	0.00429	0.00175	---	<0.0000050	---	0.0304	---	<0.000050	---	<0.000010	---	---	---	---	0.00248	---	0.391	---
	27-Sep-2016	12-IN	0.0039	0.00012	0.00747	0.164	---	0.130	0.000043	<0.00010	---	0.00333	0.00039	---	<0.0000050	---	0.0132	---	<0.000050	---	<0.000010	---	---	---	---	0.00247	---	0.229	---
	27-Sep-2017	12-IN	0.0032	<0.00010	0.00697	0.196	---	0.121	0.000065	<0.00010	---	0.00360	0.00053	---	<0.0000050	---	0.0109	---	<0.000050	---	<0.000010	---	---	---	---	0.00255	---	0.280	---
	18-Sep-2018	12-IN	0.0029	0.00011	0.00732	0.173	---	0.147	0.000063	0.00012	---	0.00438	0.00053	---	0.0000221	---	0.0164	---	<0.000050	---	<0.000010	---	---	---	---	0.00251	---	0.283	---
	16-Sep-2019	12-IN	0.0058	<0.00010	**0.01060**	0.182	---	0.125	0.000029	0.00013	---	0.01100	0.00047	---	<0.0000050	---	0.0044	---	<0.000050	---	<0.000010	---	---	---	---	0.00240	---	0.131	---
	22-Sep-2020	12-IN	0.0027	<0.00010	0.00908	0.159	<0.00010	0.124	0.0000348	<0.00010	0.00103	0.0161	0.000210	0.0337	<0.0000050	0.00459	0.00524	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00239	<0.00050	0.195	---
	22-Sep-2021	12-IN	0.0038	<0.00010	0.00539	0.18	<0.00010	0.129	0.0000907	<0.00010	0.00111	0.0495	0.000688	0.0348	<0.0000050	0.0046	0.00549	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00237	<0.00050	0.173	---
	28-Sep-2022	12-IN	0.0020	<0.00010	0.00826	0.169	---	0.131	0.0000427	<0.00050	---		0.0125	0.000121	<0.0000050	---	0.00520	---	<0.000050	---	<0.000010	---	---	---	---	0.00264	---	0.138	---
	28-Sep-2023	12-IN	0.0078	<0.00010	0.00558	0.143	---	0.128	0.0000754	<0.00050	---	0.0175	<0.000050	---	<0.0000050	---	0.00656	---	<0.000050	---	<0.000010	---	---	---	---	0.00228	---	0.165	---
	11-Sep-2024	12-IN	0.012	<0.00010	0.00353	0.165	---	0.122	0.0000593	<0.00050	---	0.0545	0.000554	---	<0.0000050	---	0.00743		<0.000050	---	<0.000010	---	---	---	---	0.0024	---	0.208	---
13-SH	04-Nov-1991	13-SH	---	0.0002	0.0007	0.27	< 0.001	---	< 0.001	< 0.001	< 0.001	0.008	< 0.002	---	< 0.00005	0.011	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	13-SH	---	< 0.0002	0.0005	0.19	< 0.001	---	< 0.003	< 0.001	< 0.003	0.002	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	13-SH	---	< 0.0002	0.0008	0.25	0.001	---	< 0.003	0.02	< 0.003	0.005	< 0.002	---	< 0.00005	0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	13-SH	---	< 0.0002	0.0002	0.19	< 0.001	---	< 0.003	0.005	< 0.003	0.006	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	13-SH	---	< 0.0002	0.0005	0.26	< 0.001	---	< 0.003	< 0.002	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	13-SH	---	< 0.0002	0.0002	0.26	0.001	---	< 0.003	< 0.002	< 0.003	0.001	< 0.001	---	< 0.00005	< 0.003	0.007	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.003	0.008	---
	22-Sep-1994	13-SH	---	0.0002	0.0016	0.21	< 0.001	---	< 0.003	< 0.002	< 0.003	0.103	< 0.001	---	0.00005	< 0.003	0.034	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.003	0.024	---
	01-Nov-1994	13-SH	---	0.0009	0.0005	0.19	0.001	---	< 0.003	< 0.002	< 0.003	0.042	< 0.001	---	< 0.00005	0.009	0.02	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.044	---
	28-Sep-1995	13-SH	---	< 0.0002	0.0005	0.27	< 0.001	---	0.0003	< 0.002	< 0.003	0.004	< 0.0003	---	< 0.00005	0.011	0.007	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.004	---
	04-Sep-1996	13-SH	---	< 0.0002	0.0005	0.29	< 0.001	---	0.002	< 0.002	< 0.003	0.004	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.004	0.004	---
	04-Sep-1997	13-SH	---	< 0.0002	0.0003	0.45	0.001	---	< 0.0002	< 0.002	0.006	0.006	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.003	---
(Duplicate)	04-Sep-1997	13-SH DUP	---	< 0.0002	0.0004	0.45	< 0.001	---	< 0.0002	0.004	< 0.003	0.009	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.011	0.003	---
	16-Sep-1998	13-SH	---	0.0002	0.0005	0.45	0.007	---	0.0004	0.01	0.015	0.009	< 0.0003	---	< 0.00005	0.006	0.008	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.006	< 0.001	---
	09-Sep-1999	13-SH	---	0.0006	0.0006	0.85	< 0.001	---	< 0.0002	0.016	< 0.003	0.007	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	---	---	---	---	0.004	< 0.001	---
	05-Sep-2000	13-SH	---	0.0004	0.001	0.797	< 0.0002	---	< 0.0002	< 0.001	0.0005	< 0.0002	< 0.0003	---	< 0.00005	0.0005	0.0052	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	< 0.0006	---
	06-Sep-2001	13-SH	---	0.0002	0.0013	0.739	0.0004	---	< 0.0002	< 0.001	0.0007	0.0016	0.0013	0.032	0.00005	0.0014	0.0079	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0068	---
	04-Sep-2002	13-SH	0.007	0.0003	0.001	0.597	< 0.0002	0.07	< 0.0002	0.005	< 0.0003	0.0016	< 0.0003	---	< 0.00005	0.0022	0.0038	< 0.1	< 0.0002	9.45	< 0.0001	0.863	< 0.0002	< 0.001	< 0.001	0.0072	< 0.001	0.004	0.0008
	04-Sep-2003	13-SH	0.007	0.0004	0.0009	0.563	< 0.0002	0.08	< 0.0002	0.013	< 0.0003	0.0013	0.0004	0.011	< 0.00005	0.0132	0.0015	< 0.1	0.0003	10.3	< 0.0001	0.82	< 0.0002	< 0.001	< 0.001	0.0064	< 0.001	0.0161	0.0002
	09-Sep-2004	13-SH	0.113	0.0004	0.0005	0.774	< 0.0002	0.08	< 0.0002	0.019	0.0004	0.0017	0.0003	0.025	< 0.00005	0.004	0.0055	< 0.1	< 0.0002	10.7	< 0.0001	0.73	< 0.0002	< 0.001	0.025	0.0063	< 0.001	< 0.0006	0.0004
	08-Sep-2005	13-SH	0.008	0.0009	0.0014	0.415	0.0002	0.07	0.0003	0.012	< 0.0003	0.0016	< 0.0003	0.041	< 0.00005	0.0034	0.0029	< 0.1	0.0004	10.3	0.0003	1.11	< 0.0002	< 0.001	0.002	0.0093	< 0.001	0.0057	0.0016
	07-Sep-2006	13-SH	0.003	0.0011	0.0008	0.301	< 0.0002	0.07	< 0.0002	0.022	< 0.0003	0.0022	< 0.0003	0.044	0.00022	0.0053	0.0035	< 0.1	< 0.0002	9.27	< 0.0001	0.91	< 0.0002	< 0.001	0.002	0.0131	< 0.001	0.0071	0.0005
	05-Sep-2007	13-SH	0.02	0.0008	0.0016	0.36	< 0.001	0.06	0.00007	0.004	0.0024	0.0052	< 0.0002	0.03	< 0.00005	0.0035	0.0293	< 0.1	< 0.0002	10.2	< 0.0001	0.87	< 0.0002	< 0.001	0.019	0.0068	< 0.001	0.019	---
	03-Sep-2008	13-SH	< 0.01	0.0007	0.0011	0.274	< 0.001	< 0.05	< 0.00005	0.015	< 0.002	0.003	< 0.0001	0.018	< 0.00010	< 0.005	0.003	---	0.0006	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.004	< 0.001	0.007	---
	10-Sep-2009	13-SH	< 0.0050	0.00088	0.00175	0.338	< 0.0010	< 0.050	0.000022	0.0081	< 0.0020	0.0036	0.00011	0.031	< 0.000020	< 0.0050	0.0046	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0015	0.00655	< 0.0010	0.0321	---
	08-Sep-2010	13 SH	< 0.0050	0.00085	0.00193	0.277	< 0.0010	0.052	0.000027	0.0065	< 0.0020	0.0037	< 0.00010	0.031	< 0.000020	< 0.0050	0.0053	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0014	0.00551	< 0.0010	0.029	---
	07-Sep-2011	13-SH	< 0.0050	0.00077	0.00307	0.262	< 0.0010	< 0.050	0.000049	0.0011	< 0.0020	0.0064	< 0.00010	0.022	< 0.000020	< 0.0050	0.0043	---	< 0.00040	8.38	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0044	< 0.0010	0.112	---
	05-Sep-2012	13-SH	< 0.0050	0.00073	0.00312	0.25	< 0.0010	< 0.050	0.000037	0.0011	< 0.0020	0.0059	< 0.00010	0.024	< 0.000020	< 0.0050	0.0048	---	< 0.00040	9.68	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00316	< 0.0010	0.102	---
	26-Sep-2013	13-SH	< 0.0050	0.00086	0.00284	0.279	< 0.0010	< 0.050	0.000181	< 0.0010	< 0.0020	0.0130	< 0.00010	0.026	< 0.000020	< 0.0050	0.0071	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00268	< 0.0010	0.245	---
	16-Sep-2014	13-SH	0.0043	0.00056	0.00262	0.312	< 0.00050	0.054	0.000016	0.00053	< 0.00010	0.00123	< 0.000050	0.0268	< 0.0000050	0.00242	0.00163	< 0.30	< 0.00010	11.8	< 0.000010	0.584	< 0.000050	< 0.00010	< 0.00030	0.00342	< 0.00010	0.0132	---
	28-Sep-2015	13-SH	0.0012	0.00026	0.00111	0.430	---	0.040	0.0000175	0.00022	---	0.00094	<0.000050	---	<0.0000050	---	0.00270	---	<0.000050	---	<0.000010	---	---	---	---	0.00381	---	0.0128	---
	26-Sep-2016	13-SH	0.0136	0.00041	0.00274	0.327	---	0.044	0.0000187	0.00037	---	0.00063	0.000056	---	<0.0000050	---	0.00178	---	<0.000050	---	<0.000010	---	---	---	---	0.00324	---	0.0037	---
	27-Sep-2017	13-SH	0.0019	0.00028	0.00124	0.513	---	0.049	0.0001770	0.01350	---	0.00045	<0.000050	---	<0.0000050	---	0.00184	---	<0.000050	---	<0.000010	---	---	---	---	0.00406	---	0.0031	---
	18-Sep-2018	13-SH	0.0027	0.00077	0.00355	0.200	---	0.052	0.0000520	0.00039	---	0.00095	<0.000050	---	0.0000072	---	0.00397	---	<0.000050	---	<0.000010	---	---	---	---	0.00298	---	0.0038	---
	16-Sep-2019	13-SH	0.0013	0.00059	0.00259	0.273	---	0.046	0.0000294	0.00034	---	0.00073	<0.000050	---	<0.0000050	---	0.00228	---	<0.000050	---	<0.000010	---	---	---	---	0.00287	---	0.0022	---
	22-Sep-2020	13-SH	0.0061	0.00049	0.00149	0.319	<0.00010	0.043	0.0000272	0.00026	0.00031	0.00245	0.000090	0.0231	<0.0000050	0.00494	0.0247	---	0.000062	---	<0.000010	---	0.000042	<0.00010	<0.00030	0.00301	<0.00050	0.0041	---
	21-Sep-2021	13-SH	0.0111	0.00049	0.00196	0.229	<0.00010	0.037	0.0000553	<0.00010	<0.00010	0.00068	<0.000050	0.0212	<0.0000050	0.00357	0.00894	---	<0.000050	---	<0.000010	---	0.000035	<0.00010	<0.00030	0.00256	<0.00050	0.0028	---
	29-Sep-2022	13-SH	<0.0010	0.00060	0.00201	0.285	---	0.048	0.0000488	0.00199	---	0.00055	<0.000050	---	<0.0000050	---	0.0032	---	0.000072	---	<0.000010	---	---	---	---	0.00343	---	0.0016	---
	28-Sep-2023	13-SH	<0.0010	0.00034	0.00088	0.277	---	0.059	0.000179	0.00189	---	0.00116	<0.000050	---	<0.0000050	---	0.00788	---	0.000171	---	<0.000010	---	---	---	---	0.00464	---	0.004	---
	10-Sep-2024	13-SH	0.0104	0.00044	0.00059	0.272	---	0.046	0.0000856	<0.00050	---	0.00287	0.000062	---	<0.0000050	---	0.00647	---	0.000151	---	<0.000010	---	---	---	---	0.00415	---	0.0054	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

Monitoring Well	Date	Sample Name	DISSOLVED METALS																										
			Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			**0.1**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**5.0**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**2.9**	**0.006**	**0.010**	**2.0**	**---**	**5**	**0.007**	**0.05**	**---**	**2**	**0.005**	**---**	**0.001**	**---**	**---**	**---**	**0.05**	**---**	**---**	**7.0**	**---**	**---**	**---**	**0.02**	**---**	**---**	**---**
Alberta Tier 2 Potable Groundwater Guideline[3]			**---**	**0.006**	**0.01**	**1**	**---**	**5**	**0.005**	**---**	**---**	**1**	**0.01**	**---**	**0.001**	**---**	**---**		**0.05**		**---**		**---**	**---**	**---**	**0.02**	**---**	**5**	**---**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**Variable (pH<6.5) 0.05 (pH>6.5) [5]**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00037 [6]**	**0.0089 [7]**	**---**	**0.007**	**0.007 [8]**	**---**	**0.000005**	**---**	**Variable [9]**		**0.002**		**0.0001**		**---**	**---**	**---**	**0.015**	**---**	**0.03**	**---**
13-IN	17-May-1991	13-IN	---	0.0002	0.0003	0.2	< 0.001	---	< 0.001	0.004	0.002	< 0.001	< 0.002	---	< 0.00005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	13-IN	---	0.0002	0.0005	0.18	< 0.001	---	< 0.001	0.005	< 0.001	< 0.001	< 0.002	---	< 0.00005	0.004	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	13-IN	---	0.0005	0.0003	0.13	< 0.001	---	< 0.003	< 0.002	< 0.001	0.002	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	13-IN	---	< 0.0002	0.0003	0.19	< 0.001	---	< 0.003	0.012	< 0.003	0.003	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	13-IN	---	< 0.0002	0.0006	0.19	0.013	---	< 0.003	< 0.002	0.003	0.003	< 0.002	---	< 0.00005	0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	13-IN	---	< 0.0002	0.0004	0.19	< 0.001	---	< 0.003	< 0.002	< 0.003	< 0.001	< 0.001	---	0.00005	< 0.003	0.008	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.002	---
	28-Sep-1995	13-IN	---	< 0.0002	0.0004	0.17	< 0.001	---	< 0.0002	< 0.002	0.003	< 0.001	< 0.0003	---	< 0.00005	0.005	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.001	---
	04-Sep-1996	13-IN	---	< 0.0002	0.0005	0.18	< 0.001	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.008	---
	04-Sep-1997	13-IN	---	< 0.0002	0.0003	0.17	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.002	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	0.004	---	< 0.001	---	---	---	0.008	0.082	---
	16-Sep-1998	13-IN	---	< 0.0002	0.0002	0.15	0.007	---	< 0.0002	< 0.002	0.007	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.002	---
	09-Sep-1999	13-IN	---	< 0.0002	0.007	0.25	< 0.001	---	< 0.0002	0.021	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	0.02	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	< 0.002	< 0.001	---
(Duplicate)	09-Sep-1999	13-IN DUP	---	0.0009	0.0008	0.2	< 0.001	---	< 0.0002	0.027	0.012	0.007	< 0.0003	---	< 0.00005	0.008	0.017	---	< 0.0002	---	0.002	---	---	---	---	---	0.005	0.017	---
	05-Sep-2000	13-IN	---	< 0.0002	0.0024	0.176	< 0.0002	---	< 0.0002	< 0.001	0.0019	< 0.0002	< 0.0003	---	< 0.00005	0.0019	0.0048	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0079	---
	06-Sep-2001	13-IN	---	< 0.0002	0.0025	0.206	0.0002	---	< 0.0002	< 0.001	0.0009	0.0008	< 0.0003	0.027	< 0.00005	0.0019	0.0077	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0056	---
	04-Sep-2002	13-IN	0.007	< 0.0002	0.0003	0.302	< 0.0002	0.11	< 0.0002	0.036	0.0007	0.001	< 0.0003	---	< 0.00005	0.0018	0.0095	< 0.1	< 0.0002	5.83	< 0.0001	0.601	< 0.0002	< 0.001	0.001	0.0047	0.01	0.0056	< 0.0002
	04-Sep-2003	13-IN	0.007	< 0.0002	0.0007	0.153	< 0.0002	0.14	< 0.0002	< 0.001	0.0007	0.0011	0.0006	0.006	< 0.00005	0.0182	0.0007	< 0.1	< 0.0002	5.31	< 0.0001	0.57	< 0.0002	< 0.001	< 0.001	0.0027	< 0.001	0.0086	0.0012
	09-Sep-2004	13-IN	0.026	< 0.0002	0.0008	0.138	0.0002	0.16	< 0.0002	< 0.001	0.0004	0.0007	< 0.0003	0.021	< 0.00005	0.0017	0.0025	< 0.1	< 0.0002	4.84	< 0.0001	0.55	< 0.0002	< 0.001	0.011	0.0031	< 0.001	< 0.0006	< 0.0002
	08-Sep-2005	13-IN	< 0.001	0.0003	0.0004	0.127	0.0002	0.12	0.0003	< 0.001	< 0.0003	0.0006	< 0.0003	0.031	< 0.00005	0.0021	0.0018	0.1	< 0.0002	5.29	0.0003	0.58	< 0.0002	< 0.001	< 0.001	0.0044	< 0.001	0.0038	0.0014
	07-Sep-2006	13-IN	0.002	< 0.0002	< 0.0002	0.218	< 0.0002	0.12	< 0.0002	< 0.001	0.0006	0.0011	< 0.0003	0.033	< 0.00005	0.0019	0.0025	< 0.1	< 0.0002	5.8	< 0.0001	0.59	< 0.0002	< 0.001	0.001	0.0046	< 0.001	< 0.0006	0.0015
	05-Sep-2007	13-IN	0.036	< 0.0002	0.0007	0.16	< 0.001	0.12	0.00002	< 0.001	0.0023	0.0042	< 0.0002	0.03	< 0.00005	0.0017	0.0188	< 0.1	< 0.0002	5.3	< 0.0001	0.55	< 0.0002	< 0.001	0.008	0.0031	< 0.001	0.01	---
	03-Sep-2008	13-IN	< 0.01	< 0.0004	0.0005	0.157	< 0.001	0.12	< 0.00005	< 0.005	< 0.002	0.002	< 0.0001	0.031	< 0.00010	< 0.005	0.004	---	0.0005	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0034	< 0.001	0.004	---
	10-Sep-2009	13-IN	0.0057	< 0.00040	0.00073	0.154	< 0.0010	0.103	0.000016	< 0.0050	< 0.0020	0.0024	0.00017	0.03	< 0.000020	< 0.0050	0.0034	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00303	< 0.0010	0.0123	---
	08-Sep-2010	13 IN	< 0.0050	< 0.00040	0.00056	0.145	< 0.0010	0.124	< 0.000010	< 0.0010	< 0.0020	0.0011	< 0.00010	0.032	< 0.000020	< 0.0050	0.004	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00271	< 0.0010	0.0121	---
	07-Sep-2011	13-IN	< 0.0050	< 0.00040	0.00099	0.158	< 0.0010	0.118	0.000015	< 0.0010	< 0.0020	0.0014	< 0.00010	0.026	< 0.000020	< 0.0050	0.0022	---	< 0.00040	5.82	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00271	< 0.0010	0.0041	---
	05-Sep-2012	13-IN	< 0.0050	< 0.00040	0.00091	0.156	< 0.0010	0.129	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.03	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	5.91	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00284	< 0.0010	< 0.0040	---
	26-Sep-2013	13-IN	< 0.0050	< 0.00040	0.00173	0.150	< 0.0010	0.107	0.000014	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.028	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00277	< 0.0010	0.0042	---
	16-Sep-2014	13-IN	0.0029	< 0.00010	0.00139	0.154	< 0.00050	0.114	< 0.000010	< 0.00010	0.00089	0.00019	< 0.000050	0.0299	< 0.0000050	0.0025	0.00114	< 0.30	< 0.00010	5.86	< 0.000010	0.529	< 0.000050	< 0.00010	< 0.00030	0.00303	< 0.00010	0.0016	---
	28-Sep-2015	13-IN	0.0013	<0.00010	0.00031	0.137	---	0.087	0.0000168	<0.00010	---	0.00078	<0.000050	---	<0.0000050	---	0.00279	---	<0.000050	---	<0.000010	---	---	---	---	0.00340	---	0.0032	---
	26-Sep-2016	13-IN	0.0061	<0.00010	0.00078	0.141	---	0.112	0.0000183	0.00011	---	0.00022	<0.000050	---	<0.0000050	---	0.00232	---	<0.000050	---	<0.000010	---	---	---	---	0.00296	---	0.0017	---
	27-Sep-2017	13-IN	0.0011	<0.00010	0.00031	0.156	---	0.110	0.0001280	0.00024	---	0.00190	0.000161	---	0.000005	---	0.00272	---	<0.000050	---	<0.000010	---	---	---	---	0.00287	---	0.0050	---
	18-Sep-2018	13-IN	0.0018	<0.00010	0.00037	0.142	---	0.113	0.0000181	0.00011	---	0.00048	<0.000050	---	0.0000463	---	0.00246	---	<0.000050	---	<0.000010	---	---	---	---	0.00264	---	0.0018	---
	16-Sep-2019	13-IN	0.0016	<0.00010	0.00031	0.156	---	0.102	0.0000079	0.00027	---	0.00084	<0.000050	---	<0.0000050	---	0.00185	---	<0.000050	---	<0.000010	---	---	---	---	0.00262	---	0.0013	---
	22-Sep-2020	13-IN	0.0013	<0.00010	0.00025	0.143	<0.00010	0.114	0.0000063	<0.00010	0.00049	0.00232	<0.000050	0.0302	<0.0000050	0.00221	0.00176	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00275	<0.00050	0.0023	---
	21-Sep-2021	13-IN	0.0014	<0.00010	0.00029	0.16	<0.00010	0.112	0.0000097	<0.00010	0.00055	0.00045	<0.000050	0.0316	<0.0000050	0.00199	0.00181	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00281	<0.00050	0.0016	---
	29-Sep-2022	13-IN	0.0037	<0.00010	0.00022	0.153	---	0.127	0.0000130	<0.00050	---	0.00026	<0.000050	---	<0.0000050	---	0.00074	---	<0.000050	---	<0.000010	---	---	---	---	0.00294	---	0.0014	---
	28-Sep-2023	13-IN	0.002	<0.00010	0.00025	0.136	---	0.109	0.0000079	0.00222	---	0.00087	<0.000050	---	<0.0000050	---	0.00243	---	<0.000050	---	<0.000010	---	---	---	---	0.00287	---	0.0011	---
	10-Sep-2024	13-IN	0.0031	<0.00010	0.00037	0.148	---	0.118	0.0000078	0.00062	---	0.00083	<0.000050	---	<0.0000050	---	0.00237	---	<0.000050	---	<0.000010	---	---	---	---	0.00293	---	0.0023	---
13-SS	17-May-1991	13-SS	---	0.0009	**0.0145**	0.12	< 0.001	---	< 0.001	0.007	< 0.001	< 0.001	< 0.002	---	< 0.00005	0.025	---	---	---	---	---	---	---	---	---	---	---	---	---
	13-May-1992	13-SS	---	0.0003	**0.056**	0.06	< 0.001	---	< 0.003	< 0.002	< 0.003	0.001	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	13-SS	---	0.0004	**0.043**	0.1	0.001	---	< 0.003	< 0.002	< 0.003	0.008	< 0.002	---	< 0.00005	0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
13(R)SS	10-Sep-2004	13(R)SS	0.021	< 0.0002	0.0013	0.57	0.0005	0.08	< 0.0002	< 0.001	0.0008	0.0032	0.0005	0.009	< 0.00005	0.0041	0.004	< 0.1	< 0.0002	7.61	< 0.0001	0.52	< 0.0002	< 0.001	0.01	0.0021	< 0.001	0.0935	0.0004
	08-Sep-2005	13(R)SS	< 0.001	0.0004	0.0012	0.159	< 0.0002	0.06	0.0005	< 0.001	< 0.0003	0.0747	< 0.0003	0.055	0.00005	0.0024	0.0209	< 0.1	0.0003	10.1	0.0003	0.53	< 0.0002	< 0.001	0.001	0.0023	< 0.001	0.665	0.0015
	07-Sep-2006	13(R)SS	0.004	< 0.0002	0.0006	0.156	< 0.0002	0.07	< 0.0002	< 0.001	0.0009	0.0406	0.0004	0.049	0.00009	0.0026	0.0126	< 0.1	< 0.0002	9.8	< 0.0001	0.52	< 0.0002	< 0.001	0.002	0.0023	< 0.001	0.488	0.0005
	16-Oct-2007	13(R)SS	0.01	0.0003	0.0011	0.11	< 0.001	0.06	0.00033	< 0.001	0.0023	0.0298	< 0.0002	0.04	---	0.0025	0.0227	< 0.1	< 0.0002	9.7	< 0.0001	0.48	< 0.0002	< 0.001	0.014	0.0016	< 0.001	0.341	---
	04-Sep-2008	13(R)SS	< 0.01	< 0.0004	0.0007	0.095	< 0.001	0.06	0.00028	< 0.005	< 0.002	0.083	0.0002	0.062	< 0.00010	< 0.005	0.017	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0017	< 0.001	1.61	---
	17-Sep-2009	13(R)SS	0.006	0.00174	0.00431	0.0395	< 0.0010	0.093	0.000091	< 0.0050	< 0.0020	0.003	0.00315	0.081	< 0.000020	0.0143	0.003	---	0.00508	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.0155	< 0.0010	0.0129	---
	09-Sep-2010	13(R)SS	< 0.0050	< 0.00040	0.00066	0.0854	< 0.0010	< 0.050	0.000146	< 0.0010	< 0.0020	0.0291	< 0.00010	0.054	< 0.000020	< 0.0050	0.0119	---	< 0.00040	---	0.00036	---	< 0.00010	< 0.050	0.0015	0.00063	< 0.0010	0.304	---
	26-Sep-2013	13(R)SS	< 0.0050	< 0.00040	0.00049	0.0727	< 0.0010	< 0.050	0.000051	0.0011	< 0.0020	0.0109	< 0.00010	0.058	< 0.000020	< 0.0050	0.0036	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00034	< 0.0010	0.101	---
	16-Sep-2014	13(R)SS	0.0020	< 0.00010	0.00049	0.0872	< 0.00050	0.019	0.000045	0.00046	0.00082	0.00354	< 0.000050	0.0577	< 0.0000050	0.000565	0.00402	< 0.30	< 0.00010	11.7	< 0.000010	0.296	0.000066	< 0.00010	< 0.00030	0.000396	< 0.00010	0.0177	---
	28-Sep-2015	13(R)SS	<0.0010	<0.00010	0.00049	0.0794	---	0.014	0.0000948	0.00022	---	0.00952	<0.000050	---	<0.0000050	---	0.00607	---	<0.000050	---	<0.000010	---	---	---	---	0.000302	---	0.101	---
	26-Sep-2016	13(R)SS	<0.0010	<0.00010	0.00042	0.0804	---	0.017	0.0000428	0.00021	---	0.00284	<0.000050	---	<0.0000050	---	0.00436	---	<0.000050	---	<0.000010	---	---	---	---	0.000325	---	0.034	---
	27-Sep-2017	13(R)SS	0.0017	<0.00010	0.00045	0.0753	---	0.027	0.0000304	0.00088	---	0.00403	<0.000050	---	0.0000086	---	0.00373	---	<0.000050	---	<0.000010	---	---	---	---	0.000378	---	0.039	---
	18-Sep-2018	13(R)SS	<0.0010	<0.00010	0.00051	0.0859	---	0.019	0.0000315	0.00013	---	0.00171	<0.000050	---	0.0000621	---	0.00346	---	<0.000050	---	<0.000010	---	---	---	---	0.000310	---	0.032	---
	16-Sep-2019	13(R)SS	0.0018	<0.00010	0.00056	0.0918	---	0.017	0.0000223	0.00018	---	0.00306	0.000075	---	<0.0000050	---	0.00293	---	<0.000050	---	<0.000010	---	---	---	---	0.000343	---	0.014	---
	22-Sep-2020	13(R)SS	0.0016	<0.00010	0.00052	0.0868	<0.00010	0.015	0.0000359	0.00014	0.00145	0.00349	0.000057	0.0546	<0.0000050	0.000675	0.00401	---	<0.000050	---	<0.000010	---	0.000079	<0.00010	<0.00030	0.000342	<0.00050	0.0064	---
	21-Sep-2021	13(R)SS	<0.0010	<0.00010	0.00053	0.101	<0.00010	0.018	0.0000143	<0.00010	<0.00010	0.00217	<0.000050	0.0589	<0.0000050	0.000271	0.00176	---	<0.00050	---	<0.000010	---	0.000093	<0.00010	<0.00030	0.000377	<0.00050	0.0154	---
	29-Sep-2022	13(R)SS	0.0011	<0.00010	0.00050	0.0802	---	0.020	<0.0000050	<0.00050	---	0.00171	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	0.000510	---	0.0044	---
Could not obtain sample	28-Sep-2023	13(R)SS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	13(R)SS	0.0014	<0.00010	0.00044	0.0787	---	0.017	<0.0000050	<0.00050	---	0.00079	<0.000050	---	<0.0000050	---	0.00063	---	<0.000050	---	<0.000010	---	---	---	---	0.00039	---	0.0028	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

Monitoring Well	Date	Sample Name	DISSOLVED METALS																										
			Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			**0.1**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**5.0**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**2.9**	**0.006**	**0.010**	**2.0**	**---**	**5**	**0.007**	**0.05**	**---**	**2**	**0.005**	**---**	**0.001**	**---**	**---**	**---**	**0.05**	**---**	**---**	**7.0**	**---**	**---**	**---**	**0.02**	**---**	**---**	**---**
Alberta Tier 2 Potable Groundwater Guideline[3]			**---**	**0.006**	**0.01**	**1**	**---**	**5**	**0.005**	**---**	**---**	**1**	**0.01**	**---**	**0.001**	**---**	**---**		**0.05**		**---**		**---**	**---**	**---**	**0.02**	**---**	**5**	**---**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**Variable (pH<6.5) 0.05 (pH>6.5) [5]**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00037 [6]**	**0.0089 [7]**	**---**	**0.007**	**0.007 [8]**	**---**	**0.000005**	**---**	**Variable [9]**		**0.002**		**0.0001**		**---**	**---**	**---**	**0.015**	**---**	**0.03**	**---**
14-SH	13-Nov-1993	14-SH	---	< 0.0002	0.0002	0.23	< 0.001	---	< 0.003	< 0.002	< 0.003	0.008	< 0.002	---	< 0.00005	0.005	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	14-SH	---	< 0.0002	0.0002	0.19	0.001	---	< 0.003	< 0.002	< 0.003	0.003	< 0.001	---	< 0.00005	0.003	0.03	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.015	---
	22-Sep-1994	14-SH	---	< 0.0002	0.0005	0.19	0.001	---	< 0.003	< 0.002	< 0.003	0.009	0.001	---	0.00005	0.006	0.057	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.003	0.018	---
	02-Nov-1994	14-SH	---	0.0005	0.0004	0.18	0.001	---	< 0.003	< 0.002	< 0.003	0.008	< 0.001	---	< 0.00005	0.003	0.032	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.03	---
	28-Sep-1995	14-SH	---	< 0.0002	0.0005	0.2	< 0.001	---	< 0.0002	< 0.002	0.003	0.003	< 0.0003	---	< 0.00005	0.006	0.012	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.006	---
(Duplicate)	28-Sep-1995	14-SH DUP	---	< 0.0002	0.0004	0.21	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.001	< 0.0003	---	< 0.00005	0.009	0.006	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.006	---
	05-Sep-1996	14-SH	---	< 0.0002	< 0.0002	0.17	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.01	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.013	---
	05-Sep-1997	14-SH	---	0.0002	< 0.0002	0.16	0.002	---	< 0.0002	0.01	0.007	0.002	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.007	---
	15-Sep-1998	14-SH	---	< 0.0002	0.0002	0.09	0.001	---	0.0006	< 0.002	< 0.003	0.006	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.005	0.002	---
	05-Sep-2000	14-SH	---	< 0.0002	0.0005	0.158	< 0.0002	---	< 0.0002	< 0.001	0.0028	0.0007	< 0.0003	---	< 0.00005	< 0.0002	0.022	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0051	---
	06-Sep-2001	14-SH	---	< 0.0002	0.0002	0.188	0.0004	---	< 0.0002	< 0.001	0.0007	0.0027	< 0.0003	0.032	< 0.00005	0.0007	0.0244	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0117	---
	05-Sep-2002	14-SH	0.005	< 0.0002	0.0002	0.198	< 0.0002	0.04	< 0.0002	0.001	0.0003	0.0023	< 0.0003	---	< 0.00005	0.0007	0.0147	< 0.1	< 0.0002	8.72	< 0.0001	0.77	< 0.0002	< 0.001	< 0.001	0.0042	< 0.001	0.0163	0.0003
	04-Sep-2003	14-SH	0.004	< 0.0002	< 0.0002	0.13	< 0.0002	0.05	< 0.0002	0.002	< 0.0003	0.002	< 0.0003	0.023	< 0.00005	0.0076	0.0033	< 0.1	< 0.0002	6.24	< 0.0001	0.41	< 0.0002	< 0.001	< 0.001	0.0022	< 0.001	0.0051	0.0003
	09-Sep-2004	14-SH	< 0.001	< 0.0002	< 0.0002	0.268	< 0.0002	0.08	< 0.0002	0.016	< 0.0003	0.0014	< 0.0003	0.034	< 0.00005	0.0024	0.0024	0.1	< 0.0002	6.78	< 0.0001	0.71	< 0.0002	< 0.001	0.01	0.0087	< 0.001	0.0856	0.0011
	08-Sep-2005	14-SH	< 0.001	0.0003	0.0005	0.35	< 0.0002	0.08	0.0004	0.011	< 0.0003	0.0006	< 0.0003	0.045	< 0.00005	0.0023	0.0026	< 0.1	0.0003	8.03	0.0003	0.73	< 0.0002	< 0.001	0.002	0.0117	< 0.001	0.0032	0.002
	07-Sep-2006	14-SH	0.001	< 0.0002	0.0012	0.351	< 0.0002	0.1	< 0.0002	0.006	0.0005	0.0034	< 0.0003	0.046	0.00014	0.0013	0.0038	< 0.1	< 0.0002	8.4	< 0.0001	0.79	< 0.0002	< 0.001	0.002	0.0137	< 0.001	0.0021	0.0004
	05-Sep-2007	14-SH	0.024	< 0.0002	0.0006	0.39	< 0.001	0.09	0.00009	0.003	0.0029	0.0071	< 0.0002	0.05	< 0.00005	0.0013	0.0334	0.2	< 0.0002	8.7	< 0.0001	0.76	< 0.0002	< 0.001	0.02	0.0123	< 0.001	0.01	---
	03-Sep-2008	14-SH	< 0.01	< 0.0004	0.0005	0.385	< 0.001	0.09	< 0.0001	< 0.005	< 0.002	0.002	< 0.0001	0.051	< 0.00010	< 0.005	0.003	---	0.0006	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0141	< 0.001	< 0.002	---
	09-Sep-2009	14-SH	< 0.0050	< 0.00040	0.00042	0.413	< 0.0010	0.078	0.000017	< 0.0050	< 0.0020	0.0012	< 0.00010	0.048	< 0.000020	< 0.0050	0.0048	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0015	0.0119	< 0.0010	< 0.0040	---
	09-Sep-2010	14 SH	< 0.0050	< 0.00040	0.00049	0.327	< 0.0010	0.085	0.000074	0.0051	< 0.0020	0.0022	< 0.00010	0.044	< 0.000020	< 0.0050	0.0051	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0013	0.00942	< 0.0010	0.0092	---
	08-Sep-2011	14-SH	< 0.0050	< 0.00040	0.00059	0.292	< 0.0010	0.05	0.000036	0.0022	< 0.0020	0.0035	< 0.00010	0.027	< 0.000020	< 0.0050	0.0032	---	< 0.00040	5.67	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0064	< 0.0010	0.1	---
	05-Sep-2012	14-SH	< 0.0050	< 0.00040	< 0.00040	0.377	< 0.0010	0.098	0.000014	0.0098	< 0.0020	0.0019	< 0.00010	0.04	< 0.000020	< 0.0050	0.0029	---	< 0.00040	8.84	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00883	< 0.0010	0.0844	---
	25-Sep-2013	14-SH	< 0.0050	< 0.00040	< 0.00040	0.494	< 0.0010	0.092	0.000057	0.0025	< 0.0020	0.0082	< 0.00010	0.053	< 0.000020	< 0.0050	0.0039	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0103	< 0.0010	0.211	---
	16-Sep-2014	14-SH	0.0027	< 0.00010	0.00023	0.515	< 0.00050	0.096	0.000055	0.00058	0.00029	0.00736	< 0.000050	0.054	< 0.0000050	0.000651	0.00314	< 0.30	< 0.00010	12.1	< 0.000010	0.753	< 0.000050	< 0.00010	< 0.00030	0.0101	< 0.00010	0.0775	---
	29-Sep-2015	14-SH	0.0028	<0.00010	0.00021	0.413	---	0.075	0.0000947	0.00053	---	0.00160	<0.000050	---	<0.0000050	---	0.00242	---	<0.000050	---	<0.000010	---	---	---	---	0.0106	---	0.0277	---
	27-Sep-2016	14-SH	0.0014	<0.00010	0.00019	0.481	---	0.085	0.0000160	0.00395	---	0.00114	<0.000050	---	<0.0000050	---	0.00159	---	<0.000050	---	<0.000010	---	---	---	---	0.0098	---	0.0104	---
	26-Sep-2017	14-SH	<0.0010	<0.00010	0.00022	0.524	---	0.081	0.0000334	0.00520	---	0.00151	<0.000050	---	<0.0000050	---	0.00171	---	<0.000050	---	<0.000010	---	---	---	---	0.0093	---	0.0138	---
	17-Sep-2018	14-SH	0.0025	<0.00010	0.00026	0.503	---	0.089	0.0002560	0.00171	---	0.00098	<0.000050	---	0.0000153	---	0.00229	---	0.000062	---	<0.000010	---	---	---	---	0.0091	---	0.0091	---
	16-Sep-2019	14-SH	0.0037	0.00018	0.00017	0.095	---	0.013	0.0001370	0.00417	---	0.00121	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	0.0009	---	0.0011	---
	22-Sep-2020	14-SH	0.0012	0.00034	0.00028	0.327	<0.00010	0.059	0.000261	0.00186	<0.00010	0.00099	<0.000050	0.0300	<0.0000050	0.00171	0.00173	---	0.000067	---	<0.000010	---	0.000023	<0.00010	<0.00030	0.00634	<0.00050	0.0032	---
	22-Sep-2021	14-SH	<0.0010	0.0003	0.00032	0.362	<0.00010	0.06	0.000514	0.00105	<0.00010	0.00097	<0.000050	0.0344	<0.0000050	0.00149	0.00232	---	0.000051	---	<0.000010	---	0.00002	<0.00010	<0.00030	0.00662	<0.00050	0.0059	---
	28-Sep-2022	14-SH	0.0018	0.00037	0.00038	0.315	---	0.075	0.000666	0.00576	---	0.00087	<0.000050	---	<0.0000050	---	0.00227	---	0.000061	---	<0.000010	---	---	---	---	0.00738	---	0.0077	---
	27-Sep-2023	14-SH	0.0049	0.00023	0.00024	0.266	---	0.064	0.0031	0.00434	---	0.00193	<0.000050	---	<0.0000050	---	0.0066	---	0.000052	---	<0.000010	---	---	---	---	0.0053	---	0.0222	---
	11-Sep-2024	14-SH	0.0014	0.00026	0.00037	0.322	---	0.072	0.00203	0.00132	---	0.00142	<0.000050	---	<0.0000050	---	0.0035	---	<0.000050	---	<0.000010	---	---	---	---	0.00703	---	0.0084	---
15-SH	18-May-1993	15-SH	---	< 0.0002	0.0003	0.25	< 0.001	---	< 0.003	< 0.002	< 0.003	0.007	< 0.002	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Nov-1993	15-SH	---	0.0013	0.0009	0.26	< 0.001	---	< 0.003	< 0.002	< 0.003	0.006	< 0.002	---	< 0.00005	0.027	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	15-SH	---	< 0.0002	0.0002	0.32	0.001	---	< 0.003	< 0.002	0.003	0.013	< 0.001	---	< 0.00005	0.01	0.033	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.013	---
	22-Sep-1994	15-SH	---	0.0002	0.0003	0.35	0.001	---	< 0.003	0.016	< 0.003	0.013	< 0.001	---	0.00005	0.006	0.023	---	0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.007	---
	01-Nov-1994	15-SH	---	< 0.0002	< 0.0002	0.31	0.002	---	< 0.003	0.006	< 0.003	0.018	< 0.001	---	< 0.00005	< 0.003	0.019	---	< 0.0002	---	0.003	---	< 0.001	---	---	---	0.005	0.02	---
	28-Sep-1995	15-SH	---	0.0002	0.0002	0.37	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.004	0.0007	---	< 0.00005	0.004	0.01	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.006	---
(Duplicate)	28-Sep-1995	15-SH DUP	---	0.0002	0.0003	0.36	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.001	< 0.0003	---	< 0.00005	0.004	0.011	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.001	---
	04-Sep-1996	15-SH	---	< 0.0002	< 0.0002	0.35	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.006	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.02	---
(Duplicate)	04-Sep-1996	15-SH DUP	---	< 0.0002	< 0.0002	0.35	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.006	< 0.0003	---	< 0.00005	< 0.003	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	15-SH	---	0.0002	< 0.0002	0.23	< 0.001	---	< 0.0002	0.01	0.005	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.006	---
	16-Sep-1998	15-SH	---	< 0.0002	< 0.0002	0.14	0.002	---	0.0005	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.001	---
	09-Sep-1999	15-SH	---	0.0005	< 0.0002	0.32	< 0.001	---	< 0.0002	0.035	< 0.003	0.004	< 0.0003	---	< 0.00005	< 0.003	0.024	---	< 0.0002	---	< 0.002	---	---	---	---	---	0.009	0.003	---
	06-Sep-2000	15-SH	---	< 0.0002	0.0002	0.268	< 0.0002	---	< 0.0002	< 0.001	0.0004	0.0016	< 0.0003	---	< 0.00005	< 0.0002	0.0041	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0015	---
	07-Sep-2001	15-SH	---	< 0.0002	0.0002	0.282	< 0.0002	---	< 0.0002	0.002	0.0006	0.0034	< 0.0003	0.026	< 0.00005	0.0015	0.0048	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0059	---
	05-Sep-2002	15-SH	0.007	0.0002	< 0.0002	0.333	< 0.0002	0.15	< 0.0002	< 0.001	< 0.0003	0.0044	< 0.0003	---	< 0.00005	0.0011	0.0029	< 0.1	< 0.0002	4.94	< 0.0001	0.489	< 0.0002	< 0.001	< 0.001	0.0013	< 0.001	0.0019	0.0005
	03-Sep-2003	15-SH	0.003	< 0.0002	< 0.0002	0.28	< 0.0002	0.19	< 0.0002	0.002	0.0003	0.0028	< 0.0003	0.014	< 0.00005	0.0025	0.0032	< 0.1	< 0.0002	5.22	0.0002	0.51	< 0.0002	< 0.001	< 0.001	0.0016	< 0.001	0.0044	0.0003
	08-Sep-2004	15-SH	0.021	< 0.0002	< 0.0002	0.3	< 0.0002	0.16	< 0.0002	0.008	< 0.0003	0.0025	< 0.0003	0.023	< 0.00005	0.0015	0.002	< 0.1	< 0.0002	4.89	< 0.0001	0.48	< 0.0002	< 0.001	0.007	0.002	< 0.001	0.0148	0.0005
	07-Sep-2005	15-SH	0.002	< 0.0002	< 0.0002	0.286	< 0.0002	0.15	< 0.0002	< 0.001	< 0.0003	0.0034	< 0.0003	0.026	< 0.00005	0.0016	0.0055	< 0.1	< 0.0002	5.31	< 0.0001	0.49	< 0.0002	< 0.001	0.001	0.0016	< 0.001	0.005	< 0.0002
	07-Sep-2006	15-SH	0.001	< 0.0002	0.0008	0.271	< 0.0002	0.16	< 0.0002	0.005	0.0005	0.0031	< 0.0003	0.029	< 0.00005	0.0016	0.0044	< 0.1	< 0.0002	5.27	< 0.0001	0.49	< 0.0002	< 0.001	< 0.001	0.0021	< 0.001	< 0.0006	0.0002
	06-Sep-2007	15-SH	0.011	< 0.0002	< 0.0002	0.28	< 0.001	0.17	0.00003	0.002	0.0015	0.0053	< 0.0002	0.03	< 0.00005	0.0018	0.0182	< 0.1	< 0.0002	5.9	< 0.0001	0.48	< 0.0002	< 0.001	0.008	0.0015	< 0.001	0.007	---
	04-Sep-2008	15-SH	< 0.01	< 0.0004	0.0005	0.128	< 0.001	0.24	< 0.00005	< 0.005	< 0.002	0.004	< 0.0001	0.041	< 0.00010	< 0.005	0.007	---	0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0061	< 0.001	0.004	---
	10-Sep-2009	15-SH	< 0.0050	< 0.00040	< 0.00040	0.283	< 0.0010	0.146	0.000015	< 0.0050	< 0.0020	0.0036	0.00011	0.028	< 0.000020	< 0.0050	0.0068	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.0014	< 0.0010	0.0064	---
	09-Sep-2010	15 SH	< 0.0050	< 0.00040	0.00058	0.121	< 0.0010	0.246	0.00006	< 0.0010	< 0.0020	0.0015	< 0.00010	0.037	< 0.000020	< 0.0050	0.0077	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00524	< 0.0010	< 0.0040	---
	08-Sep-2011	15-SH	< 0.0050	< 0.00040	0.00111	0.14	< 0.0010	0.237	0.000014	< 0.0010	< 0.0020	0.0022	< 0.00010	0.032	< 0.000020	< 0.0050	0.0054	---	< 0.00040	5.46	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00485	< 0.0010	< 0.0040	---
	06-Sep-2012	15-SH	< 0.0050	< 0.00040	0.00093	0.138	< 0.0010	0.261	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.037	< 0.000020	< 0.0050	0.0052	---	< 0.00040	5.91	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00474	< 0.0010	< 0.0040	---
	26-Sep-2013	15-SH	< 0.0050	< 0.00040	0.00144	0.136	< 0.0010	0.242	0.000016	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.035	< 0.000020	< 0.0050	0.0047	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00451	< 0.0010	< 0.0040	---
(Previously labeled 15-IN)	17-Sep-2014	15-SH	0.0016	< 0.00010	0.00028	0.392	< 0.00050	0.170	0.000014	0.00015	0.00052	0.00330	< 0.000050	0.0314	< 0.0000050	0.00215	0.00438	< 0.30	0.00034	4.94	< 0.000010	0.508	< 0.000050	< 0.00010	< 0.00030	0.00204	< 0.00010	0.0031	---
	29-Sep-2015	15-SH	0.0015	<0.00010	0.00020	0.358	---	0.153	0.0000269	0.00036	---	0.00266	<0.000050	---	<0.0000050	---	0.00531	---	0.000070	---	<0.000010	---	---	---	---	0.00209	---	0.0046	---
	27-Sep-2016	15-SH	<0.0010	<0.00010	0.00020	0.403	---	0.168	0.0000164	0.00031	---	0.00329	<0.000050	---	<0.0000050	---	0.00389	---	0.000097	---	<0.000010	---	---	---	---	0.00199	---	0.0027	---
	27-Sep-2017	15-SH	<0.0010	<0.00010	0.00016	0.505	---	0.156	0.0000142	0.00022	---	0.00302	<0.000050	---	<0.0000050	---	0.00224	---	0.000147	---	<0.000010	---	---	---	---	0.00217	---	0.0020	---
	18-Sep-2018	15-SH	<0.0010	<0.00010	0.00025	0.451	---	0.183	0.0000202	0.00011	---	0.00051	<0.000050	---	0.0000151	---	0.00340	---	<0.000050	---	<0.000010	---	---	---	---	0.00167	---	0.0017	---
	16-Sep-2019	15-SH	<0.0010	<0.00010	0.00019	0.517	---	0.169	<0.0000050	0.00050	---	0.00449	0.000066	---	<0.0000050	---	0.00266	---	0.000116	---	<0.000010	---	---	---	---	0.00225	---	0.0020	---
	21-Sep-2020	15-SH	<0.0010	<0.00010	0.00016	0.446	<0.00010	0.164	0.0000084	0.00018	<0.00010	0.00484	0.000065	0.0307	<0.0000050	0.000825	0.00284	---	0.000147	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00216	<0.00050	0.0018	---
	22-Sep-2021	15-SH	0.0012	<0.00010	0.00016	0.506	<0.00010	0.16	0.0000078	0.00022	0.00032	0.00225	<0.000050	0.0313	<0.0000050	0.000741	0.00296	---	0.000074	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.0019	<0.00050	0.0013	---
	29-Sep-2022	15-SH	0.0012	<0.00010	0.00027	0.531	---	0.176	0.0000074	<0.00050	---	0.00056	<0.000050	---	<0.0000050	---	0.06260	---	0.000136	---	<0.000010	---	---	---	---	0.00246	---	0.0012	---
	28-Sep-2023	15-SH	<0.0010	<0.00010	0.00022	0.442	---	0.186	0.0000116	0.0019	---	0.0007	<0.000050	---	<0.0000050	---	0.0162	---	0.000051	---	<0.000010	---	---	---	---	0.00195	---	0.002	---
	11-Sep-2024	15-SH	0.0018	<0.00010	0.00017	0.535	---	0.174	0.0000119	0.00076	---	0.00526	<0.000050	---	<0.0000050	---	0.0049	---	0.000067	---	<0.000010	---	---	---	---	0.00218	---	0.0023	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
15-IN	22-Sep-1994	15-IN	---	0.0008	0.0005	0.11	0.001	---	< 0.003	0.004	< 0.003	0.006	< 0.001	---	0.00005	0.008	0.025	---	0.0008	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.019	---
	28-Sep-1995	15-IN	---	0.0003	< 0.0002	0.1	< 0.001	---	0.0002	< 0.002	0.003	0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.001	---
	04-Sep-1996	15-IN	---	< 0.0002	0.0002	0.12	< 0.001	---	0.001	< 0.002	< 0.003	0.002	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.007	---
	04-Sep-1997	15-IN	---	< 0.0002	0.0002	0.13	< 0.001	---	< 0.0002	0.01	0.008	< 0.001	< 0.0003	---	< 0.00005	< 0.003	0.092	---	< 0.0002	---	0.003	---	< 0.001	---	---	---	< 0.002	0.003	---
	16-Sep-1998	15-IN	---	< 0.0002	< 0.0002	0.12	0.002	---	< 0.0002	< 0.002	< 0.003	0.005	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	0.004	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	15-IN	---	0.0023	0.0005	0.13	0.003	---	< 0.0002	0.015	< 0.003	0.01	< 0.0003	---	< 0.00005	< 0.003	0.022	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	0.011	0.026	---
	06-Sep-2000	15-IN	---	< 0.0002	0.0004	0.162	< 0.0002	---	< 0.0002	< 0.001	0.0023	< 0.0002	< 0.0003	---	< 0.00005	< 0.0002	0.0173	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0017	---
	06-Sep-2001	15-IN	---	< 0.0002	0.0005	0.123	< 0.0002	---	< 0.0002	< 0.001	0.0022	0.0009	< 0.0003	0.034	< 0.00005	0.002	0.0198	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0073	---
	05-Sep-2002	15-IN	0.006	0.0002	0.0004	0.121	< 0.0002	0.23	< 0.0002	0.032	0.002	0.0008	< 0.0003	---	< 0.00005	0.0018	0.0175	< 0.1	< 0.0002	4.22	< 0.0001	0.546	< 0.0002	< 0.001	0.002	0.0094	0.009	0.0031	0.0008
	03-Sep-2003	15-IN	0.004	< 0.0002	< 0.0002	0.12	< 0.0002	0.26	< 0.0002	< 0.001	0.0019	0.0022	< 0.0003	0.024	< 0.00005	0.0063	0.01	< 0.1	< 0.0002	4.59	< 0.0001	0.57	< 0.0002	< 0.001	< 0.001	0.0038	< 0.001	0.0068	< 0.0002
	08-Sep-2004	15-IN	0.015	< 0.0002	< 0.0002	0.104	< 0.0002	0.25	< 0.0002	< 0.001	0.001	0.0008	0.0004	0.03	< 0.00005	0.0018	0.008	< 0.1	< 0.0002	4.13	< 0.0001	0.53	< 0.0002	< 0.001	0.005	0.0045	< 0.001	0.0107	< 0.0002
	07-Sep-2005	15-IN	0.001	< 0.0002	0.0005	0.139	< 0.0002	0.23	< 0.0002	< 0.001	0.0025	0.0008	< 0.0003	0.033	0.00005 [3]	0.0018	0.0125	< 0.1	< 0.0002	4.66	< 0.0001	0.57	< 0.0002	< 0.001	< 0.001	0.0042	< 0.001	0.0019	0.0006
	07-Sep-2006	15-IN	0.002	< 0.0002	< 0.0002	0.133	< 0.0002	0.23	< 0.0002	< 0.001	0.0027	0.0034	< 0.0003	0.036	< 0.00005	0.0016	0.0101	< 0.1	< 0.0002	4.62	< 0.0001	0.55	< 0.0002	< 0.001	< 0.001	0.0055	< 0.001	0.0016	< 0.0002
	06-Sep-2007	15-IN	0.005	< 0.0002	0.001	0.13	< 0.001	0.24	0.00003	0.001	0.0034	0.0026	< 0.0002	0.04	< 0.00005	0.0018	0.0275	< 0.1	< 0.0002	5	< 0.0001	0.53	< 0.0002	< 0.001	0.007	0.0071	< 0.001	0.005	---
	04-Sep-2008	15-IN	< 0.01	< 0.0004	< 0.0004	0.247	< 0.001	0.14	< 0.00005	0.007	< 0.002	0.005	< 0.0001	0.025	< 0.00010	< 0.005	0.004	---	0.0005	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0015	< 0.001	0.003	---
	10-Sep-2009	15-IN	< 0.0050	< 0.00040	0.0004	0.13	< 0.0010	0.216	0.000016	< 0.0050	< 0.0020	0.0011	< 0.00010	0.036	< 0.000020	< 0.0050	0.0086	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00475	< 0.0010	< 0.0040	---
	09-Sep-2010	15 IN	< 0.0050	< 0.00040	< 0.00040	0.251	< 0.0010	0.174	0.00009	0.0031	< 0.0020	0.0037	< 0.00010	0.028	< 0.000020	< 0.0050	0.0065	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00137	< 0.0010	< 0.0040	---
	08-Sep-2011	15-IN	< 0.0050	< 0.00040	0.00088	0.286	< 0.0010	0.166	0.00003	0.0045	< 0.0020	0.005	< 0.00010	0.024	< 0.000020	< 0.0050	0.0039	---	< 0.00040	5.85	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0014	< 0.0010	0.0057	---
	06-Sep-2012	15-IN	< 0.0050	< 0.00040	0.00045	0.436	< 0.0010	0.173	< 0.000010	< 0.0010	0.0039	0.0013	< 0.00010	0.028	< 0.000020	< 0.0050	0.0182	---	< 0.00040	6.63	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00134	< 0.0010	0.0071	---
	26-Sep-2013	15-IN	< 0.0050	< 0.00040	0.00064	0.383	< 0.0010	0.167	0.000022	< 0.0010	< 0.0020	0.0033	< 0.00010	0.028	< 0.000020	< 0.0050	0.0075	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00172	< 0.0010	0.0053	---
(Previously labeled 15-SH)	17-Sep-2014	15-IN	< 0.0010	< 0.00010	0.00025	0.140	< 0.00050	0.257	0.000038	< 0.00010	0.00114	0.00265	< 0.000050	0.0378	< 0.0000050	0.00160	0.00733	< 0.30	< 0.00010	5.23	< 0.000010	0.532	< 0.000050	< 0.00010	< 0.00030	0.00380	0.00014	0.0014	---
	29-Sep-2015	15-IN	0.0026	<0.00010	0.00021	0.134	---	0.213	0.0000343	<0.00010	---	0.00252	<0.000050	---	<0.0000050	---	0.00593	---	0.000069	---	<0.000010	---	---	---	---	0.00478	---	0.0046	---
	27-Sep-2016	15-IN	0.0026	<0.00010	0.00016	0.136	---	0.244	0.0000476	0.00017	---	0.00292	<0.000050	---	<0.0000050	---	0.00650	---	0.000090	---	<0.000010	---	---	---	---	0.00449	---	0.0019	---
	27-Sep-2017	15-IN	0.0028	<0.00010	0.00023	0.165	---	0.236	0.0000247	0.00044	---	0.00136	<0.000050	---	<0.0000050	---	0.00648	---	0.000060	---	<0.000010	---	---	---	---	0.00453	---	0.0023	---
	18-Sep-2018	15-IN	0.0031	<0.00010	0.00025	0.146	---	0.260	0.0000312	0.00018	---	0.00218	<0.000050	---	0.0000348	---	0.00436	---	0.000105	---	<0.000010	---	---	---	---	0.00423	---	0.0041	---
Dry	16-Sep-2019	15-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2020	15-IN	0.0019	<0.00010	0.00018	0.130	<0.00010	0.239	0.0000279	0.00011	0.00050	0.00435	0.000052	0.0365	<0.0000050	0.00147	0.00460	---	0.000102	---	<0.000010	---	0.000011	<0.00010	<0.00030	0.00428	<0.00050	0.0023	---
	22-Sep-2021	15-IN	0.0015	<0.00010	0.00015	0.144	<0.00010	0.236	0.0000438	0.00052	0.0002	0.00329	<0.000050	0.0394	<0.0000050	0.00128	0.00654	---	0.000158	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00414	<0.00050	0.002	---
	29-Sep-2022	15-IN	0.001	<0.00010	0.00014	0.148	---	0.254	0.0000223	<0.00050	---	0.00315	<0.000050	---	<0.0000050	---	0.00504	---	0.000143	---	<0.000010	---	---	---	---	0.00492	---	0.0024	---
	28-Sep-2023	15-IN	<0.0010	<0.00010	0.00015	0.157	---	0.252	0.0000304	0.0019	---	0.00226	<0.000050	---	<0.0000050	---	0.00549	---	0.000122	---	<0.000010	---	---	---	---	0.00426	---	0.002	---
	11-Sep-2024	15-IN	0.002	<0.00010	0.00014	0.139	---	0.23	0.0000212	<0.00050	---	0.0026	<0.000050	---	<0.0000050	---	0.00434	---	0.00009	---	<0.000010	---	---	---	---	0.00448	---	0.002	---
15-SS	12-Nov-1993	15-SS	---	0.001	0.0056	0.08	< 0.001	---	< 0.003	0.013	< 0.003	0.005	< 0.002	---	< 0.00005	0.041	---	---	---	---	---	---	---	---	---	---	---	---	---
15(R)SS	10-Sep-2004	15(R)-SS	0.009	0.0026	**0.0136**	0.0608	0.0006	0.7	0.0004	0.005	0.0017	0.13	0.001	0.04	< 0.00005	0.402	0.0257	< 0.1	0.0013	4.91	< 0.0001	0.22	< 0.0002	< 0.001	0.004	0.0172	< 0.001	0.101	0.0013
	30-Oct-2004	15(R)-SS	0.005	0.0017	0.0095	0.0786	0.0004	0.38	0.0003	0.003	0.002	0.132	0.0006	0.043	0.00008	0.268	0.025	< 0.1	0.0007	5.12	< 0.0001	0.25	< 0.0002	< 0.001	0.005	0.0163	< 0.001	0.099	0.0006
	08-Sep-2005	15(R)-SS	< 0.001	0.0008	**0.0493**	0.0717	< 0.0002	0.03	0.0004	< 0.001	0.0017	0.454	< 0.0003	0.054	0.00007	0.0568	0.723	< 0.1	0.0003	5.01	< 0.0001	0.25	< 0.0002	< 0.001	< 0.001	**0.0309**	< 0.001	1.85	0.0005
	12-Apr-2006	15(R)-SS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0381	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	12-Apr-2006	15(R)-SS DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0377	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	15(R)-SS	0.005	< 0.0002	< 0.0002	0.0771	< 0.0002	0.03	< 0.0002	< 0.001	0.0007	0.009	< 0.0003	0.053	0.00021	0.0944	0.0321	< 0.1	< 0.0002	5.58	< 0.0001	0.23	< 0.0002	< 0.001	0.001	**0.0505**	< 0.001	0.0144	0.0006
	10-Dec-2006	15(R)-SS	0.01	0.0007	**0.0765**	0.08	< 0.001	0.04	0.00007	< 0.001	0.0013	0.0174	< 0.0002	0.06	---	0.0931	0.103	< 0.1	< 0.0002	6	< 0.0001	0.24	< 0.0002	< 0.001	0.004	**0.0437**	< 0.001	0.078	---
	07-Sep-2007	15(R)-SS	0.004	< 0.0002	**0.073**	0.08	< 0.001	0.03	0.00005	< 0.001	0.0019	0.0034	< 0.0002	0.05	< 0.00005	0.142	0.0444	0.1	< 0.0002	6.6	< 0.0001	0.27	< 0.0002	< 0.001	0.007	**0.0389**	< 0.001	0.02	---
	04-Sep-2008	15(R)-SS	< 0.01	< 0.0004	**0.0354**	0.095	< 0.001	< 0.05	< 0.00005	< 0.005	< 0.002	0.005	< 0.0001	0.065	< 0.00010	0.071	0.022	---	0.0006	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	**0.0297**	< 0.001	0.006	---
	17-Sep-2009	15(R)-SS	< 0.0050	< 0.00040	**0.0257**	0.108	< 0.0010	< 0.050	0.00009	< 0.0050	0.0055	0.0016	0.00013	0.053	< 0.000020	0.0506	0.0739	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0014	**0.0224**	< 0.0010	0.0204	---
	09-Sep-2010	15 (R) SS	< 0.0050	< 0.00040	0.00651	0.282	< 0.0010	< 0.050	0.000015	0.0022	0.0119	< 0.0010	< 0.00010	0.03	< 0.000020	0.006	0.0404	---	0.00067	---	< 0.00010	---	< 0.00010	< 0.050	0.0029	0.00673	< 0.0010	0.0074	---
	08-Sep-2011	15 (R)-SS	< 0.0050	< 0.00040	0.00802	0.359	< 0.0010	< 0.050	< 0.000010	0.0011	0.0077	< 0.0010	< 0.00010	0.019	< 0.000020	0.0077	0.0219	---	< 0.00040	11.7	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00484	< 0.0010	< 0.0040	---
	26-Sep-2013	15(R)SS	< 0.0050	< 0.00040	**0.0220**	0.213	< 0.0010	< 0.050	< 0.000010	0.0012	0.0088	0.0021	< 0.00010	0.023	< 0.000020	0.0096	0.0276	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00416	< 0.0010	0.0358	---
15(2R)SS	16-Sep-2014	15(2R)SS	0.0058	0.00041	0.00834	0.0419	< 0.00050	0.041	0.000020	0.00018	0.00201	0.00013	0.000060	0.0168	0.0000079	0.0595	0.0105	< 0.30	0.00016	10.3	< 0.000010	0.199	< 0.000050	< 0.00010	< 0.00030	0.00561	0.00027	0.0016	---
	28-Sep-2015	15(2R)SS	0.0024	0.00013	0.00613	0.0258	---	0.030	0.0000354	<0.00010	---	0.00035	<0.000050	---	<0.0000050	---	0.00659	---	0.000071	---	<0.000010	---	---	---	---	0.00990	---	0.0062	---
	26-Sep-2016	15(2R)SS	0.0010	<0.00010	0.00428	0.0265	---	0.030	0.0000193	0.00021	---	0.00049	<0.000050	---	<0.0000050	---	0.00445	---	<0.000050	---	<0.000010	---	---	---	---	0.00583	---	0.0026	---
	27-Sep-2017	15(2R)SS	0.0011	<0.00010	0.00420	0.0295	---	0.029	0.0000114	<0.00010	---	0.00026	<0.000050	---	0.0000055	---	0.00152	---	<0.000050	---	<0.000010	---	---	---	---	0.00326	---	<0.0010	---
	18-Sep-2018	15(2R)SS	<0.0010	<0.00010	0.00501	0.0386	---	0.033	0.0000231	<0.00010	---	<0.00020	<0.000050	---	0.0000065	---	0.00167	---	<0.000050	---	<0.000010	---	---	---	---	0.00316	---	0.0028	---
	16-Sep-2019	15(2R)SS	0.0770	<0.00010	0.00406	0.0369	---	0.031	0.0000078	0.00018	---	0.00147	<0.000050	---	<0.0000050	---	0.00127	---	<0.000050	---	<0.000010	---	---	---	---	0.00182	---	0.0024	---
	22-Sep-2020	15(2R)SS	0.0018	<0.00010	0.00495	0.0323	<0.00010	0.028	<0.0000050	<0.00010	0.00042	<0.00020	<0.000050	0.0374	<0.0000050	0.00256	0.00101	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.000765	<0.00050	<0.0010	---
	22-Sep-2021	15(2R)SS	0.0031	<0.00010	0.00292	0.0331	<0.00010	0.024	<0.0000050	<0.00010	0.00027	0.00031	<0.000050	0.0395	<0.0000050	0.00255	0.00082	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00105	<0.00050	<0.0010	---
	29-Sep-2022	15(2R)SS	0.0032	<0.00010	0.00316	0.0350	---	0.034	0.0000052	<0.00050	---	<0.00020	<0.000050	---	<0.0000050	---	0.00087	---	<0.000050	---	<0.000010	---	---	---	---	0.001420	---	<0.0010	---
Could not obtain sample	29-Sep-2023	15(2R)SS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	15(2R)SS	0.0028	<0.00010	0.00274	0.0382	---	0.03	0.0000104	<0.00050	---	0.00145	<0.000050	---	<0.0000050	---	0.0007	---	<0.000050	---	<0.000010	---	---	---	---	0.00134	---	0.0046	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
16-SH	28-Sep-1995	16-SH	---	0.0002	0.0002	0.18	< 0.001	---	< 0.0002	0.005	0.003	0.003	< 0.0003	---	< 0.00005	0.01	0.014	---	0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	< 0.001	---
	05-Sep-1996	16-SH	---	< 0.0002	< 0.0002	0.17	< 0.001	---	< 0.0002	< 0.002	0.003	0.031	< 0.0003	---	< 0.00005	< 0.003	0.058	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.004	0.02	---
	04-Sep-1997	16-SH	---	0.0002	< 0.0002	0.17	< 0.001	---	< 0.0002	0.008	< 0.003	0.013	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.006	---
	15-Sep-1998	16-SH	---	0.0002	< 0.0002	0.15	0.002	---	< 0.0002	< 0.002	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	< 0.001	---
	09-Sep-1999	16-SH	---	0.0005	< 0.0002	0.17	< 0.001	---	< 0.0002	0.036	0.005	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	0.0002	---	< 0.002	---	---	---	---	---	< 0.002	0.002	---
	05-Sep-2000	16-SH	---	< 0.0002	0.0003	0.147	< 0.0002	---	< 0.0002	< 0.001	< 0.0003	0.0006	< 0.0003	---	< 0.00005	< 0.0002	0.0028	---	0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0016	---
(Duplicate)	05-Sep-2000	16-SH DUP	---	0.0004	0.0002	0.145	< 0.0002	---	< 0.0002	< 0.001	0.0003	0.0015	< 0.0003	---	< 0.00005	0.0008	0.0031	---	0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	< 0.0006	---
	06-Sep-2001	16-SH	---	< 0.0002	< 0.0002	0.148	0.0004	---	< 0.0002	0.004	< 0.0003	0.0029	< 0.0003	0.056	< 0.00005	0.0012	0.0064	< 0.1	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0062	---
	04-Sep-2002	16-SH	0.007	0.0003	0.0003	0.163	< 0.0002	0.09	< 0.0002	0.016	< 0.0003	0.0041	< 0.0003	---	< 0.00005	0.0013	0.0064	< 0.1	< 0.0002	5.88	< 0.0001	0.531	< 0.0002	< 0.001	< 0.001	0.0061	< 0.001	0.0143	0.0003
	04-Sep-2003	16-SH	0.003	< 0.0002	< 0.0002	0.14	< 0.0002	0.11	< 0.0002	0.002	< 0.0003	0.0042	0.0005	0.05	< 0.00005	0.0158	0.003	< 0.1	< 0.0002	6.56	< 0.0001	0.55	< 0.0002	< 0.001	< 0.001	0.0063	< 0.001	0.0074	< 0.0002
	08-Sep-2004	16-SH	0.017	< 0.0002	< 0.0002	0.136	< 0.0002	0.08	< 0.0002	0.007	< 0.0003	0.0021	< 0.0003	0.053	< 0.00005	0.0012	0.0021	< 0.1	< 0.0002	6.64	< 0.0001	0.5	< 0.0002	< 0.001	0.007	0.0068	< 0.001	0.0026	< 0.0002
	08-Sep-2005	16-SH	< 0.001	< 0.0002	0.0002	0.153	< 0.0002	0.08	< 0.0002	0.002	< 0.0003	0.002	< 0.0003	0.06	0.00007	0.0011	0.0026	< 0.1	0.0007	6.29	< 0.0001	0.53	< 0.0002	< 0.001	0.001	0.008	< 0.001	0.002	< 0.0002
	07-Sep-2006	16-SH	< 0.001	< 0.0002	< 0.0002	0.149	< 0.0002	0.08	< 0.0002	0.013	< 0.0003	0.0044	< 0.0003	0.058	0.0003	0.001	0.0031	< 0.1	< 0.0002	5.93	< 0.0001	0.52	< 0.0002	< 0.001	0.002	0.0081	< 0.001	0.0081	< 0.0002
	05-Sep-2007	16-SH	0.027	< 0.0002	< 0.0002	0.15	< 0.001	0.09	0.00007	0.016	0.0018	0.0052	< 0.0002	0.06	< 0.00005	0.0012	0.0202	< 0.1	0.0002	6.7	< 0.0001	0.53	< 0.0002	< 0.001	0.014	0.0077	< 0.001	0.008	---
	03-Sep-2008	16-SH	< 0.01	< 0.0004	< 0.0004	0.16	< 0.001	0.08	< 0.00005	< 0.005	< 0.002	0.002	< 0.0001	0.064	< 0.00010	< 0.005	< 0.002	---	0.0011	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0096	< 0.001	< 0.002	---
	10-Sep-2009	16-SH	< 0.0050	< 0.00040	< 0.00040	0.15	< 0.0010	0.078	0.000013	< 0.0050	< 0.0020	0.0021	0.00011	0.061	< 0.000020	< 0.0050	0.0033	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0011	0.00807	< 0.0010	0.0044	---
	08-Sep-2010	16 SH	< 0.0050	< 0.00040	< 0.00040	0.151	< 0.0010	0.081	< 0.000010	0.0124	< 0.0020	0.0022	< 0.00010	0.061	< 0.000020	< 0.0050	0.0041	---	0.00058	---	< 0.00010	---	< 0.00010	< 0.050	0.0013	0.00899	< 0.0010	0.0105	---
	07-Sep-2011	16-SH	< 0.0050	< 0.00040	0.00058	0.151	< 0.0010	0.078	0.000019	0.0174	< 0.0020	0.0039	< 0.00010	0.054	< 0.000020	< 0.0050	0.004	---	0.00057	7.41	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00815	< 0.0010	0.0055	---
	05-Sep-2012	16-SH	< 0.0050	< 0.00040	< 0.00040	0.15	< 0.0010	0.085	< 0.000010	0.0157	< 0.0020	0.0023	< 0.00010	0.062	< 0.000020	< 0.0050	< 0.0020	---	0.00079	8.01	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00853	< 0.0010	< 0.0040	---
	26-Sep-2013	16-SH	< 0.0050	< 0.00040	< 0.00040	0.157	< 0.0010	0.071	< 0.000010	0.0066	< 0.0020	0.0019	< 0.00010	0.061	< 0.000020	< 0.0050	< 0.0020	---	0.00259	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00926	< 0.0010	0.0262	---
	16-Sep-2014	16-SH	0.0010	< 0.00010	0.00016	0.166	< 0.00050	0.079	< 0.000010	0.00656	< 0.00010	0.00134	< 0.000050	0.0641	< 0.0000050	0.000832	0.00031	< 0.30	0.00096	8.08	< 0.000010	0.497	< 0.000050	< 0.00010	< 0.00030	0.00971	< 0.00010	0.0018	---
	28-Sep-2015	16-SH	0.0023	<0.00010	0.00014	0.157	---	0.070	<0.000050	0.00121	---	0.00135	<0.000050	---	<0.0000050	---	0.00100	---	0.000361	---	<0.000010	---	---	---	---	0.00891	---	0.0061	---
	26-Sep-2016	16-SH	<0.0010	<0.00010	0.00016	0.157	---	0.072	<0.000050	0.00125	---	0.00130	<0.000050	---	<0.0000050	---	0.00084	---	0.000658	---	<0.000010	---	---	---	---	0.00924	---	0.0010	---
	27-Sep-2017	16-SH	<0.0010	<0.00010	0.00014	0.188	---	0.083	0.0000064	0.00104	---	0.00114	<0.000050	---	<0.0000050	---	0.00102	---	0.000269	---	<0.000010	---	---	---	---	0.00899	---	0.0016	---
	18-Sep-2018	16-SH	0.0011	0.00011	0.00016	0.204	---	0.087	0.0000243	0.00440	---	0.00183	<0.000050	---	0.0000335	---	0.00153	---	0.000232	---	<0.000010	---	---	---	---	0.00866	---	0.0032	---
	16-Sep-2019	16-SH	0.0017	<0.00010	0.00017	0.181	---	0.072	<0.000050	0.00089	---	0.00306	0.000056	---	<0.000050	---	0.00097	---	0.000417	---	<0.000010	---	---	---	---	0.01050	---	0.0021	---
	22-Sep-2020	16-SH	0.0010	<0.00010	0.00016	0.156	<0.00010	0.080	<0.000050	0.00208	<0.00010	0.00302	<0.000050	0.0596	<0.0000050	0.000796	0.00111	---	0.000763	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.0102	<0.00050	0.0015	---
	21-Sep-2021	16-SH	0.0109	<0.00010	0.00018	0.0905	<0.00010	0.206	0.0000114	0.00062	<0.00010	0.00648	<0.000050	0.0634	<0.0000050	0.000646	0.00267	---	0.000391	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00424	<0.00050	0.0151	---
	28-Sep-2022	16-SH	<0.0010	<0.00010	0.00016	0.181	---	0.094	<0.000050	0.00286	---	0.00216	<0.000050	---	<0.0000050	---	0.00148	---	0.000296	---	<0.000010	---	---	---	---	0.0101	---	0.0016	---
	28-Sep-2023	16-SH	<0.0010	<0.00010	0.00013	0.15	---	0.1	0.0000082	0.00436	---	0.00092	<0.000050	---	<0.0000050	---	0.0028	---	0.000502	---	<0.000010	---	---	---	---	0.00884	---	0.0023	---
	10-Sep-2024	16-SH	0.0016	<0.00010	0.00019	0.164	---	0.092	<0.0000050	0.00118	---	0.00264	<0.000050	---	<0.0000050	---	0.002	---	0.00163	---	<0.000010	---	---	---	---	0.00874	---	0.0025	---
16-IN	05-Sep-1996	16-IN	---	< 0.0002	< 0.0002	0.17	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.006	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.005	---
	04-Sep-1997	16-IN	---	< 0.0002	< 0.0002	0.14	< 0.001	---	< 0.0002	0.004	0.004	0.04	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.796	---
	15-Sep-1998	16-IN	---	< 0.0002	0.0002	0.13	0.003	---	0.0012	< 0.002	0.006	0.01	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.064	---
	09-Sep-1999	16-IN	---	0.0006	0.0004	0.16	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.007	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	0.002	---	< 0.0002	---	---	---	< 0.002	0.018	---
	05-Sep-2000	16-IN	---	< 0.0002	0.0004	0.139	< 0.0002	---	< 0.0002	< 0.001	0.0008	0.0017	< 0.0003	---	< 0.00005	< 0.0002	0.006	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0083	---
	06-Sep-2001	16-IN	---	< 0.0002	0.0002	0.197	< 0.0002	---	< 0.0002	0.003	< 0.0003	0.0508	0.0004	---	< 0.00005	0.0015	0.0055	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.174	---
	04-Sep-2002	16-IN	0.006	0.0004	0.0002	0.136	< 0.0002	0.07	< 0.0002	0.041	0.0003	0.0035	< 0.0003	---	< 0.00005	0.0017	0.0084	< 0.1	< 0.0002	5.69	< 0.0001	0.481	< 0.0002	< 0.001	< 0.001	0.0059	0.011	0.0277	0.0004
	04-Sep-2003	16-IN	0.003	< 0.0002	< 0.0002	0.149	< 0.0002	0.04	< 0.0002	0.006	< 0.0003	0.0573	0.0005	0.03	< 0.00005	0.0141	0.0017	< 0.1	< 0.0002	6.59	< 0.0001	0.43	< 0.0002	< 0.001	< 0.001	0.0046	< 0.001	0.153	< 0.0002
	08-Sep-2004	16-IN	0.055	< 0.0002	< 0.0002	0.157	< 0.0002	0.21	< 0.0002	0.003	0.0005	0.165	0.0004	0.049	< 0.00005	0.0032	0.006	< 0.1	< 0.0002	5.27	< 0.0001	0.56	< 0.0002	< 0.001	0.012	0.0079	< 0.001	0.767	0.0014
	08-Sep-2005	16-IN	< 0.001	< 0.0002	0.0003	0.106	< 0.0002	0.11	< 0.0002	< 0.001	0.0008	0.016	< 0.0003	0.051	< 0.00005	0.0032	0.0171	< 0.1	0.0002	5.86	< 0.0001	0.52	< 0.0002	< 0.001	< 0.001	0.005	< 0.001	0.0817	0.0005
	07-Sep-2006	16-IN	0.001	< 0.0002	< 0.0002	0.0961	< 0.0002	0.18	0.0002	< 0.001	0.0015	0.0182	< 0.0003	0.058	< 0.00005	0.0027	0.0163	< 0.1	< 0.0002	5.47	< 0.0001	0.59	< 0.0002	< 0.001	0.002	0.0051	< 0.001	0.0975	< 0.0002
	05-Sep-2007	16-IN	0.033	< 0.0002	0.0005	0.1	< 0.001	0.17	0.00006	< 0.001	0.0037	0.0132	< 0.0002	0.05	< 0.00005	0.0021	0.0268	0.1	< 0.0002	5.9	< 0.0001	0.61	< 0.0002	< 0.001	0.008	0.0046	< 0.001	0.071	---
	03-Sep-2008	16-IN	< 0.01	< 0.0004	< 0.0004	0.092	< 0.001	0.17	< 0.0001	< 0.005	< 0.002	0.003	< 0.0001	0.062	< 0.00010	< 0.005	0.007	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0053	< 0.001	0.012	---
	10-Sep-2009	16-IN	< 0.0050	< 0.00040	0.00098	0.0936	< 0.0010	0.17	0.000014	< 0.0050	< 0.0020	0.0019	< 0.00010	0.059	< 0.000020	< 0.0050	0.0064	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.0048	< 0.0010	0.0106	---
	08-Sep-2010	16 IN	< 0.0050	< 0.00040	0.00093	0.0879	< 0.0010	0.197	0.000164	0.0022	0.0025	0.0064	< 0.00010	0.061	< 0.000020	< 0.0050	0.0092	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00451	< 0.0010	0.0545	---
	07-Sep-2011	16-IN	< 0.0050	< 0.00040	0.00152	0.0966	< 0.0010	0.191	0.000019	< 0.0010	0.0025	0.0052	< 0.00010	0.051	< 0.000020	< 0.0050	0.0075	---	< 0.00040	6.89	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.0027	< 0.0010	0.0492	---
	05-Sep-2012	16-IN	< 0.0050	< 0.00040	0.00125	0.0885	< 0.0010	0.209	0.000011	< 0.0010	< 0.0020	0.0026	< 0.00010	0.062	< 0.000020	< 0.0050	0.007	---	< 0.00040	7	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00524	< 0.0010	0.0297	---
	26-Sep-2013	16-IN	< 0.0050	< 0.00040	0.00126	0.0907	< 0.0010	0.180	0.000019	< 0.0010	< 0.0020	0.0344	< 0.00010	0.065	< 0.000020	< 0.0050	0.0029	---	0.00056	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00862	< 0.0010	0.0386	---
	16-Sep-2014	16-IN	0.0025	< 0.00010	0.00033	0.105	< 0.00050	0.205	0.000018	< 0.00010	0.00115	0.0243	< 0.000050	0.0643	< 0.0000050	0.00149	0.00342	< 0.30	0.00050	5.27	< 0.000010	0.630	< 0.000050	< 0.00010	< 0.00030	0.00460	< 0.00010	0.0247	---
	28-Sep-2015	16-IN	0.0036	<0.00010	0.00027	0.0912	---	0.196	0.0000409	<0.00010	---	0.0517	<0.000050	---	<0.0000050	---	0.00397	---	0.000431	---	<0.000010	---	---	---	---	0.00490	---	0.0546	---
	26-Sep-2016	16-IN	0.0044	<0.00010	0.00022	0.0898	---	0.203	0.0000292	0.00016	---	0.0077	<0.000050	---	<0.0000050	---	0.00284	---	0.000715	---	<0.000010	---	---	---	---	0.00473	---	0.0106	---
	27-Sep-2017	16-IN	0.1720	<0.00010	0.00041	0.1040	---	0.213	0.0000681	0.00076	---	0.0683	0.000096	---	<0.0000050	---	0.00519	---	0.000217	---	<0.000010	---	---	---	---	0.00430	---	0.0737	---
	18-Sep-2018	16-IN	0.0022	<0.00010	0.00023	0.0967	---	0.226	0.0000601	0.00052	---	0.0253	<0.000050	---	<0.0000050	---	0.00448	---	0.000126	---	<0.000010	---	---	---	---	0.00422	---	0.0275	---
Dry	16-Sep-2019	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	16-IN	0.0029	<0.00010	0.00021	0.0908	<0.00010	0.197	0.0000074	0.00036	0.00015	0.00454	<0.000050	0.0597	<0.0000050	0.000640	0.00261	---	0.000898	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00477	<0.00050	0.0093	---
	21-Sep-2021	16-IN	<0.0010	<0.00010	0.00015	0.179	<0.00010	0.075	<0.0000050	0.00227	<0.00010	0.00224	<0.000050	0.0656	<0.0000050	0.00064	0.00106	---	0.000916	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00914	<0.00050	0.0012	---
	28-Sep-2022	16-IN	0.0016	<0.00010	0.00022	0.1060	---	0.215	0.0000070	0.00053	---	0.00577	<0.000050	---	<0.0000050	---	0.00169	---	0.001090	---	<0.000010	---	---	---	---	0.00502	---	0.0076	---
Dry	28-Sep-2023	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dry	10-Sep-2024	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			0.1	---	---	---	---	---	---	---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.0	---
Canadian Drinking Water MAC Guidelines 2022[2]			2.9	0.006	0.010	2.0	---	5	0.007	0.05	---	2	0.005	---	0.001	---	---	---	0.05	---	---	7.0	---	---	---	0.02	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	0.006	0.01	1	---	5	0.005	---	---	1	0.01	---	0.001	---	---		0.05		---		---	---	---	0.02	---	5	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			Variable (pH<6.5) 0.05 (pH>6.5) [5]	---	0.005	---	---	1.5	0.00037 [6]	0.0089 [7]	---	0.007	0.007 [8]	---	0.000005	---	Variable [9]		0.002		0.0001		---	---	---	0.015	---	0.03	---
17-SH	01-Nov-1994	17-SH	---	0.0013	0.0004	0.2	< 0.001	---	< 0.003	< 0.002	0.003	0.045	< 0.001	---	< 0.00005	< 0.003	0.015	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.002	0.016	---
	28-Sep-1995	17-SH	---	0.0002	0.0004	0.22	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.007	< 0.0003	---	< 0.00005	0.007	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.013	---
(Duplicate)	28-Sep-1995	17-SH DUP	---	0.0002	0.0003	0.22	< 0.001	---	< 0.0002	< 0.002	0.005	0.003	< 0.0003	---	< 0.00005	0.007	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.006	---
	04-Sep-1996	17-SH	---	< 0.0002	0.0002	0.17	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.007	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.002	0.016	---
	04-Sep-1997	17-SH	---	< 0.0002	< 0.0002	0.23	< 0.001	---	< 0.0002	< 0.002	0.005	0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.006	---
	16-Sep-1998	17-SH	---	< 0.0002	0.0002	0.21	0.001	---	0.0002	< 0.002	< 0.003	0.003	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.002	---
	09-Sep-1999	17-SH	---	0.0003	0.0002	0.24	< 0.001	---	< 0.0002	0.024	< 0.003	0.002	< 0.0003	---	< 0.00005	0.005	< 0.005	---	< 0.0002	---	< 0.002	---	---	---	---	---	< 0.002	0.003	---
	06-Sep-2000	17-SH	---	< 0.0002	0.0002	0.214	< 0.0002	---	< 0.0002	< 0.001	0.0004	0.0008	< 0.0003	---	< 0.00005	< 0.0002	0.0028	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0012	---
	06-Sep-2001	17-SH	---	< 0.0002	0.0002	0.229	0.0002	---	0.0003	< 0.001	0.0004	0.0034	0.0006	---	< 0.00005	0.0024	0.0037	---	< 0.0002	---	0.0003	---	0.0003	---	---	---	< 0.001	0.0114	---
	05-Sep-2002	17-SH	0.007	0.0003	0.0003	0.234	< 0.0002	0.08	< 0.0002	< 0.001	< 0.0003	0.0031	< 0.0003	---	< 0.00005	0.0014	0.0025	---	< 0.0002	6.06	< 0.0001	0.373	< 0.0002	< 0.001	< 0.001	0.0045	< 0.001	0.0034	0.0005
	03-Sep-2003	17-SH	0.005	< 0.0002	< 0.0002	0.206	< 0.0002	0.06	< 0.0002	< 0.001	< 0.0003	0.0025	0.0006	0.018	< 0.00005	0.0136	< 0.0005	< 0.1	< 0.0002	7.23	< 0.0001	0.35	< 0.0002	< 0.001	< 0.001	0.0046	< 0.001	0.0142	< 0.0002
	08-Sep-2004	17-SH	0.009	< 0.0002	< 0.0002	0.226	0.0008	0.63	< 0.0002	0.005	< 0.0003	0.0038	< 0.0003	0.026	< 0.00005	0.0022	0.0021	< 0.1	0.0006	6.5	< 0.0001	0.34	< 0.0002	< 0.001	0.007	0.0051	< 0.001	0.0053	0.0008
	07-Sep-2005	17-SH	0.006	< 0.0002	< 0.0002	0.204	< 0.0002	0.06	< 0.0002	0.002	< 0.0003	0.0027	< 0.0003	0.031	< 0.00005	0.0014	0.0012	< 0.1	0.0009	6.29	< 0.0001	0.35	< 0.0002	< 0.001	0.001	0.0046	< 0.001	0.003	0.0002
	07-Sep-2006	17-SH	0.002	< 0.0002	< 0.0002	0.229	< 0.0002	0.07	< 0.0002	0.002	< 0.0003	0.0059	< 0.0003	0.03	< 0.00005	0.0015	0.0018	< 0.1	< 0.0002	6.47	< 0.0001	0.33	< 0.0002	< 0.001	0.002	0.0045	< 0.001	0.009	< 0.0002
	06-Sep-2007	17-SH	0.006	< 0.0002	< 0.0002	0.2	< 0.001	0.05	0.00004	0.002	0.0012	0.0043	< 0.0002	0.02	< 0.00005	0.0011	0.0132	< 0.1	0.0002	5.8	< 0.0001	0.28	< 0.0002	< 0.001	0.01	0.0037	< 0.001	0.009	---
	04-Sep-2008	17-SH	< 0.01	< 0.0004	< 0.0004	0.248	< 0.001	0.05	< 0.00005	< 0.005	< 0.002	0.004	< 0.0001	0.033	< 0.00010	< 0.005	< 0.002	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0052	< 0.001	0.004	---
	10-Sep-2009	17-SH	< 0.0050	< 0.00040	< 0.00040	0.247	< 0.0010	0.055	0.000027	< 0.0050	< 0.0020	0.0024	0.00011	0.032	< 0.000020	< 0.0050	0.0026	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0011	0.00455	< 0.0010	0.0052	---
	09-Sep-2010	17 SH	< 0.0050	< 0.00040	< 0.00040	0.236	< 0.0010	0.056	0.000159	0.0014	< 0.0020	0.0024	< 0.00010	0.032	< 0.000020	< 0.0050	0.0031	---	0.00165	---	< 0.00010	---	< 0.00010	< 0.050	0.0011	0.00467	< 0.0010	< 0.0040	---
	08-Sep-2011	17-SH	0.0391	< 0.00040	< 0.00040	0.275	< 0.0010	0.052	0.000023	< 0.0010	< 0.0020	0.0026	< 0.00010	0.028	< 0.000020	< 0.0050	< 0.0020	---	0.00054	8.72	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00431	< 0.0010	0.0041	---
	06-Sep-2012	17-SH	< 0.0050	< 0.00040	< 0.00040	0.235	< 0.0010	0.051	0.000019	0.0034	< 0.0020	0.0025	< 0.00010	0.026	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	6.68	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00378	< 0.0010	0.0051	---
	26-Sep-2013	17-SH	< 0.0050	< 0.00040	< 0.00040	0.281	< 0.0010	0.071	0.000026	< 0.0010	< 0.0020	0.0026	< 0.00010	0.034	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00410	< 0.0010	0.0046	---
	17-Sep-2014	17-SH	< 0.0010	< 0.00010	0.00013	0.293	< 0.00050	0.069	0.000020	0.00023	< 0.00010	0.00174	< 0.000050	0.0355	< 0.0000050	0.000877	0.00020	< 0.30	< 0.00010	9.03	< 0.000010	0.400	< 0.000050	< 0.00010	< 0.00030	0.00446	0.00011	0.0020	---
	29-Sep-2015	17-SH	0.0080	<0.00010	0.00010	0.263	---	0.054	0.0000216	0.00029	---	0.00155	<0.000050	---	<0.0000050	---	0.00108	---	0.000088	---	<0.000010	---	---	---	---	0.00587	---	0.0043	---
	27-Sep-2016	17-SH	<0.0010	<0.00010	0.00013	0.306	---	0.072	0.0000216	0.00037	---	0.00119	<0.000050	---	<0.0000050	---	0.00106	---	0.000079	---	<0.000010	---	---	---	---	0.00548	---	0.0016	---
	27-Sep-2017	17-SH	<0.0010	<0.00010	0.00011	0.340	---	0.059	0.0000155	0.00040	---	0.00126	<0.000050	---	<0.0000050	---	0.00096	---	0.000071	---	<0.000010	---	---	---	---	0.00486	---	0.0016	---
	18-Sep-2018	17-SH	<0.0010	<0.00010	0.00012	0.321	---	0.076	0.0000182	0.00052	---	0.00109	<0.000050	---	0.0000165	---	0.00115	---	0.000096	---	<0.000010	---	---	---	---	0.00523	---	0.0020	---
	17-Sep-2019	17-SH	0.0063	0.00012	0.00015	0.289	---	0.059	0.0000139	0.00061	---	0.00273	<0.000050	---	<0.0000050	---	0.00073	---	0.000102	---	<0.000010	---	---	---	---	0.00376	---	0.0049	---
	21-Sep-2020	17-SH	0.0013	0.00013	0.00020	0.244	<0.00010	0.053	0.0000123	0.00057	<0.00010	0.00108	<0.000050	0.0300	<0.0000050	0.00135	0.00063	---	0.000072	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00337	<0.00050	<0.0010	---
	22-Sep-2021	17-SH	<0.0010	0.00011	0.00012	0.257	<0.00010	0.055	0.000008	0.00066	<0.00010	0.00111	<0.000050	0.033	<0.0000050	0.00113	0.00062	---	0.000221	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00366	<0.00050	<0.0010	---
	29-Sep-2022	17-SH	0.0840	0.00031	0.00040	0.259	---	0.060	0.0000114	0.00078	---	0.00179	<0.000050	---	<0.0000050	---	0.00087	---	0.000161	---	<0.000010	---	---	---	---	0.00494	---	0.0012	---
	28-Sep-2023	17-SH	<0.0010	0.00011	0.00016	0.254	---	0.064	0.0000139	0.00259	---	0.00119	<0.000050	---	<0.0000050	---	0.00218	---	0.000112	---	<0.000010	---	---	---	---	0.00443	---	0.0015	---
	11-Sep-2024	17-SH	0.0014	0.00013	0.0002	0.268	---	0.059	0.0000131	0.00088	---	0.00109	<0.000050	---	<0.0000050	---	0.00135	---	0.000382	---	<0.000010	---	---	---	---	0.0044	---	0.0019	---
17-IN	28-Sep-1995	17-IN	---	0.0006	0.0007	0.11	< 0.001	---	< 0.0002	0.003	< 0.003	0.003	< 0.0003	---	< 0.00005	0.01	0.04	---	0.0002	---	< 0.002	---	< 0.0003	---	---	---	< 0.002	0.001	---
	04-Sep-1996	17-IN	---	< 0.0002	0.0008	0.1	< 0.001	---	< 0.0002	< 0.002	< 0.003	0.007	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	0.002	0.007	---
	04-Sep-1997	17-IN	---	< 0.0002	0.0006	0.09	0.001	---	< 0.0002	0.012	0.006	0.009	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	0.006	---	< 0.001	---	---	---	0.005	0.007	---
	16-Sep-1998	17-IN	---	< 0.0002	0.0003	0.08	0.003	---	0.0003	< 0.002	0.004	0.01	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.001	---	---	---	< 0.002	0.001	---
	09-Sep-1999	17-IN	---	0.0005	0.0003	0.1	0.001	---	< 0.0002	0.005	< 0.003	< 0.001	< 0.0003	---	< 0.00005	< 0.003	< 0.005	---	< 0.0002	---	< 0.002	---	< 0.0002	---	---	---	< 0.002	< 0.001	---
	06-Sep-2000	17-IN	---	< 0.0002	0.0004	0.0694	< 0.0002	---	< 0.0002	< 0.001	0.0015	< 0.0002	< 0.0003	---	< 0.00005	< 0.0002	0.0103	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	< 0.0006	---
	06-Sep-2001	17-IN	---	< 0.0002	0.0002	0.109	< 0.0002	---	< 0.0002	< 0.001	0.0016	0.0023	< 0.0003	---	< 0.00005	0.0018	0.0101	---	< 0.0002	---	< 0.0001	---	< 0.0002	---	---	---	< 0.001	0.0105	---
	05-Sep-2002	17-IN	0.009	0.0008	0.0004	0.0825	< 0.0002	0.24	< 0.0002	0.039	0.0022	0.0014	< 0.0003	---	< 0.00005	0.0015	0.0101	< 0.1	< 0.0002	5.11	< 0.0001	0.583	< 0.0002	< 0.001	0.001	0.0045	0.011	0.015	0.0002
	03-Sep-2003	17-IN	< 0.001	< 0.0002	< 0.0002	0.0757	< 0.0002	0.29	< 0.0002	< 0.001	0.0006	0.0035	< 0.0003	0.03	< 0.00005	0.0071	0.0057	< 0.1	< 0.0002	5.29	< 0.0001	0.64	< 0.0002	< 0.001	< 0.001	0.0037	< 0.001	0.008	< 0.0002
	08-Sep-2004	17-IN	0.019	< 0.0002	< 0.0002	0.0782	0.0017	0.32	< 0.0002	0.001	0.0005	0.0023	0.0003	0.037	< 0.00005	0.0015	0.003	< 0.1	< 0.0002	4.97	< 0.0001	0.6	< 0.0002	< 0.001	0.009	0.0047	< 0.001	0.0087	0.0002
	07-Sep-2005	17-IN	0.003	< 0.0002	0.0003	0.0728	< 0.0002	0.25	< 0.0002	< 0.001	0.0009	0.0031	< 0.0003	0.044	0.00005	0.0015	0.0056	< 0.1	< 0.0002	5.11	< 0.0001	0.61	< 0.0002	< 0.001	0.001	0.0043	< 0.001	0.0047	< 0.0002
	07-Sep-2006	17-IN	0.001	< 0.0002	< 0.0002	0.0745	< 0.0002	0.29	< 0.0002	< 0.001	0.0017	0.0026	< 0.0003	0.043	0.00015	0.0016	0.0051	< 0.1	< 0.0002	5.39	< 0.0001	0.6	< 0.0002	< 0.001	0.002	0.0045	< 0.001	0.0081	0.0027
	06-Sep-2007	17-IN	0.002	< 0.0002	< 0.0002	0.06	< 0.001	0.23	0.00005	0.001	0.0015	0.0026	< 0.0002	0.03	< 0.00005	0.0012	0.0068	< 0.1	< 0.0002	5.2	< 0.0001	0.55	< 0.0002	< 0.001	0.004	0.004	< 0.001	0.005	---
	04-Sep-2008	17-IN	< 0.01	< 0.0004	< 0.0004	0.071	< 0.001	0.25	< 0.00005	< 0.005	< 0.002	0.004	< 0.0001	0.045	< 0.00010	< 0.005	0.004	---	0.0005	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0049	< 0.001	0.002	---
	10-Sep-2009	17-IN	< 0.0050	< 0.00040	< 0.00040	0.069	< 0.0010	0.244	0.000013	< 0.0050	< 0.0020	0.0035	0.0001	0.043	< 0.000020	< 0.0050	0.0047	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00422	< 0.0010	0.0057	---
	09-Sep-2010	17 IN	0.009	< 0.00040	< 0.00040	0.0664	< 0.0010	0.266	0.000109	< 0.0010	< 0.0020	0.003	< 0.00010	0.045	< 0.000020	< 0.0050	0.006	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00414	< 0.0010	0.0056	---
	08-Sep-2011	17-IN	< 0.0050	< 0.00040	0.00077	0.0748	< 0.0010	0.261	0.000017	< 0.0010	< 0.0020	0.0028	< 0.00010	0.038	< 0.000020	< 0.0050	0.0035	---	< 0.00040	6.08	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00424	< 0.0010	< 0.0040	---
	06-Sep-2012	17-IN	< 0.0050	< 0.00040	< 0.00040	0.0695	< 0.0010	0.275	0.000012	< 0.0010	< 0.0020	0.0017	< 0.00010	0.044	< 0.000020	< 0.0050	0.0027	---	< 0.00040	6.81	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00415	< 0.0010	< 0.0040	---
	26-Sep-2013	17-IN	< 0.0050	< 0.00040	0.00106	0.0831	< 0.0010	0.247	0.000036	< 0.0010	< 0.0020	0.0022	< 0.00010	0.046	< 0.000020	< 0.0050	0.0024	---	0.00096	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00576	< 0.0010	< 0.0040	---
	17-Sep-2014	17-IN	< 0.0010	< 0.00010	0.00044	0.0785	< 0.00050	0.253	0.000030	< 0.00010	0.00099	0.00221	< 0.000050	0.0490	0.0000076	0.00199	0.00316	< 0.30	0.00059	5.04	< 0.000010	0.646	< 0.000050	< 0.00010	< 0.00030	0.00493	< 0.00010	0.0014	---
	29-Sep-2015	17-IN	0.0021	<0.00010	0.00035	0.0711	---	0.232	0.0000314	<0.00010	---	0.00198	<0.000050	---	0.0000050	---	0.00360	---	0.000105	---	<0.000010	---	---	---	---	0.00515	---	0.0042	---
	27-Sep-2016	17-IN	0.0023	<0.00010	0.00027	0.0772	---	0.262	0.0000443	0.00027	---	0.00232	<0.000050	---	<0.0000050	---	0.00410	---	0.000171	---	<0.000010	---	---	---	---	0.00497	---	0.0022	---
	27-Sep-2017	17-IN	<0.0010	<0.00010	0.00022	0.0768	---	0.248	0.0000412	0.00024	---	0.00223	<0.000050	---	<0.0000050	---	0.00364	---	0.000076	---	<0.000010	---	---	---	---	0.00482	---	0.0019	---
	18-Sep-2018	17-IN	0.0018	<0.00010	0.00025	0.0831	---	0.280	0.0000246	0.001	---	0.00175	<0.000050	---	0.0000068	---	0.00314	---	0.000091	---	<0.000010	---	---	---	---	0.00461	---	0.0035	---
	17-Sep-2019	17-IN	0.0013	<0.00010	0.00018	0.0698	---	0.244	0.0000101	0.00019	---	0.00178	<0.000050	---	<0.0000050	---	0.00232	---	0.000178	---	<0.000010	---	---	---	---	0.00476	---	<0.0010	---
	21-Sep-2020	17-IN	0.0016	<0.00010	0.00018	0.0735	<0.00010	0.262	0.0000279	0.00090	0.00023	0.00357	<0.000050	0.0430	<0.0000050	0.000847	0.00288	---	0.000106	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00441	<0.00050	0.0017	---
	22-Sep-2021	17-IN	<0.0010	<0.00010	0.00021	0.0746	<0.00010	0.249	0.000034	0.00025	0.00028	0.0019	<0.000050	0.0452	<0.0000050	0.000904	0.00346	---	0.000069	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00405	<0.00050	0.0011	---
	29-Sep-2022	17-IN	<0.0010	<0.00010	0.00020	0.0758	---	0.264	0.0000185	<0.00050	---	0.00157	<0.000050	---	<0.0000050	---	0.00223	---	0.000093	---	<0.000010	---	---	---	---	0.00471	---	0.0012	---
	28-Sep-2023	17-IN	<0.0010	<0.00010	0.00018	0.122	---	0.21	0.0000088	0.00494	---	0.00113	<0.000050	---	<0.0000050	---	0.00249	---	0.000116	---	<0.000010	---	---	---	---	0.00452	---	0.0015	---
	11-Sep-2024	17-IN	0.0013	<0.00010	0.00018	0.0725	---	0.278	0.0000155	<0.00050	---	0.00248	<0.000050	---	<0.0000050	---	0.00211	---	0.000077	---	<0.000010	---	---	---	---	0.00453	---	0.004	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			**0.1**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**5.0**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**2.9**	**0.006**	**0.010**	**2.0**	**---**	**5**	**0.007**	**0.05**	**---**	**2**	**0.005**	**---**	**0.001**	**---**	**---**	**---**	**0.05**	**---**	**---**	**7.0**	**---**	**---**	**---**	**0.02**	**---**	**---**	**---**
Alberta Tier 2 Potable Groundwater Guideline[3]			**---**	**0.006**	**0.01**	**1**	**---**	**5**	**0.005**	**---**	**---**	**1**	**0.01**	**---**	**0.001**	**---**	**---**		**0.05**		**---**		**---**	**---**	**---**	**0.02**	**---**	**5**	**---**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**Variable (pH<6.5) 0.05 (pH>6.5)[5]**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00037[6]**	**0.0089[7]**	**---**	**0.007**	**0.007[8]**	**---**	**0.000005**	**---**	**Variable[9]**		**0.002**		**0.0001**		**---**	**---**	**---**	**0.015**	**---**	**0.03**	**---**
M-5	01-Oct-2001	M-5	< 0.001	< 0.0002	0.0027	0.0452	0.0003	< 0.01	< 0.0002	0.013	< 0.0003	0.0002	< 0.0003	0.077	< 0.00005	0.0004	0.0006	< 0.1	< 0.0002	11.4	< 0.0001	0.338	< 0.0002	< 0.001	< 0.001	< 0.0004	0.004	0.0039	0.0006
	23-Sep-2002	M-5	< 0.001	< 0.0002	0.0027	0.128	< 0.0002	0.03	< 0.0002	< 0.001	0.0003	0.0026	0.0019	0.09	< 0.00005	0.0004	0.0018	0.2	< 0.0002	12.7	< 0.0001	0.346	< 0.0002	< 0.001	< 0.001	< 0.0004	< 0.001	0.61	0.0006
	18-Oct-2003	M-5	0.002	< 0.0002	0.0008	0.0493	< 0.0002	0.98	< 0.0002	< 0.001	0.0006	0.0007	< 0.0003	0.017	< 0.00005	0.0024	0.0039	< 0.1	< 0.0002	4.7	< 0.0001	0.15	< 0.0002	< 0.001	< 0.001	< 0.0004	< 0.001	1.97	0.0057
	26-Oct-2004	M-5	0.013	< 0.0002	0.0002	0.109	< 0.0002	0.19	< 0.0002	0.008	0.0005	0.0035	0.0003	0.05	< 0.00005	0.001	0.0052	< 0.1	< 0.0002	10.1	0.0005	0.33	< 0.0002	< 0.001	0.007	0.0006	< 0.001	1.81	< 0.0002
	24-Oct-2005	M-5	0.003	< 0.0002	0.0002	0.0677	< 0.0002	0.02	< 0.0002	< 0.001	0.0006	0.0051	< 0.0003	0.055	< 0.00005	0.0065	0.0017	< 0.1	< 0.0002	1.08	< 0.0001	0.2	< 0.0002	< 0.001	< 0.001	< 0.0004	< 0.001	0.0144	0.0003
	12-Sep-2007	M-5	0.005	< 0.0002	< 0.0002	0.08	< 0.001	< 0.02	< 0.00001	< 0.001	0.0038	0.0048	< 0.0002	0.07	0.00001	0.0006	0.0099	< 0.1	< 0.0002	10	< 0.0001	0.25	< 0.0002	< 0.001	0.004	< 0.0001	< 0.001	**8.04**	---
	08-Oct-2008	M-5	< 0.01	< 0.0004	< 0.0004	0.079	< 0.001	< 0.05	< 0.0001	< 0.005	< 0.002	0.002	0.0001	0.087	< 0.00010	< 0.005	< 0.002	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	< 0.0001	< 0.001	0.511	---
	11-Sep-2009	M-5	< 0.0050	< 0.00040	< 0.00040	0.0816	< 0.0010	< 0.050	0.000012	< 0.0050	< 0.0020	0.0013	0.00013	0.076	< 0.000020	< 0.0050	0.0023	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	0.0019	< 0.00010	< 0.0010	1.05	---
M-6	02-Oct-2001	M-6	0.006	< 0.0002	0.0034	0.123	0.0004	< 0.01	< 0.0002	< 0.001	0.0004	0.0009	0.0019	0.042	< 0.00005	0.0005	0.002	< 0.1	< 0.0002	13	< 0.0001	0.244	< 0.0002	< 0.001	0.001	< 0.0004	< 0.001	0.601	< 0.0002
	29-Sep-2010	M-6	< 0.0050	< 0.00040	0.00046	0.168	< 0.0010	< 0.050	0.000366	< 0.0010	0.0027	0.0035	< 0.00010	0.035	< 0.000020	< 0.0050	0.0072	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	< 0.00010	< 0.0010	0.828	---
	16-Dec-2011	M6	0.0062	< 0.00040	**0.0236**	0.0869	< 0.0010	< 0.050	< 0.000010	< 0.0010	0.0068	< 0.0010	0.00027	< 0.010	< 0.000020	< 0.0050	0.0174	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00063	< 0.0010	0.979	---
89-1	27-Jun-2006	89-1	< 0.001	---	< 0.005	---	---	---	---	---	---	< 0.005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Oct-2008	89-1	< 0.01	< 0.0004	< 0.0004	0.043	< 0.001	2.94	< 0.0001	< 0.005	< 0.002	0.003	0.0002	0.053	< 0.00010	< 0.005	0.004	---	< 0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0001	< 0.001	0.005	---
99-1	27-Jun-2006	99-1	< 0.001	---	< 0.005	---	---	---	---	---	---	< 0.005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
86-2	27-Jun-2006	86-2	< 0.001	---	< 0.005	---	---	---	---	---	---	< 0.005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
86-3	27-Jun-2006	86-3	< 0.001	---	< 0.005	---	---	---	---	---	---	< 0.005	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
89-3	24-Sep-2002	89-3	0.095	< 0.0002	0.0036	0.108	< 0.0002	0.02	0.0169	0.009	0.0061	0.0033	**0.134**	0.054	< 0.00005	0.0003	0.0287	0.2	< 0.0002	12.5	< 0.0001	0.203	0.0057	< 0.001	0.002	0.0007	0.005	4.23	0.0004
	14-Oct-2003	89-3	0.001	0.0006	0.0002	0.0645	< 0.0002	0.02	< 0.0002	< 0.001	0.0013	< 0.0002	< 0.0003	0.018	< 0.00005	0.0074	0.0084	< 0.1	< 0.0002	8.56	< 0.0001	0.17	< 0.0002	< 0.001	0.001	0.0023	< 0.001	0.0241	0.0018
	26-Oct-2004	89-3	0.029	< 0.0002	0.001	0.0842	< 0.0002	0.03	< 0.0002	< 0.001	< 0.0003	0.0011	< 0.0003	0.033	< 0.00005	0.0008	0.003	< 0.1	< 0.0002	11.1	0.0001	0.19	< 0.0002	< 0.001	0.005	< 0.0004	< 0.001	0.362	< 0.0002
	25-Oct-2005	89-3	0.005	< 0.0002	0.0019	0.0857	< 0.0002	0.02	< 0.0002	< 0.001	0.0007	0.0027	< 0.0003	0.043	< 0.00005	0.0025	0.0048	< 0.1	< 0.0002	11.2	0.0003	0.21	< 0.0002	< 0.001	0.002	0.0007	< 0.001	0.0354	0.0013
	13-Sep-2007	89-3	0.005	< 0.0002	< 0.0002	0.1	< 0.001	< 0.02	0.00075	0.001	0.0011	0.0053	0.0002	0.04	0.000024	0.0012	0.0064	< 0.1	0.0007	11.2	< 0.0001	0.19	0.0003	< 0.001	0.004	0.001	< 0.001	0.909	---
	08-Oct-2008	89-3	< 0.01	< 0.0004	0.003	0.108	< 0.001	< 0.05	< 0.0001	< 0.005	< 0.002	< 0.001	< 0.0001	0.042	< 0.00010	< 0.005	0.006	---	0.0004	---	< 0.0001	---	< 0.0001	< 0.05	< 0.001	0.0016	< 0.001	0.126	---
	28-Sep-2010	89-3	< 0.0050	< 0.00040	0.00267	0.162	< 0.0010	< 0.050	0.000564	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.041	< 0.000020	< 0.0050	0.0029	---	< 0.00040	---	< 0.00010	---	< 0.00010	< 0.050	< 0.0010	0.00051	< 0.0010	0.657	---
	14-Dec-2011	89-3	< 0.0050	< 0.00040	0.00273	0.124	< 0.0010	< 0.050	0.000339	0.0012	< 0.0020	< 0.0010	0.00025	0.042	< 0.000020	< 0.0050	0.0022	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00035	< 0.0010	0.218	---
	26-Sep-2013	89-3	< 0.0050	< 0.00040	0.00112	0.127	< 0.0010	< 0.050	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	0.044	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	0.00138	< 0.0010	0.480	---
	17-Sep-2014	89-3	< 0.0010	< 0.00010	0.00118	0.132	< 0.00050	0.017	< 0.000010	< 0.00010	0.00014	< 0.00010	< 0.000050	0.0472	< 0.0000050	0.000629	0.00048	< 0.30	0.00012	13.2	< 0.000010	0.225	< 0.000050	< 0.00010	< 0.00030	0.00165	< 0.00010	0.0570	---
	29-Sep-2015	PW	<0.0010	<0.00010	0.00105	0.129	---	0.016	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	0.000705	---	0.0029	---
	27-Sep-2016	PW	<0.0010	<0.00010	0.00161	0.135	---	0.021	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	0.000989	---	0.0015	---
	27-Sep-2017	PW	<0.0010	<0.00010	0.00168	0.139	---	0.015	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	0.001470	---	0.0081	---
	18-Sep-2018	89-3	<0.0010	<0.00010	0.00235	0.143	---	0.021	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	0.0000121	---	<0.00050	---	0.000161	---	<0.000010	---	---	---	---	0.000753	---	0.0011	---
	17-Sep-2019	89-3	0.0012	<0.00010	0.00293	0.130	---	0.017	<0.0000050	<0.00010	---	0.00054	<0.000050	---	<0.0000050	---	0.00057	---	0.000054	---	<0.000010	---	---	---	---	0.002400	---	0.0086	---
	21-Sep-2020	89-3	<0.0010	<0.00010	<0.00010	0.0981	<0.00010	0.021	0.0000065	<0.00010	0.00015	0.00213	<0.000050	0.0433	<0.0000050	0.000547	0.00094	---	0.000165	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00209	<0.00050	0.0882	---
	22-Sep-2021	89-3	<0.0010	<0.00010	<0.00010	0.0942	<0.00010	0.016	<0.0000050	<0.00010	<0.00010	<0.00020	<0.000050	0.0472	<0.0000050	0.000484	<0.00050	---	0.000182	---	<0.000010	---	<0.000010	<0.00010	<0.00030	0.00194	<0.00050	0.0345	---
	29-Sep-2022	89-3	<0.0010	<0.00010	0.00025	0.1240	---	0.024	<0.0000050	<0.00050	---	0.00564	<0.000050	---	<0.0000050	---	0.00090	---	<0.000050	---	<0.000010	---	---	---	---	0.00092	---	0.0043	---
	29-Sep-2023	89-3	<0.0010	<0.00010	0.00056	0.101	---	0.023	<0.0000050	0.00226	---	<0.00020	<0.000050	---	<0.0000050	---	0.0011	---	<0.000050	---	<0.000010	---	---	---	---	0.00159	---	0.0079	---
	11-Sep-2024	89-3	<0.0010	<0.00010	0.00083	0.12	---	0.023	0.000013	<0.00050	---	0.00132	<0.000050	---	<0.0000050	---	<0.00050	---	0.000097	---	<0.000010	---	---	---	---	0.00184	---	0.0093	---
QA/QC																													
Trip Blank	05-Sep-2012	SPINEL 1	< 0.0050	< 0.00040	< 0.00040	< 0.0030	< 0.0010	< 0.050	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	< 0.010	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	< 0.10	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	< 0.00010	< 0.0010	< 0.0040	---
	05-Sep-2012	SPINEL 18	< 0.0050	< 0.00040	< 0.00040	< 0.0030	< 0.0010	< 0.050	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	< 0.010	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	< 0.10	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	< 0.00010	< 0.0010	< 0.0040	---
	05-Sep-2012	SPINEL 28	< 0.0050	< 0.00040	< 0.00040	< 0.0030	< 0.0010	< 0.050	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	< 0.010	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	< 0.10	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	< 0.00010	< 0.0010	< 0.0040	---
	26-Sep-2013	TRIP BLANK	< 0.0050	< 0.00040	< 0.00040	< 0.0030	< 0.0010	< 0.050	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	< 0.010	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	< 0.00010	< 0.0010	< 0.0040	---
	16-Sep-2014	TRIP BLANK	< 0.0010	< 0.00010	< 0.00010	< 0.000050	< 0.00050	< 0.010	< 0.000010	< 0.00010	< 0.00010	< 0.00010	< 0.000050	< 0.0030	< 0.0000050	< 0.000050	< 0.00010	< 0.30	< 0.00010	< 0.050	< 0.000010	< 0.00010	< 0.000050	< 0.00010	< 0.00030	< 0.000010	< 0.00010	< 0.0010	---
	29-Sep-2015	TRIP BLANK	<0.0010	<0.00010	<0.00010	<0.000050	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	28-Sep-2016	TRIP BLANK	<0.0010	<0.00010	<0.00010	<0.000050	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	27-Sep-2017	TRIP BLANK	<0.0010	<0.00010	<0.00010	<0.000050	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	19-Sep-2018	TRIP BLANK	<0.0010	<0.00010	<0.00010	<0.000050	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	16-Sep-2019	TRIP BLANK	<0.0010	<0.00010	<0.00010	<0.00010	---	<0.010	<0.0000050	0.00015	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	23-Sep-2020	TRIP BLANK	0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.010	<0.0000050	<0.00010	<0.00010	<0.00020	<0.000050	<0.0010	<0.0000050	<0.000050	<0.00050	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	<0.000010	<0.00050	<0.0010	---
	22-Sep-2021	TRIP BLANK	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.010	<0.0000050	<0.00010	<0.00010	<0.00020	<0.000050	<0.0010	<0.0000050	<0.000050	<0.00050	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	<0.000010	<0.00050	<0.0010	---
	28-Sep-2022	TRIP BLANK	<0.0010	<0.00010	<0.00010	0.00096	---	<0.010	<0.0000050	<0.00050	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	29-Sep-2023	TRIP BLANK	<0.0010	<0.00010	<0.00010	<0.00010	---	<0.010	<0.0000050	<0.00050	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	11-Sep-2024	TRIP BLANK	<0.0010	<0.00010	<0.00010	<0.00010	---	<0.010	<0.0000050	<0.00050	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---

Table 4.4
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Dissolved Metals

			DISSOLVED METALS																										
Monitoring Well	Date	Sample Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silicon	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium
Canadian Drinking Water AO Guidelines 2022[1]			**0.1**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**5.0**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**2.9**	**0.006**	**0.010**	**2.0**	**---**	**5**	**0.007**	**0.05**	**---**	**2**	**0.005**	**---**	**0.001**	**---**	**---**	**---**	**0.05**	**---**	**---**	**7.0**	**---**	**---**	**---**	**0.02**	**---**	**---**	**---**
Alberta Tier 2 Potable Groundwater Guideline[3]			**---**	**0.006**	**0.01**	**1**	**---**	**5**	**0.005**	**---**	**---**	**1**	**0.01**	**---**	**0.001**	**---**	**---**		**0.05**		**---**		**---**	**---**	**---**	**0.02**	**---**	**5**	**---**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**Variable (pH<6.5) 0.05 (pH>6.5) [5]**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00037 [6]**	**0.0089 [7]**	**---**	**0.007**	**0.007 [8]**	**---**	**0.000005**	**---**	**Variable [9]**		**0.002**		**0.0001**		**---**	**---**	**---**	**0.015**	**---**	**0.03**	**---**
Field Blank	25-Sep-2013	20-SH	< 0.0050	< 0.00040	< 0.00040	< 0.0030	< 0.0010	< 0.050	< 0.000010	< 0.0010	< 0.0020	< 0.0010	< 0.00010	< 0.010	< 0.000020	< 0.0050	< 0.0020	---	< 0.00040	---	< 0.000020	---	< 0.00010	< 0.050	< 0.0010	< 0.00010	< 0.0010	< 0.0040	---
	16-Sep-2014	41-SH	< 0.0010	< 0.00010	< 0.00010	< 0.000050	---	< 0.010	< 0.000010	< 0.00010	< 0.00010	< 0.00010	< 0.000050	< 0.0030	< 0.0000050	< 0.000050	< 0.00010	< 0.30	< 0.00010	< 0.050	< 0.000010	< 0.00010	< 0.000050	< 0.00010	< 0.00030	< 0.000010	< 0.00010	< 0.0010	---
	17-Sep-2014	42-SH	< 0.0010	< 0.00010	< 0.00010	< 0.000050	< 0.00050	< 0.010	< 0.000010	< 0.00010	< 0.00010	< 0.00010	< 0.000050	< 0.0030	< 0.0000050	< 0.000050	< 0.00010	< 0.30	< 0.00010	< 0.050	< 0.000010	< 0.00010	< 0.000050	< 0.00010	< 0.00030	< 0.000010	< 0.00010	< 0.0010	---
	28-Sep-2015	FIELD BLANK 1	<0.0010	<0.00010	<0.00010	<0.000050	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	29-Sep-2015	FIELD BLANK 2	<0.0010	<0.00010	<0.00010	0.000197	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	0.0013	---
	26-Sep-2016	10-SH	<0.0010	<0.00010	<0.00010	<0.000050	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	28-Sep-2016	20-SH	<0.0010	<0.00010	<0.00010	0.000072	---	<0.010	<0.0000050	<0.00010	---	0.00074	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	27-Sep-2017	10-SH	<0.0010	<0.00010	<0.00010	0.00013	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	27-Sep-2017	20-SH	<0.0010	<0.00010	<0.00010	0.000182	---	<0.010	<0.0000050	<0.00010	---	0.00039	<0.000050	---	0.000006	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	0.0019	---
	18-Sep-2018	10-SH	<0.0010	<0.00010	<0.00010	0.00013	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	18-Sep-2018	20-SH	<0.0010	<0.00010	<0.00010	0.000182	---	<0.010	<0.0000050	<0.00010	---	0.00039	<0.000050	---	0.000006	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	0.0019	---
	16-Sep-2019	10-SH	<0.0010	<0.00010	<0.00010	<0.00010	---	<0.010	<0.0000050	<0.00010	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	17-Sep-2019	20-SH	0.0019	0.00011	0.00012	0.001750	---	<0.010	<0.0000050	0.00036	---	0.00157	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	0.000027	---	---	---	---	<0.000010	---	<0.0010	---
	21-Sep-2020	10-SH	<0.0010	<0.00010	<0.00010	0.00018	<0.00010	<0.010	<0.0000050	<0.00010	<0.00010	0.00090	<0.000050	<0.0010	<0.0000050	<0.000050	<0.00050	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	<0.000010	<0.00050	<0.0010	---
	22-Sep-2020	20-SH	<0.0010	<0.00010	<0.00010	0.00010	<0.00010	<0.010	<0.0000050	<0.00010	<0.00010	0.00068	<0.000050	<0.0010	<0.0000050	0.000076	<0.00050	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	<0.000010	<0.00050	<0.0010	---
	23-Sep-2020	30-SH	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.010	<0.0000050	<0.00010	<0.00010	0.00038	<0.000050	<0.0010	<0.0000050	<0.000050	<0.00050	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	<0.000010	<0.00050	<0.0010	---
	21-Sep-2021	10-SH	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.010	<0.0000050	<0.00010	<0.00010	<0.00020	<0.000050	<0.0010	<0.0000050	<0.000050	<0.00050	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	<0.000010	<0.00050	<0.0010	---
	22-Sep-2021	20-SH	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.010	<0.0000050	<0.00010	<0.00010	<0.00020	<0.000050	<0.0010	<0.0000050	<0.000050	<0.00050	---	<0.000050	---	<0.000010	---	<0.000010	<0.00010	<0.00030	<0.000010	<0.00050	<0.0010	---
	28-Sep-2022	10-SH	<0.0010	<0.00010	<0.00010	0.00103	---	<0.010	0.0000512	<0.00050	---	0.00021	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	0.000082	---	0.0016	---
	29-Sep-2022	20-SH	<0.0010	<0.00010	<0.00010	<0.00010	---	<0.010	<0.0000050	<0.00050	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	29-Sep-2023	Field Blank	<0.0010	<0.00010	<0.00010	<0.00010	---	<0.010	<0.0000050	<0.00050	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	11-Sep-2024	10-SH	0.0018	<0.00010	<0.00010	0.00076	---	<0.010	<0.0000050	<0.00050	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---
	11-Sep-2024	20-SH	0.003	<0.00010	<0.00010	0.00026	---	<0.010	<0.0000050	<0.00050	---	<0.00020	<0.000050	---	<0.0000050	---	<0.00050	---	<0.000050	---	<0.000010	---	---	---	---	<0.000010	---	<0.0010	---

NOTES:

1: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Aesthetic Objective (AO)

2: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Maximum Acceptable Concentration (MAC)

3: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain Guidelines = Coarse Grain Guidelines for Routine Parameters (Fine Grain for SH and IN wells, Coarse Grain for SS wells)
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

5: Aluminum Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.1. Aluminum guidelines for protection of aquatic life at varying pH. - Long-term (Chronic)
6: Cadmium Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.3. Metals guidelines for Protection of Aquatic Life at varying hardness. - Long-term (Chronic)
7: Chromium (trivalent)
8: Lead Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.3. Metals guidelines for Protection of Aquatic Life at varying hardness. - Long-term (Chronic)
9: Nickel Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.3. Metals guidelines for Protection of Aquatic Life at varying hardness. - Long-term (Chronic)

Detection Limit is greater than the guideline
--- Guideline Row: No guideline for that parameter
--- Results: Parameter was not analyzed

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
01-SH [Decommissioned]	15-May-1985	01-SH [DECOM]	---	5.2	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1985	01-SH [DECOM]	---	4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	01-SH [DECOM]	---	3.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1986	01-SH [DECOM]	---	4.3	21	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	01-SH [DECOM]	---	2.8	38	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	01-SH [DECOM]	---	2.8	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	01-SH [DECOM]	---	4.2	18	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	01-SH [DECOM]	---	2.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	01-SH [DECOM]	---	3.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	01-SH [DECOM]	---	3.7	22	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	01-SH [DECOM]	---	3.6	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	01-SH [DECOM]	---	2.4	17	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	01-SH [DECOM]	---	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	01-SH [DECOM]	---	3.6	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	01-SH [DECOM]	---	3.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	01-SH [DECOM]	---	4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	01-SH [DECOM]	---	3.4	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	01-SH [DECOM]	---	4.7	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
01A-SH	13-Nov-1993	01A-SH	---	80.1	209	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	01A-SH	---	50.1	184	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	01A-SH	---	16.1	39	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Nov-1994	01A-SH	---	17.2	5	---	---	---	---	---	---	0.3	---	---	---	---	---	---
	28-Sep-1995	01A-SH	---	56	250	---	< 0.001	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	01A-SH	---	---	---	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	01A-SH	---	---	152	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1996	01A-SH	---	7.1	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1997	01A-SH	---	51.6	200	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	05-Sep-1997	01A-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	01A-SH	---	---	140	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Oct-1998	01A-SH	---	54	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Oct-1998	01A-SH	54	---	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	09-Sep-1999	01A-SH	---	51.6	133	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2000	01A-SH	---	19.4	38	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	07-Sep-2001	01A-SH	---	23	62	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Oct-2001	01A-SH	---	---	---	---	---	---	---	---	0.0017	---	---	---	---	---	---	---
	05-Oct-2001	01A-SH	---	---	---	< 0.0004	0.0005	< 0.0004	0.001	0.0005	---	---	---	---	---	---	< 0.1	---
	09-May-2002	01A-SH	---	---	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	05-Sep-2002	01A-SH	---	---	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	< 0.002	< 0.1	---	---	< 0.1	---
	11-Sep-2002	01A-SH	---	65.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Oct-2002	01A-SH	25.3	26.9	---	< 0.0004	0.0008	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	< 1
	07-Sep-2003	01A-SH	---	43.5	---	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	---	---
	14-Oct-2003	01A-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	14-Oct-2003	01A-SH DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Dec-2003	01A-SH	54.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	01A-SH	---	8.5	17	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	07-Sep-2005	01A-SH	---	22.7	64	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	01A-SH	39.5	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	06-Sep-2007	01A-SH	10	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	04-Sep-2008	01A-SH	40	---	---	< 0.00050	0.00052	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	09-Oct-2008	01A-SH	---	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	---	---	---
	21-Oct-2008	01A-SH	---	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	---	---	---
(Duplicate)	21-Oct-2008	01A-SH DUP	---	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	---	---	---
	10-Sep-2009	01A-SH	43.1	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	09-Sep-2010	01A SH	31.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2011	01A-SH	30.4	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	06-Sep-2012	01A-SH	37.6	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	01A-SH	47.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	17-Sep-2014	01A-SH	46.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	01A-SH	27.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2016	01A-SH	39.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	01A-SH	36.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	01A-SH	48.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2019	01A-SH	36.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	21-Sep-2020	01A-SH	41.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	01A-SH	26.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	29-Sep-2022	01A-SH	61.0	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	28-Sep-2023	01A-SH	53.1	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	11-Sep-2024	01A-SH	55.4	---	---	<0.00050	0.00079	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
01-IN [Decommissioned]	15-Feb-1985	01-IN [DECOM]	---	3.4	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1985	01-IN [DECOM]	---	4.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	01-IN [DECOM]	---	7.2	30	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1986	01-IN [DECOM]	---	5	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	01-IN [DECOM]	---	4.2	11	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	01-IN [DECOM]	---	4.3	18	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	01-IN [DECOM]	---	4.7	11	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	01-IN [DECOM]	---	3.5	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	01-IN [DECOM]	---	4.7	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1988	01-IN [DECOM]	---	4.8	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	01-IN [DECOM]	---	3.7	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	01-IN [DECOM]	---	3.1	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	01-IN [DECOM]	---	4.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	01-IN [DECOM]	---	3.6	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	01-IN [DECOM]	---	4.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	01-IN [DECOM]	---	4.1	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	01-IN [DECOM]	---	3.9	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	01-IN [DECOM]	---	4.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	01-IN [DECOM]	---	4.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	01-IN [DECOM]	---	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Nov-1991	01-IN [DECOM]	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	01-IN [DECOM]	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	01-IN [DECOM]	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
01A-IN	13-Nov-1993	01A-IN	---	24.2	70	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	01A-IN	---	43	116	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	01A-IN	---	19.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	01A-IN	---	19.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	01A-IN	---	22.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2000	01A-IN	---	22.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2001	01A-IN	---	22.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2002	01A-IN	---	33.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2002	01A-IN	29.3	---	---	< 0.0009	< 0.0009	< 0.0009	< 0.002	< 0.0009	< 0.0029	---	---	---	---	---	< 0.1	< 0.5
	08-Oct-2002	01A-IN	20.8	23.8	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	< 0.5
	03-Sep-2003	01A-IN	---	23.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	01A-IN	24.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	01A-IN	---	24.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	01A-IN	---	20.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	01A-IN	22.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2007	01A-IN	23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2008	01A-IN	24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2009	01A-IN	24.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2010	01A IN	31.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2011	01A-IN	20.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2012	01A-IN	23.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	01A-IN	26.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2014	01A-IN	28.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	01A-IN	63.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	01A-IN	21.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	01A-IN	21.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	01A-IN	18.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	01A-IN	28.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2020	01A-IN	27.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	01A-IN	20.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	01A-IN	31.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2023	01A-IN	23.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	01A-IN	30.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
01-SS [Decommissioned]	15-Jun-1985	01-SS [DECOM]	---	1.6	7	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jul-1985	01-SS [DECOM]	---	6.5	25	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	01-SS [DECOM]	---	2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1986	01-SS [DECOM]	---	6.6	25	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	01-SS [DECOM]	---	1.5	37	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	01-SS [DECOM]	---	1.8	18	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1987	01-SS [DECOM]	---	2	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	01-SS [DECOM]	---	1.2	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	01-SS [DECOM]	---	1.7	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	01-SS [DECOM]	---	1.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	15-May-1988	01-SS DUP	---	1.4	11	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	01-SS [DECOM]	---	2.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	01-SS [DECOM]	---	1	21	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	01-SS [DECOM]	---	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	01-SS [DECOM]	---	1.7	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	01-SS [DECOM]	---	1.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	01-SS [DECOM]	---	1.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	01-SS [DECOM]	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Nov-1991	01-SS [DECOM]	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	01-SS [DECOM]	---	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
02-SH [Decommissioned]	15-May-1985	02-SH [DECOM]	---	3	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	02-SH [DECOM]	---	2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	02-SH [DECOM]	---	2.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	02-SH [DECOM]	---	1.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	02-SH [DECOM]	---	2.3	26	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	02-SH [DECOM]	---	2	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	02-SH [DECOM]	---	1.9	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	02-SH [DECOM]	---	3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	02-SH [DECOM]	---	2	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	02-SH [DECOM]	---	2.7	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	02-SH [DECOM]	---	2.7	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	02-SH [DECOM]	---	2.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	02-SH [DECOM]	---	2.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	02-SH [DECOM]	---	1.6	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	02-SH [DECOM]	---	2.8	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	02-SH [DECOM]	---	2.1	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	02-SH [DECOM]	---	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	02-SH [DECOM]	---	2.3	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	02-SH [DECOM]	---	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	02-SH [DECOM]	---	2.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	02-SH [DECOM]	---	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	02-SH [DECOM]	---	2.1	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	02-SH [DECOM]	---	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	02-SH [DECOM]	---	2.4	< 0	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	02-SH [DECOM]	---	2.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	02-SH [DECOM]	---	1.7	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	02-SH [DECOM]	---	2.1	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
02-IN [Decommissioned]	15-May-1985	02-IN [DECOM]	---	3	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	02-IN [DECOM]	---	5.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	02-IN [DECOM]	---	2.6	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	02-IN [DECOM]	---	3.5	17	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	02-IN [DECOM]	---	3.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	02-IN [DECOM]	---	3.7	17	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	02-IN [DECOM]	---	4.8	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	02-IN [DECOM]	---	3.2	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	02-IN [DECOM]	---	4.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	02-IN [DECOM]	---	3.7	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	02-IN [DECOM]	---	4.6	13	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	02-IN [DECOM]	---	3.8	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	02-IN [DECOM]	---	3.4	40	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	02-IN [DECOM]	---	4.7	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	02-IN [DECOM]	---	3.7	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	02-IN [DECOM]	---	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	02-IN [DECOM]	---	3.9	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	02-IN [DECOM]	---	4.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	02-IN [DECOM]	---	4.1	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	02-IN [DECOM]	---	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	02-IN [DECOM]	---	3.9	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	02-IN [DECOM]	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	02-IN [DECOM]	---	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	02-IN [DECOM]	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	02-IN [DECOM]	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
03-SH	15-May-1985	03-SH	---	5.6	25	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	03-SH	---	5.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	03-SH	---	6	37	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	03-SH	---	6.1	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	03-SH	---	6.4	17	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	03-SH	---	6.8	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	03-SH	---	6.2	17	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	03-SH	---	6.4	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	03-SH	---	6	18	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	03-SH	---	6.6	17	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	03-SH	---	6.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	03-SH	---	6.3	56	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	03-SH	---	5.8	36	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	03-SH	---	5.4	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	03-SH	---	7.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	03-SH	---	6.5	30	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	03-SH	---	6.7	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	03-SH	---	6.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	03-SH	---	6.4	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	03-SH	---	6.1	27	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	03-SH	---	6.1	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	03-SH	---	5.5	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	03-SH	---	5.7	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	03-SH	---	5.3	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	03-SH	---	4.5	28	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	03-SH	---	3.6	7	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	31-May-1994	03-SH DUP	---	3.8	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	03-SH	---	4.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	21-Sep-1994	03-SH DUP	---	---	9	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	21-Sep-1994	03-SH DUP	---	4.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Nov-1994	03-SH	---	4.6	6	---	---	---	---	---	---	0.6	---	---	---	---	---	---
(Duplicate)	01-Nov-1994	03-SH DUP	---	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	02-Nov-1994	03-SH DUP	---	2.8	5	---	---	---	---	---	---	0.2	---	---	---	---	---	---
	28-Sep-1995	03-SH	---	---	7	---	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	03-SH	---	4.3	---	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	03-SH	---	---	15	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1996	03-SH	---	4.9	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	03-SH	---	4.5	7	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1997	03-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	03-SH	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	15-Sep-1998	03-SH	---	4.9	8	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	---	---
(Duplicate)	15-Sep-1998	03-SH DUP	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
(Duplicate)	15-Sep-1998	03-SH DUP	---	4.8	14	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	---	---
	09-Sep-1999	03-SH	---	4.6	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	03-SH	---	4.1	9	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	03-SH	---	3.7	7	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
	04-Sep-2002	03-SH	---	4.2	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	< 0.002	< 0.1	---	---	< 0.1	---
	03-Sep-2003	03-SH	---	4.9	5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	09-Sep-2004	03-SH	---	3.4	6	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2005	03-SH	---	3.9	7	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	03-SH	3.9	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2007	03-SH	4.4	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	03-Sep-2008	03-SH	4	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	09-Sep-2009	03-SH	4.3	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2010	03-SH	4.9	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	07-Sep-2011	03-SH	4.4	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	03-SH	5.4	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	03-SH	4.1	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	16-Sep-2014	03-SH	5.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	28-Sep-2015	03-SH	5.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2016	03-SH	5.5	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	03-SH	5.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	03-SH	4.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2019	03-SH	4.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	03-SH	5.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	03-SH	4.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	29-Sep-2022	03-SH	4.85	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	29-Sep-2023	03-SH	4.08	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	10-Sep-2024	03-SH	8.0	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
03-IN	15-May-1985	03-IN	---	13.8	30	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	03-IN	---	4	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	03-IN	---	3.8	35	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	03-IN	---	2.8	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	03-IN	---	3.6	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	03-IN	---	3	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	03-IN	---	3.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	03-IN	---	4.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	03-IN	---	3	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	03-IN	---	3.9	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	03-IN	---	4.2	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	03-IN	---	4	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	03-IN	---	3.8	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	03-IN	---	2.7	46	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	03-IN	---	3.9	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	03-IN	---	3.2	22	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	03-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	03-IN	---	3.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	03-IN	---	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	03-IN	---	3.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	03-IN	---	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	03-IN	---	3.9	22	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	03-IN	---	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	03-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	03-IN	---	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	03-IN	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	03-IN	---	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	03-IN	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	03-IN	---	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	03-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	03-IN	---	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	03-IN	---	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	03-IN	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	03-IN	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	03-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	03-IN	---	4.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	03-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2004	03-IN	---	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2005	03-IN	---	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	03-IN	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2007	03-IN	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2008	03-IN	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2009	03-IN	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2010	03-IN	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2011	03-IN	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2012	03-IN	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	03-IN	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2014	03-IN	6.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2015	03-IN	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2016	03-IN	5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	03-IN	5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	03-IN	4.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	03-IN	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	03-IN	4.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	03-IN	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	03-IN	4.73	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2023	03-IN	4.24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	03-IN	4.24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
04-SH	15-May-1985	04-SH	---	5	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	04-SH	---	3.4	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	04-SH	---	3.3	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	04-SH	---	3.2	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	04-SH	---	3.8	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	04-SH	---	3.6	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	04-SH	---	3	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	04-SH	---	3.4	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	04-SH	---	3.8	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	04-SH	---	3.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	04-SH	---	3.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1988	04-SH	---	3.3	13	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	04-SH	---	3.9	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	04-SH	---	3.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	04-SH	---	4.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	04-SH	---	3.9	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	04-SH	---	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	04-SH	---	3.5	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	04-SH	---	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	04-SH	---	3.7	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Nov-1991	04-SH	---	3.6	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	04-SH	---	3.1	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	04-SH	---	4	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	04-SH	---	3.1	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	04-SH	---	2.1	28	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	04-SH	---	1.9	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	04-SH	---	2.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Nov-1994	04-SH	---	2.4	5	---	---	---	---	---	---	0.5	---	---	---	---	---	---
	28-Sep-1995	04-SH	---	---	9	---	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	04-SH	---	2.6	---	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	04-SH	---	---	5	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1996	04-SH	---	3.7	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	04-SH	---	2.5	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	---	---	---	---	---	---	---	---
	03-Sep-1997	04-SH	---	---	---	---	---	---	---	---	< 0.0008	---	---	---	---	---	---	---
	15-Sep-1998	04-SH	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	15-Sep-1998	04-SH	---	2.7	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	---	---
	09-Sep-1999	04-SH	---	2.8	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	05-Sep-2000	04-SH	---	2.4	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	04-SH	---	2.3	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
(Duplicate)	06-Sep-2001	04-SH DUP	---	2.1	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
(Duplicate)	06-Sep-2001	04-SH DUP	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	04-Sep-2002	04-SH	---	3.1	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	0.003	< 0.1	---	---	< 0.1	---
(Duplicate)	04-Sep-2002	04-SH DUP	---	2.7	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	11-Sep-2002	04-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	04-SH	---	2.9	5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	07-Sep-2003	04-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	07-Sep-2003	04-SH DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	11-Sep-2003	04-SH DUP	---	2.6	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2004	04-SH	---	2	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
(Duplicate)	08-Sep-2004	04-SH DUP	---	2.9	20	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	07-Sep-2005	04-SH	---	2.6	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	07-Sep-2005	04-SH DUP	---	2.5	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	04-SH	2.4	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	07-Sep-2006	04-SH DUP	2.7	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2007	04-SH	2.1	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	05-Sep-2007	04-SH DUP	2.1	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	03-Sep-2008	04-SH	2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
(Duplicate)	03-Sep-2008	04-SH DUP	2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	09-Sep-2009	04-SH	2.5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
(Duplicate)	09-Sep-2009	04-SH DUP	2.4	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2010	04 SH	5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
(Duplicate)	08-Sep-2010	SYLVITE 24	4.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	07-Sep-2011	04-SH	3.9	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	07-Sep-2011	ZIRCON 24	4.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	04-SH	3.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	05-Sep-2012	SPINEL 22	3.1	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	04-SH	2.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	26-Sep-2013	24-SH	2.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	17-Sep-2014	04-SH	4.6	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	28-Sep-2015	04-SH	2.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	26-Sep-2016	04-SH	3.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	04-SH	3.5	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2018	04-SH	3.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2019	04-SH	2.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	04-SH	4.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	04-SH	3.5	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	29-Sep-2022	04-SH	3.2	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	29-Sep-2023	04-SH	2.45	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	10-Sep-2024	04-SH	3.15	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
04-IN	15-Mar-1989	04-IN	---	4.8	13	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	04-IN	---	3.9	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	04-IN	---	4.7	49	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	04-IN	---	3.3	27	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	15-Nov-1989	04-IN DUP	---	4.4	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	04-IN	---	4.2	49	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	04-IN	---	4.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	04-IN	---	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	04-IN	---	4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1991	04-IN	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	04-IN	---	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	04-IN	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	04-IN	---	2.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	04-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	04-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	04-IN	---	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	04-IN	---	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	04-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	04-IN	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	04-IN	---	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	04-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	04-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2007	04-IN	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2008	04-IN	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2010	04 IN	14.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2014	04-IN	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2015	04-IN	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2016	04-IN	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	04-IN	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2018	04-IN	3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	04-IN	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	04-IN	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	04-IN	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	04-IN	3.81	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2023	04-IN	3.22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	04-IN	4.02	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
04-SS	15-Sep-1985	04-SS	---	1.2	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	04-SS	---	8.6	35	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	04-SS	---	3.2	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	04-SS	---	1.5	27	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	04-SS	---	1	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	04-SS	---	1.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	04-SS	---	1.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	04-SS	---	1	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	04-SS	---	1.2	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	04-SS	---	1.6	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	04-SS	---	2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	04-SS	---	1.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1988	04-SS	---	0.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	04-SS	---	2.5	19	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	04-SS	---	1.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	04-SS	---	1.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	04-SS	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	04-SS	---	1.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	04-SS	---	1.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	04-SS	---	1.3	27	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1991	04-SS	---	2.2	25	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	04-SS	---	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	04-SS	---	1.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	04-SS	---	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	04-SS	1.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2014	04-SS	4.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2015	04-SS	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	04-SS	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2017	04-SS	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2018	04-SS	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	04-SS	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	04-SS	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	04-SS	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	04-SS	2.38	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2023	04-SS	1.58	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	04-SS	2.04	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
05-SH	15-May-1985	05-SH	---	5	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	05-SH	---	4.4	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	05-SH	---	4.8	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	05-SH	---	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	05-SH	---	4.3	11	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	05-SH	---	4.8	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	05-SH	---	5.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	05-SH	---	4.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	05-SH	---	5.6	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	05-SH	---	4.5	13	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	05-SH	---	4.8	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	05-SH	---	5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	05-SH	---	4.4	18	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	05-SH	---	5.1	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	05-SH	---	3.9	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	05-SH	---	4.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	05-SH	---	4.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	05-SH	---	4.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	05-SH	---	4.6	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	05-SH	---	3.9	23	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1991	05-SH	---	3.9	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	05-SH	---	3.3	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	05-SH	---	4.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	05-SH	---	2.8	23	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	05-SH	---	3.4	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	05-SH	---	4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Nov-1994	05-SH	---	3.7	5	---	---	---	---	---	---	0.7	---	---	---	---	---	---
	28-Sep-1995	05-SH	---	---	5	---	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	05-SH	---	4.1	---	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	05-SH	---	---	5	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1996	05-SH	---	4.8	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	05-SH	---	4	5	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	---	---	---	---	---	---	---	---
	03-Sep-1997	05-SH	---	---	---	---	---	---	---	---	< 0.0008	---	---	---	---	---	---	---
	16-Sep-1998	05-SH	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	16-Sep-1998	05-SH	---	4.2	7	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	---	---
	09-Sep-1999	05-SH	---	4.7	8	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	05-Sep-2000	05-SH	---	4.4	9	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	05-SH	---	3.6	5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
(Duplicate)	06-Sep-2001	05-SH DUP	---	4.6	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
(Duplicate)	06-Sep-2001	05-SH DUP	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	04-Sep-2002	05-SH	---	5.3	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	< 0.002	< 0.1	---	---	< 0.1	---
(Duplicate)	04-Sep-2002	05-SH DUP	---	4.3	8	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	03-Sep-2003	05-SH	---	---	11	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	07-Sep-2003	05-SH	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2003	05-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	07-Sep-2003	05-SH DUP	---	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	11-Sep-2003	05-SH DUP	---	---	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2004	05-SH	---	4.4	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
(Duplicate)	08-Sep-2004	05-SH DUP	---	4.9	13	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	07-Sep-2005	05-SH	---	4.5	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	07-Sep-2005	05-SH DUP	---	5.7	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	05-SH	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	07-Sep-2006	05-SH DUP	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2007	05-SH	5	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	05-Sep-2007	05-SH DUP	5.7	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2008	05-SH	5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
(Duplicate)	05-Sep-2008	05-SH DUP	5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	09-Sep-2009	05-SH	5.5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
(Duplicate)	09-Sep-2009	05-SH DUP	5.6	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2010	05 SH	5.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
(Duplicate)	08-Sep-2010	SYLVITE 25	5.9	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	07-Sep-2011	05-SH	5.4	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	07-Sep-2011	ZIRCON 25	5.1	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	05-SH	5.4	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	05-Sep-2012	SPINEL 23	6	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	05-SH	4.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	17-Sep-2014	05-SH	5.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	17-Sep-2014	25-SH	5.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	28-Sep-2015	05-SH	5.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	28-Sep-2015	25-SH	5.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2016	05-SH	6.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	28-Sep-2016	25-SH	5.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	05-SH	5.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	27-Sep-2017	25-SH	7.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2018	05-SH	5.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	17-Sep-2018	25-SH	6.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2019	05-SH	5.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	17-Sep-2019	25-SH	6.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	05-SH	7.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	22-Sep-2020	25-SH	6.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	05-SH	6.5	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	22-Sep-2021	25-SH	6.5	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	29-Sep-2022	05-SH	7.02	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
(Duplicate)	29-Sep-2022	25-SH	7.24	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	28-Sep-2023	05-SH	7.20	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
(Duplicate)	28-Sep-2023	25-SH	10.8	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	10-Sep-2024	05-SH	7.83	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
(Duplicate)	10-Sep-2024	25-SH	8.24	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
05-IN	15-May-1985	05-IN	---	16	54	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	05-IN	---	0.8	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	05-IN	---	4.3	13	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	05-IN	---	4.2	18	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	05-IN	---	4.8	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	05-IN	---	5	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	05-IN	---	4.3	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	05-IN	---	5.4	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	05-IN	---	5	22	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	05-IN	---	4.2	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	05-IN	---	4.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	05-IN	---	4.7	24	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	05-IN	---	6.3	17	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	05-IN	---	4.4	7	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	05-IN	---	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	05-IN	---	4.9	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	05-IN	---	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	05-IN	---	4.9	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	05-IN	---	4.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1990	05-IN	---	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	05-IN	---	4.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	05-IN	---	4.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	05-IN	---	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	05-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	05-IN	---	4.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	05-IN	---	5.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	05-IN	---	4.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	05-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	05-IN	---	4.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	05-IN	---	4.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	05-IN	---	4.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	05-IN	---	5.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	05-IN	---	5.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	05-IN	---	4.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	05-IN	---	5.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	05-IN	5.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2007	05-IN	5.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2008	05-IN	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2009	05-IN	6.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2010	05 IN	6.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2011	05-IN	5.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2012	05-IN	5.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	05-IN	4.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2014	05-IN	7.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2015	05-IN	6.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2016	05-IN	6.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	05-IN	6.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2018	05-IN	7.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	05-IN	6.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	05-IN	7.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	05-IN	7.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	05-IN	8.59	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2023	05-IN	7.46	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	05-IN	8.42	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
05-SS	10-Sep-2004	05-SS	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Nov-2004	05-SS	---	---	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
	08-Sep-2005	05-SS	---	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	05-SS	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2007	05-SS	0.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2008	05-SS	9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2009	05-SS	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	17-Sep-2009	05-SS DUP	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2010	05 (R) SS	10.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2011	05-SS	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2014	05-SS	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2015	05-SS	<1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	28-Sep-2015	25-SS	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2016	05-SS	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	28-Sep-2016	25-SS	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	05-SS	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	27-Sep-2017	25-SS	2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2018	05-SS	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	17-Sep-2018	25-SS	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	05-SS	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	17-Sep-2019	25-SS	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	23-Sep-2020	05-SS	<1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	23-Sep-2020	25-SS	<1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	05-SS	<1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	22-Sep-2021	25-SS	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	05-SS	0.78	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	29-Sep-2022	25-SS	0.71	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2023	05-SS	0.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	28-Sep-2023	25-SS	0.55	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	05-SS	1.45	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	10-Sep-2024	25-SS	1.34	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
06-SH	15-May-1985	06-SH	---	5.4	25	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	06-SH	---	3.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	06-SH	---	4.8	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	06-SH	---	3.5	19	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	06-SH	---	2.3	23	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	06-SH	---	3.1	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	06-SH	---	3	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	06-SH	---	2.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	06-SH	---	2.6	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	06-SH	---	2.8	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	06-SH	---	2.6	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	06-SH	---	2.7	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	06-SH	---	1.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	06-SH	---	2.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	06-SH	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	06-SH	---	3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	06-SH	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Apr-1990	06-SH	---	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	06-SH	---	3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	06-SH	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	06-SH	---	3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	06-SH	---	3.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	06-SH	---	7.8	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Nov-1994	06-SH	---	4.6	6	---	---	---	---	---	---	0.4	---	---	---	---	---	---
	28-Sep-1995	06-SH	---	---	5	---	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	06-SH	---	4.5	---	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	06-SH	---	---	5	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1996	06-SH	---	4.7	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	06-SH	---	4.9	8	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	03-Sep-1997	06-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	06-SH	---	4.4	16	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
(Duplicate)	15-Sep-1998	06-SH DUP	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
(Duplicate)	15-Sep-1998	06-SH DUP	---	3.9	8	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	---	---
	09-Sep-1999	06-SH	---	5.8	7	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	05-Sep-2000	06-SH	---	5.3	13	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	06-SH	---	4.5	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
(Duplicate)	06-Sep-2001	06-SH DUP	---	4.9	8	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
(Duplicate)	06-Sep-2001	06-SH DUP	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	04-Sep-2002	06-SH	---	6.2	8	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	0.003	< 0.1	---	---	< 0.1	---
(Duplicate)	04-Sep-2002	06-SH DUP	---	5.1	12	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	03-Sep-2003	06-SH	---	5.8	14	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
(Duplicate)	03-Sep-2003	06-SH DUP	---	5.9	8	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	14-Oct-2003	06-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	14-Oct-2003	06-SH DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	06-SH	---	5.4	10	< 0.0004	0.0005	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
(Duplicate)	08-Sep-2004	06-SH DUP	---	5.9	15	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	30-Sep-2004	06-SH	---	---	---	< 0.0004	0.0008	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	30-Oct-2004	06-SH	---	---	---	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	---	---
	07-Sep-2005	06-SH	---	5.4	8	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	07-Sep-2005	06-SH DUP	---	5.7	13	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	06-SH	5.8	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	07-Sep-2006	06-SH DUP	6	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2007	06-SH	5.3	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	05-Sep-2007	06-SH DUP	5.8	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	03-Sep-2008	06-SH	5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
(Duplicate)	03-Sep-2008	06-SH DUP	5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	09-Sep-2009	06-SH	5.5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
(Duplicate)	09-Sep-2009	06-SH DUP	7	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2010	06 SH	3.4	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
(Duplicate)	08-Sep-2010	SYLVITE 26	5.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	07-Sep-2011	06-SH	5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	07-Sep-2011	ZIRCON 26	6.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	06-SH	5.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	05-Sep-2012	SPINEL 25	5.9	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	25-Sep-2013	06-SH	5.6	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	25-Sep-2013	26-SH	5.3	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	17-Sep-2014	06-SH	7.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	06-SH	5.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2016	06-SH	5.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	26-Sep-2017	06-SH	5.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2018	06-SH	5.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2019	06-SH	4.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	06-SH	5.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	06-SH	5.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2022	06-SH	4.77	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	29-Sep-2023	06-SH	4.30	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	10-Sep-2024	06-SH	4.95	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
06-IN	15-May-1985	06-IN	---	3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	06-IN	---	2.4	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	06-IN	---	3	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	06-IN	---	2	37	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	06-IN	---	3.1	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1987	06-IN	---	3	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	06-IN	---	3	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	06-IN	---	2.2	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	06-IN	---	2.6	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	06-IN	---	2.8	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	06-IN	---	2.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	06-IN	---	1.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	06-IN	---	3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	06-IN	---	2.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	06-IN	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	06-IN	---	2.8	43	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	06-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	06-IN	---	2.5	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	06-IN	---	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	06-IN	---	2.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1991	06-IN	---	2.1	14	< 0.001	< 0.001	---	---	---	< 0.001	---	---	---	---	---	---	---
	05-Nov-1991	06-IN	---	2.6	< 0	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	06-IN	---	2.3	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	06-IN	---	3.2	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	06-IN	---	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	06-IN	---	3.6	25	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	06-IN	---	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	06-IN	---	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	06-IN	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	06-IN	---	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	06-IN	---	2.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	06-IN	---	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	06-IN	---	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	06-IN	---	1.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	06-IN	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	06-IN	---	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	06-IN	---	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	06-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	06-IN	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2008	06-IN	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2009	06-IN	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2010	06 IN	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2011	06-IN	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2012	06-IN	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	25-Sep-2013	06-IN	4.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
06(R)IN	17-Sep-2014	06(R)IN	6.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	06(R)IN	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2016	06(R)IN	6.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2017	06(R)IN	5.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2018	06(R)IN	5.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	06(R)IN	5.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	06(R)IN	6.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	06(R)IN	6.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2022	06(R)IN	7.22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2023	06(R)IN	5.84	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	06(R)IN	6.26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
07-SH	15-May-1985	07-SH	---	3.8	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	07-SH	---	2.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	07-SH	---	3.1	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	07-SH	---	2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	07-SH	---	8.3	28	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	07-SH	---	3	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	07-SH	---	2.6	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	07-SH	---	2.8	18	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	07-SH	---	3.2	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	07-SH	---	3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	07-SH	---	2.9	7	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	07-SH	---	2.2	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	07-SH	---	4.2	19	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	07-SH	---	3.9	11	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	07-SH	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	07-SH	---	4.2	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	07-SH	---	4	49	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	07-SH	---	4.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	07-SH	---	5	7	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1991	07-SH	---	3.7	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Nov-1991	07-SH	---	3.3	< 0	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	07-SH	---	3.6	60	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	07-SH	---	4.7	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	20-May-1993	07-SH	---	3.7	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	07-SH	---	2.6	23	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	07-SH	---	2.6	7	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	07-SH	---	3	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Nov-1994	07-SH	---	2.8	5	---	---	---	---	---	---	0.4	---	---	---	---	---	---
	28-Sep-1995	07-SH	---	---	5	---	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	07-SH	---	2.9	---	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	07-SH	---	---	15	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1996	07-SH	---	3.8	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	07-SH	---	2.9	6	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	03-Sep-1997	07-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	07-SH	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	15-Sep-1998	07-SH	---	2.6	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	---	---
(Duplicate)	15-Sep-1998	07-SH DUP	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
(Duplicate)	15-Sep-1998	07-SH DUP	---	2.6	5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	---	---
	09-Sep-1999	07-SH	---	3	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
(Duplicate)	09-Sep-1999	07-SH DUP	---	3	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	05-Sep-2000	07-SH	---	2.7	7	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
(Duplicate)	05-Sep-2000	07-SH DUP	---	2.3	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	07-SH	---	2.1	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
(Duplicate)	06-Sep-2001	07-SH DUP	---	2.4	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
(Duplicate)	06-Sep-2001	07-SH DUP	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	04-Sep-2002	07-SH	---	2.7	6	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	0.004	< 0.1	---	---	< 0.1	---
(Duplicate)	04-Sep-2002	07-SH DUP	---	2.7	8	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	03-Sep-2003	07-SH	---	2.5	8	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
(Duplicate)	03-Sep-2003	07-SH DUP	---	3.2	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	14-Oct-2003	07-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	07-SH	---	3	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
(Duplicate)	08-Sep-2004	07-SH DUP	---	2.9	17	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	07-Sep-2005	07-SH	---	3	6	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	07-Sep-2005	07-SH DUP	---	2.3	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	07-SH	2.7	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	07-Sep-2006	07-SH DUP	3.1	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2007	07-SH	2.9	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
(Duplicate)	05-Sep-2007	07-SH DUP	2.8	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	03-Sep-2008	07-SH	2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
(Duplicate)	03-Sep-2008	07-SH DUP	2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	09-Sep-2009	07-SH	2.7	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
(Duplicate)	09-Sep-2009	07-SH DUP	2.5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2010	07 SH	3	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
(Duplicate)	08-Sep-2010	SYLVITE 27	3.6	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	07-Sep-2011	07-SH	2.6	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	07-Sep-2011	ZIRCON 27	2.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	07-SH	2.6	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	05-Sep-2012	SPINEL 27	2.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	25-Sep-2013	07-SH	2.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	25-Sep-2013	27-SH	2.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
07-SH (continued)	17-Sep-2014	07-SH	3.1	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Duplicate)	17-Sep-2014	27-SH	3.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	07-SH	2.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	29-Sep-2015	27-SH	3.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2016	07-SH	3.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	27-Sep-2016	27-SH	2.5	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	26-Sep-2017	07-SH	3.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	26-Sep-2017	27-SH	3.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2018	07-SH	2.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	17-Sep-2018	27-SH	2.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	16-Sep-2019	07-SH	1.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	16-Sep-2019	27-SH	1.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	07-SH	1.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	22-Sep-2020	27-SH	2.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	07-SH	3.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	22-Sep-2021	27-SH	2.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2022	07-SH	2.48	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
(Duplicate)	28-Sep-2022	27-SH	3.34	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	29-Sep-2023	07-SH	2.46	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
(Duplicate)	29-Sep-2023	27-SH	2.47	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	10-Sep-2024	07-SH	2.64	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
(Duplicate)	10-Sep-2024	27-SH	2.66	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

AECOM

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
07-IN	15-May-1985	07-IN	---	4.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	07-IN	---	2.8	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	07-IN	---	3.3	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	07-IN	---	2.4	36	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	07-IN	---	3.8	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	07-IN	---	3.2	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	07-IN	---	2.5	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	07-IN	---	3.2	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	07-IN	---	3.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	07-IN	---	3.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	07-IN	---	2.8	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	07-IN	---	2.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	07-IN	---	3.9	21	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	07-IN	---	2.9	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	07-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	07-IN	---	3.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	07-IN	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	07-IN	---	3	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	07-IN	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	07-IN	---	3.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1991	07-IN	---	2.3	11	< 0.001	0.002	---	---	---	< 0.001	---	---	---	---	---	---	---
	15-Nov-1991	07-IN	---	2.4	< 0	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	07-IN	---	3.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	07-IN	---	2.7	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	20-May-1993	07-IN	---	2.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Nov-1993	07-IN	---	1.8	17	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-1994	07-IN	---	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	07-IN	---	1.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	07-IN	---	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	07-IN	---	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	07-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	07-IN	---	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	07-IN	---	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	07-IN	---	1.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	07-IN	---	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	07-IN	---	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	07-IN	---	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	07-IN	---	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	07-IN	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2007	07-IN	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2008	07-IN	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2009	07-IN	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2010	07 IN	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2011	07-IN	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2012	07-IN	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	25-Sep-2013	07-IN	2.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2014	07-IN	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	07-IN	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	07-IN	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2017	07-IN	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2018	07-IN	3.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2019	07-IN	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	07-IN	2.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	07-IN	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2022	07-IN	4.07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2023	07-IN	2.55	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	07-IN	2.57	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
07-SS	15-Feb-1985	07-SS	---	0.6	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1985	07-SS	---	3.4	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	07-SS	---	1.4	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	07-SS	---	2	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	07-SS	---	2.2	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	07-SS	---	1.6	48	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	07-SS	---	2.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	07-SS	---	2.2	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	07-SS	---	1.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	07-SS	---	2.4	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	07-SS	---	2.4	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	07-SS	---	2.4	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	07-SS	---	1.9	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	07-SS	---	1.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	07-SS	---	2.4	18	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	07-SS	---	1.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	07-SS	---	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	07-SS	---	2.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	07-SS	---	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	07-SS	---	1.7	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	07-SS	---	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	07-SS	---	2.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1991	07-SS	---	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Nov-1991	07-SS	---	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	14-May-1992	07-SS	---	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	07-SS	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	07-SS	---	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	07-SS	---	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-1997	07-SS	---	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Oct-1998	07-SS	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	07-SS	---	1.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	07-SS	---	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	07-SS	---	1.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	07-SS	---	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	07-SS	---	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	07-SS	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
07(R)SS	16-Sep-2014	07(R)SS	5.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	07(R)SS	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	07(R)SS	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2017	07(R)SS	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2018	07(R)SS	6.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2019	07(R)SS	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	23-Sep-2020	07(R)SS	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	07(R)SS	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2022	07(R)SS	3.58	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2023	07(R)SS	2.06	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	07(R)SS	1.79	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
08-SH	15-May-1985	08-SH	---	4.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	08-SH	---	2	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	08-SH	---	2.4	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	08-SH	---	2	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	08-SH	---	2.5	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	08-SH	---	2.6	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	08-SH	---	1.8	11	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	08-SH	---	2.3	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	08-SH	---	2.7	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	08-SH	---	2.4	11	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	08-SH	---	1.7	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	08-SH	---	1.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	08-SH	---	2.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	08-SH	---	1.9	23	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	08-SH	---	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	08-SH	---	2.5	13	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	08-SH	---	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	08-SH	---	1.9	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	08-SH	---	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	08-SH	---	2.2	60	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1991	08-SH	---	1.7	< 0	---	---	---	---	---	---	---	---	---	---	---	---	---
	13-May-1992	08-SH	---	1.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	08-SH	---	2.1	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	08-SH	---	1.8	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Nov-1993	08-SH	---	0.9	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	08-SH	---	1.3	6	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	31-May-1994	08-SH DUP	---	1.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	08-SH	---	1.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	22-Sep-1994	08-SH DUP	---	1.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Nov-1994	08-SH	---	1.1	5	---	---	---	---	---	---	< 0.2	---	---	---	---	---	---
	28-Sep-1995	08-SH	---	---	5	---	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	08-SH	---	1.1	---	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1996	08-SH	---	---	5	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	05-Sep-1996	08-SH	---	1.9	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	05-Sep-1996	08-SH DUP	---	---	5	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
(Duplicate)	05-Sep-1996	08-SH DUP	---	1.9	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1997	08-SH	---	1.4	8	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
(Duplicate)	05-Sep-1997	08-SH DUP	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	08-SH	---	---	---	---	---	---	---	---	< 0.0029	---	---	---	---	---	---	---
	15-Sep-1998	08-SH	---	1.4	< 5	< 0.0009	< 0.0009	< 0.0009	< 0.002	< 0.0009	---	---	---	---	---	---	---	---
	09-Sep-1999	08-SH	---	1.2	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
(Duplicate)	09-Sep-1999	08-SH DUP	---	---	7	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	05-Sep-2000	08-SH	---	1.2	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
(Duplicate)	05-Sep-2000	08-SH DUP	---	1	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	08-SH	---	1.2	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
	05-Sep-2002	08-SH	---	1.8	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	0.004	< 0.1	---	---	< 0.1	---
	04-Sep-2003	08-SH	---	1.1	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	09-Sep-2004	08-SH	---	1.2	15	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2005	08-SH	---	1.4	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	08-SH	1.7	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2007	08-SH	1.4	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	03-Sep-2008	08-SH	2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	09-Sep-2009	08-SH	3.3	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2010	8 SH	3.3	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2011	08-SH	2.3	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	08-SH	1.4	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	25-Sep-2013	08-SH	2.3	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	16-Sep-2014	08-SH	4.1	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	08-SH	1.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2016	08-SH	2.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	26-Sep-2017	08-SH	23.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2018	08-SH	2.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	16-Sep-2019	08-SH	1.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	08-SH	3.5	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	08-SH	3.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2022	08-SH	3.5	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	27-Sep-2023	08-SH	1.64	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	10-Sep-2024	08-SH	1.84	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
08-IN	15-May-1985	08-IN	---	0.2	25	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	08-IN	---	2.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	08-IN	---	2.8	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	08-IN	---	1.5	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	08-IN	---	2.6	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	08-IN	---	2.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	08-IN	---	2.6	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	08-IN	---	3	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	08-IN	---	1.8	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	08-IN	---	2.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	08-IN	---	3.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	08-IN	---	2.2	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	08-IN	---	2.7	30	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	08-IN	---	2.3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	08-IN	---	2.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	08-IN	---	2.7	22	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	08-IN	---	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	08-IN	---	2.8	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	08-IN	---	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	08-IN	---	2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	08-IN	---	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	08-IN	---	2.4	71	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-May-1991	08-IN	---	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Nov-1991	08-IN	---	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	08-IN	---	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-May-1993	08-IN	---	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Nov-1993	08-IN	---	1.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	08-IN	---	1.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	08-IN	---	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1996	08-IN	---	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1997	08-IN	---	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	08-IN	---	1.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	08-IN	---	1.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	08-IN	---	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	08-IN	---	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2002	08-IN	---	1.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2003	08-IN	---	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2004	08-IN	---	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2005	08-IN	---	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	08-IN	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2007	08-IN	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2008	08-IN	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2009	08-IN	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2010	8 IN	4.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2011	08-IN	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2012	08-IN	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	25-Sep-2013	08-IN	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2014	08-IN	4.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	08-IN	2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	08-IN	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2017	08-IN	2.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2018	08-IN	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2019	08-IN	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	08-IN	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	08-IN	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2022	08-IN	3.62	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2023	08-IN	1.80	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	08-IN	2.17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
08-SS	15-May-1985	08-SS	---	3.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	08-SS	---	1.7	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	08-SS	---	1.6	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	08-SS	---	0.6	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	08-SS	---	1.6	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	08-SS	---	1.4	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	08-SS	---	1.6	9	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	08-SS	---	1.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	08-SS	---	1.2	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	08-SS	---	2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	08-SS	---	1.8	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	08-SS	---	2.2	7	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	08-SS	---	0.4	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	08-SS	---	1.9	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	08-SS	---	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	08-SS	---	2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	08-SS	---	1.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	08-SS	---	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	08-SS	---	1.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-May-1991	08-SS	---	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Nov-1992	08-SS	---	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Nov-1993	08-SS	---	0.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	08-SS	---	0.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	08-SS	---	0.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Oct-1998	08-SS	---	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	08-SS	---	0.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	08-SS	---	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2003	08-SS	---	0.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2004	08-SS	---	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
09-SH [Decommissioned]	15-May-1985	09-SH [DECOM]	---	32.5	106	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	09-SH [DECOM]	---	31.3	81	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	09-SH [DECOM]	---	40	105	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	09-SH [DECOM]	---	44	82	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	09-SH [DECOM]	---	38	100	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	09-SH [DECOM]	---	38	110	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	09-SH [DECOM]	---	43	110	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	09-SH [DECOM]	---	46.5	128	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	09-SH [DECOM]	---	42	110	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	09-SH [DECOM]	---	41	120	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	09-SH [DECOM]	---	46.6	131	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	09-SH [DECOM]	---	47	28	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	09-SH [DECOM]	---	43	123	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	09-SH [DECOM]	---	45.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	09-SH [DECOM]	---	43.4	66	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	09-SH [DECOM]	---	44.5	109	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	09-SH [DECOM]	---	47.2	155	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Nov-1991	09-SH [DECOM]	---	49.8	114	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	09-SH [DECOM]	---	48.6	120	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-Aug-1992	09-SH [DECOM]	---	39.2	90	---	---	---	---	---	---	---	---	---	---	---	---	---
09-IN [Decommissioned]	15-May-1985	09-IN [DECOM]	---	16.2	56	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	09-IN [DECOM]	---	14	24	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Dec-1985	09-IN [DECOM]	---	14.8	50	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	09-IN [DECOM]	---	15	50	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	09-IN [DECOM]	---	17	44	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	09-IN [DECOM]	---	17.6	34	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	09-IN [DECOM]	---	18.2	47	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	09-IN [DECOM]	---	19.6	41	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	09-IN [DECOM]	---	17.8	44	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	09-IN [DECOM]	---	22	59	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	09-IN [DECOM]	---	17.6	58	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	09-IN [DECOM]	---	20	54	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	09-IN [DECOM]	---	20.1	54	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	09-IN [DECOM]	---	19.7	56	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	09-IN [DECOM]	---	19.3	40	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	09-IN [DECOM]	---	20.2	39	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	09-IN [DECOM]	---	22	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	09-IN [DECOM]	---	20.3	44	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	09-IN [DECOM]	---	22	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	09-IN [DECOM]	---	21.2	59	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	09-IN [DECOM]	---	21.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	09-IN [DECOM]	---	19.9	74	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-May-1991	09-IN [DECOM]	---	21.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
09-IN [Decommissioned]	06-Nov-1991	09-IN [DECOM]	---	21	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-Aug-1992	09-IN [DECOM]	---	20.6	30	---	---	---	---	---	---	---	---	---	---	---	---	---
09-PEAT	15-Nov-1987	09-PEAT	---	90	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	09-PEAT	---	60	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	09-PEAT	---	74	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1988	09-PEAT	---	70	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	09-PEAT	---	46.6	148	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	09-PEAT	---	69	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	09-PEAT	---	62.5	560	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	09-PEAT	---	62.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	09-PEAT	---	55.5	178	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	09-PEAT	---	57.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	09-PEAT	---	64.2	220	---	---	---	---	---	---	---	---	---	---	---	---	---
10-SH [Decommissioned]	15-May-1985	10-SH [DECOM]	---	5.7	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1985	10-SH [DECOM]	---	4.6	1	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	10-SH [DECOM]	---	5.4	23	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	10-SH [DECOM]	---	5	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	10-SH [DECOM]	---	4.9	11	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	10-SH [DECOM]	---	6	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	10-SH [DECOM]	---	4.8	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	10-SH [DECOM]	---	6.3	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	10-SH [DECOM]	---	5	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	10-SH [DECOM]	---	5.1	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	10-SH [DECOM]	---	4.2	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	10-SH [DECOM]	---	5.7	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	10-SH [DECOM]	---	4.7	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	10-SH [DECOM]	---	5.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	10-SH [DECOM]	---	5.5	38	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	10-SH [DECOM]	---	5.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	10-SH [DECOM]	---	5.2	40	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	10-SH [DECOM]	---	5.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	10-SH [DECOM]	---	5.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-May-1991	10-SH [DECOM]	---	4.4	27	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	10-SH [DECOM]	---	3.9	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Sep-1992	10-SH [DECOM]	---	4.3	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
10-IN [Decommissioned]	15-Dec-1985	10-IN [DECOM]	---	13	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1986	10-IN [DECOM]	---	4.4	25	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Jun-1986	10-IN [DECOM]	---	5.4	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1986	10-IN [DECOM]	---	4.8	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Oct-1986	10-IN [DECOM]	---	5.2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1987	10-IN [DECOM]	---	6.6	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1987	10-IN [DECOM]	---	5	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1987	10-IN [DECOM]	---	6.1	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Feb-1988	10-IN [DECOM]	---	5.4	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1988	10-IN [DECOM]	---	5.6	8	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1988	10-IN [DECOM]	---	4.6	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1988	10-IN [DECOM]	---	4.5	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1989	10-IN [DECOM]	---	5.6	18	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1989	10-IN [DECOM]	---	5.3	23	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1989	10-IN [DECOM]	---	6.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1989	10-IN [DECOM]	---	6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	10-IN [DECOM]	---	5.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	10-IN [DECOM]	---	5	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	10-IN [DECOM]	---	5.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	10-IN [DECOM]	---	5.5	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-May-1991	10-IN [DECOM]	---	8.3	44	< 0.001	< 0.001	---	---	---	< 0.001	---	---	---	---	---	---	---
	06-Nov-1991	10-IN [DECOM]	---	8.1	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	10-IN [DECOM]	---	4.8	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Sep-1992	10-IN [DECOM]	---	5.1	10	---	---	---	---	---	---	---	---	---	---	---	---	---
11-SH	17-May-1991	11-SH	---	10.6	35	< 0.001	< 0.001	---	---	---	< 0.001	---	---	---	---	---	---	---
	04-Nov-1991	11-SH	---	11.8	14.9	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	11-SH	---	12.5	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	11-SH	---	11.5	30	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	11-SH	---	12.1	17	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	11-SH	---	13.9	63	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	11-SH	---	12.4	32	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	11-SH	---	12	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Nov-1994	11-SH	---	12.8	37	---	---	---	---	---	---	0.3	---	---	---	---	---	---
(Duplicate)	02-Nov-1994	11-SH DUP	---	14.4	5	---	---	---	---	---	---	0.4	---	---	---	---	---	---
	28-Sep-1995	11-SH	---	14	43	---	< 0.001	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	11-SH	---	---	---	< 0.001	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1996	11-SH	---	---	29	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	05-Sep-1996	11-SH	---	13.8	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1997	11-SH	---	12.7	37	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	---	---	---	---	---	---	---	---
	05-Sep-1997	11-SH	---	---	---	---	---	---	---	---	< 0.0008	---	---	---	---	---	---	---
	09-Sep-1999	11-SH	---	17.2	38	0.0026	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2000	11-SH	---	13.5	47	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	11-SH	---	12.3	20	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
	05-Sep-2002	11-SH	---	12.7	34	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	0.012	< 0.1	---	---	< 0.1	---
	03-Sep-2003	11-SH	---	13.1	36	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	03-Sep-2003	11-SH	14.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	11-SH	---	16.7	44	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	07-Sep-2005	11-SH	---	14.4	37	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	11-SH	12.6	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	06-Sep-2007	11-SH	13.3	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	04-Sep-2008	11-SH	13	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	10-Sep-2009	11-SH	13	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	09-Sep-2010	11 SH	13.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2011	11-SH	13.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	06-Sep-2012	11-SH	13.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	11-SH	9.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	17-Sep-2014	11-SH	9.9	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	17-Sep-2014	31-SH	10.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	11-SH	11.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	29-Sep-2015	31-SH	10.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2016	11-SH	10.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	27-Sep-2016	31-SH	10.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	11-SH	8.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	27-Sep-2017	31-SH	9.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	11-SH	10.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	18-Sep-2018	31-SH	10.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2019	11-SH	9.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	17-Sep-2019	31-SH	9.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	21-Sep-2020	11-SH	8.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	21-Sep-2020	31-SH	8.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	11-SH	8.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
(Duplicate)	22-Sep-2021	31-SH	8.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	29-Sep-2022	11-SH	9.49	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
(Duplicate)	29-Sep-2022	31-SH	9.02	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	28-Sep-2023	11-SH	7.53	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
(Duplicate)	28-Sep-2023	31-SH	8.13	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	11-Sep-2024	11-SH	7.39	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
(Duplicate)	11-Sep-2024	31-SH	7.54	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
11-IN	17-May-1991	11-IN	---	9.6	36	< 0.001	< 0.001	---	---	---	< 0.001	---	---	---	---	---	---	---
	04-Nov-1991	11-IN	---	9.7	14.9	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	11-IN	---	9.3	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	11-IN	---	10.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	11-IN	---	10	41	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	11-IN	---	11.3	22	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	11-IN	---	10	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1996	11-IN	---	11	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1997	11-IN	---	10	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	11-IN	---	10.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	11-IN	---	10.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2000	11-IN	---	9.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	11-IN	---	9.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2002	11-IN	---	10.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Oct-2002	11-IN	10.3	10.8	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	< 0.5
	03-Sep-2003	11-IN	---	10.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	11-IN	10.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	11-IN	---	11.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	11-IN	---	9.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	11-IN	9.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2007	11-IN	9.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2008	11-IN	9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2009	11-IN	9.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2010	11 IN	10.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2011	11-IN	10.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2012	11-IN	11.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	11-IN	9.40	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2014	11-IN	11.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	11-IN	11.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	11-IN	13.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	11-IN	10.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	11-IN	10.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	11-IN	11.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2020	11-IN	10.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	11-IN	11.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	11-IN	12.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2023	11-IN	9.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	11-IN	12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11-SS	17-May-1991	11-SS	---	2.3	20	< 0.001	< 0.001	---	---	---	< 0.001	---	---	---	---	---	---	---
	12-May-1992	11-SS	---	1.7	60	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

AECOM

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
12-SH	17-May-1991	12-SH	---	2	11	< 0.001	< 0.001	---	---	---	< 0.001	---	---	---	---	---	---	---
	12-May-1992	12-SH	---	1.9	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	12-SH	---	2.4	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	12-SH	---	2.4	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	12-SH	---	1	20	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	12-SH	---	1.6	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	12-SH	---	1.8	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Nov-1994	12-SH	---	1.6	5	---	---	---	---	---	---	0.8	---	---	---	---	---	---
	28-Sep-1995	12-SH	---	---	12	---	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	12-SH	---	1.2	---	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1996	12-SH	---	---	5	< 0.0009	---	< 0.0009	< 0.0009	< 0.0009	< 0.0018	---	---	---	---	---	---	---
	05-Sep-1996	12-SH	---	1.8	---	---	< 0.0009	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	05-Sep-1996	12-SH DUP	---	1.8	5	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	05-Sep-1997	12-SH	---	1.7	5	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	05-Sep-1997	12-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	05-Sep-1997	12-SH DUP	---	1.4	11	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
(Duplicate)	05-Sep-1997	12-SH DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	12-SH	---	1.8	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	09-Sep-1999	12-SH	---	1.7	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2000	12-SH	---	1.7	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	12-SH	---	1.4	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
	04-Sep-2002	12-SH	---	2	< 5	< 0.0004	0.0005	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	0.007	< 0.1	---	---	< 0.1	---
	08-Oct-2002	12-SH	---	---	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	04-Sep-2003	12-SH	---	1.5	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	09-Sep-2004	12-SH	---	2.5	9	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2005	12-SH	---	1.9	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	12-SH	2.6	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2007	12-SH	1.3	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2008	12-SH	2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	10-Sep-2009	12-SH	2.3	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	09-Sep-2010	12 SH	2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	07-Sep-2011	12-SH	2.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	12-SH	2.1	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	12-SH	1.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	17-Sep-2014	12-SH	3.3	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	12-SH	2.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2016	12-SH	2.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	12-SH	2.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	12-SH	3.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	16-Sep-2019	12-SH	1.2	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	12-SH	2.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	12-SH	2.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2022	12-SH	2.95	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	28-Sep-2023	12-SH	2.85	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	11-Sep-2024	12-SH	3.21	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
12-IN	15-Jan-1990	12-IN	---	4	31	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Mar-1990	12-IN	---	4	29	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-May-1990	12-IN	---	2.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Aug-1990	12-IN	---	3	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Nov-1990	12-IN	---	2.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-May-1991	12-IN	---	2.1	11	< 0.001	< 0.001	---	---	---	< 0.001	---	---	---	---	---	---	---
	04-Nov-1991	12-IN	---	2.2	< 0	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	12-IN	---	2.3	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	12-IN	---	2.8	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	12-IN	---	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	12-IN	---	1.4	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	12-IN	---	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1996	12-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1997	12-IN	---	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	12-IN	---	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	12-IN	---	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2000	12-IN	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	12-IN	---	3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	12-IN	---	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2003	12-IN	---	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2004	12-IN	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Nov-2004	12-IN	---	---	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
	08-Sep-2005	12-IN	---	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	12-IN	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2007	12-IN	1.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2008	12-IN	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2009	12-IN	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2010	12 IN	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2011	12-IN	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2012	12-IN	4.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2014	12-IN	4.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	12-IN	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	12-IN	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	12-IN	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	12-IN	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2019	12-IN	2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	12-IN	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	12-IN	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2022	12-IN	3.29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2023	12-IN	2.97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	12-IN	4.05	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13-SH	04-Nov-1991	13-SH	---	1.8	< 0	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	13-SH	---	2.1	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	13-SH	---	1.9	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	13-SH	---	1.5	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	13-SH	---	1	11	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	13-SH	---	1.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	13-SH	---	---	7	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	13-SH	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Nov-1994	13-SH	---	2.8	5	---	---	---	---	---	---	0.6	---	---	---	---	---	---
	28-Sep-1995	13-SH	---	---	5	< 0.001	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	13-SH	---	4.5	---	---	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	13-SH	---	---	5	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1996	13-SH	---	3.2	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	13-SH	---	2.1	6	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1997	13-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	04-Sep-1997	13-SH DUP	---	2.1	9	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
(Duplicate)	04-Sep-1997	13-SH DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	13-SH	---	3.2	6	< 0.0008	0.002	< 0.0008	< 0.002	< 0.0008	< 0.0028	---	---	---	---	---	---	---
	09-Sep-1999	13-SH	---	4.3	6	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	05-Sep-2000	13-SH	---	3.7	11	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	13-SH	---	3.4	5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
	04-Sep-2002	13-SH	---	3.7	10	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	0.007	< 0.1	---	---	< 0.1	---
	04-Sep-2003	13-SH	---	3.3	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	09-Sep-2004	13-SH	---	3.8	14	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2005	13-SH	---	2.8	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	13-SH (Duplicate)	2.8	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2007	13-SH	2.2	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	03-Sep-2008	13-SH	2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	10-Sep-2009	13-SH	2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2010	13 SH	3.1	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	07-Sep-2011	13-SH	3	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	13-SH	2.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	13-SH	1.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	16-Sep-2014	13-SH	2.9	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	28-Sep-2015	13-SH	2.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	26-Sep-2016	13-SH	2.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	13-SH	3.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	13-SH	2.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	16-Sep-2019	13-SH	1.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	13-SH	1.5	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	21-Sep-2021	13-SH	2.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	29-Sep-2022	13-SH	2.96	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	28-Sep-2023	13-SH	8.39	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	10-Sep-2024	13-SH	6.56	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

AECOM

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
13-IN	17-May-1991	13-IN	---	2.4	29	< 0.001	< 0.001	---	---	---	< 0.001	---	---	---	---	---	---	---
	04-Nov-1991	13-IN	---	2.2	< 0	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-May-1992	13-IN	---	2	10	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Nov-1992	13-IN	---	2	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	13-IN	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	13-IN	---	1.2	12	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	13-IN	---	1.2	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	13-IN	---	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	13-IN	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	13-IN	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	13-IN	---	1.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	13-IN	---	1.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	13-IN DUP	---	2.4	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	13-IN	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	13-IN	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	13-IN	---	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2003	13-IN	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2004	13-IN	---	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2005	13-IN	---	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	13-IN	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2007	13-IN	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2008	13-IN	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2009	13-IN	1.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2010	13 IN	4.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2011	13-IN	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2012	13-IN	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	13-IN	1.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2014	13-IN	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2015	13-IN	2.7	---	---	---	---	---	---	---	---	---	---	---		---	---	---
	26-Sep-2016	13-IN	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	13-IN	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	13-IN	2.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2019	13-IN	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	13-IN	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2021	13-IN	3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	13-IN	3.16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2023	13-IN	2.50	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	13-IN	2.36	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13-SS	17-May-1991	13-SS	---	2	54	< 0.001	< 0.001	---	---	---	< 0.001	---	---	---	---	---	---	---
	13-May-1992	13-SS	---	2.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-May-1993	13-SS	---	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Nov-1993	13-SS	---	3	60	---	---	---	---	---	---	---	---	---	---	---	---	---
13(R)SS	10-Sep-2004	13(R)-SS	---	5.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2005	13(R)-SS	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	13(R)-SS	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Oct-2007	13(R)-SS	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2008	13(R)-SS	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2009	13(R)-SS	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2010	13 (R) SS	10.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	13(R)SS	<1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2014	13(R)SS	3.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2015	13(R)SS	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2016	13(R)SS	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	13(R)SS	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	13(R)SS	1.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2019	13(R)SS	0.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	13(R)SS	<1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2021	13(R)SS	1.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	13(R)SS	1.36	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Could not obtain sample	28-Sep-2023	13(R)SS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	13(R)SS	1.87	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14-SH	13-Nov-1993	14-SH	---	1.5	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	14-SH	---	2.3	6	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	14-SH	---	2.4	5	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Nov-1994	14-SH	---	1.6	5	---	---	---	---	---	---	0.2	---	---	---	---	---	---
	28-Sep-1995	14-SH	---	2.1	12	< 0.001	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	14-SH	---	---	---	---	---	---	---	---	< 0.001	---	---	---	---	---	---	---
(Duplicate)	28-Sep-1995	14-SH DUP	---	2	5	< 0.001	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
(Duplicate)	28-Sep-1995	14-SH DUP	---	---	---	---	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1996	14-SH	---	---	5	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	05-Sep-1996	14-SH	---	3.2	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-1997	14-SH	---	2.6	8	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	05-Sep-1997	14-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	14-SH	---	---	---	---	---	---	---	---	< 0.0029	---	---	---	---	---	---	---
	15-Sep-1998	14-SH	---	3	5	< 0.0009	< 0.0009	< 0.0009	< 0.002	< 0.0009	---	---	---	---	---	---	---	---
	05-Sep-2000	14-SH	---	3.4	11	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	14-SH	---	4.1	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
	05-Sep-2002	14-SH	---	5.5	18	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	04-Sep-2003	14-SH	---	4.7	14	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	09-Sep-2004	14-SH	---	5.2	14	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2005	14-SH	---	4.5	11	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	14-SH	3.8	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2007	14-SH	4.1	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	03-Sep-2008	14-SH	4	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	09-Sep-2009	14-SH	5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	09-Sep-2010	14-SH	4.7	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2011	14-SH	3	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	14-SH	3.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	25-Sep-2013	14-SH	3.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	16-Sep-2014	14-SH	6.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	14-SH	3.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2016	14-SH	4.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	26-Sep-2017	14-SH	4.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2018	14-SH	3.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	16-Sep-2019	14-SH	0.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	14-SH	2.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	14-SH	3.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2022	14-SH	3.18	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	27-Sep-2023	14-SH	2.84	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	11-Sep-2024	14-SH	3.38	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
15-SH	18-May-1993	15-SH	---	2.3	14	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Nov-1993	15-SH	---	12.5	55	---	---	---	---	---	---	---	---	---	---	---	---	---
	31-May-1994	15-SH	---	5.4	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-1994	15-SH	---	5.5	15	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Nov-1994	15-SH	---	5.5	13	---	---	---	---	---	---	0.5	---	---	---	---	---	---
	28-Sep-1995	15-SH	---	---	16	---	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	15-SH	---	5.1	---	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	28-Sep-1995	15-SH DUP	---	5.3	11	< 0.001	< 0.001	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
(Duplicate)	28-Sep-1995	15-SH DUP	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	15-SH	---	---	17	< 0.0004	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1996	15-SH	---	5.8	---	---	< 0.0004	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	15-SH	---	4.7	5	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1997	15-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	15-SH	---	4.4	7	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	09-Sep-1999	15-SH	---	4.9	8	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2000	15-SH	---	4.6	8	< 0.0009	< 0.0009	< 0.0009	< 0.002	< 0.0009	< 0.0029	---	---	---	---	---	---	---
	07-Sep-2001	15-SH	---	4.3	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
	05-Sep-2002	15-SH	---	5.1	17	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	03-Sep-2003	15-SH	---	5.1	11	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2004	15-SH	---	5.5	20	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	07-Sep-2005	15-SH	---	4.8	7	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	15-SH	4.5	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	06-Sep-2007	15-SH	4.8	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	04-Sep-2008	15-SH	5	---	---	---	---	---	---	---	---	---	---	---	---	< 0.1	---	---
	10-Sep-2009	15-SH	5.4	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	09-Sep-2010	15 SH	7.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2011	15-SH	6.1	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	06-Sep-2012	15-SH	6.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	15-SH	5.9	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
(Previously labeled 15-IN)	17-Sep-2014	15-SH	6.6	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	15-SH	5.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2016	15-SH	5.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	15-SH	5.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	15-SH	5.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	16-Sep-2019	15-SH	4.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	21-Sep-2020	15-SH	4.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	15-SH	5.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	29-Sep-2022	15-SH	5.38	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	28-Sep-2023	15-SH	4.56	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	11-Sep-2024	15-SH	5.04	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
15-IN	22-Sep-1994	15-IN	---	15	16	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	15-IN	---	6.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	15-IN	---	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	15-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	15-IN	---	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	15-IN	---	4.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2000	15-IN	---	4.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	15-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2002	15-IN	---	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	15-IN	---	5.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	15-IN	---	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	15-IN	---	5.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	15-IN	4.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2007	15-IN	4.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2008	15-IN	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2009	15-IN	6.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2010	15 IN	6.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2011	15-IN	5.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2012	15-IN	6.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	15-IN	6.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Previously labeled 15-S	17-Sep-2014	15-IN	6.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	15-IN	4.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	15-IN	5.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	15-IN	5.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	15-IN	5.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dry	16-Sep-2019	15-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2020	15-IN	4.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	15-IN	5.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	15-IN	4.98	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2023	15-IN	4.07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	15-IN	4.67	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15-SS	12-Nov-1993	15-SS	---	6.7	100	---	---	---	---	---	---	---	---	---	---	---	---	---
15(R)SS	10-Sep-2004	15(R)-SS	---	11.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Nov-2004	15(R)-SS	---	---	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
	08-Sep-2005	15(R)-SS	---	2.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	15(R)-SS	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2007	15(R)-SS	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2008	15(R)-SS	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2009	15(R)-SS	15.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2010	15 (R) SS	58.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2011	15 (R)-SS	30.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	15(R)SS	28.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15(2R)SS	16-Sep-2014	15(2R)SS	8.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2015	15(2R)SS	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2016	15(2R)SS	4.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	15(2R)SS	<20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	15(2R)SS	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2019	15(2R)SS	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	15(2R)SS	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	15(2R)SS	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	15(2R)SS	2.97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Could not obtain sample	28-Sep-2023	15(2R)SS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	15(2R)SS	2.36	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16-SH	28-Sep-1995	16-SH	---	4.2	10	< 0.001	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---
	28-Sep-1995	16-SH	---	---	---	---	---	---	---	---	< 0.001	---	---	---	---	---	---	---
	05-Sep-1996	16-SH	---	---	5	< 0.0009	---	< 0.0009	< 0.0009	< 0.0009	< 0.0018	---	---	---	---	---	---	---
	05-Sep-1996	16-SH	---	4.4	---	---	< 0.0009	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	16-SH	---	3	5	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	---	---	---	---	---	---	---	---
	04-Sep-1997	16-SH	---	---	---	---	---	---	---	---	< 0.0008	---	---	---	---	---	---	---
	15-Sep-1998	16-SH	---	---	---	---	---	---	---	---	< 0.0029	---	---	---	---	---	---	---
	15-Sep-1998	16-SH	---	3.5	7	< 0.0009	< 0.0009	< 0.0009	< 0.002	< 0.0009	---	---	---	---	---	---	---	---
	09-Sep-1999	16-SH	---	3.4	9	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	05-Sep-2000	16-SH	---	4	5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
(Duplicate)	05-Sep-2000	16-SH DUP	---	3.7	9	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	16-SH	---	3.1	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	< 0.1	---
	04-Sep-2002	16-SH	---	3.6	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	04-Sep-2003	16-SH	---	4.1	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2004	16-SH	---	3.8	23	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2005	16-SH	---	3.8	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	16-SH	3.5	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	05-Sep-2007	16-SH	3.4	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	03-Sep-2008	16-SH	4	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	10-Sep-2009	16-SH	3.8	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2010	16 SH	5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	07-Sep-2011	16-SH	4	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	16-SH	4.4	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	16-SH	3.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	16-Sep-2014	16-SH	5.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	28-Sep-2015	16-SH	3.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	26-Sep-2016	16-SH	4.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	16-SH	4.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	16-SH	4.3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	16-Sep-2019	16-SH	2.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	16-SH	3	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	21-Sep-2021	16-SH	3.4	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2022	16-SH	3.44	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	28-Sep-2023	16-SH	3.71	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	10-Sep-2024	16-SH	3.75	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

AECOM

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
16-IN	05-Sep-1996	16-IN	---	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	16-IN	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15-Sep-1998	16-IN	---	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	16-IN	---	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2000	16-IN	---	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	16-IN	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2002	16-IN	---	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2003	16-IN	---	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	16-IN	---	4.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2005	16-IN	---	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	16-IN	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2007	16-IN	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2008	16-IN	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2009	16-IN	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2010	16 IN	4.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2011	16-IN	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2012	16-IN	4.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	16-IN	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-2014	16-IN	5.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2015	16-IN	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2016	16-IN	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	16-IN	3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	16-IN	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dry	16-Sep-2019	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	16-IN	3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2021	16-IN	4.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2022	16-IN	3.07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dry	28-Sep-2023	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dry	10-Sep-2024	16-IN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17-SH	01-Nov-1994	17-SH	---	3.5	5	---	---	---	---	---	---	0.6	---	---	---	---	---	---
	28-Sep-1995	17-SH	---	---	5	---	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
	28-Sep-1995	17-SH	---	2.2	---	< 0.001	< 0.001	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	28-Sep-1995	17-SH DUP	---	2	5	< 0.001	---	< 0.001	---	---	< 0.001	---	---	---	---	---	---	---
(Duplicate)	28-Sep-1995	17-SH DUP	---	---	---	---	< 0.001	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	17-SH	---	---	5	< 0.0009	---	< 0.0009	< 0.0009	< 0.0009	< 0.0018	---	---	---	---	---	---	---
	04-Sep-1996	17-SH	---	3.4	---	---	< 0.0009	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	17-SH	---	1.6	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0008	---	---	---	---	---	---	---
	04-Sep-1997	17-SH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	17-SH	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	16-Sep-1998	17-SH	---	2.2	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	---	---
	09-Sep-1999	17-SH	---	2	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2000	17-SH	---	1.7	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	---	---	---	---	---
	06-Sep-2001	17-SH	---	1.7	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
	06-Sep-2001	17-SH	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	05-Sep-2002	17-SH	---	2.4	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0012	---	---	< 0.1	---	---	< 0.1	---
	03-Sep-2003	17-SH	---	2.2	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	08-Sep-2004	17-SH	---	2.9	13	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	< 0.0008	---	---	< 0.1	---	---	< 0.1	---
	07-Sep-2005	17-SH	---	2.5	< 5	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	07-Sep-2006	17-SH	2.1	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	06-Sep-2007	17-SH	1.6	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	---	---	< 0.10	---	---	< 0.10	---
	04-Sep-2008	17-SH	2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.1	< 0.1	---	< 0.1	---	---
	10-Sep-2009	17-SH	2.2	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
	09-Sep-2010	17 SH	2.2	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	< 0.10	---	---
	08-Sep-2011	17-SH	2.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	06-Sep-2012	17-SH	1.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	17-SH	1.8	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	17-Sep-2014	17-SH	3.6	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	17-SH	2.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2016	17-SH	2.6	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	17-SH	2.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	17-SH	2.5	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2019	17-SH	1.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	21-Sep-2020	17-SH	2.9	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	17-SH	2.7	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	29-Sep-2022	17-SH	2.79	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	28-Sep-2023	17-SH	2.72	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	11-Sep-2024	17-SH	2.42	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
17-IN	28-Sep-1995	17-IN	---	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1996	17-IN	---	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-1997	17-IN	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Sep-1998	17-IN	---	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-1999	17-IN	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2000	17-IN	---	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2001	17-IN	---	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05-Sep-2002	17-IN	---	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Sep-2003	17-IN	---	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2004	17-IN	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2005	17-IN	---	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07-Sep-2006	17-IN	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2007	17-IN	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04-Sep-2008	17-IN	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10-Sep-2009	17-IN	7.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09-Sep-2010	17 IN	5.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Sep-2011	17-IN	4.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06-Sep-2012	17-IN	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	17-IN	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2014	17-IN	4.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	17-IN	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	17-IN	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	17-IN	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	17-IN	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	17-IN	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2020	17-IN	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	17-IN	3.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	17-IN	4.38	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2023	17-IN	3.17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	17-IN	3.16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 4.5
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS			BTEX						SELECT HYDROCARBONS						
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Dissolved Organic Carbon (DOC) (mg/L)	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes-Total (mg/L)	Oil and Grease (mg/L)	PHC F1 (C6-C10) (mg/L)	PHC F1 (C6-C10) - BTEX (mg/L)	PHC F2 (C10-C16) (mg/L)	TVH (C5-C10) (mg/L)	TPH (C3-C10) (mg/L)	TEH (C11-C60) (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	0.024	0.0016	---	---	0.02	---	---	---	---	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			---	---	---	0.005	0.06	0.14	---	---	0.09	---	---	---	---	---	---	---
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	0.0050	0.024	0.0016	---	---	0.020	---	---	2.2	2.2	---	---	---
Alberta Tier 2 Aquatic Life Fine Groundwater Guideline (Fine/C			---	---	---	3.6/0.074	12000/0.021	---/41			---/2.9			---/9.8	---/9.8	---	---	---
M-5	01-Oct-2001	M-5	---	---	---	---	---	---	---	---	< 0.0012	---	---	---	---	---	---	---
	01-Oct-2001	M-5	---	1	< 5	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
	23-Sep-2002	M-5	---	0.6	< 5	< 0.0009	< 0.0009	< 0.0009	< 0.002	< 0.0009	< 0.002	---	---	---	---	---	< 0.1	---
	18-Oct-2003	M-5	---	11.8	< 5	< 0.0004	0.0011	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	---	---
	02-Dec-2003	M-5	---	---	---	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	---	---
	26-Oct-2004	M-5	---	1.2	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	---	---
	26-Nov-2004	M-5	---	---	---	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.0004	---	---	---	---	---	---	< 0.1	---
(Duplicate)	26-Nov-2004	M-5 DUP1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	24-Oct-2005	M-5	---	2.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Sep-2007	M-5	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Oct-2008	M-5	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2009	M-5	1.5	---	---	< 0.00050	< 0.00050	< 0.00050	---	---	< 0.00050	---	< 0.10	< 0.10	---	< 0.10	---	---
M-6	29-Sep-2010	M-6	1.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Dec-2011	M6	13.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
89-1	27-Mar-2006	89-1	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Jun-2006	89-1	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2006	89-1	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-Dec-2006	89-1	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
99-1	27-Mar-2006	99-1	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Jun-2006	99-1	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2006	99-1	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-Dec-2006	99-1	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
86-2	27-Jun-2006	86-2	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
86-3	27-Jun-2006	86-3	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
89-3	02-Oct-2001	89-3	---	---	< 5	---	---	---	---	---	---	---	---	---	---	---	---	---
	24-Sep-2002	89-3	---	0.6	22.0	< 0.0009	< 0.0009	< 0.0009	< 0.002	< 0.0009	< 0.002	---	---	---	---	---	< 0.1	---
	14-Oct-2003	89-3	---	9	22.0	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	---	---
	26-Oct-2004	89-3	---	0.9	< 5	< 0.0004	< 0.0004	< 0.0004	---	---	< 0.0008	---	---	< 0.1	---	---	---	---
	25-Oct-2005	89-3	---	1.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	13-Sep-2007	89-3	1.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08-Oct-2008	89-3	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	28-Sep-2010	89-3	7.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	14-Dec-2011	89-3	6.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	26-Sep-2013	89-3	1.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2014	89-3	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2015	PW	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2016	PW	1.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	27-Sep-2017	PW	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Sep-2018	89-3	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2019	89-3	0.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	21-Sep-2020	89-3	2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	22-Sep-2021	89-3	4.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2022	89-3	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	29-Sep-2023	89-3	1.34	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	89-3	1.94	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
QA/QC																		
Trip Blank	05-Sep-2012	SPINEL 1	< 1.0	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	SPINEL 18	< 1.0	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	05-Sep-2012	SPINEL 28	< 1.0	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	26-Sep-2013	TRIP BLANK	< 1.0	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	16-Sep-2014	TRIP BLANK	<1.0	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	29-Sep-2015	TRIP BLANK	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2016	TRIP BLANK	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	TRIP BLANK	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	19-Sep-2018	TRIP BLANK	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	16-Sep-2019	TRIP BLANK	<0.50	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	23-Sep-2020	TRIP BLANK	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	TRIP BLANK	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2022	TRIP BLANK	<0.50	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	29-Sep-2023	TRIP BLANK	<0.50	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	11-Sep-2024	TRIP BLANK	<0.50	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
Field Blank	25-Sep-2013	20-SH	< 1.0	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	16-Sep-2014	41-SH	3.5	---	---	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00071	---	< 0.10	< 0.10	---	---	---	---
	28-Sep-2015	FIELD BLANK 1	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	29-Sep-2015	FIELD BLANK 2	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	26-Sep-2016	10-SH	1.1	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2016	20-SH	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	10-SH	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	27-Sep-2017	20-SH	1.8	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	10-SH	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	18-Sep-2018	20-SH	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	16-Sep-2019	10-SH	<0.50	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	17-Sep-2019	20-SH	<0.50	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	21-Sep-2020	10-SH	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2020	20-SH	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	23-Sep-2020	30-SH	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	21-Sep-2021	10-SH	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	22-Sep-2021	20-SH	<1.0	---	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00071	---	<0.10	<0.10	---	---	---	---
	28-Sep-2022	10-SH	<0.50	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	29-Sep-2022	20-SH	<0.50	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.025	---	---	---	---
	29-Sep-2023	FIELD BLANK	<0.50	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	11-Sep-2024	10-SH	4.04	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---
	11-Sep-2024	20-SH	1.91	---	---	<0.00050	<0.00050	<0.00050	<0.00040	<0.00030	<0.00050	---	<0.10	<0.10	---	---	---	---

NOTES:

1: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Aesthetic Objective (AO)
2: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Maximum Acceptable Concentration (MAC)
3: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain for SH and IN wells, Coarse Grain for SS wells
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

Detection Limit is greater than the guideline
--- Guideline Row: No guideline for that parameter
--- Results: Parameter was not analyzed

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

AECOM

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
01-SH [Decommissioned]	04-Nov-1992	01-SH [DECOM]	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.00002
	10-Nov-1993	01-SH [DECOM]	---	---	---	< 0.000118	< 0.000118	< 0.000118	< 0.000118	< 0.000118	< 0.000118	< 0.000708
	31-May-1994	01-SH [DECOM]	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
01A-SH	22-Sep-1994	01A-SH	---	---	---	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.00005
	28-Sep-1995	01A-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	01A-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	05-Sep-1997	01A-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	01A-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	01A-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2000	01A-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Oct-2001	01A-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	11-Sep-2003	01A-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	01A-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	01A-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	06-Sep-2007	01A-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	01A-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	01A-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	01A SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	01A-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	01A-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	01A-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	01A-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2020	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	01A-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
01-IN [Decommissioned]	10-Nov-1993	01-IN [DECOM]	---	---	---	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0006
01A-IN	22-Sep-1994	01A-IN	---	---	---	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.00005
	28-Sep-1995	01A-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	01A-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	01A-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	01A-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	07-Sep-2001	01A-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2002	01A-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	01A-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	01A-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	01A-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	01A-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	06-Sep-2007	01A-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	01A-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	01A-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	01A IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	01A-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	01A-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	01A-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	01A-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2020	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	01A-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
02-SH [Decommissioned]	02-Dec-1991	02-SH [DECOM]	---	---	---	---	---	---	---	---	---	< 0.0001
	03-Nov-1992	02-SH [DECOM]	---	---	---	---	---	---	---	---	---	< 0.00002
	04-Nov-1992	02-SH [DECOM]	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.000113
03-SH	02-Dec-1991	03-SH	---	---	---	---	---	---	---	---	---	< 0.0001
	03-Nov-1992	03-SH	---	---	---	---	---	---	---	---	---	< 0.00002
	04-Nov-1992	03-SH	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.000113
	10-Nov-1993	03-SH	---	---	---	< 0.000108	< 0.000108	< 0.000108	< 0.000108	< 0.000108	< 0.000108	< 0.000648
	31-May-1994	03-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
(Duplicate)	31-May-1994	03-SH DUP	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
	21-Sep-1994	03-SH	---	---	---	---	---	---	---	---	---	< 0.00005
	22-Sep-1994	03-SH	---	---	---	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.000286
(Duplicate)	22-Sep-1994	03-SH DUP	---	---	---	< 0.0000478	< 0.0000478	< 0.0000478	< 0.0000478	< 0.0000478	< 0.0000478	< 0.000287
	28-Sep-1995	03-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	03-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-1997	03-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	15-Sep-1998	03-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
(Duplicate)	15-Sep-1998	03-SH DUP	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	03-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2000	03-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	03-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	03-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	03-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	09-Sep-2004	03-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2005	03-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	03-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	03-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	03-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	03-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	03-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	03-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	03-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	03-SH	< 0.000011	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	03-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	28-Sep-2016	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	03-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
03-IN	07-Sep-2006	03-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	03-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	03-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	03-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	03-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	03-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	03-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	03-IN	< 0.000011	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	03-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	28-Sep-2016	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	03-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

AECOM

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
04-SH	02-Dec-1991	04-SH	---	---	---	---	---	---	---	---	---	< 0.0001
	03-Nov-1992	04-SH	---	---	---	---	---	---	---	---	---	< 0.00002
	04-Nov-1992	04-SH	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.000113
	10-Nov-1993	04-SH	---	---	---	< 0.000103	< 0.000103	< 0.000103	< 0.000103	< 0.000103	< 0.000103	< 0.000618
	31-May-1994	04-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
	21-Sep-1994	04-SH	---	---	---	---	---	---	---	---	---	< 0.00005
	22-Sep-1994	04-SH	---	---	---	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.000284
	28-Sep-1995	04-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	04-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	03-Sep-1997	04-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	15-Sep-1998	04-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	04-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2000	04-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	04-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	06-Sep-2001	04-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	04-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	(0.000030-0.00019)
(Duplicate)	04-Sep-2002	04-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	08-Oct-2002	04-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	07-Sep-2003	04-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
(Duplicate)	11-Sep-2003	04-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	04-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
(Duplicate)	08-Sep-2004	04-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	04-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2005	04-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	04-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2006	04-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	04-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	05-Sep-2007	04-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	04-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
(Duplicate)	03-Sep-2008	04-SH DUP	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	04-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	09-Sep-2009	04-SH DUP	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	04 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	08-Sep-2010	SYLVITE 24	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	04-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	07-Sep-2011	ZIRCON 24	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	04-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	05-Sep-2012	SPINEL 22	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	04-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	26-Sep-2013	24-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	04-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2016	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	04-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
04-IN	08-Sep-2010	04 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000013	0.00003	< 0.000010	< 0.000010	0.000043
	13-Oct-2010	FLUORITE 3	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	14-Oct-2010	FLUORITE 14	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	04-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	17-Sep-2014	04-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2016	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	04-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
04-SS	26-Sep-2013	04-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	26-Sep-2013	24-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	04-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	16-Sep-2014	24-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2017	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	04-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
05-SH	02-Dec-1991	05-SH	---	---	---	---	---	---	---	---	---	< 0.0001
	03-Nov-1992	05-SH	---	---	---	---	---	---	---	---	---	< 0.00002
	04-Nov-1992	05-SH	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.000113
	10-Nov-1993	05-SH	---	---	---	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0006
	31-May-1994	05-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
	21-Sep-1994	05-SH	---	---	---	---	---	---	---	---	---	< 0.00005
	22-Sep-1994	05-SH	---	---	---	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.000284
	28-Sep-1995	05-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	05-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	03-Sep-1997	05-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	05-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	05-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2000	05-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	05-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	06-Sep-2001	05-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	05-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	04-Sep-2002	05-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	05-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
(Duplicate)	07-Sep-2003	05-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	05-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
(Duplicate)	08-Sep-2004	05-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	05-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2005	05-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	05-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	05-Sep-2007	05-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2008	05-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
(Duplicate)	05-Sep-2008	05-SH DUP	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	05-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	09-Sep-2009	05-SH DUP	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	05 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	08-Sep-2010	SYLVITE 25	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	05-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	07-Sep-2011	ZIRCON 25	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	05-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	05-Sep-2012	SPINEL 23	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	05-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	05-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	17-Sep-2014	25-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	28-Sep-2015	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	28-Sep-2016	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	28-Sep-2016	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	27-Sep-2017	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	17-Sep-2018	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	17-Sep-2019	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	22-Sep-2020	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	22-Sep-2021	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	29-Sep-2022	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	28-Sep-2023	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	05-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	10-Sep-2024	25-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
05-IN	16-Sep-1998	05-IN	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.0009
	09-Sep-1999	05-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	05-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	05-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	05-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	05-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	05-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	30-Sep-2004	05-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00005	< 0.00002	< 0.00002	---
	07-Sep-2005	05-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	05-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	05-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2008	05-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	05-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	05 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	05-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	05-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	05-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	26-Sep-2013	25-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	05-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	28-Sep-2016	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	05-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
05-SS	10-Sep-2004	05-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.0001	< 0.00002	< 0.00002	---
	30-Oct-2004	05-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.0003	0.00016	< 0.00002	< 0.00002	---
	26-Nov-2004	05-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00002	< 0.00002	< 0.00002	0.00005
(Duplicate)	26-Nov-2004	05-SS DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00002	< 0.00002	< 0.00002	0.00005
(Duplicate)	26-Nov-2004	05-SS DUP2	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
	18-Jan-2005	05-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00003	< 0.00002	< 0.00002	0.00005
(Duplicate)	18-Jan-2005	05-SS DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	0.00004
	03-Apr-2005	05-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
(Duplicate)	03-Apr-2005	05-SS DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
	27-May-2005	05-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
(Duplicate)	27-May-2005	05-SS DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.00002	0.00004
(Duplicate)	07-Sep-2005	05-SS DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	08-Sep-2005	05-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	17-Nov-2005	05-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	17-Nov-2005	05-SS DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	17-Nov-2005	05-SS DUP2	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	12-Apr-2006	05-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	12-Apr-2006	05-SS DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	05-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2006	05-SS DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2007	05-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000021	< 0.000020	< 0.000020	0.00002
(Duplicate)	07-Sep-2007	05-SS DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	15-Oct-2007	05-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	15-Oct-2007	05-SS DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	03-Sep-2008	05-SS DUP	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	04-Sep-2008	05-SS	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	17-Sep-2009	05-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	17-Sep-2009	05-SS DUP	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	05 (R) SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	09-Sep-2010	SYLVITE 22	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	05-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	08-Sep-2011	ZIRCON 22	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	05-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	16-Sep-2014	05-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	16-Sep-2014	25-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	28-Sep-2015	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	28-Sep-2016	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	28-Sep-2016	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	27-Sep-2017	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	17-Sep-2018	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	17-Sep-2019	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	23-Sep-2020	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	23-Sep-2020	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	22-Sep-2021	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	29-Sep-2022	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	28-Sep-2023	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	05-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	10-Sep-2024	25-SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
06-SH	22-Sep-1994	06-SH	---	---	---	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.000283
	28-Sep-1995	06-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	06-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	03-Sep-1997	06-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	15-Sep-1998	06-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
(Duplicate)	15-Sep-1998	06-SH DUP	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	06-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2000	06-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	06-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	06-Sep-2001	06-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	06-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	04-Sep-2002	06-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	06-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
(Duplicate)	03-Sep-2003	06-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	14-Oct-2003	06-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
(Duplicate)	14-Oct-2003	06-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	06-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
(Duplicate)	08-Sep-2004	06-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	30-Oct-2004	06-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	06-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2005	06-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	06-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2006	06-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	06-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	05-Sep-2007	06-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	06-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
(Duplicate)	03-Sep-2008	06-SH DUP	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	06-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	09-Sep-2009	06-SH DUP	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	06 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	08-Sep-2010	SYLVITE 26	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	06-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	07-Sep-2011	ZIRCON 26	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	06-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	05-Sep-2012	SPINEL 25	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	25-Sep-2013	06-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	25-Sep-2013	26-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	06-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	28-Sep-2016	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2017	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	06-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
06-IN	15-May-1991	06-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	02-Dec-1991	06-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	06-IN	---	---	---	< 0.000318	< 0.000318	< 0.000318	< 0.000318	< 0.000318	< 0.000318	< 0.00032
	03-Nov-1992	06-IN	---	---	---	---	---	---	---	---	---	< 0.00002
	04-Nov-1992	06-IN	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.000113
	10-Nov-1993	06-IN	---	---	---	< 0.000104	< 0.000104	< 0.000104	< 0.000104	< 0.000104	< 0.000104	< 0.000624
	15-Sep-1998	06-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	06-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	06-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	06-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.0001	< 0.00002	< 0.00002	< 0.00002	(0.00010-0.00026)
	23-May-2002	06-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	23-May-2002	06-IN DUP	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-2002	06-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	06-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	06-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	06-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	06-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	06-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	06-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	06 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	06-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	06-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	25-Sep-2013	06-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

AECOM

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
06(R)IN	17-Sep-2014	06(R)IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	28-Sep-2016	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2017	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	06(R)IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
07-SH	02-Dec-1991	07-SH	---	---	---	---	---	---	---	---	---	< 0.0001
	03-Nov-1992	07-SH	---	---	---	---	---	---	---	---	---	< 0.00002
	04-Nov-1992	07-SH	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.000113
	10-Nov-1993	07-SH	---	---	---	< 0.000111	< 0.000111	< 0.000111	< 0.000111	< 0.000111	< 0.000111	< 0.000666
	31-May-1994	07-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
	22-Sep-1994	07-SH	---	---	---	< 0.0000481	< 0.0000481	< 0.0000481	< 0.0000481	< 0.0000481	< 0.0000481	< 0.000289
	28-Sep-1995	07-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	07-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	03-Sep-1997	07-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	15-Sep-1998	07-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
(Duplicate)	15-Sep-1998	07-SH DUP	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	07-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	09-Sep-1999	07-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2000	07-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	05-Sep-2000	07-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	07-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	06-Sep-2001	07-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	07-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	04-Sep-2002	07-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	(0.00004-0.0002)
	08-Oct-2002	07-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	07-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
(Duplicate)	03-Sep-2003	07-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	07-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
(Duplicate)	08-Sep-2004	07-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	07-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2005	07-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	07-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2006	07-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	07-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	05-Sep-2007	07-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	07-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
(Duplicate)	03-Sep-2008	07-SH DUP	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	07-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	09-Sep-2009	07-SH DUP	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	07 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	08-Sep-2010	SYLVITE 27	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	07-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	07-Sep-2011	ZIRCON 27	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	07-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	05-Sep-2012	SPINEL 27	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	25-Sep-2013	07-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	<0.000050
(Duplicate)	25-Sep-2013	27-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	07-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	17-Sep-2014	27-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	29-Sep-2015	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	27-Sep-2016	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2017	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	26-Sep-2017	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	17-Sep-2018	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	17-Sep-2019	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	22-Sep-2020	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	22-Sep-2021	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	28-Sep-2022	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	29-Sep-2022	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	07-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	10-Sep-2024	27-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
07-IN	15-May-1991	07-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	02-Dec-1991	07-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	07-IN	---	---	---	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.00031
	03-Nov-1992	07-IN	---	---	---	---	---	---	---	---	---	< 0.00002
	04-Nov-1992	07-IN	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.000113
	10-Nov-1993	07-IN	---	---	---	< 0.000105	< 0.000105	< 0.000105	< 0.000105	< 0.000105	< 0.000105	< 0.00063
	15-Sep-1998	07-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	07-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	07-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	07-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	(0.000050-0.00021)
	09-May-2002	07-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	07-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	07-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	07-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	07-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	07-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	07-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000033	< 0.000020	< 0.000020	0.00003
	15-Oct-2007	07-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	15-Oct-2007	07-IN DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	07-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	07-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	07 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	07-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	07-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	25-Sep-2013	07-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	07-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2017	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	07-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
07-SS	04-Oct-1998	07-SS	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00036
07(R)SS	16-Sep-2014	07(R)SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	07(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	07(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2017	07(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	07(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	07(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	23-Sep-2020	07(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	07(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	07(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
08-SH	02-Dec-1991	08-SH	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	08-SH	---	---	---	< 0.000305	< 0.000305	< 0.000305	< 0.000305	< 0.000305	< 0.000305	< 0.00183
	13-May-1992	08-SH	---	---	---	---	---	---	---	---	---	< 0.00031
	03-Nov-1992	08-SH	---	---	---	---	---	---	---	---	---	< 0.00002
	04-Nov-1992	08-SH	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.000113
	10-Nov-1993	08-SH	---	---	---	< 0.000101	< 0.000101	< 0.000101	< 0.000101	< 0.000101	< 0.000101	< 0.000606
	31-May-1994	08-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
(Duplicate)	31-May-1994	08-SH DUP	---	---	---	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.000283
	22-Sep-1994	08-SH DUP	---	---	---	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.000284
	28-Sep-1995	08-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	05-Sep-1996	08-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
(Duplicate)	05-Sep-1996	08-SH DUP	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	05-Sep-1997	08-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	15-Sep-1998	08-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	08-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	09-Sep-1999	08-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2000	08-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	05-Sep-2000	08-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	08-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2002	08-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2003	08-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	09-Sep-2004	08-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2005	08-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	08-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	08-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	08-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	08-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	8 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	08-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	08-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	25-Sep-2013	08-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	<0.000050
	16-Sep-2014	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	29-Sep-2015	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2017	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	27-Sep-2023	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	08-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
08-IN	07-Sep-2006	08-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	08-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	08-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	08-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	8 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	08-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	08-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	25-Sep-2013	08-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	08-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2017	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	27-Sep-2023	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	08-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
09-SH [Decommissioned]	02-Dec-1991	09-SH [DECOM]	---	---	---	---	---	---	---	---	---	< 0.0001
	31-Aug-1992	09-SH [DECOM]	---	---	---	---	---	---	---	---	---	< 0.00002
09-IN [Decommissioned]	31-Aug-1992	09-IN [DECOM]	---	---	---	---	---	---	---	---	---	< 0.00002
10-SH [Decommissioned]	01-Sep-1992	10-SH [DECOM]	---	---	---	---	---	---	---	---	---	< 0.00002
10-IN [Decommissioned]	17-May-1991	10-IN [DECOM]	---	---	---	---	---	---	---	---	---	< 0.0001
	02-Dec-1991	10-IN [DECOM]	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	10-IN [DECOM]	---	---	---	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.00031
	01-Sep-1992	10-IN [DECOM]	---	---	---	---	---	---	---	---	---	< 0.00002
11-SH	17-May-1991	11-SH	---	---	---	---	---	---	---	---	---	< 0.0001
	02-Dec-1991	11-SH	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	11-SH	---	---	---	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.00031
	04-Nov-1992	11-SH	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.00002
	10-Nov-1993	11-SH	---	---	---	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0006
	31-May-1994	11-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
	22-Sep-1994	11-SH	---	---	---	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.0000474	< 0.00005
	28-Sep-1995	11-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	05-Sep-1996	11-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	05-Sep-1997	11-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	09-Sep-1999	11-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2000	11-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	11-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	(0.000030-0.00019)
	09-May-2002	11-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2002	11-SH	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00045
	03-Sep-2003	11-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	11-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	11-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	11-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	06-Sep-2007	11-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000026	< 0.000020	< 0.000020	0.00003
	16-Oct-2007	11-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	16-Oct-2007	11-SH DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	11-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	11-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	11 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	11-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	11-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	11-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	11-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	17-Sep-2014	31-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	29-Sep-2015	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	27-Sep-2016	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	27-Sep-2017	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
(Duplicate)	18-Sep-2018	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	17-Sep-2019	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2020	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	21-Sep-2020	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	22-Sep-2021	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	29-Sep-2022	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	28-Sep-2023	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	11-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
(Duplicate)	11-Sep-2024	31-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

AECOM

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
11-IN	17-May-1991	11-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	02-Dec-1991	11-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	11-IN	---	---	---	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.00031
	10-Nov-1993	11-IN	---	---	---	< 0.000103	< 0.000103	< 0.000103	< 0.000103	< 0.000103	< 0.000103	< 0.000618
	22-Sep-1994	11-IN	---	---	---	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.00005
	28-Sep-1995	11-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	05-Sep-1996	11-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	05-Sep-1997	11-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	11-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	11-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	11-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	11-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2002	11-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	11-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	11-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	11-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	11-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	06-Sep-2007	11-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000023	< 0.000020	< 0.000020	< 0.000020	0.00002
	16-Oct-2007	11-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	16-Oct-2007	11-IN DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	11-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	11-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	11 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	11-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	11-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	11-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	11-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000013	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2020	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	11-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
11-SS	17-May-1991	11-SS	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	11-SS	---	---	---	< 0.000309	< 0.000309	< 0.000309	< 0.000309	< 0.000309	< 0.000309	< 0.00031
12-SH	17-May-1991	12-SH	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	12-SH	---	---	---	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.000313	< 0.00031
	04-Nov-1992	12-SH	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.00002
	10-Nov-1993	12-SH	---	---	---	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0006
	31-May-1994	12-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
	22-Sep-1994	12-SH	---	---	---	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.00005
	28-Sep-1995	12-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	05-Sep-1996	12-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
(Duplicate)	05-Sep-1996	12-SH DUP	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	05-Sep-1997	12-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	05-Sep-1997	12-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	12-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	12-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2000	12-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	12-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	12-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2003	12-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	09-Sep-2004	12-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2005	12-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	12-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2007	12-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2008	12-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	12-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	12 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	12-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	12-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	12-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	12-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	12-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
12-IN	17-May-1991	12-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	02-Dec-1991	12-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	12-IN	---	---	---	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.00031
	04-Nov-1992	12-IN	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.00002
	10-Nov-1993	12-IN	---	---	---	< 0.000111	< 0.000111	< 0.000111	< 0.000111	< 0.000111	< 0.000111	< 0.000666
	28-Sep-1995	12-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	05-Sep-1996	12-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	05-Sep-1997	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	12-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2003	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	09-Sep-2004	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00016	< 0.00002	< 0.00002	---
	30-Sep-2004	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00006	< 0.00002	< 0.00002	---
	30-Oct-2004	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	---
	26-Nov-2004	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	0.00004
(Duplicate)	26-Nov-2004	12-IN DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004
	18-Jan-2005	12-IN DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
	03-Apr-2005	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00006	< 0.00002	< 0.00002	0.00006
(Duplicate)	03-Apr-2005	12-IN DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
	27-May-2005	12-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
(Duplicate)	27-May-2005	12-IN DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
(Duplicate)	07-Sep-2005	12-IN DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	08-Sep-2005	12-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	12-Apr-2006	12-IN DUP	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021
(Duplicate)	12-Apr-2006	12-IN DUP2	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021
	07-Sep-2006	12-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2006	12-IN DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2007	12-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	07-Sep-2007	12-IN DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	03-Sep-2008	12-IN DUP	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	05-Sep-2008	12-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	11-Sep-2009	12-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	11-Sep-2009	12-IN DUP	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	12 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	09-Sep-2010	SYLVITE 20	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	12-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	ZIRCON 20	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	12-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	06-Sep-2012	SPINEL 19	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	17-Sep-2014	12-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	12-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

AECOM

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
13-SH	12-May-1992	13-SH	---	---	---	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.00031
	04-Nov-1992	13-SH	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.00002
	10-Nov-1993	13-SH	---	---	---	< 0.000102	< 0.000102	< 0.000102	< 0.000102	< 0.000102	< 0.000102	< 0.000612
	31-May-1994	13-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
	22-Sep-1994	13-SH	---	---	---	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.00005
	28-Sep-1995	13-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	13-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-1997	13-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	04-Sep-1997	13-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	13-SH	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.0009
	09-Sep-1999	13-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2000	13-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	13-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	13-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2003	13-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	09-Sep-2004	13-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2005	13-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	13-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	13-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	13-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	13-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	13 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	13-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	13-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	13-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.00001	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	13-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2016	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2021	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	13-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
13-IN	17-May-1991	13-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	02-Dec-1991	13-IN	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	13-IN	---	---	---	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.000311	< 0.00031
	04-Nov-1992	13-IN	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.00002
(Duplicate)	04-Nov-1992	13-IN DUP	---	---	---	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.0000189	< 0.000113
	10-Nov-1993	13-IN	---	---	---	< 0.000104	< 0.000104	< 0.000104	< 0.000104	< 0.000104	< 0.000104	< 0.000624
	22-Sep-1994	13-IN	---	---	---	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.00005
	28-Sep-1995	13-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	13-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-1997	13-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	13-IN	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.0009
	09-Sep-1999	13-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	09-Sep-1999	13-IN DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	13-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	13-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	13-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2003	13-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	09-Sep-2004	13-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2005	13-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	13-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	13-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	13-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Oct-2008	13-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	21-Oct-2008	13-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00002	< 0.00001	< 0.00001	< 0.00001	< 0.00005
(Duplicate)	21-Oct-2008	13-IN DUP	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	13-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	13 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	13-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	13-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	13-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	13-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2016	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2021	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	13-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
13-SS	17-May-1991	13-SS	---	---	---	---	---	---	---	---	---	< 0.0001
	12-May-1992	13-SS	---	---	---	< 0.000314	< 0.000314	< 0.000314	< 0.000314	< 0.000314	< 0.000314	< 0.00188
	13-May-1992	13-SS	---	---	---	---	---	---	---	---	---	< 0.00031
	10-Nov-1993	13-SS	---	---	---	< 0.000099	< 0.000099	< 0.000099	< 0.000099	< 0.000099	< 0.000099	< 0.000594
13(R)SS	10-Sep-2004	13(R)-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	---
	30-Sep-2004	13(R)-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2005	13(R)-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	13(R)-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	16-Oct-2007	13(R)-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	13(R)-SS	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	17-Sep-2009	13(R)-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.00001	< 0.000010	< 0.000010	< 0.000050
	16-Oct-2009	13(R)-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Duplicate)	16-Oct-2009	13(R)-SS DUP	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	13 (R) SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	13 (R)-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	13(R)SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	13(R)SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	13(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2016	13(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	13(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	13(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	13(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	13(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2021	13(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	13(R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
Could not obtain sample	28-Sep-2023	13(R)SS	---	---	---	---	---	---	---	---	---	---
	10-Sep-2024	13(R)SS	---	---	---	---	---	---	---	---	---	---

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

AECOM

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
14-SH	12-May-1992	14-SH	---	---	---	< 0.000305	< 0.000305	< 0.000305	< 0.000305	< 0.000305	< 0.000305	< 0.00183
	10-Nov-1993	14-SH	---	---	---	< 0.000103	< 0.000103	< 0.000103	< 0.000103	< 0.000103	< 0.000103	< 0.000618
	31-May-1994	14-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
	22-Sep-1994	14-SH	---	---	---	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.0000472	< 0.00005
	28-Sep-1995	14-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
(Duplicate)	28-Sep-1995	14-SH DUP	---	---	---	---	---	---	---	---	---	< 0.00001
	05-Sep-1996	14-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	05-Sep-1997	14-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	15-Sep-1998	14-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	05-Sep-2000	14-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	14-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2002	14-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2003	14-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	09-Sep-2004	14-SH	< 0.00003	< 0.00003	< 0.00003	< 0.00003	< 0.00003	< 0.00003	< 0.00003	< 0.00003	< 0.00003	---
	08-Sep-2005	14-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	14-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	14-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	14-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	09-Sep-2009	14-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	14 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	14-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	14-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	25-Sep-2013	14-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	14-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2017	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2018	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	27-Sep-2023	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	14-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
15-SH	10-Nov-1993	15-SH	---	---	---	< 0.000106	< 0.000106	< 0.000106	< 0.000106	< 0.000106	< 0.000106	< 0.000636
	31-May-1994	15-SH	---	---	---	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000016	< 0.000096
	22-Sep-1994	15-SH	---	---	---	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.00005
	28-Sep-1995	15-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
(Duplicate)	28-Sep-1995	15-SH DUP	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	15-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-1997	15-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	15-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	15-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2000	15-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	07-Sep-2001	15-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2002	15-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	15-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	15-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	15-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	15-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	06-Sep-2007	15-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	15-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	15-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	15 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	15-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	15-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	15-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Previously labeled 15-IN)	17-Sep-2014	15-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2020	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	15-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
15-IN	22-Sep-1994	15-IN	---	---	---	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.0000476	< 0.00005
	28-Sep-1995	15-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	15-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-1997	15-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	15-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	15-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	15-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	15-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2002	15-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	15-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	15-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	18-Jan-2005	15-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
	07-Sep-2005	15-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	15-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	06-Sep-2007	15-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	15-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	15-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	15 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	15-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	15-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	15-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
(Previously labeled 15-SH)	17-Sep-2014	15-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
Dry	16-Sep-2019	15-IN	---	---	---	---	---	---	---	---	---	---
	21-Sep-2020	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	22-Sep-2021	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	15-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
15-SS	10-Nov-1993	15-SS	---	---	---	< 0.000115	< 0.000115	< 0.000115	< 0.000115	< 0.000115	< 0.000115	< 0.00069
15(R)SS	10-Sep-2004	15(R)-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00012	< 0.00002	< 0.00002	---
	30-Sep-2004	15(R)-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	---
	30-Oct-2004	15(R)-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	0.00009	< 0.00002	< 0.00002	---
	26-Nov-2004	15(R)-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
(Duplicate)	26-Nov-2004	15(R)-SS DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
	18-Jan-2005	15(R)-SS	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
(Duplicate)	18-Jan-2005	15(R)-SS DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
	08-Sep-2005	15(R)-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000028	< 0.000020	< 0.000020	0.00003
	06-Oct-2005	15(R)-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000042	< 0.000020	< 0.000020	0.00004
(Duplicate)	06-Oct-2005	15(R)-SS DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000039	< 0.000020	< 0.000020	0.00004
	17-Nov-2005	15(R)-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	17-Nov-2005	15(R)-SS DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	17-Nov-2005	15(R)-SS DUP2	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	12-Apr-2006	15(R)-SS DUP	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	12-Apr-2006	15(R)-SS DUP2	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	15(R)-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2007	15(R)-SS	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	15(R)-SS	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	17-Sep-2009	15(R)-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	15 (R) SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	15 (R)-SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	15(R)SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	15(R)SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

AECOM

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
15(2R)SS	16-Sep-2014	15(2R)SS	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	15(2R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2016	15(2R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	15(2R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	15(2R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	15(2R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	15(2R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	15(2R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	15(2R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
Could not obtain sample	28-Sep-2023	15(2R)SS	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	15(2R)SS	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
16-SH	28-Sep-1995	16-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	05-Sep-1996	16-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-1997	16-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	15-Sep-1998	16-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	16-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2000	16-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
(Duplicate)	05-Sep-2000	16-SH DUP	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	16-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	16-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2003	16-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	16-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2005	16-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	16-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	16-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	16-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	16-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	16 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	16-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	16-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	16-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	16-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2016	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2021	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	10-Sep-2024	16-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
16-IN	05-Sep-1996	16-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-1997	16-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	15-Sep-1998	16-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	16-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	16-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	16-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2002	16-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	04-Sep-2003	16-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	16-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2005	16-IN	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021	< 0.000021
	07-Sep-2006	16-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	05-Sep-2007	16-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	03-Sep-2008	16-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	16-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	08-Sep-2010	16 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	07-Sep-2011	16-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	16-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	16-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	16-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	16-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2016	16-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	16-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	16-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
Dry	16-Sep-2019	16-IN	---	---	---	---	---	---	---	---	---	---
	22-Sep-2020	16-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	21-Sep-2021	16-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	16-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
Dry	28-Sep-2023	16-IN	---	---	---	---	---	---	---	---	---	---
Dry	10-Sep-2024	16-IN	---	---	---	---	---	---	---	---	---	---
17-SH	28-Sep-1995	17-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
(Duplicate)	28-Sep-1995	17-SH DUP	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00009
	04-Sep-1996	17-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-1997	17-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	17-SH	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	17-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2000	17-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	17-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2002	17-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	17-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	17-SH	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	17-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	17-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	06-Sep-2007	17-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	17-SH	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	17-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	17 SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	17-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	17-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	17-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	17-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2020	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	17-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
17-IN	28-Sep-1995	17-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	(0.00001-0.00009)
	04-Sep-1996	17-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	04-Sep-1997	17-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	16-Sep-1998	17-IN	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0009
	09-Sep-1999	17-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Sep-2000	17-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	06-Sep-2001	17-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	05-Sep-2002	17-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	03-Sep-2003	17-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	08-Sep-2004	17-IN	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	07-Sep-2005	17-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	07-Sep-2006	17-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	06-Sep-2007	17-IN	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	04-Sep-2008	17-IN	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	10-Sep-2009	17-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	09-Sep-2010	17 IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	08-Sep-2011	17-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	17-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
(Duplicate)	06-Sep-2012	SPINEL 20	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	17-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	<0.000050
	17-Sep-2014	17-IN	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	17-Sep-2019	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2020	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2023	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	17-IN	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
M-5	01-Oct-2001	M-5	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	23-Sep-2002	M-5	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00018
	18-Oct-2003	M-5	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.00002	---
	02-Dec-2003	M-5	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	---
(Duplicate)	02-Dec-2003	M-5 DUP1	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	---
(Duplicate)	02-Dec-2003	M-5 DUP2	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	< 0.00000002	---
	26-Oct-2004	M-5	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00003	< 0.00002	< 0.00002	---
	26-Nov-2004	M-5	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
(Duplicate)	26-Nov-2004	M-5 DUP1	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
	24-Oct-2005	M-5	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	12-Sep-2007	M-5	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000033	0.000072	< 0.000020	< 0.000020	**0.0001**
	16-Oct-2007	M-5	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
(Duplicate)	16-Oct-2007	M-5 DUP1	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	08-Oct-2008	M-5	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	11-Sep-2009	M-5	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
M-6	29-Sep-2010	M-6	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Dec-2011	M6	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
89-3	24-Sep-2002	89-3	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00045
	14-Oct-2003	89-3	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	26-Oct-2004	89-3	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---
	25-Oct-2005	89-3	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	13-Sep-2007	89-3	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
	08-Oct-2008	89-3	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00005
	28-Sep-2010	89-3	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	14-Dec-2011	89-3	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	26-Sep-2013	89-3	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	89-3	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	PW	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2016	PW	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	PW	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	89-3	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2019	89-3	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	<0.000030
	21-Sep-2020	89-3	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	<0.000031
	22-Sep-2021	89-3	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	89-3	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	89-3	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	89-3	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
QA/QC												
Field Blank	05-Sep-2012	SPINEL 17	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	06-Sep-2012	SPINEL 24	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	25-Sep-2013	20-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	41-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	17-Sep-2014	42-SH	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	28-Sep-2015	FIELD BLANK 1	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	29-Sep-2015	FIELD BLANK 2	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	26-Sep-2016	10-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	28-Sep-2016	20-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	10-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	20-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	10-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	18-Sep-2018	20-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	10-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	17-Sep-2019	20-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2020	10-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2020	20-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	23-Sep-2020	30-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	21-Sep-2021	10-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	20-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	10-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2022	20-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	29-Sep-2023	Field Blank	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	10-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	11-Sep-2024	20-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
Trip Blank	05-Sep-2012	SPINEL 1	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	SPINEL 13	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	SPINEL 18	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	SPINEL 21	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	SPINEL 26	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	SPINEL 28	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	SPINEL 5	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	05-Sep-2012	SPINEL 9	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	26-Sep-2013	TRIP BLANK	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	16-Sep-2014	TRIP BLANK	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000050
	29-Sep-2015	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	28-Sep-2016	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	27-Sep-2017	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	19-Sep-2018	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050
	16-Sep-2019	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	23-Sep-2020	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	22-Sep-2021	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
	28-Sep-2022	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030
Not available	29-Sep-2023	TRIP BLANK	---	---	---	---	---	---	---	---	---	---
	11-Sep-2024	TRIP BLANK	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030

Table 4.6
VEOLIA, Swan Hills Treatment Centre
Historical Groundwater Monitoring Results: PCB Aroclors

AECOM

			PCB AROCLORS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Aroclor 1016 (mg/L)	Aroclor 1221 (mg/L)	Aroclor 1232 (mg/L)	Aroclor 1242 (mg/L)	Aroclor 1248 (mg/L)	Aroclor 1254 (mg/L)	Aroclor 1260 (mg/L)	Aroclor 1262 (mg/L)	Aroclor 1268 (mg/L)	Total PCBs (mg/L)
Alberta Tier 2 Potable Groundwater Guideline[3]			---	---	---	---	---	---	---	---	---	**0.000094**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	---	---	---	---	---	---	---	---	---
PCB 1254 Spike 0.1 ug/L	01-Sep-2012	SPINEL 12	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.00004	< 0.000010	< 0.000010	< 0.000010	< 0.000010
	01-Sep-2012	SPINEL 4	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000023	< 0.000010	< 0.000010	< 0.000010	< 0.000010
PCB 1254 Spike 0.2 ug/L	01-Sep-2012	SPINEL 11	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000088	0.000026	< 0.000010	< 0.000010	**0.000114**
	01-Sep-2012	SPINEL 3	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000061	< 0.000010	< 0.000010	< 0.000010	0.000061
PCB 1254 Spike 0.5 ug/L	01-Sep-2012	SPINEL 10	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000206	0.000041	< 0.000010	< 0.000010	**0.000247**
	01-Sep-2012	SPINEL 2	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000079	< 0.000010	< 0.000010	< 0.000010	0.000079
PCB 1260 Spike 0.1 ug/L	01-Sep-2012	SPINEL 16	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.00008	< 0.000010	< 0.000010	0.00008
	01-Sep-2012	SPINEL 8	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000086	< 0.000010	< 0.000010	0.000086
PCB 1260 Spike 0.2 ug/L	01-Sep-2012	SPINEL 15	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000143	< 0.000010	< 0.000010	**0.000143**
	01-Sep-2012	SPINEL 7	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000101	< 0.000010	< 0.000010	**0.000101**
PCB 1260 Spike 0.5 ug/L	01-Sep-2012	SPINEL 14	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000465	< 0.000010	< 0.000010	**0.000465**
	01-Sep-2012	SPINEL 6	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000286	< 0.000010	< 0.000010	**0.000286**
PCB 1254 Spike 0.1 µg/L	18-Sep-2014	51-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000287	< 0.000020	< 0.000020	< 0.000020	**0.00029**
PCB 1260 Spike 0.1 µg/L	18-Sep-2014	52-SH	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000167	< 0.000020	< 0.000020	**0.00017**
PCB 1254 Spike 0.1 µg/L	29-Sep-2015	51-SH	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000287	<0.000020	<0.000020	<0.000020	**0.00029**
PCB 1260 Spike 0.1 µg/L	29-Sep-2015	52-SH	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000167	<0.000020	<0.000020	**0.00017**
PCB 1254 Spike 0.1 µg/L	28-Sep-2016	51-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000170	<0.000010	<0.000010	<0.000010	0.00017
PCB 1260 Spike 0.1 µg/L	28-Sep-2016	52-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000500	<0.000010	<0.000010	0.0005
PCB 1254 Spike 0.1 µg/L	28-Sep-2017	51-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00138	<0.000010	<0.000010	<0.000010	0.00138
PCB 1260 Spike 0.1 µg/L	28-Sep-2017	52-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00104	<0.000010	<0.000010	0.00104
PCB 1254 Spike 0.1 µg/L	19-Sep-2018	51-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000827	<0.000010	<0.000010	<0.000010	0.000827
PCB 1260 Spike 0.1 µg/L	19-Sep-2018	52-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000610	<0.000010	<0.000010	0.00061
PCB 1254 Spike 0.1 µg/L	17-Sep-2019	51-SH	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00007	<0.000781	<0.00002	<0.00002	**0.000781**
PCB 1260 Spike 0.1 µg/L	17-Sep-2019	52-SH	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000573	<0.00008	<0.00002	<0.00002	**0.000573**
PCB 1254 Spike 0.1 µg/L	23-Sep-2020	51-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000052	<0.000010	<0.000010	<0.000010	0.000052
PCB 1260 Spike 0.1 µg/L	23-Sep-2020	52-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000061	<0.000010	<0.000010	0.000061
PCB 1254 Spike 1.0 µg/L	22-Sep-2021	51-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00102	<0.000010	<0.000010	<0.000010	**0.00102**
PCB 1260 Spike 1.0 µg/L	22-Sep-2021	52-SH	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000978	<0.000010	<0.000010	**0.000978**
PCB 1254 Spike 1.0 µg/L	28-Sep-2022	51-SH	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000761	<0.000070	<0.000050	<0.000050	**0.000761**
PCB 1260 Spike 1.0 µg/L	29-Sep-2022	52-SH	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000060	0.000724	<0.000050	<0.000050	**0.000724**
PCB 1254 Spike 1.0 µg/L	2-Oct-2023	51-SH	<0.000050	<0.000050	<0.000050	0.0011	<0.000050	0.000996	0.000997	<0.000050	<0.000050	**0.00309**
PCB 1260 Spike 1.0 µg/L	2-Oct-2023	52-SH	<0.000050	<0.000050	<0.000050	0.000962	<0.000050	0.000879	0.000945	<0.000050	<0.000050	**0.00279**
PCB 1254 Spike 1.0 µg/L	12-Sep-2024	51-SH	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000673	0.000702	<0.000050	<0.000050	**0.00138**
PCB 1260 Spike 1.0 µg/L	12-Sep-2024	52-SH	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000654	0.000726	<0.000050	<0.000050	**0.00138**

NOTES:

3: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain for SH and IN wells, Coarse Grain for SS wells
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

Detection Limit is greater than the guideline
--- Guideline Row: No guideline for that parameter
--- Results: Parameter was not analyzed

Table 5.1
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicatiors, etc.)

AECOM

			GENERAL				INDICATORS			CATIONS, ANIONS AND ION BALANCE					NITROGEN PARAMETERS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	pH	EC (µs/cm)	Total Hardness as $CaCO_3$ (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	TDS (calculated) (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			**7.0-10.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**---**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1**	**10**
Alberta Tier 2 Potable Groundwater Guideline[3]			**6.5 - 8.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**1**	**10**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**6.5 - 8.5**	**---**	**---**	**---**	**120**	**Variable**	**500**	**---**	**---**	**---**	**200**	**---**	**Variable**	**3**
01-SH [Decommissioned]	15-May-1985	01-SH [DECOM]	7.81	492	268.2	273	1.6	8.4	280	77	18.4	1.75	8.3	332.8	0.014	0.02
	15-Jun-1985	01-SH [DECOM]	7.15	640	333.1	340	1.5	1.8	350	---	24.5	2.22	---	414.5	< 0.003	< 0.003
	15-Sep-1985	01-SH [DECOM]	7.53	539	265.3	295	1.5	6.9	295	76	18.3	2.05	8.4	359.6	< 0.003	0.037
	15-May-1986	01-SH [DECOM]	7.86	530	287.2	291	0.6	6.7	300	79	21.8	1.79	7.7	354.7	0.004	0.026
	15-Aug-1986	01-SH [DECOM]	7.26	534	277.3	279	1	4.9	285	77	20.6	1.78	7.6	340.1	< 0.003	0.005
	15-Oct-1986	01-SH [DECOM]	7.92	560	297.2	310	0.9	5.6	315	82	22.4	2.08	8.6	377.9	< 0.003	0.007
	15-May-1987	01-SH [DECOM]	7.4	538	280.3	296	0.8	6	290	79.7	19.7	1.85	7.75	360.8	< 0.003	0.049
	15-Sep-1987	01-SH [DECOM]	7.56	508	273.1	273	1.1	6.3	280	76	20.2	1.54	6.7	332.8	0.004	0.034
	15-Nov-1987	01-SH [DECOM]	7.78	609	267.7	273	0.7	5.2	285	73	20.7	1.68	7	332.8	< 0.003	0.05
		01-SH +95CI	7.77	580.76	297.19	306.66	1.32	6.94	312.49	79.36	22.02	2	8.22	373.8	0.0068	0.038
		01-SH -95CI	7.41	519.24	269.34	277.79	0.83	4.57	283.07	75.56	19.45	1.72	7.29	338.6	0.0021	0.014
		01-SH MAX	7.92	640	333.1	340	1.6	8.4	350	82	24.5	2.22	8.6	414.5	0.014	0.05
		01-SH MEAN	7.59	550	283.27	292.22	1.078	5.76	297.78	77.46	20.73	1.86	7.76	356.2	0.0044	0.026
		01-SH MIN	7.15	492	265.3	273	0.6	1.8	280	73	18.3	1.54	6.7	332.8	0.003	0.003
		01-SH N	9	9	9	9	9	9	9	8	9	9	8	9	9	9
		01-SH SD	0.28	47.08	21.31	22.1	0.37	1.81	22.52	2.74	1.96	0.22	0.67	26.9	0.0036	0.018
01-IN [Decommissioned]	15-Feb-1985	01-IN [DECOM]	7.56	1080	518.7	408	3.2	176	**680**	151	34.3	5.5	48	497.4	0.014	0.095
	15-Jun-1985	01-IN [DECOM]	7.95	1000	463.2	401	3.6	170	**630**	128	34.8	5.35	46.7	488.8	0.003	0.045
	15-Dec-1985	01-IN [DECOM]	7.61	1120	401.3	349	4.75	182	**600**	109	31.3	5.7	53	425.4	0.057	0.021
	15-May-1986	01-IN [DECOM]	7.7	996	496.2	435	1	131	**640**	144	33.1	5.55	46.5	530.3	< 0.003	0.184
	15-Aug-1986	01-IN [DECOM]	7.71	1035	479.4	412	2.3	148	**625**	144	29	5.1	40	502.2	< 0.003	0.004
	15-Oct-1986	01-IN [DECOM]	8.1	1040	488.3	446	1.7	150	**670**	141	33	5.45	50	543.7	0.004	0.012
	15-May-1987	01-IN [DECOM]	8.05	942	456.5	436	2.2	92	**580**	134	29.6	4.98	41	532	< 0.003	0.84
	15-Sep-1987	01-IN [DECOM]	7.75	982	495.8	451	2.1	131	**630**	144	33	5.26	42.4	549.8	< 0.003	0.66
	15-Nov-1987	01-IN [DECOM]	7.85	1000	507.4	449	1.7	122	**640**	146	34.6	5.25	42.5	547.3	< 0.003	0.74
		01-IN +95CI	7.93	1056.78	501.44	442.15	3.26	163.6	652.99	146.2	33.91	5.5	48.44	539.1	0.022	0.52
		01-IN -95CI	7.68	986.56	455.62	399.4	1.75	125.73	612.57	129.54	31.14	5.2	42.7	486.9	0.0013	0.06
		01-IN MAX	8.1	1120	518.7	451	4.75	182	680	151	34.8	5.7	53	549.8	0.057	0.84
		01-IN MEAN	7.81	1021.67	478.53	420.78	2.51	144.67	632.78	137.89	32.52	5.35	45.57	513	0.01	0.29
		01-IN MIN	7.56	942	401.3	349	1	92	580	109	29	4.98	40	425.4	0.003	0.004
		01-IN N	9	9	9	9	9	9	9	9	9	9	9	9	9	9
		01-IN SD	0.19	53.74	35.07	32.72	1.15	28.98	30.93	12.78	2.12	0.23	4.39	39.9	0.018	0.35
01-SS [Decommissioned]	17-Feb-1985	01-SS [DECOM]	---	---	168.3	298	---	---	360	---	---	---	---	363.3	0.007	0.47
	15-Jun-1985	01-SS [DECOM]	7.49	580	135.8	268	1	36	340	43.6	6.5	7.3	78.6	326.7	< 0.003	0.006
	15-Jul-1985	01-SS [DECOM]	7.87	434	101.2	217	1.5	36.2	285	33.1	4.5	6.7	67	264	0.008	0.053
	15-Dec-1985	01-SS [DECOM]	7.62	530	110.5	237	1.21	42.5	320	35	5.6	7.4	73	288.9	< 0.003	0.008
	15-May-1986	01-SS [DECOM]	7.65	584	154.9	286	0.6	35.2	350	48.8	8	7.25	75	348.6	< 0.003	0.003
	15-Aug-1986	01-SS [DECOM]	7.67	588	130.8	268	0.9	37.1	335	42.6	5.9	7	74	326.7	0.006	0.019
	15-Oct-1986	01-SS [DECOM]	8	560	148.3	276	0.9	30	340	46.8	7.6	7.4	68	336.4	0.004	0.003
	15-Feb-1987	01-SS [DECOM]	7.57	601	---	---	0.7	38.8	---	52	9.3	7.25	70	---	---	---
	15-Sep-1987	01-SS [DECOM]	7.87	579	172.9	290	1.3	32.3	350	55	8.6	7.55	70	353.5	< 0.003	0.003
	15-Nov-1987	01-SS [DECOM]	7.95	600	167.5	295	0.7	27	360	52	9.1	7.35	71.5	359.6	0.009	0.53
		01-SS +95CI	7.86	596.16	160.18	288.45	1.18	38.057	353.11	50.41	8.33	7.41	74.29	351.6	0.0067	0.26
		01-SS -95CI	7.62	527.4	126.53	252.66	0.78	31.97	322.45	40.46	6.13	7.08	69.51	307.8	0.0035	0.019
		01-SS MAX	8	601	172.9	298	1.5	42.5	360	55	9.3	7.55	78.6	363.3	0.009	0.53
		01-SS MEAN	7.74	561.78	143.36	270.56	0.98	35.01	337.78	45.43	7.23	7.24	71.9	329.7	0.0051	0.12
		01-SS MIN	7.49	434	101.2	217	0.6	27	285	33.1	4.5	6.7	67	264	0.003	0.003
		01-SS N	9	9	9	9	9	9	9	9	9	9	9	9	9	9
		01-SS SD	0.18	52.62	25.76	27.4	0.3	4.66	23.47	7.61	1.69	0.25	3.65	33.5	0.0024	0.22

Table 5.1
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicatiors, etc.)

AECOM

			GENERAL				INDICATORS			CATIONS, ANIONS AND ION BALANCE					NITROGEN PARAMETERS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	pH	EC (µs/cm)	Total Hardness as $CaCO_3$ (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	TDS (calculated) (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			**7.0-10.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**---**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1**	**10**
Alberta Tier 2 Potable Groundwater Guideline[3]			**6.5 - 8.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**1**	**10**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**6.5 - 8.5**	**---**	**---**	**---**	**120**	**Variable**	**500**	**---**	**---**	**---**	**200**	**---**	**Variable**	**3**
02-SH [Decommissioned]	16-Feb-1985	02-SH [DECOM]	---	---	215.6	205	---	---	210	---	---	---	---	249.9	0.006	0.004
	18-Feb-1985	02-SH [DECOM]	---	---	193.1	206	---	---	202	---	---	---	---	251.1	< 0.003	0.003
	15-May-1985	02-SH [DECOM]	7.91	391	203.9	209	0.4	4	215	59	13.7	0.97	4.3	254.8	< 0.003	0.004
	15-Sep-1985	02-SH [DECOM]	7.87	381	188.9	207	0.4	3.4	205	55	12.5	1.12	4.3	252.3	< 0.003	0.003
	15-Dec-1985	02-SH [DECOM]	7.72	410	202.6	202	0.6	4	210	57	14.6	1.05	3.9	246.2	0.006	0.006
	15-Feb-1986	02-SH [DECOM]	7.56	400	---	---	0.2	4	---	60.9	15.4	1.23	4.5	---	---	---
	15-Jun-1986	02-SH [DECOM]	7.29	400	215.6	208	1.1	3.4	215	60.4	15.7	0.93	4.6	253.6	< 0.003	0.004
	15-Aug-1986	02-SH [DECOM]	7.11	414	213.8	210	0.5	5	220	60	15.5	1.43	5.4	256	< 0.003	0.027
	15-Oct-1986	02-SH [DECOM]	7.76	380	203.8	200	0.7	3.7	215	57	14.9	1	3.8	243.8	0.004	0.01
	15-May-1987	02-SH [DECOM]	7.84	381	200.1	202	0.2	3.7	210	55	15.2	1	4.1	246.2	< 0.003	0.003
	15-Sep-1987	02-SH [DECOM]	7.88	370	191	200	0.8	3.5	200	55	13	0.95	3.7	243.8	< 0.003	0.009
	15-Nov-1987	02-SH [DECOM]	7.71	375	202.6	202	1.2	4.3	215	56	15.2	0.98	4	246.2	< 0.003	0.003
		02-SH +95CI	7.83	399.59	208.38	206.77	0.82	4.2	214.3	58.99	15.26	1.16	4.57	252.06	0.0043	0.011
		02-SH -95CI	7.5	380.81	197.26	202.5	0.4	3.6	206.97	56.07	13.88	0.97	3.95	246.83	0.0029	0.0027
		02-SH MAX	7.91	414	215.6	210	1.2	5	220	60.9	15.7	1.43	5.4	256	0.006	0.027
		02-SH MEAN	7.67	390.2	202.82	204.64	0.61	3.9	210.64	57.53	14.57	1.066	4.26	249.45	0.0036	0.0069
		02-SH MIN	7.11	370	188.9	200	0.2	3.4	200	55	12.5	0.93	3.7	243.8	0.003	0.003
		02-SH N	10	10	11	11	10	10	11	10	10	10	10	11	11	11
		02-SH SD	0.27	15.14	9.41	3.61	0.34	0.49	6.2	2.36	1.12	0.16	0.5	4.42	0.0012	0.0071
02-IN [Decommissioned]	16-Feb-1985	02-IN [DECOM]	---	---	301.7	314	---	---	370	---	---	---	---	382.8	< 0.003	0.003
	18-Feb-1985	02-IN [DECOM]	---	---	295.2	318	---	---	381	---	---	---	---	387.6	0.021	0.01
	15-May-1985	02-IN [DECOM]	8.01	585	255	309	2.1	24.3	340	76	15.8	4.36	24.9	376.7	0.054	0.024
	15-Sep-1985	02-IN [DECOM]	7.63	616	269.1	313	1.6	27.5	350	80	16.8	4.15	24.7	381.5	0.004	0.01
	15-Feb-1986	02-IN [DECOM]	7.55	640	---	---	0.9	36	---	86.1	21	4.02	27.5	---	---	---
	15-Jun-1986	02-IN [DECOM]	7.67	660	314.3	319	1.9	40	385	89	22.3	3.91	27.5	388.9	< 0.003	0.032
	15-Aug-1986	02-IN [DECOM]	7.35	681	305.2	314	1.3	52.5	390	89	20.1	3.95	26.5	382.8	< 0.003	0.013
	15-Oct-1986	02-IN [DECOM]	7.96	660	303.5	320	1	48.5	400	86	21.5	3.9	27	390.1	0.007	0.003
	15-May-1987	02-IN [DECOM]	7.74	665	308.1	318	0.8	50.5	390	87	22	4	30	387.6	< 0.003	0.003
	15-Sep-1987	02-IN [DECOM]	7.88	661	307.3	325	1.5	48.8	390	89	20.6	3.8	27.6	396.2	< 0.003	0.003
	15-Nov-1987	02-IN [DECOM]	7.79	656	302.2	322	0.2	42.4	385	85	21.8	3.7	27.8	392.5	< 0.003	0.51
		02-IN +95CI	7.87	666.37	307.89	320.13	1.644	47.82	390	88.15	21.74	4.1	28.1	390.24	0.021	0.16
		02-IN -95CI	7.59	627.86	284.46	314.27	0.87	34.52	366.2	82.31	18.69	3.85	26.01	383.1	0.00029	0.037
		02-IN MAX	8.01	681	314.3	325	2.1	52.5	400	89	22.3	4.36	30	396.2	0.054	0.51
		02-IN MEAN	7.73	647.11	296.16	317.2	1.26	41.17	378.1	85.23	20.21	3.98	27.06	386.67	0.01	0.061
		02-IN MIN	7.35	585	255	309	0.2	24.3	340	76	15.8	3.7	24.7	376.7	0.003	0.003
		02-IN N	9	9	10	10	9	9	10	9	9	9	9	10	10	10
		02-IN SD	0.21	29.47	18.93	4.73	0.59	10.18	19.19	4.47	2.34	0.19	1.6	5.77	0.016	0.16
03-SH	18-Feb-1985	03-SH	---	---	298.8	284	---	---	316	---	---	---	---	346.2	< 0.003	0.085
	15-May-1985	03-SH	7.86	516	284.4	289	0.6	12	300	81	19.9	1.23	7.1	352.3	< 0.003	0.041
	15-Sep-1985	03-SH	7.65	551	280.7	291	0.8	11	300	80	19.6	1.26	6.6	354.7	< 0.003	0.082
	15-Jun-1986	03-SH	7.32	570	316.6	287	2.4	16.8	315	87.3	23.9	1.08	7	349.9	< 0.003	0.13
	15-Aug-1986	03-SH	7.53	567	296.8	278	1.4	17	305	82	22.3	1.25	6.2	338.9	< 0.003	0.084
	15-Oct-1986	03-SH	7.91	550	299.7	284	1.6	18	315	83	22.4	1.21	6.2	346.2	0.006	0.113
	15-May-1987	03-SH	7.62	554	302.2	273	1.3	26.7	310	83	23	1.11	7	332.8	< 0.003	0.107
	15-Sep-1987	03-SH	7.76	560	295.6	286	2.1	26.6	315	82	22	1.21	7	348.6	< 0.003	0.044
	15-Nov-1987	03-SH	7.72	567	312.2	276	2.5	36.8	335	87	23	1.05	7.8	336.4	< 0.003	0.048
		03-SH +95CI	7.8	566.37	306.07	287.12	2.08	26.68	319.31	85	23.06	1.23	7.23	345	0.004	0.1
		03-SH -95CI	7.54	542.38	291.04	279.1	1.1	14.55	305.36	81.32	20.96	1.12	6.5	340.23	0.0027	0.061
		03-SH MAX	7.91	570	316.6	291	2.5	36.8	335	87.3	23.9	1.26	7.8	354.7	0.006	0.13
		03-SH MEAN	7.67	554.38	298.56	283.11	1.59	20.61	312.33	83.16	22.01	1.18	6.86	345.11	0.0033	0.082
		03-SH MIN	7.32	516	280.7	273	0.6	11	300	80	19.6	1.05	6.2	332.8	0.003	0.041
		03-SH N	8	8	9	9	8	8	9	8	8	8	8	9	9	9
		03-SH SD	0.19	17.31	11.5	6.13	0.7	8.75	10.678	2.65	1.51	0.082	0.53	7.48	0.001	0.032

Table 5.1
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicatiors, etc.)

AECOM

			GENERAL				INDICATORS			CATIONS, ANIONS AND ION BALANCE					NITROGEN PARAMETERS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	pH	EC (µs/cm)	Total Hardness as $CaCO_3$ (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	TDS (calculated) (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			**7.0-10.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**---**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1**	**10**
Alberta Tier 2 Potable Groundwater Guideline[3]			**6.5 - 8.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**1**	**10**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**6.5 - 8.5**	**---**	**---**	**---**	**120**	**Variable**	**500**	**---**	**---**	**---**	**200**	**---**	**Variable**	**3**
03-IN	16-Feb-1985	03-IN	---	---	397.1	352	---	---	**540**	---	---	---	---	429.1	< 0.003	0.82
	18-Feb-1985	03-IN	---	---	526.5	349	---	---	**670**	---	---	---	---	425.4	< 0.003	0.28
	15-May-1985	03-IN	8.09	852	307.9	309	4.2	163	**540**	95	17.1	4.65	62	376.7	0.13	1.81
	15-Sep-1985	03-IN	7.64	788	350.1	328	3.1	107	475	103	22.5	3.7	33.7	399.8	0.04	0.36
	15-Dec-1985	03-IN	7.82	890	392.7	360	3	128	**530**	110	28.6	4.08	32.1	438.8	0.008	1.02
	15-Feb-1986	03-IN	7.96	820	---	---	3	147	---	106	32.1	4.25	29.7	---	---	---
	15-Jun-1986	03-IN	7.46	910	408.6	341	4.7	156	**550**	117	28.2	3.6	27.3	415.7	0.014	0.61
	15-Aug-1986	03-IN	7.73	959	442.7	334	2.9	176	**585**	128	29.8	3.95	29.1	407.1	0.007	0.67
	15-Oct-1986	03-IN	7.69	930	474.2	345	3.6	172	**600**	135	33.2	4	31	420.6	0.09	0.27
	15-May-1987	03-IN	7.54	888	472	343	2.6	149	**560**	133	33.9	3.95	27	418.1	< 0.003	0.059
	15-Sep-1987	03-IN	7.7	920	471.2	351	4.4	180	**600**	133	33.7	3.9	27	427.9	< 0.003	0.016
	15-Nov-1987	03-IN	7.9	987	511.5	345	1.2	210	**650**	145	36.2	4.06	29.5	420.6	< 0.003	0.36
		03-IN +95CI	7.87	932.29	472.18	349.74	3.9	176.61	605.77	130.76	33.15	4.19	39.34	426.33	0.053	0.87
		03-IN -95CI	7.63	856.51	392.28	333.35	2.64	140.99	539.68	110.24	25.91	3.83	26.34	406.36	0.0022	0.27
		03-IN MAX	8.09	987	526.5	360	4.7	210	670	145	36.2	4.65	62	438.8	0.13	1.81
		03-IN MEAN	7.75	894.4	432.23	341.55	3.27	158.8	572.73	120.5	29.53	4.04	32.84	416.35	0.028	0.57
		03-IN MIN	7.46	788	307.9	309	1.2	107	475	95	17.1	3.6	27	376.7	0.003	0.016
		03-IN N	10	10	11	11	10	10	11	10	10	10	10	11	11	11
		03-IN SD	0.19	61.13	67.6	13.86	1.02	28.74	55.92	16.56	5.85	0.29	10.48	16.89	0.043	0.51
04-SH	18-Feb-1985	04-SH	---	---	326.6	337	---	---	347	---	---	---	---	410.8	< 0.003	0.053
	15-May-1985	04-SH	7.92	601	313.5	320	3.2	34.5	370	89	22.1	2.28	19.5	390.1	0.017	0.43
	15-Sep-1985	04-SH	8.11	627	299.4	320	1.3	19	340	86	20.5	2.01	12.3	390.1	< 0.003	0.169
	15-Jun-1986	04-SH	7.37	640	311.9	322	1.8	23.7	350	86.9	23	2.2	10.4	392.5	< 0.003	0.17
	15-Aug-1986	04-SH	7.3	632	314.2	316	1	19	335	85	24.7	2.09	9.2	385.2	< 0.003	0.161
	15-Oct-1986	04-SH	7.99	610	330	328	1	15.5	355	91	24.9	2.2	8.8	399.8	0.004	0.26
	15-May-1987	04-SH	7.79	569	312.9	309	0.4	14.2	330	85	24.4	1.73	8	376.7	< 0.003	0.115
	15-Sep-1987	04-SH	7.76	606	324.8	328	0.9	16.4	342	90.2	24.1	2.03	8.7	400	< 0.003	0.07
	15-Nov-1987	04-SH	7.63	603	326.6	327	1.1	11.6	345	89	25.3	1.85	8.8	398.6	< 0.003	0.033
		04-SH +95CI	7.93	626.48	324.22	328.3	1.93	24.2	353.67	89.39	24.76	2.18	13.34	400.21	0.0077	0.24
		04-SH -95CI	7.53	595.52	311.31	317.7	0.75	14.28	338.33	86.14	22.49	1.92	8.08	387.3	0.0016	0.082
		04-SH MAX	8.11	640	330	337	3.2	34.5	370	91	25.3	2.28	19.5	410.8	0.017	0.43
		04-SH MEAN	7.73	611	317.77	323	1.34	19.24	346	87.77	23.63	2.05	10.71	393.76	0.0047	0.16
		04-SH MIN	7.3	569	299.4	309	0.4	11.6	330	85	20.5	1.73	8	376.7	0.003	0.033
		04-SH N	8	8	9	9	8	8	9	8	8	8	8	9	9	9
		04-SH SD	0.29	22.34	9.88	8.11	0.85	7.16	11.75	2.35	1.64	0.19	3.8	9.89	0.0046	0.12
04-SS	16-Feb-1985	04-SS	---	---	228	233	---	---	270	---	---	---	---	284	< 0.003	0.003
	18-Feb-1985	04-SS	---	---	206.7	237	---	---	268	---	---	---	---	288.9	< 0.003	0.003
	15-Dec-1985	04-SS	7.47	490	217.5	243	0.7	18.5	270	61	15.8	2.45	14.8	296.2	0.005	0.017
	15-Feb-1986	04-SS	7	480	---	---	0.01	22	---	64.2	16.4	3.26	19	---	---	---
	15-Jun-1986	04-SS	7.02	490	218.3	231	1.9	25	275	60.5	16.3	3.5	20.7	281.6	< 0.003	0.003
	15-Aug-1986	04-SS	6.97	485	214	222	0.4	25.6	265	59.1	16.1	3.54	20.2	270.6	< 0.003	0.003
	15-Oct-1986	04-SS	7.5	480	215	233	0.7	23.6	280	60	15.8	3.47	21	284	< 0.003	0.033
	15-May-1987	04-SS	7.2	453	213.8	229	0.3	24.6	270	59	16.1	3.62	21.7	279.2	< 0.003	0.22
	15-Sep-1987	04-SS	8.04	471	208.1	248	0.6	25.6	275	58.7	15	3.54	20.4	302	< 0.003	0.003
	15-Nov-1987	04-SS	7.35	478	214.6	232	0.7	23.1	275	59	16.3	3.45	21.2	282.8	< 0.003	0.016
		04-SS +95CI	7.57	486.73	219.15	239.23	1.05	25.15	274.99	61.45	16.29	3.62	21.4	291.53	0.0037	0.08
		04-SS -95CI	7.07	470.02	211.08	229.22	0.28	21.85	269.01	58.93	15.66	3.091	18.35	279.42	0.0028	0.013
		04-SS MAX	8.04	490	228	248	1.9	25.6	280	64.2	16.4	3.62	21.7	302	0.005	0.22
		04-SS MEAN	7.32	478.38	215.11	234.22	0.66375	23.5	272	60.19	15.98	3.35	19.88	285.48	0.0032	0.033
		04-SS MIN	6.97	453	206.7	222	0.01	18.5	265	58.7	15	2.45	14.8	270.6	0.003	0.003
		04-SS N	8	8	9	9	8	8	9	8	8	8	8	9	9	9
		04-SS SD	0.36	12.06	6.18	7.66	0.56	2.38	4.58	1.82	0.45	0.38	2.2	9.27	0.00067	0.071

Table 5.1
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicatiors, etc.)

			GENERAL				INDICATORS			CATIONS, ANIONS AND ION BALANCE					NITROGEN PARAMETERS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	pH	EC (µs/cm)	Total Hardness as $CaCO_3$ (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	TDS (calculated) (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			**7.0-10.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**---**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1**	**10**
Alberta Tier 2 Potable Groundwater Guideline[3]			**6.5 - 8.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**1**	**10**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**6.5 - 8.5**	**---**	**---**	**---**	**120**	**Variable**	**500**	**---**	**---**	**---**	**200**	**---**	**Variable**	**3**
05-SH	18-Feb-1985	05-SH	---	---	254	256	---	---	261	---	---	---	---	312.1	0.003	0.061
	15-May-1985	05-SH	7.97	504	277.8	282	0.7	11.6	295	80	18.9	1	7.8	343.8	0.003	0.003
	15-Sep-1985	05-SH	7.68	530	266.1	281	0.8	9	290	76	18.5	1.05	6.9	342.5	0.003	0.006
	15-Dec-1985	05-SH	7.7	540	274	288	0.7	9.6	290	76	20.4	1.02	6.2	351.1	0.003	0.005
	15-Jun-1986	05-SH	8.18	500	272.2	258	1.7	8.1	270	74.3	21	0.91	5.8	314.5	0.003	0.009
	15-Aug-1986	05-SH	7.64	518	270.2	260	0.5	8.8	275	74	20.7	0.95	5.6	316.9	0.012	0.021
	15-Oct-1986	05-SH	7.87	500	273.6	272	0.2	7.8	285	76	20.3	0.95	5.5	331.6	0.005	0.043
	15-May-1987	05-SH	7.71	473	259	255	0.3	7.6	260	71	19.9	0.88	5.4	311	0.003	0.055
	15-Sep-1987	05-SH	8.09	484	257	256	0.7	9.1	263	72	18.7	0.92	5.6	312	0.003	0.064
	15-Nov-1987	05-SH	7.64	475	256.1	252	1.1	8.2	265	70	19.7	0.85	5.5	307.2	0.003	0.074
		05-SH +95CI	7.97	517.96	271.42	274.31	1.04	9.66	283.76	76.38	20.38	0.99	6.57	334.4	0.0059	0.052
		05-SH -95CI	7.7	487.37	260.58	257.69	0.45	8.07	267.04	72.35	19.2	0.9	5.5	314.14	0.0023	0.017
		05-SH MAX	8.18	540	277.8	288	1.7	11.6	295	80	21	1.05	7.8	351.1	0.012	0.074
		05-SH MEAN	7.83	502.67	266	266	0.74	8.87	275.4	74.37	19.79	0.95	6.03	324.27	0.0041	0.034
		05-SH MIN	7.64	473	254	252	0.2	7.6	260	70	18.5	0.85	5.4	307.2	0.003	0.003
		05-SH N	9	9	10	10	9	9	10	9	9	9	9	10	10	10
		05-SH SD	0.21	23.41	8.75	13.41	0.45	1.22	13.49	3.08	0.91	0.066	0.81	16.34	0.0028	0.028
05-IN	18-Feb-1985	05-IN	---	---	341.7	290	---	---	488	---	---	---	---	353.5	0.012	0.012
	15-May-1985	05-IN	7.96	601	286.9	294	2	46	365	83	19.3	2.08	24.3	358.4	0.032	0.36
	15-Sep-1985	05-IN	7.78	552	266.6	279	1.9	24	310	76	18.6	1.56	11.6	340.1	0.015	0.26
	15-Jun-1986	05-IN	6.86	640	321.1	275	4.5	55	370	89.9	23.4	2	20	335.2	0.007	0.167
	15-Aug-1986	05-IN	7.64	686	293.1	271	3	75	380	82	21.4	2.08	26.3	330.3	0.009	0.24
	15-Oct-1986	05-IN	7.96	700	325.9	295	3.6	91.5	430	92	23.3	2.31	28.9	359.6	0.015	0.088
	15-May-1987	05-IN	7.66	682	304.3	273	2.7	110	430	84	22.9	2.13	38	332.8	0.004	0.023
	15-Sep-1987	05-IN	8.14	707	307.2	259	4.2	113	425	87	21.8	2.1	38.6	315.7	0.007	0.009
	15-Nov-1987	05-IN	7.71	684	291	279	3.9	97	425	80	22.1	2.02	42	340.1	0.006	0.011
		05-IN +95CI	7.98	694.45	319.14	287.16	3.91	98.74	436.31	87.87	22.84	2.18	35.91	350.05	0.017	0.22
		05-IN -95CI	7.45	618.55	289.26	271.73	2.54	54.14	368.8	80.6	20.36	1.89	21.52	331.22	0.0063	0.044
		05-IN MAX	8.14	707	341.7	295	4.5	113	488	92	23.4	2.31	42	359.6	0.032	0.36
		05-IN MEAN	7.71	656.5	304.2	279.44	3.23	76.44	402.56	84.24	21.6	2.04	28.71	340.63	0.012	0.13
		05-IN MIN	6.86	552	266.6	259	1.9	24	310	76	18.6	1.56	11.6	315.7	0.004	0.009
		05-IN N	8	8	9	9	8	8	9	8	8	8	8	9	9	9
		05-IN SD	0.39	54.76	22.86	11.81	0.98	32.18	51.67	5.24	1.79	0.21	10.38	14.41	0.0085	0.13
06-SH	18-Feb-1985	06-SH	---	---	285.5	295	---	---	295	---	---	---	---	359.6	0.003	0.009
	15-May-1985	06-SH	7.82	493	264.1	272	1	10.5	285	75	18.6	1.39	7.3	331.6	0.017	0.003
	15-Sep-1985	06-SH	7.84	508	257	276	0.9	6.8	280	74	17.5	1.45	6.2	336.4	0.007	0.007
	15-Dec-1985	06-SH	7.49	530	268.6	289	1.12	5.8	290	74	20.3	1.35	5.9	352.3	0.005	0.005
	15-Jun-1986	06-SH	8.26	520	282.7	278	1.8	5.3	280	77.7	21.5	1.2	6.1	---	0.005	0.013
	15-Aug-1986	06-SH	7.27	528	282.3	276	1.1	6.7	285	78	21.2	1.25	5.9	336.4	0.004	0.014
	15-Oct-1986	06-SH	7.86	500	266.9	277	1.2	6.1	290	73	20.5	1.27	5.4	337.7	0.006	0.066
	15-May-1987	06-SH	8.15	505	270.2	275	0.8	6.5	280	73	21.3	1.2	5.8	335.2	0.003	0.057
	15-Sep-1987	06-SH	8.4	526	276	285	2.1	6.7	290	76.8	20.6	1.36	6.1	348	0.003	0.068
	15-Nov-1987	06-SH	7.55	536	294.7	289	2.3	6.7	305	81	22.4	1.31	6	352.3	0.003	0.011
		06-SH +95CI	8.09	526.09	281.91	285.96	1.73	7.76	292.89	77.61	21.42	1.37	6.41	349.72	0.0082	0.042
		06-SH -95CI	7.6	506.35	267.69	276.44	1.01	5.82	283.11	74.05	19.44	1.25	5.74	336.83	0.003	0.0087
		06-SH MAX	8.4	536	294.7	295	2.3	10.5	305	81	22.4	1.45	7.3	359.6	0.017	0.068
		06-SH MEAN	7.85	516.22	274.8	281.2	1.37	6.79	288	75.83	20.43	1.31	6.08	343.28	0.0056	0.025
		06-SH MIN	7.27	493	257	272	0.8	5.3	280	73	17.5	1.2	5.4	331.6	0.003	0.003
		06-SH N	9	9	10	10	9	9	10	9	9	9	9	9	10	10
		06-SH SD	0.37	15.11	11.47	7.69	0.55	1.48	7.89	2.72	1.51	0.086	0.51	9.87	0.0042	0.027

Table 5.1
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicatiors, etc.)

			GENERAL				INDICATORS			CATIONS, ANIONS AND ION BALANCE					NITROGEN PARAMETERS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	pH	EC (µs/cm)	Total Hardness as $CaCO_3$ (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	TDS (calculated) (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			**7.0-10.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**---**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1**	**10**
Alberta Tier 2 Potable Groundwater Guideline[3]			**6.5 - 8.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**1**	**10**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**6.5 - 8.5**	**---**	**---**	**---**	**120**	**Variable**	**500**	**---**	**---**	**---**	**200**	**---**	**Variable**	**3**
06-IN	17-Feb-1985	06-IN	---	---	393.2	306	---	---	**571**	---	---	---	---	373	0.004	0.015
	15-May-1985	06-IN	7.96	684	312.7	308	2.2	83	430	91	20.7	3.11	34	375.5	0.039	1.08
	15-Sep-1985	06-IN	8.06	781	317.3	308	2.6	106	450	94	20	3.2	47	375.5	0.019	1.1
	15-Jun-1986	06-IN	7.18	750	369.1	305	5.1	89	450	106	25.3	3.06	25.7	371.8	0.007	0.017
	15-Aug-1986	06-IN	7.49	763	348	304	5	110	455	101	23.2	3	30	370.6	< 0.003	0.026
	15-Oct-1986	06-IN	7.85	780	347	314	5.9	118	490	97	25.4	2.9	37.5	382.8	0.006	0.058
	15-Feb-1987	06-IN	7.16	907	---	---	5.1	188	---	112	27.5	3.18	48.4	---	---	---
	15-May-1987	06-IN	8.09	781	356.2	301	5.8	145	500	99	26.4	3.1	36.5	366.9	< 0.003	0.003
	15-Sep-1987	06-IN	8.01	813	367.9	308	6.3	146	**505**	105	25.6	2.99	39.3	375.5	< 0.003	0.06
	15-Nov-1987	06-IN	7.92	842	384.5	308	6.2	147	**530**	109	27.2	3	42.5	375.5	0.004	0.046
		06-IN +95CI	7.99	829.5	373.02	309.23	5.89	147.67	516.37	106.13	26.36	3.12	42.75	376.99	0.018	0.57
		06-IN -95CI	7.5	748.5	337.18	304.55	3.93	103.88	457.18	96.98	22.82	2.3	33	371.25	0.0019	0.038
		06-IN MAX	8.09	907	393.2	314	6.3	188	571	112	27.5	3.2	48.4	382.8	0.039	1.1
		06-IN MEAN	7.75	789	355.1	306.89	4.91	125.78	486.78	101.56	24.59	3.06	37.88	374.12	0.0098	0.27
		06-IN MIN	7.16	684	312.7	301	2.2	83	430	91	20	2.9	25.7	366.9	0.003	0.003
		06-IN N	9	9	9	9	9	9	9	9	9	9	9	9	9	9
		06-IN SD	0.37	61.99	27.43	3.59	1.51	33.51	45.3	7	2.71	0.097	7.46	4.39	0.012	0.47
07-SH	18-Feb-1985	07-SH	---	---	308.4	299	---	---	340	---	---	---	---	364.5	0.004	0.019
	15-May-1985	07-SH	7.95	708	289.8	292	3	56	375	83	20	2.2	27	355.9	0.01	0.71
	15-Sep-1985	07-SH	8.06	552	275.7	283	1.1	9.8	300	80	18.4	1.85	8.1	345	0.006	0.033
	15-Jun-1986	07-SH	7.17	620	333.9	316	1.8	18	350	---	---	2.14	9.9	385.2	< 0.003	0.038
	15-Aug-1986	07-SH	7.36	567	296.4	280	1.3	16.4	310	84	21	1.96	8.2	341.3	< 0.003	0.092
	15-Oct-1986	07-SH	7.62	560	290.6	277	1.8	19.2	310	81	21.4	2.04	8	337.7	0.007	0.3
	15-May-1987	07-SH	8.14	562	291.8	279	1.3	30	320	81	21.7	1.75	7.74	340.1	< 0.003	0.115
	15-Sep-1987	07-SH	7.77	571	303.9	287	2.3	34	330	87	21	1.9	8.3	349.9	< 0.003	0.055
	15-Nov-1987	07-SH	7.88	584	317.6	295	2.1	33.2	340	89	23.1	1.91	8.7	359.6	< 0.003	0.03
		07-SH +95CI	7.98	626.48	312.22	297.89	2.27	37.18	345.92	86.06	22.02	2.07	15.32	363.13	0.0063	0.3
		07-SH -95CI	7.51	554.52	289.58	281.67	1.4	16.97	315.19	81.08	19.86	1.86	6.17	343.36	0.003	0.0072
		07-SH MAX	8.14	708	333.9	316	3	56	375	89	23.1	2.2	27	385.2	0.01	0.71
		07-SH MEAN	7.74	590.5	300.9	289.78	1.84	27.08	330.56	83.57	20.94	1.97	10.74	353.24	0.0047	0.15
		07-SH MIN	7.17	552	275.7	277	1.1	9.8	300	80	18.4	1.75	7.74	337.7	0.003	0.019
		07-SH N	8	8	9	9	8	8	9	7	7	8	8	9	9	9
		07-SH SD	0.34	51.93	17.32	12.42	0.63	14.58	23.51	3.36	1.46	0.15	6.6	15.13	0.0025	0.23
07-IN	18-Feb-1985	07-IN	---	---	330.1	368	---	---	487	---	---	---	---	448.6	0.005	0.008
	15-May-1985	07-IN	7.95	786	346	369	2.1	82	495	104	20.9	5.5	50	449.8	0.055	0.48
	15-Sep-1985	07-IN	8.06	823	333.1	358	1.6	97.5	500	100	20.2	5.7	53	436.4	0.048	0.33
	15-Jun-1986	07-IN	7.61	870	345.4	365	2.9	140	**560**	96	25.6	5.5	61	444.9	0.005	0.024
	15-Aug-1986	07-IN	7.36	910	346.4	360	1.6	135	**555**	104	21	5.3	62	438.8	0.004	0.012
	15-Oct-1986	07-IN	7.75	850	344.3	375	1.7	110	**540**	100	22.9	5	60	457.1	0.004	0.019
	15-May-1987	07-IN	7.99	828	343.8	361	0.9	115	**530**	99	23.4	5.25	57.5	440.1	< 0.003	0.014
	15-Sep-1987	07-IN	7.72	838	356.8	370	1.9	110	**530**	106	22.3	5.06	54.2	451	< 0.003	0.006
	15-Nov-1987	07-IN	8.22	812	351.8	374	2	99	475	104	22.3	4.9	52.5	395	< 0.003	0.01
		07-IN +95CI	8.02	865.86	349.6	370.64	2.23	124.42	539.19	103.97	23.51	5.47	59.36	452.07	0.028	0.22
		07-IN -95CI	7.64	813.39	338.78	362.69	1.45	97.7	499.03	99.28	21.14	5.08	53.18	428.31	0.00066	0.015
		07-IN MAX	8.22	910	356.8	375	2.9	140	560	106	25.6	5.7	62	457.1	0.055	0.48
		07-IN MEAN	7.83	839.63	344.19	366.67	1.84	111.06	519.11	101.63	22.33	5.28	56.28	440.19	0.014	0.1
		07-IN MIN	7.36	786	330.1	358	0.9	82	475	96	20.2	4.9	50	395	0.003	0.006
		07-IN N	8	8	9	9	8	8	9	8	8	8	8	9	9	9
		07-IN SD	0.28	37.86	8.28	6.08	0.57	19.28	30.73	3.38	1.71	0.28	4.46	18.19	0.021	0.18

Table 5.1
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicatiors, etc.)

			GENERAL				INDICATORS			CATIONS, ANIONS AND ION BALANCE					NITROGEN PARAMETERS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	pH	EC (µs/cm)	Total Hardness as $CaCO_3$ (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	TDS (calculated) (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			**7.0-10.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**---**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1**	**10**
Alberta Tier 2 Potable Groundwater Guideline[3]			**6.5 - 8.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**1**	**10**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**6.5 - 8.5**	**---**	**---**	**---**	**120**	**Variable**	**500**	**---**	**---**	**---**	**200**	**---**	**Variable**	**3**
07-SS	15-Feb-1985	07-SS	7.39	745	328.9	328	0.7	78	450	99.6	19.4	5.85	46.5	399.8	< 0.003	0.004
	18-Feb-1985	07-SS	---	---	288.2	319	---	---	407	---	---	---	---	388.9	< 0.003	0.076
	15-May-1985	07-SS	7.39	675	321	342	---	70.5	445	100	17.6	5.2	39	417	< 0.003	0.053
	15-Sep-1985	07-SS	7.73	689	285	310	0.7	65	400	87	16.4	5.5	37	377.9	< 0.003	0.003
	15-Dec-1985	07-SS	7.37	760	285.7	334	0.9	78	440	84	18.4	6	47	407.1	0.005	0.007
	15-Jun-1986	07-SS	7	720	305.7	326	1.2	75	435	89.7	19.8	5.5	42.4	397.4	0.007	0.003
	15-Aug-1986	07-SS	6.66	725	295.7	296	0.7	78.5	415	88	18.4	5	39	360.8	0.2	0.04
	15-Oct-1986	07-SS	7.37	690	300.3	317	0.9	68.5	420	88	19.5	5.05	35.9	386.4	0.2	0.04
	15-May-1987	07-SS	7	720	305.7	326	1.2	75	435	89.7	19.8	5.5	42.4	397.4	0.007	0.003
	15-Sep-1987	07-SS	7.24	683	299.1	317	1.1	68	410	89	18.6	4.6	32.4	386.4	< 0.003	0.009
	15-Nov-1987	07-SS	7.43	686	315.3	321	1.6	63.3	420	94	19.5	4.65	34.2	391.3	< 0.003	0.003
		07-SS +95CI	7.44	727.21	311.3	328.67	1.2	75.48	435.02	94.19	19.42	5.58	42.66	400.65	0.087	0.037
		07-SS -95CI	7.07	691.39	294.26	314.24	0.8	68.48	415.34	87.61	18.06	4.99	36.51	383.06	0.0071	0.0067
		07-SS MAX	7.73	760	328.9	342	1.6	78.5	450	100	19.8	6	47	417	0.2	0.076
		07-SS MEAN	7.26	709.3	302.78	321.45	1	71.98	425.18	90.9	18.74	5.29	39.58	391.85	0.04	0.022
		07-SS MIN	6.66	675	285	296	0.7	63.3	400	84	16.4	4.6	32.4	360.8	0.003	0.003
		07-SS N	10	10	11	11	9	10	11	10	10	10	10	11	11	11
		07-SS SD	0.3	28.9	14.42	12.2	0.3	5.65	16.65	5.31	1.099	0.47	4.95	14.89	0.079	0.026
08-SH	18-Feb-1985	08-SH	---	---	274.7	276	---	---	317	---	---	---	---	336.4	0.007	0.054
	15-May-1985	08-SH	7.93	516	258.7	277	1.4	16.7	300	75	17.3	2.02	17.2	337.7	0.016	0.118
	15-Sep-1985	08-SH	7.77	534	242.9	269	1	24	300	71	15.9	2.18	17.9	327.9	0.005	0.102
	15-Jun-1986	08-SH	7.69	530	270.3	281	1.9	15.5	300	73.2	21.2	2	11.7	342.5	0.004	0.029
	15-Aug-1986	08-SH	7.49	545	264.4	275	0.7	12.5	290	73	19.9	2.05	10.5	335.2	< 0.003	0.006
	15-Oct-1986	08-SH	7.91	530	271.1	287	1.4	11.5	305	75	20.3	2.1	10.2	349.9	< 0.003	0.027
	15-May-1987	08-SH	8	533	269.4	275	1	15.5	300	74	20.5	2.13	11	335.2	< 0.003	0.017
	15-Sep-1987	08-SH	7.87	539	281.5	282	2.5	24	310	79	20.4	2.2	12	343.8	< 0.003	0.055
	15-Nov-1987	08-SH	7.68	555	280.3	269	1.8	27.9	315	80	19.5	2.1	12.6	327.9	< 0.003	0.072
		08-SH +95CI	7.91	543.24	275.89	280.63	1.87	22.63	309.71	77.14	20.64	2.15	14.96	342.09	0.008	0.078
		08-SH -95CI	7.68	527.26	260.4	272.93	1.057	14.27	298.52	72.91	18.11	2.05	10.82	332.68	0.0024	0.028
		08-SH MAX	8	555	281.5	287	2.5	27.9	317	80	21.2	2.2	17.9	349.9	0.016	0.12
		08-SH MEAN	7.79	535.25	268.14	276.78	1.46	18.45	304.11	75.03	19.38	2.1	12.89	337.39	0.0052	0.053
		08-SH MIN	7.49	516	242.9	269	0.7	11.5	290	71	15.9	2	10.2	327.9	0.003	0.006
		08-SH N	8	8	9	9	8	8	9	8	8	8	8	9	9	9
		08-SH SD	0.17	11.53	11.86	5.89	0.59	6.04	8.57	3.05	1.82	0.072	2.99	7.2	0.0043	0.038
08-IN	16-Feb-1985	08-IN	---	---	435.2	301	---	---	**610**	---	---	---	---	366.9	0.012	3.1
	18-Feb-1985	08-IN	---	---	402.4	320	---	---	**613**	---	---	---	---	390.1	0.005	1.79
	15-May-1985	08-IN	7.76	667	302.8	272	5.7	104	425	87	20.8	6	28.5	332	**0.21**	0.59
	15-Sep-1985	08-IN	7.72	729	316.6	298	2.5	81	420	96	18.6	4.45	31.5	363.3	0.028	0.73
	15-Dec-1985	08-IN	7.73	840	363.8	316	2.38	198	**600**	105	24.6	4.5	54	385.2	0.021	2.78
	15-Feb-1986	08-IN	7.46	970	---	---	2.2	206	---	127	28.6	4.44	54.5	---	---	---
	15-Jun-1986	08-IN	7.36	980	436.4	301	4.1	220	**635**	126	29.5	4.3	51.8	366.9	0.025	3.46
	15-Aug-1986	08-IN	7.74	1170	454.9	305	2.8	320	**760**	137	27.3	4.85	73	371.8	0.023	3.18
	15-Oct-1986	08-IN	8.07	970	441	331	2.6	196	**630**	127	30	4.65	53.5	403.5	0.069	4.03
	15-May-1987	08-IN	7.8	959	444.7	308	1.9	256	**680**	129	29.7	4.85	67.5	375.5	< 0.003	3.52
	15-Sep-1987	08-IN	7.78	920	437.2	321	3.3	191	**595**	126	29.7	4.36	43.6	391.3	< 0.003	2.4
	15-Nov-1987	08-IN	7.87	986	456.8	320	2.6	224	**655**	134	29.6	4.2	53.5	390.1	< 0.003	1.8
		08-IN +95CI	7.85	1007.69	441.15	317.89	3.71	241.95	661.31	129.98	29.4	4.98	59.74	387.5	0.072	3.16
		08-IN -95CI	7.61	830.51	375.54	299.02	2.31	157.24	542.87	108.82	24.28	4.34	42.54	364.61	0.00072	1.82
		08-IN MAX	8.07	1170	456.8	331	5.7	320	760	137	30	6	73	403.5	0.21	4.03
		08-IN MEAN	7.73	919.1	408.35	308.45	3.01	199.6	602.09	119.4	26.84	4.66	51.14	376.06	0.037	2.49
		08-IN MIN	7.36	667	302.8	272	1.9	81	420	87	18.6	4.2	28.5	332	0.003	0.59
		08-IN N	10	10	11	11	10	10	11	10	10	10	10	11	11	11
		08-IN SD	0.2	142.93	55.52	15.97	1.13	68.33	100.21	17.07	4.13	0.52	13.87	19.37	0.061	1.14

Table 5.1
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicatiors, etc.)

AECOM

			GENERAL				INDICATORS			CATIONS, ANIONS AND ION BALANCE					NITROGEN PARAMETERS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	pH	EC (µs/cm)	Total Hardness as $CaCO_3$ (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	TDS (calculated) (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			**7.0-10.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**---**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1**	**10**
Alberta Tier 2 Potable Groundwater Guideline[3]			**6.5 - 8.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**1**	**10**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**6.5 - 8.5**	**---**	**---**	**---**	**120**	**Variable**	**500**	**---**	**---**	**---**	**200**	**---**	**Variable**	**3**
08-SS	16-Feb-1985	08-SS	---	---	273.8	313	---	---	390	---	---	---	---	381.5	< 0.003	0.274
	18-Feb-1985	08-SS	---	---	243.6	340	---	---	384	---	---	---	---	414.5	0.004	0.27
	15-May-1985	08-SS	7.99	728	280	335	---	105	**505**	91	12.7	4.86	78	408	< 0.003	0.83
	15-Sep-1985	08-SS	7.91	603	238.2	331	1	40	400	78	10.5	4.5	60	403.5	0.007	0.087
	15-Dec-1985	08-SS	7.53	690	246	373	0.92	37.5	420	77	13	4.5	58	454.7	0.031	0.096
	15-Feb-1986	08-SS	7.77	670	---	---	0.5	39	---	88.3	12.9	4.3	50	---	---	---
	15-Jun-1986	08-SS	7.67	610	209.9	313	1.1	32.1	360	65.2	11.4	4.1	51.4	381.5	< 0.003	0.3
	15-Aug-1986	08-SS	7.37	621	199.1	285	0.4	32.7	345	64	9.5	4.48	53	347.4	< 0.003	0.34
	15-Oct-1986	08-SS	7.82	620	226.9	317	0.7	30	380	72	11.4	4.4	55	386.4	0.01	0.35
	15-May-1987	08-SS	7.67	610	209.9	313	1.1	32.1	360	65.2	11.4	4.1	51.4	381.5	< 0.003	0.3
	15-Sep-1987	08-SS	7.68	612	226.1	321	1.2	30	370	73	10.6	4.66	54.6	391.3	< 0.003	0.149
		08-SS +95CI	7.84	669.53	251.91	338.37	1.071	57.66	419.55	81.27	12.27	4.59	62.42	412.42	0.012	0.43
		08-SS -95CI	7.59	611.36	218.79	309.83	0.66	26.42	363.25	68.44	10.71	4.27	51.22	377.64	0.0016	0.17
		08-SS MAX	7.99	728	280	373	1.2	105	505	91	13	4.86	78	454.7	0.031	0.83
		08-SS MEAN	7.71	640.44	235.35	324.1	0.87	42.04	391.4	74.86	11.49	4.43	56.82	395.03	0.007	0.3
		08-SS MIN	7.37	603	199.1	285	0.4	30	345	64	9.5	4.1	50	347.4	0.003	0.087
		08-SS N	9	9	10	10	8	9	10	9	9	9	9	10	10	10
		08-SS SD	0.19	44.52	26.73	23.02	0.3	23.91	45.42	9.82	1.2	0.25	8.57	28.06	0.0088	0.21
09-SH [Decommissioned]	15-May-1985	09-SH [DECOM]	7.18	781	271.4	151	3.2	260	---	86	13.7	1.58	65	184.1	0.031	2.77
	15-Sep-1985	09-SH [DECOM]	6.66	938	303.4	165	2.7	305	---	97	14.8	1.64	82	201.1	0.03	1.91
	15-Jun-1986	09-SH [DECOM]	6.84	750	273.9	178	3.3	211	---	86	14.3	1.4	61.4	217	0.006	0.004
	15-Aug-1986	09-SH [DECOM]	6.72	708	229.8	174	1.9	197	---	71	12.7	1.42	57	212.1	< 0.003	0.01
	15-Oct-1986	09-SH [DECOM]	7.08	710	265	208	2.6	182	---	83	14.1	3.9	57	253	0.01	0.003
	15-May-1987	09-SH [DECOM]	6.79	715	235.2	174	1.6	198	---	72	13.4	1.55	73	212.1	0.004	0.003
	15-Sep-1987	09-SH [DECOM]	6.7	689	211.9	177	3.9	195	---	66	11.4	1.4	73.5	215.8	0.004	0.003
	15-Nov-1987	09-SH [DECOM]	6.79	659	228.5	187	5.2	125	---	71	12.4	1.3	58.5	228	0.004	0.01
		09-SH +95CI	6.97	803.81	273.67	188.17	3.84	246.23	---	86.33	14.13	2.37	72.35	229.21	0.02	1.35
		09-SH -95CI	6.72	683.69	231.11	165.33	2.26	172.02	---	71.67	12.57	1.17	59.5	201.59	0.0032	0.18
		09-SH MAX	7.18	938	303.4	208	5.2	305	---	97	14.8	3.9	82	253	0.031	2.77
		09-SH MEAN	6.85	743.75	252.39	176.75	3.05	209.13	---	79	13.35	1.77	65.93	215.4	0.012	0.59
		09-SH MIN	6.66	659	211.9	151	1.6	125	---	66	11.4	1.3	57	184.1	0.003	0.003
		09-SH N	8	8	8	8	8	8	---	8	8	8	8	8	8	8
		09-SH SD	0.19	86.67	30.71	16.48	1.15	53.54	---	10.58	1.12	0.87	9.27	19.93	0.012	1.1
09-IN [Decommissioned]	16-Feb-1985	09-IN [DECOM]	---	---	391.6	366	---	---	440	---	---	---	---	446.2	0.104	0.36
	18-Feb-1985	09-IN [DECOM]	---	---	398.7	386	---	---	500	---	---	---	---	463	< 0.003	0.003
	15-May-1985	09-IN [DECOM]	7.87	582	293.3	311	6.4	12.5	350	89	17.2	4.37	16.8	379.1	0.083	0.34
	15-Sep-1985	09-IN [DECOM]	7.9	617	300.7	322	2.8	13.9	350	90	18.4	3.6	14.6	392.5	0.06	0.064
	15-Dec-1985	09-IN [DECOM]	7.61	730	355.5	369	1.8	33.1	420	104	23.2	3.4	18	449.8	0.036	0.279
	15-Feb-1986	09-IN [DECOM]	7.6	760	---	---	1.3	46	---	115	25.3	3.45	21.7	---	---	---
	15-Jun-1986	09-IN [DECOM]	7.99	780	396.1	355	2.8	80	470	114	27	3.3	24.9	432.7	0.033	0.21
	15-Aug-1986	09-IN [DECOM]	7.79	806	365	358	1.2	78.5	460	106	24.3	3.37	23.8	436.4	0.051	0.199
	15-Oct-1986	09-IN [DECOM]	7.9	810	407.8	381	2	79	500	119	26.8	3.38	25.6	464.4	0.14	0.012
	15-May-1987	09-IN [DECOM]	7.9	802	412.3	370	1.2	90.5	500	119	27.9	3.75	26.5	451	0.048	0.067
	15-Sep-1987	09-IN [DECOM]	7.8	814	408.2	382	2.3	98.1	**510**	117	28.1	3.1	25.4	465.7	< 0.003	0.003
	15-Nov-1987	09-IN [DECOM]	7.8	821	419	383	2.9	74	**505**	122	27.7	3.2	27.1	466.9	0.004	0.006
		09-IN +95CI	7.89	805.21	403.15	376.77	3.42	80.14	490.14	116.91	27.03	3.71	25.2	458.22	0.077	0.22
		09-IN -95CI	7.74	699.19	351.07	347.41	1.52	40.98	419.86	102.09	22.15	3.27	19.68	423.18	0.025	0.057
		09-IN MAX	7.99	821	419	386	6.4	98.1	510	122	28.1	4.37	27.1	466.9	0.14	0.36
		09-IN MEAN	7.82	752.2	377.11	362.09	2.47	60.56	455	109.5	24.59	3.49	22.44	440.7	0.051	0.14
		09-IN MIN	7.6	582	293.3	311	1.2	12.5	350	89	17.2	3.1	14.6	379.1	0.003	0.003
		09-IN N	10	10	11	11	10	10	11	10	10	10	10	11	11	11
		09-IN SD	0.13	85.53	44.062	24.85	1.53	31.59	59.46	11.96	3.93	0.36	4.45	29.65	0.044	0.14
09-PEAT	15-Nov-1987	09-PEAT	**4**	51.2	5.2	0.1	2.5	1.2	6	1.6	0.3	0.18	0.5	0.5	0.006	0.008
		09-PEAT +95CI	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09-PEAT -95CI	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09-PEAT MAX	4	51.2	5.2	0.1	2.5	1.2	6	1.6	0.3	0.18	0.5	0.5	0.006	0.008
		09-PEAT MEAN	4	51.2	5.2	0.1	2.5	1.2	6	1.6	0.3	0.18	0.5	0.5	0.006	0.008
		09-PEAT MIN	4	51.2	5.2	0.1	2.5	1.2	6	1.6	0.3	0.18	0.5	0.5	0.006	0.008
		09-PEAT N	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		09-PEAT SD	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 5.1
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Routine Water Analysis (Major Ions, Indicatiors, etc.)

			GENERAL				INDICATORS			CATIONS, ANIONS AND ION BALANCE					NITROGEN PARAMETERS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	pH	EC (µs/cm)	Total Hardness as $CaCO_3$ (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	TDS (calculated) (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			**7.0-10.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**---**	**---**
Canadian Drinking Water MAC Guidelines 2022[2]			**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1**	**10**
Alberta Tier 2 Potable Groundwater Guideline[3]			**6.5 - 8.5**	**---**	**---**	**---**	**250**	**500**	**500**	**---**	**---**	**---**	**200**	**---**	**1**	**10**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**6.5 - 8.5**	**---**	**---**	**---**	**120**	**Variable**	**500**	**---**	**---**	**---**	**200**	**---**	**Variable**	**3**
10-SH [Decommissioned]	15-May-1985	10-SH [DECOM]	7.9	624	302.4	328	2.2	29.4	375	92	17.6	2.8	26.2	399.8	0.006	0.5
	15-Sep-1985	10-SH [DECOM]	7.94	670	303.3	334	1.3	38.4	380	92	17.8	2.83	28.3	407.1	0.007	0.36
	15-Jun-1986	10-SH [DECOM]	7.48	650	325.1	320	2	14.6	350	94.8	21.4	2.7	17	390.1	0.004	0.006
	15-Aug-1986	10-SH [DECOM]	7.42	621	297.8	320	0.4	8.2	330	87	19.5	2.67	16	390.1	0.004	0.005
	15-Oct-1986	10-SH [DECOM]	7.81	620	311.1	336	0.8	6.6	350	91	20.3	2.73	15.7	409.6	0.011	0.003
	15-May-1987	10-SH [DECOM]	7.7	607	301.9	331	0.4	5.9	340	87	20.5	2.7	16.2	403.5	< 0.003	0.003
	15-Sep-1987	10-SH [DECOM]	7.64	603	307.7	344	1.1	6.1	350	90	20.1	2.8	16	419.3	0.006	0.005
	15-Nov-1987	10-SH [DECOM]	8.11	604	309.4	331	1.4	5.4	350	91	19.9	2.7	15.7	403.5	0.006	0.24
10-SH [Decommissioned; continued]		10-SH +95CI	7.91	641.32	313.17	336.07	1.67	23.1	364.68	92.42	20.55	2.78	22.5	409.65	0.0076	0.28
		10-SH -95CI	7.59	608.43	301.51	324.93	0.74	5.55	341.57	88.78	18.73	2.7	15.28	396.1	0.0042	0.0017
		10-SH MAX	8.11	670	325.1	344	2.2	38.4	380	94.8	21.4	2.83	28.3	419.3	0.011	0.5
		10-SH MEAN	7.75	624.88	307.34	330.5	1.2	14.33	353.13	90.6	19.64	2.74	18.89	402.88	0.0059	0.14
		10-SH MIN	7.42	603	297.8	320	0.4	5.4	330	87	17.6	2.67	15.7	390.1	0.003	0.003
		10-SH N	8	8	8	8	8	8	8	8	8	8	8	8	8	8
		10-SH SD	0.24	23.73	8.41	8.04	0.67	12.67	16.68	2.62	1.32	0.06	5.21	9.78	0.0025	0.2
10-IN [Decommissioned]	16-Feb-1985	10-IN [DECOM]	---	---	370.5	321	---	---	460	---	---	---	---	391.3	0.168	0.622
	18-Feb-1985	10-IN [DECOM]	---	---	378.3	349	---	---	**522**	---	---	---	---	425.4	0.009	0.72
	15-Dec-1985	10-IN [DECOM]	7.62	800	330.6	332	4.81	102	480	96	22	5	42	404.7	0.195	0.425
	15-Feb-1986	10-IN [DECOM]	7.35	780	---	---	3.7	90	---	109	23.8	4.9	35	---	---	---
	15-Jun-1986	10-IN [DECOM]	7.94	830	381.2	320	4.1	114	495	111	25.2	4.6	38.4	390.1	0.007	1.06
	15-Aug-1986	10-IN [DECOM]	7.22	823	337.6	323	2.3	108	475	99	21.9	4.8	34.6	393.7	0.018	1.49
	15-Oct-1986	10-IN [DECOM]	8.07	810	381.7	355	2.4	107	**520**	112	24.7	3.9	38.5	432.7	0.011	1.12
	15-May-1987	10-IN [DECOM]	7.77	819	376.2	339	1.4	111	500	108	25.8	5	35	413.2	0.005	0.88
	15-Sep-1987	10-IN [DECOM]	7.65	815	394.5	349	2.5	127	**520**	116	25.4	4.7	33.6	425.4	< 0.003	0.46
	15-Nov-1987	10-IN [DECOM]	7.67	854	409.1	353	2.5	116	**530**	121	25.9	4.8	36.8	430.3	< 0.003	0.52
		10-IN +95CI	7.86	831.39	389.64	347.22	3.74	116.86	516.28	114.71	25.46	4.96	38.66	423.23	0.097	1.04
		10-IN -95CI	7.47	801.36	356.96	328.56	2.18	101.89	484.16	103.29	23.22	4.47	34.81	400.5	0.0037	0.58
		10-IN MAX	8.07	854	409.1	355	4.81	127	530	121	25.9	5	42	432.7	0.2	1.49
		10-IN MEAN	7.66	816.38	373.3	337.89	2.96	109.38	500.22	109	24.34	4.71	36.74	411.87	0.047	0.81
		10-IN MIN	7.22	780	330.6	320	1.4	90	460	96	21.9	3.9	33.6	390.1	0.003	0.43
		10-IN N	8	8	9	9	8	8	9	8	8	8	8	9	9	9
		10-IN SD	0.28	21.67	25.01	14.28	1.13	10.8	24.58	8.25	1.61	0.36	2.78	17.39	0.077	0.36

NOTES:

1: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Aesthetic Objective (AO)

2: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Maximum Acceptable Concentration (MAC)

3: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (June, 2024), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

Baseline Statistics
--- Guideline Row: No guideline for that parameter
--- Results: Parameter was not analyzed

Table 5.2
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	---	---	1.0	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			0.006	0.010	2.0	---	0.007	0.05	2	0.005	0.001	---
Alberta Tier 2 Potable Groundwater Guideline[3]			0.006	0.01	1	---	0.005	---	1	0.01	0.001	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	0.005	---	---	0.00037 [6]	0.0089 [7]	0.007	0.007 [8]	0.000005	Variable [9]
01-SH [Decommissioned]	15-May-1985	01-SH [DECOM]	0.0002	0.0014	---	< 0.001	< 0.001	< 0.001	0.008	< 0.002	< 0.0001	0.035
	15-Jun-1985	01-SH [DECOM]	0.0003	0.0015	0.37	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	0.008
	15-Sep-1985	01-SH [DECOM]	0.0008	0.0003	---	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	0.018
	15-May-1986	01-SH [DECOM]	0.0004	0.0015	0.24	---	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	0.02
	15-Aug-1986	01-SH [DECOM]	0.0005	0.0029	0.27	---	---	0.005	0.002	< 0.002	< 0.0001	0.041
	15-Oct-1986	01-SH [DECOM]	0.0007	0.0019	0.25	---	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	0.056
	15-May-1987	01-SH [DECOM]	0.0006	0.0012	0.25	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.00005	0.009
	15-Sep-1987	01-SH [DECOM]	0.0002	0.002	0.24	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.00005	0.0118
	15-Nov-1987	01-SH [DECOM]	0.0002	0.0006	0.25	< 0.001	< 0.001	< 0.001	0.002	0.003	< 0.00005	---
		01-SH +95CI	0.00058	0.002	0.3	0.001	0.001	0.0023	0.0042	0.0023	0.0001	0.037
		01-SH -95CI	0.00028	0.00098	0.23	0.001	0.001	0.00057	0.0014	0.0019	0.000067	0.013
		01-SH MAX	0.0008	0.0029	0.37	0.001	0.001	0.005	0.008	0.003	0.0001	0.056
		01-SH MEAN	0.00043	0.0015	0.27	0.001	0.001	0.0014	0.0028	0.0021	0.000083	0.025
		01-SH MIN	0.0002	0.0003	0.24	0.001	0.001	0.001	0.001	0.002	0.00005	0.008
		01-SH N	9	9	7	6	8	9	9	9	9	8
		01-SH SD	0.00023	0.00077	0.046	0	0	0.0013	0.0021	0.00033	0.000025	0.017
01-IN [Decommissioned]	15-Feb-1985	01-IN [DECOM]	0.0008	0.0006	---	< 0.001	< 0.001	0.004	0.018	0.004	< 0.0001	0.05
	15-Jun-1985	01-IN [DECOM]	0.0002	0.0005	0.27	< 0.001	< 0.001	< 0.001	0.009	< 0.002	< 0.0001	0.038
	15-Dec-1985	01-IN [DECOM]	0.0002	0.0005	---	< 0.001	< 0.001	< 0.001	0.002	0.003	< 0.0001	0.13
	15-May-1986	01-IN [DECOM]	---	0.0005	0.1	---	< 0.001	< 0.001	0.005	< 0.002	< 0.0001	0.02
	15-Aug-1986	01-IN [DECOM]	0.0005	0.0006	0.12	---	---	< 0.001	0.007	0.003	< 0.0001	0.015
	15-Oct-1986	01-IN [DECOM]	0.0005	0.0004	0.13	---	< 0.001	< 0.001	0.005	< 0.002	< 0.0001	0.012
	15-May-1987	01-IN [DECOM]	0.0004	0.0004	0.11	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.00005	0.014
	15-Sep-1987	01-IN [DECOM]	0.0002	0.0007	0.11	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.00005	0.012
	15-Nov-1987	01-IN [DECOM]	0.0002	0.0004	0.12	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.00005	0.012
		01-IN +95CI	0.0005	0.0006	0.18	0.001	0.001	0.002	0.0094	0.0029	0.0001	0.059
		01-IN -95CI	0.00022	0.00044	0.093	0.001	0.001	0.00068	0.003	0.002	0.000067	0.0085
		01-IN MAX	0.0008	0.0007	0.27	0.001	0.001	0.004	0.018	0.004	0.0001	0.13
		01-IN MEAN	0.00038	0.00051	0.14	0.001	0.001	0.0013	0.0062	0.0024	0.000083	0.033
		01-IN MIN	0.0002	0.0004	0.1	0.001	0.001	0.001	0.002	0.002	0.00005	0.012
		01-IN N	8	9	7	6	8	9	9	9	9	9
		01-IN SD	0.00022	0.00011	0.059	0	0	0.001	0.0049	0.00073	0.000025	0.039
01-SS [Decommissioned]	15-Jun-1985	01-SS [DECOM]	0.0059	**0.07**	0.1	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	0.037
	15-Jul-1985	01-SS [DECOM]	**0.0077**	**0.022**	---	< 0.001	< 0.001	0.003	0.019	0.003	< 0.0001	0.041
	15-Dec-1985	01-SS [DECOM]	0.0024	**0.057**	---	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	0.019
	15-May-1986	01-SS [DECOM]	0.0049	**0.014**	0.08	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	0.028
	15-Aug-1986	01-SS [DECOM]	0.0022	**0.056**	0.08	---	---	< 0.001	0.002	< 0.002	< 0.0001	0.032
	15-Oct-1986	01-SS [DECOM]	0.0022	**0.085**	0.08	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	0.025
	15-Feb-1987	01-SS [DECOM]	0.0048	**0.09**	0.09	< 0.001	< 0.001	0.002	< 0.001	< 0.002	< 0.0001	0.039
	15-Sep-1987	01-SS [DECOM]	0.0044	**0.099**	0.08	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.00005	0.03
	15-Nov-1987	01-SS [DECOM]	0.0051	**0.099**	0.09	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.00005	0.032
		01-SS +95CI	0.0056	0.086	0.092	0.001	0.001	0.0018	0.0074	0.0023	0.0001	0.036
		01-SS -95CI	0.0032	0.045	0.08	0.001	0.001	0.00087	0.00026	0.0019	0.000075	0.027
		01-SS MAX	0.0077	0.099	0.1	0.001	0.001	0.003	0.019	0.003	0.0001	0.041
		01-SS MEAN	0.0044	0.066	0.086	0.001	0.001	0.0013	0.0036	0.0021	0.000089	0.031
		01-SS MIN	0.0022	0.014	0.08	0.001	0.001	0.001	0.001	0.002	0.00005	0.019
		01-SS N	9	9	7	6	8	9	9	9	9	9
		01-SS SD	0.0019	0.032	0.0079	0	0	0.00071	0.0059	0.00033	0.000022	0.007
02-SH [Decommissioned]	15-May-1985	02-SH [DECOM]	0.0019	0.0044	---	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
	15-Sep-1985	02-SH [DECOM]	0.0002	0.0008	---	< 0.001	< 0.001	0.002	0.003	< 0.002	< 0.0001	---
	15-Dec-1985	02-SH [DECOM]	0.0002	0.0028	---	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
	15-Feb-1986	02-SH [DECOM]	0.0005	0.0039	---	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
	15-Jun-1986	02-SH [DECOM]	0.0002	0.0037	0.26	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Aug-1986	02-SH [DECOM]	0.0002	0.0028	0.23	---	---	< 0.001	< 0.001	0.005	< 0.0001	---
	15-Oct-1986	02-SH [DECOM]	0.0003	0.0057	0.24	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-May-1987	02-SH [DECOM]	0.0002	0.006	0.23	---	< 0.001	0.003	< 0.001	< 0.002	< 0.0001	---
	15-Sep-1987	02-SH [DECOM]	0.0006	0.0055	0.22	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Nov-1987	02-SH [DECOM]	0.0004	0.0048	0.24	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
		02-SH +95CI	0.00079	0.005	0.25	0.001	0.001	0.0017	0.0019	0.0029	0.0001	---
		02-SH -95CI	0.00015	0.003	0.23	0.001	0.001	0.00088	0.0011	0.0017	0.0001	---
		02-SH MAX	0.0019	0.006	0.26	0.001	0.001	0.003	0.003	0.005	0.0001	---
		02-SH MEAN	0.00047	0.004	0.24	0.001	0.001	0.0013	0.0015	0.0023	0.0001	---
		02-SH MIN	0.0002	0.0008	0.22	0.001	0.001	0.001	0.001	0.002	0.0001	---
		02-SH N	10	10	6	7	9	10	10	10	10	---
		02-SH SD	0.00052	0.0016	0.014	0	0	0.00068	0.00071	0.00095	0	---
02-IN [Decommissioned]	15-May-1985	02-IN [DECOM]	0.0007	0.0009	---	< 0.001	< 0.001	0.002	< 0.001	< 0.002	< 0.0001	---
	15-Sep-1985	02-IN [DECOM]	0.0005	0.0009	---	< 0.001	< 0.001	< 0.001	0.005	< 0.002	< 0.0001	---
	15-Feb-1986	02-IN [DECOM]	0.0004	0.0038	---	< 0.001	< 0.001	0.004	0.002	0.003	< 0.0001	---
	15-Jun-1986	02-IN [DECOM]	0.0023	0.0044	0.15	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
	15-Aug-1986	02-IN [DECOM]	0.0002	0.0031	0.13	---	---	< 0.001	0.002	0.004	< 0.0001	---
	15-Oct-1986	02-IN [DECOM]	0.0004	0.0041	0.12	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-May-1987	02-IN [DECOM]	0.0002	0.0079	0.12	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Sep-1987	02-IN [DECOM]	0.001	0.0072	0.11	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Nov-1987	02-IN [DECOM]	0.0005	0.0074	0.12	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
		02-IN +95CI	0.0011	0.0061	0.14	0.001	0.001	0.0021	0.0026	0.0028	0.0001	---
		02-IN -95CI	0.00026	0.0027	0.11	0.001	0.001	0.00078	0.00093	0.0019	0.0001	---
		02-IN MAX	0.0023	0.0079	0.15	0.001	0.001	0.004	0.005	0.004	0.0001	---
		02-IN MEAN	0.00069	0.0044	0.13	0.001	0.001	0.0014	0.0018	0.0023	0.0001	---
		02-IN MIN	0.0002	0.0009	0.11	0.001	0.001	0.001	0.001	0.002	0.0001	---
		02-IN N	9	9	6	6	8	9	9	9	9	---
		02-IN SD	0.00065	0.0026	0.014	0	0	0.001	0.0013	0.00071	0	---
03-SH	15-May-1985	03-SH	0.001	0.0002	---	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Sep-1985	03-SH	0.0002	**0.014**	---	< 0.001	< 0.001	< 0.001	0.008	< 0.002	< 0.0001	---
	15-Jun-1986	03-SH	0.0002	0.0004	0.27	< 0.001	< 0.001	< 0.001	0.007	< 0.002	< 0.0001	---
	15-Aug-1986	03-SH	0.0002	0.0002	0.26	---	---	< 0.001	0.006	0.003	< 0.0001	---
	15-Oct-1986	03-SH	0.0003	0.0005	0.26	---	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-May-1987	03-SH	0.0002	0.0004	0.25	---	< 0.001	< 0.001	0.005	< 0.002	< 0.0001	---
	15-Sep-1987	03-SH	0.0005	0.0004	0.26	< 0.001	< 0.001	0.002	0.003	< 0.002	< 0.0001	---
	15-Nov-1987	03-SH	0.0002	0.0003	0.28	< 0.001	< 0.001	0.002	0.002	< 0.002	< 0.0001	---
		03-SH +95CI	0.00055	0.0054	0.27	0.001	0.001	0.0016	0.0063	0.0024	0.0001	---
		03-SH -95CI	0.00015	0.0013	0.26	0.001	0.001	0.00093	0.0035	0.0019	0.0001	---
		03-SH MAX	0.001	0.014	0.28	0.001	0.001	0.002	0.008	0.003	0.0001	---
		03-SH MEAN	0.00035	0.0021	0.26	0.001	0.001	0.0013	0.0049	0.0021	0.0001	---
		03-SH MIN	0.0002	0.0002	0.25	0.001	0.001	0.001	0.002	0.002	0.0001	---
		03-SH N	8	8	6	5	7	8	8	8	8	---
		03-SH SD	0.00028	0.0048	0.01	0	0	0.00047	0.002	0.00035	0	---

Table 5.2
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	---	---	1.0	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			0.006	0.010	2.0	---	0.007	0.05	2	0.005	0.001	---
Alberta Tier 2 Potable Groundwater Guideline[3]			0.006	0.01	1	---	0.005	---	1	0.01	0.001	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	0.005	---	---	0.00037 [6]	0.0089 [7]	0.007	0.007 [8]	0.000005	Variable [9]
03-IN	15-May-1985	03-IN	0.0002	0.0009	---	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Sep-1985	03-IN	0.0002	0.0008	---	< 0.001	< 0.001	< 0.001	0.006	< 0.002	< 0.0001	---
	15-Dec-1985	03-IN	0.0002	0.0005	---	< 0.001	< 0.001	< 0.001	0.009	< 0.002	< 0.0001	---
	15-Feb-1986	03-IN	0.0007	0.0009	---	< 0.001	< 0.001	0.003	0.009	0.004	< 0.0001	---
	15-Jun-1986	03-IN	0.0002	0.0006	---	< 0.001	< 0.001	< 0.001	0.007	< 0.002	< 0.0001	---
	15-Aug-1986	03-IN	0.0002	0.0006	0.11	---	---	< 0.001	0.002	0.004	< 0.0001	---
	15-Oct-1986	03-IN	0.0004	0.0007	0.1	---	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
	15-May-1987	03-IN	0.0002	0.0005	0.1	---	< 0.001	0.002	0.005	< 0.002	< 0.0001	---
	15-Sep-1987	03-IN	0.0005	0.0002	0.09	< 0.001	< 0.001	< 0.001	0.021	**0.016**	< 0.0001	---
	15-Nov-1987	03-IN	0.0002	0.0006	0.09	< 0.001	< 0.001	0.013	0.004	< 0.002	< 0.0001	---
		03-IN +95CI	0.00041	0.00076	0.11	0.001	0.001	0.0048	0.01	0.0065	0.0001	---
		03-IN -95CI	0.00019	0.0005	0.091	0.001	0.001	0.00018	0.0035	0.0011	0.0001	---
		03-IN MAX	0.0007	0.0009	0.11	0.001	0.001	0.013	0.021	0.016	0.0001	---
		03-IN MEAN	0.0003	0.00063	0.098	0.001	0.001	0.0025	0.0069	0.0038	0.0001	---
		03-IN MIN	0.0002	0.0002	0.09	0.001	0.001	0.001	0.002	0.002	0.0001	---
		03-IN N	10	10	5	7	9	10	10	10	10	---
		03-IN SD	0.00018	0.00021	0.0084	0	0	0.0037	0.0055	0.0044	0	---
04-SH	15-May-1985	04-SH	0.0004	0.0004	---	< 0.001	< 0.001	< 0.001	0.009	< 0.002	< 0.0001	---
	15-Sep-1985	04-SH	0.0003	0.0004	---	< 0.001	< 0.001	< 0.001	0.013	< 0.002	< 0.0001	---
	15-Jun-1986	04-SH	0.0002	0.0008	0.18	< 0.001	< 0.001	< 0.001	0.006	< 0.002	< 0.0001	---
	15-Aug-1986	04-SH	0.0002	0.0005	0.15	---	---	< 0.001	0.004	0.003	< 0.0001	---
	15-Oct-1986	04-SH	0.0006	0.0008	0.16	---	< 0.001	< 0.001	0.007	< 0.002	< 0.0001	---
	15-May-1987	04-SH	0.0005	0.0003	0.15	---	< 0.001	0.003	0.005	< 0.002	< 0.0001	---
	15-Sep-1987	04-SH	0.0002	0.0004	0.14	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Nov-1987	04-SH	0.0002	0.0003	0.15	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
		04-SH +95CI	0.00043	0.00063	0.16	0.001	0.001	0.0017	0.0086	0.0024	0.0001	---
		04-SH -95CI	0.00022	0.00035	0.14	0.001	0.001	0.00076	0.0037	0.0019	0.0001	---
		04-SH MAX	0.0006	0.0008	0.18	0.001	0.001	0.003	0.013	0.003	0.0001	---
		04-SH MEAN	0.00033	0.00049	0.16	0.001	0.001	0.0013	0.0061	0.0021	0.0001	---
		04-SH MIN	0.0002	0.0003	0.14	0.001	0.001	0.001	0.002	0.002	0.0001	---
		04-SH N	8	8	6	5	7	8	8	8	8	---
		04-SH SD	0.00016	0.0002	0.014	0	0	0.00071	0.0036	0.00035	0	---
04-SS	15-May-1985	04-SS	0.0023	**0.029**	---	< 0.001	< 0.001	0.003	0.014	< 0.002	**0.0012**	---
	15-Sep-1985	04-SS	0.0002	0.0004	---	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Dec-1985	04-SS	0.0002	0.0074	---	< 0.001	< 0.001	0.006	0.005	0.003	< 0.0001	---
	15-Feb-1986	04-SS	0.0008	0.0018	---	< 0.001	< 0.001	0.002	0.005	0.003	< 0.0001	---
	15-Jun-1986	04-SS	0.0002	0.002	0.09	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
	15-Aug-1986	04-SS	0.0002	**0.011**	0.08	---	---	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Oct-1986	04-SS	0.0007	**0.012**	0.07	---	< 0.001	0.002	< 0.001	< 0.002	< 0.0001	---
	15-May-1987	04-SS	0.0005	0.0004	0.06	---	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Sep-1987	04-SS	0.0002	0.0008	0.06	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Nov-1987	04-SS	0.0005	0.0006	0.07	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
		04-SS +95CI	0.00098	0.012	0.081	0.001	0.001	0.0029	0.006	0.0025	0.00043	---
		04-SS -95CI	0.00018	0.00091	0.062	0.001	0.001	0.00091	0.001	0.0019	0.0000056	---
		04-SS MAX	0.0023	0.029	0.09	0.001	0.001	0.006	0.014	0.003	0.0012	---
		04-SS MEAN	0.00058	0.0065	0.072	0.001	0.001	0.0019	0.0035	0.0022	0.00021	---
		04-SS MIN	0.0002	0.0004	0.06	0.001	0.001	0.001	0.001	0.002	0.0001	---
		04-SS N	10	10	6	7	9	10	10	10	10	---
		04-SS SD	0.00065	0.0091	0.012	0	0	0.0016	0.004	0.00042	0.00035	---
05-SH	15-May-1985	05-SH	0.0005	0.0006	---	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Sep-1985	05-SH	0.0002	0.0014	---	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Dec-1985	05-SH	0.0002	0.0004	---	< 0.001	< 0.001	0.006	0.008	< 0.002	< 0.0001	---
	15-Jun-1986	05-SH	0.0002	0.0007	0.27	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Aug-1986	05-SH	0.0002	0.0005	0.26	---	---	< 0.001	0.005	0.003	< 0.0001	---
	15-Oct-1986	05-SH	0.0006	0.0005	0.27	---	< 0.001	< 0.001	0.009	< 0.002	< 0.0001	---
	15-May-1987	05-SH	0.0003	0.0002	0.23	---	< 0.001	< 0.001	0.009	< 0.002	< 0.0001	---
	15-Sep-1987	05-SH	0.0002	0.0005	0.14	< 0.001	< 0.001	< 0.001	0.006	< 0.002	< 0.0001	---
	15-Nov-1987	05-SH	0.0002	0.0004	0.25	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
05-SH (continued)		05-SH +95CI	0.00039	0.0008	0.28	0.001	0.001	0.0026	0.0073	0.0023	0.0001	---
		05-SH -95CI	0.00019	0.00036	0.2	0.001	0.001	0.00047	0.0043	0.0019	0.0001	---
		05-SH MAX	0.0006	0.0014	0.27	0.001	0.001	0.006	0.009	0.003	0.0001	---
		05-SH MEAN	0.00029	0.00058	0.24	0.001	0.001	0.0016	0.0058	0.0021	0.0001	---
		05-SH MIN	0.0002	0.0002	0.14	0.001	0.001	0.001	0.003	0.002	0.0001	---
		05-SH N	9	9	6	6.00 [4]	8	9	9	9	9	---
		05-SH SD	0.00015	0.00034	0.05	0	0	0.0017	0.0023	0.00033	0	---
05-IN	15-May-1985	05-IN	0.0002	0.0007	---	< 0.001	< 0.001	< 0.001	0.016	< 0.002	< 0.0001	---
	15-Sep-1985	05-IN	0.0002	0.0002	---	< 0.001	< 0.001	0.002	0.002	< 0.002	< 0.0001	---
	15-Jun-1986	05-IN	0.0002	0.0008	0.22	< 0.001	< 0.001	0.006	0.013	< 0.002	< 0.0001	---
	15-Aug-1986	05-IN	0.0002	0.0004	0.21	---	---	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Oct-1986	05-IN	0.0006	0.0008	0.21	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-May-1987	05-IN	0.0003	0.0005	0.17	---	< 0.001	0.008	0.009	< 0.002	< 0.0001	---
	15-Sep-1987	05-IN	---	0.0004	0.17	< 0.001	< 0.001	0.002	0.003	< 0.002	< 0.0001	---
	15-Nov-1987	05-IN	0.0002	0.0007	0.17	< 0.001	< 0.001	0.003	0.005	< 0.002	< 0.0001	---
		05-IN +95CI	0.00038	0.00071	0.21	0.001	0.001	0.0048	0.01	0.002	0.0001	---
		05-IN -95CI	0.00016	0.00041	0.17	0.001	0.001	0.0012	0.0027	0.002	0.0001	---
		05-IN MAX	0.0006	0.0008	0.22	0.001	0.001	0.008	0.016	0.002	0.0001	---
		05-IN MEAN	0.00027	0.00056	0.19	0.001	0.001	0.003	0.0065	0.002	0.0001	---
		05-IN MIN	0.0002	0.0002	0.17	0.001	0.001	0.001	0.001	0.002	0.0001	---
		05-IN N	7	8	6	5	7	8	8	8	8	---
		05-IN SD	0.00015	0.00022	0.024	0	0	0.0026	0.0056	0	0	---
06-SH	15-May-1985	06-SH	0.0003	0.001	---	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
	15-Sep-1985	06-SH	0.0004	0.0011	---	< 0.001	< 0.001	0.003	< 0.001	< 0.002	< 0.0001	---
	15-Dec-1985	06-SH	0.0002	0.0003	---	< 0.001	< 0.001	0.004	0.006	0.008	< 0.0001	---
	15-Jun-1986	06-SH	0.0002	0.0009	0.29	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Aug-1986	06-SH	0.0002	0.0006	0.27	---	---	< 0.001	0.006	0.003	< 0.0001	---
	15-Oct-1986	06-SH	0.0004	0.0002	0.28	---	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-May-1987	06-SH	0.0002	0.0004	0.26	---	< 0.001	< 0.001	0.005	< 0.002	< 0.0001	---
	15-Sep-1987	06-SH	0.0004	0.0004	0.29	< 0.001	< 0.001	< 0.001	0.004	0.003	< 0.0001	---
	15-Nov-1987	06-SH	0.0002	0.0004	0.31	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
		06-SH +95CI	0.00034	0.0008	0.3	0.001	0.001	0.0023	0.0048	0.0042	0.0001	---
		06-SH -95CI	0.00021	0.00037	0.27	0.001	0.001	0.00082	0.0025	0.0016	0.0001	---
		06-SH MAX	0.0004	0.0011	0.31	0.001	0.001	0.004	0.006	0.008	0.0001	---
		06-SH MEAN	0.00028	0.00059	0.28	0.001	0.001	0.0016	0.0037	0.0029	0.0001	---
		06-SH MIN	0.0002	0.0002	0.26	0.001	0.001	0.001	0.001	0.002	0.0001	---
		06-SH N	9	9	6	6	8	9	9	9	9	---
		06-SH SD	0.000097	0.00033	0.018	0	0	0.0011	0.0017	0.002	0	---

Table 5.2
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	---	---	1.0	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			0.006	0.010	2.0	---	0.007	0.05	2	0.005	0.001	---
Alberta Tier 2 Potable Groundwater Guideline[3]			0.006	0.01	1	---	0.005	---	1	0.01	0.001	---
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			---	0.005	---	---	0.00037 [6]	0.0089 [7]	0.007	0.007 [8]	0.000005	Variable [9]
06-IN	15-May-1985	06-IN	0.001	0.0011	---	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Sep-1985	06-IN	0.0002	0.0005	---	< 0.001	< 0.001	0.003	0.003	< 0.002	< 0.0001	---
	15-Jun-1986	06-IN	0.0002	0.0005	0.25	< 0.001	< 0.001	< 0.001	0.005	< 0.002	< 0.0001	---
	15-Aug-1986	06-IN	0.0002	0.0009	0.19	---	---	0.002	0.004	0.005	< 0.0001	---
	15-Oct-1986	06-IN	0.0002	0.0006	0.19	---	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Feb-1987	06-IN	0.0002	0.0007	0.17	< 0.001	< 0.001	0.003	0.002	< 0.002	< 0.0001	---
	15-May-1987	06-IN	0.0002	0.0008	0.17	---	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Sep-1987	06-IN	0.001	0.0014	0.16	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Nov-1987	06-IN	0.0002	0.0011	0.17	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
		06-IN +95CI	0.00061	0.001	0.21	0.001	0.001	0.0021	0.0039	0.003	0.0001	---
		06-IN -95CI	0.00015	0.00064	0.16	0.001	0.001	0.00098	0.0023	0.0017	0.0001	---
		06-IN MAX	0.001	0.0014	0.25	0.001	0.001	0.003	0.005	0.005	0.0001	---
		06-IN MEAN	0.00038	0.00084	0.19	0.001	0.001	0.0016	0.0031	0.0023	0.0001	---
		06-IN MIN	0.0002	0.0005	0.16	0.001	0.001	0.001	0.001	0.002	0.0001	---
		06-IN N	9	9	7	6.00 [4]	8	9	9	9	9	---
		06-IN SD	0.00035	0.00031	0.03	0	0	0.00088	0.0012	0.001	0	---
07-SH	15-May-1985	07-SH	0.0011	0.0008	---	< 0.001	< 0.001	< 0.001	0.012	< 0.002	< 0.0001	---
	15-Sep-1985	07-SH	0.0004	0.0007	---	< 0.001	< 0.001	< 0.001	0.007	< 0.002	< 0.0001	---
	15-Jun-1986	07-SH	0.0002	0.0009	0.4	< 0.001	< 0.001	0.018	0.003	< 0.002	< 0.0001	---
	15-Aug-1986	07-SH	0.0002	0.0005	0.36	---	---	0.003	0.006	0.004	< 0.0001	---
	15-Oct-1986	07-SH	0.0005	0.0008	0.37	---	< 0.001	< 0.001	0.007	0.005	< 0.0001	---
	15-May-1987	07-SH	0.0002	0.0003	0.33	---	< 0.001	0.004	0.003	< 0.002	< 0.0001	---
	15-Sep-1987	07-SH	0.0007	0.0009	0.36	< 0.001	< 0.001	0.004	0.008	< 0.002	< 0.0001	---
	15-Nov-1987	07-SH	0.0002	0.0005	0.39	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
		07-SH +95CI	0.00066	0.00083	0.39	0.001	0.001	0.0081	0.0083	0.0034	0.0001	---
		07-SH -95CI	0.00021	0.00052	0.35	0.001	0.001	0.00013	0.004	0.0018	0.0001	---
		07-SH MAX	0.0011	0.0009	0.4	0.001	0.001	0.018	0.012	0.005	0.0001	---
		07-SH MEAN	0.00044	0.00068	0.37	0.001	0.001	0.0041	0.0061	0.0026	0.0001	---
		07-SH MIN	0.0002	0.0003	0.33	0.001	0.001	0.001	0.003	0.002	0.0001	---
		07-SH N	8	8	6	5	7	8	8	8	8	---
		07-SH SD	0.00032	0.00022	0.025	0	0	0.0058	0.0031	0.0012	0	---
07-IN	15-May-1985	07-IN	0.0006	0.0011	---	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Sep-1985	07-IN	0.0008	0.0008	---	< 0.001	< 0.001	0.002	0.003	< 0.002	< 0.0001	---
	15-Jun-1986	07-IN	0.0002	0.0008	0.2	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Aug-1986	07-IN	0.0002	0.0007	0.17	---	---	0.002	0.003	0.003	< 0.0001	---
	15-Oct-1986	07-IN	0.0003	0.0006	0.17	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-May-1987	07-IN	0.0002	0.0037	0.16	---	< 0.001	0.004	< 0.001	< 0.002	< 0.0001	---
	15-Sep-1987	07-IN	0.0007	0.0032	0.16	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Nov-1987	07-IN	0.0002	**0.016**	0.17	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
		07-IN +95CI	0.00058	0.007	0.18	0.001	0.001	0.0024	0.003	0.0024	0.0001	---
		07-IN -95CI	0.00022	0.00027	0.16	0.001	0.001	0.00089	0.0013	0.0019	0.0001	---
		07-IN MAX	0.0008	0.016	0.2	0.001	0.001	0.004	0.004	0.003	0.0001	---
		07-IN MEAN	0.0004	0.0034	0.17	0.001	0.001	0.0016	0.0021	0.0021	0.0001	---
		07-IN MIN	0.0002	0.0006	0.16	0.001	0.001	0.001	0.001	0.002	0.0001	---
		07-IN N	8	8	6	5	7	8	8	8	8	---
		07-IN SD	0.00026	0.0052	0.015	0	0	0.0011	0.0012	0.00035	0	---
07-SS	15-Feb-1985	07-SS	0.0004	0.0029	---	< 0.001	< 0.001	0.004	0.003	0.003	< 0.0001	---
	15-May-1985	07-SS	0.001	0.0012	---	< 0.001	< 0.001	< 0.001	0.009	< 0.002	0.0000013	---
	15-Sep-1985	07-SS	0.0007	0.0008	---	< 0.001	< 0.001	0.002	0.002	< 0.002	< 0.0001	---
	15-Dec-1985	07-SS	0.0002	0.0018	---	< 0.001	< 0.001	< 0.001	0.005	0.005	< 0.0001	---
	15-Jun-1986	07-SS	0.0002	0.0008	0.08	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Aug-1986	07-SS	0.0002	0.0022	0.06	---	---	< 0.001	0.007	0.004	< 0.0001	---
	15-Oct-1986	07-SS	0.0005	0.0008	0.06	---	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
	15-May-1987	07-SS	0.0002	0.0034	0.06	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Sep-1987	07-SS	0.0007	0.0031	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Nov-1987	07-SS	0.0003	0.0029	0.06	< 0.001	< 0.001	0.003	< 0.001	< 0.002	< 0.0001	---
		07-SS +95CI	0.00061	0.0026	0.07	0.001	0.001	0.0023	0.0051	0.0033	0.00011	---
		07-SS -95CI	0.00027	0.0013	0.054	0.001	0.001	0.00093	0.0017	0.0019	0.000071	---
		07-SS MAX	0.001	0.0034	0.08	0.001	0.001	0.004	0.009	0.005	0.0001	---
		07-SS MEAN	0.00044	0.002	0.062	0.001	0.001	0.0016	0.0034	0.0026	0.00009	---
		07-SS MIN	0.0002	0.0008	0.05	0.001	0.001	0.001	0.001	0.002	0.0000013	---
		07-SS N	10	10	6	7	9	10	10	10	10	---
		07-SS SD	0.00028	0.001	0.0098	0	0	0.0011	0.0028	0.0011	0.000031	---
08-SH	15-May-1985	08-SH	0.001	0.0022	---	< 0.001	< 0.001	< 0.001	**0.012**	< 0.002	< 0.0001	---
	15-Sep-1985	08-SH	0.0005	0.0019	---	< 0.001	< 0.001	< 0.001	**0.008**	< 0.002	< 0.0001	---
	15-Jun-1986	08-SH	0.0002	0.0015	0.3	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Aug-1986	08-SH	0.0002	0.0019	0.28	---	---	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Oct-1986	08-SH	0.0004	0.0013	0.29	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-May-1987	08-SH	0.0011	0.0012	0.27	---	< 0.001	< 0.001	**0.008**	< 0.002	< 0.0001	---
	15-Sep-1987	08-SH	0.0005	0.0014	0.27	< 0.001	< 0.001	0.002	0.005	< 0.002	< 0.0001	---
	15-Nov-1987	08-SH	0.0002	0.0011	0.29	< 0.001	< 0.001	< 0.001	0.007	0.005	< 0.0001	---
		08-SH +95CI	0.00076	0.0018	0.29	0.001	0.001	0.0014	0.0084	0.0031	0.0001	---
		08-SH -95CI	0.00027	0.0013	0.27	0.001	0.001	0.00088	0.0031	0.0016	0.0001	---
		08-SH MAX	0.0011	0.0022	0.3	0.001	0.001	0.002	0.012	0.005	0.0001	---
		08-SH MEAN	0.00051	0.0016	0.28	0.001	0.001	0.0011	0.0058	0.0024	0.0001	---
		08-SH MIN	0.0002	0.0011	0.27	0.001	0.001	0.001	0.001	0.002	0.0001	---
		08-SH N	8	8	6	5	7	8	8	8	8	---
		08-SH SD	0.00036	0.00039	0.012	0	0	0.00035	0.0038	0.0011	0	---
08-IN	15-May-1985	08-IN	0.0002	0.0004	---	< 0.001	< 0.001	**0.045**	**0.025**	< 0.002	< 0.0001	---
	15-Sep-1985	08-IN	0.0002	0.0009	---	< 0.001	< 0.001	< 0.001	**0.011**	< 0.002	< 0.0001	---
	15-Dec-1985	08-IN	0.0054	0.0004	---	< 0.001	< 0.001	< 0.001	**0.01**	< 0.002	< 0.0001	---
	15-Feb-1986	08-IN	0.0008	0.0011	---	< 0.001	< 0.001	0.002	0.007	0.004	< 0.0001	---
	15-Jun-1986	08-IN	0.0002	0.0005	0.17	< 0.001	< 0.001	**0.019**	**0.017**	< 0.002	< 0.0001	---
	15-Aug-1986	08-IN	0.0002	< 0.0002	0.12	---	---	< 0.001	< 0.001	0.004	< 0.0001	---
	15-Oct-1986	08-IN	0.0006	< 0.0002	0.11	---	< 0.001	< 0.001	0.005	< 0.002	< 0.0001	---
	15-May-1987	08-IN	0.0002	0.0003	0.1	---	< 0.001	**0.075**	**0.028**	< 0.002	< 0.0001	---
	15-Sep-1987	08-IN	0.0006	0.0007	0.07	< 0.001	< 0.001	< 0.001	0.005	< 0.002	< 0.0001	---
	15-Nov-1987	08-IN	0.0002	0.0003	0.08	< 0.001	< 0.001	< 0.001	0.004	0.007	< 0.0001	---
		08-IN +95CI	0.0018	0.00069	0.14	0.001	0.001	0.031	0.017	0.0039	0.0001	---
		08-IN -95CI	0.00014	0.00031	0.08	0.001	0.001	0.0011	0.0056	0.0019	0.0001	---
		08-IN MAX	0.0054	0.0011	0.17	0.001	0.001	0.075	0.028	0.007	0.0001	---
		08-IN MEAN	0.00086	0.0005	0.11	0.001	0.001	0.015	0.011	0.0029	0.0001	---
		08-IN MIN	0.0002	0.0002	0.07	0.001	0.001	0.001	0.001	0.002	0.0001	---
		08-IN N	10	10	6	7	9	10	10	10	10	---
		08-IN SD	0.0016	0.00031	0.035	0	0	0.026	0.0092	0.0017	0	---
08-SS	15-May-1985	08-SS	0.0043	**0.0086**	---	< 0.001	< 0.001	< 0.001	**0.014**	0.003	**0.0014**	---
	15-Sep-1985	08-SS	0.0002	**0.023**	---	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Dec-1985	08-SS	0.0002	**0.032**	---	< 0.001	< 0.001	< 0.001	0.003	0.003	< 0.0001	---
	15-Feb-1986	08-SS	0.0016	**0.025**	---	< 0.001	< 0.001	< 0.001	0.003	0.004	< 0.0001	---
	15-Jun-1986	08-SS	0.0034	**0.037**	0.11	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Aug-1986	08-SS	0.0014	**0.032**	0.09	---	---	< 0.001	0.004	0.003	< 0.0001	---
	15-Oct-1986	08-SS	0.0026	**0.034**	0.09	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-May-1987	08-SS	0.0012	**0.027**	0.09	---	< 0.001	< 0.001	**0.01**	< 0.002	< 0.0001	---
	15-Sep-1987	08-SS	0.005	**0.017**	0.08	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
		08-SS +95CI	0.0033	0.032	0.1	0.001	0.001	0.001	0.0077	0.003	0.00053	---
		08-SS -95CI	0.0011	0.02	0.082	0.001	0.001	0.001	0.0023	0.0021	0.000039	---
		08-SS MAX	0.005	0.037	0.11	0.001	0.001	0.001	0.014	0.004	0.0014	---
		08-SS MEAN	0.0022	0.026	0.092	0.001	0.001	0.001	0.005	0.0026	0.00024	---
		08-SS MIN	0.0002	0.0086	0.08	0.001	0.001	0.001	0.001	0.002	0.0001	---
		08-SS N	9	9	5	6	8	9	9	9	9	---
		08-SS SD	0.0017	0.009	0.011	0	0	0	0.0042	0.00073	0.00043	---

Table 5.2
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Dissolved Metals

AECOM

			DISSOLVED METALS									
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)
Canadian Drinking Water AO Guidelines 2022[1]			---	---	---	---	---	---	1.0	---	---	---
Canadian Drinking Water MAC Guidelines 2022[2]			0.006	0.010	2.0	---	0.007	0.05	2	0.005	0.001	---
Alberta Tier 2 Potable Groundwater Guideline[3]			**0.006**	**0.01**	**1**	**---**	**0.005**	**---**	**1**	**0.01**	**0.001**	**---**
Alberta Tier 2 Aquatic Life Groundwater Guideline[4]			**---**	**0.005**	**---**	**---**	**0.00037 [6]**	**0.0089 [7]**	**0.007**	**0.007 [8]**	**0.000005**	**Variable [9]**
09-SH [Decommissioned]	15-May-1985	09-SH [DECOM]	0.0002	0.001	---	< 0.001	< 0.001	< 0.001	0.005	< 0.002	< 0.0001	---
	15-Sep-1985	09-SH [DECOM]	0.001	0.0059	---	< 0.001	< 0.001	0.002	0.007	< 0.002	< 0.0001	---
	15-Jun-1986	09-SH [DECOM]	0.0002	0.0014	0.43	< 0.001	< 0.001	0.003	0.016	< 0.002	< 0.0001	---
	15-Aug-1986	09-SH [DECOM]	0.0002	0.0012	0.42	---	---	< 0.001	0.009	0.006	< 0.0001	---
	15-Oct-1986	09-SH [DECOM]	0.0005	0.0016	0.42	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-May-1987	09-SH [DECOM]	0.0002	0.0021	0.38	---	< 0.001	0.002	0.006	< 0.002	< 0.0001	---
	15-Sep-1987	09-SH [DECOM]	0.0006	0.0018	0.37	< 0.001	< 0.001	0.003	0.003	< 0.002	< 0.0001	---
	15-Nov-1987	09-SH [DECOM]	0.0002	0.0017	0.4	< 0.001	< 0.001	0.002	< 0.001	< 0.002	< 0.0001	---
		09-SH +95CI	0.00059	0.0032	0.42	0.001	0.001	0.0025	0.0094	0.0035	0.0001	---
		09-SH -95CI	0.00018	0.00099	0.38	0.001	0.001	0.0013	0.0026	0.0015	0.0001	---
		09-SH MAX	0.001	0.0059	0.43	0.001	0.001	0.003	0.016	0.006	0.0001	---
		09-SH MEAN	0.00039	0.0021	0.4	0.001	0.001	0.0019	0.006	0.0025	0.0001	---
		09-SH MIN	0.0002	0.001	0.37	0.001	0.001	0.001	0.001	0.002	0.0001	---
		09-SH N	8	8	6	5	7	8	8	8	8	---
		09-SH SD	0.00029	0.0016	0.024	0	0	0.00083	0.0049	0.0014	0	---
09-IN [Decommissioned]	15-May-1985	09-IN [DECOM]	0.0004	0.0009	---	< 0.001	< 0.001	< 0.001	0.012	< 0.002	< 0.0001	---
	15-Sep-1985	09-IN [DECOM]	0.0007	0.0013	---	< 0.001	< 0.001	0.002	0.006	< 0.002	< 0.0001	---
	15-Dec-1985	09-IN [DECOM]	0.0002	0.0007	---	< 0.001	< 0.001	< 0.001	0.005	0.004	< 0.0001	---
	15-Feb-1986	09-IN [DECOM]	0.0007	0.002	---	< 0.001	< 0.001	0.003	0.003	0.006	< 0.0001	---
	15-Jun-1986	09-IN [DECOM]	0.0002	0.0031	0.47	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Aug-1986	09-IN [DECOM]	0.0005	0.0048	0.48	---	---	0.003	< 0.001	0.004	< 0.0001	---
	15-Oct-1986	09-IN [DECOM]	0.0005	0.0048	0.45	---	< 0.001	0.021	0.003	< 0.002	< 0.0001	---
	15-May-1987	09-IN [DECOM]	0.0003	0.009	0.43	---	< 0.001	0.003	0.01	< 0.002	< 0.0001	---
	15-Sep-1987	09-IN [DECOM]	0.0006	0.0098	0.39	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Nov-1987	09-IN [DECOM]	0.0012	0.0018	0.48	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
		09-IN +95CI	0.00071	0.0059	0.48	0.001	0.001	0.0075	0.0071	0.0037	0.0001	---
		09-IN -95CI	0.00035	0.0018	0.42	0.001	0.001	0.00011	0.0027	0.0019	0.0001	---
		09-IN MAX	0.0012	0.0098	0.48	0.001	0.001	0.021	0.012	0.006	0.0001	---
		09-IN MEAN	0.00053	0.0038	0.45	0.001	0.001	0.0037	0.0049	0.0028	0.0001	---
		09-IN MIN	0.0002	0.0007	0.39	0.001	0.001	0.001	0.001	0.002	0.0001	---
		09-IN N	10	10	6	7	9	10	10	10	10	---
		09-IN SD	0.0003	0.0033	0.035	0	0	0.0061	0.0035	0.0014	0	---
09-PEAT	15-Nov-1987	09-PEAT	0.0002	0.0007	0.03	< 0.001	< 0.001	< 0.001	0.005	0.005	< 0.0001	---
		09-PEAT +95CI	0	0	0	0	0	0	0	0	0	---
		09-PEAT -95CI	0	0	0	0	0	0	0	0	0	---
		09-PEAT MAX	0.0002	0.0007	0.03	0.001	0.001	0.001	0.005	0.005	0.0001	---
		09-PEAT MEAN	0.0002	0.0007	0.03	0.001	0.001	0.001	0.005	0.005	0.0001	---
		09-PEAT MIN	0.0002	0.0007	0.03	0.001	0.001	0.001	0.005	0.005	0.0001	---
		09-PEAT N	1	1	1	1	1	1	1	1	1	---
		09-PEAT SD	0	0	0	0	0	0	0	0	0	---
10-SH [Decommissioned]	15-May-1985	10-SH [DECOM]	0.0005	0.0026	---	< 0.001	< 0.001	< 0.001	0.009	< 0.002	< 0.0001	---
	15-Sep-1985	10-SH [DECOM]	0.0003	0.0008	---	< 0.001	< 0.001	< 0.001	0.008	< 0.002	< 0.0001	---
	15-Jun-1986	10-SH [DECOM]	0.0002	0.0019	0.41	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.0001	---
	15-Aug-1986	10-SH [DECOM]	0.0005	0.0027	0.39	---	---	< 0.001	0.003	0.004	< 0.0001	---
	15-Oct-1986	10-SH [DECOM]	0.0003	0.0072	0.4	---	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-May-1987	10-SH [DECOM]	0.0002	0.003	0.35	---	< 0.001	0.002	0.002	< 0.002	< 0.0001	---
	15-Sep-1987	10-SH [DECOM]	0.0013	0.0047	0.36	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.0001	---
	15-Nov-1987	10-SH [DECOM]	0.0002	0.0018	0.36	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.0001	---
		10-SH +95CI	0.00069	0.0045	0.4	0.001	0.001	0.0014	0.0058	0.0027	0.0001	---
		10-SH -95CI	0.00018	0.0017	0.36	0.001	0.001	0.00088	0.0015	0.0018	0.0001	---
		10-SH MAX	0.0013	0.0072	0.41	0.001	0.001	0.002	0.009	0.004	0.0001	---
		10-SH MEAN	0.00044	0.0031	0.38	0.001	0.001	0.0011	0.0036	0.0022	0.0001	---
		10-SH MIN	0.0002	0.0008	0.35	0.001	0.001	0.001	0.001	0.002	0.0001	---
		10-SH N	8	8	6	5	7	8	8	8	8	---
		10-SH SD	0.00037	0.002	0.025	0	0	0.00035	0.0031	0.00071	0	---
10-IN [Decommissioned]	15-Dec-1985	10-IN [DECOM]	0.0002	0.0004	---	< 0.001	< 0.001	0.023	0.01	0.004	< 0.0001	---
	15-Feb-1986	10-IN [DECOM]	0.0005	0.0005	---	< 0.001	< 0.001	0.005	0.003	0.004	< 0.0001	---
	15-Jun-1986	10-IN [DECOM]	0.0002	0.0004	0.22	< 0.001	< 0.001	< 0.001	0.006	< 0.002	< 0.0001	---
	15-Aug-1986	10-IN [DECOM]	0.0002	0.0005	0.2	---	---	< 0.001	0.007	0.004	< 0.0001	---
	15-Oct-1986	10-IN [DECOM]	0.0005	0.0007	0.22	---	< 0.001	< 0.001	0.006	< 0.002	< 0.0001	---
	15-May-1987	10-IN [DECOM]	0.0002	0.0004	0.19	---	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Sep-1987	10-IN [DECOM]	0.0005	0.0006	0.17	< 0.001	< 0.001	< 0.001	0.004	< 0.002	< 0.0001	---
	15-Nov-1987	10-IN [DECOM]	0.0002	0.0005	0.21	< 0.001	< 0.001	0.008	0.005	< 0.002	< 0.0001	---
		10-IN +95CI	0.00042	0.00057	0.22	0.001	0.001	0.01	0.0071	0.0035	0.0001	---
		10-IN -95CI	0.0002	0.00043	0.19	0.001	0.001	0.0002	0.0041	0.002	0.0001	---
		10-IN MAX	0.0005	0.0007	0.22	0.001	0.001	0.023	0.01	0.004	0.0001	---
		10-IN MEAN	0.00031	0.0005	0.2	0.001	0.001	0.0051	0.0056	0.0028	0.0001	---
		10-IN MIN	0.0002	0.0004	0.17	0.001	0.001	0.001	0.003	0.002	0.0001	---
		10-IN N	8	8	6	5	7	8	8	8	8	---
		10-IN SD	0.00016	0.00011	0.019	0	0	0.0077	0.0022	0.001	0	---

NOTES:

1: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Aesthetic Objective (AO)

2: Health Canada Guidelines for Canadian Drinking Water Quality, September 2022 - Maximum Acceptable Concentration (MAC)

3: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (August, 2022), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Potable

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Potable Groundwater Remediation Guideline for Commercial/Industrial Sites
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

4: Alberta Tier 1 Soil and Groundwater Remediation Guidelines (August, 2022), Table B-4. Groundwater Remediation Guidline Values for Commercial/Industrial - All Water Uses - Aquatic Life

Monitoring Well	Monitoring Well compared to Alberta Tier 2 Aquatic Life Groundwater Remediation Guideline for Commercial/Industrial Sites - Fine Grain Guidelines = Coarse Grain Guidelines for Routine Parameters (Fine Grain for SH and IN wells, Coarse Grain for SS wells)
Bold	Guideline exceeded
Regular	Concentration is equal to the guideline

6: Cadmium Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.3. Metals guidelines for Protection of Aquatic Life at varying hardness. - Long-term (Cronic)

7: Chromium (trivalent)

8: Lead Guideline: Environmental Quality Guidelines for Alberta Surface Waters (March 2018) - Table 1.3. Metals guidelines for Protection of Aquatic Life at varying hardness. - Long-term (Cronic)

Baseline Statistics
Detection Limit is greater than the guideline
--- Guideline Row: No guideline for that parameter
--- Results: Parameter was not analyzed

Table 5.3
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

AECOM

			ORGANICS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)
01-SH [Decommissioned]	15-May-1985	01-SH [DECOM]	5.2	20
	15-Jun-1985	01-SH [DECOM]	4	5
	15-Sep-1985	01-SH [DECOM]	3.4	5
	15-May-1986	01-SH [DECOM]	4.3	21
	15-Aug-1986	01-SH [DECOM]	2.8	38
	15-Oct-1986	01-SH [DECOM]	2.8	8
	15-May-1987	01-SH [DECOM]	4.2	18
	15-Sep-1987	01-SH [DECOM]	2.8	5
	15-Nov-1987	01-SH [DECOM]	3.4	10
		01-SH +95CI	4.2	21
		01-SH -95CI	3.11	7.25
		01-SH MAX	5.2	38
		01-SH MEAN	3.66	14
		01-SH MIN	2.8	5
		01-SH N	9	9
		01-SH SD	0.83	11
01-IN [Decommissioned]	15-Feb-1985	01-IN [DECOM]	3.4	20
	15-Jun-1985	01-IN [DECOM]	4.6	5
	15-Dec-1985	01-IN [DECOM]	7.2	30
	15-May-1986	01-IN [DECOM]	5	14
	15-Aug-1986	01-IN [DECOM]	4.2	11
	15-Oct-1986	01-IN [DECOM]	4.3	18
	15-May-1987	01-IN [DECOM]	4.7	11
	15-Sep-1987	01-IN [DECOM]	3.5	15
	15-Nov-1987	01-IN [DECOM]	4.7	10
		01-IN +95CI	5.35	19.61
		01-IN -95CI	3.9	10.17
		01-IN MAX	7.2	30
		01-IN MEAN	4.62	14.89
		01-IN MIN	3.4	5
		01-IN N	9	9
		01-IN SD	1.11	7.22
01-SS [Decommissioned]	15-Jun-1985	01-SS [DECOM]	1.6	7
	15-Jul-1985	01-SS [DECOM]	6.5	25
	15-Dec-1985	01-SS [DECOM]	2	10
	15-May-1986	01-SS [DECOM]	6.6	25
	15-Aug-1986	01-SS [DECOM]	1.5	37
	15-Oct-1986	01-SS [DECOM]	1.8	18
	15-Feb-1987	01-SS [DECOM]	2	< 5
	15-Sep-1987	01-SS [DECOM]	1.2	8
	15-Nov-1987	01-SS [DECOM]	1.7	10
		01-SS +95CI	4.18	23.21
		01-SS -95CI	1.36	9.01
		01-SS MAX	6.6	37
		01-SS MEAN	2.77	16
		01-SS MIN	1.2	5
		01-SS N	9	9
		01-SS SD	2.16	11
02-SH [Decommissioned]	15-May-1985	02-SH [DECOM]	3	10
	15-Sep-1985	02-SH [DECOM]	2	5
	15-Dec-1985	02-SH [DECOM]	2.2	10
	15-Feb-1986	02-SH [DECOM]	1.2	5
	15-Jun-1986	02-SH [DECOM]	2.3	26
	15-Aug-1986	02-SH [DECOM]	2	9
	15-Oct-1986	02-SH [DECOM]	1.9	10
	15-May-1987	02-SH [DECOM]	3	5
	15-Sep-1987	02-SH [DECOM]	2	8
	15-Nov-1987	02-SH [DECOM]	2.7	10
		02-SH +95CI	2.57	13.58
		02-SH -95CI	1.89	6.02
		02-SH MAX	3	26
		02-SH MEAN	2.23	9.8
		02-SH MIN	1.2	5
		02-SH N	10	10
		02-SH SD	0.55	6.11
02-IN [Decommissioned]	15-May-1985	02-IN [DECOM]	3	20
	15-Sep-1985	02-IN [DECOM]	5.4	5
	15-Feb-1986	02-IN [DECOM]	2.6	15
	15-Jun-1986	02-IN [DECOM]	3.5	17
	15-Aug-1986	02-IN [DECOM]	3.2	10
	15-Oct-1986	02-IN [DECOM]	3.7	17
	15-May-1987	02-IN [DECOM]	4.8	12
	15-Sep-1987	02-IN [DECOM]	3.2	14
	15-Nov-1987	02-IN [DECOM]	4.2	10
		02-IN +95CI	4.33	16.33
		02-IN -95CI	3.14	10.34
		02-IN MAX	5.4	20
		02-IN MEAN	3.73	13.33
		02-IN MIN	2.6	5
		02-IN N	9	9
		02-IN SD	0.91	4.58

Table 5.3
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

AECOM

			ORGANICS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)
03-SH	15-May-1985	03-SH	5.6	25
	15-Sep-1985	03-SH	5.2	10
	15-Jun-1986	03-SH	6	37
	15-Aug-1986	03-SH	6.1	20
	15-Oct-1986	03-SH	6.4	17
	15-May-1987	03-SH	6.8	14
	15-Sep-1987	03-SH	6.2	17
	15-Nov-1987	03-SH	6.4	20
		03-SH +95CI	6.43	25.67
		03-SH -95CI	5.74	14.33
		03-SH MAX	6.8	37
		03-SH MEAN	6.09	20
		03-SH MIN	5.2	10
		03-SH N	8	8
		03-SH SD	0.5	8.18
03-IN	15-May-1985	03-IN	13.8	30
	15-Sep-1985	03-IN	4	15
	15-Dec-1985	03-IN	3.8	35
	15-Feb-1986	03-IN	2.8	10
	15-Jun-1986	03-IN	3.6	1
	15-Aug-1986	03-IN	3	1
	15-Oct-1986	03-IN	3.3	5
	15-May-1987	03-IN	4.2	5
	15-Sep-1987	03-IN	3	6
	15-Nov-1987	03-IN	3.9	15
		03-IN +95CI	6.58	19.6
		03-IN -95CI	2.5	5
		03-IN MAX	13.8	35
		03-IN MEAN	4.54	12.3
		03-IN MIN	2.8	1
		03-IN N	10	10
		03-IN SD	3.29	11.79
04-SH	15-May-1985	04-SH	5	20
	15-Sep-1985	04-SH	3.4	1
	15-Jun-1986	04-SH	3.3	1
	15-Aug-1986	04-SH	3.2	1
	15-Oct-1986	04-SH	3.8	10
	15-May-1987	04-SH	3.6	8
	15-Sep-1987	04-SH	3	15
	15-Nov-1987	04-SH	3.4	15
		04-SH +95CI	4.02	14.03
		04-SH -95CI	3.16	3.72
		04-SH MAX	5	20
		04-SH MEAN	3.59	8.88
		04-SH MIN	3	1
		04-SH N	8	8
		04-SH SD	0.62	7.43
04-SS	15-Sep-1985	04-SS	1.2	1
	15-Dec-1985	04-SS	8.6	35
	15-Feb-1986	04-SS	3.2	20
	15-Jun-1986	04-SS	1.5	27
	15-Aug-1986	04-SS	1	5
	15-Oct-1986	04-SS	1.4	10
	15-May-1987	04-SS	1.8	5
	15-Sep-1987	04-SS	1	9
	15-Nov-1987	04-SS	1.2	20
		04-SS +95CI	3.92	22.15
		04-SS -95CI	0.72	7.18
		04-SS MAX	8.6	35
		04-SS MEAN	2.32	14.67
		04-SS MIN	1	1
		04-SS N	9	9
		04-SS SD	2.45	11.46
05-SH	15-May-1985	05-SH	5	15
	15-Sep-1985	05-SH	4.4	15
	15-Dec-1985	05-SH	4.8	15
	15-Jun-1986	05-SH	4.5	---
	15-Aug-1986	05-SH	4.3	11
	15-Oct-1986	05-SH	4.8	15
	15-May-1987	05-SH	5.2	10
	15-Sep-1987	05-SH	4.4	10
	15-Nov-1987	05-SH	5.6	10
		05-SH +95CI	5.06	14.34
		05-SH -95CI	4.5	10.85
		05-SH MAX	5.6	15
		05-SH MEAN	4.78	12.63
		05-SH MIN	4.3	10
		05-SH N	9	8
		05-SH SD	0.43	2.56

Table 5.3
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)
05-IN	15-May-1985	05-IN	16	54
	15-Sep-1985	05-IN	0.8	1
	15-Jun-1986	05-IN	4.3	13
	15-Aug-1986	05-IN	4.2	18
	15-Oct-1986	05-IN	4.8	9
	15-May-1987	05-IN	5	9
	15-Sep-1987	05-IN	4.3	14
	15-Nov-1987	05-IN	5.4	20
		05-IN +95CI	8.67	28.32
		05-IN -95CI	2.53	6.18
		05-IN MAX	16	54
		05-IN MEAN	5.6	17.25
		05-IN MIN	0.8	1
		05-IN N	8	8
		05-IN SD	4.43	15.98
06-SH	15-May-1985	06-SH	5.4	25
	15-Sep-1985	06-SH	3.4	5
	15-Dec-1985	06-SH	4.8	10
	15-Jun-1986	06-SH	3.5	19
	15-Aug-1986	06-SH	2.3	23
	15-Oct-1986	06-SH	3.1	8
	15-May-1987	06-SH	3	1
	15-Sep-1987	06-SH	2.4	5
	15-Nov-1987	06-SH	2.6	20
		06-SH +95CI	4.08	18.71
		06-SH -95CI	2.69	7.07
		06-SH MAX	5.4	25
		06-SH MEAN	3.39	12.89
		06-SH MIN	2.3	1
		06-SH N	9	9
		06-SH SD	1.066	8.9
06-IN	15-May-1985	06-IN	3	5
	15-Sep-1985	06-IN	2.4	1
	15-Jun-1986	06-IN	3	1
	15-Aug-1986	06-IN	2	37
	15-Oct-1986	06-IN	3.1	8
	15-Feb-1987	06-IN	3	20
	15-May-1987	06-IN	3	1
	15-Sep-1987	06-IN	2.2	16
	15-Nov-1987	06-IN	2.6	15
		06-IN +95CI	2.97	19.36
		06-IN -95CI	2.43	3.76
		06-IN MAX	3.1	37
		06-IN MEAN	2.7	11.56
		06-IN MIN	2	1
		06-IN N	9	9
		06-IN SD	0.41	11.94
07-SH	15-May-1985	07-SH	3.8	15
	15-Sep-1985	07-SH	2.6	5
	15-Jun-1986	07-SH	3.1	5
	15-Aug-1986	07-SH	2	10
	15-Oct-1986	07-SH	8.3	28
	15-May-1987	07-SH	3	1
	15-Sep-1987	07-SH	2.6	12
	15-Nov-1987	07-SH	2.8	18
		07-SH +95CI	4.91	17.74
		07-SH -95CI	2.14	5.76
		07-SH MAX	8.3	28
		07-SH MEAN	3.53	11.75
		07-SH MIN	2	1
		07-SH N	8	8
		07-SH SD	2	8.65
07-IN	15-May-1985	07-IN	4.2	10
	15-Sep-1985	07-IN	2.8	10
	15-Jun-1986	07-IN	3.3	1
	15-Aug-1986	07-IN	2.4	36
	15-Oct-1986	07-IN	3.8	10
	15-May-1987	07-IN	3.2	6
	15-Sep-1987	07-IN	2.5	16
	15-Nov-1987	07-IN	3.2	15
		07-IN +95CI	3.6	20.23
		07-IN -95CI	2.75	5.77
		07-IN MAX	4.2	36
		07-IN MEAN	3.18	13
		07-IN MIN	2.4	1
		07-IN N	8	8
		07-IN SD	0.62	10.43

Table 5.3
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

			ORGANICS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)
07-SS	15-Feb-1985	07-SS	0.6	10
	15-May-1985	07-SS	3.4	20
	15-Sep-1985	07-SS	1.4	1
	15-Dec-1985	07-SS	2	1
	15-Jun-1986	07-SS	2.2	1
	15-Aug-1986	07-SS	1.6	48
	15-Oct-1986	07-SS	2.2	10
	15-May-1987	07-SS	2.2	1
	15-Sep-1987	07-SS	1.8	5
	15-Nov-1987	07-SS	2.4	15
		07-SS +95CI	2.43	20.21
		07-SS -95CI	1.53	2.19
		07-SS MAX	3.4	48
		07-SS MEAN	1.98	11.2
		07-SS MIN	0.6	1
		07-SS N	10	10
		07-SS SD	0.73	14.54
08-SH	15-May-1985	08-SH	4.3	5
	15-Sep-1985	08-SH	2	1
	15-Jun-1986	08-SH	2.4	12
	15-Aug-1986	08-SH	2	1
	15-Oct-1986	08-SH	2.5	6
	15-May-1987	08-SH	2.6	1
	15-Sep-1987	08-SH	1.8	11
	15-Nov-1987	08-SH	2.3	10
		08-SH +95CI	3.03	9.11
		08-SH -95CI	1.95	2.64
		08-SH MAX	4.3	12
		08-SH MEAN	2.49	5.88
		08-SH MIN	1.8	1
		08-SH N	8	8
		08-SH SD	0.78	4.67
08-IN	15-May-1985	08-IN	0.2	25
	15-Sep-1985	08-IN	2.4	5
	15-Dec-1985	08-IN	2.8	20
	15-Feb-1986	08-IN	1.5	20
	15-Jun-1986	08-IN	2.6	1
	15-Aug-1986	08-IN	2.3	5
	15-Oct-1986	08-IN	2.6	9
	15-May-1987	08-IN	3	1
	15-Sep-1987	08-IN	1.8	8
	15-Nov-1987	08-IN	2.4	10
		08-IN +95CI	2.67	15.63
		08-IN -95CI	1.65	5.17
		08-IN MAX	3	25
		08-IN MEAN	2.16	10.4
		08-IN MIN	0.2	1
		08-IN N	10	10
		08-IN SD	0.82	8.44
08-SS	15-May-1985	08-SS	3.4	10
	15-Sep-1985	08-SS	1.7	1
	15-Dec-1985	08-SS	1.6	1
	15-Feb-1986	08-SS	0.6	10
	15-Jun-1986	08-SS	1.6	1
	15-Aug-1986	08-SS	1.4	1
	15-Oct-1986	08-SS	1.6	9
	15-May-1987	08-SS	1.6	5
	15-Sep-1987	08-SS	1.2	14
		08-SS +95CI	2.12	9.09
		08-SS -95CI	1.15	2.47
		08-SS MAX	3.4	14
		08-SS MEAN	1.63	5.78
		08-SS MIN	0.6	1
		08-SS N	9	9
		08-SS SD	0.74	5.07
09-SH [Decommissioned]	15-May-1985	09-SH [DECOM]	32.5	106
	15-Sep-1985	09-SH [DECOM]	31.3	81
	15-Jun-1986	09-SH [DECOM]	40	105
	15-Aug-1986	09-SH [DECOM]	44	82
	15-Oct-1986	09-SH [DECOM]	38	100
	15-May-1987	09-SH [DECOM]	38	110
	15-Sep-1987	09-SH [DECOM]	43	110
	15-Nov-1987	09-SH [DECOM]	46.5	128
		09-SH +95CI	42.88	113.45
		09-SH -95CI	35.44	92.05
		09-SH MAX	46.5	128
		09-SH MEAN	39.16	102.75
		09-SH MIN	31.3	81
		09-SH N	8	8
		09-SH SD	5.37	15.44

Table 5.3
VEOLIA, Swan Hills Treatment Centre
Baseline Groundwater Monitoring Analytical Results: Organics and Petroleum Hydrocarbons

AECOM

			ORGANICS	
Monitoring Well	Date (dd-mmm-yyyy)	Sample Name	Total Organic Carbon (TOC) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)
09-IN [Decommissioned]	15-May-1985	09-IN [DECOM]	16.2	56
	15-Sep-1985	09-IN [DECOM]	14	24
	15-Dec-1985	09-IN [DECOM]	14.8	50
	15-Feb-1986	09-IN [DECOM]	15	50
	15-Jun-1986	09-IN [DECOM]	17	44
	15-Aug-1986	09-IN [DECOM]	17.6	34
	15-Oct-1986	09-IN [DECOM]	18.2	47
	15-May-1987	09-IN [DECOM]	19.6	41
	15-Sep-1987	09-IN [DECOM]	17.8	44
	15-Nov-1987	09-IN [DECOM]	22	59
		09-IN +95CI	18.71	51.27
		09-IN -95CI	15.73	38.53
		09-IN MAX	22	59
		09-IN MEAN	17.22	44.9
		09-IN MIN	14	24
		09-IN N	10	10
		09-IN SD	2.41	10.28
09-PEAT	15-Nov-1987	09-PEAT	90	---
		09-PEAT +95CI	0	---
		09-PEAT -95CI	0	---
		09-PEAT MAX	90	---
		09-PEAT MEAN	90	---
		09-PEAT MIN	90	---
		09-PEAT N	1	---
		09-PEAT SD	0	---
10-SH [Decommissioned]	15-May-1985	10-SH [DECOM]	5.7	15
	15-Sep-1985	10-SH [DECOM]	4.6	1
	15-Jun-1986	10-SH [DECOM]	5.4	23
	15-Aug-1986	10-SH [DECOM]	5	16
	15-Oct-1986	10-SH [DECOM]	4.9	11
	15-May-1987	10-SH [DECOM]	6	12
	15-Sep-1987	10-SH [DECOM]	4.8	16
	15-Nov-1987	10-SH [DECOM]	6.3	20
		10-SH +95CI	5.76	18.84
		10-SH -95CI	4.91	9.66
		10-SH MAX	6.3	23
		10-SH MEAN	5.34	14.25
		10-SH MIN	4.6	1
		10-SH N	8	8
		10-SH SD	0.61	6.63
10-IN [Decommissioned]	15-Dec-1985	10-IN [DECOM]	13	10
	15-Feb-1986	10-IN [DECOM]	4.4	25
	15-Jun-1986	10-IN [DECOM]	5.4	10
	15-Aug-1986	10-IN [DECOM]	4.8	16
	15-Oct-1986	10-IN [DECOM]	5.2	10
	15-May-1987	10-IN [DECOM]	6.6	10
	15-Sep-1987	10-IN [DECOM]	5	16
	15-Nov-1987	10-IN [DECOM]	6.1	20
		10-IN +95CI	8.25	18.56
		10-IN -95CI	4.38	10.69
		10-IN MAX	13	25
		10-IN MEAN	6.31	14.63
		10-IN MIN	4.4	10
		10-IN N	8	8
		10-IN SD	2.79	5.68

NOTES: --- Results: Parameter was not analyzed

Table 6.0
VEOLIA, Swan Hills Treatment Centre
2023 Groundwater Analytical Exceedances

Monitoring Well	Parameter Exceeded	2024 Concentration (mg/L)	2024 Guideline - AB Tier 2 Potable / Aquatic Life [1] (mg/L)	2024 Mann Kendall Trend (All Data)
01A-SH	pH	5.69	6.5-8.5	Decreasing
	Iron	3.22	0.3	Not Significant
	Manganese	0.082	0.02	Decreasing
01A-IN	Iron	16	0.3	Not Significant
	Manganese	0.49	0.02	Decreasing
	TDS	526	500	Decreasing
	Arsenic	0.0112	0.01	Increasing
03-SH	TDS	579	500	Increasing
03-IN	TDS	528	500	Decreasing
04-SH	Manganese	0.242	0.02	Not Significant
04-IN	Manganese	0.372	0.02	Increasing
04-SS	Manganese	0.557	0.02	Not Significant
05-SH	TDS	711	500	Increasing
05-IN	Manganese	0.147	0.02	Decreasing
	TDS	747	500	Increasing
05-SS	Manganese	0.417	0.02	Increasing
06-SH	Manganese	1.17	0.02	Increasing
	TDS	584	500	Increasing
06-IN 06(R)IN	Manganese	0.837	0.02	Not Significant
	TDS	605	500	Not Significant
07-SH	pH	8.83	6.5-8.5	Not Significant
	Manganese	0.428	0.02	Not Significant
	TDS	840	500	Increasing
07-IN	Manganese	0.415	0.02	Not Significant
07-SS 07(R)SS	Manganese	0.745	0.02	Not Significant
08-SH	Manganese	0.087	0.02	Not Significant
08-IN	TDS	519	500	Decreasing
11-SH	Manganese	0.690	0.02	Not Significant
	TDS	747	500	Increasing
11-IN	Manganese	0.405	0.02	Not Significant
12-SH	Manganese	0.197	0.02	Not Significant
12-IN	Manganese	0.726	0.02	Not Significant
13-SH	Manganese	0.252	0.02	Not Significant
	TDS	628	500	Not Significant
13-IN	Manganese	0.210	0.02	Decreasing
14-SH	Manganese	0.0776	0.02	Decreasing
	TDS	547	500	Not Significant
15-SH	Manganese	0.163	0.02	Not Significant
15-IN	Manganese	0.345	0.02	Decreasing
15(2R)SS	Manganese	0.750	0.02	Not Significant
17-IN	Manganese	0.410	0.02	Decreasing
89-3	Iron	0.99	0.02	Not Significant
	Manganese	1.06	0.02	Increasing

	Shallow Interval Wells
	Intermediate Interval Wells
	Sandstone Interval Wells

1 Aquatic Life applicable to MW-08 only; lowest concentration between Potable and Aquatic Life guidelines used

Table 7.1
Veolia, Swan Hills Treatment Centre
2024 Outliers using 1989 EPA with 95% Confidence

AECOM

Monitoring Well	INDICATORS						MAJOR IONS				DISSOLVED METALS									
	pH (mm/dd/yy - concentration in mg/L)	TDS (mm/dd/yy - concentration in mg/L)	Chloride (Cl) (mm/dd/yy - concentration in mg/L)	Sulphate (SO_4) (mm/dd/yy - concentration in mg/L)	DOC (mm/dd/yy - concentration in mg/L)	TOC (mm/dd/yy - concentration in mg/L)	Bicarbonate (HCO_3) (mm/dd/yy - concentration in mg/L)	Calcium (Ca) (mm/dd/yy - concentration in mg/L)	Magnesium (mm/dd/yy - concentration in mg/L)	Sodium (Na) (mm/dd/yy - concentration in mg/L)	Arsenic (As) (mm/dd/yy - concentration in mg/L)	Cadmium (Cd) (mm/dd/yy - concentration in mg/L)	Chromium (Cr) (mm/dd/yy - concentration in mg/L)	Copper (Cu) (mm/dd/yy - concentration in mg/L)	Iron (Fe) (mm/dd/yy - concentration in mg/L)	Lead (Pb) (mm/dd/yy - concentration in mg/L)	Manganese (Mn) (mm/dd/yy - concentration in mg/L)	Mercury (Hg) (mm/dd/yy - concentration in mg/L)	Nickel (Ni) (mm/dd/yy - concentration in mg/L)	Zinc (mm/dd/yy - concentration in mg/L)
Shallow Interval																				
01-SH_01A-SH	None	**9/8/04 - 724**	**9/28/22 - 9.66**	**9/8/04 - 214**	None	None	None	**9/8/04 - 176**	None	None	**8/15/90 - 0.13**	None	None	**11/13/93 - 0.102**	None	None	**9/22/94 - 0.844**	None	**11/13/93 - 0.16**	**11/2/94 - 0.099**
03-SH	None	None	**11/2/94 - 4.4**	None	**9/10/24 - 8.0**	None	None	None	None	None	**9/15/85 - 0.014**	None	**9/9/99 - 0.018**	**9/15/98 - 0.015**	None	None	**9/8/10 - 0.266**	None	None	**9/3/03 - 0.0259**
04-SH	None	**3/15/90 - 244**	**5/15/85 - 3.2**	**5/15/85 - 34.5**	None	None	None	None	None	**5/15/85 - 19.5**	**9/7/11 - 0.0016**	None	**9/15/98 - 0.04**	**9/15/85 - 0.013**	None	None	**9/22/20 - 0.524**	None	**11/1/94 - 0.018**	**9/8/04 - 0.0235**
05-SH	None	None	None	None	None	None	None	None	None	None	**9/7/11 - 0.0019**	None	None	None	None	None	None	None	**9/21/94 - 0.015**	**5/31/94 - 0.078**
06-SH	None	None	**9/21/94 - 5.2**	**5/12/92 - 51.4**	**9/8/10 - 3.4** **9/17/14 - 7.5**	None	None	None	None	**5/12/92 - 44.1**	**9/7/11 - 0.00208**	None	None	**9/21/94 - 0.128**	None	None	**9/7/05 - 3.55**	None	**9/21/94 - 0.167**	**9/21/94 - 0.054**
07-SH	**9/10/24 - 8.83**	None	**9/10/24 - 220**	None	None	**10/15/86 - 8.3**	None	None	None	**5/15/85 - 27**	None	None	None	**9/9/99 - 0.035**	**9/9/09 - 2.06**	None	None	None	**9/21/94 - 0.017**	**9/4/96 - 0.026**
08-SH (bg)	None	**8/15/90 - 585**	None	None	**9/26/17 - 23**	**5/15/85 - 4.3**	**9/11/24 - 452**	**9/8/11 - 60**	**9/15/85 - 15.9**	None	None	None	None	**9/9/04 - 0.0123**	None	None	**9/16/14 - 1.29**	None	**9/5/12 - 0.0335**	**9/9/04 - 0.0179**
11-SH	None	None	None	**9/11/24 - 198**	**9/17/14 - 3.3**	**9/9/99 - 17.2**	None	None	None	None	**9/9/99 - 0.013**	None	None	None	None	None	None	None	**9/22/94 - 0.027**	**11/2/94 - 0.097**
12-SH	None	None	None	None	None	None	None	None	None	None	**9/18/18 - 0.00282**	None	None	**5/18/93 - 0.012**	**9/18/18 - 0.62**	None	**9/7/07 - 1.19**	None	**9/7/07 - 0.0153**	**9/28/23 - 0.0307**
13-SH	None	None	**9/5/12 - 5.08**	None	**9/28/23 - 8.39**	None	None	None	None	**9/7/06 - 72.6**	None	None	None	**9/22/94 - 0.103**	None	None	None	None	**9/22/94 - 0.034**	**9/26/13 - 0.245**
14-SH	None	None	**9/5/00 - 17.1**	**9/5/00 - 106**	**9/16/19 - 0.64** **9/16/14 - 6.5**	None	None	None	None	**9/15/98 - 64.1**	**9/7/06 - 0.0012**	None	**9/9/04 - 0.016**	None	None	None	**9/5/00 - 1.07**	None	**9/5/00 - 0.057**	**9/25/13 - 0.211**
15-SH	None	**5/18/93 - 231**	**11/12/93 - 3.2**	**9/4/97 - 91.5**	None	**5/18/93 - 2.3** **11/12/93 - 12.5**	None	None	None	None	**9/26/13 - 0.00144**	None	**9/9/99 - 0.035**	**11/1/94 - 0.018**	**9/26/13 - 0.461**	None	None	None	**9/28/22 - 0.0626**	**11/1/94 - 0.02**
16-SH	None	**9/21/21 - 500**	None	**9/21/21 - 90.1**	**9/16/14 - 5.5**	None	None	None	None	None	**9/7/11 - 0.00058**	None	**9/9/99 - 0.036**	**9/5/96 - 0.031**	None	None	**9/5/96 - 0.571**	None	**9/5/96 - 0.058**	**9/26/13 - 0.0262**
17-SH	None	None	**9/27/16 - 21.8**	None	None	None	**9/4/96 - 228**	None	None	None	None	**9/6/01 - 0.003**	**9/9/99 - 0.024**	**11/1/94 - 0.045**	None	None	**11/1/94 - 0.441**	None	**11/1/94 - 0.015**	None
Intermediate Interval																				
01-IN_01A-IN	**9/22/94 - 5.57**	**9/22/94 - 73**	**12/15/85 - 4.75**	None	**9/29/15 - 63.8**	**9/22/94 - 43**	**9/22/94 - 65.6**	**9/22/94 - 20**	**9/22/94 - 3.8**	None	**12/4/06 - 0.095**	None	None	**11/13/93 - 0.109**	None	None	None	None	**12/15/85 - 0.13**	**9/22/94 - 0.021**
03-IN	None	None	None	None	None	**5/15/85 - 13.8**	**5/15/88 - 726**	None	None	None	**9/7/11 - 0.00245**	None	**9/9/99 - 0.088**	**9/15/87 - 0.021**	None	None	**9/16/14 - 0.347**	None	**9/9/99 - 0.036**	**9/5/07 - 0.036**
04-IN	None	None	None	None	**9/8/10 - 14.2**	None	None	None	None	None	**9/5/07 - 0.0001 (<0.0002)**	None	**9/17/18 - 0.0124**	None	None	None	None	None	**9/5/07 - 0.0047**	None
05-IN	None	None	None	None	None	**5/15/85 - 16**	None	None	None	None	**9/7/11 - 0.00341**	None	None	**9/7/05 - 0.0669**	**9/26/13 - 0.778**	None	None	None	None	**9/6/01 - 0.0345**
06-IN_06(R)IN	None	None	None	None	None	**11/15/88 - 1.2**	None	None	None	None	**9/17/19 - 0.0151**	None	None	**9/7/05 - 0.0171**	**9/17/19 - 3.05**	None	None	None	**9/17/14 - 0.108**	**9/9/99 - 0.201**
07-IN	None	**3/15/90 - 352**	**6/15/86 - 2.9**	None	**9/16/14 - 4.6**	None	**11/15/87 - 395**	None	None	None	**11/15/87 - 0.016**	None	None	None	None	None	None	None	**9/5/07 - 0.0191**	**9/22/21 - 0.159**
08-IN (bg)	None	None	**5/15/85 - 5.7**	None	None	**5/15/85 - 0.2**	None	None	**9/15/85 - 18.6**	None	None	None	**5/15/87 - 0.075**	**5/15/87 - 0.028**	None	None	None	None	None	None
11-IN	None	**9/28/23 - 709**	None	**9/28/23 - 181**	None	None	None	**9/28/23 - 154**	**9/26/13 - 0.553**	**9/28/23 - 45**	**9/9/99 - 0.0033**	None	None	**9/21/20 - 0.0082**	**9/5/97 - 2.79**	None	**9/22/94 - 0.969**	None	**9/17/14 - 0.0744**	**9/5/96 - 0.03**
12-IN	None	**5/12/92 - 208**	**1/15/90 - 2.9**	None	None	None	**5/12/92 - 237**	None	None	None	None	**5/12/92 - 0.003**	None	**12/10/06 - 0.0726**	None	**9/9/10 - 0.00539**	**9/5/96 - 1.69**	None	**9/8/05 - 1.52**	None
13-IN	None	None	**9/4/03 - 2**	None	None	None	**9/16/98 - 254**	**9/4/97 - 56.5**	None	None	**9/9/99 - 0.007 (Dup was 0.0008)**	None	None	**9/5/07 - 0.0042**	**9/8/05 - 1.4**	None	**9/5/00 - 2.28**	None	None	**9/4/97 - 0.082**
15-IN	None	None	**9/22/94 - 3.1**	**9/22/94 - 144**	None	**9/22/94 - 15**	**9/22/94 - 339**	None	None	None	**9/6/07 - 0.001**	**9/22/94 - 0.003**	None	**9/4/97 - 0.01**	None	None	None	None	**9/4/97 - 0.092**	**9/9/99 - 0.026**
16-IN[1]	**9/4/97 - 7.12**	**9/9/99 - 560**	None	None	**9/16/14 - 5.7**	None	None	None	**9/9/99 - 32.8**	None	None	**9/15/98 - 0.0012**	None	**9/8/04 - 0.165**	9/10/09 - 3.31	None	None	None	**9/5/07 - 0.0268**	**9/4/97 - 0.796**
17-IN	None	None	None	None	**9/10/09 - 7.2**	**9/28/95 - 4.7**	None	None	None	None	**9/26/13 - 0.00106**	None	None	**9/16/98 - 0.01**	None	None	None	None	**9/28/95 - 0.04**	**9/5/02 - 0.015**
Sandstone Interval																				
04-SS	None	None	**6/15/86 - 1.9**	None	**9/16/14 - 4.0**	**12/15/85 - 8.6**	None	None	None	None	**2/16/85 - 0.029**	None	None	**2/16/85 - 0.014**	None	None	**9/7/05 - 0.124**	None	**9/26/13 - 0.0054**	**9/28/15 - 0.0217**
05-SS	None	None	None	None	**9/9/10 - 10.1**	N/A	None	None	None	None	None	**9/9/13 - 0.000113**	None	**9/9/10 - 0.101**	None	**9/9/10 - 0.101**	None	None	**9/8/05 - 0.272**	**9/9/10 - 0.667**
07-SS_07(R)SS	None	**9/16/14 - 550**	**9/16/14 - 9.31**	None	**9/17/18 - 6.1**	None	None	None	None	None	None	None	None	**5/15/85 - 0.009**	None	None	None	None	**10/4/98 - 0.026**	None
13-SS_13(R)SS	None	None	None	**9/17/09 - 81.2**	**9/9/10 - 10.1**	None	**9/10/04 - 528**	**9/10/04 - 117**	**9/10/04 - 26.8**	**9/17/09 - 56.9**	**5/13/92 - 0.056**	None	None	**9/4/08 - 0.083**	None	None	None	None	None	**9/4/08 - 1.61**
15-SS_15(R)SS_15(2R)SS	None	None	**9/16/14 - 30.1**	None	**9/9/10 - 58.3**	N/A	None	None	None	**11/12/93 - 118**	None	**11/12/93 - 0.003 (<0.003)**	None	**9/8/05 - 0.454**	**9/9/10 - 19.5**	None	None	None	**9/8/05 - 0.723**	**9/8/5 - 1.85**
89-3	None	None	**9/13/7 - 58.4 9/28/10 - 38.4**	None	**9/28/10 - 7.1**	None	None	None	None	**9/13/07 - 62.4**	None	None	None	None	None	**9/24/02 - 0.134**	None	None	**9/24/02- 0.0287**	**9/24/02- 4.23**

NOTES:

N/A	Not enough data points to run test
Bold	Outlier
Blue and Bold	2024 result is an outlier
Red + Bold (actual concentration / detection limit)	Outlier is a result is below the detection limit
Red + Bold (actual concentration / detection limit)	2024 Outlier is a result is below the detection limit

[1] No sample collected in 2024 event

Table 7.2
SUEZ, Swan Hills Treatment Centre
2024 Sen's Slope/Mann-Kendall trend Analysis

AECOM

Monitoring Well	Data Set	INDICATORS						MAJOR IONS				DISSOLVED METALS									
		pH	TDS	Chloride	Sulphate	DOC	TOC	Bicarbonate	Calcium	Magnesium	Sodium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc
Shallow Interval																					
01-SH_01A-SH	All Data	Decreasing	Decreasing	Increasing	Decreasing	Not significant	Increasing	Decreasing	Decreasing	Decreasing	Increasing	Decreasing	N/A	N/A	Decreasing	Not significant	N/A	Decreasing	N/A	Decreasing	Decreasing
03-SH	All Data	Increasing	Increasing	Not significant	Increasing	Increasing	Decreasing	Increasing	Increasing	Increasing	Increasing	Decreasing	N/A	Not significant	Decreasing	N/A	N/A	Not significant	N/A	Decreasing	Decreasing
04-SH	All Data	Not significant	Increasing	Not significant	Decreasing	Not significant	Decreasing	Increasing	Increasing	Increasing	Increasing	Decreasing	N/A	Decreasing	Decreasing	N/A	N/A	Not significant	N/A	Decreasing	Decreasing
05-SH	All Data	Not significant	Increasing	Increasing	Increasing	Increasing	Decreasing	Increasing	Increasing	Increasing	Increasing	Decreasing	N/A	N/A	Decreasing	N/A	N/A	Decreasing	N/A	Decreasing	Decreasing
	Outliers Removed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Decreasing
06-SH	All Data	Not significant	Increasing	Not significant	Decreasing	Not significant	Increasing	Increasing	Increasing	Increasing	Not significant	Not significant	N/A	N/A	Decreasing	N/A	N/A	Increasing	N/A	Decreasing	Decreasing
	Outliers Removed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Increasing	-	-	-
07-SH	All Data	Not significant	Increasing	Increasing	Decreasing	Not significant	Not significant	Increasing	Increasing	Increasing	Increasing	Decreasing	N/A	N/A	Decreasing	Not significant	N/A	Not significant	N/A	Not significant	Decreasing
08-SH (bg)	All Data	Increasing	Increasing	Increasing	Not significant	Not significant	Decreasing	Increasing	Increasing	Increasing	Increasing	Decreasing	N/A	Not significant	Decreasing	N/A	N/A	Not significant	N/A	Not significant	Decreasing
	Outliers Removed	-	-	-	-	-	-	-	Increasing	-	-	-	-	-	-	-	-	-	-	-	-
11-SH	All Data	Increasing	Increasing	N/A	Increasing	Decreasing	Increasing	Increasing	Increasing	Increasing	Increasing	Decreasing	N/A	N/A	Not significant	Not significant	N/A	Not significant	N/A	Decreasing	Not significant
12-SH	All Data	Increasing	Increasing	N/A	Decreasing	Increasing	Not significant	Increasing	Increasing	Increasing	Increasing	Increasing	N/A	N/A	Decreasing	Not significant	N/A	Not significant	N/A	Decreasing	Decreasing
13-SH	All Data	Increasing	Not significant	Increasing	Increasing	Not significant	Increasing	Not significant	Increasing	Increasing	Not significant	Increasing	Not significant	Not significant	Decreasing	N/A	N/A	Not significant	N/A	Not significant	Not significant
14-SH	All Data	Increasing	Not significant	Decreasing	Not significant	Decreasing	Increasing	Increasing	Increasing	Increasing	Not significant	Not significant	Increasing	Increasing	Decreasing	N/A	N/A	Decreasing	N/A	Decreasing	Not significant
15-SH	All Data	Increasing	Increasing	N/A	Decreasing	Not significant	Not significant	Increasing	Increasing	Increasing	Not significant	Not significant	N/A	Not significant	Decreasing	N/A	N/A	Not significant	N/A	Not significant	Decreasing
	Outliers Removed	-	Increasing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16-SH	All Data	Increasing	Not significant	Not significant	Decreasing	Not significant	Not significant	Increasing	Not significant	Not significant	Increasing	Not significant	N/A	Not significant	Not significant	N/A	N/A	Decreasing	N/A	Decreasing	Not significant
17-SH	All Data	Increasing	Increasing	Increasing	Not significant	Increasing	Not significant	Increasing	Increasing	Increasing	Increasing	Not significant	Decreasing	Not significant	Decreasing	N/A	N/A	Decreasing	N/A	Decreasing	Decreasing
	Outliers Removed	-	-	-	-	-	-	-	-	-	-	-	-	-	Decreasing	-	-	-	-	-	-
Intermediate Interval																					
01-IN_01A-IN	All Data	Decreasing	Decreasing	Not significant	Decreasing	Not significant	Increasing	Not significant	Decreasing	Decreasing	Not significant	Increasing	N/A	N/A	Decreasing	Not significant	N/A	Decreasing	N/A	Decreasing	Decreasing
03-IN	All Data	Increasing	Decreasing	Decreasing	Decreasing	Increasing	Not significant	Increasing	Decreasing	Not significant	Not significant	Decreasing	N/A	Increasing	Decreasing	N/A	N/A	Not significant	N/A	Decreasing	Decreasing
04-IN	All Data	Not significant	Not significant	N/A	Not significant	Not significant	Decreasing	Not significant	Not significant	Not significant	Not significant	Increasing	N/A	Not significant	Decreasing	N/A	N/A	Increasing	N/A	Not significant	Not significant
05-IN	All Data	Not significant	Increasing	Decreasing	Not significant	Increasing	Not significant	Increasing	Increasing	Increasing	Increasing	Not significant	N/A	N/A	Not significant	Not significant	N/A	Decreasing	N/A	Decreasing	Decreasing
06-IN_06(R)IN	All Data	Not significant	Not significant	Decreasing	Decreasing	Increasing	Not significant	Increasing	Increasing	Increasing	Decreasing	Not significant	N/A	N/A	Decreasing	Increasing	N/A	Not significant	N/A	Increasing	Decreasing
07-IN	All Data	Increasing	Decreasing	Decreasing	Decreasing	Not significant	Decreasing	Not significant	Not significant	Increasing	Decreasing	Increasing	N/A	N/A	Not significant	Not significant	N/A	Not significant	N/A	Not significant	Not significant
08-IN (bg)	All Data	Not significant	Decreasing	Decreasing	Decreasing	Not significant	Decreasing	Increasing	Decreasing	Decreasing	Decreasing	N/A	N/A	Not significant	Decreasing	N/A	N/A	Not significant	N/A	Decreasing	Not significant
11-IN	All Data	Increasing	Increasing	N/A	Increasing	Increasing	Not significant	Not significant	Not significant	Not significant	Increasing	Not significant	N/A	N/A	Not significant	Not significant	N/A	Not significant	N/A	Not significant	Not significant
12-IN	All Data	Increasing	Increasing	Decreasing	Not significant	Not significant	Not significant	Increasing	Increasing	Increasing	Increasing	Increasing	Not significant	N/A	Increasing	Increasing	Increasing	Not significant	N/A	Not significant	Increasing
13-IN	All Data	Increasing	Increasing	Decreasing	Not Significant	Not significant	Not significant	Increasing	Increasing	Not significant	Increasing	Not significant	N/A	N/A	Not significant	Not significant	N/A	Decreasing	N/A	Decreasing	Not significant
15-IN	All Data	Increasing	Not significant	Decreasing	Not Significant	Decreasing	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	N/A	Not significant	N/A	N/A	Decreasing	N/A	Decreasing	Not significant
16-IN[1]	All Data	Increasing	Not significant	Decreasing	Not significant	Not significant	Not significant	Not significant	Increasing	Not significant	Decreasing	Decreasing	Not significant	N/A	Not significant	Not significant	N/A	Not significant	N/A	Not significant	Decreasing
17-IN	All Data	Increasing	Increasing	N/A	Not Significant	Not significant	Not significant	Not significant	Not significant	Not significant	Increasing	Decreasing	Not significant	N/A	Decreasing	N/A	N/A	Decreasing	N/A	Decreasing	Decreasing
Sandstone Interval																					
04-SS	All Data	Increasing	Increasing	Not significant	Increasing	Not significant	Not significant	Increasing	Increasing	Increasing	Increasing	Decreasing	N/A	N/A	Not significant	Not significant	N/A	Not significant	N/A	Not significant	Decreasing
05-SS	All Data	Not significant	Increasing	N/A	Increasing	Decreasing	N/A	Increasing	Not significant	Increasing	Not significant	Decreasing	Not significant	N/A	Not significant	Not significant	Not significant	Increasing	N/A	Decreasing	Not significant
07-SS_07(R)SS	All Data	Increasing	Increasing	Not significant	Decreasing	Not significant	Decreasing	Increasing	Not significant	Increasing	Not significant	Decreasing	N/A	N/A	Decreasing	N/A	N/A	Not significant	N/A	Decreasing	Not significant
13-SS_13(R)SS	All Data	Not significant	Not significant	N/A	Decreasing	Decreasing	Not significant	Decreasing	Not significant	Decreasing	Decreasing	Decreasing	Decreasing	N/A	Decreasing	N/A	N/A	Decreasing	N/A	Decreasing	Decreasing
	Outliers Removed	-	-	-	-	-	-	Decreasing	-	-	-	-	-	-	-	-	-	-	-	-	-
15-SS_15(R)SS_15(2R)SS	All Data	Not significant	Decreasing	Not significant	Decreasing	Not significant	N/A	Decreasing	Decreasing	Decreasing	Decreasing	Decreasing	Decreasing	N/A	Decreasing	Not significant	N/A	Not significant	N/A	Decreasing	Decreasing
89-3	All Data	Not significant	Increasing	N/A	Not significant	Not significant	Not significant	Increasing	Increasing	Increasing	Not significant	Not significant	N/A	N/A	N/A	Not significant	N/A	Increasing	N/A	Decreasing	Decreasing

NOTES:

-	No Outliers removed
N/A	Insufficient data (data points do not exist or are below the detection limit)
	2024 Alberta Tier 2 Potable Groundwater Exceedance (Commercial/Industrial Land Use)
	2024 Alberta Tier 2 Aquatic Life Groundwater Exceedance (Commercial/Industrial Land Use)
Bold	Removal of outliers (identified using the Rosner's or Dixon's Outlier Test) affects the Sen's Slope/Mann-Kendall Trend

[1] - No sample collected in 2023 and 2024, stats results from 2022

Table 7.3
VEOLIA, Swan Hills Treatment Centre
2024 Outlier/Trend Analysis Data Evaluation

AECOM

Monitoring Well	Parameter	All Data			Outlier(s) Removed			Minimum*	Maximum	Mean (All Data)	Outlier Date	Outlier Value	Same Monitoring Well - Temporally Proximal Concentration(s)	Nearby Monitoring Well(s) - Concentration from the Same Sampling Event	Comment
		Trend	Slope (mg/L per year)	Number of data points (n)+	Trend	Slope (mg/L per year)	Number of data points (n)+								
Shallow Interval															
05-SH	Zinc	Decreasing	-0.0005	34	Decreasing	-0.0002	33	0.001 mg/L	0.078 mg/L	0.00622 mg/L	1994-May-31	0.078 mg/L	1994-Sep-21 - 0.004 mg/L	03-SH - 0.005 mg/L	1. This result is: a. an order of magnitude higher than spatially and temporally proximal results b. the maximum concentration recorded for this well 2. The slope is negative for both trend analyses
06-SH	Manganese	Increasing	0.0119	31	Increasing	0.0171	30	0.059 mg/L	3.550 mg/L	0.839 mg/L	2005-Sep-07	3.550 mg/L	2004-Oct-10 - 0.935 mg/L 2006-Sep-6 - 1.070 mg/L	07-SH - 2.730 mg/L	1. This result is: a. an order of magnitude higher than spatially and temporally proximal results b. the maximum concentration recorded for this well 2. The slope is positive for both trend analyses
08-SH	Calcium	Increasing	0.0409	55	Increasing	0.0626	54	60 mg/L	92.1 mg/L	79.1 mg/L	2011-Sep-8	60 mg/L	2010-Sep-8 - 70.2 mg/L 2012-Sep-5 - 77.3 mg/L	14-SH - 98.6mg/L	1. This result is: a. lower than spatially and temporally proximal results but on the same order of magnitude b. the minimum concentration recorded for this well 2. The slope is positive for both trend analyses
15-SH	TDS	Increasing	2.958	35	Increasing	2.457	34	231 mg/L	457 mg/L	372.4 mg/L	1993-May-18	231 mg/L	1994-May-31 - 363 mg/L	13-SH - 194 mg/L	1. This result is: a. lower than spatially and temporally proximal results but on the same order of magnitude b. the minimum concentration recorded for this well 2. The slope is positive for both trend analyses
17-SH	Copper	Decreasing	-0.0004	31	Decreasing	-0.0001	30	0.0008 mg/L	0.007 mg/L	0.00409 mg/L	1994-Nov-1	0.045 mg/L	1995-Sep-28 - 0.007 mg/L	13-SH - 0.001 mg/L	1. This result is: a. an order of magnitude higher than spatially and temporally proximal results b. the maximum concentration recorded for this well 2. The slope is negative for both trend analyses
Intermediate Interval															
No outliers removed for Intermediate Wells															
Sandstone Interval															
13-SS 13(R)SS	Bicarbonate	Decreasing	-4.6	22	Decreasing	-2.746	21	256 mg/L	528 mg/L	311.9 mg/L	2004-Sep-10	528 mg/L	1993-Nov-11 - 289 mg/L 2005-Sep-8 - 395 mg/L	15(R)SS - 263 mg/L	1. This result is: a. the maximum concentration recorded for this well b. the same order of magnitude as spatially and temporally proximal results 2. The slope is negative for both trend analyses

NOTES:

---	No Analysis
N/A	Insufficient data (data points do not exist or are below the detection limit)
*	Not including results below the detection limit
+	Number includes results below the detection limit as data points

AECOM

Appendix E

Photographic Log

PHOTOGRAPHIC RECORD

AECOM Imagine it. Delivered.

Site Name:	Site Location:	Project No.
Swan Hills Treatment Centre	West half of 06-067-08W5	60442762

Photo No.	Date:
1	2014-05-22

Well:

01A-SH
01A-IN

Description:

Orange film observed on some bladder pumps and tubing.

Photo No.	Date:
2	2014-05-21

Well:

04-IN

Description:

Signs of oxidation on some bladder pumps.

PHOTOGRAPHIC RECORD 2

AECOM Imagine it. Delivered.

Site Name:	Site Location:	Project No.
Swan Hills Treatment Centre	West half of 06-067-08W5	60442762

Photo No.	Date:
3	2014-05-21

Well:

04-IN
13-SH

Description:

Black residue observed on some bladder pumps and tubing

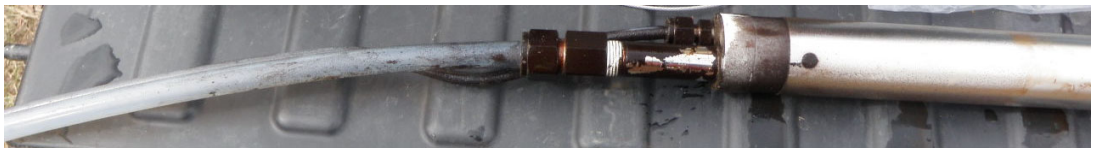


Photo No.	Date:
4	2014-05-22

Well:

12-SH

Description:

Black residue observed on some bladder pumps and tubing

AECOM

Appendix F

Laboratory Test Results

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **EO2407951**		
Client	: **AECOM Canada Ltd.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Michael Steed	Account Manager	: Megha Walia
Address	: 101 - 18817 Stony Plain Rd. NW Edmonton Alberta Canada T5S 0C2	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 780 486 7000	Telephone	: +1 780 413 5227
Project	: Swan Hills-60735747	Date Samples Received	: 12-Sep-2024 12:30
PO	: ----	Date Analysis Commenced	: 13-Sep-2024
C-O-C number	: ----	Issue Date	: 07-Oct-2024 16:02
Sampler	: ----		
Site	: ----		
Quote number	: EO22-AECO100-016 (Swan Hills)		
No. of samples received	: 45		
No. of samples analysed	: 45		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
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Christian Murera	Lab Analyst	Organics, Edmonton, Alberta
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta
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Kiersten Penol	Lab Assistant	Inorganics, Edmonton, Alberta
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Shruti Mudliar	Lab Analyst	Metals, Edmonton, Alberta
Shruti Mudliar	Lab Analyst	Inorganics, Edmonton, Alberta

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
mg/L	milligrams per litre
µg/L	micrograms per litre
pH units	pH units
µS/cm	microsiemens per centimetre
-	no units
%	percent
meq/L	milliequivalents per litre

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Sample(s) -042 and -043 Container XXX not received at laboratory, but requested on Chain of Custody / analytical request form; subsample cannot be obtained from other containers to meet request. The requested analysis cannot be performed.
**Fraction -035 containers received empty, but requested on Chain of Custody / analytical request form; subsample cannot be obtained from other containers to meet request. The requested analysis cannot be performed.
Corrected sample times on -023, -035, -036

Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
IB:INT	Ion Balance Reviewed: Imbalance is due to interference or non-measured component.
RRV	Reported result verified by repeat analysis.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	01A-SH	01A-IN	03-SH	03-IN	04-SH
				Client sampling date / time	11-Sep-2024 09:20	11-Sep-2024 09:20	10-Sep-2024 14:40	10-Sep-2024 14:40	10-Sep-2024 16:40
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-001	EO2407951-002	EO2407951-003	EO2407951-004	EO2407951-005
					Result	Result	Result	Result	Result
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/EO	0.50	mg/L	78.0	332	476	390	383
Conductivity	----	E100/EO	2.0	µS/cm	198	753	861	813	723
pH	----	E108/EO	0.10	pH units	5.69	7.01	7.63	7.65	7.61
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/EO	1.0	mg/L	102	569	539	495	532
Alkalinity, carbonate (as CO3)	3812-32-6	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290/EO	2.0	mg/L	84.0	466	442	406	436
Solids, total dissolved [TDS], calculated	----	EC103/EO	1.0	mg/L	202	526	579	528	443
Anions and Nutrients									
Chloride	16887-00-6	E235.Cl/EO	0.50	mg/L	8.68	1.94	3.69	1.24	<0.50
Fluoride	16984-48-8	E235.F/EO	0.020	mg/L	0.029	0.182	0.334	0.228	0.241
Nitrate (as N)	14797-55-8	E235.NO3/EO	0.020	mg/L	<0.020	<0.020	<0.020	0.030	<0.020
Nitrite (as N)	14797-65-0	E235.NO2/EO	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Sulfate (as SO4)	14808-79-8	E235.SO4/EO	0.30	mg/L	0.46	<0.30	90.6	90.2	10.1
Nitrate + Nitrite (as N)	----	EC235.N+N/EO	0.0500	mg/L	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/EO	0.50	mg/L	55.4	30.4	8.00	4.24	3.15
Ion Balance									
Anion sum	----	EC101/EO	0.10	meq/L	1.93	9.38	10.8	10.0	8.94
Cation sum	----	EC101/EO	0.10	meq/L	2.15	9.24	10.2	9.08	8.11
Ion balance (APHA)	----	EC101/EO	0.01	%	5.39	-0.75	-2.86	-4.82	-4.87

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	01A-SH	01A-IN	03-SH	03-IN	04-SH
				Client sampling date / time	11-Sep-2024 09:20	11-Sep-2024 09:20	10-Sep-2024 14:40	10-Sep-2024 14:40	10-Sep-2024 16:40
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-001	EO2407951-002	EO2407951-003	EO2407951-004	EO2407951-005
					Result	Result	Result	Result	Result
Ion Balance									
Ion balance (cations/anions)	----	EC101/EO	0.010	%	111	98.5	94.4	90.8	90.7
Dissolved Metals									
Calcium, dissolved	7440-70-2	E421/EO	0.050	mg/L	23.0	93.4	131	106	102
Iron, dissolved	7439-89-6	E421/EO	0.010	mg/L	3.22	16.0	<0.010	<0.010	<0.010
Magnesium, dissolved	7439-95-4	E421/EO	0.0050	mg/L	4.99	24.0	36.3	30.5	31.2
Manganese, dissolved	7439-96-5	E421/EO	0.00010	mg/L	0.0820	0.490	0.00623	0.0100	0.242
Potassium, dissolved	7440-09-7	E421/EO	0.050	mg/L	0.872	3.33	1.31	3.48	2.32
Sodium, dissolved	7440-23-5	E421/EO	0.050	mg/L	9.97	44.4	16.0	27.4	8.85
Dissolved mercury filtration location	----	EP509/EO	-	-	Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/EO	-	-	Field	Field	Field	Field	Field
Aluminum, dissolved	7429-90-5	E421/EO	0.0010	mg/L	0.173	0.0037	0.0048	0.0029	0.0019
Antimony, dissolved	7440-36-0	E421/EO	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421/EO	0.00010	mg/L	0.00040	0.0112	0.00017	0.00016	<0.00010
Barium, dissolved	7440-39-3	E421/EO	0.00010	mg/L	0.0844	0.527	0.441	0.115	0.220
Boron, dissolved	7440-42-8	E421/EO	0.010	mg/L	0.013	0.122	0.031	0.061	0.079
Cadmium, dissolved	7440-43-9	E421/EO	0.0000050	mg/L	<0.0000050	<0.0000050	0.0000266	<0.0000050	0.0000070
Chromium, dissolved	7440-47-3	E421/EO	0.00050	mg/L	0.00093	0.00071	0.00124	0.00083	0.00080
Copper, dissolved	7440-50-8	E421/EO	0.00020	mg/L	0.00292	0.00087	0.00098	0.00099	0.00367
Lead, dissolved	7439-92-1	E421/EO	0.000050	mg/L	0.000228	<0.000050	<0.000050	<0.000050	<0.000050
Nickel, dissolved	7440-02-0	E421/EO	0.00050	mg/L	0.00218	0.00067	0.00257	0.00143	0.00148
Selenium, dissolved	7782-49-2	E421/EO	0.000050	mg/L	0.000100	0.000058	0.000118	<0.000050	<0.000050

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	01A-SH	01A-IN	03-SH	03-IN	04-SH
				Client sampling date / time	11-Sep-2024 09:20	11-Sep-2024 09:20	10-Sep-2024 14:40	10-Sep-2024 14:40	10-Sep-2024 16:40
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-001	EO2407951-002	EO2407951-003	EO2407951-004	EO2407951-005
					Result	Result	Result	Result	Result
Dissolved Metals									
Silver, dissolved	7440-22-4	E421/EO	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Uranium, dissolved	7440-61-1	E421/EO	0.000010	mg/L	0.000640	0.000203	0.00553	0.00426	0.00906
Zinc, dissolved	7440-66-6	E421/EO	0.0010	mg/L	0.0061	0.0028	0.0018	0.0017	0.0017
Mercury, dissolved	7439-97-6	E509/EO	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Aggregate Organics									
Adsorbable organic halogens, [AOX], (as Cl)	----	AOX/1D	10	mg/L	----	----	see attached	----	----
Volatile Organic Compounds									
Benzene	71-43-2	E611A/EO	0.50	µg/L	<0.50	----	<0.50	----	<0.50
BTEX, total	----	E611A/EO	1.0	µg/L	<1.0	----	<1.0	----	<1.0
Ethylbenzene	100-41-4	E611A/EO	0.50	µg/L	<0.50	----	<0.50	----	<0.50
Toluene	108-88-3	E611A/EO	0.50	µg/L	0.79	----	<0.50	----	<0.50
Xylene, m+p-	179601-23-1	E611A/EO	0.40	µg/L	<0.40	----	<0.40	----	<0.40
Xylene, o-	95-47-6	E611A/EO	0.30	µg/L	<0.30	----	<0.30	----	<0.30
Xylenes, total	1330-20-7	E611A/EO	0.50	µg/L	<0.50	----	<0.50	----	<0.50
Hydrocarbons									
F1 (C6-C10)	----	E581.F1/EO	100	µg/L	<100	----	<100	----	<100
F1-BTEX	----	EC580/EO	25	µg/L	<100	----	<100	----	<100
Hydrocarbons Surrogates									
Dichlorotoluene, 3,4-	95-75-0	E581.F1/EO	1.0	%	109	----	105	----	91.2
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/EO	1.0	%	113	----	113	----	113

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

			Client sample ID		01A-SH	01A-IN	03-SH	03-IN	04-SH
			Client sampling date / time		11-Sep-2024 09:20	11-Sep-2024 09:20	10-Sep-2024 14:40	10-Sep-2024 14:40	10-Sep-2024 16:40
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-001	EO2407951-002	EO2407951-003	EO2407951-004	EO2407951-005
					Result	Result	Result	Result	Result
Volatile Organic Compounds Surrogates									
Difluorobenzene, 1,4-	540-36-3	E611A/EO	1.0	%	113	----	108	----	111
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1221	11104-28-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1232	11141-16-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1242	53469-21-9	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1248	12672-29-6	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1254	11097-69-1	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1260	11096-82-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1262	37324-23-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1268	11100-14-4	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Polychlorinated biphenyls [PCBs], total	----	E687-L/WT	0.0300	µg/L	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687-L/WT	0.010	%	89.4	72.5	98.7	93.1	94.1
Tetrachloro-m-xylene	877-09-8	E687-L/WT	0.010	%	78.4	60.0	75.4	71.6	71.9

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	04-IN	04-SS	05-SH	25-SH	05-IN
				Client sampling date / time	10-Sep-2024 16:40	10-Sep-2024 17:00	10-Sep-2024 15:10	10-Sep-2024 15:10	10-Sep-2024 15:10
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-006	EO2407951-007	EO2407951-008	EO2407951-009	EO2407951-010
					Result	Result	Result	Result	Result
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/EO	0.50	mg/L	329	286	596	596	541
Conductivity	----	E100/EO	2.0	µS/cm	657	623	1070	1080	1140
pH	----	E108/EO	0.10	pH units	7.76	7.28	7.24	7.39	7.35
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/EO	1.0	mg/L	459	393	670	668	691
Alkalinity, carbonate (as CO3)	3812-32-6	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290/EO	2.0	mg/L	376	322	549	548	567
Solids, total dissolved [TDS], calculated	----	EC103/EO	1.0	mg/L	430	423	711	712	747
Anions and Nutrients									
Chloride	16887-00-6	E235.Cl/EO	0.50	mg/L	<0.50	<0.50	2.28	2.26	1.90
Fluoride	16984-48-8	E235.F/EO	0.020	mg/L	0.226	0.087	0.215	0.199	0.176
Nitrate (as N)	14797-55-8	E235.NO3/EO	0.020	mg/L	0.219	0.226	0.036	<0.020	0.058
Nitrite (as N)	14797-65-0	E235.NO2/EO	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Sulfate (as SO4)	14808-79-8	E235.SO4/EO	0.30	mg/L	25.6	54.7	128	128	131
Nitrate + Nitrite (as N)	----	EC235.N+N/EO	0.0500	mg/L	0.219	0.226	<0.0500	<0.0500	0.0580
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/EO	0.50	mg/L	4.02	2.04	7.83	8.24	8.42
Ion Balance									
Anion sum	----	EC101/EO	0.10	meq/L	8.07	7.59	13.7	13.7	14.1
Cation sum	----	EC101/EO	0.10	meq/L	7.64	7.06	12.2	12.3	12.9
Ion balance (APHA)	----	EC101/EO	0.01	%	-2.74	-3.62	-5.79	-5.38	-4.44

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	04-IN	04-SS	05-SH	25-SH	05-IN
				Client sampling date / time	10-Sep-2024 16:40	10-Sep-2024 17:00	10-Sep-2024 15:10	10-Sep-2024 15:10	10-Sep-2024 15:10
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-006	EO2407951-007	EO2407951-008	EO2407951-009	EO2407951-010
					Result	Result	Result	Result	Result
Ion Balance									
Ion balance (cations/anions)	----	EC101/EO	0.010	%	94.7	93.0	89.0	89.8	91.5
Dissolved Metals									
Calcium, dissolved	7440-70-2	E421/EO	0.050	mg/L	96.6	79.6	162	163	150
Iron, dissolved	7439-89-6	E421/EO	0.010	mg/L	0.043	<0.010	<0.010	<0.010	<0.010
Magnesium, dissolved	7439-95-4	E421/EO	0.0050	mg/L	21.4	21.2	46.4	45.8	40.4
Manganese, dissolved	7439-96-5	E421/EO	0.00010	mg/L	0.372	0.557	0.00384	0.00370	0.147
Potassium, dissolved	7440-09-7	E421/EO	0.050	mg/L	5.18	4.76	1.03	1.02	2.82
Sodium, dissolved	7440-23-5	E421/EO	0.050	mg/L	21.1	27.6	7.55	7.68	46.4
Dissolved mercury filtration location	----	EP509/EO	-	-	Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/EO	-	-	Field	Field	Field	Field	Field
Aluminum, dissolved	7429-90-5	E421/EO	0.0010	mg/L	0.0014	0.0016	0.0026	0.0022	0.0019
Antimony, dissolved	7440-36-0	E421/EO	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421/EO	0.00010	mg/L	0.00321	0.00035	0.00020	0.00021	0.00059
Barium, dissolved	7440-39-3	E421/EO	0.00010	mg/L	0.0691	0.104	0.112	0.117	0.0791
Boron, dissolved	7440-42-8	E421/EO	0.010	mg/L	0.202	0.029	0.029	0.030	0.047
Cadmium, dissolved	7440-43-9	E421/EO	0.0000050	mg/L	0.0000111	0.0000119	0.0000126	0.0000142	0.0000082
Chromium, dissolved	7440-47-3	E421/EO	0.00050	mg/L	0.00105	<0.00050	0.00219	0.00220	<0.00050
Copper, dissolved	7440-50-8	E421/EO	0.00020	mg/L	0.00094	0.00352	0.00083	0.00229	0.00295
Lead, dissolved	7439-92-1	E421/EO	0.000050	mg/L	<0.000050	0.000082	<0.000050	<0.000050	0.000070
Nickel, dissolved	7440-02-0	E421/EO	0.00050	mg/L	0.00188	0.00084	0.00117	0.00133	0.00137
Selenium, dissolved	7782-49-2	E421/EO	0.000050	mg/L	<0.000050	<0.000050	0.000164	0.000139	0.000051

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	04-IN	04-SS	05-SH	25-SH	05-IN
				Client sampling date / time	10-Sep-2024 16:40	10-Sep-2024 17:00	10-Sep-2024 15:10	10-Sep-2024 15:10	10-Sep-2024 15:10
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-006	EO2407951-007	EO2407951-008	EO2407951-009	EO2407951-010
					Result	Result	Result	Result	Result
Dissolved Metals									
Silver, dissolved	7440-22-4	E421/EO	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Uranium, dissolved	7440-61-1	E421/EO	0.000010	mg/L	0.00821	0.000047	0.00696	0.00701	0.00830
Zinc, dissolved	7440-66-6	E421/EO	0.0010	mg/L	0.0018	0.0042	0.0013	0.0024	0.0037
Mercury, dissolved	7439-97-6	E509/EO	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Volatile Organic Compounds									
Benzene	71-43-2	E611A/EO	0.50	µg/L	----	----	<0.50	<0.50	----
BTEX, total	----	E611A/EO	1.0	µg/L	----	----	<1.0	<1.0	----
Ethylbenzene	100-41-4	E611A/EO	0.50	µg/L	----	----	<0.50	<0.50	----
Toluene	108-88-3	E611A/EO	0.50	µg/L	----	----	<0.50	<0.50	----
Xylene, m+p-	179601-23-1	E611A/EO	0.40	µg/L	----	----	<0.40	<0.40	----
Xylene, o-	95-47-6	E611A/EO	0.30	µg/L	----	----	<0.30	<0.30	----
Xylenes, total	1330-20-7	E611A/EO	0.50	µg/L	----	----	<0.50	<0.50	----
Hydrocarbons									
F1 (C6-C10)	----	E581.F1/EO	100	µg/L	----	----	<100	<100	----
F1-BTEX	----	EC580/EO	25	µg/L	----	----	<100	<100	----
Hydrocarbons Surrogates									
Dichlorotoluene, 3,4-	95-75-0	E581.F1/EO	1.0	%	----	----	103	102	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/EO	1.0	%	----	----	109	116	----
Difluorobenzene, 1,4-	540-36-3	E611A/EO	1.0	%	----	----	109	112	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	04-IN	04-SS	05-SH	25-SH	05-IN
				Client sampling date / time	10-Sep-2024 16:40	10-Sep-2024 17:00	10-Sep-2024 15:10	10-Sep-2024 15:10	10-Sep-2024 15:10
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-006	EO2407951-007	EO2407951-008	EO2407951-009	EO2407951-010
					Result	Result	Result	Result	Result
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1221	11104-28-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1232	11141-16-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1242	53469-21-9	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1248	12672-29-6	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1254	11097-69-1	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1260	11096-82-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1262	37324-23-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1268	11100-14-4	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Polychlorinated biphenyls [PCBs], total	----	E687-L/WT	0.0300	µg/L	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687-L/WT	0.010	%	95.8	97.0	97.6	83.1	69.5
Tetrachloro-m-xylene	877-09-8	E687-L/WT	0.010	%	79.1	76.5	77.1	64.3	74.8

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	05-SS	25-SS	06-SH	06(R)IN	07-SH
				Client sampling date / time	10-Sep-2024 16:18	10-Sep-2024 16:18	10-Sep-2024 17:17	10-Sep-2024 17:17	10-Sep-2024 17:45
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-011	EO2407951-012	EO2407951-013	EO2407951-014	EO2407951-015
					Result	Result	Result	Result	Result
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/EO	0.50	mg/L	167	167	514	511	716

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	05-SS	25-SS	06-SH	06(R)IN	07-SH
				Client sampling date / time	10-Sep-2024 16:18	10-Sep-2024 16:18	10-Sep-2024 17:17	10-Sep-2024 17:17	10-Sep-2024 17:45
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-011	EO2407951-012	EO2407951-013	EO2407951-014	EO2407951-015
					Result	Result	Result	Result	Result
Physical Tests									
Conductivity	----	E100/EO	2.0	µS/cm	416 RRV	422	898	926	1480
pH	----	E108/EO	0.10	pH units	8.00 RRV	7.52	7.63	8.19	8.83
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/EO	1.0	mg/L	275	261	725	337	629
Alkalinity, carbonate (as CO3)	3812-32-6	E290/EO	1.0	mg/L	<1.0	3.7	<1.0	211	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290/EO	2.0	mg/L	226	220	594	628	515
Solids, total dissolved [TDS], calculated	----	EC103/EO	1.0	mg/L	289	287	584	605	840
Anions and Nutrients									
Chloride	16887-00-6	E235.Cl/EO	0.50	mg/L	<0.50 RRV	<0.50	0.77	0.80	220
Fluoride	16984-48-8	E235.F/EO	0.020	mg/L	0.118	0.120	0.200	0.188	0.132
Nitrate (as N)	14797-55-8	E235.NO3/EO	0.020	mg/L	0.185	0.175	<0.020	<0.020	<0.020
Nitrite (as N)	14797-65-0	E235.NO2/EO	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Sulfate (as SO4)	14808-79-8	E235.SO4/EO	0.30	mg/L	24.0 RRV	24.0	2.59	2.00	13.6
Nitrate + Nitrite (as N)	----	EC235.N+N/EO	0.0500	mg/L	0.185	0.175	<0.0500	<0.0500	<0.0500
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/EO	0.50	mg/L	1.45	1.34	4.95	6.26	2.64
Ion Balance									
Anion sum	----	EC101/EO	0.10	meq/L	5.04	4.91	12.0	12.6	16.8
Cation sum	----	EC101/EO	0.10	meq/L	4.68	4.64	10.7	10.6	15.1
Ion balance (APHA)	----	EC101/EO	0.01	%	-3.70	-2.83	-5.73	-8.62	-5.33
Ion balance (cations/anions)	----	EC101/EO	0.010	%	92.8 IB:INT	94.5	89.2	84.1 IB:INT	89.9

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	05-SS	25-SS	06-SH	06(R)IN	07-SH
				Client sampling date / time	10-Sep-2024 16:18	10-Sep-2024 16:18	10-Sep-2024 17:17	10-Sep-2024 17:17	10-Sep-2024 17:45
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-011	EO2407951-012	EO2407951-013	EO2407951-014	EO2407951-015
					Result	Result	Result	Result	Result
Dissolved Metals									
Calcium, dissolved	7440-70-2	E421/EO	0.050	mg/L	46.3 RRV	47.1	141	139	195
Iron, dissolved	7439-89-6	E421/EO	0.010	mg/L	<0.010 RRV	<0.010	0.053	0.277	0.085
Magnesium, dissolved	7439-95-4	E421/EO	0.0050	mg/L	12.5 RRV	12.1	39.4	39.8	55.7
Manganese, dissolved	7439-96-5	E421/EO	0.00010	mg/L	0.417 RRV	0.413	1.17	0.837	0.428
Potassium, dissolved	7440-09-7	E421/EO	0.050	mg/L	3.98 RRV	4.10	1.72	1.96	2.96
Sodium, dissolved	7440-23-5	E421/EO	0.050	mg/L	28.2 RRV	27.0	7.00	7.55	16.9
Dissolved mercury filtration location	----	EP509/EO	-	-	Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/EO	-	-	Field	Field	Field	Field	Field
Aluminum, dissolved	7429-90-5	E421/EO	0.0010	mg/L	0.0011 RRV	0.0017	0.0020	0.0040	0.0029
Antimony, dissolved	7440-36-0	E421/EO	0.00010	mg/L	<0.00010 RRV	<0.00010	0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421/EO	0.00010	mg/L	0.00022 RRV	0.00022	0.00027	0.00054	0.00011
Barium, dissolved	7440-39-3	E421/EO	0.00010	mg/L	0.0984 RRV	0.102	0.586	0.559	0.931
Boron, dissolved	7440-42-8	E421/EO	0.010	mg/L	0.022 RRV	0.022	0.047	0.043	0.059
Cadmium, dissolved	7440-43-9	E421/EO	0.0000050	mg/L	0.0000084 RRV	0.0000076	0.0000146	0.0000246	0.0000083
Chromium, dissolved	7440-47-3	E421/EO	0.00050	mg/L	<0.00050 RRV	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	7440-50-8	E421/EO	0.00020	mg/L	0.00140 RRV	0.00666	0.00086	0.00159	0.00119
Lead, dissolved	7439-92-1	E421/EO	0.000050	mg/L	<0.000050 RRV	0.000217	<0.000050	<0.000050	<0.000050
Nickel, dissolved	7440-02-0	E421/EO	0.00050	mg/L	0.00076 RRV	0.00103	0.00466	0.00837	0.00256
Selenium, dissolved	7782-49-2	E421/EO	0.000050	mg/L	<0.000050 RRV	<0.000050	<0.000050	0.000058	<0.000050
Silver, dissolved	7440-22-4	E421/EO	0.000010	mg/L	<0.000010 RRV	<0.000010	<0.000010	<0.000010	<0.000010
Uranium, dissolved	7440-61-1	E421/EO	0.000010	mg/L	0.000056 RRV	0.000046	0.00566	0.00584	0.00347

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	05-SS	25-SS	06-SH	06(R)IN	07-SH
				Client sampling date / time	10-Sep-2024 16:18	10-Sep-2024 16:18	10-Sep-2024 17:17	10-Sep-2024 17:17	10-Sep-2024 17:45
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-011	EO2407951-012	EO2407951-013	EO2407951-014	EO2407951-015
					Result	Result	Result	Result	Result
Dissolved Metals									
Zinc, dissolved	7440-66-6	E421/EO	0.0010	mg/L	0.0220 RRV	0.0252	0.0030	0.0039	0.0034
Mercury, dissolved	7439-97-6	E509/EO	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Volatile Organic Compounds									
Benzene	71-43-2	E611A/EO	0.50	µg/L	----	----	<0.50	----	<0.50
BTEX, total	----	E611A/EO	1.0	µg/L	----	----	<1.0	----	<1.0
Ethylbenzene	100-41-4	E611A/EO	0.50	µg/L	----	----	<0.50	----	<0.50
Toluene	108-88-3	E611A/EO	0.50	µg/L	----	----	<0.50	----	<0.50
Xylene, m+p-	179601-23-1	E611A/EO	0.40	µg/L	----	----	<0.40	----	<0.40
Xylene, o-	95-47-6	E611A/EO	0.30	µg/L	----	----	<0.30	----	<0.30
Xylenes, total	1330-20-7	E611A/EO	0.50	µg/L	----	----	<0.50	----	<0.50
Hydrocarbons									
F1 (C6-C10)	----	E581.F1/EO	100	µg/L	----	----	<100	----	<100
F1-BTEX	----	EC580/EO	25	µg/L	----	----	<100	----	<100
Hydrocarbons Surrogates									
Dichlorotoluene, 3,4-	95-75-0	E581.F1/EO	1.0	%	----	----	85.1	----	102
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/EO	1.0	%	----	----	117	----	111
Difluorobenzene, 1,4-	540-36-3	E611A/EO	1.0	%	----	----	109	----	110
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1221	11104-28-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	05-SS	25-SS	06-SH	06(R)IN	07-SH
				Client sampling date / time	10-Sep-2024 16:18	10-Sep-2024 16:18	10-Sep-2024 17:17	10-Sep-2024 17:17	10-Sep-2024 17:45
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-011	EO2407951-012	EO2407951-013	EO2407951-014	EO2407951-015
					Result	Result	Result	Result	Result
Polychlorinated Biphenyls									
Aroclor 1232	11141-16-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1242	53469-21-9	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1248	12672-29-6	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1254	11097-69-1	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1260	11096-82-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1262	37324-23-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1268	11100-14-4	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Polychlorinated biphenyls [PCBs], total	----	E687-L/WT	0.0300	µg/L	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687-L/WT	0.010	%	64.4	63.8	61.7	61.2	50.0
Tetrachloro-m-xylene	877-09-8	E687-L/WT	0.010	%	68.5	65.7	70.2	69.0	59.7

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	27-SH	07-IN	07(R)SS	08-SH	08-IN
				Client sampling date / time	10-Sep-2024 17:45	10-Sep-2024 17:45	10-Sep-2024 18:11	11-Sep-2024 13:35	11-Sep-2024 13:35
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-016	EO2407951-017	EO2407951-018	EO2407951-019	EO2407951-020
					Result	Result	Result	Result	Result
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/EO	0.50	mg/L	731	323	309	302	366
Conductivity	----	E100/EO	2.0	µS/cm	1470	709	704	704	796
pH	----	E108/EO	0.10	pH units	8.25	8.49	8.29	7.58	7.26

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	27-SH	07-IN	07(R)SS	08-SH	08-IN
				Client sampling date / time	10-Sep-2024 17:45	10-Sep-2024 17:45	10-Sep-2024 18:11	11-Sep-2024 13:35	11-Sep-2024 13:35
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-016	EO2407951-017	EO2407951-018	EO2407951-019	EO2407951-020
					Result	Result	Result	Result	Result
Physical Tests									
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/EO	1.0	mg/L	602	449	461	452	410
Alkalinity, carbonate (as CO3)	3812-32-6	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290/EO	2.0	mg/L	494	368	378	370	336
Solids, total dissolved [TDS], calculated	----	EC103/EO	1.0	mg/L	835	449	462	438	519
Anions and Nutrients									
Chloride	16887-00-6	E235.Cl/EO	0.50	mg/L	220	<0.50	<0.50	1.47	0.74
Fluoride	16984-48-8	E235.F/EO	0.020	mg/L	0.137	0.182	0.070	0.245	0.197
Nitrate (as N)	14797-55-8	E235.NO3/EO	0.020	mg/L	<0.020	0.020	0.218	0.038	0.082
Nitrite (as N)	14797-65-0	E235.NO2/EO	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Sulfate (as SO4)	14808-79-8	E235.SO4/EO	0.30	mg/L	13.6	53.7	41.5	44.9	127
Nitrate + Nitrite (as N)	----	EC235.N+N/EO	0.0500	mg/L	<0.0500	<0.0500	0.218	<0.0500	0.0820
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/EO	0.50	mg/L	2.66	2.57	1.79	1.84	2.17
Ion Balance									
Anion sum	----	EC101/EO	0.10	meq/L	16.4	8.48	8.44	8.38	9.40
Cation sum	----	EC101/EO	0.10	meq/L	15.4	7.84	7.99	7.92	9.03
Ion balance (APHA)	----	EC101/EO	0.01	%	-3.14	-3.92	-2.74	-2.82	-2.01
Ion balance (cations/anions)	----	EC101/EO	0.010	%	93.9	92.4	94.7	94.5	96.1
Dissolved Metals									
Calcium, dissolved	7440-70-2	E421/EO	0.050	mg/L	201	92.2	87.0	81.6	105

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	27-SH	07-IN	07(R)SS	08-SH	08-IN
				Client sampling date / time	10-Sep-2024 17:45	10-Sep-2024 17:45	10-Sep-2024 18:11	11-Sep-2024 13:35	11-Sep-2024 13:35
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-016	EO2407951-017	EO2407951-018	EO2407951-019	EO2407951-020
					Result	Result	Result	Result	Result
Dissolved Metals									
Iron, dissolved	7439-89-6	E421/EO	0.010	mg/L	0.079	0.086	<0.010	<0.010	<0.010
Magnesium, dissolved	7439-95-4	E421/EO	0.0050	mg/L	55.6	22.6	22.3	24.0	25.3
Manganese, dissolved	7439-96-5	E421/EO	0.00010	mg/L	0.388	0.415	0.745	0.0870	0.0176
Potassium, dissolved	7440-09-7	E421/EO	0.050	mg/L	2.94	5.28	6.00	2.21	3.84
Sodium, dissolved	7440-23-5	E421/EO	0.050	mg/L	17.3	28.3	37.5	41.6	37.1
Dissolved mercury filtration location	----	EP509/EO	-	-	Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/EO	-	-	Field	Field	Field	Field	Field
Aluminum, dissolved	7429-90-5	E421/EO	0.0010	mg/L	0.0017	0.0019	0.0012	0.0023	<0.0010
Antimony, dissolved	7440-36-0	E421/EO	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00017	<0.00010
Arsenic, dissolved	7440-38-2	E421/EO	0.00010	mg/L	0.00010	0.00279	0.00026	0.00098	0.00010
Barium, dissolved	7440-39-3	E421/EO	0.00010	mg/L	0.943	0.139	0.0855	0.229	0.0583
Boron, dissolved	7440-42-8	E421/EO	0.010	mg/L	0.060	0.190	0.036	0.056	0.176
Cadmium, dissolved	7440-43-9	E421/EO	0.0000050	mg/L	0.0000087	0.0000148	<0.0000050	0.0000230	0.0000079
Chromium, dissolved	7440-47-3	E421/EO	0.00050	mg/L	<0.00050	0.00138	<0.00050	0.00186	0.0112
Copper, dissolved	7440-50-8	E421/EO	0.00020	mg/L	0.00033	0.00244	0.00119	0.00137	0.00112
Lead, dissolved	7439-92-1	E421/EO	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel, dissolved	7440-02-0	E421/EO	0.00050	mg/L	0.00239	0.00377	0.00173	0.00147	0.00159
Selenium, dissolved	7782-49-2	E421/EO	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000066
Silver, dissolved	7440-22-4	E421/EO	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Uranium, dissolved	7440-61-1	E421/EO	0.000010	mg/L	0.00356	0.00803	0.000429	0.00565	0.00373
Zinc, dissolved	7440-66-6	E421/EO	0.0010	mg/L	0.0026	0.0132	0.0012	0.0017	0.0045

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	27-SH	07-IN	07(R)SS	08-SH	08-IN
				Client sampling date / time	10-Sep-2024 17:45	10-Sep-2024 17:45	10-Sep-2024 18:11	11-Sep-2024 13:35	11-Sep-2024 13:35
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-016	EO2407951-017	EO2407951-018	EO2407951-019	EO2407951-020
					Result	Result	Result	Result	Result
Dissolved Metals									
Mercury, dissolved	7439-97-6	E509/EO	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Aggregate Organics									
Adsorbable organic halogens, [AOX], (as Cl)	----	AOX/1D	10	mg/L	----	----	----	see attached	----
Volatile Organic Compounds									
Benzene	71-43-2	E611A/EO	0.50	µg/L	<0.50	----	----	<0.50	----
BTEX, total	----	E611A/EO	1.0	µg/L	<1.0	----	----	<1.0	----
Ethylbenzene	100-41-4	E611A/EO	0.50	µg/L	<0.50	----	----	<0.50	----
Toluene	108-88-3	E611A/EO	0.50	µg/L	<0.50	----	----	<0.50	----
Xylene, m+p-	179601-23-1	E611A/EO	0.40	µg/L	<0.40	----	----	<0.40	----
Xylene, o-	95-47-6	E611A/EO	0.30	µg/L	<0.30	----	----	<0.30	----
Xylenes, total	1330-20-7	E611A/EO	0.50	µg/L	<0.50	----	----	<0.50	----
Hydrocarbons									
F1 (C6-C10)	----	E581.F1/EO	100	µg/L	<100	----	----	<100	----
F1-BTEX	----	EC580/EO	25	µg/L	<100	----	----	<100	----
Hydrocarbons Surrogates									
Dichlorotoluene, 3,4-	95-75-0	E581.F1/EO	1.0	%	99.7	----	----	107	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/EO	1.0	%	118	----	----	115	----
Difluorobenzene, 1,4-	540-36-3	E611A/EO	1.0	%	110	----	----	109	----
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	27-SH	07-IN	07(R)SS	08-SH	08-IN
				Client sampling date / time	10-Sep-2024 17:45	10-Sep-2024 17:45	10-Sep-2024 18:11	11-Sep-2024 13:35	11-Sep-2024 13:35
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-016	EO2407951-017	EO2407951-018	EO2407951-019	EO2407951-020
					Result	Result	Result	Result	Result
Polychlorinated Biphenyls									
Aroclor 1221	11104-28-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1232	11141-16-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1242	53469-21-9	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1248	12672-29-6	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1254	11097-69-1	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1260	11096-82-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1262	37324-23-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1268	11100-14-4	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Polychlorinated biphenyls [PCBs], total	----	E687-L/WT	0.0300	µg/L	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687-L/WT	0.010	%	75.6	71.1	75.9	64.4	71.6
Tetrachloro-m-xylene	877-09-8	E687-L/WT	0.010	%	78.8	77.3	81.4	74.3	84.5

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	11-SH	31-SH	11-IN	12-SH	32-SH
				Client sampling date / time	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 14:20	11-Sep-2024 14:20
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-021	EO2407951-022	EO2407951-023	EO2407951-024	EO2407951-025
					Result	Result	Result	Result	Result
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/EO	0.50	mg/L	538	530	337	282	----
Conductivity	----	E100/EO	2.0	µS/cm	1100 RRV	1110	737	688	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	11-SH	31-SH	11-IN	12-SH	32-SH
				Client sampling date / time	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 14:20	11-Sep-2024 14:20
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-021	EO2407951-022	EO2407951-023	EO2407951-024	EO2407951-025
					Result	Result	Result	Result	Result
Physical Tests									
pH	----	E108/EO	0.10	pH units	7.06	7.05	7.57	7.56	----
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/EO	1.0	mg/L	570 RRV	572	499	404	----
Alkalinity, carbonate (as CO3)	3812-32-6	E290/EO	1.0	mg/L	<1.0 RRV	<1.0	<1.0	<1.0	----
Alkalinity, hydroxide (as OH)	14280-30-9	E290/EO	1.0	mg/L	<1.0 RRV	<1.0	<1.0	<1.0	----
Alkalinity, total (as CaCO3)	----	E290/EO	2.0	mg/L	467 RRV	469	409	332	----
Solids, total dissolved [TDS], calculated	----	EC103/EO	1.0	mg/L	747	748	446	432	----
Anions and Nutrients									
Chloride	16887-00-6	E235.Cl/EO	0.50	mg/L	<0.50 RRV	<0.50	<0.50	<0.50	----
Fluoride	16984-48-8	E235.F/EO	0.020	mg/L	0.196	0.185	0.318	0.227	----
Nitrate (as N)	14797-55-8	E235.NO3/EO	0.020	mg/L	0.139	0.127	0.055	0.062	----
Nitrite (as N)	14797-65-0	E235.NO2/EO	0.010	mg/L	<0.010	<0.010	0.012	0.011	----
Sulfate (as SO4)	14808-79-8	E235.SO4/EO	0.30	mg/L	198 RRV	203	17.2	64.1	----
Nitrate + Nitrite (as N)	----	EC235.N+N/EO	0.0500	mg/L	0.139	0.127	0.0670	0.0730	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/EO	0.50	mg/L	7.39	7.54	12.0	4.05	----
Ion Balance									
Anion sum	----	EC101/EO	0.10	meq/L	13.5	13.6	8.55	7.99	----
Cation sum	----	EC101/EO	0.10	meq/L	12.9	12.6	8.07	7.57	----
Ion balance (APHA)	----	EC101/EO	0.01	%	-2.27	-3.82	-2.89	-2.70	----
Ion balance (cations/anions)	----	EC101/EO	0.010	%	95.6	92.6	94.4	94.7	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	11-SH	31-SH	11-IN	12-SH	32-SH
				Client sampling date / time	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 14:20	11-Sep-2024 14:20
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-021	EO2407951-022	EO2407951-023	EO2407951-024	EO2407951-025
					Result	Result	Result	Result	Result
Dissolved Metals									
Calcium, dissolved	7440-70-2	E421/EO	0.050	mg/L	160 RRV	157	92.9	80.3	----
Iron, dissolved	7439-89-6	E421/EO	0.010	mg/L	0.053 RRV	0.061	0.014	0.189	----
Magnesium, dissolved	7439-95-4	E421/EO	0.0050	mg/L	33.7 RRV	33.6	25.5	19.7	----
Manganese, dissolved	7439-96-5	E421/EO	0.00010	mg/L	0.690 RRV	0.678	0.405	0.726	----
Potassium, dissolved	7440-09-7	E421/EO	0.050	mg/L	2.34 RRV	2.30	3.77	3.85	----
Sodium, dissolved	7440-23-5	E421/EO	0.050	mg/L	47.4 RRV	45.2	28.2	41.5	----
Dissolved mercury filtration location	----	EP509/EO	-	-	Field	Field	Field	Field	----
Dissolved metals filtration location	----	EP421/EO	-	-	Field	Field	Field	Field	----
Aluminum, dissolved	7429-90-5	E421/EO	0.0010	mg/L	0.0019 RRV	0.0032	0.0016	0.0120	----
Antimony, dissolved	7440-36-0	E421/EO	0.00010	mg/L	<0.00010 RRV	<0.00010	<0.00010	<0.00010	----
Arsenic, dissolved	7440-38-2	E421/EO	0.00010	mg/L	0.00011 RRV	0.00010	0.00073	0.00353	----
Barium, dissolved	7440-39-3	E421/EO	0.00010	mg/L	0.146 RRV	0.149	0.290	0.165	----
Boron, dissolved	7440-42-8	E421/EO	0.010	mg/L	0.126 RRV	0.117	0.226	0.122	----
Cadmium, dissolved	7440-43-9	E421/EO	0.0000050	mg/L	0.0000494 RRV	0.0000466	0.0000073	0.0000593	----
Chromium, dissolved	7440-47-3	E421/EO	0.00050	mg/L	<0.00050 RRV	<0.00050	<0.00050	<0.00050	----
Copper, dissolved	7440-50-8	E421/EO	0.00020	mg/L	0.00136 RRV	0.00198	0.00295	0.0545	----
Lead, dissolved	7439-92-1	E421/EO	0.000050	mg/L	<0.000050 RRV	<0.000050	<0.000050	0.000554	----
Nickel, dissolved	7440-02-0	E421/EO	0.00050	mg/L	0.00288 RRV	0.00299	0.00338	0.00743	----
Selenium, dissolved	7782-49-2	E421/EO	0.000050	mg/L	0.000064 RRV	0.000050	0.000076	<0.000050	----
Silver, dissolved	7440-22-4	E421/EO	0.000010	mg/L	<0.000010 RRV	<0.000010	<0.000010	<0.000010	----
Uranium, dissolved	7440-61-1	E421/EO	0.000010	mg/L	0.00354 RRV	0.00340	0.00268	0.00240	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	11-SH	31-SH	11-IN	12-SH	32-SH
				Client sampling date / time	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 14:20	11-Sep-2024 14:20
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-021	EO2407951-022	EO2407951-023	EO2407951-024	EO2407951-025
					Result	Result	Result	Result	Result
Dissolved Metals									
Zinc, dissolved	7440-66-6	E421/EO	0.0010	mg/L	0.0032 RRV	0.0034	0.0039	0.208	----
Mercury, dissolved	7439-97-6	E509/EO	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
Aggregate Organics									
Adsorbable organic halogens, [AOX], (as Cl)	----	AOX/1D	10	mg/L	----	----	----	see attached	see attached
Volatile Organic Compounds									
Benzene	71-43-2	E611A/EO	0.50	µg/L	<0.50	<0.50	----	<0.50	----
BTEX, total	----	E611A/EO	1.0	µg/L	<1.0	<1.0	----	<1.0	----
Ethylbenzene	100-41-4	E611A/EO	0.50	µg/L	<0.50	<0.50	----	<0.50	----
Toluene	108-88-3	E611A/EO	0.50	µg/L	<0.50	<0.50	----	<0.50	----
Xylene, m+p-	179601-23-1	E611A/EO	0.40	µg/L	<0.40	<0.40	----	<0.40	----
Xylene, o-	95-47-6	E611A/EO	0.30	µg/L	<0.30	<0.30	----	<0.30	----
Xylenes, total	1330-20-7	E611A/EO	0.50	µg/L	<0.50	<0.50	----	<0.50	----
Hydrocarbons									
F1 (C6-C10)	----	E581.F1/EO	100	µg/L	<100	<100	----	<100	----
F1-BTEX	----	EC580/EO	25	µg/L	<100	<100	----	<100	----
Hydrocarbons Surrogates									
Dichlorotoluene, 3,4-	95-75-0	E581.F1/EO	1.0	%	104	98.9	----	101	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/EO	1.0	%	114	116	----	116	----
Difluorobenzene, 1,4-	540-36-3	E611A/EO	1.0	%	110	110	----	110	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	11-SH	31-SH	11-IN	12-SH	32-SH
				Client sampling date / time	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 09:45	11-Sep-2024 14:20	11-Sep-2024 14:20
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-021	EO2407951-022	EO2407951-023	EO2407951-024	EO2407951-025
					Result	Result	Result	Result	Result
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	----
Aroclor 1221	11104-28-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	----
Aroclor 1232	11141-16-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	----
Aroclor 1242	53469-21-9	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	----
Aroclor 1248	12672-29-6	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	----
Aroclor 1254	11097-69-1	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	----
Aroclor 1260	11096-82-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	----
Aroclor 1262	37324-23-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	----
Aroclor 1268	11100-14-4	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	----
Polychlorinated biphenyls [PCBs], total	----	E687-L/WT	0.0300	µg/L	<0.0300	<0.0300	<0.0300	<0.0300	----
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687-L/WT	0.010	%	61.4	67.8	66.4	63.9	----
Tetrachloro-m-xylene	877-09-8	E687-L/WT	0.010	%	74.0	86.7	80.9	80.2	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	12-IN	13-SH	13-IN	13(R)SS	14-SH
				Client sampling date / time	11-Sep-2024 14:20	10-Sep-2024 13:20	10-Sep-2024 13:22	10-Sep-2024 13:45	11-Sep-2024 13:55
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-026	EO2407951-027	EO2407951-028	EO2407951-029	EO2407951-030
					Result	Result	Result	Result	Result
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/EO	0.50	mg/L	343	557	341	206	480

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	12-IN	13-SH	13-IN	13(R)SS	14-SH
				Client sampling date / time	11-Sep-2024 14:20	10-Sep-2024 13:20	10-Sep-2024 13:22	10-Sep-2024 13:45	11-Sep-2024 13:55
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-026	EO2407951-027	EO2407951-028	EO2407951-029	EO2407951-030
					Result	Result	Result	Result	Result
Physical Tests									
Conductivity	----	E100/EO	2.0	µS/cm	643	967	691	424	864
pH	----	E108/EO	0.10	pH units	7.67	7.04	7.57	7.50	7.22
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/EO	1.0	mg/L	459	607	382	273	584
Alkalinity, carbonate (as CO3)	3812-32-6	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290/EO	2.0	mg/L	376	498	313	224	479
Solids, total dissolved [TDS], calculated	----	EC103/EO	1.0	mg/L	392	628	452	280	547
Anions and Nutrients									
Chloride	16887-00-6	E235.Cl/EO	0.50	mg/L	<0.50	<0.50	0.51	<0.50	1.66
Fluoride	16984-48-8	E235.F/EO	0.020	mg/L	0.390	0.139	0.198	0.163	0.160
Nitrate (as N)	14797-55-8	E235.NO3/EO	0.020	mg/L	<0.020	0.021	0.066	0.188	0.064
Nitrite (as N)	14797-65-0	E235.NO2/EO	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Sulfate (as SO4)	14808-79-8	E235.SO4/EO	0.30	mg/L	3.40	89.6	89.9	19.0	42.9
Nitrate + Nitrite (as N)	----	EC235.N+N/EO	0.0500	mg/L	<0.0500	<0.0500	0.0660	0.188	0.0640
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/EO	0.50	mg/L	3.21	6.56	2.36	1.87	3.38
Ion Balance									
Anion sum	----	EC101/EO	0.10	meq/L	7.60	11.8	8.16	4.89	10.5
Cation sum	----	EC101/EO	0.10	meq/L	7.42	11.7	8.16	4.82	10.3
Ion balance (APHA)	----	EC101/EO	0.01	%	-1.20	-0.42	0.0	-0.72	-0.96
Ion balance (cations/anions)	----	EC101/EO	0.010	%	97.6	99.2	100	98.6	98.1

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	12-IN	13-SH	13-IN	13(R)SS	14-SH
				Client sampling date / time	11-Sep-2024 14:20	10-Sep-2024 13:20	10-Sep-2024 13:22	10-Sep-2024 13:45	11-Sep-2024 13:55
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-026	EO2407951-027	EO2407951-028	EO2407951-029	EO2407951-030
					Result	Result	Result	Result	Result
Dissolved Metals									
Calcium, dissolved	7440-70-2	E421/EO	0.050	mg/L	95.4	156	101	62.4	130
Iron, dissolved	7439-89-6	E421/EO	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Magnesium, dissolved	7439-95-4	E421/EO	0.0050	mg/L	25.4	40.6	21.6	12.3	37.7
Manganese, dissolved	7439-96-5	E421/EO	0.00010	mg/L	0.197	0.252	0.210	0.00220	0.0776
Potassium, dissolved	7440-09-7	E421/EO	0.050	mg/L	1.82	1.75	4.04	3.75	2.24
Sodium, dissolved	7440-23-5	E421/EO	0.050	mg/L	12.0	11.5	28.3	13.8	15.9
Dissolved mercury filtration location	----	EP509/EO	-	-	Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/EO	-	-	Field	Field	Field	Field	Field
Aluminum, dissolved	7429-90-5	E421/EO	0.0010	mg/L	0.0013	0.0104	0.0031	0.0014	0.0014
Antimony, dissolved	7440-36-0	E421/EO	0.00010	mg/L	<0.00010	0.00044	<0.00010	<0.00010	0.00026
Arsenic, dissolved	7440-38-2	E421/EO	0.00010	mg/L	0.00059	0.00059	0.00037	0.00044	0.00037
Barium, dissolved	7440-39-3	E421/EO	0.00010	mg/L	0.405	0.272	0.148	0.0787	0.322
Boron, dissolved	7440-42-8	E421/EO	0.010	mg/L	0.036	0.046	0.118	0.017	0.072
Cadmium, dissolved	7440-43-9	E421/EO	0.0000050	mg/L	0.0000061	0.0000856	0.0000078	<0.0000050	0.00203
Chromium, dissolved	7440-47-3	E421/EO	0.00050	mg/L	<0.00050	<0.00050	0.00062	<0.00050	0.00132
Copper, dissolved	7440-50-8	E421/EO	0.00020	mg/L	0.00271	0.00287	0.00083	0.00079	0.00142
Lead, dissolved	7439-92-1	E421/EO	0.000050	mg/L	0.000068	0.000062	<0.000050	<0.000050	<0.000050
Nickel, dissolved	7440-02-0	E421/EO	0.00050	mg/L	0.00084	0.00647	0.00237	0.00063	0.00350
Selenium, dissolved	7782-49-2	E421/EO	0.000050	mg/L	<0.000050	0.000151	<0.000050	<0.000050	<0.000050
Silver, dissolved	7440-22-4	E421/EO	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Uranium, dissolved	7440-61-1	E421/EO	0.000010	mg/L	0.00612	0.00415	0.00293	0.000390	0.00703

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	12-IN	13-SH	13-IN	13(R)SS	14-SH
				Client sampling date / time	11-Sep-2024 14:20	10-Sep-2024 13:20	10-Sep-2024 13:22	10-Sep-2024 13:45	11-Sep-2024 13:55
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-026	EO2407951-027	EO2407951-028	EO2407951-029	EO2407951-030
					Result	Result	Result	Result	Result
Dissolved Metals									
Zinc, dissolved	7440-66-6	E421/EO	0.0010	mg/L	0.0031	0.0054	0.0023	0.0028	0.0084
Mercury, dissolved	7439-97-6	E509/EO	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Aggregate Organics									
Adsorbable organic halogens, [AOX], (as Cl)	----	AOX/1D	10	mg/L	----	see attached	----	----	----
Volatile Organic Compounds									
Benzene	71-43-2	E611A/EO	0.50	µg/L	----	<0.50	----	----	<0.50
BTEX, total	----	E611A/EO	1.0	µg/L	----	<1.0	----	----	<1.0
Ethylbenzene	100-41-4	E611A/EO	0.50	µg/L	----	<0.50	----	----	<0.50
Toluene	108-88-3	E611A/EO	0.50	µg/L	----	<0.50	----	----	<0.50
Xylene, m+p-	179601-23-1	E611A/EO	0.40	µg/L	----	<0.40	----	----	<0.40
Xylene, o-	95-47-6	E611A/EO	0.30	µg/L	----	<0.30	----	----	<0.30
Xylenes, total	1330-20-7	E611A/EO	0.50	µg/L	----	<0.50	----	----	<0.50
Hydrocarbons									
F1 (C6-C10)	----	E581.F1/EO	100	µg/L	----	<100	----	----	<100
F1-BTEX	----	EC580/EO	25	µg/L	----	<100	----	----	<100
Hydrocarbons Surrogates									
Dichlorotoluene, 3,4-	95-75-0	E581.F1/EO	1.0	%	----	96.5	----	----	100
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/EO	1.0	%	----	116	----	----	113
Difluorobenzene, 1,4-	540-36-3	E611A/EO	1.0	%	----	110	----	----	111

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	12-IN	13-SH	13-IN	13(R)SS	14-SH
				Client sampling date / time	11-Sep-2024 14:20	10-Sep-2024 13:20	10-Sep-2024 13:22	10-Sep-2024 13:45	11-Sep-2024 13:55
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-026	EO2407951-027	EO2407951-028	EO2407951-029	EO2407951-030
					Result	Result	Result	Result	Result
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1221	11104-28-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1232	11141-16-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1242	53469-21-9	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1248	12672-29-6	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1254	11097-69-1	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1260	11096-82-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1262	37324-23-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1268	11100-14-4	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Polychlorinated biphenyls [PCBs], total	----	E687-L/WT	0.0300	µg/L	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687-L/WT	0.010	%	68.4	63.0	65.4	64.2	68.2
Tetrachloro-m-xylene	877-09-8	E687-L/WT	0.010	%	85.5	76.0	98.0	77.7	79.4

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	15-SH	15-IN	15(2R)SS	16-SH	17-SH
				Client sampling date / time	11-Sep-2024 10:40	11-Sep-2024 10:40	10-Sep-2024 12:50	10-Sep-2024 14:07	11-Sep-2024 10:15
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-031	EO2407951-032	EO2407951-033	EO2407951-034	EO2407951-036
					Result	Result	Result	Result	Result
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/EO	0.50	mg/L	340	371	124	383	310

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	15-SH	15-IN	15(2R)SS	16-SH	17-SH
				Client sampling date / time	11-Sep-2024 10:40	11-Sep-2024 10:40	10-Sep-2024 12:50	10-Sep-2024 14:07	11-Sep-2024 10:15
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-031	EO2407951-032	EO2407951-033	EO2407951-034	EO2407951-036
					Result	Result	Result	Result	Result
Physical Tests									
Conductivity	----	E100/EO	2.0	µS/cm	716	758	412	752	626
pH	----	E108/EO	0.10	pH units	7.42	7.44	8.11	7.61	7.73
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/EO	1.0	mg/L	430	539	261	502	393
Alkalinity, carbonate (as CO3)	3812-32-6	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290/EO	2.0	mg/L	353	442	214	412	322
Solids, total dissolved [TDS], calculated	----	EC103/EO	1.0	mg/L	461	461	271	463	382
Anions and Nutrients									
Chloride	16887-00-6	E235.Cl/EO	0.50	mg/L	<0.50	<0.50	0.66	0.93	8.11
Fluoride	16984-48-8	E235.F/EO	0.020	mg/L	0.182	0.220	0.222	0.288	0.273
Nitrate (as N)	14797-55-8	E235.NO3/EO	0.020	mg/L	0.863	0.150	0.222	0.118	<0.020
Nitrite (as N)	14797-65-0	E235.NO2/EO	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Sulfate (as SO4)	14808-79-8	E235.SO4/EO	0.30	mg/L	67.0	9.76	15.8	26.7	25.3
Nitrate + Nitrite (as N)	----	EC235.N+N/EO	0.0500	mg/L	0.863	0.150	0.222	0.118	<0.0500
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/EO	0.50	mg/L	4.67	5.04	2.36	3.75	2.42
Ion Balance									
Anion sum	----	EC101/EO	0.10	meq/L	8.52	9.06	4.65	8.84	7.20
Cation sum	----	EC101/EO	0.10	meq/L	8.39	8.71	4.52	8.80	7.05
Ion balance (APHA)	----	EC101/EO	0.01	%	-0.77	-1.97	-1.42	-0.23	-1.05
Ion balance (cations/anions)	----	EC101/EO	0.010	%	98.5	96.1	97.2	99.5	97.9

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	15-SH	15-IN	15(2R)SS	16-SH	17-SH
				Client sampling date / time	11-Sep-2024 10:40	11-Sep-2024 10:40	10-Sep-2024 12:50	10-Sep-2024 14:07	11-Sep-2024 10:15
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-031	EO2407951-032	EO2407951-033	EO2407951-034	EO2407951-036
					Result	Result	Result	Result	Result
Dissolved Metals									
Calcium, dissolved	7440-70-2	E421/EO	0.050	mg/L	97.7	108	34.3	105	86.4
Iron, dissolved	7439-89-6	E421/EO	0.010	mg/L	<0.010	<0.010	0.013	<0.010	<0.010
Magnesium, dissolved	7439-95-4	E421/EO	0.0050	mg/L	23.3	24.7	9.28	29.3	22.8
Manganese, dissolved	7439-96-5	E421/EO	0.00010	mg/L	0.345	0.163	0.752	0.00538	0.00074
Potassium, dissolved	7440-09-7	E421/EO	0.050	mg/L	4.48	3.40	3.01	3.03	1.78
Sodium, dissolved	7440-23-5	E421/EO	0.050	mg/L	33.8	27.5	44.7	24.8	18.9
Dissolved mercury filtration location	----	EP509/EO	-	-	Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/EO	-	-	Field	Field	Field	Field	Field
Aluminum, dissolved	7429-90-5	E421/EO	0.0010	mg/L	0.0020	0.0018	0.0028	0.0016	0.0014
Antimony, dissolved	7440-36-0	E421/EO	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00013
Arsenic, dissolved	7440-38-2	E421/EO	0.00010	mg/L	0.00014	0.00017	0.00274	0.00019	0.00020
Barium, dissolved	7440-39-3	E421/EO	0.00010	mg/L	0.139	0.535	0.0382	0.164	0.268
Boron, dissolved	7440-42-8	E421/EO	0.010	mg/L	0.230	0.174	0.030	0.092	0.059
Cadmium, dissolved	7440-43-9	E421/EO	0.0000050	mg/L	0.0000212	0.0000119	0.0000104	<0.0000050	0.0000131
Chromium, dissolved	7440-47-3	E421/EO	0.00050	mg/L	<0.00050	0.00076	<0.00050	0.00118	0.00088
Copper, dissolved	7440-50-8	E421/EO	0.00020	mg/L	0.00260	0.00526	0.00145	0.00264	0.00109
Lead, dissolved	7439-92-1	E421/EO	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel, dissolved	7440-02-0	E421/EO	0.00050	mg/L	0.00434	0.00490	0.00070	0.00200	0.00135
Selenium, dissolved	7782-49-2	E421/EO	0.000050	mg/L	0.000090	0.000067	<0.000050	0.00163	0.000382
Silver, dissolved	7440-22-4	E421/EO	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Uranium, dissolved	7440-61-1	E421/EO	0.000010	mg/L	0.00448	0.00218	0.00134	0.00874	0.00440

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	15-SH	15-IN	15(2R)SS	16-SH	17-SH
				Client sampling date / time	11-Sep-2024 10:40	11-Sep-2024 10:40	10-Sep-2024 12:50	10-Sep-2024 14:07	11-Sep-2024 10:15
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-031	EO2407951-032	EO2407951-033	EO2407951-034	EO2407951-036
					Result	Result	Result	Result	Result
Dissolved Metals									
Zinc, dissolved	7440-66-6	E421/EO	0.0010	mg/L	0.0020	0.0023	0.0046	0.0025	0.0019
Mercury, dissolved	7439-97-6	E509/EO	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Aggregate Organics									
Adsorbable organic halogens, [AOX], (as Cl)	----	AOX/1D	10	mg/L	see attached	----	----	see attached	see attached
Volatile Organic Compounds									
Benzene	71-43-2	E611A/EO	0.50	µg/L	<0.50	----	----	<0.50	<0.50
BTEX, total	----	E611A/EO	1.0	µg/L	<1.0	----	----	<1.0	<1.0
Ethylbenzene	100-41-4	E611A/EO	0.50	µg/L	<0.50	----	----	<0.50	<0.50
Toluene	108-88-3	E611A/EO	0.50	µg/L	<0.50	----	----	<0.50	<0.50
Xylene, m+p-	179601-23-1	E611A/EO	0.40	µg/L	<0.40	----	----	<0.40	<0.40
Xylene, o-	95-47-6	E611A/EO	0.30	µg/L	<0.30	----	----	<0.30	<0.30
Xylenes, total	1330-20-7	E611A/EO	0.50	µg/L	<0.50	----	----	<0.50	<0.50
Hydrocarbons									
F1 (C6-C10)	----	E581.F1/EO	100	µg/L	<100	----	----	<100	<100
F1-BTEX	----	EC580/EO	25	µg/L	<100	----	----	<100	<100
Hydrocarbons Surrogates									
Dichlorotoluene, 3,4-	95-75-0	E581.F1/EO	1.0	%	103	----	----	90.9	107
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/EO	1.0	%	121	----	----	116	120
Difluorobenzene, 1,4-	540-36-3	E611A/EO	1.0	%	111	----	----	112	112

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	15-SH	15-IN	15(2R)SS	16-SH	17-SH
				Client sampling date / time	11-Sep-2024 10:40	11-Sep-2024 10:40	10-Sep-2024 12:50	10-Sep-2024 14:07	11-Sep-2024 10:15
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-031	EO2407951-032	EO2407951-033	EO2407951-034	EO2407951-036
					Result	Result	Result	Result	Result
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1221	11104-28-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1232	11141-16-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1242	53469-21-9	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1248	12672-29-6	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1254	11097-69-1	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1260	11096-82-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1262	37324-23-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1268	11100-14-4	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Polychlorinated biphenyls [PCBs], total	----	E687-L/WT	0.0300	µg/L	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687-L/WT	0.010	%	71.7	67.5	66.1	72.1	67.4
Tetrachloro-m-xylene	877-09-8	E687-L/WT	0.010	%	83.7	81.4	83.8	87.3	81.2

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	17-IN	89-3	Trip Blank	10-SH	20-SH
				Client sampling date / time	11-Sep-2024 10:15	11-Sep-2024 11:25	11-Sep-2024 00:00	11-Sep-2024 12:15	11-Sep-2024 14:52
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-037	EO2407951-038	EO2407951-039	EO2407951-040	EO2407951-041
					Result	Result	Result	Result	Result
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/EO	0.50	mg/L	375	172	<0.50	<0.50	<0.50

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	17-IN	89-3	Trip Blank	10-SH	20-SH
				Client sampling date / time	11-Sep-2024 10:15	11-Sep-2024 11:25	11-Sep-2024 00:00	11-Sep-2024 12:15	11-Sep-2024 14:52
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-037	EO2407951-038	EO2407951-039	EO2407951-040	EO2407951-041
					Result	Result	Result	Result	Result
Physical Tests									
Conductivity	----	E100/EO	2.0	µS/cm	762	373	<2.0	<2.0	<2.0
pH	----	E108/EO	0.10	pH units	7.63	7.34	5.68	5.63	5.65
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/EO	1.0	mg/L	468	226	<1.0	<1.0	<1.0
Alkalinity, carbonate (as CO3)	3812-32-6	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290/EO	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290/EO	2.0	mg/L	384	185	<2.0	<2.0	<2.0
Solids, total dissolved [TDS], calculated	----	EC103/EO	1.0	mg/L	483	243	<1.0	4.4	2.4
Anions and Nutrients									
Chloride	16887-00-6	E235.Cl/EO	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride	16984-48-8	E235.F/EO	0.020	mg/L	0.173	0.175	<0.020	<0.020	<0.020
Nitrate (as N)	14797-55-8	E235.NO3/EO	0.020	mg/L	0.736	<0.020	<0.020	<0.020	<0.020
Nitrite (as N)	14797-65-0	E235.NO2/EO	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Sulfate (as SO4)	14808-79-8	E235.SO4/EO	0.30	mg/L	59.9	18.9	<0.30	<0.30	<0.30
Nitrate + Nitrite (as N)	----	EC235.N+N/EO	0.0500	mg/L	0.736	<0.0500	<0.0500	<0.0500	<0.0500
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/EO	0.50	mg/L	3.16	1.94	<0.50	4.04	1.91
Ion Balance									
Anion sum	----	EC101/EO	0.10	meq/L	8.98	4.10	<0.10	<0.10	<0.10
Cation sum	----	EC101/EO	0.10	meq/L	9.00	4.11	<0.10	<0.10	<0.10
Ion balance (APHA)	----	EC101/EO	0.01	%	0.11	0.12	0.0	0.0	0.0
Ion balance (cations/anions)	----	EC101/EO	0.010	%	100	100	100	100	100

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	17-IN	89-3	Trip Blank	10-SH	20-SH
				Client sampling date / time	11-Sep-2024 10:15	11-Sep-2024 11:25	11-Sep-2024 00:00	11-Sep-2024 12:15	11-Sep-2024 14:52
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-037	EO2407951-038	EO2407951-039	EO2407951-040	EO2407951-041
					Result	Result	Result	Result	Result
Dissolved Metals									
Calcium, dissolved	7440-70-2	E421/EO	0.050	mg/L	110	45.6	<0.050	0.083 RRV	0.062 RRV
Iron, dissolved	7439-89-6	E421/EO	0.010	mg/L	<0.010	0.990	<0.010	<0.010	<0.010
Magnesium, dissolved	7439-95-4	E421/EO	0.0050	mg/L	24.4	14.0	<0.0050	0.0103 RRV	0.0118 RRV
Manganese, dissolved	7439-96-5	E421/EO	0.00010	mg/L	0.410	1.06	<0.00010	<0.00010	<0.00010
Potassium, dissolved	7440-09-7	E421/EO	0.050	mg/L	4.52	2.71	<0.050	<0.050	<0.050
Sodium, dissolved	7440-23-5	E421/EO	0.050	mg/L	31.7	12.4	<0.050	0.081 RRV	0.110 RRV
Dissolved mercury filtration location	----	EP509/EO	-	-	Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/EO	-	-	Field	Field	Field	Field	Field
Aluminum, dissolved	7429-90-5	E421/EO	0.0010	mg/L	0.0013	<0.0010	<0.0010	0.0018 RRV	0.0030 RRV
Antimony, dissolved	7440-36-0	E421/EO	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421/EO	0.00010	mg/L	0.00018	0.00083	<0.00010	<0.00010	<0.00010
Barium, dissolved	7440-39-3	E421/EO	0.00010	mg/L	0.0725	0.120	<0.00010	0.00076 RRV	0.00026 RRV
Boron, dissolved	7440-42-8	E421/EO	0.010	mg/L	0.278	0.023	<0.010	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421/EO	0.0000050	mg/L	0.0000155	0.0000130	<0.0000050	<0.0000050	<0.0000050
Chromium, dissolved	7440-47-3	E421/EO	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	7440-50-8	E421/EO	0.00020	mg/L	0.00248	0.00132	<0.00020	0.00128 RRV	0.00031 RRV
Lead, dissolved	7439-92-1	E421/EO	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel, dissolved	7440-02-0	E421/EO	0.00050	mg/L	0.00211	<0.00050	<0.00050	<0.00050	<0.00050
Selenium, dissolved	7782-49-2	E421/EO	0.000050	mg/L	0.000077	0.000097	<0.000050	<0.000050	<0.000050
Silver, dissolved	7440-22-4	E421/EO	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Uranium, dissolved	7440-61-1	E421/EO	0.000010	mg/L	0.00453	0.00184	<0.000010	<0.000010	<0.000010

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	17-IN	89-3	Trip Blank	10-SH	20-SH
				Client sampling date / time	11-Sep-2024 10:15	11-Sep-2024 11:25	11-Sep-2024 00:00	11-Sep-2024 12:15	11-Sep-2024 14:52
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-037	EO2407951-038	EO2407951-039	EO2407951-040	EO2407951-041
					Result	Result	Result	Result	Result
Dissolved Metals									
Zinc, dissolved	7440-66-6	E421/EO	0.0010	mg/L	0.0040	0.0093	<0.0010	<0.0010	<0.0010
Mercury, dissolved	7439-97-6	E509/EO	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Aggregate Organics									
Adsorbable organic halogens, [AOX], (as Cl)	----	AOX/1D	10	mg/L	----	----	----	see attached	----
Volatile Organic Compounds									
Benzene	71-43-2	E611A/EO	0.50	µg/L	----	----	<0.50	<0.50	<0.50
BTEX, total	----	E611A/EO	1.0	µg/L	----	----	<1.0	<1.0	<1.0
Ethylbenzene	100-41-4	E611A/EO	0.50	µg/L	----	----	<0.50	<0.50	<0.50
Toluene	108-88-3	E611A/EO	0.50	µg/L	----	----	<0.50	<0.50	<0.50
Xylene, m+p-	179601-23-1	E611A/EO	0.40	µg/L	----	----	<0.40	<0.40	<0.40
Xylene, o-	95-47-6	E611A/EO	0.30	µg/L	----	----	<0.30	<0.30	<0.30
Xylenes, total	1330-20-7	E611A/EO	0.50	µg/L	----	----	<0.50	<0.50	<0.50
Hydrocarbons									
F1 (C6-C10)	----	E581.F1/EO	100	µg/L	----	----	<100	<100	<100
F1-BTEX	----	EC580/EO	25	µg/L	----	----	<100	<100	<100
Hydrocarbons Surrogates									
Dichlorotoluene, 3,4-	95-75-0	E581.F1/EO	1.0	%	----	----	108	98.8	99.8
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/EO	1.0	%	----	----	113	115	111
Difluorobenzene, 1,4-	540-36-3	E611A/EO	1.0	%	----	----	109	112	111

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	17-IN	89-3	Trip Blank	10-SH	20-SH
				Client sampling date / time	11-Sep-2024 10:15	11-Sep-2024 11:25	11-Sep-2024 00:00	11-Sep-2024 12:15	11-Sep-2024 14:52
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-037	EO2407951-038	EO2407951-039	EO2407951-040	EO2407951-041
					Result	Result	Result	Result	Result
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1221	11104-28-2	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1232	11141-16-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1242	53469-21-9	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1248	12672-29-6	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1254	11097-69-1	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1260	11096-82-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1262	37324-23-5	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Aroclor 1268	11100-14-4	E687-L/WT	0.0100	µg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Polychlorinated biphenyls [PCBs], total	----	E687-L/WT	0.0300	µg/L	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687-L/WT	0.010	%	66.7	62.8	58.6	77.0	61.8
Tetrachloro-m-xylene	877-09-8	E687-L/WT	0.010	%	86.2	78.7	84.3	75.5	78.8

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	51-SH	52-SH	----	----	----
				Client sampling date / time	12-Sep-2024 00:00	12-Sep-2024 00:00	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	EO2407951-044	EO2407951-045	----	----	----
					Result	Result	----	----	----
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687-L/WT	0.0100	µg/L	<0.0500 DLM	<0.0500 DLM	----	----	----
Aroclor 1221	11104-28-2	E687-L/WT	0.0100	µg/L	<0.0500 DLM	<0.0500 DLM	----	----	----
Aroclor 1232	11141-16-5	E687-L/WT	0.0100	µg/L	<0.0500 DLM	<0.0500 DLM	----	----	----
Aroclor 1242	53469-21-9	E687-L/WT	0.0100	µg/L	<0.0500 DLM	<0.0500 DLM	----	----	----
Aroclor 1248	12672-29-6	E687-L/WT	0.0100	µg/L	<0.0500 DLM	<0.0500 DLM	----	----	----
Aroclor 1254	11097-69-1	E687-L/WT	0.0100	µg/L	0.673	0.654	----	----	----
Aroclor 1260	11096-82-5	E687-L/WT	0.0100	µg/L	0.702	0.726	----	----	----
Aroclor 1262	37324-23-5	E687-L/WT	0.0100	µg/L	<0.0500 DLM	<0.0500 DLM	----	----	----
Aroclor 1268	11100-14-4	E687-L/WT	0.0100	µg/L	<0.0500 DLM	<0.0500 DLM	----	----	----
Polychlorinated biphenyls [PCBs], total	----	E687-L/WT	0.0300	µg/L	1.38	1.38	----	----	----
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687-L/WT	0.010	%	113	122	----	----	----
Tetrachloro-m-xylene	877-09-8	E687-L/WT	0.010	%	92.2	96.3	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **EO2407951**	Page	: 1 of 66
Client	: **AECOM Canada Ltd.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Michael Steed	Account Manager	: Megha Walia
Address	: 101 - 18817 Stony Plain Rd. NW Edmonton AB Canada T5S 0C2	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780 486 7000	Telephone	: +1 780 413 5227
Project	: Swan Hills-60735747	Date Samples Received	: 12-Sep-2024 12:30
PO	: ----	Issue Date	: 07-Oct-2024 16:06
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: EO22-AECO100-016 (Swan Hills)		
No. of samples received	: 45		
No. of samples analysed	: 42		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass (nitric acid) 08-SH	AOX	11-Sep-2024	----	----	----		02-Oct-2024	180 days	21 days	✓
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass (nitric acid) 10-SH	AOX	11-Sep-2024	----	----	----		02-Oct-2024	180 days	21 days	✓
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass (nitric acid) 12-SH	AOX	11-Sep-2024	----	----	----		02-Oct-2024	180 days	21 days	✓
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass (nitric acid) 15-SH	AOX	11-Sep-2024	----	----	----		02-Oct-2024	180 days	21 days	✓
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass (nitric acid) 17-SH	AOX	11-Sep-2024	----	----	----		02-Oct-2024	180 days	21 days	✓
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass (nitric acid) 32-SH	AOX	11-Sep-2024	----	----	----		02-Oct-2024	180 days	21 days	✓
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass (nitric acid) 03-SH	AOX	10-Sep-2024	----	----	----		02-Oct-2024	180 days	22 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass (nitric acid) 13-SH	AOX	10-Sep-2024	----	----	----		02-Oct-2024	180 days	22 days	✓
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass (nitric acid) 16-SH	AOX	10-Sep-2024	----	----	----		02-Oct-2024	180 days	22 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 01A-IN	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 01A-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 08-IN	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 08-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 10-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 11-IN	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 11-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 12-IN	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 12-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 14-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 15-IN	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 15-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 17-IN	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 17-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 20-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 31-SH	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 89-3	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Trip Blank	E235.Cl	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 03-IN	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 03-SH	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 04-IN	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 04-SH	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 04-SS	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 05-IN	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 05-SH	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 05-SS	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 06(R)IN	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 06-SH	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 07(R)SS	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 07-IN	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 07-SH	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 13(R)SS	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 13-IN	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 13-SH	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 15(2R)SS	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 16-SH	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 25-SH	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 25-SS	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 27-SH	E235.Cl	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 01A-IN	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 01A-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 08-IN	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 08-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 10-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 11-IN	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 11-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 12-IN	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 12-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 14-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 15-IN	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 15-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 17-IN	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 17-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 20-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 31-SH	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 89-3	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Trip Blank	E235.F	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 03-IN	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 03-SH	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 04-IN	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 04-SH	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓

Matrix: **Water**

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 04-SS	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 05-IN	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 05-SH	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 05-SS	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 06(R)IN	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 06-SH	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 07(R)SS	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 07-IN	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 07-SH	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓

Matrix: **Water**

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 13(R)SS	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 13-IN	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 13-SH	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 15(2R)SS	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 16-SH	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 25-SH	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 25-SS	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 27-SH	E235.F	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 01A-IN	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓

Matrix: **Water**

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 01A-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 08-IN	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 08-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 10-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 11-IN	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 11-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 12-IN	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 12-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 14-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 15-IN	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 15-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 17-IN	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 17-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 20-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 31-SH	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 89-3	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE Trip Blank	E235.NO3	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 03-IN	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓

Matrix: **Water**

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 03-SH	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 04-IN	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 04-SH	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 04-SS	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 05-IN	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 05-SH	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 05-SS	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 06(R)IN	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 06-SH	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓

Matrix: **Water**

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 07(R)SS	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 07-IN	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 07-SH	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 13(R)SS	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 13-IN	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 13-SH	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 15(2R)SS	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 16-SH	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 25-SH	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓

Matrix: **Water**

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 25-SS	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 27-SH	E235.NO3	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 01A-IN	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 01A-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 08-IN	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 08-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 10-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 11-IN	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 11-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE 12-IN	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 12-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 14-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 15-IN	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 15-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 17-IN	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 17-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 20-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 31-SH	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE 89-3	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE Trip Blank	E235.NO2	11-Sep-2024	13-Sep-2024	3 days	2 days	✓	13-Sep-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 03-IN	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 03-SH	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 04-IN	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 04-SH	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 04-SS	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 05-IN	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 05-SH	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE 05-SS	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 06(R)IN	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 06-SH	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 07(R)SS	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 07-IN	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 07-SH	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 13(R)SS	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 13-IN	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 13-SH	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE 15(2R)SS	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 16-SH	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 25-SH	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 25-SS	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 27-SH	E235.NO2	10-Sep-2024	13-Sep-2024	3 days	3 days	✓	13-Sep-2024	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 01A-IN	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 01A-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 08-IN	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 08-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE 10-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 11-IN	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 11-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 12-IN	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 12-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 14-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 15-IN	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 15-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 17-IN	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE 17-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 20-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 31-SH	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 89-3	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Trip Blank	E235.SO4	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 03-IN	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 03-SH	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 04-IN	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 04-SH	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE 04-SS	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 05-IN	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 05-SH	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 05-SS	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 06(R)IN	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 06-SH	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 07(R)SS	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 07-IN	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 07-SH	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
13(R)SS	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
13-IN	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
13-SH	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
15(2R)SS	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
16-SH	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
25-SH	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
25-SS	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
27-SH	E235.SO4	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Dioxins and Furans : Dioxins and Furans in Water by GC-HRMS										
Amber glass/Teflon lined cap										
08-SH	E766	11-Sep-2024	----	----	----		07-Oct-2024	365 days	26 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dioxins and Furans : Dioxins and Furans in Water by GC-HRMS										
Amber glass/Teflon lined cap										
10-SH	E766	11-Sep-2024	----	----	----		07-Oct-2024	365 days	26 days	✓
Dioxins and Furans : Dioxins and Furans in Water by GC-HRMS										
Amber glass/Teflon lined cap										
12-SH	E766	11-Sep-2024	----	----	----		07-Oct-2024	365 days	26 days	✓
Dioxins and Furans : Dioxins and Furans in Water by GC-HRMS										
Amber glass/Teflon lined cap										
15-SH	E766	11-Sep-2024	----	----	----		07-Oct-2024	365 days	26 days	✓
Dioxins and Furans : Dioxins and Furans in Water by GC-HRMS										
Amber glass/Teflon lined cap										
17-SH	E766	11-Sep-2024	----	----	----		07-Oct-2024	365 days	26 days	✓
Dioxins and Furans : Dioxins and Furans in Water by GC-HRMS										
Amber glass/Teflon lined cap										
32-SH	E766	11-Sep-2024	----	----	----		07-Oct-2024	365 days	26 days	✓
Dioxins and Furans : Dioxins and Furans in Water by GC-HRMS										
Amber glass/Teflon lined cap										
03-SH	E766	10-Sep-2024	----	----	----		07-Oct-2024	365 days	27 days	✓
Dioxins and Furans : Dioxins and Furans in Water by GC-HRMS										
Amber glass/Teflon lined cap										
13-SH	E766	10-Sep-2024	----	----	----		07-Oct-2024	365 days	27 days	✓
Dioxins and Furans : Dioxins and Furans in Water by GC-HRMS										
Amber glass/Teflon lined cap										
16-SH	E766	10-Sep-2024	----	----	----		07-Oct-2024	365 days	27 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
01A-IN	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 01A-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 08-IN	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 08-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 10-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 11-IN	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 11-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 12-IN	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 12-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 14-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 15-IN	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 15-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 17-IN	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 17-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 20-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 31-SH	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 89-3	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) Trip Blank	E509	11-Sep-2024	18-Sep-2024	28 days	7 days	✓	18-Sep-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 03-IN	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓

Matrix: **Water**

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 03-SH	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 04-IN	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 04-SH	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 04-SS	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 05-IN	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 05-SH	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 05-SS	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 06(R)IN	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 06-SH	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 07(R)SS	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 07-IN	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 07-SH	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 13(R)SS	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 13-IN	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 13-SH	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 15(2R)SS	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 16-SH	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 25-SH	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
25-SS	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
27-SH	E509	10-Sep-2024	18-Sep-2024	28 days	8 days	✓	18-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
01A-IN	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
01A-SH	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
08-IN	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
08-SH	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
11-IN	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
11-SH	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
12-IN	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
12-SH	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
14-SH	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
15-IN	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
15-SH	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
31-SH	E421	11-Sep-2024	16-Sep-2024	180 days	5 days	✓	16-Sep-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
03-IN	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
03-SH	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
04-IN	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
04-SH	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
04-SS	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
05-IN	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
05-SH	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
05-SS	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
06(R)IN	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
06-SH	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
07(R)SS	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
07-IN	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
07-SH	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
10-SH	E421	11-Sep-2024	17-Sep-2024	180 days	6 days	✓	17-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
13(R)SS	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
13-IN	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
13-SH	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
17-IN	E421	11-Sep-2024	17-Sep-2024	180 days	6 days	✓	17-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
17-SH	E421	11-Sep-2024	17-Sep-2024	180 days	6 days	✓	17-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
20-SH	E421	11-Sep-2024	17-Sep-2024	180 days	6 days	✓	17-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
25-SH	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
25-SS	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
27-SH	E421	10-Sep-2024	16-Sep-2024	180 days	6 days	✓	16-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
89-3	E421	11-Sep-2024	17-Sep-2024	180 days	6 days	✓	17-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
Trip Blank	E421	11-Sep-2024	17-Sep-2024	180 days	6 days	✓	17-Sep-2024	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
15(2R)SS	E421	10-Sep-2024	17-Sep-2024	180 days	7 days	✓	17-Sep-2024	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
16-SH	E421	10-Sep-2024	17-Sep-2024	180 days	7 days	✓	17-Sep-2024	180 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
08-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
10-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
12-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
14-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 15-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 20-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 01A-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 03-SH	E581.F1	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 04-SH	E581.F1	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 05-SH	E581.F1	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 06-SH	E581.F1	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 07-SH	E581.F1	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 11-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 13-SH	E581.F1	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 16-SH	E581.F1	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 17-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 25-SH	E581.F1	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 27-SH	E581.F1	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 31-SH	E581.F1	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) Trip Blank	E581.F1	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 03-IN	E358-L	10-Sep-2024	20-Sep-2024	28 days	10 days	✓	20-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 03-SH	E358-L	10-Sep-2024	20-Sep-2024	28 days	10 days	✓	20-Sep-2024	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 04-IN	E358-L	10-Sep-2024	20-Sep-2024	28 days	10 days	✓	20-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 04-SH	E358-L	10-Sep-2024	20-Sep-2024	28 days	10 days	✓	20-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 04-SS	E358-L	10-Sep-2024	20-Sep-2024	28 days	10 days	✓	20-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 05-SH	E358-L	10-Sep-2024	20-Sep-2024	28 days	10 days	✓	20-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 08-IN	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 08-SH	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 10-SH	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 11-IN	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 11-SH	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
12-IN	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
12-SH	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
14-SH	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
15-IN	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
15-SH	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
17-IN	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
17-SH	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
20-SH	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
31-SH	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 89-3	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Trip Blank	E358-L	11-Sep-2024	21-Sep-2024	28 days	10 days	✓	21-Sep-2024	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 05-IN	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 05-SS	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 06(R)IN	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 06-SH	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 07(R)SS	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 07-IN	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 07-SH	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 13(R)SS	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 13-IN	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 13-SH	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 15(2R)SS	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 16-SH	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 25-SH	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 25-SS	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 27-SH	E358-L	10-Sep-2024	21-Sep-2024	28 days	11 days	✓	21-Sep-2024	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 01A-IN	E358-L	11-Sep-2024	20-Sep-2024	28 days	9 days	✓	20-Sep-2024	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 01A-SH	E358-L	11-Sep-2024	20-Sep-2024	28 days	9 days	✓	20-Sep-2024	28 days	9 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 01A-IN	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 01A-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 08-IN	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 08-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 10-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 11-IN	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 11-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 12-IN	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE 12-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 14-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 15-IN	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 15-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 17-IN	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 17-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 20-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 31-SH	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 89-3	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE										
Trip Blank	E290	11-Sep-2024	13-Sep-2024	14 days	2 days	✓	13-Sep-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
03-IN	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
03-SH	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
04-IN	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
04-SH	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
04-SS	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
05-IN	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
05-SH	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
05-SS	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE 06(R)IN	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 06-SH	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 07(R)SS	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 07-IN	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 07-SH	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 13(R)SS	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 13-IN	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 13-SH	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 15(2R)SS	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE 16-SH	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 25-SH	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 25-SS	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 27-SH	E290	10-Sep-2024	13-Sep-2024	14 days	3 days	✓	13-Sep-2024	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 01A-IN	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 01A-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 08-IN	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 08-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 10-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 11-IN	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 11-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 12-IN	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 12-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 14-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 15-IN	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 15-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 17-IN	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 17-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 20-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 31-SH	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 89-3	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Trip Blank	E100	11-Sep-2024	13-Sep-2024	28 days	2 days	✓	13-Sep-2024	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 03-IN	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 03-SH	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 04-IN	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 04-SH	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 04-SS	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 05-IN	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 05-SH	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 05-SS	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 06(R)IN	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 06-SH	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 07(R)SS	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 07-IN	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 07-SH	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 13(R)SS	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 13-IN	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 13-SH	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 15(2R)SS	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 16-SH	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 25-SH	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 25-SS	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 27-SH	E100	10-Sep-2024	13-Sep-2024	28 days	3 days	✓	13-Sep-2024	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE 20-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	44 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	47 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 12-IN	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	45 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	48 hrs	✗ EHTR-FM

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 12-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	45 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	48 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 14-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	45 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	48 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 08-IN	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	45 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 08-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	45 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 10-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	47 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	50 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 89-3	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	48 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	51 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 15-IN	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	51 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 15-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	51 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 11-IN	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	52 hrs	✗ EHTR-FM

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE 11-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	52 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 17-IN	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	52 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 17-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	52 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 31-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	52 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 01A-IN	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	53 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 01A-SH	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	49 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	53 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE Trip Blank	E108	11-Sep-2024	13-Sep-2024	0.25 hrs	50 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	53 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 07(R)SS	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	64 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	68 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 07-IN	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	65 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	68 hrs	✗ EHTR-FM

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 07-SH	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	65 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	68 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 27-SH	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	65 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	68 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 06(R)IN	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	65 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	69 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 06-SH	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	65 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	69 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 04-IN	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	66 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	69 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 04-SH	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	66 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	69 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 04-SS	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	66 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	69 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 05-SS	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	66 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	70 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 25-SS	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	66 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	70 hrs	✗ EHTR-FM

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 05-IN	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	67 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	71 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 05-SH	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	67 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	71 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 25-SH	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	67 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	71 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 03-IN	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	68 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	71 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 03-SH	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	68 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	71 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 13(R)SS	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	69 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	72 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 16-SH	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	69 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	72 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 13-IN	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	70 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	73 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE 13-SH	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	70 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	73 hrs	✗ EHTR-FM

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE 15(2R)SS	E108	10-Sep-2024	13-Sep-2024	0.25 hrs	70 hrs	✗ EHTR-FM	13-Sep-2024	0.25 hrs	73 hrs	✗ EHTR-FM
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 51-SH	E687-L	12-Sep-2024	18-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 52-SH	E687-L	12-Sep-2024	18-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 01A-IN	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 01A-SH	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 08-IN	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 08-SH	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 10-SH	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 11-IN	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 11-SH	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 12-IN	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 12-SH	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 14-SH	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 15-IN	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 15-SH	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 17-IN	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 17-SH	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 31-SH	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 89-3	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap Trip Blank	E687-L	11-Sep-2024	17-Sep-2024	365 days	6 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 20-SH	E687-L	11-Sep-2024	18-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 03-IN	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 03-SH	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 04-IN	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 04-SH	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 04-SS	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 05-IN	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 05-SH	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 05-SS	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 06(R)IN	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 06-SH	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 07(R)SS	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 07-IN	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 07-SH	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 13(R)SS	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 13-IN	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 13-SH	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 15(2R)SS	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 16-SH	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 25-SH	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 25-SS	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (low level)										
Amber glass/Teflon lined cap 27-SH	E687-L	10-Sep-2024	17-Sep-2024	365 days	7 days	✓	18-Sep-2024	40 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 08-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 10-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 12-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 14-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 15-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 20-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	1 days	✓	12-Sep-2024	14 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 01A-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 03-SH	E611A	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 04-SH	E611A	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 05-SH	E611A	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 06-SH	E611A	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 07-SH	E611A	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 11-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 13-SH	E611A	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 16-SH	E611A	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 17-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 25-SH	E611A	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 27-SH	E611A	10-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 31-SH	E611A	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611A	11-Sep-2024	12-Sep-2024	14 days	2 days	✓	12-Sep-2024	14 days	2 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1649811	2	40	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1648683	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1648684	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1649788	2	40	5.0	5.0	✓
Conductivity in Water	E100	1649810	2	40	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1657519	2	39	5.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1653985	3	60	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1663438	5	96	5.2	5.0	✓
Fluoride in Water by IC	E235.F	1649785	2	40	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1649786	2	40	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	1649789	2	40	5.0	5.0	✓
pH by Meter	E108	1649809	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1649787	2	40	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1649811	2	40	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1648683	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1648684	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1649788	2	40	5.0	5.0	✓
Conductivity in Water	E100	1649810	2	40	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1657519	2	39	5.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1653985	3	60	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1663438	5	96	5.2	5.0	✓
Fluoride in Water by IC	E235.F	1649785	2	40	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1649786	2	40	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	1649789	2	40	5.0	5.0	✓
PCB Aroclors by GC-MS (low level)	E687-L	1654820	3	54	5.5	5.0	✓
pH by Meter	E108	1649809	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1649787	2	40	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1649811	2	40	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1648683	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1648684	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1649788	2	40	5.0	5.0	✓
Conductivity in Water	E100	1649810	2	40	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1657519	2	39	5.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Dissolved Metals in Water by CRC ICPMS	E421	1653985	3	60	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1663438	5	96	5.2	5.0	✓
Fluoride in Water by IC	E235.F	1649785	2	40	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1649786	2	40	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	1649789	2	40	5.0	5.0	✓
PCB Aroclors by GC-MS (low level)	E687-L	1654820	3	54	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	1649787	2	40	5.0	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1648683	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1649788	2	40	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1657519	2	39	5.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1653985	3	60	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1663438	5	96	5.2	5.0	✓
Fluoride in Water by IC	E235.F	1649785	2	40	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1649786	2	40	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	1649789	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1649787	2	40	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	AOX Kelso - Environmental - 1317 South 13th Avenue Kelso Washington DC (District of Columbia) United States 98626	Water	EPA 1650C	Organic halide in water is determined by adsorption onto granular activated carbon (GAC), washing the adsorbed sample and GAC to remove inorganic halide, combustion of the sample and GAC to form the hydrogen halide, and titration of the hydrogen halide with a micro-coulometer.
Conductivity in Water	E100 ALS Environmental - Edmonton	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Edmonton	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Edmonton	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Edmonton	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Edmonton	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Edmonton	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
CCME PHC - F1 by Headspace GC-FID	E581.F1 ALS Environmental - Edmonton	Water	CCME PHC in Soil - Tier 1	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BTEX by Headspace GC-MS	E611A ALS Environmental - Edmonton	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PCB Aroclors by GC-MS (low level)	E687-L ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Dioxins and Furans in Water by GC-HRMS	E766 ALS Environmental - Burlington	Water	USEPA 1613B	The sample is extracted by liquid/liquid extraction using dichloromethane. The extracts are prepared using column chromatography, reduced in volume and analyzed by isotope-dilution GC-HRMS.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Edmonton	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ion Balance using Dissolved Metals	EC101 ALS Environmental - Edmonton	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 ALS Environmental - Edmonton	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Edmonton	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
F1-BTEX	EC580 ALS Environmental - Edmonton	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Edmonton	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421 ALS Environmental - Edmonton	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Edmonton	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Edmonton	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into a GC-MS-FID.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction (Low Level)	EP660-L ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

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QUALITY CONTROL REPORT

Work Order	: **EO2407951**	Page	: 1 of 19
Client	: AECOM Canada Ltd.	Laboratory	: ALS Environmental - Edmonton
Contact	: Michael Steed	Account Manager	: Megha Walia
Address	: 101 - 18817 Stony Plain Rd. NW Edmonton AB Canada T5S 0C2	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780 486 7000	Telephone	: +1 780 413 5227
Project	: Swan Hills-60735747	Date Samples Received	: 12-Sep-2024 12:30
PO	: ----	Date Analysis Commenced	: 12-Sep-2024
C-O-C number	: ----	Issue Date	: 07-Oct-2024 16:05
Sampler	: ----		
Site	: ----		
Quote number	: EO22-AECO100-016 (Swan Hills)		
No. of samples received	: 45		
No. of samples analysed	: 42		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
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Shruti Mudliar	Lab Analyst	Edmonton Inorganics, Edmonton, Alberta
Shruti Mudliar	Lab Analyst	Edmonton Metals, Edmonton, Alberta

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1649809)											
EO2407951-001	01A-SH	pH	----	E108	0.10	pH units	5.69	5.76	0.07	Diff <2x LOR	----
Physical Tests (QC Lot: 1649810)											
EO2407951-001	01A-SH	Conductivity	----	E100	2.0	µS/cm	198	192	3.23%	10%	----
Physical Tests (QC Lot: 1649811)											
EO2407951-001	01A-SH	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	84.0	85.6	1.89%	20%	----
Physical Tests (QC Lot: 1649887)											
EO2407951-021	11-SH	pH	----	E108	0.10	pH units	7.06	6.98	1.14%	3%	----
Physical Tests (QC Lot: 1649888)											
EO2407951-021	11-SH	Conductivity	----	E100	2.0	µS/cm	1100	1110	1.36%	10%	----
Physical Tests (QC Lot: 1649889)											
EO2407951-021	11-SH	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	467	468	0.278%	20%	----
Anions and Nutrients (QC Lot: 1649785)											
EO2407951-020	08-IN	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.197	0.199	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1649786)											
EO2407951-020	08-IN	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.082	0.082	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1649787)											
EO2407951-020	08-IN	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	127	127	0.188%	20%	----
Anions and Nutrients (QC Lot: 1649788)											
EO2407951-020	08-IN	Chloride	16887-00-6	E235.Cl	0.50	mg/L	0.74	0.74	0.003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1649789)											
EO2407951-020	08-IN	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1649796)											
EO2407951-040	10-SH	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1649797)											
EO2407951-040	10-SH	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1649798)											
EO2407951-040	10-SH	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1649799)											
EO2407951-040	10-SH	Fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1649800)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrients (QC Lot: 1649800) - continued											
EO2407951-040	10-SH	Chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1663438)											
EO2408005-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	18.2	18.5	1.42%	20%	----
Organic / Inorganic Carbon (QC Lot: 1665231)											
EO2407951-017	07-IN	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.57	2.56	0.01	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1665645)											
EO2407951-040	10-SH	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.04	3.28	0.76	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1666182)											
EO2408054-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	19.4	19.2	1.37%	20%	----
Organic / Inorganic Carbon (QC Lot: 1667335)											
EO2408054-011	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	5.71	5.81	1.60%	20%	----
Dissolved Metals (QC Lot: 1653985)											
EO2407933-022	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0192	0.0201	4.73%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00025	0.00022	0.00003	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00161	0.00162	0.704%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0269	0.0267	0.710%	20%	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.039	0.042	0.003	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000391	0.0000382	0.0000009	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	9.31	9.90	6.12%	20%	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00061	0.00052	0.00009	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00245	0.00241	1.45%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.335	0.337	0.793%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000168	0.000163	0.000005	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.40	2.36	1.58%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.215	0.215	0.206%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0136	0.0135	0.911%	20%	----
		Potassium, dissolved	7440-09-7	E421	2.00	mg/L	3.05	3.19	0.147	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000562	0.000575	2.30%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000013	0.000014	0.000001	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	408	409	0.246%	20%	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00975	0.00976	0.0808%	20%	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0029	0.0029	0.000006	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1654368)											
EO2407951-012	25-SS	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0013	0.0004	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 1654368) - continued											
EO2407951-012	25-SS	Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00022	0.00024	0.00001	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.102	0.101	0.214%	20%	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.023	0.0009	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000076	0.0000065	0.0000011	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	47.1	49.6	5.09%	20%	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00666	0.00662	0.500%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000217	0.000221	0.000005	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	12.1	12.5	2.96%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.413	0.410	0.740%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00103	0.00108	0.00005	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.10	4.12	0.394%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	27.0	27.4	1.30%	20%	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000046	0.000045	0.000002	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0252	0.0250	0.661%	20%	----
Dissolved Metals (QC Lot: 1654371)											
EO2407951-033	15(2R)SS	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	0.0022	0.0006	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00274	0.00277	1.42%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0382	0.0378	1.02%	20%	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.030	0.030	0.00002	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000104	0.0000106	0.0000002	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	34.3	33.8	1.44%	20%	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00145	0.00148	0.00003	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.013	0.014	0.0004	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	9.28	9.21	0.729%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.752	0.766	1.85%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00070	0.00071	0.00001	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 1654371) - continued											
EO2407951-033	15(2R)SS	Potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.01	3.14	4.44%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	44.7	45.2	1.10%	20%	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00134	0.00133	0.413%	20%	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0046	0.0047	0.0001	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1657519)											
EO2407951-001	01A-SH	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1657520)											
EO2407951-021	11-SH	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1648683)											
EO2407951-001	01A-SH	Benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.50	µg/L	0.79	0.75	0.04	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1648684)											
EO2407951-001	01A-SH	F1 (C6-C10)	----	E581.F1	100	µg/L	<100	<100	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1649810)						
Conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 1649811)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1649888)						
Conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 1649889)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.0	----
Anions and Nutrients (QCLot: 1649785)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1649786)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1649787)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1649788)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1649789)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 1649796)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1649797)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 1649798)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1649799)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1649800)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1663438)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1665231)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1665645)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 1665645) - continued						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1666182)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1667335)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 1653985)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 1654368)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1654368) - continued						
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 1654371)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 1657519)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1657520)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QCLot: 1648683)						
Benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
BTEX, total	----	E611A	1	µg/L	<1.0	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 1648684)						
F1 (C6-C10)	----	E581.F1	100	µg/L	<100	----
Polychlorinated Biphenyls (QCLot: 1654820)						
Aroclor 1016	12674-11-2	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1221	11104-28-2	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1232	11141-16-5	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1242	53469-21-9	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1248	12672-29-6	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1254	11097-69-1	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1260	11096-82-5	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1262	37324-23-5	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1268	11100-14-4	E687-L	0.01	µg/L	<0.0100	----
Polychlorinated Biphenyls (QCLot: 1655979)						
Aroclor 1016	12674-11-2	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1221	11104-28-2	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1232	11141-16-5	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1242	53469-21-9	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1248	12672-29-6	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1254	11097-69-1	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1260	11096-82-5	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1262	37324-23-5	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1268	11100-14-4	E687-L	0.01	µg/L	<0.0100	----
Polychlorinated Biphenyls (QCLot: 1657270)						
Aroclor 1016	12674-11-2	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1221	11104-28-2	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1232	11141-16-5	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1242	53469-21-9	E687-L	0.01	µg/L	<0.0100	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polychlorinated Biphenyls (QCLot: 1657270) - continued						
Aroclor 1248	12672-29-6	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1254	11097-69-1	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1260	11096-82-5	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1262	37324-23-5	E687-L	0.01	µg/L	<0.0100	----
Aroclor 1268	11100-14-4	E687-L	0.01	µg/L	<0.0100	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1649809)									
pH	----	E108	----	pH units	6 pH units	101	97.0	103	----
Physical Tests (QCLot: 1649810)									
Conductivity	----	E100	1	µS/cm	1410 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 1649811)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	99.0	85.0	115	----
Physical Tests (QCLot: 1649887)									
pH	----	E108	----	pH units	6 pH units	99.5	97.0	103	----
Physical Tests (QCLot: 1649888)									
Conductivity	----	E100	1	µS/cm	1410 µS/cm	97.8	90.0	110	----
Physical Tests (QCLot: 1649889)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	97.7	85.0	115	----
Anions and Nutrients (QCLot: 1649785)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.2	90.0	110	----
Anions and Nutrients (QCLot: 1649786)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1649787)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1649788)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1649789)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 1649796)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1649797)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 1649798)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1649799)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.6	90.0	110	----
Anions and Nutrients (QCLot: 1649800)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 1663438)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1665231)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1665645)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1666182)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	119	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1667335)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Dissolved Metals (QCLot: 1653985)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.3	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.9	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.1	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	93.1	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	99.0	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.3	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100.0	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	106	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.0	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	95.2	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	91.4	80.0	120	----
Dissolved Metals (QCLot: 1654368)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.5	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1654368) - continued									
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.6	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.8	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.2	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.2	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.9	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.8	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.4	80.0	120	----
Dissolved Metals (QCLot: 1654371)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	95.6	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.7	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.0	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.9	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.0	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.8	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.7	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.0	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1654371) - continued									
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.2	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	109	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	110	80.0	120	----
Volatile Organic Compounds (QCLot: 1648683)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	99.1	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	95.8	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	105	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	101	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	99.1	70.0	130	----
Hydrocarbons (QCLot: 1648684)									
F1 (C6-C10)	----	E581.F1	100	µg/L	2750 µg/L	104	70.0	130	----
Polychlorinated Biphenyls (QCLot: 1654820)									
Aroclor 1016	12674-11-2	E687-L	0.01	µg/L	0.1 µg/L	95.9	60.0	140	----
Aroclor 1221	11104-28-2	E687-L	0.01	µg/L	0.1 µg/L	95.9	60.0	140	----
Aroclor 1232	11141-16-5	E687-L	0.01	µg/L	0.1 µg/L	95.9	60.0	140	----
Aroclor 1242	53469-21-9	E687-L	0.01	µg/L	0.1 µg/L	95.9	60.0	140	----
Aroclor 1248	12672-29-6	E687-L	0.01	µg/L	0.1 µg/L	76.4	60.0	140	----
Aroclor 1254	11097-69-1	E687-L	0.01	µg/L	0.1 µg/L	80.2	60.0	140	----
Aroclor 1260	11096-82-5	E687-L	0.01	µg/L	0.1 µg/L	91.8	60.0	140	----
Aroclor 1262	37324-23-5	E687-L	0.01	µg/L	0.1 µg/L	91.8	60.0	140	----
Aroclor 1268	11100-14-4	E687-L	0.01	µg/L	0.1 µg/L	91.8	60.0	140	----
Polychlorinated Biphenyls (QCLot: 1655979)									
Aroclor 1016	12674-11-2	E687-L	0.01	µg/L	0.1 µg/L	78.9	60.0	140	----
Aroclor 1221	11104-28-2	E687-L	0.01	µg/L	0.1 µg/L	78.9	60.0	140	----
Aroclor 1232	11141-16-5	E687-L	0.01	µg/L	0.1 µg/L	78.9	60.0	140	----
Aroclor 1242	53469-21-9	E687-L	0.01	µg/L	0.1 µg/L	78.9	60.0	140	----
Aroclor 1248	12672-29-6	E687-L	0.01	µg/L	0.1 µg/L	110	60.0	140	----
Aroclor 1254	11097-69-1	E687-L	0.01	µg/L	0.1 µg/L	71.9	60.0	140	----
Aroclor 1260	11096-82-5	E687-L	0.01	µg/L	0.1 µg/L	74.0	60.0	140	----
Aroclor 1262	37324-23-5	E687-L	0.01	µg/L	0.1 µg/L	74.0	60.0	140	----
Aroclor 1268	11100-14-4	E687-L	0.01	µg/L	0.1 µg/L	74.0	60.0	140	----
Polychlorinated Biphenyls (QCLot: 1657270)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Polychlorinated Biphenyls (QCLot: 1657270) - continued									
Aroclor 1016	12674-11-2	E687-L	0.01	µg/L	0.1 µg/L	99.6	60.0	140	----
Aroclor 1221	11104-28-2	E687-L	0.01	µg/L	0.1 µg/L	99.6	60.0	140	----
Aroclor 1232	11141-16-5	E687-L	0.01	µg/L	0.1 µg/L	99.6	60.0	140	----
Aroclor 1242	53469-21-9	E687-L	0.01	µg/L	0.1 µg/L	99.6	60.0	140	----
Aroclor 1248	12672-29-6	E687-L	0.01	µg/L	0.1 µg/L	96.2	60.0	140	----
Aroclor 1254	11097-69-1	E687-L	0.01	µg/L	0.1 µg/L	90.2	60.0	140	----
Aroclor 1260	11096-82-5	E687-L	0.01	µg/L	0.1 µg/L	88.2	60.0	140	----
Aroclor 1262	37324-23-5	E687-L	0.01	µg/L	0.1 µg/L	88.2	60.0	140	----
Aroclor 1268	11100-14-4	E687-L	0.01	µg/L	0.1 µg/L	88.2	60.0	140	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1649785)										
EO2407951-020	08-IN	Fluoride	16984-48-8	E235.F	0.994 mg/L	1 mg/L	99.4	75.0	125	----
Anions and Nutrients (QCLot: 1649786)										
EO2407951-020	08-IN	Nitrate (as N)	14797-55-8	E235.NO3	2.59 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1649787)										
EO2407951-020	08-IN	Sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1649788)										
EO2407951-020	08-IN	Chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1649789)										
EO2407951-020	08-IN	Nitrite (as N)	14797-65-0	E235.NO2	0.539 mg/L	0.5 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 1649796)										
EO2407951-040	10-SH	Nitrate (as N)	14797-55-8	E235.NO3	2.60 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1649797)										
EO2407951-040	10-SH	Nitrite (as N)	14797-65-0	E235.NO2	0.541 mg/L	0.5 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 1649798)										
EO2407951-040	10-SH	Sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1649799)										
EO2407951-040	10-SH	Fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1649800)										
EO2407951-040	10-SH	Chloride	16887-00-6	E235.Cl	103 mg/L	100 mg/L	103	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1663438)										
EO2408005-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	----	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1665231)										
EO2407951-017	07-IN	Carbon, dissolved organic [DOC]	----	E358-L	5.16 mg/L	5 mg/L	103	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1665645)										
EO2407951-040	10-SH	Carbon, dissolved organic [DOC]	----	E358-L	6.13 mg/L	5 mg/L	123	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1666182)										
EO2408054-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	----	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1667335)										
EO2408054-011	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	----	ND	70.0	130	----
Dissolved Metals (QCLot: 1653985)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1653985) - continued										
EO2407933-023	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.186 mg/L	0.2 mg/L	93.0	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0173 mg/L	0.02 mg/L	86.6	70.0	130	----
		Boron, dissolved	7440-42-8	E421	ND mg/L	----	ND	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00365 mg/L	0.004 mg/L	91.2	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.88 mg/L	2 mg/L	94.1	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	----	ND	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	----	ND	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00365 mg/L	0.004 mg/L	91.2	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00361 mg/L	0.004 mg/L	90.3	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.350 mg/L	0.4 mg/L	87.6	70.0	130	----
Dissolved Metals (QCLot: 1654368)										
EO2407951-013	06-SH	Aluminum, dissolved	7429-90-5	E421	0.184 mg/L	0.2 mg/L	92.1	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00397 mg/L	0.004 mg/L	99.2	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	96.1	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	----	ND	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0360 mg/L	0.04 mg/L	90.0	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.84 mg/L	4 mg/L	96.1	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0452 mg/L	0.04 mg/L	113	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00326 mg/L	0.004 mg/L	81.6	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	ND mg/L	----	ND	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.361 mg/L	0.4 mg/L	90.4	70.0	130	----
Dissolved Metals (QCLot: 1654371)										
EO2407951-034	16-SH	Aluminum, dissolved	7429-90-5	E421	0.182 mg/L	0.2 mg/L	91.2	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1654371) - continued										
EO2407951-034	16-SH	Antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	98.3	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	97.0	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0359 mg/L	0.04 mg/L	89.7	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.74 mg/L	4 mg/L	93.6	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00390 mg/L	0.004 mg/L	97.6	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	ND mg/L	----	ND	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.365 mg/L	0.4 mg/L	91.2	70.0	130	----
Dissolved Metals (QCLot: 1657519)										
EO2407951-002	01A-IN	Mercury, dissolved	7439-97-6	E509	0.000103 mg/L	0 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 1657520)										
EO2407951-022	31-SH	Mercury, dissolved	7439-97-6	E509	0.000111 mg/L	0 mg/L	111	70.0	130	----
Volatile Organic Compounds (QCLot: 1648683)										
EO2407951-003	03-SH	Benzene	71-43-2	E611A	100 µg/L	100 µg/L	100	50.0	140	----
		Ethylbenzene	100-41-4	E611A	94.0 µg/L	100 µg/L	94.0	50.0	140	----
		Toluene	108-88-3	E611A	99.8 µg/L	100 µg/L	99.8	50.0	140	----
		Xylene, m+p-	179601-23-1	E611A	190 µg/L	200 µg/L	95.1	50.0	140	----
		Xylene, o-	95-47-6	E611A	99.8 µg/L	100 µg/L	99.8	50.0	140	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Edmonton
Work Order Reference
EO2407951

Telephone : +1 780 413 5227

Report To	Contact and company name below will appear on the final report
Company:	AECOM
Contact:	Michael Steed
Phone:	1-780-264-4868
	Company address below will appear on the final report
Street:	18817 Stony Plain Rd #101 NW
City/Province:	Edmonton/Alberta
Postal Code:	T5S0C2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	Bane.Brotschi@aecom.com
Email 2	Michael.Steed@aecom.com
Email 3	carter.mackie@aecom.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	canssc.e-billing@aecom.com
Email 2	michael.steed@aecom.com

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge m
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge r
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge r
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge
☐ Same day [E2] if received by 10am M-S - 200% rush surc
Additional fees may apply to rush requests on w
Date and Time Required for all E&P TATs:
For all tests with rush TATs requested, p

Project Information

ALS Account # / Quote #:	
Job #:	Swan Hills - 60735747
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	7951

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: Pamela Toledo	Sampler:

Analys

Indicate Filtered (F), Preserved (P) or Fil

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	DOC (F/P)	Routine	Dissolved Metals (F)	Dissolved Mercury (F/P)	BTEX, F1	PCB	AOX	Dioxin and Furan	SAMPLES ON HOLD	EXTENDED STORAGE RE	SUSPECTED HAZARD (see notes)
	01A-SH	09-Sep-24	9:20A	Water	8	X	X	X	X	x	X					
	01A-IN	11-Sep-24	9:20A	Water	6	X	X	X	X		X					
	03-SH	10-Sep-24	2:40P	Water	11	X	X	X	X	x	X	x	x			
	03-IN	10-Sep-24	2:40P	Water	6	X	X	X	X		X					
	04-SH	10-Sep-24	4:40P	Water	8	X	X	X	X	x	X					
	04-IN	10-Sep-24	4:40P	Water	6	X	X	X	X		X					
	04-SS	10-Sep-24	5:00P	Water	6	X	X	X	X		X					
	05-SH	10-Sep-24	3:10P	Water	8	X	X	X	X	x	X					
	25-SH	10-Sep-24	3:10P	Water	8	X	X	X	X	x	X					
	05-IN	10-Sep-24	3:10P	Water	6	X	X	X	X		X					
	05-SS	10-Sep-24	4:18P	Water	6	X	X	X	X		X					
	25-SS	10-Sep-24	4:18P	Water	6	X	X	X	X		X					

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO
Are samples for human consumption/ use?
☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Dioxin and Furan - Quote Q89925

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
2.3, 3.7, 4.8, 7.4, 6.7, 5.8	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Carter Mackie	Date: 09/12/24	Time: 12:25	Received by:	Date: 09/12/24	Time: 12:30	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY FEB 2022 FRONT

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	AECOM
Contact:	Michael Steed
Phone:	1-780-264-4868
	Company address below will appear on the final report
Street:	18817 Stony Plain Rd #101 NW
City/Province:	Edmonton/Alberta
Postal Code:	T5S0C2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Bane.Brotschi@aecom.com

Email 2: Michael.Steed@aecom.com

Email 3: carter.mackie@aecom.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: canssc.e-billing@aecom.com

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	
Job #:	Swan Hills - 60735747
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Pamela Toledo Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	DOC (F/P)	Routine	Dissolved Metals (F)	Dissolved Mercury (F/P)	BTEX, F1	PCB	AOX	Dioxin and Furan							SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	06-SH	09/10/24	5:17 PM	Water	8	X	X	X	X	x	x											
	06(R)IN	09/10/24	5:17 PM	Water	6	X	X	X	X		x											
	07-SH	09/10/24	5:45 PM	Water	8	X	X	X	X	x	x											
	27-SH	09/10/24	5:45 PM	Water	8	X	X	X	X	x	x											
	07-IN	09/10/24	5:45 PM	Water	6	X	X	X	X		x											
	07(R)SS	09/10/24	6:11 PM	Water	6	X	X	X	X		x											
	08-SH	09/11/24	1:35 PM	Water	11	X	X	X	X	x	x	x	X									
	08-IN	09/11/24	1:35 PM	Water	6	X	X	X	X		x											
	11-SH	09/11/24	9:45 AM	Water	8	X	X	X	X	x	x											
	31-SH	09/11/24	9:45 AM	Water	8	X	X	X	X	x	x											
	11-IN	09/11/24	9:45 AM	Water	6	X	X	X	X		x											
	12-SH	09/11/24	2:20 PM	Water	11	X	X	X	X	x	x	x	X									

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Dioxin and Furan - Quote Q89925

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Carter Mackie	Date: 09/12/24	Time: 12:25	Received by:	Date:	Time:	Received by:	Date:	Time:

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Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	AECOM
Contact:	Michael Steed
Phone:	1-780-264-4868
	Company address below will appear on the final report
Street:	18817 Stony Plain Rd #101 NW
City/Province:	Edmonton/Alberta
Postal Code:	T5S0C2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Bane.Brotschi@aecom.com

Email 2: Michael.Steed@aecom.com

Email 3: carter.mackie@aecom.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: canssc.e-billing@aecom.com

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
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Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:

Job #: Swan Hills - 60735747

PO / AFE:

LSD:

ALS Lab Work Order # (ALS use only):

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Contact: Pamela Toledo Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	DOC (F/P)	Routine	Dissolved Metals (F)	Dissolved Mercury (F/P)	BTEX, F1	PCB	AOX	Dioxin and Furan							SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	32-SH	09/11/24	2:20 pm	Water	3							x	x									
	12-IN	09/11/24	2:20 pm	Water	6	x	x	x	x		x											
	13-SH	09/10/24	1:20 pm	Water	11	x	x	x	x	x	x	x	x									
	13-IN	09/10/24	1:22 pm	Water	6	x	x	x	x		x											
	13(R)SS	09/10/24	1:45 pm	Water	6	x	x	x	x		x											
	14-SH	09/11/24	1:55 pm	Water	8	x	x	x	x	x	x											
	15-SH	09/11/24	10:40 AM	Water	11	x	x	x	x	x	x	x	x									
	15-IN	09/11/24	10:40 AM	Water	6	x	x	x	x		x											
	15(2R)SS	09/10/24	12:50 pm	Water	6	x	x	x	x		x											
	16-SH	09/10/24	2:07 pm	Water	11	x	x	x	x	x	x	x	x									
	16-IN	09/10/24	2:05 pm	Water	6	x	x	x	x		x											
	17-SH	09/11/24	10:15 AM	Water	11	x	x	x	x	x	x	x	x									

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Dioxin and Furan - Quote Q89925

SAMPLE RECEIPT DETAILS (ALS use only)

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Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Carter Mackie	Date: 09/12/24	Time: 12:25	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY FEB 2022 FRONT

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COC Number: 22 -

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	AECOM
Contact:	Michael Steed
Phone:	1-780-264-4868
	Company address below will appear on the final report
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City/Province:	Edmonton/Alberta
Postal Code:	T5S0C2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Bane.Brotschi@aecom.com

Email 2: Michael.Steed@aecom.com

Email 3: carter.mackie@aecom.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: canssc.e-billing@aecom.com

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Turnaround Time (TAT) Requested

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Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please contact your Ala

AFFIX ALS BARCO ERE (ALS

Project Information

ALS Account # / Quote #:	
Job #:	Swan Hills - 60735747
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: Pamela Toledo

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	DOC (F/P)	Routine	Dissolved Metals (F)	Dissolved Mercury (F/P)	BTEX, F1	PCB	AOX	Dioxin and Furan	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	17-IN	09/11/24	10:15 AM	Water	6	X	X	X	X		X					
	89-3	09/11/24	11:25 AM	Water	6	X	X	X	X		X					
	~~Trip~~ Blank	09/11/24	~~12:15 PM~~	Water	8	X	X	X	X	x	X					
	10-SH	09/11/24	12:15 PM	Water	11	X	X	X	X	x	x	X	X			
	20-SH	09/11/24	2:52 PM	Water	8	X	X	X	X	x	X					
	~~30-SH~~			Water		~~X~~	~~X~~	~~X~~	~~X~~	~~x~~	~~X~~					
	51-SH	—	—	Water	2						X					
	52-SH	—	—	Water	1						X					

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO

Are samples for human consumption/ use?
☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Dioxin and Furan - Quote Q89925

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INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C		
2.3	3.7	4.8	7.4	6.7	5.8	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Carter Mackie	Date: 09/12/24	Time: 12:25	Received by:	Date: 09/12/24	Time: 12:30	Received by:	Date:	Time:

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

October 02, 2024 Service Request No:K2409741

Megha Walia
ALS Environmental - Canada
9450 17 Ave NW
Edmonton, AB T6N 1M9

Laboratory Results for: EO2407951

Dear Megha,

Enclosed are the results of the sample(s) submitted to our laboratory September 17, 2024
For your reference, these analyses have been assigned our service request number **K2409741.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3260. You may also contact me via email at Luke.Rahn@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Luke Rahn
Project Manager

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ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - Canada
Project: EO2407951
Sample Matrix: Water

Service Request: K2409741
Date Received: 09/17/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Nine water samples were received for analysis at ALS Environmental on 09/17/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 10/02/2024

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: ALS Environmental - Canada **Service Request:**K2409741
Project: EO2407951

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2409741-001	EO2407951-003	9/10/2024	1340
K2409741-002	EO2407951-019	9/11/2024	1235
K2409741-003	EO2407951-024	9/11/2024	1320
K2409741-004	EO2407951-025	9/11/2024	1320
K2409741-005	EO2407951-027	9/10/2024	1220
K2409741-006	EO2407951-031	9/11/2024	0940
K2409741-007	EO2407951-034	9/10/2024	1307
K2409741-008	EO2407951-036	9/11/2024	1340
K2409741-009	EO2407951-040	9/11/2024	1115

Chain of Custody

ALS Environmental - Edmonton
9450 - 17 Avenue NW
Edmonton AB Canada T6N 1M9

208299 K2409741

Destination Lab:	**USA - Kelso**
Address:	1317 South 13th Avenue Kelso DC United States 98626
Client:	AECOM Canada Ltd.
Work Order Number:	**EO2407951**
Original Receipt Date/Time	Instructions Received
12/09/2024 11:30	

Relinquished By

Date/Time

Received By
AUDREY DECORTE
Date/Time
09/17/2024 0920
Receipt Temp 5.3

Return as Indicated: Results: ALSEDClientServices@alsglobal.com Invoice: ALSEDClientServices@alsglobal.com Electronic Data: ALSEDClientServices@alsglobal.com

Attention: Megha Walia

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
EO2407951-003	03-SH	Water	Amber glass (nitric acid)	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	10-10-2024	10/09/2024 13:40	
EO2407951-019	08-SH	Water	Amber glass (nitric acid)	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	10-10-2024	11/09/2024 12:35	
EO2407951-024	12-SH	Water	Amber glass (nitric acid)	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	10-10-2024	11/09/2024 13:20	
EO2407951-025	32-SH	Water	Amber glass (nitric acid)	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	10-10-2024	11/09/2024 13:20	
EO2407951-027	13-SH	Water	Amber glass (nitric acid)	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	10-10-2024	10/09/2024 12:20	
EO2407951-031	15-SH	Water	Amber glass (nitric acid)	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	10-10-2024	11/09/2024 09:40	
EO2407951-034	16-SH	Water	Amber glass (nitric acid)	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	10-10-2024	10/09/2024 13:07	
EO2407951-036	17-SH	Water	Amber glass (nitric acid)	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	10-10-2024	11/09/2024 13:40	

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
EO2407951-040	10-SH	Water	Amber glass (nitric acid)	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	10-10-2024	11/09/2024 11:15	

PM LR

Cooler Receipt and Preservation Form

Client Decom Service Request K24 09741

Received: 09/17/24 Opened: 09/17/24 By: AD Unloaded: 09/17/24 By: AD

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   - If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	5.3	IR06				7786 2306 0071	

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA Y N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. NA Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
8. Were samples received in good condition (unbroken) NA Y N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
10. Did all sample labels and tags agree with custody papers? NA Y N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
13. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
14. Was C12/Res negative? NA Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM NA Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: Not Relinquished.

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value over the calibration range.
J	The result is an estimated value between the MDL and the MRL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: ALS Environmental - Canada **Service Request:** K2409741
Project: EO2407951/

Sample Name: EO2407951-003 **Date Collected:** 09/10/24
Lab Code: K2409741-001 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Sample Name: EO2407951-019 **Date Collected:** 09/11/24
Lab Code: K2409741-002 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Sample Name: EO2407951-024 **Date Collected:** 09/11/24
Lab Code: K2409741-003 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Sample Name: EO2407951-025 **Date Collected:** 09/11/24
Lab Code: K2409741-004 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Sample Name: EO2407951-027 **Date Collected:** 09/10/24
Lab Code: K2409741-005 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Client: ALS Environmental - Canada **Service Request:** K2409741
Project: EO2407951/

Sample Name: EO2407951-027 **Date Collected:** 09/10/24
Lab Code: K2409741-005.R01 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Sample Name: EO2407951-031 **Date Collected:** 09/11/24
Lab Code: K2409741-006 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Sample Name: EO2407951-034 **Date Collected:** 09/10/24
Lab Code: K2409741-007 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Sample Name: EO2407951-036 **Date Collected:** 09/11/24
Lab Code: K2409741-008 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Sample Name: EO2407951-040 **Date Collected:** 09/11/24
Lab Code: K2409741-009 **Date Received:** 09/17/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		JBYMAN

Sample Results

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General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	09/10/24 13:40
Sample Matrix:	Water	**Date Received:**	09/17/24 09:20
Sample Name:	EO2407951-003	**Basis:**	NA
Lab Code:	K2409741-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	09/26/24 10:41	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	09/11/24 12:35
Sample Matrix:	Water	**Date Received:**	09/17/24 09:20
Sample Name:	EO2407951-019	**Basis:**	NA
Lab Code:	K2409741-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	09/26/24 10:41	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	09/11/24 13:20
Sample Matrix:	Water	**Date Received:**	09/17/24 09:20
Sample Name:	EO2407951-024	**Basis:**	NA
Lab Code:	K2409741-003		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	09/26/24 10:41	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	09/11/24 13:20
Sample Matrix:	Water	**Date Received:**	09/17/24 09:20
Sample Name:	EO2407951-025	**Basis:**	NA
Lab Code:	K2409741-004		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	09/26/24 10:41	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	09/10/24 12:20
Sample Matrix:	Water	**Date Received:**	09/17/24 09:20
Sample Name:	EO2407951-027	**Basis:**	NA
Lab Code:	K2409741-005		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	09/27/24 09:24	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	09/11/24 09:40
Sample Matrix:	Water	**Date Received:**	09/17/24 09:20
Sample Name:	EO2407951-031	**Basis:**	NA
Lab Code:	K2409741-006		

General Chemistry Parameters

Analyte Name	Analysis Method	Result		Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND	U	mg/L	0.020	1	09/27/24 09:24	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	09/10/24 13:07
Sample Matrix:	Water	**Date Received:**	09/17/24 09:20
Sample Name:	EO2407951-034	**Basis:**	NA
Lab Code:	K2409741-007		

General Chemistry Parameters

Analyte Name	Analysis Method	Result		Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND	U	mg/L	0.020	1	09/27/24 09:24	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	09/11/24 13:40
Sample Matrix:	Water	**Date Received:**	09/17/24 09:20
Sample Name:	EO2407951-036	**Basis:**	NA
Lab Code:	K2409741-008		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	09/27/24 09:24	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	09/11/24 11:15
Sample Matrix:	Water	**Date Received:**	09/17/24 09:20
Sample Name:	EO2407951-040	**Basis:**	NA
Lab Code:	K2409741-009		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	09/27/24 09:24	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Batch QC	**Basis:**	NA
Lab Code:	KQ2415517-03		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	**0.024**	mg/L	0.020	1	09/26/24 10:41	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Batch QC	**Basis:**	NA
Lab Code:	KQ2415594-03		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	**2.0**	mg/L	1.0	50	09/27/24 09:24	

QC Summary Forms

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General Chemistry

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dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2409741-MB1		

General Chemistry Parameters

Analyte Name	Analysis Method	Result		Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND	U	mg/L	0.020	1	09/26/24 10:41	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2409741-MB2		

General Chemistry Parameters

Analyte Name	Analysis Method	Result		Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND	U	mg/L	0.020	1	09/27/24 09:24	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951/	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	09/26/2024
		Analysis Lot:	855435

Calibration and Method Blank Summary
Halides, Adsorbable Organic (AOX)

1650C

	Halide Check Standard (ug)	**Instrument Calibration Standard** (ug)	**PAR Standard** (ug/L)
True Value	3.64	10.0	100
Run A	3.57	10.1	90.0
Percent Recovery A	98	101	90
Run B	3.54	10.3	
Percent Recovery B	97	103	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951/	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	09/27/2024
		Analysis Lot:	855566

Calibration and Method Blank Summary
Halides, Adsorbable Organic (AOX)
1650C

	Halide Check Standard (ug)	**Instrument Calibration Standard** (ug)	**PAR Standard** (ug/L)
True Value	3.64	10.0	100
Run A	3.64	10.1	95.0
Percent Recovery A	100	101	95
Run B	3.55	9.99	
Percent Recovery B	98	100	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	09/26/24
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Halides, Adsorbable Organic (AOX)

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ2415517-03	**Basis:**	NA
Analysis Method:	1650C		
Prep Method:	None		

		Matrix Spike KQ2415517-03MS			Duplicate Matrix Spike KQ2415517-03DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Halides, Adsorbable Organic (AOX)	0.024	0.205	0.200	91	0.210	0.200	93	78-116	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K2409741
Project:	EO2407951	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	09/27/24
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Halides, Adsorbable Organic (AOX)

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ2415594-03	**Basis:**	NA
Analysis Method:	1650C		
Prep Method:	None		

		Matrix Spike KQ2415594-03MS			Duplicate Matrix Spike KQ2415594-03DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Halides, Adsorbable Organic (AOX)	2.0	11.6	10.0	97	11.5	10.0	96	78-116	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

AECOM Canada Ltd.
ATTN: Michael Steed
101 - 18817 Stony Plain Rd. NW
Edmonton AB T5S 1G3

Date Received: 18-SEP-24
Report Date: 09-OCT-24 20:20 (MT)
Version: FINAL

Client Phone: 780-486-7000

Certificate of Analysis

Lab Work Order #: L2757431

Project P.O. #: NOT SUBMITTED
Job Reference: SWAN HILLS-60735747
C of C Numbers:
Legal Site Desc:

Megha Walia
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-1 03-SH							
Sampled By: Client on 10-SEP-24 @ 14:40							
Matrix: Water							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.48	[U]	0.48	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8-PeCDD	<0.40	[U]	0.40	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,7,8-HxCDD	<0.38	[U]	0.38	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,6,7,8-HxCDD	<0.40	[U]	0.40	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8,9-HxCDD	<0.38	[U]	0.38	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDD	<0.54	[U]	0.54	pg/L	26-SEP-24	01-OCT-24	R5988316
OCDD	4.4	M,J	1.0	pg/L	26-SEP-24	01-OCT-24	R5988316
2,3,7,8-TCDF	<0.50	[U]	0.50	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8-PeCDF	0.51	J,R	0.34	pg/L	26-SEP-24	01-OCT-24	R5988316
2,3,4,7,8-PeCDF	<0.29	[U]	0.29	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,7,8-HxCDF	<0.19	[U]	0.19	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,6,7,8-HxCDF	<0.19	[U]	0.19	pg/L	26-SEP-24	01-OCT-24	R5988316
2,3,4,6,7,8-HxCDF	<0.19	[U]	0.19	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8,9-HxCDF	<0.25	[U]	0.25	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDF	0.46	J,R	0.41	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,7,8,9-HpCDF	<0.60	[U]	0.60	pg/L	26-SEP-24	01-OCT-24	R5988316
OCDF	0.92	M,J	0.75	pg/L	26-SEP-24	01-OCT-24	R5988316
Total-TCDD	<0.48	[U]	0.48	pg/L	26-SEP-24	01-OCT-24	R5988316
Total TCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-PeCDD	<0.40	[U]	0.40	pg/L	26-SEP-24	01-OCT-24	R5988316
Total PeCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HxCDD	<0.40	[U]	0.40	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HxCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HpCDD	<0.54	[U]	0.54	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HpCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-TCDF	<0.50	[U]	0.50	pg/L	26-SEP-24	01-OCT-24	R5988316
Total TCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-PeCDF	<0.34	[U]	0.34	pg/L	26-SEP-24	01-OCT-24	R5988316
Total PeCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HxCDF	<0.25	[U]	0.25	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HxCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HpCDF	<0.60	[U]	0.60	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HpCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDD	76.0		20-175	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDD	70.0		21-227	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	83.0		21-193	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	82.0		25-163	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	79.0		23-166	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-OCDD	56.0		13-138	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDF	82.0		22-152	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDF	74.0		24-185	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,4,7,8-PeCDF	80.0		21-178	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	97.0		26-152	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	99.0		21-159	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	98.0		17-205	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	93.0		28-136	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	86.0		21-158	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	77.0		20-186	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	77.0		31-191	%	26-SEP-24	01-OCT-24	R5988316
Lower Bound PCDD/F TEQ (WHO 2005)	0.00160		0	pg/L	26-SEP-24	01-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-1 03-SH							
Sampled By: Client on 10-SEP-24 @ 14:40							
Matrix: Water							
Dioxins and Furans HR 1613B							
Mid Point PCDD/F TEQ (WHO 2005)	0.635		0	pg/L	26-SEP-24	01-OCT-24	R5988316
Upper Bound PCDD/F TEQ (WHO 2005)	1.25		0	pg/L	26-SEP-24	01-OCT-24	R5988316
L2757431-2 08-SH							
Sampled By: Client on 11-SEP-24 @ 13:35							
Matrix: Water							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.34	[U]	0.34	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8-PeCDD	<0.37	[U]	0.37	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,7,8-HxCDD	<0.45	[U]	0.45	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,6,7,8-HxCDD	<0.48	[U]	0.48	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8,9-HxCDD	<0.45	[U]	0.45	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDD	0.80	M,J,R	0.43	pg/L	26-SEP-24	01-OCT-24	R5988316
OCDD	3.58	M,J	0.79	pg/L	26-SEP-24	01-OCT-24	R5988316
2,3,7,8-TCDF	<0.48	[U]	0.48	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8-PeCDF	<0.40	[U]	0.40	pg/L	26-SEP-24	01-OCT-24	R5988316
2,3,4,7,8-PeCDF	<0.34	[U]	0.34	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,7,8-HxCDF	<0.24	[U]	0.24	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,6,7,8-HxCDF	<0.21	[U]	0.21	pg/L	26-SEP-24	01-OCT-24	R5988316
2,3,4,6,7,8-HxCDF	<0.22	[U]	0.22	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8,9-HxCDF	<0.29	[U]	0.29	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDF	0.94	J,R	0.26	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,7,8,9-HpCDF	<0.37	[U]	0.37	pg/L	26-SEP-24	01-OCT-24	R5988316
OCDF	<0.50	M,U	0.50	pg/L	26-SEP-24	01-OCT-24	R5988316
Total-TCDD	<0.34	[U]	0.34	pg/L	26-SEP-24	01-OCT-24	R5988316
Total TCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-PeCDD	<0.37	[U]	0.37	pg/L	26-SEP-24	01-OCT-24	R5988316
Total PeCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HxCDD	0.61		0.48	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HxCDD # Homologues	1				26-SEP-24	01-OCT-24	R5988316
Total-HpCDD	<0.43	[U]	0.43	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HpCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-TCDF	<0.48	[U]	0.48	pg/L	26-SEP-24	01-OCT-24	R5988316
Total TCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-PeCDF	<0.40	[U]	0.40	pg/L	26-SEP-24	01-OCT-24	R5988316
Total PeCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HxCDF	<0.29	[U]	0.29	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HxCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HpCDF	<0.37	[U]	0.37	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HpCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDD	80.0		20-175	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDD	76.0		21-227	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	86.0		21-193	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	84.0		25-163	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	85.0		23-166	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-OCDD	63.0		13-138	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDF	87.0		22-152	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDF	79.0		24-185	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,4,7,8-PeCDF	89.0		21-178	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	99.0		26-152	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	103.0		21-159	%	26-SEP-24	01-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-2 08-SH							
Sampled By: Client on 11-SEP-24 @ 13:35							
Matrix: Water							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	102.0		17-205	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	99.0		28-136	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	92.0		21-158	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	86.0		20-186	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	80.0		31-191	%	26-SEP-24	01-OCT-24	R5988316
Lower Bound PCDD/F TEQ (WHO 2005)	0.00107		0	pg/L	26-SEP-24	01-OCT-24	R5988316
Mid Point PCDD/F TEQ (WHO 2005)	0.573		0	pg/L	26-SEP-24	01-OCT-24	R5988316
Upper Bound PCDD/F TEQ (WHO 2005)	1.13		0	pg/L	26-SEP-24	01-OCT-24	R5988316
L2757431-3 12-SH							
Sampled By: Client on 11-SEP-24 @ 14:20							
Matrix: Water							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.39	[U]	0.39	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8-PeCDD	<0.49	[U]	0.49	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,7,8-HxCDD	<0.36	[U]	0.36	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,6,7,8-HxCDD	<0.37	[U]	0.37	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8,9-HxCDD	<0.35	[U]	0.35	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDD	0.62	J,R	0.43	pg/L	26-SEP-24	01-OCT-24	R5988316
OCDD	3.30	M,J,R	0.64	pg/L	26-SEP-24	01-OCT-24	R5988316
2,3,7,8-TCDF	<0.43	[U]	0.43	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8-PeCDF	0.68	[J]	0.32	pg/L	26-SEP-24	01-OCT-24	R5988316
2,3,4,7,8-PeCDF	<0.26	M,U	0.26	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,7,8-HxCDF	<0.17	[U]	0.17	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,6,7,8-HxCDF	0.20	J,R	0.16	pg/L	26-SEP-24	01-OCT-24	R5988316
2,3,4,6,7,8-HxCDF	0.30	M,J,R	0.17	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,7,8,9-HxCDF	0.23	J,R	0.22	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDF	1.10	J,R	0.20	pg/L	26-SEP-24	01-OCT-24	R5988316
1,2,3,4,7,8,9-HpCDF	<0.29	M,U	0.29	pg/L	26-SEP-24	01-OCT-24	R5988316
OCDF	<0.63	[U]	0.63	pg/L	26-SEP-24	01-OCT-24	R5988316
Total-TCDD	<0.39	[U]	0.39	pg/L	26-SEP-24	01-OCT-24	R5988316
Total TCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-PeCDD	<0.49	[U]	0.49	pg/L	26-SEP-24	01-OCT-24	R5988316
Total PeCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HxCDD	<0.37	[U]	0.37	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HxCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HpCDD	<0.43	[U]	0.43	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HpCDD # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-TCDF	<0.43	[U]	0.43	pg/L	26-SEP-24	01-OCT-24	R5988316
Total TCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-PeCDF	0.68		0.32	pg/L	26-SEP-24	01-OCT-24	R5988316
Total PeCDF # Homologues	1				26-SEP-24	01-OCT-24	R5988316
Total-HxCDF	<0.22	[U]	0.22	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HxCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Total-HpCDF	<0.29	[U]	0.29	pg/L	26-SEP-24	01-OCT-24	R5988316
Total HpCDF # Homologues	0				26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDD	76.0		20-175	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDD	73.0		21-227	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	83.0		21-193	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	81.0		25-163	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	85.0		23-166	%	26-SEP-24	01-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-3 12-SH							
Sampled By: Client on 11-SEP-24 @ 14:20							
Matrix: Water							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-OCDD	61.0		13-138	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDF	81.0		22-152	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDF	76.0		24-185	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,4,7,8-PeCDF	84.0		21-178	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	96.0		26-152	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	100.0		21-159	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	97.0		17-205	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	95.0		28-136	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	89.0		21-158	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	83.0		20-186	%	26-SEP-24	01-OCT-24	R5988316
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	82.0		31-191	%	26-SEP-24	01-OCT-24	R5988316
Lower Bound PCDD/F TEQ (WHO 2005)	0.0205		0	pg/L	26-SEP-24	01-OCT-24	R5988316
Mid Point PCDD/F TEQ (WHO 2005)	0.676		0	pg/L	26-SEP-24	01-OCT-24	R5988316
Upper Bound PCDD/F TEQ (WHO 2005)	1.24		0	pg/L	26-SEP-24	01-OCT-24	R5988316
L2757431-4 32-SH							
Sampled By: Client on 11-SEP-24 @ 14:20							
Matrix: Water							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.35	[U]	0.35	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDD	<0.39	[U]	0.39	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDD	<0.36	[U]	0.36	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDD	<0.36	[U]	0.36	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDD	<0.35	[U]	0.35	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDD	0.68	M,J,R	0.54	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDD	3.0	J,R	1.6	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,7,8-TCDF	<0.48	[U]	0.48	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDF	0.47	J,R	0.32	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,7,8-PeCDF	<0.29	[U]	0.29	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDF	<0.25	[U]	0.25	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDF	<0.22	[U]	0.22	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,6,7,8-HxCDF	<0.25	M,U	0.25	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDF	<0.33	M,U	0.33	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDF	0.42	J,R	0.31	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8,9-HpCDF	<0.47	[U]	0.47	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDF	0.99	M,J,R	0.86	pg/L	26-SEP-24	02-OCT-24	R5988316
Total-TCDD	<0.35	[U]	0.35	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDD	<0.39	[U]	0.39	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDD	<0.36	[U]	0.36	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDD	<0.54	[U]	0.54	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-TCDF	<0.48	[U]	0.48	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDF	<0.32	[U]	0.32	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDF	<0.33	[U]	0.33	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDF	<0.47	[U]	0.47	pg/L	26-SEP-24	02-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-4 32-SH							
Sampled By: Client on 11-SEP-24 @ 14:20							
Matrix: Water							
Dioxins and Furans HR 1613B							
Total HpCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDD	78.0		20-175	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDD	74.0		21-227	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	85.0		21-193	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	84.0		25-163	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	80.0		23-166	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-OCDD	53.0		13-138	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDF	82.0		22-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDF	79.0		24-185	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,7,8-PeCDF	85.0		21-178	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	101.0		26-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	110.0		21-159	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	99.0		17-205	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	95.0		28-136	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	88.0		21-158	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	80.0		20-186	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	85.0		31-191	%	26-SEP-24	02-OCT-24	R5988316
Lower Bound PCDD/F TEQ (WHO 2005)	0.00		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Mid Point PCDD/F TEQ (WHO 2005)	0.572		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Upper Bound PCDD/F TEQ (WHO 2005)	1.12		0	pg/L	26-SEP-24	02-OCT-24	R5988316
L2757431-5 13-SH							
Sampled By: Client on 10-SEP-24 @ 13:20							
Matrix: Water							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.39	[U]	0.39	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDD	<0.49	[U]	0.49	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDD	<0.42	[U]	0.42	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDD	<0.44	[U]	0.44	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDD	<0.41	[U]	0.41	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDD	0.76	J,R	0.44	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDD	5.15	M,J	0.75	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,7,8-TCDF	<0.48	[U]	0.48	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDF	0.30	J,R	0.24	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,7,8-PeCDF	<0.20	[U]	0.20	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDF	<0.17	[U]	0.17	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDF	<0.17	[U]	0.17	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,6,7,8-HxCDF	<0.18	[U]	0.18	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDF	<0.24	[U]	0.24	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDF	0.33	M,J,R	0.26	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8,9-HpCDF	<0.38	[U]	0.38	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDF	1.10	M,J,R	0.70	pg/L	26-SEP-24	02-OCT-24	R5988316
Total-TCDD	<0.39	[U]	0.39	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDD	<0.49	[U]	0.49	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDD	<0.44	[U]	0.44	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDD	<0.44	[U]	0.44	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-TCDF	<0.48	[U]	0.48	pg/L	26-SEP-24	02-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-5 13-SH							
Sampled By: Client on 10-SEP-24 @ 13:20							
Matrix: Water							
Dioxins and Furans HR 1613B							
Total TCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDF	<0.24	[U]	0.24	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDF	<0.24	[U]	0.24	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDF	<0.38	[U]	0.38	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDD	78.0		20-175	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDD	72.0		21-227	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	85.0		21-193	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	87.0		25-163	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	80.0		23-166	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-OCDD	57.0		13-138	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDF	84.0		22-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDF	75.0		24-185	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,7,8-PeCDF	83.0		21-178	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	100.0		26-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	110.0		21-159	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	101.0		17-205	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	98.0		28-136	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	90.0		21-158	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	81.0		20-186	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	81.0		31-191	%	26-SEP-24	02-OCT-24	R5988316
Lower Bound PCDD/F TEQ (WHO 2005)	0.00155		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Mid Point PCDD/F TEQ (WHO 2005)	0.619		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Upper Bound PCDD/F TEQ (WHO 2005)	1.22		0	pg/L	26-SEP-24	02-OCT-24	R5988316
L2757431-6 15-SH							
Sampled By: Client on 11-SEP-24 @ 10:40							
Matrix: Water							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.43	[U]	0.43	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDD	<0.42	[U]	0.42	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDD	<0.55	[U]	0.55	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDD	<0.58	[U]	0.58	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDD	<0.55	[U]	0.55	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDD	0.94	J,R	0.73	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDD	3.70	M,J,R	0.90	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,7,8-TCDF	<0.48	[U]	0.48	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDF	0.59	J,R	0.32	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,7,8-PeCDF	<0.29	[U]	0.29	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDF	<0.33	[U]	0.33	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDF	<0.32	[U]	0.32	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,6,7,8-HxCDF	<0.32	[U]	0.32	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDF	<0.42	[U]	0.42	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDF	0.86	[J]	0.32	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8,9-HpCDF	<0.44	[U]	0.44	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDF	<0.94	[U]	0.94	pg/L	26-SEP-24	02-OCT-24	R5988316
Total-TCDD	<0.43	[U]	0.43	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDD	<0.42	[U]	0.42	pg/L	26-SEP-24	02-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-6 15-SH							
Sampled By: Client on 11-SEP-24 @ 10:40							
Matrix: Water							
Dioxins and Furans HR 1613B							
Total PeCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDD	<0.58	[U]	0.58	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDD	<0.73	[U]	0.73	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-TCDF	<0.48	[U]	0.48	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDF	<0.32	[U]	0.32	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDF	<0.42	[U]	0.42	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDF	0.86		0.44	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDF # Homologues	1				26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDD	71.0		20-175	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDD	67.0		21-227	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	77.0		21-193	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	77.0		25-163	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	74.0		23-166	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-OCDD	50.0		13-138	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDF	76.0		22-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDF	71.0		24-185	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,7,8-PeCDF	77.0		21-178	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	89.0		26-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	89.0		21-159	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	90.0		17-205	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	87.0		28-136	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	80.0		21-158	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	74.0		20-186	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	71.0		31-191	%	26-SEP-24	02-OCT-24	R5988316
Lower Bound PCDD/F TEQ (WHO 2005)	0.00860		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Mid Point PCDD/F TEQ (WHO 2005)	0.685		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Upper Bound PCDD/F TEQ (WHO 2005)	1.33		0	pg/L	26-SEP-24	02-OCT-24	R5988316
L2757431-7 16-SH							
Sampled By: Client on 10-SEP-24 @ 14:07							
Matrix: Water							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.40	[U]	0.40	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDD	<0.43	[U]	0.43	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDD	<0.29	[U]	0.29	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDD	<0.30	[U]	0.30	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDD	<0.29	[U]	0.29	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDD	<0.79	[U]	0.79	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDD	3.92	M,J	0.76	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,7,8-TCDF	<0.43	[U]	0.43	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDF	0.45	J,R	0.29	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,7,8-PeCDF	<0.23	[U]	0.23	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDF	<0.23	[U]	0.23	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDF	<0.22	[U]	0.22	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,6,7,8-HxCDF	<0.23	[U]	0.23	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDF	<0.29	[U]	0.29	pg/L	26-SEP-24	02-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-7 16-SH							
Sampled By: Client on 10-SEP-24 @ 14:07							
Matrix: Water							
Dioxins and Furans HR 1613B							
1,2,3,4,6,7,8-HpCDF	0.40	M,J,R	0.34	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8,9-HpCDF	<0.50	[U]	0.50	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDF	<0.71	[U]	0.71	pg/L	26-SEP-24	02-OCT-24	R5988316
Total-TCDD	<0.40	[U]	0.40	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDD	<0.43	[U]	0.43	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDD	<0.30	[U]	0.30	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDD	<0.79	[U]	0.79	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-TCDF	<0.43	[U]	0.43	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDF	<0.29	[U]	0.29	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDF	<0.29	[U]	0.29	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDF	<0.50	[U]	0.50	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDD	77.0		20-175	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDD	73.0		21-227	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	86.0		21-193	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	83.0		25-163	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	79.0		23-166	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-OCDD	55.0		13-138	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDF	85.0		22-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDF	78.0		24-185	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,7,8-PeCDF	85.0		21-178	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	98.0		26-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	103.0		21-159	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	101.0		17-205	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	95.0		28-136	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	89.0		21-158	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	78.0		20-186	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	77.0		31-191	%	26-SEP-24	02-OCT-24	R5988316
Lower Bound PCDD/F TEQ (WHO 2005)	0.00118		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Mid Point PCDD/F TEQ (WHO 2005)	0.589		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Upper Bound PCDD/F TEQ (WHO 2005)	1.16		0	pg/L	26-SEP-24	02-OCT-24	R5988316
L2757431-8 17-SH							
Sampled By: Client on 11-SEP-24 @ 10:15							
Matrix: Water							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.38	[U]	0.38	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDD	<0.37	[U]	0.37	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDD	<0.58	[U]	0.58	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDD	<0.62	[U]	0.62	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDD	<0.58	[U]	0.58	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDD	<0.50	[U]	0.50	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDD	3.20	M,J,R	0.97	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,7,8-TCDF	<0.44	[U]	0.44	pg/L	26-SEP-24	02-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-8 17-SH							
Sampled By: Client on 11-SEP-24 @ 10:15							
Matrix: Water							
Dioxins and Furans HR 1613B							
1,2,3,7,8-PeCDF	<0.35	[U]	0.35	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,7,8-PeCDF	<0.31	[U]	0.31	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDF	<0.26	[U]	0.26	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDF	<0.23	[U]	0.23	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,6,7,8-HxCDF	<0.25	[U]	0.25	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDF	<0.33	[U]	0.33	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDF	0.29	M,J,R	0.28	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8,9-HpCDF	<0.40	[U]	0.40	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDF	<0.71	[U]	0.71	pg/L	26-SEP-24	02-OCT-24	R5988316
Total-TCDD	<0.38	[U]	0.38	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDD	<0.37	[U]	0.37	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDD	<0.62	[U]	0.62	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDD	<0.50	[U]	0.50	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-TCDF	<0.44	[U]	0.44	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDF	<0.35	[U]	0.35	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDF	<0.33	[U]	0.33	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDF	<0.40	[U]	0.40	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDD	75.0		20-175	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDD	71.0		21-227	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	84.0		21-193	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	82.0		25-163	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	79.0		23-166	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-OCDD	55.0		13-138	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDF	81.0		22-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDF	76.0		24-185	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,7,8-PeCDF	82.0		21-178	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	96.0		26-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	104.0		21-159	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	97.0		17-205	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	93.0		28-136	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	86.0		21-158	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	79.0		20-186	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	84.0		31-191	%	26-SEP-24	02-OCT-24	R5988316
Lower Bound PCDD/F TEQ (WHO 2005)	0.00		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Mid Point PCDD/F TEQ (WHO 2005)	0.600		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Upper Bound PCDD/F TEQ (WHO 2005)	1.20		0	pg/L	26-SEP-24	02-OCT-24	R5988316
L2757431-9 10-SH							
Sampled By: Client on 11-SEP-24 @ 12:15							
Matrix: Water							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.35	[U]	0.35	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDD	<0.42	[U]	0.42	pg/L	26-SEP-24	02-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2757431-9 10-SH							
Sampled By: Client on 11-SEP-24 @ 12:15							
Matrix: Water							
Dioxins and Furans HR 1613B							
1,2,3,4,7,8-HxCDD	<0.37	[U]	0.37	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDD	<0.39	[U]	0.39	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDD	<0.36	[U]	0.36	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDD	<0.51	[U]	0.51	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDD	3.6	M,J,R	1.0	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,7,8-TCDF	<0.56	[U]	0.56	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8-PeCDF	0.48	[J]	0.30	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,7,8-PeCDF	<0.23	M,U	0.23	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8-HxCDF	<0.20	[U]	0.20	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,6,7,8-HxCDF	<0.18	[U]	0.18	pg/L	26-SEP-24	02-OCT-24	R5988316
2,3,4,6,7,8-HxCDF	<0.19	[U]	0.19	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,7,8,9-HxCDF	<0.25	[U]	0.25	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,6,7,8-HpCDF	0.72	J,R	0.26	pg/L	26-SEP-24	02-OCT-24	R5988316
1,2,3,4,7,8,9-HpCDF	<0.36	[U]	0.36	pg/L	26-SEP-24	02-OCT-24	R5988316
OCDF	<0.73	M,U	0.73	pg/L	26-SEP-24	02-OCT-24	R5988316
Total-TCDD	<0.35	[U]	0.35	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDD	<0.42	[U]	0.42	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HxCDD	<0.39	[U]	0.39	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDD	<0.51	[U]	0.51	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDD # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-TCDF	<0.56	[U]	0.56	pg/L	26-SEP-24	02-OCT-24	R5988316
Total TCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-PeCDF	0.48		0.30	pg/L	26-SEP-24	02-OCT-24	R5988316
Total PeCDF # Homologues	1				26-SEP-24	02-OCT-24	R5988316
Total-HxCDF	<0.25	[U]	0.25	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HxCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Total-HpCDF	<0.36	[U]	0.36	pg/L	26-SEP-24	02-OCT-24	R5988316
Total HpCDF # Homologues	0				26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDD	73.0		20-175	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDD	72.0		21-227	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	82.0		21-193	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	81.0		25-163	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	81.0		23-166	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-OCDD	62.0		13-138	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,7,8-TCDF	81.0		22-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8-PeCDF	75.0		24-185	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,7,8-PeCDF	83.0		21-178	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	96.0		26-152	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	104.0		21-159	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	99.0		17-205	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	92.0		28-136	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	88.0		21-158	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	83.0		20-186	%	26-SEP-24	02-OCT-24	R5988316
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	82.0		31-191	%	26-SEP-24	02-OCT-24	R5988316
Lower Bound PCDD/F TEQ (WHO 2005)	0.0144		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Mid Point PCDD/F TEQ (WHO 2005)	0.572		0	pg/L	26-SEP-24	02-OCT-24	R5988316
Upper Bound PCDD/F TEQ (WHO 2005)	1.12		0	pg/L	26-SEP-24	02-OCT-24	R5988316

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.
J,R	The analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,J	A peak has been manually integrated, and the analyte was detected below the calibrated range but above the EDL.
M,J,R	A peak has been manually integrated, the analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,U	A peak has been manually integrated, and the analyte was not detected above the EDL.
[J]	The analyte was detected below the calibrated range but above the EDL.
[U]	The analyte was not detected above the EDL.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
DX-1613B-HRMS-BU	Water	Dioxins and Furans HR 1613B	USEPA 1613B

Samples are filtered if required. Solids are extracted by Soxhlet using toluene. The liquid portion is extracted by liquid/liquid extraction using dichloromethane. The extracts are prepared using column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
BU	ALS ENVIRONMENTAL - BURLINGTON, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2757431 Report Date: 09-OCT-24

Client: AECOM Canada Ltd.
101 - 18817 Stony Plain Rd. NW
Edmonton AB T5S 1G3

Contact: Michael Steed

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Water**							
Batch R5988316								
WG3790516-2 LCS								
2,3,7,8-TCDD			94.0		%		67-158	01-OCT-24
1,2,3,7,8-PeCDD			115.0		%		70-142	01-OCT-24
1,2,3,4,7,8-HxCDD			106.0		%		70-164	01-OCT-24
1,2,3,6,7,8-HxCDD			105.0		%		76-134	01-OCT-24
1,2,3,7,8,9-HxCDD			107.0		%		64-162	01-OCT-24
1,2,3,4,6,7,8-HpCDD			105.0		%		70-140	01-OCT-24
OCDD			102.0		%		78-144	01-OCT-24
2,3,7,8-TCDF			109.0		%		75-158	01-OCT-24
1,2,3,7,8-PeCDF			119.0		%		80-134	01-OCT-24
2,3,4,7,8-PeCDF			104.0		%		68-160	01-OCT-24
1,2,3,4,7,8-HxCDF			105.0		%		72-134	01-OCT-24
1,2,3,6,7,8-HxCDF			102.0		%		84-130	01-OCT-24
2,3,4,6,7,8-HxCDF			97.0		%		70-156	01-OCT-24
1,2,3,7,8,9-HxCDF			101.0		%		78-130	01-OCT-24
1,2,3,4,6,7,8-HpCDF			106.0		%		82-122	01-OCT-24
1,2,3,4,7,8,9-HpCDF			115.0		%		78-138	01-OCT-24
OCDF			122.0		%		63-170	01-OCT-24
WG3790516-1 MB								
2,3,7,8-TCDD			<0.37	[U]	pg/L		10	01-OCT-24
1,2,3,7,8-PeCDD			<0.43	[U]	pg/L		50	01-OCT-24
1,2,3,4,7,8-HxCDD			<0.41	[U]	pg/L		50	01-OCT-24
1,2,3,6,7,8-HxCDD			<0.43	[U]	pg/L		50	01-OCT-24
1,2,3,7,8,9-HxCDD			<0.41	[U]	pg/L		50	01-OCT-24
1,2,3,4,6,7,8-HpCDD			<0.57	[U]	pg/L		50	01-OCT-24
OCDD			2.90	M,J,R	pg/L		100	01-OCT-24
2,3,7,8-TCDF			<0.52	[U]	pg/L		10	01-OCT-24
1,2,3,7,8-PeCDF			<0.83	M,U	pg/L		50	01-OCT-24
2,3,4,7,8-PeCDF			<0.70	[U]	pg/L		50	01-OCT-24
1,2,3,4,7,8-HxCDF			<0.26	[U]	pg/L		50	01-OCT-24
1,2,3,6,7,8-HxCDF			<0.24	[U]	pg/L		50	01-OCT-24
2,3,4,6,7,8-HxCDF			<0.24	[U]	pg/L		50	01-OCT-24
1,2,3,7,8,9-HxCDF			<0.34	[U]	pg/L		50	01-OCT-24
1,2,3,4,6,7,8-HpCDF			0.61	J,R	pg/L		50	01-OCT-24
1,2,3,4,7,8,9-HpCDF			<0.43	[U]	pg/L		50	01-OCT-24

Quality Control Report

Workorder: L2757431 Report Date: 09-OCT-24

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Water**							
Batch R5988316								
WG3790516-1 MB								
OCDF			0.98	M,J,R	pg/L		100	01-OCT-24
Total-TCDD			<0.37	[U]	pg/L		0.37	01-OCT-24
Total-PeCDD			<0.43	[U]	pg/L		0.43	01-OCT-24
Total-HxCDD			<0.43	[U]	pg/L		0.43	01-OCT-24
Total-HpCDD			<0.57	[U]	pg/L		0.57	01-OCT-24
Total-TCDF			<0.52	[U]	pg/L		0.52	01-OCT-24
Total-PeCDF			1.11	A	pg/L		0.83	01-OCT-24
Total-HxCDF			<0.34	[U]	pg/L		0.34	01-OCT-24
Total-HpCDF			<0.43	[U]	pg/L		0.43	01-OCT-24
Surrogate: 13C12-2,3,7,8-TCDD			71.0		%		20-175	01-OCT-24
Surrogate: 13C12-1,2,3,7,8-PeCDD			67.0		%		21-227	01-OCT-24
Surrogate: 13C12-1,2,3,4,7,8-HxCDD			78.0		%		21-193	01-OCT-24
Surrogate: 13C12-1,2,3,6,7,8-HxCDD			78.0		%		25-163	01-OCT-24
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD			76.0		%		23-166	01-OCT-24
Surrogate: 13C12-OCDD			54.0		%		13-138	01-OCT-24
Surrogate: 13C12-2,3,7,8-TCDF			77.0		%		22-152	01-OCT-24
Surrogate: 13C12-1,2,3,7,8-PeCDF			71.0		%		24-185	01-OCT-24
Surrogate: 13C12-2,3,4,7,8-PeCDF			77.0		%		21-178	01-OCT-24
Surrogate: 13C12-1,2,3,4,7,8-HxCDF			92.0		%		26-152	01-OCT-24
Surrogate: 13C12-1,2,3,6,7,8-HxCDF			95.0		%		21-159	01-OCT-24
Surrogate: 13C12-2,3,4,6,7,8-HxCDF			94.0		%		17-205	01-OCT-24
Surrogate: 13C12-1,2,3,7,8,9-HxCDF			87.0		%		28-136	01-OCT-24
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF			82.0		%		21-158	01-OCT-24
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF			73.0		%		20-186	01-OCT-24
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)			80.0		%		31-191	01-OCT-24

COMMENTS: There were low level of select target in the blank that were within the reference method control limit.

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.
J,R	The analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,J,R	A peak has been manually integrated, the analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,U	A peak has been manually integrated, and the analyte was not detected above the EDL.
[U]	The analyte was not detected above the EDL.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

AECOM

Appendix G

Statistical Output

AECOM

App G1 – Outlier Test Output - Shallow

1					Outlier Tests for Selected Uncensored Variables							
2				User Selected Options								
3			Date/Time of Computation	ProUCL 5.112/12/2024 11:39:43 AM								
4				From File	2024-ShallowProUCL_b.xls							
5				Full Precision	OFF							
6												
7				01A-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11				Mean	6.796							
12				Standard Deviation	0.864							
13				Number of data	52							
14				Number of suspected outliers	1							
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	6.796	0.855	5.15	25	1.925	3.144	3.496				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28				Mean	205.1							
29				Standard Deviation	134.9							
30				Number of data	52							
31				Number of suspected outliers	1							
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	205.1	133.6	724	32	3.885	3.144	3.496				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 724											
39												
40	For 1% Significance Level, there is 1 Potential Outlier											
41	Potential outliers is: 724											
42												
43												
44				Rosner's Outlier Test for Chloride (mg/L)								
45												
46												
47				Mean	2.303							
48				Standard Deviation	2.201							
49				Number of data	51							
50				Number of suspected outliers	1							
51												
52				Potential	Obs.	Test	Critical	Critical				
53	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
54	1	2.303	2.179	9.66	49	3.377	3.137	3.488				
55												
56	For 5% Significance Level, there is 1 Potential Outlier											
57	Potential outliers is: 9.66											
58												
59	For 1% Significance Level, there is no Potential Outlier											
60												
61												
62				Rosner's Outlier Test for Sulphate (mg/L)								
63												
64												
65				Mean	13.01							
66				Standard Deviation	32.23							
67				Number of data	51							
68				Number of suspected outliers	1							
69												
70				Potential	Obs.	Test	Critical	Critical				
71	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
72	1	13.01	31.91	214	31	6.298	3.137	3.488				
73												
74	For 5% Significance Level, there is 1 Potential Outlier											
75	Potential outliers is: 214											
76												
77	For 1% Significance Level, there is 1 Potential Outlier											
78	Potential outliers is: 214											
79												
80												
81				Dixon's Outlier Test for DOC (mg/L)								
82												
83	Number of Observations = 22											
84	10% critical value: 0.382											
85	5% critical value: 0.43											
86	1% critical value: 0.514											
87												
88	1. Observation Value 61 is a Potential Outlier (Upper Ta											
89												
90	Test Statistic: 0.175											
91												
92	For 10% significance level, 61 is not an outlier.											
93	For 5% significance level, 61 is not an outlier.											
94	For 1% significance level, 61 is not an outlier.											
95												
96	2. Observation Value 10 is a Potential Outlier (Lower Ta											
97												
98	Test Statistic: 0.359											
99												
100	For 10% significance level, 10 is not an outlier.											
101	For 5% significance level, 10 is not an outlier.											
102	For 1% significance level, 10 is not an outlier.											
103												
104												
105				Rosner's Outlier Test for Bicarbonate (mg/L)								
106												

	A	B	C	D	E	F	G	H	I	J	K	L
107												
108			Mean	213.9								
109			Standard Deviation	154.2								
110			Number of data	51								
111			Number of suspected outliers	1								
112												
113				Potential	Obs.	Test	Critical	Critical				
114	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
115	1	213.9	152.6	558	31	2.255	3.137	3.488				
116												
117	For 5% Significance Level, there is no Potential Outlier											
118												
119	For 1% Significance Level, there is no Potential Outlier											
120												
121												
122			Rosner's Outlier Test for Calcium (mg/L)									
123												
124												
125			Mean	49.12								
126			Standard Deviation	35.14								
127			Number of data	52								
128			Number of suspected outliers	1								
129												
130				Potential	Obs.	Test	Critical	Critical				
131	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
132	1	49.12	34.8	176	32	3.646	3.144	3.496				
133												
134	For 5% Significance Level, there is 1 Potential Outlier											
135	Potential outliers is: 176											
136												
137	For 1% Significance Level, there is 1 Potential Outlier											
138	Potential outliers is: 176											
139												
140												
141			Rosner's Outlier Test for Magnesium (mg/L)									
142												
143												
144			Mean	11.59								
145			Standard Deviation	9.051								
146			Number of data	53								
147			Number of suspected outliers	1								
148												
149				Potential	Obs.	Test	Critical	Critical				
150	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
151	1	11.59	8.965	35	33	2.611	3.151	3.504				
152												
153	For 5% Significance Level, there is no Potential Outlier											
154												
155	For 1% Significance Level, there is no Potential Outlier											
156												
157												
158			Rosner's Outlier Test for Sodium (mg/L)									
159												

160												
161				Mean	8.666							
162				Standard Deviation	4.314							
163				Number of data	52							
164				Number of suspected outliers	1							
165												
166				Potential	Obs.	Test	Critical	Critical				
167	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
168	1	8.666	4.273	20.8	47	2.84	3.144	3.496				
169												
170	For 5% Significance Level, there is no Potential Outlier											
171												
172	For 1% Significance Level, there is no Potential Outlier											
173												
174												
175				Rosner's Outlier Test for Arsenic (mg/L)								
176												
177												
178				Mean	0.00323							
179				Standard Deviation	0.0181							
180				Number of data	51							
181				Number of suspected outliers	1							
182												
183				Potential	Obs.	Test	Critical	Critical				
184	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
185	1	0.00323	0.0179	0.13	14	7.067	3.137	3.488				
186												
187	For 5% Significance Level, there is 1 Potential Outlier											
188	Potential outliers is: 0.13											
189												
190	For 1% Significance Level, there is 1 Potential Outlier											
191	Potential outliers is: 0.13											
192												
193												
194				Rosner's Outlier Test for Copper (mg/L)								
195												
196												
197				Mean	0.0038							
198				Standard Deviation	0.0141							
199				Number of data	51							
200				Number of suspected outliers	1							
201												
202				Potential	Obs.	Test	Critical	Critical				
203	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
204	1	0.0038	0.014	0.102	18	7.021	3.137	3.488				
205												
206	For 5% Significance Level, there is 1 Potential Outlier											
207	Potential outliers is: 0.102											
208												
209	For 1% Significance Level, there is 1 Potential Outlier											
210	Potential outliers is: 0.102											
211												
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213				Rosner's Outlier Test for Iron (mg/L)								
214												
215												
216			Mean	2.792								
217			Standard Deviation	1.407								
218			Number of data	33								
219			Number of suspected outliers	1								
220												
221				Potential	Obs.	Test	Critical	Critical				
222	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
223	1	2.792	1.385	6.79	5	2.886	2.95	3.29				
224												
225	For 5% Significance Level, there is no Potential Outlier											
226												
227	For 1% Significance Level, there is no Potential Outlier											
228												
229												
230				Rosner's Outlier Test for Manganese (mg/L)								
231												
232												
233			Mean	0.158								
234			Standard Deviation	0.202								
235			Number of data	33								
236			Number of suspected outliers	1								
237												
238				Potential	Obs.	Test	Critical	Critical				
239	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
240	1	0.158	0.199	0.844	2	3.451	2.95	3.29				
241												
242	For 5% Significance Level, there is 1 Potential Outlier											
243	Potential outliers is: 0.844											
244												
245	For 1% Significance Level, there is 1 Potential Outlier											
246	Potential outliers is: 0.844											
247												
248												
249				Rosner's Outlier Test for Nickel (mg/L)								
250												
251												
252			Mean	0.0138								
253			Standard Deviation	0.0258								
254			Number of data	50								
255			Number of suspected outliers	1								
256												
257				Potential	Obs.	Test	Critical	Critical				
258	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
259	1	0.0138	0.0256	0.16	17	5.712	3.13	3.48				
260												
261	For 5% Significance Level, there is 1 Potential Outlier											
262	Potential outliers is: 0.16											
263												
264	For 1% Significance Level, there is 1 Potential Outlier											
265	Potential outliers is: 0.16											

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267												
268				Rosner's Outlier Test for Zinc (mg/L)								
269												
270												
271				Mean	0.0133							
272				Standard Deviation	0.02							
273				Number of data	33							
274				Number of suspected outliers	1							
275												
276				Potential	Obs.	Test	Critical	Critical				
277	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
278	1	0.0133	0.0197	0.099	3	4.342	2.95	3.29				
279												
280	For 5% Significance Level, there is 1 Potential Outlier											
281	Potential outliers is: 0.099											
282												
283	For 1% Significance Level, there is 1 Potential Outlier											
284	Potential outliers is: 0.099											
285												
286												
287				Rosner's Outlier Test for TOC (mg/L)								
288												
289												
290				Mean	19.37							
291				Standard Deviation	22.55							
292				Number of data	34							
293				Number of suspected outliers	1							
294												
295				Potential	Obs.	Test	Critical	Critical				
296	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
297	1	19.37	22.21	80.1	19	2.734	2.97	3.3				
298												
299	For 5% Significance Level, there is no Potential Outlier											
300												
301	For 1% Significance Level, there is no Potential Outlier											
302												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/12/2024 11:41:07 AM								
4				From File	2024-ShallowProUCL_c.xls							
5				Full Precision	OFF							
6												
7				03-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.829								
12			Standard Deviation	0.266								
13			Number of data	59								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.829	0.264	7.26	9	2.157	3.193	3.552				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	380.8								
29			Standard Deviation	86.64								
30			Number of data	59								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	380.8	85.9	579	59	2.307	3.193	3.552				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Chloride (mg/L)								
43												
44												
45			Mean	1.262								
46			Standard Deviation	0.82								
47			Number of data	57								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	1.262	0.813	4.4	27	3.86	3.179	3.536				
53												

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 4.4

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 4.4

Rosner's Outlier Test for Sulphate (mg/L)

Mean	48.53
Standard Deviation	25.91
Number of data	57
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	48.53	25.68	99.1	44	1.969	3.179	3.536

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

1. Observation Value 8 is a Potential Outlier (Upper Tai

Test Statistic: 0.587

For 10% significance level, 8 is an outlier.

For 5% significance level, 8 is an outlier.

For 1% significance level, 8 is an outlier.

2. Observation Value 3.9 is a Potential Outlier (Lower Ta

Test Statistic: 0.100

For 10% significance level, 3.9 is not an outlier.

For 5% significance level, 3.9 is not an outlier.

For 1% significance level, 3.9 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	390.6
Standard Deviation	76.85

	A	B	C	D	E	F	G	H	I	J	K	L
107			Number of data	56								
108			Number of suspected outliers	1								
109												
110				Potential	Obs.	Test	Critical	Critical				
111	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
112	1	390.6	76.16	575	45	2.421	3.172	3.528				
113												
114	For 5% Significance Level, there is no Potential Outlier											
115												
116	For 1% Significance Level, there is no Potential Outlier											
117												
118												
119			Rosner's Outlier Test for Calcium (mg/L)									
120												
121												
122			Mean	90.68								
123			Standard Deviation	18.4								
124			Number of data	57								
125			Number of suspected outliers	1								
126												
127				Potential	Obs.	Test	Critical	Critical				
128	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
129	1	90.68	18.24	139	56	2.65	3.179	3.536				
130												
131	For 5% Significance Level, there is no Potential Outlier											
132												
133	For 1% Significance Level, there is no Potential Outlier											
134												
135												
136			Rosner's Outlier Test for Magnesium (mg/L)									
137												
138												
139			Mean	24.72								
140			Standard Deviation	5.176								
141			Number of data	57								
142			Number of suspected outliers	1								
143												
144				Potential	Obs.	Test	Critical	Critical				
145	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
146	1	24.72	5.13	36.5	56	2.297	3.179	3.536				
147												
148	For 5% Significance Level, there is no Potential Outlier											
149												
150	For 1% Significance Level, there is no Potential Outlier											
151												
152												
153			Rosner's Outlier Test for Sodium (mg/L)									
154												
155												
156			Mean	18.94								
157			Standard Deviation	11.02								
158			Number of data	57								
159			Number of suspected outliers	1								

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161				Potential	Obs.	Test	Critical	Critical				
162	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
163	1	18.94	10.92	46.4	40	2.515	3.179	3.536				
164												
165	For 5% Significance Level, there is no Potential Outlier											
166												
167	For 1% Significance Level, there is no Potential Outlier											
168												
169												
170				Rosner's Outlier Test for Arsenic (mg/L)								
171												
172												
173				Mean	5.5456E-4							
174				Standard Deviation	0.00183							
175				Number of data	57							
176				Number of suspected outliers	1							
177												
178				Potential	Obs.	Test	Critical	Critical				
179	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
180	1	5.5456E-4	0.00182	0.014	2	7.398	3.179	3.536				
181												
182	For 5% Significance Level, there is 1 Potential Outlier											
183	Potential outliers is: 0.014											
184												
185	For 1% Significance Level, there is 1 Potential Outlier											
186	Potential outliers is: 0.014											
187												
188												
189				Rosner's Outlier Test for Chromium (mg/L)								
190												
191												
192				Mean	0.00306							
193				Standard Deviation	0.0039							
194				Number of data	57							
195				Number of suspected outliers	1							
196												
197				Potential	Obs.	Test	Critical	Critical				
198	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
199	1	0.00306	0.00387	0.018	30	3.862	3.179	3.536				
200												
201	For 5% Significance Level, there is 1 Potential Outlier											
202	Potential outliers is: 0.018											
203												
204	For 1% Significance Level, there is 1 Potential Outlier											
205	Potential outliers is: 0.018											
206												
207												
208				Rosner's Outlier Test for Copper (mg/L)								
209												
210												
211				Mean	0.00327							
212				Standard Deviation	0.00245							

	A	B	C	D	E	F	G	H	I	J	K	L
213			Number of data	55								
214			Number of suspected outliers	1								
215												
216				Potential	Obs.	Test	Critical	Critical				
217	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
218	1	0.00327	0.00243	0.015	29	4.837	3.165	3.52				
219												
220	For 5% Significance Level, there is 1 Potential Outlier											
221	Potential outliers is: 0.015											
222												
223	For 1% Significance Level, there is 1 Potential Outlier											
224	Potential outliers is: 0.015											
225												
226												
227			Rosner's Outlier Test for Manganese (mg/L)									
228												
229												
230			Mean	0.0575								
231			Standard Deviation	0.0696								
232			Number of data	32								
233			Number of suspected outliers	1								
234												
235				Potential	Obs.	Test	Critical	Critical				
236	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
237	1	0.0575	0.0685	0.266	18	3.044	2.94	3.27				
238												
239	For 5% Significance Level, there is 1 Potential Outlier											
240	Potential outliers is: 0.266											
241												
242	For 1% Significance Level, there is no Potential Outlier											
243												
244												
245			Rosner's Outlier Test for Nickel (mg/L)									
246												
247												
248			Mean	0.00531								
249			Standard Deviation	0.00349								
250			Number of data	34								
251			Number of suspected outliers	1								
252												
253				Potential	Obs.	Test	Critical	Critical				
254	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
255	1	0.00531	0.00344	0.015	2	2.819	2.97	3.3				
256												
257	For 5% Significance Level, there is no Potential Outlier											
258												
259	For 1% Significance Level, there is no Potential Outlier											
260												
261												
262			Rosner's Outlier Test for Zinc (mg/L)									
263												
264												
265			Mean	0.00648								

	A	B	C	D	E	F	G	H	I	J	K	L
266			Standard Deviation	0.00585								
267			Number of data	34								
268			Number of suspected outliers	1								
269												
270				Potential	Obs.	Test	Critical	Critical				
271	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
272	1	0.00648	0.00576	0.0259	13	3.37	2.97	3.3				
273												
274	For 5% Significance Level, there is 1 Potential Outlier											
275	Potential outliers is: 0.0259											
276												
277	For 1% Significance Level, there is 1 Potential Outlier											
278	Potential outliers is: 0.0259											
279												
280												
281				Rosner's Outlier Test for TOC (mg/L)								
282												
283												
284			Mean	5.365								
285			Standard Deviation	1.109								
286			Number of data	40								
287			Number of suspected outliers	1								
288												
289				Potential	Obs.	Test	Critical	Critical				
290	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
291	1	5.365	1.095	2.8	29	2.343	3.04	3.38				
292												
293	For 5% Significance Level, there is no Potential Outlier											
294												
295	For 1% Significance Level, there is no Potential Outlier											
296												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/12/2024 11:42:14 AM								
4				From File	2024-ShallowProUCL_d.xls							
5				Full Precision	OFF							
6												
7				04-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.746								
12			Standard Deviation	0.301								
13			Number of data	59								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.746	0.298	7.06	27	2.303	3.193	3.552				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	382.9								
29			Standard Deviation	36.09								
30			Number of data	59								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	382.9	35.78	244	17	3.882	3.193	3.552				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 244											
39												
40	For 1% Significance Level, there is 1 Potential Outlier											
41	Potential outliers is: 244											
42												
43												
44				Rosner's Outlier Test for Chloride (mg/L)								
45												
46												
47			Mean	0.775								
48			Standard Deviation	0.651								
49			Number of data	30								
50			Number of suspected outliers	1								
51												
52				Potential	Obs.	Test	Critical	Critical				
53	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
54	1	0.775	0.64	3.2	1	3.786	2.91	3.24				
55												
56	For 5% Significance Level, there is 1 Potential Outlier											
57	Potential outliers is: 3.2											
58												
59	For 1% Significance Level, there is 1 Potential Outlier											
60	Potential outliers is: 3.2											
61												
62												
63				Rosner's Outlier Test for Sulphate (mg/L)								
64												
65												
66				Mean	13.4							
67				Standard Deviation	5.594							
68				Number of data	56							
69				Number of suspected outliers	1							
70												
71				Potential	Obs.	Test	Critical	Critical				
72	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
73	1	13.4	5.544	34.5	1	3.806	3.172	3.528				
74												
75	For 5% Significance Level, there is 1 Potential Outlier											
76	Potential outliers is: 34.5											
77												
78	For 1% Significance Level, there is 1 Potential Outlier											
79	Potential outliers is: 34.5											
80												
81												
82				Dixon's Outlier Test for DOC (mg/L)								
83												
84	Number of Observations = 19											
85	10% critical value: 0.412											
86	5% critical value: 0.462											
87	1% critical value: 0.547											
88												
89	1. Observation Value 5 is a Potential Outlier (Upper Tai											
90												
91	Test Statistic: 0.276											
92												
93	For 10% significance level, 5 is not an outlier.											
94	For 5% significance level, 5 is not an outlier.											
95	For 1% significance level, 5 is not an outlier.											
96												
97	2. Observation Value 2 is a Potential Outlier (Lower Tail											
98												
99	Test Statistic: 0.045											
100												
101	For 10% significance level, 2 is not an outlier.											
102	For 5% significance level, 2 is not an outlier.											
103	For 1% significance level, 2 is not an outlier.											
104												
105												
106				Rosner's Outlier Test for Bicarbonate (mg/L)								

Mean			458.5					
Standard Deviation			44.64					
Number of data			56					
Number of suspected outliers			1					
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	458.5	44.24	376.7	7	1.85	3.172	3.528	

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Calcium (mg/L)

Mean			101.2					
Standard Deviation			10.43					
Number of data			56					
Number of suspected outliers			1					
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	101.2	10.34	123	50	2.112	3.172	3.528	

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Magnesium (mg/L)

Mean			27.49					
Standard Deviation			2.979					
Number of data			56					
Number of suspected outliers			1					
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	27.49	2.953	20.5	2	2.366	3.172	3.528	

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sodium (mg/L)

	A	B	C	D	E	F	G	H	I	J	K	L
160			Mean	9.98								
161			Standard Deviation	1.585								
162			Number of data	56								
163			Number of suspected outliers	1								
164												
165				Potential	Obs.	Test	Critical	Critical				
166	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
167	1	9.98	1.57	19.5	1	6.063	3.172	3.528				
168												
169	For 5% Significance Level, there is 1 Potential Outlier											
170	Potential outliers is: 19.5											
171												
172	For 1% Significance Level, there is 1 Potential Outlier											
173	Potential outliers is: 19.5											
174												
175												
176			Rosner's Outlier Test for Arsenic (mg/L)									
177												
178												
179			Mean	2.7714E-4								
180			Standard Deviation	2.3055E-4								
181			Number of data	56								
182			Number of suspected outliers	1								
183												
184				Potential	Obs.	Test	Critical	Critical				
185	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
186	1	2.7714E-4	2.2849E-4	0.0016	43	5.79	3.172	3.528				
187												
188	For 5% Significance Level, there is 1 Potential Outlier											
189	Potential outliers is: 0.0016											
190												
191	For 1% Significance Level, there is 1 Potential Outlier											
192	Potential outliers is: 0.0016											
193												
194												
195			Rosner's Outlier Test for Chromium (mg/L)									
196												
197												
198			Mean	0.00607								
199			Standard Deviation	0.00804								
200			Number of data	56								
201			Number of suspected outliers	1								
202												
203				Potential	Obs.	Test	Critical	Critical				
204	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
205	1	0.00607	0.00797	0.04	29	4.259	3.172	3.528				
206												
207	For 5% Significance Level, there is 1 Potential Outlier											
208	Potential outliers is: 0.04											
209												
210	For 1% Significance Level, there is 1 Potential Outlier											
211	Potential outliers is: 0.04											
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213												
214				Rosner's Outlier Test for Copper (mg/L)								
215												
216												
217				Mean	0.00271							
218				Standard Deviation	0.00246							
219				Number of data	56							
220				Number of suspected outliers	1							
221												
222				Potential	Obs.	Test	Critical	Critical				
223	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
224	1	0.00271	0.00244	0.013	2	4.219	3.172	3.528				
225												
226	For 5% Significance Level, there is 1 Potential Outlier											
227	Potential outliers is: 0.013											
228												
229	For 1% Significance Level, there is 1 Potential Outlier											
230	Potential outliers is: 0.013											
231												
232												
233				Rosner's Outlier Test for Manganese (mg/L)								
234												
235												
236				Mean	0.134							
237				Standard Deviation	0.131							
238				Number of data	32							
239				Number of suspected outliers	1							
240												
241				Potential	Obs.	Test	Critical	Critical				
242	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
243	1	0.134	0.129	0.524	28	3.032	2.94	3.27				
244												
245	For 5% Significance Level, there is 1 Potential Outlier											
246	Potential outliers is: 0.524											
247												
248	For 1% Significance Level, there is no Potential Outlier											
249												
250												
251				Rosner's Outlier Test for Nickel (mg/L)								
252												
253												
254				Mean	0.00419							
255				Standard Deviation	0.00348							
256				Number of data	34							
257				Number of suspected outliers	1							
258												
259				Potential	Obs.	Test	Critical	Critical				
260	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
261	1	0.00419	0.00342	0.018	3	4.034	2.97	3.3				
262												
263	For 5% Significance Level, there is 1 Potential Outlier											
264	Potential outliers is: 0.018											
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266	For 1% Significance Level, there is 1 Potential Outlier											
267	Potential outliers is: 0.018											
268												
269												
270				Rosner's Outlier Test for Zinc (mg/L)								
271												
272												
273				Mean	0.00381							
274				Standard Deviation	0.00408							
275				Number of data	34							
276				Number of suspected outliers	1							
277												
278				Potential	Obs.	Test	Critical	Critical				
279	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
280	1	0.00381	0.00402	0.0235	14	4.894	2.97	3.3				
281												
282	For 5% Significance Level, there is 1 Potential Outlier											
283	Potential outliers is: 0.0235											
284												
285	For 1% Significance Level, there is 1 Potential Outlier											
286	Potential outliers is: 0.0235											
287												
288												
289				Rosner's Outlier Test for TOC (mg/L)								
290												
291												
292				Mean	3.198							
293				Standard Deviation	0.677							
294				Number of data	40							
295				Number of suspected outliers	1							
296												
297				Potential	Obs.	Test	Critical	Critical				
298	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
299	1	3.198	0.668	5	1	2.698	3.04	3.38				
300												
301	For 5% Significance Level, there is no Potential Outlier											
302												
303	For 1% Significance Level, there is no Potential Outlier											
304												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3		Date/Time of Computation		ProUCL 5.112/12/2024 11:43:35 AM								
4				From File	2024-ShallowProUCL_e.xls							
5				Full Precision	OFF							
6												
7				05-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.734								
12			Standard Deviation	0.265								
13			Number of data	56								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.734	0.263	7.23	26	1.921	3.172	3.528				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	492								
29			Standard Deviation	190.2								
30			Number of data	56								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	492	188.5	246	15	1.305	3.172	3.528				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Chloride (mg/L)								
43												
44												
45			Mean	1.391								
46			Standard Deviation	0.755								
47			Number of data	55								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	1.391	0.748	2.72	54	1.776	3.165	3.52				
53												

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sulphate (mg/L)

Mean	80.16
Standard Deviation	57.92
Number of data	55
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	80.16	57.39	169	48	1.548	3.165	3.52

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 18

10% critical value: 0.424

5% critical value: 0.475

1% critical value: 0.561

1. Observation Value 7.83 is a Potential Outlier (Upper

Test Statistic: 0.223

For 10% significance level, 7.83 is not an outlier.

For 5% significance level, 7.83 is not an outlier.

For 1% significance level, 7.83 is not an outlier.

2. Observation Value 4.5 is a Potential Outlier (Lower T

Test Statistic: 0.185

For 10% significance level, 4.5 is not an outlier.

For 5% significance level, 4.5 is not an outlier.

For 1% significance level, 4.5 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	485
Standard Deviation	153.1
Number of data	54
Number of suspected outliers	1

	A	B	C	D	E	F	G	H	I	J	K	L
107												
108				Potential	Obs.	Test	Critical	Critical				
109	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
110	1	485	151.7	727	37	1.596	3.158	3.512				
111												
112	For 5% Significance Level, there is no Potential Outlier											
113												
114	For 1% Significance Level, there is no Potential Outlier											
115												
116												
117	Rosner's Outlier Test for Calcium (mg/L)											
118												
119												
120			Mean	131.1								
121			Standard Deviation	48.01								
122			Number of data	58								
123			Number of suspected outliers	1								
124												
125				Potential	Obs.	Test	Critical	Critical				
126	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
127	1	131.1	47.6	66.5	18	1.357	3.186	3.544				
128												
129	For 5% Significance Level, there is no Potential Outlier											
130												
131	For 1% Significance Level, there is no Potential Outlier											
132												
133												
134	Rosner's Outlier Test for Magnesium (mg/L)											
135												
136												
137			Mean	35.07								
138			Standard Deviation	13.14								
139			Number of data	58								
140			Number of suspected outliers	1								
141												
142				Potential	Obs.	Test	Critical	Critical				
143	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
144	1	35.07	13.03	53.9	31	1.446	3.186	3.544				
145												
146	For 5% Significance Level, there is no Potential Outlier											
147												
148	For 1% Significance Level, there is no Potential Outlier											
149												
150												
151	Rosner's Outlier Test for Sodium (mg/L)											
152												
153												
154			Mean	7.324								
155			Standard Deviation	1.438								
156			Number of data	58								
157			Number of suspected outliers	1								
158												
159				Potential	Obs.	Test	Critical	Critical				

	A	B	C	D	E	F	G	H	I	J	K	L
160	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
161	1	7.324	1.426	11.8	41	3.14	3.186	3.544				
162												
163	For 5% Significance Level, there is no Potential Outlier											
164												
165	For 1% Significance Level, there is no Potential Outlier											
166												
167												
168				Rosner's Outlier Test for Arsenic (mg/L)								
169												
170												
171				Mean	3.3500E-4							
172				Standard Deviation	3.0562E-4							
173				Number of data	50							
174				Number of suspected outliers	1							
175												
176				Potential	Obs.	Test	Critical	Critical				
177	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
178	1	3.3500E-4	3.0254E-4	0.0019	39	5.173	3.13	3.48				
179												
180	For 5% Significance Level, there is 1 Potential Outlier											
181	Potential outliers is: 0.0019											
182												
183	For 1% Significance Level, there is 1 Potential Outlier											
184	Potential outliers is: 0.0019											
185												
186												
187				Rosner's Outlier Test for Copper (mg/L)								
188												
189												
190				Mean	0.00275							
191				Standard Deviation	0.00205							
192				Number of data	57							
193				Number of suspected outliers	1							
194												
195				Potential	Obs.	Test	Critical	Critical				
196	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
197	1	0.00275	0.00204	0.009	6	3.068	3.179	3.536				
198												
199	For 5% Significance Level, there is no Potential Outlier											
200												
201	For 1% Significance Level, there is no Potential Outlier											
202												
203												
204				Rosner's Outlier Test for Manganese (mg/L)								
205												
206												
207				Mean	0.202							
208				Standard Deviation	0.179							
209				Number of data	33							
210				Number of suspected outliers	1							
211												
212				Potential	Obs.	Test	Critical	Critical				

	A	B	C	D	E	F	G	H	I	J	K	L
213	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
214	1	0.202	0.176	0.625	21	2.398	2.95	3.29				
215												
216	For 5% Significance Level, there is no Potential Outlier											
217												
218	For 1% Significance Level, there is no Potential Outlier											
219												
220												
221				Rosner's Outlier Test for Nickel (mg/L)								
222												
223												
224				Mean	0.00418							
225				Standard Deviation	0.00325							
226				Number of data	34							
227				Number of suspected outliers	1							
228												
229				Potential	Obs.	Test	Critical	Critical				
230	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
231	1	0.00418	0.0032	0.015	2	3.382	2.97	3.3				
232												
233	For 5% Significance Level, there is 1 Potential Outlier											
234	Potential outliers is: 0.015											
235												
236	For 1% Significance Level, there is 1 Potential Outlier											
237	Potential outliers is: 0.015											
238												
239												
240				Rosner's Outlier Test for Zinc (mg/L)								
241												
242												
243				Mean	0.00654							
244				Standard Deviation	0.0138							
245				Number of data	34							
246				Number of suspected outliers	1							
247												
248				Potential	Obs.	Test	Critical	Critical				
249	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
250	1	0.00654	0.0136	0.078	1	5.262	2.97	3.3				
251												
252	For 5% Significance Level, there is 1 Potential Outlier											
253	Potential outliers is: 0.078											
254												
255	For 1% Significance Level, there is 1 Potential Outlier											
256	Potential outliers is: 0.078											
257												
258												
259				Rosner's Outlier Test for TOC (mg/L)								
260												
261												
262				Mean	4.387							
263				Standard Deviation	0.579							
264				Number of data	38							
265				Number of suspected outliers	1							

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267				Potential	Obs.	Test	Critical	Critical				
268	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
269	1	4.387	0.571	2.8	24	2.78	3.01	3.36				
270												
271	For 5% Significance Level, there is no Potential Outlier											
272												
273	For 1% Significance Level, there is no Potential Outlier											
274												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/12/2024 11:46:04 AM								
4				From File	2024-ShallowProUCL_f.xls							
5				Full Precision	OFF							
6												
7				06-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.666								
12			Standard Deviation	0.335								
13			Number of data	54								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.666	0.332	6.9	28	2.31	3.158	3.512				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	483								
29			Standard Deviation	148.3								
30			Number of data	54								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	483	147	748	29	1.803	3.158	3.512				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Chloride (mg/L)								
43												
44												
45			Mean	1.918								
46			Standard Deviation	0.898								
47			Number of data	50								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	1.918	0.889	5.2	19	3.69	3.13	3.48				
53												

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 5.2

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 5.2

Rosner's Outlier Test for Sulphate (mg/L)

Mean	6.51
Standard Deviation	7.03
Number of data	50
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	6.51	6.959	51.4	18	6.451	3.13	3.48

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 51.4

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 51.4

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

1. Observation Value 7.5 is a Potential Outlier (Upper T

Test Statistic: 0.623

For 10% significance level, 7.5 is an outlier.

For 5% significance level, 7.5 is an outlier.

For 1% significance level, 7.5 is an outlier.

2. Observation Value 3.4 is a Potential Outlier (Lower Ta

Test Statistic: 0.571

For 10% significance level, 3.4 is an outlier.

For 5% significance level, 3.4 is an outlier.

For 1% significance level, 3.4 is an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

	A	B	C	D	E	F	G	H	I	J	K	L
107			Mean	610.3								
108			Standard Deviation	194.8								
109			Number of data	49								
110			Number of suspected outliers	1								
111												
112				Potential	Obs.	Test	Critical	Critical				
113	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
114	1	610.3	192.8	927	24	1.643	3.12	3.47				
115												
116	For 5% Significance Level, there is no Potential Outlier											
117												
118	For 1% Significance Level, there is no Potential Outlier											
119												
120												
121			Rosner's Outlier Test for Calcium (mg/L)									
122												
123												
124			Mean	134.4								
125			Standard Deviation	42.83								
126			Number of data	51								
127			Number of suspected outliers	1								
128												
129				Potential	Obs.	Test	Critical	Critical				
130	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
131	1	134.4	42.41	216	29	1.923	3.137	3.488				
132												
133	For 5% Significance Level, there is no Potential Outlier											
134												
135	For 1% Significance Level, there is no Potential Outlier											
136												
137												
138			Rosner's Outlier Test for Magnesium (mg/L)									
139												
140												
141			Mean	37.14								
142			Standard Deviation	12.17								
143			Number of data	51								
144			Number of suspected outliers	1								
145												
146				Potential	Obs.	Test	Critical	Critical				
147	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
148	1	37.14	12.05	60.9	25	1.972	3.137	3.488				
149												
150	For 5% Significance Level, there is no Potential Outlier											
151												
152	For 1% Significance Level, there is no Potential Outlier											
153												
154												
155			Rosner's Outlier Test for Sodium (mg/L)									
156												
157												
158			Mean	9.286								
159			Standard Deviation	6.073								

	A	B	C	D	E	F	G	H	I	J	K	L
160			Number of data	51								
161			Number of suspected outliers	1								
162												
163				Potential	Obs.	Test	Critical	Critical				
164	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
165	1	9.286	6.013	44.1	18	5.79	3.137	3.488				
166												
167	For 5% Significance Level, there is 1 Potential Outlier											
168	Potential outliers is: 44.1											
169												
170	For 1% Significance Level, there is 1 Potential Outlier											
171	Potential outliers is: 44.1											
172												
173												
174			Rosner's Outlier Test for Arsenic (mg/L)									
175												
176												
177			Mean	5.2510E-4								
178			Standard Deviation	3.7122E-4								
179			Number of data	51								
180			Number of suspected outliers	1								
181												
182				Potential	Obs.	Test	Critical	Critical				
183	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
184	1	5.2510E-4	3.6756E-4	0.00208	38	4.23	3.137	3.488				
185												
186	For 5% Significance Level, there is 1 Potential Outlier											
187	Potential outliers is: 0.00208											
188												
189	For 1% Significance Level, there is 1 Potential Outlier											
190	Potential outliers is: 0.00208											
191												
192												
193			Rosner's Outlier Test for Copper (mg/L)									
194												
195												
196			Mean	0.00528								
197			Standard Deviation	0.0183								
198			Number of data	51								
199			Number of suspected outliers	1								
200												
201				Potential	Obs.	Test	Critical	Critical				
202	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
203	1	0.00528	0.0181	0.128	19	6.789	3.137	3.488				
204												
205	For 5% Significance Level, there is 1 Potential Outlier											
206	Potential outliers is: 0.128											
207												
208	For 1% Significance Level, there is 1 Potential Outlier											
209	Potential outliers is: 0.128											
210												
211												
212			Rosner's Outlier Test for Manganese (mg/L)									

			Mean	0.839				
			Standard Deviation	0.604				
			Number of data	31				
			Number of suspected outliers	1				
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	0.839	0.595	3.55	12	4.559	2.92	3.25	

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 3.55

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 3.55

Rosner's Outlier Test for Nickel (mg/L)

			Mean	0.0146				
			Standard Deviation	0.029				
			Number of data	33				
			Number of suspected outliers	1				
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	0.0146	0.0285	0.167	1	5.341	2.95	3.29	

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.167

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.167

Rosner's Outlier Test for Zinc (mg/L)

			Mean	0.00554				
			Standard Deviation	0.00934				
			Number of data	33				
			Number of suspected outliers	1				
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	0.00554	0.0092	0.054	1	5.268	2.95	3.29	

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.054

For 1% Significance Level, there is 1 Potential Outlier

	A	B	C	D	E	F	G	H	I	J	K	L
266	Potential outliers is: 0.054											
267												
268												
269				Rosner's Outlier Test for TOC (mg/L)								
270												
271												
272				Mean	3.897							
273				Standard Deviation	1.413							
274				Number of data	35							
275				Number of suspected outliers	1							
276												
277				Potential	Obs.	Test	Critical	Critical				
278	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
279	1	3.897	1.393	7.8	23	2.802	2.98	3.32				
280												
281	For 5% Significance Level, there is no Potential Outlier											
282												
283	For 1% Significance Level, there is no Potential Outlier											
284												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/12/2024 11:46:56 AM								
4				From File	2024-ShallowProUCL_g.xls							
5				Full Precision	OFF							
6												
7				07-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11				Mean	7.698							
12				Standard Deviation	0.333							
13				Number of data	58							
14				Number of suspected outliers	1							
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.698	0.33	8.83	58	3.432	3.186	3.544				
19												
20	For 5% Significance Level, there is 1 Potential Outlier											
21	Potential outliers is: 8.83											
22												
23	For 1% Significance Level, there is no Potential Outlier											
24												
25												
26				Rosner's Outlier Test for TDS (mg/L)								
27												
28												
29				Mean	508.8							
30				Standard Deviation	137.9							
31				Number of data	58							
32				Number of suspected outliers	1							
33												
34				Potential	Obs.	Test	Critical	Critical				
35	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
36	1	508.8	136.7	840	58	2.423	3.186	3.544				
37												
38	For 5% Significance Level, there is no Potential Outlier											
39												
40	For 1% Significance Level, there is no Potential Outlier											
41												
42												
43				Rosner's Outlier Test for Chloride (mg/L)								
44												
45												
46				Mean	37.36							
47				Standard Deviation	56.32							
48				Number of data	56							
49				Number of suspected outliers	1							
50												
51				Potential	Obs.	Test	Critical	Critical				
52	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
53	1	37.36	55.81	220	56	3.272	3.172	3.528				

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 220

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sulphate (mg/L)

Mean	27.37
Standard Deviation	11.53
Number of data	56
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	27.37	11.43	56	1	2.505	3.172	3.528

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

1. Observation Value 3.4 is a Potential Outlier (Upper T

Test Statistic: 0.286

For 10% significance level, 3.4 is not an outlier.

For 5% significance level, 3.4 is not an outlier.

For 1% significance level, 3.4 is not an outlier.

2. Observation Value 1.8 is a Potential Outlier (Lower T

Test Statistic: 0.167

For 10% significance level, 1.8 is not an outlier.

For 5% significance level, 1.8 is not an outlier.

For 1% significance level, 1.8 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	522.1
Standard Deviation	110.2

	A	B	C	D	E	F	G	H	I	J	K	L
107			Number of data	55								
108			Number of suspected outliers	1								
109												
110				Potential	Obs.	Test	Critical	Critical				
111	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
112	1	522.1	109.2	337.7	6	1.689	3.165	3.52				
113												
114	For 5% Significance Level, there is no Potential Outlier											
115												
116	For 1% Significance Level, there is no Potential Outlier											
117												
118												
119			Rosner's Outlier Test for Calcium (mg/L)									
120												
121												
122			Mean	134.2								
123			Standard Deviation	38.89								
124			Number of data	55								
125			Number of suspected outliers	1								
126												
127				Potential	Obs.	Test	Critical	Critical				
128	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
129	1	134.2	38.54	221	52	2.254	3.165	3.52				
130												
131	For 5% Significance Level, there is no Potential Outlier											
132												
133	For 1% Significance Level, there is no Potential Outlier											
134												
135												
136			Rosner's Outlier Test for Magnesium (mg/L)									
137												
138												
139			Mean	35.45								
140			Standard Deviation	10.45								
141			Number of data	55								
142			Number of suspected outliers	1								
143												
144				Potential	Obs.	Test	Critical	Critical				
145	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
146	1	35.45	10.36	58.9	52	2.264	3.165	3.52				
147												
148	For 5% Significance Level, there is no Potential Outlier											
149												
150	For 1% Significance Level, there is no Potential Outlier											
151												
152												
153			Rosner's Outlier Test for Sodium (mg/L)									
154												
155												
156			Mean	13.07								
157			Standard Deviation	3.237								
158			Number of data	56								
159			Number of suspected outliers	1								

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161				Potential	Obs.	Test	Critical	Critical				
162	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
163	1	13.07	3.208	27	1	4.342	3.172	3.528				
164												
165	For 5% Significance Level, there is 1 Potential Outlier											
166	Potential outliers is: 27											
167												
168	For 1% Significance Level, there is 1 Potential Outlier											
169	Potential outliers is: 27											
170												
171												
172				Rosner's Outlier Test for Arsenic (mg/L)								
173												
174												
175				Mean	3.9607E-4							
176				Standard Deviation	2.5704E-4							
177				Number of data	56							
178				Number of suspected outliers	1							
179												
180				Potential	Obs.	Test	Critical	Critical				
181	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
182	1	3.9607E-4	2.5473E-4	0.0012	34	3.156	3.172	3.528				
183												
184	For 5% Significance Level, there is no Potential Outlier											
185												
186	For 1% Significance Level, there is no Potential Outlier											
187												
188												
189				Rosner's Outlier Test for Copper (mg/L)								
190												
191												
192				Mean	0.00306							
193				Standard Deviation	0.0049							
194				Number of data	56							
195				Number of suspected outliers	1							
196												
197				Potential	Obs.	Test	Critical	Critical				
198	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
199	1	0.00306	0.00485	0.035	31	6.582	3.172	3.528				
200												
201	For 5% Significance Level, there is 1 Potential Outlier											
202	Potential outliers is: 0.035											
203												
204	For 1% Significance Level, there is 1 Potential Outlier											
205	Potential outliers is: 0.035											
206												
207												
208				Rosner's Outlier Test for Iron (mg/L)								
209												
210												
211				Mean	0.327							
212				Standard Deviation	0.526							

213			Number of data	31								
214			Number of suspected outliers	1								
215												
216				Potential	Obs.	Test	Critical	Critical				
217	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
218	1	0.327	0.517	2.06	16	3.352	2.92	3.25				
219												
220	For 5% Significance Level, there is 1 Potential Outlier											
221	Potential outliers is: 2.06											
222												
223	For 1% Significance Level, there is 1 Potential Outlier											
224	Potential outliers is: 2.06											
225												
226												
227			Rosner's Outlier Test for Manganese (mg/L)									
228												
229												
230			Mean	0.382								
231			Standard Deviation	0.258								
232			Number of data	31								
233			Number of suspected outliers	1								
234												
235				Potential	Obs.	Test	Critical	Critical				
236	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
237	1	0.382	0.254	0.995	2	2.413	2.92	3.25				
238												
239	For 5% Significance Level, there is no Potential Outlier											
240												
241	For 1% Significance Level, there is no Potential Outlier											
242												
243												
244			Rosner's Outlier Test for Nickel (mg/L)									
245												
246												
247			Mean	0.00389								
248			Standard Deviation	0.00334								
249			Number of data	33								
250			Number of suspected outliers	1								
251												
252				Potential	Obs.	Test	Critical	Critical				
253	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
254	1	0.00389	0.00328	0.017	2	3.993	2.95	3.29				
255												
256	For 5% Significance Level, there is 1 Potential Outlier											
257	Potential outliers is: 0.017											
258												
259	For 1% Significance Level, there is 1 Potential Outlier											
260	Potential outliers is: 0.017											
261												
262												
263			Rosner's Outlier Test for Zinc (mg/L)									
264												
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266			Mean	0.00474								
267			Standard Deviation	0.00478								
268			Number of data	33								
269			Number of suspected outliers	1								
270												
271				Potential	Obs.	Test	Critical	Critical				
272	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
273	1	0.00474	0.00471	0.026	5	4.518	2.95	3.29				
274												
275	For 5% Significance Level, there is 1 Potential Outlier											
276	Potential outliers is: 0.026											
277												
278	For 1% Significance Level, there is 1 Potential Outlier											
279	Potential outliers is: 0.026											
280												
281												
282			Rosner's Outlier Test for TOC (mg/L)									
283												
284												
285			Mean	3.341								
286			Standard Deviation	1.08								
287			Number of data	39								
288			Number of suspected outliers	1								
289												
290				Potential	Obs.	Test	Critical	Critical				
291	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
292	1	3.341	1.066	8.3	5	4.651	3.03	3.37				
293												
294	For 5% Significance Level, there is 1 Potential Outlier											
295	Potential outliers is: 8.3											
296												
297	For 1% Significance Level, there is 1 Potential Outlier											
298	Potential outliers is: 8.3											
299												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/12/2024 2:20:26 PM								
4				From File	2024-ShallowProUCL_h.xls							
5				Full Precision	OFF							
6												
7				08-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.878								
12			Standard Deviation	0.242								
13			Number of data	58								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.878	0.24	7.37	17	2.115	3.186	3.544				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	340.6								
29			Standard Deviation	45.76								
30			Number of data	58								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	340.6	45.37	585	19	5.388	3.186	3.544				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 585											
39												
40	For 1% Significance Level, there is 1 Potential Outlier											
41	Potential outliers is: 585											
42												
43												
44				Rosner's Outlier Test for Chloride (mg/L)								
45												
46												
47			Mean	1.353								
48			Standard Deviation	0.573								
49			Number of data	55								
50			Number of suspected outliers	1								
51												
52				Potential	Obs.	Test	Critical	Critical				
53	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
54	1	1.353	0.567	0.01	17	2.367	3.165	3.52				
55												
56	For 5% Significance Level, there is no Potential Outlier											
57												
58	For 1% Significance Level, there is no Potential Outlier											
59												
60												
61				Rosner's Outlier Test for Sulphate (mg/L)								
62												
63												
64				Mean	35.5							
65				Standard Deviation	9.529							
66				Number of data	55							
67				Number of suspected outliers	1							
68												
69				Potential	Obs.	Test	Critical	Critical				
70	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
71	1	35.5	9.442	11.5	5	2.542	3.165	3.52				
72												
73	For 5% Significance Level, there is no Potential Outlier											
74												
75	For 1% Significance Level, there is no Potential Outlier											
76												
77												
78				Dixon's Outlier Test for DOC (mg/L)								
79												
80	Number of Observations = 19											
81	10% critical value: 0.412											
82	5% critical value: 0.462											
83	1% critical value: 0.547											
84												
85	1. Observation Value 23 is a Potential Outlier (Upper T											
86												
87	Test Statistic: 0.903											
88												
89	For 10% significance level, 23 is an outlier.											
90	For 5% significance level, 23 is an outlier.											
91	For 1% significance level, 23 is an outlier.											
92												
93	2. Observation Value 1.26 is a Potential Outlier (Lower T											
94												
95	Test Statistic: 0.063											
96												
97	For 10% significance level, 1.26 is not an outlier.											
98	For 5% significance level, 1.26 is not an outlier.											
99	For 1% significance level, 1.26 is not an outlier.											
100												
101												
102				Rosner's Outlier Test for Bicarbonate (mg/L)								
103												
104												
105				Mean	353.4							
106				Standard Deviation	28.7							

	A	B	C	D	E	F	G	H	I	J	K	L
107			Number of data	55								
108			Number of suspected outliers	1								
109												
110				Potential	Obs.	Test	Critical	Critical				
111	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
112	1	353.4	28.44	452	55	3.468	3.165	3.52				
113												
114	For 5% Significance Level, there is 1 Potential Outlier											
115	Potential outliers is: 452											
116												
117	For 1% Significance Level, there is no Potential Outlier											
118												
119												
120			Rosner's Outlier Test for Calcium (mg/L)									
121												
122												
123			Mean	79.14								
124			Standard Deviation	5.874								
125			Number of data	55								
126			Number of suspected outliers	1								
127												
128				Potential	Obs.	Test	Critical	Critical				
129	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
130	1	79.14	5.82	60	42	3.289	3.165	3.52				
131												
132	For 5% Significance Level, there is 1 Potential Outlier											
133	Potential outliers is: 60											
134												
135	For 1% Significance Level, there is no Potential Outlier											
136												
137												
138			Rosner's Outlier Test for Magnesium (mg/L)									
139												
140												
141			Mean	20.76								
142			Standard Deviation	1.509								
143			Number of data	55								
144			Number of suspected outliers	1								
145												
146				Potential	Obs.	Test	Critical	Critical				
147	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
148	1	20.76	1.496	15.9	2	3.247	3.165	3.52				
149												
150	For 5% Significance Level, there is 1 Potential Outlier											
151	Potential outliers is: 15.9											
152												
153	For 1% Significance Level, there is no Potential Outlier											
154												
155												
156			Rosner's Outlier Test for Sodium (mg/L)									
157												
158												
159			Mean	19.91								

	A	B	C	D	E	F	G	H	I	J	K	L
160			Standard Deviation	9.879								
161			Number of data	55								
162			Number of suspected outliers	1								
163												
164				Potential	Obs.	Test	Critical	Critical				
165	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
166	1	19.91	9.789	46.1	53	2.675	3.165	3.52				
167												
168	For 5% Significance Level, there is no Potential Outlier											
169												
170	For 1% Significance Level, there is no Potential Outlier											
171												
172												
173			Rosner's Outlier Test for Arsenic (mg/L)									
174												
175												
176			Mean	7.0345E-4								
177			Standard Deviation	4.7920E-4								
178			Number of data	55								
179			Number of suspected outliers	1								
180												
181				Potential	Obs.	Test	Critical	Critical				
182	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
183	1	7.0345E-4	4.7483E-4	0.0022	1	3.152	3.165	3.52				
184												
185	For 5% Significance Level, there is no Potential Outlier											
186												
187	For 1% Significance Level, there is no Potential Outlier											
188												
189												
190			Rosner's Outlier Test for Chromium (mg/L)									
191												
192												
193			Mean	0.00564								
194			Standard Deviation	0.00689								
195			Number of data	55								
196			Number of suspected outliers	1								
197												
198				Potential	Obs.	Test	Critical	Critical				
199	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
200	1	0.00564	0.00683	0.027	29	3.127	3.165	3.52				
201												
202	For 5% Significance Level, there is no Potential Outlier											
203												
204	For 1% Significance Level, there is no Potential Outlier											
205												
206												
207			Rosner's Outlier Test for Copper (mg/L)									
208												
209												
210			Mean	0.003								
211			Standard Deviation	0.00285								
212			Number of data	55								

	A	B	C	D	E	F	G	H	I	J	K	L
213	Number of suspected outliers			1								
214												
215				Potential	Obs.	Test	Critical	Critical				
216	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
217	1	0.003	0.00283	0.0123	35	3.288	3.165	3.52				
218												
219	For 5% Significance Level, there is 1 Potential Outlier											
220	Potential outliers is: 0.0123											
221												
222	For 1% Significance Level, there is no Potential Outlier											
223												
224												
225	Rosner's Outlier Test for Manganese (mg/L)											
226												
227												
228			Mean	0.191								
229			Standard Deviation	0.305								
230			Number of data	31								
231			Number of suspected outliers	1								
232												
233				Potential	Obs.	Test	Critical	Critical				
234	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
235	1	0.191	0.3	1.29	21	3.657	2.92	3.25				
236												
237	For 5% Significance Level, there is 1 Potential Outlier											
238	Potential outliers is: 1.29											
239												
240	For 1% Significance Level, there is 1 Potential Outlier											
241	Potential outliers is: 1.29											
242												
243												
244	Rosner's Outlier Test for Nickel (mg/L)											
245												
246												
247			Mean	0.00558								
248			Standard Deviation	0.00653								
249			Number of data	33								
250			Number of suspected outliers	1								
251												
252				Potential	Obs.	Test	Critical	Critical				
253	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
254	1	0.00558	0.00643	0.0335	21	4.342	2.95	3.29				
255												
256	For 5% Significance Level, there is 1 Potential Outlier											
257	Potential outliers is: 0.0335											
258												
259	For 1% Significance Level, there is 1 Potential Outlier											
260	Potential outliers is: 0.0335											
261												
262												
263	Rosner's Outlier Test for Zinc (mg/L)											
264												
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266			Mean	0.0046								
267			Standard Deviation	0.00432								
268			Number of data	33								
269			Number of suspected outliers	1								
270												
271				Potential	Obs.	Test	Critical	Critical				
272	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
273	1	0.0046	0.00426	0.0179	13	3.126	2.95	3.29				
274												
275	For 5% Significance Level, there is 1 Potential Outlier											
276	Potential outliers is: 0.0179											
277												
278	For 1% Significance Level, there is no Potential Outlier											
279												
280												
281			Rosner's Outlier Test for TOC (mg/L)									
282												
283												
284			Mean	1.887								
285			Standard Deviation	0.663								
286			Number of data	39								
287			Number of suspected outliers	1								
288												
289				Potential	Obs.	Test	Critical	Critical				
290	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
291	1	1.887	0.654	4.3	1	3.689	3.03	3.37				
292												
293	For 5% Significance Level, there is 1 Potential Outlier											
294	Potential outliers is: 4.3											
295												
296	For 1% Significance Level, there is 1 Potential Outlier											
297	Potential outliers is: 4.3											
298												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/12/2024 2:21:12 PM								
4				From File	2024-ShallowProUCL_i.xls							
5				Full Precision	OFF							
6												
7				11-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.592								
12			Standard Deviation	0.346								
13			Number of data	38								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.592	0.341	6.9	7	2.028	3.01	3.36				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	481.1								
29			Standard Deviation	90.53								
30			Number of data	38								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	481.1	89.33	747	38	2.976	3.01	3.36				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Sulphate (mg/L)								
43												
44												
45			Mean	37.02								
46			Standard Deviation	50.1								
47			Number of data	32								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	37.02	49.31	198	32	3.265	2.94	3.27				
53												

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 198

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 20

10% critical value: 0.401

5% critical value: 0.45

1% critical value: 0.535

1. Observation Value 14.2 is a Potential Outlier (Upper

Test Statistic: 0.150

For 10% significance level, 14.2 is not an outlier.

For 5% significance level, 14.2 is not an outlier.

For 1% significance level, 14.2 is not an outlier.

2. Observation Value 3.3 is a Potential Outlier (Lower T

Test Statistic: 0.427

For 10% significance level, 3.3 is an outlier.

For 5% significance level, 3.3 is not an outlier.

For 1% significance level, 3.3 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	536
Standard Deviation	37.86
Number of data	37
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	536	37.34	607	32	1.901	3	3.34

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Calcium (mg/L)

Mean	123.1
Standard Deviation	18.3
Number of data	38

	A	B	C	D	E	F	G	H	I	J	K	L
107	Number of suspected outliers			1								
108												
109				Potential	Obs.	Test	Critical	Critical				
110	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
111	1	123.1	18.06	165	37	2.322	3.01	3.36				
112												
113	For 5% Significance Level, there is no Potential Outlier											
114												
115	For 1% Significance Level, there is no Potential Outlier											
116												
117												
118	Rosner's Outlier Test for Magnesium (mg/L)											
119												
120												
121	Mean			27.04								
122	Standard Deviation			3.161								
123	Number of data			38								
124	Number of suspected outliers			1								
125												
126				Potential	Obs.	Test	Critical	Critical				
127	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
128	1	27.04	3.119	33.7	38	2.136	3.01	3.36				
129												
130	For 5% Significance Level, there is no Potential Outlier											
131												
132	For 1% Significance Level, there is no Potential Outlier											
133												
134												
135	Rosner's Outlier Test for Sodium (mg/L)											
136												
137												
138	Mean			25.62								
139	Standard Deviation			9.931								
140	Number of data			38								
141	Number of suspected outliers			1								
142												
143				Potential	Obs.	Test	Critical	Critical				
144	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
145	1	25.62	9.8	47.4	38	2.222	3.01	3.36				
146												
147	For 5% Significance Level, there is no Potential Outlier											
148												
149	For 1% Significance Level, there is no Potential Outlier											
150												
151												
152	Rosner's Outlier Test for Arsenic (mg/L)											
153												
154												
155	Mean			0.00178								
156	Standard Deviation			0.00298								
157	Number of data			38								
158	Number of suspected outliers			1								
159												

	A	B	C	D	E	F	G	H	I	J	K	L
160				Potential	Obs.	Test	Critical	Critical				
161	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
162	1	0.00178	0.00294	0.013	13	3.809	3.01	3.36				
163												
164	For 5% Significance Level, there is 1 Potential Outlier											
165	Potential outliers is: 0.013											
166												
167	For 1% Significance Level, there is 1 Potential Outlier											
168	Potential outliers is: 0.013											
169												
170												
171				Rosner's Outlier Test for Copper (mg/L)								
172												
173												
174			Mean	0.00246								
175			Standard Deviation	0.00172								
176			Number of data	38								
177			Number of suspected outliers	1								
178												
179				Potential	Obs.	Test	Critical	Critical				
180	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
181	1	0.00246	0.00169	0.007	5	2.677	3.01	3.36				
182												
183	For 5% Significance Level, there is no Potential Outlier											
184												
185	For 1% Significance Level, there is no Potential Outlier											
186												
187												
188				Rosner's Outlier Test for Iron (mg/L)								
189												
190												
191			Mean	2.621								
192			Standard Deviation	3.964								
193			Number of data	31								
194			Number of suspected outliers	1								
195												
196				Potential	Obs.	Test	Critical	Critical				
197	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
198	1	2.621	3.899	12.9	9	2.636	2.92	3.25				
199												
200	For 5% Significance Level, there is no Potential Outlier											
201												
202	For 1% Significance Level, there is no Potential Outlier											
203												
204												
205				Rosner's Outlier Test for Manganese (mg/L)								
206												
207												
208			Mean	0.524								
209			Standard Deviation	0.119								
210			Number of data	31								
211			Number of suspected outliers	1								
212												

			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	0.524	0.117	0.226	20	2.544	2.92	3.25	

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Nickel (mg/L)

Mean	0.00599
Standard Deviation	0.00577
Number of data	32
Number of suspected outliers	1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	0.00599	0.00568	0.027	2	3.697	2.94	3.27

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.027

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.027

Rosner's Outlier Test for Zinc (mg/L)

Mean	0.00877
Standard Deviation	0.0164
Number of data	32
Number of suspected outliers	1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	0.00877	0.0161	0.097	3	5.466	2.94	3.27

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.097

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.097

Dixon's Outlier Test for TOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267	1. Observation Value 17.2 is a Potential Outlier (Upper											
268												
269	Test Statistic: 0.519											
270												
271	For 10% significance level, 17.2 is an outlier.											
272	For 5% significance level, 17.2 is an outlier.											
273	For 1% significance level, 17.2 is not an outlier.											
274												
275	2. Observation Value 10.6 is a Potential Outlier (Lower											
276												
277	Test Statistic: 0.316											
278												
279	For 10% significance level, 10.6 is not an outlier.											
280	For 5% significance level, 10.6 is not an outlier.											
281	For 1% significance level, 10.6 is not an outlier.											
282												

				Outlier Tests for Selected Uncensored Variables				
			User Selected Options					
		Date/Time of Computation	ProUCL 5.112/12/2024 2:22:04 PM					
			From File	2024-ShallowProUCL_j.xls				
			Full Precision	OFF				
			12-SH OUTLIERS					
			Rosner's Outlier Test for pH ()					
			Mean	7.929				
			Standard Deviation	0.258				
			Number of data	38				
			Number of suspected outliers	1				
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	7.929	0.255	7.37	9	2.194	3.01	3.36	
For 5% Significance Level, there is no Potential Outlier								
For 1% Significance Level, there is no Potential Outlier								
			Rosner's Outlier Test for TDS (mg/L)					
			Mean	284.4				
			Standard Deviation	60.48				
			Number of data	38				
			Number of suspected outliers	1				
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	284.4	59.68	146	10	2.319	3.01	3.36	
For 5% Significance Level, there is no Potential Outlier								
For 1% Significance Level, there is no Potential Outlier								
			Rosner's Outlier Test for Sulphate (mg/L)					
			Mean	3.411				
			Standard Deviation	1.428				
			Number of data	33				
			Number of suspected outliers	1				
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	3.411	1.407	6.4	2	2.125	2.95	3.29	

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

1. Observation Value 3.3 is a Potential Outlier (Upper T

Test Statistic: 0.062

For 10% significance level, 3.3 is not an outlier.

For 5% significance level, 3.3 is not an outlier.

For 1% significance level, 3.3 is not an outlier.

2. Observation Value 1.24 is a Potential Outlier (Lower T

Test Statistic: 0.235

For 10% significance level, 1.24 is not an outlier.

For 5% significance level, 1.24 is not an outlier.

For 1% significance level, 1.24 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	355.5
Standard Deviation	75
Number of data	37
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	355.5	73.98	173	9	2.467	3	3.34

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Calcium (mg/L)

Mean	70.16
Standard Deviation	21.39
Number of data	38
Number of suspected outliers	1

	A	B	C	D	E	F	G	H	I	J	K	L
107												
108				Potential	Obs.	Test	Critical	Critical				
109	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
110	1	70.16	21.1	17.2	24	2.509	3.01	3.36				
111												
112	For 5% Significance Level, there is no Potential Outlier											
113												
114	For 1% Significance Level, there is no Potential Outlier											
115												
116												
117	Rosner's Outlier Test for Magnesium (mg/L)											
118												
119												
120			Mean	21.17								
121			Standard Deviation	4.518								
122			Number of data	38								
123			Number of suspected outliers	1								
124												
125				Potential	Obs.	Test	Critical	Critical				
126	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
127	1	21.17	4.458	10.4	10	2.415	3.01	3.36				
128												
129	For 5% Significance Level, there is no Potential Outlier											
130												
131	For 1% Significance Level, there is no Potential Outlier											
132												
133												
134	Rosner's Outlier Test for Sodium (mg/L)											
135												
136												
137			Mean	8.926								
138			Standard Deviation	2.451								
139			Number of data	38								
140			Number of suspected outliers	1								
141												
142				Potential	Obs.	Test	Critical	Critical				
143	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
144	1	8.926	2.418	3.89	10	2.083	3.01	3.36				
145												
146	For 5% Significance Level, there is no Potential Outlier											
147												
148	For 1% Significance Level, there is no Potential Outlier											
149												
150												
151	Rosner's Outlier Test for Arsenic (mg/L)											
152												
153												
154			Mean	8.9711E-4								
155			Standard Deviation	6.1995E-4								
156			Number of data	38								
157			Number of suspected outliers	1								
158												
159				Potential	Obs.	Test	Critical	Critical				

	A	B	C	D	E	F	G	H	I	J	K	L
160	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
161	1	8.9711E-4	6.1174E-4	0.00282	32	3.143	3.01	3.36				
162												
163	For 5% Significance Level, there is 1 Potential Outlier											
164	Potential outliers is: 0.00282											
165												
166	For 1% Significance Level, there is no Potential Outlier											
167												
168												
169				Rosner's Outlier Test for Copper (mg/L)								
170												
171												
172				Mean	0.00233							
173				Standard Deviation	0.00268							
174				Number of data	38							
175				Number of suspected outliers	1							
176												
177				Potential	Obs.	Test	Critical	Critical				
178	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
179	1	0.00233	0.00265	0.012	4	3.655	3.01	3.36				
180												
181	For 5% Significance Level, there is 1 Potential Outlier											
182	Potential outliers is: 0.012											
183												
184	For 1% Significance Level, there is 1 Potential Outlier											
185	Potential outliers is: 0.012											
186												
187												
188				Rosner's Outlier Test for Iron (mg/L)								
189												
190												
191				Mean	0.0903							
192				Standard Deviation	0.135							
193				Number of data	31							
194				Number of suspected outliers	1							
195												
196				Potential	Obs.	Test	Critical	Critical				
197	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
198	1	0.0903	0.133	0.62	25	3.976	2.92	3.25				
199												
200	For 5% Significance Level, there is 1 Potential Outlier											
201	Potential outliers is: 0.62											
202												
203	For 1% Significance Level, there is 1 Potential Outlier											
204	Potential outliers is: 0.62											
205												
206												
207				Rosner's Outlier Test for Manganese (mg/L)								
208												
209												
210				Mean	0.273							
211				Standard Deviation	0.229							
212				Number of data	31							

	A	B	C	D	E	F	G	H	I	J	K	L
213	Number of suspected outliers			1								
214												
215				Potential	Obs.	Test	Critical	Critical				
216	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
217	1	0.273	0.225	1.19	14	4.07	2.92	3.25				
218												
219	For 5% Significance Level, there is 1 Potential Outlier											
220	Potential outliers is: 1.19											
221												
222	For 1% Significance Level, there is 1 Potential Outlier											
223	Potential outliers is: 1.19											
224												
225												
226	Rosner's Outlier Test for Nickel (mg/L)											
227												
228												
229			Mean	0.00347								
230			Standard Deviation	0.00397								
231			Number of data	33								
232			Number of suspected outliers	1								
233												
234				Potential	Obs.	Test	Critical	Critical				
235	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
236	1	0.00347	0.00391	0.0153	16	3.027	2.95	3.29				
237												
238	For 5% Significance Level, there is 1 Potential Outlier											
239	Potential outliers is: 0.0153											
240												
241	For 1% Significance Level, there is no Potential Outlier											
242												
243												
244	Rosner's Outlier Test for Zinc (mg/L)											
245												
246												
247			Mean	0.00697								
248			Standard Deviation	0.0071								
249			Number of data	33								
250			Number of suspected outliers	1								
251												
252				Potential	Obs.	Test	Critical	Critical				
253	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
254	1	0.00697	0.00699	0.0307	32	3.395	2.95	3.29				
255												
256	For 5% Significance Level, there is 1 Potential Outlier											
257	Potential outliers is: 0.0307											
258												
259	For 1% Significance Level, there is 1 Potential Outlier											
260	Potential outliers is: 0.0307											
261												
262												
263	Dixon's Outlier Test for TOC (mg/L)											
264												
265	Number of Observations = 19											

	A	B	C	D	E	F	G	H	I	J	K	L
266	10% critical value: 0.412											
267	5% critical value: 0.462											
268	1% critical value: 0.547											
269												
270	1. Observation Value 2.5 is a Potential Outlier (Upper T											
271												
272	Test Statistic: 0.091											
273												
274	For 10% significance level, 2.5 is not an outlier.											
275	For 5% significance level, 2.5 is not an outlier.											
276	For 1% significance level, 2.5 is not an outlier.											
277												
278	2. Observation Value 1 is a Potential Outlier (Lower Tail											
279												
280	Test Statistic: 0.286											
281												
282	For 10% significance level, 1 is not an outlier.											
283	For 5% significance level, 1 is not an outlier.											
284	For 1% significance level, 1 is not an outlier.											
285												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3		Date/Time of Computation		ProUCL 5.112/12/2024 2:22:44 PM								
4				From File	2024-ShallowProUCL_k.xls							
5				Full Precision	OFF							
6												
7				13-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.765								
12			Standard Deviation	0.245								
13			Number of data	38								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.765	0.242	7.04	38	2.993	3.01	3.36				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	486.1								
29			Standard Deviation	168.1								
30			Number of data	38								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	486.1	165.8	811	13	1.959	3.01	3.36				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Chloride (mg/L)								
43												
44												
45			Mean	1.816								
46			Standard Deviation	0.884								
47			Number of data	38								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	1.816	0.872	5.08	26	3.742	3.01	3.36				
53												

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 5.08

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 5.08

Rosner's Outlier Test for Sulphate (mg/L)

Mean	42.48
Standard Deviation	17.55
Number of data	33
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	42.48	17.28	89.6	33	2.727	2.95	3.29

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

1. Observation Value 8.39 is a Potential Outlier (Upper

Test Statistic: 0.803

For 10% significance level, 8.39 is an outlier.

For 5% significance level, 8.39 is an outlier.

For 1% significance level, 8.39 is an outlier.

2. Observation Value 1.14 is a Potential Outlier (Lower

Test Statistic: 0.337

For 10% significance level, 1.14 is not an outlier.

For 5% significance level, 1.14 is not an outlier.

For 1% significance level, 1.14 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	543
Standard Deviation	206.4

	A	B	C	D	E	F	G	H	I	J	K	L
107			Number of data	38								
108			Number of suspected outliers	1								
109												
110				Potential	Obs.	Test	Critical	Critical				
111	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
112	1	543	203.7	973	14	2.111	3.01	3.36				
113												
114	For 5% Significance Level, there is no Potential Outlier											
115												
116	For 1% Significance Level, there is no Potential Outlier											
117												
118												
119			Rosner's Outlier Test for Calcium (mg/L)									
120												
121												
122			Mean	114.8								
123			Standard Deviation	39.07								
124			Number of data	38								
125			Number of suspected outliers	1								
126												
127				Potential	Obs.	Test	Critical	Critical				
128	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
129	1	114.8	38.55	202	13	2.263	3.01	3.36				
130												
131	For 5% Significance Level, there is no Potential Outlier											
132												
133	For 1% Significance Level, there is no Potential Outlier											
134												
135												
136			Rosner's Outlier Test for Magnesium (mg/L)									
137												
138												
139			Mean	31.36								
140			Standard Deviation	11.98								
141			Number of data	38								
142			Number of suspected outliers	1								
143												
144				Potential	Obs.	Test	Critical	Critical				
145	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
146	1	31.36	11.82	57.2	13	2.186	3.01	3.36				
147												
148	For 5% Significance Level, there is no Potential Outlier											
149												
150	For 1% Significance Level, there is no Potential Outlier											
151												
152												
153			Rosner's Outlier Test for Sodium (mg/L)									
154												
155												
156			Mean	26.3								
157			Standard Deviation	14.53								
158			Number of data	38								
159			Number of suspected outliers	1								

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161				Potential	Obs.	Test	Critical	Critical				
162	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
163	1	26.3	14.33	72.6	20	3.23	3.01	3.36				
164												
165	For 5% Significance Level, there is 1 Potential Outlier											
166	Potential outliers is: 72.6											
167												
168	For 1% Significance Level, there is no Potential Outlier											
169												
170												
171				Rosner's Outlier Test for Arsenic (mg/L)								
172												
173												
174				Mean	0.00133							
175				Standard Deviation	9.2186E-4							
176				Number of data	38							
177				Number of suspected outliers	1							
178												
179				Potential	Obs.	Test	Critical	Critical				
180	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
181	1	0.00133	9.0965E-4	0.00355	32	2.442	3.01	3.36				
182												
183	For 5% Significance Level, there is no Potential Outlier											
184												
185	For 1% Significance Level, there is no Potential Outlier											
186												
187												
188				Rosner's Outlier Test for Cadmium (mg/L)								
189												
190												
191				Mean	7.3011E-4							
192				Standard Deviation	0.00115							
193				Number of data	38							
194				Number of suspected outliers	1							
195												
196				Potential	Obs.	Test	Critical	Critical				
197	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
198	1	7.3011E-4	0.00113	0.003	2	2.009	3.01	3.36				
199												
200	For 5% Significance Level, there is no Potential Outlier											
201												
202	For 1% Significance Level, there is no Potential Outlier											
203												
204												
205				Rosner's Outlier Test for Chromium (mg/L)								
206												
207												
208				Mean	0.00518							
209				Standard Deviation	0.00641							
210				Number of data	38							
211				Number of suspected outliers	1							
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213				Potential	Obs.	Test	Critical	Critical				
214	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
215	1	0.00518	0.00632	0.022	20	2.66	3.01	3.36				
216												
217	For 5% Significance Level, there is no Potential Outlier											
218												
219	For 1% Significance Level, there is no Potential Outlier											
220												
221												
222				Rosner's Outlier Test for Copper (mg/L)								
223												
224												
225				Mean	0.00689							
226				Standard Deviation	0.0174							
227				Number of data	38							
228				Number of suspected outliers	1							
229												
230				Potential	Obs.	Test	Critical	Critical				
231	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
232	1	0.00689	0.0172	0.103	7	5.587	3.01	3.36				
233												
234	For 5% Significance Level, there is 1 Potential Outlier											
235	Potential outliers is: 0.103											
236												
237	For 1% Significance Level, there is 1 Potential Outlier											
238	Potential outliers is: 0.103											
239												
240												
241				Rosner's Outlier Test for Manganese (mg/L)								
242												
243												
244				Mean	0.12							
245				Standard Deviation	0.118							
246				Number of data	31							
247				Number of suspected outliers	1							
248												
249				Potential	Obs.	Test	Critical	Critical				
250	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
251	1	0.12	0.116	0.442	6	2.771	2.92	3.25				
252												
253	For 5% Significance Level, there is no Potential Outlier											
254												
255	For 1% Significance Level, there is no Potential Outlier											
256												
257												
258				Rosner's Outlier Test for Nickel (mg/L)								
259												
260												
261				Mean	0.00743							
262				Standard Deviation	0.00787							
263				Number of data	33							
264				Number of suspected outliers	1							
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266				Potential	Obs.	Test	Critical	Critical				
267	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
268	1	0.00743	0.00775	0.034	2	3.431	2.95	3.29				
269												
270	For 5% Significance Level, there is 1 Potential Outlier											
271	Potential outliers is: 0.034											
272												
273	For 1% Significance Level, there is 1 Potential Outlier											
274	Potential outliers is: 0.034											
275												
276												
277	Rosner's Outlier Test for Zinc (mg/L)											
278												
279												
280			Mean	0.0222								
281			Standard Deviation	0.0476								
282			Number of data	33								
283			Number of suspected outliers	1								
284												
285				Potential	Obs.	Test	Critical	Critical				
286	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
287	1	0.0222	0.0469	0.245	22	4.755	2.95	3.29				
288												
289	For 5% Significance Level, there is 1 Potential Outlier											
290	Potential outliers is: 0.245											
291												
292	For 1% Significance Level, there is 1 Potential Outlier											
293	Potential outliers is: 0.245											
294												
295												
296	Dixon's Outlier Test for TOC (mg/L)											
297												
298	Number of Observations = 19											
299	10% critical value: 0.412											
300	5% critical value: 0.462											
301	1% critical value: 0.547											
302												
303	1. Observation Value 4.5 is a Potential Outlier (Upper T											
304												
305	Test Statistic: 0.233											
306												
307	For 10% significance level, 4.5 is not an outlier.											
308	For 5% significance level, 4.5 is not an outlier.											
309	For 1% significance level, 4.5 is not an outlier.											
310												
311	2. Observation Value 1 is a Potential Outlier (Lower Tail											
312												
313	Test Statistic: 0.179											
314												
315	For 10% significance level, 1 is not an outlier.											
316	For 5% significance level, 1 is not an outlier.											
317	For 1% significance level, 1 is not an outlier.											
318												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3		Date/Time of Computation		ProUCL 5.112/12/2024 2:24:29 PM								
4				From File	2024-ShallowProUCL_I.xls							
5				Full Precision	OFF							
6												
7				14-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.698								
12			Standard Deviation	0.324								
13			Number of data	33								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.698	0.319	6.86	8	2.622	2.95	3.29				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	511.3								
29			Standard Deviation	165.7								
30			Number of data	33								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	511.3	163.2	237	28	1.681	2.95	3.29				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Chloride (mg/L)								
43												
44												
45			Mean	4.131								
46			Standard Deviation	3.475								
47			Number of data	33								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	4.131	3.422	17.1	9	3.79	2.95	3.29				
53												

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 17.1

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 17.1

Rosner's Outlier Test for Sulphate (mg/L)

Mean	28.3
Standard Deviation	21.91
Number of data	32
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	28.3	21.57	106	8	3.602	2.94	3.27

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 106

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 106

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

1. Observation Value 6.5 is a Potential Outlier (Upper T

Test Statistic: 0.492

For 10% significance level, 6.5 is an outlier.

For 5% significance level, 6.5 is an outlier.

For 1% significance level, 6.5 is not an outlier.

2. Observation Value 0.64 is a Potential Outlier (Lower T

Test Statistic: 0.542

For 10% significance level, 0.64 is an outlier.

For 5% significance level, 0.64 is an outlier.

For 1% significance level, 0.64 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

	A	B	C	D	E	F	G	H	I	J	K	L
107			Mean	596.1								
108			Standard Deviation	222.7								
109			Number of data	33								
110			Number of suspected outliers	1								
111												
112				Potential	Obs.	Test	Critical	Critical				
113	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
114	1	596.1	219.3	916	16	1.459	2.95	3.29				
115												
116	For 5% Significance Level, there is no Potential Outlier											
117												
118	For 1% Significance Level, there is no Potential Outlier											
119												
120												
121			Rosner's Outlier Test for Calcium (mg/L)									
122												
123												
124			Mean	122.9								
125			Standard Deviation	46.62								
126			Number of data	33								
127			Number of suspected outliers	1								
128												
129				Potential	Obs.	Test	Critical	Critical				
130	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
131	1	122.9	45.91	22.8	28	2.181	2.95	3.29				
132												
133	For 5% Significance Level, there is no Potential Outlier											
134												
135	For 1% Significance Level, there is no Potential Outlier											
136												
137												
138			Rosner's Outlier Test for Magnesium (mg/L)									
139												
140												
141			Mean	34.32								
142			Standard Deviation	13.06								
143			Number of data	33								
144			Number of suspected outliers	1								
145												
146				Potential	Obs.	Test	Critical	Critical				
147	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
148	1	34.32	12.86	6.16	28	2.19	2.95	3.29				
149												
150	For 5% Significance Level, there is no Potential Outlier											
151												
152	For 1% Significance Level, there is no Potential Outlier											
153												
154												
155			Rosner's Outlier Test for Sodium (mg/L)									
156												
157												
158			Mean	22.56								
159			Standard Deviation	11.02								

160			Number of data	33								
161			Number of suspected outliers	1								
162												
163				Potential	Obs.	Test	Critical	Critical				
164	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
165	1	22.56	10.85	64.1	8	3.829	2.95	3.29				
166												
167	For 5% Significance Level, there is 1 Potential Outlier											
168	Potential outliers is: 64.1											
169												
170	For 1% Significance Level, there is 1 Potential Outlier											
171	Potential outliers is: 64.1											
172												
173												
174			Rosner's Outlier Test for Arsenic (mg/L)									
175												
176												
177			Mean	3.5364E-4								
178			Standard Deviation	2.0351E-4								
179			Number of data	33								
180			Number of suspected outliers	1								
181												
182				Potential	Obs.	Test	Critical	Critical				
183	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
184	1	3.5364E-4	2.0041E-4	0.0012	15	4.223	2.95	3.29				
185												
186	For 5% Significance Level, there is 1 Potential Outlier											
187	Potential outliers is: 0.0012											
188												
189	For 1% Significance Level, there is 1 Potential Outlier											
190	Potential outliers is: 0.0012											
191												
192												
193			Rosner's Outlier Test for Cadmium (mg/L)									
194												
195												
196			Mean	6.7731E-4								
197			Standard Deviation	0.00107								
198			Number of data	33								
199			Number of suspected outliers	1								
200												
201				Potential	Obs.	Test	Critical	Critical				
202	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
203	1	6.7731E-4	0.00105	0.0031	32	2.308	2.95	3.29				
204												
205	For 5% Significance Level, there is no Potential Outlier											
206												
207	For 1% Significance Level, there is no Potential Outlier											
208												
209												
210			Rosner's Outlier Test for Chromium (mg/L)									
211												
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213			Mean	0.00379								
214			Standard Deviation	0.00348								
215			Number of data	33								
216			Number of suspected outliers	1								
217												
218				Potential	Obs.	Test	Critical	Critical				
219	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
220	1	0.00379	0.00343	0.016	13	3.561	2.95	3.29				
221												
222	For 5% Significance Level, there is 1 Potential Outlier											
223	Potential outliers is: 0.016											
224												
225	For 1% Significance Level, there is 1 Potential Outlier											
226	Potential outliers is: 0.016											
227												
228												
229			Rosner's Outlier Test for Copper (mg/L)									
230												
231												
232			Mean	0.00328								
233			Standard Deviation	0.00284								
234			Number of data	33								
235			Number of suspected outliers	1								
236												
237				Potential	Obs.	Test	Critical	Critical				
238	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
239	1	0.00328	0.0028	0.01	6	2.403	2.95	3.29				
240												
241	For 5% Significance Level, there is no Potential Outlier											
242												
243	For 1% Significance Level, there is no Potential Outlier											
244												
245												
246			Rosner's Outlier Test for Manganese (mg/L)									
247												
248												
249			Mean	0.263								
250			Standard Deviation	0.275								
251			Number of data	31								
252			Number of suspected outliers	1								
253												
254				Potential	Obs.	Test	Critical	Critical				
255	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
256	1	0.263	0.271	1.07	7	2.981	2.92	3.25				
257												
258	For 5% Significance Level, there is 1 Potential Outlier											
259	Potential outliers is: 1.07											
260												
261	For 1% Significance Level, there is no Potential Outlier											
262												
263												
264			Rosner's Outlier Test for Nickel (mg/L)									
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267			Mean	0.00949								
268			Standard Deviation	0.0129								
269			Number of data	32								
270			Number of suspected outliers	1								
271												
272				Potential	Obs.	Test	Critical	Critical				
273	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
274	1	0.00949	0.0127	0.057	2	3.746	2.94	3.27				
275												
276	For 5% Significance Level, there is 1 Potential Outlier											
277	Potential outliers is: 0.057											
278												
279	For 1% Significance Level, there is 1 Potential Outlier											
280	Potential outliers is: 0.057											
281												
282												
283			Rosner's Outlier Test for Zinc (mg/L)									
284												
285												
286			Mean	0.0259								
287			Standard Deviation	0.0432								
288			Number of data	32								
289			Number of suspected outliers	1								
290												
291				Potential	Obs.	Test	Critical	Critical				
292	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
293	1	0.0259	0.0425	0.211	21	4.357	2.94	3.27				
294												
295	For 5% Significance Level, there is 1 Potential Outlier											
296	Potential outliers is: 0.211											
297												
298	For 1% Significance Level, there is 1 Potential Outlier											
299	Potential outliers is: 0.211											
300												
301												
302	Dixon's Outlier Test for TOC (mg/L)											
303												
304	Number of Observations = 14											
305	10% critical value: 0.492											
306	5% critical value: 0.546											
307	1% critical value: 0.641											
308												
309	1. Observation Value 5.5 is a Potential Outlier (Upper T											
310												
311	Test Statistic: 0.235											
312												
313	For 10% significance level, 5.5 is not an outlier.											
314	For 5% significance level, 5.5 is not an outlier.											
315	For 1% significance level, 5.5 is not an outlier.											
316												
317	2. Observation Value 1.5 is a Potential Outlier (Lower T											
318												

	A	B	C	D	E	F	G	H	I	J	K	L
319	Test Statistic: 0.188											
320												
321	For 10% significance level, 1.5 is not an outlier.											
322	For 5% significance level, 1.5 is not an outlier.											
323	For 1% significance level, 1.5 is not an outlier.											
324												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/12/2024 2:25:17 PM								
4				From File	2024-ShallowProUCL_m.xls							
5				Full Precision	OFF							
6												
7				15-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.757								
12			Standard Deviation	0.371								
13			Number of data	35								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.757	0.365	7.01	6	2.045	2.98	3.32				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	374.9								
29			Standard Deviation	47.17								
30			Number of data	35								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	374.9	46.49	231	1	3.096	2.98	3.32				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 231											
39												
40	For 1% Significance Level, there is no Potential Outlier											
41												
42												
43				Dixon's Outlier Test for Chloride (mg/L)								
44												
45	Number of Observations = 17											
46	10% critical value: 0.438											
47	5% critical value: 0.49											
48	1% critical value: 0.577											
49												
50	1. Observation Value 3.2 is a Potential Outlier (Upper T											
51												
52	Test Statistic: 0.651											
53												

For 10% significance level, 3.2 is an outlier.

For 5% significance level, 3.2 is an outlier.

For 1% significance level, 3.2 is an outlier.

2. Observation Value 0.5 is a Potential Outlier (Lower T

Test Statistic: 0.090

For 10% significance level, 0.5 is not an outlier.

For 5% significance level, 0.5 is not an outlier.

For 1% significance level, 0.5 is not an outlier.

Rosner's Outlier Test for Sulphate (mg/L)

Mean	29.86
Standard Deviation	20.14
Number of data	33
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	29.86	19.84	91.5	6	3.107	2.95	3.29

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 91.5

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

1. Observation Value 7.2 is a Potential Outlier (Upper T

Test Statistic: 0.227

For 10% significance level, 7.2 is not an outlier.

For 5% significance level, 7.2 is not an outlier.

For 1% significance level, 7.2 is not an outlier.

2. Observation Value 4.3 is a Potential Outlier (Lower T

Test Statistic: 0.113

For 10% significance level, 4.3 is not an outlier.

For 5% significance level, 4.3 is not an outlier.

For 1% significance level, 4.3 is not an outlier.

	A	B	C	D	E	F	G	H	I	J	K	L
107												
108												
109				Rosner's Outlier Test for Bicarbonate (mg/L)								
110												
111												
112				Mean	410.7							
113				Standard Deviation	62.7							
114				Number of data	35							
115				Number of suspected outliers	1							
116												
117				Potential	Obs.	Test	Critical	Critical				
118	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
119	1	410.7	61.79	275	1	2.197	2.98	3.32				
120												
121	For 5% Significance Level, there is no Potential Outlier											
122												
123	For 1% Significance Level, there is no Potential Outlier											
124												
125												
126				Rosner's Outlier Test for Calcium (mg/L)								
127												
128												
129				Mean	90.04							
130				Standard Deviation	11.38							
131				Number of data	35							
132				Number of suspected outliers	1							
133												
134				Potential	Obs.	Test	Critical	Critical				
135	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
136	1	90.04	11.21	58.2	1	2.839	2.98	3.32				
137												
138	For 5% Significance Level, there is no Potential Outlier											
139												
140	For 1% Significance Level, there is no Potential Outlier											
141												
142												
143				Rosner's Outlier Test for Magnesium (mg/L)								
144												
145												
146				Mean	20.35							
147				Standard Deviation	2.553							
148				Number of data	35							
149				Number of suspected outliers	1							
150												
151				Potential	Obs.	Test	Critical	Critical				
152	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
153	1	20.35	2.516	14	2	2.524	2.98	3.32				
154												
155	For 5% Significance Level, there is no Potential Outlier											
156												
157	For 1% Significance Level, there is no Potential Outlier											
158												
159												

	A	B	C	D	E	F	G	H	I	J	K	L
160	Rosner's Outlier Test for Sodium (mg/L)											
161												
162												
163			Mean	26.2								
164			Standard Deviation	7.396								
165			Number of data	35								
166			Number of suspected outliers	1								
167												
168				Potential	Obs.	Test	Critical	Critical				
169	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
170	1	26.2	7.289	5.71	1	2.811	2.98	3.32				
171												
172	For 5% Significance Level, there is no Potential Outlier											
173												
174	For 1% Significance Level, there is no Potential Outlier											
175												
176												
177	Rosner's Outlier Test for Arsenic (mg/L)											
178												
179												
180			Mean	3.5200E-4								
181			Standard Deviation	3.0938E-4								
182			Number of data	35								
183			Number of suspected outliers	1								
184												
185				Potential	Obs.	Test	Critical	Critical				
186	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
187	1	3.5200E-4	3.0493E-4	0.00144	24	3.568	2.98	3.32				
188												
189	For 5% Significance Level, there is 1 Potential Outlier											
190	Potential outliers is: 0.00144											
191												
192	For 1% Significance Level, there is 1 Potential Outlier											
193	Potential outliers is: 0.00144											
194												
195												
196	Rosner's Outlier Test for Chromium (mg/L)											
197												
198												
199			Mean	0.00343								
200			Standard Deviation	0.0064								
201			Number of data	35								
202			Number of suspected outliers	1								
203												
204				Potential	Obs.	Test	Critical	Critical				
205	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
206	1	0.00343	0.0063	0.035	10	5.007	2.98	3.32				
207												
208	For 5% Significance Level, there is 1 Potential Outlier											
209	Potential outliers is: 0.035											
210												
211	For 1% Significance Level, there is 1 Potential Outlier											
212	Potential outliers is: 0.035											

	A	B	C	D	E	F	G	H	I	J	K	L
213												
214												
215				Rosner's Outlier Test for Copper (mg/L)								
216												
217												
218				Mean	0.00411							
219				Standard Deviation	0.00375							
220				Number of data	35							
221				Number of suspected outliers	1							
222												
223				Potential	Obs.	Test	Critical	Critical				
224	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
225	1	0.00411	0.00369	0.018	5	3.762	2.98	3.32				
226												
227	For 5% Significance Level, there is 1 Potential Outlier											
228	Potential outliers is: 0.018											
229												
230	For 1% Significance Level, there is 1 Potential Outlier											
231	Potential outliers is: 0.018											
232												
233												
234				Rosner's Outlier Test for Manganese (mg/L)								
235												
236												
237				Mean	0.308							
238				Standard Deviation	0.219							
239				Number of data	31							
240				Number of suspected outliers	1							
241												
242				Potential	Obs.	Test	Critical	Critical				
243	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
244	1	0.308	0.215	0.678	20	1.718	2.92	3.25				
245												
246	For 5% Significance Level, there is no Potential Outlier											
247												
248	For 1% Significance Level, there is no Potential Outlier											
249												
250												
251				Rosner's Outlier Test for Nickel (mg/L)								
252												
253												
254				Mean	0.00961							
255				Standard Deviation	0.0121							
256				Number of data	33							
257				Number of suspected outliers	1							
258												
259				Potential	Obs.	Test	Critical	Critical				
260	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
261	1	0.00961	0.0119	0.0626	31	4.457	2.95	3.29				
262												
263	For 5% Significance Level, there is 1 Potential Outlier											
264	Potential outliers is: 0.0626											
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266	For 1% Significance Level, there is 1 Potential Outlier											
267	Potential outliers is: 0.0626											
268												
269												
270				Rosner's Outlier Test for Zinc (mg/L)								
271												
272												
273				Mean	0.0051							
274				Standard Deviation	0.00494							
275				Number of data	33							
276				Number of suspected outliers	1							
277												
278				Potential	Obs.	Test	Critical	Critical				
279	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
280	1	0.0051	0.00487	0.02	3	3.062	2.95	3.29				
281												
282	For 5% Significance Level, there is 1 Potential Outlier											
283	Potential outliers is: 0.02											
284												
285	For 1% Significance Level, there is no Potential Outlier											
286												
287												
288				Dixon's Outlier Test for TOC (mg/L)								
289												
290	Number of Observations = 16											
291	10% critical value: 0.454											
292	5% critical value: 0.507											
293	1% critical value: 0.595											
294												
295	1. Observation Value 12.5 is a Potential Outlier (Upper											
296												
297	Test Statistic: 0.864											
298												
299	For 10% significance level, 12.5 is an outlier.											
300	For 5% significance level, 12.5 is an outlier.											
301	For 1% significance level, 12.5 is an outlier.											
302												
303	2. Observation Value 2.3 is a Potential Outlier (Lower T											
304												
305	Test Statistic: 0.656											
306												
307	For 10% significance level, 2.3 is an outlier.											
308	For 5% significance level, 2.3 is an outlier.											
309	For 1% significance level, 2.3 is an outlier.											
310												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/12/2024 2:26:03 PM								
4				From File	2024-ShallowProUCL_n.xls							
5				Full Precision	OFF							
6												
7				16-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.892								
12			Standard Deviation	0.258								
13			Number of data	30								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.892	0.254	7.28	4	2.409	2.91	3.24				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	446.3								
29			Standard Deviation	18.16								
30			Number of data	30								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	446.3	17.86	500	27	3.009	2.91	3.24				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 500											
39												
40	For 1% Significance Level, there is no Potential Outlier											
41												
42												
43				Rosner's Outlier Test for Chloride (mg/L)								
44												
45												
46			Mean	0.934								
47			Standard Deviation	0.395								
48			Number of data	30								
49			Number of suspected outliers	1								
50												
51				Potential	Obs.	Test	Critical	Critical				
52	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
53	1	0.934	0.388	1.9	1	2.49	2.91	3.24				

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sulphate (mg/L)

Mean	42.4
Standard Deviation	13.97
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	42.4	13.73	90.1	27	3.473	2.91	3.24

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 90.1

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 90.1

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

1. Observation Value 5.5 is a Potential Outlier (Upper T

Test Statistic: 0.478

For 10% significance level, 5.5 is an outlier.

For 5% significance level, 5.5 is an outlier.

For 1% significance level, 5.5 is not an outlier.

2. Observation Value 2.72 is a Potential Outlier (Lower T

Test Statistic: 0.286

For 10% significance level, 2.72 is not an outlier.

For 5% significance level, 2.72 is not an outlier.

For 1% significance level, 2.72 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	480.6

	A	B	C	D	E	F	G	H	I	J	K	L
107			Standard Deviation	17.38								
108			Number of data	30								
109			Number of suspected outliers	1								
110												
111				Potential	Obs.	Test	Critical	Critical				
112	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
113	1	480.6	17.09	522	25	2.421	2.91	3.24				
114												
115	For 5% Significance Level, there is no Potential Outlier											
116												
117	For 1% Significance Level, there is no Potential Outlier											
118												
119												
120			Rosner's Outlier Test for Calcium (mg/L)									
121												
122												
123			Mean	104.1								
124			Standard Deviation	7.027								
125			Number of data	30								
126			Number of suspected outliers	1								
127												
128				Potential	Obs.	Test	Critical	Critical				
129	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
130	1	104.1	6.909	119	27	2.155	2.91	3.24				
131												
132	For 5% Significance Level, there is no Potential Outlier											
133												
134	For 1% Significance Level, there is no Potential Outlier											
135												
136												
137			Rosner's Outlier Test for Magnesium (mg/L)									
138												
139												
140			Mean	29.88								
141			Standard Deviation	1.845								
142			Number of data	30								
143			Number of suspected outliers	1								
144												
145				Potential	Obs.	Test	Critical	Critical				
146	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
147	1	29.88	1.814	33.5	3	1.996	2.91	3.24				
148												
149	For 5% Significance Level, there is no Potential Outlier											
150												
151	For 1% Significance Level, there is no Potential Outlier											
152												
153												
154			Rosner's Outlier Test for Sodium (mg/L)									
155												
156												
157			Mean	25.53								
158			Standard Deviation	5.442								
159			Number of data	30								

	A	B	C	D	E	F	G	H	I	J	K	L
160	Number of suspected outliers			1								
161												
162				Potential	Obs.	Test	Critical	Critical				
163	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
164	1	25.53	5.35	38.3	20	2.386	2.91	3.24				
165												
166	For 5% Significance Level, there is no Potential Outlier											
167												
168	For 1% Significance Level, there is no Potential Outlier											
169												
170												
171	Rosner's Outlier Test for Arsenic (mg/L)											
172												
173												
174	Mean			2.3767E-4								
175	Standard Deviation			1.0881E-4								
176	Number of data			30								
177	Number of suspected outliers			1								
178												
179				Potential	Obs.	Test	Critical	Critical				
180	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
181	1	2.3767E-4	1.0698E-4	5.8000E-4	17	3.2	2.91	3.24				
182												
183	For 5% Significance Level, there is 1 Potential Outlier											
184	Potential outliers is: 5.8000E-4											
185												
186	For 1% Significance Level, there is no Potential Outlier											
187												
188												
189	Rosner's Outlier Test for Chromium (mg/L)											
190												
191												
192	Mean			0.00675								
193	Standard Deviation			0.00761								
194	Number of data			30								
195	Number of suspected outliers			1								
196												
197				Potential	Obs.	Test	Critical	Critical				
198	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
199	1	0.00675	0.00748	0.036	5	3.911	2.91	3.24				
200												
201	For 5% Significance Level, there is 1 Potential Outlier											
202	Potential outliers is: 0.036											
203												
204	For 1% Significance Level, there is 1 Potential Outlier											
205	Potential outliers is: 0.036											
206												
207												
208	Rosner's Outlier Test for Copper (mg/L)											
209												
210												
211	Mean			0.0038								
212	Standard Deviation			0.00565								

	A	B	C	D	E	F	G	H	I	J	K	L
213			Number of data	30								
214			Number of suspected outliers	1								
215												
216				Potential	Obs.	Test	Critical	Critical				
217	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
218	1	0.0038	0.00555	0.031	2	4.898	2.91	3.24				
219												
220	For 5% Significance Level, there is 1 Potential Outlier											
221	Potential outliers is: 0.031											
222												
223	For 1% Significance Level, there is 1 Potential Outlier											
224	Potential outliers is: 0.031											
225												
226												
227			Rosner's Outlier Test for Manganese (mg/L)									
228												
229												
230			Mean	0.0514								
231			Standard Deviation	0.122								
232			Number of data	28								
233			Number of suspected outliers	1								
234												
235				Potential	Obs.	Test	Critical	Critical				
236	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
237	1	0.0514	0.12	0.571	2	4.338	2.88	3.2				
238												
239	For 5% Significance Level, there is 1 Potential Outlier											
240	Potential outliers is: 0.571											
241												
242	For 1% Significance Level, there is 1 Potential Outlier											
243	Potential outliers is: 0.571											
244												
245												
246			Rosner's Outlier Test for Nickel (mg/L)									
247												
248												
249			Mean	0.00556								
250			Standard Deviation	0.0107								
251			Number of data	30								
252			Number of suspected outliers	1								
253												
254				Potential	Obs.	Test	Critical	Critical				
255	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
256	1	0.00556	0.0105	0.058	2	4.985	2.91	3.24				
257												
258	For 5% Significance Level, there is 1 Potential Outlier											
259	Potential outliers is: 0.058											
260												
261	For 1% Significance Level, there is 1 Potential Outlier											
262	Potential outliers is: 0.058											
263												
264												
265			Rosner's Outlier Test for Zinc (mg/L)									

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267												
268			Mean	0.00572								
269			Standard Deviation	0.00608								
270			Number of data	30								
271			Number of suspected outliers	1								
272												
273				Potential	Obs.	Test	Critical	Critical				
274	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
275	1	0.00572	0.00597	0.0262	19	3.429	2.91	3.24				
276												
277	For 5% Significance Level, there is 1 Potential Outlier											
278	Potential outliers is: 0.0262											
279												
280	For 1% Significance Level, there is 1 Potential Outlier											
281	Potential outliers is: 0.0262											
282												
283												
284	Dixon's Outlier Test for TOC (mg/L)											
285												
286	Number of Observations = 11											
287	10% critical value: 0.517											
288	5% critical value: 0.576											
289	1% critical value: 0.679											
290												
291	1. Observation Value 4.4 is a Potential Outlier (Upper T											
292												
293	Test Statistic: 0.231											
294												
295	For 10% significance level, 4.4 is not an outlier.											
296	For 5% significance level, 4.4 is not an outlier.											
297	For 1% significance level, 4.4 is not an outlier.											
298												
299	2. Observation Value 3 is a Potential Outlier (Lower Tail											
300												
301	Test Statistic: 0.333											
302												
303	For 10% significance level, 3 is not an outlier.											
304	For 5% significance level, 3 is not an outlier.											
305	For 1% significance level, 3 is not an outlier.											
306												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3		Date/Time of Computation		ProUCL 5.112/12/2024 2:27:11 PM								
4				From File	2024-ShallowProUCL_o.xls							
5				Full Precision	OFF							
6												
7				17-SH OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.967								
12			Standard Deviation	0.27								
13			Number of data	31								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.967	0.265	7.25	2	2.705	2.92	3.25				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	335.3								
29			Standard Deviation	47.26								
30			Number of data	31								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	335.3	46.49	208	3	2.739	2.92	3.25				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Chloride (mg/L)								
43												
44												
45			Mean	4.25								
46			Standard Deviation	5.819								
47			Number of data	31								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	4.25	5.725	21.8	23	3.066	2.92	3.25				
53												

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 21.8

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sulphate (mg/L)

Mean	24.08
Standard Deviation	8.776
Number of data	31
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	24.08	8.633	45.1	24	2.435	2.92	3.25

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

1. Observation Value 3.6 is a Potential Outlier (Upper T

Test Statistic: 0.444

For 10% significance level, 3.6 is an outlier.

For 5% significance level, 3.6 is not an outlier.

For 1% significance level, 3.6 is not an outlier.

2. Observation Value 1.6 is a Potential Outlier (Lower T

Test Statistic: 0.167

For 10% significance level, 1.6 is not an outlier.

For 5% significance level, 1.6 is not an outlier.

For 1% significance level, 1.6 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	368.2
Standard Deviation	39.1
Number of data	31

	A	B	C	D	E	F	G	H	I	J	K	L
107	Number of suspected outliers			1								
108												
109				Potential	Obs.	Test	Critical	Critical				
110	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
111	1	368.2	38.46	228	3	3.646	2.92	3.25				
112												
113	For 5% Significance Level, there is 1 Potential Outlier											
114	Potential outliers is: 228											
115												
116	For 1% Significance Level, there is 1 Potential Outlier											
117	Potential outliers is: 228											
118												
119												
120	Rosner's Outlier Test for Calcium (mg/L)											
121												
122												
123	Mean			82.1								
124	Standard Deviation			11.17								
125	Number of data			31								
126	Number of suspected outliers			1								
127												
128				Potential	Obs.	Test	Critical	Critical				
129	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
130	1	82.1	10.98	55.7	3	2.403	2.92	3.25				
131												
132	For 5% Significance Level, there is no Potential Outlier											
133												
134	For 1% Significance Level, there is no Potential Outlier											
135												
136												
137	Rosner's Outlier Test for Magnesium (mg/L)											
138												
139												
140	Mean			21.49								
141	Standard Deviation			3.144								
142	Number of data			31								
143	Number of suspected outliers			1								
144												
145				Potential	Obs.	Test	Critical	Critical				
146	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
147	1	21.49	3.093	29.5	24	2.588	2.92	3.25				
148												
149	For 5% Significance Level, there is no Potential Outlier											
150												
151	For 1% Significance Level, there is no Potential Outlier											
152												
153												
154	Rosner's Outlier Test for Sodium (mg/L)											
155												
156												
157	Mean			17.27								
158	Standard Deviation			5.2								
159	Number of data			31								

	A	B	C	D	E	F	G	H	I	J	K	L
160	Number of suspected outliers			1								
161												
162				Potential	Obs.	Test	Critical	Critical				
163	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
164	1	17.27	5.115	26.5	24	1.804	2.92	3.25				
165												
166	For 5% Significance Level, there is no Potential Outlier											
167												
168	For 1% Significance Level, there is no Potential Outlier											
169												
170												
171	Rosner's Outlier Test for Arsenic (mg/L)											
172												
173												
174	Mean			2.4258E-4								
175	Standard Deviation			1.0933E-4								
176	Number of data			31								
177	Number of suspected outliers			1								
178												
179				Potential	Obs.	Test	Critical	Critical				
180	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
181	1	2.4258E-4	1.0755E-4	4.0000E-4	1	1.464	2.92	3.25				
182												
183	For 5% Significance Level, there is no Potential Outlier											
184												
185	For 1% Significance Level, there is no Potential Outlier											
186												
187												
188	Rosner's Outlier Test for Cadmium (mg/L)											
189												
190												
191	Mean			1.9398E-4								
192	Standard Deviation			5.2909E-4								
193	Number of data			31								
194	Number of suspected outliers			1								
195												
196				Potential	Obs.	Test	Critical	Critical				
197	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
198	1	1.9398E-4	5.2048E-4	0.003	1	5.391	2.92	3.25				
199												
200	For 5% Significance Level, there is 1 Potential Outlier											
201	Potential outliers is: 0.003											
202												
203	For 1% Significance Level, there is 1 Potential Outlier											
204	Potential outliers is: 0.003											
205												
206												
207	Rosner's Outlier Test for Chromium (mg/L)											
208												
209												
210	Mean			0.00238								
211	Standard Deviation			0.00423								
212	Number of data			31								

	A	B	C	D	E	F	G	H	I	J	K	L
213	Number of suspected outliers			1								
214												
215				Potential	Obs.	Test	Critical	Critical				
216	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
217	1	0.00238	0.00416	0.024	6	5.194	2.92	3.25				
218												
219	For 5% Significance Level, there is 1 Potential Outlier											
220	Potential outliers is: 0.024											
221												
222	For 1% Significance Level, there is 1 Potential Outlier											
223	Potential outliers is: 0.024											
224												
225												
226	Rosner's Outlier Test for Copper (mg/L)											
227												
228												
229			Mean	0.00399								
230			Standard Deviation	0.00778								
231			Number of data	31								
232			Number of suspected outliers	1								
233												
234				Potential	Obs.	Test	Critical	Critical				
235	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
236	1	0.00399	0.00766	0.045	1	5.354	2.92	3.25				
237												
238	For 5% Significance Level, there is 1 Potential Outlier											
239	Potential outliers is: 0.045											
240												
241	For 1% Significance Level, there is 1 Potential Outlier											
242	Potential outliers is: 0.045											
243												
244												
245	Rosner's Outlier Test for Manganese (mg/L)											
246												
247												
248			Mean	0.0411								
249			Standard Deviation	0.0979								
250			Number of data	29								
251			Number of suspected outliers	1								
252												
253				Potential	Obs.	Test	Critical	Critical				
254	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
255	1	0.0411	0.0962	0.441	1	4.155	2.89	3.22				
256												
257	For 5% Significance Level, there is 1 Potential Outlier											
258	Potential outliers is: 0.441											
259												
260	For 1% Significance Level, there is 1 Potential Outlier											
261	Potential outliers is: 0.441											
262												
263												
264	Rosner's Outlier Test for Nickel (mg/L)											
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267			Mean	0.00298								
268			Standard Deviation	0.00333								
269			Number of data	31								
270			Number of suspected outliers	1								
271												
272				Potential	Obs.	Test	Critical	Critical				
273	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
274	1	0.00298	0.00327	0.015	1	3.674	2.92	3.25				
275												
276	For 5% Significance Level, there is 1 Potential Outlier											
277	Potential outliers is: 0.015											
278												
279	For 1% Significance Level, there is 1 Potential Outlier											
280	Potential outliers is: 0.015											
281												
282												
283			Rosner's Outlier Test for Zinc (mg/L)									
284												
285												
286			Mean	0.00524								
287			Standard Deviation	0.00451								
288			Number of data	31								
289			Number of suspected outliers	1								
290												
291				Potential	Obs.	Test	Critical	Critical				
292	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
293	1	0.00524	0.00444	0.016	1	2.426	2.92	3.25				
294												
295	For 5% Significance Level, there is no Potential Outlier											
296												
297	For 1% Significance Level, there is no Potential Outlier											
298												
299												
300			Dixon's Outlier Test for TOC (mg/L)									
301												
302	Number of Observations = 12											
303	10% critical value: 0.49											
304	5% critical value: 0.546											
305	1% critical value: 0.642											
306												
307	1. Observation Value 3.5 is a Potential Outlier (Upper T											
308												
309	Test Statistic: 0.333											
310												
311	For 10% significance level, 3.5 is not an outlier.											
312	For 5% significance level, 3.5 is not an outlier.											
313	For 1% significance level, 3.5 is not an outlier.											
314												
315	2. Observation Value 1.6 is a Potential Outlier (Lower Ta											
316												
317	Test Statistic: 0.056											
318												

	A	B	C	D	E	F	G	H	I	J	K	L
319	For 10% significance level, 1.6 is not an outlier.											
320	For 5% significance level, 1.6 is not an outlier.											
321	For 1% significance level, 1.6 is not an outlier.											
322												

AECOM

App G2 – Outlier Test Output - Intermediate

1					Outlier Tests for Selected Uncensored Variables							
2				User Selected Options								
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:20:39 AM								
4				From File	2024-IntermediateProUCL_b.xls							
5				Full Precision	OFF							
6												
7				01A-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11				Mean	7.538							
12				Standard Deviation	0.46							
13				Number of data	53							
14				Number of suspected outliers	1							
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.538	0.456	5.57	25	4.316	3.151	3.504				
19												
20	For 5% Significance Level, there is 1 Potential Outlier											
21	Potential outliers is: 5.57											
22												
23	For 1% Significance Level, there is 1 Potential Outlier											
24	Potential outliers is: 5.57											
25												
26												
27				Rosner's Outlier Test for Chloride (mg/L)								
28												
29												
30				Mean	1.588							
31				Standard Deviation	0.905							
32				Number of data	49							
33				Number of suspected outliers	1							
34												
35				Potential	Obs.	Test	Critical	Critical				
36	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
37	1	1.588	0.895	4.75	3	3.532	3.12	3.47				
38												
39	For 5% Significance Level, there is 1 Potential Outlier											
40	Potential outliers is: 4.75											
41												
42	For 1% Significance Level, there is 1 Potential Outlier											
43	Potential outliers is: 4.75											
44												
45												
46				Rosner's Outlier Test for Sulphate (mg/L)								
47												
48												
49				Mean	68.81							
50				Standard Deviation	49.68							
51				Number of data	46							
52				Number of suspected outliers	1							
53												

	A	B	C	D	E	F	G	H	I	J	K	L
54				Potential	Obs.	Test	Critical	Critical				
55	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
56	1	68.81	49.14	182	3	2.304	3.09	3.45				
57												
58	For 5% Significance Level, there is no Potential Outlier											
59												
60	For 1% Significance Level, there is no Potential Outlier											
61												
62												
63				Rosner's Outlier Test for Iron (mg/L)								
64												
65												
66			Mean	12.75								
67			Standard Deviation	11.46								
68			Number of data	29								
69			Number of suspected outliers	1								
70												
71				Potential	Obs.	Test	Critical	Critical				
72	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
73	1	12.75	11.26	33.8	18	1.869	2.89	3.22				
74												
75	For 5% Significance Level, there is no Potential Outlier											
76												
77	For 1% Significance Level, there is no Potential Outlier											
78												
79												
80				Rosner's Outlier Test for Manganese (mg/L)								
81												
82												
83			Mean	0.446								
84			Standard Deviation	0.101								
85			Number of data	29								
86			Number of suspected outliers	1								
87												
88				Potential	Obs.	Test	Critical	Critical				
89	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
90	1	0.446	0.0996	0.244	8	2.033	2.89	3.22				
91												
92	For 5% Significance Level, there is no Potential Outlier											
93												
94	For 1% Significance Level, there is no Potential Outlier											
95												
96												
97				Rosner's Outlier Test for Total Dissolved Solids (mg/L)								
98												
99												
100			Mean	511.2								
101			Standard Deviation	104.3								
102			Number of data	53								
103			Number of suspected outliers	1								
104												
105				Potential	Obs.	Test	Critical	Critical				
106	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
107	1	511.2	103.3	73	25	4.243	3.151	3.504				
108												
109	For 5% Significance Level, there is 1 Potential Outlier											
110	Potential outliers is: 73											
111												
112	For 1% Significance Level, there is 1 Potential Outlier											
113	Potential outliers is: 73											
114												
115												
116				Rosner's Outlier Test for Calcium (mg/L)								
117												
118												
119				Mean	112.6							
120				Standard Deviation	22.45							
121				Number of data	47							
122				Number of suspected outliers	1							
123												
124				Potential	Obs.	Test	Critical	Critical				
125	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
126	1	112.6	22.21	20	18	4.167	3.1	3.46				
127												
128	For 5% Significance Level, there is 1 Potential Outlier											
129	Potential outliers is: 20											
130												
131	For 1% Significance Level, there is 1 Potential Outlier											
132	Potential outliers is: 20											
133												
134												
135				Rosner's Outlier Test for Magnesium (mg/L)								
136												
137												
138				Mean	26.94							
139				Standard Deviation	5.135							
140				Number of data	47							
141				Number of suspected outliers	1							
142												
143				Potential	Obs.	Test	Critical	Critical				
144	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
145	1	26.94	5.08	3.8	18	4.555	3.1	3.46				
146												
147	For 5% Significance Level, there is 1 Potential Outlier											
148	Potential outliers is: 3.8											
149												
150	For 1% Significance Level, there is 1 Potential Outlier											
151	Potential outliers is: 3.8											
152												
153												
154				Rosner's Outlier Test for Sodium (mg/L)								
155												
156												
157				Mean	36.97							
158				Standard Deviation	12.33							
159				Number of data	47							

	A	B	C	D	E	F	G	H	I	J	K	L
160	Number of suspected outliers			1								
161												
162				Potential	Obs.	Test	Critical	Critical				
163	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
164	1	36.97	12.2	2.6	18	2.818	3.1	3.46				
165												
166	For 5% Significance Level, there is no Potential Outlier											
167												
168	For 1% Significance Level, there is no Potential Outlier											
169												
170												
171	Rosner's Outlier Test for Bicarbonate (mg/L)											
172												
173												
174			Mean	489.9								
175			Standard Deviation	81.3								
176			Number of data	46								
177	Number of suspected outliers			1								
178												
179				Potential	Obs.	Test	Critical	Critical				
180	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
181	1	489.9	80.41	65.6	18	5.277	3.09	3.45				
182												
183	For 5% Significance Level, there is 1 Potential Outlier											
184	Potential outliers is: 65.6											
185												
186	For 1% Significance Level, there is 1 Potential Outlier											
187	Potential outliers is: 65.6											
188												
189												
190	Rosner's Outlier Test for Arsenic (mg/L)											
191												
192												
193			Mean	0.0115								
194			Standard Deviation	0.0188								
195			Number of data	47								
196	Number of suspected outliers			1								
197												
198				Potential	Obs.	Test	Critical	Critical				
199	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
200	1	0.0115	0.0186	0.095	29	4.498	3.1	3.46				
201												
202	For 5% Significance Level, there is 1 Potential Outlier											
203	Potential outliers is: 0.095											
204												
205	For 1% Significance Level, there is 1 Potential Outlier											
206	Potential outliers is: 0.095											
207												
208												
209	Rosner's Outlier Test for Copper (mg/L)											
210												
211												
212			Mean	0.00508								

213			Standard Deviation	0.0158								
214			Number of data	47								
215			Number of suspected outliers	1								
216												
217				Potential	Obs.	Test	Critical	Critical				
218	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
219	1	0.00508	0.0156	0.109	17	6.642	3.1	3.46				
220												
221	For 5% Significance Level, there is 1 Potential Outlier											
222	Potential outliers is: 0.109											
223												
224	For 1% Significance Level, there is 1 Potential Outlier											
225	Potential outliers is: 0.109											
226												
227												
228				Rosner's Outlier Test for Nickel (mg/L)								
229												
230												
231			Mean	0.0118								
232			Standard Deviation	0.0207								
233			Number of data	46								
234			Number of suspected outliers	1								
235												
236				Potential	Obs.	Test	Critical	Critical				
237	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
238	1	0.0118	0.0204	0.13	3	5.783	3.09	3.45				
239												
240	For 5% Significance Level, there is 1 Potential Outlier											
241	Potential outliers is: 0.13											
242												
243	For 1% Significance Level, there is 1 Potential Outlier											
244	Potential outliers is: 0.13											
245												
246												
247				Rosner's Outlier Test for Zinc (mg/L)								
248												
249												
250			Mean	0.00551								
251			Standard Deviation	0.00461								
252			Number of data	30								
253			Number of suspected outliers	1								
254												
255				Potential	Obs.	Test	Critical	Critical				
256	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
257	1	0.00551	0.00453	0.021	1	3.417	2.91	3.24				
258												
259	For 5% Significance Level, there is 1 Potential Outlier											
260	Potential outliers is: 0.021											
261												
262	For 1% Significance Level, there is 1 Potential Outlier											
263	Potential outliers is: 0.021											
264												
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266	Rosner's Outlier Test for Total Organic Carbon (mg/L)											
267												
268												
269			Mean	11.35								
270			Standard Deviation	10.73								
271			Number of data	35								
272			Number of suspected outliers	1								
273												
274				Potential	Obs.	Test	Critical	Critical				
275	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
276	1	11.35	10.57	43	25	2.994	2.98	3.32				
277												
278	For 5% Significance Level, there is 1 Potential Outlier											
279	Potential outliers is: 43											
280												
281	For 1% Significance Level, there is no Potential Outlier											
282												
283												
284	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
285												
286	Number of Observations = 22											
287	10% critical value: 0.382											
288	5% critical value: 0.43											
289	1% critical value: 0.514											
290												
291	1. Observation Value 63.8 is a Potential Outlier (Upper											
292												
293	Test Statistic: 0.741											
294												
295	For 10% significance level, 63.8 is an outlier.											
296	For 5% significance level, 63.8 is an outlier.											
297	For 1% significance level, 63.8 is an outlier.											
298												
299	2. Observation Value 18.8 is a Potential Outlier (Lower											
300												
301	Test Statistic: 0.138											
302												
303	For 10% significance level, 18.8 is not an outlier.											
304	For 5% significance level, 18.8 is not an outlier.											
305	For 1% significance level, 18.8 is not an outlier.											
306												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3		Date/Time of Computation		ProUCL 5.112/13/2024 10:21:35 AM								
4				From File	2024-IntermediateProUCL_c.xls							
5				Full Precision	OFF							
6												
7				03-IN - OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.777								
12			Standard Deviation	0.313								
13			Number of data	58								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.777	0.311	7.04	30	2.373	3.186	3.544				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Chloride (mg/L)								
26												
27												
28			Mean	1.952								
29			Standard Deviation	1.223								
30			Number of data	46								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	1.952	1.209	4.7	5	2.273	3.09	3.45				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Sulphate (mg/L)								
43												
44												
45			Mean	155.6								
46			Standard Deviation	64.48								
47			Number of data	42								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	155.6	63.71	295	17	2.188	3.06	3.4				
53												

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for Manganese (mg/L)

Number of Observations = 22

10% critical value: 0.382

5% critical value: 0.43

1% critical value: 0.514

1. Observation Value 0.347 is a Potential Outlier (Uppe

Test Statistic: 0.660

For 10% significance level, 0.347 is an outlier.

For 5% significance level, 0.347 is an outlier.

For 1% significance level, 0.347 is an outlier.

2. Observation Value 0.00051 is a Potential Outlier (Lov

Test Statistic: 0.035

For 10% significance level, 0.00051 is not an outlier.

For 5% significance level, 0.00051 is not an outlier.

For 1% significance level, 0.00051 is not an outlier.

Rosner's Outlier Test for Total Dissolved Solids (mg/L)

Mean	590.5
Standard Deviation	85.4
Number of data	58
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	590.5	84.67	767	18	2.084	3.186	3.544

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Calcium (mg/L)

Mean	121.6
Standard Deviation	19.36
Number of data	42
Number of suspected outliers	1

	A	B	C	D	E	F	G	H	I	J	K	L
107												
108				Potential	Obs.	Test	Critical	Critical				
109	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
110	1	121.6	19.13	168	12	2.426	3.06	3.4				
111												
112	For 5% Significance Level, there is no Potential Outlier											
113												
114	For 1% Significance Level, there is no Potential Outlier											
115												
116												
117	Rosner's Outlier Test for Magnesium (mg/L)											
118												
119												
120			Mean	30.46								
121			Standard Deviation	4.925								
122			Number of data	42								
123			Number of suspected outliers	1								
124												
125				Potential	Obs.	Test	Critical	Critical				
126	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
127	1	30.46	4.866	17.1	1	2.747	3.06	3.4				
128												
129	For 5% Significance Level, there is no Potential Outlier											
130												
131	For 1% Significance Level, there is no Potential Outlier											
132												
133												
134	Rosner's Outlier Test for Sodium (mg/L)											
135												
136												
137			Mean	38.94								
138			Standard Deviation	11.81								
139			Number of data	42								
140			Number of suspected outliers	1								
141												
142				Potential	Obs.	Test	Critical	Critical				
143	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
144	1	38.94	11.67	63.6	24	2.114	3.06	3.4				
145												
146	For 5% Significance Level, there is no Potential Outlier											
147												
148	For 1% Significance Level, there is no Potential Outlier											
149												
150												
151	Rosner's Outlier Test for Bicarbonate (mg/L)											
152												
153												
154			Mean	443.2								
155			Standard Deviation	50.89								
156			Number of data	42								
157			Number of suspected outliers	1								
158												
159				Potential	Obs.	Test	Critical	Critical				

	A	B	C	D	E	F	G	H	I	J	K	L
160	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
161	1	443.2	50.28	726	12	5.624	3.06	3.4				
162												
163	For 5% Significance Level, there is 1 Potential Outlier											
164	Potential outliers is: 726											
165												
166	For 1% Significance Level, there is 1 Potential Outlier											
167	Potential outliers is: 726											
168												
169												
170			Rosner's Outlier Test for Arsenic (mg/L)									
171												
172												
173			Mean	4.8538E-4								
174			Standard Deviation	4.2184E-4								
175			Number of data	39								
176			Number of suspected outliers	1								
177												
178				Potential	Obs.	Test	Critical	Critical				
179	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
180	1	4.8538E-4	4.1639E-4	0.00245	26	4.718	3.03	3.37				
181												
182	For 5% Significance Level, there is 1 Potential Outlier											
183	Potential outliers is: 0.00245											
184												
185	For 1% Significance Level, there is 1 Potential Outlier											
186	Potential outliers is: 0.00245											
187												
188												
189			Rosner's Outlier Test for Chromium (mg/L)									
190												
191												
192			Mean	0.00641								
193			Standard Deviation	0.0144								
194			Number of data	39								
195			Number of suspected outliers	1								
196												
197				Potential	Obs.	Test	Critical	Critical				
198	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
199	1	0.00641	0.0142	0.088	20	5.746	3.03	3.37				
200												
201	For 5% Significance Level, there is 1 Potential Outlier											
202	Potential outliers is: 0.088											
203												
204	For 1% Significance Level, there is 1 Potential Outlier											
205	Potential outliers is: 0.088											
206												
207												
208			Rosner's Outlier Test for Copper (mg/L)									
209												
210												
211			Mean	0.00344								
212			Standard Deviation	0.00369								

	A	B	C	D	E	F	G	H	I	J	K	L
213			Number of data	39								
214		Number of suspected outliers		1								
215												
216				Potential	Obs.	Test	Critical	Critical				
217	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
218	1	0.00344	0.00364	0.021	9	4.823	3.03	3.37				
219												
220	For 5% Significance Level, there is 1 Potential Outlier											
221	Potential outliers is: 0.021											
222												
223	For 1% Significance Level, there is 1 Potential Outlier											
224	Potential outliers is: 0.021											
225												
226												
227	Dixon's Outlier Test for Nickel (mg/L)											
228												
229	Number of Observations = 20											
230	10% critical value: 0.401											
231	5% critical value: 0.45											
232	1% critical value: 0.535											
233												
234	1. Observation Value 0.036 is a Potential Outlier (Uppe											
235												
236	Test Statistic: 0.904											
237												
238	For 10% significance level, 0.036 is an outlier.											
239	For 5% significance level, 0.036 is an outlier.											
240	For 1% significance level, 0.036 is an outlier.											
241												
242	2. Observation Value 0.0007 is a Potential Outlier (Lowe											
243												
244	Test Statistic: 0.009											
245												
246	For 10% significance level, 0.0007 is not an outlier.											
247	For 5% significance level, 0.0007 is not an outlier.											
248	For 1% significance level, 0.0007 is not an outlier.											
249												
250												
251	Dixon's Outlier Test for Zinc (mg/L)											
252												
253	Number of Observations = 20											
254	10% critical value: 0.401											
255	5% critical value: 0.45											
256	1% critical value: 0.535											
257												
258	1. Observation Value 0.036 is a Potential Outlier (Uppe											
259												
260	Test Statistic: 0.864											
261												
262	For 10% significance level, 0.036 is an outlier.											
263	For 5% significance level, 0.036 is an outlier.											
264	For 1% significance level, 0.036 is an outlier.											
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266	2. Observation Value 0.001 is a Potential Outlier (Lower											
267												
268	Test Statistic: 0.096											
269												
270	For 10% significance level, 0.001 is not an outlier.											
271	For 5% significance level, 0.001 is not an outlier.											
272	For 1% significance level, 0.001 is not an outlier.											
273												
274												
275	Rosner's Outlier Test for Total Organic Carbon (mg/L)											
276												
277												
278				Mean	3.849							
279				Standard Deviation	1.708							
280				Number of data	39							
281				Number of suspected outliers	1							
282												
283				Potential	Obs.	Test	Critical	Critical				
284	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
285	1	3.849	1.686	13.8	1	5.901	3.03	3.37				
286												
287	For 5% Significance Level, there is 1 Potential Outlier											
288	Potential outliers is: 13.8											
289												
290	For 1% Significance Level, there is 1 Potential Outlier											
291	Potential outliers is: 13.8											
292												
293												
294	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
295												
296	Number of Observations = 19											
297	10% critical value: 0.412											
298	5% critical value: 0.462											
299	1% critical value: 0.547											
300												
301	1. Observation Value 6 is a Potential Outlier (Upper Tai											
302												
303	Test Statistic: 0.433											
304												
305	For 10% significance level, 6 is an outlier.											
306	For 5% significance level, 6 is not an outlier.											
307	For 1% significance level, 6 is not an outlier.											
308												
309	2. Observation Value 3.4 is a Potential Outlier (Lower Ta											
310												
311	Test Statistic: 0.181											
312												
313	For 10% significance level, 3.4 is not an outlier.											
314	For 5% significance level, 3.4 is not an outlier.											
315	For 1% significance level, 3.4 is not an outlier.											
316												

1					Outlier Tests for Selected Uncensored Variables							
2				User Selected Options								
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:22:35 AM								
4				From File	2024-IntermediateProUCL_d.xls							
5				Full Precision	OFF							
6												
7				04-IN - OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11				Mean	7.829							
12				Standard Deviation	0.311							
13				Number of data	35							
14				Number of suspected outliers	1							
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.829	0.306	8.44	6	1.998	2.98	3.32				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25	Dixon's Outlier Test for Sulphate (mg/L)											
26												
27	Number of Observations = 24											
28	10% critical value: 0.367											
29	5% critical value: 0.413											
30	1% critical value: 0.497											
31												
32	1. Observation Value 31 is a Potential Outlier (Upper T											
33												
34	Test Statistic: 0.037											
35												
36	For 10% significance level, 31 is not an outlier.											
37	For 5% significance level, 31 is not an outlier.											
38	For 1% significance level, 31 is not an outlier.											
39												
40	2. Observation Value 22.2 is a Potential Outlier (Lower											
41												
42	Test Statistic: 0.082											
43												
44	For 10% significance level, 22.2 is not an outlier.											
45	For 5% significance level, 22.2 is not an outlier.											
46	For 1% significance level, 22.2 is not an outlier.											
47												
48												
49	Dixon's Outlier Test for Manganese (mg/L)											
50												
51	Number of Observations = 18											
52	10% critical value: 0.424											
53	5% critical value: 0.475											

1% critical value: 0.561

1. Observation Value 0.727 is a Potential Outlier (Uppe

Test Statistic: 0.087

For 10% significance level, 0.727 is not an outlier.
For 5% significance level, 0.727 is not an outlier.
For 1% significance level, 0.727 is not an outlier.

2. Observation Value 0.004 is a Potential Outlier (Lower

Test Statistic: 0.085

For 10% significance level, 0.004 is not an outlier.
For 5% significance level, 0.004 is not an outlier.
For 1% significance level, 0.004 is not an outlier.

Rosner's Outlier Test for Total Dissolved Solids (mg/L)

Mean	430.3
Standard Deviation	30.64
Number of data	35
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	430.3	30.2	500	7	2.307	2.98	3.32

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Calcium (mg/L)

Mean	103.4
Standard Deviation	10.36
Number of data	25
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	103.4	10.15	80.4	11	2.265	2.82	3.14

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

	A	B	C	D	E	F	G	H	I	J	K	L
107				Rosner's Outlier Test for Magnesium (mg/L)								
108												
109												
110				Mean	22.61							
111				Standard Deviation	2.071							
112				Number of data	25							
113				Number of suspected outliers	1							
114												
115				Potential	Obs.	Test	Critical	Critical				
116	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
117	1	22.61	2.029	27.4	8	2.362	2.82	3.14				
118												
119	For 5% Significance Level, there is no Potential Outlier											
120												
121	For 1% Significance Level, there is no Potential Outlier											
122												
123												
124				Rosner's Outlier Test for Sodium (mg/L)								
125												
126												
127				Mean	23.46							
128				Standard Deviation	2.392							
129				Number of data	25							
130				Number of suspected outliers	1							
131												
132				Potential	Obs.	Test	Critical	Critical				
133	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
134	1	23.46	2.344	29.3	9	2.49	2.82	3.14				
135												
136	For 5% Significance Level, there is no Potential Outlier											
137												
138	For 1% Significance Level, there is no Potential Outlier											
139												
140												
141	Dixon's Outlier Test for Bicarbonate (mg/L)											
142												
143	Number of Observations = 24											
144	10% critical value: 0.367											
145	5% critical value: 0.413											
146	1% critical value: 0.497											
147												
148	1. Observation Value 488 is a Potential Outlier (Upper T											
149												
150	Test Statistic: 0.280											
151												
152	For 10% significance level, 488 is not an outlier.											
153	For 5% significance level, 488 is not an outlier.											
154	For 1% significance level, 488 is not an outlier.											
155												
156	2. Observation Value 431 is a Potential Outlier (Lower T											
157												
158	Test Statistic: 0.239											
159												

	A	B	C	D	E	F	G	H	I	J	K	L
160	For 10% significance level, 431 is not an outlier.											
161	For 5% significance level, 431 is not an outlier.											
162	For 1% significance level, 431 is not an outlier.											
163												
164												
165	Dixon's Outlier Test for Arsenic (mg/L)											
166												
167	Number of Observations = 22											
168	10% critical value: 0.382											
169	5% critical value: 0.43											
170	1% critical value: 0.514											
171												
172	1. Observation Value 0.0052 is a Potential Outlier (Upp											
173												
174	Test Statistic: 0.406											
175												
176	For 10% significance level, 0.0052 is an outlier.											
177	For 5% significance level, 0.0052 is not an outlier.											
178	For 1% significance level, 0.0052 is not an outlier.											
179												
180	2. Observation Value 0.0002 is a Potential Outlier (Lowe											
181												
182	Test Statistic: 0.486											
183												
184	For 10% significance level, 0.0002 is an outlier.											
185	For 5% significance level, 0.0002 is an outlier.											
186	For 1% significance level, 0.0002 is not an outlier.											
187												
188												
189	Dixon's Outlier Test for Chromium (mg/L)											
190												
191	Number of Observations = 22											
192	10% critical value: 0.382											
193	5% critical value: 0.43											
194	1% critical value: 0.514											
195												
196	1. Observation Value 0.0124 is a Potential Outlier (Upp											
197												
198	Test Statistic: 0.618											
199												
200	For 10% significance level, 0.0124 is an outlier.											
201	For 5% significance level, 0.0124 is an outlier.											
202	For 1% significance level, 0.0124 is an outlier.											
203												
204	2. Observation Value 0.0002 is a Potential Outlier (Lowe											
205												
206	Test Statistic: 0.048											
207												
208	For 10% significance level, 0.0002 is not an outlier.											
209	For 5% significance level, 0.0002 is not an outlier.											
210	For 1% significance level, 0.0002 is not an outlier.											
211												
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213	Dixon's Outlier Test for Copper (mg/L)											
214												
215	Number of Observations = 22											
216	10% critical value: 0.382											
217	5% critical value: 0.43											
218	1% critical value: 0.514											
219												
220	1. Observation Value 0.006 is a Potential Outlier (Uppe											
221												
222	Test Statistic: 0.178											
223												
224	For 10% significance level, 0.006 is not an outlier.											
225	For 5% significance level, 0.006 is not an outlier.											
226	For 1% significance level, 0.006 is not an outlier.											
227												
228	2. Observation Value 0.00026 is a Potential Outlier (Lov											
229												
230	Test Statistic: 0.027											
231												
232	For 10% significance level, 0.00026 is not an outlier.											
233	For 5% significance level, 0.00026 is not an outlier.											
234	For 1% significance level, 0.00026 is not an outlier.											
235												
236												
237	Dixon's Outlier Test for Nickel (mg/L)											
238												
239	Number of Observations = 15											
240	10% critical value: 0.472											
241	5% critical value: 0.525											
242	1% critical value: 0.616											
243												
244	1. Observation Value 0.0047 is a Potential Outlier (Upp											
245												
246	Test Statistic: 0.588											
247												
248	For 10% significance level, 0.0047 is an outlier.											
249	For 5% significance level, 0.0047 is an outlier.											
250	For 1% significance level, 0.0047 is not an outlier.											
251												
252	2. Observation Value 0.00074 is a Potential Outlier (Lov											
253												
254	Test Statistic: 0.354											
255												
256	For 10% significance level, 0.00074 is not an outlier.											
257	For 5% significance level, 0.00074 is not an outlier.											
258	For 1% significance level, 0.00074 is not an outlier.											
259												
260												
261	Dixon's Outlier Test for Zinc (mg/L)											
262												
263	Number of Observations = 15											
264	10% critical value: 0.472											
265	5% critical value: 0.525											

	A	B	C	D	E	F	G	H	I	J	K	L
266	1% critical value: 0.616											
267												
268	1. Observation Value 0.0048 is a Potential Outlier (Upp											
269												
270	Test Statistic: 0.474											
271												
272	For 10% significance level, 0.0048 is an outlier.											
273	For 5% significance level, 0.0048 is not an outlier.											
274	For 1% significance level, 0.0048 is not an outlier.											
275												
276	2. Observation Value 0.001 is a Potential Outlier (Lower											
277												
278	Test Statistic: 0.000											
279												
280	For 10% significance level, 0.001 is not an outlier.											
281	For 5% significance level, 0.001 is not an outlier.											
282	For 1% significance level, 0.001 is not an outlier.											
283												
284												
285	Dixon's Outlier Test for Total Organic Carbon (mg/L)											
286												
287	Number of Observations = 21											
288	10% critical value: 0.391											
289	5% critical value: 0.44											
290	1% critical value: 0.524											
291												
292	1. Observation Value 4.8 is a Potential Outlier (Upper T											
293												
294	Test Statistic: 0.316											
295												
296	For 10% significance level, 4.8 is not an outlier.											
297	For 5% significance level, 4.8 is not an outlier.											
298	For 1% significance level, 4.8 is not an outlier.											
299												
300	2. Observation Value 2.6 is a Potential Outlier (Lower T											
301												
302	Test Statistic: 0.188											
303												
304	For 10% significance level, 2.6 is not an outlier.											
305	For 5% significance level, 2.6 is not an outlier.											
306	For 1% significance level, 2.6 is not an outlier.											
307												
308												
309	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
310												
311	Number of Observations = 14											
312	10% critical value: 0.492											
313	5% critical value: 0.546											
314	1% critical value: 0.641											
315												
316	1. Observation Value 14.2 is a Potential Outlier (Upper											
317												
318	Test Statistic: 0.911											

	A	B	C	D	E	F	G	H	I	J	K	L
319												
320	For 10% significance level, 14.2 is an outlier.											
321	For 5% significance level, 14.2 is an outlier.											
322	For 1% significance level, 14.2 is an outlier.											
323												
324	2. Observation Value 3.1 is a Potential Outlier (Lower T											
325												
326	Test Statistic: 0.109											
327												
328	For 10% significance level, 3.1 is not an outlier.											
329	For 5% significance level, 3.1 is not an outlier.											
330	For 1% significance level, 3.1 is not an outlier.											
331												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3		Date/Time of Computation		ProUCL 5.112/13/2024 10:24:42 AM								
4				From File	2024-IntermediateProUCL_e.xls							
5				Full Precision	OFF							
6												
7				05-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.707								
12			Standard Deviation	0.318								
13			Number of data	55								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.707	0.315	6.86	3	2.688	3.165	3.52				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Chloride (mg/L)								
26												
27												
28			Mean	2.168								
29			Standard Deviation	0.777								
30			Number of data	49								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	2.168	0.769	4.5	3	3.032	3.12	3.47				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Sulphate (mg/L)								
43												
44												
45			Mean	150.1								
46			Standard Deviation	51.24								
47			Number of data	46								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	150.1	50.68	24	2	2.488	3.09	3.45				
53												

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Iron (mg/L)

Mean	0.126
Standard Deviation	0.198
Number of data	27
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.126	0.195	0.778	16	3.35	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.778

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.778

Rosner's Outlier Test for Manganese (mg/L)

Mean	0.754
Standard Deviation	0.397
Number of data	27
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.754	0.39	0.0729	26	1.749	2.86	3.18

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Total Dissolved Solids (mg/L)

Mean	616.8
Standard Deviation	152.2
Number of data	55
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	616.8	150.9	310	3	2.034	3.165	3.52

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Calcium (mg/L)

Mean	123.7
Standard Deviation	35.82
Number of data	46
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	123.7	35.43	179	40	1.561	3.09	3.45

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Magnesium (mg/L)

Mean	32.48
Standard Deviation	8.981
Number of data	46
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	32.48	8.883	47.2	44	1.657	3.09	3.45

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sodium (mg/L)

Mean	57.28
Standard Deviation	17.53
Number of data	46
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	57.28	17.33	11.6	2	2.635	3.09	3.45

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	514.2
Standard Deviation	138.1
Number of data	46
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	514.2	136.6	315.7	8	1.453	3.09	3.45

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Arsenic (mg/L)

Mean	8.2326E-4
Standard Deviation	6.7140E-4
Number of data	43
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	8.2326E-4	6.6355E-4	0.00341	30	3.898	3.07	3.41

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.00341

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.00341

Rosner's Outlier Test for Copper (mg/L)

Mean	0.00563
Standard Deviation	0.0111
Number of data	44
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00563	0.011	0.0669	25	5.567	3.08	3.43

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0669

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0669

Rosner's Outlier Test for Nickel (mg/L)

Mean	0.00398
Standard Deviation	0.00242
Number of data	26
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00398	0.00237	0.0082	8	1.783	2.84	3.16

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Zinc (mg/L)

Mean	0.00771
Standard Deviation	0.0087
Number of data	27
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00771	0.00854	0.0345	4	3.137	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0345

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Total Organic Carbon (mg/L)

Mean	4.949
Standard Deviation	2.104
Number of data	35
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	4.949	2.074	16	1	5.329	2.98	3.32

For 5% Significance Level, there is 1 Potential Outlier

	A	B	C	D	E	F	G	H	I	J	K	L
266	Potential outliers is: 16											
267												
268	For 1% Significance Level, there is 1 Potential Outlier											
269	Potential outliers is: 16											
270												
271												
272	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
273												
274	Number of Observations = 19											
275	10% critical value: 0.412											
276	5% critical value: 0.462											
277	1% critical value: 0.547											
278												
279	1. Observation Value 8.59 is a Potential Outlier (Upper											
280												
281	Test Statistic: 0.279											
282												
283	For 10% significance level, 8.59 is not an outlier.											
284	For 5% significance level, 8.59 is not an outlier.											
285	For 1% significance level, 8.59 is not an outlier.											
286												
287	2. Observation Value 4.9 is a Potential Outlier (Lower Ta											
288												
289	Test Statistic: 0.179											
290												
291	For 10% significance level, 4.9 is not an outlier.											
292	For 5% significance level, 4.9 is not an outlier.											
293	For 1% significance level, 4.9 is not an outlier.											
294												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:26:46 AM								
4				From File	2024-IntermediateProUCL_f.xls							
5				Full Precision	OFF							
6												
7				06R-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.739								
12			Standard Deviation	0.302								
13			Number of data	56								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.739	0.299	7.1	18	2.136	3.172	3.528				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Chloride (mg/L)								
26												
27												
28			Mean	2.481								
29			Standard Deviation	1.622								
30			Number of data	50								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	2.481	1.606	6.3	8	2.379	3.13	3.48				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Sulphate (mg/L)								
43												
44												
45			Mean	107.4								
46			Standard Deviation	70.63								
47			Number of data	49								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	107.4	69.91	215	16	1.539	3.12	3.47				
53												

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Iron (mg/L)

Mean	0.566
Standard Deviation	0.768
Number of data	25
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.566	0.753	3.05	20	3.3	2.82	3.14

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 3.05

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 3.05

Rosner's Outlier Test for Manganese (mg/L)

Mean	1.261
Standard Deviation	0.816
Number of data	25
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	1.261	0.799	3.34	8	2.601	2.82	3.14

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Total Dissolved Solids (mg/L)

Mean	554.5
Standard Deviation	59.16
Number of data	56
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	554.5	58.63	417	23	2.345	3.172	3.528

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Calcium (mg/L)

Mean	120.9
Standard Deviation	20.94
Number of data	49
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	120.9	20.72	172	43	2.467	3.12	3.47

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Magnesium (mg/L)

Mean	30.17
Standard Deviation	6.43
Number of data	49
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	30.17	6.364	44.8	42	2.299	3.12	3.47

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sodium (mg/L)

Mean	42.62
Standard Deviation	20.94
Number of data	49
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	42.62	20.73	7.55	49	1.692	3.12	3.47

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	478.4
Standard Deviation	109.6
Number of data	48
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	478.4	108.4	707	43	2.109	3.11	3.46

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Arsenic (mg/L)

Mean	0.00172
Standard Deviation	0.00291
Number of data	48
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00172	0.00288	0.0151	43	4.647	3.11	3.46

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0151

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0151

Rosner's Outlier Test for Copper (mg/L)

Mean	0.00292
Standard Deviation	0.00346
Number of data	48
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00292	0.00343	0.0171	30	4.137	3.11	3.46

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0171

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0171

Rosner's Outlier Test for Nickel (mg/L)

Mean	0.0184
Standard Deviation	0.0211
Number of data	26
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.0184	0.0207	0.108	16	4.334	2.84	3.16

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.108

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.108

Rosner's Outlier Test for Zinc (mg/L)

Mean	0.0301
Standard Deviation	0.0521
Number of data	26
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.0301	0.0511	0.201	2	3.348	2.84	3.16

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.201

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.201

Rosner's Outlier Test for Total Organic Carbon (mg/L)

Mean	2.655
Standard Deviation	0.471
Number of data	38
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)

	A	B	C	D	E	F	G	H	I	J	K	L
266	1	2.655	0.464	1.2	12	3.134	3.01	3.36				
267												
268	For 5% Significance Level, there is 1 Potential Outlier											
269	Potential outliers is: 1.2											
270												
271	For 1% Significance Level, there is no Potential Outlier											
272												
273												
274	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
275												
276	Number of Observations = 18											
277	10% critical value: 0.424											
278	5% critical value: 0.475											
279	1% critical value: 0.561											
280												
281	1. Observation Value 7.22 is a Potential Outlier (Upper											
282												
283	Test Statistic: 0.220											
284												
285	For 10% significance level, 7.22 is not an outlier.											
286	For 5% significance level, 7.22 is not an outlier.											
287	For 1% significance level, 7.22 is not an outlier.											
288												
289	2. Observation Value 3.2 is a Potential Outlier (Lower T											
290												
291	Test Statistic: 0.094											
292												
293	For 10% significance level, 3.2 is not an outlier.											
294	For 5% significance level, 3.2 is not an outlier.											
295	For 1% significance level, 3.2 is not an outlier.											
296												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:26:04 AM								
4				From File	2024-IntermediateProUCL_g.xls							
5				Full Precision	OFF							
6												
7				07-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.779								
12			Standard Deviation	0.312								
13			Number of data	57								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.779	0.309	7	29	2.522	3.179	3.536				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Chloride (mg/L)								
26												
27												
28			Mean	0.83								
29			Standard Deviation	0.597								
30			Number of data	51								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	0.83	0.592	2.9	3	3.499	3.137	3.488				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 2.9											
39												
40	For 1% Significance Level, there is 1 Potential Outlier											
41	Potential outliers is: 2.9											
42												
43												
44				Rosner's Outlier Test for Sulphate (mg/L)								
45												
46												
47			Mean	82.67								
48			Standard Deviation	20.44								
49			Number of data	50								
50			Number of suspected outliers	1								
51												
52				Potential	Obs.	Test	Critical	Critical				
53	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
54	1	82.67	20.24	140	3	2.833	3.13	3.48				
55												
56	For 5% Significance Level, there is no Potential Outlier											
57												
58	For 1% Significance Level, there is no Potential Outlier											
59												
60												
61				Rosner's Outlier Test for Iron (mg/L)								
62												
63												
64				Mean	0.219							
65				Standard Deviation	0.226							
66				Number of data	26							
67				Number of suspected outliers	1							
68												
69				Potential	Obs.	Test	Critical	Critical				
70	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
71	1	0.219	0.222	0.737	21	2.333	2.84	3.16				
72												
73	For 5% Significance Level, there is no Potential Outlier											
74												
75	For 1% Significance Level, there is no Potential Outlier											
76												
77												
78				Rosner's Outlier Test for Manganese (mg/L)								
79												
80												
81				Mean	0.788							
82				Standard Deviation	0.275							
83				Number of data	26							
84				Number of suspected outliers	1							
85												
86				Potential	Obs.	Test	Critical	Critical				
87	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
88	1	0.788	0.27	0.278	13	1.894	2.84	3.16				
89												
90	For 5% Significance Level, there is no Potential Outlier											
91												
92	For 1% Significance Level, there is no Potential Outlier											
93												
94												
95				Rosner's Outlier Test for Total Dissolved Solids (mg/L)								
96												
97												
98				Mean	476.6							
99				Standard Deviation	39.55							
100				Number of data	57							
101				Number of suspected outliers	1							
102												
103				Potential	Obs.	Test	Critical	Critical				
104	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
105	1	476.6	39.21	352	17	3.179	3.179	3.536				
106												

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 352

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Calcium (mg/L)

Mean	101.1
Standard Deviation	7.648
Number of data	50
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	101.1	7.571	121	23	2.624	3.13	3.48

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Magnesium (mg/L)

Mean	22.69
Standard Deviation	1.636
Number of data	50
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	22.69	1.619	27.2	25	2.785	3.13	3.48

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sodium (mg/L)

Mean	42.9
Standard Deviation	9.305
Number of data	50
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	42.9	9.211	62	4	2.074	3.13	3.48

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	442.7
Standard Deviation	14.82
Number of data	49
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	442.7	14.67	395	9	3.254	3.12	3.47

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 395

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Arsenic (mg/L)

Mean	0.00354
Standard Deviation	0.00277
Number of data	49
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00354	0.00274	0.016	8	4.542	3.12	3.47

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.016

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.016

Rosner's Outlier Test for Copper (mg/L)

Mean	0.00215
Standard Deviation	0.00149
Number of data	49
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00215	0.00148	0.0061	32	2.67	3.12	3.47

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Nickel (mg/L)

Mean	0.00501
Standard Deviation	0.0035
Number of data	27
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00501	0.00343	0.0191	10	4.107	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0191

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0191

Rosner's Outlier Test for Zinc (mg/L)

Mean	0.0142
Standard Deviation	0.0296
Number of data	27
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.0142	0.029	0.159	24	4.985	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.159

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.159

Rosner's Outlier Test for Total Organic Carbon (mg/L)

Mean	2.897
Standard Deviation	0.619
Number of data	38
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)

	A	B	C	D	E	F	G	H	I	J	K	L
266	1	2.897	0.611	4.2	1	2.132	3.01	3.36				
267												
268	For 5% Significance Level, there is no Potential Outlier											
269												
270	For 1% Significance Level, there is no Potential Outlier											
271												
272												
273	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
274												
275	Number of Observations = 19											
276	10% critical value: 0.412											
277	5% critical value: 0.462											
278	1% critical value: 0.547											
279												
280	1. Observation Value 4.6 is a Potential Outlier (Upper T											
281												
282	Test Statistic: 0.522											
283												
284	For 10% significance level, 4.6 is an outlier.											
285	For 5% significance level, 4.6 is an outlier.											
286	For 1% significance level, 4.6 is not an outlier.											
287												
288	2. Observation Value 2 is a Potential Outlier (Lower Tail											
289												
290	Test Statistic: 0.214											
291												
292	For 10% significance level, 2 is not an outlier.											
293	For 5% significance level, 2 is not an outlier.											
294	For 1% significance level, 2 is not an outlier.											
295												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:27:50 AM								
4				From File	2024-IntermediateProUCL_h.xls							
5				Full Precision	OFF							
6												
7				08-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.766								
12			Standard Deviation	0.332								
13			Number of data	58								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.766	0.329	7.06	30	2.146	3.186	3.544				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Chloride (mg/L)								
26												
27												
28			Mean	1.517								
29			Standard Deviation	1.073								
30			Number of data	44								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	1.517	1.061	5.7	1	3.943	3.08	3.43				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 5.7											
39												
40	For 1% Significance Level, there is 1 Potential Outlier											
41	Potential outliers is: 5.7											
42												
43												
44				Rosner's Outlier Test for Sulphate (mg/L)								
45												
46												
47			Mean	181.2								
48			Standard Deviation	49.44								
49			Number of data	40								
50			Number of suspected outliers	1								
51												
52				Potential	Obs.	Test	Critical	Critical				
53	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
54	1	181.2	48.82	320	6	2.844	3.04	3.38				
55												
56	For 5% Significance Level, there is no Potential Outlier											
57												
58	For 1% Significance Level, there is no Potential Outlier											
59												
60												
61	Dixon's Outlier Test for Manganese (mg/L)											
62												
63	Number of Observations = 21											
64	10% critical value: 0.391											
65	5% critical value: 0.44											
66	1% critical value: 0.524											
67												
68	1. Observation Value 1.09 is a Potential Outlier (Upper											
69												
70	Test Statistic: 0.108											
71												
72	For 10% significance level, 1.09 is not an outlier.											
73	For 5% significance level, 1.09 is not an outlier.											
74	For 1% significance level, 1.09 is not an outlier.											
75												
76	2. Observation Value 0.0019 is a Potential Outlier (Lowe											
77												
78	Test Statistic: 0.002											
79												
80	For 10% significance level, 0.0019 is not an outlier.											
81	For 5% significance level, 0.0019 is not an outlier.											
82	For 1% significance level, 0.0019 is not an outlier.											
83												
84												
85	Rosner's Outlier Test for Total Dissolved Solids (mg/L)											
86												
87												
88			Mean	593.9								
89			Standard Deviation	73.81								
90			Number of data	58								
91			Number of suspected outliers	1								
92												
93				Potential	Obs.	Test	Critical	Critical				
94	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
95	1	593.9	73.17	420	4	2.377	3.186	3.544				
96												
97	For 5% Significance Level, there is no Potential Outlier											
98												
99	For 1% Significance Level, there is no Potential Outlier											
100												
101												
102	Rosner's Outlier Test for Calcium (mg/L)											
103												
104												
105			Mean	116.4								
106			Standard Deviation	10.53								

	A	B	C	D	E	F	G	H	I	J	K	L
107			Number of data	40								
108			Number of suspected outliers	1								
109												
110				Potential	Obs.	Test	Critical	Critical				
111	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
112	1	116.4	10.4	87	1	2.83	3.04	3.38				
113												
114	For 5% Significance Level, there is no Potential Outlier											
115												
116	For 1% Significance Level, there is no Potential Outlier											
117												
118												
119			Rosner's Outlier Test for Magnesium (mg/L)									
120												
121												
122			Mean	26.39								
123			Standard Deviation	2.412								
124			Number of data	40								
125			Number of suspected outliers	1								
126												
127				Potential	Obs.	Test	Critical	Critical				
128	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
129	1	26.39	2.382	18.6	2	3.271	3.04	3.38				
130												
131	For 5% Significance Level, there is 1 Potential Outlier											
132	Potential outliers is: 18.6											
133												
134	For 1% Significance Level, there is no Potential Outlier											
135												
136												
137			Rosner's Outlier Test for Sodium (mg/L)									
138												
139												
140			Mean	47.45								
141			Standard Deviation	12.39								
142			Number of data	40								
143			Number of suspected outliers	1								
144												
145				Potential	Obs.	Test	Critical	Critical				
146	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
147	1	47.45	12.23	81	17	2.742	3.04	3.38				
148												
149	For 5% Significance Level, there is no Potential Outlier											
150												
151	For 1% Significance Level, there is no Potential Outlier											
152												
153												
154			Rosner's Outlier Test for Bicarbonate (mg/L)									
155												
156												
157			Mean	387.6								
158			Standard Deviation	20.23								
159			Number of data	40								

	A	B	C	D	E	F	G	H	I	J	K	L
160	Number of suspected outliers			1								
161												
162				Potential	Obs.	Test	Critical	Critical				
163	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
164	1	387.6	19.98	332	3	2.785	3.04	3.38				
165												
166	For 5% Significance Level, there is no Potential Outlier											
167												
168	For 1% Significance Level, there is no Potential Outlier											
169												
170												
171	Rosner's Outlier Test for Chromium (mg/L)											
172												
173												
174			Mean	0.00623								
175			Standard Deviation	0.0139								
176			Number of data	38								
177	Number of suspected outliers			1								
178												
179				Potential	Obs.	Test	Critical	Critical				
180	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
181	1	0.00623	0.0137	0.075	8	5.013	3.01	3.36				
182												
183	For 5% Significance Level, there is 1 Potential Outlier											
184	Potential outliers is: 0.075											
185												
186	For 1% Significance Level, there is 1 Potential Outlier											
187	Potential outliers is: 0.075											
188												
189												
190	Rosner's Outlier Test for Copper (mg/L)											
191												
192												
193			Mean	0.00475								
194			Standard Deviation	0.00618								
195			Number of data	38								
196	Number of suspected outliers			1								
197												
198				Potential	Obs.	Test	Critical	Critical				
199	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
200	1	0.00475	0.0061	0.028	8	3.813	3.01	3.36				
201												
202	For 5% Significance Level, there is 1 Potential Outlier											
203	Potential outliers is: 0.028											
204												
205	For 1% Significance Level, there is 1 Potential Outlier											
206	Potential outliers is: 0.028											
207												
208												
209	Dixon's Outlier Test for Nickel (mg/L)											
210												
211	Number of Observations = 19											
212	10% critical value: 0.412											

	A	B	C	D	E	F	G	H	I	J	K	L
213	5% critical value: 0.462											
214	1% critical value: 0.547											
215												
216	1. Observation Value 0.0341 is a Potential Outlier (Upp											
217												
218	Test Statistic: 0.426											
219												
220	For 10% significance level, 0.0341 is an outlier.											
221	For 5% significance level, 0.0341 is not an outlier.											
222	For 1% significance level, 0.0341 is not an outlier.											
223												
224	2. Observation Value 0.00083 is a Potential Outlier (Low											
225												
226	Test Statistic: 0.031											
227												
228	For 10% significance level, 0.00083 is not an outlier.											
229	For 5% significance level, 0.00083 is not an outlier.											
230	For 1% significance level, 0.00083 is not an outlier.											
231												
232												
233	Dixon's Outlier Test for Zinc (mg/L)											
234												
235	Number of Observations = 19											
236	10% critical value: 0.412											
237	5% critical value: 0.462											
238	1% critical value: 0.547											
239												
240	1. Observation Value 0.0198 is a Potential Outlier (Upp											
241												
242	Test Statistic: 0.055											
243												
244	For 10% significance level, 0.0198 is not an outlier.											
245	For 5% significance level, 0.0198 is not an outlier.											
246	For 1% significance level, 0.0198 is not an outlier.											
247												
248	2. Observation Value 0.001 is a Potential Outlier (Lower											
249												
250	Test Statistic: 0.039											
251												
252	For 10% significance level, 0.001 is not an outlier.											
253	For 5% significance level, 0.001 is not an outlier.											
254	For 1% significance level, 0.001 is not an outlier.											
255												
256												
257	Rosner's Outlier Test for Total Organic Carbon (mg/L)											
258												
259												
260			Mean	2.164								
261			Standard Deviation	0.631								
262			Number of data	39								
263			Number of suspected outliers	1								
264												
265				Potential	Obs.	Test	Critical	Critical				

	A	B	C	D	E	F	G	H	I	J	K	L
266	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
267	1	2.164	0.623	0.2	1	3.151	3.03	3.37				
268												
269	For 5% Significance Level, there is 1 Potential Outlier											
270	Potential outliers is: 0.2											
271												
272	For 1% Significance Level, there is no Potential Outlier											
273												
274												
275	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
276												
277	Number of Observations = 19											
278	10% critical value: 0.412											
279	5% critical value: 0.462											
280	1% critical value: 0.547											
281												
282	1. Observation Value 4.6 is a Potential Outlier (Upper T											
283												
284	Test Statistic: 0.321											
285												
286	For 10% significance level, 4.6 is not an outlier.											
287	For 5% significance level, 4.6 is not an outlier.											
288	For 1% significance level, 4.6 is not an outlier.											
289												
290	2. Observation Value 1.7 is a Potential Outlier (Lower Ta											
291												
292	Test Statistic: 0.050											
293												
294	For 10% significance level, 1.7 is not an outlier.											
295	For 5% significance level, 1.7 is not an outlier.											
296	For 1% significance level, 1.7 is not an outlier.											
297												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:28:33 AM								
4				From File	2024-IntermediateProUCL_i.xls							
5				Full Precision	OFF							
6												
7				11-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.799								
12			Standard Deviation	0.285								
13			Number of data	36								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.799	0.281	7.24	6	1.993	2.99	3.33				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Sulphate (mg/L)								
26												
27												
28			Mean	16.14								
29			Standard Deviation	31.18								
30			Number of data	31								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	16.14	30.67	181	30	5.376	2.92	3.25				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 181											
39												
40	For 1% Significance Level, there is 1 Potential Outlier											
41	Potential outliers is: 181											
42												
43												
44				Rosner's Outlier Test for Iron (mg/L)								
45												
46												
47			Mean	0.371								
48			Standard Deviation	0.586								
49			Number of data	29								
50			Number of suspected outliers	1								
51												
52				Potential	Obs.	Test	Critical	Critical				
53	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
54	1	0.371	0.576	2.79	4	4.203	2.89	3.22				
55												
56	For 5% Significance Level, there is 1 Potential Outlier											
57	Potential outliers is: 2.79											
58												
59	For 1% Significance Level, there is 1 Potential Outlier											
60	Potential outliers is: 2.79											
61												
62												
63				Rosner's Outlier Test for Manganese (mg/L)								
64												
65												
66			Mean	0.49								
67			Standard Deviation	0.159								
68			Number of data	29								
69			Number of suspected outliers	1								
70												
71				Potential	Obs.	Test	Critical	Critical				
72	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
73	1	0.49	0.157	0.969	1	3.063	2.89	3.22				
74												
75	For 5% Significance Level, there is 1 Potential Outlier											
76	Potential outliers is: 0.969											
77												
78	For 1% Significance Level, there is no Potential Outlier											
79												
80												
81				Rosner's Outlier Test for Total Dissolved Solids (mg/L)								
82												
83												
84			Mean	423.7								
85			Standard Deviation	55.1								
86			Number of data	36								
87			Number of suspected outliers	1								
88												
89				Potential	Obs.	Test	Critical	Critical				
90	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
91	1	423.7	54.33	709	35	5.251	2.99	3.33				
92												
93	For 5% Significance Level, there is 1 Potential Outlier											
94	Potential outliers is: 709											
95												
96	For 1% Significance Level, there is 1 Potential Outlier											
97	Potential outliers is: 709											
98												
99												
100				Rosner's Outlier Test for Calcium (mg/L)								
101												
102												
103			Mean	101.4								
104			Standard Deviation	13.1								
105			Number of data	35								
106			Number of suspected outliers	1								

	A	B	C	D	E	F	G	H	I	J	K	L
107												
108				Potential	Obs.	Test	Critical	Critical				
109	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
110	1	101.4	12.91	154	34	4.071	2.98	3.32				
111												
112	For 5% Significance Level, there is 1 Potential Outlier											
113	Potential outliers is: 154											
114												
115	For 1% Significance Level, there is 1 Potential Outlier											
116	Potential outliers is: 154											
117												
118												
119				Rosner's Outlier Test for Magnesium (mg/L)								
120												
121												
122				Mean	24.8							
123				Standard Deviation	4.682							
124				Number of data	35							
125				Number of suspected outliers	1							
126												
127				Potential	Obs.	Test	Critical	Critical				
128	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
129	1	24.8	4.615	0.553	24	5.254	2.98	3.32				
130												
131	For 5% Significance Level, there is 1 Potential Outlier											
132	Potential outliers is: 0.553											
133												
134	For 1% Significance Level, there is 1 Potential Outlier											
135	Potential outliers is: 0.553											
136												
137												
138				Rosner's Outlier Test for Sodium (mg/L)								
139												
140												
141				Mean	28.47							
142				Standard Deviation	4.154							
143				Number of data	35							
144				Number of suspected outliers	1							
145												
146				Potential	Obs.	Test	Critical	Critical				
147	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
148	1	28.47	4.095	45	34	4.037	2.98	3.32				
149												
150	For 5% Significance Level, there is 1 Potential Outlier											
151	Potential outliers is: 45											
152												
153	For 1% Significance Level, there is 1 Potential Outlier											
154	Potential outliers is: 45											
155												
156												
157				Rosner's Outlier Test for Bicarbonate (mg/L)								
158												
159												

	A	B	C	D	E	F	G	H	I	J	K	L
160			Mean	494.6								
161			Standard Deviation	24.47								
162			Number of data	35								
163			Number of suspected outliers	1								
164												
165				Potential	Obs.	Test	Critical	Critical				
166	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
167	1	494.6	24.12	558	8	2.631	2.98	3.32				
168												
169	For 5% Significance Level, there is no Potential Outlier											
170												
171	For 1% Significance Level, there is no Potential Outlier											
172												
173												
174			Rosner's Outlier Test for Arsenic (mg/L)									
175												
176												
177			Mean	9.9543E-4								
178			Standard Deviation	7.1157E-4								
179			Number of data	35								
180			Number of suspected outliers	1								
181												
182				Potential	Obs.	Test	Critical	Critical				
183	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
184	1	9.9543E-4	7.0133E-4	0.0033	10	3.286	2.98	3.32				
185												
186	For 5% Significance Level, there is 1 Potential Outlier											
187	Potential outliers is: 0.0033											
188												
189	For 1% Significance Level, there is no Potential Outlier											
190												
191												
192			Rosner's Outlier Test for Copper (mg/L)									
193												
194												
195			Mean	0.00215								
196			Standard Deviation	0.00192								
197			Number of data	35								
198			Number of suspected outliers	1								
199												
200				Potential	Obs.	Test	Critical	Critical				
201	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
202	1	0.00215	0.00189	0.0082	31	3.199	2.98	3.32				
203												
204	For 5% Significance Level, there is 1 Potential Outlier											
205	Potential outliers is: 0.0082											
206												
207	For 1% Significance Level, there is no Potential Outlier											
208												
209												
210			Rosner's Outlier Test for Nickel (mg/L)									
211												
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213			Mean	0.0133								
214			Standard Deviation	0.0171								
215			Number of data	31								
216			Number of suspected outliers	1								
217												
218				Potential	Obs.	Test	Critical	Critical				
219	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
220	1	0.0133	0.0168	0.0744	21	3.63	2.92	3.25				
221												
222	For 5% Significance Level, there is 1 Potential Outlier											
223	Potential outliers is: 0.0744											
224												
225	For 1% Significance Level, there is 1 Potential Outlier											
226	Potential outliers is: 0.0744											
227												
228												
229			Rosner's Outlier Test for Zinc (mg/L)									
230												
231												
232			Mean	0.00492								
233			Standard Deviation	0.00563								
234			Number of data	31								
235			Number of suspected outliers	1								
236												
237				Potential	Obs.	Test	Critical	Critical				
238	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
239	1	0.00492	0.00554	0.03	3	4.525	2.92	3.25				
240												
241	For 5% Significance Level, there is 1 Potential Outlier											
242	Potential outliers is: 0.03											
243												
244	For 1% Significance Level, there is 1 Potential Outlier											
245	Potential outliers is: 0.03											
246												
247												
248	Dixon's Outlier Test for Total Organic Carbon (mg/L)											
249												
250	Number of Observations = 18											
251	10% critical value: 0.424											
252	5% critical value: 0.475											
253	1% critical value: 0.561											
254												
255	1. Observation Value 11.3 is a Potential Outlier (Upper											
256												
257	Test Statistic: 0.158											
258												
259	For 10% significance level, 11.3 is not an outlier.											
260	For 5% significance level, 11.3 is not an outlier.											
261	For 1% significance level, 11.3 is not an outlier.											
262												
263	2. Observation Value 9.2 is a Potential Outlier (Lower T											
264												
265	Test Statistic: 0.111											

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267	For 10% significance level, 9.2 is not an outlier.											
268	For 5% significance level, 9.2 is not an outlier.											
269	For 1% significance level, 9.2 is not an outlier.											
270												
271												
272				Rosner's Outlier Test for Dissolved Organic Carbon (mg/L)								
273												
274												
275				Mean	10.77							
276				Standard Deviation	1.019							
277				Number of data	35							
278				Number of suspected outliers	1							
279												
280				Potential	Obs.	Test	Critical	Critical				
281	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
282	1	10.77	1.004	13.1	13	2.32	2.98	3.32				
283												
284	For 5% Significance Level, there is no Potential Outlier											
285												
286	For 1% Significance Level, there is no Potential Outlier											
287												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:29:07 AM								
4				From File	2024-IntermediateProUCL_j.xls							
5				Full Precision	OFF							
6												
7				12-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.857								
12			Standard Deviation	0.293								
13			Number of data	41								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.857	0.29	8.41	31	1.907	3.05	3.39				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Chloride (mg/L)								
26												
27												
28			Mean	0.923								
29			Standard Deviation	0.541								
30			Number of data	41								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	0.923	0.535	2.9	1	3.697	3.05	3.39				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 2.9											
39												
40	For 1% Significance Level, there is 1 Potential Outlier											
41	Potential outliers is: 2.9											
42												
43												
44				Rosner's Outlier Test for Sulphate (mg/L)								
45												
46												
47			Mean	74.32								
48			Standard Deviation	8.38								
49			Number of data	29								
50			Number of suspected outliers	1								
51												
52				Potential	Obs.	Test	Critical	Critical				
53	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
54	1	74.32	8.234	56.8	17	2.128	2.89	3.22				
55												
56	For 5% Significance Level, there is no Potential Outlier											
57												
58	For 1% Significance Level, there is no Potential Outlier											
59												
60												
61				Rosner's Outlier Test for Iron (mg/L)								
62												
63												
64				Mean	0.532							
65				Standard Deviation	0.581							
66				Number of data	28							
67				Number of suspected outliers	1							
68												
69				Potential	Obs.	Test	Critical	Critical				
70	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
71	1	0.532	0.571	1.91	23	2.414	2.88	3.2				
72												
73	For 5% Significance Level, there is no Potential Outlier											
74												
75	For 1% Significance Level, there is no Potential Outlier											
76												
77												
78				Rosner's Outlier Test for Manganese (mg/L)								
79												
80												
81				Mean	0.712							
82				Standard Deviation	0.327							
83				Number of data	28							
84				Number of suspected outliers	1							
85												
86				Potential	Obs.	Test	Critical	Critical				
87	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
88	1	0.712	0.321	1.69	2	3.05	2.88	3.2				
89												
90	For 5% Significance Level, there is 1 Potential Outlier											
91	Potential outliers is: 1.69											
92												
93	For 1% Significance Level, there is no Potential Outlier											
94												
95												
96				Rosner's Outlier Test for Total Dissolved Solids (mg/L)								
97												
98												
99				Mean	386.7							
100				Standard Deviation	51.63							
101				Number of data	41							
102				Number of suspected outliers	1							
103												
104				Potential	Obs.	Test	Critical	Critical				
105	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
106	1	386.7	51	208	8	3.504	3.05	3.39				

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 208

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 208

Rosner's Outlier Test for Calcium (mg/L)

Mean	86.33
Standard Deviation	13
Number of data	41
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	86.33	12.84	56.2	3	2.346	3.05	3.39

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Magnesium (mg/L)

Mean	19.82
Standard Deviation	2.964
Number of data	41
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	19.82	2.927	13.1	1	2.295	3.05	3.39

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sodium (mg/L)

Mean	29.95
Standard Deviation	9.148
Number of data	41
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	29.95	9.036	57.5	3	3.049	3.05	3.39

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	362.6
Standard Deviation	39.92
Number of data	40
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	362.6	39.41	236.5	8	3.2	3.04	3.38

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 236.5

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Arsenic (mg/L)

Mean	0.00272
Standard Deviation	0.00305
Number of data	40
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00272	0.00301	0.0106	35	2.617	3.04	3.38

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Cadmium (mg/L)

Mean	5.2282E-4
Standard Deviation	7.9041E-4
Number of data	40
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	5.2282E-4	7.8047E-4	0.003	8	3.174	3.04	3.38

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.003

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Copper (mg/L)

Mean	0.0111
Standard Deviation	0.0169
Number of data	40
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.0111	0.0167	0.0726	23	3.679	3.04	3.38

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0726

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0726

Rosner's Outlier Test for Lead (mg/L)

Mean	0.00122
Standard Deviation	0.00108
Number of data	40
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00122	0.00106	0.00539	27	3.929	3.04	3.38

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.00539

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.00539

Rosner's Outlier Test for Nickel (mg/L)

Mean	0.132
Standard Deviation	0.304
Number of data	30
Number of suspected outliers	1

Potential	Obs.	Test	Critical	Critical

	A	B	C	D	E	F	G	H	I	J	K	L
266	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
267	1	0.132	0.299	1.52	11	4.638	2.91	3.24				
268												
269	For 5% Significance Level, there is 1 Potential Outlier											
270	Potential outliers is: 1.52											
271												
272	For 1% Significance Level, there is 1 Potential Outlier											
273	Potential outliers is: 1.52											
274												
275												
276	Rosner's Outlier Test for Zinc (mg/L)											
277												
278												
279			Mean	0.318								
280			Standard Deviation	0.379								
281			Number of data	30								
282			Number of suspected outliers	1								
283												
284				Potential	Obs.	Test	Critical	Critical				
285	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
286	1	0.318	0.372	1.19	16	2.342	2.91	3.24				
287												
288	For 5% Significance Level, there is no Potential Outlier											
289												
290	For 1% Significance Level, there is no Potential Outlier											
291												
292												
293	Dixon's Outlier Test for Total Organic Carbon (mg/L)											
294												
295	Number of Observations = 22											
296	10% critical value: 0.382											
297	5% critical value: 0.43											
298	1% critical value: 0.514											
299												
300	1. Observation Value 4 is a Potential Outlier (Upper Tai											
301												
302	Test Statistic: 0.053											
303												
304	For 10% significance level, 4 is not an outlier.											
305	For 5% significance level, 4 is not an outlier.											
306	For 1% significance level, 4 is not an outlier.											
307												
308	2. Observation Value 1.4 is a Potential Outlier (Lower T											
309												
310	Test Statistic: 0.280											
311												
312	For 10% significance level, 1.4 is not an outlier.											
313	For 5% significance level, 1.4 is not an outlier.											
314	For 1% significance level, 1.4 is not an outlier.											
315												
316												
317	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L											
318												

	A	B	C	D	E	F	G	H	I	J	K	L
319	Number of Observations = 18											
320	10% critical value: 0.424											
321	5% critical value: 0.475											
322	1% critical value: 0.561											
323												
324	1. Observation Value 4.8 is a Potential Outlier (Upper T											
325												
326	Test Statistic: 0.107											
327												
328	For 10% significance level, 4.8 is not an outlier.											
329	For 5% significance level, 4.8 is not an outlier.											
330	For 1% significance level, 4.8 is not an outlier.											
331												
332	2. Observation Value 1.9 is a Potential Outlier (Lower Ta											
333												
334	Test Statistic: 0.038											
335												
336	For 10% significance level, 1.9 is not an outlier.											
337	For 5% significance level, 1.9 is not an outlier.											
338	For 1% significance level, 1.9 is not an outlier.											
339												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:29:44 AM								
4				From File	2024-IntermediateProUCL_k.xls							
5				Full Precision	OFF							
6												
7				13-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.852								
12			Standard Deviation	0.277								
13			Number of data	37								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.852	0.273	7.33	7	1.912	3	3.34				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Chloride (mg/L)								
26												
27												
28			Mean	0.784								
29			Standard Deviation	0.367								
30			Number of data	37								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	0.784	0.362	2	16	3.361	3	3.34				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 2											
39												
40	For 1% Significance Level, there is 1 Potential Outlier											
41	Potential outliers is: 2											
42												
43												
44				Rosner's Outlier Test for Sulphate (mg/L)								
45												
46												
47			Mean	88.5								
48			Standard Deviation	18.22								
49			Number of data	31								
50			Number of suspected outliers	1								
51												
52				Potential	Obs.	Test	Critical	Critical				
53	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
54	1	88.5	17.93	42.8	4	2.549	2.92	3.25				
55												
56	For 5% Significance Level, there is no Potential Outlier											
57												
58	For 1% Significance Level, there is no Potential Outlier											
59												
60												
61				Rosner's Outlier Test for Iron (mg/L)								
62												
63												
64				Mean	0.192							
65				Standard Deviation	0.297							
66				Number of data	29							
67				Number of suspected outliers	1							
68												
69				Potential	Obs.	Test	Critical	Critical				
70	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
71	1	0.192	0.291	1.4	10	4.144	2.89	3.22				
72												
73	For 5% Significance Level, there is 1 Potential Outlier											
74	Potential outliers is: 1.4											
75												
76	For 1% Significance Level, there is 1 Potential Outlier											
77	Potential outliers is: 1.4											
78												
79												
80				Rosner's Outlier Test for Manganese (mg/L)								
81												
82												
83				Mean	0.805							
84				Standard Deviation	0.456							
85				Number of data	29							
86				Number of suspected outliers	1							
87												
88				Potential	Obs.	Test	Critical	Critical				
89	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
90	1	0.805	0.448	2.28	5	3.289	2.89	3.22				
91												
92	For 5% Significance Level, there is 1 Potential Outlier											
93	Potential outliers is: 2.28											
94												
95	For 1% Significance Level, there is 1 Potential Outlier											
96	Potential outliers is: 2.28											
97												
98												
99				Rosner's Outlier Test for Total Dissolved Solids (mg/L)								
100												
101												
102				Mean	397.9							
103				Standard Deviation	44.61							
104				Number of data	37							
105				Number of suspected outliers	1							
106												

	A	B	C	D	E	F	G	H	I	J	K	L
107				Potential	Obs.	Test	Critical	Critical				
108	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
109	1	397.9	44	285	1	2.566	3	3.34				
110												
111	For 5% Significance Level, there is no Potential Outlier											
112												
113	For 1% Significance Level, there is no Potential Outlier											
114												
115												
116				Rosner's Outlier Test for Calcium (mg/L)								
117												
118												
119			Mean	94.04								
120			Standard Deviation	10.28								
121			Number of data	36								
122			Number of suspected outliers	1								
123												
124				Potential	Obs.	Test	Critical	Critical				
125	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
126	1	94.04	10.14	56.5	9	3.702	2.99	3.33				
127												
128	For 5% Significance Level, there is 1 Potential Outlier											
129	Potential outliers is: 56.5											
130												
131	For 1% Significance Level, there is 1 Potential Outlier											
132	Potential outliers is: 56.5											
133												
134												
135				Rosner's Outlier Test for Magnesium (mg/L)								
136												
137												
138			Mean	20.97								
139			Standard Deviation	2.061								
140			Number of data	36								
141			Number of suspected outliers	1								
142												
143				Potential	Obs.	Test	Critical	Critical				
144	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
145	1	20.97	2.032	16	1	2.445	2.99	3.33				
146												
147	For 5% Significance Level, there is no Potential Outlier											
148												
149	For 1% Significance Level, there is no Potential Outlier											
150												
151												
152				Rosner's Outlier Test for Sodium (mg/L)								
153												
154												
155			Mean	23.65								
156			Standard Deviation	5.507								
157			Number of data	36								
158			Number of suspected outliers	1								
159												

	A	B	C	D	E	F	G	H	I	J	K	L
160				Potential	Obs.	Test	Critical	Critical				
161	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
162	1	23.65	5.43	34.9	31	2.072	2.99	3.33				
163												
164	For 5% Significance Level, there is no Potential Outlier											
165												
166	For 1% Significance Level, there is no Potential Outlier											
167												
168												
169	Rosner's Outlier Test for Bicarbonate (mg/L)											
170												
171												
172			Mean	347.7								
173			Standard Deviation	28.6								
174			Number of data	36								
175			Number of suspected outliers	1								
176												
177				Potential	Obs.	Test	Critical	Critical				
178	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
179	1	347.7	28.2	254	10	3.322	2.99	3.33				
180												
181	For 5% Significance Level, there is 1 Potential Outlier											
182	Potential outliers is: 254											
183												
184	For 1% Significance Level, there is no Potential Outlier											
185												
186												
187	Rosner's Outlier Test for Arsenic (mg/L)											
188												
189												
190			Mean	8.0750E-4								
191			Standard Deviation	0.0012								
192			Number of data	36								
193			Number of suspected outliers	1								
194												
195				Potential	Obs.	Test	Critical	Critical				
196	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
197	1	8.0750E-4	0.00118	0.007	11	5.24	2.99	3.33				
198												
199	For 5% Significance Level, there is 1 Potential Outlier											
200	Potential outliers is: 0.007											
201												
202	For 1% Significance Level, there is 1 Potential Outlier											
203	Potential outliers is: 0.007											
204												
205												
206	Rosner's Outlier Test for Copper (mg/L)											
207												
208												
209			Mean	0.00122								
210			Standard Deviation	9.0382E-4								
211			Number of data	36								
212			Number of suspected outliers	1								

	A	B	C	D	E	F	G	H	I	J	K	L
213												
214				Potential	Obs.	Test	Critical	Critical				
215	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
216	1	0.00122	8.9118E-4	0.0042	19	3.344	2.99	3.33				
217												
218	For 5% Significance Level, there is 1 Potential Outlier											
219	Potential outliers is: 0.0042											
220												
221	For 1% Significance Level, there is 1 Potential Outlier											
222	Potential outliers is: 0.0042											
223												
224												
225				Rosner's Outlier Test for Nickel (mg/L)								
226												
227												
228				Mean	0.0044							
229				Standard Deviation	0.00452							
230				Number of data	31							
231				Number of suspected outliers	1							
232												
233				Potential	Obs.	Test	Critical	Critical				
234	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
235	1	0.0044	0.00445	0.02	6	3.508	2.92	3.25				
236												
237	For 5% Significance Level, there is 1 Potential Outlier											
238	Potential outliers is: 0.02											
239												
240	For 1% Significance Level, there is 1 Potential Outlier											
241	Potential outliers is: 0.02											
242												
243												
244				Rosner's Outlier Test for D-Nickel (mg/L)								
245												
246												
247				Mean	0.806							
248				Standard Deviation	0.402							
249				Number of data	31							
250				Number of suspected outliers	1							
251												
252				Potential	Obs.	Test	Critical	Critical				
253	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
254	1	0.806	0.395	0	2	2.041	2.92	3.25				
255												
256	For 5% Significance Level, there is no Potential Outlier											
257												
258	For 1% Significance Level, there is no Potential Outlier											
259												
260												
261				Rosner's Outlier Test for Zinc (mg/L)								
262												
263												
264				Mean	0.00654							
265				Standard Deviation	0.0144							

	A	B	C	D	E	F	G	H	I	J	K	L
266			Number of data	31								
267			Number of suspected outliers	1								
268												
269				Potential	Obs.	Test	Critical	Critical				
270	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
271	1	0.00654	0.0142	0.082	4	5.33	2.92	3.25				
272												
273	For 5% Significance Level, there is 1 Potential Outlier											
274	Potential outliers is: 0.082											
275												
276	For 1% Significance Level, there is 1 Potential Outlier											
277	Potential outliers is: 0.082											
278												
279												
280	Dixon's Outlier Test for Total Organic Carbon (mg/L)											
281												
282	Number of Observations = 18											
283	10% critical value: 0.424											
284	5% critical value: 0.475											
285	1% critical value: 0.561											
286												
287	1. Observation Value 3.2 is a Potential Outlier (Upper T											
288												
289	Test Statistic: 0.400											
290												
291	For 10% significance level, 3.2 is not an outlier.											
292	For 5% significance level, 3.2 is not an outlier.											
293	For 1% significance level, 3.2 is not an outlier.											
294												
295	2. Observation Value 1 is a Potential Outlier (Lower Tail											
296												
297	Test Statistic: 0.143											
298												
299	For 10% significance level, 1 is not an outlier.											
300	For 5% significance level, 1 is not an outlier.											
301	For 1% significance level, 1 is not an outlier.											
302												
303												
304	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
305												
306	Number of Observations = 19											
307	10% critical value: 0.412											
308	5% critical value: 0.462											
309	1% critical value: 0.547											
310												
311	1. Observation Value 4.2 is a Potential Outlier (Upper T											
312												
313	Test Statistic: 0.115											
314												
315	For 10% significance level, 4.2 is not an outlier.											
316	For 5% significance level, 4.2 is not an outlier.											
317	For 1% significance level, 4.2 is not an outlier.											
318												

	A	B	C	D	E	F	G	H	I	J	K	L
319	2. Observation Value 1.3 is a Potential Outlier (Lower Ta											
320												
321	Test Statistic: 0.115											
322												
323	For 10% significance level, 1.3 is not an outlier.											
324	For 5% significance level, 1.3 is not an outlier.											
325	For 1% significance level, 1.3 is not an outlier.											
326												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:30:21 AM								
4				From File	2024-IntermediateProUCL_I.xls							
5				Full Precision	OFF							
6												
7				15-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.844								
12			Standard Deviation	0.324								
13			Number of data	30								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.844	0.318	7.04	4	2.526	2.91	3.24				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Chloride (mg/L)								
26												
27												
28			Mean	0.793								
29			Standard Deviation	0.542								
30			Number of data	30								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	0.793	0.533	3.1	1	4.331	2.91	3.24				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 3.1											
39												
40	For 1% Significance Level, there is 1 Potential Outlier											
41	Potential outliers is: 3.1											
42												
43												
44				Rosner's Outlier Test for Sulphate (mg/L)								
45												
46												
47			Mean	54.77								
48			Standard Deviation	29.83								
49			Number of data	30								
50			Number of suspected outliers	1								
51												
52				Potential	Obs.	Test	Critical	Critical				
53	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
54	1	54.77	29.33	144	1	3.043	2.91	3.24				
55												
56	For 5% Significance Level, there is 1 Potential Outlier											
57	Potential outliers is: 144											
58												
59	For 1% Significance Level, there is no Potential Outlier											
60												
61												
62				Rosner's Outlier Test for Manganese (mg/L)								
63												
64												
65				Mean	0.621							
66				Standard Deviation	0.281							
67				Number of data	28							
68				Number of suspected outliers	1							
69												
70				Potential	Obs.	Test	Critical	Critical				
71	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
72	1	0.621	0.276	1.28	17	2.389	2.88	3.2				
73												
74	For 5% Significance Level, there is no Potential Outlier											
75												
76	For 1% Significance Level, there is no Potential Outlier											
77												
78												
79				Rosner's Outlier Test for Total Dissolved Solids (mg/L)								
80												
81												
82				Mean	414.4							
83				Standard Deviation	51.06							
84				Number of data	30							
85				Number of suspected outliers	1							
86												
87				Potential	Obs.	Test	Critical	Critical				
88	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
89	1	414.4	50.2	317	17	1.941	2.91	3.24				
90												
91	For 5% Significance Level, there is no Potential Outlier											
92												
93	For 1% Significance Level, there is no Potential Outlier											
94												
95												
96				Rosner's Outlier Test for Calcium (mg/L)								
97												
98												
99				Mean	94.79							
100				Standard Deviation	11.49							
101				Number of data	30							
102				Number of suspected outliers	1							
103												
104				Potential	Obs.	Test	Critical	Critical				
105	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
106	1	94.79	11.29	121	2	2.321	2.91	3.24				

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Magnesium (mg/L)

Mean	21.6
Standard Deviation	2.491
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	21.6	2.449	15.6	15	2.448	2.91	3.24

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sodium (mg/L)

Mean	31.19
Standard Deviation	5.8
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	31.19	5.702	17.5	17	2.4	2.91	3.24

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	414.5
Standard Deviation	22.38
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	414.5	22	339	1	3.43	2.91	3.24

For 5% Significance Level, there is 1 Potential Outlier

	A	B	C	D	E	F	G	H	I	J	K	L
160	Potential outliers is: 339											
161												
162	For 1% Significance Level, there is 1 Potential Outlier											
163	Potential outliers is: 339											
164												
165												
166				Rosner's Outlier Test for Arsenic (mg/L)								
167												
168												
169				Mean	3.4100E-4							
170				Standard Deviation	2.1514E-4							
171				Number of data	30							
172				Number of suspected outliers	1							
173												
174				Potential	Obs.	Test	Critical	Critical				
175	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
176	1	3.4100E-4	2.1152E-4	0.001	14	3.115	2.91	3.24				
177												
178	For 5% Significance Level, there is 1 Potential Outlier											
179	Potential outliers is: 0.001											
180												
181	For 1% Significance Level, there is no Potential Outlier											
182												
183												
184				Rosner's Outlier Test for Cadmium (mg/L)								
185												
186												
187				Mean	2.2565E-4							
188				Standard Deviation	5.5513E-4							
189				Number of data	30							
190				Number of suspected outliers	1							
191												
192				Potential	Obs.	Test	Critical	Critical				
193	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
194	1	2.2565E-4	5.4580E-4	0.003	1	5.083	2.91	3.24				
195												
196	For 5% Significance Level, there is 1 Potential Outlier											
197	Potential outliers is: 0.003											
198												
199	For 1% Significance Level, there is 1 Potential Outlier											
200	Potential outliers is: 0.003											
201												
202												
203				Rosner's Outlier Test for Copper (mg/L)								
204												
205												
206				Mean	0.00278							
207				Standard Deviation	0.00202							
208				Number of data	30							
209				Number of suspected outliers	1							
210												
211				Potential	Obs.	Test	Critical	Critical				
212	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				

	A	B	C	D	E	F	G	H	I	J	K	L
213	1	0.00278	0.00199	0.01	6	3.63	2.91	3.24				
214												
215	For 5% Significance Level, there is 1 Potential Outlier											
216	Potential outliers is: 0.01											
217												
218	For 1% Significance Level, there is 1 Potential Outlier											
219	Potential outliers is: 0.01											
220												
221												
222				Rosner's Outlier Test for Nickel (mg/L)								
223												
224												
225				Mean	0.0127							
226				Standard Deviation	0.0164							
227				Number of data	30							
228				Number of suspected outliers	1							
229												
230				Potential	Obs.	Test	Critical	Critical				
231	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
232	1	0.0127	0.0162	0.092	4	4.908	2.91	3.24				
233												
234	For 5% Significance Level, there is 1 Potential Outlier											
235	Potential outliers is: 0.092											
236												
237	For 1% Significance Level, there is 1 Potential Outlier											
238	Potential outliers is: 0.092											
239												
240												
241				Rosner's Outlier Test for Zinc (mg/L)								
242												
243												
244				Mean	0.00497							
245				Standard Deviation	0.00537							
246				Number of data	30							
247				Number of suspected outliers	1							
248												
249				Potential	Obs.	Test	Critical	Critical				
250	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
251	1	0.00497	0.00528	0.026	6	3.982	2.91	3.24				
252												
253	For 5% Significance Level, there is 1 Potential Outlier											
254	Potential outliers is: 0.026											
255												
256	For 1% Significance Level, there is 1 Potential Outlier											
257	Potential outliers is: 0.026											
258												
259												
260	Dixon's Outlier Test for Total Organic Carbon (mg/L)											
261												
262	Number of Observations = 12											
263	10% critical value: 0.49											
264	5% critical value: 0.546											
265	1% critical value: 0.642											

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267	1. Observation Value 15 is a Potential Outlier (Upper Ta											
268												
269	Test Statistic: 0.861											
270												
271	For 10% significance level, 15 is an outlier.											
272	For 5% significance level, 15 is an outlier.											
273	For 1% significance level, 15 is an outlier.											
274												
275	2. Observation Value 4.2 is a Potential Outlier (Lower Ta											
276												
277	Test Statistic: 0.095											
278												
279	For 10% significance level, 4.2 is not an outlier.											
280	For 5% significance level, 4.2 is not an outlier.											
281	For 1% significance level, 4.2 is not an outlier.											
282												
283												
284	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
285												
286	Number of Observations = 18											
287	10% critical value: 0.424											
288	5% critical value: 0.475											
289	1% critical value: 0.561											
290												
291	1. Observation Value 6.8 is a Potential Outlier (Upper T											
292												
293	Test Statistic: 0.141											
294												
295	For 10% significance level, 6.8 is not an outlier.											
296	For 5% significance level, 6.8 is not an outlier.											
297	For 1% significance level, 6.8 is not an outlier.											
298												
299	2. Observation Value 4.07 is a Potential Outlier (Lower T											
300												
301	Test Statistic: 0.247											
302												
303	For 10% significance level, 4.07 is not an outlier.											
304	For 5% significance level, 4.07 is not an outlier.											
305	For 1% significance level, 4.07 is not an outlier.											
306												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:31:01 AM								
4				From File	2024-IntermediateProUCL_m.xls							
5				Full Precision	OFF							
6												
7				16-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.935								
12			Standard Deviation	0.264								
13			Number of data	26								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.935	0.258	7.12	2	3.152	2.84	3.16				
19												
20	For 5% Significance Level, there is 1 Potential Outlier											
21	Potential outliers is: 7.12											
22												
23	For 1% Significance Level, there is no Potential Outlier											
24												
25												
26				Rosner's Outlier Test for Chloride (mg/L)								
27												
28												
29			Mean	0.805								
30			Standard Deviation	0.335								
31			Number of data	26								
32			Number of suspected outliers	1								
33												
34				Potential	Obs.	Test	Critical	Critical				
35	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
36	1	0.805	0.329	1.7	11	2.72	2.84	3.16				
37												
38	For 5% Significance Level, there is no Potential Outlier											
39												
40	For 1% Significance Level, there is no Potential Outlier											
41												
42												
43				Rosner's Outlier Test for Sulphate (mg/L)								
44												
45												
46			Mean	79.47								
47			Standard Deviation	16.09								
48			Number of data	26								
49			Number of suspected outliers	1								
50												
51				Potential	Obs.	Test	Critical	Critical				
52	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
53	1	79.47	15.78	35	25	2.819	2.84	3.16				

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for Iron (mg/L)

Number of Observations = 24

10% critical value: 0.367

5% critical value: 0.413

1% critical value: 0.497

1. Observation Value 3.31 is a Potential Outlier (Upper

Test Statistic: 0.715

For 10% significance level, 3.31 is an outlier.

For 5% significance level, 3.31 is an outlier.

For 1% significance level, 3.31 is an outlier.

2. Observation Value 0.01 is a Potential Outlier (Lower

Test Statistic: 0.000

For 10% significance level, 0.01 is not an outlier.

For 5% significance level, 0.01 is not an outlier.

For 1% significance level, 0.01 is not an outlier.

Dixon's Outlier Test for Manganese (mg/L)

Number of Observations = 24

10% critical value: 0.367

5% critical value: 0.413

1% critical value: 0.497

1. Observation Value 0.812 is a Potential Outlier (Uppe

Test Statistic: 0.072

For 10% significance level, 0.812 is not an outlier.

For 5% significance level, 0.812 is not an outlier.

For 1% significance level, 0.812 is not an outlier.

2. Observation Value 0.005 is a Potential Outlier (Lower

Test Statistic: 0.007

For 10% significance level, 0.005 is not an outlier.

For 5% significance level, 0.005 is not an outlier.

For 1% significance level, 0.005 is not an outlier.

	A	B	C	D	E	F	G	H	I	J	K	L
107												
108	Rosner's Outlier Test for Total Dissolved Solids (mg/L)											
109												
110												
111			Mean	487.3								
112			Standard Deviation	25.48								
113			Number of data	26								
114			Number of suspected outliers	1								
115												
116				Potential	Obs.	Test	Critical	Critical				
117	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
118	1	487.3	24.98	560	4	2.911	2.84	3.16				
119												
120	For 5% Significance Level, there is 1 Potential Outlier											
121	Potential outliers is: 560											
122												
123	For 1% Significance Level, there is no Potential Outlier											
124												
125												
126	Rosner's Outlier Test for Calcium (mg/L)											
127												
128												
129			Mean	110.1								
130			Standard Deviation	9.794								
131			Number of data	26								
132			Number of suspected outliers	1								
133												
134				Potential	Obs.	Test	Critical	Critical				
135	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
136	1	110.1	9.604	88.2	10	2.277	2.84	3.16				
137												
138	For 5% Significance Level, there is no Potential Outlier											
139												
140	For 1% Significance Level, there is no Potential Outlier											
141												
142												
143	Rosner's Outlier Test for Magnesium (mg/L)											
144												
145												
146			Mean	27.14								
147			Standard Deviation	2.016								
148			Number of data	26								
149			Number of suspected outliers	1								
150												
151				Potential	Obs.	Test	Critical	Critical				
152	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
153	1	27.14	1.977	32.8	4	2.861	2.84	3.16				
154												
155	For 5% Significance Level, there is 1 Potential Outlier											
156	Potential outliers is: 32.8											
157												
158	For 1% Significance Level, there is no Potential Outlier											
159												

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161				Rosner's Outlier Test for Sodium (mg/L)								
162												
163												
164				Mean	35.12							
165				Standard Deviation	7.522							
166				Number of data	26							
167				Number of suspected outliers	1							
168												
169				Potential	Obs.	Test	Critical	Critical				
170	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
171	1	35.12	7.376	50	5	2.018	2.84	3.16				
172												
173	For 5% Significance Level, there is no Potential Outlier											
174												
175	For 1% Significance Level, there is no Potential Outlier											
176												
177												
178				Rosner's Outlier Test for Bicarbonate (mg/L)								
179												
180												
181				Mean	463.5							
182				Standard Deviation	20.7							
183				Number of data	26							
184				Number of suspected outliers	1							
185												
186				Potential	Obs.	Test	Critical	Critical				
187	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
188	1	463.5	20.29	512	25	2.39	2.84	3.16				
189												
190	For 5% Significance Level, there is no Potential Outlier											
191												
192	For 1% Significance Level, there is no Potential Outlier											
193												
194												
195				Rosner's Outlier Test for Arsenic (mg/L)								
196												
197												
198				Mean	4.4538E-4							
199				Standard Deviation	3.9163E-4							
200				Number of data	26							
201				Number of suspected outliers	1							
202												
203				Potential	Obs.	Test	Critical	Critical				
204	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
205	1	4.4538E-4	3.8403E-4	0.00152	16	2.798	2.84	3.16				
206												
207	For 5% Significance Level, there is no Potential Outlier											
208												
209	For 1% Significance Level, there is no Potential Outlier											
210												
211												
212				Rosner's Outlier Test for Cadmium (mg/L)								

			Mean	1.4703E-4				
			Standard Deviation	2.3071E-4				
			Number of data	26				
			Number of suspected outliers	1				
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	1.4703E-4	2.2623E-4	0.0012	3	4.654	2.84	3.16	

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0012

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0012

Rosner's Outlier Test for Copper (mg/L)

			Mean	0.0243				
			Standard Deviation	0.0348				
			Number of data	26				
			Number of suspected outliers	1				
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	0.0243	0.0341	0.165	9	4.125	2.84	3.16	

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.165

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.165

Rosner's Outlier Test for Nickel (mg/L)

			Mean	0.00666				
			Standard Deviation	0.00559				
			Number of data	26				
			Number of suspected outliers	1				
			Potential	Obs.	Test	Critical	Critical	
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)	
1	0.00666	0.00548	0.0268	12	3.674	2.84	3.16	

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.0268

For 1% Significance Level, there is 1 Potential Outlier

	A	B	C	D	E	F	G	H	I	J	K	L
266	Potential outliers is: 0.0268											
267												
268												
269				Rosner's Outlier Test for Zinc (mg/L)								
270												
271												
272				Mean	0.103							
273				Standard Deviation	0.205							
274				Number of data	26							
275				Number of suspected outliers	1							
276												
277				Potential	Obs.	Test	Critical	Critical				
278	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
279	1	0.103	0.201	0.796	2	3.456	2.84	3.16				
280												
281	For 5% Significance Level, there is 1 Potential Outlier											
282	Potential outliers is: 0.796											
283												
284	For 1% Significance Level, there is 1 Potential Outlier											
285	Potential outliers is: 0.796											
286												
287												
288	Dixon's Outlier Test for Total Organic Carbon (mg/L)											
289												
290	Number of Observations = 10											
291	10% critical value: 0.409											
292	5% critical value: 0.477											
293	1% critical value: 0.597											
294												
295	1. Observation Value 4.7 is a Potential Outlier (Upper T											
296												
297	Test Statistic: 0.357											
298												
299	For 10% significance level, 4.7 is not an outlier.											
300	For 5% significance level, 4.7 is not an outlier.											
301	For 1% significance level, 4.7 is not an outlier.											
302												
303	2. Observation Value 3.2 is a Potential Outlier (Lower T											
304												
305	Test Statistic: 0.100											
306												
307	For 10% significance level, 3.2 is not an outlier.											
308	For 5% significance level, 3.2 is not an outlier.											
309	For 1% significance level, 3.2 is not an outlier.											
310												
311												
312	Dixon's Outlier Test for Dissolved Organic Carbon (mg/L)											
313												
314	Number of Observations = 16											
315	10% critical value: 0.454											
316	5% critical value: 0.507											
317	1% critical value: 0.595											
318												

	A	B	C	D	E	F	G	H	I	J	K	L
319	1. Observation Value 5.7 is a Potential Outlier (Upper T											
320												
321	Test Statistic: 0.583											
322												
323	For 10% significance level, 5.7 is an outlier.											
324	For 5% significance level, 5.7 is an outlier.											
325	For 1% significance level, 5.7 is not an outlier.											
326												
327	2. Observation Value 3 is a Potential Outlier (Lower Tail											
328												
329	Test Statistic: 0.231											
330												
331	For 10% significance level, 3 is not an outlier.											
332	For 5% significance level, 3 is not an outlier.											
333	For 1% significance level, 3 is not an outlier.											
334												

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:31:42 AM								
4				From File	2024-IntermediateProUCL_n.xls							
5				Full Precision	OFF							
6												
7				17-IN OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.804								
12			Standard Deviation	0.338								
13			Number of data	30								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.804	0.332	7.05	3	2.268	2.91	3.24				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for Sulphate (mg/L)								
26												
27												
28			Mean	55.09								
29			Standard Deviation	9.716								
30			Number of data	30								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	55.09	9.553	77.5	21	2.346	2.91	3.24				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Manganese (mg/L)								
43												
44												
45			Mean	0.556								
46			Standard Deviation	0.238								
47			Number of data	28								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	0.556	0.234	1.08	3	2.244	2.88	3.2				
53												

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Total Dissolved Solids (mg/L)

Mean	458.7
Standard Deviation	19.52
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	458.7	19.2	501	21	2.202	2.91	3.24

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Calcium (mg/L)

Mean	108.2
Standard Deviation	7.634
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	108.2	7.505	93	1	2.027	2.91	3.24

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Magnesium (mg/L)

Mean	24.18
Standard Deviation	1.658
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	24.18	1.63	28.8	21	2.834	2.91	3.24

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Sodium (mg/L)

Mean	30.28
Standard Deviation	3.368
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	30.28	3.312	37.6	23	2.209	2.91	3.24

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	472.9
Standard Deviation	20.06
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	472.9	19.72	423	20	2.532	2.91	3.24

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Arsenic (mg/L)

Mean	3.6300E-4
Standard Deviation	2.1948E-4
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	3.6300E-4	2.1580E-4	0.00106	19	3.23	2.91	3.24

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.00106

For 1% Significance Level, there is no Potential Outlier

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161												
162				Rosner's Outlier Test for Cadmium (mg/L)								
163												
164												
165				Mean	1.0244E-4							
166				Standard Deviation	9.1499E-5							
167				Number of data	30							
168				Number of suspected outliers	1							
169												
170				Potential	Obs.	Test	Critical	Critical				
171	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
172	1	1.0244E-4	8.9961E-5	3.0000E-4	4	2.196	2.91	3.24				
173												
174	For 5% Significance Level, there is no Potential Outlier											
175												
176	For 1% Significance Level, there is no Potential Outlier											
177												
178												
179				Rosner's Outlier Test for Copper (mg/L)								
180												
181												
182				Mean	0.00294							
183				Standard Deviation	0.00215							
184				Number of data	30							
185				Number of suspected outliers	1							
186												
187				Potential	Obs.	Test	Critical	Critical				
188	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
189	1	0.00294	0.00211	0.01	4	3.347	2.91	3.24				
190												
191	For 5% Significance Level, there is 1 Potential Outlier											
192	Potential outliers is: 0.01											
193												
194	For 1% Significance Level, there is 1 Potential Outlier											
195	Potential outliers is: 0.01											
196												
197												
198				Rosner's Outlier Test for Nickel (mg/L)								
199												
200												
201				Mean	0.00577							
202				Standard Deviation	0.00685							
203				Number of data	30							
204				Number of suspected outliers	1							
205												
206				Potential	Obs.	Test	Critical	Critical				
207	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
208	1	0.00577	0.00673	0.04	1	5.085	2.91	3.24				
209												
210	For 5% Significance Level, there is 1 Potential Outlier											
211	Potential outliers is: 0.04											
212												

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.04

Rosner's Outlier Test for Zinc (mg/L)

Mean	0.00422
Standard Deviation	0.0034
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.00422	0.00335	0.015	8	3.223	2.91	3.24

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 0.015

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for Total Organic Carbon (mg/L)

Number of Observations = 11

10% critical value: 0.517

5% critical value: 0.576

1% critical value: 0.679

1. Observation Value 4.7 is a Potential Outlier (Upper T

Test Statistic: 0.625

For 10% significance level, 4.7 is an outlier.

For 5% significance level, 4.7 is an outlier.

For 1% significance level, 4.7 is not an outlier.

2. Observation Value 2.9 is a Potential Outlier (Lower T

Test Statistic: 0.188

For 10% significance level, 2.9 is not an outlier.

For 5% significance level, 2.9 is not an outlier.

For 1% significance level, 2.9 is not an outlier.

Dixon's Outlier Test for Dissolved Organic Carbon (mg/L

Number of Observations = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

	A	B	C	D	E	F	G	H	I	J	K	L
266	1. Observation Value 7.2 is a Potential Outlier (Upper T											
267												
268	Test Statistic: 0.667											
269												
270	For 10% significance level, 7.2 is an outlier.											
271	For 5% significance level, 7.2 is an outlier.											
272	For 1% significance level, 7.2 is an outlier.											
273												
274	2. Observation Value 2.53 is a Potential Outlier (Lower T											
275												
276	Test Statistic: 0.251											
277												
278	For 10% significance level, 2.53 is not an outlier.											
279	For 5% significance level, 2.53 is not an outlier.											
280	For 1% significance level, 2.53 is not an outlier.											
281												

AECOM

App G3 – Outlier Test Output - Sandstone

1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:35:30 AM								
4				From File	2024-SandstoneProUCL_b.xls							
5				Full Precision	OFF							
6												
7				04-SS OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.626								
12			Standard Deviation	0.438								
13			Number of data	35								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.626	0.432	8.49	34	2	2.98	3.32				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	318.4								
29			Standard Deviation	64.31								
30			Number of data	35								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	318.4	63.39	432	33	1.792	2.98	3.32				
36												
37	For 5% Significance Level, there is no Potential Outlier											
38												
39	For 1% Significance Level, there is no Potential Outlier											
40												
41												
42				Rosner's Outlier Test for Chloride (mg/L)								
43												
44												
45			Mean	0.484								
46			Standard Deviation	0.336								
47			Number of data	30								
48			Number of suspected outliers	1								
49												
50				Potential	Obs.	Test	Critical	Critical				
51	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
52	1	0.484	0.331	1.9	3	4.281	2.91	3.24				
53												

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 1.9

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 1.9

Rosner's Outlier Test for Sulphate (mg/L)

Mean	35.1
Standard Deviation	15.67
Number of data	30
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	35.1	15.41	10.5	18	1.596	2.91	3.24

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 12

10% critical value: 0.49

5% critical value: 0.546

1% critical value: 0.642

1. Observation Value 4 is a Potential Outlier (Upper Tai

Test Statistic: 0.628

For 10% significance level, 4 is an outlier.

For 5% significance level, 4 is an outlier.

For 1% significance level, 4 is not an outlier.

2. Observation Value 1.4 is a Potential Outlier (Lower Ta

Test Statistic: 0.091

For 10% significance level, 1.4 is not an outlier.

For 5% significance level, 1.4 is not an outlier.

For 1% significance level, 1.4 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	331.8
Standard Deviation	58.23

	A	B	C	D	E	F	G	H	I	J	K	L
107			Number of data	30								
108			Number of suspected outliers	1								
109												
110				Potential	Obs.	Test	Critical	Critical				
111	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
112	1	331.8	57.25	480	18	2.588	2.91	3.24				
113												
114	For 5% Significance Level, there is no Potential Outlier											
115												
116	For 1% Significance Level, there is no Potential Outlier											
117												
118												
119			Rosner's Outlier Test for Calcium (mg/L)									
120												
121												
122			Mean	69.99								
123			Standard Deviation	14.41								
124			Number of data	30								
125			Number of suspected outliers	1								
126												
127				Potential	Obs.	Test	Critical	Critical				
128	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
129	1	69.99	14.16	101	18	2.19	2.91	3.24				
130												
131	For 5% Significance Level, there is no Potential Outlier											
132												
133	For 1% Significance Level, there is no Potential Outlier											
134												
135												
136			Rosner's Outlier Test for Magnesium (mg/L)									
137												
138												
139			Mean	18.6								
140			Standard Deviation	3.786								
141			Number of data	30								
142			Number of suspected outliers	1								
143												
144				Potential	Obs.	Test	Critical	Critical				
145	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
146	1	18.6	3.722	26	18	1.989	2.91	3.24				
147												
148	For 5% Significance Level, there is no Potential Outlier											
149												
150	For 1% Significance Level, there is no Potential Outlier											
151												
152												
153			Rosner's Outlier Test for Sodium (mg/L)									
154												
155												
156			Mean	24.18								
157			Standard Deviation	5.587								
158			Number of data	30								
159			Number of suspected outliers	1								

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161				Potential	Obs.	Test	Critical	Critical				
162	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
163	1	24.18	5.493	9.3	18	2.708	2.91	3.24				
164												
165	For 5% Significance Level, there is no Potential Outlier											
166												
167	For 1% Significance Level, there is no Potential Outlier											
168												
169												
170				Rosner's Outlier Test for Arsenic (mg/L)								
171												
172												
173				Mean	0.00274							
174				Standard Deviation	0.00578							
175				Number of data	30							
176				Number of suspected outliers	1							
177												
178				Potential	Obs.	Test	Critical	Critical				
179	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
180	1	0.00274	0.00568	0.029	1	4.621	2.91	3.24				
181												
182	For 5% Significance Level, there is 1 Potential Outlier											
183	Potential outliers is: 0.029											
184												
185	For 1% Significance Level, there is 1 Potential Outlier											
186	Potential outliers is: 0.029											
187												
188												
189				Rosner's Outlier Test for Copper (mg/L)								
190												
191												
192				Mean	0.00203							
193				Standard Deviation	0.00264							
194				Number of data	30							
195				Number of suspected outliers	1							
196												
197				Potential	Obs.	Test	Critical	Critical				
198	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
199	1	0.00203	0.0026	0.014	1	4.604	2.91	3.24				
200												
201	For 5% Significance Level, there is 1 Potential Outlier											
202	Potential outliers is: 0.014											
203												
204	For 1% Significance Level, there is 1 Potential Outlier											
205	Potential outliers is: 0.014											
206												
207												
208				Dixon's Outlier Test for Iron (mg/L)								
209												
210	Number of Observations = 13											
211	10% critical value: 0.467											
212	5% critical value: 0.521											

	A	B	C	D	E	F	G	H	I	J	K	L
213	1% critical value: 0.615											
214												
215	1. Observation Value 3.17 is a Potential Outlier (Upper											
216												
217	Test Statistic: 0.250											
218												
219	For 10% significance level, 3.17 is not an outlier.											
220	For 5% significance level, 3.17 is not an outlier.											
221	For 1% significance level, 3.17 is not an outlier.											
222												
223	2. Observation Value 0.01 is a Potential Outlier (Lower											
224												
225	Test Statistic: 0.000											
226												
227	For 10% significance level, 0.01 is not an outlier.											
228	For 5% significance level, 0.01 is not an outlier.											
229	For 1% significance level, 0.01 is not an outlier.											
230												
231												
232	Dixon's Outlier Test for Manganese (mg/L)											
233												
234	Number of Observations = 13											
235	10% critical value: 0.467											
236	5% critical value: 0.521											
237	1% critical value: 0.615											
238												
239	1. Observation Value 0.601 is a Potential Outlier (Uppe											
240												
241	Test Statistic: 0.126											
242												
243	For 10% significance level, 0.601 is not an outlier.											
244	For 5% significance level, 0.601 is not an outlier.											
245	For 1% significance level, 0.601 is not an outlier.											
246												
247	2. Observation Value 0.124 is a Potential Outlier (Lower											
248												
249	Test Statistic: 0.819											
250												
251	For 10% significance level, 0.124 is an outlier.											
252	For 5% significance level, 0.124 is an outlier.											
253	For 1% significance level, 0.124 is an outlier.											
254												
255												
256	Dixon's Outlier Test for Nickel (mg/L)											
257												
258	Number of Observations = 12											
259	10% critical value: 0.49											
260	5% critical value: 0.546											
261	1% critical value: 0.642											
262												
263	1. Observation Value 0.0054 is a Potential Outlier (Upp											
264												
265	Test Statistic: 0.604											

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267	For 10% significance level, 0.0054 is an outlier.											
268	For 5% significance level, 0.0054 is an outlier.											
269	For 1% significance level, 0.0054 is not an outlier.											
270												
271	2. Observation Value 0.00028 is a Potential Outlier (Lov											
272												
273	Test Statistic: 0.101											
274												
275	For 10% significance level, 0.00028 is not an outlier.											
276	For 5% significance level, 0.00028 is not an outlier.											
277	For 1% significance level, 0.00028 is not an outlier.											
278												
279												
280	Dixon's Outlier Test for Zinc (mg/L)											
281												
282	Number of Observations = 12											
283	10% critical value: 0.49											
284	5% critical value: 0.546											
285	1% critical value: 0.642											
286												
287	1. Observation Value 0.0217 is a Potential Outlier (Upp											
288												
289	Test Statistic: 0.784											
290												
291	For 10% significance level, 0.0217 is an outlier.											
292	For 5% significance level, 0.0217 is an outlier.											
293	For 1% significance level, 0.0217 is an outlier.											
294												
295	2. Observation Value 0.0015 is a Potential Outlier (Lowe											
296												
297	Test Statistic: 0.054											
298												
299	For 10% significance level, 0.0015 is not an outlier.											
300	For 5% significance level, 0.0015 is not an outlier.											
301	For 1% significance level, 0.0015 is not an outlier.											
302												
303												
304	Dixon's Outlier Test for TOC (mg/L)											
305												
306	Number of Observations = 24											
307	10% critical value: 0.367											
308	5% critical value: 0.413											
309	1% critical value: 0.497											
310												
311	1. Observation Value 8.6 is a Potential Outlier (Upper T											
312												
313	Test Statistic: 0.803											
314												
315	For 10% significance level, 8.6 is an outlier.											
316	For 5% significance level, 8.6 is an outlier.											
317	For 1% significance level, 8.6 is an outlier.											
318												

	A	B	C	D	E	F	G	H	I	J	K	L
319	2. Observation Value 0.8 is a Potential Outlier (Lower Ta											
320												
321	Test Statistic: 0.118											
322												
323	For 10% significance level, 0.8 is not an outlier.											
324	For 5% significance level, 0.8 is not an outlier.											
325	For 1% significance level, 0.8 is not an outlier.											
326												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2				User Selected Options								
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:36:59 AM								
4				From File	2024-SandstoneProUCL_c.xls							
5				Full Precision	OFF							
6												
7			05-SS OUTLIERS									
8			Dixon's Outlier Test for pH ()									
9												
10	Number of Observations = 19											
11	10% critical value: 0.412											
12	5% critical value: 0.462											
13	1% critical value: 0.547											
14												
15	1. Observation Value 8.48 is a Potential Outlier (Upper											
16												
17	Test Statistic: 0.239											
18												
19	For 10% significance level, 8.48 is not an outlier.											
20	For 5% significance level, 8.48 is not an outlier.											
21	For 1% significance level, 8.48 is not an outlier.											
22												
23	2. Observation Value 7.41 is a Potential Outlier (Lower T											
24												
25	Test Statistic: 0.221											
26												
27	For 10% significance level, 7.41 is not an outlier.											
28	For 5% significance level, 7.41 is not an outlier.											
29	For 1% significance level, 7.41 is not an outlier.											
30												
31												
32			Dixon's Outlier Test for TDS (mg/L)									
33												
34	Number of Observations = 19											
35	10% critical value: 0.412											
36	5% critical value: 0.462											
37	1% critical value: 0.547											
38												
39	1. Observation Value 290 is a Potential Outlier (Upper T											
40												
41	Test Statistic: 0.018											
42												
43	For 10% significance level, 290 is not an outlier.											
44	For 5% significance level, 290 is not an outlier.											
45	For 1% significance level, 290 is not an outlier.											
46												
47	2. Observation Value 230 is a Potential Outlier (Lower T											
48												
49	Test Statistic: 0.051											
50												
51	For 10% significance level, 230 is not an outlier.											
52	For 5% significance level, 230 is not an outlier.											
53	For 1% significance level, 230 is not an outlier.											

	A	B	C	D	E	F	G	H	I	J	K	L
54												
55												
56	Dixon's Outlier Test for Sulphate (mg/L)											
57												
58	Number of Observations = 19											
59	10% critical value: 0.412											
60	5% critical value: 0.462											
61	1% critical value: 0.547											
62												
63	1. Observation Value 26.3 is a Potential Outlier (Upper											
64												
65	Test Statistic: 0.071											
66												
67	For 10% significance level, 26.3 is not an outlier.											
68	For 5% significance level, 26.3 is not an outlier.											
69	For 1% significance level, 26.3 is not an outlier.											
70												
71	2. Observation Value 20 is a Potential Outlier (Lower Ta											
72												
73	Test Statistic: 0.350											
74												
75	For 10% significance level, 20 is not an outlier.											
76	For 5% significance level, 20 is not an outlier.											
77	For 1% significance level, 20 is not an outlier.											
78												
79												
80	Dixon's Outlier Test for DOC (mg/L)											
81												
82	Number of Observations = 17											
83	10% critical value: 0.438											
84	5% critical value: 0.49											
85	1% critical value: 0.577											
86												
87	1. Observation Value 10.1 is a Potential Outlier (Upper											
88												
89	Test Statistic: 0.609											
90												
91	For 10% significance level, 10.1 is an outlier.											
92	For 5% significance level, 10.1 is an outlier.											
93	For 1% significance level, 10.1 is an outlier.											
94												
95	2. Observation Value 0.7 is a Potential Outlier (Lower Ta											
96												
97	Test Statistic: 0.053											
98												
99	For 10% significance level, 0.7 is not an outlier.											
100	For 5% significance level, 0.7 is not an outlier.											
101	For 1% significance level, 0.7 is not an outlier.											
102												
103												
104	Dixon's Outlier Test for Bicarbonate (mg/L)											
105												
106	Number of Observations = 19											

	A	B	C	D	E	F	G	H	I	J	K	L
107	10% critical value: 0.412											
108	5% critical value: 0.462											
109	1% critical value: 0.547											
110												
111	1. Observation Value 282 is a Potential Outlier (Upper T											
112												
113	Test Statistic: 0.226											
114												
115	For 10% significance level, 282 is not an outlier.											
116	For 5% significance level, 282 is not an outlier.											
117	For 1% significance level, 282 is not an outlier.											
118												
119	2. Observation Value 246 is a Potential Outlier (Lower T											
120												
121	Test Statistic: 0.172											
122												
123	For 10% significance level, 246 is not an outlier.											
124	For 5% significance level, 246 is not an outlier.											
125	For 1% significance level, 246 is not an outlier.											
126												
127												
128	Dixon's Outlier Test for Calcium (mg/L)											
129												
130	Number of Observations = 19											
131	10% critical value: 0.412											
132	5% critical value: 0.462											
133	1% critical value: 0.547											
134												
135	1. Observation Value 52.4 is a Potential Outlier (Upper											
136												
137	Test Statistic: 0.149											
138												
139	For 10% significance level, 52.4 is not an outlier.											
140	For 5% significance level, 52.4 is not an outlier.											
141	For 1% significance level, 52.4 is not an outlier.											
142												
143	2. Observation Value 41.7 is a Potential Outlier (Lower T											
144												
145	Test Statistic: 0.213											
146												
147	For 10% significance level, 41.7 is not an outlier.											
148	For 5% significance level, 41.7 is not an outlier.											
149	For 1% significance level, 41.7 is not an outlier.											
150												
151												
152	Dixon's Outlier Test for Magnesium (mg/L)											
153												
154	Number of Observations = 19											
155	10% critical value: 0.412											
156	5% critical value: 0.462											
157	1% critical value: 0.547											
158												
159	1. Observation Value 13.1 is a Potential Outlier (Upper											

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161	Test Statistic: 0.111											
162												
163	For 10% significance level, 13.1 is not an outlier.											
164	For 5% significance level, 13.1 is not an outlier.											
165	For 1% significance level, 13.1 is not an outlier.											
166												
167	2. Observation Value 9.7 is a Potential Outlier (Lower T											
168												
169	Test Statistic: 0.226											
170												
171	For 10% significance level, 9.7 is not an outlier.											
172	For 5% significance level, 9.7 is not an outlier.											
173	For 1% significance level, 9.7 is not an outlier.											
174												
175												
176	Dixon's Outlier Test for Sodium (mg/L)											
177												
178	Number of Observations = 19											
179	10% critical value: 0.412											
180	5% critical value: 0.462											
181	1% critical value: 0.547											
182												
183	1. Observation Value 32.8 is a Potential Outlier (Upper											
184												
185	Test Statistic: 0.167											
186												
187	For 10% significance level, 32.8 is not an outlier.											
188	For 5% significance level, 32.8 is not an outlier.											
189	For 1% significance level, 32.8 is not an outlier.											
190												
191	2. Observation Value 25.9 is a Potential Outlier (Lower											
192												
193	Test Statistic: 0.250											
194												
195	For 10% significance level, 25.9 is not an outlier.											
196	For 5% significance level, 25.9 is not an outlier.											
197	For 1% significance level, 25.9 is not an outlier.											
198												
199												
200	Dixon's Outlier Test for Arsenic (mg/L)											
201												
202	Number of Observations = 19											
203	10% critical value: 0.412											
204	5% critical value: 0.462											
205	1% critical value: 0.547											
206												
207	1. Observation Value 0.0097 is a Potential Outlier (Upp											
208												
209	Test Statistic: 0.330											
210												
211	For 10% significance level, 0.0097 is not an outlier.											
212	For 5% significance level, 0.0097 is not an outlier.											

	A	B	C	D	E	F	G	H	I	J	K	L
213	For 1% significance level, 0.0097 is not an outlier.											
214												
215	2. Observation Value 0.00019 is a Potential Outlier (Lov											
216												
217	Test Statistic: 0.017											
218												
219	For 10% significance level, 0.00019 is not an outlier.											
220	For 5% significance level, 0.00019 is not an outlier.											
221	For 1% significance level, 0.00019 is not an outlier.											
222												
223												
224	Dixon's Outlier Test for Cadmium (mg/L)											
225												
226	Number of Observations = 11											
227	10% critical value: 0.517											
228	5% critical value: 0.576											
229	1% critical value: 0.679											
230												
231	1. Observation Value 0.000113 is a Potential Outlier (U											
232												
233	Test Statistic: 0.869											
234												
235	For 10% significance level, 0.000113 is an outlier.											
236	For 5% significance level, 0.000113 is an outlier.											
237	For 1% significance level, 0.000113 is an outlier.											
238												
239	2. Observation Value 7.2E-06 is a Potential Outlier (Low											
240												
241	Test Statistic: 0.029											
242												
243	For 10% significance level, 7.2E-06 is not an outlier.											
244	For 5% significance level, 7.2E-06 is not an outlier.											
245	For 1% significance level, 7.2E-06 is not an outlier.											
246												
247												
248	Dixon's Outlier Test for Copper (mg/L)											
249												
250	Number of Observations = 19											
251	10% critical value: 0.412											
252	5% critical value: 0.462											
253	1% critical value: 0.547											
254												
255	1. Observation Value 0.101 is a Potential Outlier (Uppe											
256												
257	Test Statistic: 0.886											
258												
259	For 10% significance level, 0.101 is an outlier.											
260	For 5% significance level, 0.101 is an outlier.											
261	For 1% significance level, 0.101 is an outlier.											
262												
263	2. Observation Value 0.0004 is a Potential Outlier (Lowe											
264												
265	Test Statistic: 0.050											

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267	For 10% significance level, 0.0004 is not an outlier.											
268	For 5% significance level, 0.0004 is not an outlier.											
269	For 1% significance level, 0.0004 is not an outlier.											
270												
271												
272			Dixon's Outlier Test for Iron (mg/L)									
273												
274	Number of Observations = 19											
275	10% critical value: 0.412											
276	5% critical value: 0.462											
277	1% critical value: 0.547											
278												
279	1. Observation Value 2.19 is a Potential Outlier (Upper											
280												
281	Test Statistic: 0.147											
282												
283	For 10% significance level, 2.19 is not an outlier.											
284	For 5% significance level, 2.19 is not an outlier.											
285	For 1% significance level, 2.19 is not an outlier.											
286												
287	2. Observation Value 0.01 is a Potential Outlier (Lower											
288												
289	Test Statistic: 0.000											
290												
291	For 10% significance level, 0.01 is not an outlier.											
292	For 5% significance level, 0.01 is not an outlier.											
293	For 1% significance level, 0.01 is not an outlier.											
294												
295												
296			Dixon's Outlier Test for Lead (mg/L)									
297												
298	Number of Observations = 19											
299	10% critical value: 0.412											
300	5% critical value: 0.462											
301	1% critical value: 0.547											
302												
303	1. Observation Value 0.101 is a Potential Outlier (Uppe											
304												
305	Test Statistic: 0.898											
306												
307	For 10% significance level, 0.101 is an outlier.											
308	For 5% significance level, 0.101 is an outlier.											
309	For 1% significance level, 0.101 is an outlier.											
310												
311	2. Observation Value 5E-05 is a Potential Outlier (Lowe											
312												
313	Test Statistic: 0.000											
314												
315	For 10% significance level, 5E-05 is not an outlier.											
316	For 5% significance level, 5E-05 is not an outlier.											
317	For 1% significance level, 5E-05 is not an outlier.											
318												

	A	B	C	D	E	F	G	H	I	J	K	L
319												
320	Dixon's Outlier Test for Manganese (mg/L)											
321												
322	Number of Observations = 19											
323	10% critical value: 0.412											
324	5% critical value: 0.462											
325	1% critical value: 0.547											
326												
327	1. Observation Value 0.436 is a Potential Outlier (Uppe											
328												
329	Test Statistic: 0.341											
330												
331	For 10% significance level, 0.436 is not an outlier.											
332	For 5% significance level, 0.436 is not an outlier.											
333	For 1% significance level, 0.436 is not an outlier.											
334												
335	2. Observation Value 0.336 is a Potential Outlier (Lower											
336												
337	Test Statistic: 0.211											
338												
339	For 10% significance level, 0.336 is not an outlier.											
340	For 5% significance level, 0.336 is not an outlier.											
341	For 1% significance level, 0.336 is not an outlier.											
342												
343												
344	Dixon's Outlier Test for Nickel (mg/L)											
345												
346	Number of Observations = 19											
347	10% critical value: 0.412											
348	5% critical value: 0.462											
349	1% critical value: 0.547											
350												
351	1. Observation Value 0.272 is a Potential Outlier (Uppe											
352												
353	Test Statistic: 0.965											
354												
355	For 10% significance level, 0.272 is an outlier.											
356	For 5% significance level, 0.272 is an outlier.											
357	For 1% significance level, 0.272 is an outlier.											
358												
359	2. Observation Value 0.00046 is a Potential Outlier (Lov											
360												
361	Test Statistic: 0.030											
362												
363	For 10% significance level, 0.00046 is not an outlier.											
364	For 5% significance level, 0.00046 is not an outlier.											
365	For 1% significance level, 0.00046 is not an outlier.											
366												
367												
368	Dixon's Outlier Test for Zinc (mg/L)											
369												
370	Number of Observations = 19											
371	10% critical value: 0.412											

	A	B	C	D	E	F	G	H	I	J	K	L
372	5% critical value: 0.462											
373	1% critical value: 0.547											
374												
375	1. Observation Value 0.667 is a Potential Outlier (Uppe											
376												
377	Test Statistic: 0.886											
378												
379	For 10% significance level, 0.667 is an outlier.											
380	For 5% significance level, 0.667 is an outlier.											
381	For 1% significance level, 0.667 is an outlier.											
382												
383	2. Observation Value 0.0032 is a Potential Outlier (Lowe											
384												
385	Test Statistic: 0.068											
386												
387	For 10% significance level, 0.0032 is not an outlier.											
388	For 5% significance level, 0.0032 is not an outlier.											
389	For 1% significance level, 0.0032 is not an outlier.											
390												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:37:58 AM								
4				From File	2024-SandstoneProUCL_d.xls							
5				Full Precision	OFF							
6												
7				07R-SS OUTLIERS								
8				Rosner's Outlier Test for pH ()								
9												
10												
11			Mean	7.716								
12			Standard Deviation	0.441								
13			Number of data	47								
14			Number of suspected outliers	1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	7.716	0.436	6.66	6	2.422	3.1	3.46				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25				Rosner's Outlier Test for TDS (mg/L)								
26												
27												
28			Mean	432.3								
29			Standard Deviation	37.52								
30			Number of data	47								
31			Number of suspected outliers	1								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	432.3	37.12	550	37	3.17	3.1	3.46				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 550											
39												
40	For 1% Significance Level, there is no Potential Outlier											
41												
42												
43				Rosner's Outlier Test for Chloride (mg/L)								
44												
45												
46			Mean	1.114								
47			Standard Deviation	1.745								
48			Number of data	35								
49			Number of suspected outliers	1								
50												
51				Potential	Obs.	Test	Critical	Critical				
52	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
53	1	1.114	1.72	9.31	25	4.765	2.98	3.32				

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 9.31

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 9.31

Rosner's Outlier Test for Sulphate (mg/L)

Mean	62.49
Standard Deviation	17.89
Number of data	33
Number of suspected outliers	1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	62.49	17.62	114	23	2.923	2.95	3.29

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Dixon's Outlier Test for DOC (mg/L)

Number of Observations = 11

10% critical value: 0.517

5% critical value: 0.576

1% critical value: 0.679

1. Observation Value 6.1 is a Potential Outlier (Upper T

Test Statistic: 0.585

For 10% significance level, 6.1 is an outlier.

For 5% significance level, 6.1 is an outlier.

For 1% significance level, 6.1 is not an outlier.

2. Observation Value 1.67 is a Potential Outlier (Lower T

Test Statistic: 0.107

For 10% significance level, 1.67 is not an outlier.

For 5% significance level, 1.67 is not an outlier.

For 1% significance level, 1.67 is not an outlier.

Rosner's Outlier Test for Bicarbonate (mg/L)

Mean	416.9

	A	B	C	D	E	F	G	H	I	J	K	L
107			Standard Deviation	51.03								
108			Number of data	33								
109			Number of suspected outliers	1								
110												
111				Potential	Obs.	Test	Critical	Critical				
112	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
113	1	416.9	50.25	544	25	2.529	2.95	3.29				
114												
115	For 5% Significance Level, there is no Potential Outlier											
116												
117	For 1% Significance Level, there is no Potential Outlier											
118												
119												
120			Rosner's Outlier Test for Calcium (mg/L)									
121												
122												
123			Mean	92.7								
124			Standard Deviation	9.596								
125			Number of data	33								
126			Number of suspected outliers	1								
127												
128				Potential	Obs.	Test	Critical	Critical				
129	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
130	1	92.7	9.45	118	24	2.677	2.95	3.29				
131												
132	For 5% Significance Level, there is no Potential Outlier											
133												
134	For 1% Significance Level, there is no Potential Outlier											
135												
136												
137			Rosner's Outlier Test for Magnesium (mg/L)									
138												
139												
140			Mean	19.94								
141			Standard Deviation	1.737								
142			Number of data	33								
143			Number of suspected outliers	1								
144												
145				Potential	Obs.	Test	Critical	Critical				
146	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
147	1	19.94	1.711	23.8	30	2.257	2.95	3.29				
148												
149	For 5% Significance Level, there is no Potential Outlier											
150												
151	For 1% Significance Level, there is no Potential Outlier											
152												
153												
154			Rosner's Outlier Test for Sodium (mg/L)									
155												
156												
157			Mean	38.55								
158			Standard Deviation	4.44								
159			Number of data	33								

	A	B	C	D	E	F	G	H	I	J	K	L
160	Number of suspected outliers			1								
161												
162				Potential	Obs.	Test	Critical	Critical				
163	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
164	1	38.55	4.372	50.1	23	2.643	2.95	3.29				
165												
166	For 5% Significance Level, there is no Potential Outlier											
167												
168	For 1% Significance Level, there is no Potential Outlier											
169												
170												
171	Rosner's Outlier Test for Arsenic (mg/L)											
172												
173												
174			Mean	0.00128								
175			Standard Deviation	0.00108								
176			Number of data	31								
177	Number of suspected outliers			1								
178												
179				Potential	Obs.	Test	Critical	Critical				
180	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
181	1	0.00128	0.00106	0.0038	27	2.375	2.92	3.25				
182												
183	For 5% Significance Level, there is no Potential Outlier											
184												
185	For 1% Significance Level, there is no Potential Outlier											
186												
187												
188	Rosner's Outlier Test for Copper (mg/L)											
189												
190												
191			Mean	0.00199								
192			Standard Deviation	0.00217								
193			Number of data	31								
194	Number of suspected outliers			1								
195												
196				Potential	Obs.	Test	Critical	Critical				
197	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
198	1	0.00199	0.00214	0.009	2	3.278	2.92	3.25				
199												
200	For 5% Significance Level, there is 1 Potential Outlier											
201	Potential outliers is: 0.009											
202												
203	For 1% Significance Level, there is 1 Potential Outlier											
204	Potential outliers is: 0.009											
205												
206												
207	Dixon's Outlier Test for Manganese (mg/L)											
208												
209	Number of Observations = 13											
210	10% critical value: 0.467											
211	5% critical value: 0.521											
212	1% critical value: 0.615											

	A	B	C	D	E	F	G	H	I	J	K	L
213												
214	1. Observation Value 2.13 is a Potential Outlier (Upper											
215												
216	Test Statistic: 0.089											
217												
218	For 10% significance level, 2.13 is not an outlier.											
219	For 5% significance level, 2.13 is not an outlier.											
220	For 1% significance level, 2.13 is not an outlier.											
221												
222	2. Observation Value 0.004 is a Potential Outlier (Lower											
223												
224	Test Statistic: 0.373											
225												
226	For 10% significance level, 0.004 is not an outlier.											
227	For 5% significance level, 0.004 is not an outlier.											
228	For 1% significance level, 0.004 is not an outlier.											
229												
230												
231	Dixon's Outlier Test for Nickel (mg/L)											
232												
233	Number of Observations = 12											
234	10% critical value: 0.49											
235	5% critical value: 0.546											
236	1% critical value: 0.642											
237												
238	1. Observation Value 0.026 is a Potential Outlier (Uppe											
239												
240	Test Statistic: 0.647											
241												
242	For 10% significance level, 0.026 is an outlier.											
243	For 5% significance level, 0.026 is an outlier.											
244	For 1% significance level, 0.026 is an outlier.											
245												
246	2. Observation Value 0.00171 is a Potential Outlier (Lov											
247												
248	Test Statistic: 0.002											
249												
250	For 10% significance level, 0.00171 is not an outlier.											
251	For 5% significance level, 0.00171 is not an outlier.											
252	For 1% significance level, 0.00171 is not an outlier.											
253												
254												
255	Dixon's Outlier Test for Zinc (mg/L)											
256												
257	Number of Observations = 12											
258	10% critical value: 0.49											
259	5% critical value: 0.546											
260	1% critical value: 0.642											
261												
262	1. Observation Value 0.0043 is a Potential Outlier (Upp											
263												
264	Test Statistic: 0.303											
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266	For 10% significance level, 0.0043 is not an outlier.											
267	For 5% significance level, 0.0043 is not an outlier.											
268	For 1% significance level, 0.0043 is not an outlier.											
269												
270	2. Observation Value 0.001 is a Potential Outlier (Lower											
271												
272	Test Statistic: 0.000											
273												
274	For 10% significance level, 0.001 is not an outlier.											
275	For 5% significance level, 0.001 is not an outlier.											
276	For 1% significance level, 0.001 is not an outlier.											
277												
278												
279				Rosner's Outlier Test for TOC (mg/L)								
280												
281												
282				Mean	1.881							
283				Standard Deviation	0.525							
284				Number of data	36							
285				Number of suspected outliers	1							
286												
287				Potential	Obs.	Test	Critical	Critical				
288	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
289	1	1.881	0.518	3.4	2	2.934	2.99	3.33				
290												
291	For 5% Significance Level, there is no Potential Outlier											
292												
293	For 1% Significance Level, there is no Potential Outlier											
294												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2				User Selected Options								
3				Date/Time of Computation	ProUCL 5.112/13/2024 10:38:51 AM							
4				From File	2024-SandstoneProUCL_e.xls							
5				Full Precision	OFF							
6												
7			13R-SS OUTLIERS									
8			Dixon's Outlier Test for pH ()									
9												
10	Number of Observations = 23											
11	10% critical value: 0.374											
12	5% critical value: 0.421											
13	1% critical value: 0.505											
14												
15	1. Observation Value 8.49 is a Potential Outlier (Upper											
16												
17	Test Statistic: 0.320											
18												
19	For 10% significance level, 8.49 is not an outlier.											
20	For 5% significance level, 8.49 is not an outlier.											
21	For 1% significance level, 8.49 is not an outlier.											
22												
23	2. Observation Value 7.29 is a Potential Outlier (Lower T											
24												
25	Test Statistic: 0.258											
26												
27	For 10% significance level, 7.29 is not an outlier.											
28	For 5% significance level, 7.29 is not an outlier.											
29	For 1% significance level, 7.29 is not an outlier.											
30												
31												
32			Dixon's Outlier Test for TDS (mg/L)									
33												
34	Number of Observations = 23											
35	10% critical value: 0.374											
36	5% critical value: 0.421											
37	1% critical value: 0.505											
38												
39	1. Observation Value 445 is a Potential Outlier (Upper T											
40												
41	Test Statistic: 0.398											
42												
43	For 10% significance level, 445 is an outlier.											
44	For 5% significance level, 445 is not an outlier.											
45	For 1% significance level, 445 is not an outlier.											
46												
47	2. Observation Value 236 is a Potential Outlier (Lower T											
48												
49	Test Statistic: 0.062											
50												
51	For 10% significance level, 236 is not an outlier.											
52	For 5% significance level, 236 is not an outlier.											
53	For 1% significance level, 236 is not an outlier.											

	A	B	C	D	E	F	G	H	I	J	K	L
54												
55												
56	Dixon's Outlier Test for Sulphate (mg/L)											
57												
58	Number of Observations = 19											
59	10% critical value: 0.412											
60	5% critical value: 0.462											
61	1% critical value: 0.547											
62												
63	1. Observation Value 81.2 is a Potential Outlier (Upper											
64												
65	Test Statistic: 0.855											
66												
67	For 10% significance level, 81.2 is an outlier.											
68	For 5% significance level, 81.2 is an outlier.											
69	For 1% significance level, 81.2 is an outlier.											
70												
71	2. Observation Value 18.9 is a Potential Outlier (Lower											
72												
73	Test Statistic: 0.101											
74												
75	For 10% significance level, 18.9 is not an outlier.											
76	For 5% significance level, 18.9 is not an outlier.											
77	For 1% significance level, 18.9 is not an outlier.											
78												
79												
80	Dixon's Outlier Test for DOC (mg/L)											
81												
82	Number of Observations = 16											
83	10% critical value: 0.454											
84	5% critical value: 0.507											
85	1% critical value: 0.595											
86												
87	1. Observation Value 10.1 is a Potential Outlier (Upper											
88												
89	Test Statistic: 0.703											
90												
91	For 10% significance level, 10.1 is an outlier.											
92	For 5% significance level, 10.1 is an outlier.											
93	For 1% significance level, 10.1 is an outlier.											
94												
95	2. Observation Value 0.73 is a Potential Outlier (Lower											
96												
97	Test Statistic: 0.091											
98												
99	For 10% significance level, 0.73 is not an outlier.											
100	For 5% significance level, 0.73 is not an outlier.											
101	For 1% significance level, 0.73 is not an outlier.											
102												
103												
104	Dixon's Outlier Test for Bicarbonate (mg/L)											
105												
106	Number of Observations = 22											

	A	B	C	D	E	F	G	H	I	J	K	L
107	10% critical value: 0.382											
108	5% critical value: 0.43											
109	1% critical value: 0.514											
110												
111	1. Observation Value 528 is a Potential Outlier (Upper T											
112												
113	Test Statistic: 0.510											
114												
115	For 10% significance level, 528 is an outlier.											
116	For 5% significance level, 528 is an outlier.											
117	For 1% significance level, 528 is not an outlier.											
118												
119	2. Observation Value 256 is a Potential Outlier (Lower T											
120												
121	Test Statistic: 0.079											
122												
123	For 10% significance level, 256 is not an outlier.											
124	For 5% significance level, 256 is not an outlier.											
125	For 1% significance level, 256 is not an outlier.											
126												
127												
128	Dixon's Outlier Test for Calcium (mg/L)											
129												
130	Number of Observations = 22											
131	10% critical value: 0.382											
132	5% critical value: 0.43											
133	1% critical value: 0.514											
134												
135	1. Observation Value 117 is a Potential Outlier (Upper T											
136												
137	Test Statistic: 0.433											
138												
139	For 10% significance level, 117 is an outlier.											
140	For 5% significance level, 117 is an outlier.											
141	For 1% significance level, 117 is not an outlier.											
142												
143	2. Observation Value 52 is a Potential Outlier (Lower Ta											
144												
145	Test Statistic: 0.126											
146												
147	For 10% significance level, 52 is not an outlier.											
148	For 5% significance level, 52 is not an outlier.											
149	For 1% significance level, 52 is not an outlier.											
150												
151												
152	Dixon's Outlier Test for Magnesium (mg/L)											
153												
154	Number of Observations = 22											
155	10% critical value: 0.382											
156	5% critical value: 0.43											
157	1% critical value: 0.514											
158												
159	1. Observation Value 26.8 is a Potential Outlier (Upper											

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161	Test Statistic: 0.652											
162												
163	For 10% significance level, 26.8 is an outlier.											
164	For 5% significance level, 26.8 is an outlier.											
165	For 1% significance level, 26.8 is an outlier.											
166												
167	2. Observation Value 10.7 is a Potential Outlier (Lower											
168												
169	Test Statistic: 0.100											
170												
171	For 10% significance level, 10.7 is not an outlier.											
172	For 5% significance level, 10.7 is not an outlier.											
173	For 1% significance level, 10.7 is not an outlier.											
174												
175												
176	Dixon's Outlier Test for Sodium (mg/L)											
177												
178	Number of Observations = 22											
179	10% critical value: 0.382											
180	5% critical value: 0.43											
181	1% critical value: 0.514											
182												
183	1. Observation Value 56.9 is a Potential Outlier (Upper											
184												
185	Test Statistic: 0.704											
186												
187	For 10% significance level, 56.9 is an outlier.											
188	For 5% significance level, 56.9 is an outlier.											
189	For 1% significance level, 56.9 is an outlier.											
190												
191	2. Observation Value 13.2 is a Potential Outlier (Lower											
192												
193	Test Statistic: 0.038											
194												
195	For 10% significance level, 13.2 is not an outlier.											
196	For 5% significance level, 13.2 is not an outlier.											
197	For 1% significance level, 13.2 is not an outlier.											
198												
199												
200	Dixon's Outlier Test for Arsenic (mg/L)											
201												
202	Number of Observations = 21											
203	10% critical value: 0.391											
204	5% critical value: 0.44											
205	1% critical value: 0.524											
206												
207	1. Observation Value 0.056 is a Potential Outlier (Uppe											
208												
209	Test Statistic: 0.747											
210												
211	For 10% significance level, 0.056 is an outlier.											
212	For 5% significance level, 0.056 is an outlier.											

	A	B	C	D	E	F	G	H	I	J	K	L
213	For 1% significance level, 0.056 is an outlier.											
214												
215	2. Observation Value 0.00042 is a Potential Outlier (Lov											
216												
217	Test Statistic: 0.002											
218												
219	For 10% significance level, 0.00042 is not an outlier.											
220	For 5% significance level, 0.00042 is not an outlier.											
221	For 1% significance level, 0.00042 is not an outlier.											
222												
223												
224	Dixon's Outlier Test for Cadmium (mg/L)											
225												
226	Number of Observations = 21											
227	10% critical value: 0.391											
228	5% critical value: 0.44											
229	1% critical value: 0.524											
230												
231	1. Observation Value 0.003 is a Potential Outlier (Uppe											
232												
233	Test Statistic: 0.670											
234												
235	For 10% significance level, 0.003 is an outlier.											
236	For 5% significance level, 0.003 is an outlier.											
237	For 1% significance level, 0.003 is an outlier.											
238												
239	2. Observation Value 5E-06 is a Potential Outlier (Lowe											
240												
241	Test Statistic: 0.009											
242												
243	For 10% significance level, 5E-06 is not an outlier.											
244	For 5% significance level, 5E-06 is not an outlier.											
245	For 1% significance level, 5E-06 is not an outlier.											
246												
247												
248	Dixon's Outlier Test for Copper (mg/L)											
249												
250	Number of Observations = 20											
251	10% critical value: 0.401											
252	5% critical value: 0.45											
253	1% critical value: 0.535											
254												
255	1. Observation Value 0.083 is a Potential Outlier (Uppe											
256												
257	Test Statistic: 0.522											
258												
259	For 10% significance level, 0.083 is an outlier.											
260	For 5% significance level, 0.083 is an outlier.											
261	For 1% significance level, 0.083 is not an outlier.											
262												
263	2. Observation Value 0.00079 is a Potential Outlier (Lov											
264												
265	Test Statistic: 0.023											

For 10% significance level, 0.00079 is not an outlier.
For 5% significance level, 0.00079 is not an outlier.
For 1% significance level, 0.00079 is not an outlier.

Dixon's Outlier Test for Manganese (mg/L)

Number of Observations = 19
10% critical value: 0.412
5% critical value: 0.462
1% critical value: 0.547

1. Observation Value 0.92 is a Potential Outlier (Upper

Test Statistic: 0.339

For 10% significance level, 0.92 is not an outlier.
For 5% significance level, 0.92 is not an outlier.
For 1% significance level, 0.92 is not an outlier.

2. Observation Value 0.0022 is a Potential Outlier (Lowe

Test Statistic: 0.014

For 10% significance level, 0.0022 is not an outlier.
For 5% significance level, 0.0022 is not an outlier.
For 1% significance level, 0.0022 is not an outlier.

Dixon's Outlier Test for Nickel (mg/L)

Number of Observations = 18
10% critical value: 0.424
5% critical value: 0.475
1% critical value: 0.561

1. Observation Value 0.0227 is a Potential Outlier (Upp

Test Statistic: 0.272

For 10% significance level, 0.0227 is not an outlier.
For 5% significance level, 0.0227 is not an outlier.
For 1% significance level, 0.0227 is not an outlier.

2. Observation Value 0.0005 is a Potential Outlier (Lowe

Test Statistic: 0.076

For 10% significance level, 0.0005 is not an outlier.
For 5% significance level, 0.0005 is not an outlier.
For 1% significance level, 0.0005 is not an outlier.

	A	B	C	D	E	F	G	H	I	J	K	L
319												
320	Dixon's Outlier Test for Zinc (mg/L)											
321												
322	Number of Observations = 18											
323	10% critical value: 0.424											
324	5% critical value: 0.475											
325	1% critical value: 0.561											
326												
327	1. Observation Value 1.61 is a Potential Outlier (Upper											
328												
329	Test Statistic: 0.700											
330												
331	For 10% significance level, 1.61 is an outlier.											
332	For 5% significance level, 1.61 is an outlier.											
333	For 1% significance level, 1.61 is an outlier.											
334												
335	2. Observation Value 0.0028 is a Potential Outlier (Lowe											
336												
337	Test Statistic: 0.007											
338												
339	For 10% significance level, 0.0028 is not an outlier.											
340	For 5% significance level, 0.0028 is not an outlier.											
341	For 1% significance level, 0.0028 is not an outlier.											
342												
343												
344	Dixon's Outlier Test for TOC (mg/L)											
345												
346	Number of Observations = 6											
347	10% critical value: 0.482											
348	5% critical value: 0.56											
349	1% critical value: 0.698											
350												
351	1. Observation Value 5.9 is a Potential Outlier (Upper T											
352												
353	Test Statistic: 0.354											
354												
355	For 10% significance level, 5.9 is not an outlier.											
356	For 5% significance level, 5.9 is not an outlier.											
357	For 1% significance level, 5.9 is not an outlier.											
358												
359	2. Observation Value 1.1 is a Potential Outlier (Lower T											
360												
361	Test Statistic: 0.188											
362												
363	For 10% significance level, 1.1 is not an outlier.											
364	For 5% significance level, 1.1 is not an outlier.											
365	For 1% significance level, 1.1 is not an outlier.											
366												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:40:06 AM								
4				From File	2024-SandstoneProUCL_f.xls							
5				Full Precision	OFF							
6												
7			15-2R-SS OUTLIERS									
8			Dixon's Outlier Test for pH ()									
9												
10	Number of Observations = 20											
11	10% critical value: 0.401											
12	5% critical value: 0.45											
13	1% critical value: 0.535											
14												
15	1. Observation Value 8.51 is a Potential Outlier (Upper											
16												
17	Test Statistic: 0.175											
18												
19	For 10% significance level, 8.51 is not an outlier.											
20	For 5% significance level, 8.51 is not an outlier.											
21	For 1% significance level, 8.51 is not an outlier.											
22												
23	2. Observation Value 7.83 is a Potential Outlier (Lower											
24												
25	Test Statistic: 0.088											
26												
27	For 10% significance level, 7.83 is not an outlier.											
28	For 5% significance level, 7.83 is not an outlier.											
29	For 1% significance level, 7.83 is not an outlier.											
30												
31												
32			Dixon's Outlier Test for TDS (mg/L)									
33												
34	Number of Observations = 20											
35	10% critical value: 0.401											
36	5% critical value: 0.45											
37	1% critical value: 0.535											
38												
39	1. Observation Value 931 is a Potential Outlier (Upper											
40												
41	Test Statistic: 0.075											
42												
43	For 10% significance level, 931 is not an outlier.											
44	For 5% significance level, 931 is not an outlier.											
45	For 1% significance level, 931 is not an outlier.											
46												
47	2. Observation Value 227 is a Potential Outlier (Lower T											
48												
49	Test Statistic: 0.058											
50												
51	For 10% significance level, 227 is not an outlier.											
52	For 5% significance level, 227 is not an outlier.											
53	For 1% significance level, 227 is not an outlier.											

	A	B	C	D	E	F	G	H	I	J	K	L
54												
55												
56	Dixon's Outlier Test for Chloride (mg/L)											
57												
58	Number of Observations = 20											
59	10% critical value: 0.401											
60	5% critical value: 0.45											
61	1% critical value: 0.535											
62												
63	1. Observation Value 30.1 is a Potential Outlier (Upper											
64												
65	Test Statistic: 0.611											
66												
67	For 10% significance level, 30.1 is an outlier.											
68	For 5% significance level, 30.1 is an outlier.											
69	For 1% significance level, 30.1 is an outlier.											
70												
71	2. Observation Value 0.5 is a Potential Outlier (Lower T											
72												
73	Test Statistic: 0.014											
74												
75	For 10% significance level, 0.5 is not an outlier.											
76	For 5% significance level, 0.5 is not an outlier.											
77	For 1% significance level, 0.5 is not an outlier.											
78												
79												
80	Dixon's Outlier Test for Sulphate (mg/L)											
81												
82	Number of Observations = 19											
83	10% critical value: 0.412											
84	5% critical value: 0.462											
85	1% critical value: 0.547											
86												
87	1. Observation Value 148 is a Potential Outlier (Upper											
88												
89	Test Statistic: 0.399											
90												
91	For 10% significance level, 148 is not an outlier.											
92	For 5% significance level, 148 is not an outlier.											
93	For 1% significance level, 148 is not an outlier.											
94												
95	2. Observation Value 15.4 is a Potential Outlier (Lower											
96												
97	Test Statistic: 0.011											
98												
99	For 10% significance level, 15.4 is not an outlier.											
100	For 5% significance level, 15.4 is not an outlier.											
101	For 1% significance level, 15.4 is not an outlier.											
102												
103												
104	Dixon's Outlier Test for DOC (mg/L)											
105												
106	Number of Observations = 17											

	A	B	C	D	E	F	G	H	I	J	K	L
107	10% critical value: 0.438											
108	5% critical value: 0.49											
109	1% critical value: 0.577											
110												
111	1. Observation Value 58.3 is a Potential Outlier (Upper											
112												
113	Test Statistic: 0.536											
114												
115	For 10% significance level, 58.3 is an outlier.											
116	For 5% significance level, 58.3 is an outlier.											
117	For 1% significance level, 58.3 is not an outlier.											
118												
119	2. Observation Value 2 is a Potential Outlier (Lower Tail											
120												
121	Test Statistic: 0.014											
122												
123	For 10% significance level, 2 is not an outlier.											
124	For 5% significance level, 2 is not an outlier.											
125	For 1% significance level, 2 is not an outlier.											
126												
127												
128	Dixon's Outlier Test for Bicarbonate (mg/L)											
129												
130	Number of Observations = 20											
131	10% critical value: 0.401											
132	5% critical value: 0.45											
133	1% critical value: 0.535											
134												
135	1. Observation Value 1060 is a Potential Outlier (Upper											
136												
137	Test Statistic: 0.049											
138												
139	For 10% significance level, 1060 is not an outlier.											
140	For 5% significance level, 1060 is not an outlier.											
141	For 1% significance level, 1060 is not an outlier.											
142												
143	2. Observation Value 244 is a Potential Outlier (Lower T											
144												
145	Test Statistic: 0.009											
146												
147	For 10% significance level, 244 is not an outlier.											
148	For 5% significance level, 244 is not an outlier.											
149	For 1% significance level, 244 is not an outlier.											
150												
151												
152	Dixon's Outlier Test for Calcium (mg/L)											
153												
154	Number of Observations = 22											
155	10% critical value: 0.382											
156	5% critical value: 0.43											
157	1% critical value: 0.514											
158												
159	1. Observation Value 246 is a Potential Outlier (Upper T											

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161	Test Statistic: 0.056											
162												
163	For 10% significance level, 246 is not an outlier.											
164	For 5% significance level, 246 is not an outlier.											
165	For 1% significance level, 246 is not an outlier.											
166												
167	2. Observation Value 32.1 is a Potential Outlier (Lower											
168												
169	Test Statistic: 0.006											
170												
171	For 10% significance level, 32.1 is not an outlier.											
172	For 5% significance level, 32.1 is not an outlier.											
173	For 1% significance level, 32.1 is not an outlier.											
174												
175												
176	Dixon's Outlier Test for Magnesium (mg/L)											
177												
178	Number of Observations = 22											
179	10% critical value: 0.382											
180	5% critical value: 0.43											
181	1% critical value: 0.514											
182												
183	1. Observation Value 51.6 is a Potential Outlier (Upper											
184												
185	Test Statistic: 0.134											
186												
187	For 10% significance level, 51.6 is not an outlier.											
188	For 5% significance level, 51.6 is not an outlier.											
189	For 1% significance level, 51.6 is not an outlier.											
190												
191	2. Observation Value 8.12 is a Potential Outlier (Lower											
192												
193	Test Statistic: 0.029											
194												
195	For 10% significance level, 8.12 is not an outlier.											
196	For 5% significance level, 8.12 is not an outlier.											
197	For 1% significance level, 8.12 is not an outlier.											
198												
199												
200	Dixon's Outlier Test for Sodium (mg/L)											
201												
202	Number of Observations = 22											
203	10% critical value: 0.382											
204	5% critical value: 0.43											
205	1% critical value: 0.514											
206												
207	1. Observation Value 118 is a Potential Outlier (Upper											
208												
209	Test Statistic: 0.581											
210												
211	For 10% significance level, 118 is an outlier.											
212	For 5% significance level, 118 is an outlier.											

	A	B	C	D	E	F	G	H	I	J	K	L
213	For 1% significance level, 118 is an outlier.											
214												
215	2. Observation Value 33.6 is a Potential Outlier (Lower T											
216												
217	Test Statistic: 0.230											
218												
219	For 10% significance level, 33.6 is not an outlier.											
220	For 5% significance level, 33.6 is not an outlier.											
221	For 1% significance level, 33.6 is not an outlier.											
222												
223												
224	Dixon's Outlier Test for Arsenic (mg/L)											
225												
226	Number of Observations = 22											
227	10% critical value: 0.382											
228	5% critical value: 0.43											
229	1% critical value: 0.514											
230												
231	1. Observation Value 0.0765 is a Potential Outlier (Upp											
232												
233	Test Statistic: 0.370											
234												
235	For 10% significance level, 0.0765 is not an outlier.											
236	For 5% significance level, 0.0765 is not an outlier.											
237	For 1% significance level, 0.0765 is not an outlier.											
238												
239	2. Observation Value 0.0002 is a Potential Outlier (Lowe											
240												
241	Test Statistic: 0.055											
242												
243	For 10% significance level, 0.0002 is not an outlier.											
244	For 5% significance level, 0.0002 is not an outlier.											
245	For 1% significance level, 0.0002 is not an outlier.											
246												
247												
248	Dixon's Outlier Test for Cadmium (mg/L)											
249												
250	Number of Observations = 22											
251	10% critical value: 0.382											
252	5% critical value: 0.43											
253	1% critical value: 0.514											
254												
255	1. Observation Value 0.003 is a Potential Outlier (Uppe											
256												
257	Test Statistic: 0.868											
258												
259	For 10% significance level, 0.003 is an outlier.											
260	For 5% significance level, 0.003 is an outlier.											
261	For 1% significance level, 0.003 is an outlier.											
262												
263	2. Observation Value 5E-06 is a Potential Outlier (Lowe											
264												
265	Test Statistic: 0.001											

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267	For 10% significance level, 5E-06 is not an outlier.											
268	For 5% significance level, 5E-06 is not an outlier.											
269	For 1% significance level, 5E-06 is not an outlier.											
270												
271												
272	Dixon's Outlier Test for Copper (mg/L)											
273												
274	Number of Observations = 22											
275	10% critical value: 0.382											
276	5% critical value: 0.43											
277	1% critical value: 0.514											
278												
279	1. Observation Value 0.454 is a Potential Outlier (Uppe											
280												
281	Test Statistic: 0.714											
282												
283	For 10% significance level, 0.454 is an outlier.											
284	For 5% significance level, 0.454 is an outlier.											
285	For 1% significance level, 0.454 is an outlier.											
286												
287	2. Observation Value 0.00013 is a Potential Outlier (Lov											
288												
289	Test Statistic: 0.001											
290												
291	For 10% significance level, 0.00013 is not an outlier.											
292	For 5% significance level, 0.00013 is not an outlier.											
293	For 1% significance level, 0.00013 is not an outlier.											
294												
295												
296	Dixon's Outlier Test for Iron (mg/L)											
297												
298	Number of Observations = 21											
299	10% critical value: 0.391											
300	5% critical value: 0.44											
301	1% critical value: 0.524											
302												
303	1. Observation Value 19.5 is a Potential Outlier (Upper											
304												
305	Test Statistic: 0.911											
306												
307	For 10% significance level, 19.5 is an outlier.											
308	For 5% significance level, 19.5 is an outlier.											
309	For 1% significance level, 19.5 is an outlier.											
310												
311	2. Observation Value 0.01 is a Potential Outlier (Lower											
312												
313	Test Statistic: 0.000											
314												
315	For 10% significance level, 0.01 is not an outlier.											
316	For 5% significance level, 0.01 is not an outlier.											
317	For 1% significance level, 0.01 is not an outlier.											
318												

	A	B	C	D	E	F	G	H	I	J	K	L
319												
320	Dixon's Outlier Test for Manganese (mg/L)											
321												
322	Number of Observations = 21											
323	10% critical value: 0.391											
324	5% critical value: 0.44											
325	1% critical value: 0.524											
326												
327	1. Observation Value 3.9 is a Potential Outlier (Upper T											
328												
329	Test Statistic: 0.243											
330												
331	For 10% significance level, 3.9 is not an outlier.											
332	For 5% significance level, 3.9 is not an outlier.											
333	For 1% significance level, 3.9 is not an outlier.											
334												
335	2. Observation Value 0.251 is a Potential Outlier (Lower											
336												
337	Test Statistic: 0.041											
338												
339	For 10% significance level, 0.251 is not an outlier.											
340	For 5% significance level, 0.251 is not an outlier.											
341	For 1% significance level, 0.251 is not an outlier.											
342												
343												
344	Dixon's Outlier Test for Nickel (mg/L)											
345												
346	Number of Observations = 21											
347	10% critical value: 0.391											
348	5% critical value: 0.44											
349	1% critical value: 0.524											
350												
351	1. Observation Value 0.723 is a Potential Outlier (Uppe											
352												
353	Test Statistic: 0.899											
354												
355	For 10% significance level, 0.723 is an outlier.											
356	For 5% significance level, 0.723 is an outlier.											
357	For 1% significance level, 0.723 is an outlier.											
358												
359	2. Observation Value 0.0007 is a Potential Outlier (Lowe											
360												
361	Test Statistic: 0.002											
362												
363	For 10% significance level, 0.0007 is not an outlier.											
364	For 5% significance level, 0.0007 is not an outlier.											
365	For 1% significance level, 0.0007 is not an outlier.											
366												
367												
368	Dixon's Outlier Test for Zinc (mg/L)											
369												
370	Number of Observations = 21											
371	10% critical value: 0.391											

	A	B	C	D	E	F	G	H	I	J	K	L
372	5% critical value: 0.44											
373	1% critical value: 0.524											
374												
375	1. Observation Value 1.85 is a Potential Outlier (Upper											
376												
377	Test Statistic: 0.947											
378												
379	For 10% significance level, 1.85 is an outlier.											
380	For 5% significance level, 1.85 is an outlier.											
381	For 1% significance level, 1.85 is an outlier.											
382												
383	2. Observation Value 0.001 is a Potential Outlier (Lower											
384												
385	Test Statistic: 0.000											
386												
387	For 10% significance level, 0.001 is not an outlier.											
388	For 5% significance level, 0.001 is not an outlier.											
389	For 1% significance level, 0.001 is not an outlier.											
390												
391												
392	Dixon's Outlier Test for TOC (mg/L)											
393												
394	Number of Observations = 3											
395	10% critical value: 0.886											
396	5% critical value: 0.941											
397	1% critical value: 0.988											
398												
399	1. Observation Value 11.1 is a Potential Outlier (Upper											
400												
401	Test Statistic: 0.524											
402												
403	For 10% significance level, 11.1 is not an outlier.											
404	For 5% significance level, 11.1 is not an outlier.											
405	For 1% significance level, 11.1 is not an outlier.											
406												
407	2. Observation Value 2.7 is a Potential Outlier (Lower T											
408												
409	Test Statistic: 0.476											
410												
411	For 10% significance level, 2.7 is not an outlier.											
412	For 5% significance level, 2.7 is not an outlier.											
413	For 1% significance level, 2.7 is not an outlier.											
414												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.112/13/2024 10:40:59 AM								
4				From File	2024-SandstoneProUCL_g.xls							
5				Full Precision	OFF							
6												
7			89-3 OUTLIERS									
8			Dixon's Outlier Test for pH ()									
9												
10	Number of Observations = 23											
11	10% critical value: 0.374											
12	5% critical value: 0.421											
13	1% critical value: 0.505											
14												
15	1. Observation Value 8.4 is a Potential Outlier (Upper T											
16												
17	Test Statistic: 0.150											
18												
19	For 10% significance level, 8.4 is not an outlier.											
20	For 5% significance level, 8.4 is not an outlier.											
21	For 1% significance level, 8.4 is not an outlier.											
22												
23	2. Observation Value 7.3 is a Potential Outlier (Lower Ta											
24												
25	Test Statistic: 0.105											
26												
27	For 10% significance level, 7.3 is not an outlier.											
28	For 5% significance level, 7.3 is not an outlier.											
29	For 1% significance level, 7.3 is not an outlier.											
30												
31												
32			Dixon's Outlier Test for TDS (mg/L)									
33												
34	Number of Observations = 22											
35	10% critical value: 0.382											
36	5% critical value: 0.43											
37	1% critical value: 0.514											
38												
39	1. Observation Value 293 is a Potential Outlier (Upper T											
40												
41	Test Statistic: 0.324											
42												
43	For 10% significance level, 293 is not an outlier.											
44	For 5% significance level, 293 is not an outlier.											
45	For 1% significance level, 293 is not an outlier.											
46												
47	2. Observation Value 176 is a Potential Outlier (Lower T											
48												
49	Test Statistic: 0.074											
50												
51	For 10% significance level, 176 is not an outlier.											
52	For 5% significance level, 176 is not an outlier.											
53	For 1% significance level, 176 is not an outlier.											

	A	B	C	D	E	F	G	H	I	J	K	L
54												
55												
56	Dixon's Outlier Test for Sulphate (mg/L)											
57												
58	Number of Observations = 23											
59	10% critical value: 0.374											
60	5% critical value: 0.421											
61	1% critical value: 0.505											
62												
63	1. Observation Value 30.1 is a Potential Outlier (Upper											
64												
65	Test Statistic: 0.405											
66												
67	For 10% significance level, 30.1 is an outlier.											
68	For 5% significance level, 30.1 is not an outlier.											
69	For 1% significance level, 30.1 is not an outlier.											
70												
71	2. Observation Value 13.6 is a Potential Outlier (Lower											
72												
73	Test Statistic: 0.162											
74												
75	For 10% significance level, 13.6 is not an outlier.											
76	For 5% significance level, 13.6 is not an outlier.											
77	For 1% significance level, 13.6 is not an outlier.											
78												
79												
80	Dixon's Outlier Test for DOC (mg/L)											
81												
82	Number of Observations = 16											
83	10% critical value: 0.454											
84	5% critical value: 0.507											
85	1% critical value: 0.595											
86												
87	1. Observation Value 7.1 is a Potential Outlier (Upper T											
88												
89	Test Statistic: 0.508											
90												
91	For 10% significance level, 7.1 is an outlier.											
92	For 5% significance level, 7.1 is an outlier.											
93	For 1% significance level, 7.1 is not an outlier.											
94												
95	2. Observation Value 0.83 is a Potential Outlier (Lower											
96												
97	Test Statistic: 0.113											
98												
99	For 10% significance level, 0.83 is not an outlier.											
100	For 5% significance level, 0.83 is not an outlier.											
101	For 1% significance level, 0.83 is not an outlier.											
102												
103												
104	Dixon's Outlier Test for Bicarbonate (mg/L)											
105												
106	Number of Observations = 23											

	A	B	C	D	E	F	G	H	I	J	K	L
107	10% critical value: 0.374											
108	5% critical value: 0.421											
109	1% critical value: 0.505											
110												
111	1. Observation Value 245 is a Potential Outlier (Upper T											
112												
113	Test Statistic: 0.055											
114												
115	For 10% significance level, 245 is not an outlier.											
116	For 5% significance level, 245 is not an outlier.											
117	For 1% significance level, 245 is not an outlier.											
118												
119	2. Observation Value 186 is a Potential Outlier (Lower T											
120												
121	Test Statistic: 0.071											
122												
123	For 10% significance level, 186 is not an outlier.											
124	For 5% significance level, 186 is not an outlier.											
125	For 1% significance level, 186 is not an outlier.											
126												
127												
128	Dixon's Outlier Test for Calcium (mg/L)											
129												
130	Number of Observations = 23											
131	10% critical value: 0.374											
132	5% critical value: 0.421											
133	1% critical value: 0.505											
134												
135	1. Observation Value 48.4 is a Potential Outlier (Upper											
136												
137	Test Statistic: 0.053											
138												
139	For 10% significance level, 48.4 is not an outlier.											
140	For 5% significance level, 48.4 is not an outlier.											
141	For 1% significance level, 48.4 is not an outlier.											
142												
143	2. Observation Value 35.4 is a Potential Outlier (Lower T											
144												
145	Test Statistic: 0.137											
146												
147	For 10% significance level, 35.4 is not an outlier.											
148	For 5% significance level, 35.4 is not an outlier.											
149	For 1% significance level, 35.4 is not an outlier.											
150												
151												
152	Dixon's Outlier Test for Magnesium (mg/L)											
153												
154	Number of Observations = 23											
155	10% critical value: 0.374											
156	5% critical value: 0.421											
157	1% critical value: 0.505											
158												
159	1. Observation Value 16.9 is a Potential Outlier (Upper											

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161	Test Statistic: 0.286											
162												
163	For 10% significance level, 16.9 is not an outlier.											
164	For 5% significance level, 16.9 is not an outlier.											
165	For 1% significance level, 16.9 is not an outlier.											
166												
167	2. Observation Value 10.9 is a Potential Outlier (Lower											
168												
169	Test Statistic: 0.091											
170												
171	For 10% significance level, 10.9 is not an outlier.											
172	For 5% significance level, 10.9 is not an outlier.											
173	For 1% significance level, 10.9 is not an outlier.											
174												
175												
176	Dixon's Outlier Test for Sodium (mg/L)											
177												
178	Number of Observations = 23											
179	10% critical value: 0.374											
180	5% critical value: 0.421											
181	1% critical value: 0.505											
182												
183	1. Observation Value 62.4 is a Potential Outlier (Upper											
184												
185	Test Statistic: 0.936											
186												
187	For 10% significance level, 62.4 is an outlier.											
188	For 5% significance level, 62.4 is an outlier.											
189	For 1% significance level, 62.4 is an outlier.											
190												
191	2. Observation Value 11.8 is a Potential Outlier (Lower											
192												
193	Test Statistic: 0.158											
194												
195	For 10% significance level, 11.8 is not an outlier.											
196	For 5% significance level, 11.8 is not an outlier.											
197	For 1% significance level, 11.8 is not an outlier.											
198												
199												
200	Dixon's Outlier Test for Arsenic (mg/L)											
201												
202	Number of Observations = 20											
203	10% critical value: 0.401											
204	5% critical value: 0.45											
205	1% critical value: 0.535											
206												
207	1. Observation Value 0.0036 is a Potential Outlier (Upp											
208												
209	Test Statistic: 0.197											
210												
211	For 10% significance level, 0.0036 is not an outlier.											
212	For 5% significance level, 0.0036 is not an outlier.											

	A	B	C	D	E	F	G	H	I	J	K	L
213	For 1% significance level, 0.0036 is not an outlier.											
214												
215	2. Observation Value 0.0001 is a Potential Outlier (Lowe											
216												
217	Test Statistic: 0.035											
218												
219	For 10% significance level, 0.0001 is not an outlier.											
220	For 5% significance level, 0.0001 is not an outlier.											
221	For 1% significance level, 0.0001 is not an outlier.											
222												
223												
224	Dixon's Outlier Test for Iron (mg/L)											
225												
226	Number of Observations = 23											
227	10% critical value: 0.374											
228	5% critical value: 0.421											
229	1% critical value: 0.505											
230												
231	1. Observation Value 8.95 is a Potential Outlier (Upper											
232												
233	Test Statistic: 0.094											
234												
235	For 10% significance level, 8.95 is not an outlier.											
236	For 5% significance level, 8.95 is not an outlier.											
237	For 1% significance level, 8.95 is not an outlier.											
238												
239	2. Observation Value 0.01 is a Potential Outlier (Lower											
240												
241	Test Statistic: 0.006											
242												
243	For 10% significance level, 0.01 is not an outlier.											
244	For 5% significance level, 0.01 is not an outlier.											
245	For 1% significance level, 0.01 is not an outlier.											
246												
247												
248	Dixon's Outlier Test for Manganese (mg/L)											
249												
250	Number of Observations = 23											
251	10% critical value: 0.374											
252	5% critical value: 0.421											
253	1% critical value: 0.505											
254												
255	1. Observation Value 1.27 is a Potential Outlier (Upper											
256												
257	Test Statistic: 0.138											
258												
259	For 10% significance level, 1.27 is not an outlier.											
260	For 5% significance level, 1.27 is not an outlier.											
261	For 1% significance level, 1.27 is not an outlier.											
262												
263	2. Observation Value 0.232 is a Potential Outlier (Lower											
264												
265	Test Statistic: 0.405											

For 10% significance level, 0.232 is an outlier.

For 5% significance level, 0.232 is not an outlier.

For 1% significance level, 0.232 is not an outlier.

Dixon's Outlier Test for Nickel (mg/L)

Number of Observations = 20

10% critical value: 0.401

5% critical value: 0.45

1% critical value: 0.535

1. Observation Value 0.0287 is a Potential Outlier (Upp

Test Statistic: 0.791

For 10% significance level, 0.0287 is an outlier.

For 5% significance level, 0.0287 is an outlier.

For 1% significance level, 0.0287 is an outlier.

2. Observation Value 0.00048 is a Potential Outlier (Lov

Test Statistic: 0.003

For 10% significance level, 0.00048 is not an outlier.

For 5% significance level, 0.00048 is not an outlier.

For 1% significance level, 0.00048 is not an outlier.

Dixon's Outlier Test for Zinc (mg/L)

Number of Observations = 20

10% critical value: 0.401

5% critical value: 0.45

1% critical value: 0.535

1. Observation Value 4.23 is a Potential Outlier (Upper

Test Statistic: 0.845

For 10% significance level, 4.23 is an outlier.

For 5% significance level, 4.23 is an outlier.

For 1% significance level, 4.23 is an outlier.

2. Observation Value 0.0011 is a Potential Outlier (Lowe

Test Statistic: 0.003

For 10% significance level, 0.0011 is not an outlier.

For 5% significance level, 0.0011 is not an outlier.

For 1% significance level, 0.0011 is not an outlier.

	A	B	C	D	E	F	G	H	I	J	K	L
319												
320	Dixon's Outlier Test for TOC (mg/L)											
321												
322	Number of Observations = 4											
323	10% critical value: 0.679											
324	5% critical value: 0.765											
325	1% critical value: 0.889											
326												
327	1. Observation Value 9 is a Potential Outlier (Upper Tai											
328												
329	Test Statistic: 0.929											
330												
331	For 10% significance level, 9 is an outlier.											
332	For 5% significance level, 9 is an outlier.											
333	For 1% significance level, 9 is an outlier.											
334												
335	2. Observation Value 0.6 is a Potential Outlier (Lower Ta											
336												
337	Test Statistic: 0.036											
338												
339	For 10% significance level, 0.6 is not an outlier.											
340	For 5% significance level, 0.6 is not an outlier.											
341	For 1% significance level, 0.6 is not an outlier.											
342												

AECOM

App G4 - Sen's Slope/Mann-Kendall Trend Analysis Output – All Data - Shallow

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/2/2025 10:27:15 AM
4	From File	2024-ShallowProUCL_o.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	01A-SH	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	31
13	Number of Distinct Observations	17
14	Minimum	0.5
15	Maximum	21.8
16	Mean of Raw Data	4.25
17	Standard Deviation of Raw Data	5.819
18	Khat	0.667
19	Theta hat	6.372
20	Kstar	0.624
21	Theta star	6.811
22	Mean of Log Transformed Data	0.535
23	Standard Deviation of Log Transformed Data	1.369
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.84
28	Shapiro Wilk Test Statistic	0.705
29	Shapiro Wilk Critical (0.05) Value	0.929
30	Approximate Shapiro Wilk P Value	2.0182E-7
31	Lilliefors Test Statistic	0.302
32	Lilliefors Critical (0.05) Value	0.156
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.982
38	A-D Test Statistic	2.615
39	A-D Critical (0.05) Value	0.795
40	K-S Test Statistic	0.255
41	K-S Critical(0.05) Value	0.165
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.908
47	Shapiro Wilk Test Statistic	0.803
48	Shapiro Wilk Critical (0.05) Value	0.929
49	Approximate Shapiro Wilk P Value	2.5285E-5
50	Lilliefors Test Statistic	0.267
51	Lilliefors Critical (0.05) Value	0.156
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Arsenic (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		31						
62				Number of Distinct Observations		9						
63				Minimum		1.0000E-4						
64				Maximum		4.0000E-4						
65				Mean of Raw Data		2.4258E-4						
66				Standard Deviation of Raw Data		1.0933E-4						
67				Khat		5.285						
68				Theta hat		4.5896E-5						
69				Kstar		4.795						
70				Theta star		5.0586E-5						
71				Mean of Log Transformed Data		-8.422						
72				Standard Deviation of Log Transformed Data		0.45						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.9						
77				Shapiro Wilk Test Statistic		0.788						
78				Shapiro Wilk Critical (0.05) Value		0.929						
79				Approximate Shapiro Wilk P Value		1.1492E-5						
80				Lilliefors Test Statistic		0.329						
81				Lilliefors Critical (0.05) Value		0.156						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.899						
87				A-D Test Statistic		2.196						
88				A-D Critical (0.05) Value		0.747						
89				K-S Test Statistic		0.289						
90				K-S Critical(0.05) Value		0.158						
91	Data not Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.935						
96				Shapiro Wilk Test Statistic		0.855						
97				Shapiro Wilk Critical (0.05) Value		0.929						
98				Approximate Shapiro Wilk P Value		4.7517E-4						
99				Lilliefors Test Statistic		0.261						
100				Lilliefors Critical (0.05) Value		0.156						
101	Data not Lognormal at (0.05) Significance Level											
102												
103	Non-parametric GOF Test Results											
104												
105	Data do not follow a discernible distribution at (0.05) Level of Signif											
106												

	A	B	C	D	E	F	G	H	I	J	K	L
107	Copper (mg/L)											
108												
109				Raw Statistics								
110					Number of Valid Observations	31						
111					Number of Distinct Observations	25						
112					Minimum	8.0000E-4						
113					Maximum	0.045						
114					Mean of Raw Data	0.00399						
115					Standard Deviation of Raw Data	0.00778						
116					Khat	1.147						
117					Theta hat	0.00348						
118					Kstar	1.058						
119					Theta star	0.00378						
120					Mean of Log Transformed Data	-6.018						
121					Standard Deviation of Log Transformed Data	0.797						
122												
123				Normal GOF Test Results								
124												
125					Correlation Coefficient R	0.558						
126					Shapiro Wilk Test Statistic	0.347						
127					Shapiro Wilk Critical (0.05) Value	0.929						
128					Approximate Shapiro Wilk P Value	3.271E-13						
129					Lilliefors Test Statistic	0.355						
130					Lilliefors Critical (0.05) Value	0.156						
131	Data not Normal at (0.05) Significance Level											
132												
133				Gamma GOF Test Results								
134												
135					Correlation Coefficient R	0.752						
136					A-D Test Statistic	2.638						
137					A-D Critical (0.05) Value	0.772						
138					K-S Test Statistic	0.218						
139					K-S Critical(0.05) Value	0.162						
140	Data not Gamma Distributed at (0.05) Significance Level											
141												
142				Lognormal GOF Test Results								
143												
144					Correlation Coefficient R	0.927						
145					Shapiro Wilk Test Statistic	0.876						
146					Shapiro Wilk Critical (0.05) Value	0.929						
147					Approximate Shapiro Wilk P Value	0.00169						
148					Lilliefors Test Statistic	0.123						
149					Lilliefors Critical (0.05) Value	0.156						
150	Data appear Approximate_Lognormal at (0.05) Significance Level											
151												
152	Nickel (mg/L)											
153												
154				Raw Statistics								
155					Number of Valid Observations	31						
156					Number of Distinct Observations	24						
157					Minimum	2.0000E-4						
158					Maximum	0.015						
159					Mean of Raw Data	0.00298						

160	Standard Deviation of Raw Data	0.00333
161	Khat	1.311
162	Theta hat	0.00227
163	Kstar	1.206
164	Theta star	0.00247
165	Mean of Log Transformed Data	-6.244
166	Standard Deviation of Log Transformed Data	0.936
167		
168	Normal GOF Test Results	
169		
170	Correlation Coefficient R	0.81
171	Shapiro Wilk Test Statistic	0.67
172	Shapiro Wilk Critical (0.05) Value	0.929
173	Approximate Shapiro Wilk P Value	4.2346E-8
174	Lilliefors Test Statistic	0.231
175	Lilliefors Critical (0.05) Value	0.156
176	Data not Normal at (0.05) Significance Level	
177		
178	Gamma GOF Test Results	
179		
180	Correlation Coefficient R	0.94
181	A-D Test Statistic	0.735
182	A-D Critical (0.05) Value	0.768
183	K-S Test Statistic	0.128
184	K-S Critical(0.05) Value	0.161
185	Data appear Gamma Distributed at (0.05) Significance Level	
186		
187	Lognormal GOF Test Results	
188		
189	Correlation Coefficient R	0.987
190	Shapiro Wilk Test Statistic	0.979
191	Shapiro Wilk Critical (0.05) Value	0.929
192	Approximate Shapiro Wilk P Value	0.816
193	Lilliefors Test Statistic	0.0931
194	Lilliefors Critical (0.05) Value	0.156
195	Data appear Lognormal at (0.05) Significance Level	
196		
197	Zinc (mg/L)	
198		
199	Raw Statistics	
200	Number of Valid Observations	31
201	Number of Distinct Observations	22
202	Minimum	0.001
203	Maximum	0.016
204	Mean of Raw Data	0.00524
205	Standard Deviation of Raw Data	0.00451
206	Khat	1.634
207	Theta hat	0.00321
208	Kstar	1.498
209	Theta star	0.0035
210	Mean of Log Transformed Data	-5.587
211	Standard Deviation of Log Transformed Data	0.839
212		

	A	B	C	D	E	F	G	H	I	J	K	L
213				Normal GOF Test Results								
214												
215					Correlation Coefficient R	0.905						
216					Shapiro Wilk Test Statistic	0.806						
217					Shapiro Wilk Critical (0.05) Value	0.929						
218					Approximate Shapiro Wilk P Value	3.0371E-5						
219					Lilliefors Test Statistic	0.237						
220					Lilliefors Critical (0.05) Value	0.156						
221	Data not Normal at (0.05) Significance Level											
222												
223				Gamma GOF Test Results								
224												
225					Correlation Coefficient R	0.972						
226					A-D Test Statistic	0.715						
227					A-D Critical (0.05) Value	0.762						
228					K-S Test Statistic	0.138						
229					K-S Critical(0.05) Value	0.16						
230	Data appear Gamma Distributed at (0.05) Significance Level											
231												
232				Lognormal GOF Test Results								
233												
234					Correlation Coefficient R	0.983						
235					Shapiro Wilk Test Statistic	0.946						
236					Shapiro Wilk Critical (0.05) Value	0.929						
237					Approximate Shapiro Wilk P Value	0.143						
238					Lilliefors Test Statistic	0.128						
239					Lilliefors Critical (0.05) Value	0.156						
240	Data appear Lognormal at (0.05) Significance Level											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/2/2025 11:01:36 AM
	From File	2024-ShallowProUCL_c.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

03-SH

Chloride (mg/L)

Raw Statistics	
Number of Valid Observations	57
Number of Distinct Observations	22
Minimum	0.01
Maximum	4.4
Mean of Raw Data	1.262
Standard Deviation of Raw Data	0.82
Khat	2.403
Theta hat	0.525
Kstar	2.289
Theta star	0.552
Mean of Log Transformed Data	0.0107
Standard Deviation of Log Transformed Data	0.829

Normal GOF Test Results	
Correlation Coefficient R	0.91
Approximate Shapiro Wilk Test Statistic	0.839
Approximate Shapiro Wilk P Value	4.1026E-8
Lilliefors Test Statistic	0.223
Lilliefors Critical (0.05) Value	0.117

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.98
A-D Test Statistic	1.23
A-D Critical (0.05) Value	0.761
K-S Test Statistic	0.142
K-S Critical(0.05) Value	0.119

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.851
Approximate Shapiro Wilk Test Statistic	0.77
Approximate Shapiro Wilk P Value	1.596E-11
Lilliefors Test Statistic	0.18
Lilliefors Critical (0.05) Value	0.117

Data not Lognormal at (0.05) Significance Level

Non-parametric GOF Test Results

	A	B	C	D	E	F	G	H	I	J	K	L
54	Data do not follow a discernible distribution at (0.05) Level of Signif											
55												
56	Arsenic (mg/L)											
57												
58				Raw Statistics								
59				Number of Valid Observations		57						
60				Number of Distinct Observations		16						
61				Minimum		1.2000E-4						
62				Maximum		0.014						
63				Mean of Raw Data		5.5456E-4						
64				Standard Deviation of Raw Data		0.00183						
65				Khat		0.852						
66				Theta hat		6.5121E-4						
67				Kstar		0.818						
68				Theta star		6.7756E-4						
69				Mean of Log Transformed Data		-8.189						
70				Standard Deviation of Log Transformed Data		0.758						
71												
72				Normal GOF Test Results								
73												
74				Correlation Coefficient R		0.412						
75				Approximate Shapiro Wilk Test Statistic		0.211						
76				Approximate Shapiro Wilk P Value		0						
77				Lilliefors Test Statistic		0.428						
78				Lilliefors Critical (0.05) Value		0.117						
79	Data not Normal at (0.05) Significance Level											
80												
81				Gamma GOF Test Results								
82												
83				Correlation Coefficient R		0.642						
84				A-D Test Statistic		10.02						
85				A-D Critical (0.05) Value		0.787						
86				K-S Test Statistic		0.36						
87				K-S Critical(0.05) Value		0.122						
88	Data not Gamma Distributed at (0.05) Significance Level											
89												
90				Lognormal GOF Test Results								
91												
92				Correlation Coefficient R		0.831						
93				Approximate Shapiro Wilk Test Statistic		0.721						
94				Approximate Shapiro Wilk P Value		7.971E-14						
95				Lilliefors Test Statistic		0.247						
96				Lilliefors Critical (0.05) Value		0.117						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Non-parametric GOF Test Results											
100												
101	Data do not follow a discernible distribution at (0.05) Level of Signif											
102												
103	Chromium (mg/L)											
104												
105				Raw Statistics								
106				Number of Valid Observations		57						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	21						
108					Minimum	2.9000E-4						
109					Maximum	0.018						
110					Mean of Raw Data	0.00306						
111					Standard Deviation of Raw Data	0.0039						
112					Khat	1.099						
113					Theta hat	0.00278						
114					Kstar	1.053						
115					Theta star	0.0029						
116					Mean of Log Transformed Data	-6.31						
117					Standard Deviation of Log Transformed Data	0.975						
118												
119				Normal GOF Test Results								
120												
121					Correlation Coefficient R	0.791						
122					Approximate Shapiro Wilk Test Statistic	0.634						
123					Approximate Shapiro Wilk P Value	0						
124					Lilliefors Test Statistic	0.321						
125					Lilliefors Critical (0.05) Value	0.117						
126	Data not Normal at (0.05) Significance Level											
127												
128				Gamma GOF Test Results								
129												
130					Correlation Coefficient R	0.953						
131					A-D Test Statistic	3.147						
132					A-D Critical (0.05) Value	0.777						
133					K-S Test Statistic	0.244						
134					K-S Critical(0.05) Value	0.121						
135	Data not Gamma Distributed at (0.05) Significance Level											
136												
137				Lognormal GOF Test Results								
138												
139					Correlation Coefficient R	0.965						
140					Approximate Shapiro Wilk Test Statistic	0.921						
141					Approximate Shapiro Wilk P Value	0.00104						
142					Lilliefors Test Statistic	0.17						
143					Lilliefors Critical (0.05) Value	0.117						
144	Data not Lognormal at (0.05) Significance Level											
145												
146	Non-parametric GOF Test Results											
147												
148	Data do not follow a discernible distribution at (0.05) Level of Signif											
149												
150	Manganese (mg/L)											
151												
152				Raw Statistics								
153					Number of Valid Observations	32						
154					Number of Distinct Observations	29						
155					Minimum	0.001						
156					Maximum	0.266						
157					Mean of Raw Data	0.0575						
158					Standard Deviation of Raw Data	0.0696						
159					Khat	0.609						

160	Theta hat	0.0944
161	Kstar	0.572
162	Theta star	0.1
163	Mean of Log Transformed Data	-3.87
164	Standard Deviation of Log Transformed Data	1.663
165		
166	Normal GOF Test Results	
167		
168	Correlation Coefficient R	0.892
169	Shapiro Wilk Test Statistic	0.793
170	Shapiro Wilk Critical (0.05) Value	0.93
171	Approximate Shapiro Wilk P Value	1.0783E-5
172	Lilliefors Test Statistic	0.236
173	Lilliefors Critical (0.05) Value	0.154
174	Data not Normal at (0.05) Significance Level	
175		
176	Gamma GOF Test Results	
177		
178	Correlation Coefficient R	0.974
179	A-D Test Statistic	0.686
180	A-D Critical (0.05) Value	0.801
181	K-S Test Statistic	0.125
182	K-S Critical(0.05) Value	0.163
183	Data appear Gamma Distributed at (0.05) Significance Level	
184		
185	Lognormal GOF Test Results	
186		
187	Correlation Coefficient R	0.98
188	Shapiro Wilk Test Statistic	0.94
189	Shapiro Wilk Critical (0.05) Value	0.93
190	Approximate Shapiro Wilk P Value	0.093
191	Lilliefors Test Statistic	0.114
192	Lilliefors Critical (0.05) Value	0.154
193	Data appear Lognormal at (0.05) Significance Level	
194		
195	Nickel (mg/L)	
196		
197	Raw Statistics	
198	Number of Valid Observations	34
199	Number of Distinct Observations	28
200	Minimum	0.00149
201	Maximum	0.015
202	Mean of Raw Data	0.00531
203	Standard Deviation of Raw Data	0.00349
204	Khat	3.044
205	Theta hat	0.00174
206	Kstar	2.795
207	Theta star	0.0019
208	Mean of Log Transformed Data	-5.412
209	Standard Deviation of Log Transformed Data	0.583
210		
211	Normal GOF Test Results	
212		

	A	B	C	D	E	F	G	H	I	J	K	L
213					Correlation Coefficient R	0.904						
214					Shapiro Wilk Test Statistic	0.813						
215					Shapiro Wilk Critical (0.05) Value	0.933						
216					Approximate Shapiro Wilk P Value	1.6180E-5						
217					Lilliefors Test Statistic	0.241						
218					Lilliefors Critical (0.05) Value	0.15						
219	Data not Normal at (0.05) Significance Level											
220												
221				Gamma GOF Test Results								
222												
223					Correlation Coefficient R	0.97						
224					A-D Test Statistic	0.688						
225					A-D Critical (0.05) Value	0.753						
226					K-S Test Statistic	0.17						
227					K-S Critical(0.05) Value	0.152						
228	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
229												
230				Lognormal GOF Test Results								
231												
232					Correlation Coefficient R	0.989						
233					Shapiro Wilk Test Statistic	0.969						
234					Shapiro Wilk Critical (0.05) Value	0.933						
235					Approximate Shapiro Wilk P Value	0.498						
236					Lilliefors Test Statistic	0.129						
237					Lilliefors Critical (0.05) Value	0.15						
238	Data appear Lognormal at (0.05) Significance Level											
239												
240	Zinc (mg/L)											
241												
242				Raw Statistics								
243					Number of Valid Observations	34						
244					Number of Distinct Observations	29						
245					Minimum	0.001						
246					Maximum	0.0259						
247					Mean of Raw Data	0.00648						
248					Standard Deviation of Raw Data	0.00585						
249					Khat	1.603						
250					Theta hat	0.00404						
251					Kstar	1.481						
252					Theta star	0.00437						
253					Mean of Log Transformed Data	-5.383						
254					Standard Deviation of Log Transformed Data	0.851						
255												
256				Normal GOF Test Results								
257												
258					Correlation Coefficient R	0.889						
259					Shapiro Wilk Test Statistic	0.794						
260					Shapiro Wilk Critical (0.05) Value	0.933						
261					Approximate Shapiro Wilk P Value	5.2599E-6						
262					Lilliefors Test Statistic	0.189						
263					Lilliefors Critical (0.05) Value	0.15						
264	Data not Normal at (0.05) Significance Level											
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266				Gamma GOF Test Results								
267												
268					Correlation Coefficient R	0.983						
269					A-D Test Statistic	0.419						
270					A-D Critical (0.05) Value	0.765						
271					K-S Test Statistic	0.095						
272					K-S Critical(0.05) Value	0.154						
273	Data appear Gamma Distributed at (0.05) Significance Level											
274												
275				Lognormal GOF Test Results								
276												
277					Correlation Coefficient R	0.993						
278					Shapiro Wilk Test Statistic	0.974						
279					Shapiro Wilk Critical (0.05) Value	0.933						
280					Approximate Shapiro Wilk P Value	0.64						
281					Lilliefors Test Statistic	0.0713						
282					Lilliefors Critical (0.05) Value	0.15						
283	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/2/2025 11:28:16 AM
4	From File	2024-ShallowProUCL_d.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	04-SH	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	56
13	Number of Distinct Observations	15
14	Minimum	0.01
15	Maximum	3.2
16	Mean of Raw Data	0.638
17	Standard Deviation of Raw Data	0.5
18	Khat	1.329
19	Theta hat	0.48
20	Kstar	1.27
21	Theta star	0.503
22	Mean of Log Transformed Data	-0.87
23	Standard Deviation of Log Transformed Data	1.281
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.835
28	Approximate Shapiro Wilk Test Statistic	0.729
29	Approximate Shapiro Wilk P Value	3.777E-13
30	Lilliefors Test Statistic	0.305
31	Lilliefors Critical (0.05) Value	0.118
32	Data not Normal at (0.05) Significance Level	
33		
34	Gamma GOF Test Results	
35		
36	Correlation Coefficient R	0.935
37	A-D Test Statistic	5.471
38	A-D Critical (0.05) Value	0.772
39	K-S Test Statistic	0.332
40	K-S Critical(0.05) Value	0.122
41	Data not Gamma Distributed at (0.05) Significance Level	
42		
43	Lognormal GOF Test Results	
44		
45	Correlation Coefficient R	0.802
46	Approximate Shapiro Wilk Test Statistic	0.65
47	Approximate Shapiro Wilk P Value	2.220E-16
48	Lilliefors Test Statistic	0.376
49	Lilliefors Critical (0.05) Value	0.118
50	Data not Lognormal at (0.05) Significance Level	
51		
52	Non-parametric GOF Test Results	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Data do not follow a discernible distribution at (0.05) Level of Signif											
55												
56	Arsenic (mg/L)											
57												
58				Raw Statistics								
59				Number of Valid Observations		56						
60				Number of Distinct Observations		10						
61				Minimum		1.0000E-4						
62				Maximum		0.0016						
63				Mean of Raw Data		2.7714E-4						
64				Standard Deviation of Raw Data		2.3055E-4						
65				Khat		2.942						
66				Theta hat		9.4206E-5						
67				Kstar		2.796						
68				Theta star		9.9115E-5						
69				Mean of Log Transformed Data		-8.37						
70				Standard Deviation of Log Transformed Data		0.546						
71												
72				Normal GOF Test Results								
73												
74				Correlation Coefficient R		0.744						
75				Approximate Shapiro Wilk Test Statistic		0.59						
76				Approximate Shapiro Wilk P Value		0						
77				Lilliefors Test Statistic		0.31						
78				Lilliefors Critical (0.05) Value		0.118						
79	Data not Normal at (0.05) Significance Level											
80												
81				Gamma GOF Test Results								
82												
83				Correlation Coefficient R		0.859						
84				A-D Test Statistic		3.826						
85				A-D Critical (0.05) Value		0.758						
86				K-S Test Statistic		0.308						
87				K-S Critical(0.05) Value		0.12						
88	Data not Gamma Distributed at (0.05) Significance Level											
89												
90				Lognormal GOF Test Results								
91												
92				Correlation Coefficient R		0.932						
93				Approximate Shapiro Wilk Test Statistic		0.874						
94				Approximate Shapiro Wilk P Value		3.7320E-6						
95				Lilliefors Test Statistic		0.285						
96				Lilliefors Critical (0.05) Value		0.118						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Non-parametric GOF Test Results											
100												
101	Data do not follow a discernible distribution at (0.05) Level of Signif											
102												
103	Chromium (mg/L)											
104												
105				Raw Statistics								
106				Number of Valid Observations		56						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	28						
108					Minimum	1.0000E-4						
109					Maximum	0.04						
110					Mean of Raw Data	0.00607						
111					Standard Deviation of Raw Data	0.00804						
112					Khat	0.8						
113					Theta hat	0.00759						
114					Kstar	0.769						
115					Theta star	0.00789						
116					Mean of Log Transformed Data	-5.847						
117					Standard Deviation of Log Transformed Data	1.269						
118												
119				Normal GOF Test Results								
120												
121					Correlation Coefficient R	0.83						
122					Approximate Shapiro Wilk Test Statistic	0.7						
123					Approximate Shapiro Wilk P Value	2.021E-14						
124					Lilliefors Test Statistic	0.229						
125					Lilliefors Critical (0.05) Value	0.118						
126	Data not Normal at (0.05) Significance Level											
127												
128				Gamma GOF Test Results								
129												
130					Correlation Coefficient R	0.987						
131					A-D Test Statistic	2.06						
132					A-D Critical (0.05) Value	0.79						
133					K-S Test Statistic	0.193						
134					K-S Critical(0.05) Value	0.123						
135	Data not Gamma Distributed at (0.05) Significance Level											
136												
137				Lognormal GOF Test Results								
138												
139					Correlation Coefficient R	0.97						
140					Approximate Shapiro Wilk Test Statistic	0.938						
141					Approximate Shapiro Wilk P Value	0.00943						
142					Lilliefors Test Statistic	0.191						
143					Lilliefors Critical (0.05) Value	0.118						
144	Data not Lognormal at (0.05) Significance Level											
145												
146	Non-parametric GOF Test Results											
147												
148	Data do not follow a discernible distribution at (0.05) Level of Signif											
149												
150	Copper (mg/L)											
151												
152				Raw Statistics								
153					Number of Valid Observations	56						
154					Number of Distinct Observations	25						
155					Minimum	5.8000E-4						
156					Maximum	0.013						
157					Mean of Raw Data	0.00271						
158					Standard Deviation of Raw Data	0.00246						
159					Khat	1.72						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Theta hat	0.00157						
161					Kstar	1.64						
162					Theta star	0.00165						
163					Mean of Log Transformed Data	-6.23						
164					Standard Deviation of Log Transformed Data	0.782						
165												
166				Normal GOF Test Results								
167												
168					Correlation Coefficient R	0.874						
169					Approximate Shapiro Wilk Test Statistic	0.773						
170					Approximate Shapiro Wilk P Value	3.708E-11						
171					Lilliefors Test Statistic	0.238						
172					Lilliefors Critical (0.05) Value	0.118						
173	Data not Normal at (0.05) Significance Level											
174												
175				Gamma GOF Test Results								
176												
177					Correlation Coefficient R	0.982						
178					A-D Test Statistic	1.436						
179					A-D Critical (0.05) Value	0.766						
180					K-S Test Statistic	0.171						
181					K-S Critical(0.05) Value	0.121						
182	Data not Gamma Distributed at (0.05) Significance Level											
183												
184				Lognormal GOF Test Results								
185												
186					Correlation Coefficient R	0.981						
187					Approximate Shapiro Wilk Test Statistic	0.947						
188					Approximate Shapiro Wilk P Value	0.027						
189					Lilliefors Test Statistic	0.129						
190					Lilliefors Critical (0.05) Value	0.118						
191	Data not Lognormal at (0.05) Significance Level											
192												
193	Non-parametric GOF Test Results											
194												
195	Data do not follow a discernible distribution at (0.05) Level of Signif											
196												
197	Manganese (mg/L)											
198												
199				Raw Statistics								
200					Number of Valid Observations	32						
201					Number of Distinct Observations	32						
202					Minimum	0.004						
203					Maximum	0.524						
204					Mean of Raw Data	0.134						
205					Standard Deviation of Raw Data	0.131						
206					Khat	1.041						
207					Theta hat	0.129						
208					Kstar	0.964						
209					Theta star	0.139						
210					Mean of Log Transformed Data	-2.562						
211					Standard Deviation of Log Transformed Data	1.198						
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213				Normal GOF Test Results								
214												
215					Correlation Coefficient R	0.917						
216					Shapiro Wilk Test Statistic	0.838						
217					Shapiro Wilk Critical (0.05) Value	0.93						
218					Approximate Shapiro Wilk P Value	1.3438E-4						
219					Lilliefors Test Statistic	0.206						
220					Lilliefors Critical (0.05) Value	0.154						
221	Data not Normal at (0.05) Significance Level											
222												
223				Gamma GOF Test Results								
224												
225					Correlation Coefficient R	0.984						
226					A-D Test Statistic	0.28						
227					A-D Critical (0.05) Value	0.775						
228					K-S Test Statistic	0.0991						
229					K-S Critical(0.05) Value	0.16						
230	Data appear Gamma Distributed at (0.05) Significance Level											
231												
232				Lognormal GOF Test Results								
233												
234					Correlation Coefficient R	0.984						
235					Shapiro Wilk Test Statistic	0.963						
236					Shapiro Wilk Critical (0.05) Value	0.93						
237					Approximate Shapiro Wilk P Value	0.386						
238					Lilliefors Test Statistic	0.0893						
239					Lilliefors Critical (0.05) Value	0.154						
240	Data appear Lognormal at (0.05) Significance Level											
241												
242	Nickel (mg/L)											
243												
244				Raw Statistics								
245					Number of Valid Observations	34						
246					Number of Distinct Observations	28						
247					Minimum	0.00105						
248					Maximum	0.018						
249					Mean of Raw Data	0.00419						
250					Standard Deviation of Raw Data	0.00348						
251					Khat	2.271						
252					Theta hat	0.00184						
253					Kstar	2.091						
254					Theta star	0.002						
255					Mean of Log Transformed Data	-5.712						
256					Standard Deviation of Log Transformed Data	0.671						
257												
258				Normal GOF Test Results								
259												
260					Correlation Coefficient R	0.842						
261					Shapiro Wilk Test Statistic	0.727						
262					Shapiro Wilk Critical (0.05) Value	0.933						
263					Approximate Shapiro Wilk P Value	1.3266E-7						
264					Lilliefors Test Statistic	0.246						
265					Lilliefors Critical (0.05) Value	0.15						

	A	B	C	D	E	F	G	H	I	J	K	L
266	Data not Normal at (0.05) Significance Level											
267												
268				Gamma GOF Test Results								
269												
270					Correlation Coefficient R	0.943						
271					A-D Test Statistic	0.723						
272					A-D Critical (0.05) Value	0.758						
273					K-S Test Statistic	0.15						
274					K-S Critical(0.05) Value	0.153						
275	Data appear Gamma Distributed at (0.05) Significance Level											
276												
277				Lognormal GOF Test Results								
278												
279					Correlation Coefficient R	0.984						
280					Shapiro Wilk Test Statistic	0.964						
281					Shapiro Wilk Critical (0.05) Value	0.933						
282					Approximate Shapiro Wilk P Value	0.379						
283					Lilliefors Test Statistic	0.115						
284					Lilliefors Critical (0.05) Value	0.15						
285	Data appear Lognormal at (0.05) Significance Level											
286												
287	Zinc (mg/L)											
288												
289				Raw Statistics								
290					Number of Valid Observations	34						
291					Number of Distinct Observations	17						
292					Minimum	0.001						
293					Maximum	0.0235						
294					Mean of Raw Data	0.00381						
295					Standard Deviation of Raw Data	0.00408						
296					Khat	1.638						
297					Theta hat	0.00233						
298					Kstar	1.513						
299					Theta star	0.00252						
300					Mean of Log Transformed Data	-5.904						
301					Standard Deviation of Log Transformed Data	0.792						
302												
303				Normal GOF Test Results								
304												
305					Correlation Coefficient R	0.772						
306					Shapiro Wilk Test Statistic	0.627						
307					Shapiro Wilk Critical (0.05) Value	0.933						
308					Approximate Shapiro Wilk P Value	1.0588E-9						
309					Lilliefors Test Statistic	0.247						
310					Lilliefors Critical (0.05) Value	0.15						
311	Data not Normal at (0.05) Significance Level											
312												
313				Gamma GOF Test Results								
314												
315					Correlation Coefficient R	0.901						
316					A-D Test Statistic	0.978						
317					A-D Critical (0.05) Value	0.764						
318					K-S Test Statistic	0.132						

	A	B	C	D	E	F	G	H	I	J	K	L
319					K-S Critical(0.05) Value	0.154						
320	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
321												
322				Lognormal GOF Test Results								
323												
324					Correlation Coefficient R	0.964						
325					Shapiro Wilk Test Statistic	0.922						
326					Shapiro Wilk Critical (0.05) Value	0.933						
327					Approximate Shapiro Wilk P Value	0.0213						
328					Lilliefors Test Statistic	0.133						
329					Lilliefors Critical (0.05) Value	0.15						
330	Data appear Approximate_Lognormal at (0.05) Significance Level											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/2/2025 12:04:50 PM
	From File	2024-ShallowProUCL_e.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

05-SH

Chloride (mg/L)

Raw Statistics	
Number of Valid Observations	55
Number of Distinct Observations	36
Minimum	0.1
Maximum	2.72
Mean of Raw Data	1.391
Standard Deviation of Raw Data	0.755
Khat	2.449
Theta hat	0.568
Kstar	2.328
Theta star	0.598
Mean of Log Transformed Data	0.112
Standard Deviation of Log Transformed Data	0.763

Normal GOF Test Results	
Correlation Coefficient R	0.981
Approximate Shapiro Wilk Test Statistic	0.937
Approximate Shapiro Wilk P Value	0.00981
Lilliefors Test Statistic	0.111
Lilliefors Critical (0.05) Value	0.119

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.937
A-D Test Statistic	1.148
A-D Critical (0.05) Value	0.76
K-S Test Statistic	0.123
K-S Critical(0.05) Value	0.121

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.944
Approximate Shapiro Wilk Test Statistic	0.884
Approximate Shapiro Wilk P Value	1.5358E-5
Lilliefors Test Statistic	0.143
Lilliefors Critical (0.05) Value	0.119

Data not Lognormal at (0.05) Significance Level

Arsenic (mg/L)

	A	B	C	D	E	F	G	H	I	J	K	L
54				Raw Statistics								
55					Number of Valid Observations	50						
56					Number of Missing Observations	7						
57					Number of Distinct Observations	16						
58					Minimum	1.5000E-4						
59					Maximum	0.0019						
60					Mean of Raw Data	3.3500E-4						
61					Standard Deviation of Raw Data	3.0562E-4						
62					Khat	2.731						
63					Theta hat	1.2269E-4						
64					Kstar	2.58						
65					Theta star	1.2984E-4						
66					Mean of Log Transformed Data	-8.196						
67					Standard Deviation of Log Transformed Data	0.54						
68												
69				Normal GOF Test Results								
70												
71					Correlation Coefficient R	0.71						
72					Shapiro Wilk Test Statistic	0.533						
73					Shapiro Wilk Critical (0.05) Value	0.947						
74					Approximate Shapiro Wilk P Value	0						
75					Lilliefors Test Statistic	0.274						
76					Lilliefors Critical (0.05) Value	0.125						
77	Data not Normal at (0.05) Significance Level											
78												
79				Gamma GOF Test Results								
80												
81					Correlation Coefficient R	0.847						
82					A-D Test Statistic	5.434						
83					A-D Critical (0.05) Value	0.759						
84					K-S Test Statistic	0.287						
85					K-S Critical(0.05) Value	0.126						
86	Data not Gamma Distributed at (0.05) Significance Level											
87												
88				Lognormal GOF Test Results								
89												
90					Correlation Coefficient R	0.871						
91					Shapiro Wilk Test Statistic	0.765						
92					Shapiro Wilk Critical (0.05) Value	0.947						
93					Approximate Shapiro Wilk P Value	4.173E-10						
94					Lilliefors Test Statistic	0.273						
95					Lilliefors Critical (0.05) Value	0.125						
96	Data not Lognormal at (0.05) Significance Level											
97												
98	Non-parametric GOF Test Results											
99												
100	Data do not follow a discernible distribution at (0.05) Level of Signif											
101												
102	Copper (mg/L)											
103												
104				Raw Statistics								
105					Number of Valid Observations	57						
106					Number of Distinct Observations	25						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Minimum	7.2000E-4						
108					Maximum	0.009						
109					Mean of Raw Data	0.00275						
110					Standard Deviation of Raw Data	0.00205						
111					Khat	2.147						
112					Theta hat	0.00128						
113					Kstar	2.046						
114					Theta star	0.00135						
115					Mean of Log Transformed Data	-6.146						
116					Standard Deviation of Log Transformed Data	0.709						
117												
118				Normal GOF Test Results								
119												
120					Correlation Coefficient R	0.912						
121					Approximate Shapiro Wilk Test Statistic	0.822						
122					Approximate Shapiro Wilk P Value	5.4322E-9						
123					Lilliefors Test Statistic	0.169						
124					Lilliefors Critical (0.05) Value	0.117						
125	Data not Normal at (0.05) Significance Level											
126												
127				Gamma GOF Test Results								
128												
129					Correlation Coefficient R	0.98						
130					A-D Test Statistic	1.97						
131					A-D Critical (0.05) Value	0.762						
132					K-S Test Statistic	0.163						
133					K-S Critical(0.05) Value	0.119						
134	Data not Gamma Distributed at (0.05) Significance Level											
135												
136				Lognormal GOF Test Results								
137												
138					Correlation Coefficient R	0.961						
139					Approximate Shapiro Wilk Test Statistic	0.903						
140					Approximate Shapiro Wilk P Value	1.0088E-4						
141					Lilliefors Test Statistic	0.16						
142					Lilliefors Critical (0.05) Value	0.117						
143	Data not Lognormal at (0.05) Significance Level											
144												
145	Non-parametric GOF Test Results											
146												
147	Data do not follow a discernible distribution at (0.05) Level of Signif											
148												
149	Manganese (mg/L)											
150												
151				Raw Statistics								
152					Number of Valid Observations	33						
153					Number of Distinct Observations	32						
154					Minimum	9.7000E-4						
155					Maximum	0.625						
156					Mean of Raw Data	0.202						
157					Standard Deviation of Raw Data	0.179						
158					Khat	0.716						
159					Theta hat	0.282						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Kstar	0.671						
161					Theta star	0.301						
162					Mean of Log Transformed Data	-2.439						
163					Standard Deviation of Log Transformed Data	1.838						
164												
165				Normal GOF Test Results								
166												
167					Correlation Coefficient R	0.95						
168					Shapiro Wilk Test Statistic	0.887						
169					Shapiro Wilk Critical (0.05) Value	0.931						
170					Approximate Shapiro Wilk P Value	0.00236						
171					Lilliefors Test Statistic	0.176						
172					Lilliefors Critical (0.05) Value	0.152						
173	Data not Normal at (0.05) Significance Level											
174												
175				Gamma GOF Test Results								
176												
177					Correlation Coefficient R	0.924						
178					A-D Test Statistic	0.852						
179					A-D Critical (0.05) Value	0.791						
180					K-S Test Statistic	0.129						
181					K-S Critical(0.05) Value	0.16						
182	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
183												
184				Lognormal GOF Test Results								
185												
186					Correlation Coefficient R	0.915						
187					Shapiro Wilk Test Statistic	0.826						
188					Shapiro Wilk Critical (0.05) Value	0.931						
189					Approximate Shapiro Wilk P Value	4.9787E-5						
190					Lilliefors Test Statistic	0.204						
191					Lilliefors Critical (0.05) Value	0.152						
192	Data not Lognormal at (0.05) Significance Level											
193												
194	Nickel (mg/L)											
195												
196				Raw Statistics								
197					Number of Valid Observations	34						
198					Number of Distinct Observations	27						
199					Minimum	7.4000E-4						
200					Maximum	0.015						
201					Mean of Raw Data	0.00418						
202					Standard Deviation of Raw Data	0.00325						
203					Khat	2.066						
204					Theta hat	0.00202						
205					Kstar	1.903						
206					Theta star	0.0022						
207					Mean of Log Transformed Data	-5.738						
208					Standard Deviation of Log Transformed Data	0.748						
209												
210				Normal GOF Test Results								
211												
212					Correlation Coefficient R	0.894						

	A	B	C	D	E	F	G	H	I	J	K	L
213					Shapiro Wilk Test Statistic	0.806						
214					Shapiro Wilk Critical (0.05) Value	0.933						
215					Approximate Shapiro Wilk P Value	1.0667E-5						
216					Lilliefors Test Statistic	0.165						
217					Lilliefors Critical (0.05) Value	0.15						
218	Data not Normal at (0.05) Significance Level											
219												
220				Gamma GOF Test Results								
221												
222					Correlation Coefficient R	0.966						
223					A-D Test Statistic	0.475						
224					A-D Critical (0.05) Value	0.759						
225					K-S Test Statistic	0.0852						
226					K-S Critical(0.05) Value	0.153						
227	Data appear Gamma Distributed at (0.05) Significance Level											
228												
229				Lognormal GOF Test Results								
230												
231					Correlation Coefficient R	0.984						
232					Shapiro Wilk Test Statistic	0.961						
233					Shapiro Wilk Critical (0.05) Value	0.933						
234					Approximate Shapiro Wilk P Value	0.319						
235					Lilliefors Test Statistic	0.114						
236					Lilliefors Critical (0.05) Value	0.15						
237	Data appear Lognormal at (0.05) Significance Level											
238												
239	Zinc (mg/L)											
240												
241				Raw Statistics								
242					Number of Valid Observations	34						
243					Number of Distinct Observations	21						
244					Minimum	0.001						
245					Maximum	0.078						
246					Mean of Raw Data	0.00654						
247					Standard Deviation of Raw Data	0.0138						
248					Khat	0.778						
249					Theta hat	0.00841						
250					Kstar	0.729						
251					Theta star	0.00898						
252					Mean of Log Transformed Data	-5.796						
253					Standard Deviation of Log Transformed Data	1.045						
254												
255				Normal GOF Test Results								
256												
257					Correlation Coefficient R	0.62						
258					Shapiro Wilk Test Statistic	0.419						
259					Shapiro Wilk Critical (0.05) Value	0.933						
260					Approximate Shapiro Wilk P Value	2.217E-13						
261					Lilliefors Test Statistic	0.367						
262					Lilliefors Critical (0.05) Value	0.15						
263	Data not Normal at (0.05) Significance Level											
264												
265				Gamma GOF Test Results								

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267					Correlation Coefficient R	0.859						
268					A-D Test Statistic	2.973						
269					A-D Critical (0.05) Value	0.786						
270					K-S Test Statistic	0.297						
271					K-S Critical(0.05) Value	0.157						
272	Data not Gamma Distributed at (0.05) Significance Level											
273												
274				Lognormal GOF Test Results								
275												
276					Correlation Coefficient R	0.938						
277					Shapiro Wilk Test Statistic	0.878						
278					Shapiro Wilk Critical (0.05) Value	0.933						
279					Approximate Shapiro Wilk P Value	0.001						
280					Lilliefors Test Statistic	0.191						
281					Lilliefors Critical (0.05) Value	0.15						
282	Data not Lognormal at (0.05) Significance Level											
283												
284	Non-parametric GOF Test Results											
285												
286	Data do not follow a discernible distribution at (0.05) Level of Signif											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/6/2025 7:51:23 AM
	From File	2024-ShallowProUCL_f.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

06-SH

Arsenic (mg/L)

Raw Statistics	
Number of Valid Observations	51
Number of Distinct Observations	23
Minimum	2.0000E-4
Maximum	0.00208
Mean of Raw Data	5.2510E-4
Standard Deviation of Raw Data	3.7122E-4
Khat	2.63
Theta hat	1.9966E-4
Kstar	2.488
Theta star	2.1102E-4
Mean of Log Transformed Data	-7.754
Standard Deviation of Log Transformed Data	0.627

Normal GOF Test Results	
Correlation Coefficient R	0.896
Approximate Shapiro Wilk Test Statistic	0.813
Approximate Shapiro Wilk P Value	2.4352E-8
Lilliefors Test Statistic	0.194
Lilliefors Critical (0.05) Value	0.123

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.976
A-D Test Statistic	1.295
A-D Critical (0.05) Value	0.759
K-S Test Statistic	0.133
K-S Critical(0.05) Value	0.125

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.966
Approximate Shapiro Wilk Test Statistic	0.916
Approximate Shapiro Wilk P Value	0.00124
Lilliefors Test Statistic	0.143
Lilliefors Critical (0.05) Value	0.123

Data not Lognormal at (0.05) Significance Level

Non-parametric GOF Test Results

	A	B	C	D	E	F	G	H	I	J	K	L
54	Data do not follow a discernible distribution at (0.05) Level of Signif											
55												
56	Copper (mg/L)											
57												
58				Raw Statistics								
59					Number of Valid Observations	51						
60					Number of Distinct Observations	28						
61					Minimum	2.4000E-4						
62					Maximum	0.128						
63					Mean of Raw Data	0.00528						
64					Standard Deviation of Raw Data	0.0183						
65					Khat	0.61						
66					Theta hat	0.00867						
67					Kstar	0.587						
68					Theta star	0.009						
69					Mean of Log Transformed Data	-6.254						
70					Standard Deviation of Log Transformed Data	1.035						
71												
72				Normal GOF Test Results								
73												
74					Correlation Coefficient R	0.456						
75					Approximate Shapiro Wilk Test Statistic	0.249						
76					Approximate Shapiro Wilk P Value	0						
77					Lilliefors Test Statistic	0.445						
78					Lilliefors Critical (0.05) Value	0.123						
79	Data not Normal at (0.05) Significance Level											
80												
81				Gamma GOF Test Results								
82												
83					Correlation Coefficient R	0.725						
84					A-D Test Statistic	6.486						
85					A-D Critical (0.05) Value	0.805						
86					K-S Test Statistic	0.288						
87					K-S Critical(0.05) Value	0.13						
88	Data not Gamma Distributed at (0.05) Significance Level											
89												
90				Lognormal GOF Test Results								
91												
92					Correlation Coefficient R	0.933						
93					Approximate Shapiro Wilk Test Statistic	0.894						
94					Approximate Shapiro Wilk P Value	1.1681E-4						
95					Lilliefors Test Statistic	0.138						
96					Lilliefors Critical (0.05) Value	0.123						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Non-parametric GOF Test Results											
100												
101	Data do not follow a discernible distribution at (0.05) Level of Signif											
102												
103	Nickel (mg/L)											
104												
105				Raw Statistics								
106					Number of Valid Observations	33						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	28						
108					Minimum	0.0041						
109					Maximum	0.167						
110					Mean of Raw Data	0.0146						
111					Standard Deviation of Raw Data	0.029						
112					Khat	1.037						
113					Theta hat	0.0141						
114					Kstar	0.963						
115					Theta star	0.0151						
116					Mean of Log Transformed Data	-4.782						
117					Standard Deviation of Log Transformed Data	0.816						
118												
119				Normal GOF Test Results								
120												
121					Correlation Coefficient R	0.579						
122					Shapiro Wilk Test Statistic	0.37						
123					Shapiro Wilk Critical (0.05) Value	0.931						
124					Approximate Shapiro Wilk P Value	1.045E-13						
125					Lilliefors Test Statistic	0.389						
126					Lilliefors Critical (0.05) Value	0.152						
127	Data not Normal at (0.05) Significance Level											
128												
129				Gamma GOF Test Results								
130												
131					Correlation Coefficient R	0.801						
132					A-D Test Statistic	4.599						
133					A-D Critical (0.05) Value	0.775						
134					K-S Test Statistic	0.32						
135					K-S Critical(0.05) Value	0.158						
136	Data not Gamma Distributed at (0.05) Significance Level											
137												
138				Lognormal GOF Test Results								
139												
140					Correlation Coefficient R	0.86						
141					Shapiro Wilk Test Statistic	0.751						
142					Shapiro Wilk Critical (0.05) Value	0.931						
143					Approximate Shapiro Wilk P Value	7.3882E-7						
144					Lilliefors Test Statistic	0.223						
145					Lilliefors Critical (0.05) Value	0.152						
146	Data not Lognormal at (0.05) Significance Level											
147												
148	Non-parametric GOF Test Results											
149												
150	Data do not follow a discernible distribution at (0.05) Level of Signif											
151												
152	Zinc (mg/L)											
153												
154				Raw Statistics								
155					Number of Valid Observations	33						
156					Number of Distinct Observations	24						
157					Minimum	0.001						
158					Maximum	0.054						
159					Mean of Raw Data	0.00554						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Standard Deviation of Raw Data	0.00934						
161					Khat	1.161						
162					Theta hat	0.00478						
163					Kstar	1.075						
164					Theta star	0.00515						
165					Mean of Log Transformed Data	-5.684						
166					Standard Deviation of Log Transformed Data	0.848						
167												
168				Normal GOF Test Results								
169												
170					Correlation Coefficient R	0.634						
171					Shapiro Wilk Test Statistic	0.438						
172					Shapiro Wilk Critical (0.05) Value	0.931						
173					Approximate Shapiro Wilk P Value	1.122E-12						
174					Lilliefors Test Statistic	0.321						
175					Lilliefors Critical (0.05) Value	0.152						
176	Data not Normal at (0.05) Significance Level											
177												
178				Gamma GOF Test Results								
179												
180					Correlation Coefficient R	0.829						
181					A-D Test Statistic	2.104						
182					A-D Critical (0.05) Value	0.772						
183					K-S Test Statistic	0.206						
184					K-S Critical(0.05) Value	0.157						
185	Data not Gamma Distributed at (0.05) Significance Level											
186												
187				Lognormal GOF Test Results								
188												
189					Correlation Coefficient R	0.958						
190					Shapiro Wilk Test Statistic	0.926						
191					Shapiro Wilk Critical (0.05) Value	0.931						
192					Approximate Shapiro Wilk P Value	0.031						
193					Lilliefors Test Statistic	0.119						
194					Lilliefors Critical (0.05) Value	0.152						
195	Data appear Approximate_Lognormal at (0.05) Significance Level											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/6/2025 8:58:29 AM
	From File	2024-ShallowProUCL_g.xls
	Full Precision	OFF
	Confidence Coefficient	0.95
07-SH		
Arsenic (mg/L)		
	Raw Statistics	
	Number of Valid Observations	56
	Number of Distinct Observations	15
	Minimum	1.0000E-4
	Maximum	0.0012
	Mean of Raw Data	3.9607E-4
	Standard Deviation of Raw Data	2.5704E-4
	Khat	2.462
	Theta hat	1.6088E-4
	Kstar	2.342
	Theta star	1.6912E-4
	Mean of Log Transformed Data	-8.051
	Standard Deviation of Log Transformed Data	0.686
	Normal GOF Test Results	
	Correlation Coefficient R	0.95
	Approximate Shapiro Wilk Test Statistic	0.894
	Approximate Shapiro Wilk P Value	4.0205E-5
	Lilliefors Test Statistic	0.155
	Lilliefors Critical (0.05) Value	0.118
Data not Normal at (0.05) Significance Level		
	Gamma GOF Test Results	
	Correlation Coefficient R	0.987
	A-D Test Statistic	0.872
	A-D Critical (0.05) Value	0.76
	K-S Test Statistic	0.145
	K-S Critical(0.05) Value	0.12
Data not Gamma Distributed at (0.05) Significance Level		
	Lognormal GOF Test Results	
	Correlation Coefficient R	0.978
	Approximate Shapiro Wilk Test Statistic	0.934
	Approximate Shapiro Wilk P Value	0.00567
	Lilliefors Test Statistic	0.129
	Lilliefors Critical (0.05) Value	0.118
Data not Lognormal at (0.05) Significance Level		
Non-parametric GOF Test Results		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Data do not follow a discernible distribution at (0.05) Level of Signif											
55												
56	Copper (mg/L)											
57												
58				Raw Statistics								
59				Number of Valid Observations		56						
60				Number of Distinct Observations		27						
61				Minimum		2.0000E-4						
62				Maximum		0.035						
63				Mean of Raw Data		0.00306						
64				Standard Deviation of Raw Data		0.0049						
65				Khat		0.966						
66				Theta hat		0.00316						
67				Kstar		0.926						
68				Theta star		0.0033						
69				Mean of Log Transformed Data		-6.39						
70				Standard Deviation of Log Transformed Data		1.113						
71												
72				Normal GOF Test Results								
73												
74				Correlation Coefficient R		0.668						
75				Approximate Shapiro Wilk Test Statistic		0.491						
76				Approximate Shapiro Wilk P Value		0						
77				Lilliefors Test Statistic		0.299						
78				Lilliefors Critical (0.05) Value		0.118						
79	Data not Normal at (0.05) Significance Level											
80												
81				Gamma GOF Test Results								
82												
83				Correlation Coefficient R		0.85						
84				A-D Test Statistic		1.076						
85				A-D Critical (0.05) Value		0.781						
86				K-S Test Statistic		0.145						
87				K-S Critical(0.05) Value		0.123						
88	Data not Gamma Distributed at (0.05) Significance Level											
89												
90				Lognormal GOF Test Results								
91												
92				Correlation Coefficient R		0.98						
93				Approximate Shapiro Wilk Test Statistic		0.954						
94				Approximate Shapiro Wilk P Value		0.067						
95				Lilliefors Test Statistic		0.128						
96				Lilliefors Critical (0.05) Value		0.118						
97	Data appear Approximate_Lognormal at (0.05) Significance Level											
98												
99	Iron (mg/L)											
100												
101				Raw Statistics								
102				Number of Valid Observations		31						
103				Number of Distinct Observations		22						
104				Minimum		0.01						
105				Maximum		2.06						
106				Mean of Raw Data		0.327						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Standard Deviation of Raw Data	0.526						
108					Khat	0.463						
109					Theta hat	0.706						
110					Kstar	0.44						
111					Theta star	0.744						
112					Mean of Log Transformed Data	-2.504						
113					Standard Deviation of Log Transformed Data	1.823						
114												
115				Normal GOF Test Results								
116												
117					Correlation Coefficient R	0.81						
118					Shapiro Wilk Test Statistic	0.662						
119					Shapiro Wilk Critical (0.05) Value	0.929						
120					Approximate Shapiro Wilk P Value	2.9636E-8						
121					Lilliefors Test Statistic	0.289						
122					Lilliefors Critical (0.05) Value	0.156						
123	Data not Normal at (0.05) Significance Level											
124												
125				Gamma GOF Test Results								
126												
127					Correlation Coefficient R	0.986						
128					A-D Test Statistic	1.435						
129					A-D Critical (0.05) Value	0.818						
130					K-S Test Statistic	0.192						
131					K-S Critical(0.05) Value	0.168						
132	Data not Gamma Distributed at (0.05) Significance Level											
133												
134				Lognormal GOF Test Results								
135												
136					Correlation Coefficient R	0.955						
137					Shapiro Wilk Test Statistic	0.888						
138					Shapiro Wilk Critical (0.05) Value	0.929						
139					Approximate Shapiro Wilk P Value	0.00359						
140					Lilliefors Test Statistic	0.166						
141					Lilliefors Critical (0.05) Value	0.156						
142	Data not Lognormal at (0.05) Significance Level											
143												
144	Non-parametric GOF Test Results											
145												
146	Data do not follow a discernible distribution at (0.05) Level of Signif											
147												
148	Manganese (mg/L)											
149												
150				Raw Statistics								
151					Number of Valid Observations	31						
152					Number of Distinct Observations	31						
153					Minimum	0.001						
154					Maximum	0.995						
155					Mean of Raw Data	0.382						
156					Standard Deviation of Raw Data	0.258						
157					Khat	1.19						
158					Theta hat	0.321						
159					Kstar	1.097						

160	Theta star	0.348
161	Mean of Log Transformed Data	-1.438
162	Standard Deviation of Log Transformed Data	1.425
163		
164	Normal GOF Test Results	
165		
166	Correlation Coefficient R	0.985
167	Shapiro Wilk Test Statistic	0.96
168	Shapiro Wilk Critical (0.05) Value	0.929
169	Approximate Shapiro Wilk P Value	0.349
170	Lilliefors Test Statistic	0.0793
171	Lilliefors Critical (0.05) Value	0.156
172	Data appear Normal at (0.05) Significance Level	
173		
174	Gamma GOF Test Results	
175		
176	Correlation Coefficient R	0.963
177	A-D Test Statistic	0.985
178	A-D Critical (0.05) Value	0.771
179	K-S Test Statistic	0.166
180	K-S Critical(0.05) Value	0.162
181	Data not Gamma Distributed at (0.05) Significance Level	
182		
183	Lognormal GOF Test Results	
184		
185	Correlation Coefficient R	0.86
186	Shapiro Wilk Test Statistic	0.757
187	Shapiro Wilk Critical (0.05) Value	0.929
188	Approximate Shapiro Wilk P Value	2.3219E-6
189	Lilliefors Test Statistic	0.226
190	Lilliefors Critical (0.05) Value	0.156
191	Data not Lognormal at (0.05) Significance Level	
192		
193	Nickel (mg/L)	
194		
195	Raw Statistics	
196	Number of Valid Observations	33
197	Number of Distinct Observations	23
198	Minimum	9.0000E-4
199	Maximum	0.017
200	Mean of Raw Data	0.00389
201	Standard Deviation of Raw Data	0.00334
202	Khat	2.115
203	Theta hat	0.00184
204	Kstar	1.943
205	Theta star	0.002
206	Mean of Log Transformed Data	-5.805
207	Standard Deviation of Log Transformed Data	0.699
208		
209	Normal GOF Test Results	
210		
211	Correlation Coefficient R	0.831
212	Shapiro Wilk Test Statistic	0.708

213	Shapiro Wilk Critical (0.05) Value	0.931
214	Approximate Shapiro Wilk P Value	8.5374E-8
215	Lilliefors Test Statistic	0.213
216	Lilliefors Critical (0.05) Value	0.152
217	Data not Normal at (0.05) Significance Level	
218		
219	Gamma GOF Test Results	
220		
221	Correlation Coefficient R	0.929
222	A-D Test Statistic	1.091
223	A-D Critical (0.05) Value	0.759
224	K-S Test Statistic	0.152
225	K-S Critical(0.05) Value	0.155
226	Data follow Appr. Gamma Distribution at (0.05) Significance Level	
227		
228	Lognormal GOF Test Results	
229		
230	Correlation Coefficient R	0.973
231	Shapiro Wilk Test Statistic	0.943
232	Shapiro Wilk Critical (0.05) Value	0.931
233	Approximate Shapiro Wilk P Value	0.102
234	Lilliefors Test Statistic	0.16
235	Lilliefors Critical (0.05) Value	0.152
236	Data appear Approximate_Lognormal at (0.05) Significance Level	
237		
238	Zinc (mg/L)	
239		
240	Raw Statistics	
241	Number of Valid Observations	33
242	Number of Distinct Observations	23
243	Minimum	0.001
244	Maximum	0.026
245	Mean of Raw Data	0.00474
246	Standard Deviation of Raw Data	0.00478
247	Khat	1.671
248	Theta hat	0.00284
249	Kstar	1.539
250	Theta star	0.00308
251	Mean of Log Transformed Data	-5.68
252	Standard Deviation of Log Transformed Data	0.793
253		
254	Normal GOF Test Results	
255		
256	Correlation Coefficient R	0.814
257	Shapiro Wilk Test Statistic	0.688
258	Shapiro Wilk Critical (0.05) Value	0.931
259	Approximate Shapiro Wilk P Value	3.2431E-8
260	Lilliefors Test Statistic	0.233
261	Lilliefors Critical (0.05) Value	0.152
262	Data not Normal at (0.05) Significance Level	
263		
264	Gamma GOF Test Results	
265		

	A	B	C	D	E	F	G	H	I	J	K	L
266					Correlation Coefficient R	0.938						
267					A-D Test Statistic	0.667						
268					A-D Critical (0.05) Value	0.763						
269					K-S Test Statistic	0.147						
270					K-S Critical(0.05) Value	0.156						
271	Data appear Gamma Distributed at (0.05) Significance Level											
272												
273				Lognormal GOF Test Results								
274												
275					Correlation Coefficient R	0.986						
276					Shapiro Wilk Test Statistic	0.966						
277					Shapiro Wilk Critical (0.05) Value	0.931						
278					Approximate Shapiro Wilk P Value	0.434						
279					Lilliefors Test Statistic	0.0875						
280					Lilliefors Critical (0.05) Value	0.152						
281	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/6/2025 12:30:06 PM
4	From File	2024-ShallowProUCL_h.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	08-SH	
9	Arsenic (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	55
13	Number of Distinct Observations	25
14	Minimum	2.0000E-4
15	Maximum	0.0022
16	Mean of Raw Data	7.0345E-4
17	Standard Deviation of Raw Data	4.7920E-4
18	Khat	2.535
19	Theta hat	2.7753E-4
20	Kstar	2.409
21	Theta star	2.9206E-4
22	Mean of Log Transformed Data	-7.47
23	Standard Deviation of Log Transformed Data	0.654
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.932
28	Approximate Shapiro Wilk Test Statistic	0.86
29	Approximate Shapiro Wilk P Value	9.0750E-7
30	Lilliefors Test Statistic	0.159
31	Lilliefors Critical (0.05) Value	0.119
32	Data not Normal at (0.05) Significance Level	
33		
34	Gamma GOF Test Results	
35		
36	Correlation Coefficient R	0.991
37	A-D Test Statistic	0.744
38	A-D Critical (0.05) Value	0.76
39	K-S Test Statistic	0.127
40	K-S Critical(0.05) Value	0.121
41	Data follow Appr. Gamma Distribution at (0.05) Significance Level	
42		
43	Lognormal GOF Test Results	
44		
45	Correlation Coefficient R	0.987
46	Approximate Shapiro Wilk Test Statistic	0.953
47	Approximate Shapiro Wilk P Value	0.0573
48	Lilliefors Test Statistic	0.106
49	Lilliefors Critical (0.05) Value	0.119
50	Data appear Lognormal at (0.05) Significance Level	
51		
52	Chromium (mg/L)	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54				Raw Statistics								
55					Number of Valid Observations	55						
56					Number of Distinct Observations	31						
57					Minimum	1.0000E-4						
58					Maximum	0.027						
59					Mean of Raw Data	0.00564						
60					Standard Deviation of Raw Data	0.00689						
61					Khat	0.738						
62					Theta hat	0.00765						
63					Kstar	0.71						
64					Theta star	0.00795						
65					Mean of Log Transformed Data	-5.991						
66					Standard Deviation of Log Transformed Data	1.386						
67												
68				Normal GOF Test Results								
69												
70					Correlation Coefficient R	0.873						
71					Approximate Shapiro Wilk Test Statistic	0.755						
72					Approximate Shapiro Wilk P Value	9.883E-12						
73					Lilliefors Test Statistic	0.249						
74					Lilliefors Critical (0.05) Value	0.119						
75	Data not Normal at (0.05) Significance Level											
76												
77				Gamma GOF Test Results								
78												
79					Correlation Coefficient R	0.977						
80					A-D Test Statistic	1.686						
81					A-D Critical (0.05) Value	0.794						
82					K-S Test Statistic	0.181						
83					K-S Critical(0.05) Value	0.125						
84	Data not Gamma Distributed at (0.05) Significance Level											
85												
86				Lognormal GOF Test Results								
87												
88					Correlation Coefficient R	0.98						
89					Approximate Shapiro Wilk Test Statistic	0.946						
90					Approximate Shapiro Wilk P Value	0.0265						
91					Lilliefors Test Statistic	0.146						
92					Lilliefors Critical (0.05) Value	0.119						
93	Data not Lognormal at (0.05) Significance Level											
94												
95	Non-parametric GOF Test Results											
96												
97	Data do not follow a discernible distribution at (0.05) Level of Signif											
98												
99	Copper (mg/L)											
100												
101				Raw Statistics								
102					Number of Valid Observations	55						
103					Number of Distinct Observations	28						
104					Minimum	4.4000E-4						
105					Maximum	0.0123						
106					Mean of Raw Data	0.003						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Standard Deviation of Raw Data	0.00285						
108					Khat	1.457						
109					Theta hat	0.00206						
110					Kstar	1.389						
111					Theta star	0.00216						
112					Mean of Log Transformed Data	-6.188						
113					Standard Deviation of Log Transformed Data	0.876						
114												
115			Normal GOF Test Results									
116												
117					Correlation Coefficient R	0.884						
118					Approximate Shapiro Wilk Test Statistic	0.777						
119					Approximate Shapiro Wilk P Value	9.763E-11						
120					Lilliefors Test Statistic	0.192						
121					Lilliefors Critical (0.05) Value	0.119						
122	Data not Normal at (0.05) Significance Level											
123												
124			Gamma GOF Test Results									
125												
126					Correlation Coefficient R	0.982						
127					A-D Test Statistic	1.334						
128					A-D Critical (0.05) Value	0.769						
129					K-S Test Statistic	0.139						
130					K-S Critical(0.05) Value	0.122						
131	Data not Gamma Distributed at (0.05) Significance Level											
132												
133			Lognormal GOF Test Results									
134												
135					Correlation Coefficient R	0.983						
136					Approximate Shapiro Wilk Test Statistic	0.948						
137					Approximate Shapiro Wilk P Value	0.0325						
138					Lilliefors Test Statistic	0.122						
139					Lilliefors Critical (0.05) Value	0.119						
140	Data not Lognormal at (0.05) Significance Level											
141												
142	Non-parametric GOF Test Results											
143												
144	Data do not follow a discernible distribution at (0.05) Level of Signif											
145												
146	Manganese (mg/L)											
147												
148			Raw Statistics									
149					Number of Valid Observations	31						
150					Number of Distinct Observations	28						
151					Minimum	0.004						
152					Maximum	1.29						
153					Mean of Raw Data	0.191						
154					Standard Deviation of Raw Data	0.305						
155					Khat	0.485						
156					Theta hat	0.394						
157					Kstar	0.46						
158					Theta star	0.416						
159					Mean of Log Transformed Data	-2.97						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Standard Deviation of Log Transformed Data	1.766						
161												
162				Normal GOF Test Results								
163												
164					Correlation Coefficient R	0.812						
165					Shapiro Wilk Test Statistic	0.67						
166					Shapiro Wilk Critical (0.05) Value	0.929						
167					Approximate Shapiro Wilk P Value	4.1827E-8						
168					Lilliefors Test Statistic	0.306						
169					Lilliefors Critical (0.05) Value	0.156						
170	Data not Normal at (0.05) Significance Level											
171												
172				Gamma GOF Test Results								
173												
174					Correlation Coefficient R	0.994						
175					A-D Test Statistic	1.18						
176					A-D Critical (0.05) Value	0.813						
177					K-S Test Statistic	0.183						
178					K-S Critical(0.05) Value	0.167						
179	Data not Gamma Distributed at (0.05) Significance Level											
180												
181				Lognormal GOF Test Results								
182												
183					Correlation Coefficient R	0.978						
184					Shapiro Wilk Test Statistic	0.937						
185					Shapiro Wilk Critical (0.05) Value	0.929						
186					Approximate Shapiro Wilk P Value	0.0811						
187					Lilliefors Test Statistic	0.126						
188					Lilliefors Critical (0.05) Value	0.156						
189	Data appear Lognormal at (0.05) Significance Level											
190												
191	Nickel (mg/L)											
192												
193				Raw Statistics								
194					Number of Valid Observations	33						
195					Number of Distinct Observations	24						
196					Minimum	5.0000E-4						
197					Maximum	0.0335						
198					Mean of Raw Data	0.00558						
199					Standard Deviation of Raw Data	0.00653						
200					Khat	1.411						
201					Theta hat	0.00396						
202					Kstar	1.303						
203					Theta star	0.00428						
204					Mean of Log Transformed Data	-5.583						
205					Standard Deviation of Log Transformed Data	0.841						
206												
207				Normal GOF Test Results								
208												
209					Correlation Coefficient R	0.78						
210					Shapiro Wilk Test Statistic	0.632						
211					Shapiro Wilk Critical (0.05) Value	0.931						
212					Approximate Shapiro Wilk P Value	2.5040E-9						

	A	B	C	D	E	F	G	H	I	J	K	L
213					Lilliefors Test Statistic	0.354						
214					Lilliefors Critical (0.05) Value	0.152						
215	Data not Normal at (0.05) Significance Level											
216												
217				Gamma GOF Test Results								
218												
219					Correlation Coefficient R	0.935						
220					A-D Test Statistic	1.795						
221					A-D Critical (0.05) Value	0.767						
222					K-S Test Statistic	0.256						
223					K-S Critical(0.05) Value	0.156						
224	Data not Gamma Distributed at (0.05) Significance Level											
225												
226				Lognormal GOF Test Results								
227												
228					Correlation Coefficient R	0.965						
229					Shapiro Wilk Test Statistic	0.943						
230					Shapiro Wilk Critical (0.05) Value	0.931						
231					Approximate Shapiro Wilk P Value	0.104						
232					Lilliefors Test Statistic	0.186						
233					Lilliefors Critical (0.05) Value	0.152						
234	Data appear Approximate_Lognormal at (0.05) Significance Level											
235												
236	Zinc (mg/L)											
237												
238				Raw Statistics								
239					Number of Valid Observations	33						
240					Number of Distinct Observations	21						
241					Minimum	6.0000E-4						
242					Maximum	0.0179						
243					Mean of Raw Data	0.0046						
244					Standard Deviation of Raw Data	0.00432						
245					Khat	1.445						
246					Theta hat	0.00318						
247					Kstar	1.334						
248					Theta star	0.00345						
249					Mean of Log Transformed Data	-5.766						
250					Standard Deviation of Log Transformed Data	0.896						
251												
252				Normal GOF Test Results								
253												
254					Correlation Coefficient R	0.888						
255					Shapiro Wilk Test Statistic	0.789						
256					Shapiro Wilk Critical (0.05) Value	0.931						
257					Approximate Shapiro Wilk P Value	5.9360E-6						
258					Lilliefors Test Statistic	0.227						
259					Lilliefors Critical (0.05) Value	0.152						
260	Data not Normal at (0.05) Significance Level											
261												
262				Gamma GOF Test Results								
263												
264					Correlation Coefficient R	0.981						
265					A-D Test Statistic	0.878						

	A	B	C	D	E	F	G	H	I	J	K	L
266					A-D Critical (0.05) Value	0.766						
267					K-S Test Statistic	0.145						
268					K-S Critical(0.05) Value	0.156						
269	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
270												
271			Lognormal GOF Test Results									
272												
273					Correlation Coefficient R	0.982						
274					Shapiro Wilk Test Statistic	0.952						
275					Shapiro Wilk Critical (0.05) Value	0.931						
276					Approximate Shapiro Wilk P Value	0.189						
277					Lilliefors Test Statistic	0.153						
278					Lilliefors Critical (0.05) Value	0.152						
279	Data appear Approximate_Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/6/2025 2:30:48 PM
4	From File	2024-ShallowProUCL_i.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	11-SH	
9	Arsenic (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	38
13	Number of Distinct Observations	32
14	Minimum	1.1000E-4
15	Maximum	0.013
16	Mean of Raw Data	0.00178
17	Standard Deviation of Raw Data	0.00298
18	Khat	0.654
19	Theta hat	0.00273
20	Kstar	0.62
21	Theta star	0.00288
22	Mean of Log Transformed Data	-7.261
23	Standard Deviation of Log Transformed Data	1.299
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.763
28	Shapiro Wilk Test Statistic	0.593
29	Shapiro Wilk Critical (0.05) Value	0.938
30	Approximate Shapiro Wilk P Value	1.208E-11
31	Lilliefors Test Statistic	0.314
32	Lilliefors Critical (0.05) Value	0.142
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.967
38	A-D Test Statistic	2.477
39	A-D Critical (0.05) Value	0.798
40	K-S Test Statistic	0.225
41	K-S Critical(0.05) Value	0.15
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.967
47	Shapiro Wilk Test Statistic	0.92
48	Shapiro Wilk Critical (0.05) Value	0.938
49	Approximate Shapiro Wilk P Value	0.0112
50	Lilliefors Test Statistic	0.144
51	Lilliefors Critical (0.05) Value	0.142
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Copper (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		38						
62				Number of Distinct Observations		28						
63				Minimum		2.0000E-4						
64				Maximum		0.007						
65				Mean of Raw Data		0.00246						
66				Standard Deviation of Raw Data		0.00172						
67				Khat		2.255						
68				Theta hat		0.00109						
69				Kstar		2.094						
70				Theta star		0.00118						
71				Mean of Log Transformed Data		-6.244						
72				Standard Deviation of Log Transformed Data		0.734						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.931						
77				Shapiro Wilk Test Statistic		0.86						
78				Shapiro Wilk Critical (0.05) Value		0.938						
79				Approximate Shapiro Wilk P Value		1.1192E-4						
80				Lilliefors Test Statistic		0.167						
81				Lilliefors Critical (0.05) Value		0.142						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.984						
87				A-D Test Statistic		0.746						
88				A-D Critical (0.05) Value		0.758						
89				K-S Test Statistic		0.154						
90				K-S Critical(0.05) Value		0.145						
91	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.967						
96				Shapiro Wilk Test Statistic		0.941						
97				Shapiro Wilk Critical (0.05) Value		0.938						
98				Approximate Shapiro Wilk P Value		0.0624						
99				Lilliefors Test Statistic		0.134						
100				Lilliefors Critical (0.05) Value		0.142						
101	Data appear Lognormal at (0.05) Significance Level											
102												
103	Iron (mg/L)											
104												
105				Raw Statistics								
106				Number of Valid Observations		31						

107	Number of Distinct Observations	28
108	Minimum	0.01
109	Maximum	12.9
110	Mean of Raw Data	2.621
111	Standard Deviation of Raw Data	3.964
112	Khat	0.371
113	Theta hat	7.063
114	Kstar	0.357
115	Theta star	7.349
116	Mean of Log Transformed Data	-0.831
117	Standard Deviation of Log Transformed Data	2.376
118		
119	Normal GOF Test Results	
120		
121	Correlation Coefficient R	0.836
122	Shapiro Wilk Test Statistic	0.691
123	Shapiro Wilk Critical (0.05) Value	0.929
124	Approximate Shapiro Wilk P Value	1.0858E-7
125	Lilliefors Test Statistic	0.283
126	Lilliefors Critical (0.05) Value	0.156
127	Data not Normal at (0.05) Significance Level	
128		
129	Gamma GOF Test Results	
130		
131	Correlation Coefficient R	0.947
132	A-D Test Statistic	0.726
133	A-D Critical (0.05) Value	0.838
134	K-S Test Statistic	0.14
135	K-S Critical(0.05) Value	0.17
136	Data appear Gamma Distributed at (0.05) Significance Level	
137		
138	Lognormal GOF Test Results	
139		
140	Correlation Coefficient R	0.974
141	Shapiro Wilk Test Statistic	0.924
142	Shapiro Wilk Critical (0.05) Value	0.929
143	Approximate Shapiro Wilk P Value	0.0349
144	Lilliefors Test Statistic	0.109
145	Lilliefors Critical (0.05) Value	0.156
146	Data appear Approximate_Lognormal at (0.05) Significance Level	
147		
148	Nickel (mg/L)	
149		
150	Raw Statistics	
151	Number of Valid Observations	32
152	Number of Distinct Observations	25
153	Minimum	0.00168
154	Maximum	0.027
155	Mean of Raw Data	0.00599
156	Standard Deviation of Raw Data	0.00577
157	Khat	1.953
158	Theta hat	0.00307
159	Kstar	1.791

	A	B	C	D	E	F	G	H	I	J	K	L
160					Theta star	0.00335						
161					Mean of Log Transformed Data	-5.394						
162					Standard Deviation of Log Transformed Data	0.688						
163												
164				Normal GOF Test Results								
165												
166					Correlation Coefficient R	0.805						
167					Shapiro Wilk Test Statistic	0.662						
168					Shapiro Wilk Critical (0.05) Value	0.93						
169					Approximate Shapiro Wilk P Value	1.6731E-8						
170					Lilliefors Test Statistic	0.312						
171					Lilliefors Critical (0.05) Value	0.154						
172	Data not Normal at (0.05) Significance Level											
173												
174				Gamma GOF Test Results								
175												
176					Correlation Coefficient R	0.934						
177					A-D Test Statistic	1.721						
178					A-D Critical (0.05) Value	0.759						
179					K-S Test Statistic	0.217						
180					K-S Critical(0.05) Value	0.158						
181	Data not Gamma Distributed at (0.05) Significance Level											
182												
183				Lognormal GOF Test Results								
184												
185					Correlation Coefficient R	0.96						
186					Shapiro Wilk Test Statistic	0.916						
187					Shapiro Wilk Critical (0.05) Value	0.93						
188					Approximate Shapiro Wilk P Value	0.0185						
189					Lilliefors Test Statistic	0.156						
190					Lilliefors Critical (0.05) Value	0.154						
191	Data not Lognormal at (0.05) Significance Level											
192												
193	Non-parametric GOF Test Results											
194												
195	Data do not follow a discernible distribution at (0.05) Level of Signif											
196												
197	Zinc (mg/L)											
198												
199				Raw Statistics								
200					Number of Valid Observations	32						
201					Number of Distinct Observations	30						
202					Minimum	0.001						
203					Maximum	0.097						
204					Mean of Raw Data	0.00877						
205					Standard Deviation of Raw Data	0.0164						
206					Khat	1.259						
207					Theta hat	0.00697						
208					Kstar	1.162						
209					Theta star	0.00755						
210					Mean of Log Transformed Data	-5.183						
211					Standard Deviation of Log Transformed Data	0.772						
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213				Normal GOF Test Results								
214												
215					Correlation Coefficient R	0.547						
216					Shapiro Wilk Test Statistic	0.336						
217					Shapiro Wilk Critical (0.05) Value	0.93						
218					Approximate Shapiro Wilk P Value	9.159E-14						
219					Lilliefors Test Statistic	0.355						
220					Lilliefors Critical (0.05) Value	0.154						
221	Data not Normal at (0.05) Significance Level											
222												
223				Gamma GOF Test Results								
224												
225					Correlation Coefficient R	0.729						
226					A-D Test Statistic	2.691						
227					A-D Critical (0.05) Value	0.77						
228					K-S Test Statistic	0.233						
229					K-S Critical(0.05) Value	0.159						
230	Data not Gamma Distributed at (0.05) Significance Level											
231												
232				Lognormal GOF Test Results								
233												
234					Correlation Coefficient R	0.93						
235					Shapiro Wilk Test Statistic	0.897						
236					Shapiro Wilk Critical (0.05) Value	0.93						
237					Approximate Shapiro Wilk P Value	0.00524						
238					Lilliefors Test Statistic	0.135						
239					Lilliefors Critical (0.05) Value	0.154						
240	Data appear Approximate_Lognormal at (0.05) Significance Level											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/7/2025 7:43:59 AM
	From File	2024-ShallowProUCL_j.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

12-SH

Sulphate (mg/L)

Raw Statistics	
Number of Valid Observations	33
Number of Distinct Observations	30
Minimum	0.5
Maximum	6.4
Mean of Raw Data	3.411
Standard Deviation of Raw Data	1.428
Khat	4.491
Theta hat	0.759
Kstar	4.103
Theta star	0.831
Mean of Log Transformed Data	1.112
Standard Deviation of Log Transformed Data	0.55

Normal GOF Test Results	
Correlation Coefficient R	0.985
Shapiro Wilk Test Statistic	0.965
Shapiro Wilk Critical (0.05) Value	0.931
Approximate Shapiro Wilk P Value	0.408
Lilliefors Test Statistic	0.0933
Lilliefors Critical (0.05) Value	0.152

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.973
A-D Test Statistic	0.786
A-D Critical (0.05) Value	0.75
K-S Test Statistic	0.124
K-S Critical(0.05) Value	0.154

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.923
Shapiro Wilk Test Statistic	0.861
Shapiro Wilk Critical (0.05) Value	0.931
Approximate Shapiro Wilk P Value	4.0879E-4
Lilliefors Test Statistic	0.158
Lilliefors Critical (0.05) Value	0.152

Data not Lognormal at (0.05) Significance Level

	A	B	C	D	E	F	G	H	I	J	K	L
54	Copper (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	38						
58					Number of Distinct Observations	27						
59					Minimum	2.0000E-4						
60					Maximum	0.012						
61					Mean of Raw Data	0.00233						
62					Standard Deviation of Raw Data	0.00268						
63					Khat	1.295						
64					Theta hat	0.0018						
65					Kstar	1.21						
66					Theta star	0.00192						
67					Mean of Log Transformed Data	-6.497						
68					Standard Deviation of Log Transformed Data	0.894						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.81						
73					Shapiro Wilk Test Statistic	0.667						
74					Shapiro Wilk Critical (0.05) Value	0.938						
75					Approximate Shapiro Wilk P Value	5.500E-10						
76					Lilliefors Test Statistic	0.264						
77					Lilliefors Critical (0.05) Value	0.142						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.956						
83					A-D Test Statistic	1.891						
84					A-D Critical (0.05) Value	0.771						
85					K-S Test Statistic	0.197						
86					K-S Critical(0.05) Value	0.146						
87	Data not Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.973						
92					Shapiro Wilk Test Statistic	0.948						
93					Shapiro Wilk Critical (0.05) Value	0.938						
94					Approximate Shapiro Wilk P Value	0.0995						
95					Lilliefors Test Statistic	0.153						
96					Lilliefors Critical (0.05) Value	0.142						
97	Data appear Approximate_Lognormal at (0.05) Significance Level											
98												
99	Iron (mg/L)											
100												
101				Raw Statistics								
102					Number of Valid Observations	31						
103					Number of Distinct Observations	18						
104					Minimum	0.01						
105					Maximum	0.62						
106					Mean of Raw Data	0.0903						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Standard Deviation of Raw Data	0.135						
108					Khat	0.747						
109					Theta hat	0.121						
110					Kstar	0.696						
111					Theta star	0.13						
112					Mean of Log Transformed Data	-3.206						
113					Standard Deviation of Log Transformed Data	1.266						
114												
115				Normal GOF Test Results								
116												
117					Correlation Coefficient R	0.787						
118					Shapiro Wilk Test Statistic	0.635						
119					Shapiro Wilk Critical (0.05) Value	0.929						
120					Approximate Shapiro Wilk P Value	9.6874E-9						
121					Lilliefors Test Statistic	0.277						
122					Lilliefors Critical (0.05) Value	0.156						
123	Data not Normal at (0.05) Significance Level											
124												
125				Gamma GOF Test Results								
126												
127					Correlation Coefficient R	0.974						
128					A-D Test Statistic	1.371						
129					A-D Critical (0.05) Value	0.788						
130					K-S Test Statistic	0.165						
131					K-S Critical(0.05) Value	0.164						
132	Data not Gamma Distributed at (0.05) Significance Level											
133												
134				Lognormal GOF Test Results								
135												
136					Correlation Coefficient R	0.957						
137					Shapiro Wilk Test Statistic	0.897						
138					Shapiro Wilk Critical (0.05) Value	0.929						
139					Approximate Shapiro Wilk P Value	0.00636						
140					Lilliefors Test Statistic	0.188						
141					Lilliefors Critical (0.05) Value	0.156						
142	Data not Lognormal at (0.05) Significance Level											
143												
144	Non-parametric GOF Test Results											
145												
146	Data do not follow a discernible distribution at (0.05) Level of Signif											
147												
148	Nickel (mg/L)											
149												
150				Raw Statistics								
151					Number of Valid Observations	33						
152					Number of Distinct Observations	21						
153					Minimum	5.0000E-4						
154					Maximum	0.0153						
155					Mean of Raw Data	0.00347						
156					Standard Deviation of Raw Data	0.00397						
157					Khat	1.199						
158					Theta hat	0.00289						
159					Kstar	1.11						

160	Theta star	0.00312
161	Mean of Log Transformed Data	-6.136
162	Standard Deviation of Log Transformed Data	0.932
163		
164	Normal GOF Test Results	
165		
166	Correlation Coefficient R	0.831
167	Shapiro Wilk Test Statistic	0.691
168	Shapiro Wilk Critical (0.05) Value	0.931
169	Approximate Shapiro Wilk P Value	3.6799E-8
170	Lilliefors Test Statistic	0.311
171	Lilliefors Critical (0.05) Value	0.152
172	Data not Normal at (0.05) Significance Level	
173		
174	Gamma GOF Test Results	
175		
176	Correlation Coefficient R	0.96
177	A-D Test Statistic	1.81
178	A-D Critical (0.05) Value	0.771
179	K-S Test Statistic	0.259
180	K-S Critical(0.05) Value	0.157
181	Data not Gamma Distributed at (0.05) Significance Level	
182		
183	Lognormal GOF Test Results	
184		
185	Correlation Coefficient R	0.966
186	Shapiro Wilk Test Statistic	0.921
187	Shapiro Wilk Critical (0.05) Value	0.931
188	Approximate Shapiro Wilk P Value	0.0236
189	Lilliefors Test Statistic	0.2
190	Lilliefors Critical (0.05) Value	0.152
191	Data not Lognormal at (0.05) Significance Level	
192		
193	Non-parametric GOF Test Results	
194		
195	Data do not follow a discernible distribution at (0.05) Level of Signif	
196		
197	Zinc (mg/L)	
198		
199	Raw Statistics	
200	Number of Valid Observations	33
201	Number of Distinct Observations	25
202	Minimum	8.0000E-4
203	Maximum	0.0307
204	Mean of Raw Data	0.00697
205	Standard Deviation of Raw Data	0.0071
206	Khat	1.311
207	Theta hat	0.00531
208	Kstar	1.212
209	Theta star	0.00575
210	Mean of Log Transformed Data	-5.394
211	Standard Deviation of Log Transformed Data	0.943
212		

	A	B	C	D	E	F	G	H	I	J	K	L
213	Normal GOF Test Results											
214												
215					Correlation Coefficient R	0.872						
216					Shapiro Wilk Test Statistic	0.766						
217					Shapiro Wilk Critical (0.05) Value	0.931						
218					Approximate Shapiro Wilk P Value	1.6623E-6						
219					Lilliefors Test Statistic	0.23						
220					Lilliefors Critical (0.05) Value	0.152						
221	Data not Normal at (0.05) Significance Level											
222												
223	Gamma GOF Test Results											
224												
225					Correlation Coefficient R	0.984						
226					A-D Test Statistic	0.807						
227					A-D Critical (0.05) Value	0.769						
228					K-S Test Statistic	0.154						
229					K-S Critical(0.05) Value	0.157						
230	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
231												
232	Lognormal GOF Test Results											
233												
234					Correlation Coefficient R	0.989						
235					Shapiro Wilk Test Statistic	0.967						
236					Shapiro Wilk Critical (0.05) Value	0.931						
237					Approximate Shapiro Wilk P Value	0.468						
238					Lilliefors Test Statistic	0.0991						
239					Lilliefors Critical (0.05) Value	0.152						
240	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/7/2025 8:22:49 AM
4	From File	2024-ShallowProUCL_k.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	13-SH	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	38
13	Number of Distinct Observations	30
14	Minimum	0.5
15	Maximum	5.08
16	Mean of Raw Data	1.816
17	Standard Deviation of Raw Data	0.884
18	Khat	4.046
19	Theta hat	0.449
20	Kstar	3.744
21	Theta star	0.485
22	Mean of Log Transformed Data	0.468
23	Standard Deviation of Log Transformed Data	0.546
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.942
28	Shapiro Wilk Test Statistic	0.902
29	Shapiro Wilk Critical (0.05) Value	0.938
30	Approximate Shapiro Wilk P Value	0.00277
31	Lilliefors Test Statistic	0.111
32	Lilliefors Critical (0.05) Value	0.142
33	Data appear Approximate Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.957
38	A-D Test Statistic	1.219
39	A-D Critical (0.05) Value	0.752
40	K-S Test Statistic	0.177
41	K-S Critical(0.05) Value	0.144
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.953
47	Shapiro Wilk Test Statistic	0.905
48	Shapiro Wilk Critical (0.05) Value	0.938
49	Approximate Shapiro Wilk P Value	0.00341
50	Lilliefors Test Statistic	0.208
51	Lilliefors Critical (0.05) Value	0.142
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Cadmium (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	38						
58					Number of Distinct Observations	24						
59					Minimum	1.6000E-5						
60					Maximum	0.003						
61					Mean of Raw Data	7.3011E-4						
62					Standard Deviation of Raw Data	0.00115						
63					Khat	0.477						
64					Theta hat	0.00153						
65					Kstar	0.457						
66					Theta star	0.0016						
67					Mean of Log Transformed Data	-8.564						
68					Standard Deviation of Log Transformed Data	1.711						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.78						
73					Shapiro Wilk Test Statistic	0.593						
74					Shapiro Wilk Critical (0.05) Value	0.938						
75					Approximate Shapiro Wilk P Value	1.202E-11						
76					Lilliefors Test Statistic	0.383						
77					Lilliefors Critical (0.05) Value	0.142						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.865						
83					A-D Test Statistic	2.907						
84					A-D Critical (0.05) Value	0.818						
85					K-S Test Statistic	0.274						
86					K-S Critical(0.05) Value	0.152						
87	Data not Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.955						
92					Shapiro Wilk Test Statistic	0.887						
93					Shapiro Wilk Critical (0.05) Value	0.938						
94					Approximate Shapiro Wilk P Value	8.3730E-4						
95					Lilliefors Test Statistic	0.173						
96					Lilliefors Critical (0.05) Value	0.142						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Non-parametric GOF Test Results											
100												
101	Data do not follow a discernible distribution at (0.05) Level of Signif											
102												
103	Chromium (mg/L)											
104												
105				Raw Statistics								
106					Number of Valid Observations	38						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	26						
108					Minimum	1.0000E-4						
109					Maximum	0.022						
110					Mean of Raw Data	0.00518						
111					Standard Deviation of Raw Data	0.00641						
112					Khat	0.704						
113					Theta hat	0.00736						
114					Kstar	0.666						
115					Theta star	0.00778						
116					Mean of Log Transformed Data	-6.121						
117					Standard Deviation of Log Transformed Data	1.434						
118												
119			Normal GOF Test Results									
120												
121					Correlation Coefficient R	0.87						
122					Shapiro Wilk Test Statistic	0.747						
123					Shapiro Wilk Critical (0.05) Value	0.938						
124					Approximate Shapiro Wilk P Value	5.6520E-8						
125					Lilliefors Test Statistic	0.322						
126					Lilliefors Critical (0.05) Value	0.142						
127	Data not Normal at (0.05) Significance Level											
128												
129			Gamma GOF Test Results									
130												
131					Correlation Coefficient R	0.963						
132					A-D Test Statistic	1.234						
133					A-D Critical (0.05) Value	0.793						
134					K-S Test Statistic	0.237						
135					K-S Critical(0.05) Value	0.149						
136	Data not Gamma Distributed at (0.05) Significance Level											
137												
138			Lognormal GOF Test Results									
139												
140					Correlation Coefficient R	0.982						
141					Shapiro Wilk Test Statistic	0.949						
142					Shapiro Wilk Critical (0.05) Value	0.938						
143					Approximate Shapiro Wilk P Value	0.116						
144					Lilliefors Test Statistic	0.158						
145					Lilliefors Critical (0.05) Value	0.142						
146	Data appear Approximate_Lognormal at (0.05) Significance Level											
147												
148	Copper (mg/L)											
149												
150			Raw Statistics									
151					Number of Valid Observations	38						
152					Number of Distinct Observations	33						
153					Minimum	2.0000E-4						
154					Maximum	0.103						
155					Mean of Raw Data	0.00689						
156					Standard Deviation of Raw Data	0.0174						
157					Khat	0.623						
158					Theta hat	0.0111						
159					Kstar	0.591						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Theta star	0.0117						
161					Mean of Log Transformed Data	-5.966						
162					Standard Deviation of Log Transformed Data	1.231						
163												
164				Normal GOF Test Results								
165												
166					Correlation Coefficient R	0.571						
167					Shapiro Wilk Test Statistic	0.363						
168					Shapiro Wilk Critical (0.05) Value	0.938						
169					Approximate Shapiro Wilk P Value	4.441E-16						
170					Lilliefors Test Statistic	0.373						
171					Lilliefors Critical (0.05) Value	0.142						
172	Data not Normal at (0.05) Significance Level											
173												
174				Gamma GOF Test Results								
175												
176					Correlation Coefficient R	0.832						
177					A-D Test Statistic	2.594						
178					A-D Critical (0.05) Value	0.801						
179					K-S Test Statistic	0.198						
180					K-S Critical(0.05) Value	0.15						
181	Data not Gamma Distributed at (0.05) Significance Level											
182												
183				Lognormal GOF Test Results								
184												
185					Correlation Coefficient R	0.977						
186					Shapiro Wilk Test Statistic	0.965						
187					Shapiro Wilk Critical (0.05) Value	0.938						
188					Approximate Shapiro Wilk P Value	0.355						
189					Lilliefors Test Statistic	0.0782						
190					Lilliefors Critical (0.05) Value	0.142						
191	Data appear Lognormal at (0.05) Significance Level											
192												
193	Manganese (mg/L)											
194												
195				Raw Statistics								
196					Number of Valid Observations	31						
197					Number of Distinct Observations	30						
198					Minimum	0.004						
199					Maximum	0.442						
200					Mean of Raw Data	0.12						
201					Standard Deviation of Raw Data	0.118						
202					Khat	0.94						
203					Theta hat	0.128						
204					Kstar	0.87						
205					Theta star	0.138						
206					Mean of Log Transformed Data	-2.74						
207					Standard Deviation of Log Transformed Data	1.302						
208												
209				Normal GOF Test Results								
210												
211					Correlation Coefficient R	0.925						
212					Shapiro Wilk Test Statistic	0.848						

213	Shapiro Wilk Critical (0.05) Value	0.929
214	Approximate Shapiro Wilk P Value	3.0806E-4
215	Lilliefors Test Statistic	0.216
216	Lilliefors Critical (0.05) Value	0.156
217	Data not Normal at (0.05) Significance Level	
218		
219	Gamma GOF Test Results	
220		
221	Correlation Coefficient R	0.979
222	A-D Test Statistic	0.28
223	A-D Critical (0.05) Value	0.778
224	K-S Test Statistic	0.0886
225	K-S Critical(0.05) Value	0.163
226	Data appear Gamma Distributed at (0.05) Significance Level	
227		
228	Lognormal GOF Test Results	
229		
230	Correlation Coefficient R	0.977
231	Shapiro Wilk Test Statistic	0.94
232	Shapiro Wilk Critical (0.05) Value	0.929
233	Approximate Shapiro Wilk P Value	0.0999
234	Lilliefors Test Statistic	0.0911
235	Lilliefors Critical (0.05) Value	0.156
236	Data appear Lognormal at (0.05) Significance Level	
237		
238	Nickel (mg/L)	
239		
240	Raw Statistics	
241	Number of Valid Observations	33
242	Number of Distinct Observations	30
243	Minimum	0.0015
244	Maximum	0.034
245	Mean of Raw Data	0.00743
246	Standard Deviation of Raw Data	0.00787
247	Khat	1.601
248	Theta hat	0.00464
249	Kstar	1.476
250	Theta star	0.00503
251	Mean of Log Transformed Data	-5.246
252	Standard Deviation of Log Transformed Data	0.778
253		
254	Normal GOF Test Results	
255		
256	Correlation Coefficient R	0.798
257	Shapiro Wilk Test Statistic	0.646
258	Shapiro Wilk Critical (0.05) Value	0.931
259	Approximate Shapiro Wilk P Value	4.5625E-9
260	Lilliefors Test Statistic	0.32
261	Lilliefors Critical (0.05) Value	0.152
262	Data not Normal at (0.05) Significance Level	
263		
264	Gamma GOF Test Results	
265		

	A	B	C	D	E	F	G	H	I	J	K	L
266					Correlation Coefficient R	0.928						
267					A-D Test Statistic	1.741						
268					A-D Critical (0.05) Value	0.764						
269					K-S Test Statistic	0.208						
270					K-S Critical(0.05) Value	0.156						
271	Data not Gamma Distributed at (0.05) Significance Level											
272												
273				Lognormal GOF Test Results								
274												
275					Correlation Coefficient R	0.968						
276					Shapiro Wilk Test Statistic	0.93						
277					Shapiro Wilk Critical (0.05) Value	0.931						
278					Approximate Shapiro Wilk P Value	0.0432						
279					Lilliefors Test Statistic	0.144						
280					Lilliefors Critical (0.05) Value	0.152						
281	Data appear Approximate_Lognormal at (0.05) Significance Level											
282												
283	Zinc (mg/L)											
284												
285				Raw Statistics								
286					Number of Valid Observations	33						
287					Number of Distinct Observations	28						
288					Minimum	6.0000E-4						
289					Maximum	0.245						
290					Mean of Raw Data	0.0222						
291					Standard Deviation of Raw Data	0.0476						
292					Khat	0.54						
293					Theta hat	0.0411						
294					Kstar	0.511						
295					Theta star	0.0435						
296					Mean of Log Transformed Data	-4.971						
297					Standard Deviation of Log Transformed Data	1.447						
298												
299				Normal GOF Test Results								
300												
301					Correlation Coefficient R	0.673						
302					Shapiro Wilk Test Statistic	0.481						
303					Shapiro Wilk Critical (0.05) Value	0.931						
304					Approximate Shapiro Wilk P Value	5.394E-12						
305					Lilliefors Test Statistic	0.325						
306					Lilliefors Critical (0.05) Value	0.152						
307	Data not Normal at (0.05) Significance Level											
308												
309				Gamma GOF Test Results								
310												
311					Correlation Coefficient R	0.933						
312					A-D Test Statistic	2.128						
313					A-D Critical (0.05) Value	0.807						
314					K-S Test Statistic	0.231						
315					K-S Critical(0.05) Value	0.162						
316	Data not Gamma Distributed at (0.05) Significance Level											
317												
318				Lognormal GOF Test Results								

	A	B	C	D	E	F	G	H	I	J	K	L
319												
320					Correlation Coefficient R	0.981						
321					Shapiro Wilk Test Statistic	0.957						
322					Shapiro Wilk Critical (0.05) Value	0.931						
323					Approximate Shapiro Wilk P Value	0.262						
324					Lilliefors Test Statistic	0.13						
325					Lilliefors Critical (0.05) Value	0.152						
326	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/7/2025 9:09:16 AM
4	From File	2024-ShallowProUCL_I.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	14-SH	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	33
13	Number of Distinct Observations	32
14	Minimum	0.9
15	Maximum	17.1
16	Mean of Raw Data	4.131
17	Standard Deviation of Raw Data	3.475
18	Khat	2.007
19	Theta hat	2.058
20	Kstar	1.845
21	Theta star	2.239
22	Mean of Log Transformed Data	1.149
23	Standard Deviation of Log Transformed Data	0.733
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.871
28	Shapiro Wilk Test Statistic	0.771
29	Shapiro Wilk Critical (0.05) Value	0.931
30	Approximate Shapiro Wilk P Value	2.1633E-6
31	Lilliefors Test Statistic	0.176
32	Lilliefors Critical (0.05) Value	0.152
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.967
38	A-D Test Statistic	0.627
39	A-D Critical (0.05) Value	0.759
40	K-S Test Statistic	0.134
41	K-S Critical(0.05) Value	0.155
42	Data appear Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.983
47	Shapiro Wilk Test Statistic	0.958
48	Shapiro Wilk Critical (0.05) Value	0.931
49	Approximate Shapiro Wilk P Value	0.278
50	Lilliefors Test Statistic	0.134
51	Lilliefors Critical (0.05) Value	0.152
52	Data appear Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Cadmium (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	33						
58					Number of Distinct Observations	22						
59					Minimum	1.4000E-5						
60					Maximum	0.0031						
61					Mean of Raw Data	6.7731E-4						
62					Standard Deviation of Raw Data	0.00107						
63					Khat	0.554						
64					Theta hat	0.00122						
65					Kstar	0.524						
66					Theta star	0.00129						
67					Mean of Log Transformed Data	-8.425						
68					Standard Deviation of Log Transformed Data	1.559						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.776						
73					Shapiro Wilk Test Statistic	0.593						
74					Shapiro Wilk Critical (0.05) Value	0.931						
75					Approximate Shapiro Wilk P Value	4.703E-10						
76					Lilliefors Test Statistic	0.349						
77					Lilliefors Critical (0.05) Value	0.152						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.9						
83					A-D Test Statistic	2.151						
84					A-D Critical (0.05) Value	0.806						
85					K-S Test Statistic	0.253						
86					K-S Critical(0.05) Value	0.161						
87	Data not Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.971						
92					Shapiro Wilk Test Statistic	0.926						
93					Shapiro Wilk Critical (0.05) Value	0.931						
94					Approximate Shapiro Wilk P Value	0.0327						
95					Lilliefors Test Statistic	0.16						
96					Lilliefors Critical (0.05) Value	0.152						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Non-parametric GOF Test Results											
100												
101	Data do not follow a discernible distribution at (0.05) Level of Signif											
102												
103	Chromium (mg/L)											
104												
105				Raw Statistics								
106					Number of Valid Observations	33						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	23						
108					Minimum	5.3000E-4						
109					Maximum	0.016						
110					Mean of Raw Data	0.00379						
111					Standard Deviation of Raw Data	0.00348						
112					Khat	1.613						
113					Theta hat	0.00235						
114					Kstar	1.487						
115					Theta star	0.00255						
116					Mean of Log Transformed Data	-5.916						
117					Standard Deviation of Log Transformed Data	0.836						
118												
119			Normal GOF Test Results									
120												
121					Correlation Coefficient R	0.877						
122					Shapiro Wilk Test Statistic	0.778						
123					Shapiro Wilk Critical (0.05) Value	0.931						
124					Approximate Shapiro Wilk P Value	3.1160E-6						
125					Lilliefors Test Statistic	0.221						
126					Lilliefors Critical (0.05) Value	0.152						
127	Data not Normal at (0.05) Significance Level											
128												
129			Gamma GOF Test Results									
130												
131					Correlation Coefficient R	0.978						
132					A-D Test Statistic	0.878						
133					A-D Critical (0.05) Value	0.764						
134					K-S Test Statistic	0.192						
135					K-S Critical(0.05) Value	0.156						
136	Data not Gamma Distributed at (0.05) Significance Level											
137												
138			Lognormal GOF Test Results									
139												
140					Correlation Coefficient R	0.985						
141					Shapiro Wilk Test Statistic	0.964						
142					Shapiro Wilk Critical (0.05) Value	0.931						
143					Approximate Shapiro Wilk P Value	0.388						
144					Lilliefors Test Statistic	0.154						
145					Lilliefors Critical (0.05) Value	0.152						
146	Data appear Approximate_Lognormal at (0.05) Significance Level											
147												
148	Nickel (mg/L)											
149												
150			Raw Statistics									
151					Number of Valid Observations	32						
152					Number of Distinct Observations	30						
153					Minimum	5.0000E-4						
154					Maximum	0.057						
155					Mean of Raw Data	0.00949						
156					Standard Deviation of Raw Data	0.0129						
157					Khat	0.91						
158					Theta hat	0.0104						
159					Kstar	0.845						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Theta star	0.0112						
161					Mean of Log Transformed Data	-5.3						
162					Standard Deviation of Log Transformed Data	1.085						
163												
164				Normal GOF Test Results								
165												
166					Correlation Coefficient R	0.8						
167					Shapiro Wilk Test Statistic	0.652						
168					Shapiro Wilk Critical (0.05) Value	0.93						
169					Approximate Shapiro Wilk P Value	1.1125E-8						
170					Lilliefors Test Statistic	0.352						
171					Lilliefors Critical (0.05) Value	0.154						
172	Data not Normal at (0.05) Significance Level											
173												
174				Gamma GOF Test Results								
175												
176					Correlation Coefficient R	0.965						
177					A-D Test Statistic	2.437						
178					A-D Critical (0.05) Value	0.78						
179					K-S Test Statistic	0.286						
180					K-S Critical(0.05) Value	0.161						
181	Data not Gamma Distributed at (0.05) Significance Level											
182												
183				Lognormal GOF Test Results								
184												
185					Correlation Coefficient R	0.955						
186					Shapiro Wilk Test Statistic	0.914						
187					Shapiro Wilk Critical (0.05) Value	0.93						
188					Approximate Shapiro Wilk P Value	0.0156						
189					Lilliefors Test Statistic	0.211						
190					Lilliefors Critical (0.05) Value	0.154						
191	Data not Lognormal at (0.05) Significance Level											
192												
193	Non-parametric GOF Test Results											
194												
195	Data do not follow a discernible distribution at (0.05) Level of Signif											
196												
197	Zinc (mg/L)											
198												
199				Raw Statistics								
200					Number of Valid Observations	32						
201					Number of Distinct Observations	29						
202					Minimum	0.0011						
203					Maximum	0.211						
204					Mean of Raw Data	0.0259						
205					Standard Deviation of Raw Data	0.0432						
206					Khat	0.712						
207					Theta hat	0.0363						
208					Kstar	0.666						
209					Theta star	0.0388						
210					Mean of Log Transformed Data	-4.501						
211					Standard Deviation of Log Transformed Data	1.258						
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213				Normal GOF Test Results								
214												
215					Correlation Coefficient R	0.744						
216					Shapiro Wilk Test Statistic	0.576						
217					Shapiro Wilk Critical (0.05) Value	0.93						
218					Approximate Shapiro Wilk P Value	4.564E-10						
219					Lilliefors Test Statistic	0.322						
220					Lilliefors Critical (0.05) Value	0.154						
221	Data not Normal at (0.05) Significance Level											
222												
223				Gamma GOF Test Results								
224												
225					Correlation Coefficient R	0.95						
226					A-D Test Statistic	1.715						
227					A-D Critical (0.05) Value	0.791						
228					K-S Test Statistic	0.202						
229					K-S Critical(0.05) Value	0.162						
230	Data not Gamma Distributed at (0.05) Significance Level											
231												
232				Lognormal GOF Test Results								
233												
234					Correlation Coefficient R	0.983						
235					Shapiro Wilk Test Statistic	0.963						
236					Shapiro Wilk Critical (0.05) Value	0.93						
237					Approximate Shapiro Wilk P Value	0.382						
238					Lilliefors Test Statistic	0.1						
239					Lilliefors Critical (0.05) Value	0.154						
240	Data appear Lognormal at (0.05) Significance Level											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/7/2025 9:45:58 AM
	From File	2024-ShallowProUCL_m.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

15-SH

Arsenic (mg/L)

Raw Statistics	
Number of Valid Observations	35
Number of Distinct Observations	17
Minimum	1.6000E-4
Maximum	0.00144
Mean of Raw Data	3.5200E-4
Standard Deviation of Raw Data	3.0938E-4
Khat	2.31
Theta hat	1.5240E-4
Kstar	2.131
Theta star	1.6520E-4
Mean of Log Transformed Data	-8.184
Standard Deviation of Log Transformed Data	0.611

Normal GOF Test Results	
Correlation Coefficient R	0.783
Shapiro Wilk Test Statistic	0.622
Shapiro Wilk Critical (0.05) Value	0.934
Approximate Shapiro Wilk P Value	4.352E-10
Lilliefors Test Statistic	0.338
Lilliefors Critical (0.05) Value	0.148

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.915
A-D Test Statistic	4.689
A-D Critical (0.05) Value	0.758
K-S Test Statistic	0.311
K-S Critical(0.05) Value	0.15

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.863
Shapiro Wilk Test Statistic	0.739
Shapiro Wilk Critical (0.05) Value	0.934
Approximate Shapiro Wilk P Value	1.5716E-7
Lilliefors Test Statistic	0.307
Lilliefors Critical (0.05) Value	0.148

Data not Lognormal at (0.05) Significance Level

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Chromium (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		35						
62				Number of Distinct Observations		17						
63				Minimum		1.1000E-4						
64				Maximum		0.035						
65				Mean of Raw Data		0.00343						
66				Standard Deviation of Raw Data		0.0064						
67				Khat		0.672						
68				Theta hat		0.00511						
69				Kstar		0.633						
70				Theta star		0.00542						
71				Mean of Log Transformed Data		-6.579						
72				Standard Deviation of Log Transformed Data		1.343						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.691						
77				Shapiro Wilk Test Statistic		0.509						
78				Shapiro Wilk Critical (0.05) Value		0.934						
79				Approximate Shapiro Wilk P Value		3.094E-12						
80				Lilliefors Test Statistic		0.36						
81				Lilliefors Critical (0.05) Value		0.148						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.921						
87				A-D Test Statistic		1.419						
88				A-D Critical (0.05) Value		0.795						
89				K-S Test Statistic		0.265						
90				K-S Critical(0.05) Value		0.155						
91	Data not Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.985						
96				Shapiro Wilk Test Statistic		0.967						
97				Shapiro Wilk Critical (0.05) Value		0.934						
98				Approximate Shapiro Wilk P Value		0.442						
99				Lilliefors Test Statistic		0.165						
100				Lilliefors Critical (0.05) Value		0.148						
101	Data appear Approximate_Lognormal at (0.05) Significance Level											
102												
103	Copper (mg/L)											
104												
105				Raw Statistics								
106				Number of Valid Observations		35						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	27						
108					Minimum	5.1000E-4						
109					Maximum	0.018						
110					Mean of Raw Data	0.00411						
111					Standard Deviation of Raw Data	0.00375						
112					Khat	1.644						
113					Theta hat	0.0025						
114					Kstar	1.522						
115					Theta star	0.0027						
116					Mean of Log Transformed Data	-5.83						
117					Standard Deviation of Log Transformed Data	0.852						
118												
119			Normal GOF Test Results									
120												
121					Correlation Coefficient R	0.859						
122					Shapiro Wilk Test Statistic	0.751						
123					Shapiro Wilk Critical (0.05) Value	0.934						
124					Approximate Shapiro Wilk P Value	3.1147E-7						
125					Lilliefors Test Statistic	0.203						
126					Lilliefors Critical (0.05) Value	0.148						
127	Data not Normal at (0.05) Significance Level											
128												
129			Gamma GOF Test Results									
130												
131					Correlation Coefficient R	0.96						
132					A-D Test Statistic	0.603						
133					A-D Critical (0.05) Value	0.765						
134					K-S Test Statistic	0.105						
135					K-S Critical(0.05) Value	0.151						
136	Data appear Gamma Distributed at (0.05) Significance Level											
137												
138			Lognormal GOF Test Results									
139												
140					Correlation Coefficient R	0.983						
141					Shapiro Wilk Test Statistic	0.96						
142					Shapiro Wilk Critical (0.05) Value	0.934						
143					Approximate Shapiro Wilk P Value	0.289						
144					Lilliefors Test Statistic	0.113						
145					Lilliefors Critical (0.05) Value	0.148						
146	Data appear Lognormal at (0.05) Significance Level											
147												
148	Nickel (mg/L)											
149												
150			Raw Statistics									
151					Number of Valid Observations	33						
152					Number of Distinct Observations	31						
153					Minimum	0.002						
154					Maximum	0.0626						
155					Mean of Raw Data	0.00961						
156					Standard Deviation of Raw Data	0.0121						
157					Khat	1.331						
158					Theta hat	0.00722						
159					Kstar	1.23						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Theta star	0.00781						
161					Mean of Log Transformed Data	-5.065						
162					Standard Deviation of Log Transformed Data	0.828						
163												
164				Normal GOF Test Results								
165												
166					Correlation Coefficient R	0.759						
167					Shapiro Wilk Test Statistic	0.6						
168					Shapiro Wilk Critical (0.05) Value	0.931						
169					Approximate Shapiro Wilk P Value	6.386E-10						
170					Lilliefors Test Statistic	0.321						
171					Lilliefors Critical (0.05) Value	0.152						
172	Data not Normal at (0.05) Significance Level											
173												
174				Gamma GOF Test Results								
175												
176					Correlation Coefficient R	0.928						
177					A-D Test Statistic	2.568						
178					A-D Critical (0.05) Value	0.769						
179					K-S Test Statistic	0.28						
180					K-S Critical(0.05) Value	0.157						
181	Data not Gamma Distributed at (0.05) Significance Level											
182												
183				Lognormal GOF Test Results								
184												
185					Correlation Coefficient R	0.943						
186					Shapiro Wilk Test Statistic	0.888						
187					Shapiro Wilk Critical (0.05) Value	0.931						
188					Approximate Shapiro Wilk P Value	0.00238						
189					Lilliefors Test Statistic	0.233						
190					Lilliefors Critical (0.05) Value	0.152						
191	Data not Lognormal at (0.05) Significance Level											
192												
193	Non-parametric GOF Test Results											
194												
195	Data do not follow a discernible distribution at (0.05) Level of Signif											
196												
197	Zinc (mg/L)											
198												
199				Raw Statistics								
200					Number of Valid Observations	33						
201					Number of Distinct Observations	24						
202					Minimum	6.0000E-4						
203					Maximum	0.02						
204					Mean of Raw Data	0.0051						
205					Standard Deviation of Raw Data	0.00494						
206					Khat	1.568						
207					Theta hat	0.00325						
208					Kstar	1.445						
209					Theta star	0.00353						
210					Mean of Log Transformed Data	-5.631						
211					Standard Deviation of Log Transformed Data	0.838						
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213				Normal GOF Test Results								
214												
215					Correlation Coefficient R	0.852						
216					Shapiro Wilk Test Statistic	0.727						
217					Shapiro Wilk Critical (0.05) Value	0.931						
218					Approximate Shapiro Wilk P Value	2.2377E-7						
219					Lilliefors Test Statistic	0.229						
220					Lilliefors Critical (0.05) Value	0.152						
221	Data not Normal at (0.05) Significance Level											
222												
223				Gamma GOF Test Results								
224												
225					Correlation Coefficient R	0.957						
226					A-D Test Statistic	0.818						
227					A-D Critical (0.05) Value	0.764						
228					K-S Test Statistic	0.127						
229					K-S Critical(0.05) Value	0.156						
230	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
231												
232				Lognormal GOF Test Results								
233												
234					Correlation Coefficient R	0.989						
235					Shapiro Wilk Test Statistic	0.973						
236					Shapiro Wilk Critical (0.05) Value	0.931						
237					Approximate Shapiro Wilk P Value	0.642						
238					Lilliefors Test Statistic	0.0973						
239					Lilliefors Critical (0.05) Value	0.152						
240	Data appear Lognormal at (0.05) Significance Level											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/7/2025 1:24:00 PM
	From File	2024-ShallowProUCL_n.xls
	Full Precision	OFF
	Confidence Coefficient	0.95
16-SH		
Chloride (mg/L)		
	Raw Statistics	
	Number of Valid Observations	30
	Number of Distinct Observations	17
	Minimum	0.5
	Maximum	1.9
	Mean of Raw Data	0.934
	Standard Deviation of Raw Data	0.395
	Khat	6.018
	Theta hat	0.155
	Kstar	5.439
	Theta star	0.172
	Mean of Log Transformed Data	-0.154
	Standard Deviation of Log Transformed Data	0.421
	Normal GOF Test Results	
	Correlation Coefficient R	0.959
	Shapiro Wilk Test Statistic	0.908
	Shapiro Wilk Critical (0.05) Value	0.927
	Approximate Shapiro Wilk P Value	0.0142
	Lilliefors Test Statistic	0.136
	Lilliefors Critical (0.05) Value	0.159
Data appear Approximate Normal at (0.05) Significance Level		
	Gamma GOF Test Results	
	Correlation Coefficient R	0.984
	A-D Test Statistic	0.71
	A-D Critical (0.05) Value	0.746
	K-S Test Statistic	0.16
	K-S Critical(0.05) Value	0.16
Data appear Gamma Distributed at (0.05) Significance Level		
	Lognormal GOF Test Results	
	Correlation Coefficient R	0.967
	Shapiro Wilk Test Statistic	0.915
	Shapiro Wilk Critical (0.05) Value	0.927
	Approximate Shapiro Wilk P Value	0.0218
	Lilliefors Test Statistic	0.166
	Lilliefors Critical (0.05) Value	0.159
Data not Lognormal at (0.05) Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Arsenic (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	30						
58					Number of Distinct Observations	10						
59					Minimum	1.3000E-4						
60					Maximum	5.8000E-4						
61					Mean of Raw Data	2.3767E-4						
62					Standard Deviation of Raw Data	1.0881E-4						
63					Khat	6.375						
64					Theta hat	3.7279E-5						
65					Kstar	5.76						
66					Theta star	4.1262E-5						
67					Mean of Log Transformed Data	-8.425						
68					Standard Deviation of Log Transformed Data	0.387						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.868						
73					Shapiro Wilk Test Statistic	0.759						
74					Shapiro Wilk Critical (0.05) Value	0.927						
75					Approximate Shapiro Wilk P Value	3.9475E-6						
76					Lilliefors Test Statistic	0.369						
77					Lilliefors Critical (0.05) Value	0.159						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.925						
83					A-D Test Statistic	2.469						
84					A-D Critical (0.05) Value	0.746						
85					K-S Test Statistic	0.347						
86					K-S Critical(0.05) Value	0.16						
87	Data not Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.923						
92					Shapiro Wilk Test Statistic	0.849						
93					Shapiro Wilk Critical (0.05) Value	0.927						
94					Approximate Shapiro Wilk P Value	4.1245E-4						
95					Lilliefors Test Statistic	0.327						
96					Lilliefors Critical (0.05) Value	0.159						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Non-parametric GOF Test Results											
100												
101	Data do not follow a discernible distribution at (0.05) Level of Signif											
102												
103	Chromium (mg/L)											
104												
105				Raw Statistics								
106					Number of Valid Observations	30						

107	Number of Distinct Observations	24
108	Minimum	6.2000E-4
109	Maximum	0.036
110	Mean of Raw Data	0.00675
111	Standard Deviation of Raw Data	0.00761
112	Khat	1.078
113	Theta hat	0.00626
114	Kstar	0.992
115	Theta star	0.00681
116	Mean of Log Transformed Data	-5.529
117	Standard Deviation of Log Transformed Data	1.067
118		
119	Normal GOF Test Results	
120		
121	Correlation Coefficient R	0.853
122	Shapiro Wilk Test Statistic	0.743
123	Shapiro Wilk Critical (0.05) Value	0.927
124	Approximate Shapiro Wilk P Value	1.7866E-6
125	Lilliefors Test Statistic	0.224
126	Lilliefors Critical (0.05) Value	0.159
127	Data not Normal at (0.05) Significance Level	
128		
129	Gamma GOF Test Results	
130		
131	Correlation Coefficient R	0.975
132	A-D Test Statistic	0.68
133	A-D Critical (0.05) Value	0.774
134	K-S Test Statistic	0.151
135	K-S Critical(0.05) Value	0.164
136	Data appear Gamma Distributed at (0.05) Significance Level	
137		
138	Lognormal GOF Test Results	
139		
140	Correlation Coefficient R	0.985
141	Shapiro Wilk Test Statistic	0.961
142	Shapiro Wilk Critical (0.05) Value	0.927
143	Approximate Shapiro Wilk P Value	0.371
144	Lilliefors Test Statistic	0.128
145	Lilliefors Critical (0.05) Value	0.159
146	Data appear Lognormal at (0.05) Significance Level	
147		
148	Copper (mg/L)	
149		
150	Raw Statistics	
151	Number of Valid Observations	30
152	Number of Distinct Observations	27
153	Minimum	6.0000E-4
154	Maximum	0.031
155	Mean of Raw Data	0.0038
156	Standard Deviation of Raw Data	0.00565
157	Khat	1.33
158	Theta hat	0.00286
159	Kstar	1.219

	A	B	C	D	E	F	G	H	I	J	K	L
160					Theta star	0.00312						
161					Mean of Log Transformed Data	-5.992						
162					Standard Deviation of Log Transformed Data	0.8						
163												
164				Normal GOF Test Results								
165												
166					Correlation Coefficient R	0.663						
167					Shapiro Wilk Test Statistic	0.472						
168					Shapiro Wilk Critical (0.05) Value	0.927						
169					Approximate Shapiro Wilk P Value	4.310E-11						
170					Lilliefors Test Statistic	0.325						
171					Lilliefors Critical (0.05) Value	0.159						
172	Data not Normal at (0.05) Significance Level											
173												
174				Gamma GOF Test Results								
175												
176					Correlation Coefficient R	0.843						
177					A-D Test Statistic	1.87						
178					A-D Critical (0.05) Value	0.767						
179					K-S Test Statistic	0.212						
180					K-S Critical(0.05) Value	0.164						
181	Data not Gamma Distributed at (0.05) Significance Level											
182												
183				Lognormal GOF Test Results								
184												
185					Correlation Coefficient R	0.958						
186					Shapiro Wilk Test Statistic	0.932						
187					Shapiro Wilk Critical (0.05) Value	0.927						
188					Approximate Shapiro Wilk P Value	0.0644						
189					Lilliefors Test Statistic	0.133						
190					Lilliefors Critical (0.05) Value	0.159						
191	Data appear Lognormal at (0.05) Significance Level											
192												
193	Manganese (mg/L)											
194												
195				Raw Statistics								
196					Number of Valid Observations	28						
197					Number of Distinct Observations	24						
198					Minimum	9.4000E-4						
199					Maximum	0.571						
200					Mean of Raw Data	0.0514						
201					Standard Deviation of Raw Data	0.122						
202					Khat	0.421						
203					Theta hat	0.122						
204					Kstar	0.4						
205					Theta star	0.129						
206					Mean of Log Transformed Data	-4.517						
207					Standard Deviation of Log Transformed Data	1.732						
208												
209				Normal GOF Test Results								
210												
211					Correlation Coefficient R	0.655						
212					Shapiro Wilk Test Statistic	0.454						

	A	B	C	D	E	F	G	H	I	J	K	L
213					Shapiro Wilk Critical (0.05) Value	0.924						
214					Approximate Shapiro Wilk P Value	9.732E-11						
215					Lilliefors Test Statistic	0.378						
216					Lilliefors Critical (0.05) Value	0.164						
217	Data not Normal at (0.05) Significance Level											
218												
219				Gamma GOF Test Results								
220												
221					Correlation Coefficient R	0.938						
222					A-D Test Statistic	1.748						
223					A-D Critical (0.05) Value	0.828						
224					K-S Test Statistic	0.213						
225					K-S Critical(0.05) Value	0.177						
226	Data not Gamma Distributed at (0.05) Significance Level											
227												
228				Lognormal GOF Test Results								
229												
230					Correlation Coefficient R	0.98						
231					Shapiro Wilk Test Statistic	0.95						
232					Shapiro Wilk Critical (0.05) Value	0.924						
233					Approximate Shapiro Wilk P Value	0.227						
234					Lilliefors Test Statistic	0.123						
235					Lilliefors Critical (0.05) Value	0.164						
236	Data appear Lognormal at (0.05) Significance Level											
237												
238	Nickel (mg/L)											
239												
240				Raw Statistics								
241					Number of Valid Observations	30						
242					Number of Distinct Observations	23						
243					Minimum	3.1000E-4						
244					Maximum	0.058						
245					Mean of Raw Data	0.00556						
246					Standard Deviation of Raw Data	0.0107						
247					Khat	0.883						
248					Theta hat	0.00629						
249					Kstar	0.817						
250					Theta star	0.0068						
251					Mean of Log Transformed Data	-5.856						
252					Standard Deviation of Log Transformed Data	1.018						
253												
254				Normal GOF Test Results								
255												
256					Correlation Coefficient R	0.63						
257					Shapiro Wilk Test Statistic	0.43						
258					Shapiro Wilk Critical (0.05) Value	0.927						
259					Approximate Shapiro Wilk P Value	1.063E-11						
260					Lilliefors Test Statistic	0.369						
261					Lilliefors Critical (0.05) Value	0.159						
262	Data not Normal at (0.05) Significance Level											
263												
264				Gamma GOF Test Results								
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266					Correlation Coefficient R	0.85						
267					A-D Test Statistic	2.098						
268					A-D Critical (0.05) Value	0.781						
269					K-S Test Statistic	0.229						
270					K-S Critical(0.05) Value	0.165						
271	Data not Gamma Distributed at (0.05) Significance Level											
272												
273				Lognormal GOF Test Results								
274												
275					Correlation Coefficient R	0.965						
276					Shapiro Wilk Test Statistic	0.949						
277					Shapiro Wilk Critical (0.05) Value	0.927						
278					Approximate Shapiro Wilk P Value	0.186						
279					Lilliefors Test Statistic	0.125						
280					Lilliefors Critical (0.05) Value	0.159						
281	Data appear Lognormal at (0.05) Significance Level											
282												
283	Zinc (mg/L)											
284												
285				Raw Statistics								
286					Number of Valid Observations	30						
287					Number of Distinct Observations	24						
288					Minimum	0.001						
289					Maximum	0.0262						
290					Mean of Raw Data	0.00572						
291					Standard Deviation of Raw Data	0.00608						
292					Khat	1.289						
293					Theta hat	0.00444						
294					Kstar	1.182						
295					Theta star	0.00484						
296					Mean of Log Transformed Data	-5.599						
297					Standard Deviation of Log Transformed Data	0.924						
298												
299				Normal GOF Test Results								
300												
301					Correlation Coefficient R	0.86						
302					Shapiro Wilk Test Statistic	0.746						
303					Shapiro Wilk Critical (0.05) Value	0.927						
304					Approximate Shapiro Wilk P Value	2.0442E-6						
305					Lilliefors Test Statistic	0.219						
306					Lilliefors Critical (0.05) Value	0.159						
307	Data not Normal at (0.05) Significance Level											
308												
309				Gamma GOF Test Results								
310												
311					Correlation Coefficient R	0.983						
312					A-D Test Statistic	1.024						
313					A-D Critical (0.05) Value	0.768						
314					K-S Test Statistic	0.185						
315					K-S Critical(0.05) Value	0.164						
316	Data not Gamma Distributed at (0.05) Significance Level											
317												
318				Lognormal GOF Test Results								

	A	B	C	D	E	F	G	H	I	J	K	L
319												
320					Correlation Coefficient R	0.977						
321					Shapiro Wilk Test Statistic	0.94						
322					Shapiro Wilk Critical (0.05) Value	0.927						
323					Approximate Shapiro Wilk P Value	0.109						
324					Lilliefors Test Statistic	0.149						
325					Lilliefors Critical (0.05) Value	0.159						
326	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/7/2025 1:45:58 PM
4	From File	2024-ShallowProUCL_o.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	17-SH	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	31
13	Number of Distinct Observations	17
14	Minimum	0.5
15	Maximum	21.8
16	Mean of Raw Data	4.25
17	Standard Deviation of Raw Data	5.819
18	Khat	0.667
19	Theta hat	6.372
20	Kstar	0.624
21	Theta star	6.811
22	Mean of Log Transformed Data	0.535
23	Standard Deviation of Log Transformed Data	1.369
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.84
28	Shapiro Wilk Test Statistic	0.705
29	Shapiro Wilk Critical (0.05) Value	0.929
30	Approximate Shapiro Wilk P Value	2.0182E-7
31	Lilliefors Test Statistic	0.302
32	Lilliefors Critical (0.05) Value	0.156
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.982
38	A-D Test Statistic	2.615
39	A-D Critical (0.05) Value	0.795
40	K-S Test Statistic	0.255
41	K-S Critical(0.05) Value	0.165
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.908
47	Shapiro Wilk Test Statistic	0.803
48	Shapiro Wilk Critical (0.05) Value	0.929
49	Approximate Shapiro Wilk P Value	2.5285E-5
50	Lilliefors Test Statistic	0.267
51	Lilliefors Critical (0.05) Value	0.156
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Arsenic (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		31						
62				Number of Distinct Observations		9						
63				Minimum		1.0000E-4						
64				Maximum		4.0000E-4						
65				Mean of Raw Data		2.4258E-4						
66				Standard Deviation of Raw Data		1.0933E-4						
67				Khat		5.285						
68				Theta hat		4.5896E-5						
69				Kstar		4.795						
70				Theta star		5.0586E-5						
71				Mean of Log Transformed Data		-8.422						
72				Standard Deviation of Log Transformed Data		0.45						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.9						
77				Shapiro Wilk Test Statistic		0.788						
78				Shapiro Wilk Critical (0.05) Value		0.929						
79				Approximate Shapiro Wilk P Value		1.1492E-5						
80				Lilliefors Test Statistic		0.329						
81				Lilliefors Critical (0.05) Value		0.156						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.899						
87				A-D Test Statistic		2.196						
88				A-D Critical (0.05) Value		0.747						
89				K-S Test Statistic		0.289						
90				K-S Critical(0.05) Value		0.158						
91	Data not Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.935						
96				Shapiro Wilk Test Statistic		0.855						
97				Shapiro Wilk Critical (0.05) Value		0.929						
98				Approximate Shapiro Wilk P Value		4.7517E-4						
99				Lilliefors Test Statistic		0.261						
100				Lilliefors Critical (0.05) Value		0.156						
101	Data not Lognormal at (0.05) Significance Level											
102												
103	Non-parametric GOF Test Results											
104												
105	Data do not follow a discernible distribution at (0.05) Level of Signif											
106												

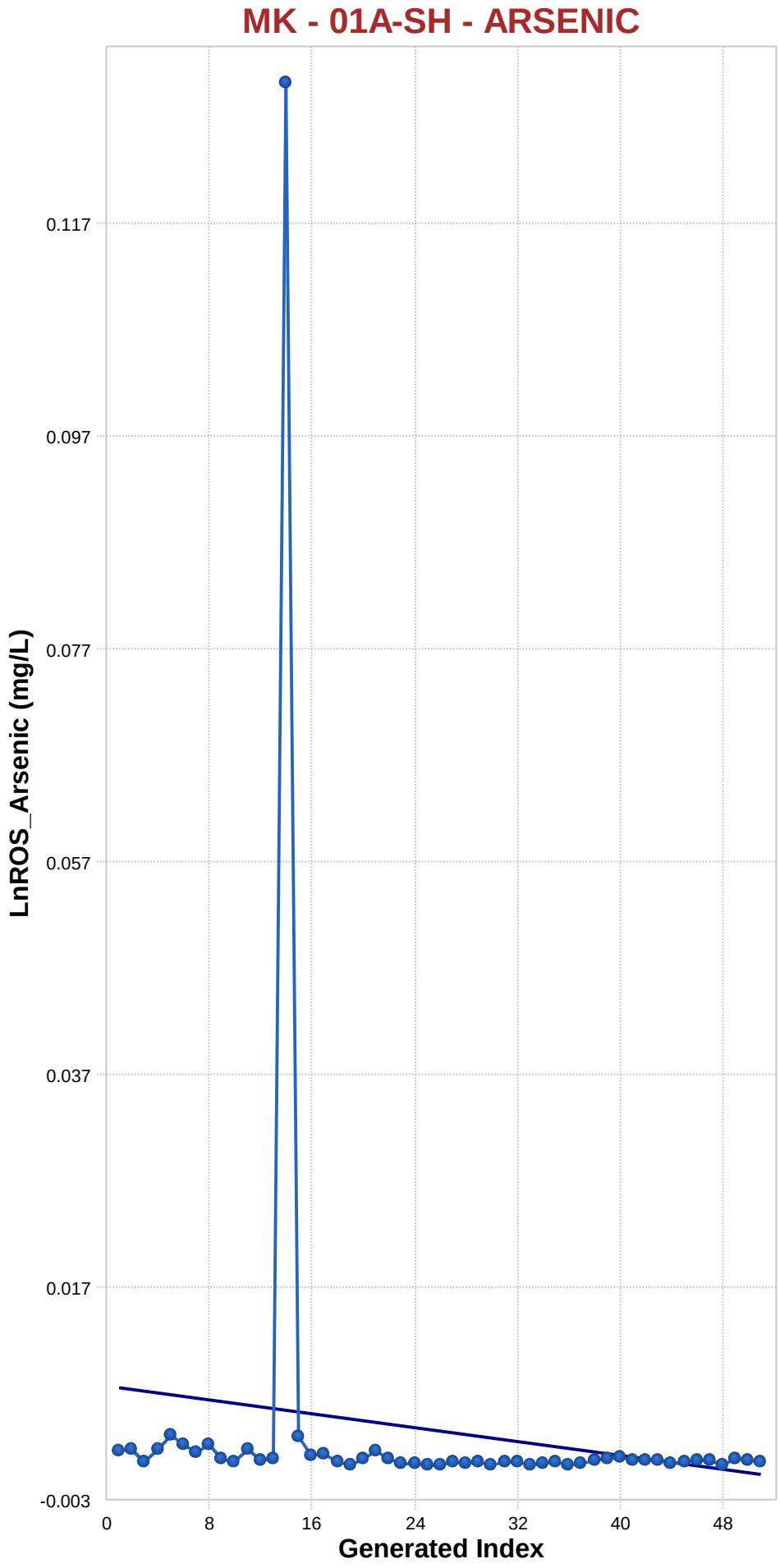
	A	B	C	D	E	F	G	H	I	J	K	L
107	Cadmium (mg/L)											
108												
109				Raw Statistics								
110					Number of Valid Observations	31						
111					Number of Distinct Observations	19						
112					Minimum	8.0000E-6						
113					Maximum	0.003						
114					Mean of Raw Data	1.9398E-4						
115					Standard Deviation of Raw Data	5.2909E-4						
116					Khat	0.536						
117					Theta hat	3.6206E-4						
118					Kstar	0.505						
119					Theta star	3.8380E-4						
120					Mean of Log Transformed Data	-9.721						
121					Standard Deviation of Log Transformed Data	1.426						
122												
123				Normal GOF Test Results								
124												
125					Correlation Coefficient R	0.526						
126					Shapiro Wilk Test Statistic	0.312						
127					Shapiro Wilk Critical (0.05) Value	0.929						
128					Approximate Shapiro Wilk P Value	1.126E-13						
129					Lilliefors Test Statistic	0.431						
130					Lilliefors Critical (0.05) Value	0.156						
131	Data not Normal at (0.05) Significance Level											
132												
133				Gamma GOF Test Results								
134												
135					Correlation Coefficient R	0.773						
136					A-D Test Statistic	2.659						
137					A-D Critical (0.05) Value	0.807						
138					K-S Test Statistic	0.251						
139					K-S Critical(0.05) Value	0.166						
140	Data not Gamma Distributed at (0.05) Significance Level											
141												
142				Lognormal GOF Test Results								
143												
144					Correlation Coefficient R	0.926						
145					Shapiro Wilk Test Statistic	0.859						
146					Shapiro Wilk Critical (0.05) Value	0.929						
147					Approximate Shapiro Wilk P Value	6.0555E-4						
148					Lilliefors Test Statistic	0.22						
149					Lilliefors Critical (0.05) Value	0.156						
150	Data not Lognormal at (0.05) Significance Level											
151												
152	Non-parametric GOF Test Results											
153												
154	Data do not follow a discernible distribution at (0.05) Level of Signif											
155												
156	Chromium (mg/L)											
157												
158				Raw Statistics								
159					Number of Valid Observations	31						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Number of Distinct Observations	17						
161					Minimum	2.3000E-4						
162					Maximum	0.024						
163					Mean of Raw Data	0.00238						
164					Standard Deviation of Raw Data	0.00423						
165					Khat	1						
166					Theta hat	0.00238						
167					Kstar	0.924						
168					Theta star	0.00257						
169					Mean of Log Transformed Data	-6.619						
170					Standard Deviation of Log Transformed Data	0.973						
171												
172				Normal GOF Test Results								
173												
174					Correlation Coefficient R	0.629						
175					Shapiro Wilk Test Statistic	0.431						
176					Shapiro Wilk Critical (0.05) Value	0.929						
177					Approximate Shapiro Wilk P Value	4.933E-12						
178					Lilliefors Test Statistic	0.342						
179					Lilliefors Critical (0.05) Value	0.156						
180	Data not Normal at (0.05) Significance Level											
181												
182				Gamma GOF Test Results								
183												
184					Correlation Coefficient R	0.823						
185					A-D Test Statistic	1.544						
186					A-D Critical (0.05) Value	0.776						
187					K-S Test Statistic	0.238						
188					K-S Critical(0.05) Value	0.162						
189	Data not Gamma Distributed at (0.05) Significance Level											
190												
191				Lognormal GOF Test Results								
192												
193					Correlation Coefficient R	0.973						
194					Shapiro Wilk Test Statistic	0.955						
195					Shapiro Wilk Critical (0.05) Value	0.929						
196					Approximate Shapiro Wilk P Value	0.252						
197					Lilliefors Test Statistic	0.145						
198					Lilliefors Critical (0.05) Value	0.156						
199	Data appear Lognormal at (0.05) Significance Level											
200												
201	Manganese (mg/L)											
202												
203				Raw Statistics								
204					Number of Valid Observations	29						
205					Number of Distinct Observations	20						
206					Minimum	1.1000E-4						
207					Maximum	0.441						
208					Mean of Raw Data	0.0411						
209					Standard Deviation of Raw Data	0.0979						
210					Khat	0.36						
211					Theta hat	0.114						
212					Kstar	0.345						

213	Theta star	0.119
214	Mean of Log Transformed Data	-5.052
215	Standard Deviation of Log Transformed Data	1.862
216		
217	Normal GOF Test Results	
218		
219	Correlation Coefficient R	0.673
220	Shapiro Wilk Test Statistic	0.474
221	Shapiro Wilk Critical (0.05) Value	0.926
222	Approximate Shapiro Wilk P Value	9.152E-11
223	Lilliefors Test Statistic	0.398
224	Lilliefors Critical (0.05) Value	0.161
225	Data not Normal at (0.05) Significance Level	
226		
227	Gamma GOF Test Results	
228		
229	Correlation Coefficient R	0.963
230	A-D Test Statistic	3.254
231	A-D Critical (0.05) Value	0.843
232	K-S Test Statistic	0.354
233	K-S Critical(0.05) Value	0.175
234	Data not Gamma Distributed at (0.05) Significance Level	
235		
236	Lognormal GOF Test Results	
237		
238	Correlation Coefficient R	0.952
239	Shapiro Wilk Test Statistic	0.912
240	Shapiro Wilk Critical (0.05) Value	0.926
241	Approximate Shapiro Wilk P Value	0.0209
242	Lilliefors Test Statistic	0.242
243	Lilliefors Critical (0.05) Value	0.161
244	Data not Lognormal at (0.05) Significance Level	
245		
246	Non-parametric GOF Test Results	
247		
248	Data do not follow a discernible distribution at (0.05) Level of Signif	
249		
250	Nickel (mg/L)	
251		
252	Raw Statistics	
253	Number of Valid Observations	31
254	Number of Distinct Observations	24
255	Minimum	2.0000E-4
256	Maximum	0.015
257	Mean of Raw Data	0.00298
258	Standard Deviation of Raw Data	0.00333
259	Khat	1.311
260	Theta hat	0.00227
261	Kstar	1.206
262	Theta star	0.00247
263	Mean of Log Transformed Data	-6.244
264	Standard Deviation of Log Transformed Data	0.936
265		

	A	B	C	D	E	F	G	H	I	J	K	L
266				Normal GOF Test Results								
267												
268					Correlation Coefficient R	0.81						
269					Shapiro Wilk Test Statistic	0.67						
270					Shapiro Wilk Critical (0.05) Value	0.929						
271					Approximate Shapiro Wilk P Value	4.2346E-8						
272					Lilliefors Test Statistic	0.231						
273					Lilliefors Critical (0.05) Value	0.156						
274	Data not Normal at (0.05) Significance Level											
275												
276				Gamma GOF Test Results								
277												
278					Correlation Coefficient R	0.94						
279					A-D Test Statistic	0.735						
280					A-D Critical (0.05) Value	0.768						
281					K-S Test Statistic	0.128						
282					K-S Critical(0.05) Value	0.161						
283	Data appear Gamma Distributed at (0.05) Significance Level											
284												
285				Lognormal GOF Test Results								
286												
287					Correlation Coefficient R	0.987						
288					Shapiro Wilk Test Statistic	0.979						
289					Shapiro Wilk Critical (0.05) Value	0.929						
290					Approximate Shapiro Wilk P Value	0.816						
291					Lilliefors Test Statistic	0.0931						
292					Lilliefors Critical (0.05) Value	0.156						
293	Data appear Lognormal at (0.05) Significance Level											
294												
295	Zinc (mg/L)											
296												
297				Raw Statistics								
298					Number of Valid Observations	31						
299					Number of Distinct Observations	22						
300					Minimum	0.001						
301					Maximum	0.016						
302					Mean of Raw Data	0.00524						
303					Standard Deviation of Raw Data	0.00451						
304					Khat	1.634						
305					Theta hat	0.00321						
306					Kstar	1.498						
307					Theta star	0.0035						
308					Mean of Log Transformed Data	-5.587						
309					Standard Deviation of Log Transformed Data	0.839						
310												
311				Normal GOF Test Results								
312												
313					Correlation Coefficient R	0.905						
314					Shapiro Wilk Test Statistic	0.806						
315					Shapiro Wilk Critical (0.05) Value	0.929						
316					Approximate Shapiro Wilk P Value	3.0371E-5						
317					Lilliefors Test Statistic	0.237						
318					Lilliefors Critical (0.05) Value	0.156						

	A	B	C	D	E	F	G	H	I	J	K	L
319	Data not Normal at (0.05) Significance Level											
320												
321				Gamma GOF Test Results								
322												
323					Correlation Coefficient R	0.972						
324					A-D Test Statistic	0.715						
325					A-D Critical (0.05) Value	0.762						
326					K-S Test Statistic	0.138						
327					K-S Critical(0.05) Value	0.16						
328	Data appear Gamma Distributed at (0.05) Significance Level											
329												
330				Lognormal GOF Test Results								
331												
332					Correlation Coefficient R	0.983						
333					Shapiro Wilk Test Statistic	0.946						
334					Shapiro Wilk Critical (0.05) Value	0.929						
335					Approximate Shapiro Wilk P Value	0.143						
336					Lilliefors Test Statistic	0.128						
337					Lilliefors Critical (0.05) Value	0.156						
338	Data appear Lognormal at (0.05) Significance Level											



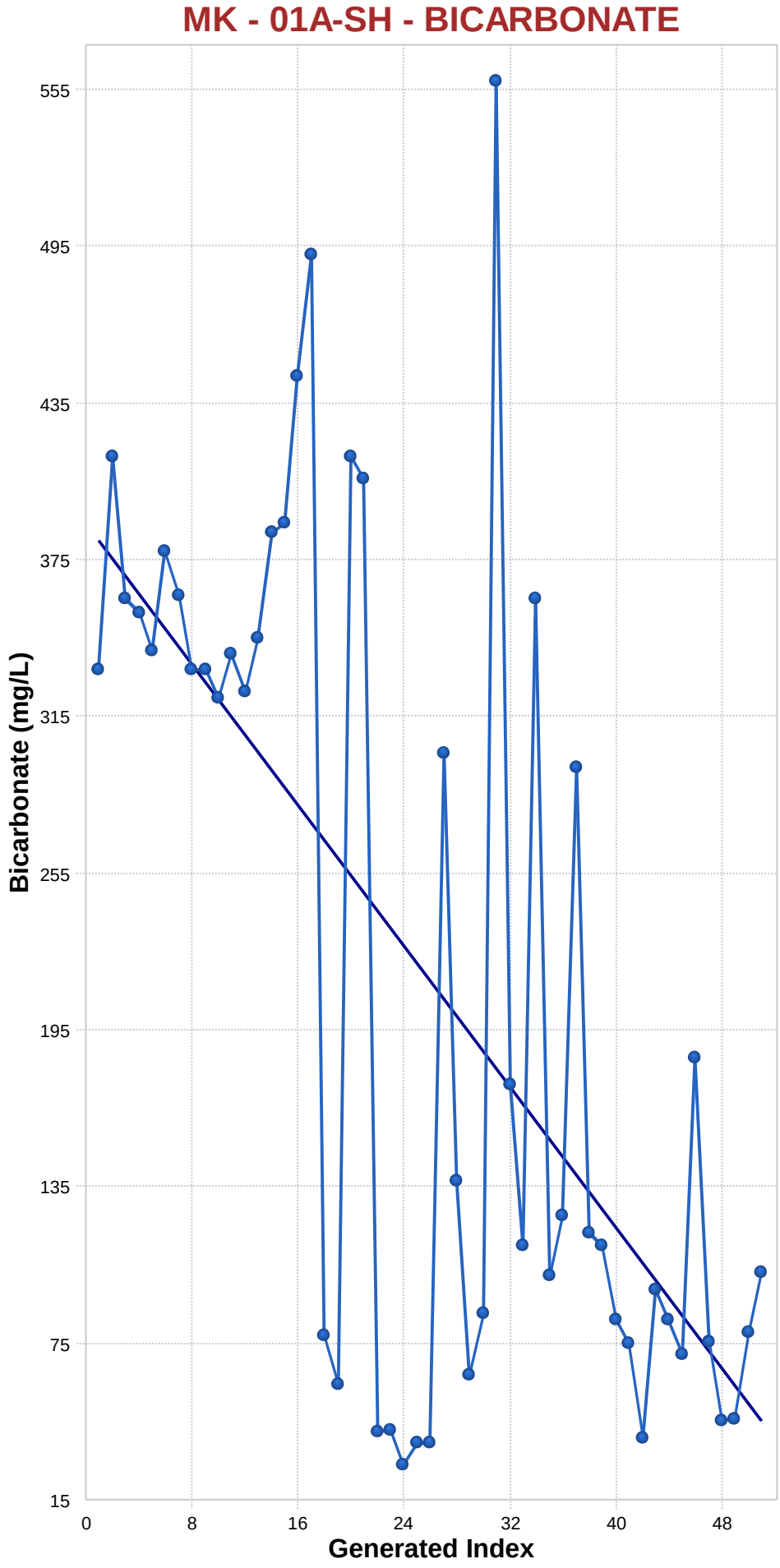
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	122.8970
Standardized Value of S	-2.9293
M-K Test Value (S)	-361
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0017

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0075

Statistically significant evidence of a decreasing trend at the specified level of significance.



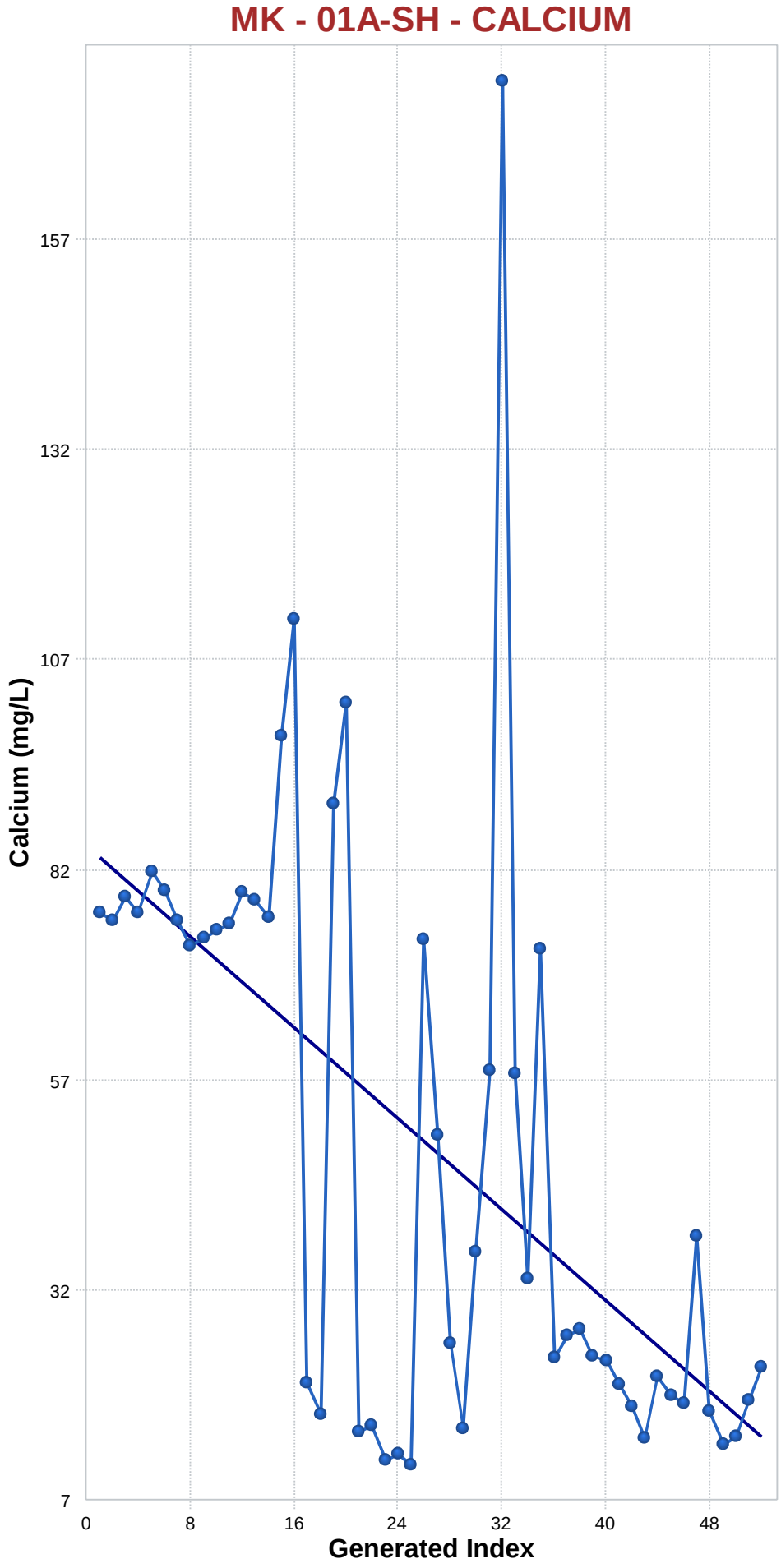
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	123.1002
Standardized Value of S	-3.8505
M-K Test Value (S)	-475
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-6.7405
OLS Regression Intercept	389.1245

Statistically significant evidence of a decreasing trend at the specified level of significance.



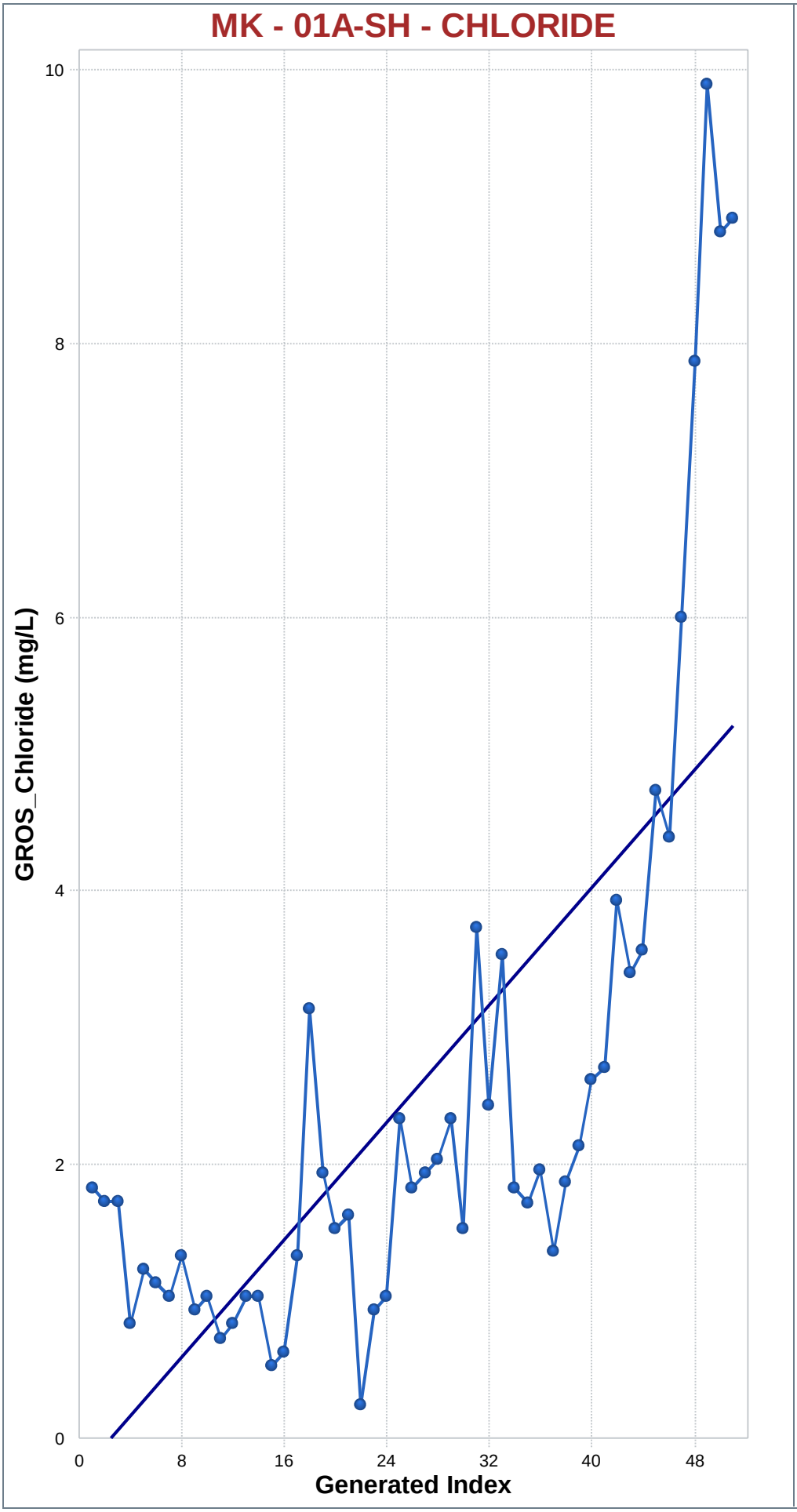
Mann-Kendall Trend Analysis

n	52
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	126.7175
Standardized Value of S	-4.4903
M-K Test Value (S)	-570
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-1.3509
OLS Regression Intercept	84.9152

Statistically significant evidence of a decreasing trend at the specified level of significance.



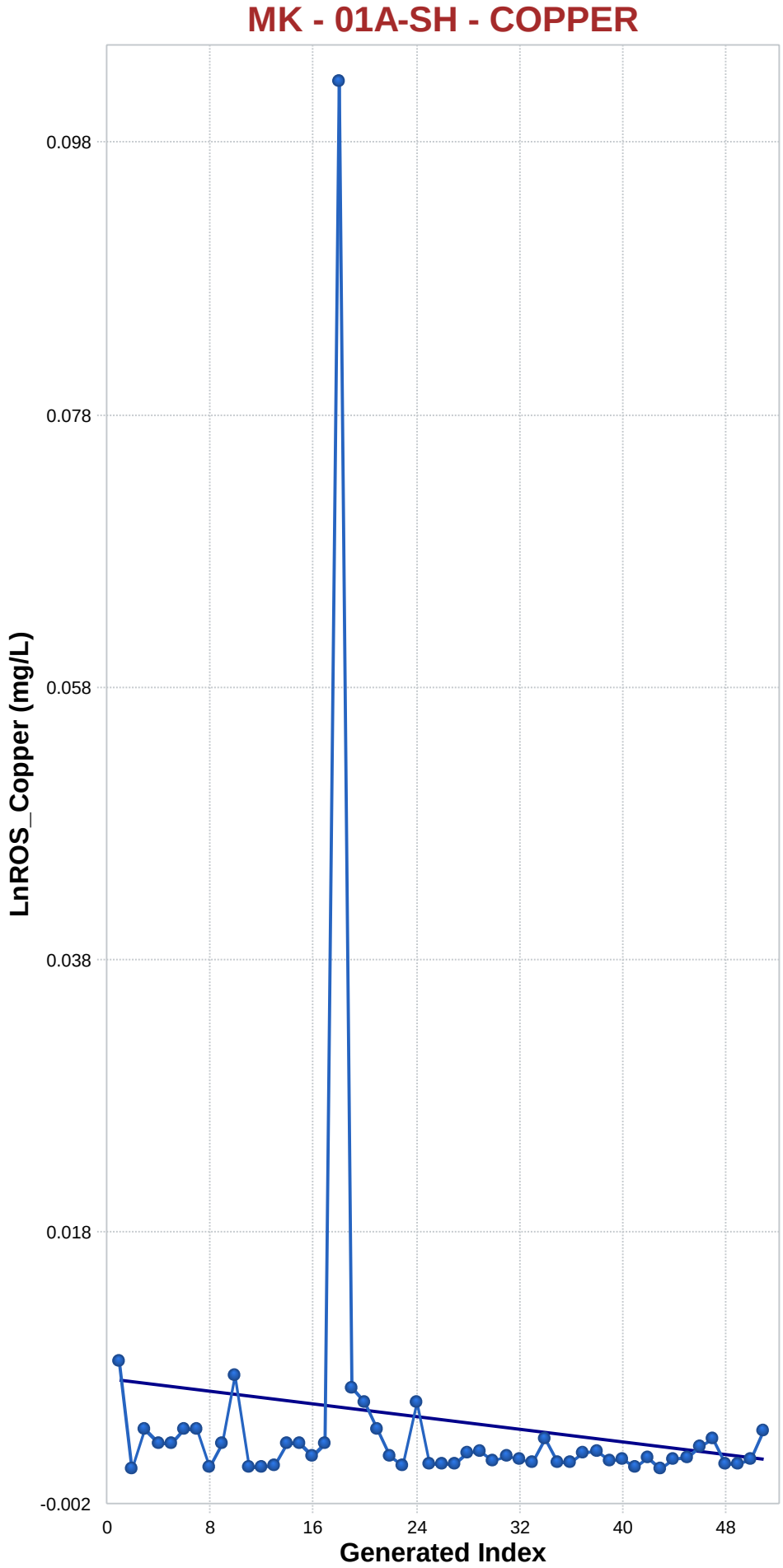
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	123.0081
Standardized Value of S	6.0484
M-K Test Value (S)	745
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.1074
OLS Regression Intercept	-0.4982

Statistically significant evidence of an increasing trend at the specified level of significance.



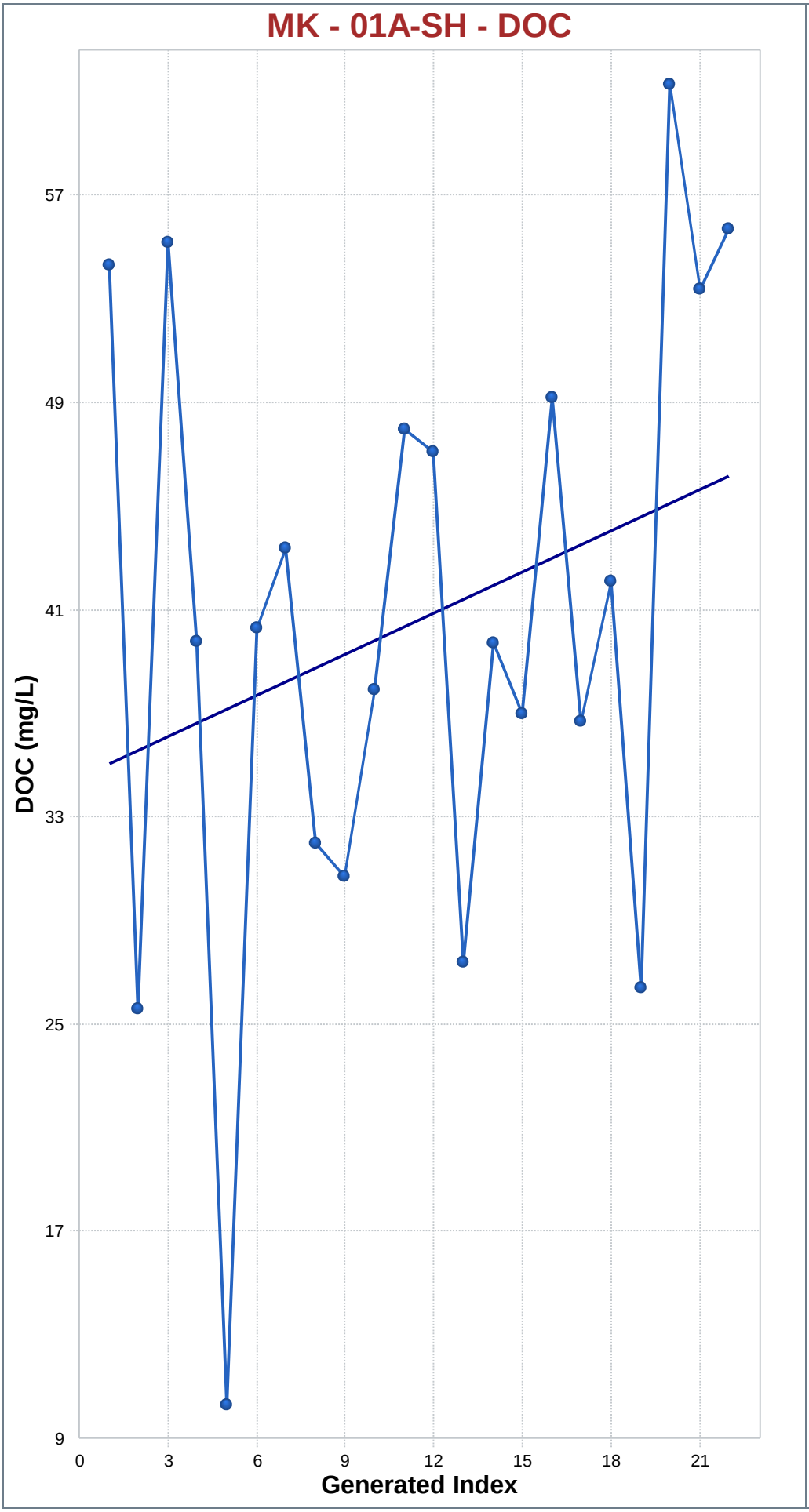
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	122.9458
Standardized Value of S	-1.6755
M-K Test Value (S)	-207
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0469

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0067

Statistically significant evidence of a decreasing trend at the specified level of significance.



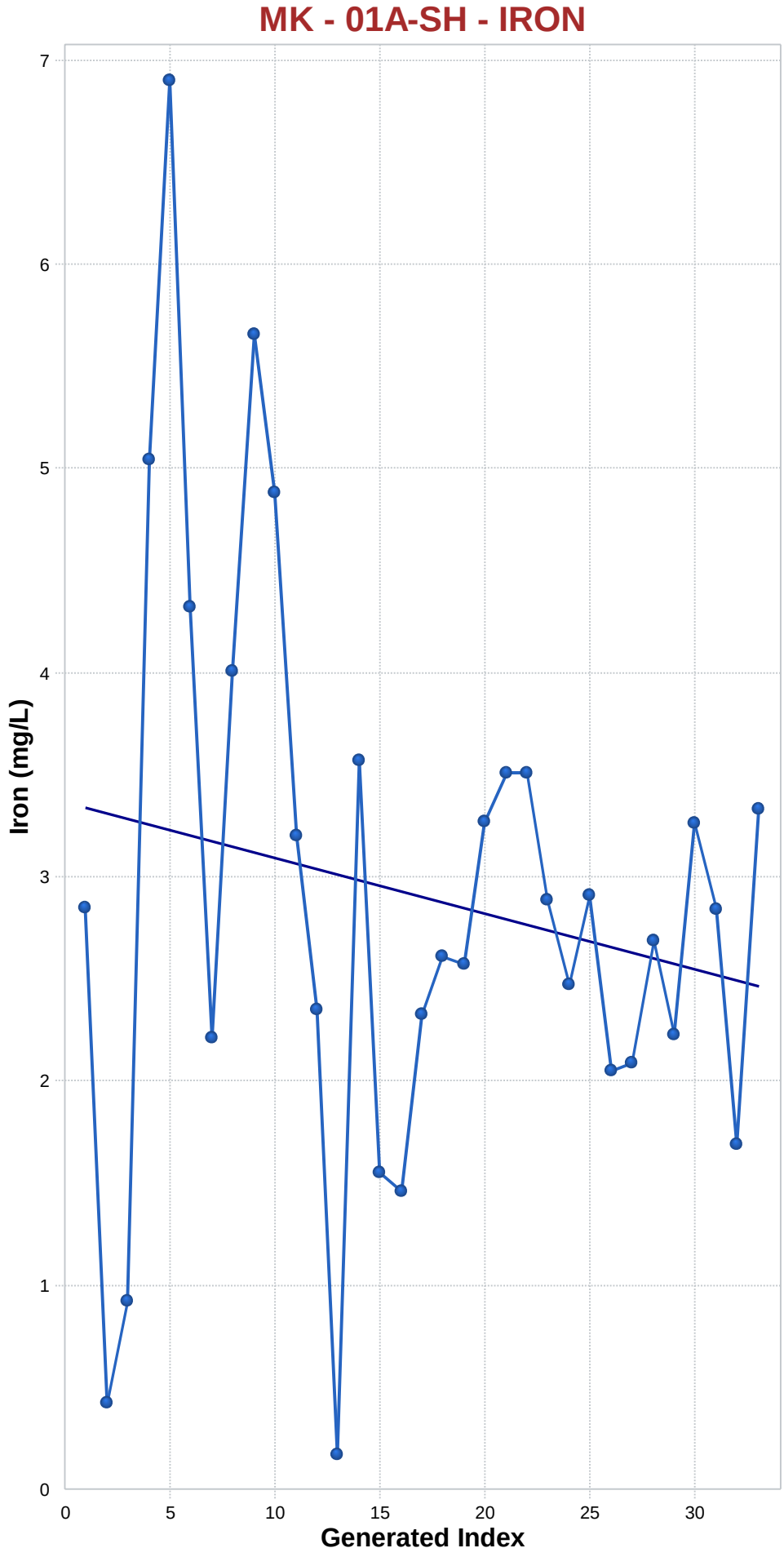
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4636
Standardized Value of S	1.0151
M-K Test Value (S)	37
Tabulated p-value	0.1570
Approximate p-value	0.1550

OLS Regression Line (Blue)

OLS Regression Slope	0.5273
OLS Regression Intercept	34.2494

Insufficient statistical evidence of a significant trend at the specified level of significance.



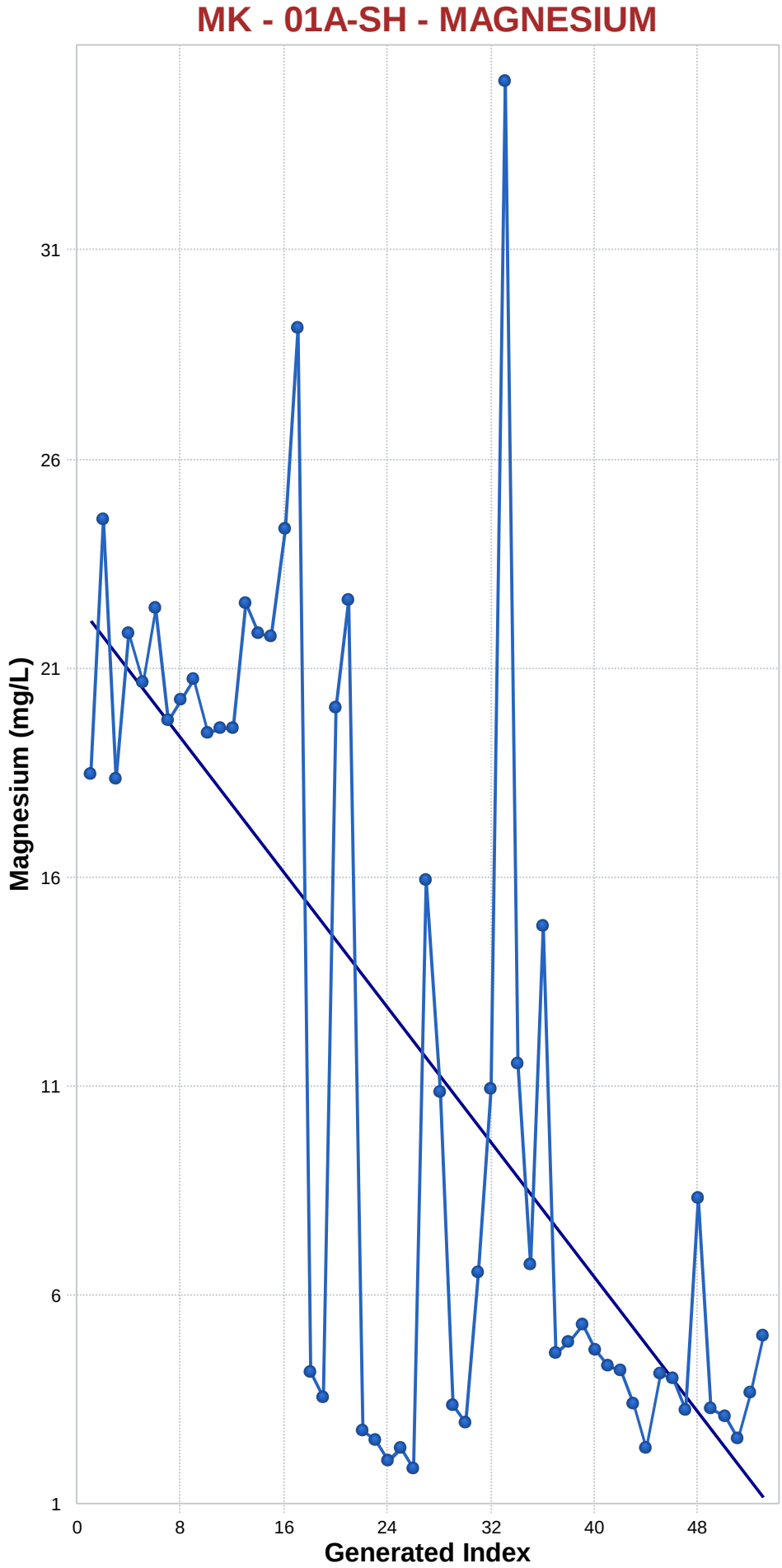
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	-0.8368
M-K Test Value (S)	-55
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.2014

OLS Regression Line (Blue)

OLS Regression Slope	-0.0273
OLS Regression Intercept	3.2556

Insufficient statistical evidence of a significant trend at the specified level of significance.



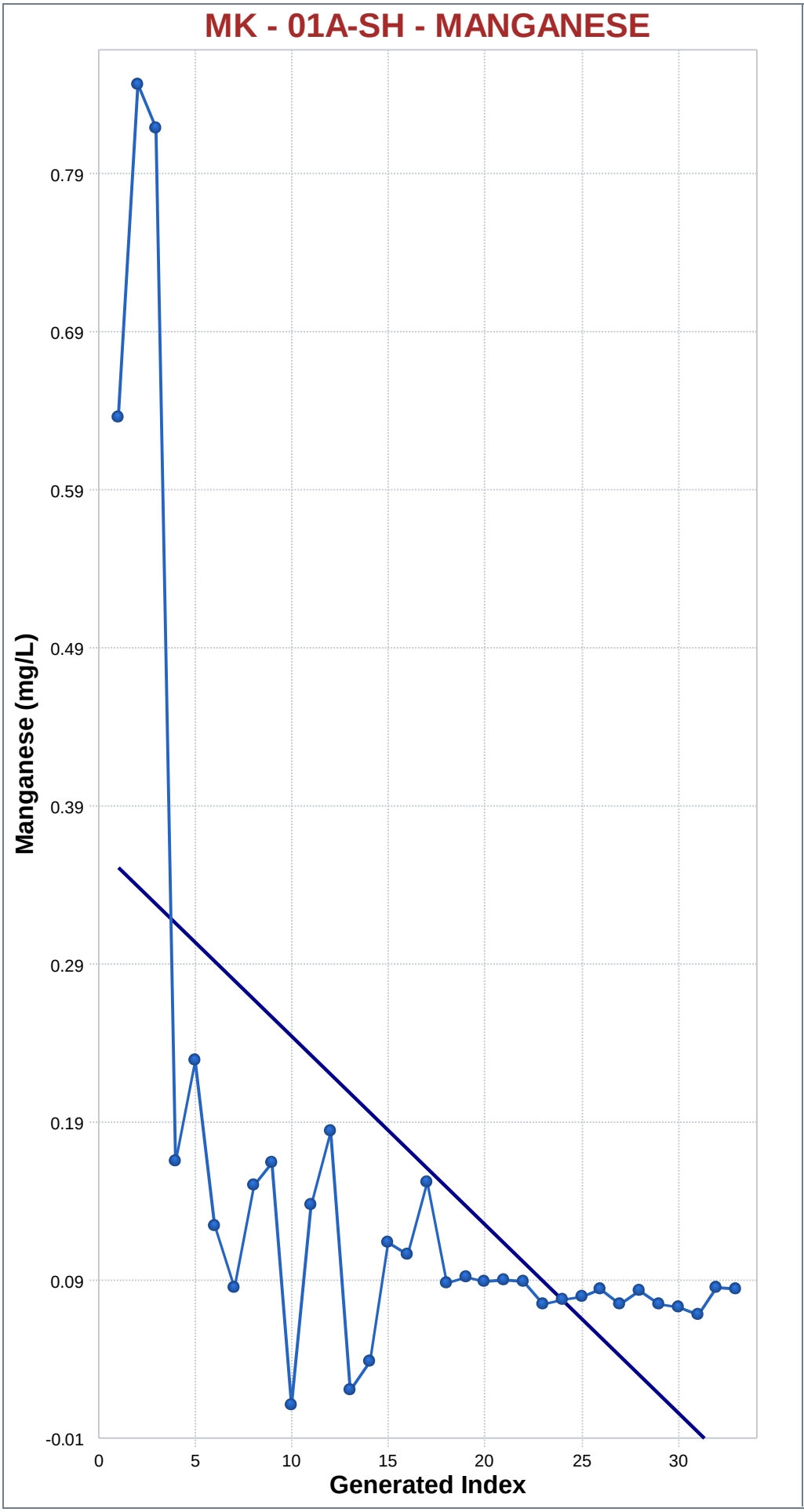
Mann-Kendall Trend Analysis

n	53
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	130.3585
Standardized Value of S	-4.4569
M-K Test Value (S)	-582
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.4035
OLS Regression Intercept	22.4870

Statistically significant evidence of a decreasing trend at the specified level of significance.



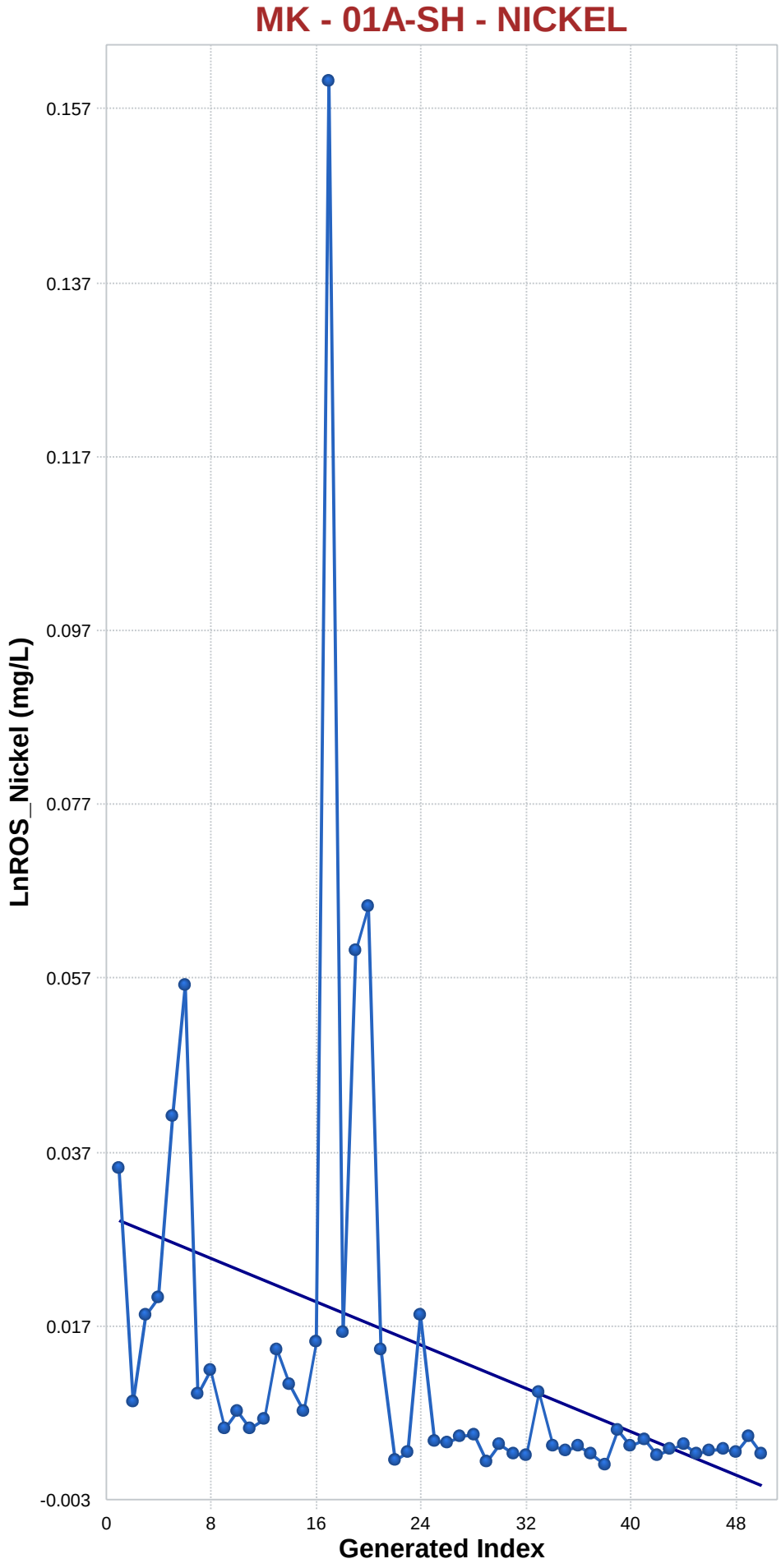
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	-4.2460
M-K Test Value (S)	-275
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0119
OLS Regression Intercept	0.3607

Statistically significant evidence of a decreasing trend at the specified level of significance.



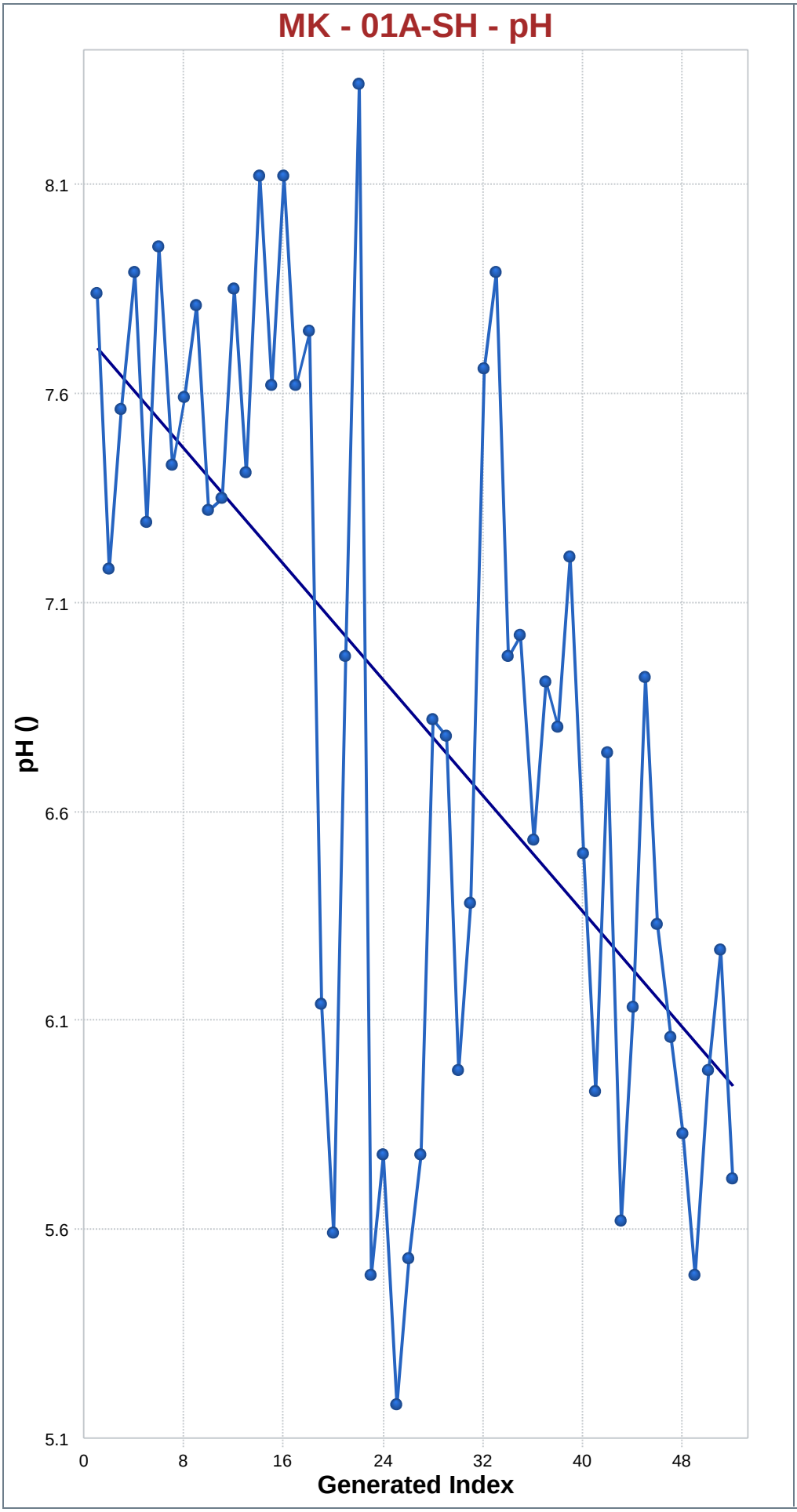
Mann-Kendall Trend Analysis

n	50
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	119.5185
Standardized Value of S	-4.8946
M-K Test Value (S)	-586
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0006
OLS Regression Intercept	0.0295

Statistically significant evidence of a decreasing trend at the specified level of significance.



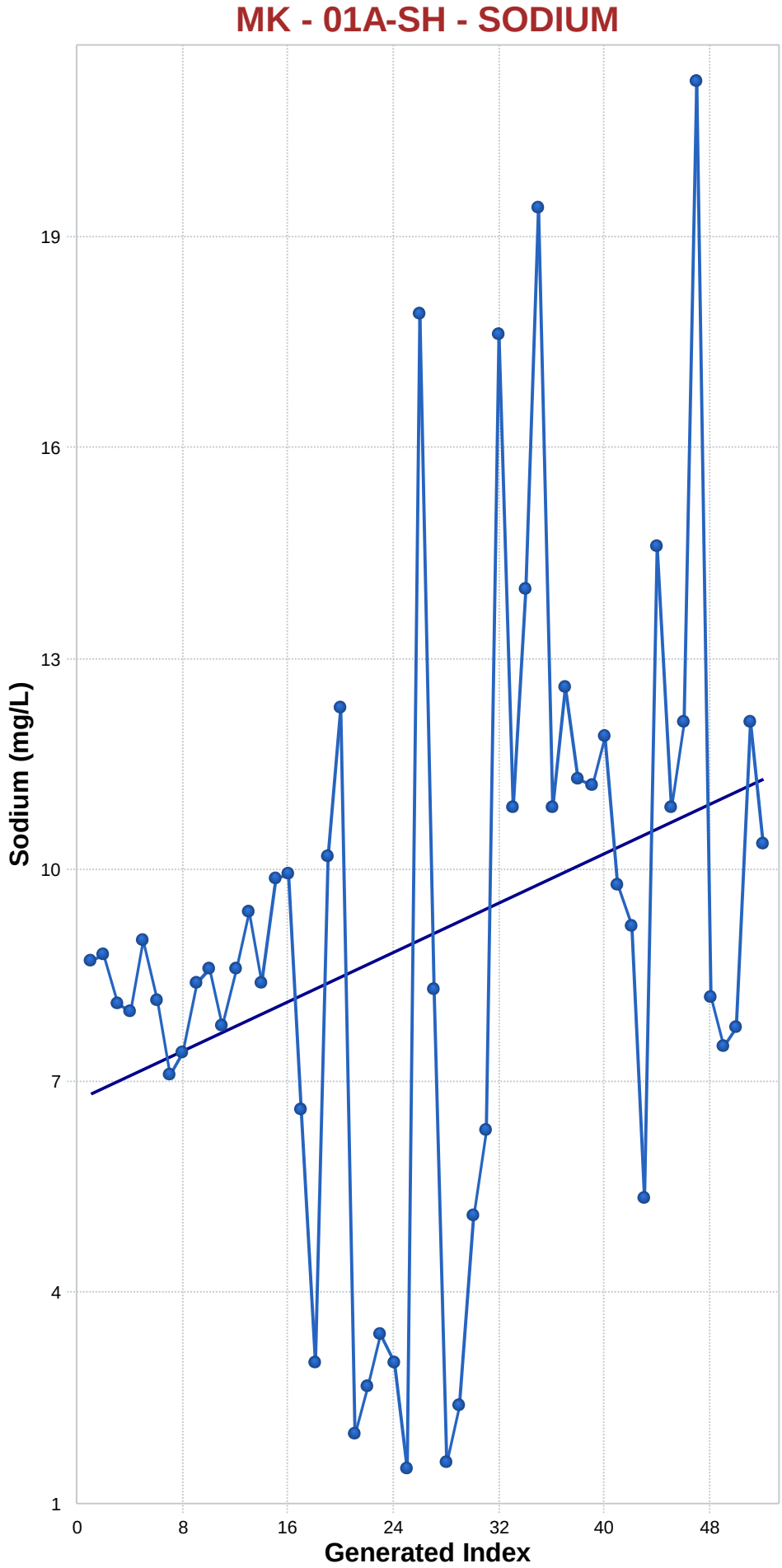
Mann-Kendall Trend Analysis

n	52
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	126.6978
Standardized Value of S	-4.2148
M-K Test Value (S)	-535
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0346
OLS Regression Intercept	7.7140

Statistically significant evidence of a decreasing trend at the specified level of significance.



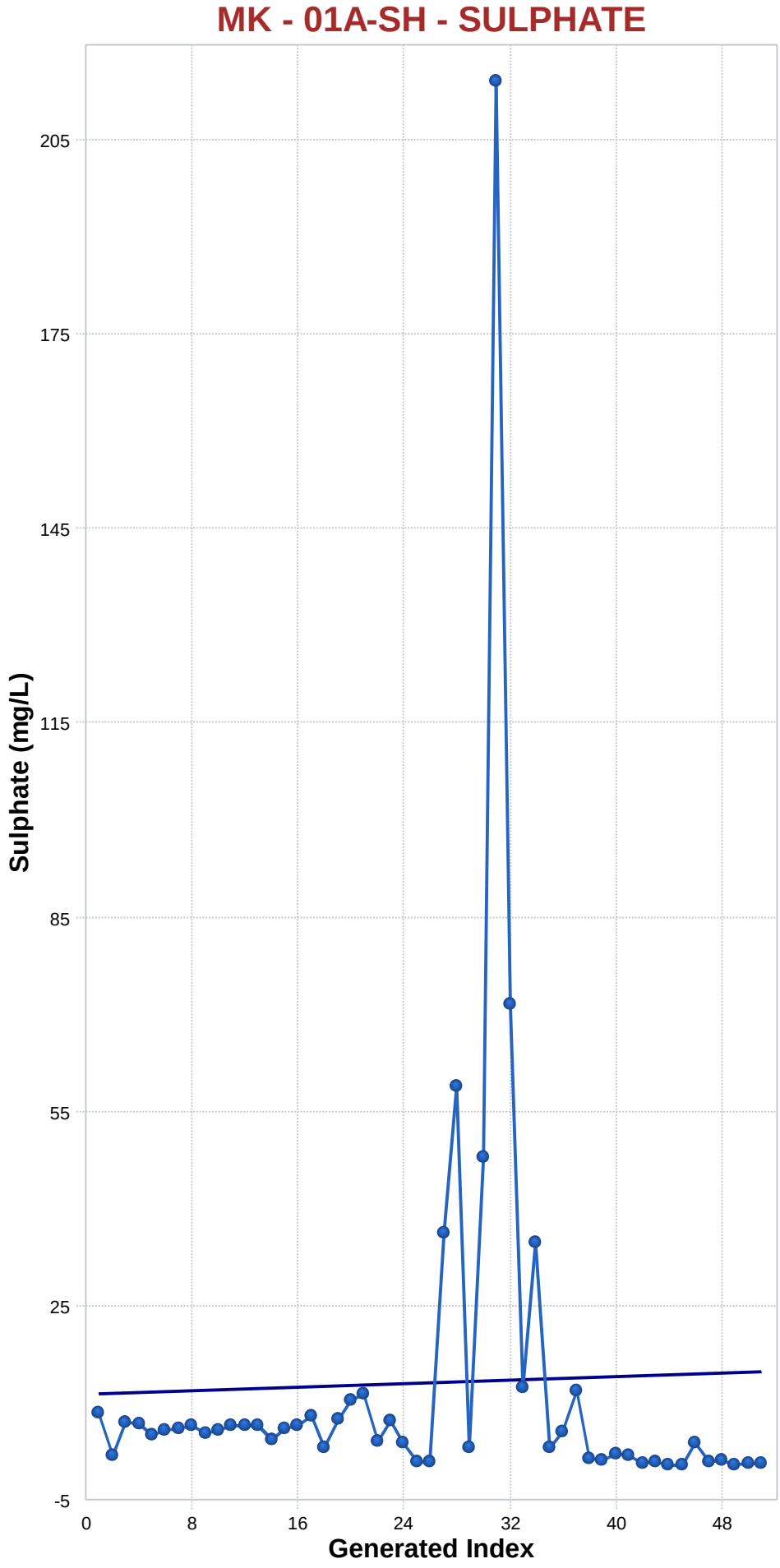
Mann-Kendall Trend Analysis

n	52
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	126.6952
Standardized Value of S	2.1469
M-K Test Value (S)	273
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0159

OLS Regression Line (Blue)

OLS Regression Slope	0.0876
OLS Regression Intercept	6.3456

Statistically significant evidence of an increasing trend at the specified level of significance.



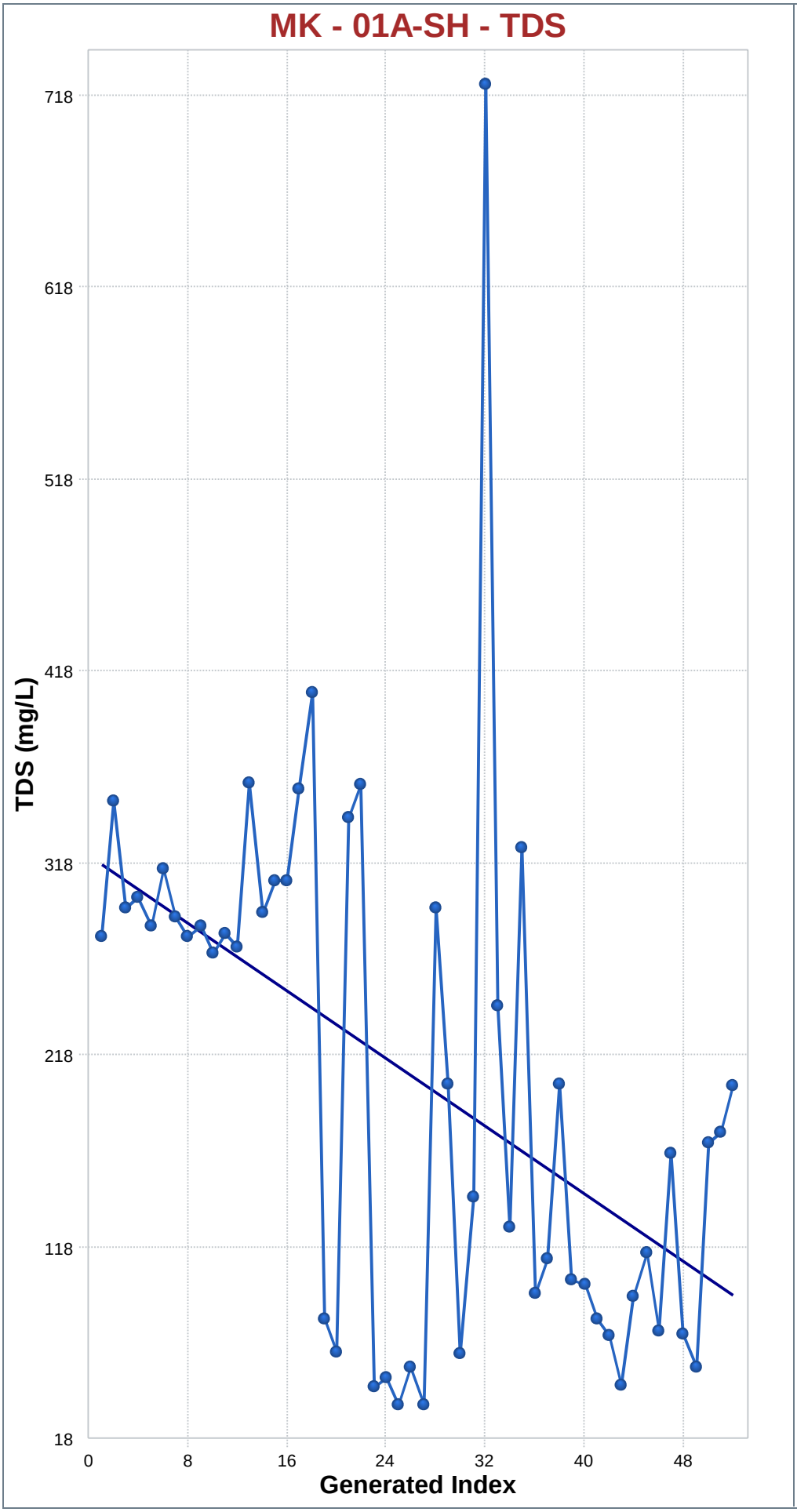
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	123.0880
Standardized Value of S	-3.0953
M-K Test Value (S)	-382
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0010

OLS Regression Line (Blue)

OLS Regression Slope	0.0690
OLS Regression Intercept	11.2153

Statistically significant evidence of a decreasing trend at the specified level of significance.



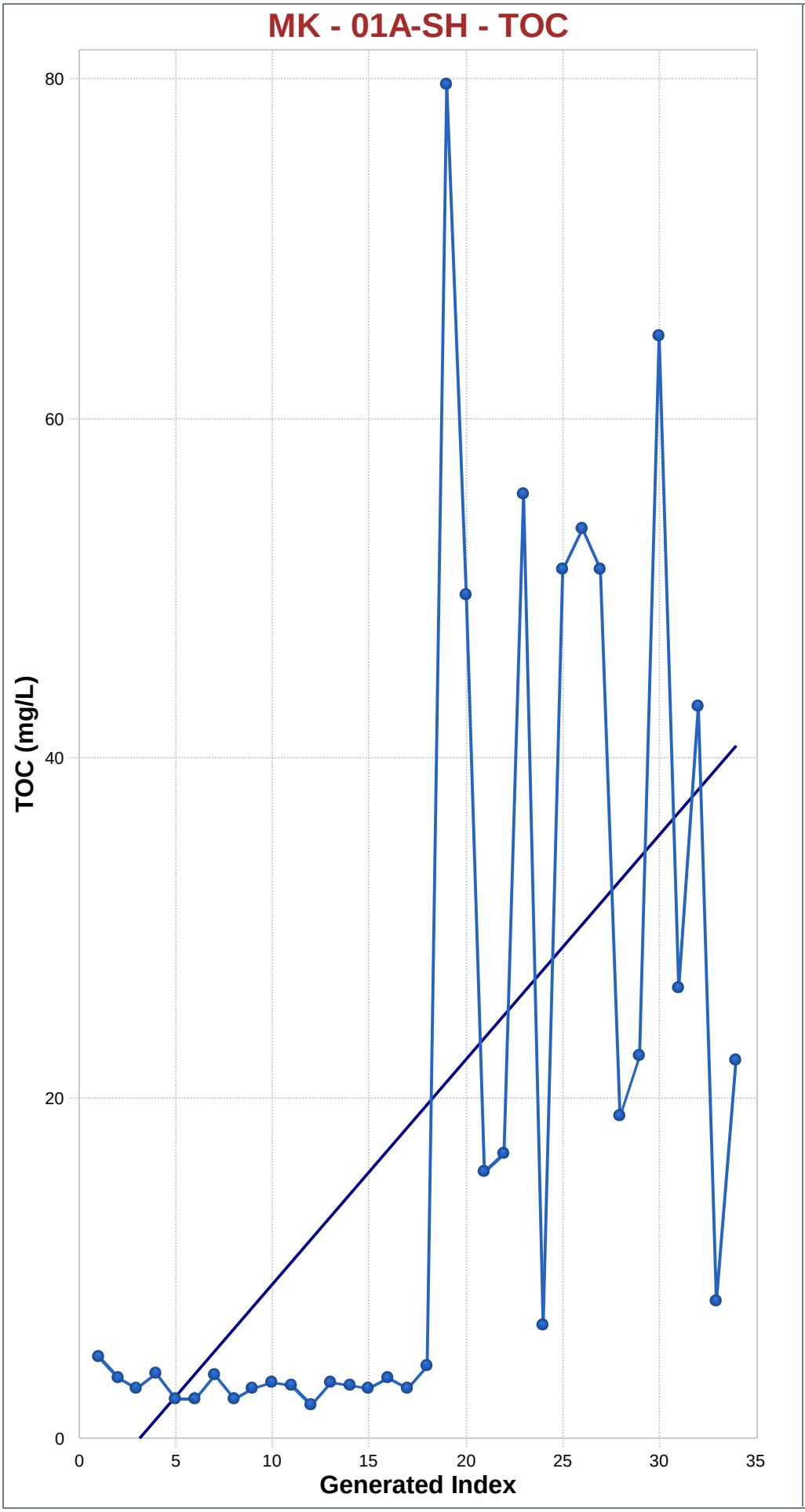
Mann-Kendall Trend Analysis

n	52
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	126.7057
Standardized Value of S	-3.3148
M-K Test Value (S)	-421
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0005

OLS Regression Line (Blue)

OLS Regression Slope	-4.3977
OLS Regression Intercept	321.6622

Statistically significant evidence of a decreasing trend at the specified level of significance.



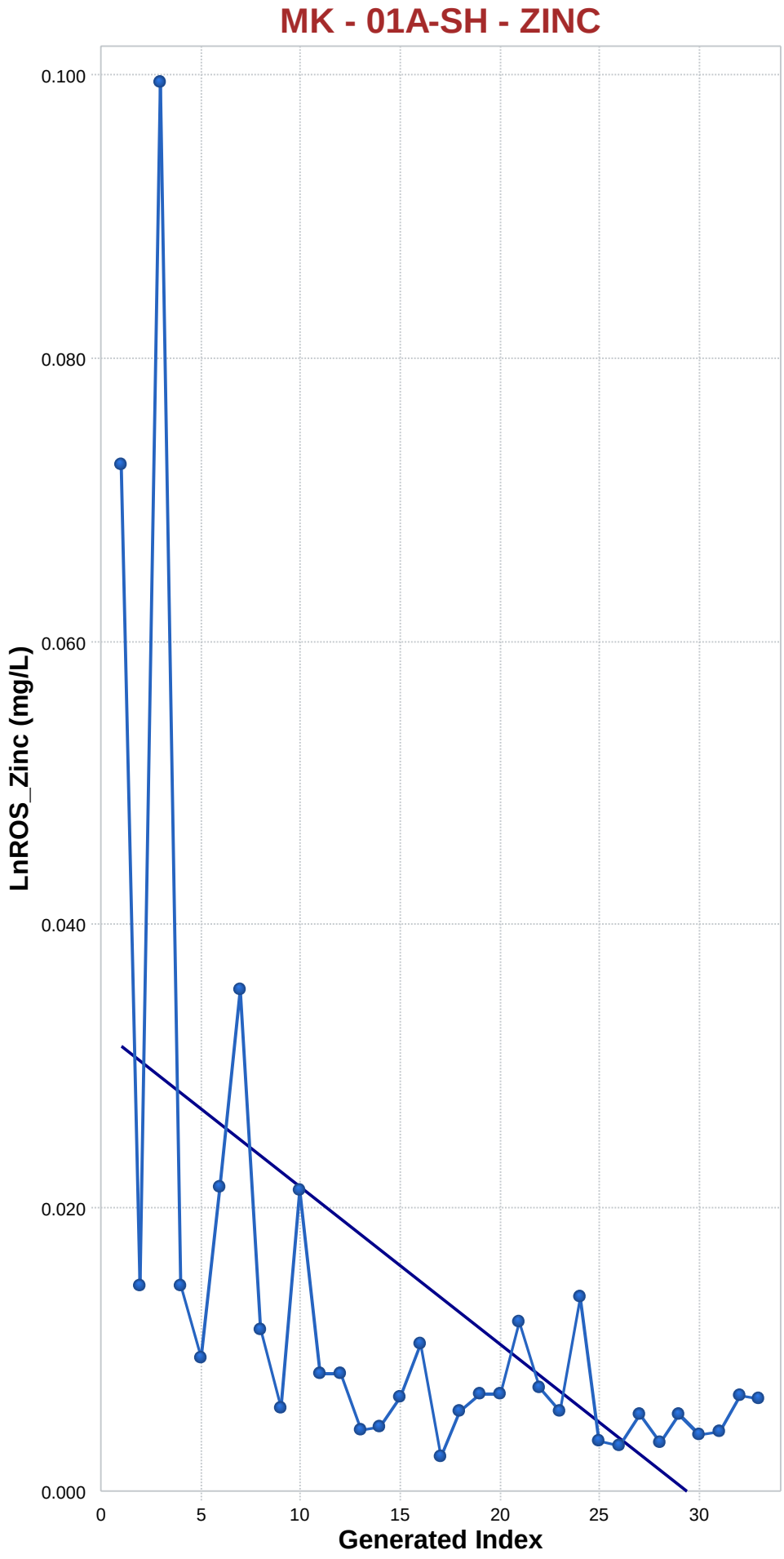
Mann-Kendall Trend Analysis

n	34
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	67.3350
Standardized Value of S	3.9058
M-K Test Value (S)	264
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.3215
OLS Regression Intercept	-3.7594

Statistically significant evidence of an increasing trend at the specified level of significance.



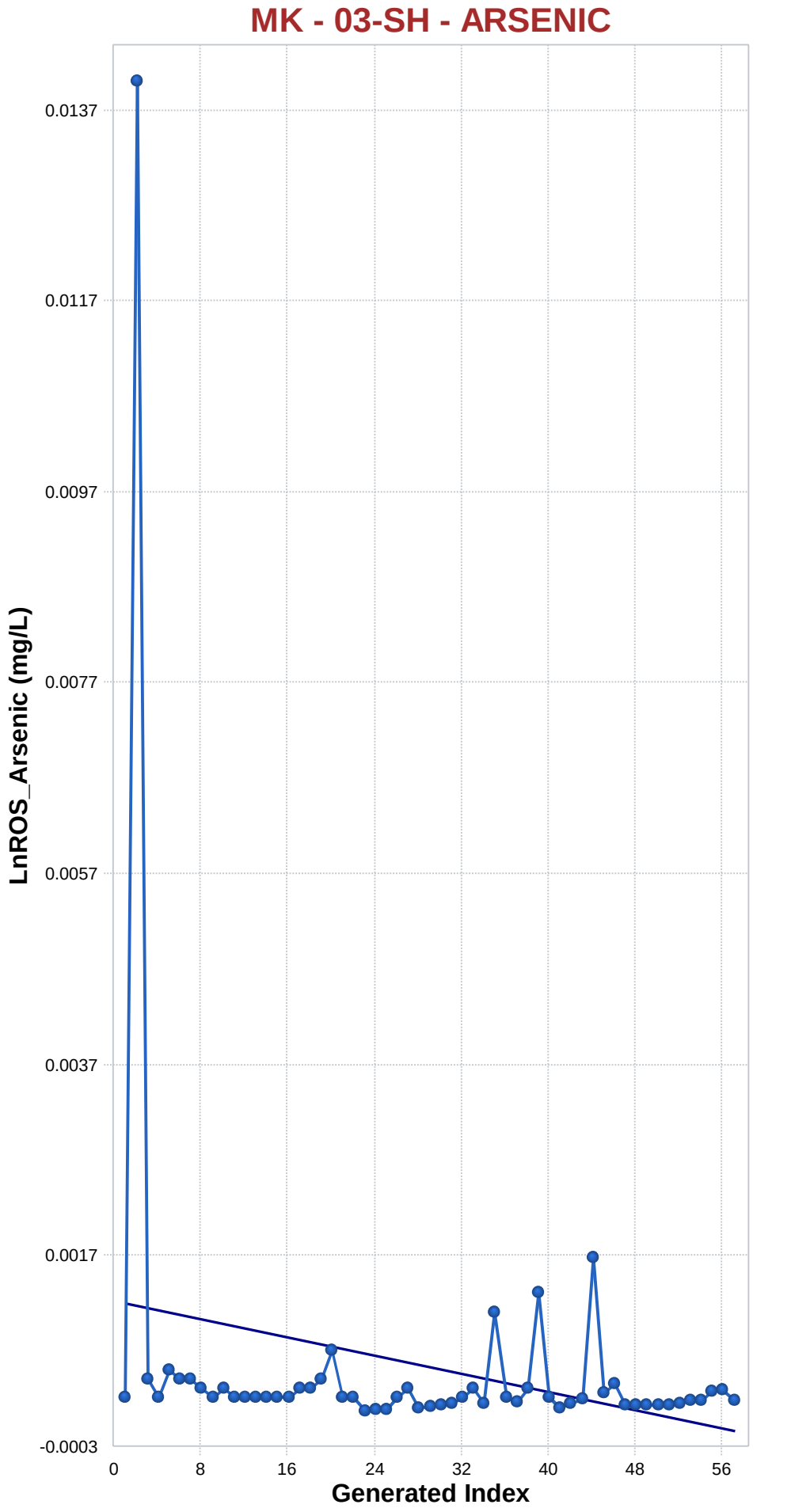
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5006
Standardized Value of S	-3.9379
M-K Test Value (S)	-255
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0011
OLS Regression Intercept	0.0321

Statistically significant evidence of a decreasing trend at the specified level of significance.



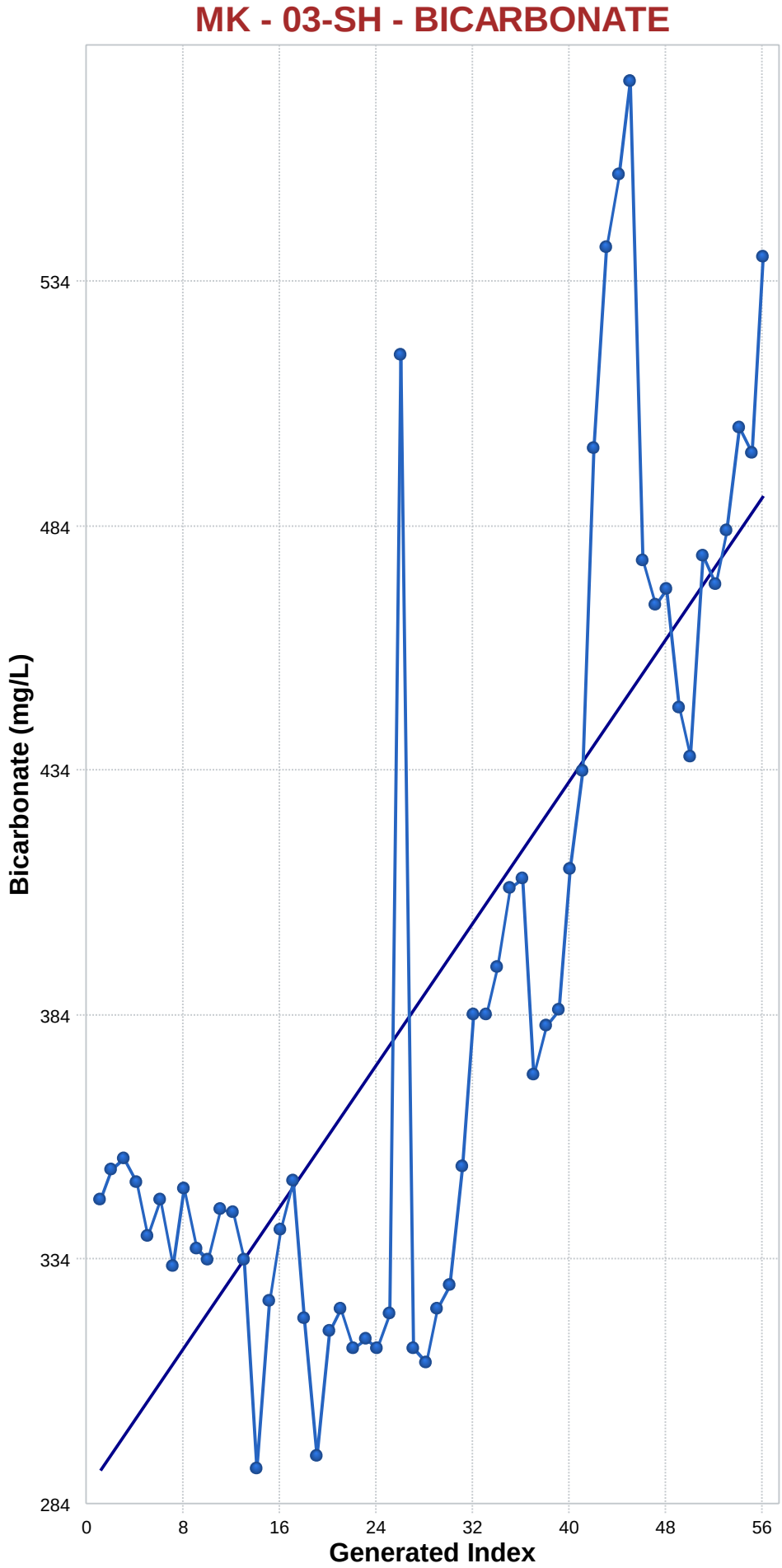
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	143.6512
Standardized Value of S	-2.4086
M-K Test Value (S)	-347
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0080

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0012

Statistically significant evidence of a decreasing trend at the specified level of significance.



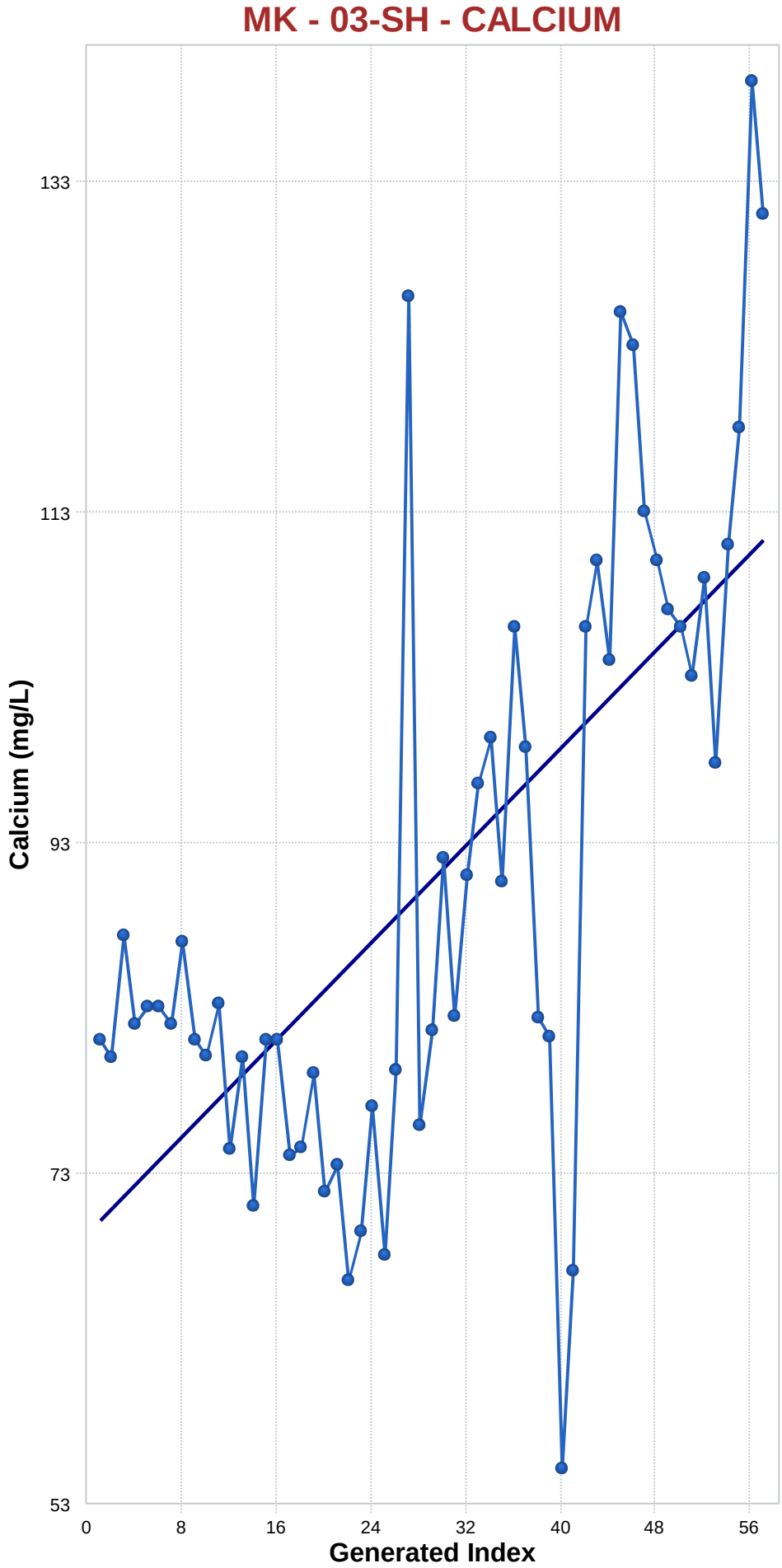
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4650
Standardized Value of S	5.1320
M-K Test Value (S)	727
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	3.6185
OLS Regression Intercept	287.4695

Statistically significant evidence of an increasing trend at the specified level of significance.



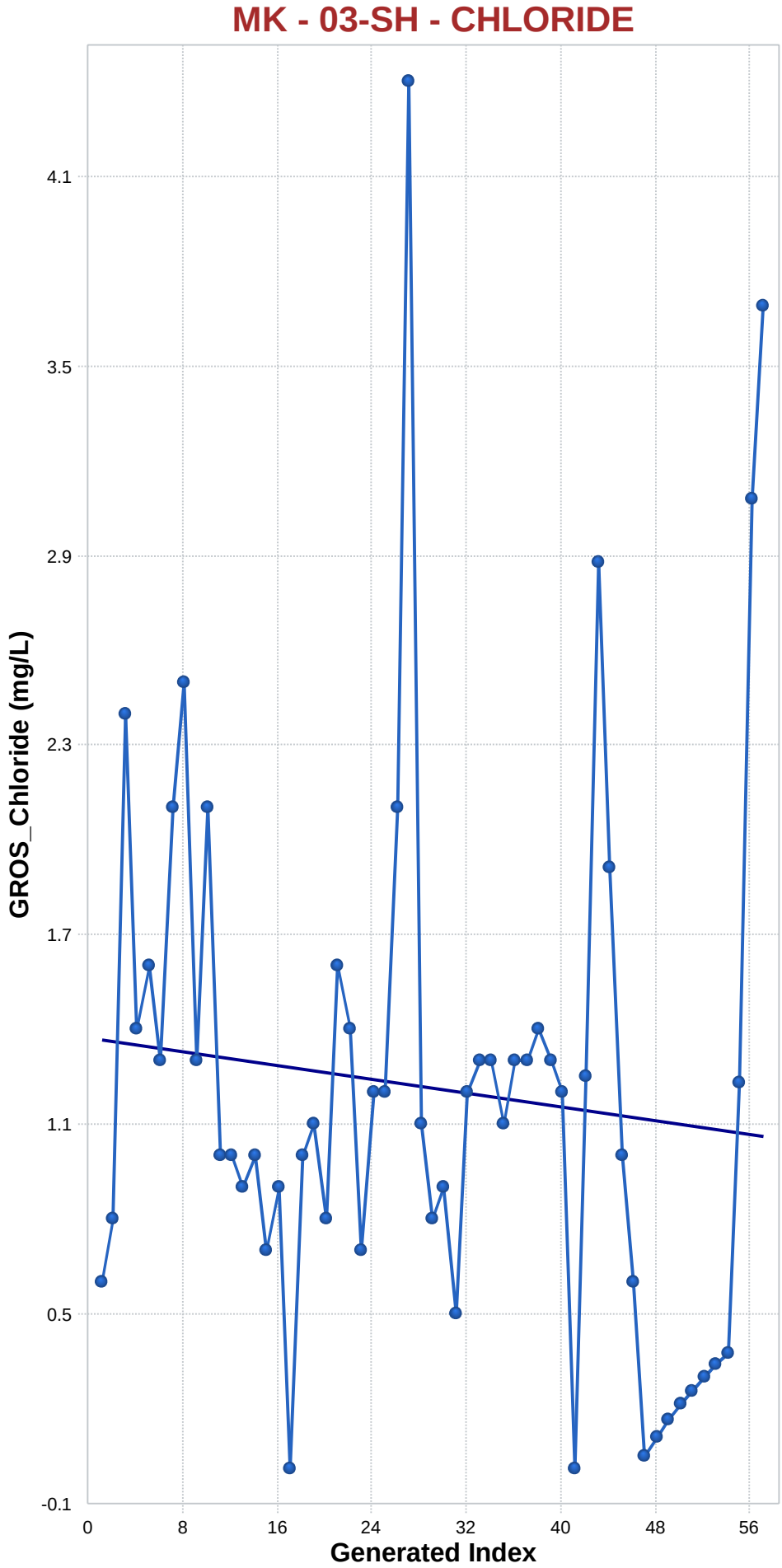
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	145.2113
Standardized Value of S	4.4211
M-K Test Value (S)	643
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.7352
OLS Regression Intercept	69.3575

Statistically significant evidence of an increasing trend at the specified level of significance.



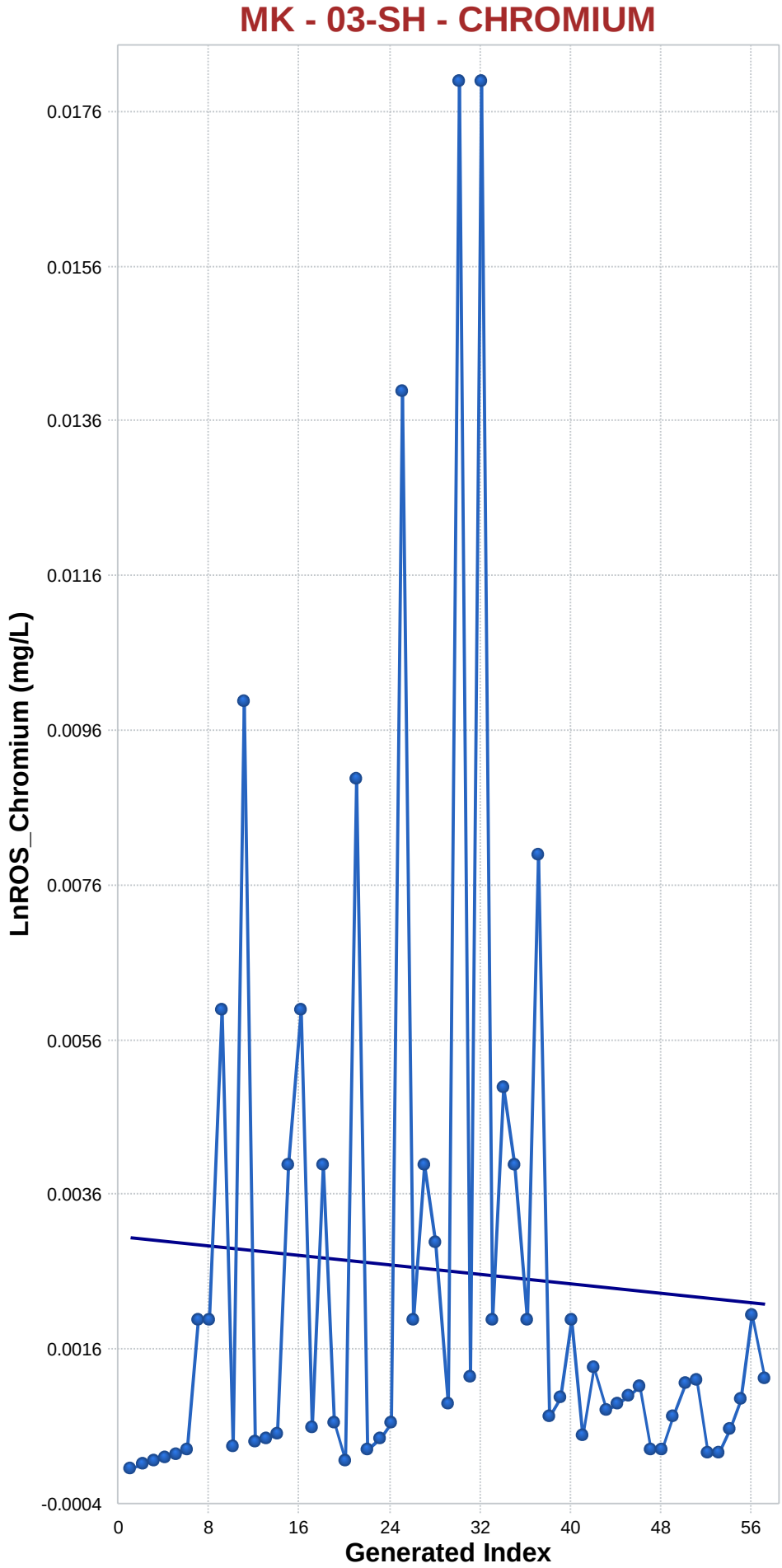
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	144.9506
Standardized Value of S	-1.3591
M-K Test Value (S)	-198
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0871

OLS Regression Line (Blue)

OLS Regression Slope	-0.0055
OLS Regression Intercept	1.3745

Insufficient statistical evidence of a significant trend at the specified level of significance.



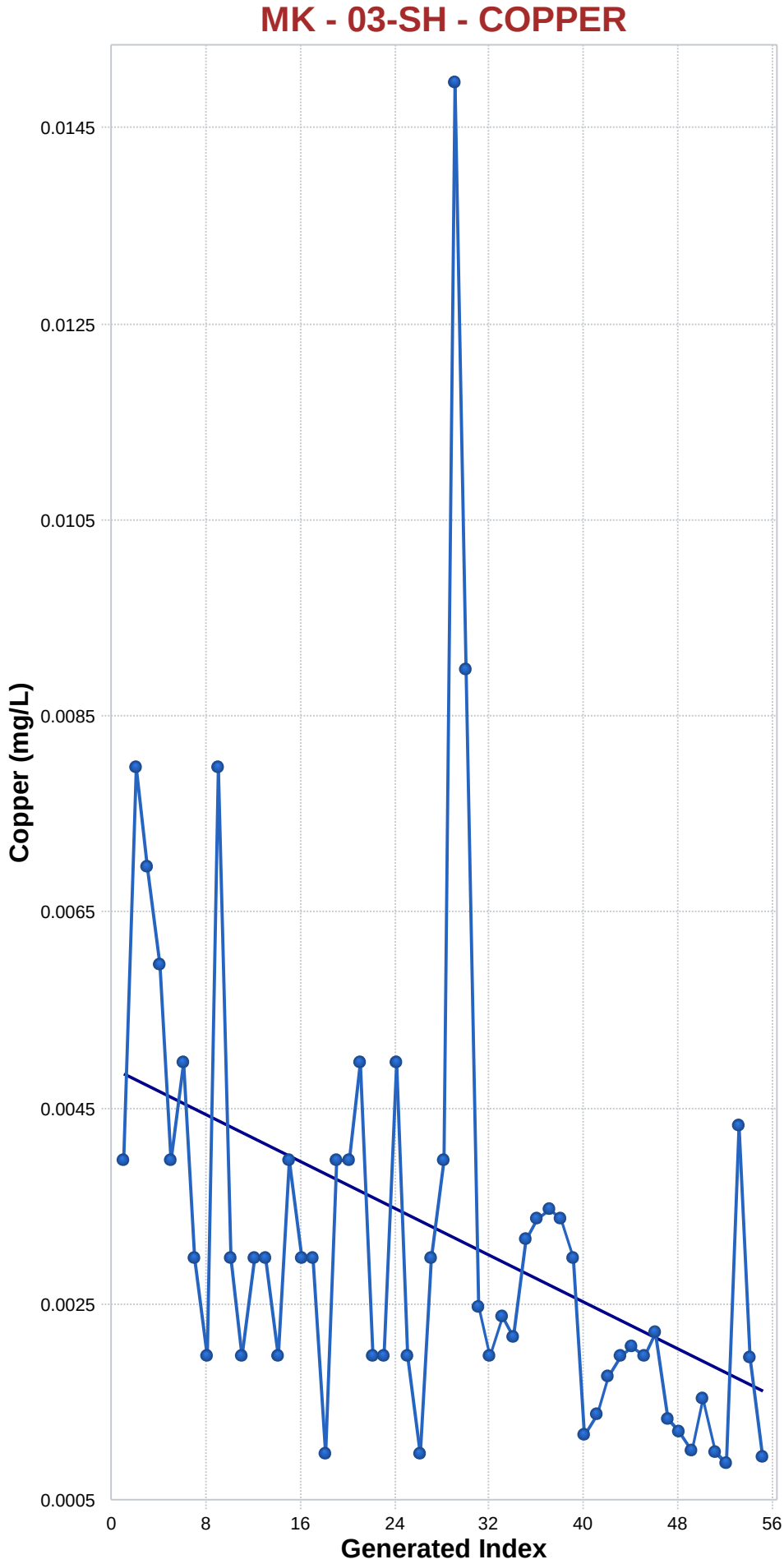
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	145.1195
Standardized Value of S	1.0612
M-K Test Value (S)	155
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1443

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0031

Insufficient statistical evidence of a significant trend at the specified level of significance.



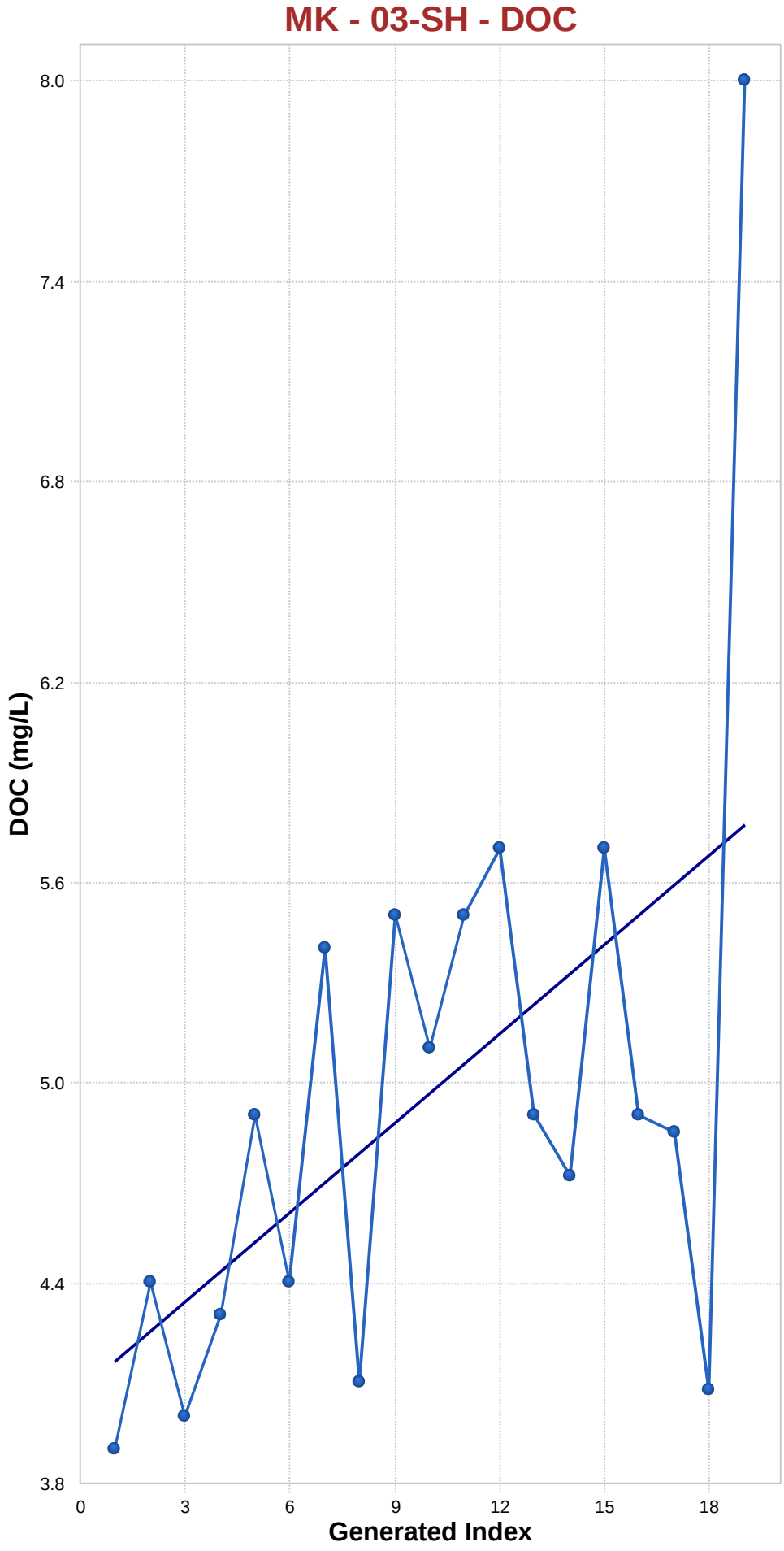
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.0499
Standardized Value of S	-4.3123
M-K Test Value (S)	-592
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0049

Statistically significant evidence of a decreasing trend at the specified level of significance.



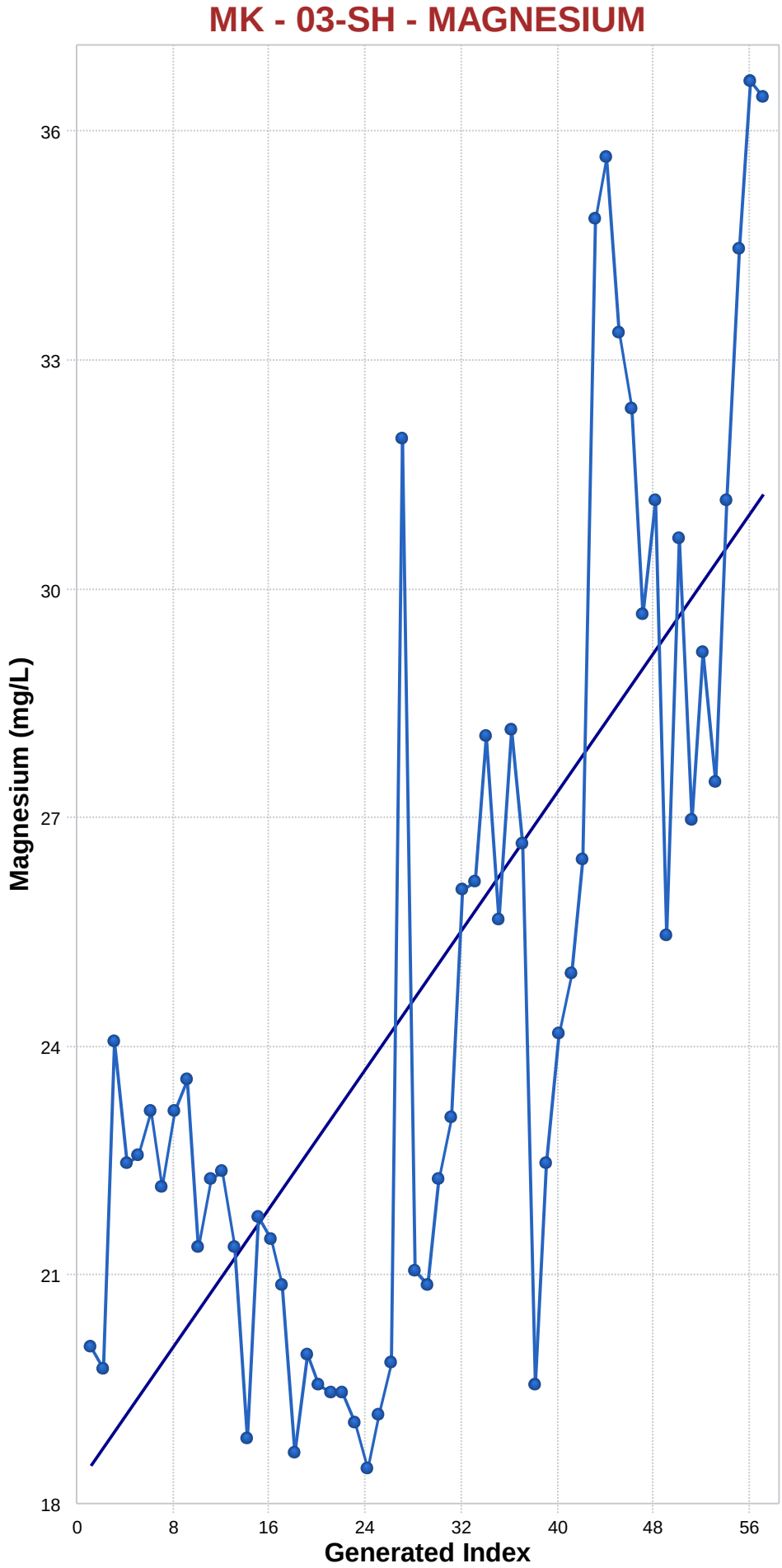
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4664
Standardized Value of S	2.1078
M-K Test Value (S)	61
Tabulated p-value	0.0170
Approximate p-value	0.0175

OLS Regression Line (Blue)

OLS Regression Slope	0.0892
OLS Regression Intercept	4.0733

Statistically significant evidence of an increasing trend at the specified level of significance.



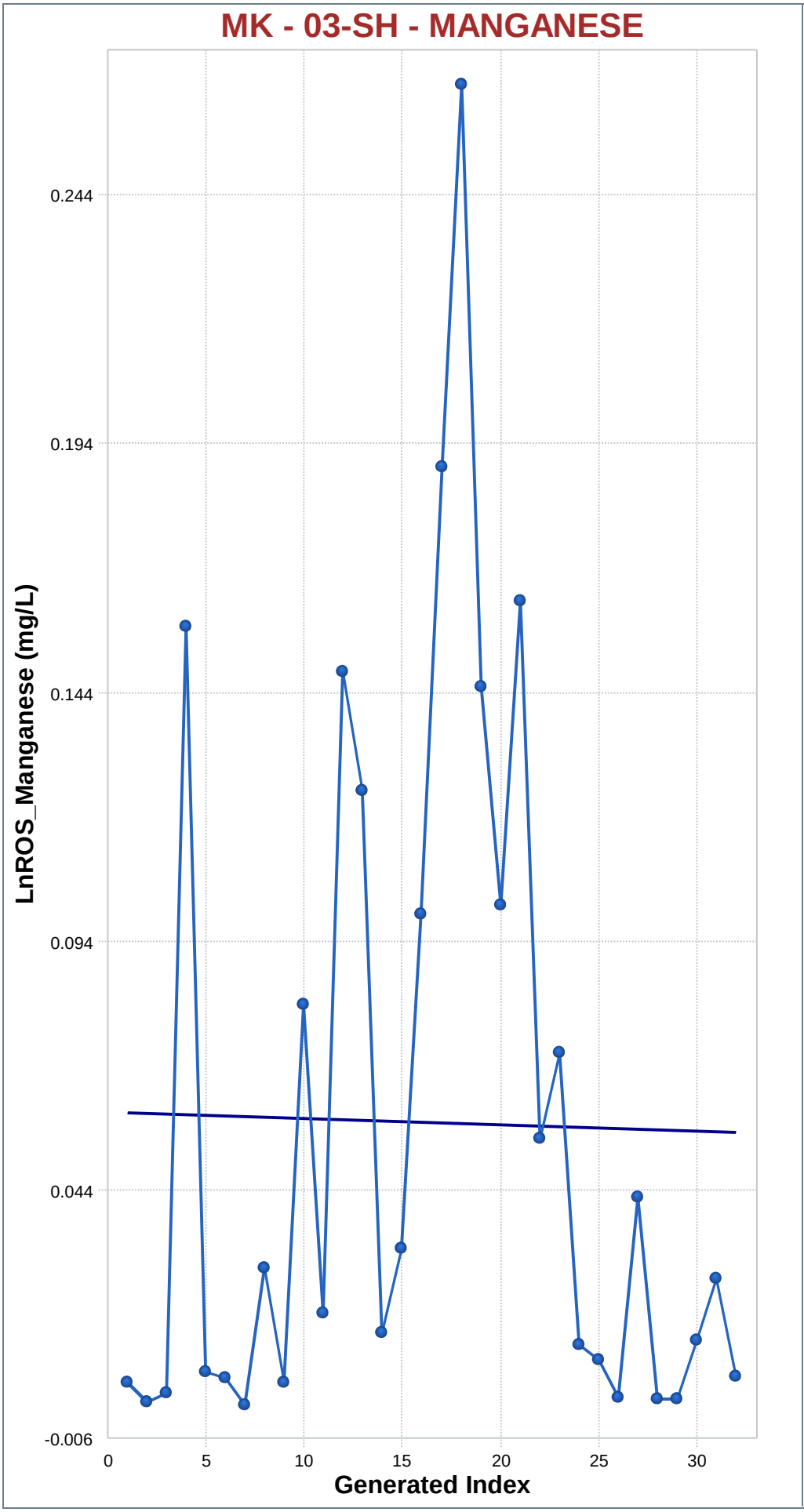
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	145.2400
Standardized Value of S	4.9780
M-K Test Value (S)	724
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.2277
OLS Regression Intercept	18.1130

Statistically significant evidence of an increasing trend at the specified level of significance.



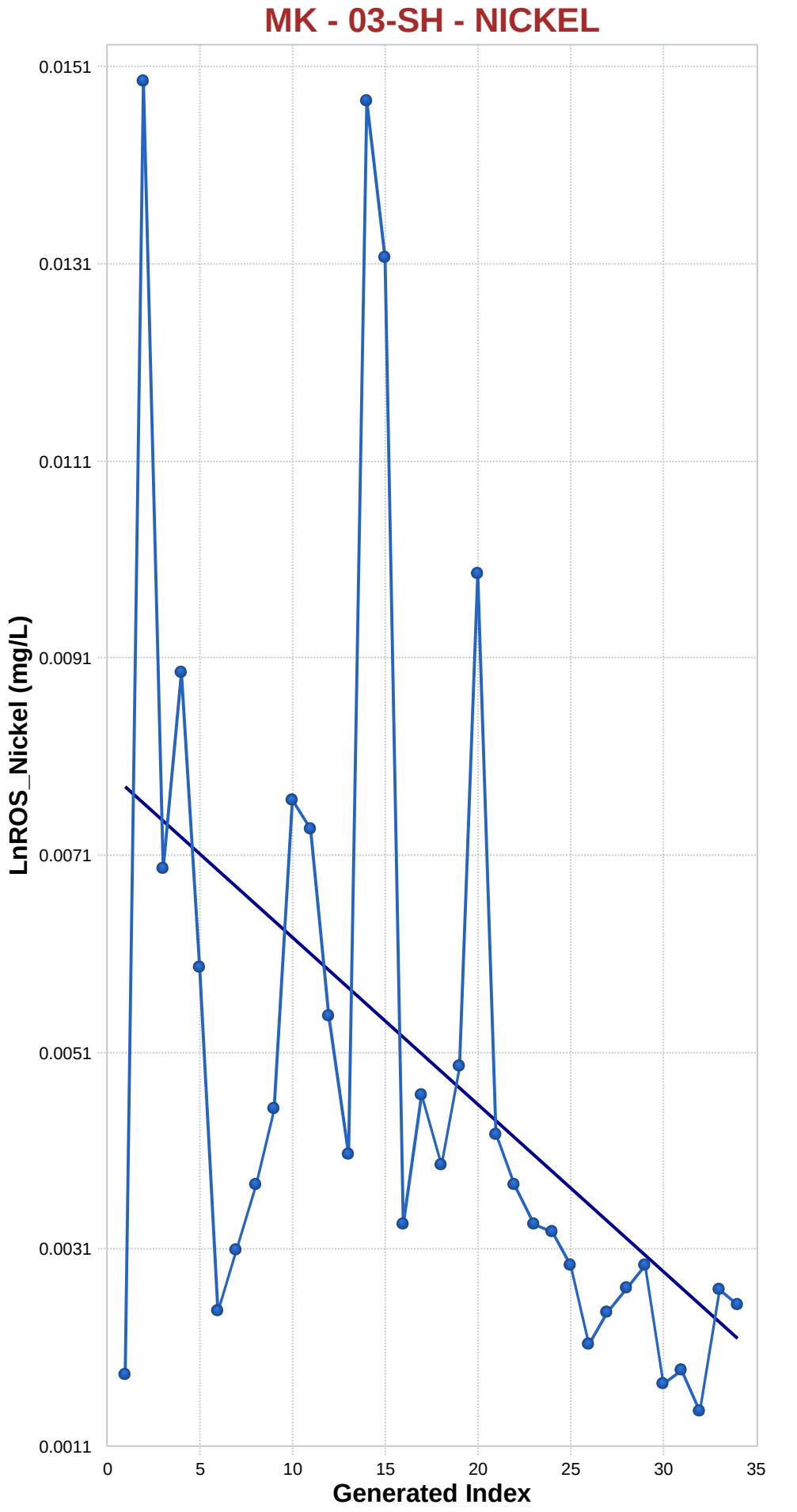
Mann-Kendall Trend Analysis

n	32
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	61.6577
Standardized Value of S	0.2271
M-K Test Value (S)	15
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4102

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0595

Insufficient statistical evidence of a significant trend at the specified level of significance.



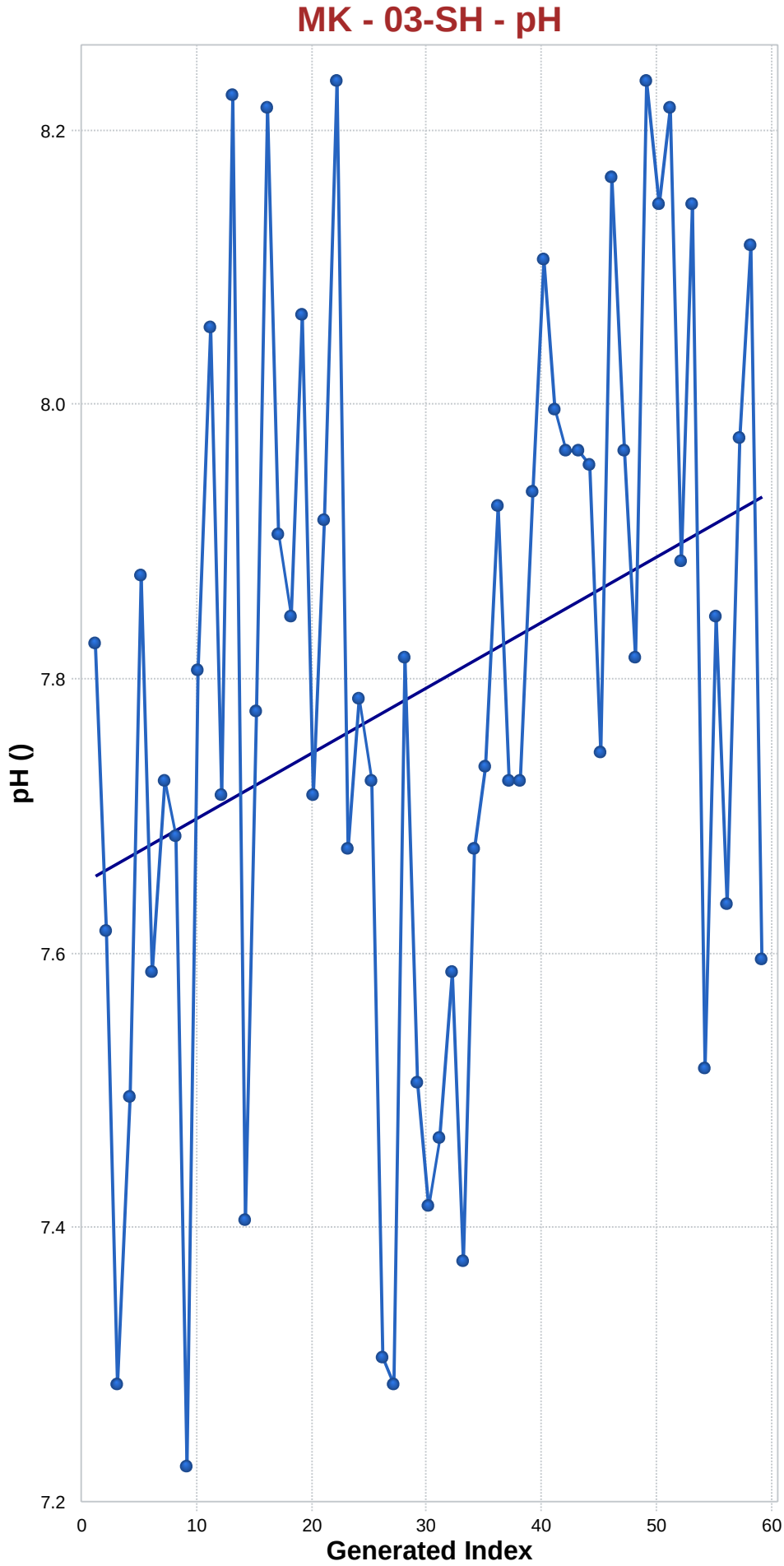
Mann-Kendall Trend Analysis

n	34
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	67.4487
Standardized Value of S	-3.8103
M-K Test Value (S)	-258
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0080

Statistically significant evidence of a decreasing trend at the specified level of significance.



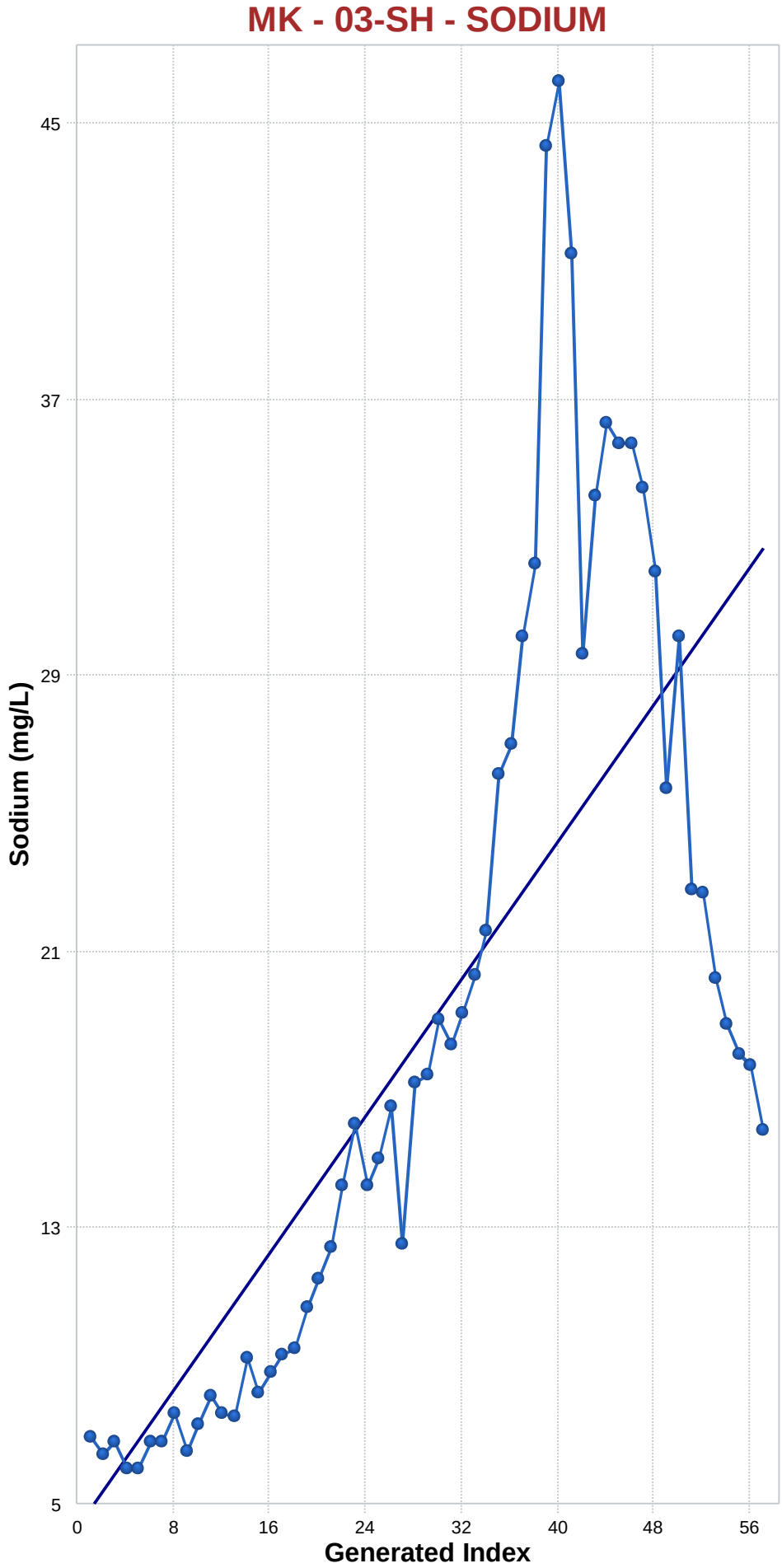
Mann-Kendall Trend Analysis

n	59
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	152.8474
Standardized Value of S	2.5908
M-K Test Value (S)	397
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0048

OLS Regression Line (Blue)

OLS Regression Slope	0.0048
OLS Regression Intercept	7.6855

Statistically significant evidence of an increasing trend at the specified level of significance.



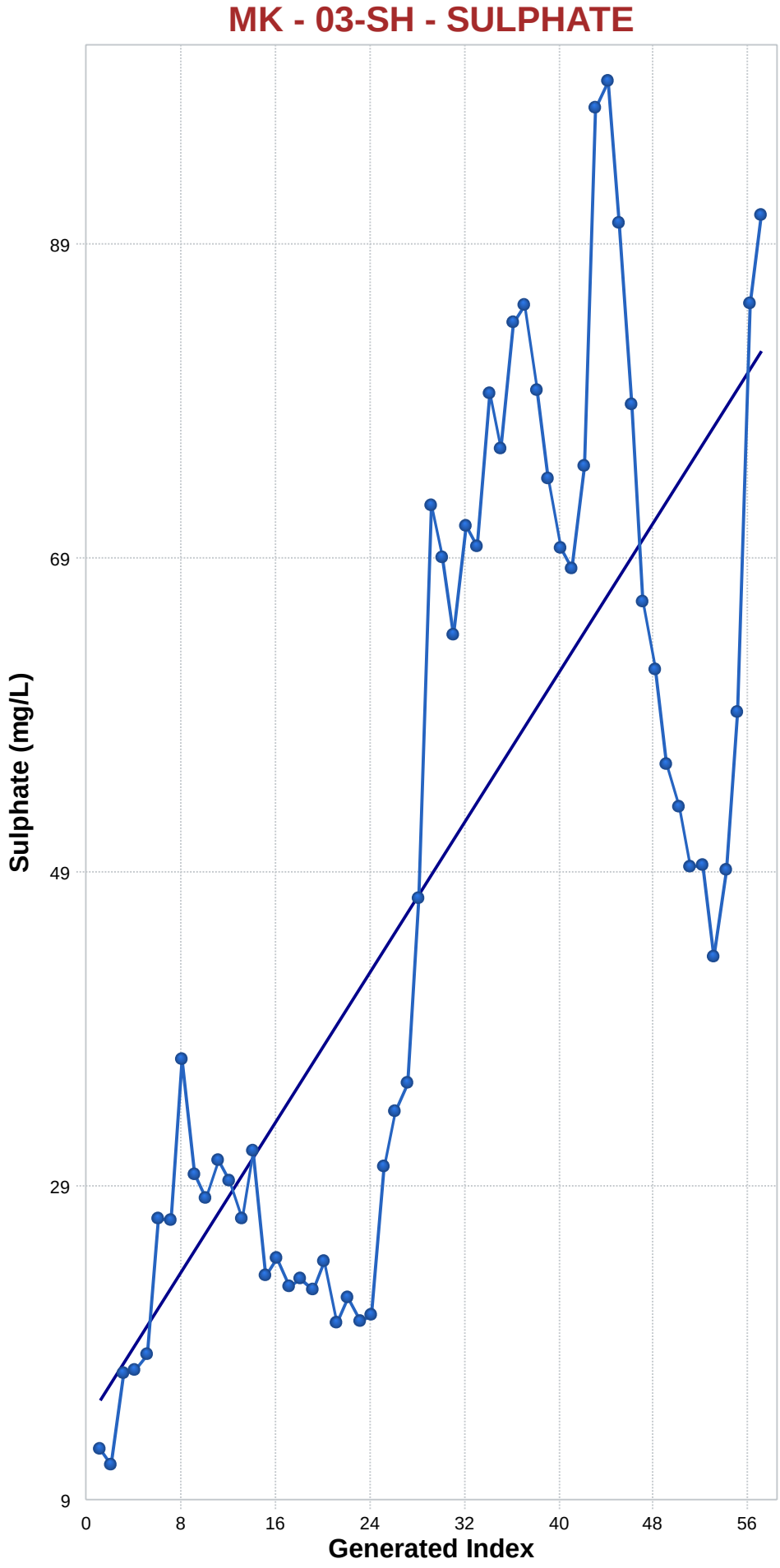
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	145.2377
Standardized Value of S	7.5118
M-K Test Value (S)	1,092
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.4975
OLS Regression Intercept	4.5122

Statistically significant evidence of an increasing trend at the specified level of significance.



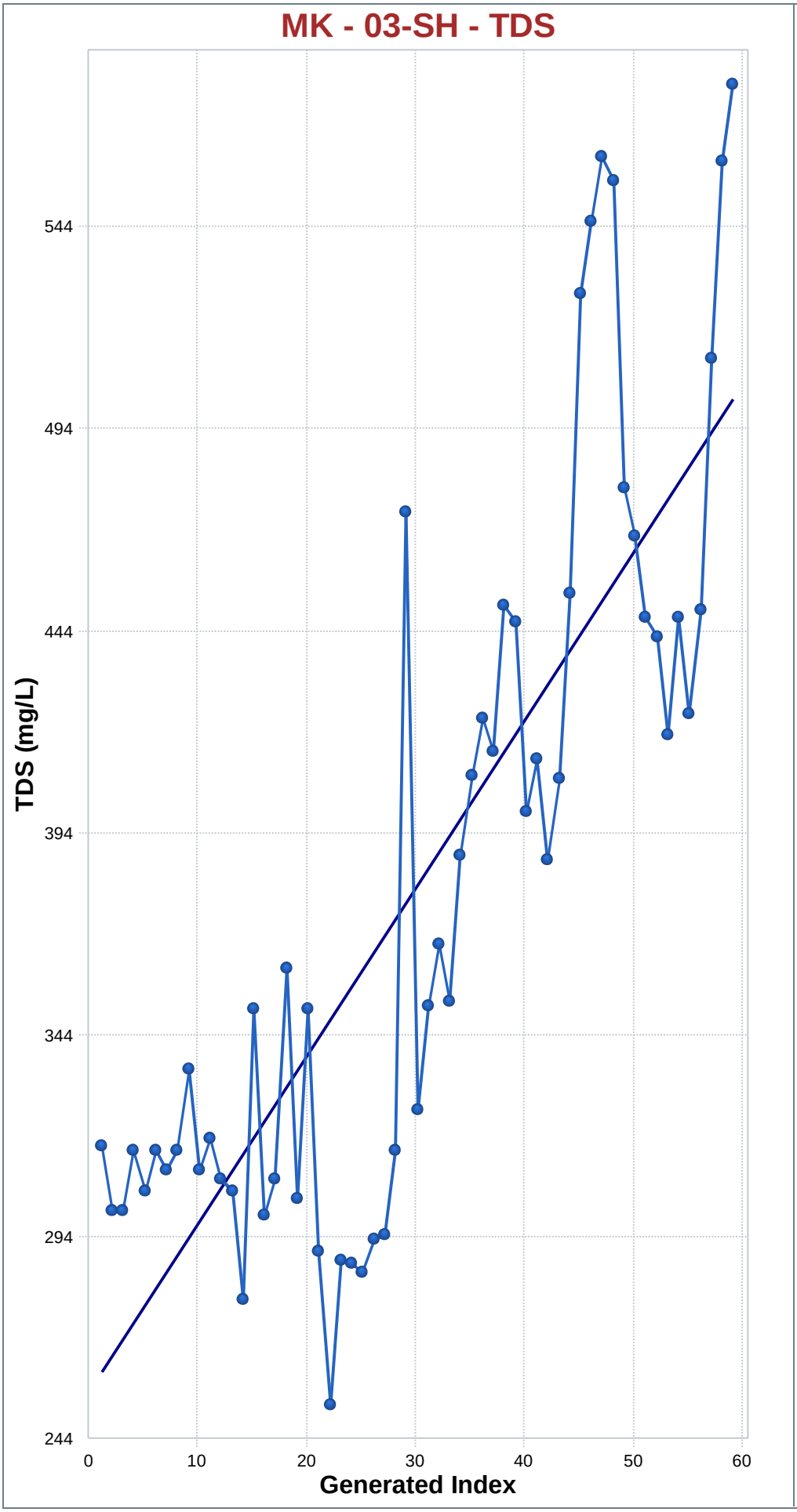
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	145.2641
Standardized Value of S	5.6311
M-K Test Value (S)	819
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.1939
OLS Regression Intercept	13.9092

Statistically significant evidence of an increasing trend at the specified level of significance.



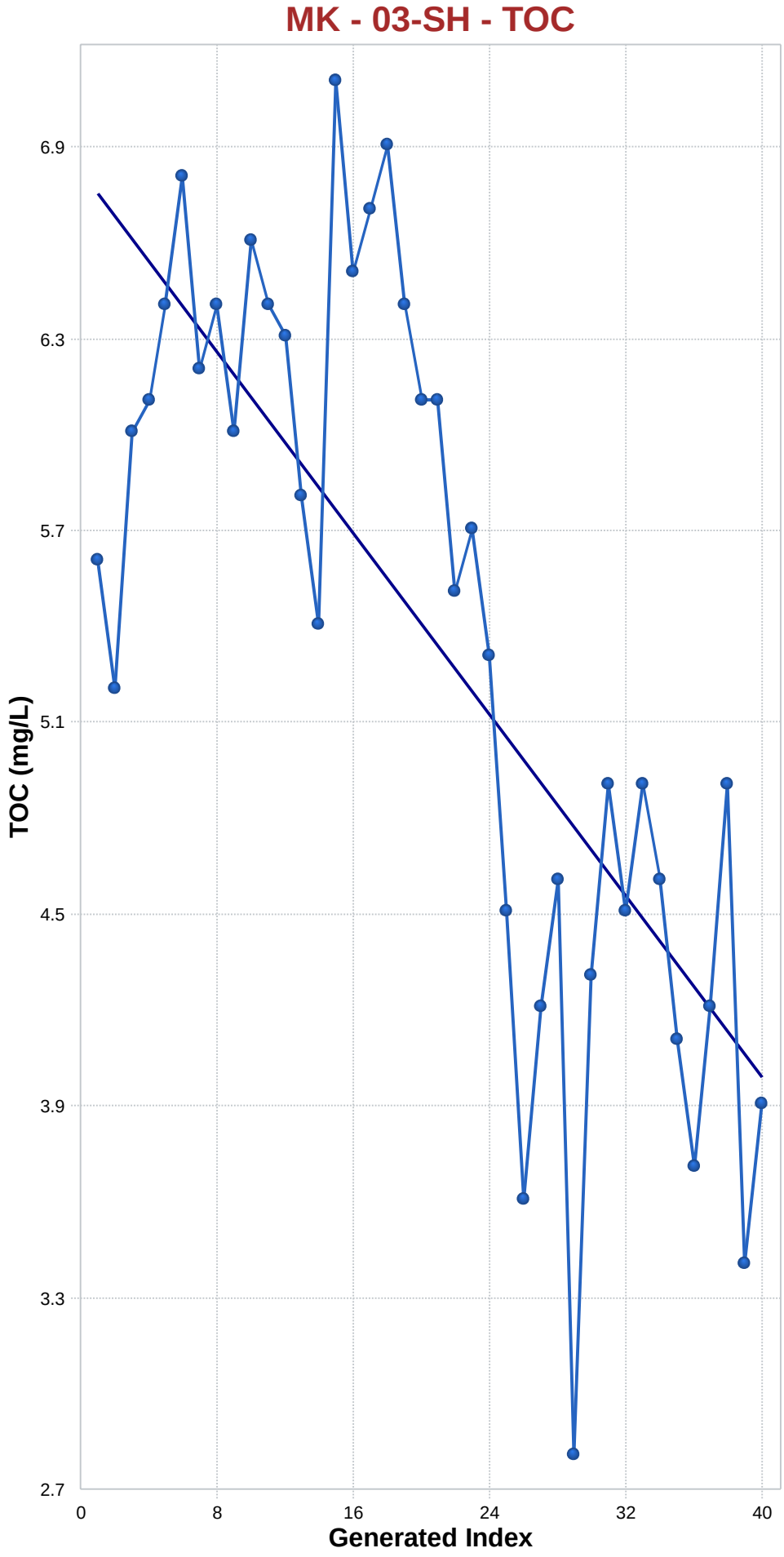
Mann-Kendall Trend Analysis

n	59
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	152.8692
Standardized Value of S	6.4238
M-K Test Value (S)	983
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	4.1523
OLS Regression Intercept	256.2291

Statistically significant evidence of an increasing trend at the specified level of significance.



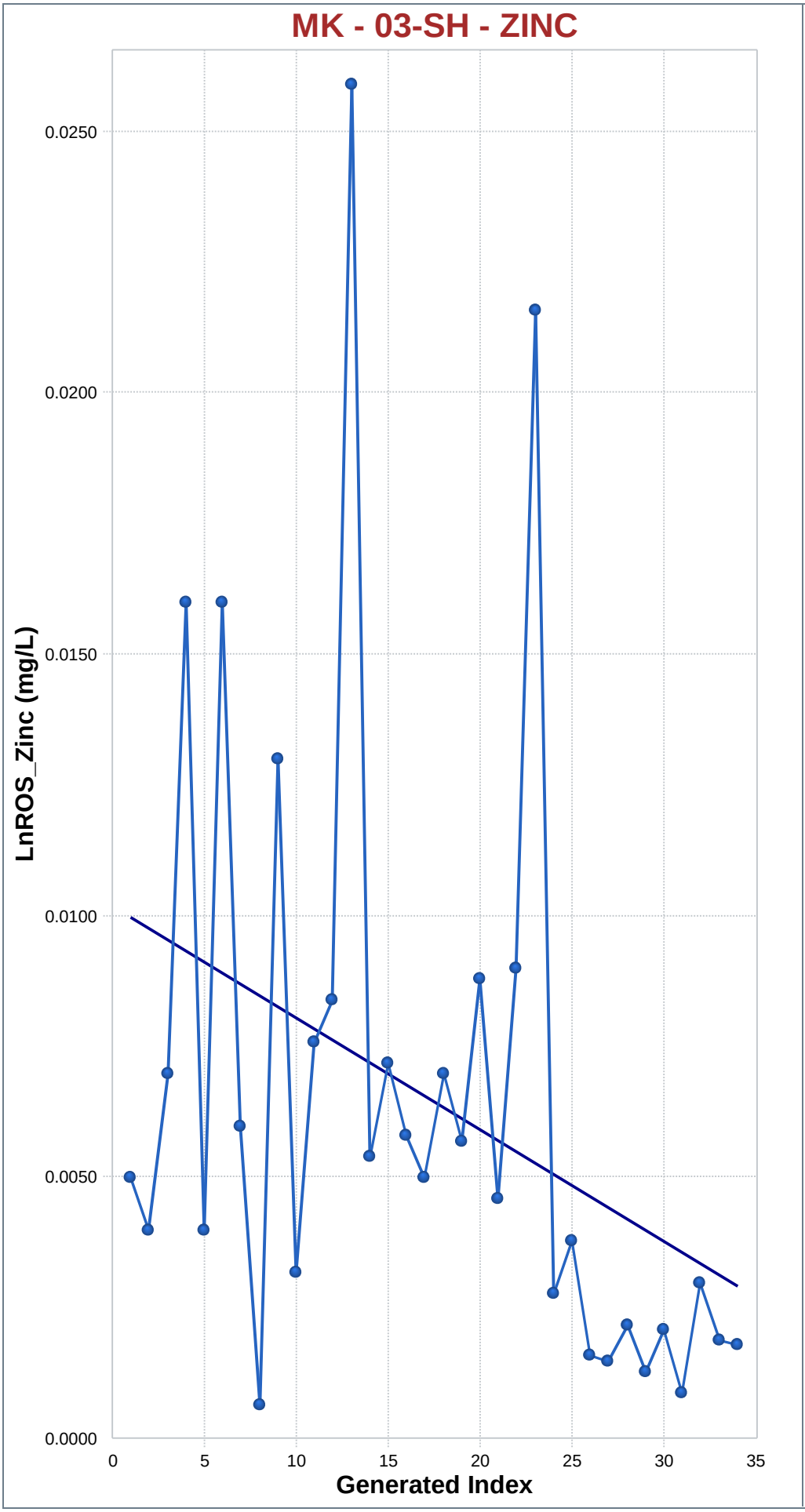
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.7127
Standardized Value of S	-4.5618
M-K Test Value (S)	-392
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0708
OLS Regression Intercept	6.8169

Statistically significant evidence of a decreasing trend at the specified level of significance.



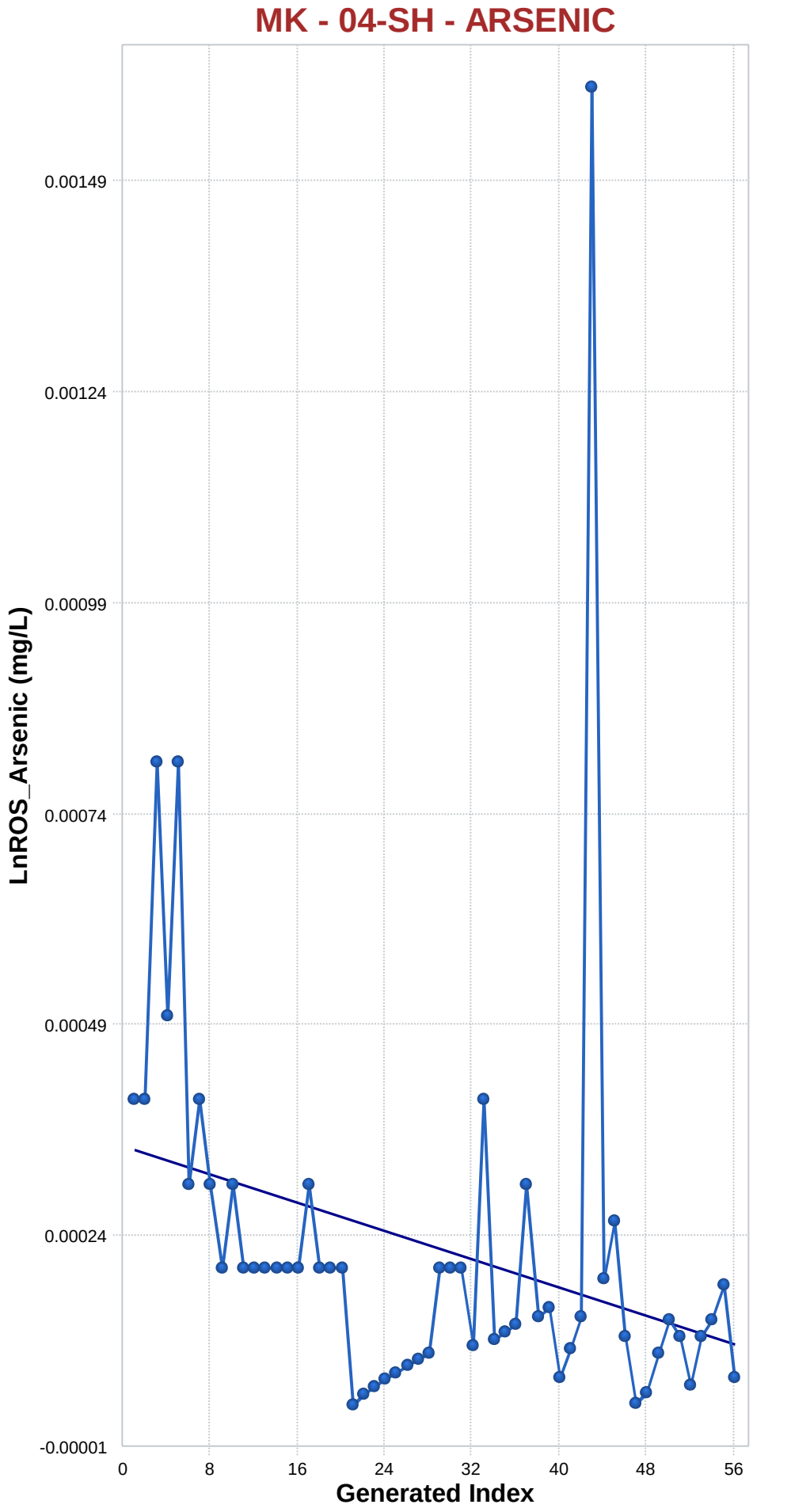
Mann-Kendall Trend Analysis

n	34
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	67.4265
Standardized Value of S	-3.0552
M-K Test Value (S)	-207
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0011

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0102

Statistically significant evidence of a decreasing trend at the specified level of significance.



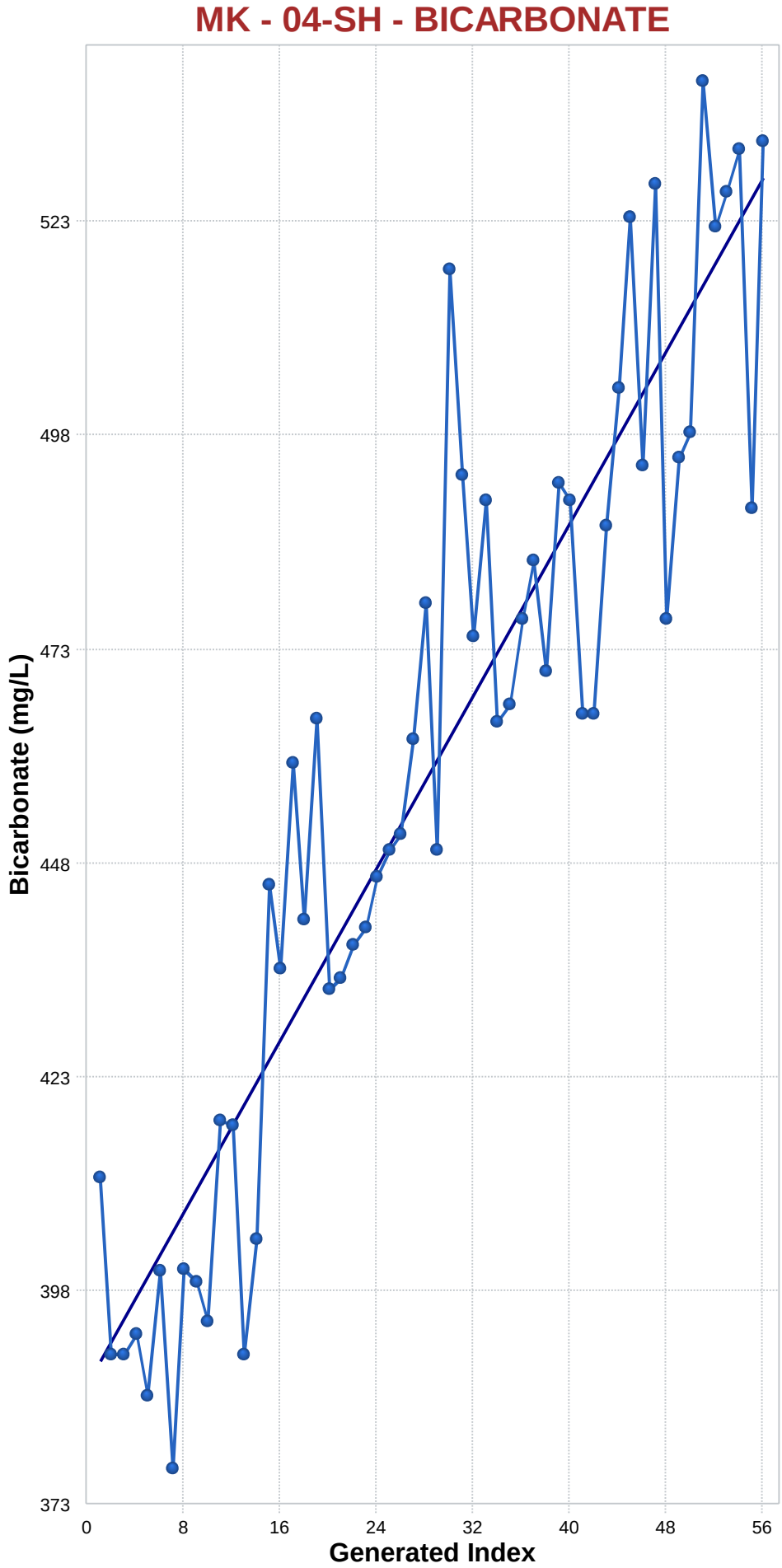
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	140.4291
Standardized Value of S	-4.0732
M-K Test Value (S)	-573
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0003

Statistically significant evidence of a decreasing trend at the specified level of significance.



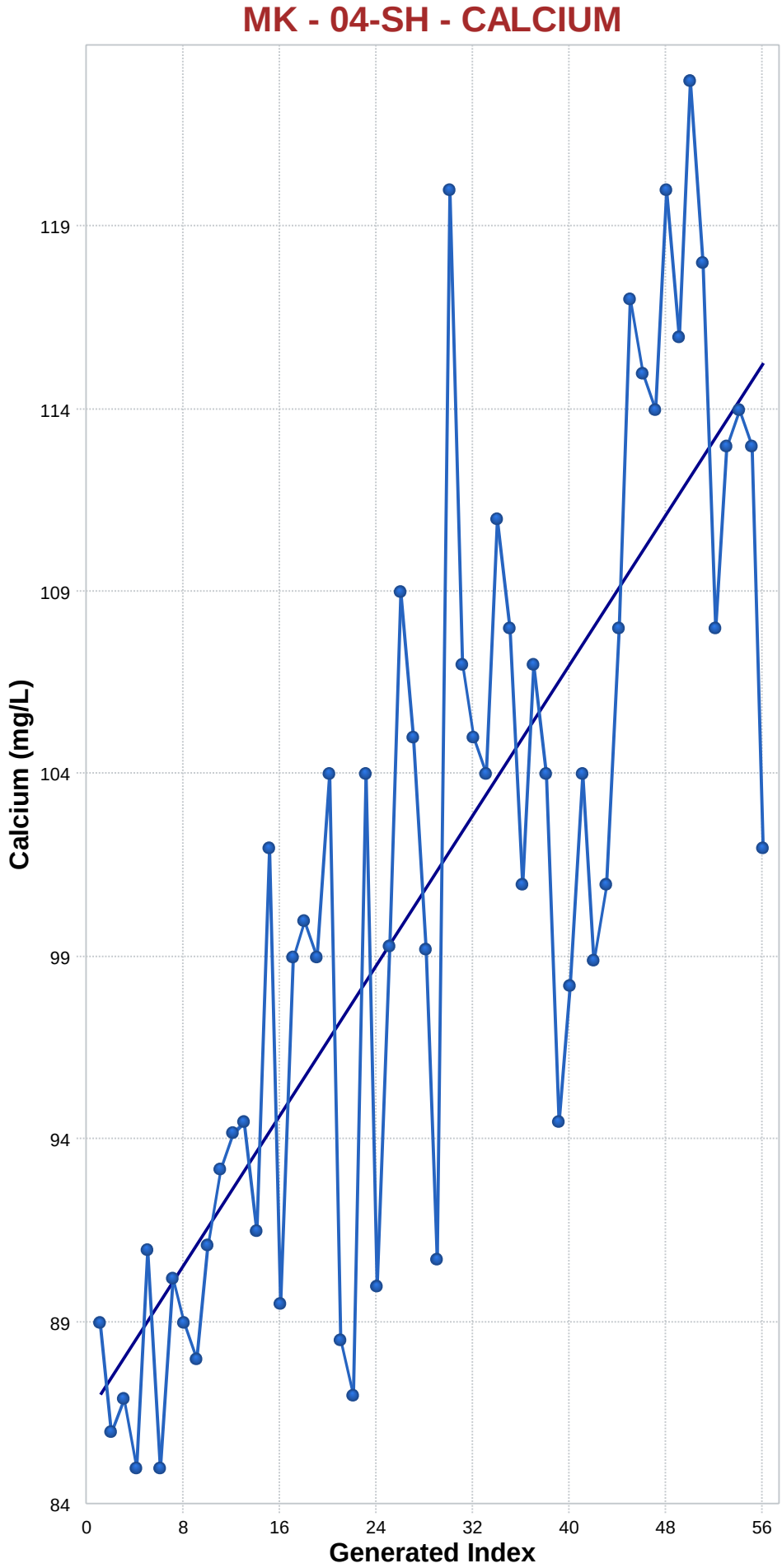
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4650
Standardized Value of S	8.3413
M-K Test Value (S)	1,181
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	2.5181
OLS Regression Intercept	386.7563

Statistically significant evidence of an increasing trend at the specified level of significance.



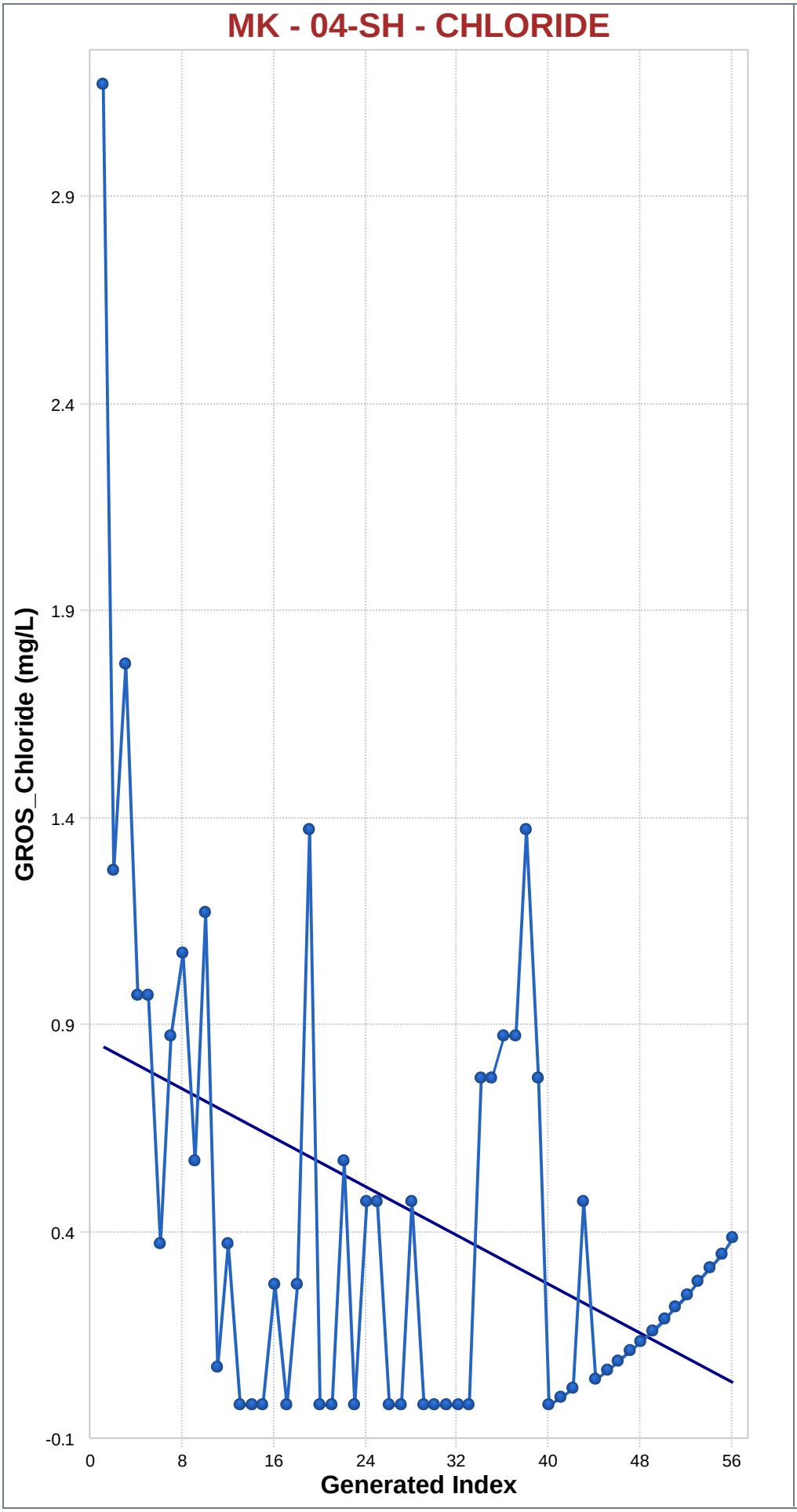
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.3813
Standardized Value of S	6.5426
M-K Test Value (S)	926
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.5136
OLS Regression Intercept	86.5312

Statistically significant evidence of an increasing trend at the specified level of significance.



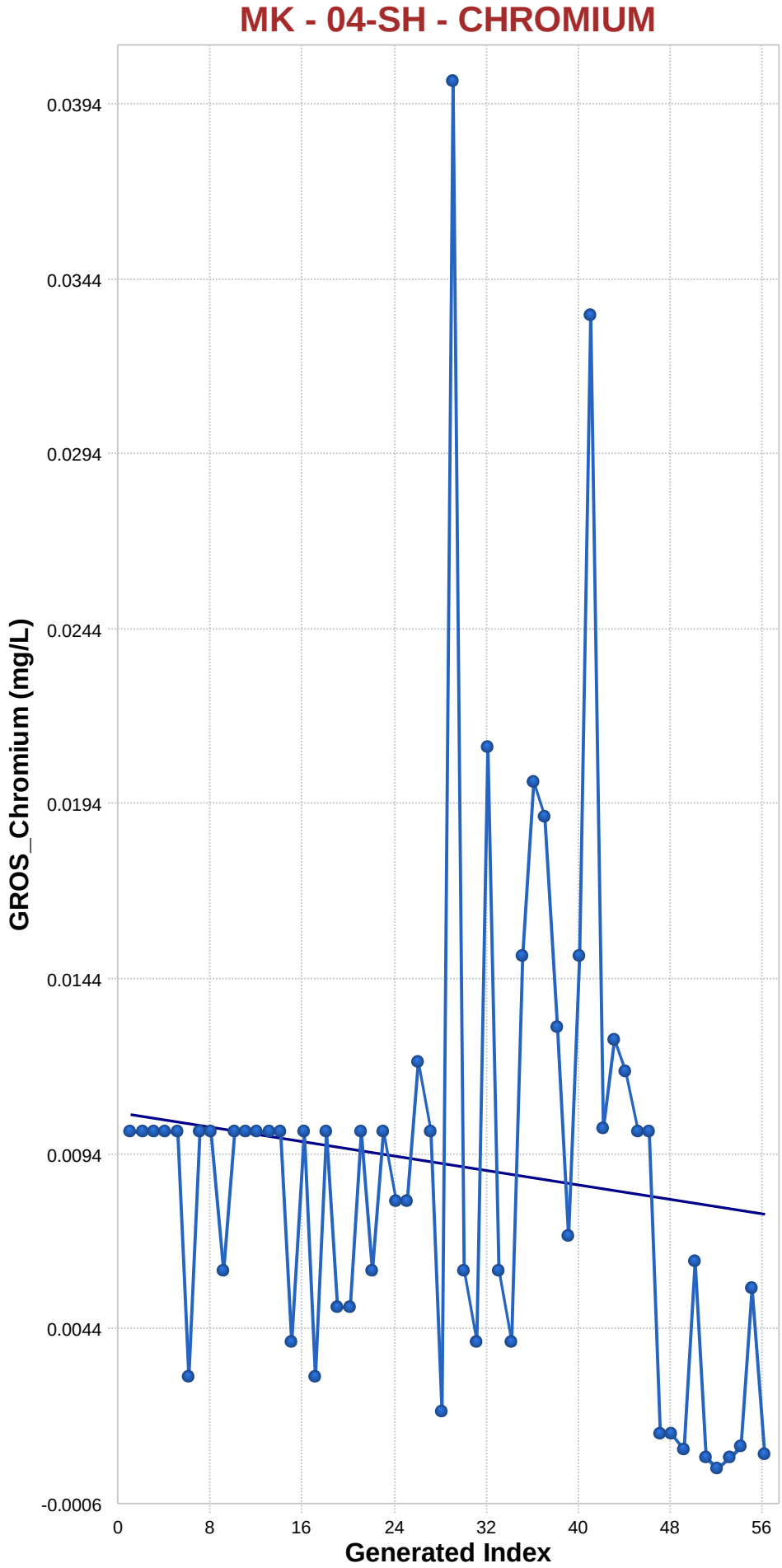
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	140.2331
Standardized Value of S	-1.1766
M-K Test Value (S)	-166
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1197

OLS Regression Line (Blue)

OLS Regression Slope	-0.0148
OLS Regression Intercept	0.8917

Insufficient statistical evidence of a significant trend at the specified level of significance.



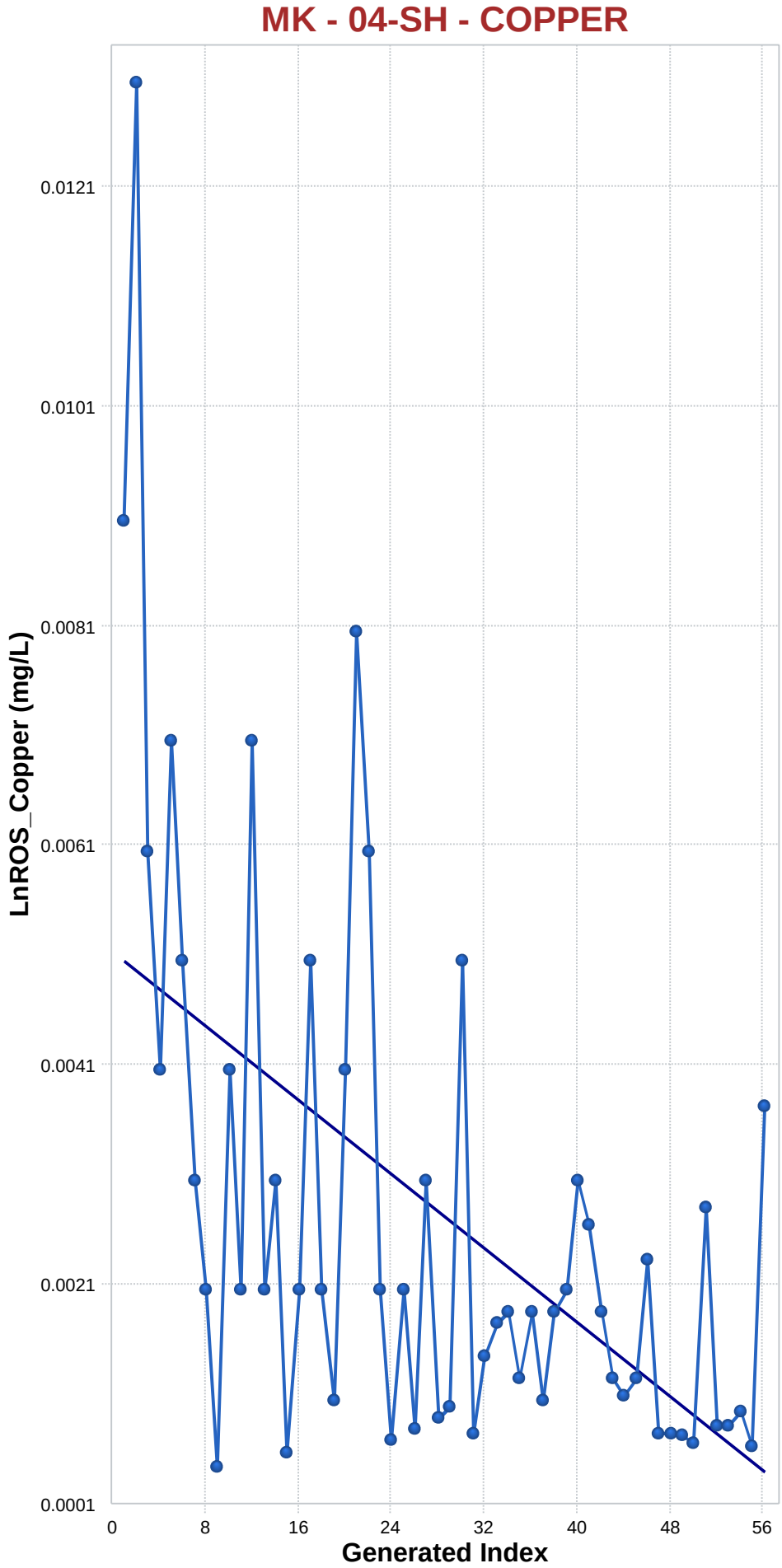
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	138.5123
Standardized Value of S	-1.7905
M-K Test Value (S)	-249
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0367

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0106

Statistically significant evidence of a decreasing trend at the specified level of significance.



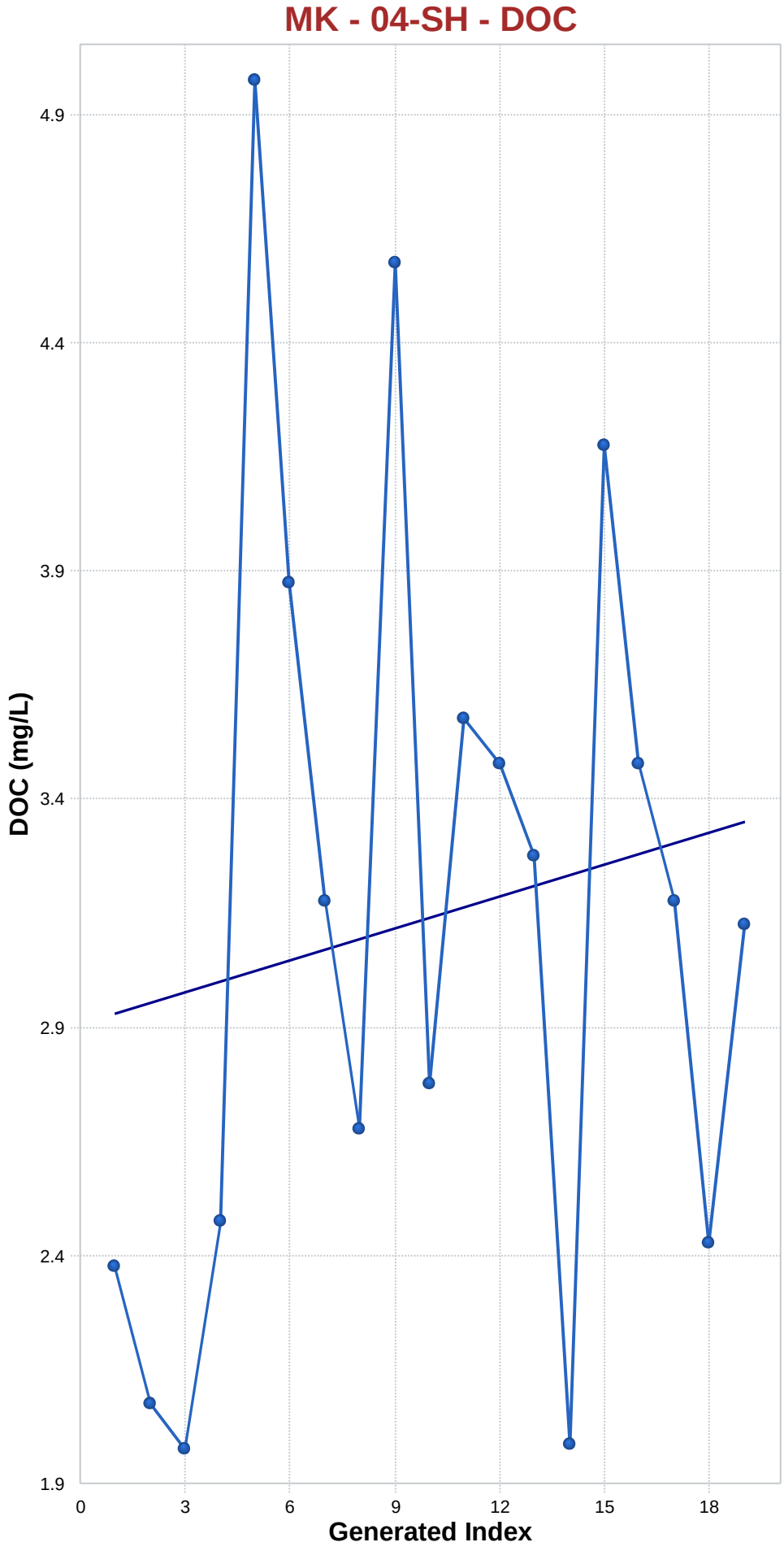
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.1430
Standardized Value of S	-4.1731
M-K Test Value (S)	-590
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0051

Statistically significant evidence of a decreasing trend at the specified level of significance.



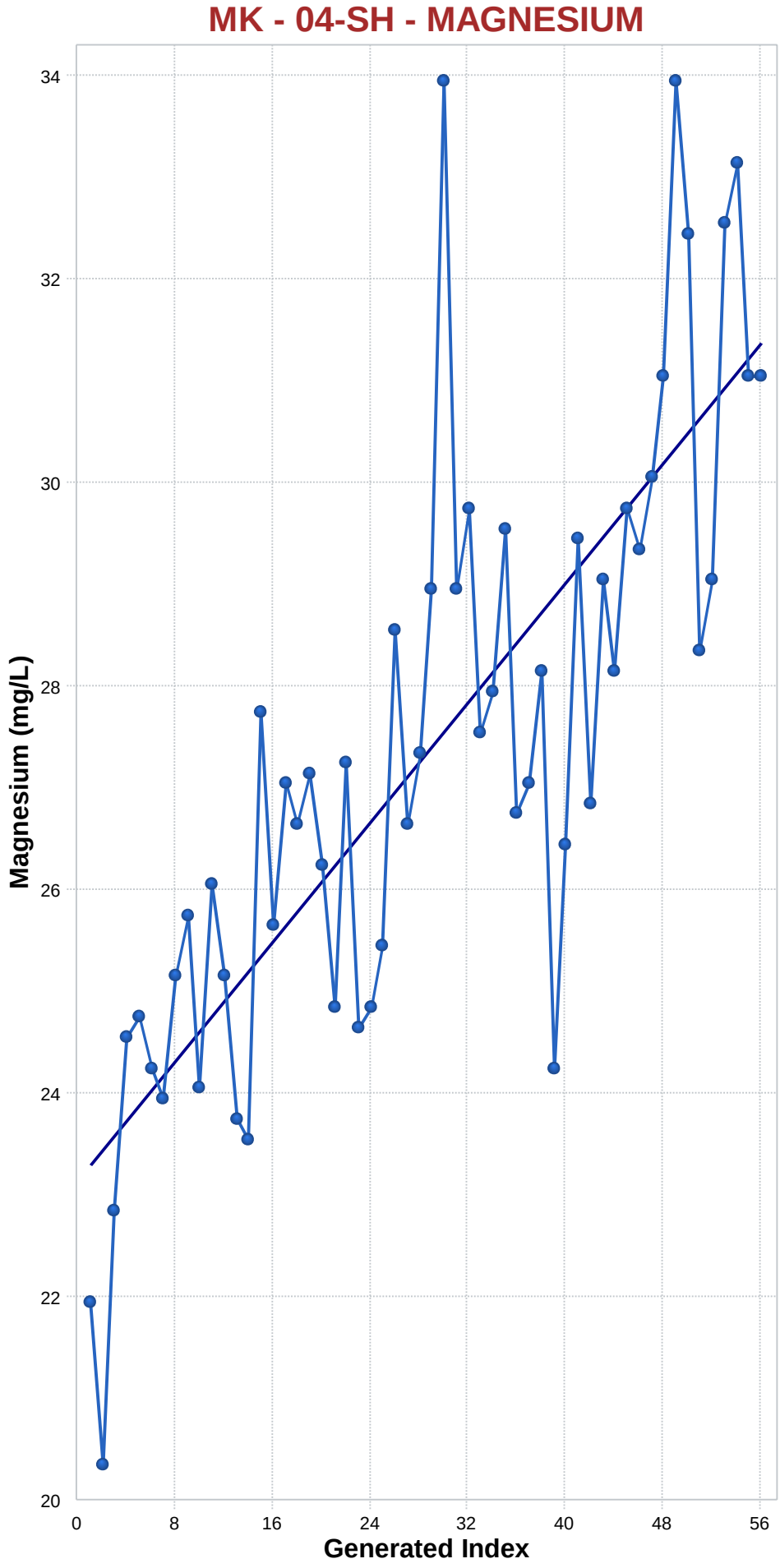
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	0.5605
M-K Test Value (S)	17
Tabulated p-value	0.2900
Approximate p-value	0.2876

OLS Regression Line (Blue)

OLS Regression Slope	0.0233
OLS Regression Intercept	2.9305

Insufficient statistical evidence of a significant trend at the specified level of significance.



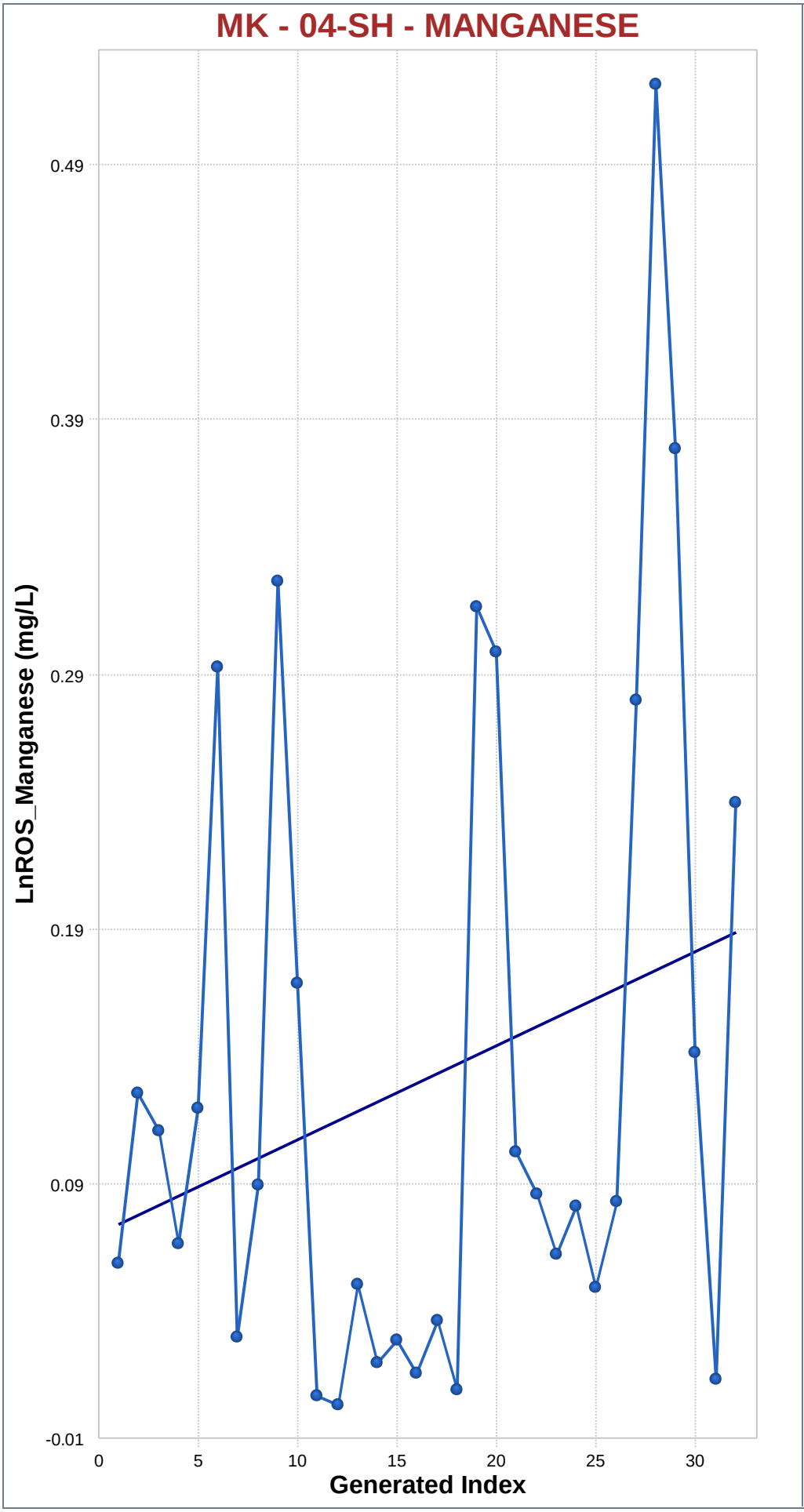
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4437
Standardized Value of S	7.0134
M-K Test Value (S)	993
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.1471
OLS Regression Intercept	23.2941

Statistically significant evidence of an increasing trend at the specified level of significance.



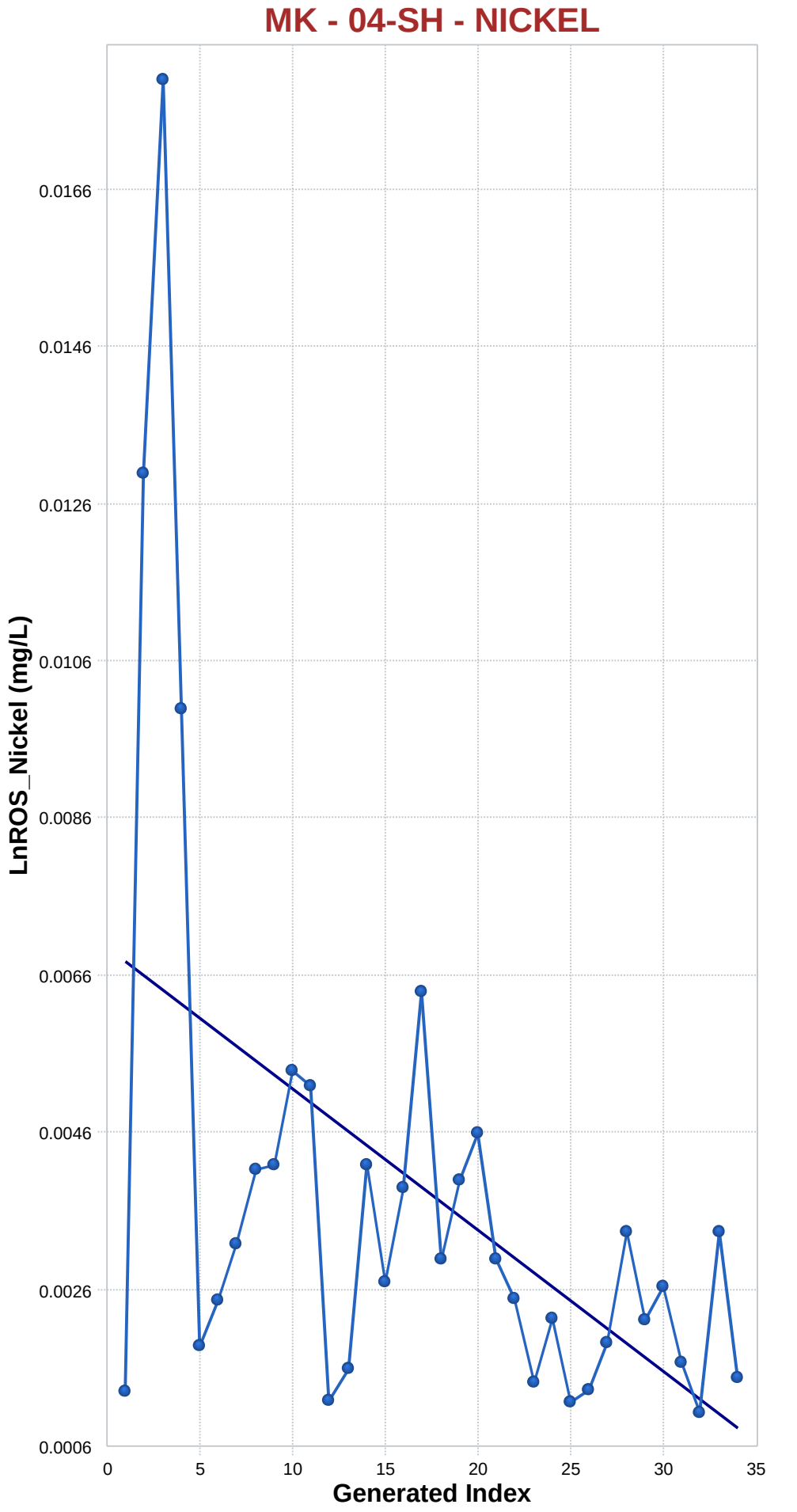
Mann-Kendall Trend Analysis

n	32
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	61.6658
Standardized Value of S	0.7622
M-K Test Value (S)	48
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2230

OLS Regression Line (Blue)

OLS Regression Slope	0.0037
OLS Regression Intercept	0.0730

Insufficient statistical evidence of a significant trend at the specified level of significance.



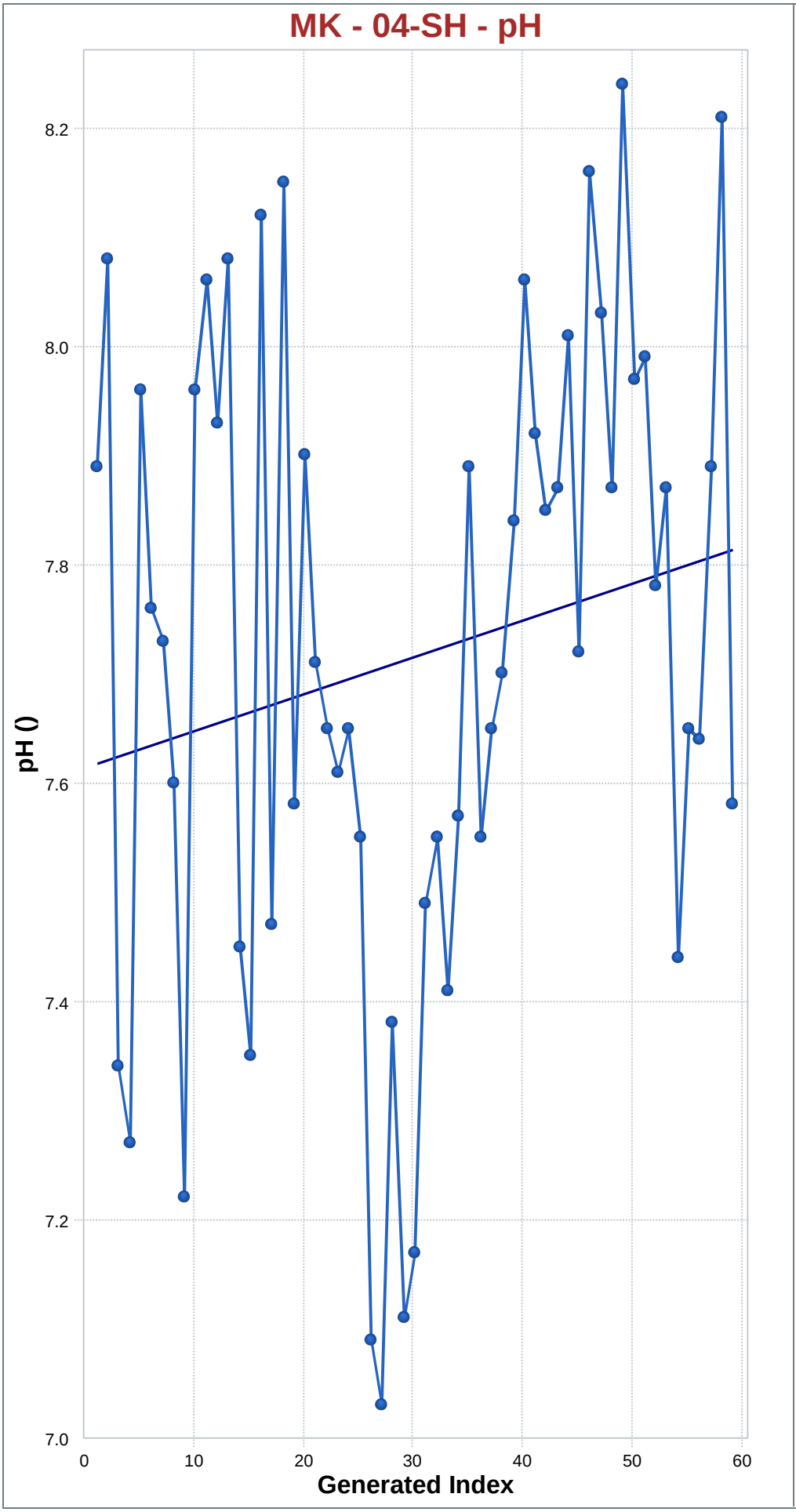
Mann-Kendall Trend Analysis

n	34
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	67.4413
Standardized Value of S	-2.6986
M-K Test Value (S)	-183
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0035

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0070

Statistically significant evidence of a decreasing trend at the specified level of significance.



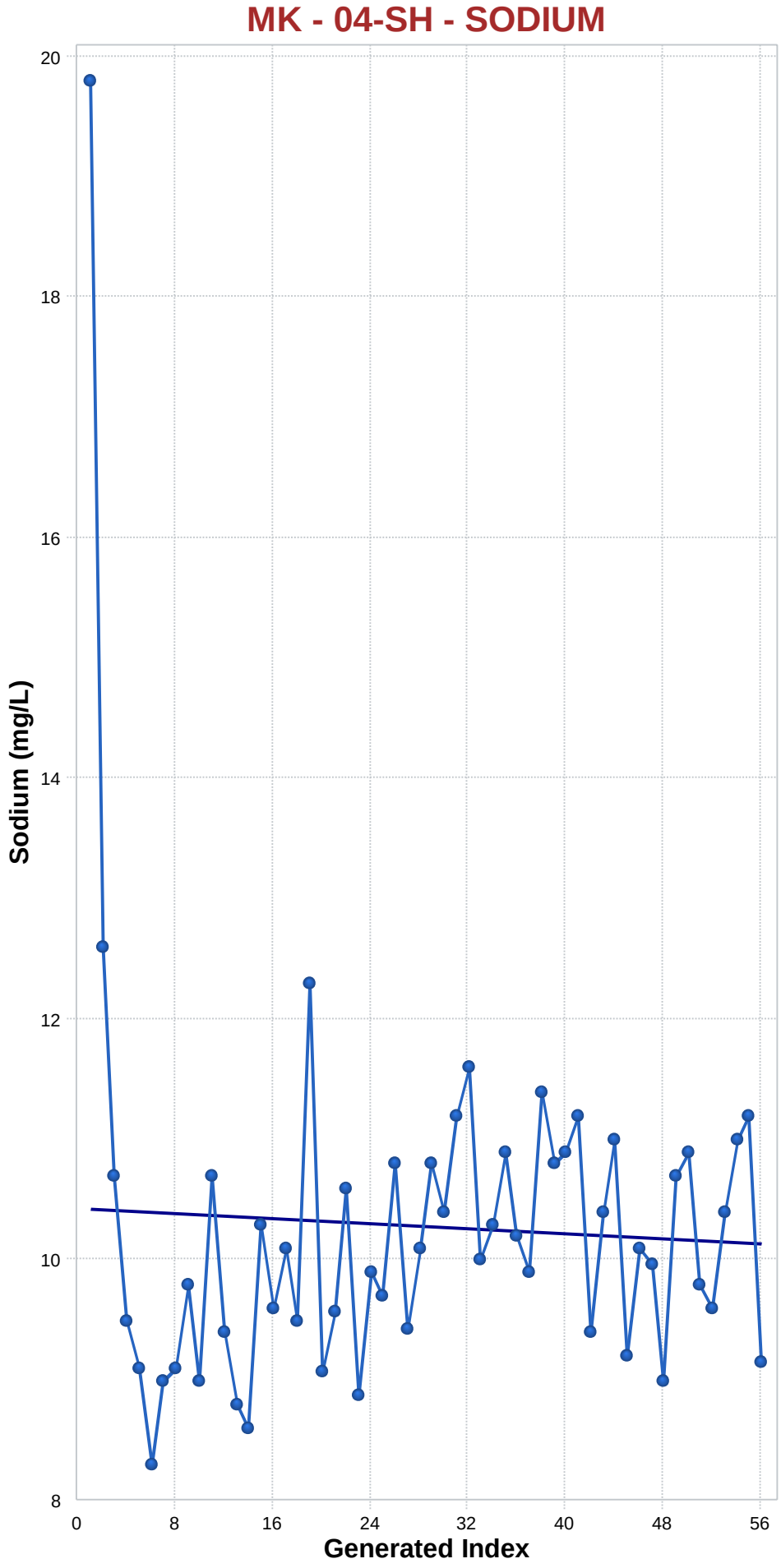
Mann-Kendall Trend Analysis

n	59
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	152.8398
Standardized Value of S	1.4198
M-K Test Value (S)	218
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0778

OLS Regression Line (Blue)

OLS Regression Slope	0.0034
OLS Regression Intercept	7.6448

Insufficient statistical evidence of a significant trend at the specified level of significance.



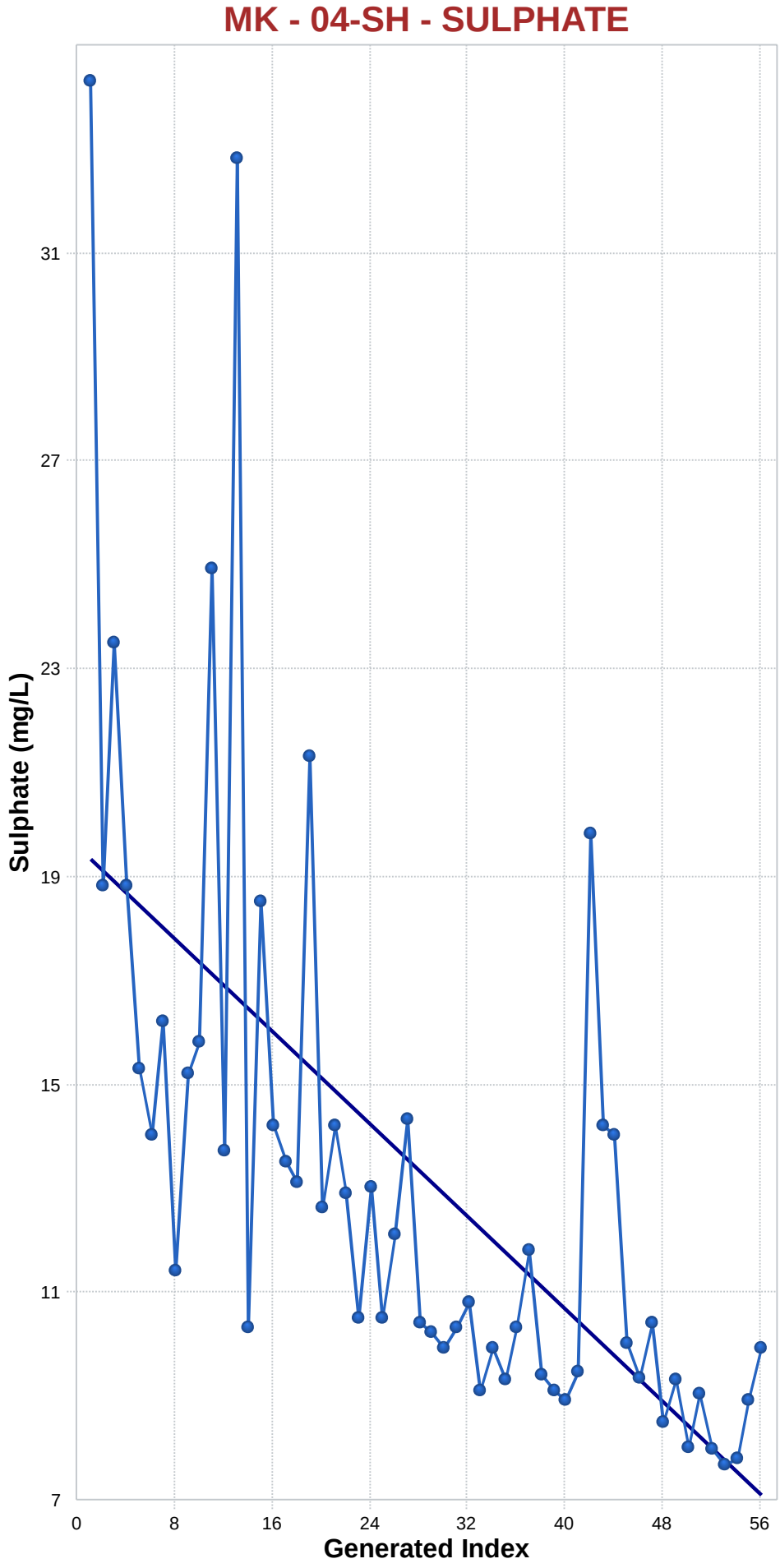
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.3730
Standardized Value of S	1.9523
M-K Test Value (S)	277
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0255

OLS Regression Line (Blue)

OLS Regression Slope	-0.0054
OLS Regression Intercept	10.1335

Statistically significant evidence of an increasing trend at the specified level of significance.



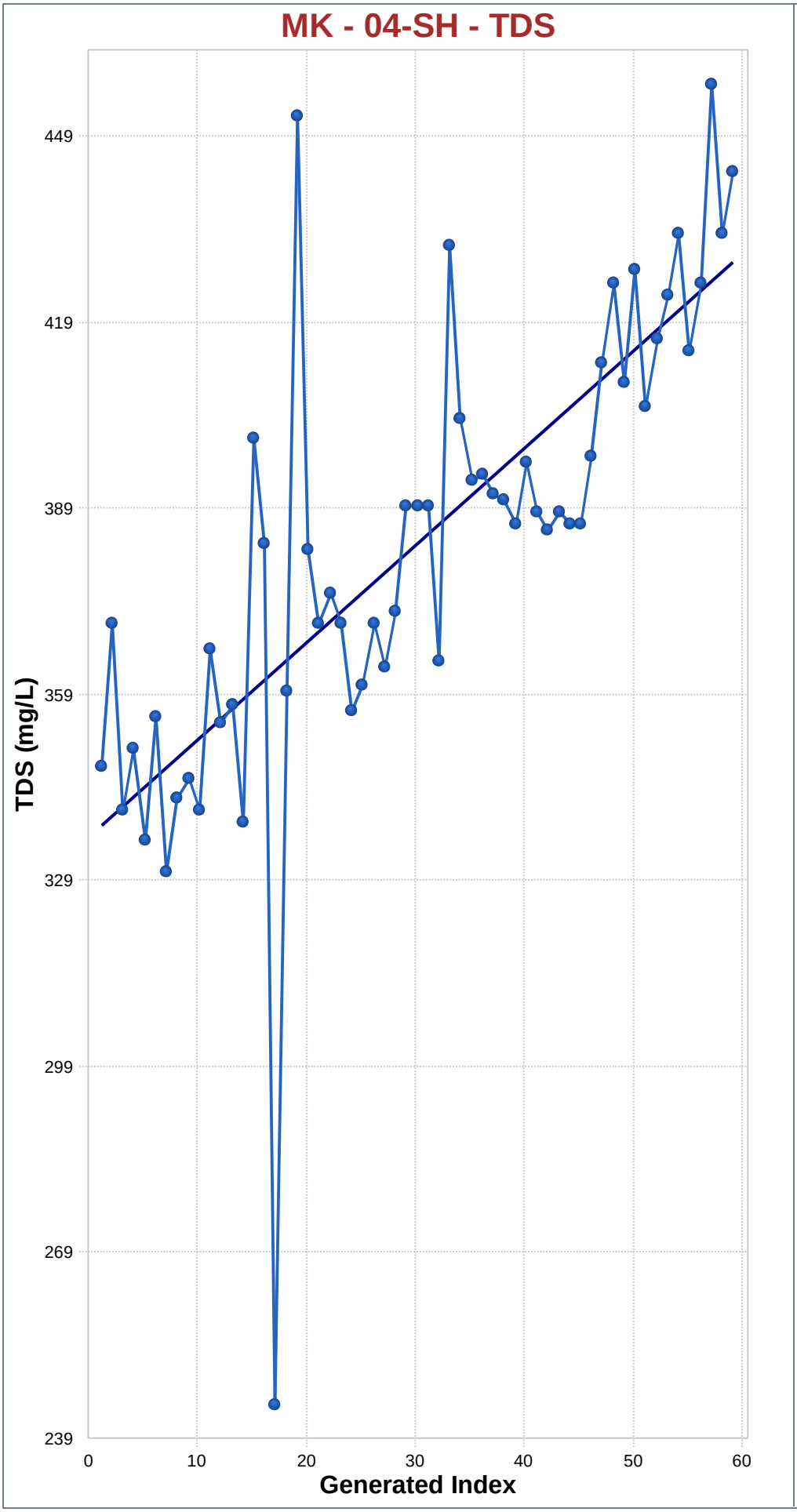
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4320
Standardized Value of S	-6.8726
M-K Test Value (S)	-973
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.2222
OLS Regression Intercept	19.7333

Statistically significant evidence of a decreasing trend at the specified level of significance.



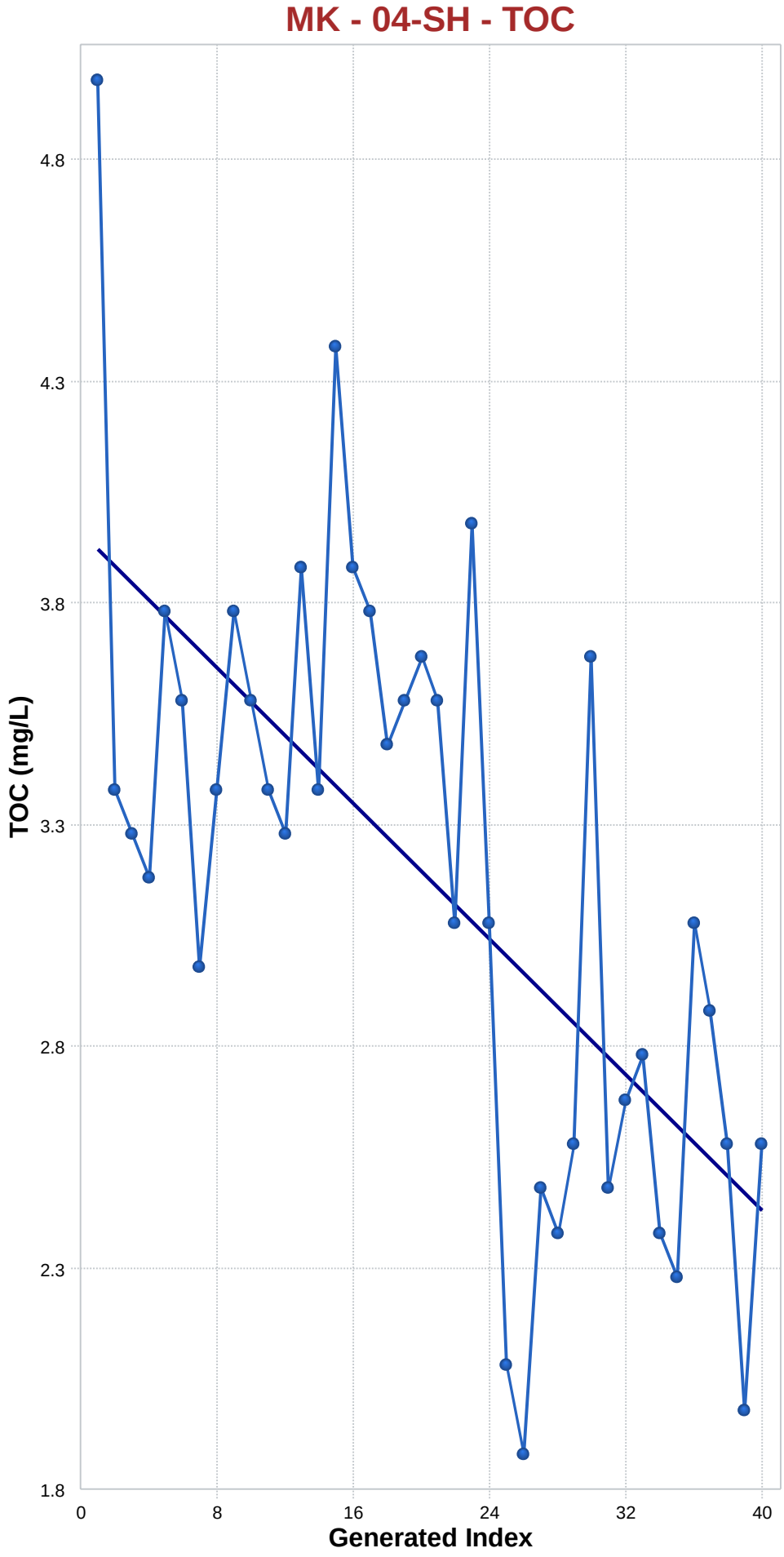
Mann-Kendall Trend Analysis

n	59
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	152.8518
Standardized Value of S	7.2750
M-K Test Value (S)	1,113
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.5676
OLS Regression Intercept	335.8884

Statistically significant evidence of an increasing trend at the specified level of significance.



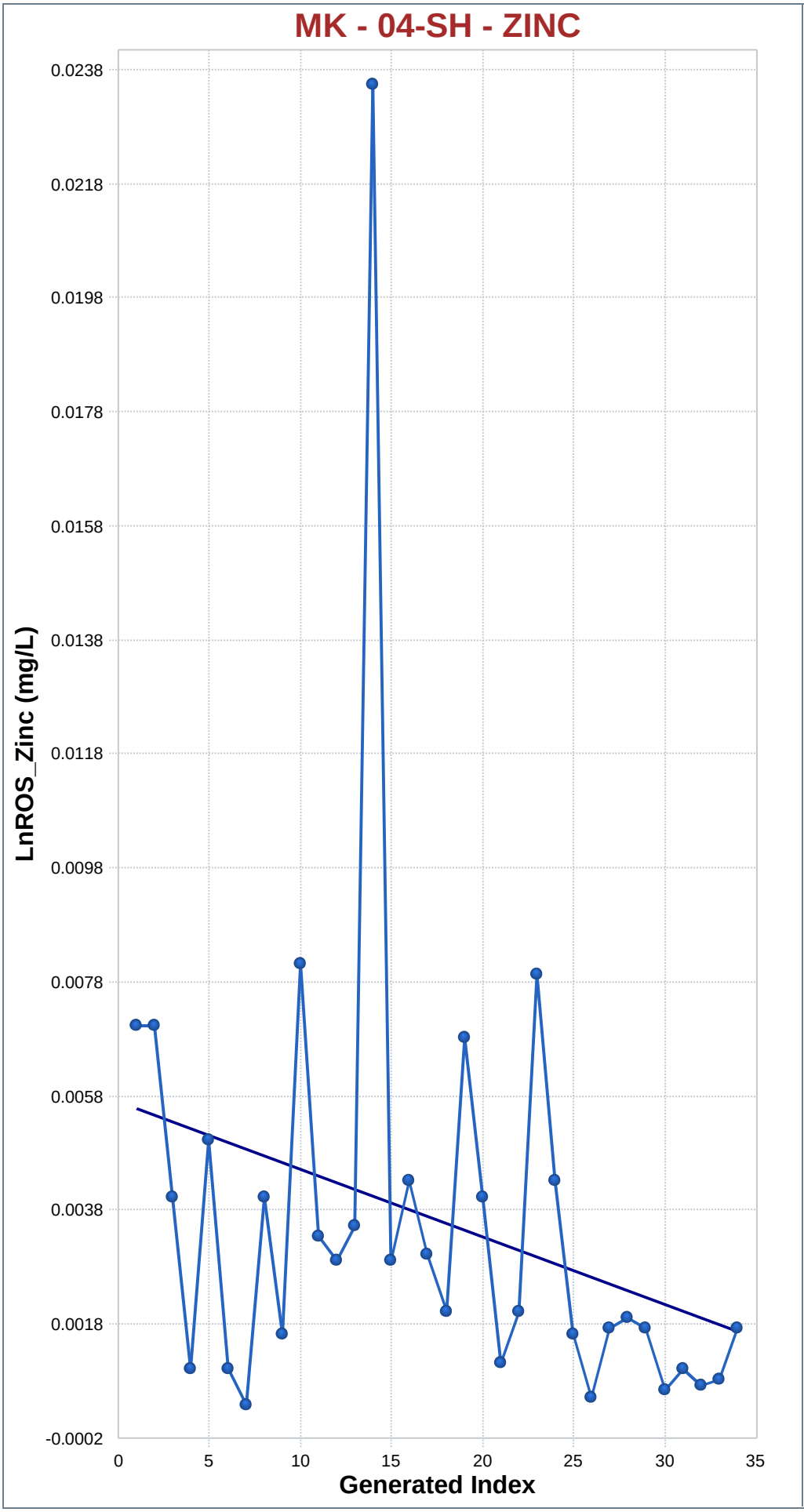
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.6349
Standardized Value of S	-3.6551
M-K Test Value (S)	-314
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0382
OLS Regression Intercept	3.9800

Statistically significant evidence of a decreasing trend at the specified level of significance.



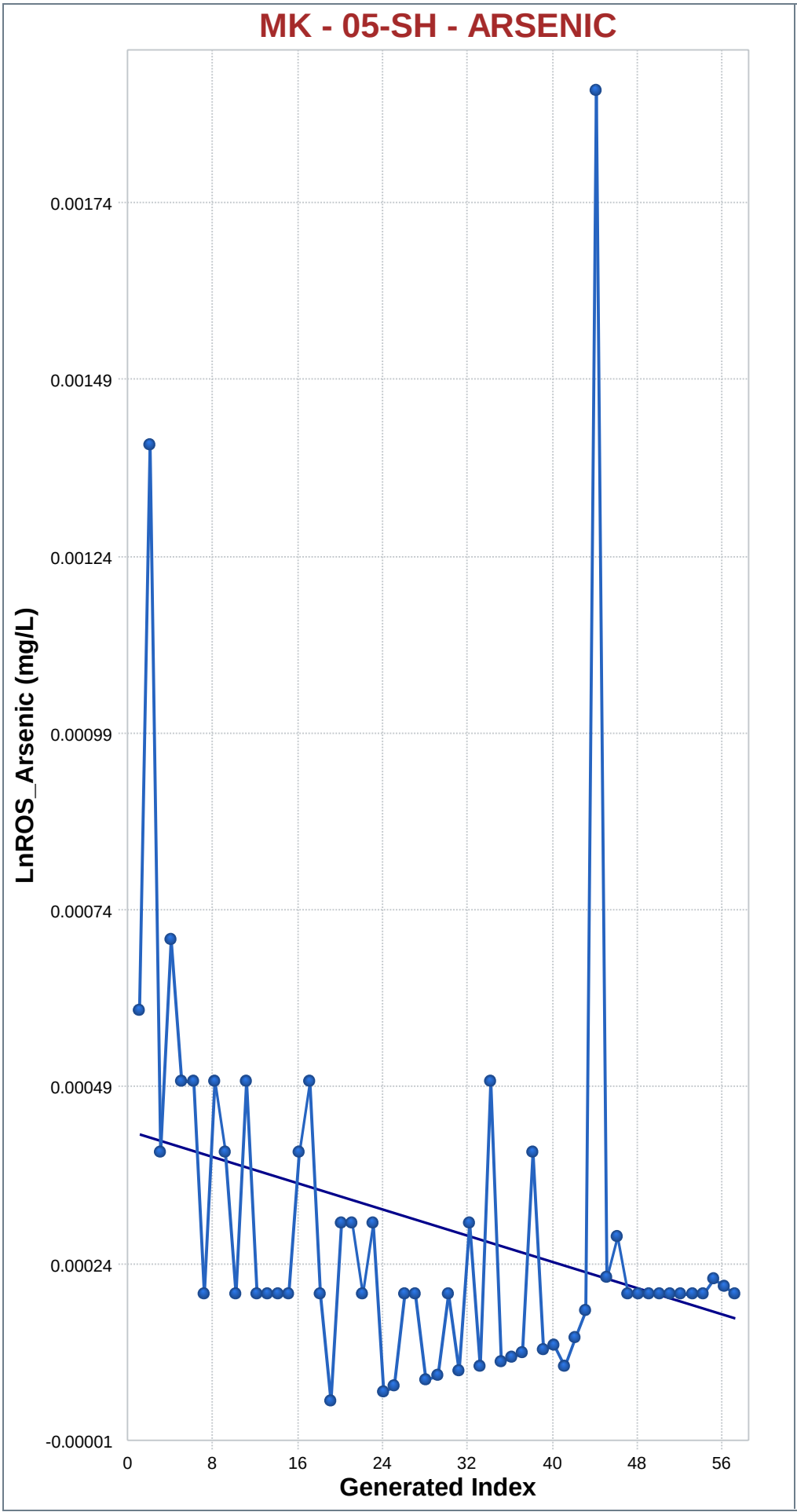
Mann-Kendall Trend Analysis

n	34
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	67.3449
Standardized Value of S	-2.5986
M-K Test Value (S)	-176
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0047

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0057

Statistically significant evidence of a decreasing trend at the specified level of significance.



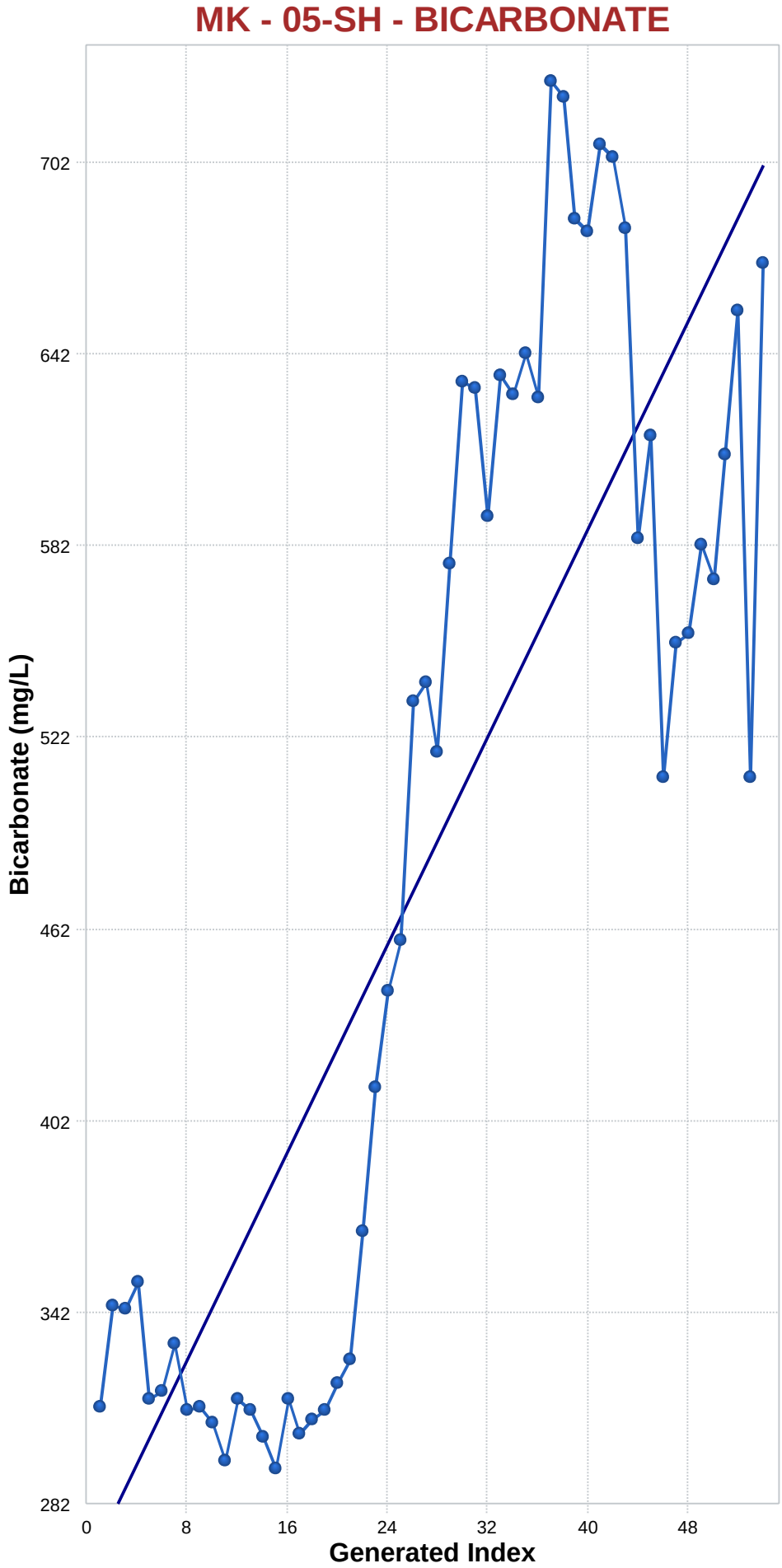
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.7992
Standardized Value of S	-2.2567
M-K Test Value (S)	-321
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0120

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0004

Statistically significant evidence of a decreasing trend at the specified level of significance.



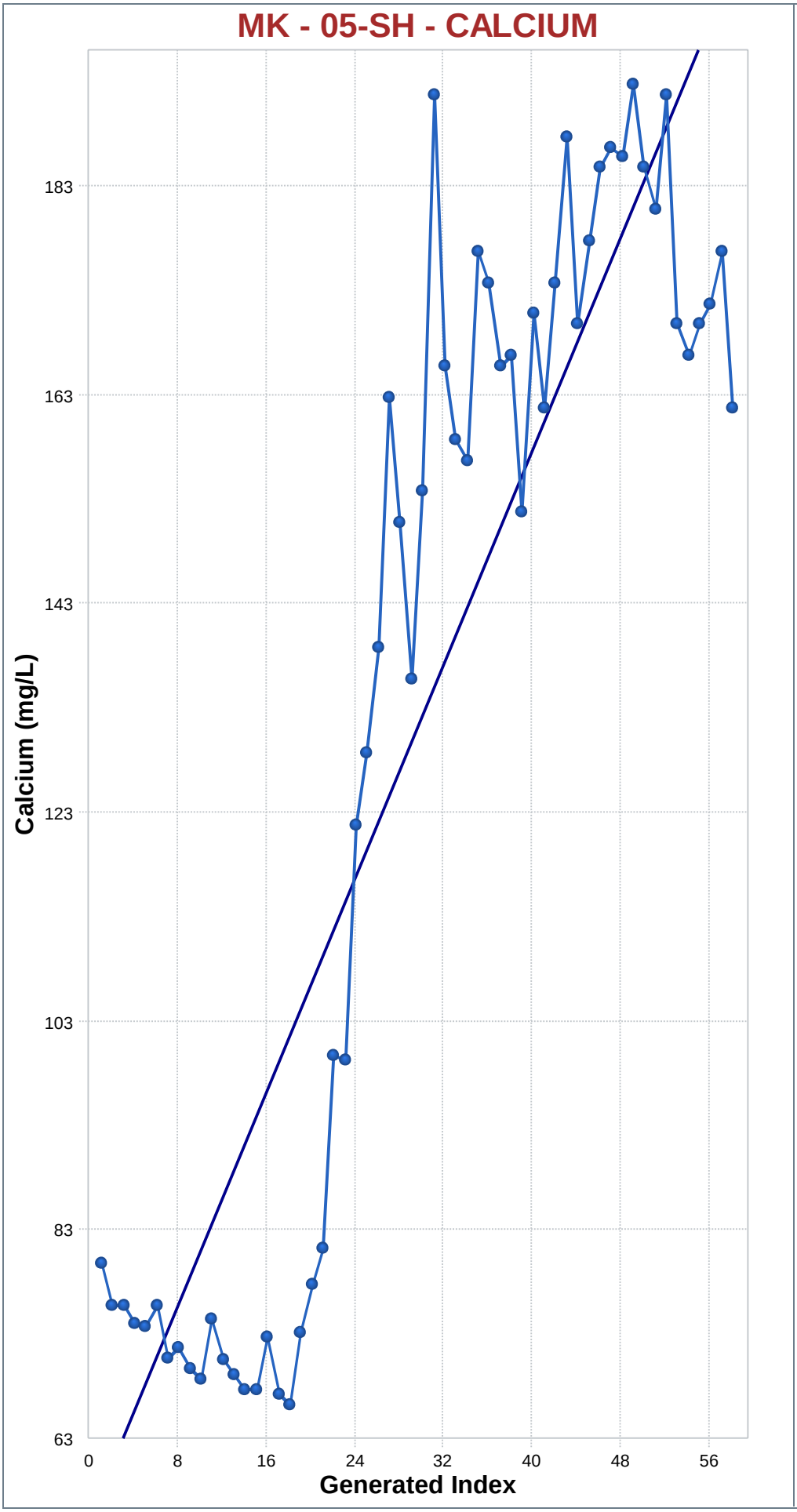
Mann-Kendall Trend Analysis

n	54
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	134.0298
Standardized Value of S	5.7077
M-K Test Value (S)	766
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	8.1397
OLS Regression Intercept	261.1413

Statistically significant evidence of an increasing trend at the specified level of significance.



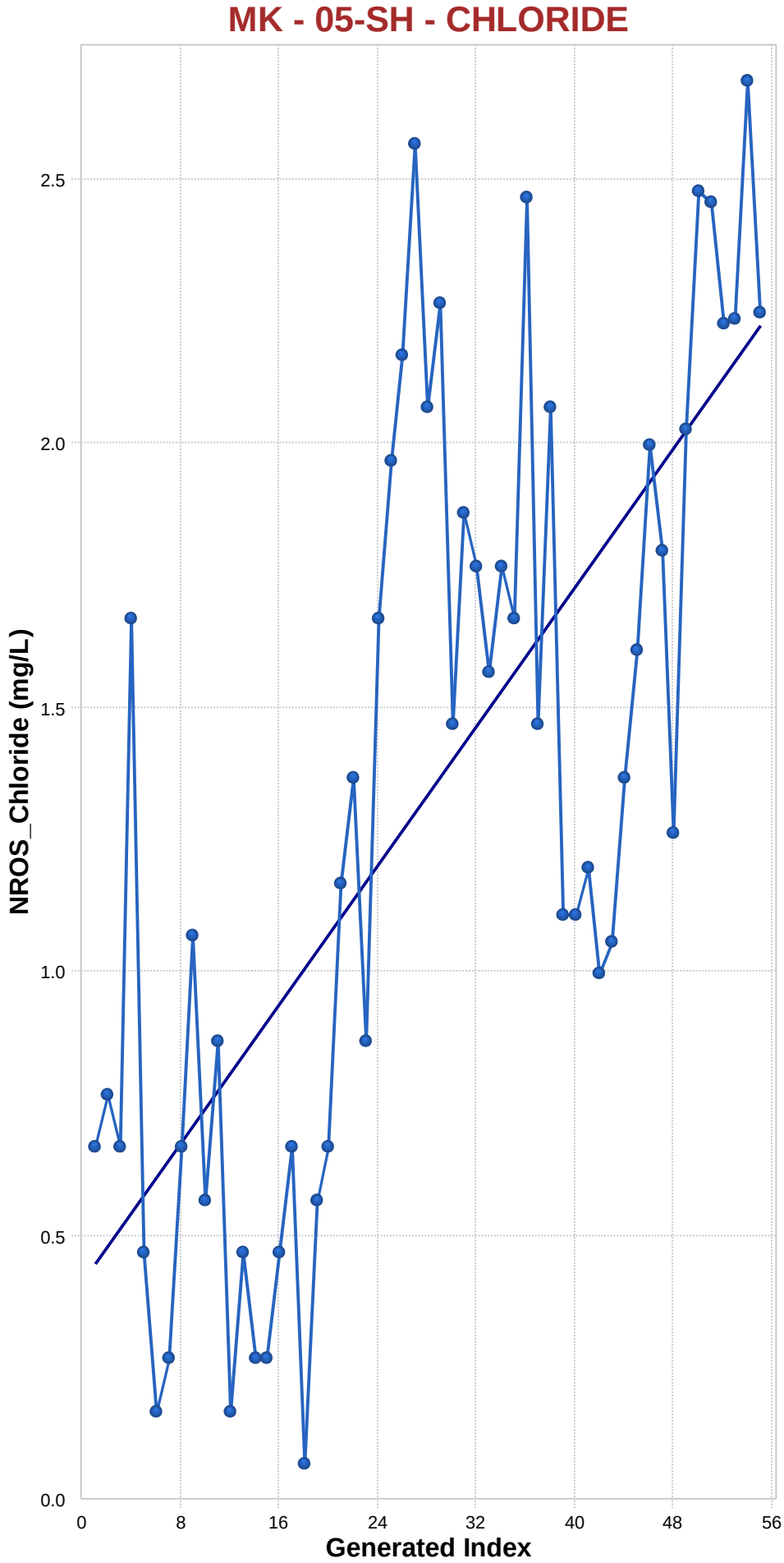
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	149.0246
Standardized Value of S	6.9250
M-K Test Value (S)	1,033
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	2.5595
OLS Regression Intercept	55.5764

Statistically significant evidence of an increasing trend at the specified level of significance.



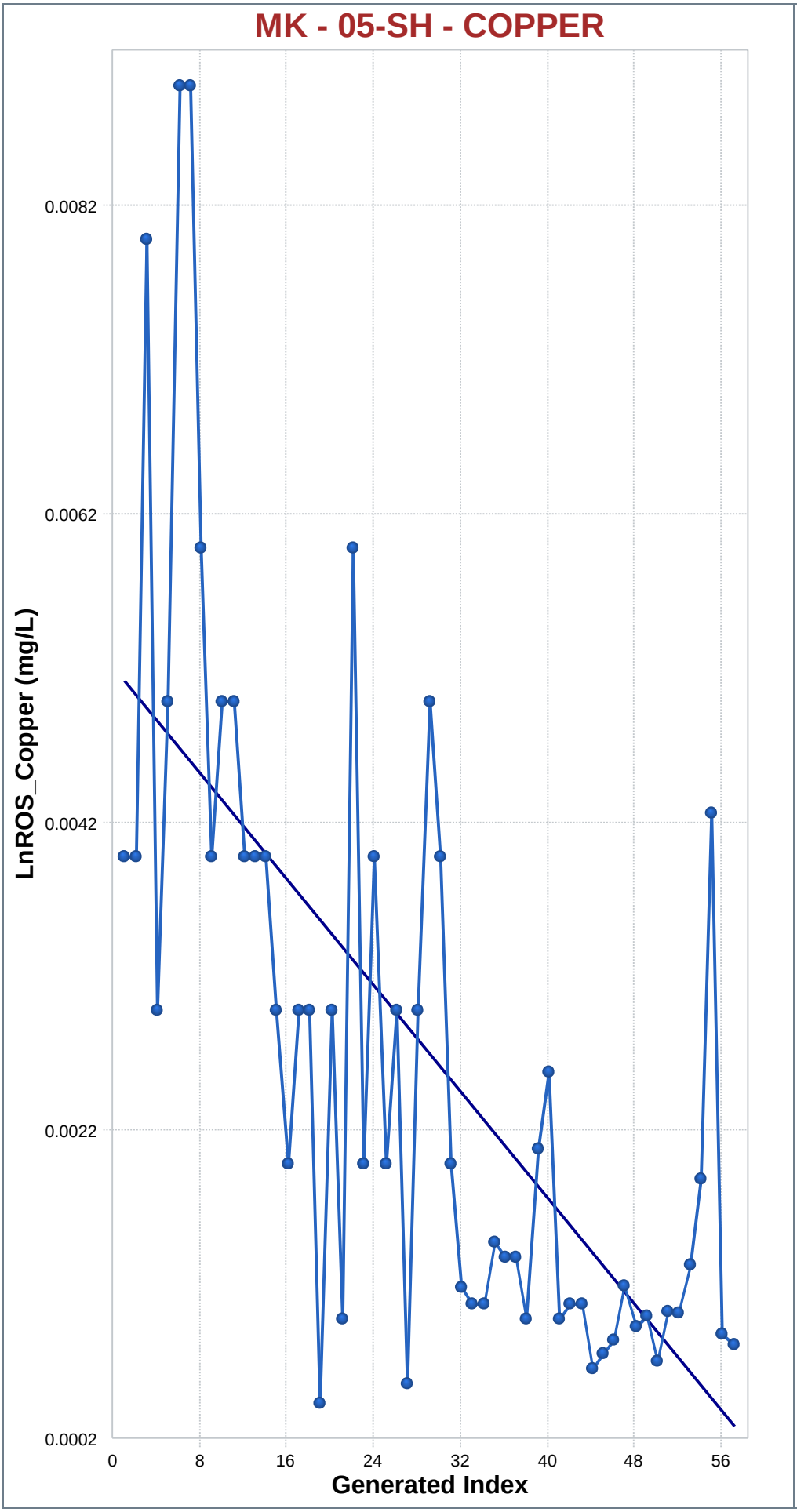
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.6203
Standardized Value of S	5.3408
M-K Test Value (S)	736
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.0329
OLS Regression Intercept	0.4480

Statistically significant evidence of an increasing trend at the specified level of significance.



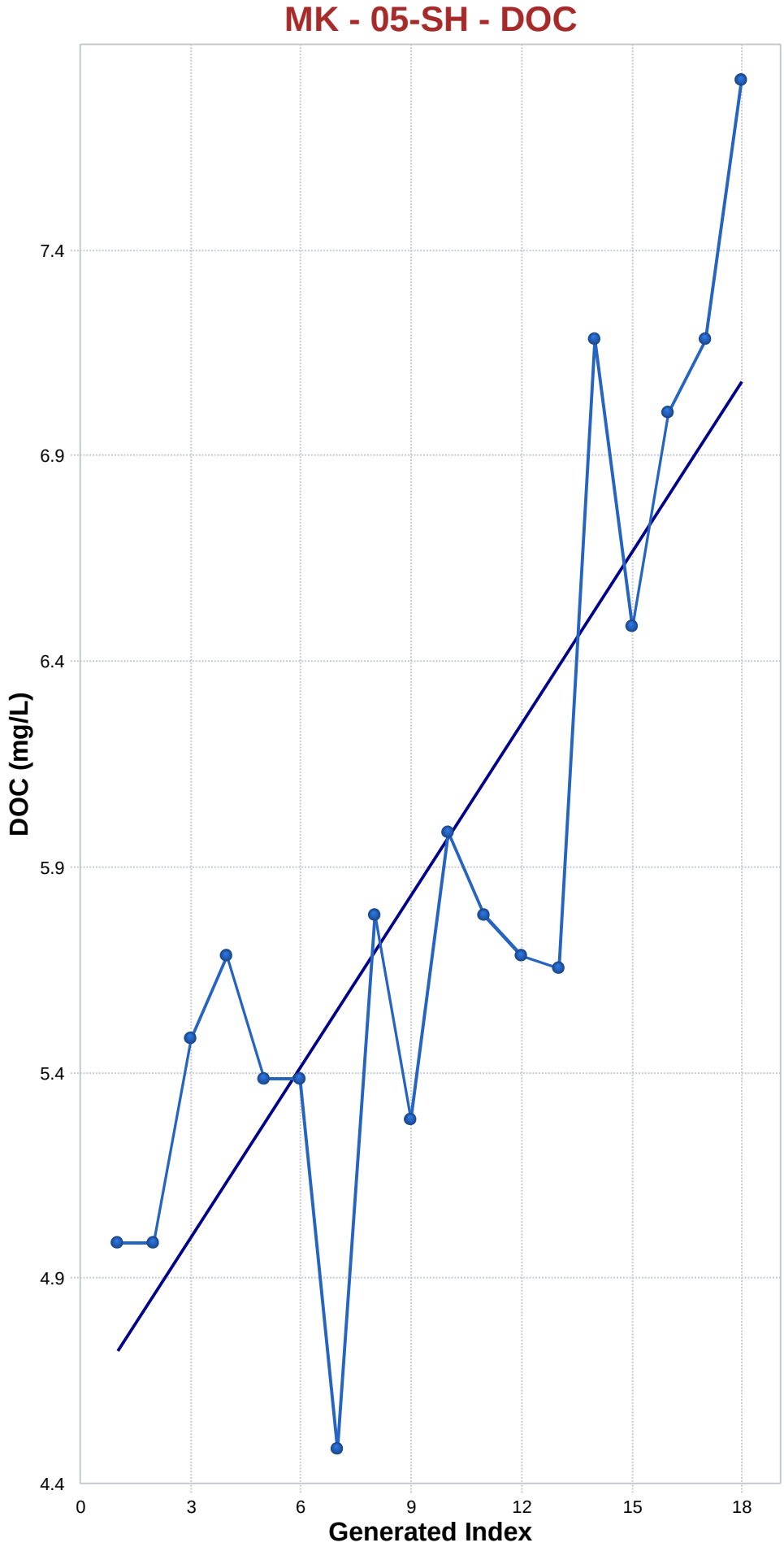
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	144.7768
Standardized Value of S	-5.7744
M-K Test Value (S)	-837
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0052

Statistically significant evidence of a decreasing trend at the specified level of significance.



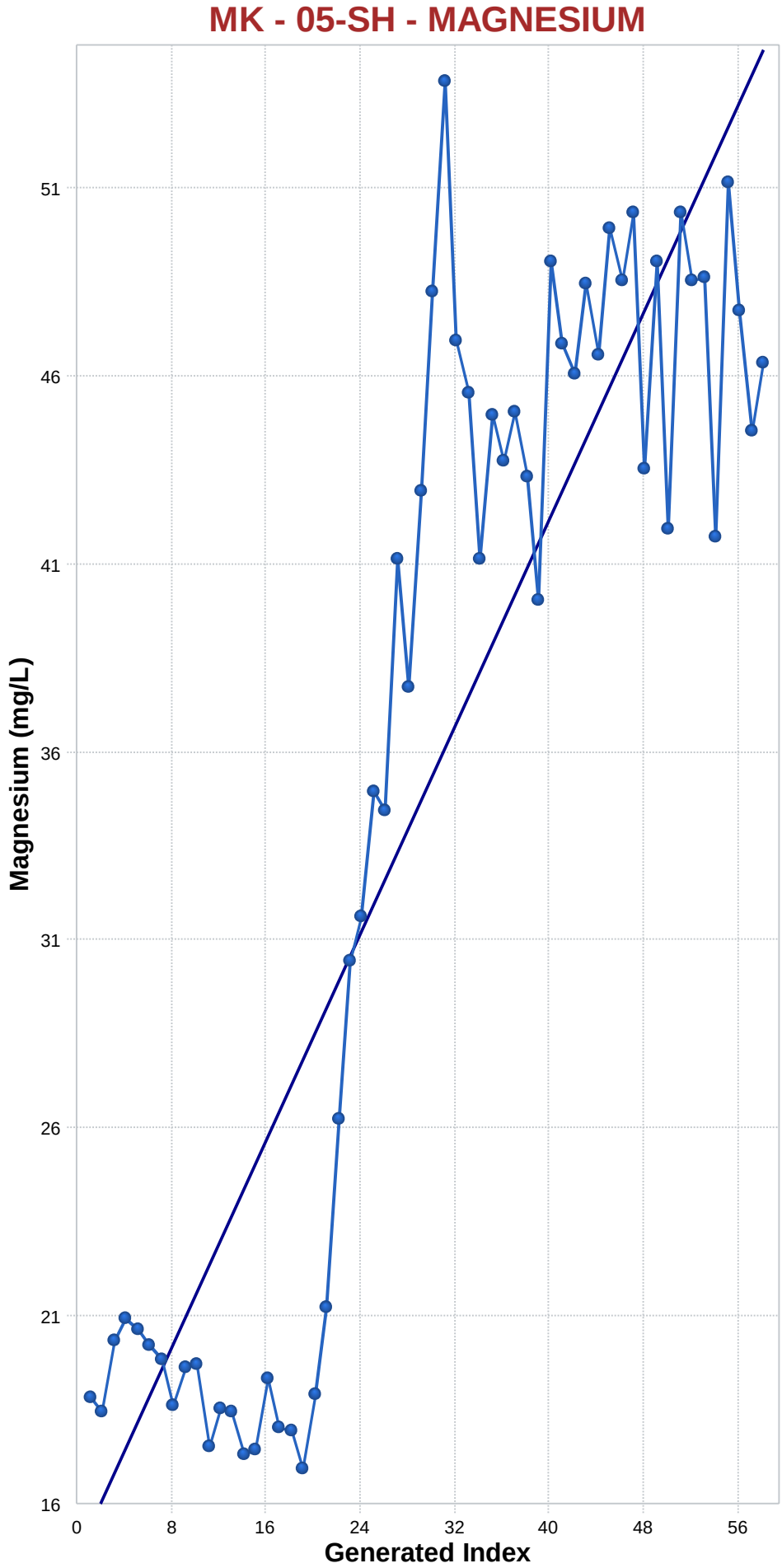
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.3059
Standardized Value of S	3.6114
M-K Test Value (S)	96
Tabulated p-value	0.0000
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	0.1388
OLS Regression Intercept	4.5995

Statistically significant evidence of an increasing trend at the specified level of significance.



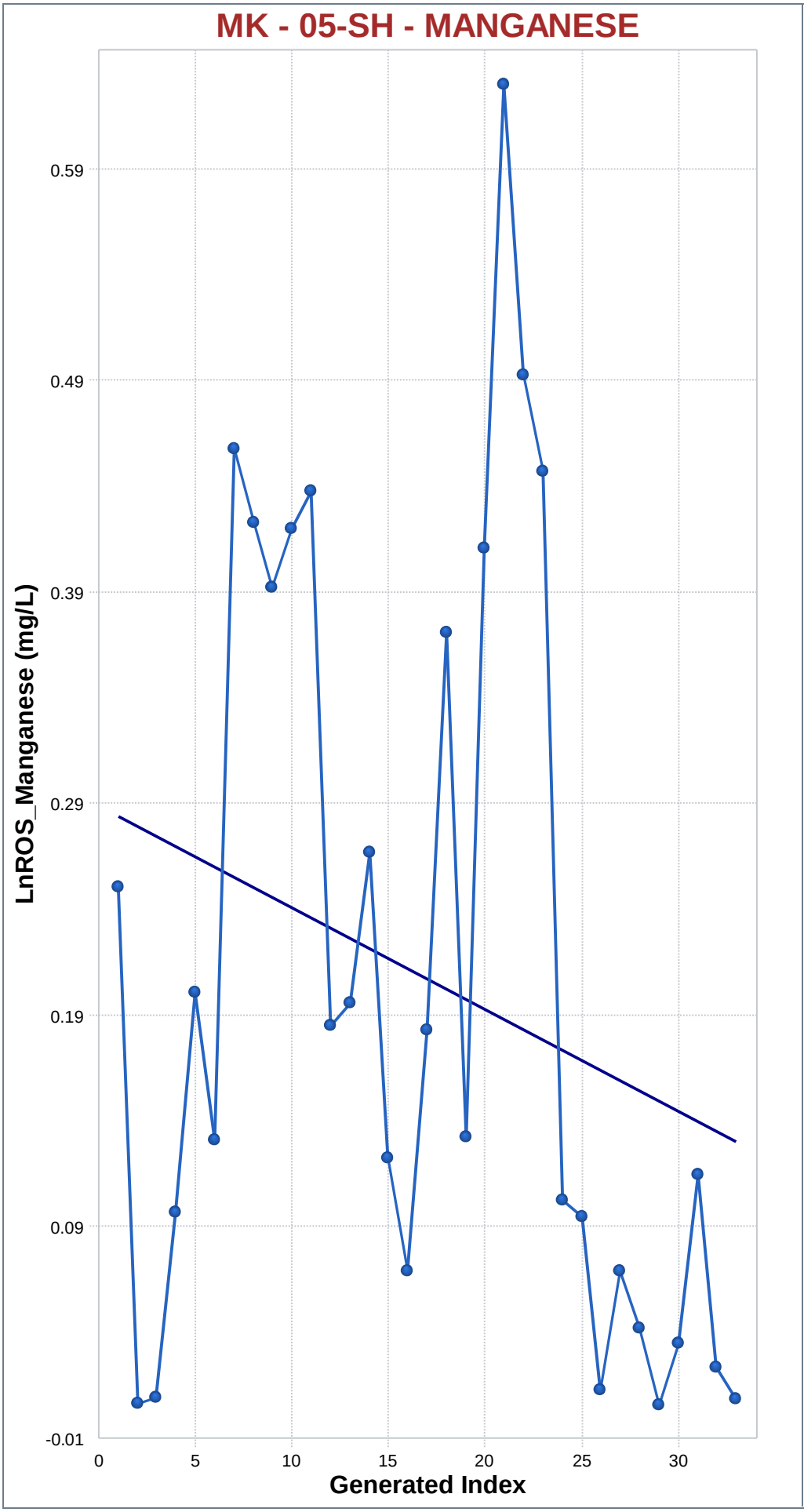
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	149.0593
Standardized Value of S	6.6484
M-K Test Value (S)	992
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.6896
OLS Regression Intercept	14.7287

Statistically significant evidence of an increasing trend at the specified level of significance.



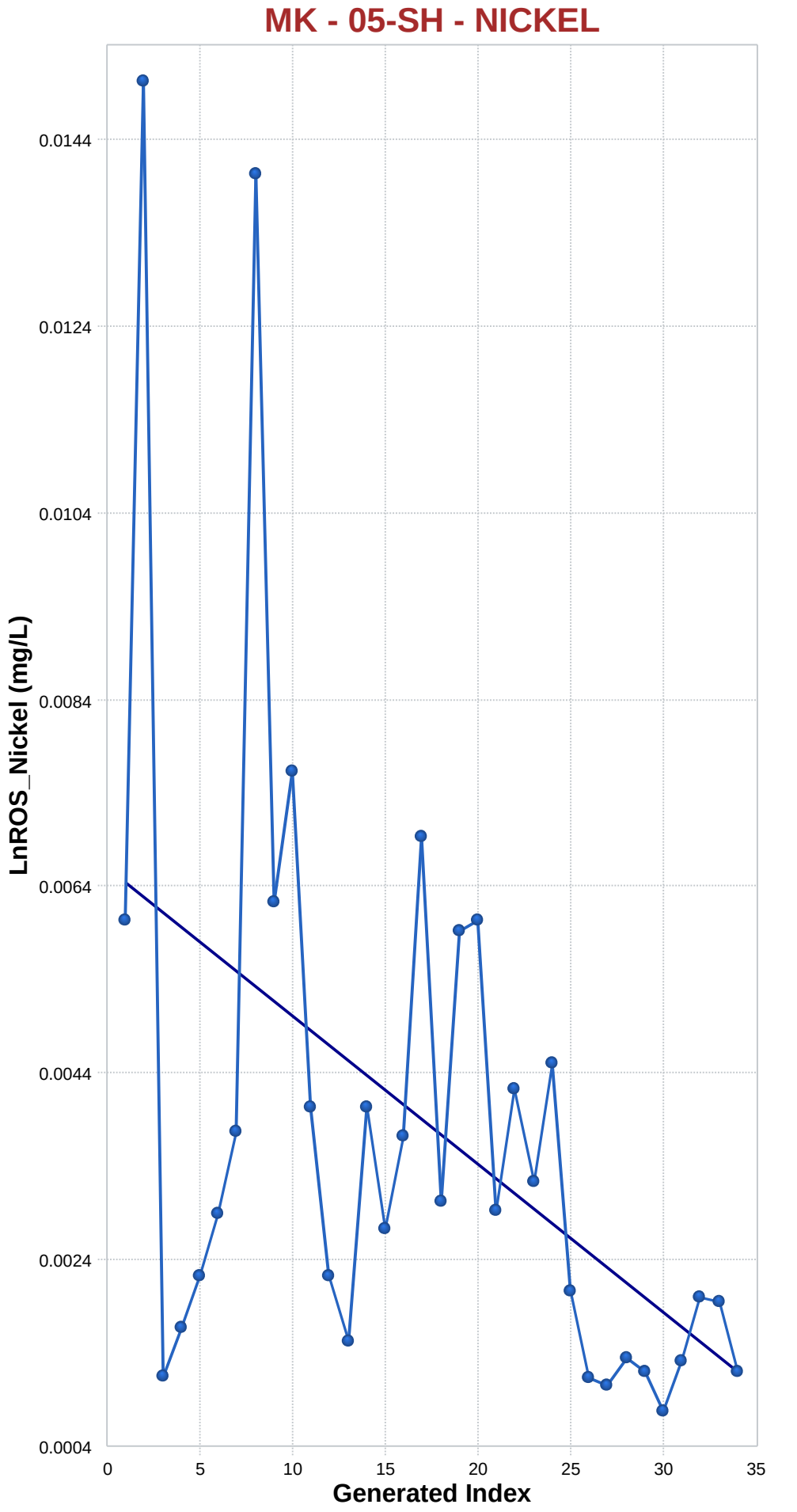
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	-1.9835
M-K Test Value (S)	-129
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0237

OLS Regression Line (Blue)

OLS Regression Slope	-0.0048
OLS Regression Intercept	0.2841

Statistically significant evidence of a decreasing trend at the specified level of significance.



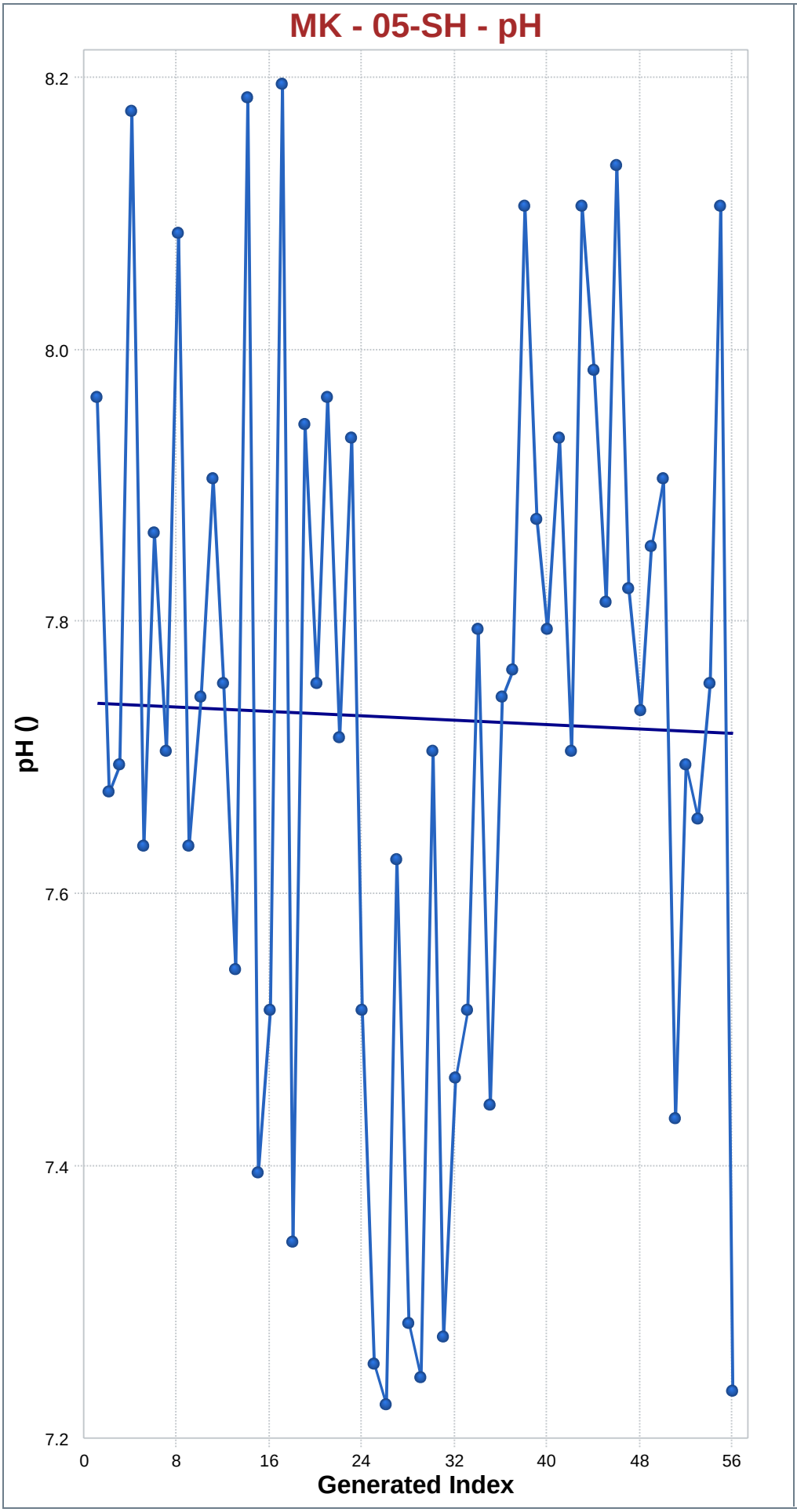
Mann-Kendall Trend Analysis

n	34
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	67.4339
Standardized Value of S	-2.8621
M-K Test Value (S)	-194
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0021

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0066

Statistically significant evidence of a decreasing trend at the specified level of significance.



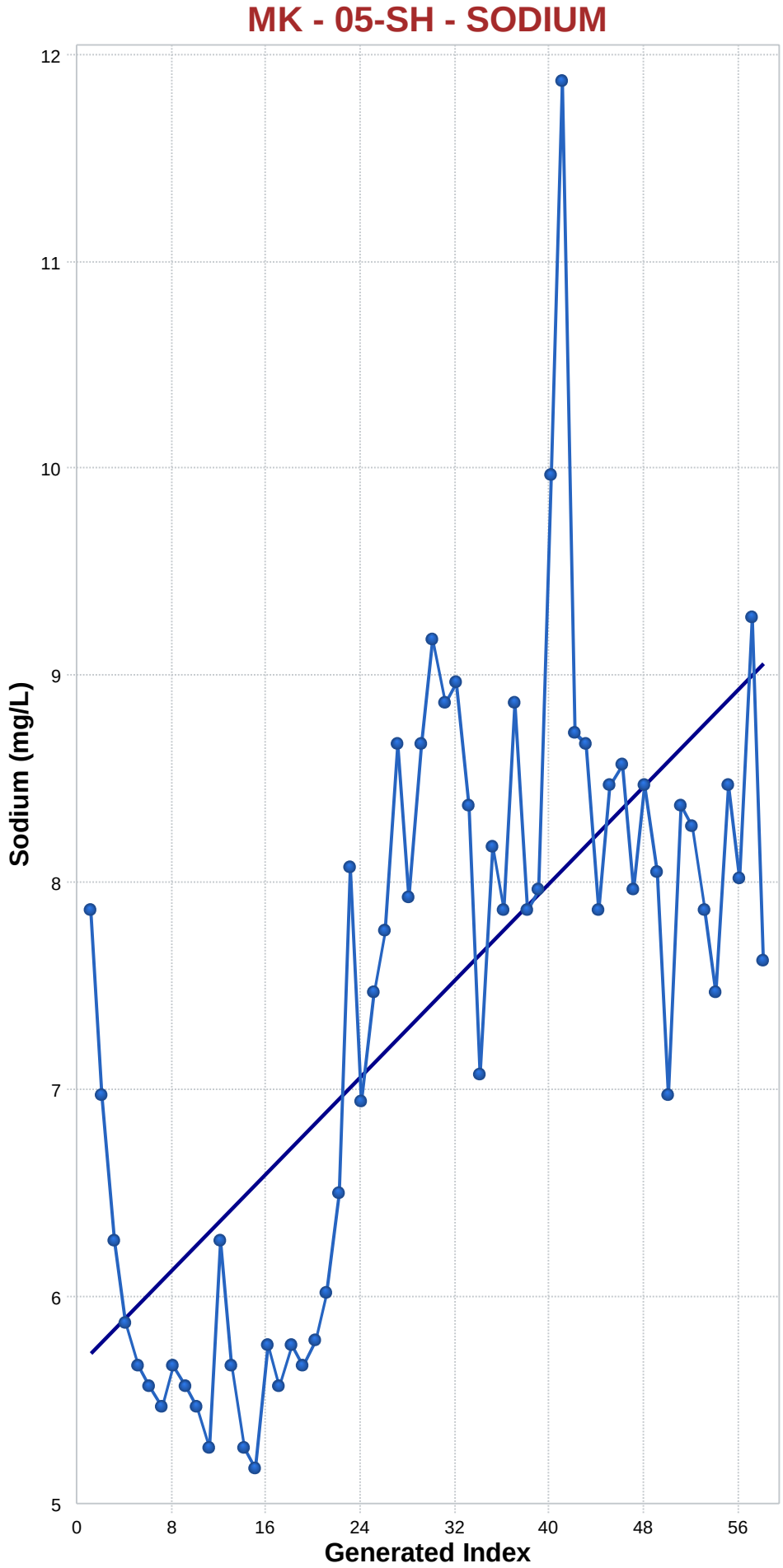
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4155
Standardized Value of S	0.0849
M-K Test Value (S)	13
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4662

OLS Regression Line (Blue)

OLS Regression Slope	-0.0004
OLS Regression Intercept	7.7455

Insufficient statistical evidence of a significant trend at the specified level of significance.



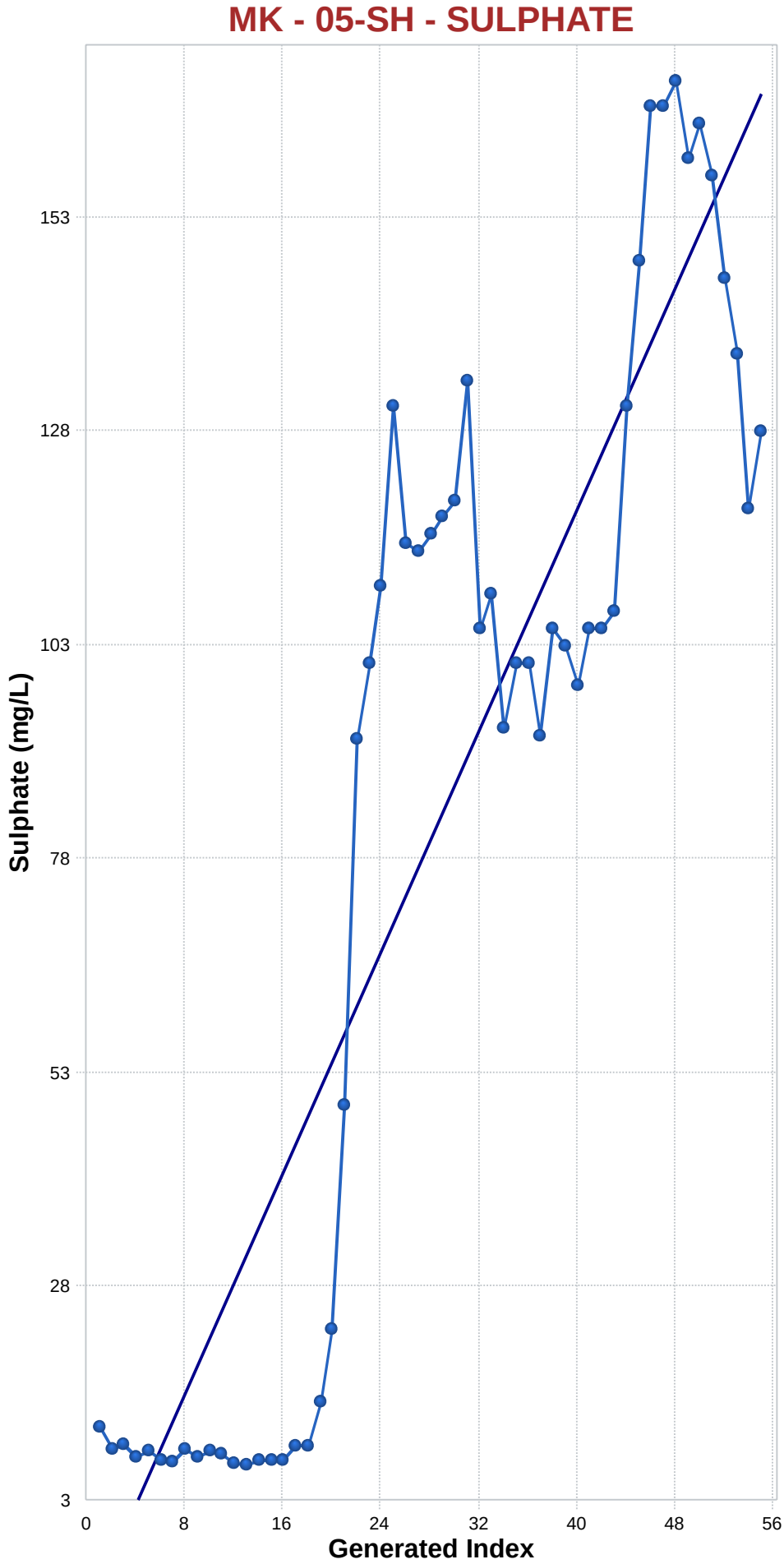
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	148.9239
Standardized Value of S	4.9421
M-K Test Value (S)	737
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.0584
OLS Regression Intercept	5.6012

Statistically significant evidence of an increasing trend at the specified level of significance.



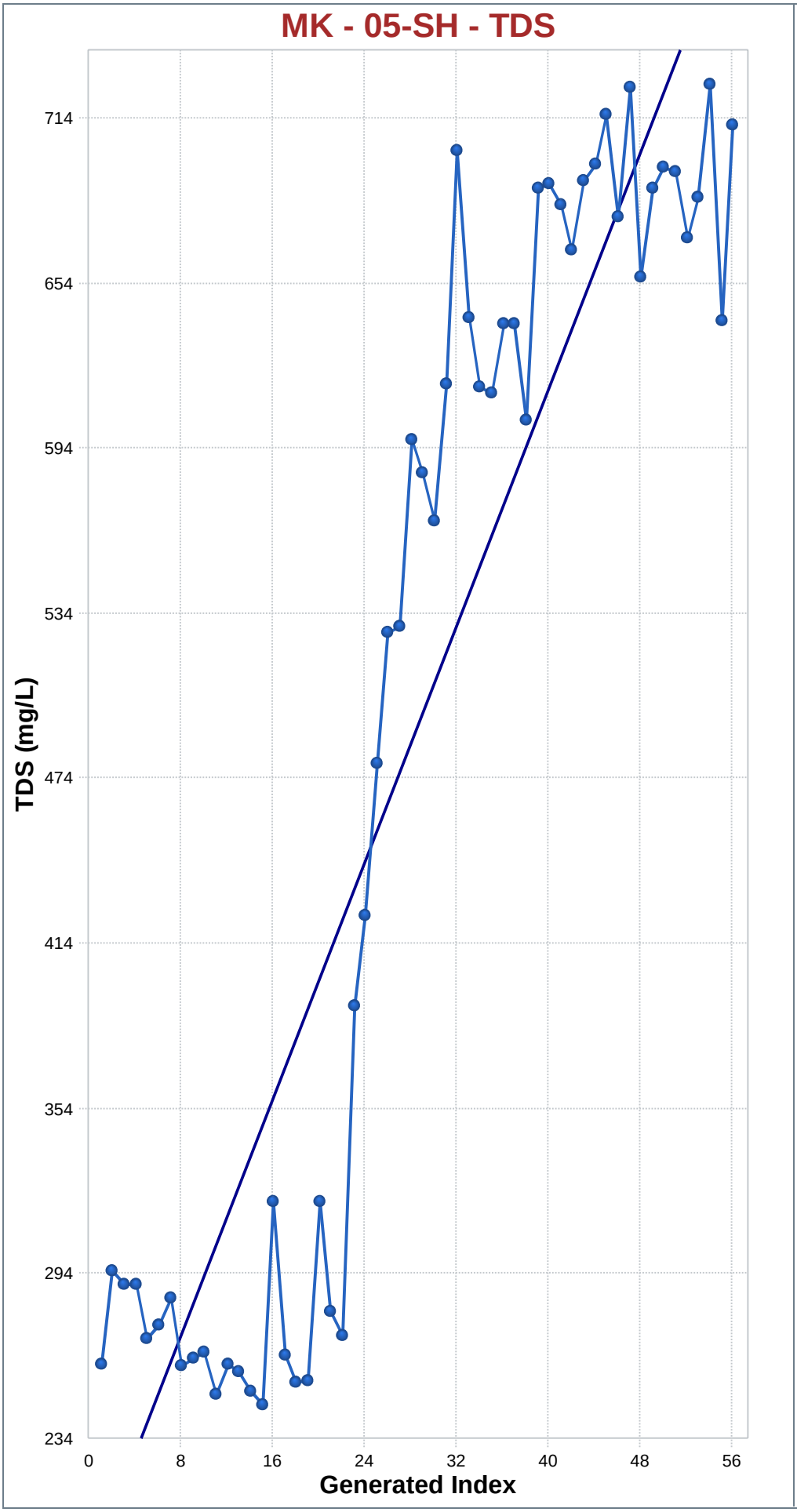
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.6868
Standardized Value of S	6.6818
M-K Test Value (S)	921
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	3.2376
OLS Regression Intercept	-10.4915

Statistically significant evidence of an increasing trend at the specified level of significance.



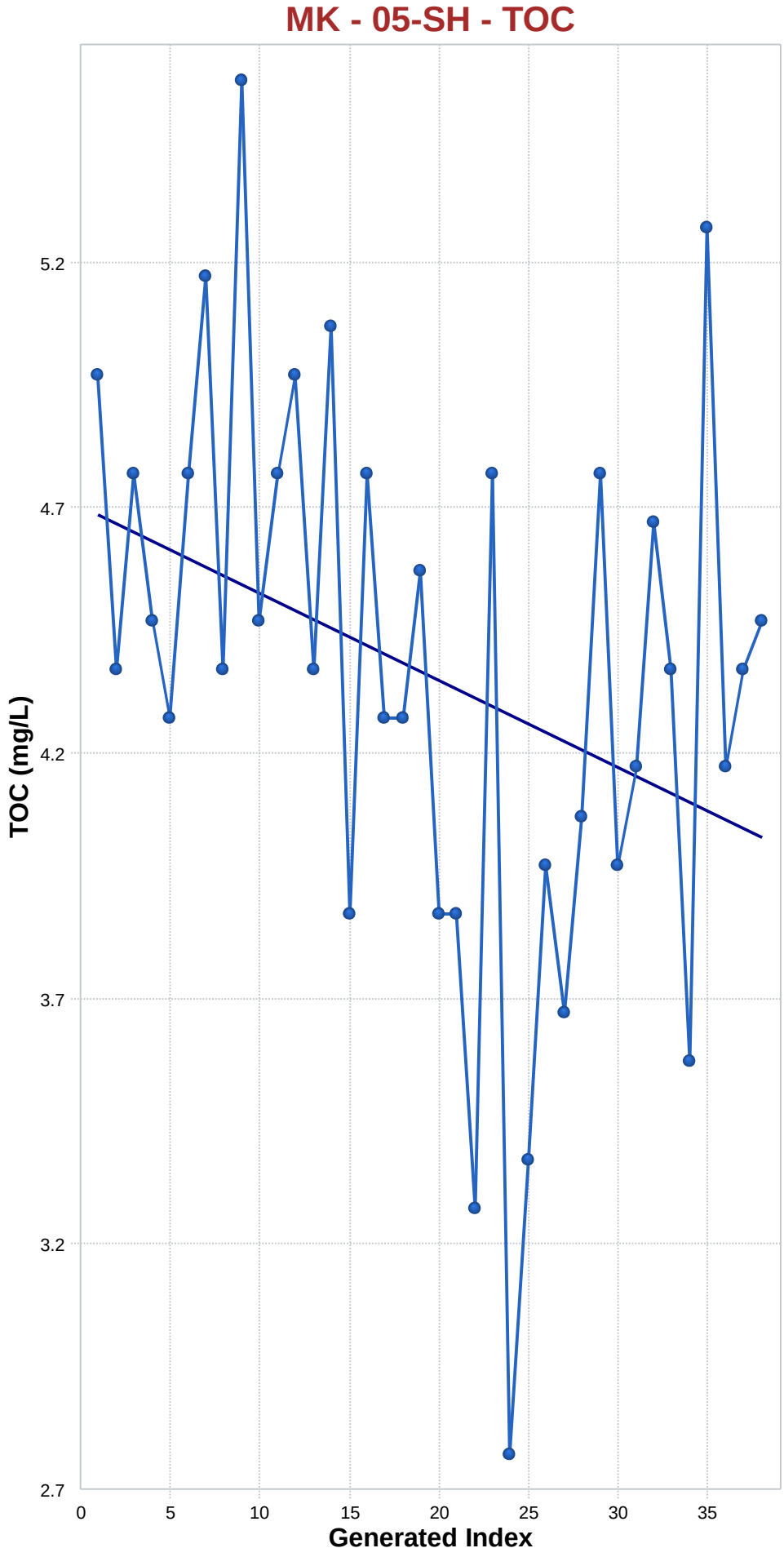
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4744
Standardized Value of S	7.4077
M-K Test Value (S)	1,049
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	10.7287
OLS Regression Intercept	186.2506

Statistically significant evidence of an increasing trend at the specified level of significance.



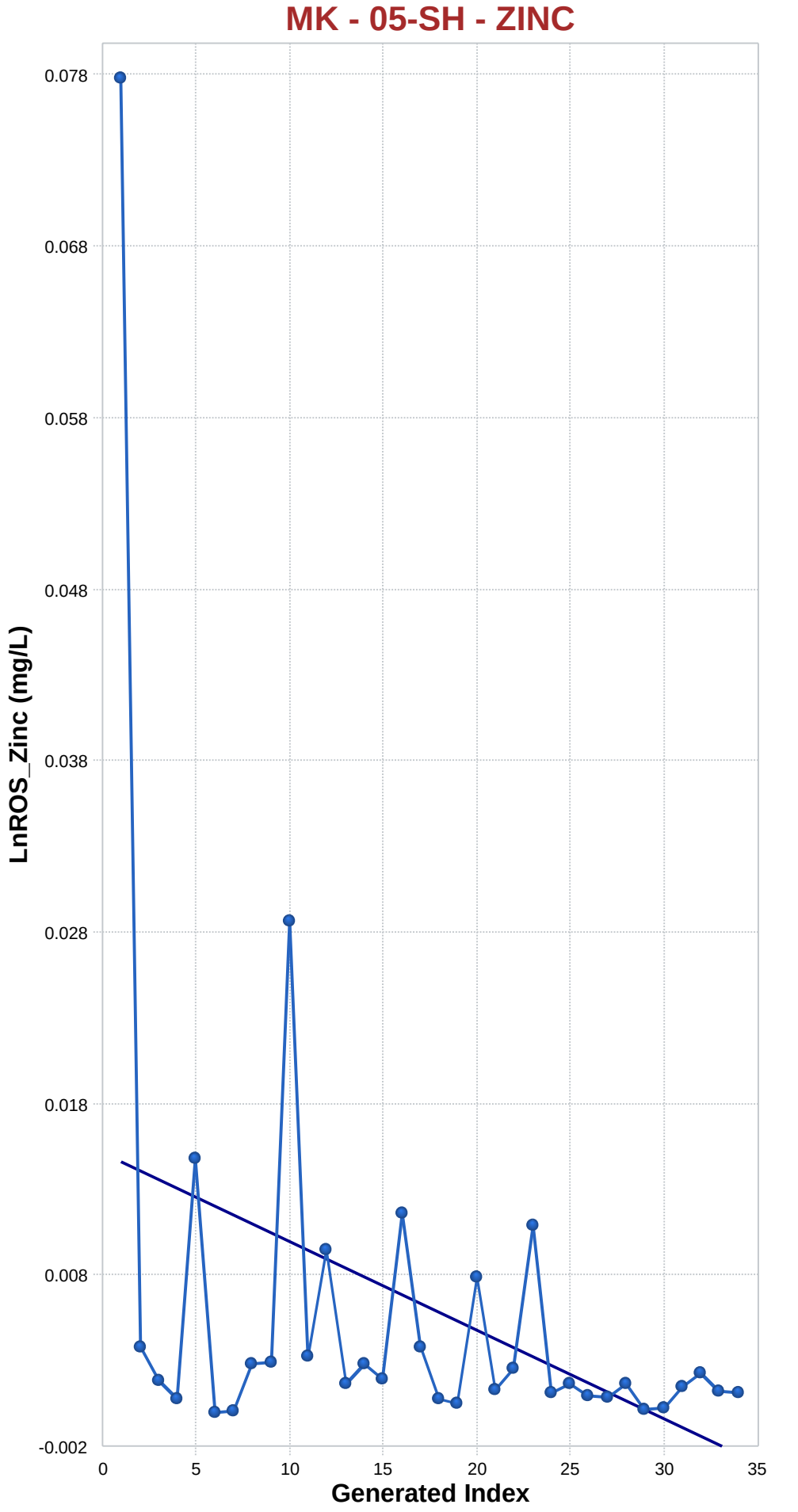
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.1707
Standardized Value of S	-2.0588
M-K Test Value (S)	-164
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0198

OLS Regression Line (Blue)

OLS Regression Slope	-0.0177
OLS Regression Intercept	4.7319

Statistically significant evidence of a decreasing trend at the specified level of significance.



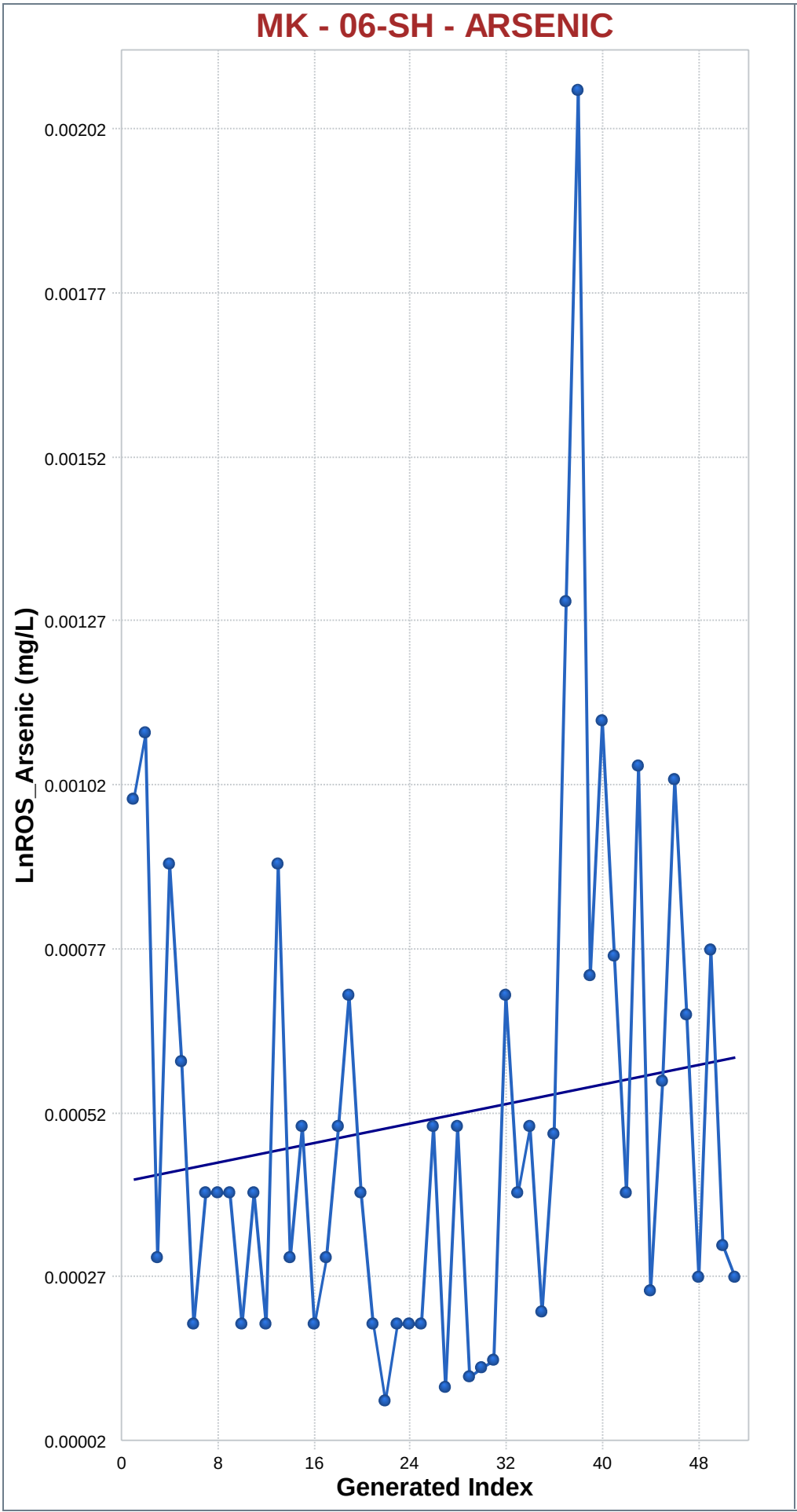
Mann-Kendall Trend Analysis

n	34
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	67.4067
Standardized Value of S	-2.1956
M-K Test Value (S)	-149
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0141

OLS Regression Line (Blue)

OLS Regression Slope	-0.0005
OLS Regression Intercept	0.0153

Statistically significant evidence of a decreasing trend at the specified level of significance.



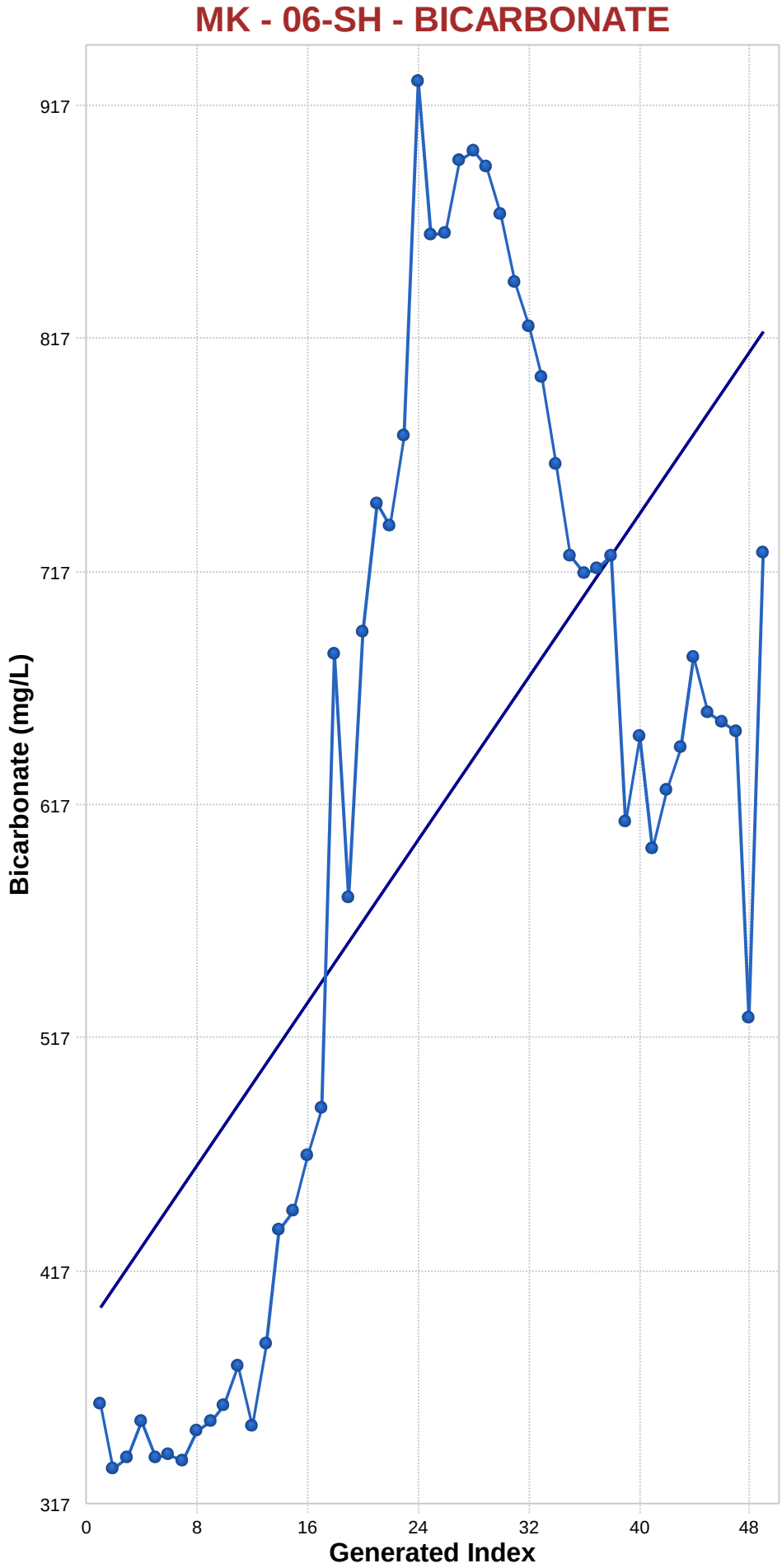
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	122.5779
Standardized Value of S	0.7750
M-K Test Value (S)	96
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2192

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0004

Insufficient statistical evidence of a significant trend at the specified level of significance.



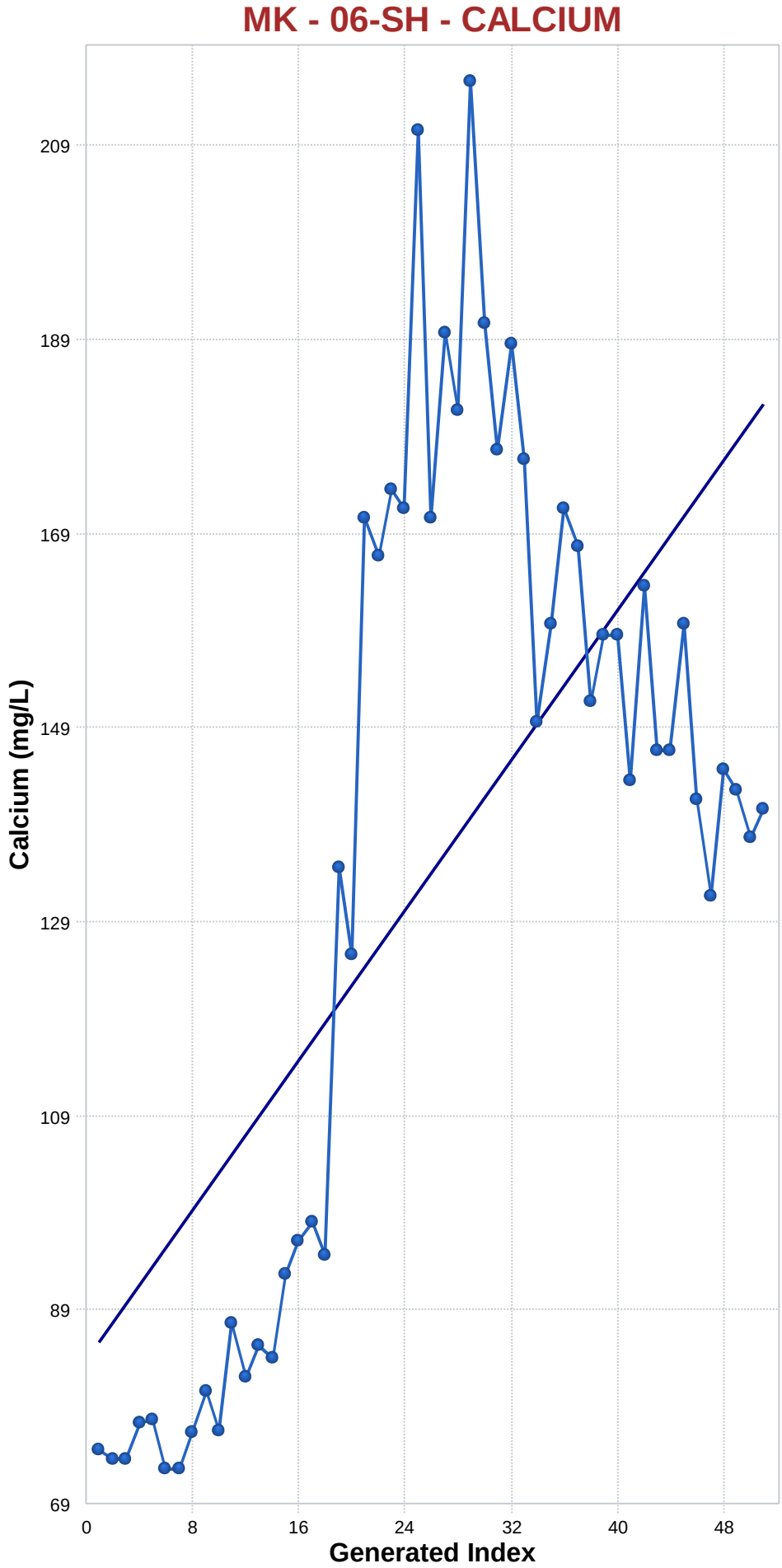
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	115.9986
Standardized Value of S	3.8794
M-K Test Value (S)	451
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	8.7321
OLS Regression Intercept	391.9643

Statistically significant evidence of an increasing trend at the specified level of significance.



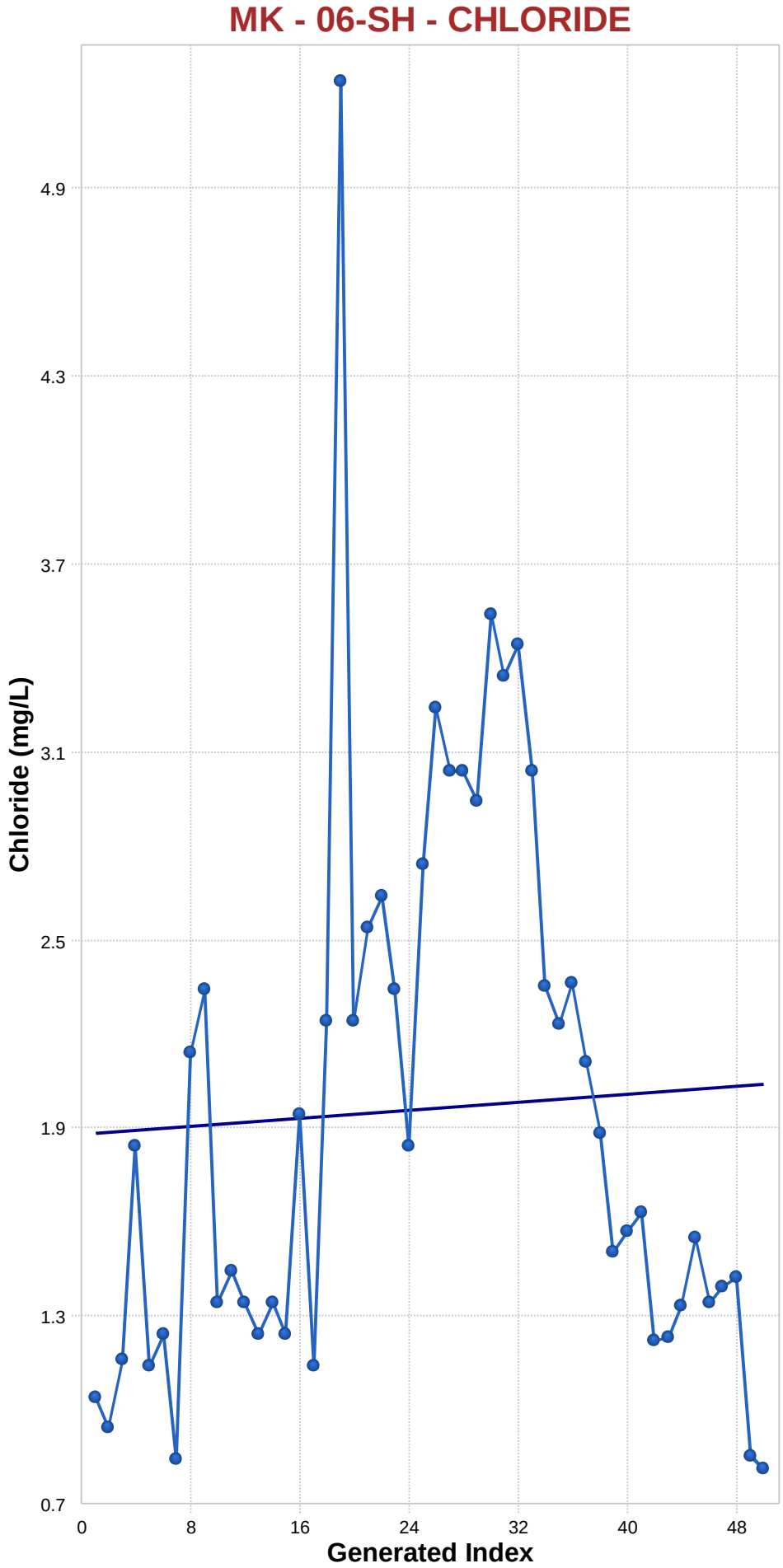
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	123.0908
Standardized Value of S	3.8427
M-K Test Value (S)	474
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	1.9343
OLS Regression Intercept	84.1442

Statistically significant evidence of an increasing trend at the specified level of significance.



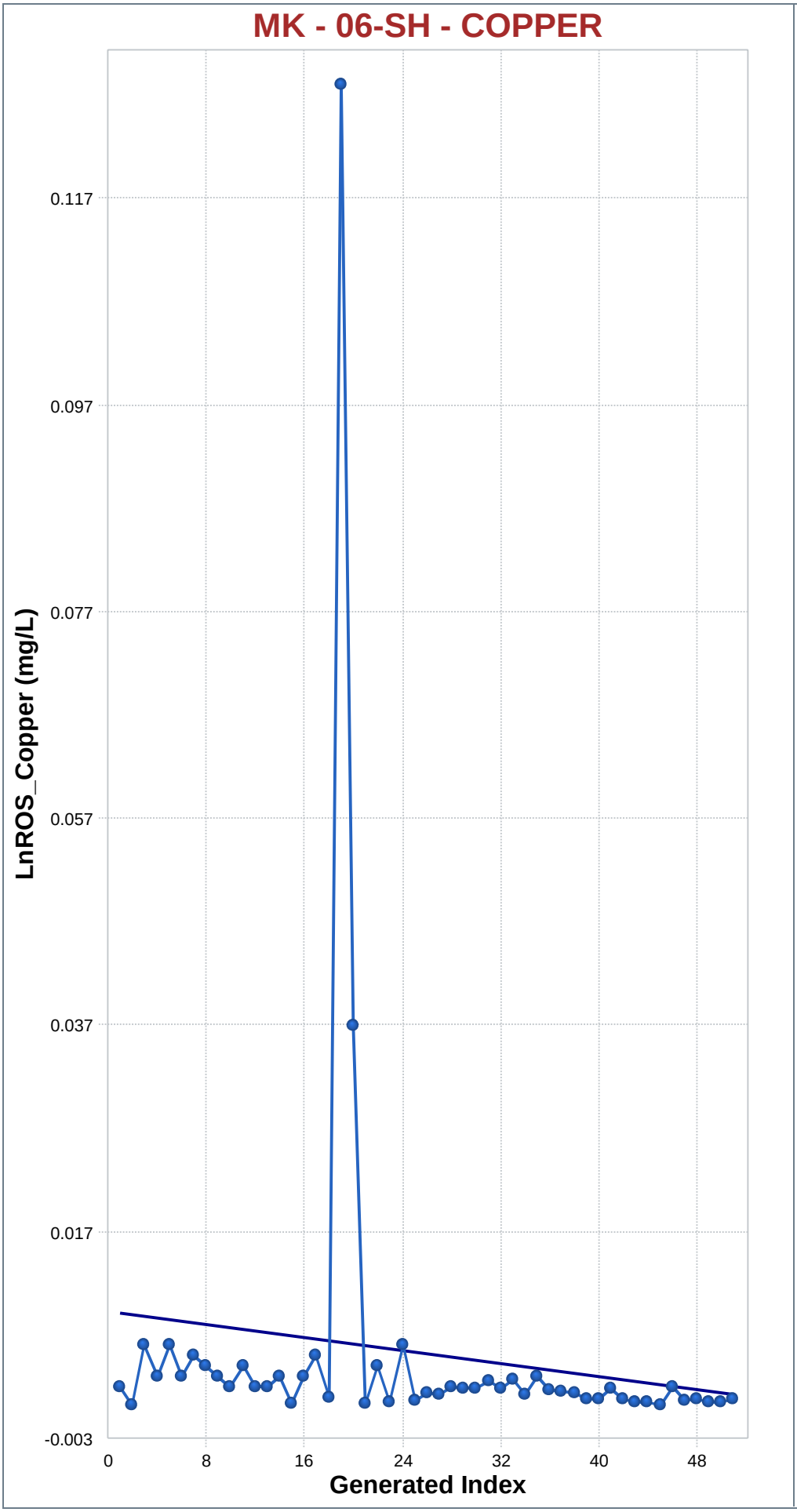
Mann-Kendall Trend Analysis

n	50
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	119.4641
Standardized Value of S	0.7199
M-K Test Value (S)	87
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2358

OLS Regression Line (Blue)

OLS Regression Slope	0.0032
OLS Regression Intercept	1.8371

Insufficient statistical evidence of a significant trend at the specified level of significance.



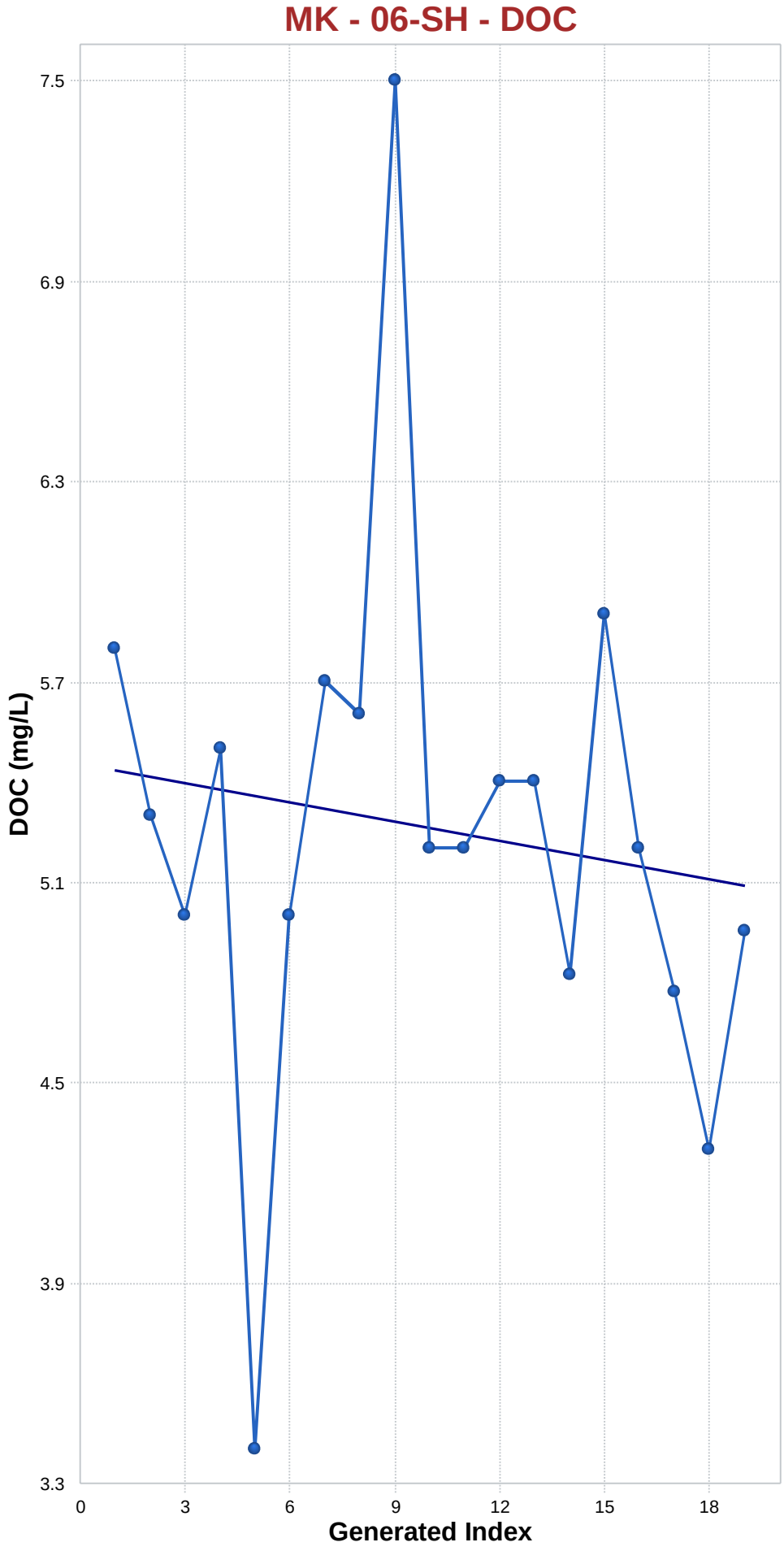
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	122.8943
Standardized Value of S	-4.1336
M-K Test Value (S)	-509
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0093

Statistically significant evidence of a decreasing trend at the specified level of significance.



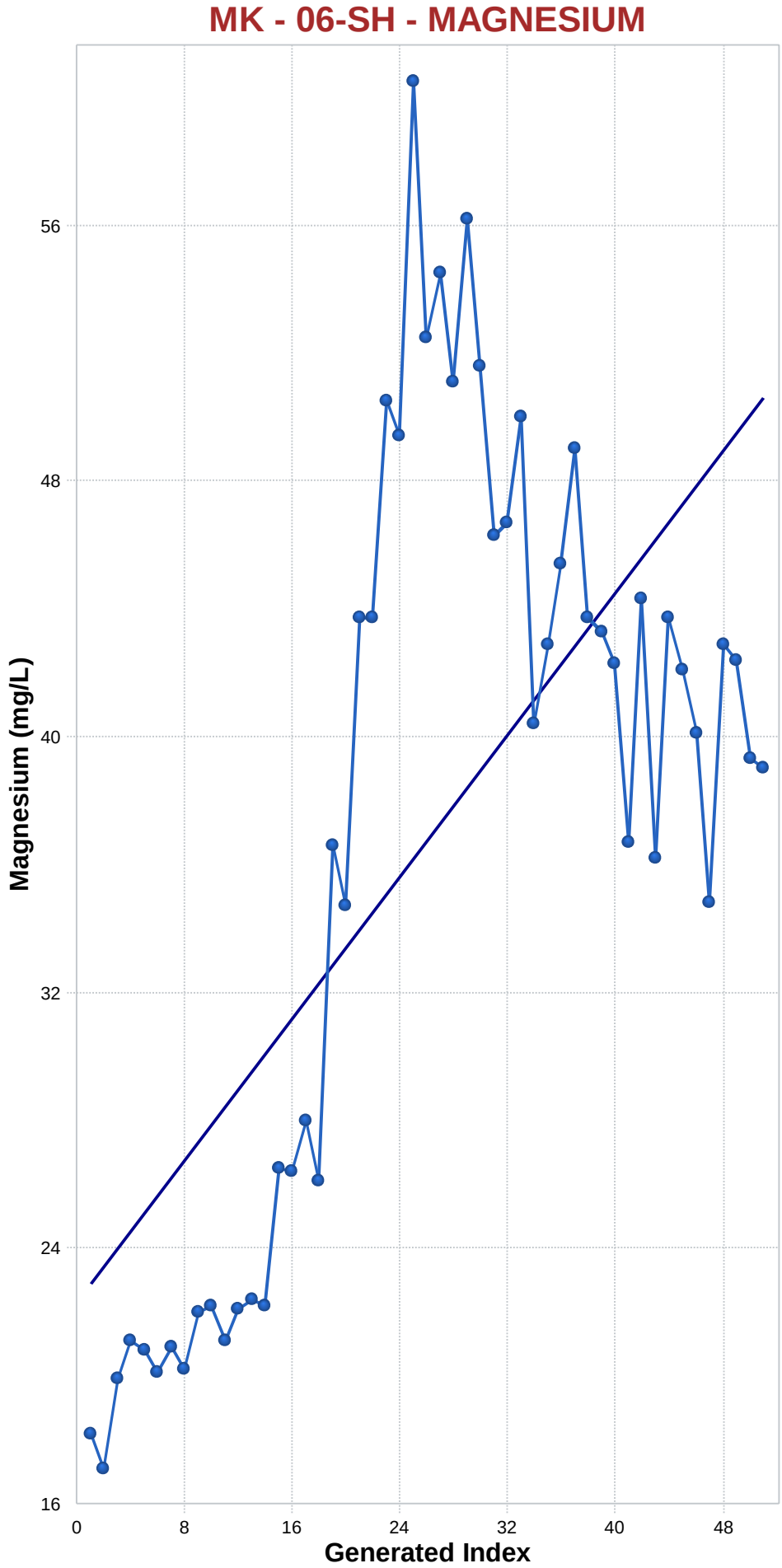
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4839
Standardized Value of S	-1.3692
M-K Test Value (S)	-40
Tabulated p-value	0.0820
Approximate p-value	0.0855

OLS Regression Line (Blue)

OLS Regression Slope	-0.0191
OLS Regression Intercept	5.4509

Insufficient statistical evidence of a significant trend at the specified level of significance.



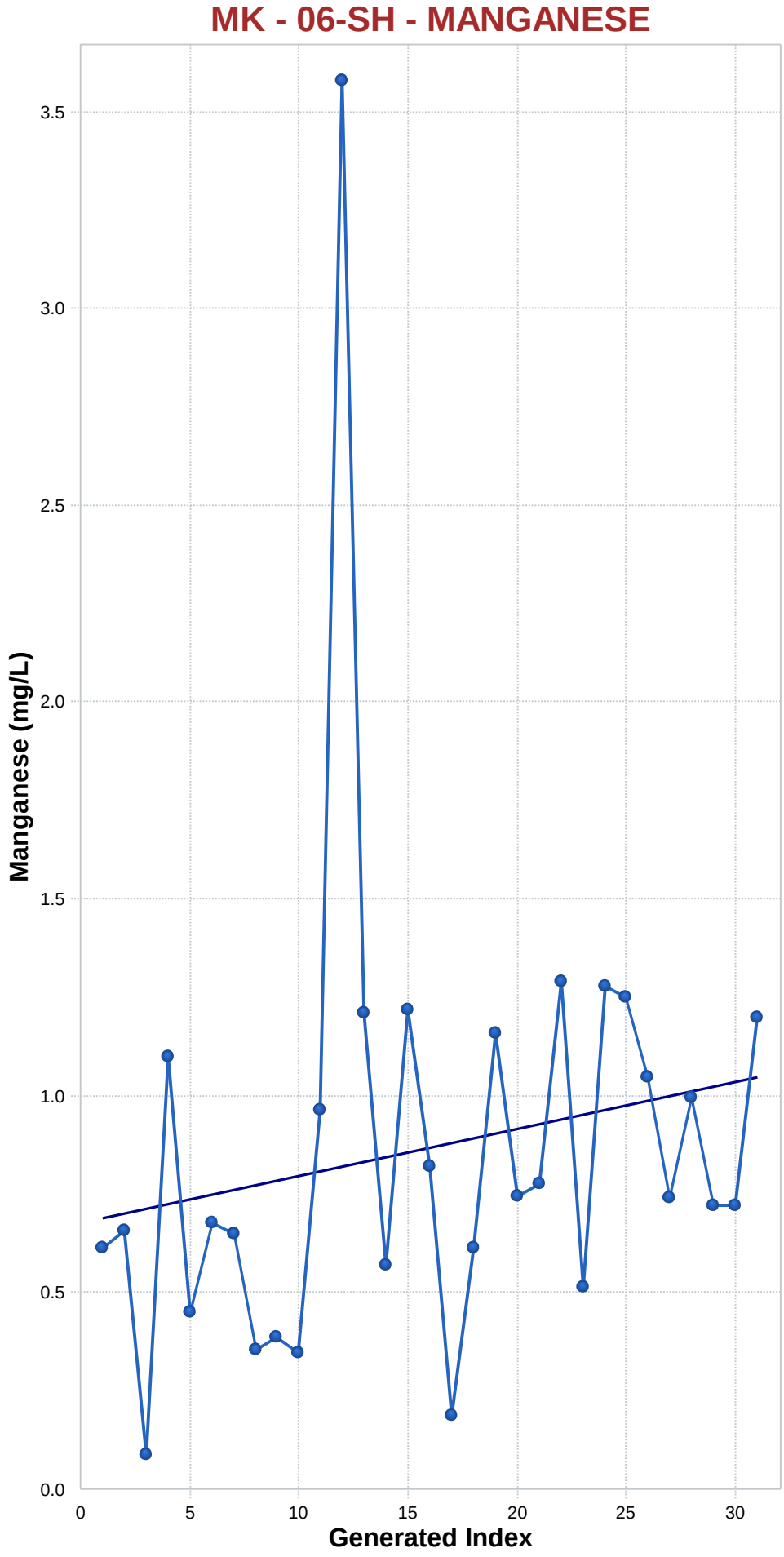
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	123.0718
Standardized Value of S	4.1358
M-K Test Value (S)	510
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.5540
OLS Regression Intercept	22.7362

Statistically significant evidence of an increasing trend at the specified level of significance.



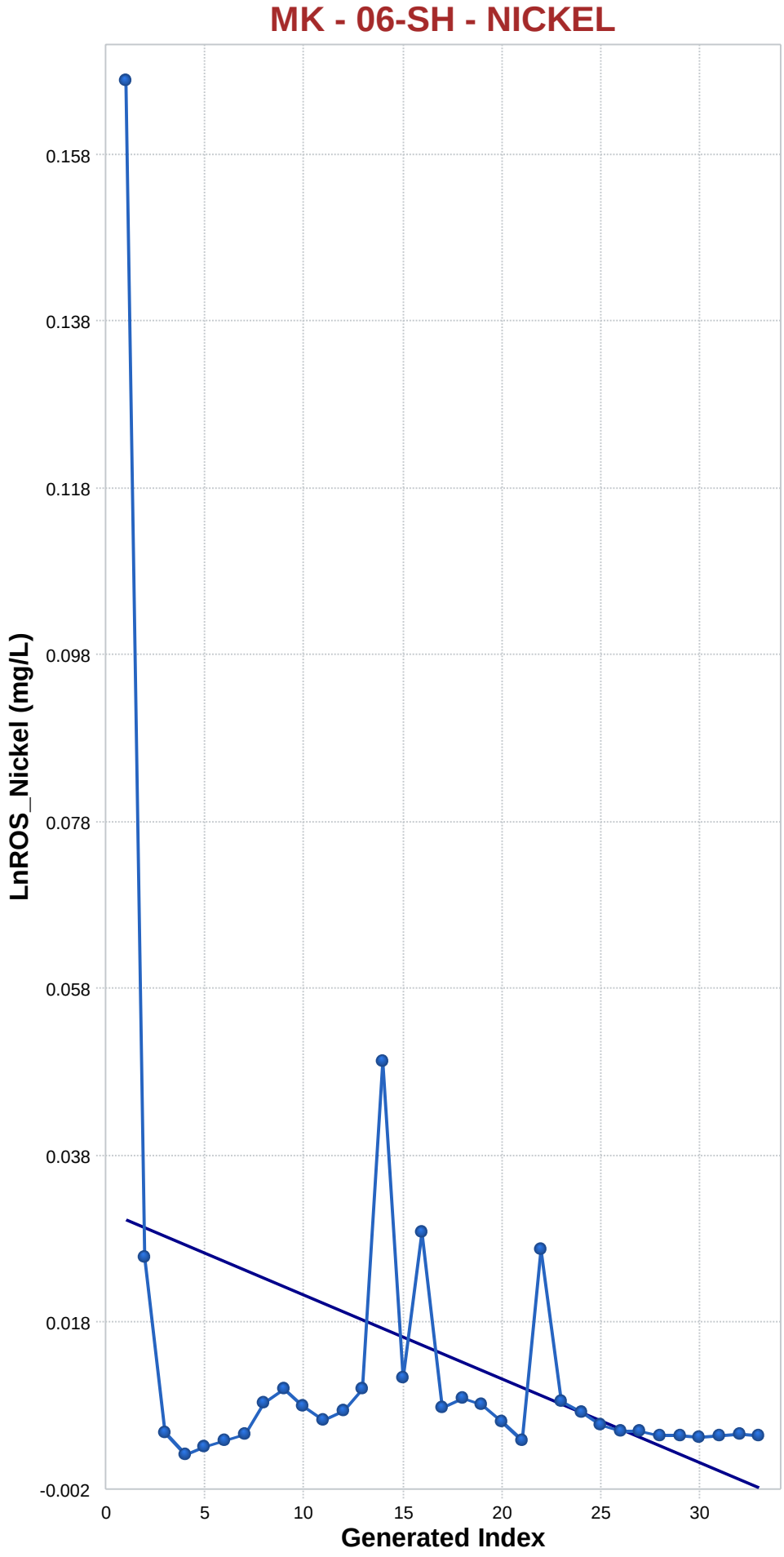
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8274
Standardized Value of S	1.9209
M-K Test Value (S)	114
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0274

OLS Regression Line (Blue)

OLS Regression Slope	0.0119
OLS Regression Intercept	0.6485

Statistically significant evidence of an increasing trend at the specified level of significance.



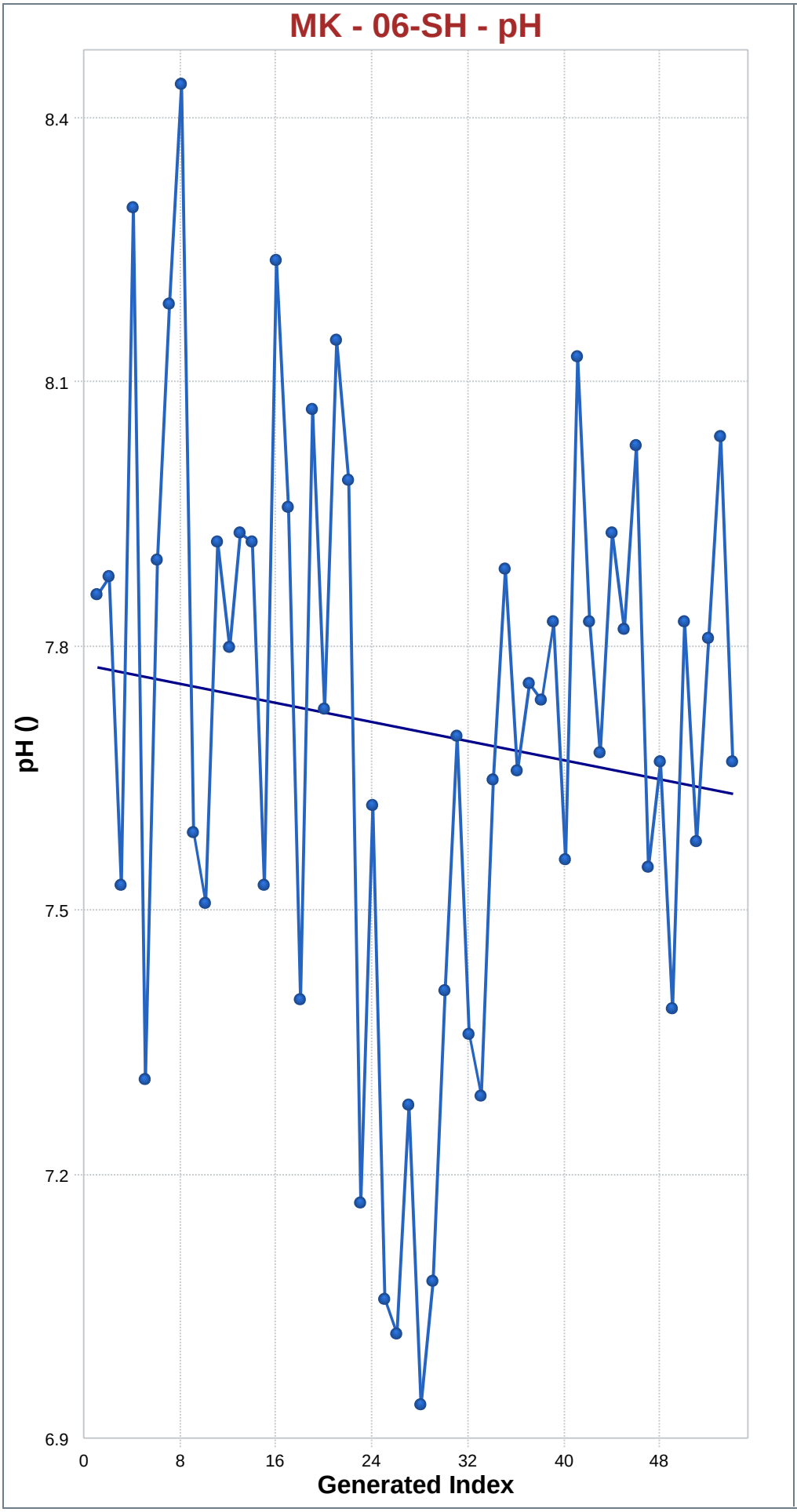
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	-1.8286
M-K Test Value (S)	-119
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0337

OLS Regression Line (Blue)

OLS Regression Slope	-0.0010
OLS Regression Intercept	0.0315

Statistically significant evidence of a decreasing trend at the specified level of significance.



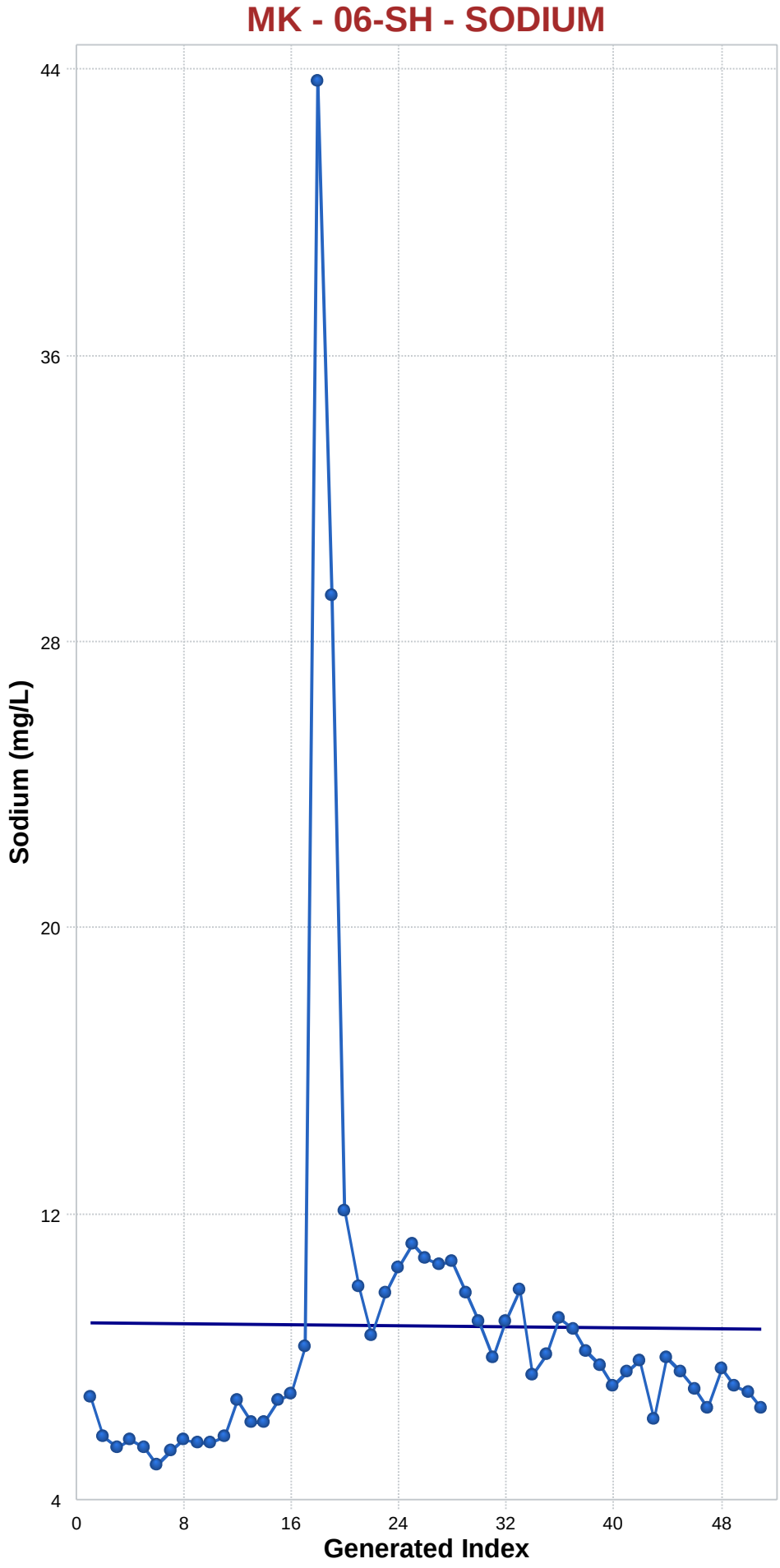
Mann-Kendall Trend Analysis

n	54
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	134.0124
Standardized Value of S	-0.6343
M-K Test Value (S)	-86
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.2630

OLS Regression Line (Blue)

OLS Regression Slope	-0.0027
OLS Regression Intercept	7.7410

Insufficient statistical evidence of a significant trend at the specified level of significance.



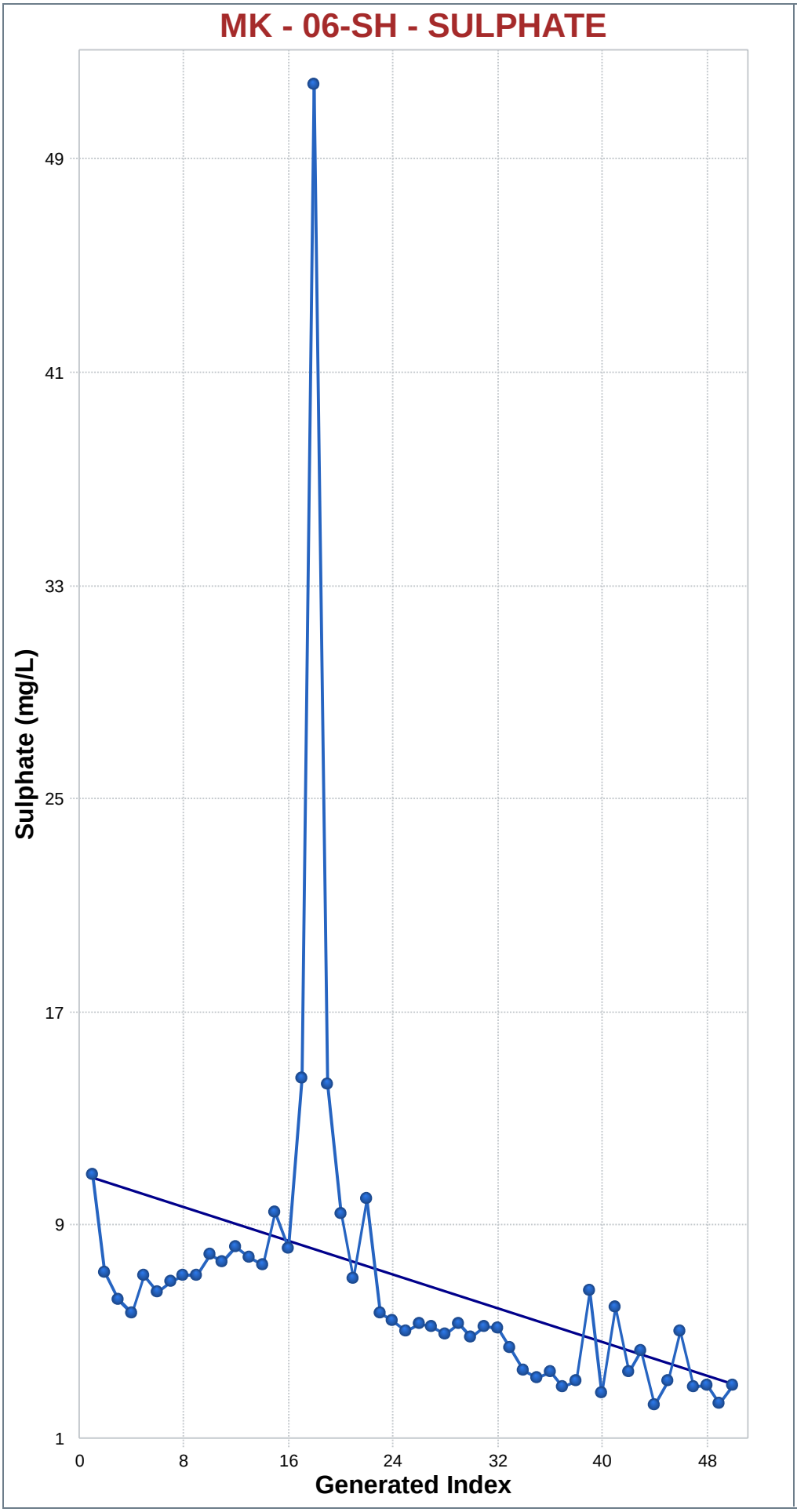
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	123.0745
Standardized Value of S	1.4544
M-K Test Value (S)	180
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0729

OLS Regression Line (Blue)

OLS Regression Slope	-0.0029
OLS Regression Intercept	9.3602

Insufficient statistical evidence of a significant trend at the specified level of significance.



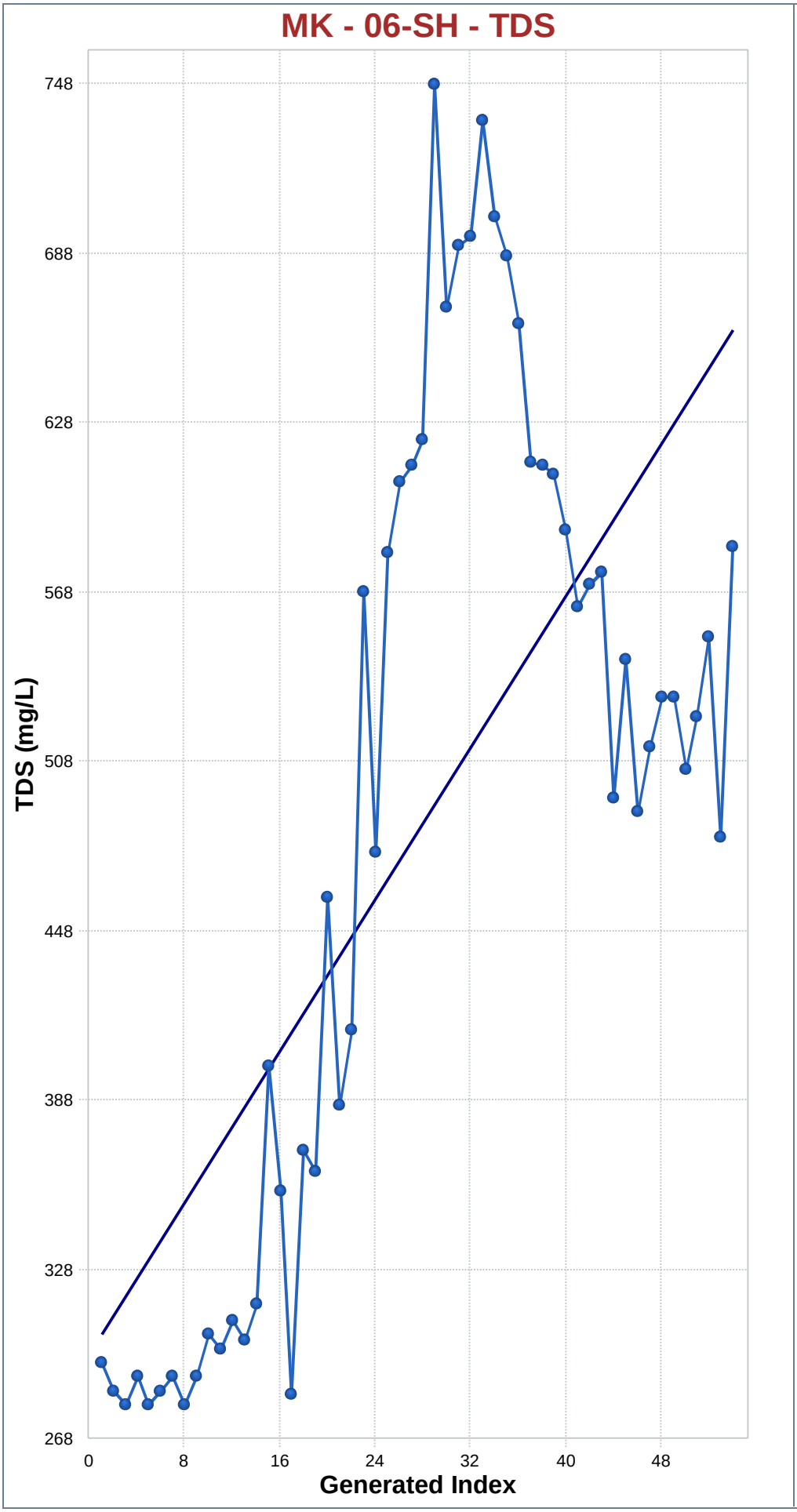
Mann-Kendall Trend Analysis

n	50
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	119.5157
Standardized Value of S	-5.8821
M-K Test Value (S)	-704
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.1582
OLS Regression Intercept	10.5457

Statistically significant evidence of a decreasing trend at the specified level of significance.



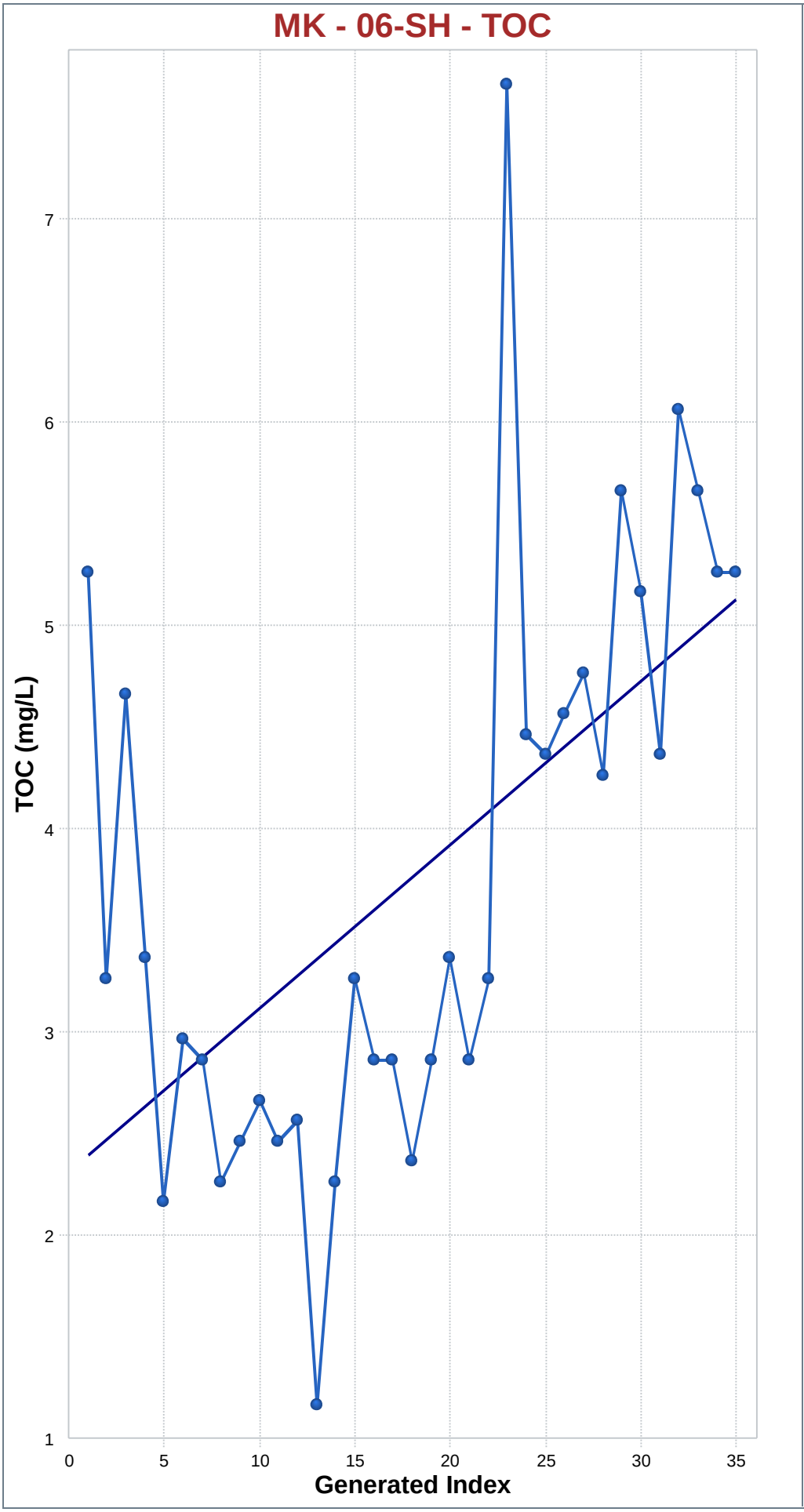
Mann-Kendall Trend Analysis

n	54
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	134.0025
Standardized Value of S	4.8133
M-K Test Value (S)	646
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	6.7067
OLS Regression Intercept	298.5835

Statistically significant evidence of an increasing trend at the specified level of significance.



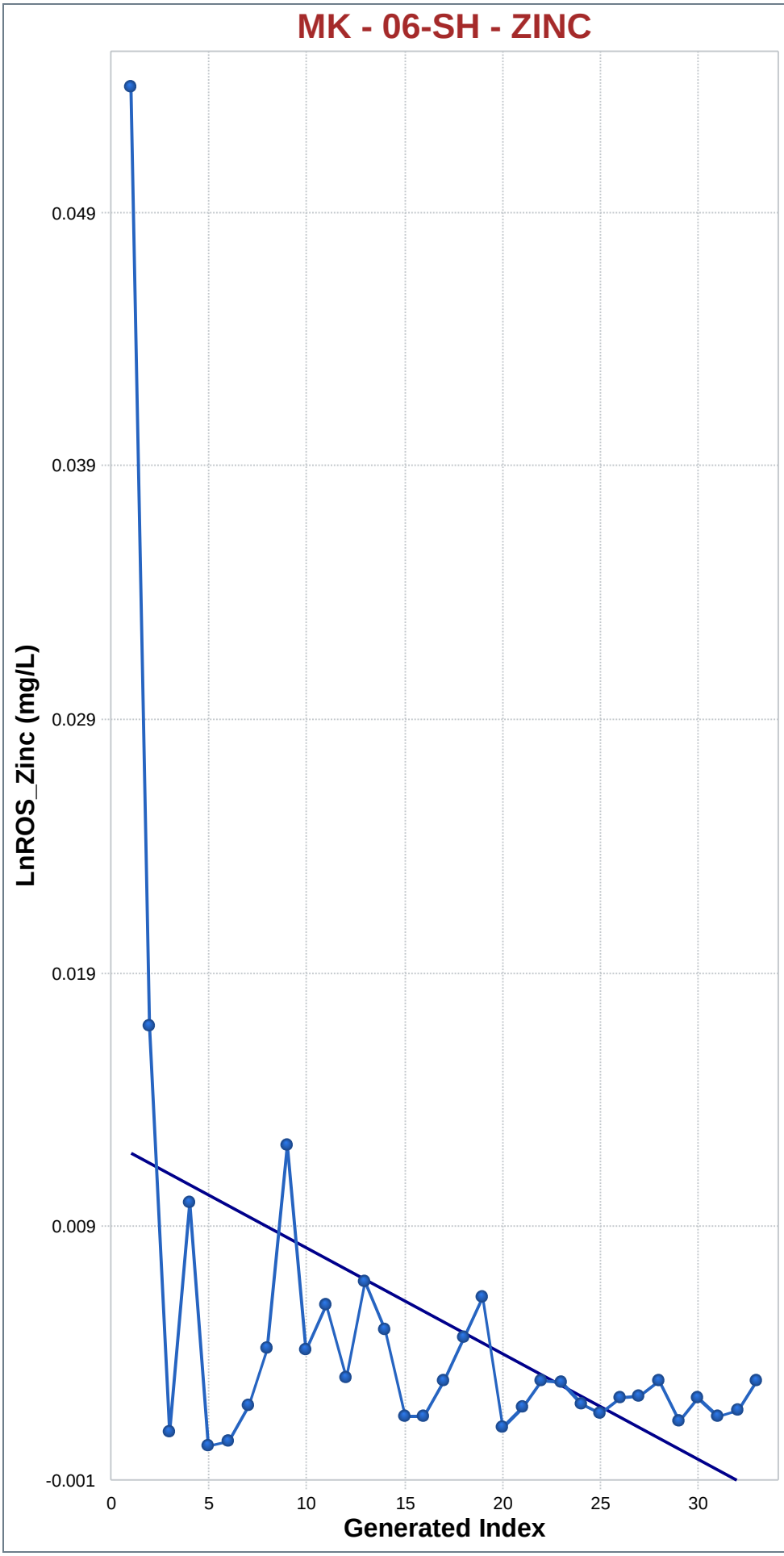
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.2092
Standardized Value of S	3.6035
M-K Test Value (S)	254
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	0.0805
OLS Regression Intercept	2.4476

Statistically significant evidence of an increasing trend at the specified level of significance.



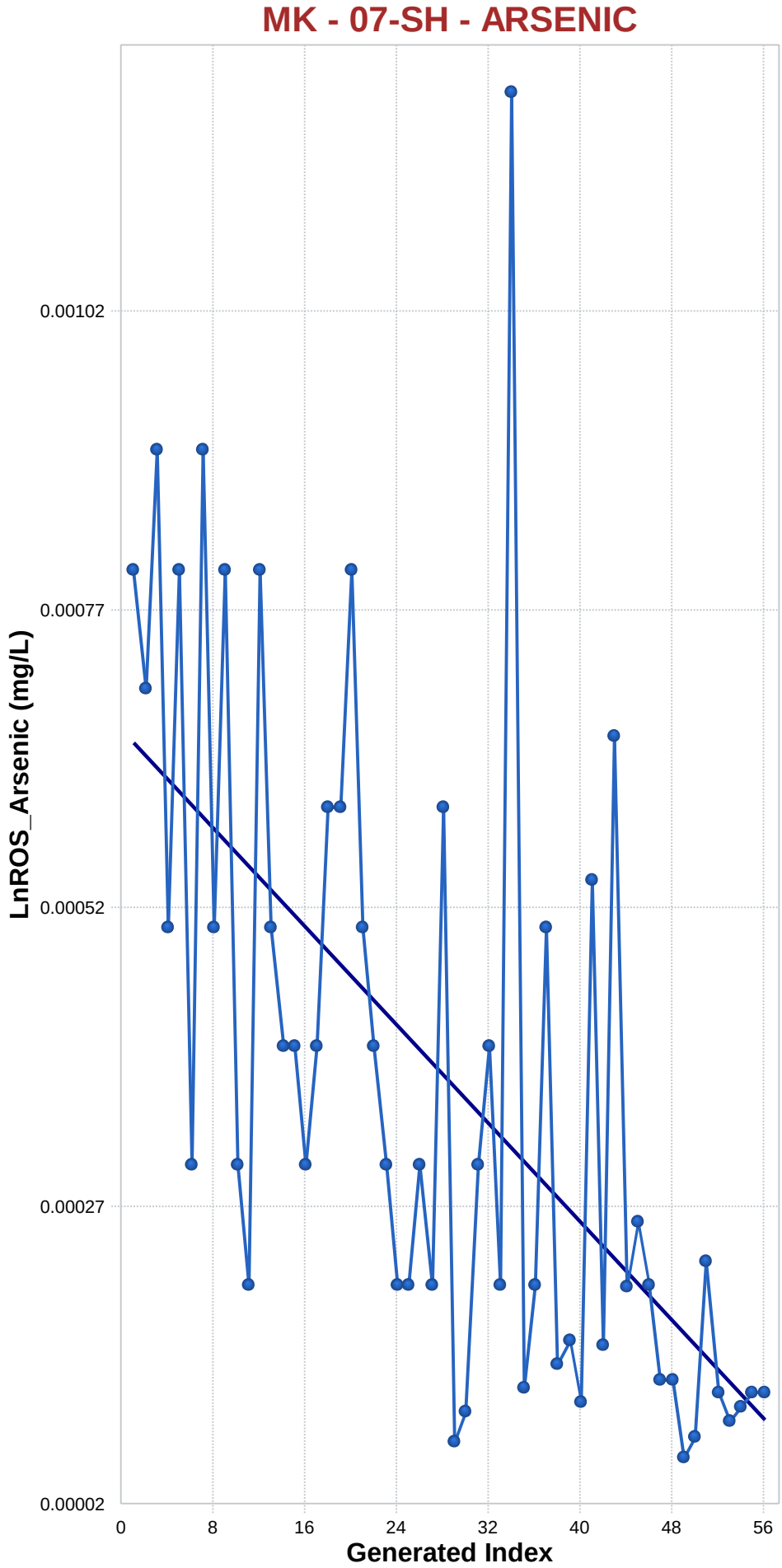
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.4955
Standardized Value of S	-1.8606
M-K Test Value (S)	-121
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0314

OLS Regression Line (Blue)

OLS Regression Slope	-0.0004
OLS Regression Intercept	0.0124

Statistically significant evidence of a decreasing trend at the specified level of significance.



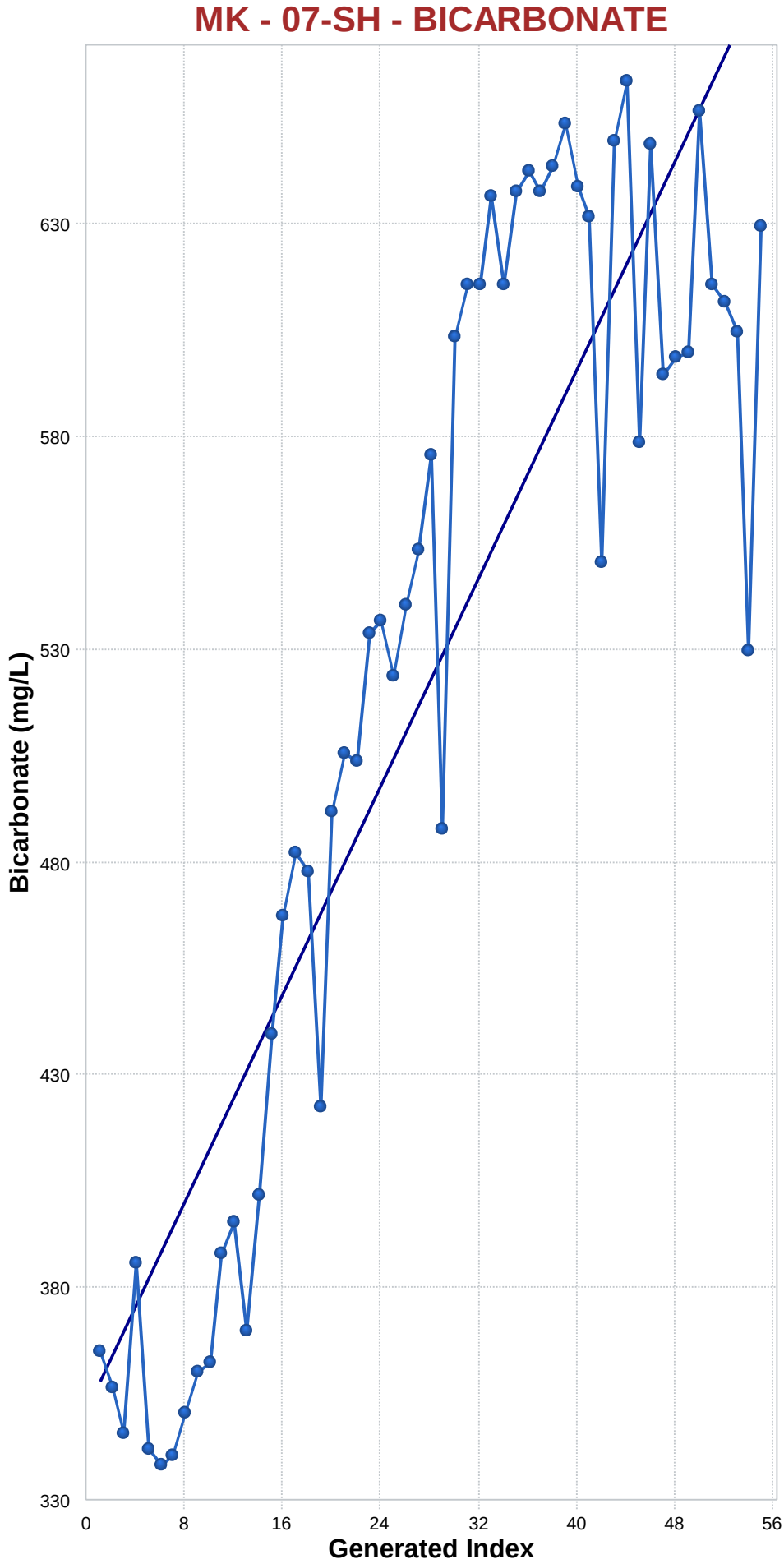
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.0343
Standardized Value of S	-5.5944
M-K Test Value (S)	-790
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0007

Statistically significant evidence of a decreasing trend at the specified level of significance.



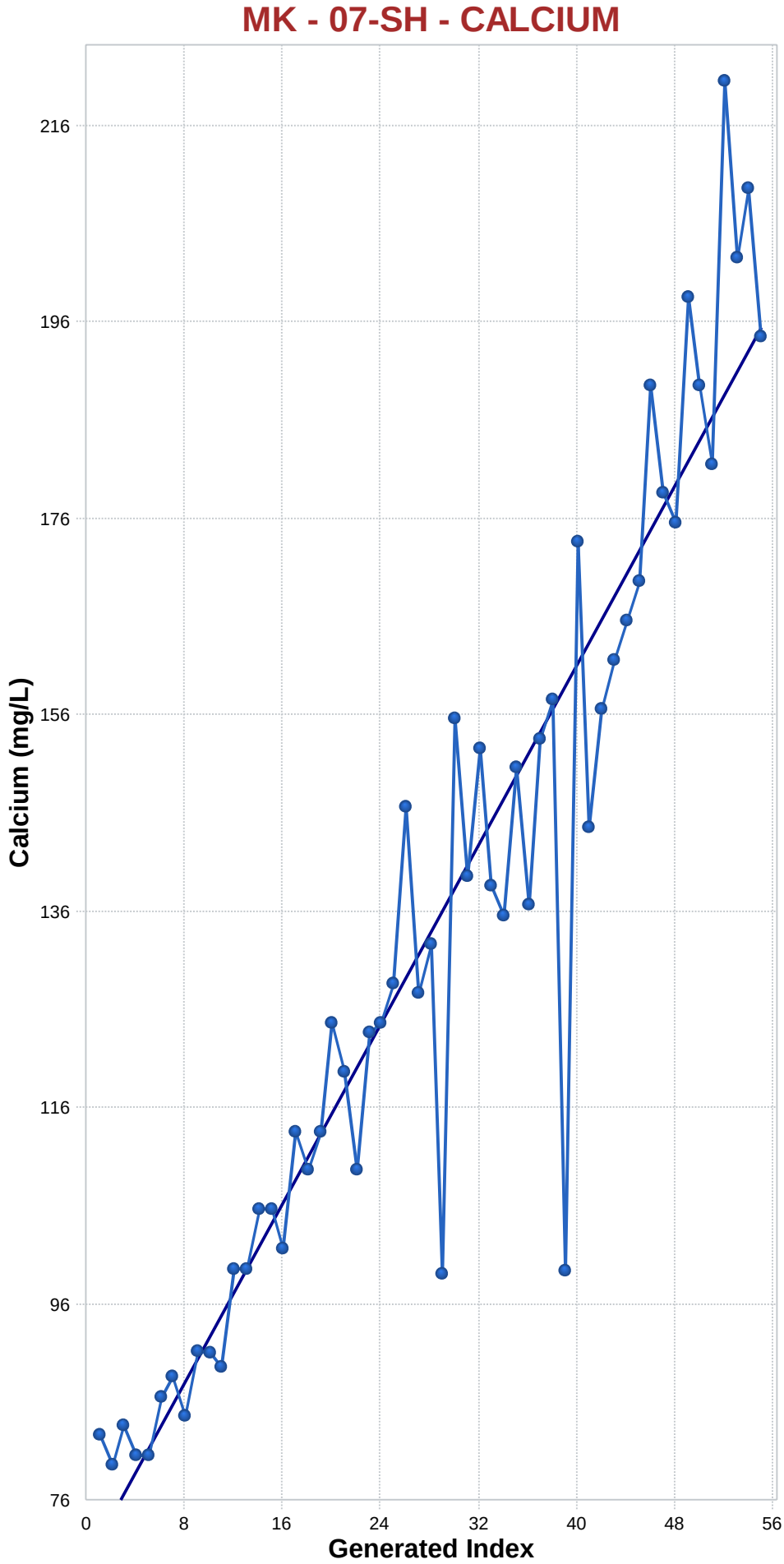
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.7147
Standardized Value of S	7.5301
M-K Test Value (S)	1,038
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	6.1069
OLS Regression Intercept	351.0933

Statistically significant evidence of an increasing trend at the specified level of significance.



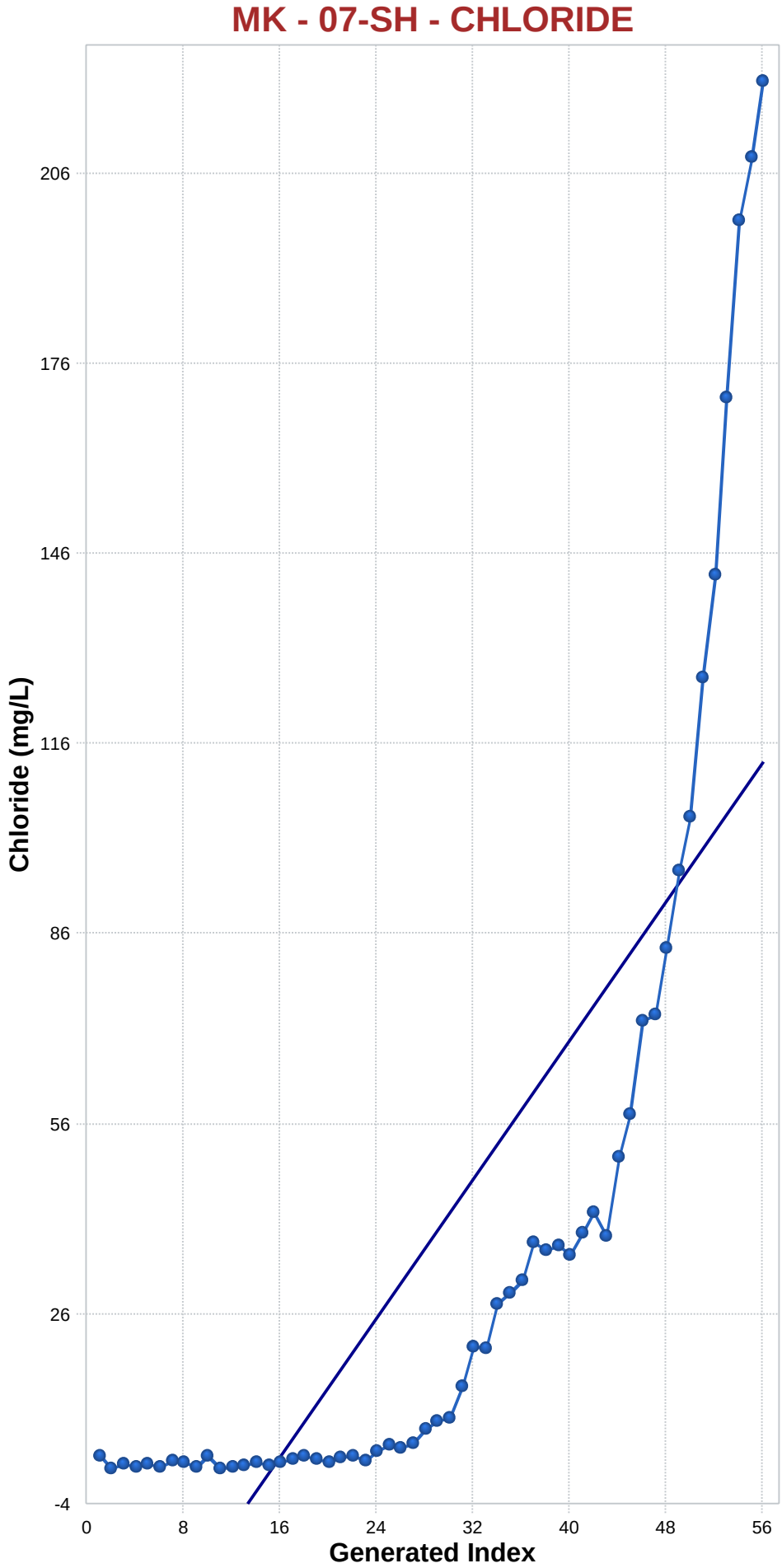
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.7244
Standardized Value of S	9.1124
M-K Test Value (S)	1,256
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	2.2861
OLS Regression Intercept	70.1412

Statistically significant evidence of an increasing trend at the specified level of significance.



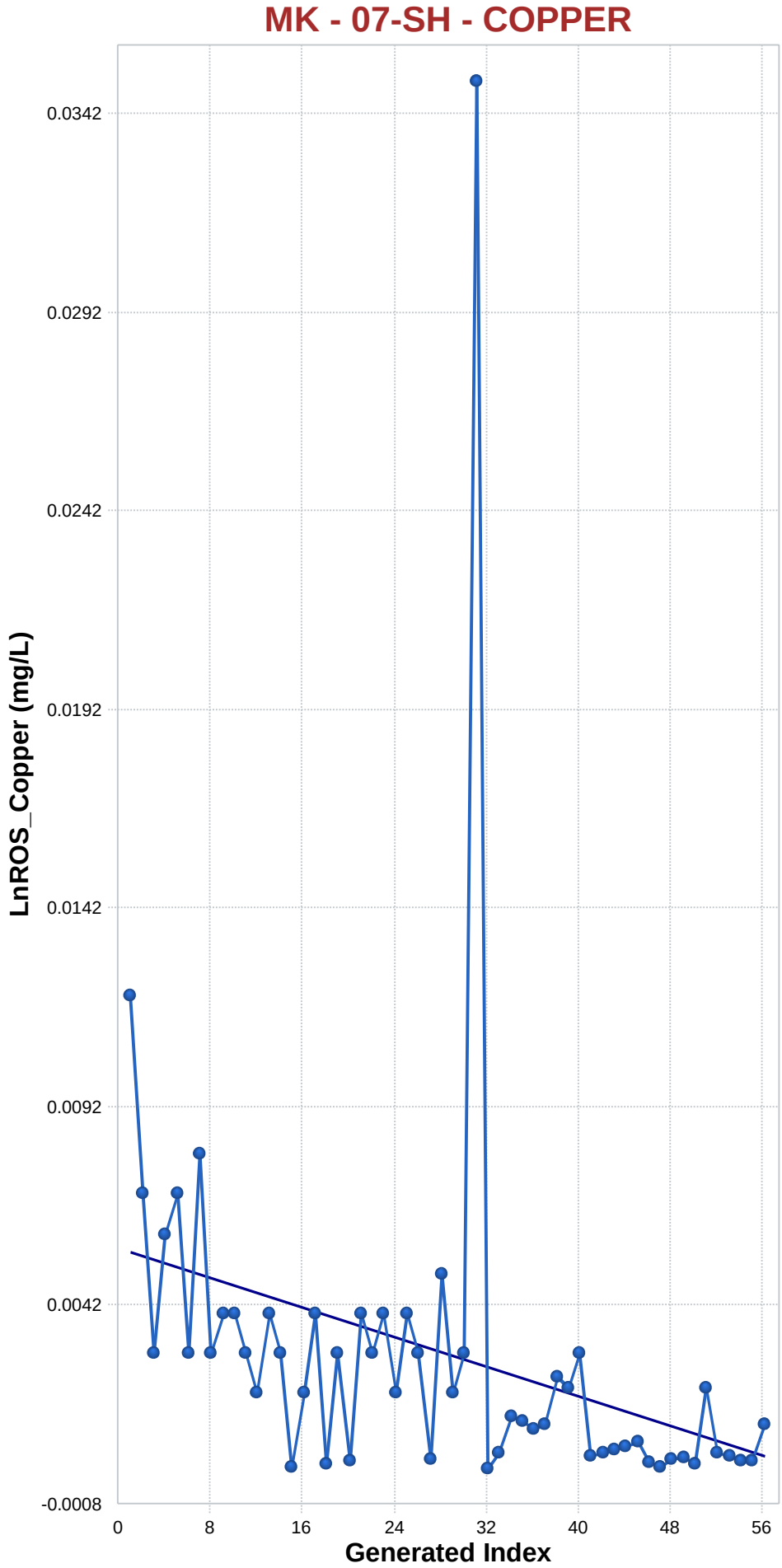
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4449
Standardized Value of S	9.6504
M-K Test Value (S)	1,366
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	2.7401
OLS Regression Intercept	-40.7337

Statistically significant evidence of an increasing trend at the specified level of significance.



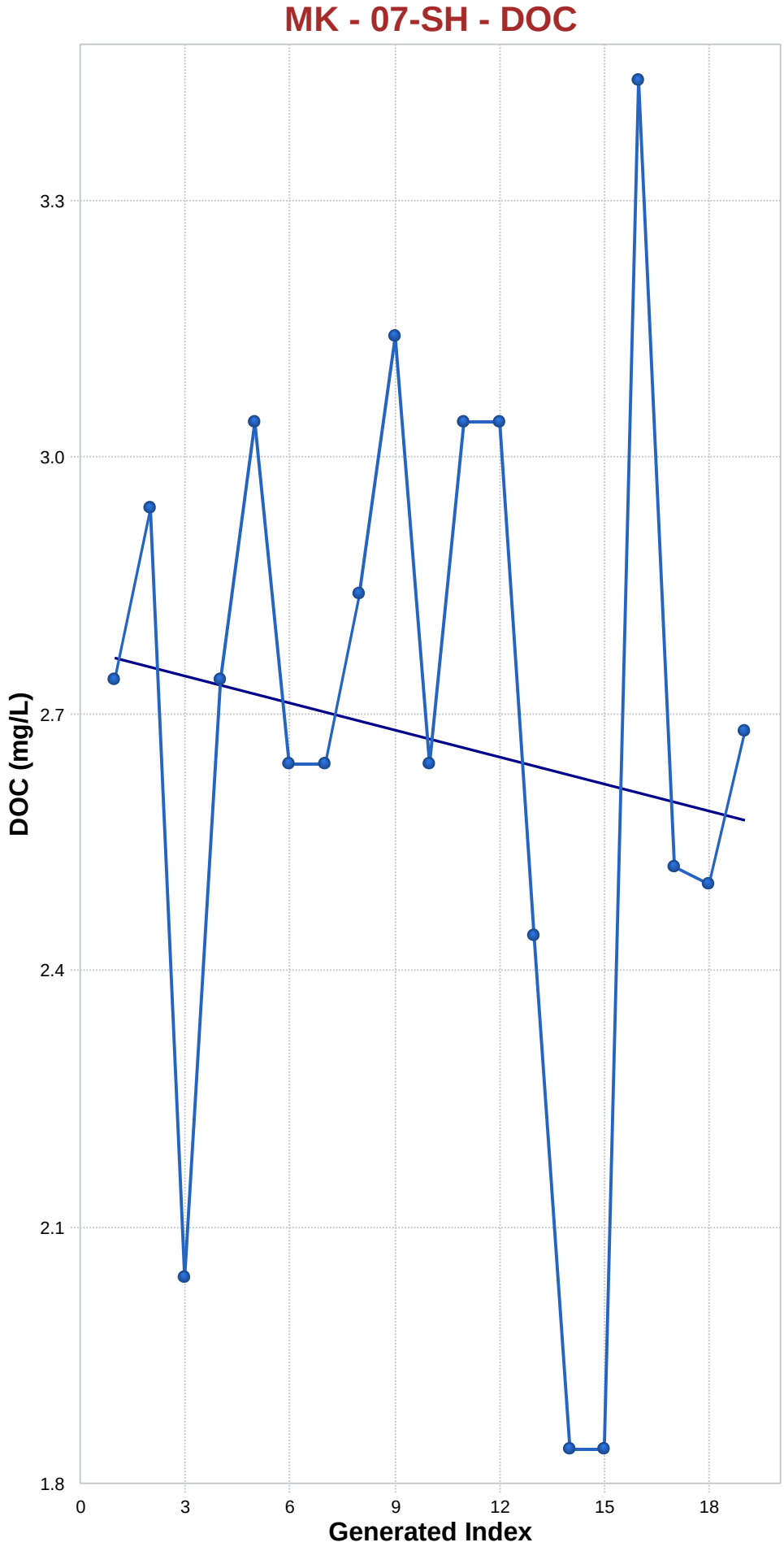
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	140.8545
Standardized Value of S	-5.1614
M-K Test Value (S)	-728
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0056

Statistically significant evidence of a decreasing trend at the specified level of significance.



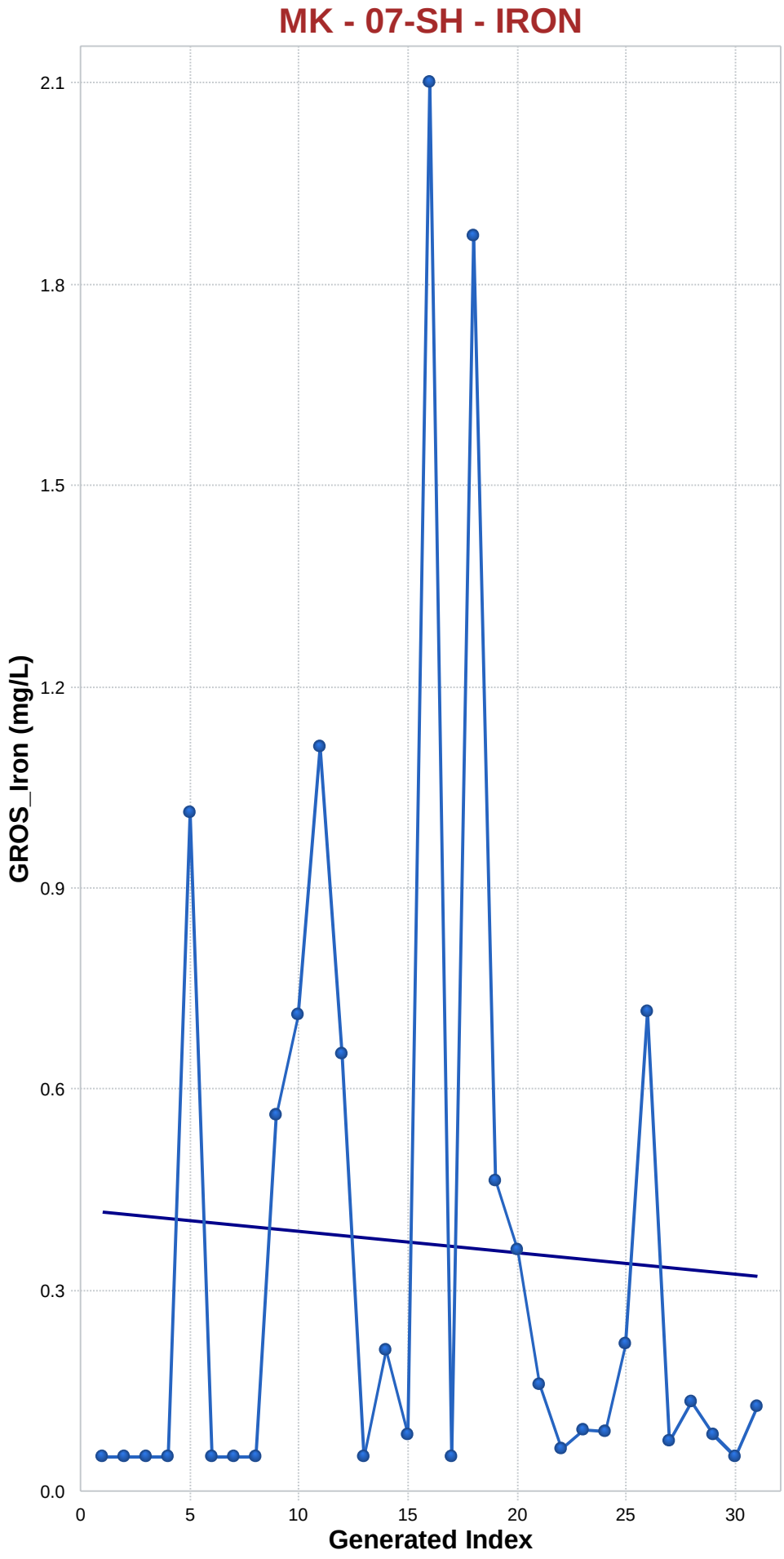
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4195
Standardized Value of S	-0.7037
M-K Test Value (S)	-21
Tabulated p-value	0.2450
Approximate p-value	0.2408

OLS Regression Line (Blue)

OLS Regression Slope	-0.0105
OLS Regression Intercept	2.7358

Insufficient statistical evidence of a significant trend at the specified level of significance.



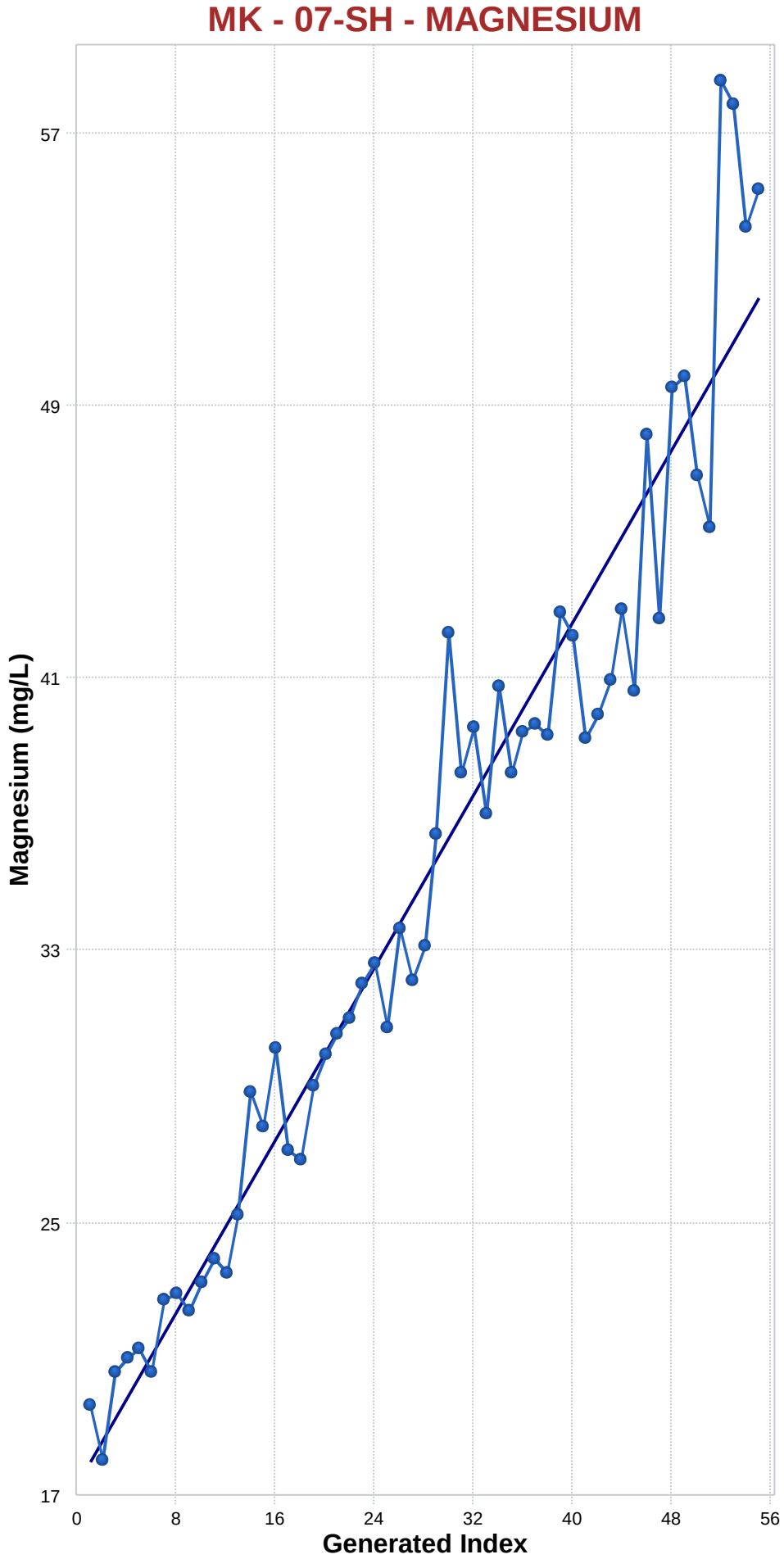
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	57.7552
Standardized Value of S	0.8311
M-K Test Value (S)	49
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2030

OLS Regression Line (Blue)

OLS Regression Slope	-0.0032
OLS Regression Intercept	0.3775

Insufficient statistical evidence of a significant trend at the specified level of significance.



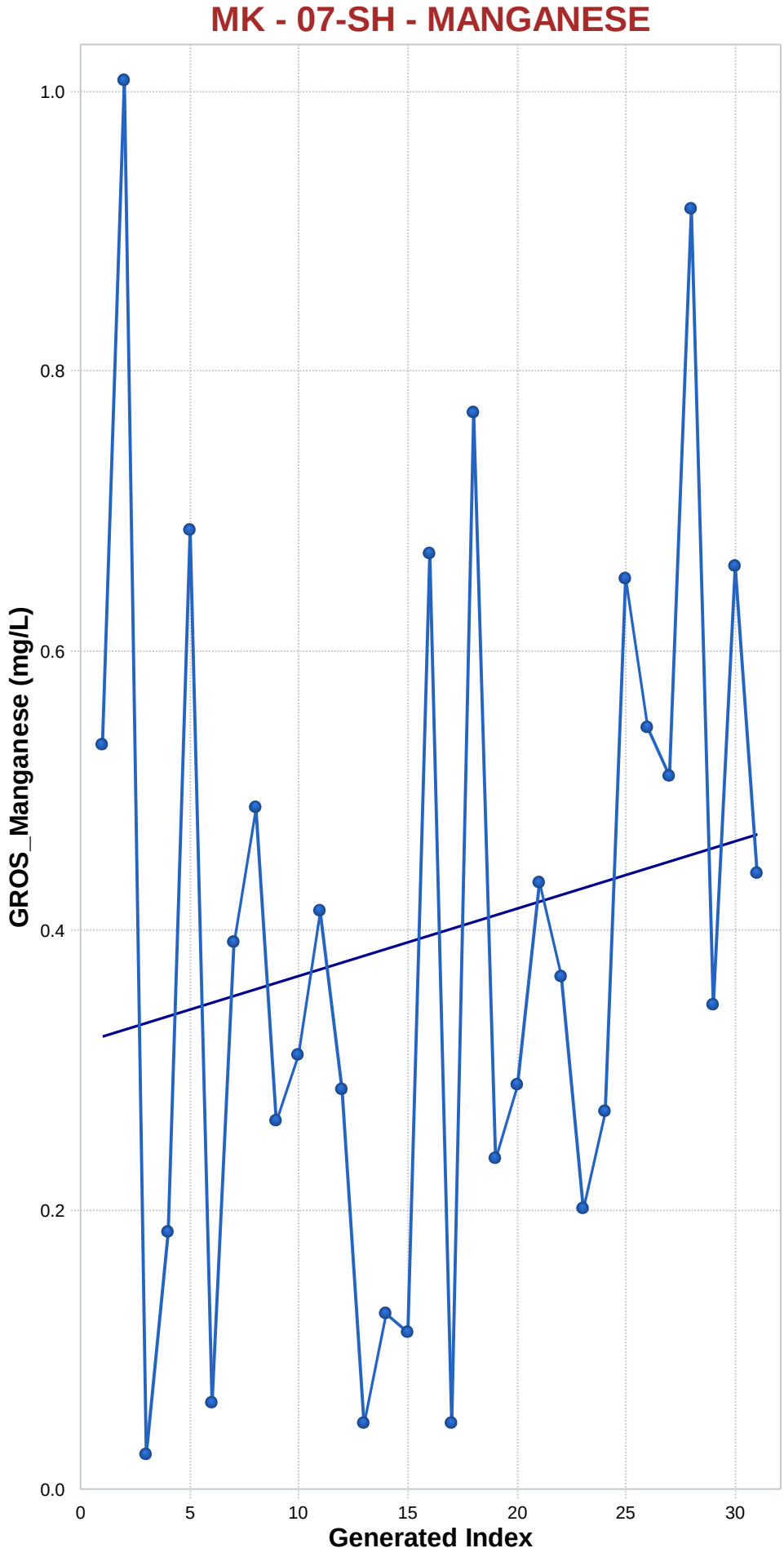
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.7425
Standardized Value of S	9.6121
M-K Test Value (S)	1,325
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.6322
OLS Regression Intercept	17.7438

Statistically significant evidence of an increasing trend at the specified level of significance.



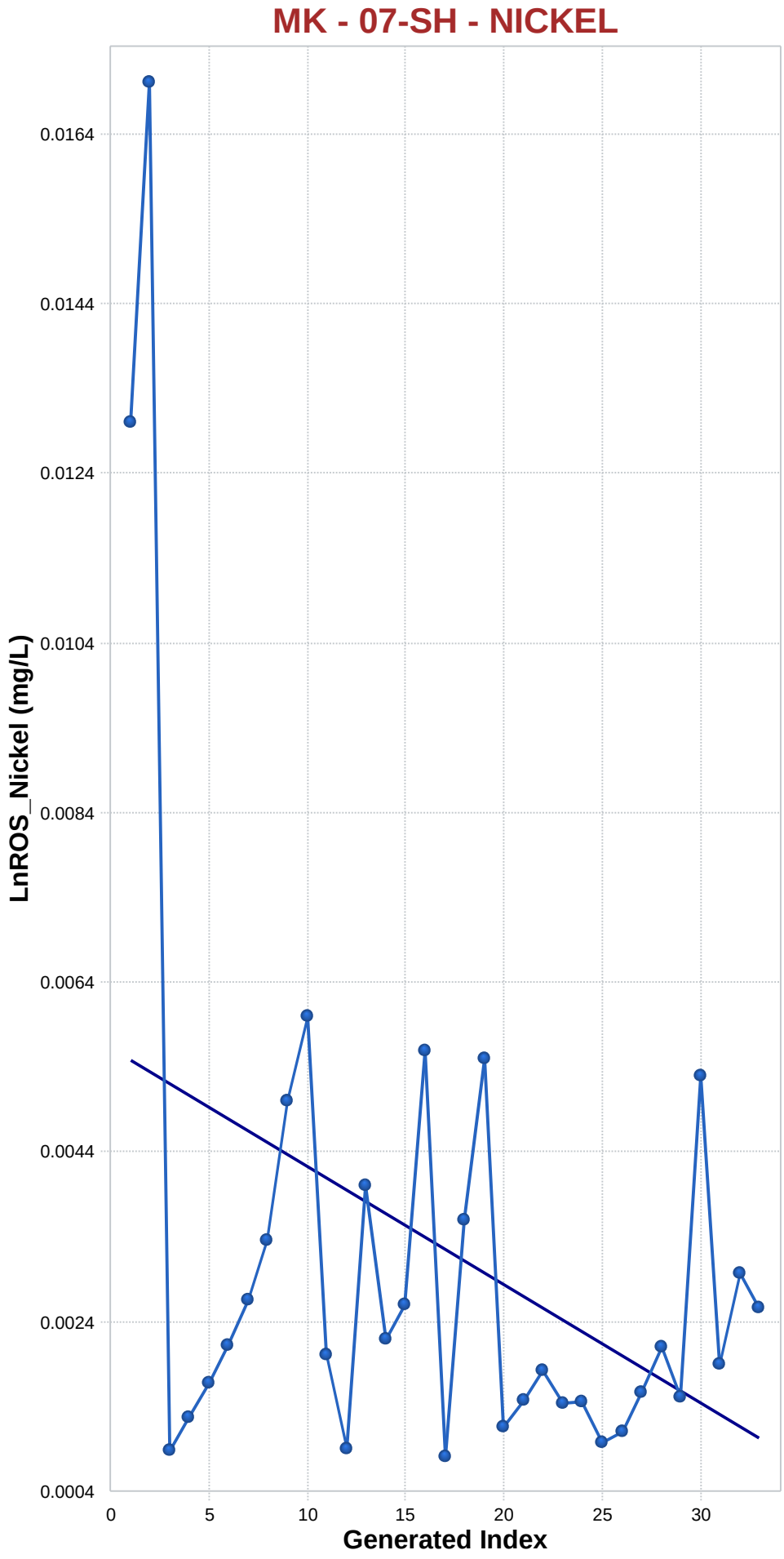
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8359
Standardized Value of S	1.2577
M-K Test Value (S)	75
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1042

OLS Regression Line (Blue)

OLS Regression Slope	0.0048
OLS Regression Intercept	0.3061

Insufficient statistical evidence of a significant trend at the specified level of significance.



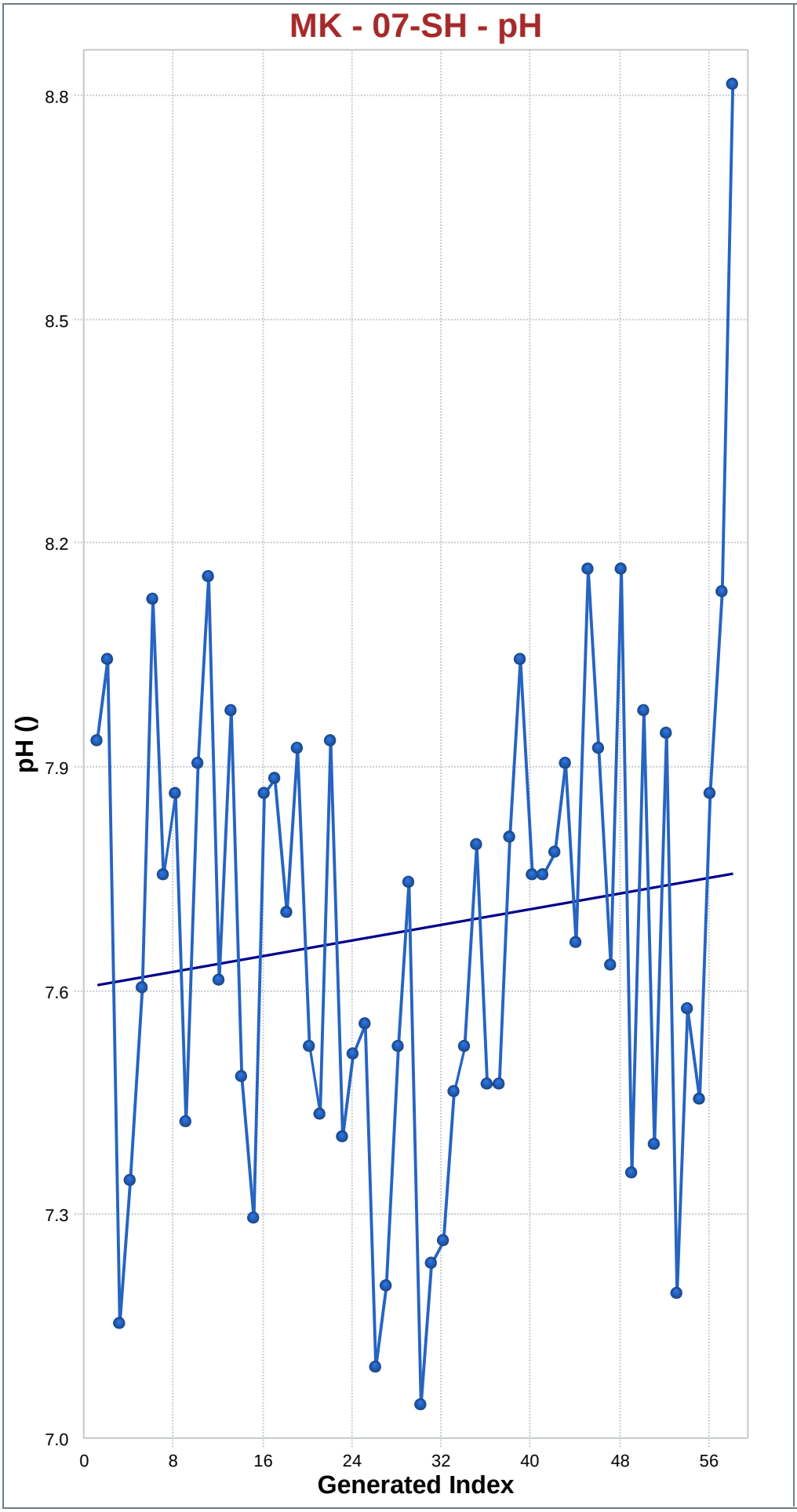
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5394
Standardized Value of S	-0.8522
M-K Test Value (S)	-56
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1971

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0056

Insufficient statistical evidence of a significant trend at the specified level of significance.



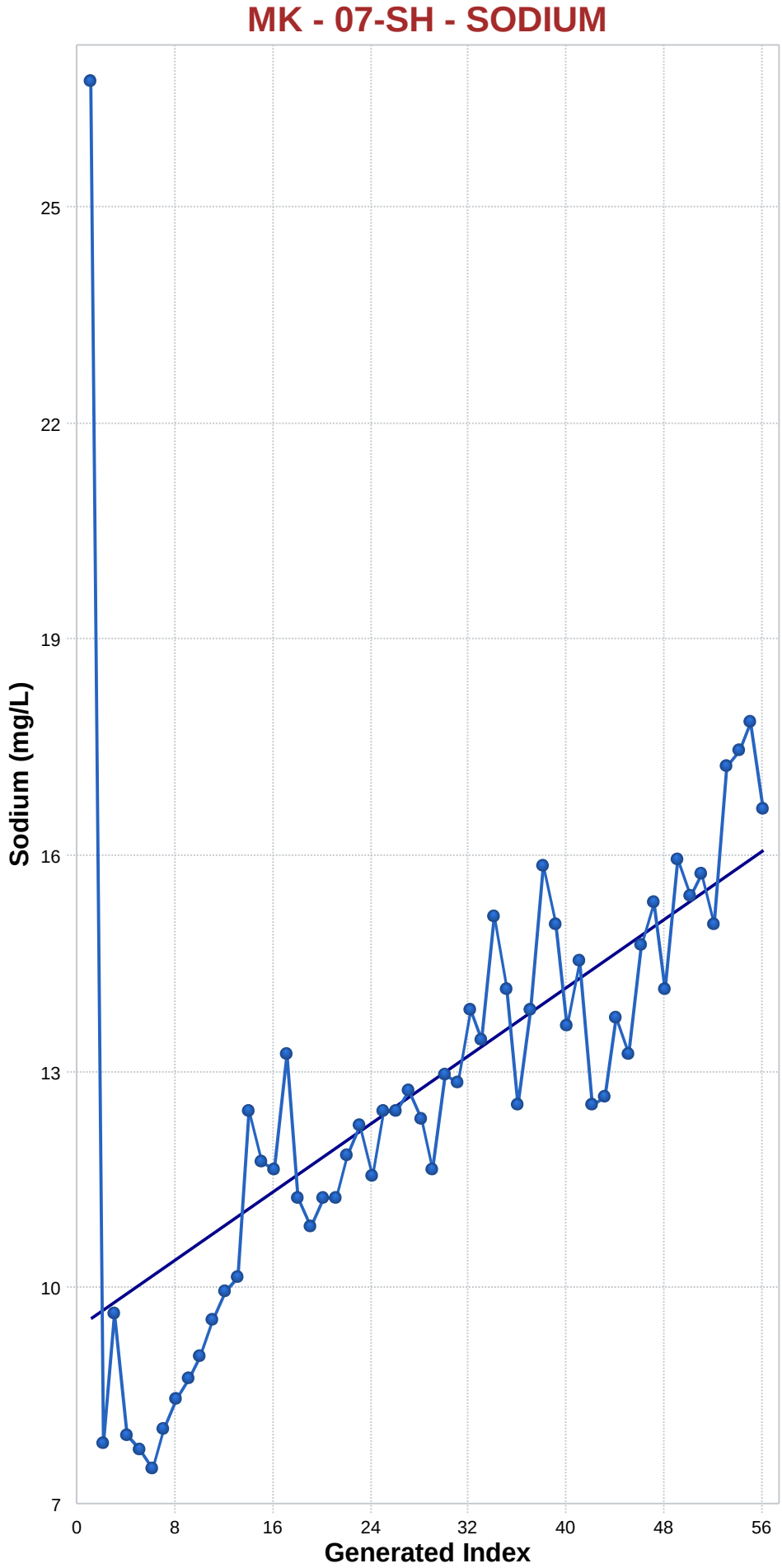
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	149.0157
Standardized Value of S	0.6845
M-K Test Value (S)	103
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2468

OLS Regression Line (Blue)

OLS Regression Slope	0.0026
OLS Regression Intercept	7.6213

Insufficient statistical evidence of a significant trend at the specified level of significance.



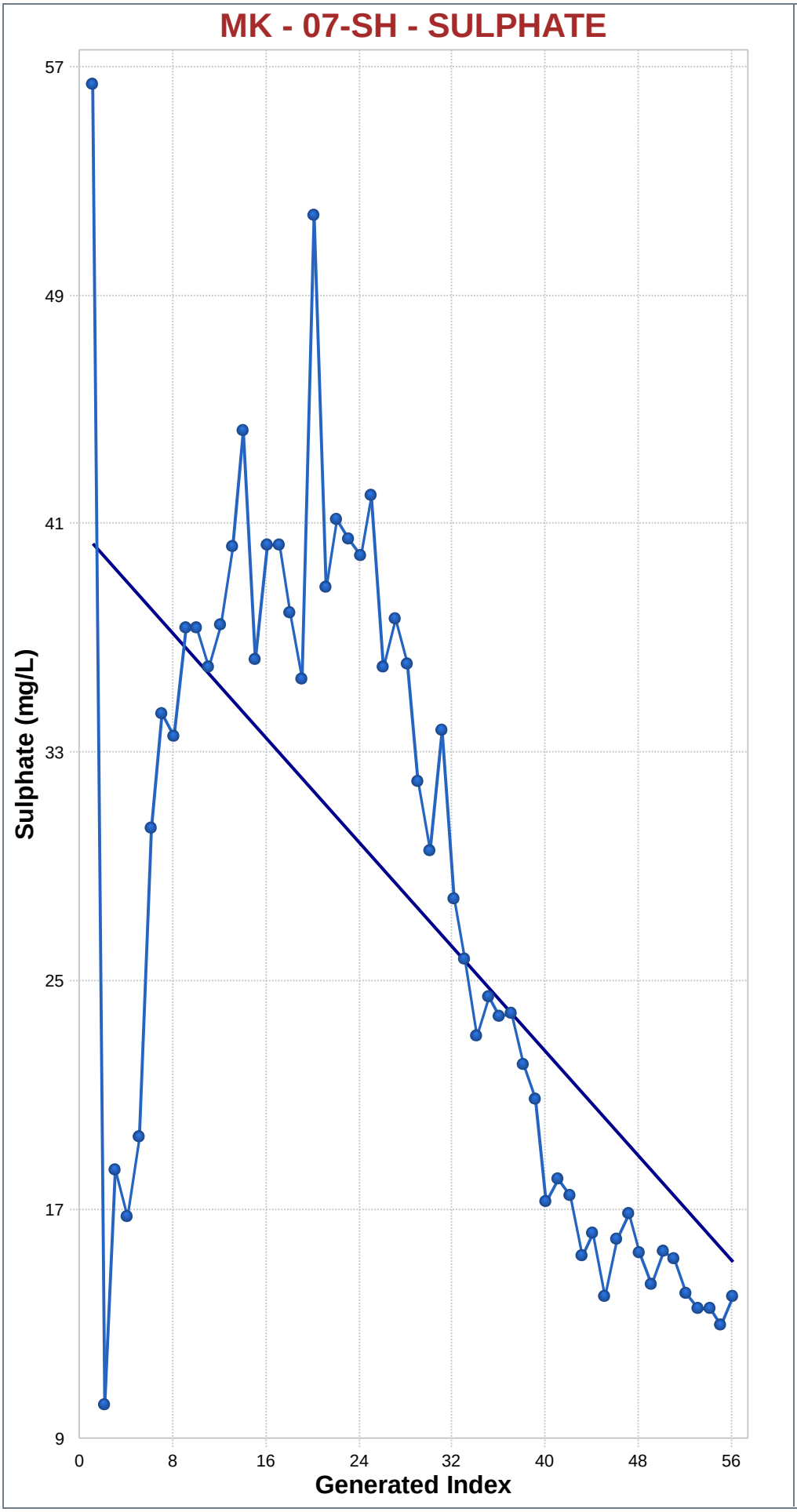
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4449
Standardized Value of S	7.8688
M-K Test Value (S)	1,114
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.1180
OLS Regression Intercept	9.7107

Statistically significant evidence of an increasing trend at the specified level of significance.



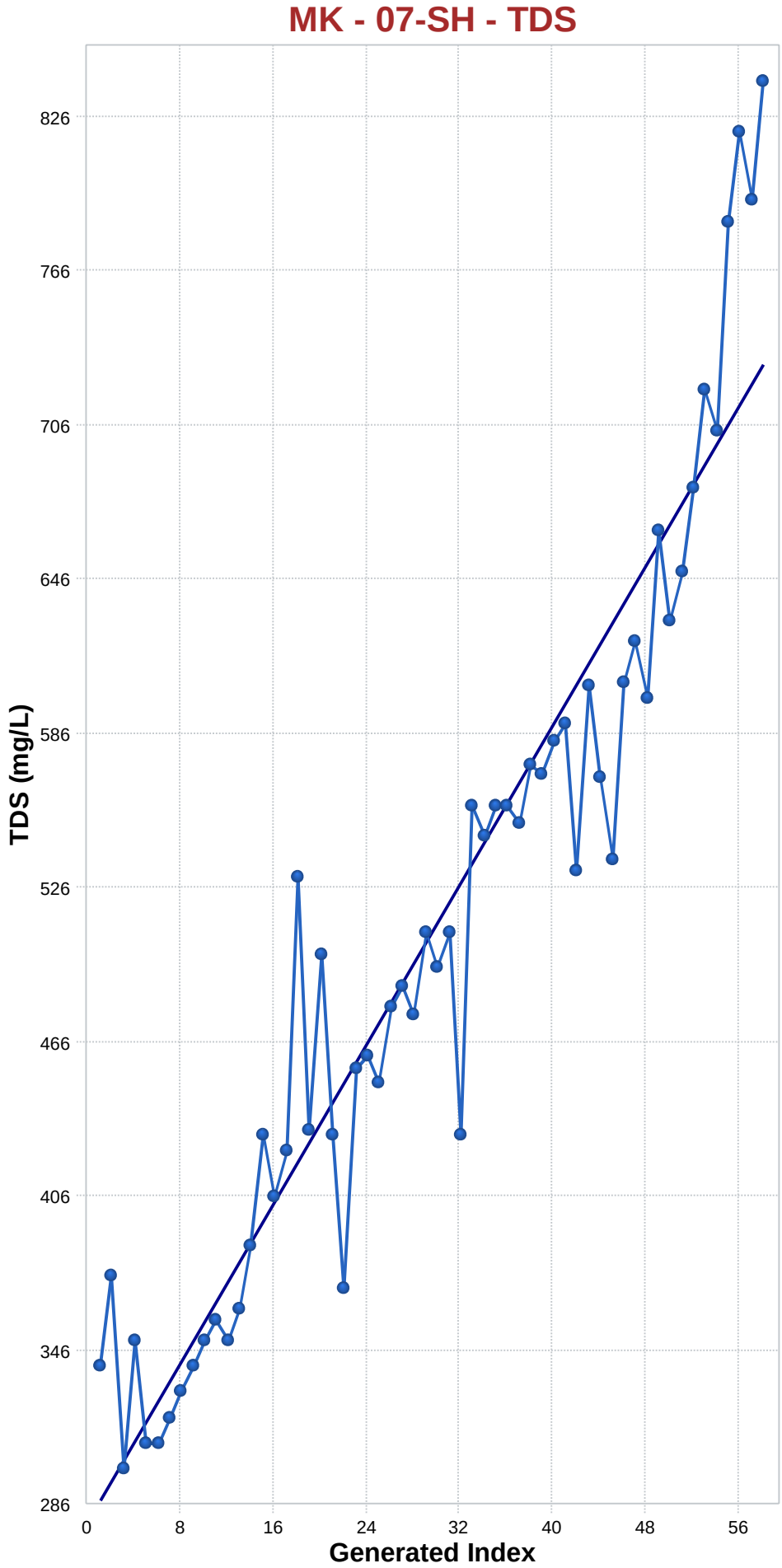
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4744
Standardized Value of S	-5.7820
M-K Test Value (S)	-819
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.4568
OLS Regression Intercept	40.3858

Statistically significant evidence of a decreasing trend at the specified level of significance.



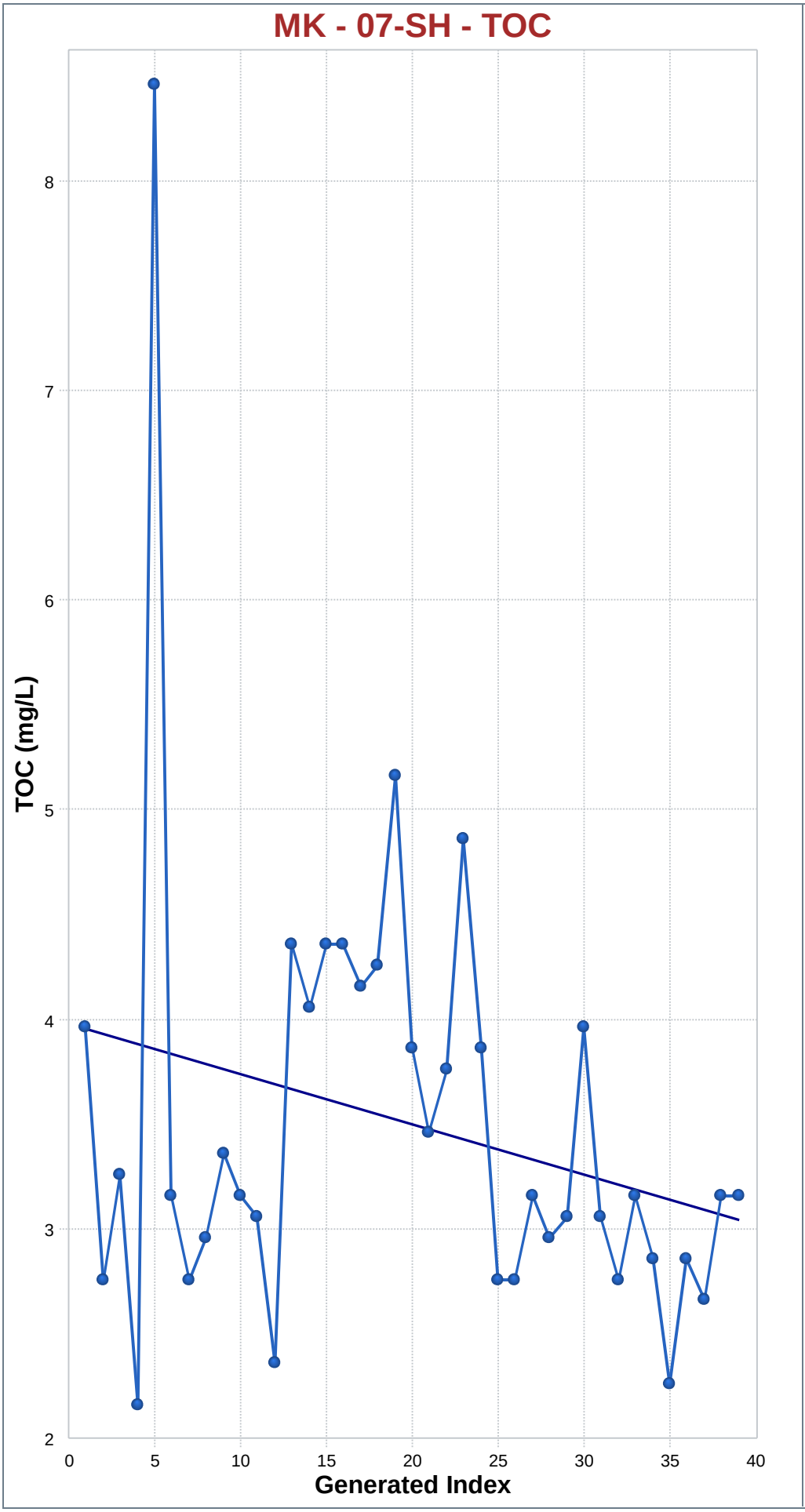
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	149.0291
Standardized Value of S	9.5552
M-K Test Value (S)	1,425
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	7.7515
OLS Regression Intercept	280.0907

Statistically significant evidence of an increasing trend at the specified level of significance.



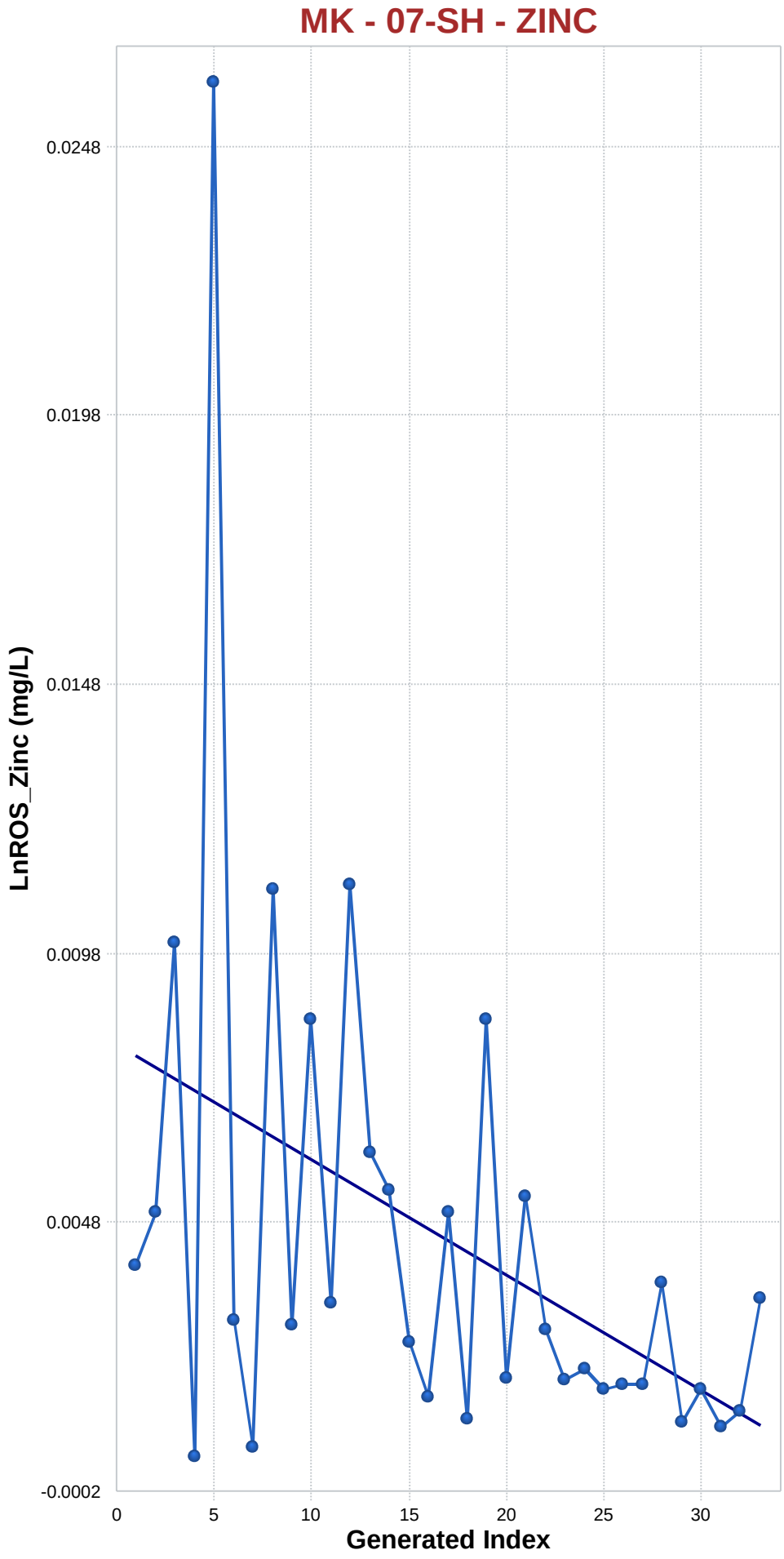
Mann-Kendall Trend Analysis

n	39
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	82.3246
Standardized Value of S	-1.3969
M-K Test Value (S)	-116
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0812

OLS Regression Line (Blue)

OLS Regression Slope	-0.0240
OLS Regression Intercept	3.8216

Insufficient statistical evidence of a significant trend at the specified level of significance.



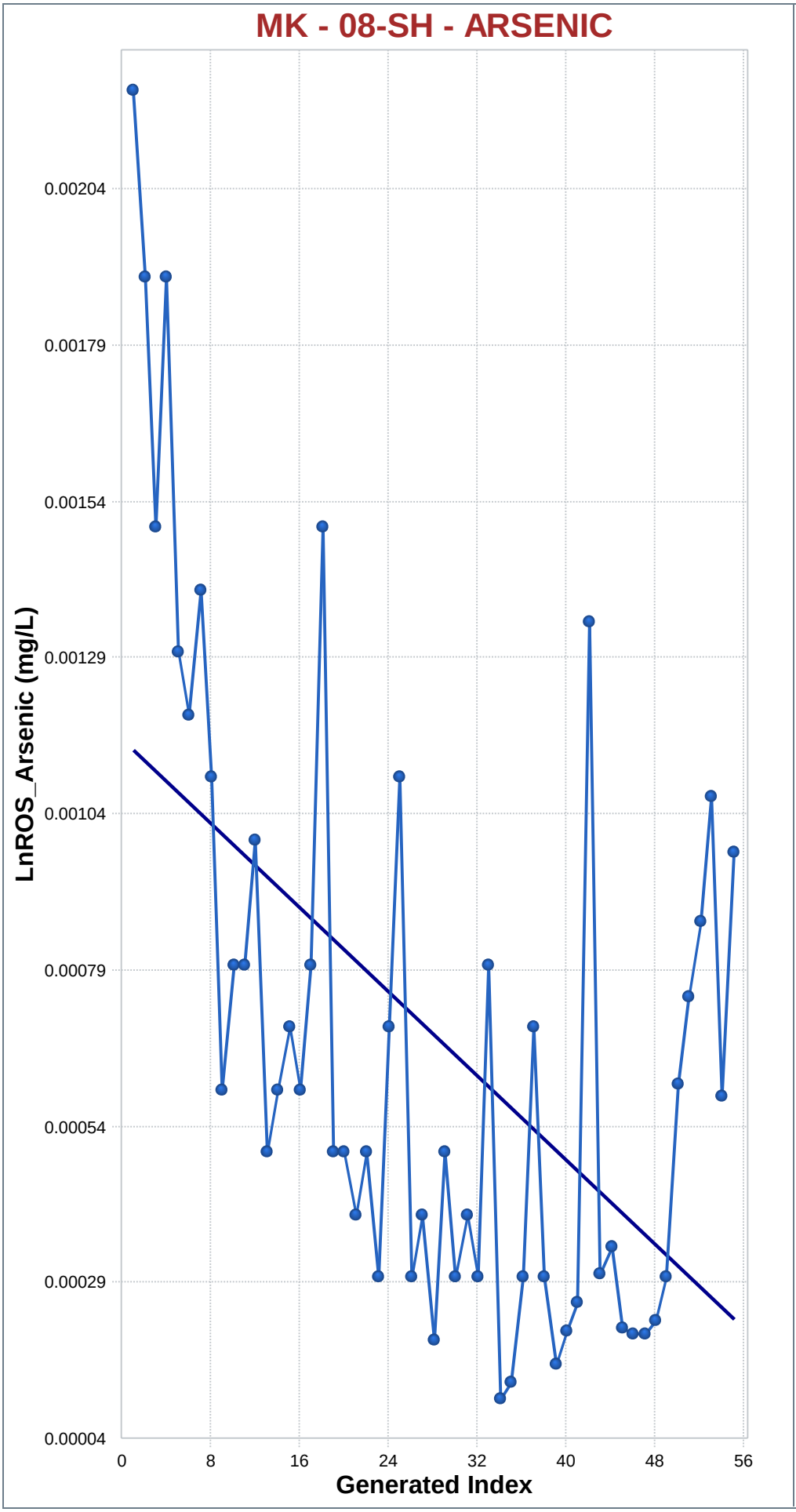
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5084
Standardized Value of S	-2.7748
M-K Test Value (S)	-180
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0028

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0081

Statistically significant evidence of a decreasing trend at the specified level of significance.



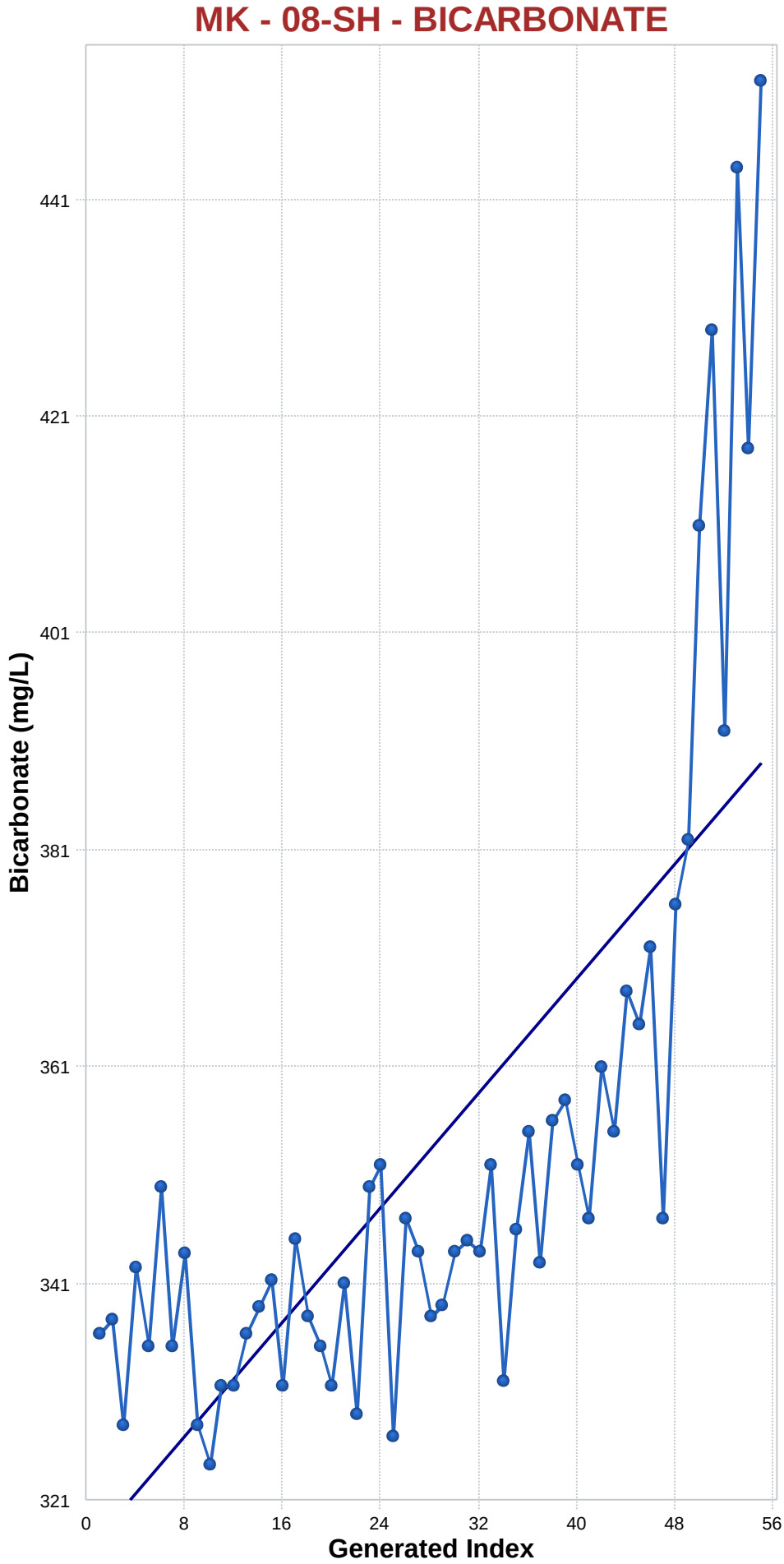
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.4421
Standardized Value of S	-4.2200
M-K Test Value (S)	-581
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0012

Statistically significant evidence of a decreasing trend at the specified level of significance.



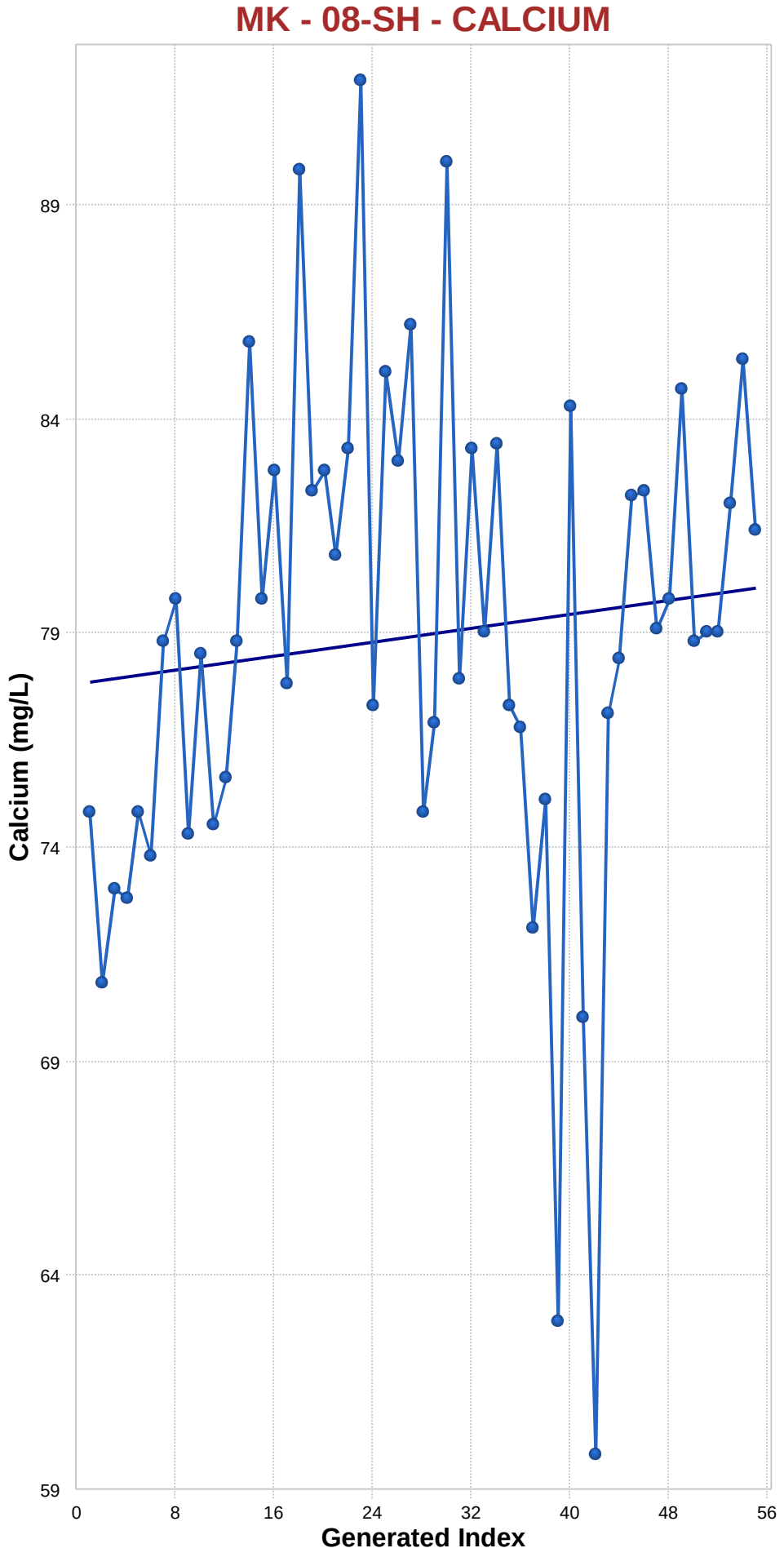
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.6505
Standardized Value of S	6.9161
M-K Test Value (S)	953
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.3246
OLS Regression Intercept	316.2782

Statistically significant evidence of an increasing trend at the specified level of significance.



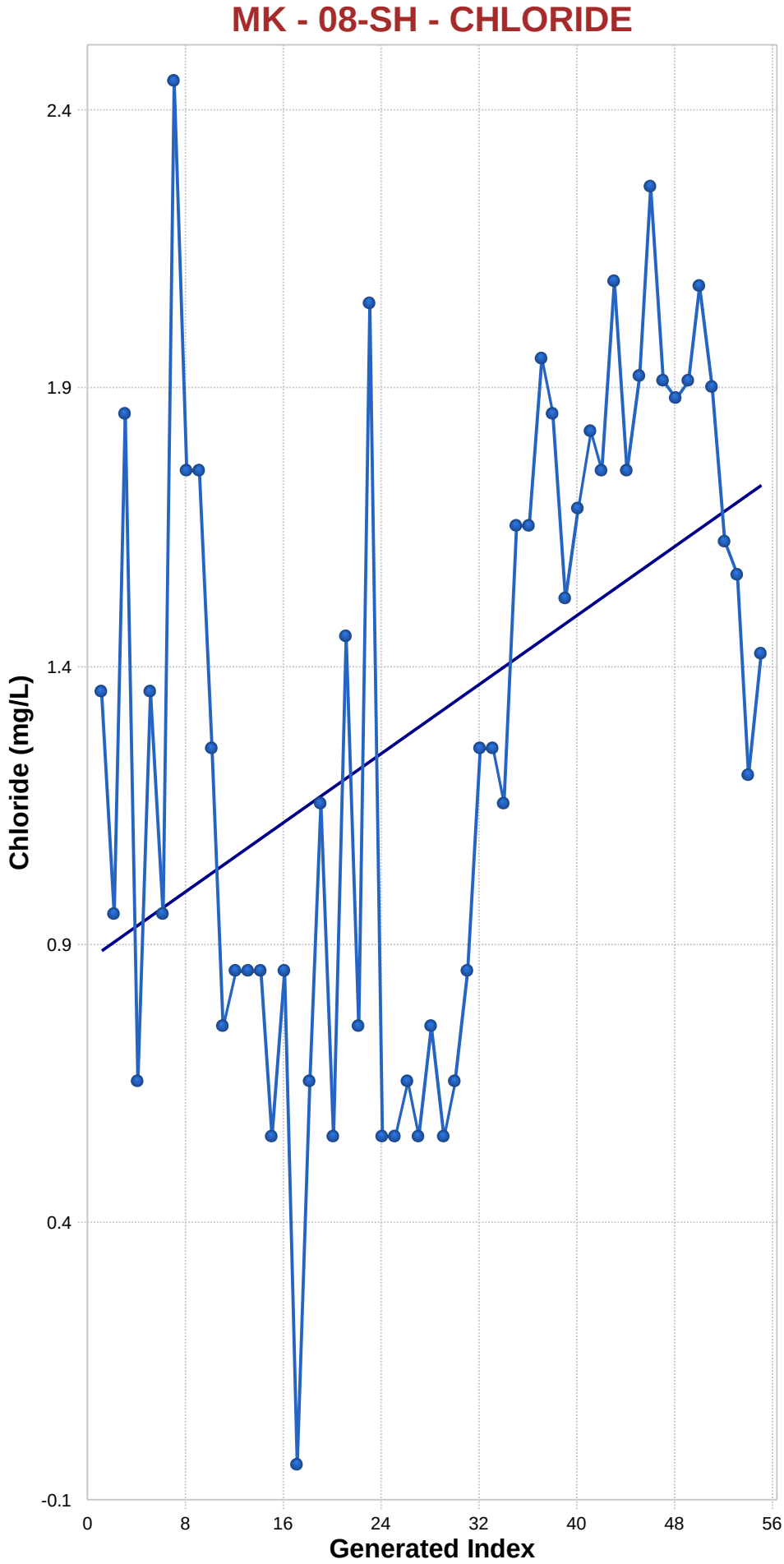
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.6820
Standardized Value of S	1.8884
M-K Test Value (S)	261
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0295

OLS Regression Line (Blue)

OLS Regression Slope	0.0409
OLS Regression Intercept	77.9974

Statistically significant evidence of an increasing trend at the specified level of significance.



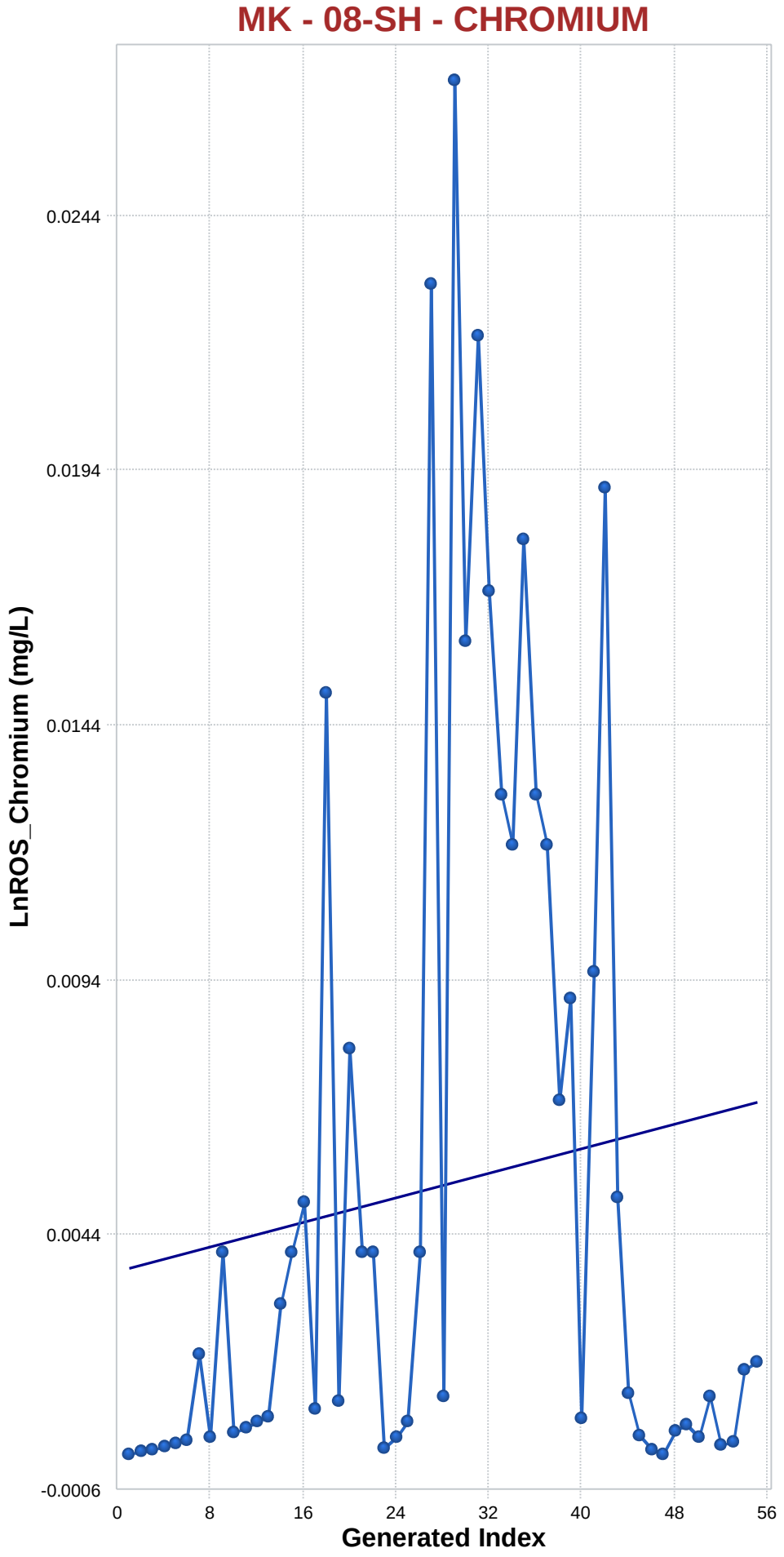
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.4748
Standardized Value of S	3.0187
M-K Test Value (S)	416
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0013

OLS Regression Line (Blue)

OLS Regression Slope	0.0155
OLS Regression Intercept	0.9189

Statistically significant evidence of an increasing trend at the specified level of significance.



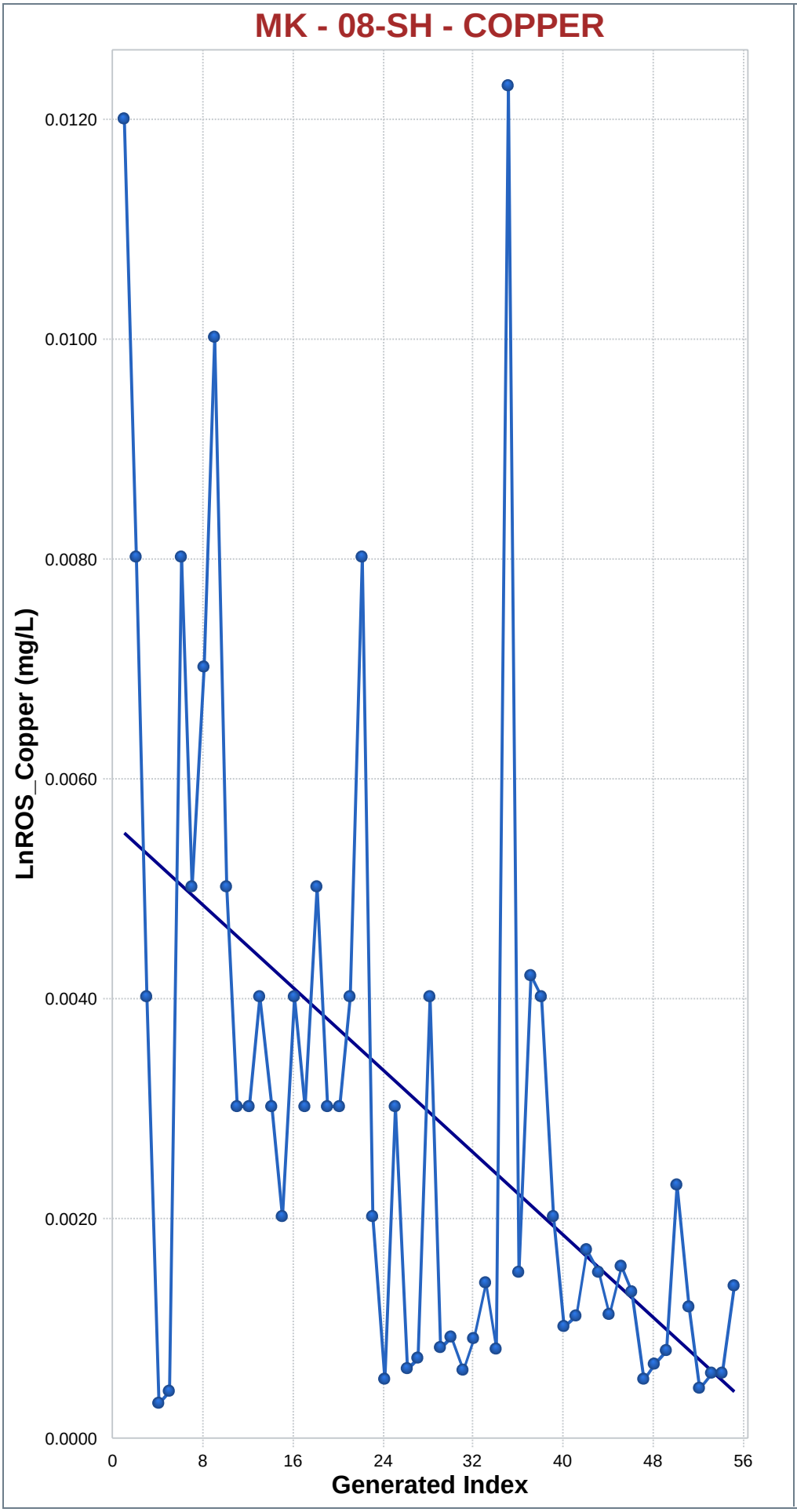
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.6820
Standardized Value of S	1.5979
M-K Test Value (S)	221
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0550

OLS Regression Line (Blue)

OLS Regression Slope	0.0001
OLS Regression Intercept	0.0036

Insufficient statistical evidence of a significant trend at the specified level of significance.



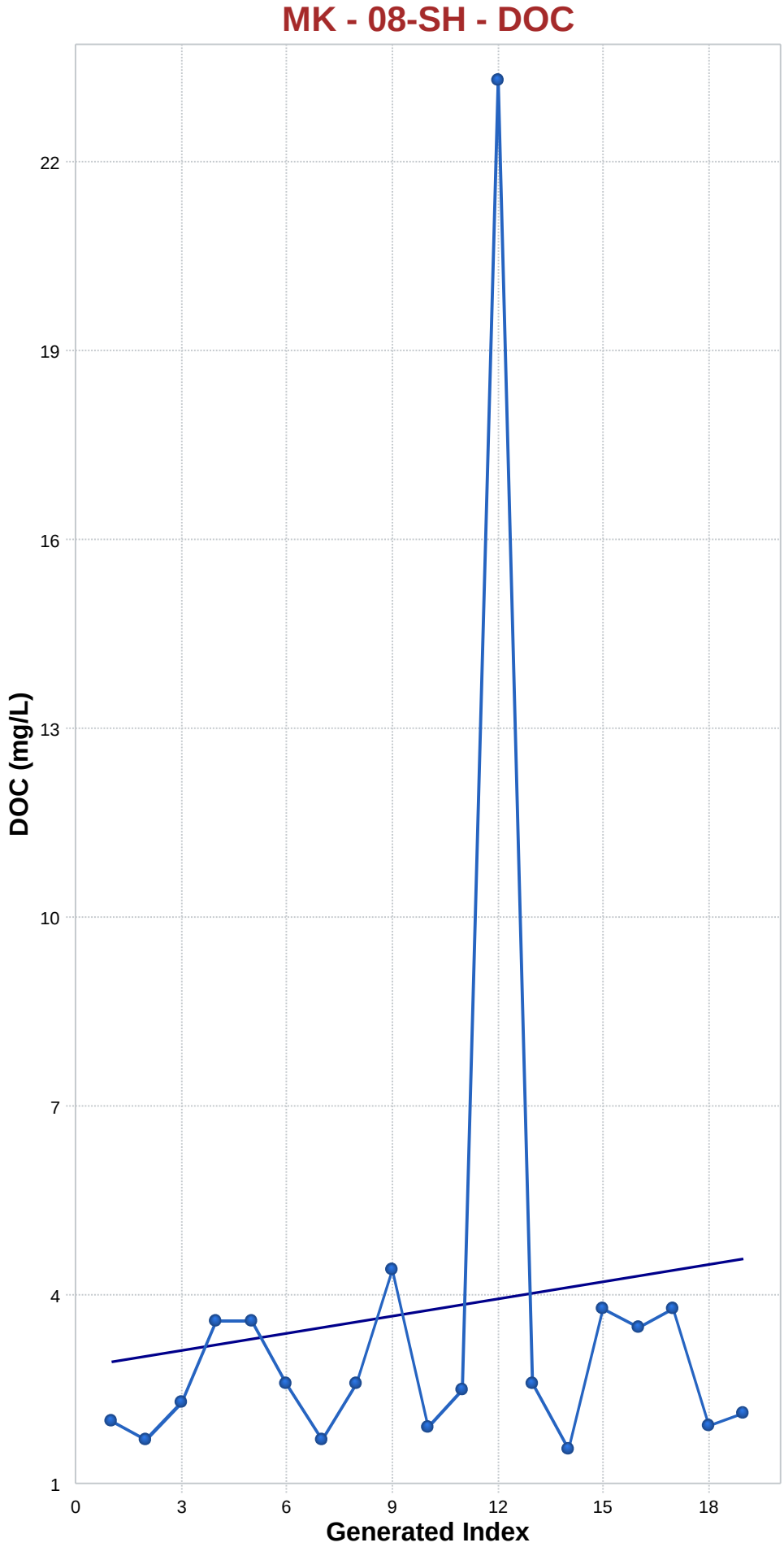
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.4385
Standardized Value of S	-4.1546
M-K Test Value (S)	-572
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0056

Statistically significant evidence of a decreasing trend at the specified level of significance.



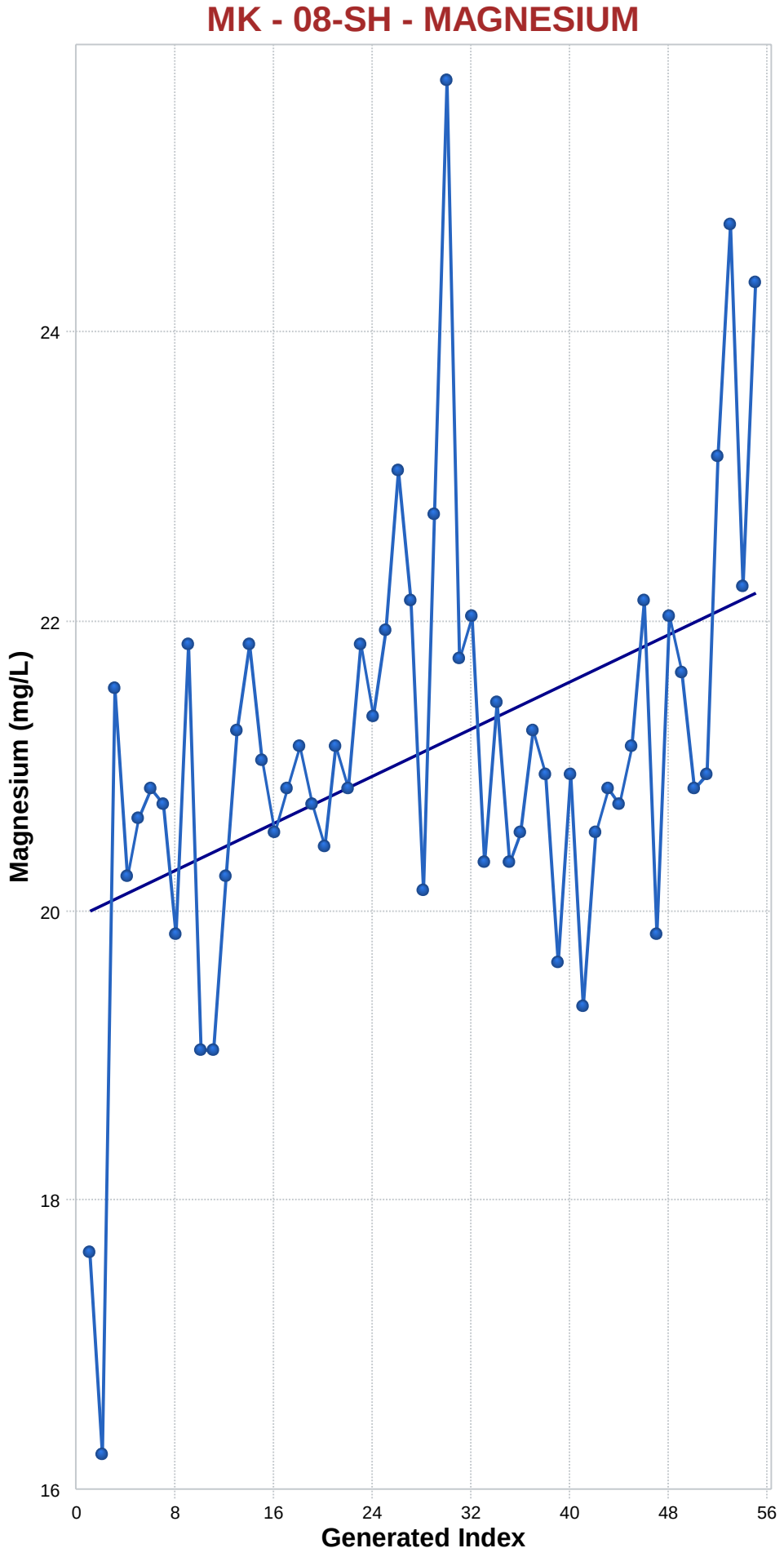
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4664
Standardized Value of S	0.6323
M-K Test Value (S)	19
Tabulated p-value	0.2670
Approximate p-value	0.2636

OLS Regression Line (Blue)

OLS Regression Slope	0.0914
OLS Regression Intercept	2.5509

Insufficient statistical evidence of a significant trend at the specified level of significance.



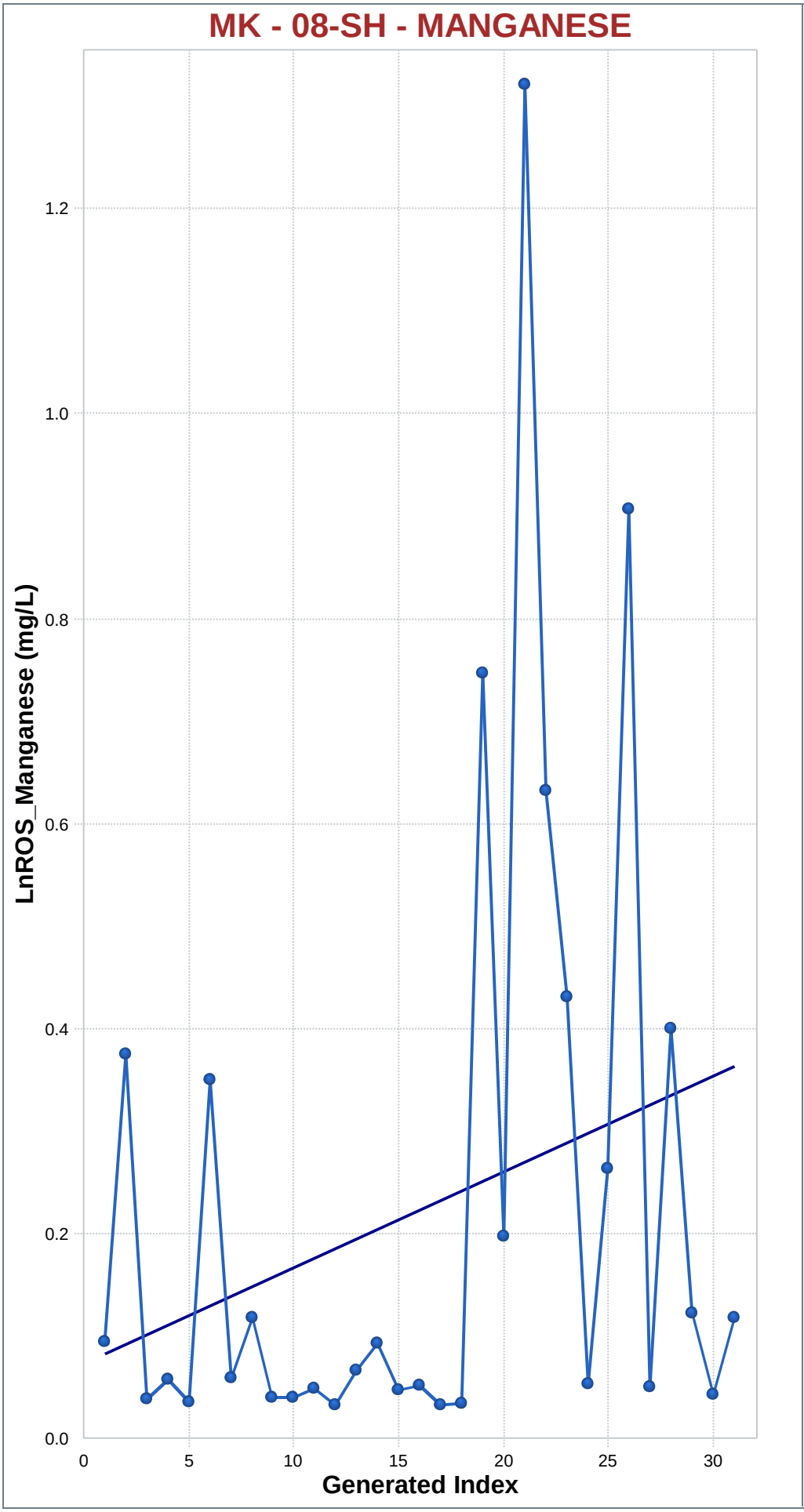
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.5972
Standardized Value of S	2.9216
M-K Test Value (S)	403
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0017

OLS Regression Line (Blue)

OLS Regression Slope	0.0408
OLS Regression Intercept	19.6147

Statistically significant evidence of an increasing trend at the specified level of significance.



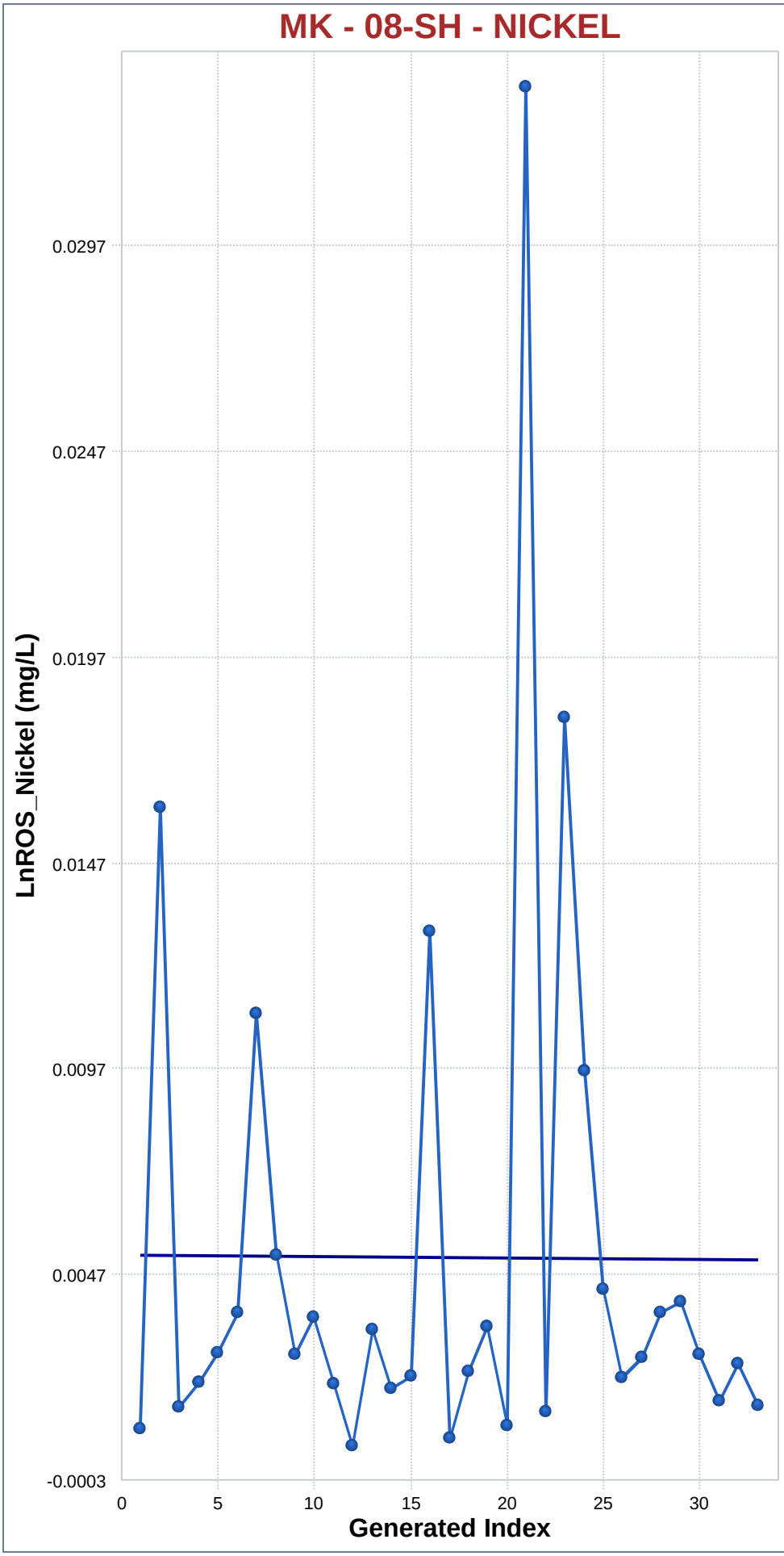
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8274
Standardized Value of S	1.3769
M-K Test Value (S)	82
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0843

OLS Regression Line (Blue)

OLS Regression Slope	0.0093
OLS Regression Intercept	0.0414

Insufficient statistical evidence of a significant trend at the specified level of significance.



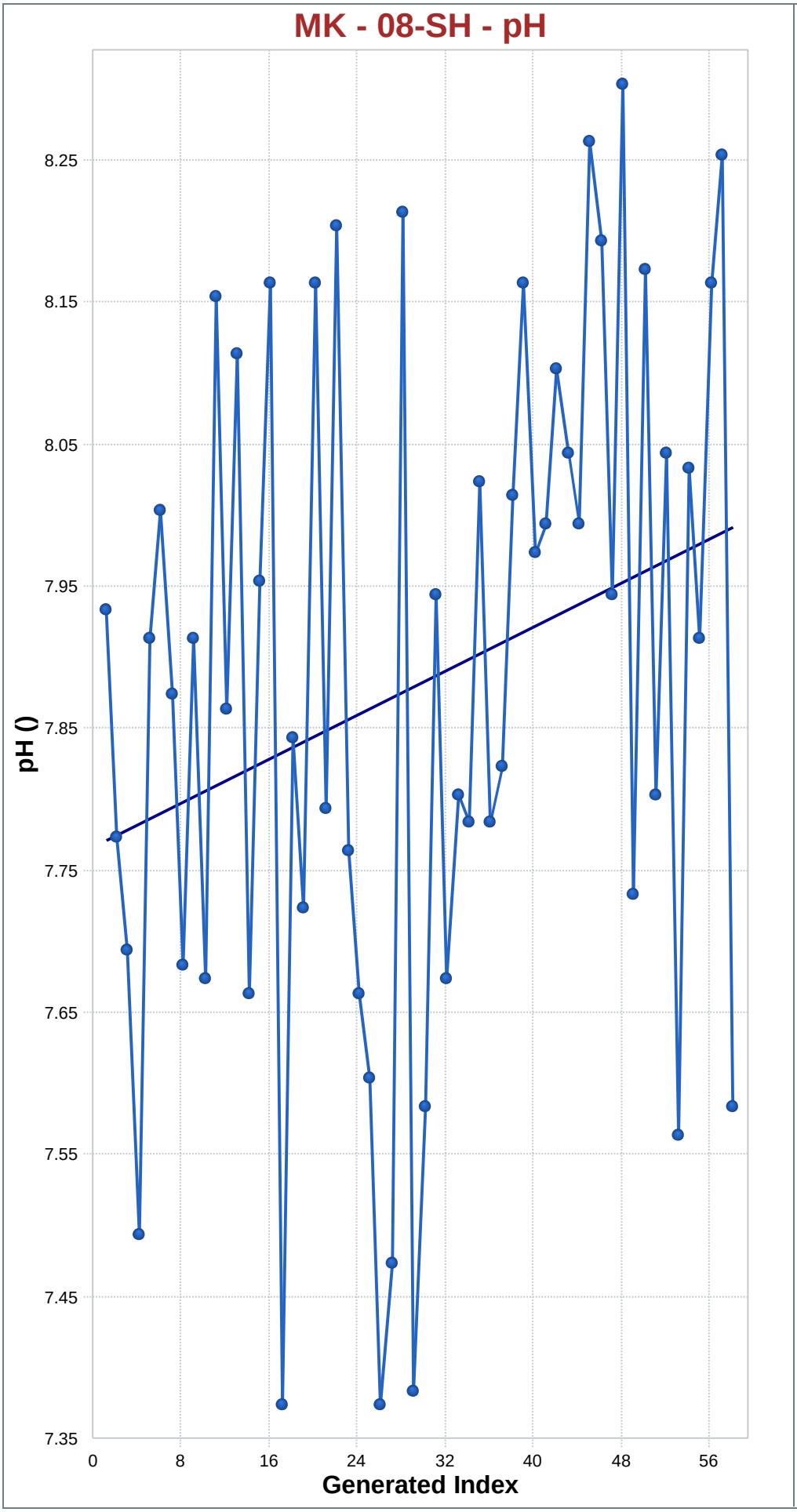
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	-0.0310
M-K Test Value (S)	-3
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4876

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0051

Insufficient statistical evidence of a significant trend at the specified level of significance.



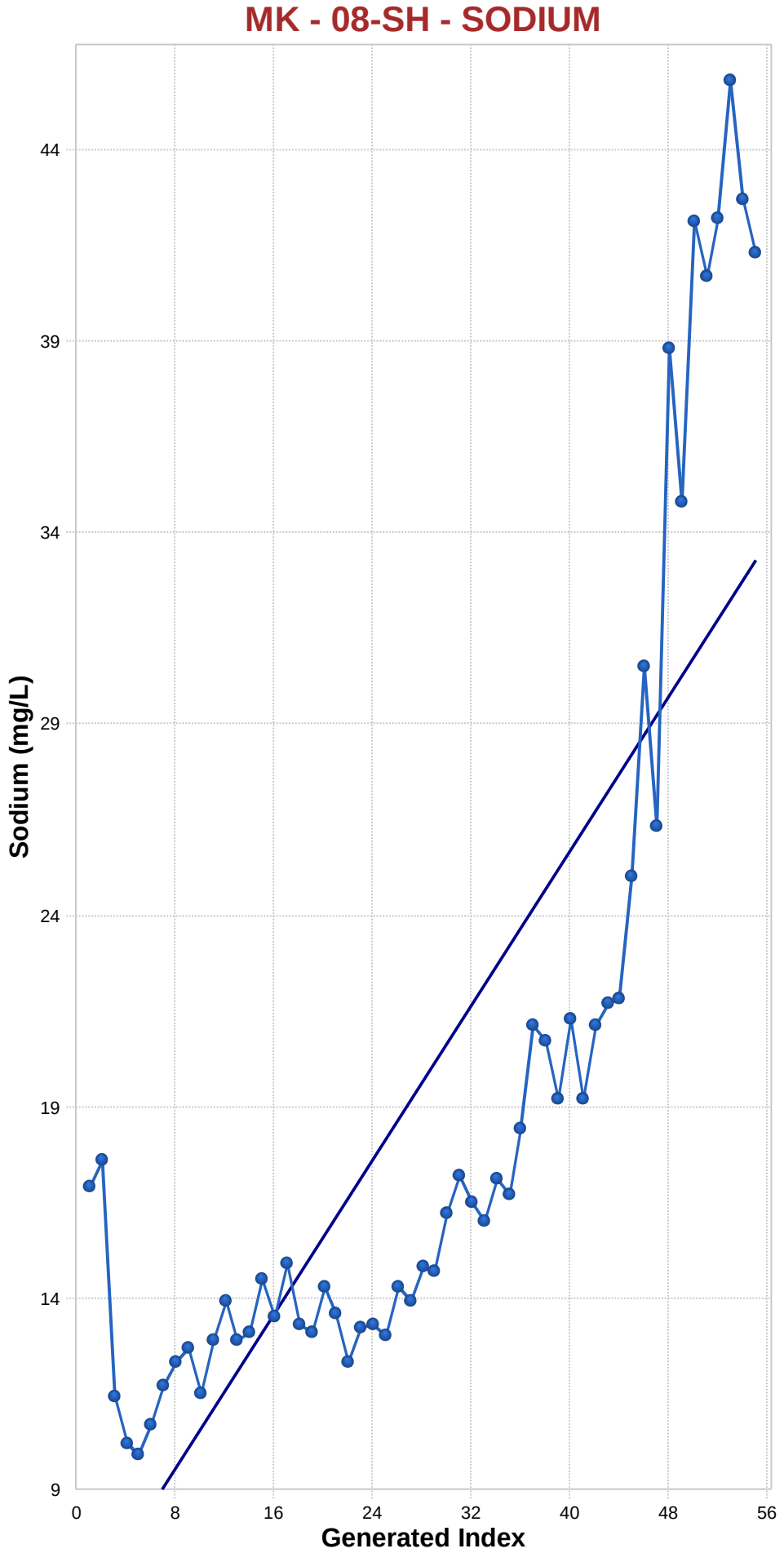
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	149.0045
Standardized Value of S	2.1744
M-K Test Value (S)	325
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0148

OLS Regression Line (Blue)

OLS Regression Slope	0.0039
OLS Regression Intercept	7.7638

Statistically significant evidence of an increasing trend at the specified level of significance.



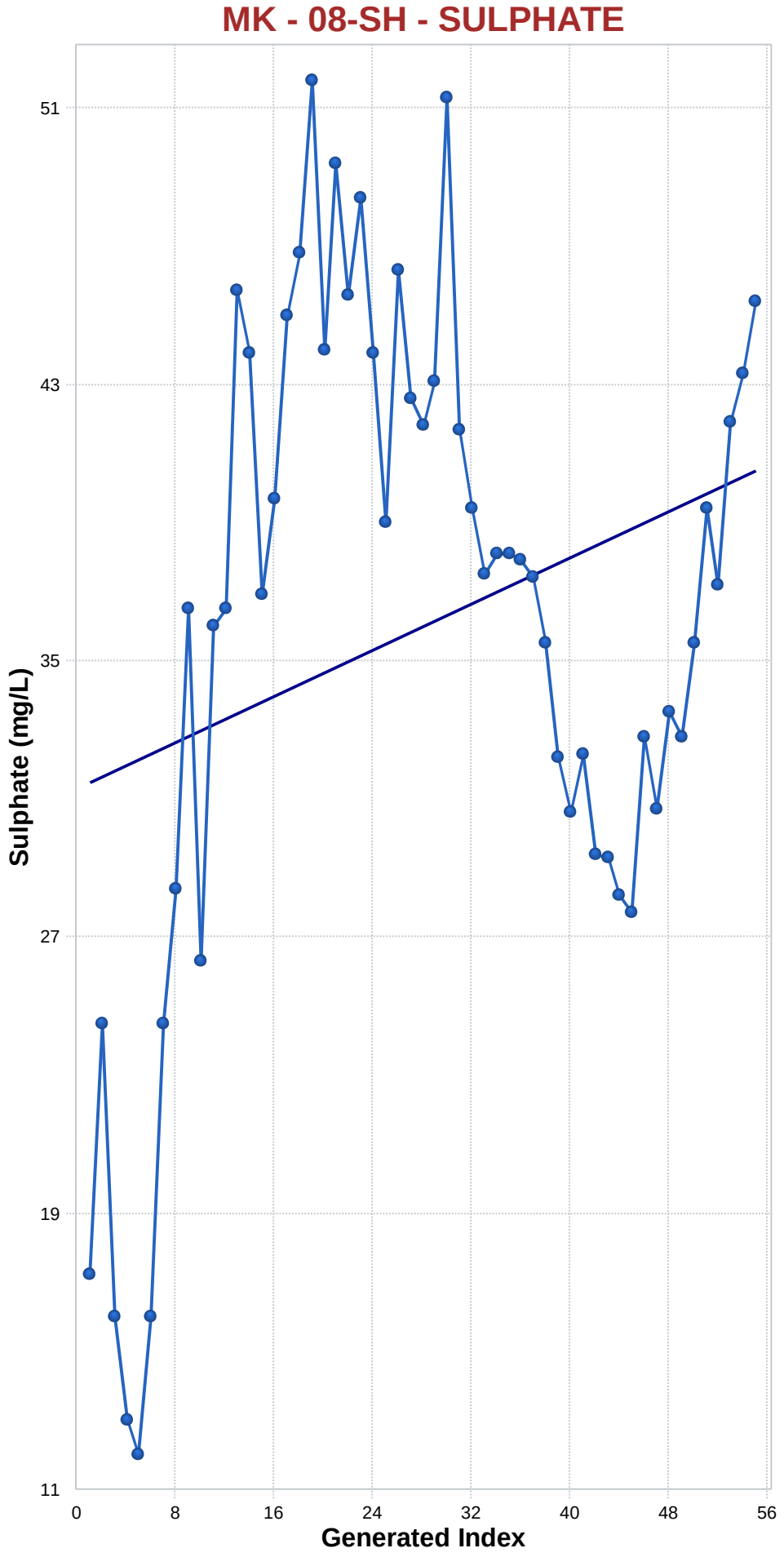
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.7207
Standardized Value of S	8.4374
M-K Test Value (S)	1,163
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.5054
OLS Regression Intercept	5.7620

Statistically significant evidence of an increasing trend at the specified level of significance.



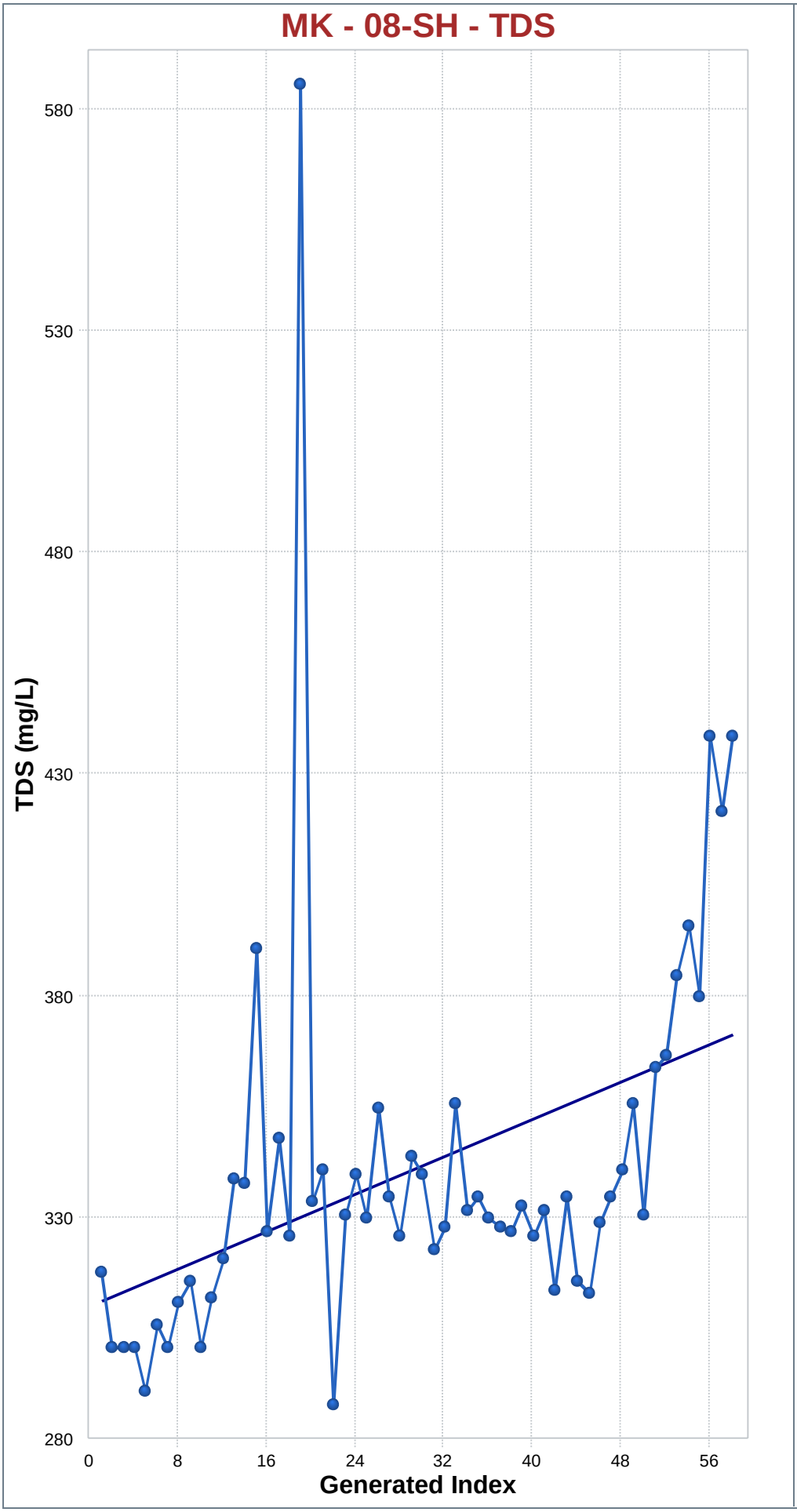
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.7207
Standardized Value of S	0.5809
M-K Test Value (S)	81
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2807

OLS Regression Line (Blue)

OLS Regression Slope	0.1673
OLS Regression Intercept	30.8139

Insufficient statistical evidence of a significant trend at the specified level of significance.



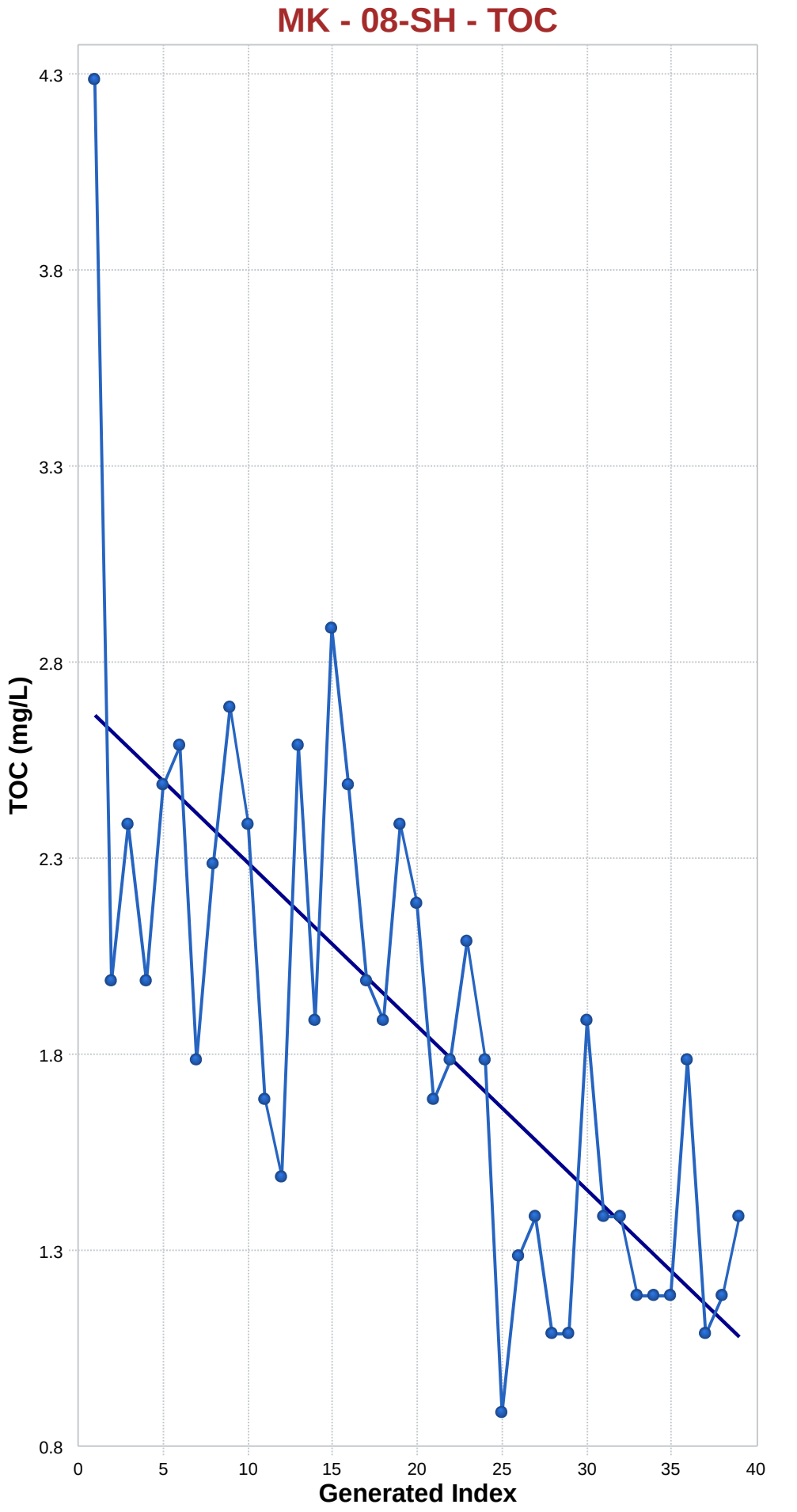
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	148.9452
Standardized Value of S	4.7736
M-K Test Value (S)	712
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.0564
OLS Regression Intercept	309.4065

Statistically significant evidence of an increasing trend at the specified level of significance.



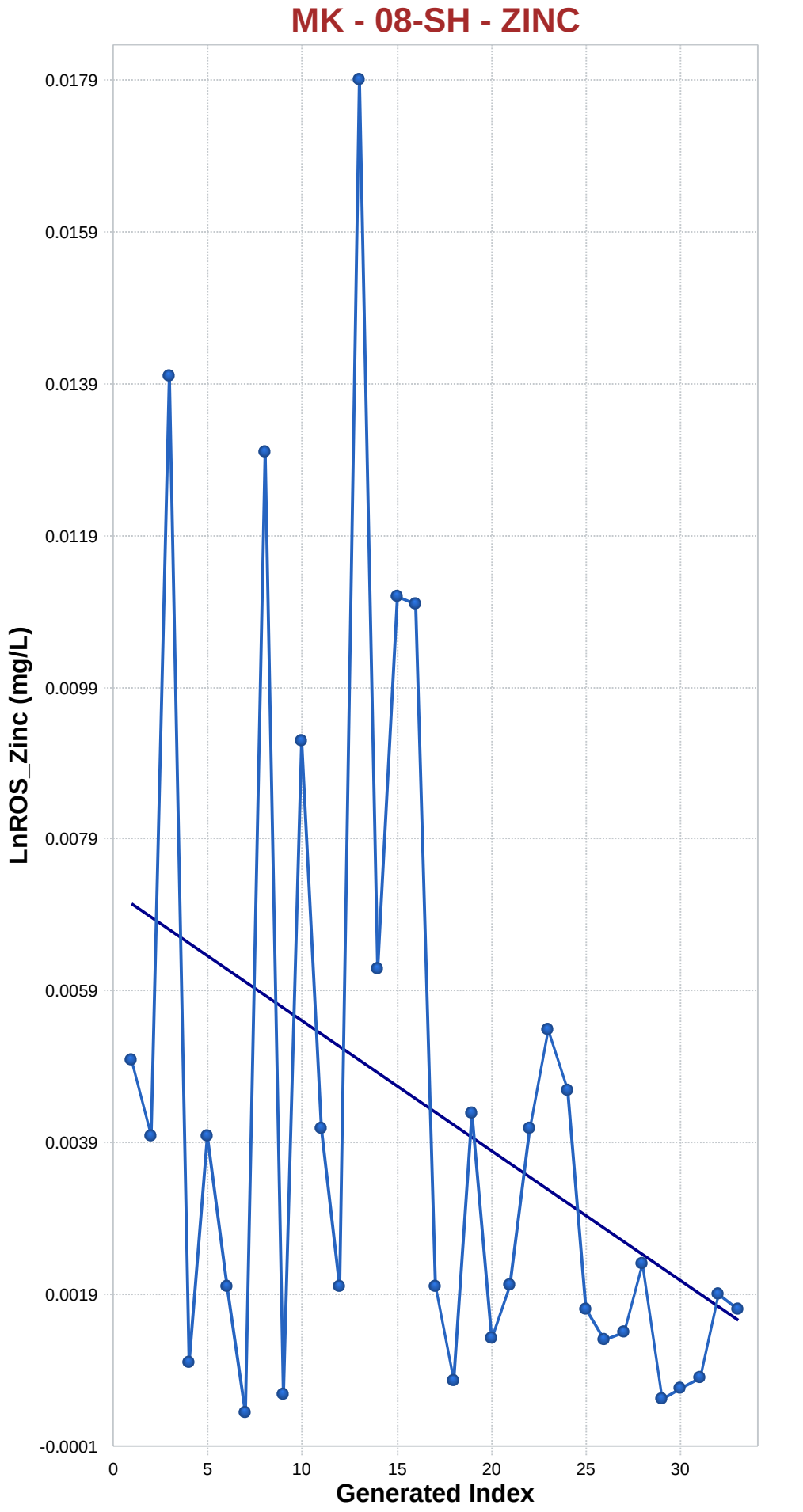
Mann-Kendall Trend Analysis

n	39
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	82.4015
Standardized Value of S	-4.7693
M-K Test Value (S)	-394
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0417
OLS Regression Intercept	2.7204

Statistically significant evidence of a decreasing trend at the specified level of significance.



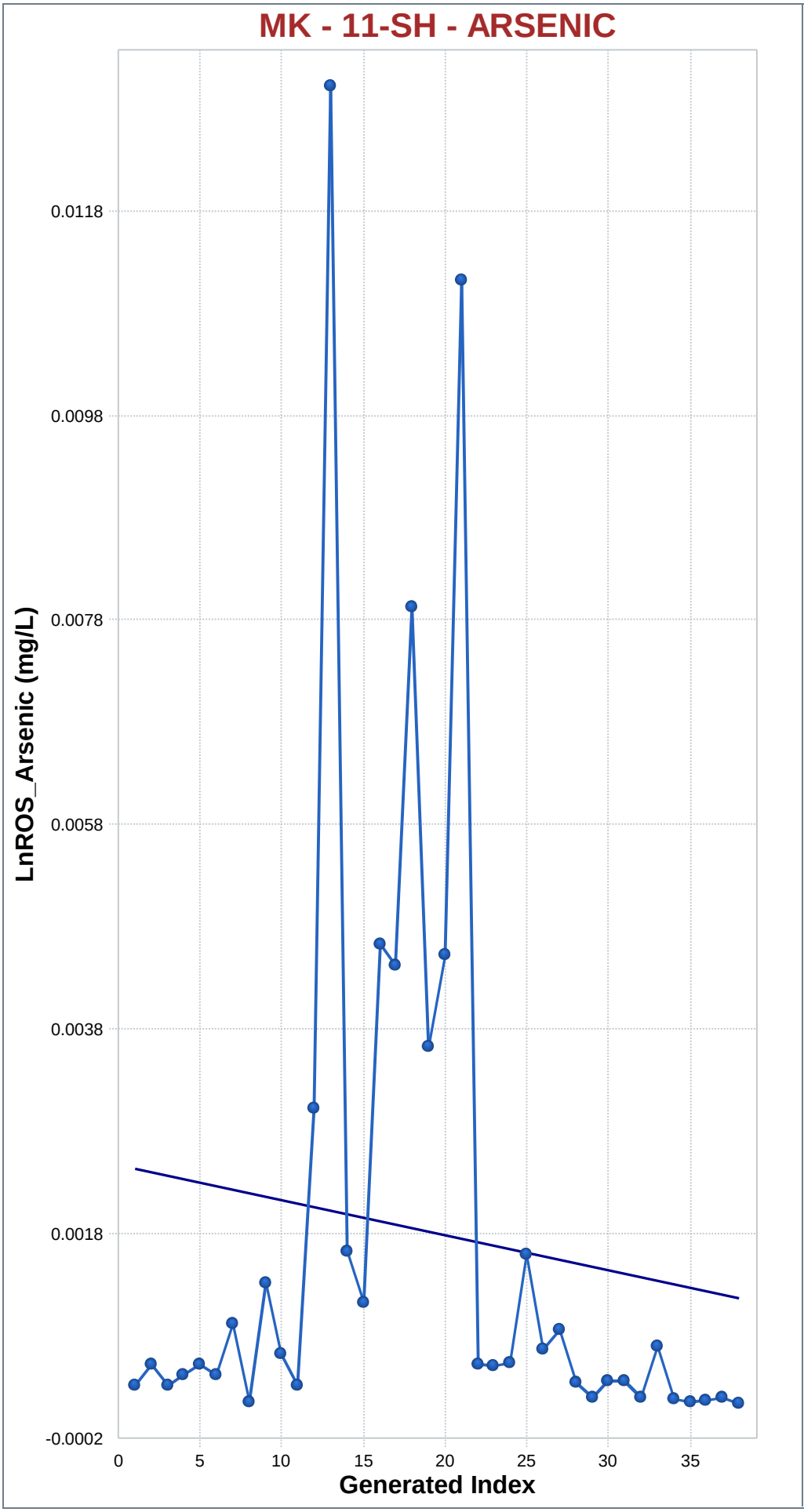
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.4877
Standardized Value of S	-2.0624
M-K Test Value (S)	-134
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0196

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0072

Statistically significant evidence of a decreasing trend at the specified level of significance.



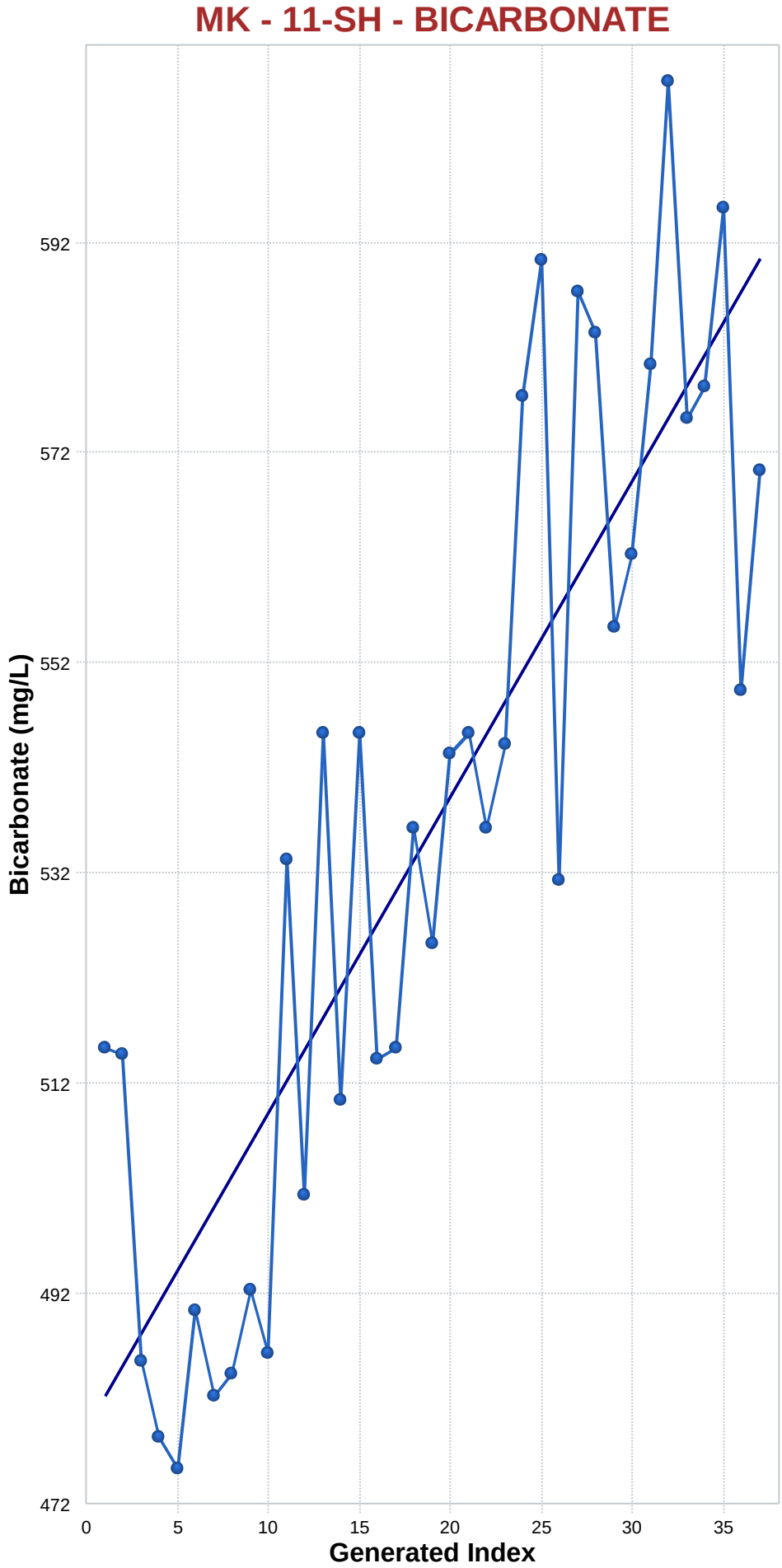
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.4838
Standardized Value of S	-1.8117
M-K Test Value (S)	-145
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0350

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0024

Statistically significant evidence of a decreasing trend at the specified level of significance.



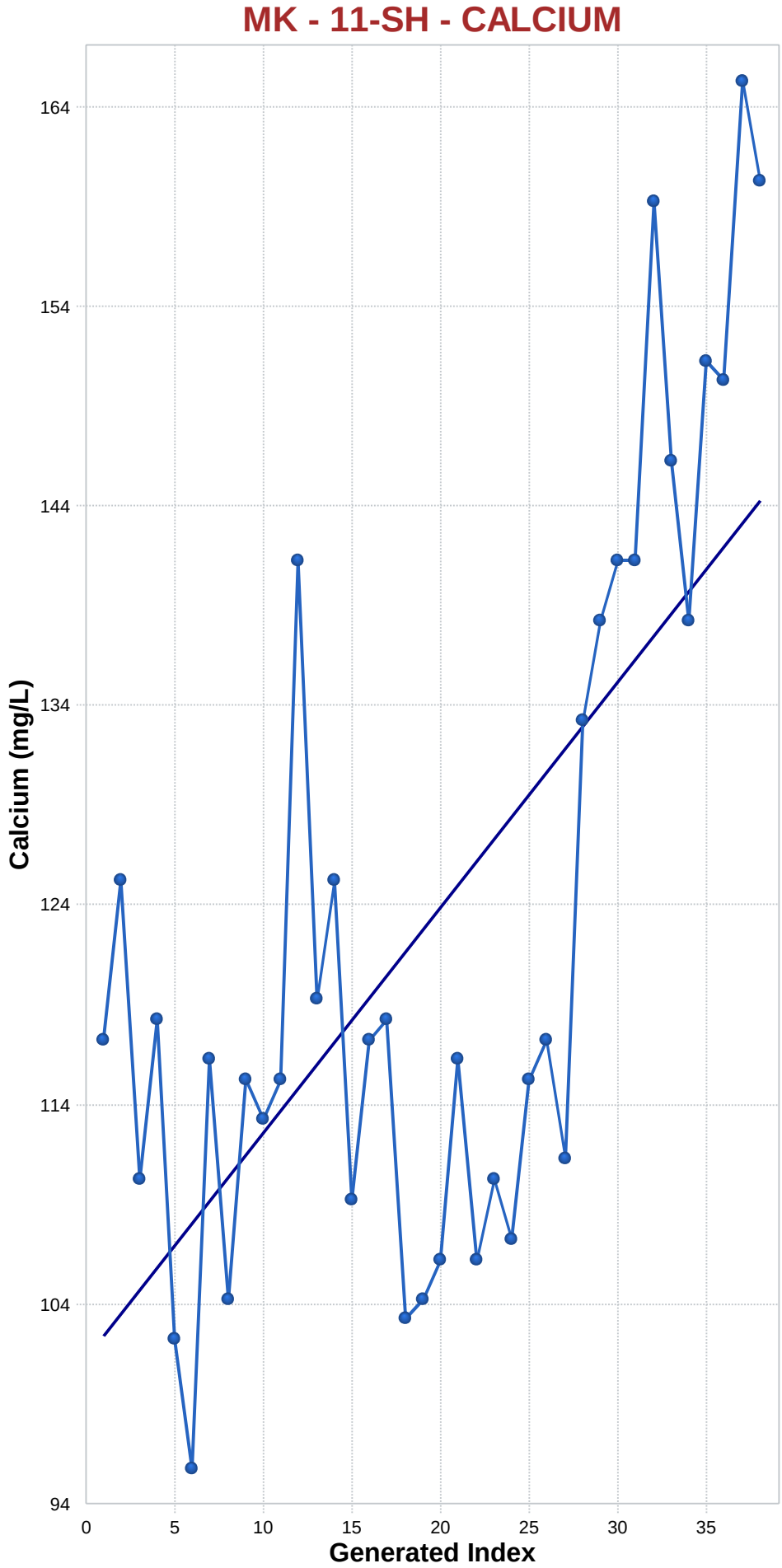
Mann-Kendall Trend Analysis

n	37
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	76.4221
Standardized Value of S	5.7052
M-K Test Value (S)	437
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	3.0036
OLS Regression Intercept	478.9486

Statistically significant evidence of an increasing trend at the specified level of significance.



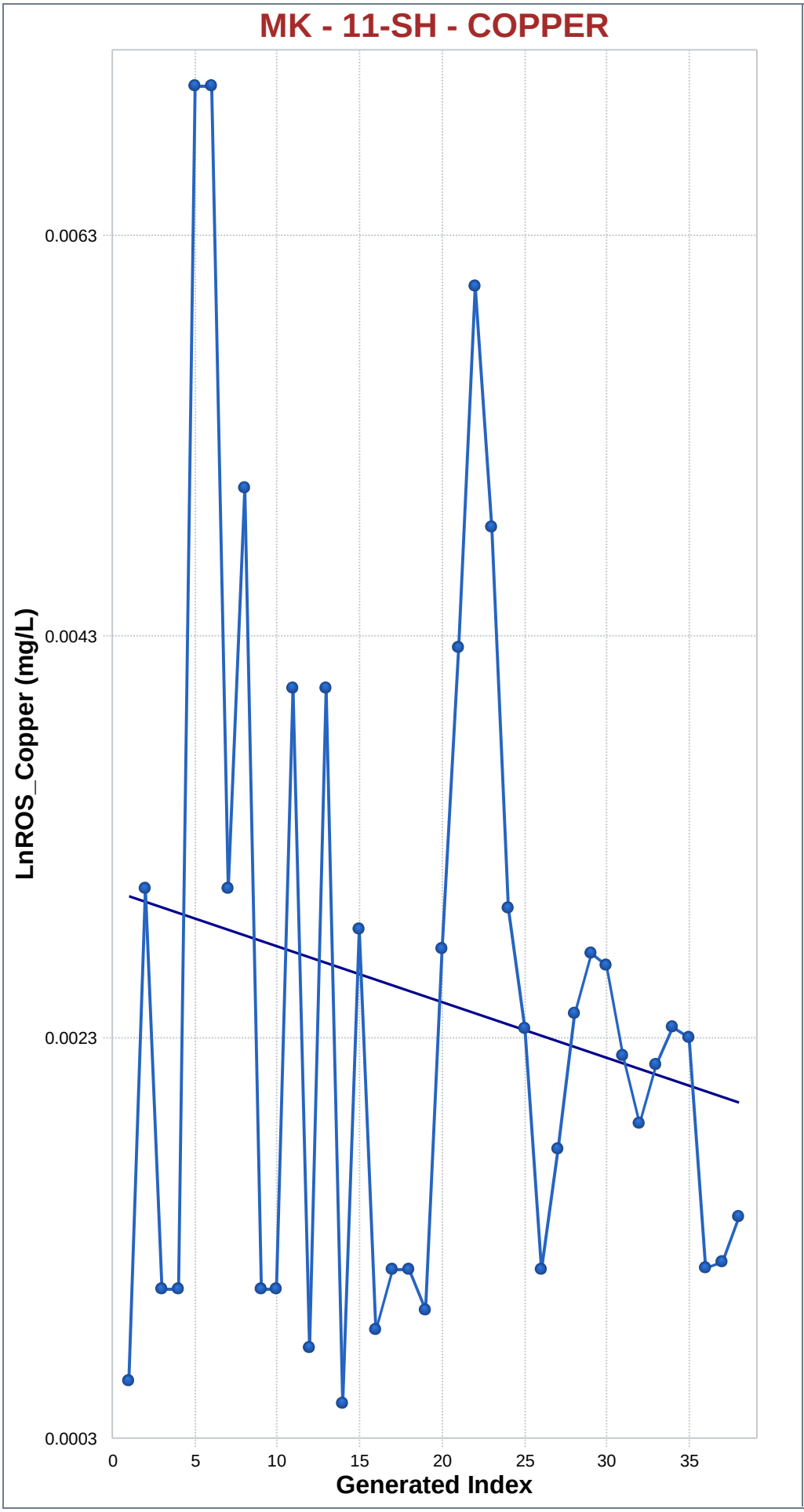
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.4292
Standardized Value of S	3.7518
M-K Test Value (S)	299
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	1.1295
OLS Regression Intercept	101.0405

Statistically significant evidence of an increasing trend at the specified level of significance.



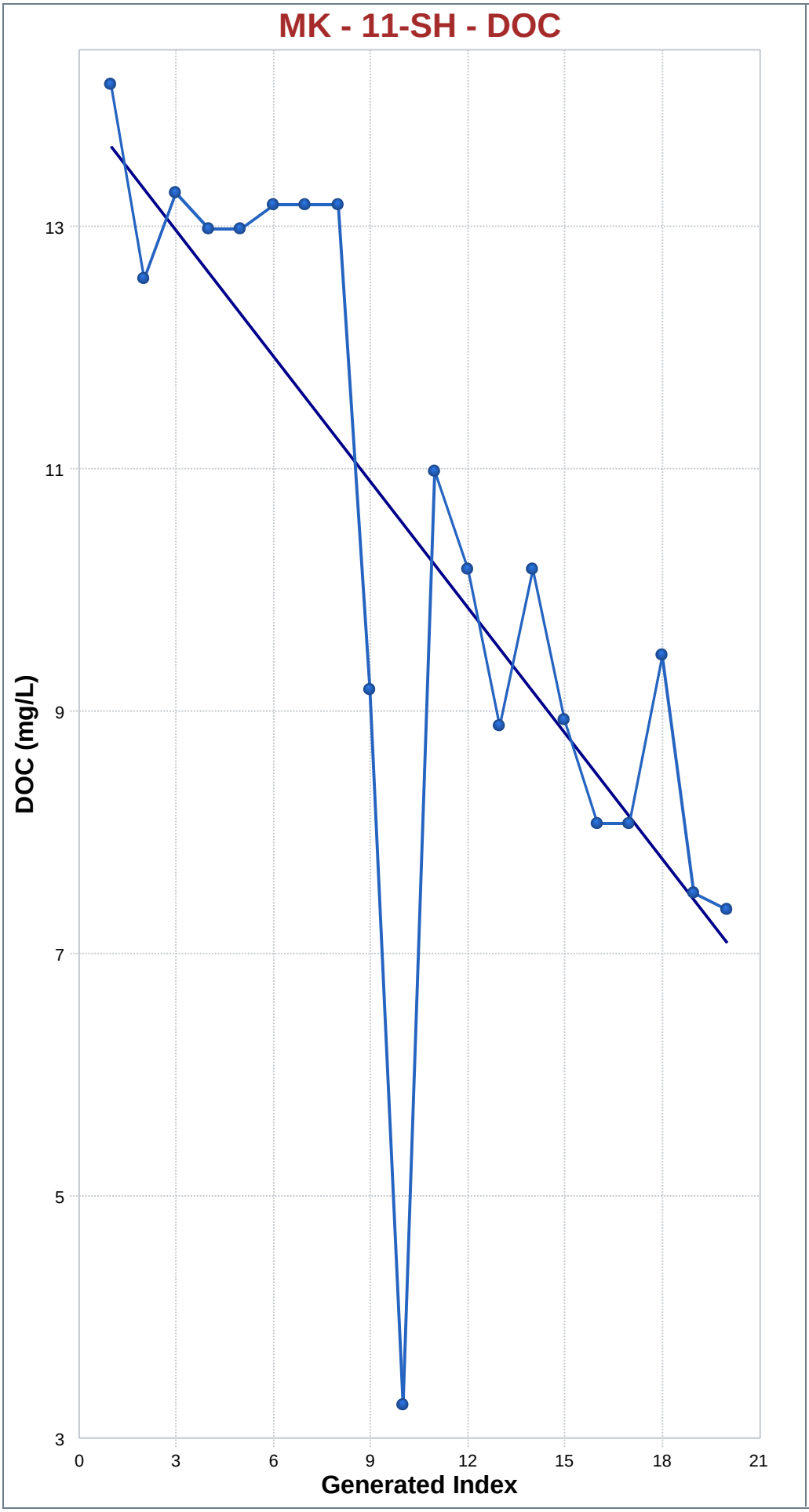
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.4460
Standardized Value of S	-0.3021
M-K Test Value (S)	-25
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3813

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0030

Insufficient statistical evidence of a significant trend at the specified level of significance.



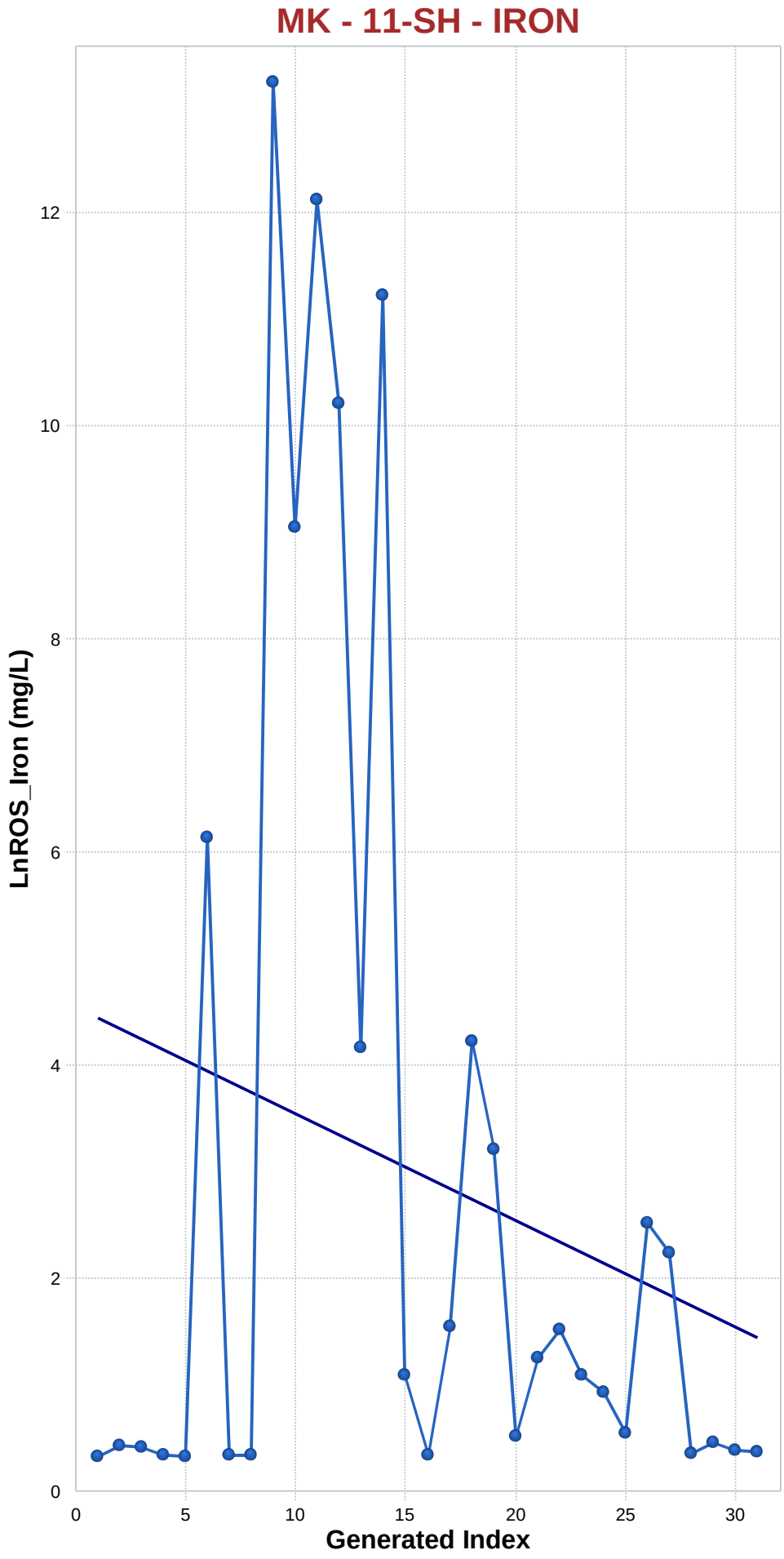
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.7137
Standardized Value of S	-3.8745
M-K Test Value (S)	-120
Tabulated p-value	0.0000
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.3461
OLS Regression Intercept	14.0374

Statistically significant evidence of a decreasing trend at the specified level of significance.



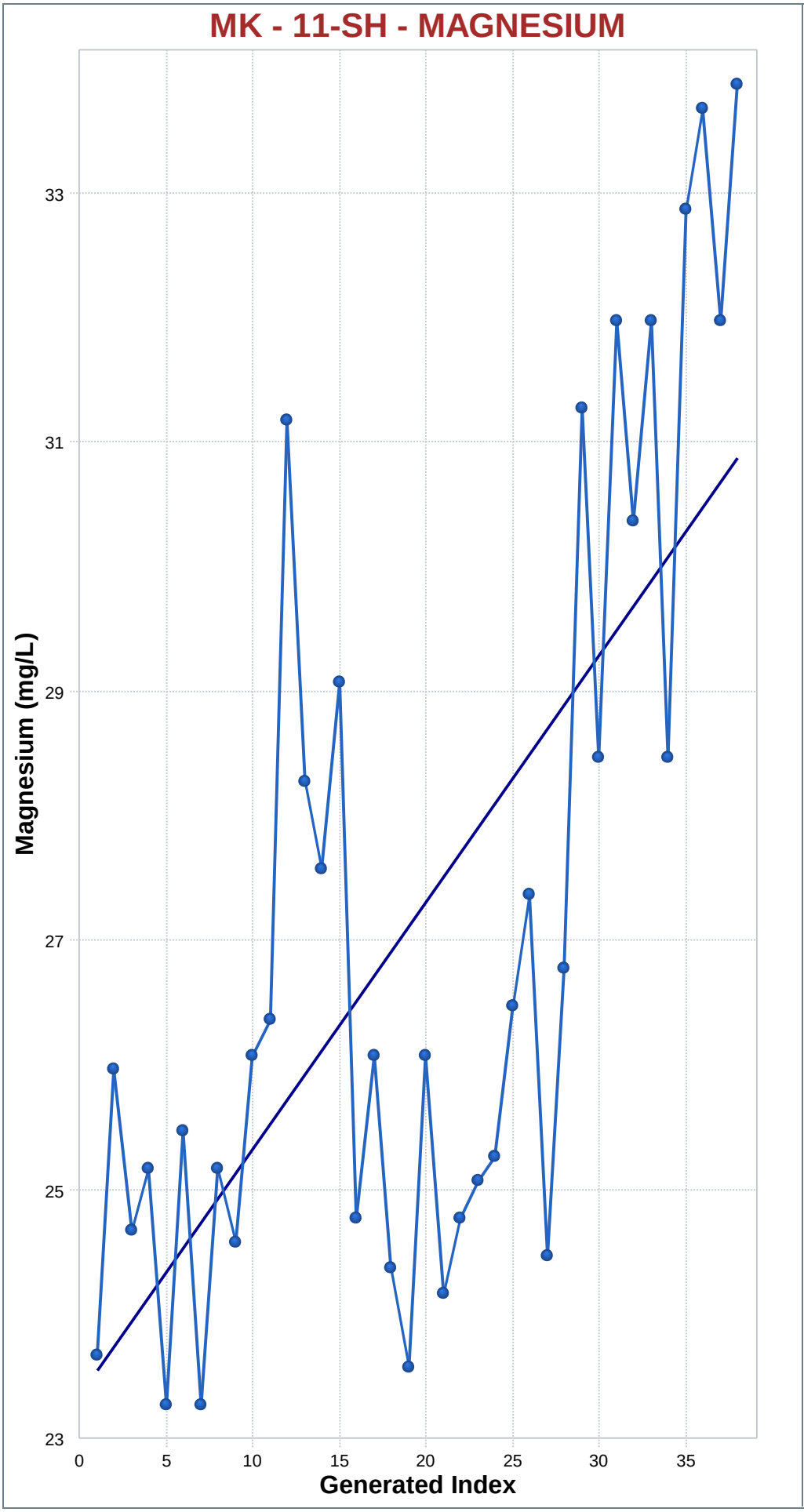
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8274
Standardized Value of S	-0.2550
M-K Test Value (S)	-16
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3994

OLS Regression Line (Blue)

OLS Regression Slope	-0.0996
OLS Regression Intercept	4.2134

Insufficient statistical evidence of a significant trend at the specified level of significance.



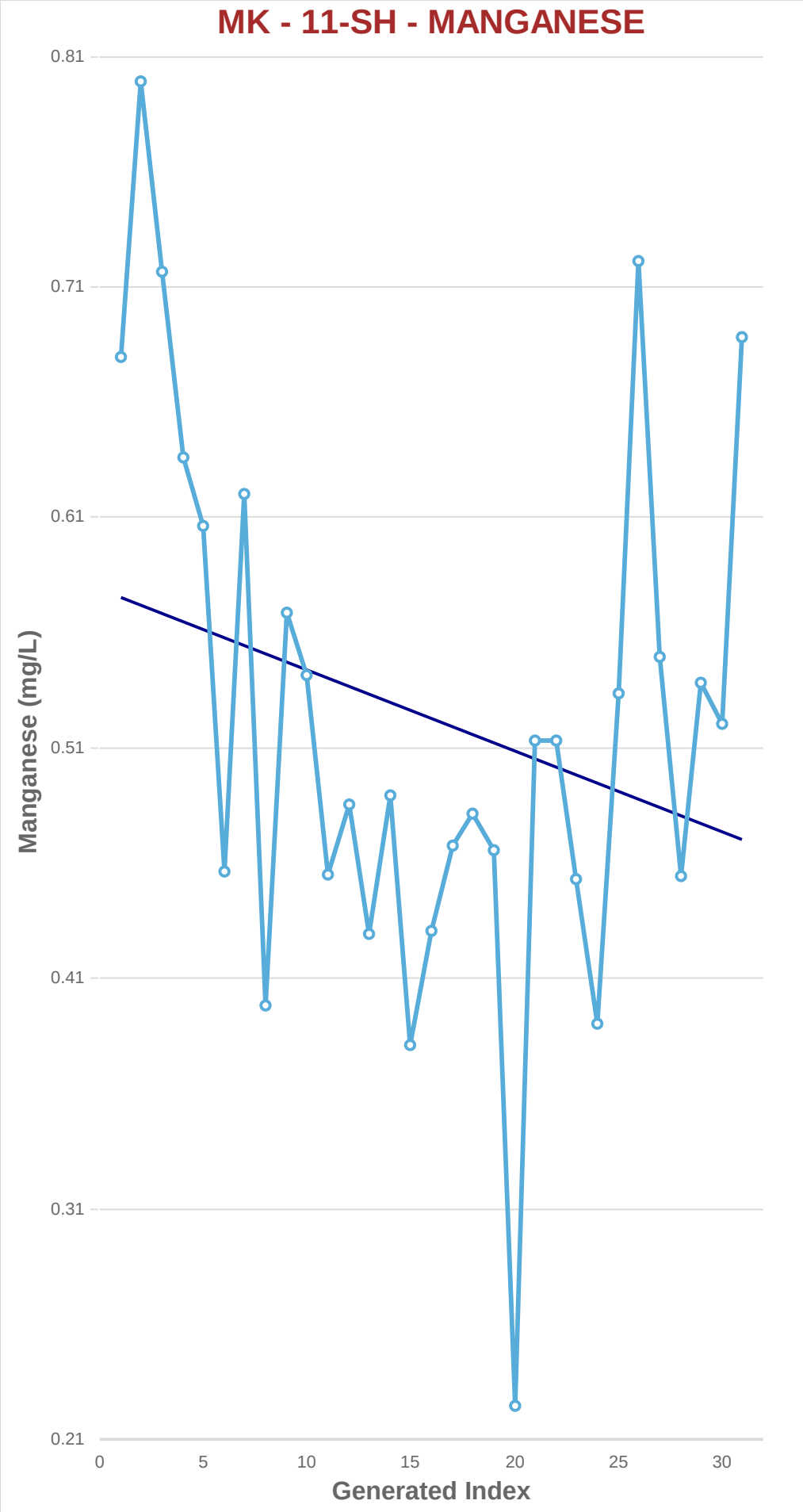
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.4712
Standardized Value of S	4.4293
M-K Test Value (S)	353
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.1980
OLS Regression Intercept	23.1752

Statistically significant evidence of an increasing trend at the specified level of significance.



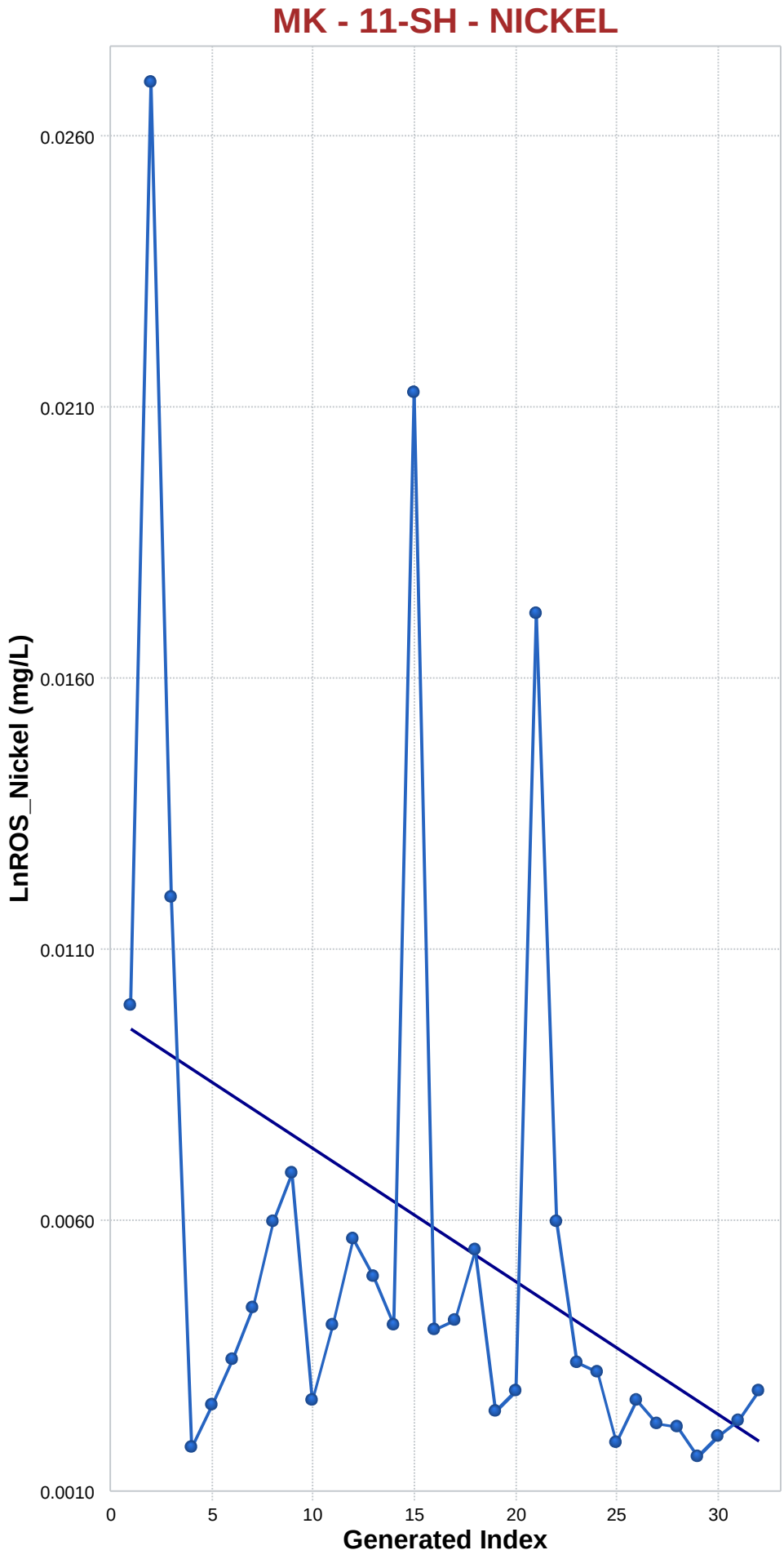
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8274
Standardized Value of S	-1.1389
M-K Test Value (S)	-68
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1274

OLS Regression Line (Blue)

OLS Regression Slope	-0.0035
OLS Regression Intercept	0.5802

Insufficient statistical evidence of a significant trend at the specified level of significance.



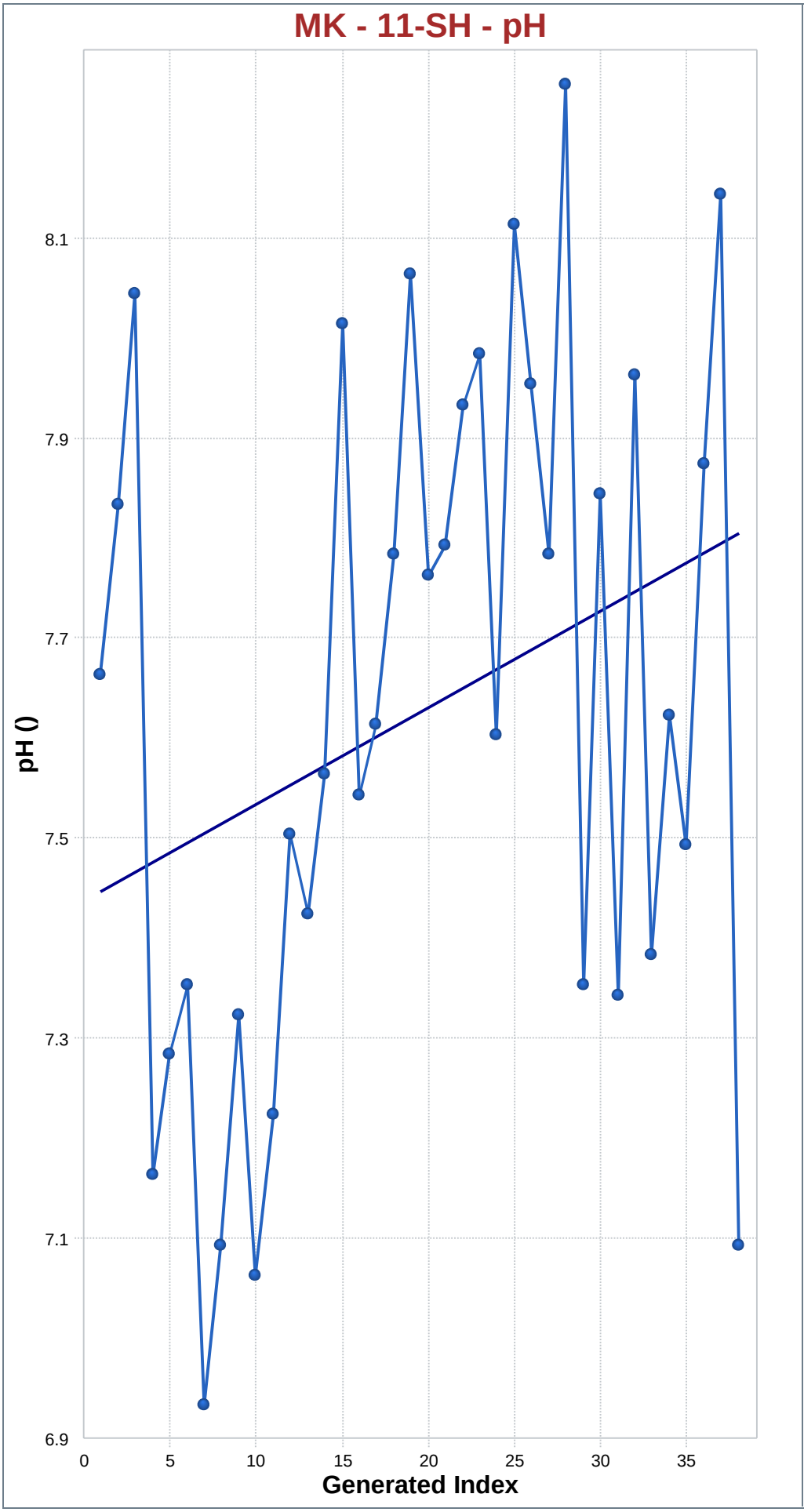
Mann-Kendall Trend Analysis

n	32
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	61.6414
Standardized Value of S	-3.1472
M-K Test Value (S)	-195
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0008

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0098

Statistically significant evidence of a decreasing trend at the specified level of significance.



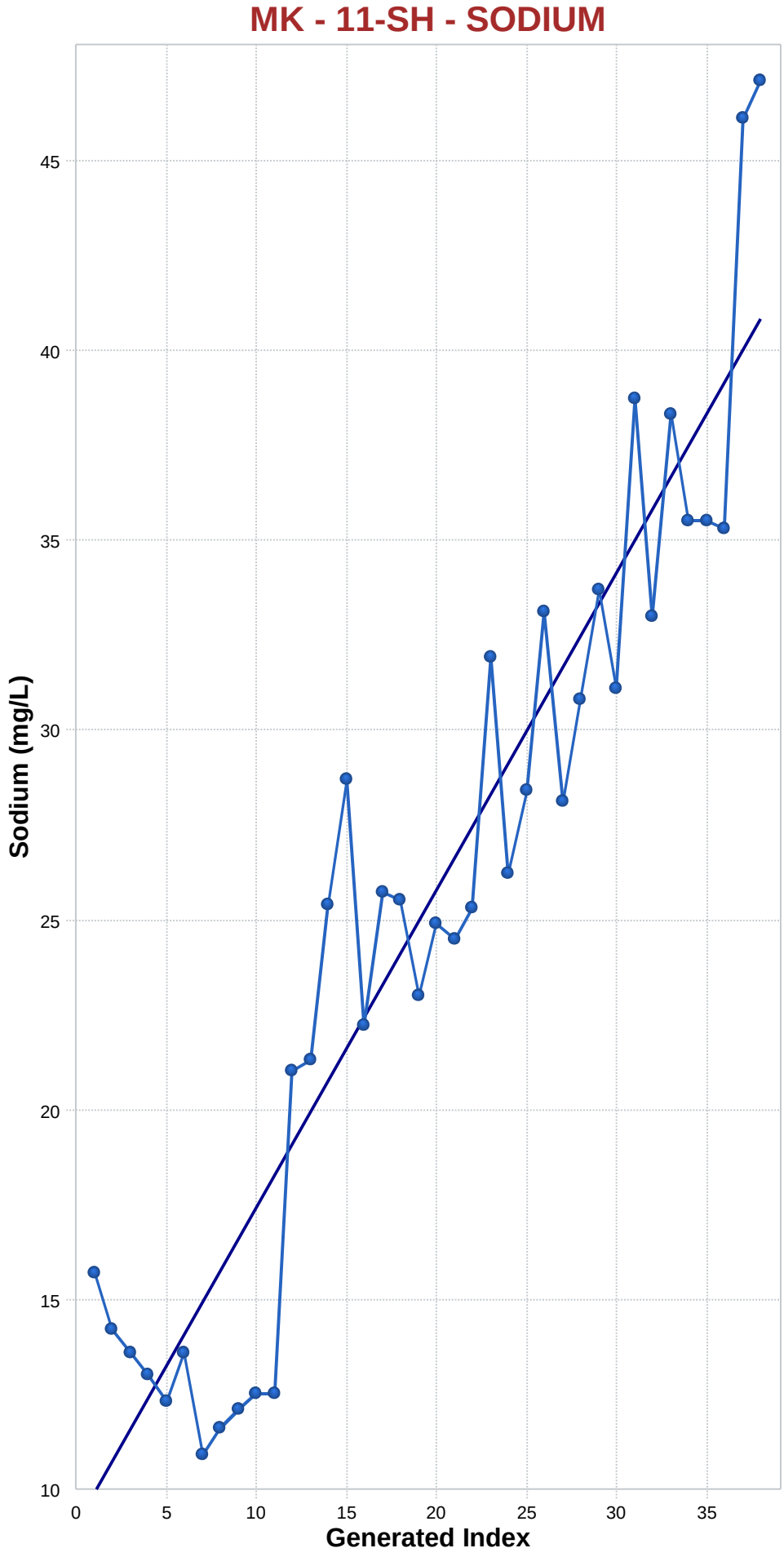
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5236
Standardized Value of S	2.1755
M-K Test Value (S)	174
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0148

OLS Regression Line (Blue)

OLS Regression Slope	0.0097
OLS Regression Intercept	7.4039

Statistically significant evidence of an increasing trend at the specified level of significance.



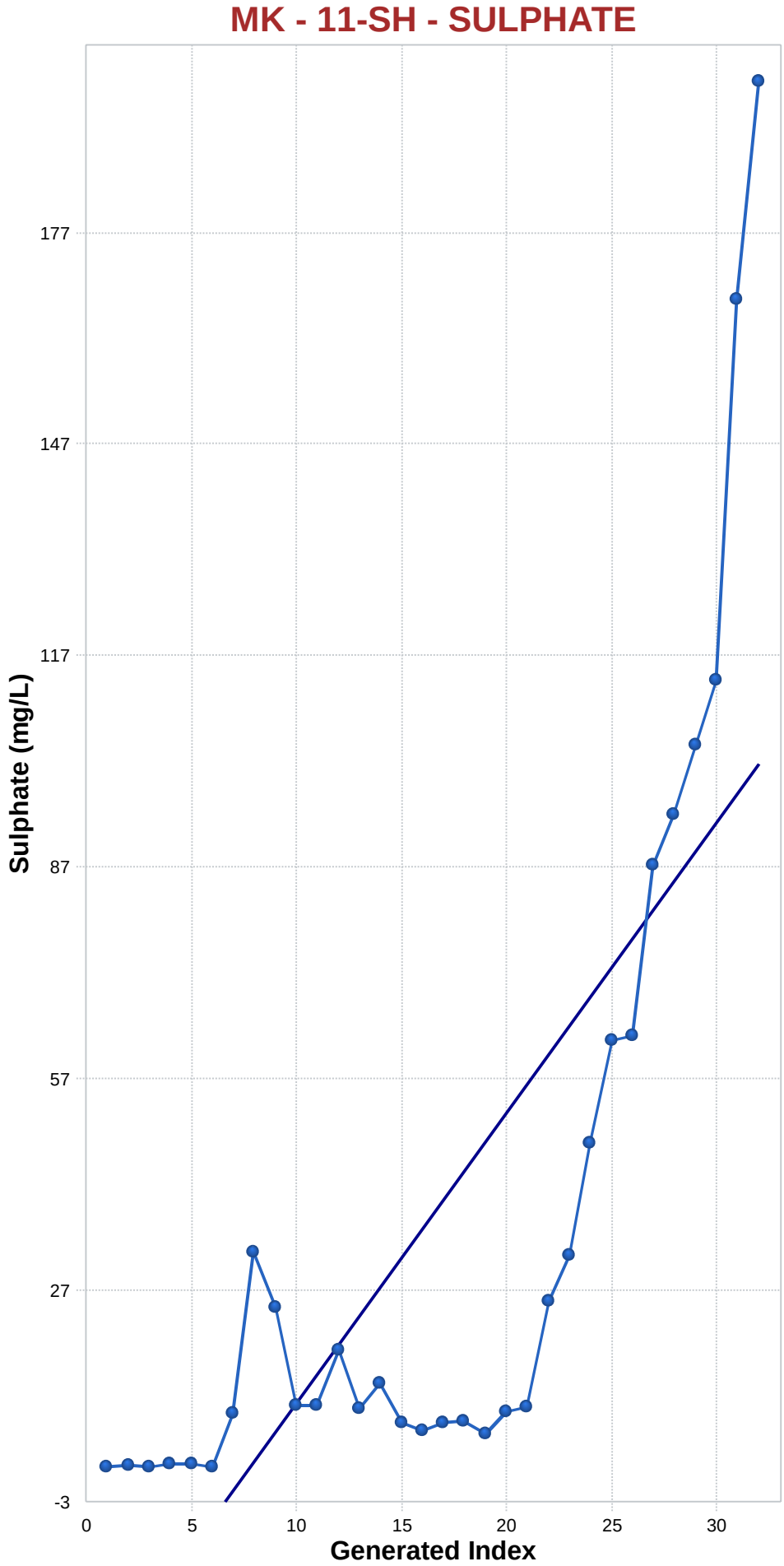
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5236
Standardized Value of S	6.6018
M-K Test Value (S)	526
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.8377
OLS Regression Intercept	9.2890

Statistically significant evidence of an increasing trend at the specified level of significance.



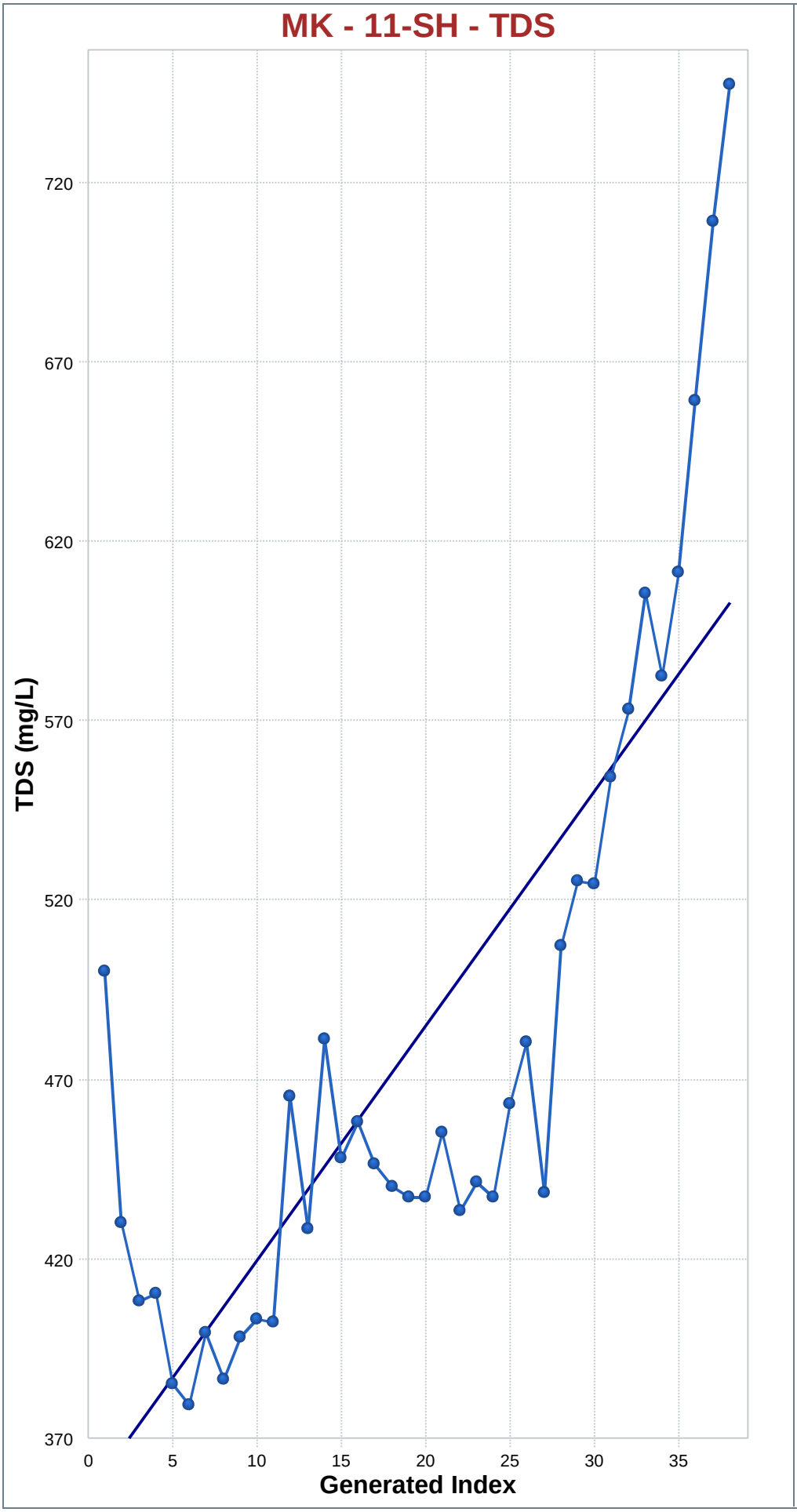
Mann-Kendall Trend Analysis

n	32
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	61.6414
Standardized Value of S	5.3535
M-K Test Value (S)	331
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	4.1343
OLS Regression Intercept	-31.1983

Statistically significant evidence of an increasing trend at the specified level of significance.



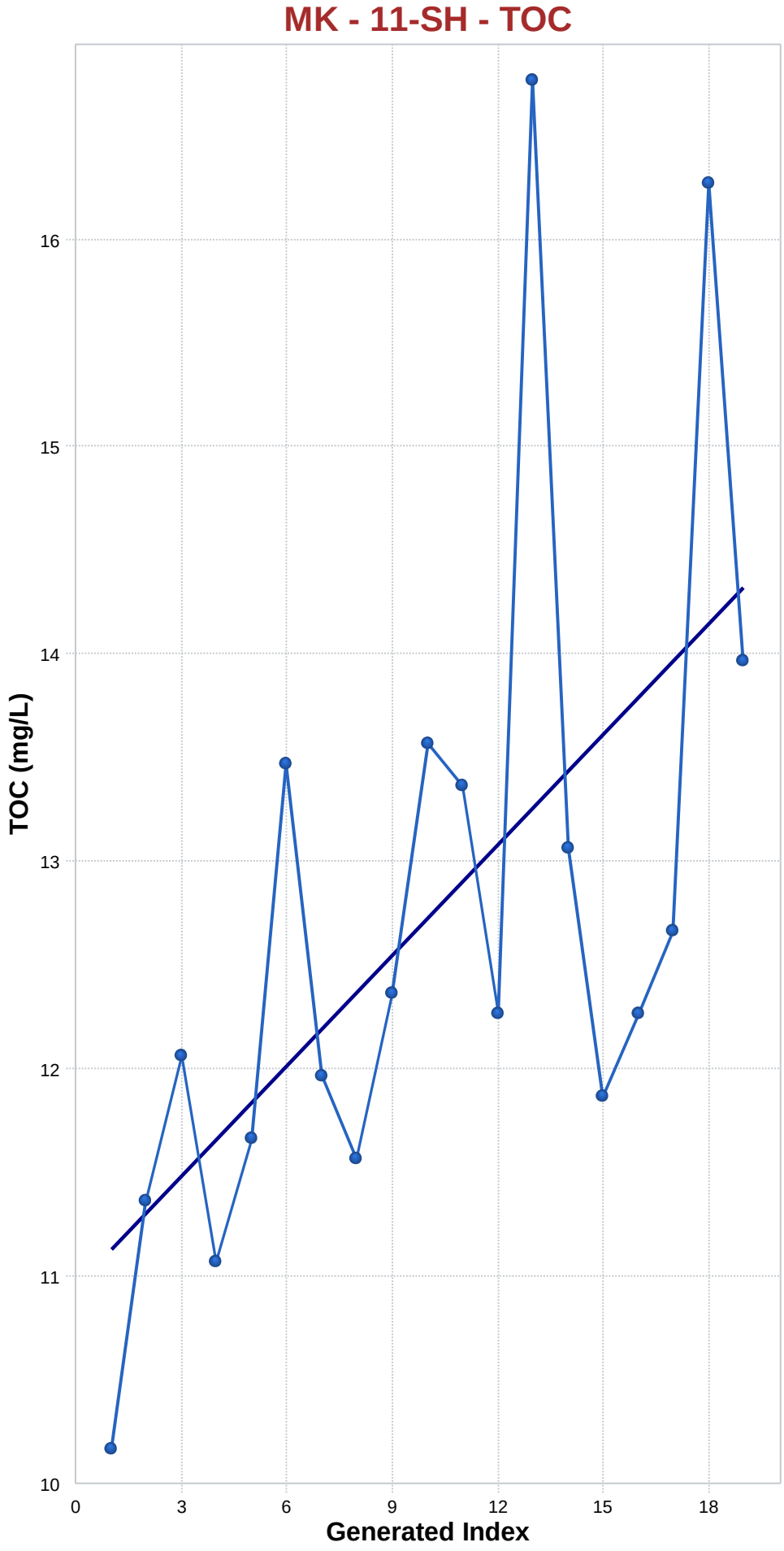
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5194
Standardized Value of S	5.7470
M-K Test Value (S)	458
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	6.5687
OLS Regression Intercept	353.0427

Statistically significant evidence of an increasing trend at the specified level of significance.



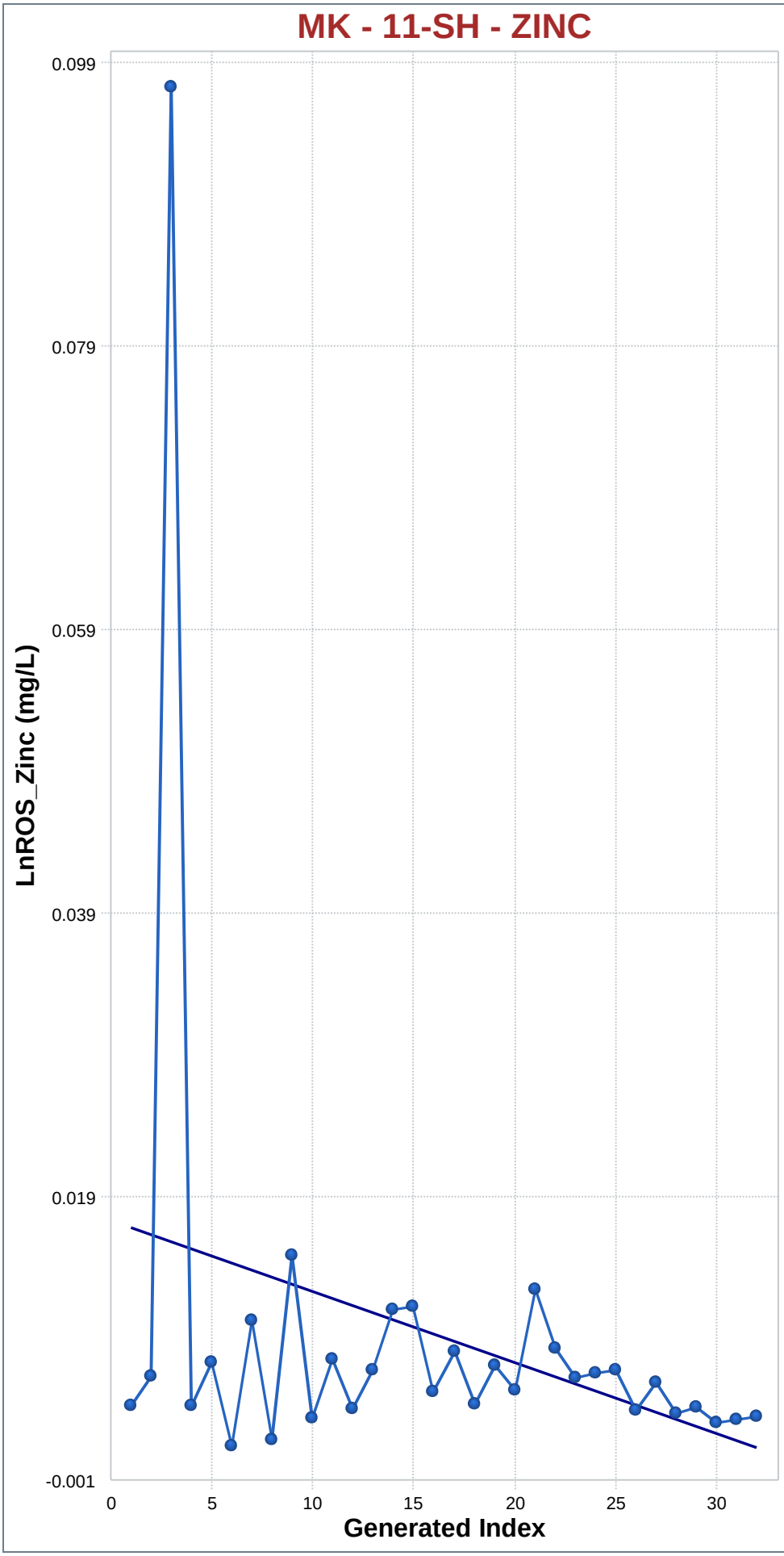
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5657
Standardized Value of S	2.9056
M-K Test Value (S)	84
Tabulated p-value	0.0010
Approximate p-value	0.0018

OLS Regression Line (Blue)

OLS Regression Slope	0.1772
OLS Regression Intercept	11.3860

Statistically significant evidence of an increasing trend at the specified level of significance.



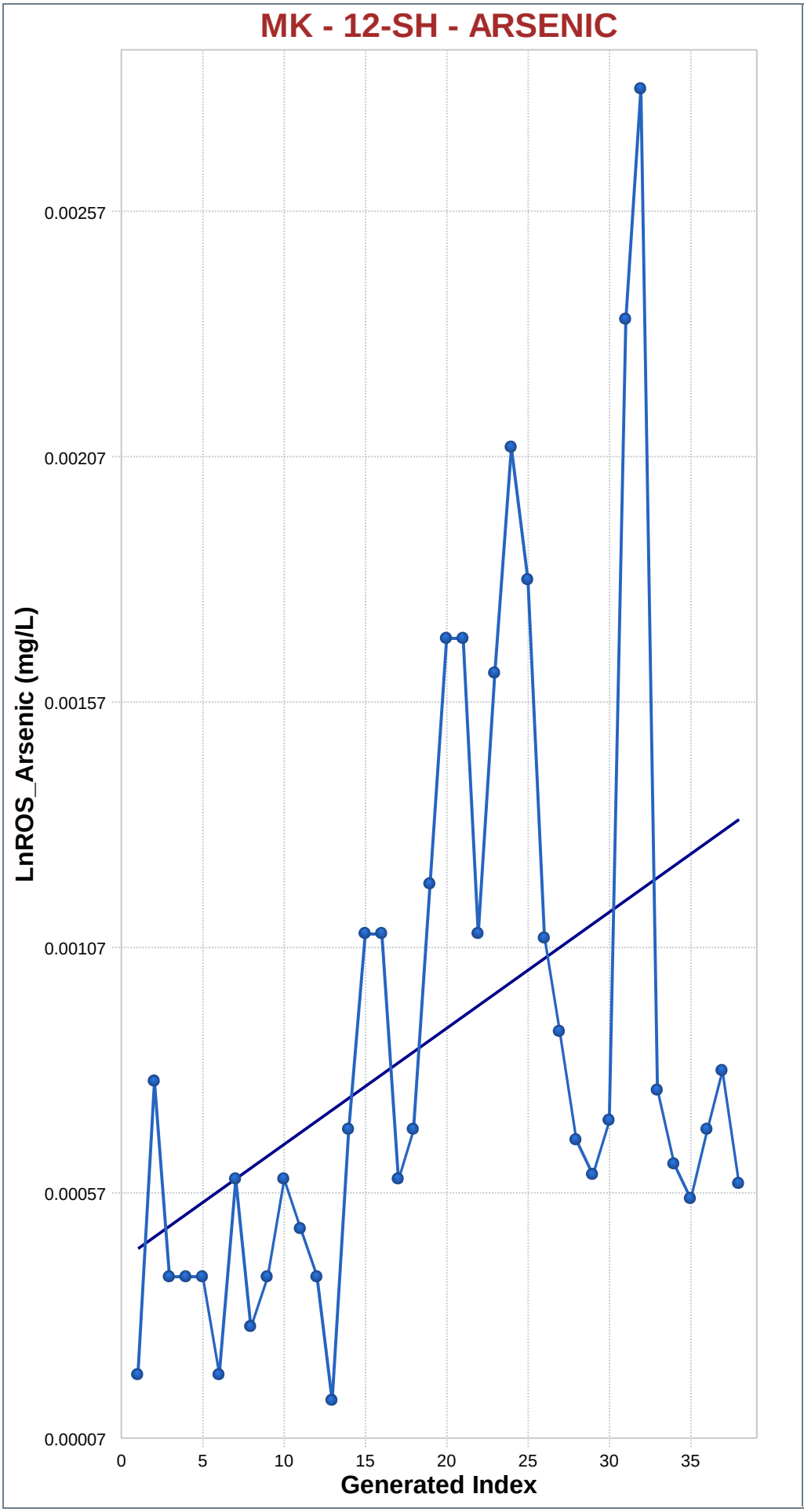
Mann-Kendall Trend Analysis

n	32
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	61.6495
Standardized Value of S	-1.5410
M-K Test Value (S)	-96
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0617

OLS Regression Line (Blue)

OLS Regression Slope	-0.0005
OLS Regression Intercept	0.0170

Insufficient statistical evidence of a significant trend at the specified level of significance.



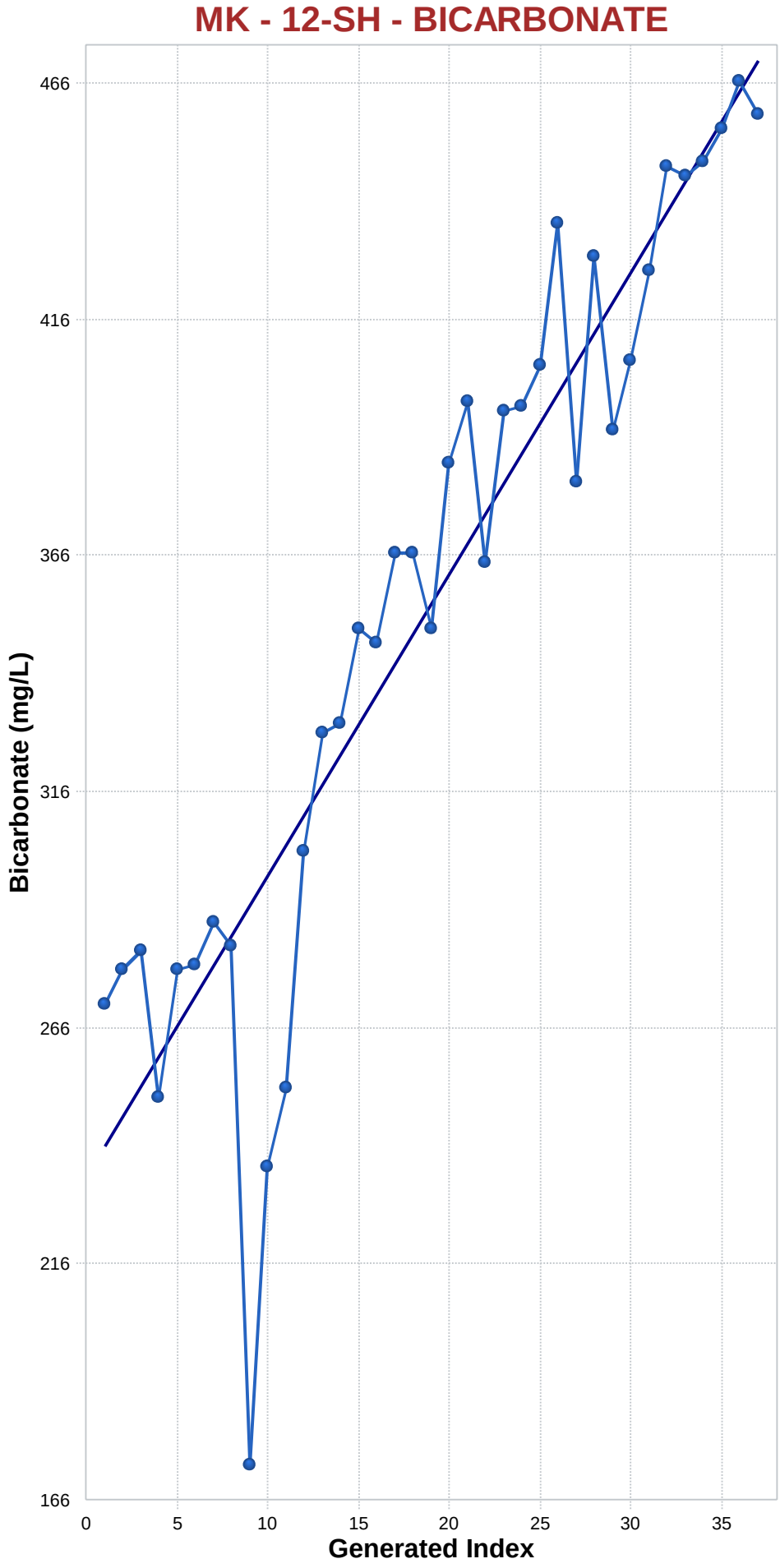
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.3557
Standardized Value of S	3.0118
M-K Test Value (S)	240
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0013

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0004

Statistically significant evidence of an increasing trend at the specified level of significance.



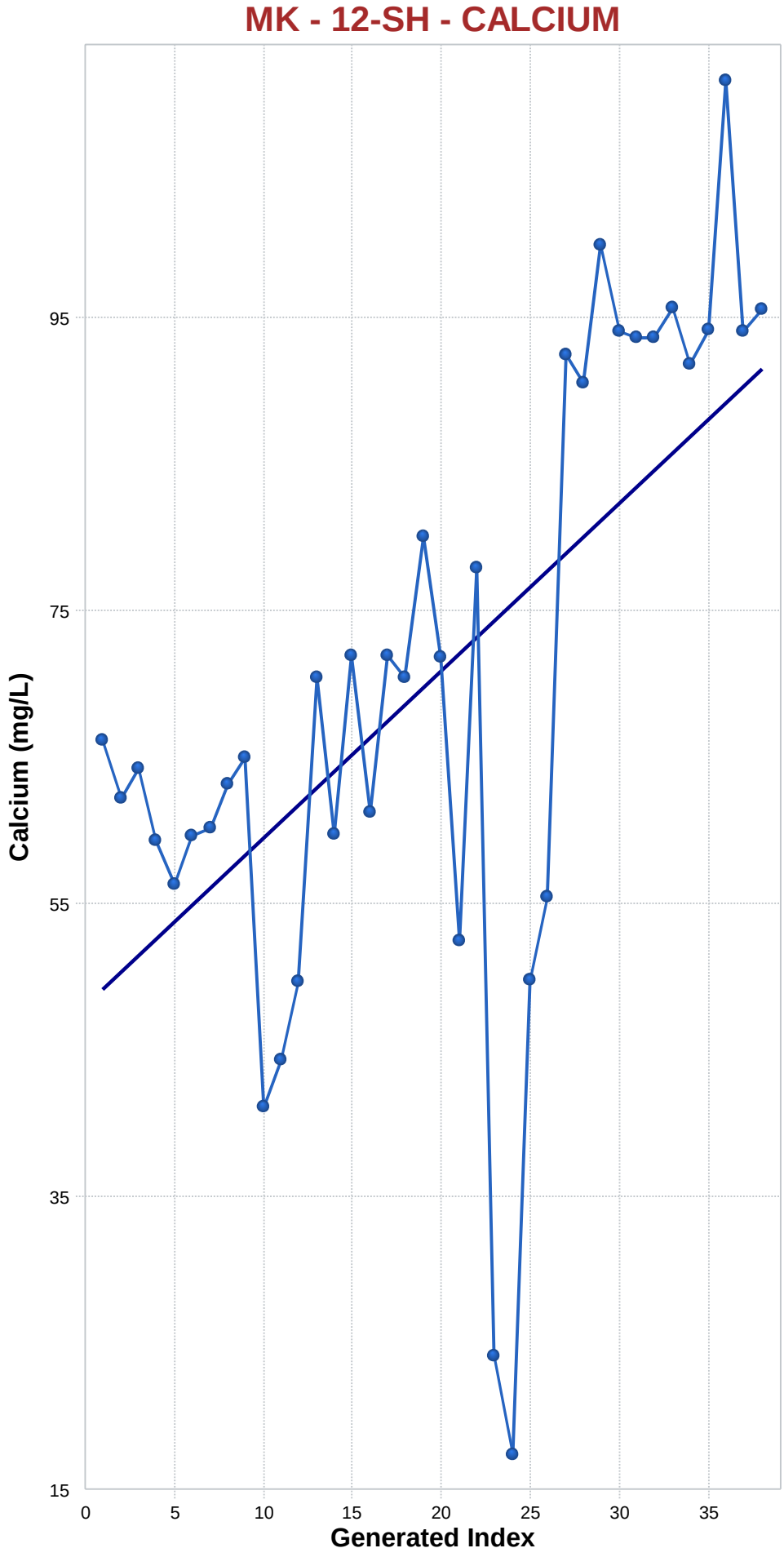
Mann-Kendall Trend Analysis

n	37
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	76.4461
Standardized Value of S	7.1815
M-K Test Value (S)	550
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	6.3810
OLS Regression Intercept	234.2347

Statistically significant evidence of an increasing trend at the specified level of significance.



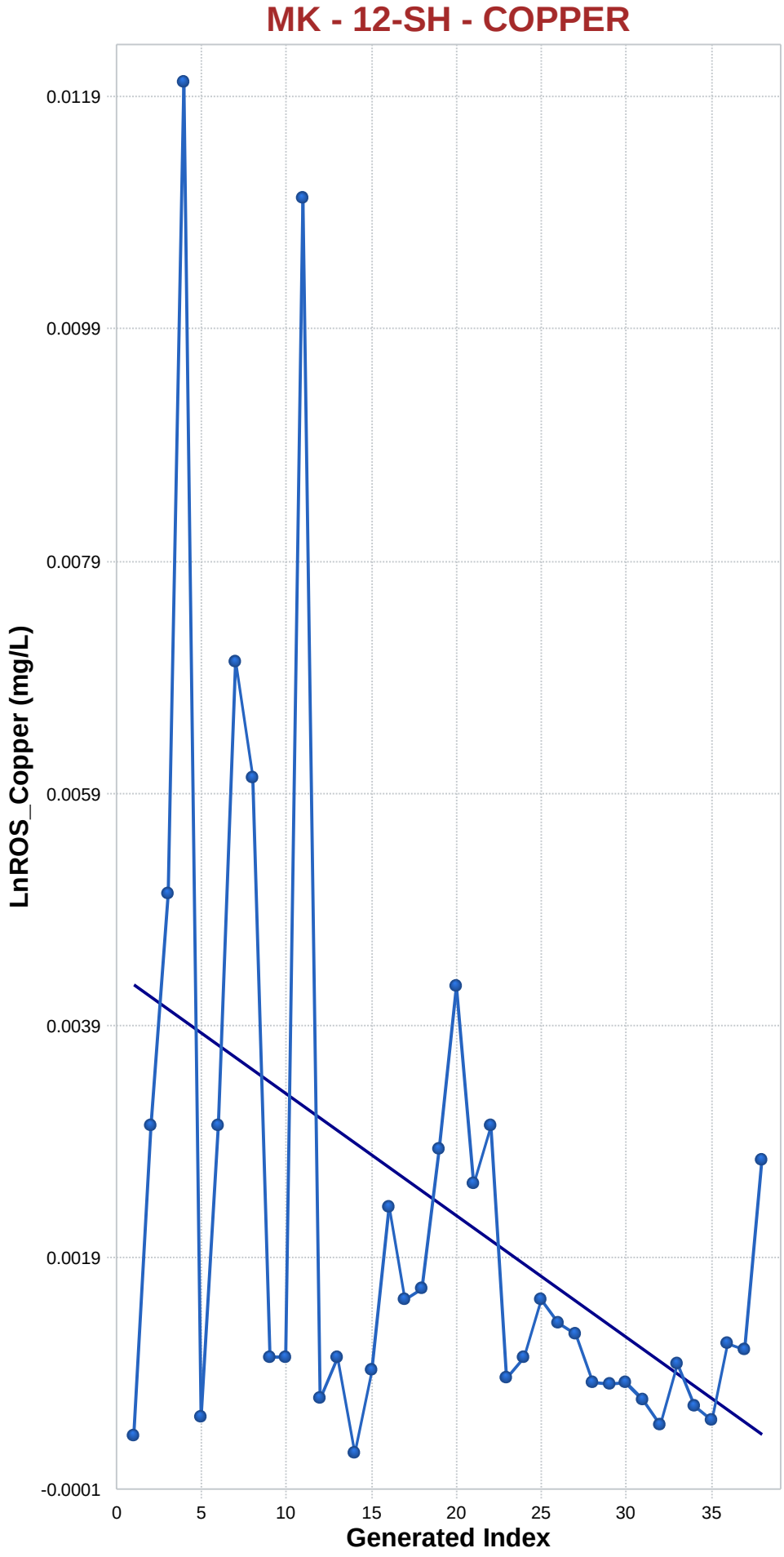
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5173
Standardized Value of S	4.0997
M-K Test Value (S)	327
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.1430
OLS Regression Intercept	47.8663

Statistically significant evidence of an increasing trend at the specified level of significance.



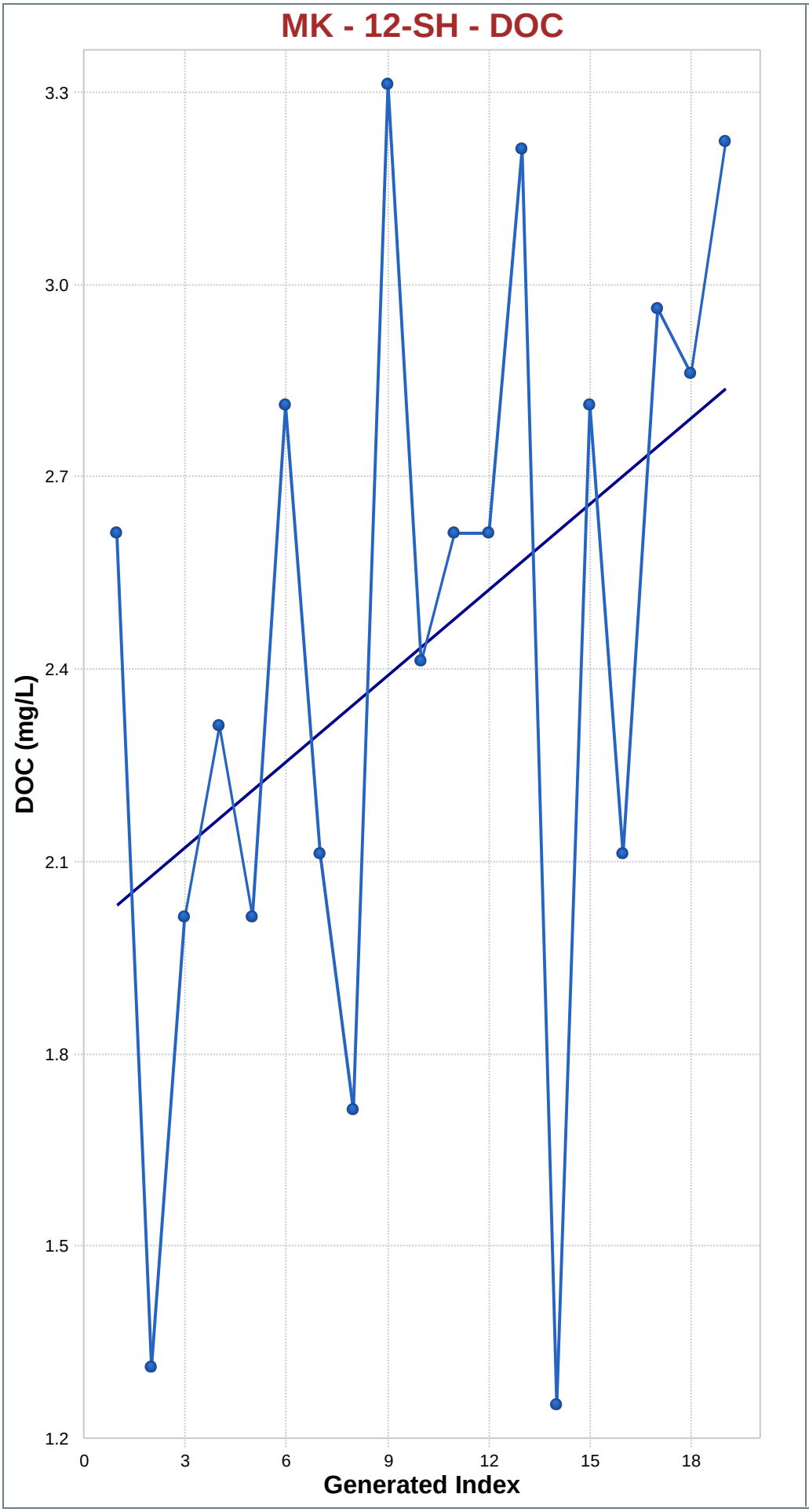
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.4523
Standardized Value of S	-2.3033
M-K Test Value (S)	-184
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0106

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0043

Statistically significant evidence of a decreasing trend at the specified level of significance.



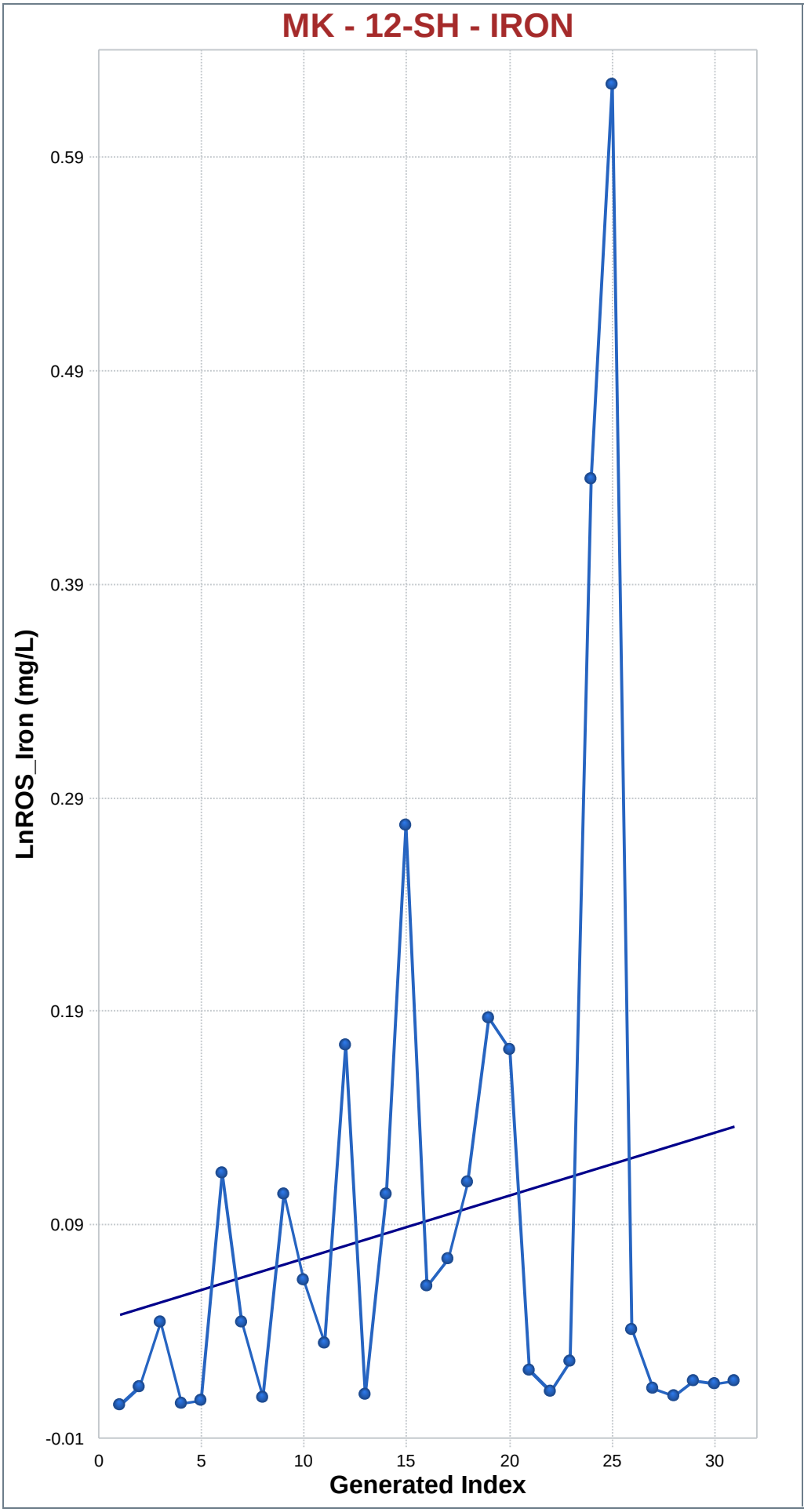
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4664
Standardized Value of S	2.1078
M-K Test Value (S)	61
Tabulated p-value	0.0170
Approximate p-value	0.0175

OLS Regression Line (Blue)

OLS Regression Slope	0.0447
OLS Regression Intercept	1.9763

Statistically significant evidence of an increasing trend at the specified level of significance.



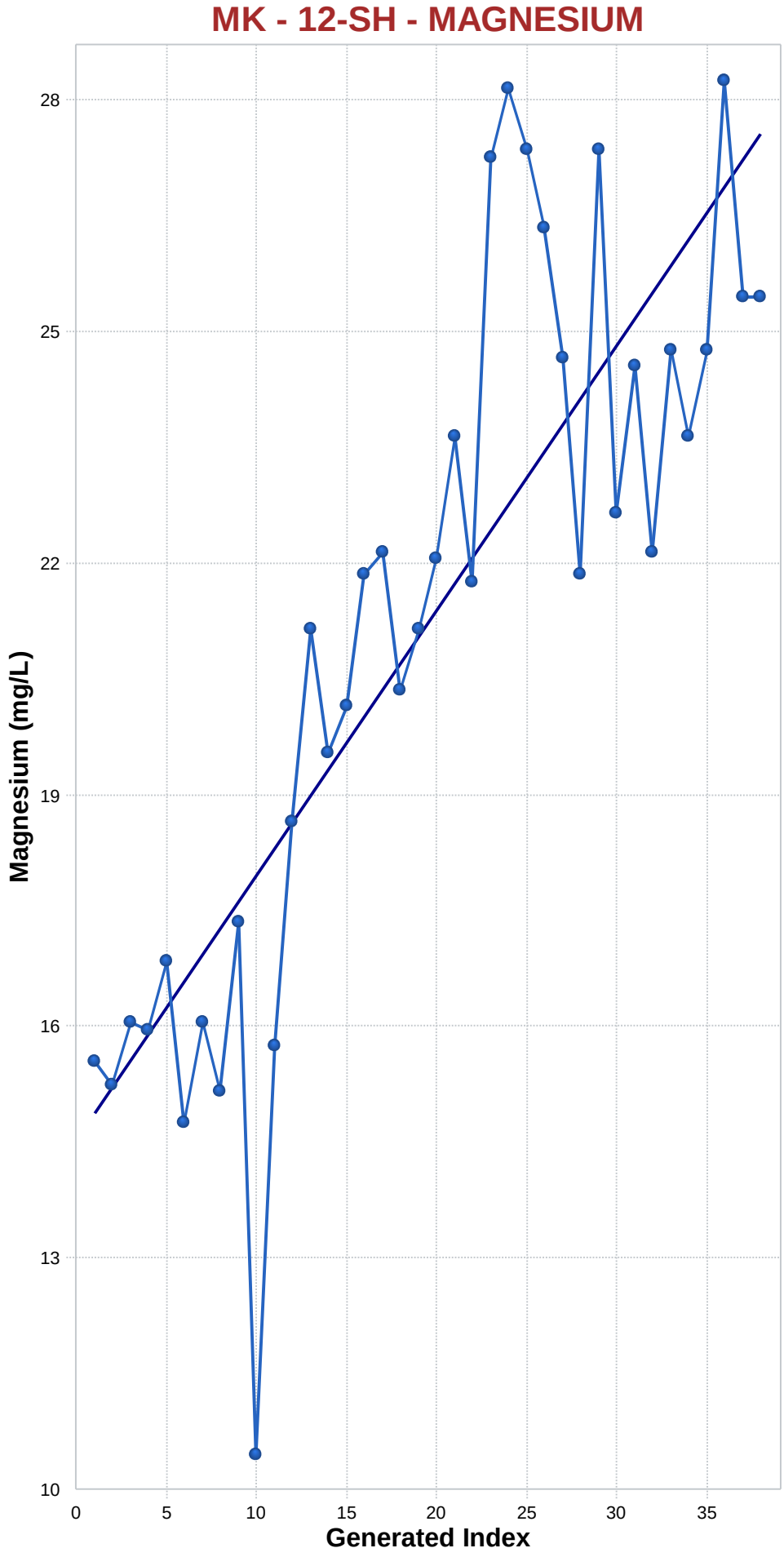
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8189
Standardized Value of S	0.8841
M-K Test Value (S)	53
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1883

OLS Regression Line (Blue)

OLS Regression Slope	0.0029
OLS Regression Intercept	0.0410

Insufficient statistical evidence of a significant trend at the specified level of significance.



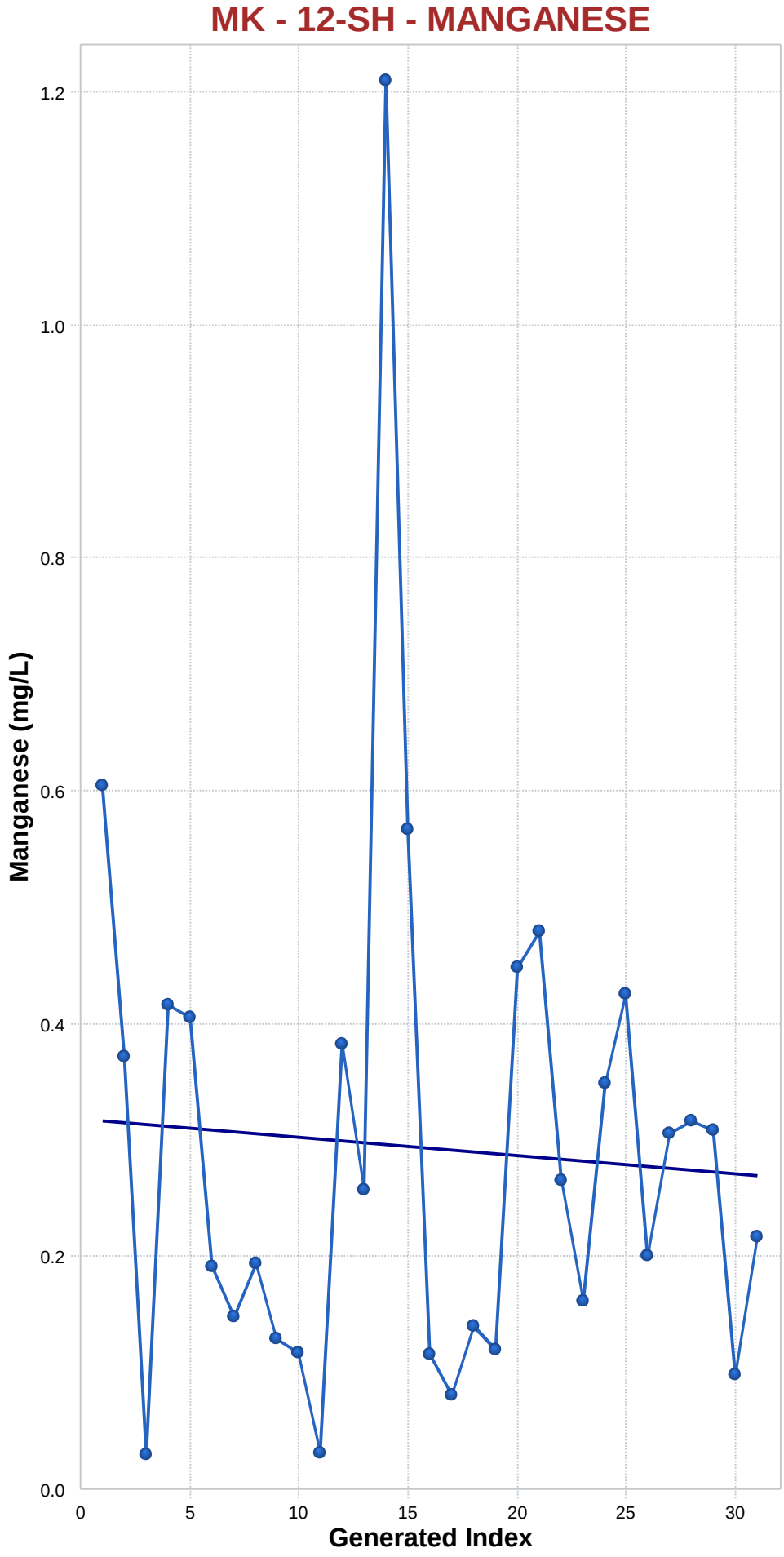
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.4921
Standardized Value of S	5.9880
M-K Test Value (S)	477
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.3428
OLS Regression Intercept	14.4815

Statistically significant evidence of an increasing trend at the specified level of significance.



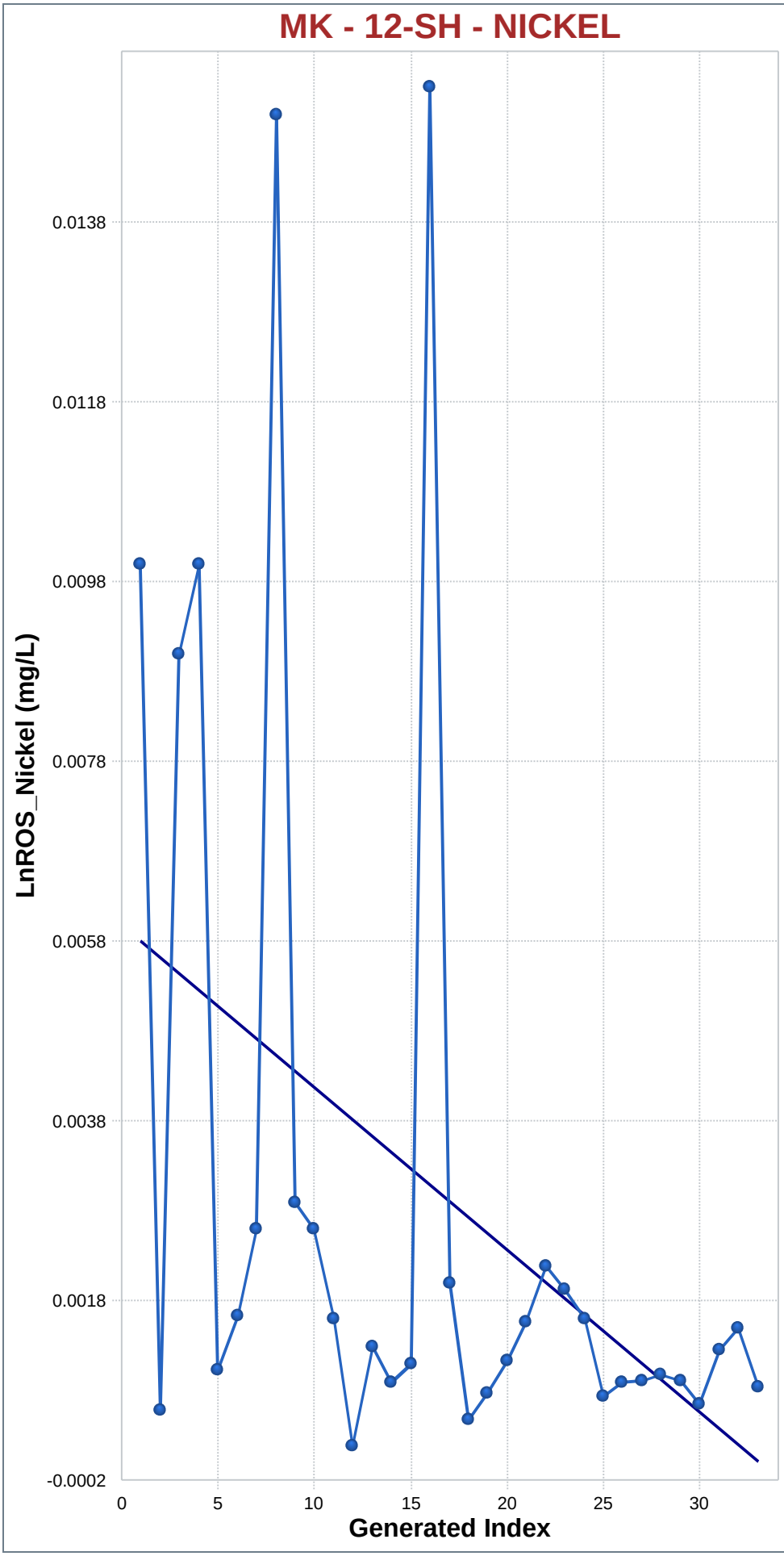
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8359
Standardized Value of S	-0.0680
M-K Test Value (S)	-5
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4729

OLS Regression Line (Blue)

OLS Regression Slope	-0.0016
OLS Regression Intercept	0.2984

Insufficient statistical evidence of a significant trend at the specified level of significance.



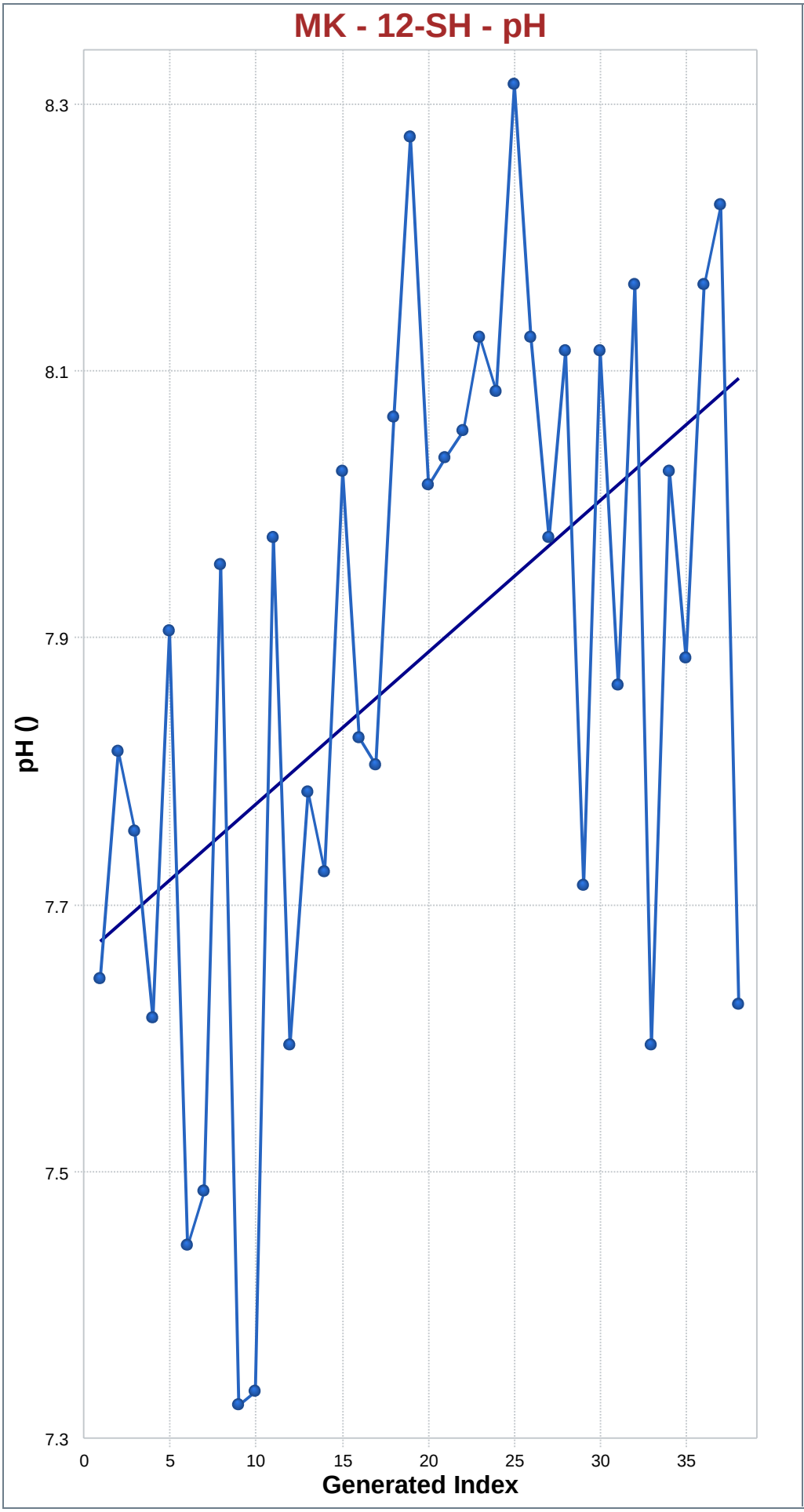
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5084
Standardized Value of S	-2.4648
M-K Test Value (S)	-160
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0069

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0060

Statistically significant evidence of a decreasing trend at the specified level of significance.



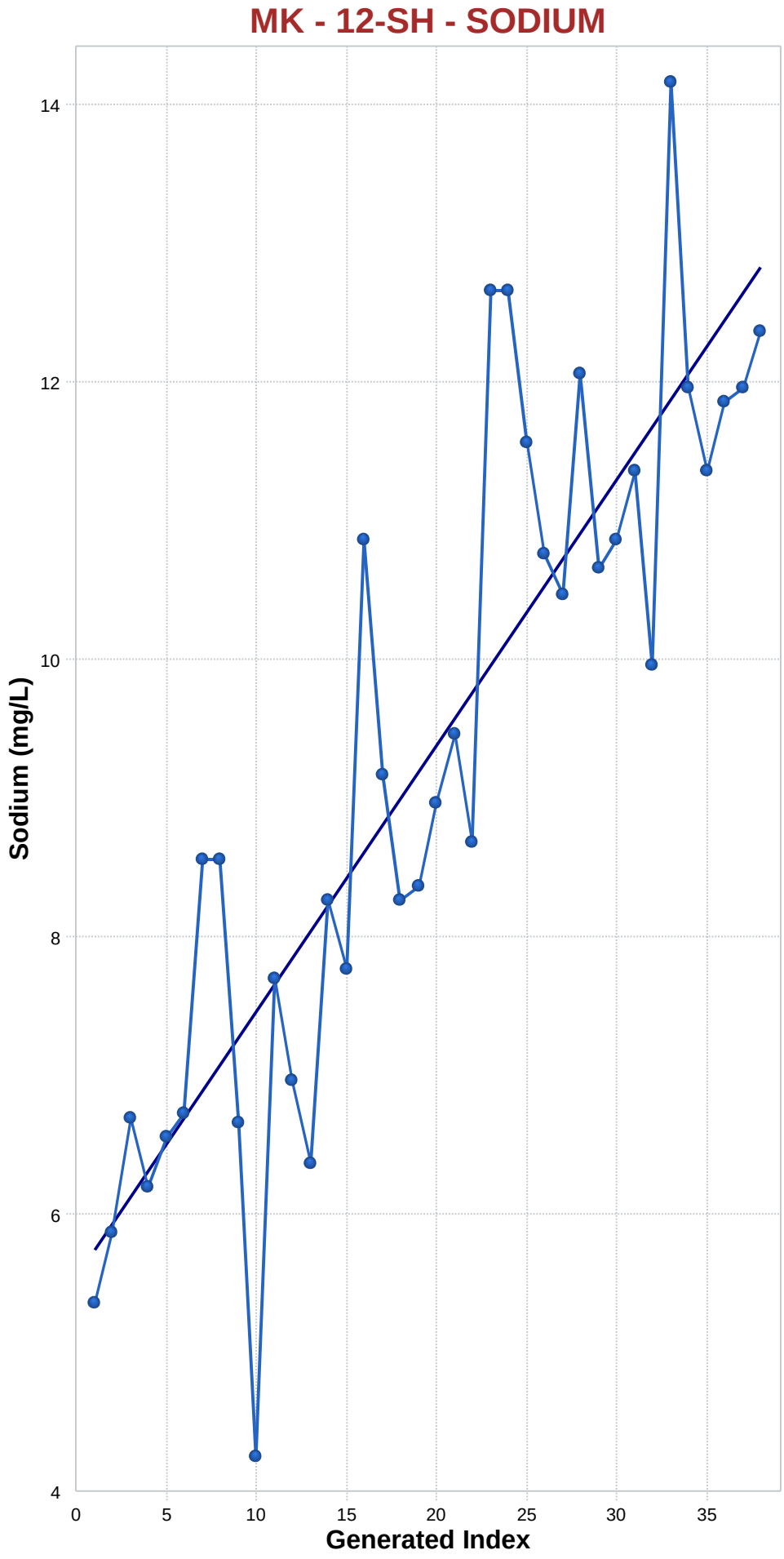
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5047
Standardized Value of S	3.3206
M-K Test Value (S)	265
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0004

OLS Regression Line (Blue)

OLS Regression Slope	0.0114
OLS Regression Intercept	7.7061

Statistically significant evidence of an increasing trend at the specified level of significance.



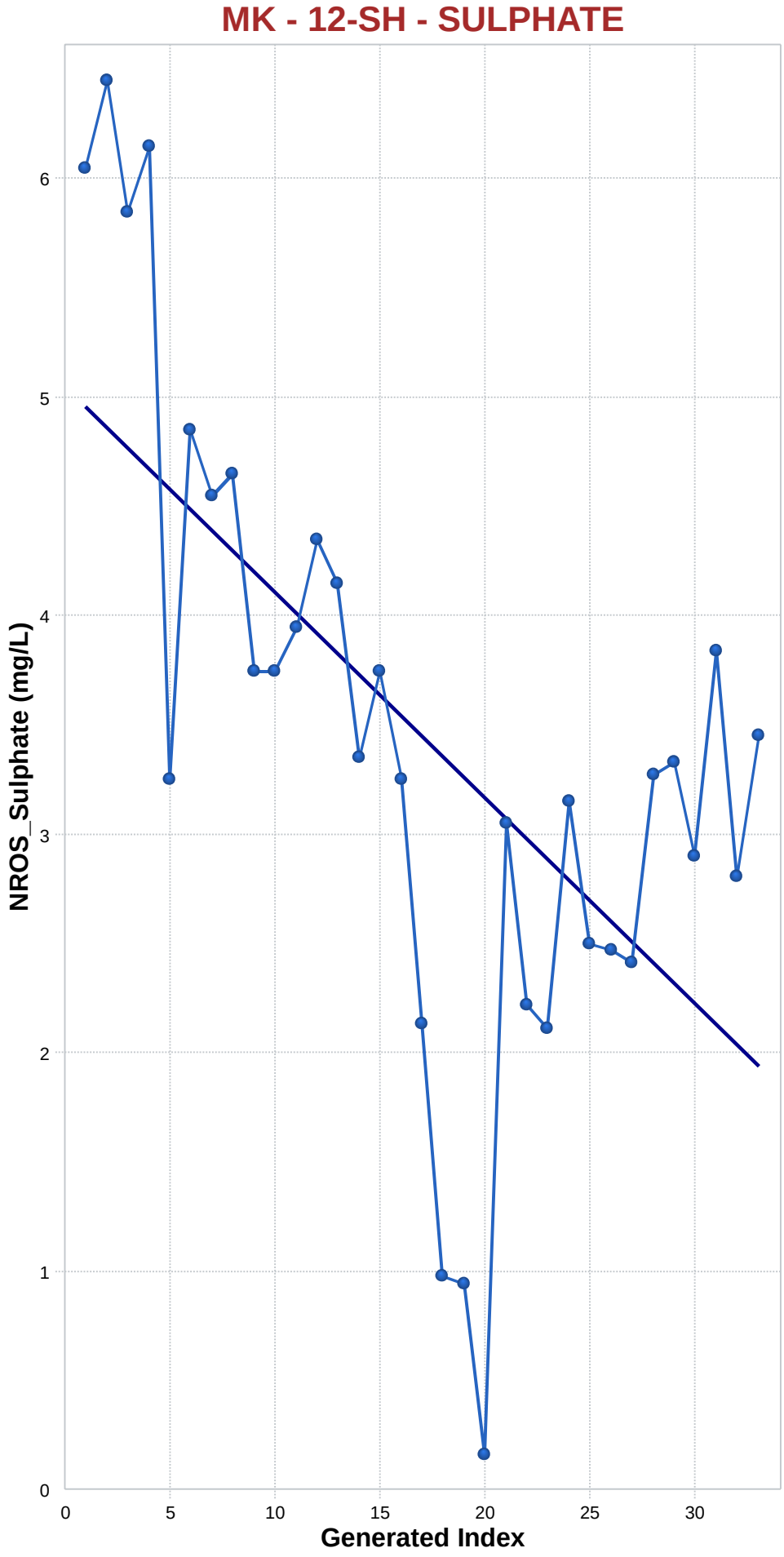
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5047
Standardized Value of S	6.0374
M-K Test Value (S)	481
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.1913
OLS Regression Intercept	5.1958

Statistically significant evidence of an increasing trend at the specified level of significance.



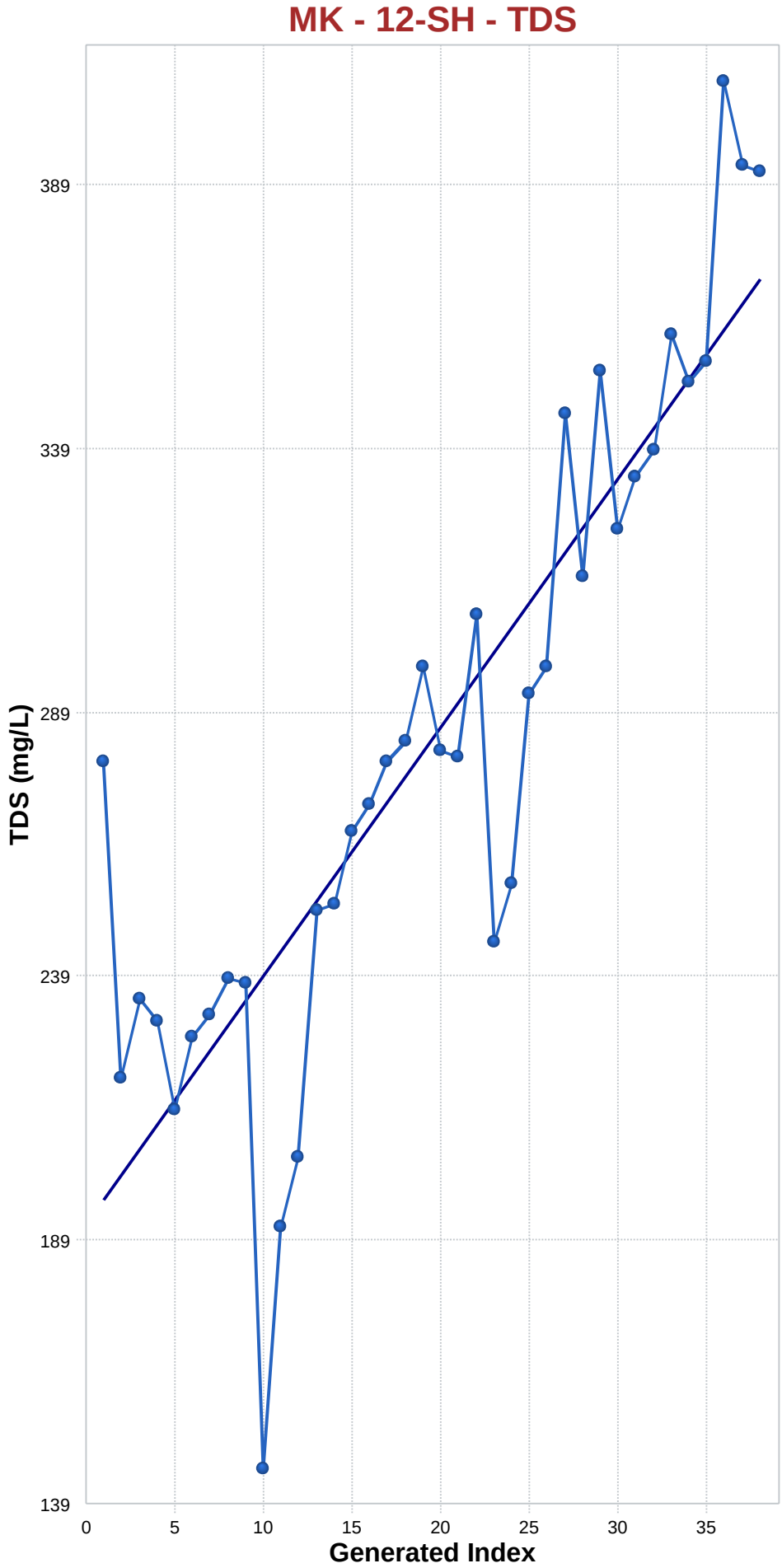
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5032
Standardized Value of S	-3.7052
M-K Test Value (S)	-240
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0942
OLS Regression Intercept	5.0001

Statistically significant evidence of a decreasing trend at the specified level of significance.



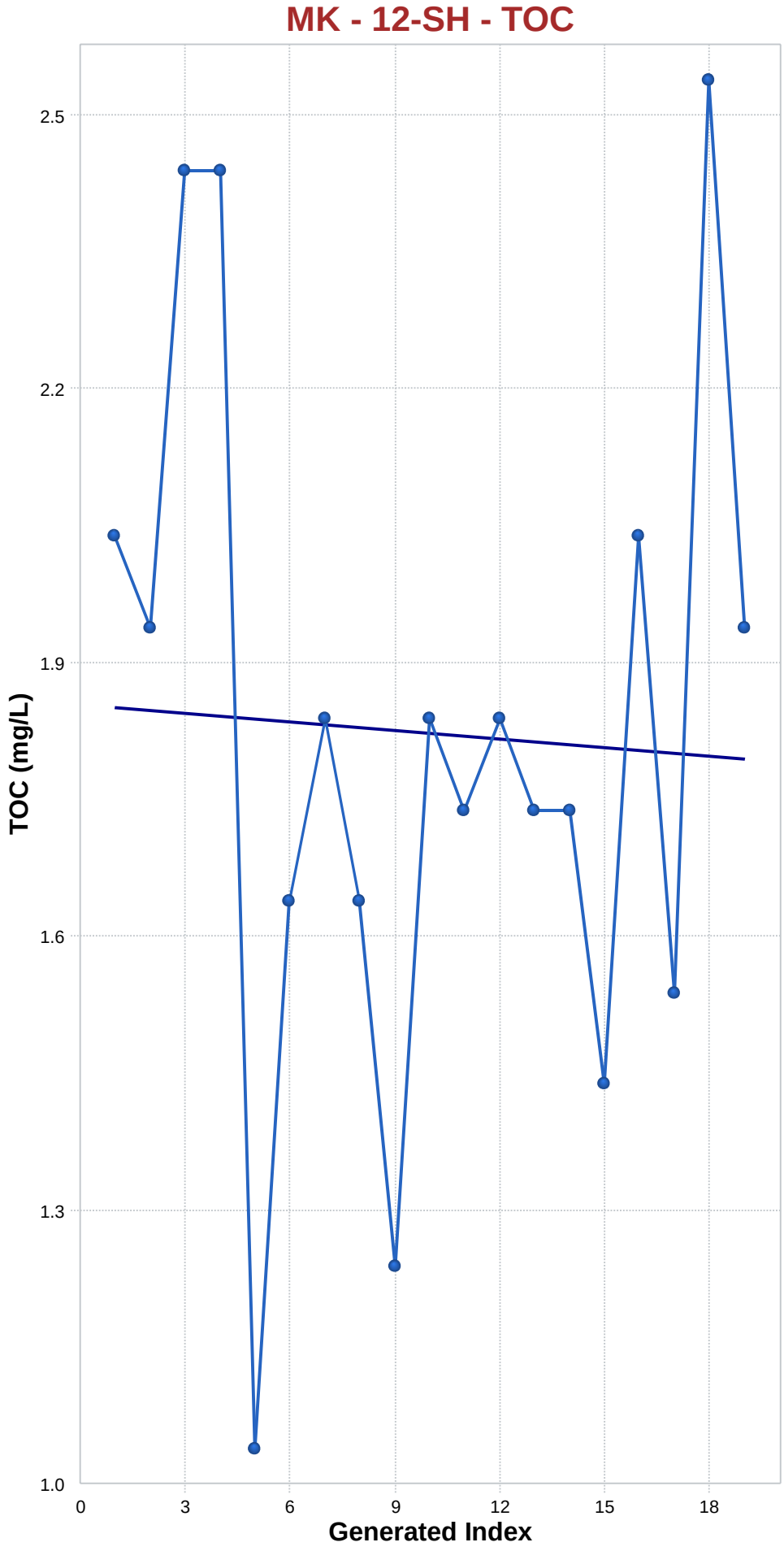
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5299
Standardized Value of S	6.5887
M-K Test Value (S)	525
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	4.7168
OLS Regression Intercept	192.3957

Statistically significant evidence of an increasing trend at the specified level of significance.



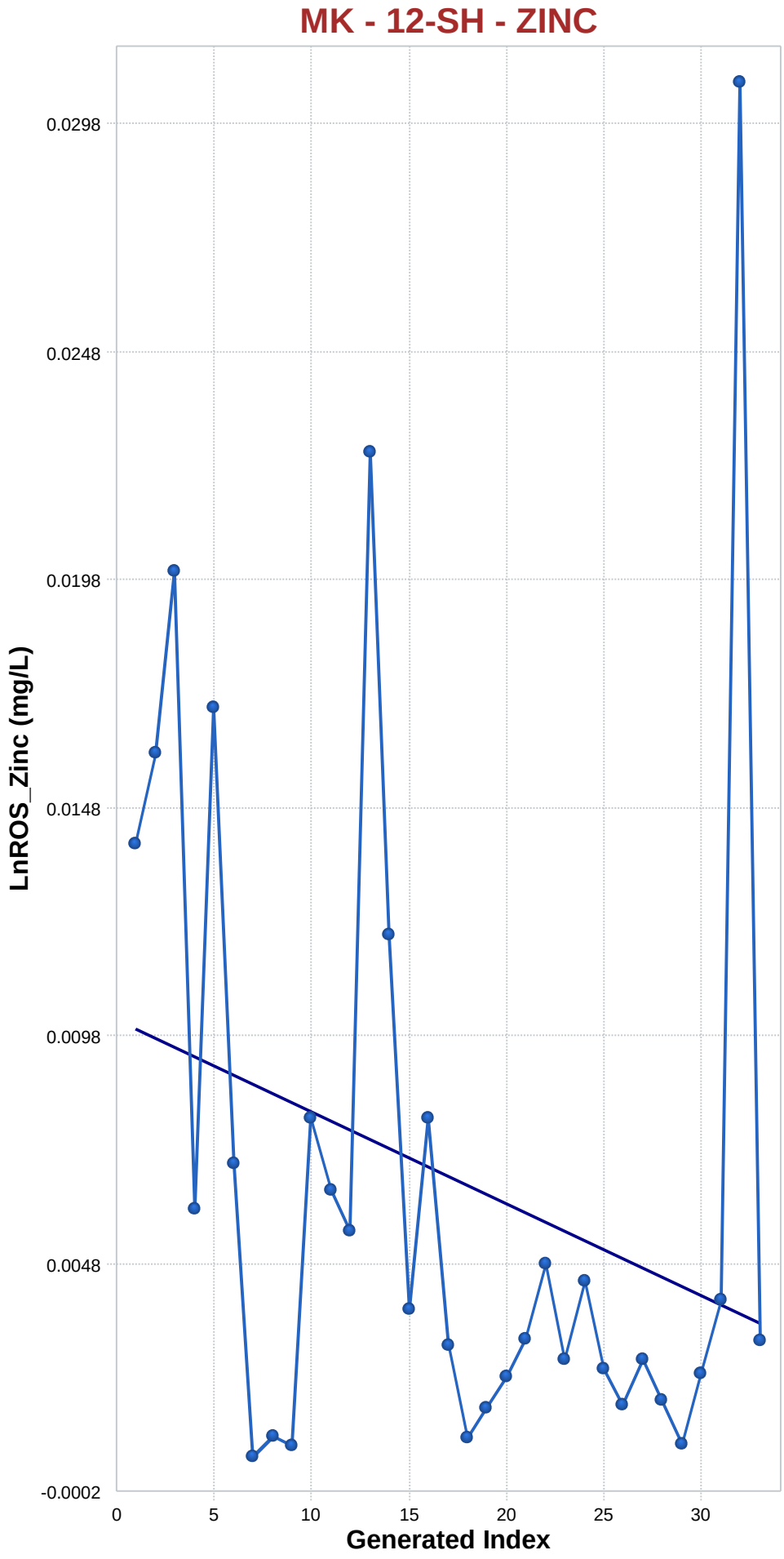
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.3843
Standardized Value of S	-0.2818
M-K Test Value (S)	-9
Tabulated p-value	0.3910
Approximate p-value	0.3890

OLS Regression Line (Blue)

OLS Regression Slope	-0.0032
OLS Regression Intercept	1.8158

Insufficient statistical evidence of a significant trend at the specified level of significance.



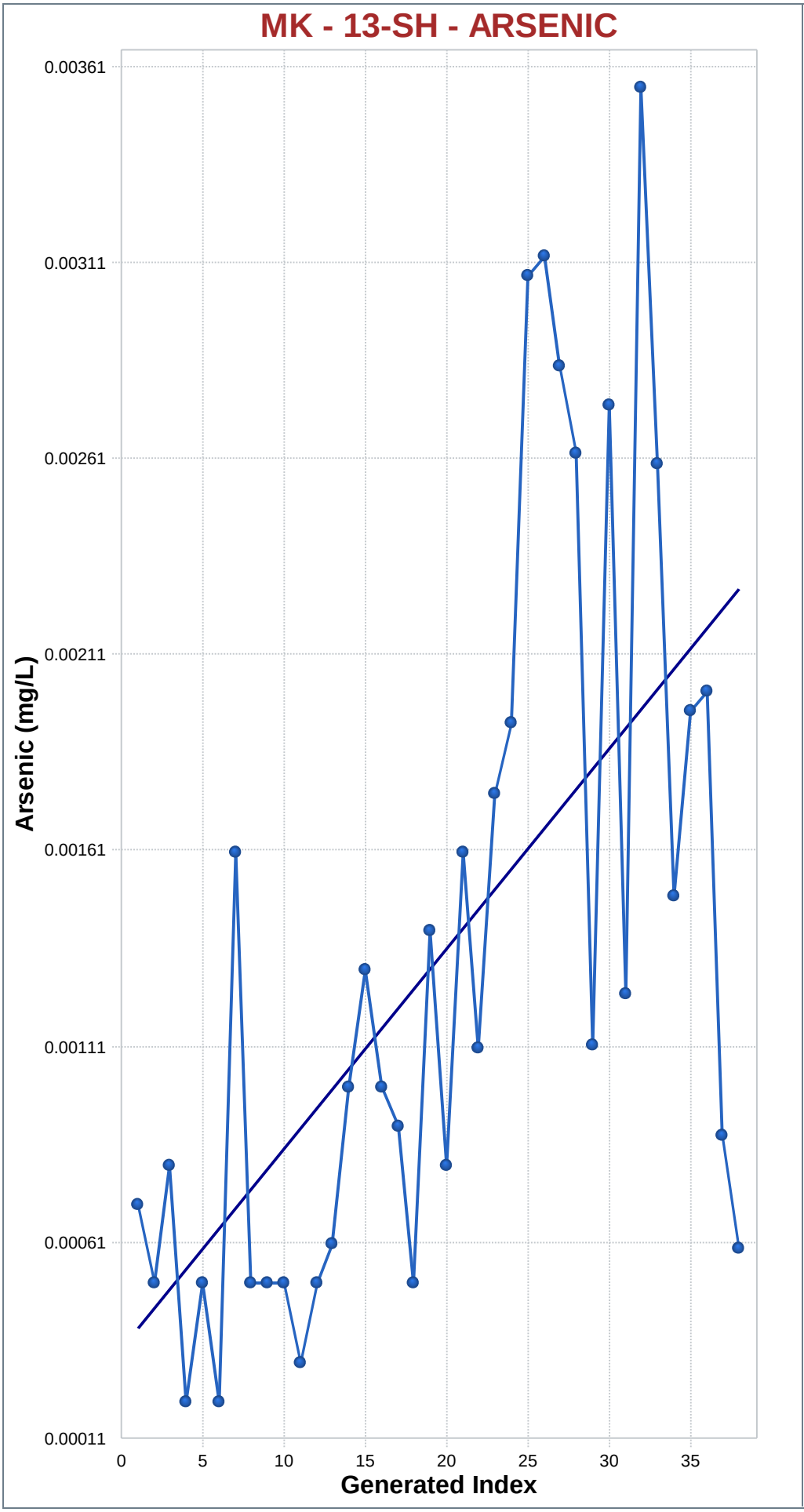
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5239
Standardized Value of S	-2.0922
M-K Test Value (S)	-136
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0182

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0101

Statistically significant evidence of a decreasing trend at the specified level of significance.



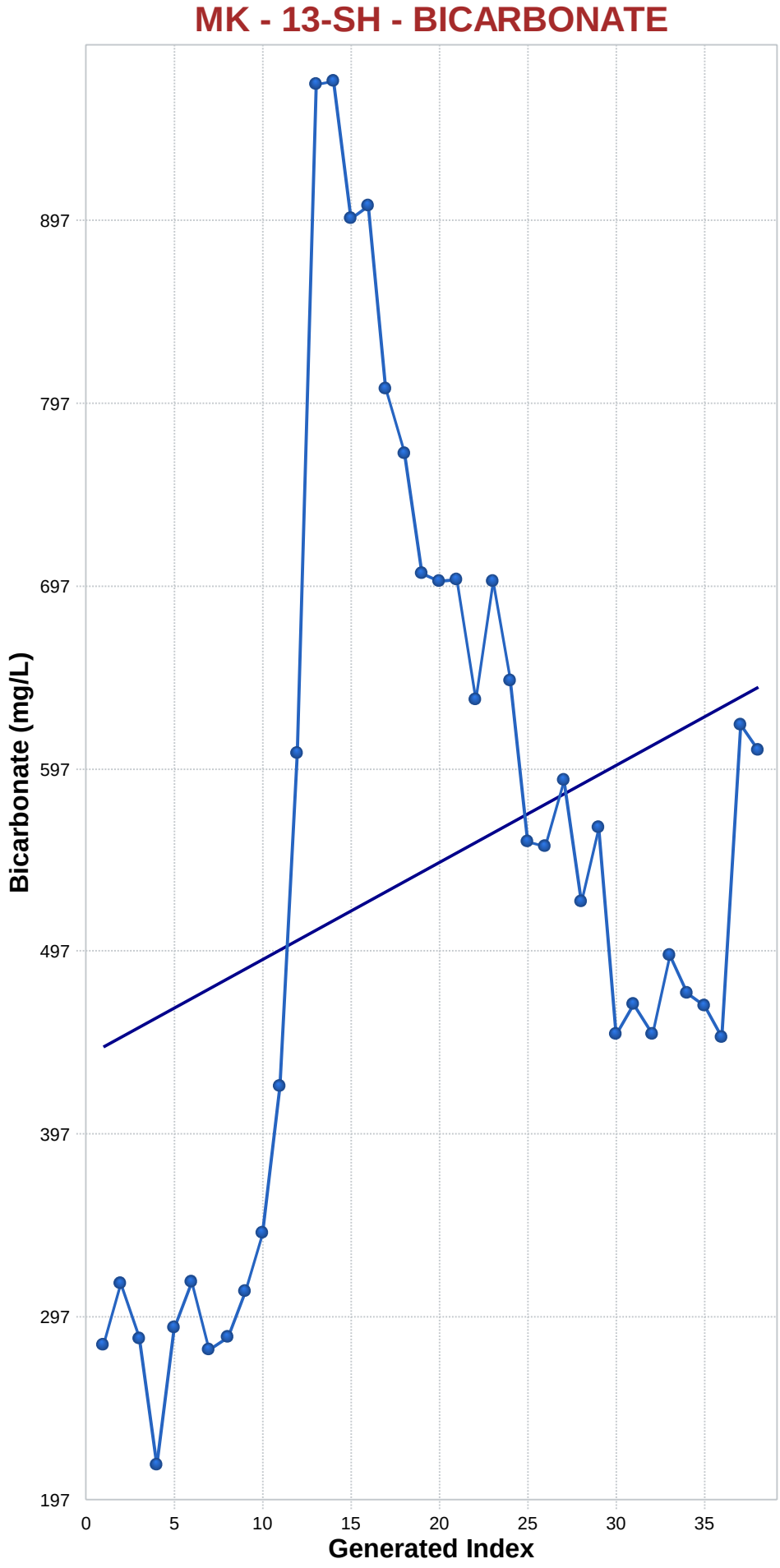
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.2380
Standardized Value of S	4.2782
M-K Test Value (S)	340
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.0001
OLS Regression Intercept	0.0003

Statistically significant evidence of an increasing trend at the specified level of significance.



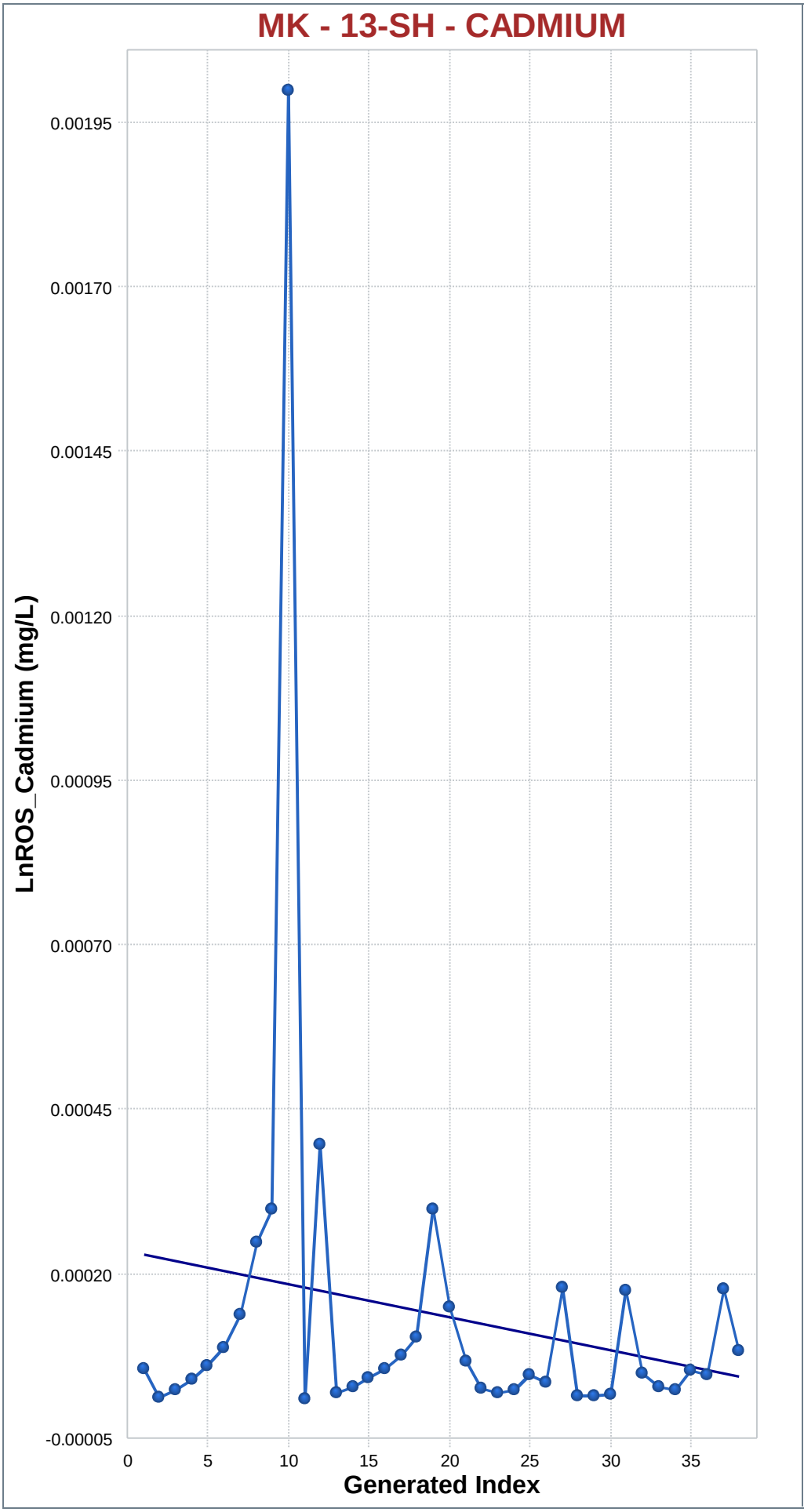
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5299
Standardized Value of S	1.0814
M-K Test Value (S)	87
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1398

OLS Regression Line (Blue)

OLS Regression Slope	5.3057
OLS Regression Intercept	439.5097

Insufficient statistical evidence of a significant trend at the specified level of significance.



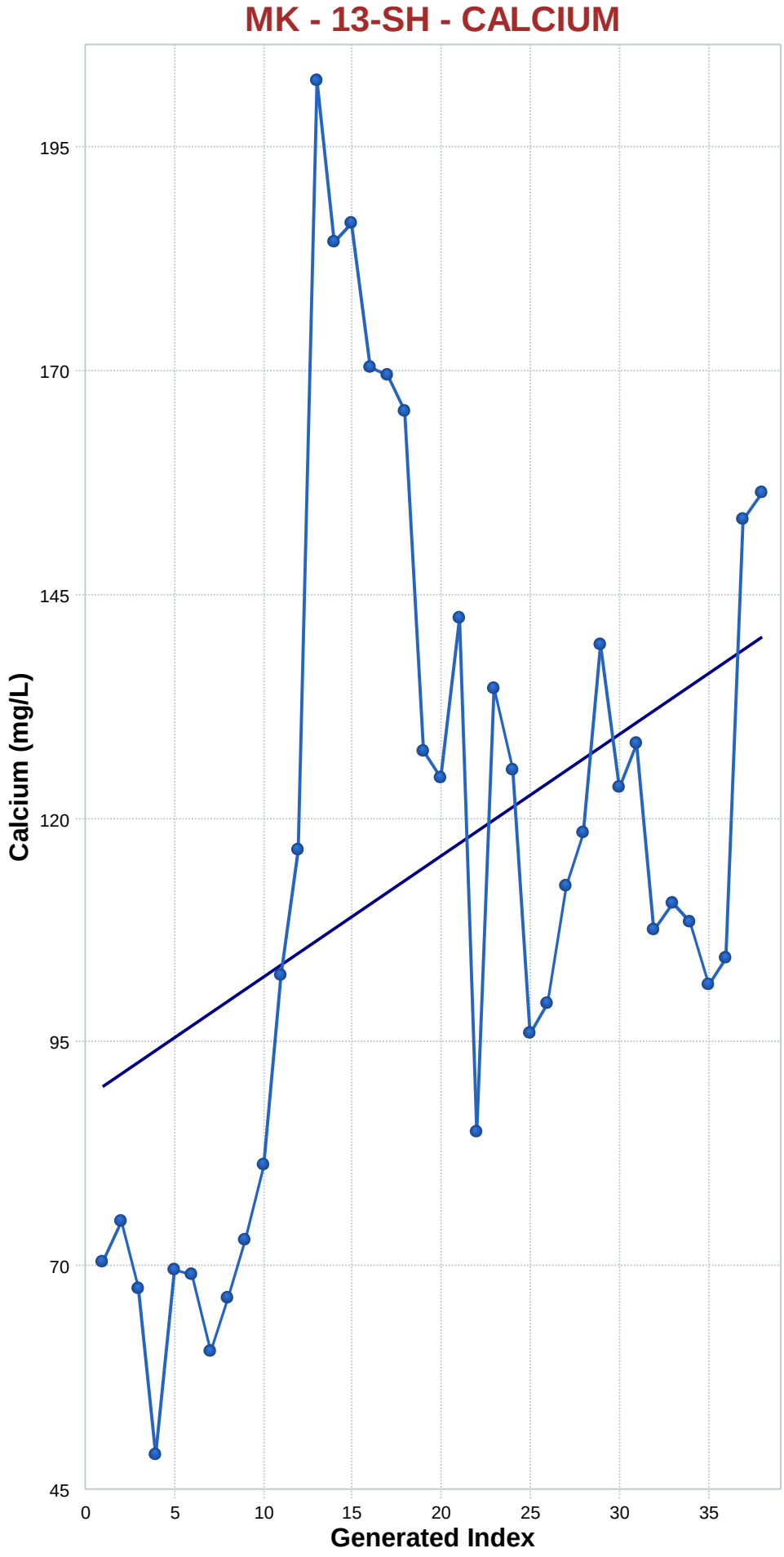
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5362
Standardized Value of S	-0.3395
M-K Test Value (S)	-28
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3671

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0002

Insufficient statistical evidence of a significant trend at the specified level of significance.



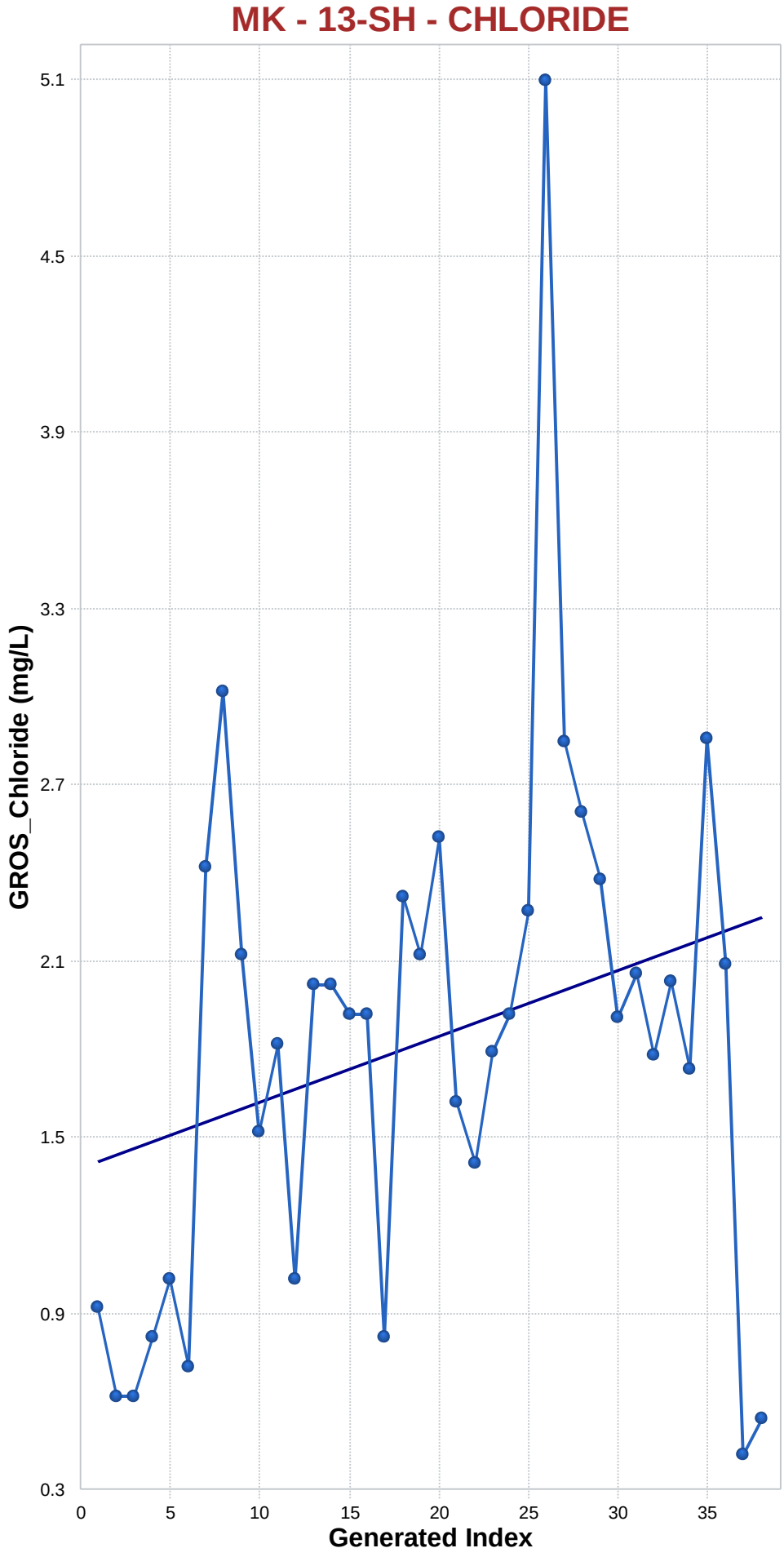
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5424
Standardized Value of S	2.2127
M-K Test Value (S)	177
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0135

OLS Regression Line (Blue)

OLS Regression Slope	1.3574
OLS Regression Intercept	88.2807

Statistically significant evidence of an increasing trend at the specified level of significance.



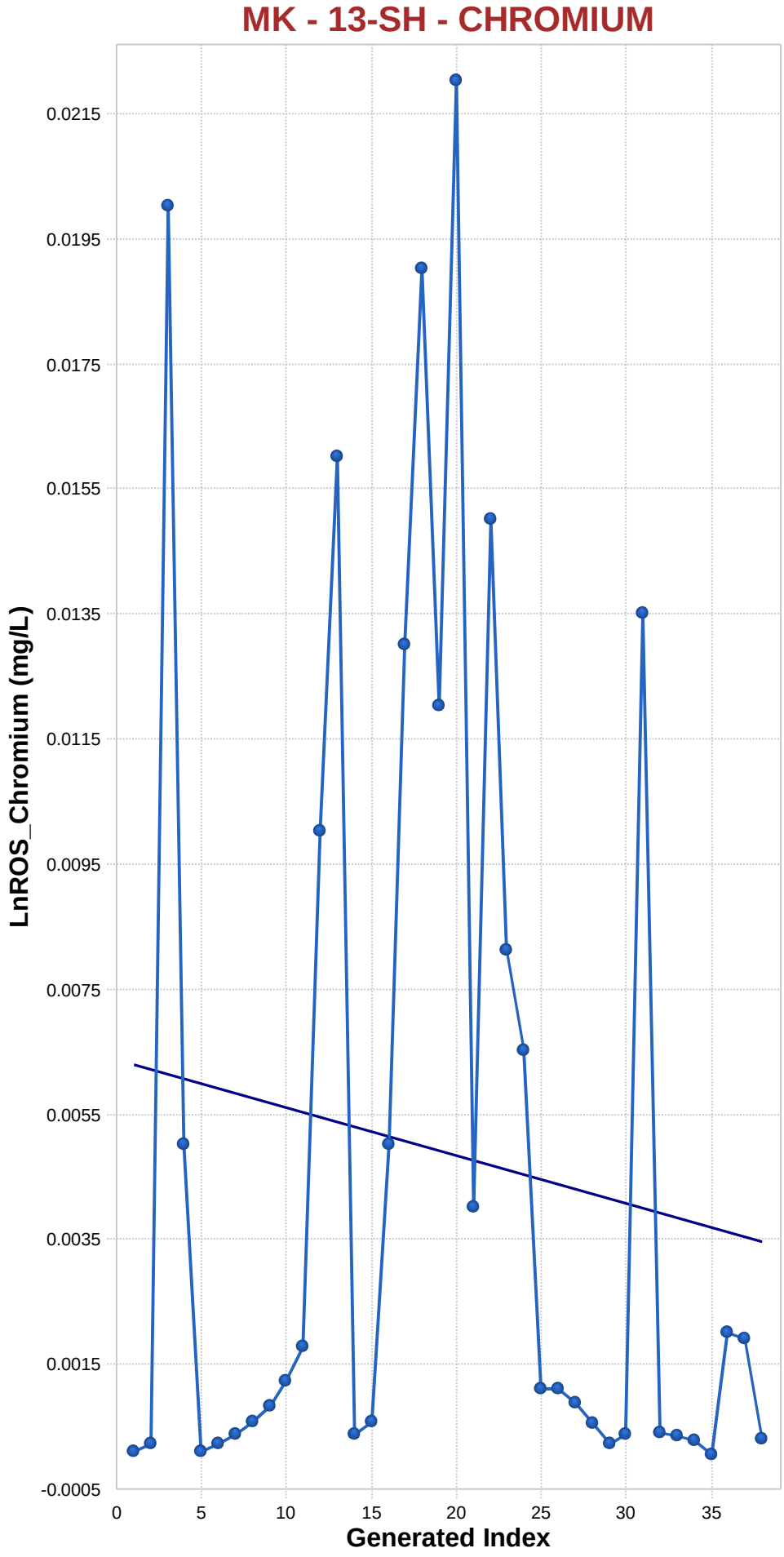
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.4879
Standardized Value of S	1.7361
M-K Test Value (S)	139
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0413

OLS Regression Line (Blue)

OLS Regression Slope	0.0224
OLS Regression Intercept	1.3769

Statistically significant evidence of an increasing trend at the specified level of significance.



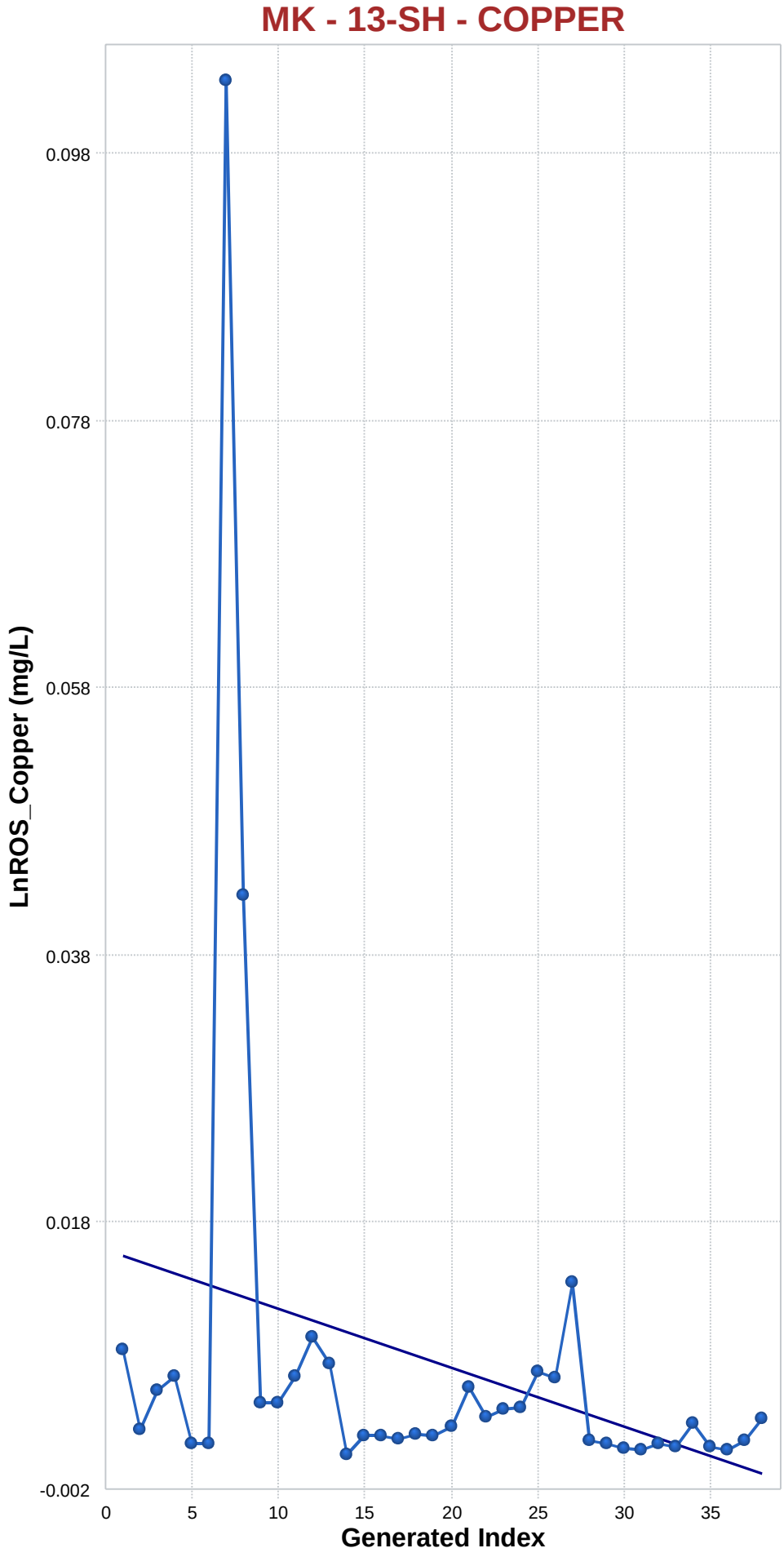
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5299
Standardized Value of S	-0.3521
M-K Test Value (S)	-29
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3624

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0063

Insufficient statistical evidence of a significant trend at the specified level of significance.



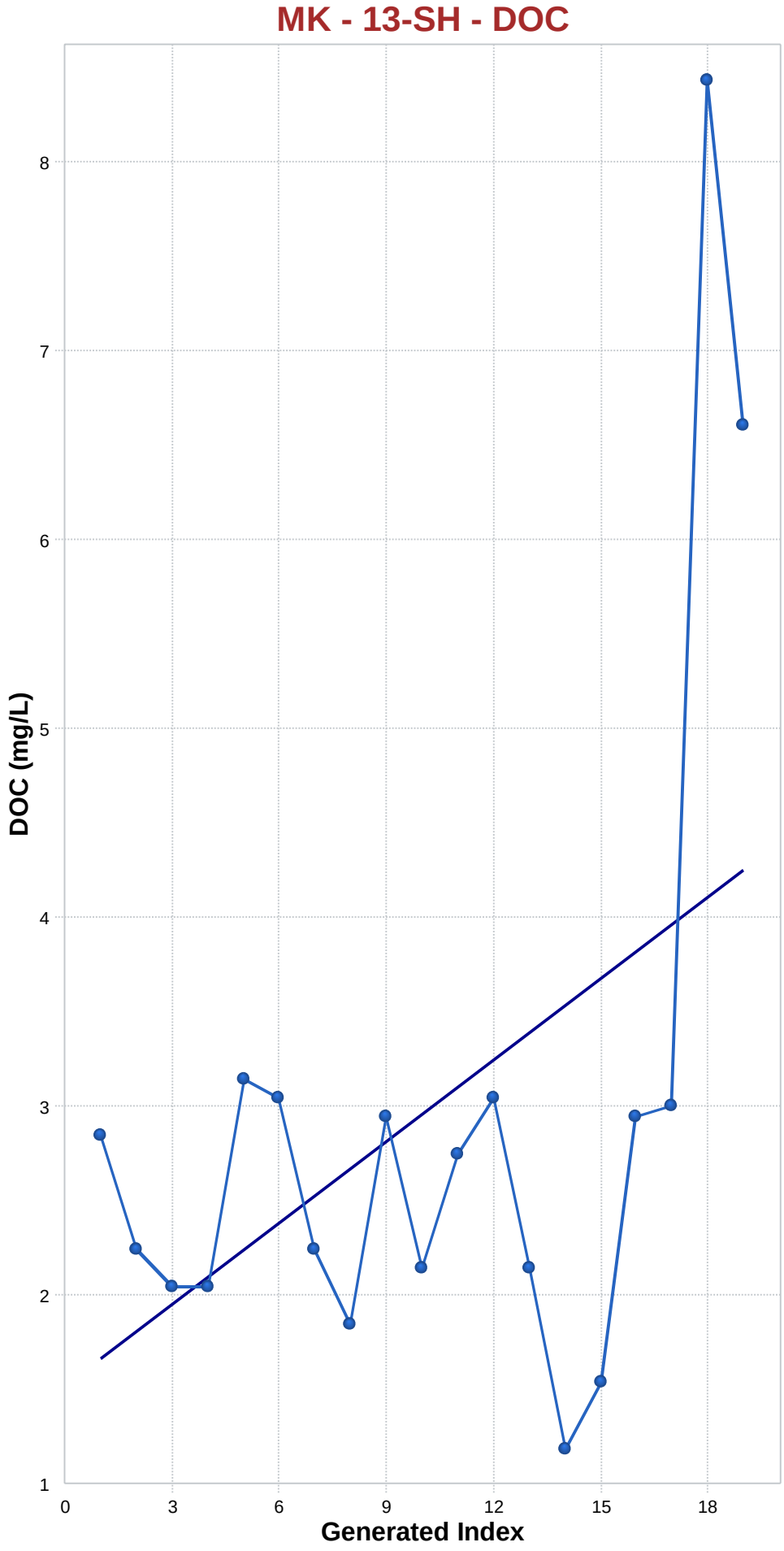
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5005
Standardized Value of S	-2.6666
M-K Test Value (S)	-213
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0038

OLS Regression Line (Blue)

OLS Regression Slope	-0.0004
OLS Regression Intercept	0.0155

Statistically significant evidence of a decreasing trend at the specified level of significance.



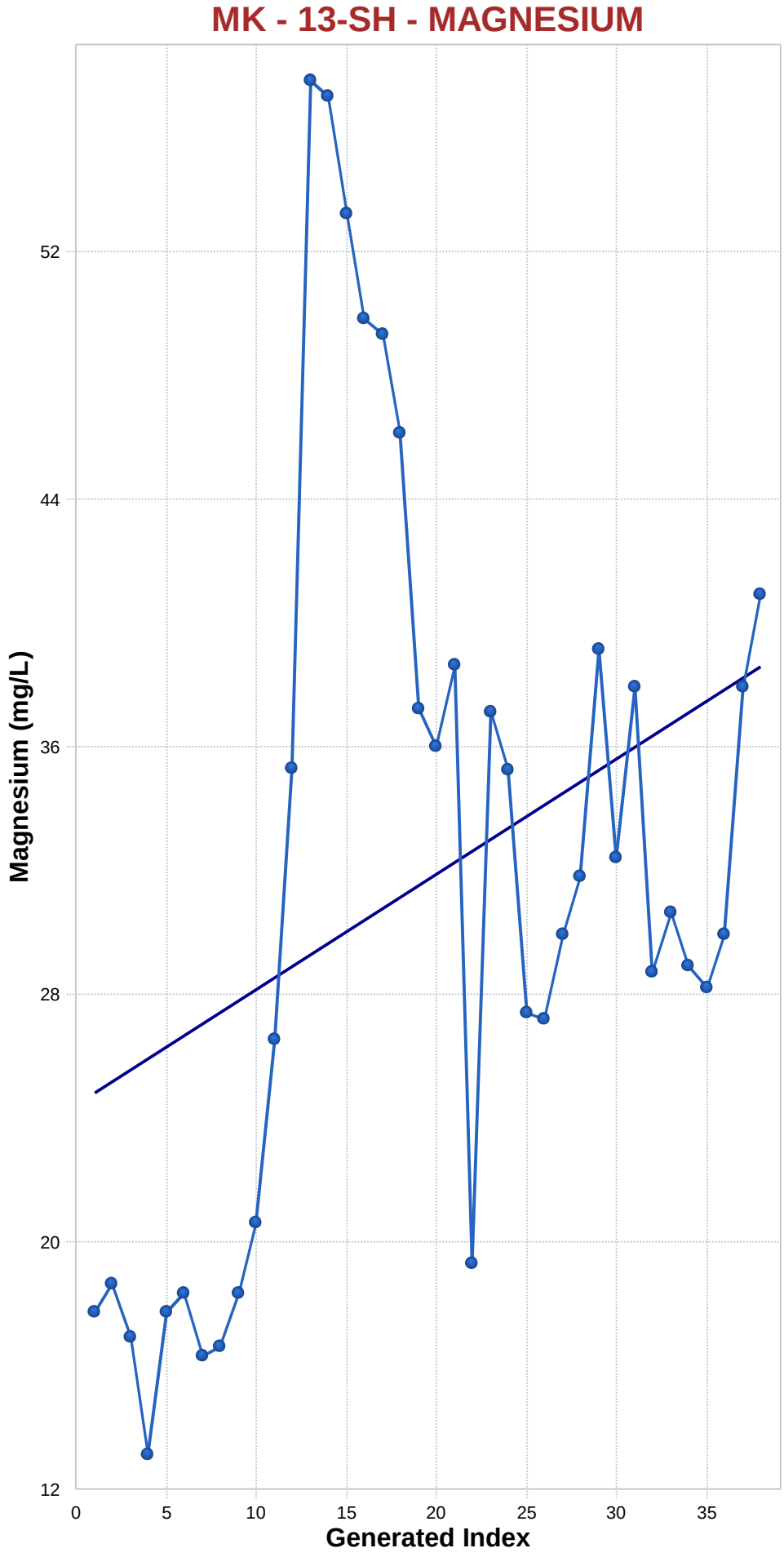
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4956
Standardized Value of S	0.8773
M-K Test Value (S)	26
Tabulated p-value	0.1840
Approximate p-value	0.1902

OLS Regression Line (Blue)

OLS Regression Slope	0.1438
OLS Regression Intercept	1.4756

Insufficient statistical evidence of a significant trend at the specified level of significance.



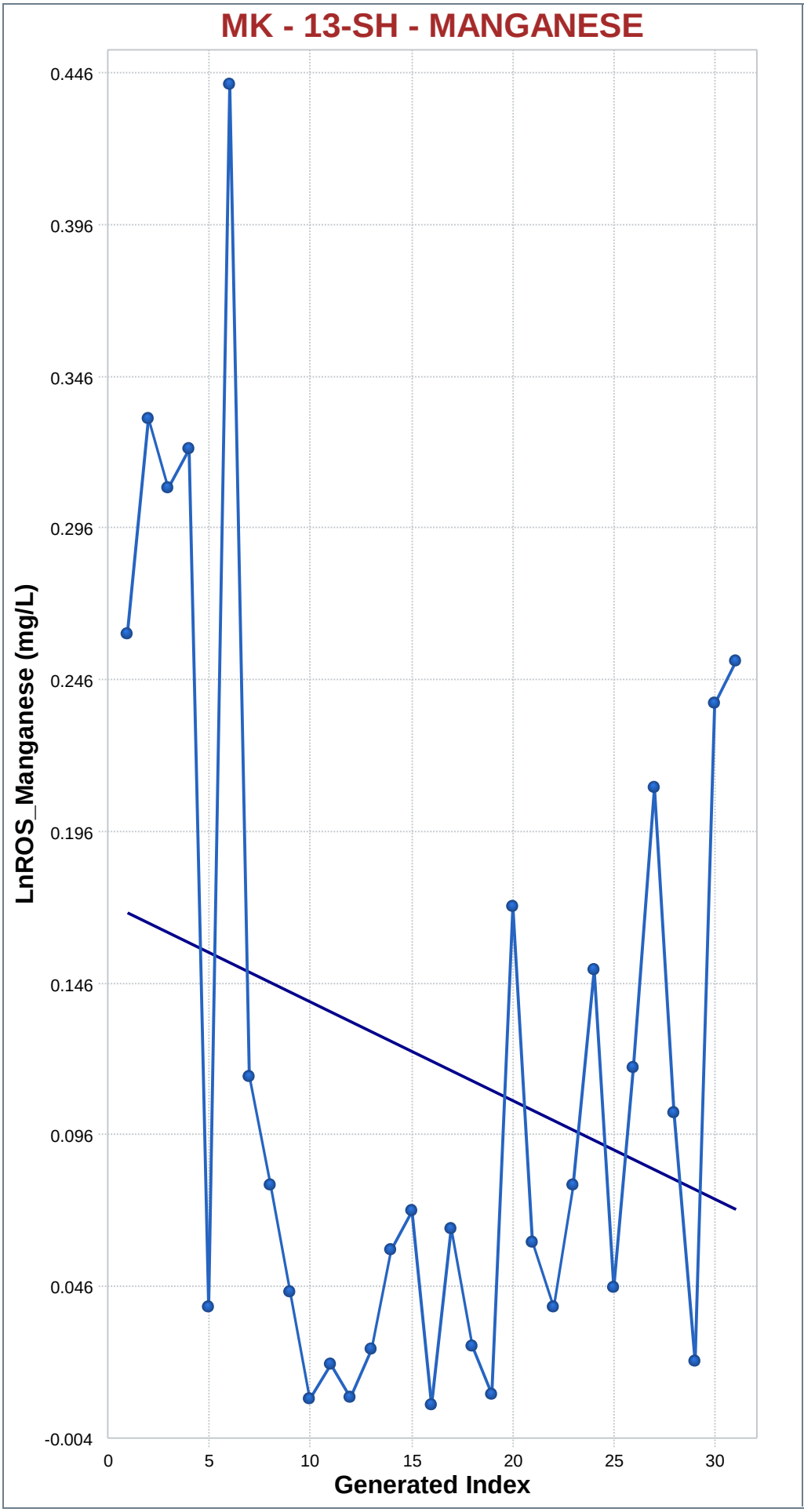
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5173
Standardized Value of S	2.2134
M-K Test Value (S)	177
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0134

OLS Regression Line (Blue)

OLS Regression Slope	0.3721
OLS Regression Intercept	24.1024

Statistically significant evidence of an increasing trend at the specified level of significance.



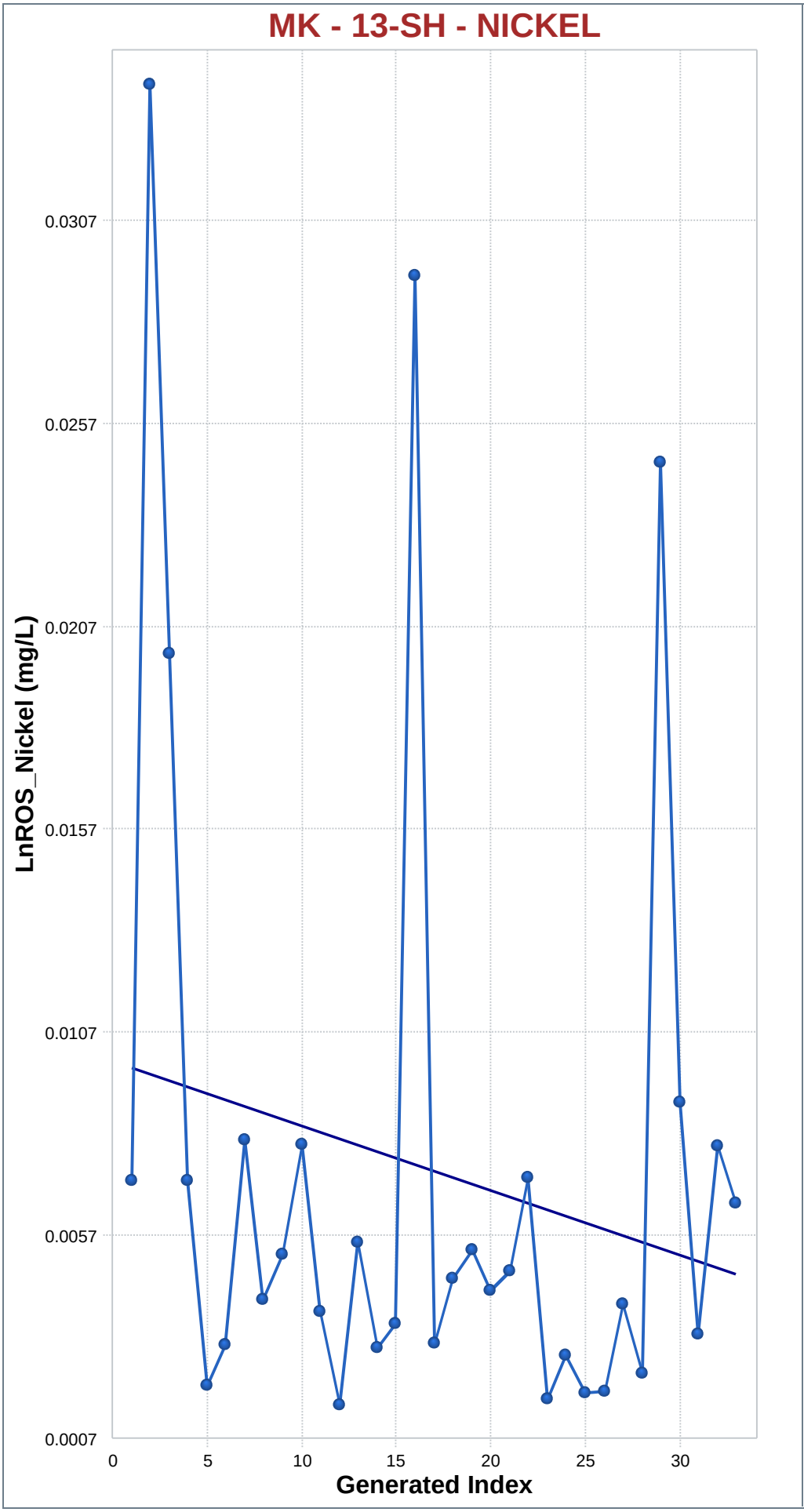
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8359
Standardized Value of S	-0.0680
M-K Test Value (S)	-5
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4729

OLS Regression Line (Blue)

OLS Regression Slope	-0.0033
OLS Regression Intercept	0.1724

Insufficient statistical evidence of a significant trend at the specified level of significance.



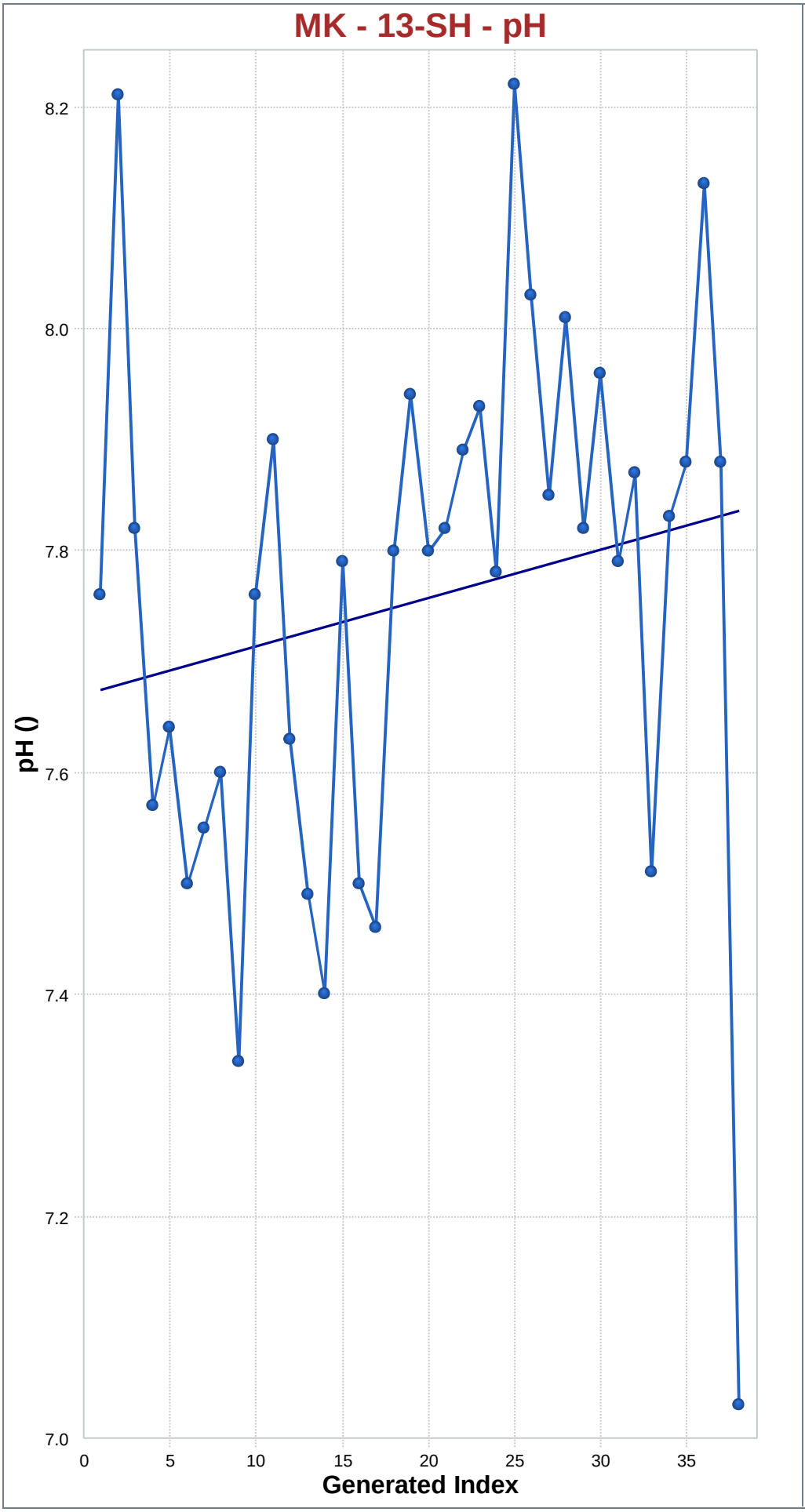
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	-0.9298
M-K Test Value (S)	-61
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1762

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0099

Insufficient statistical evidence of a significant trend at the specified level of significance.



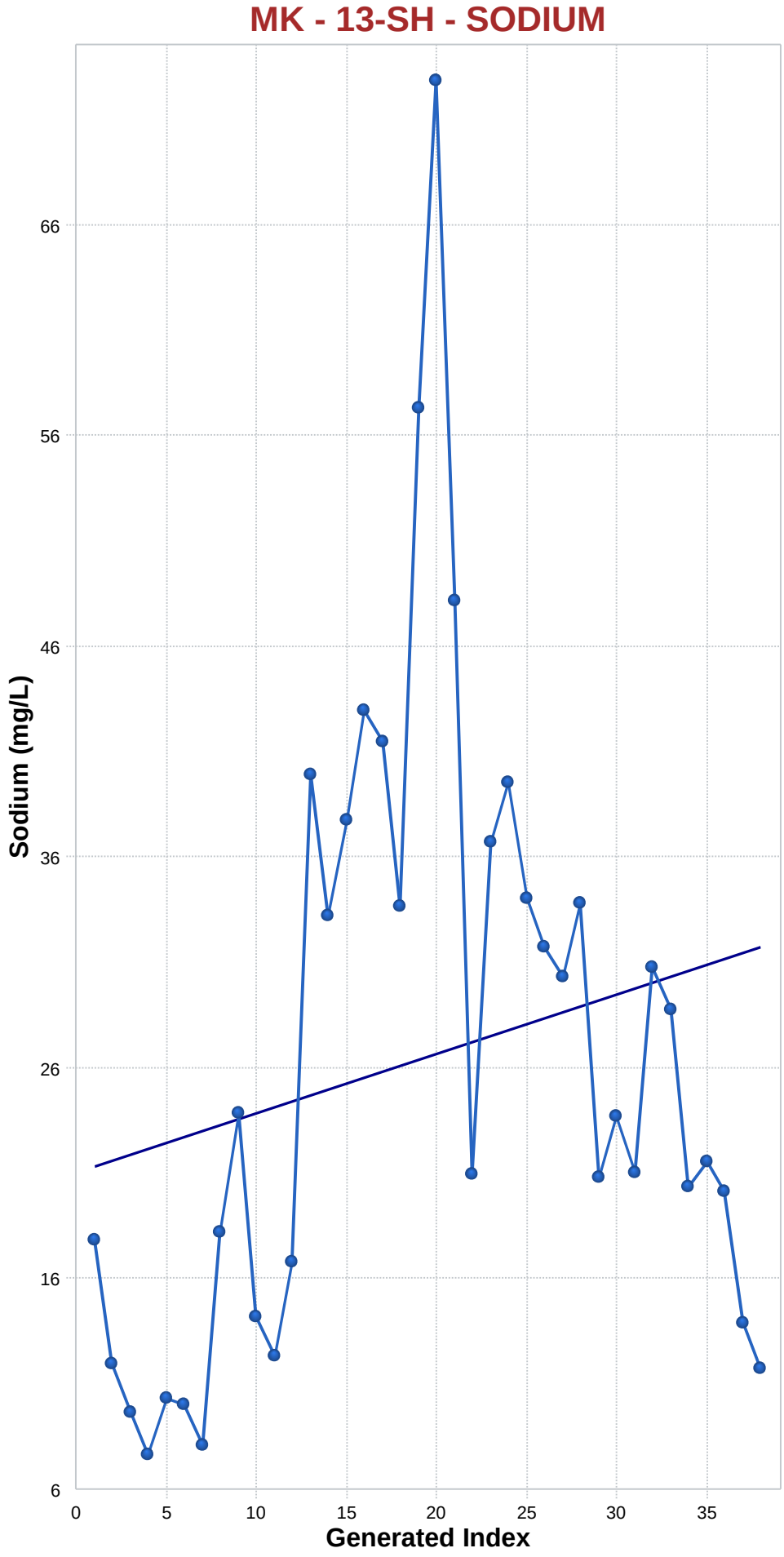
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.4879
Standardized Value of S	2.2142
M-K Test Value (S)	177
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0134

OLS Regression Line (Blue)

OLS Regression Slope	0.0044
OLS Regression Intercept	7.6801

Statistically significant evidence of an increasing trend at the specified level of significance.



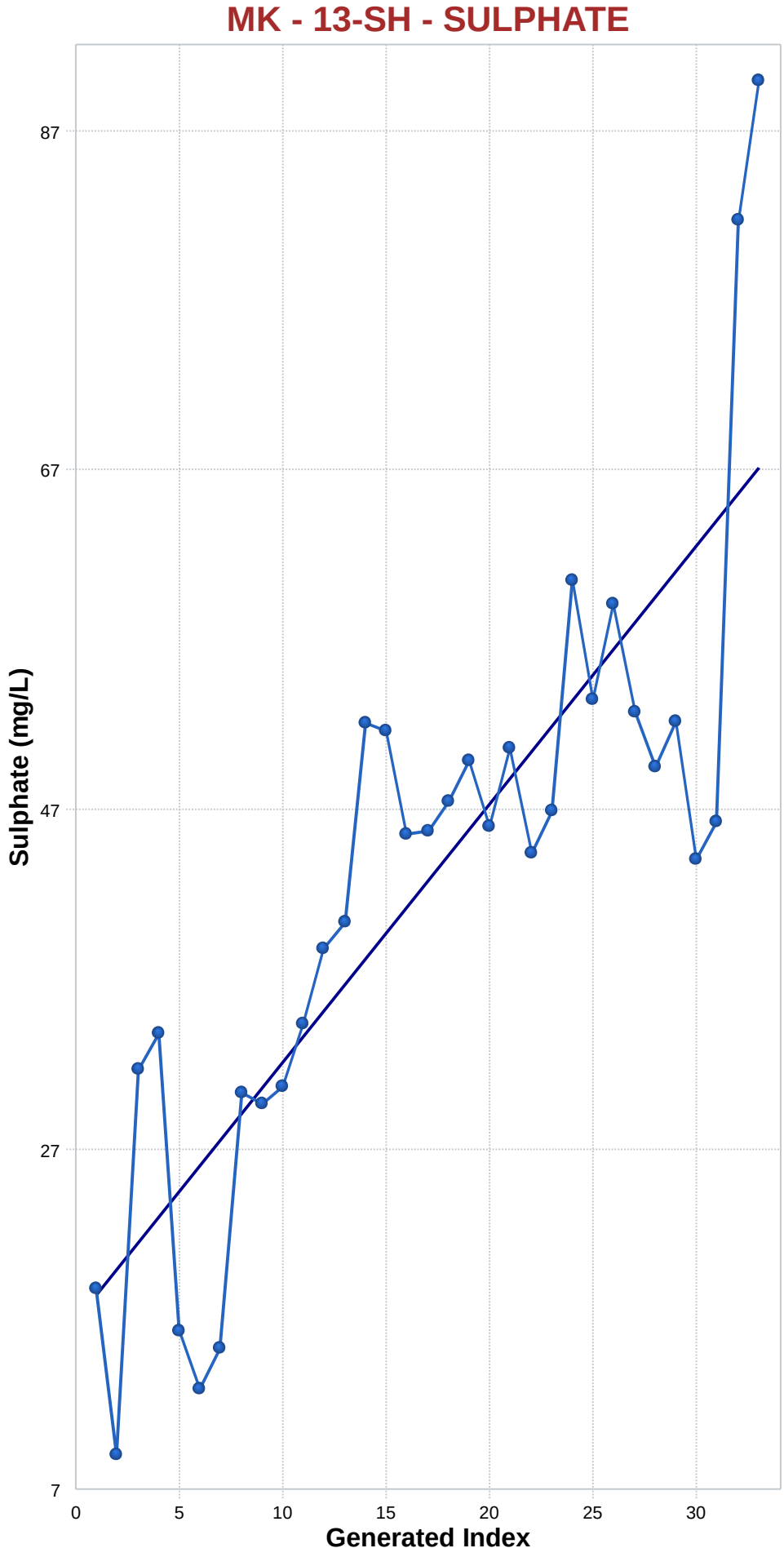
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5424
Standardized Value of S	1.0812
M-K Test Value (S)	87
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1398

OLS Regression Line (Blue)

OLS Regression Slope	0.2810
OLS Regression Intercept	20.8148

Insufficient statistical evidence of a significant trend at the specified level of significance.



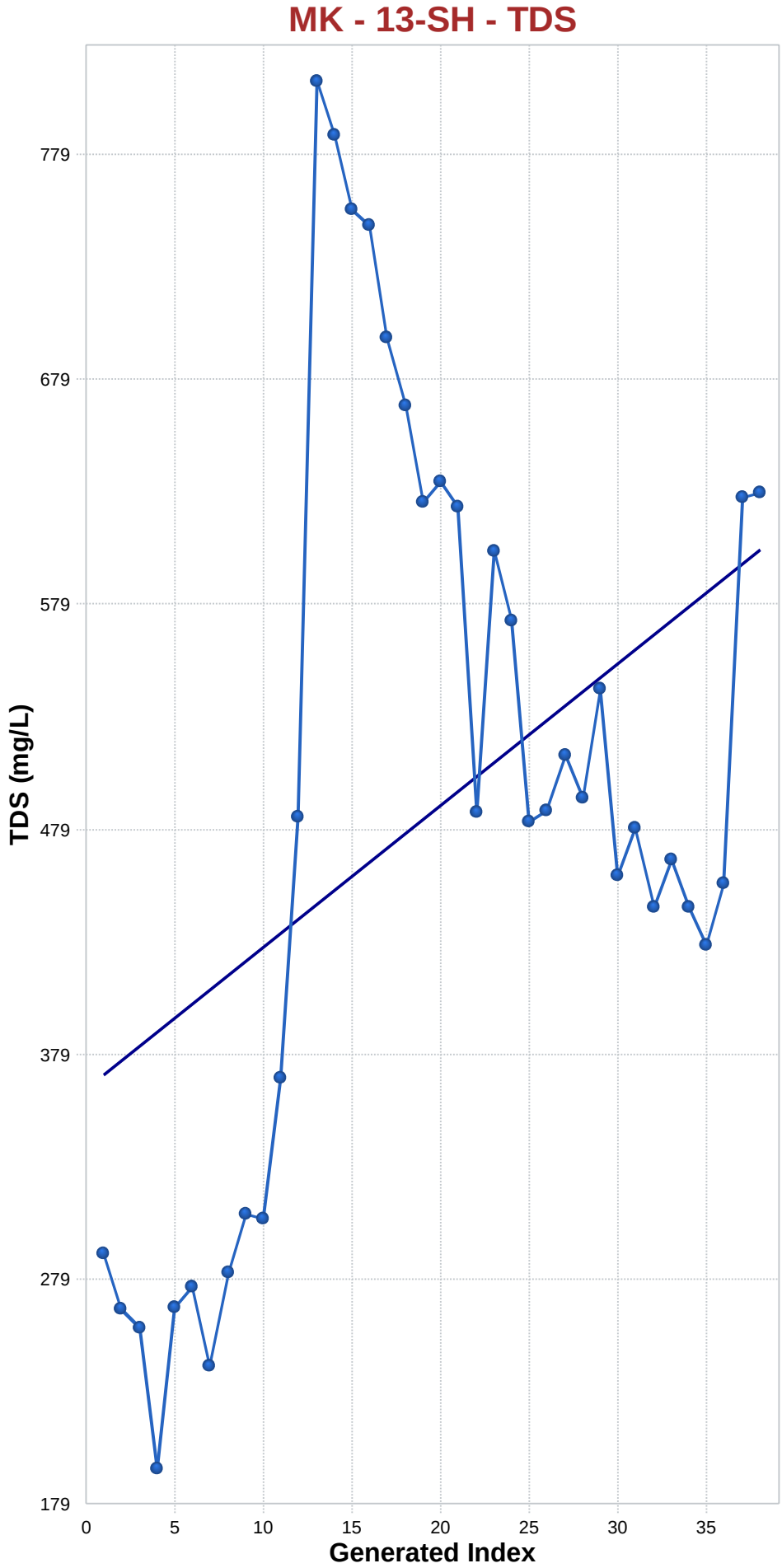
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5394
Standardized Value of S	5.3146
M-K Test Value (S)	344
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.5228
OLS Regression Intercept	16.5949

Statistically significant evidence of an increasing trend at the specified level of significance.



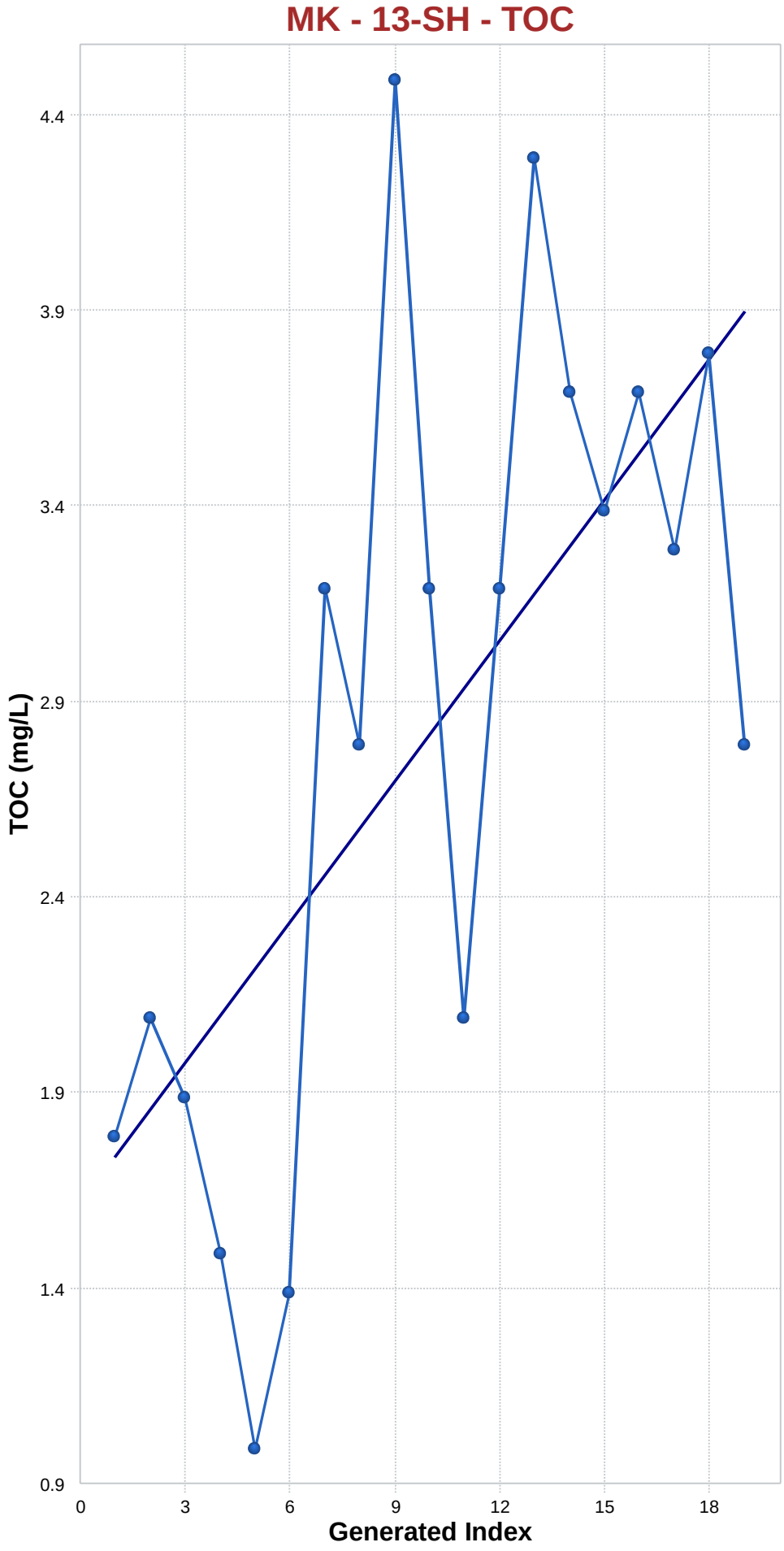
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5362
Standardized Value of S	1.5213
M-K Test Value (S)	122
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0641

OLS Regression Line (Blue)

OLS Regression Slope	6.2993
OLS Regression Intercept	363.2432

Insufficient statistical evidence of a significant trend at the specified level of significance.



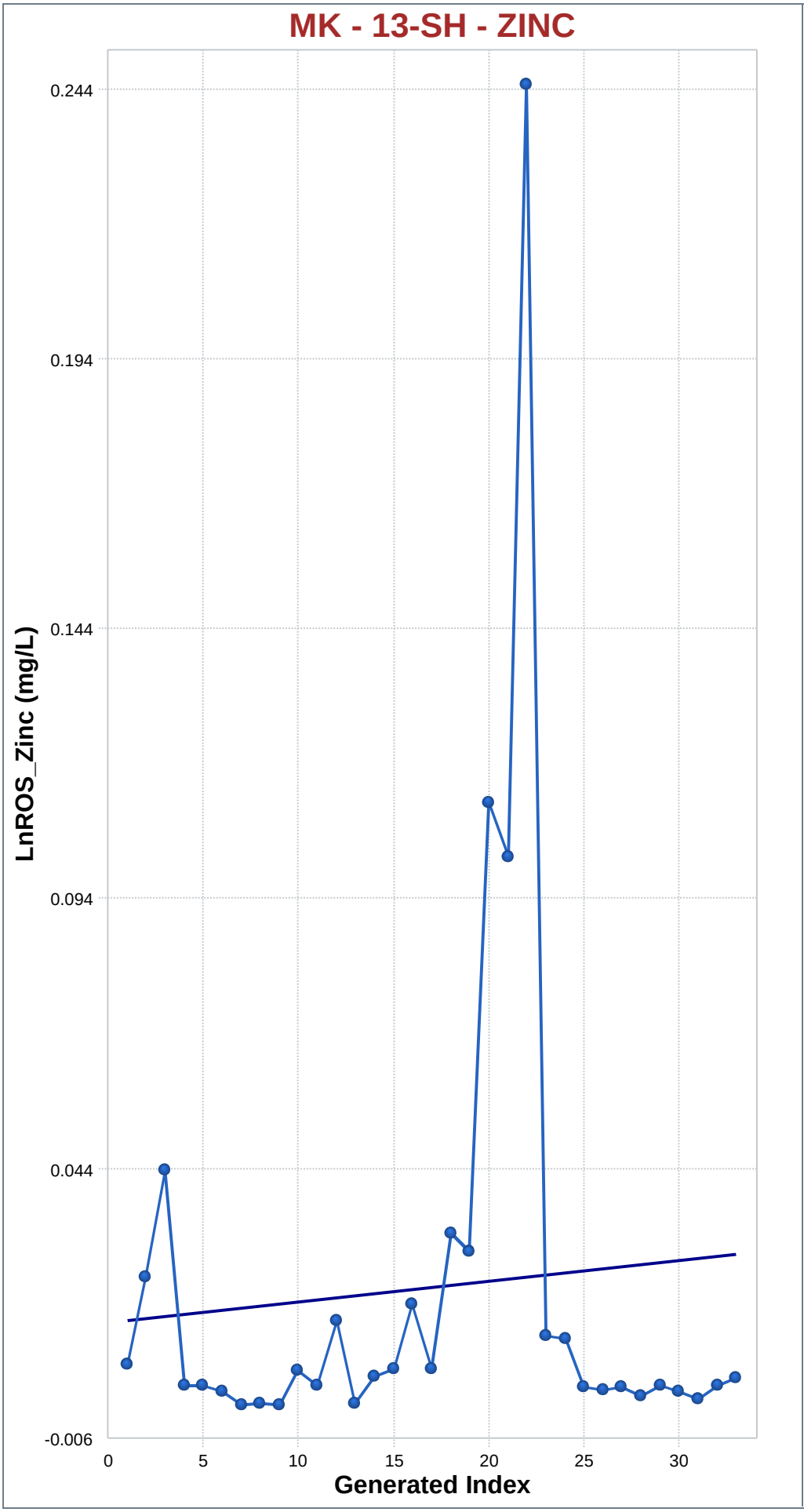
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4664
Standardized Value of S	2.6698
M-K Test Value (S)	77
Tabulated p-value	0.0030
Approximate p-value	0.0038

OLS Regression Line (Blue)

OLS Regression Slope	0.1202
OLS Regression Intercept	1.6246

Statistically significant evidence of an increasing trend at the specified level of significance.



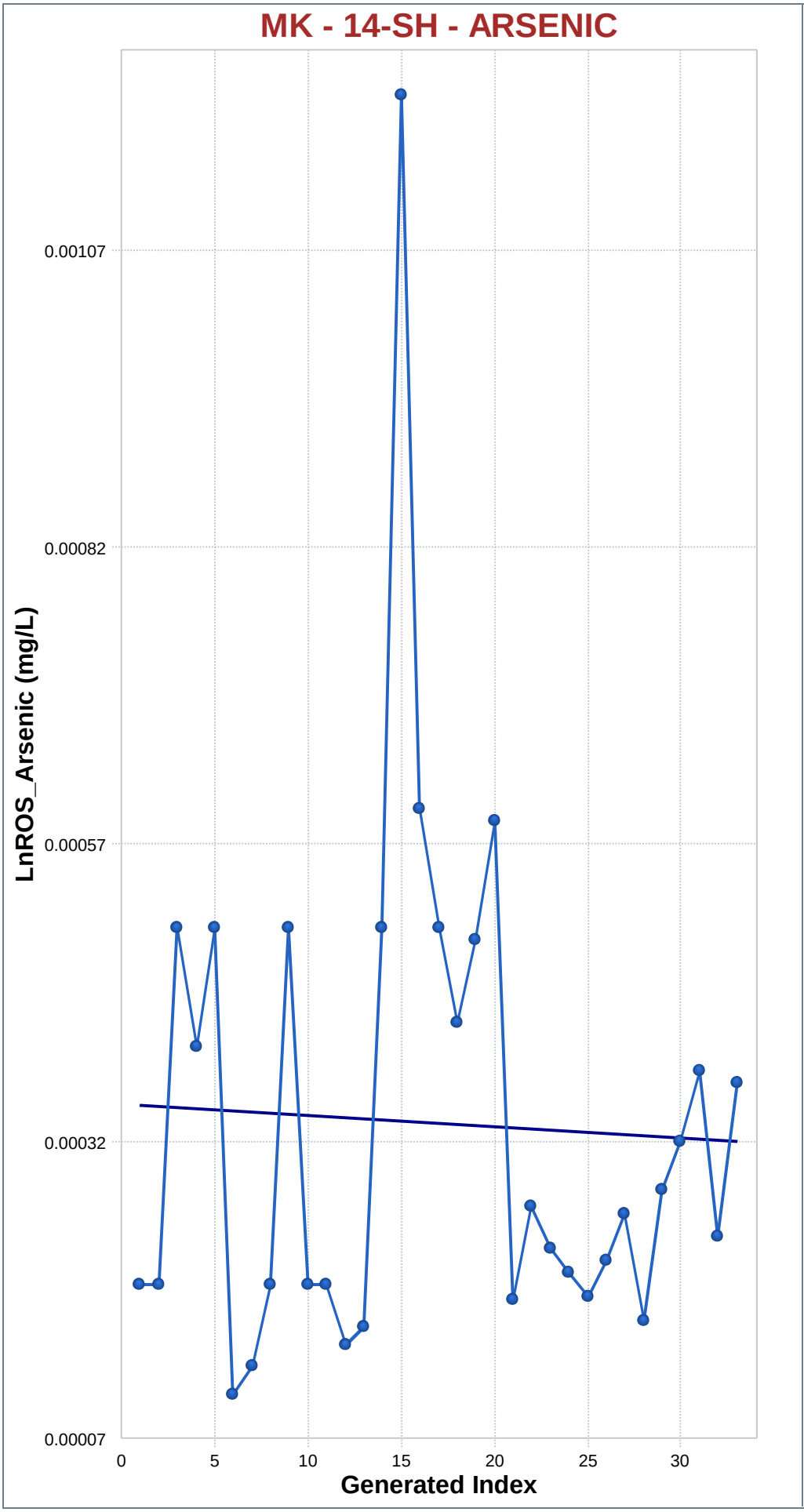
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.4567
Standardized Value of S	-0.2327
M-K Test Value (S)	-16
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4080

OLS Regression Line (Blue)

OLS Regression Slope	0.0004
OLS Regression Intercept	0.0157

Insufficient statistical evidence of a significant trend at the specified level of significance.



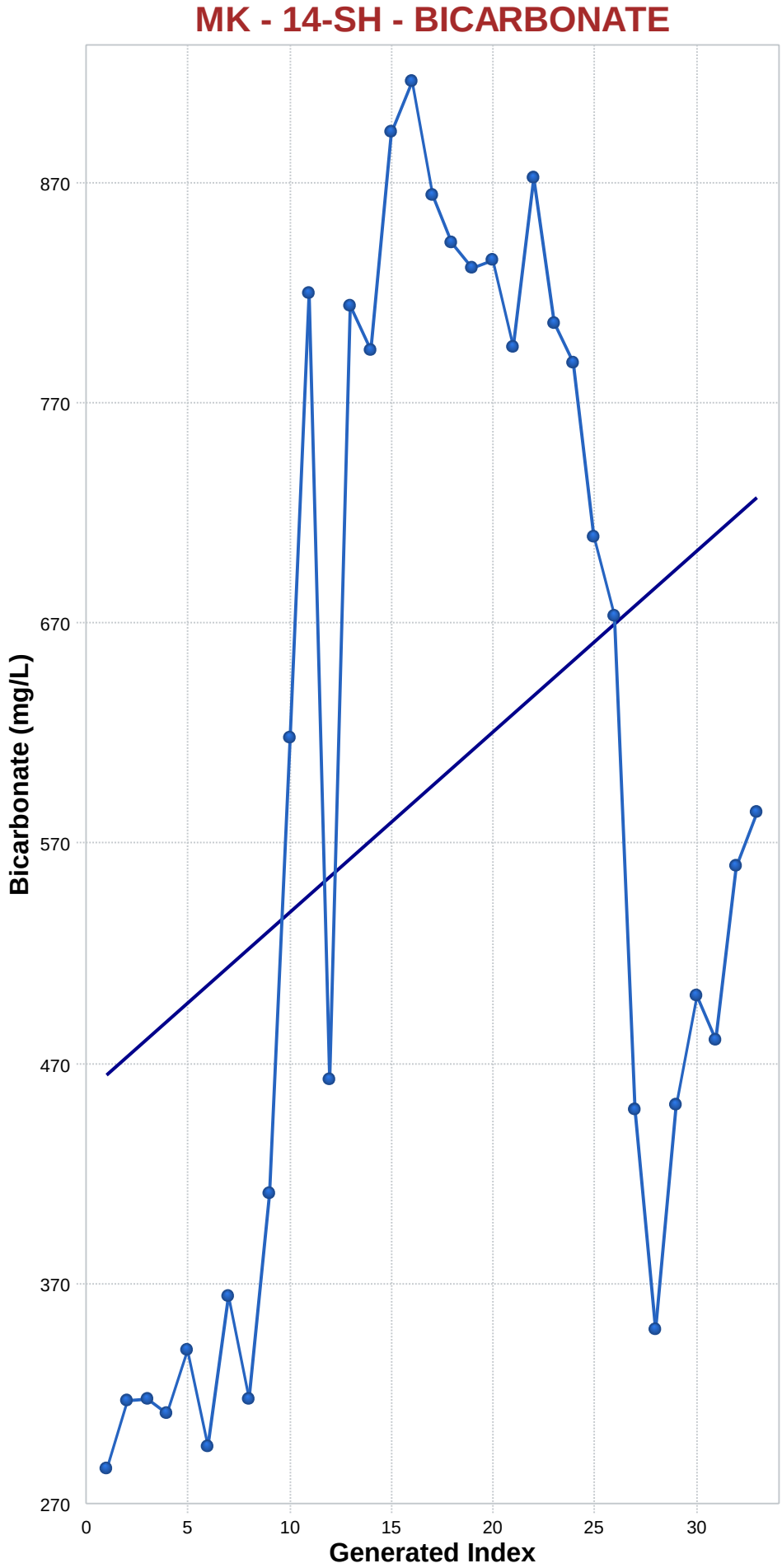
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.2806
Standardized Value of S	0.4511
M-K Test Value (S)	30
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3259

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0004

Insufficient statistical evidence of a significant trend at the specified level of significance.



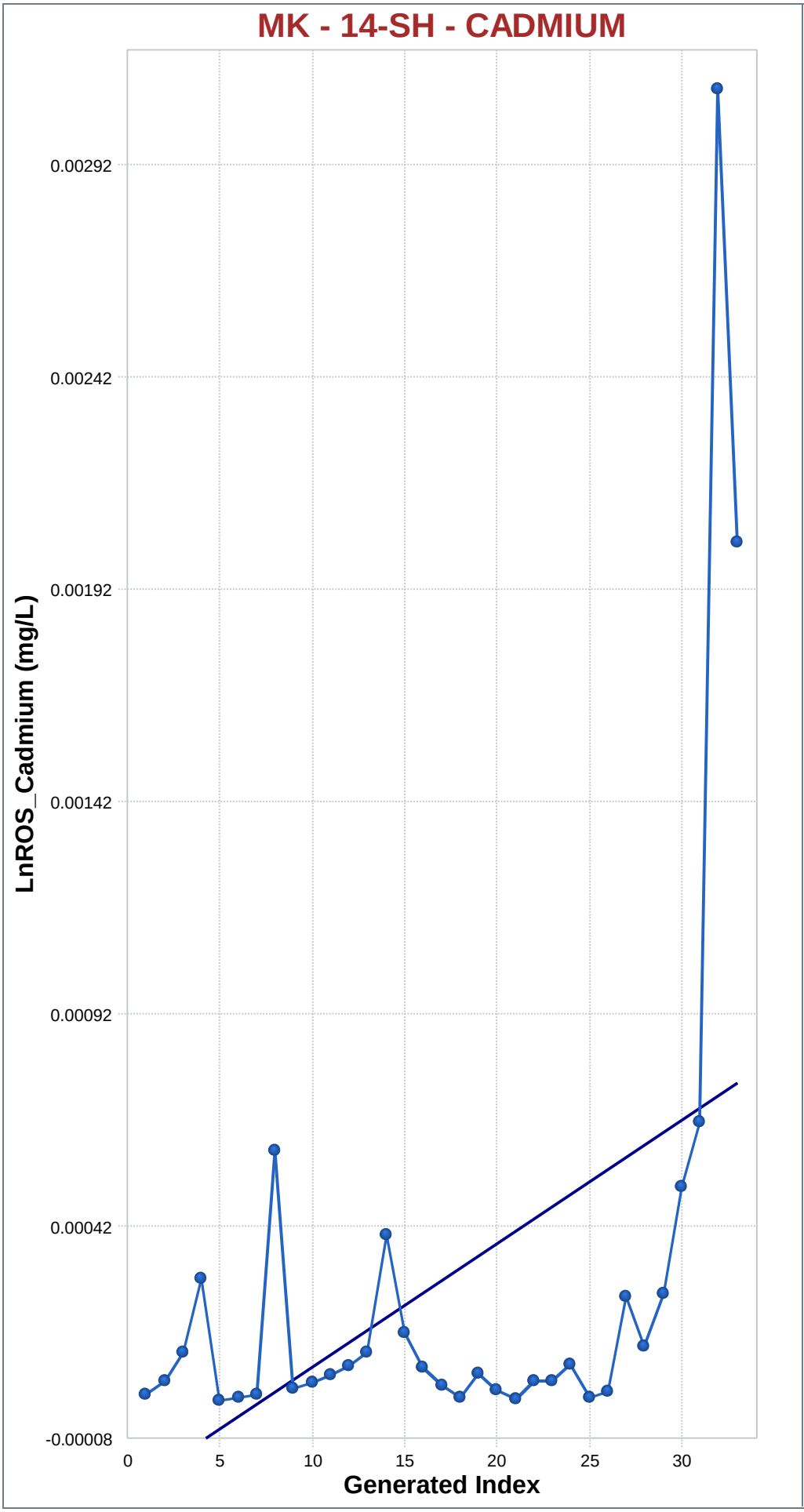
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	1.8596
M-K Test Value (S)	121
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0315

OLS Regression Line (Blue)

OLS Regression Slope	8.1918
OLS Regression Intercept	456.7992

Statistically significant evidence of an increasing trend at the specified level of significance.



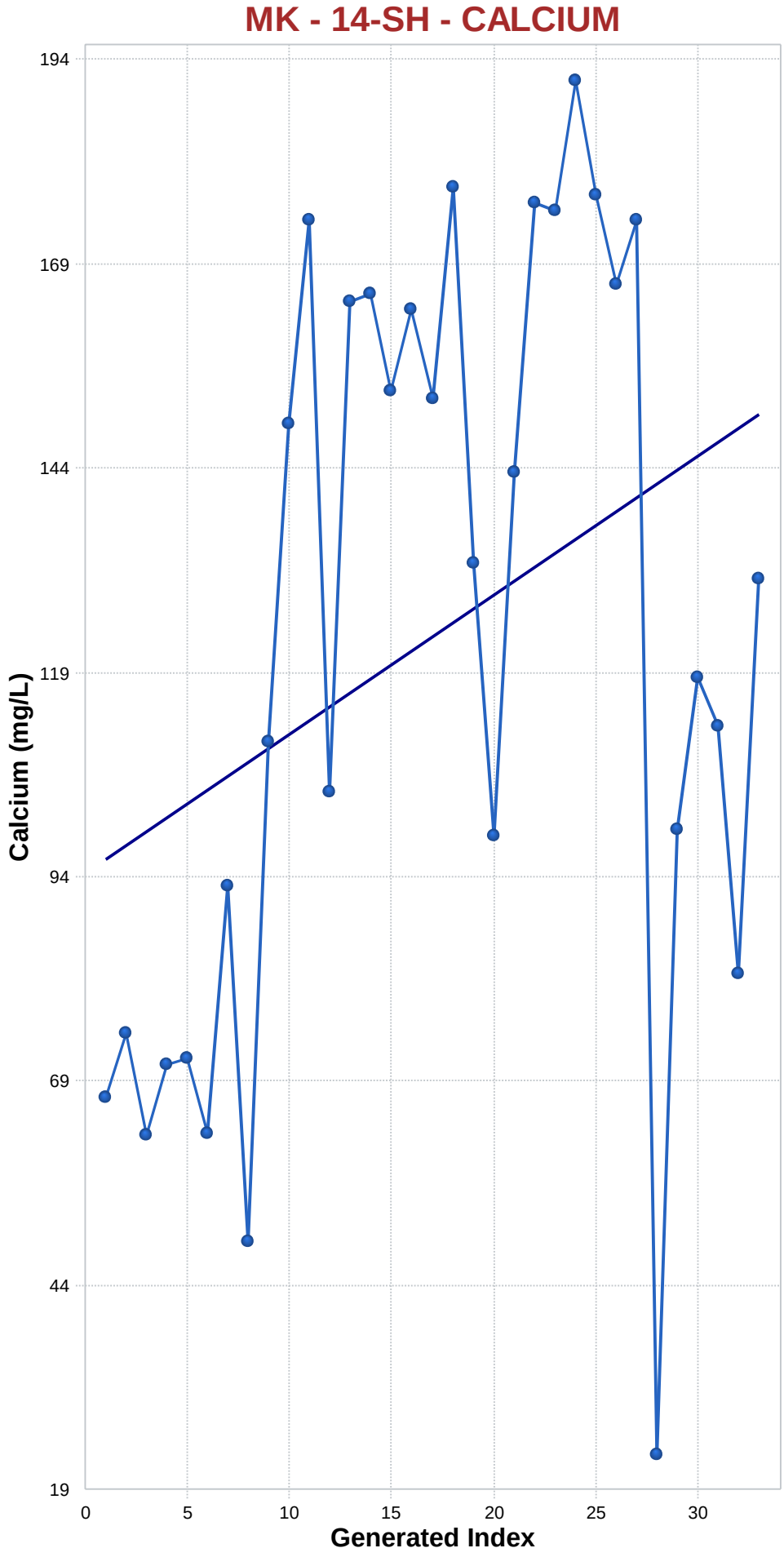
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	2.3554
M-K Test Value (S)	153
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0093

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	-0.0002

Statistically significant evidence of an increasing trend at the specified level of significance.



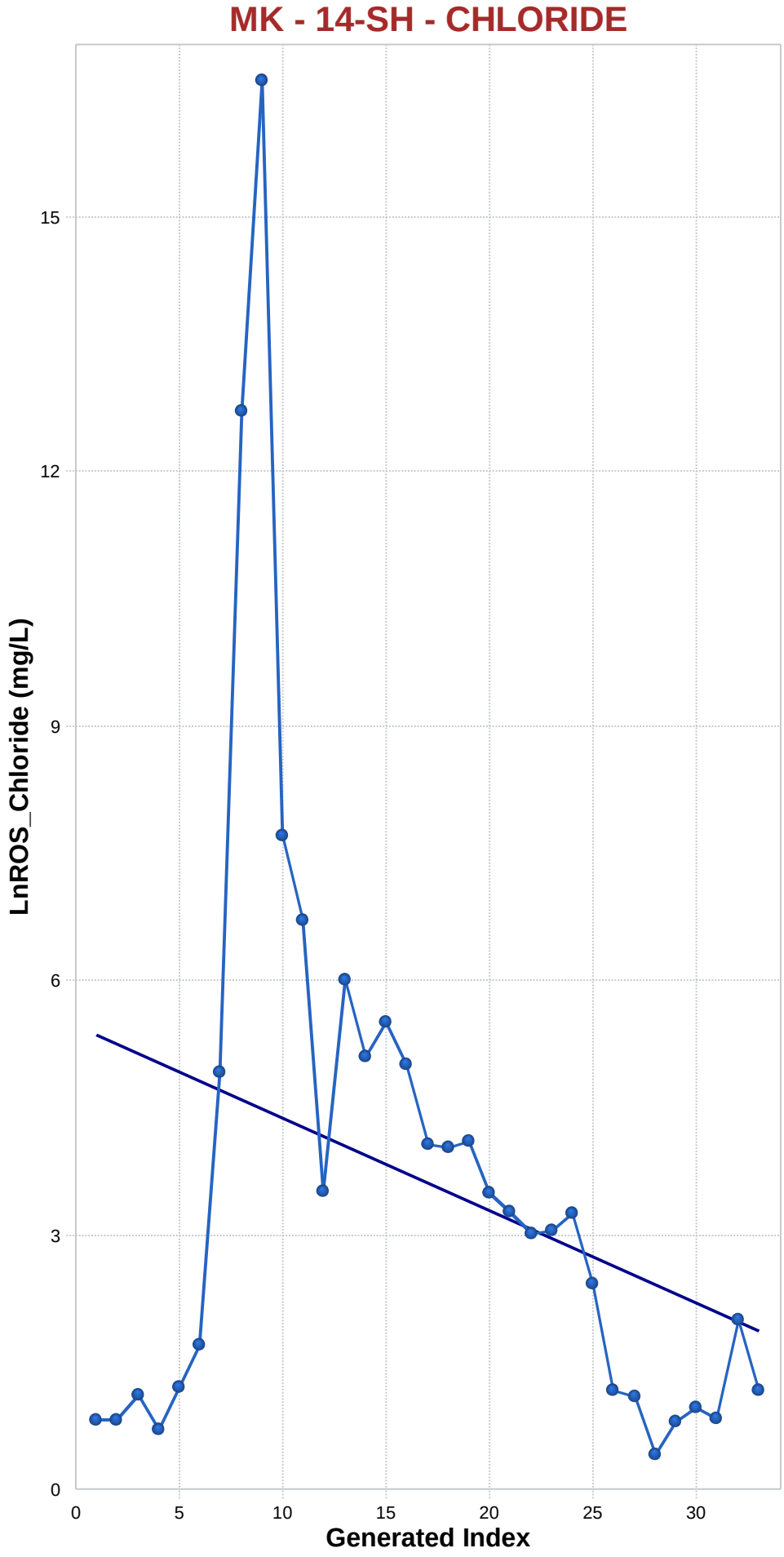
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	2.2315
M-K Test Value (S)	145
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0128

OLS Regression Line (Blue)

OLS Regression Slope	1.7044
OLS Regression Intercept	93.9498

Statistically significant evidence of an increasing trend at the specified level of significance.



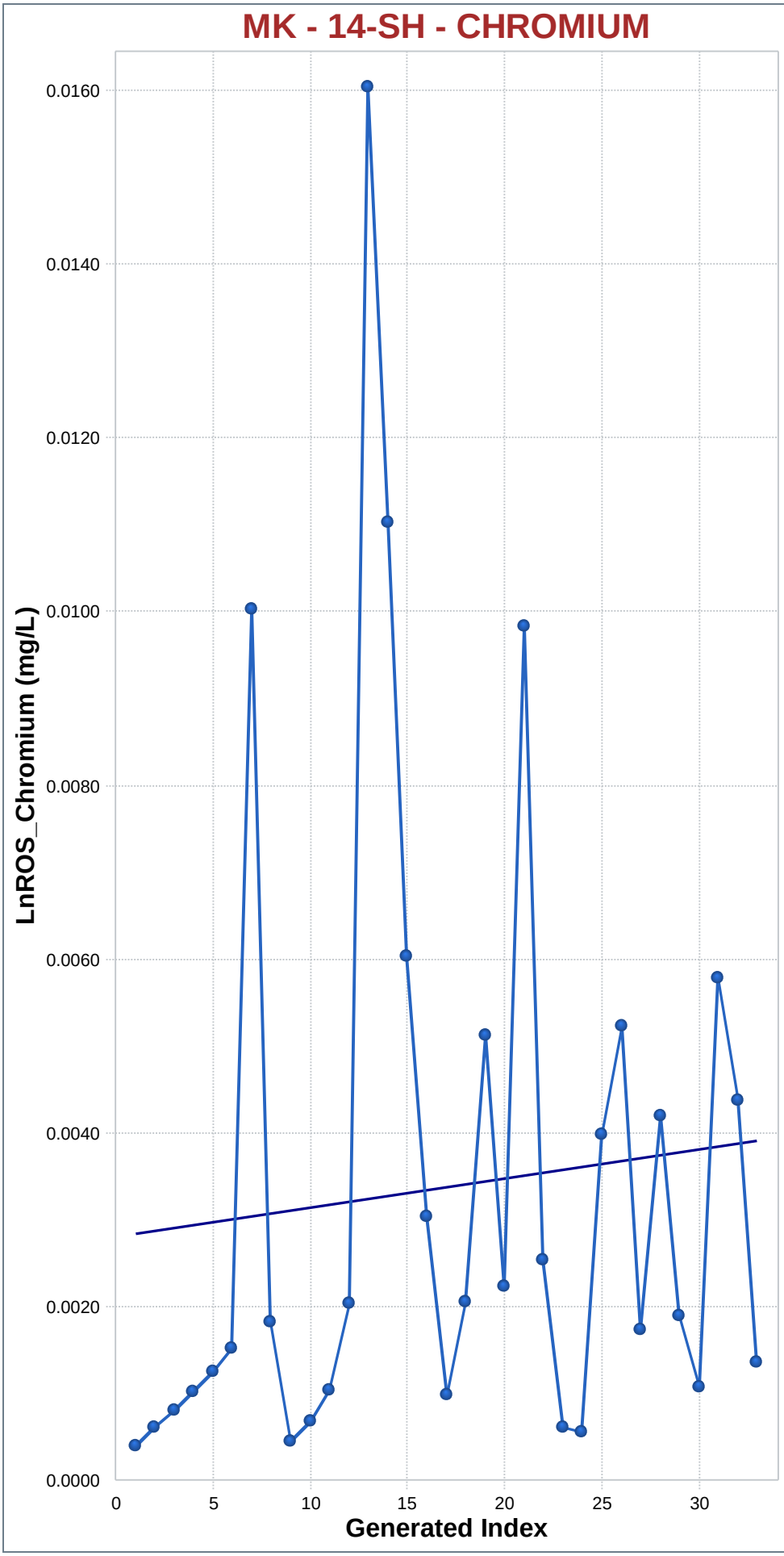
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	-2.3554
M-K Test Value (S)	-153
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0093

OLS Regression Line (Blue)

OLS Regression Slope	-0.1092
OLS Regression Intercept	5.9627

Statistically significant evidence of a decreasing trend at the specified level of significance.



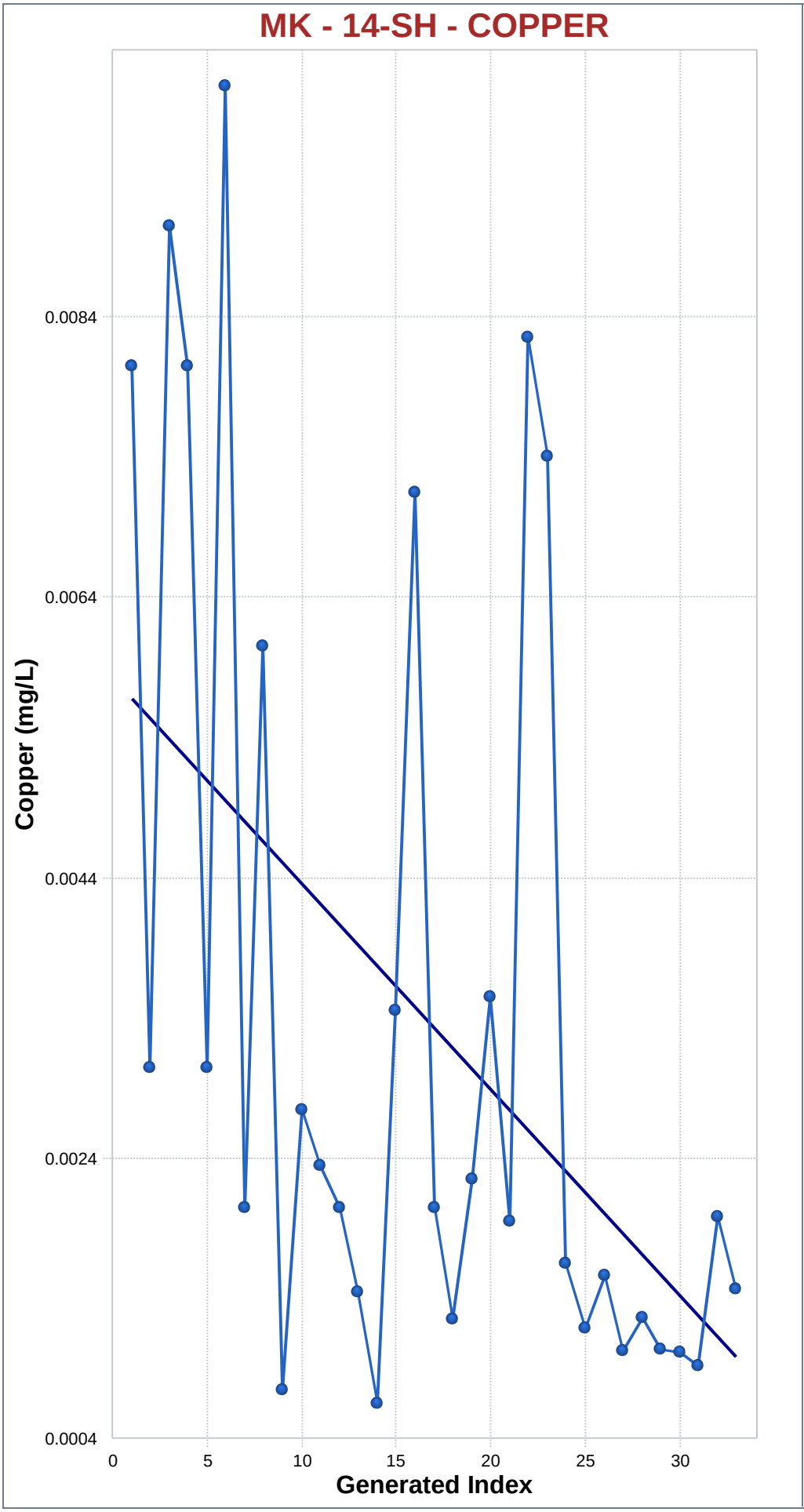
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5394
Standardized Value of S	1.9368
M-K Test Value (S)	126
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0264

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0028

Statistically significant evidence of an increasing trend at the specified level of significance.



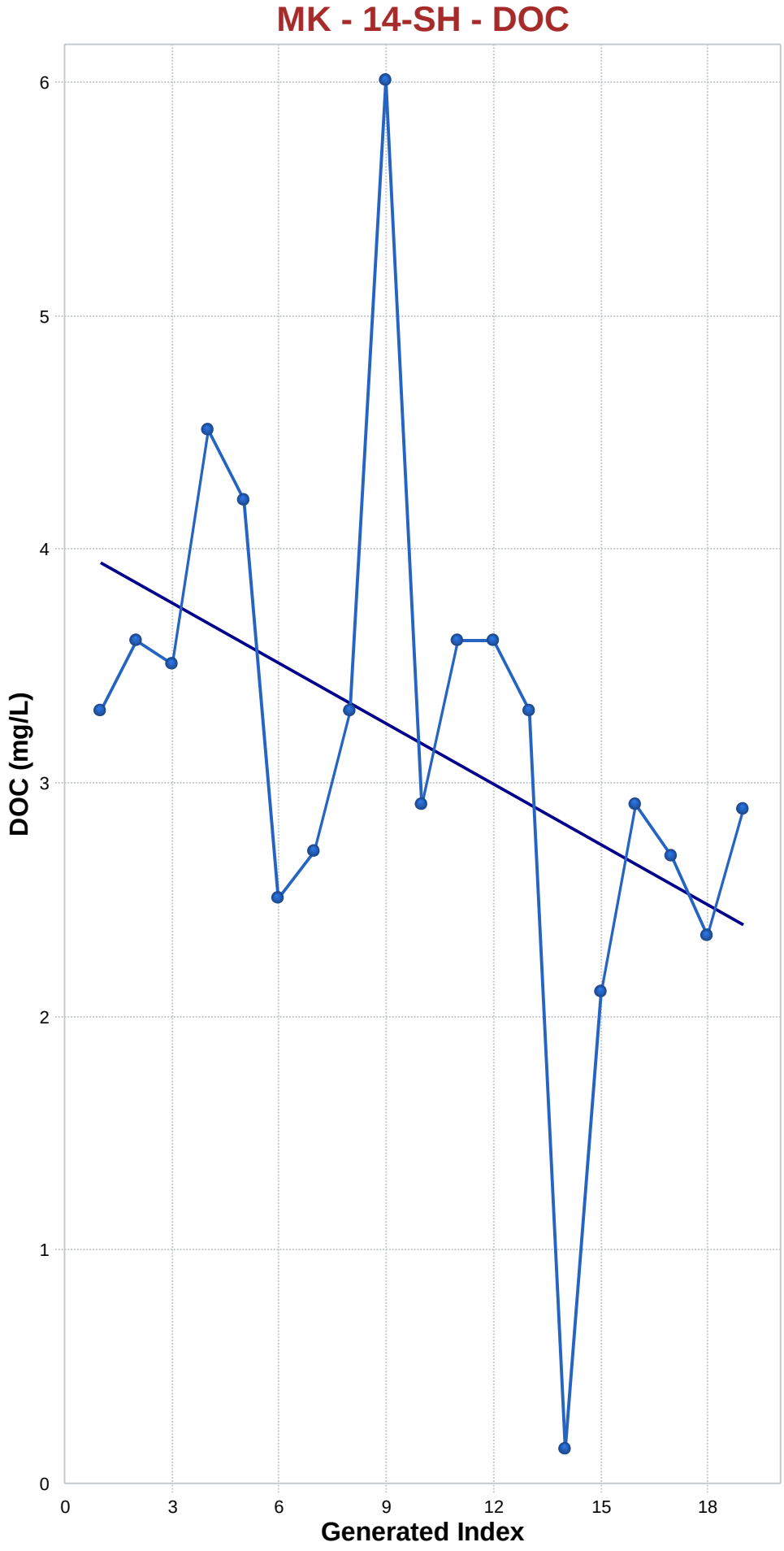
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.4955
Standardized Value of S	-3.4421
M-K Test Value (S)	-223
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0058

Statistically significant evidence of a decreasing trend at the specified level of significance.



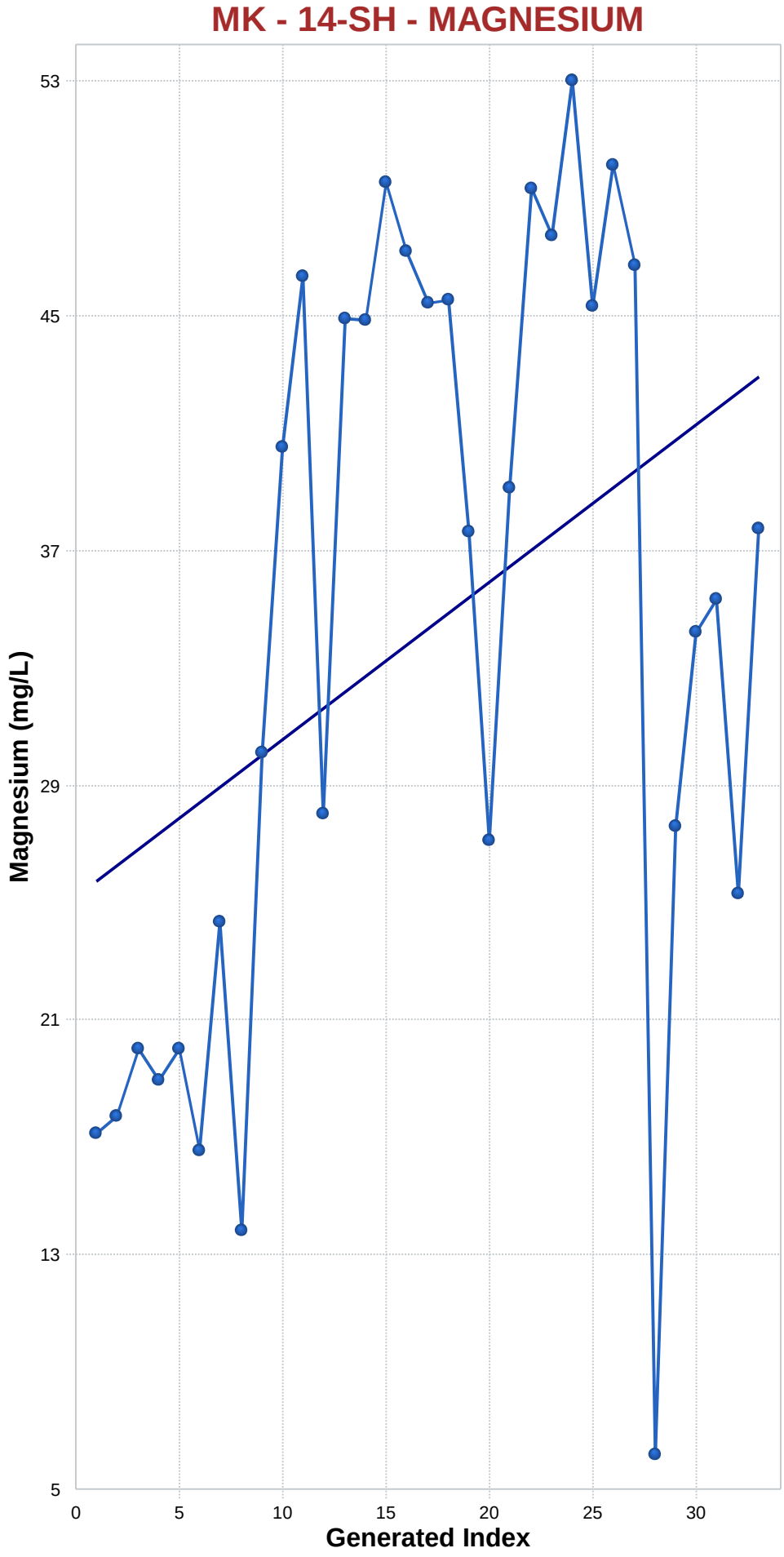
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4371
Standardized Value of S	-2.0748
M-K Test Value (S)	-60
Tabulated p-value	0.0170
Approximate p-value	0.0190

OLS Regression Line (Blue)

OLS Regression Slope	-0.0862
OLS Regression Intercept	4.5221

Statistically significant evidence of a decreasing trend at the specified level of significance.



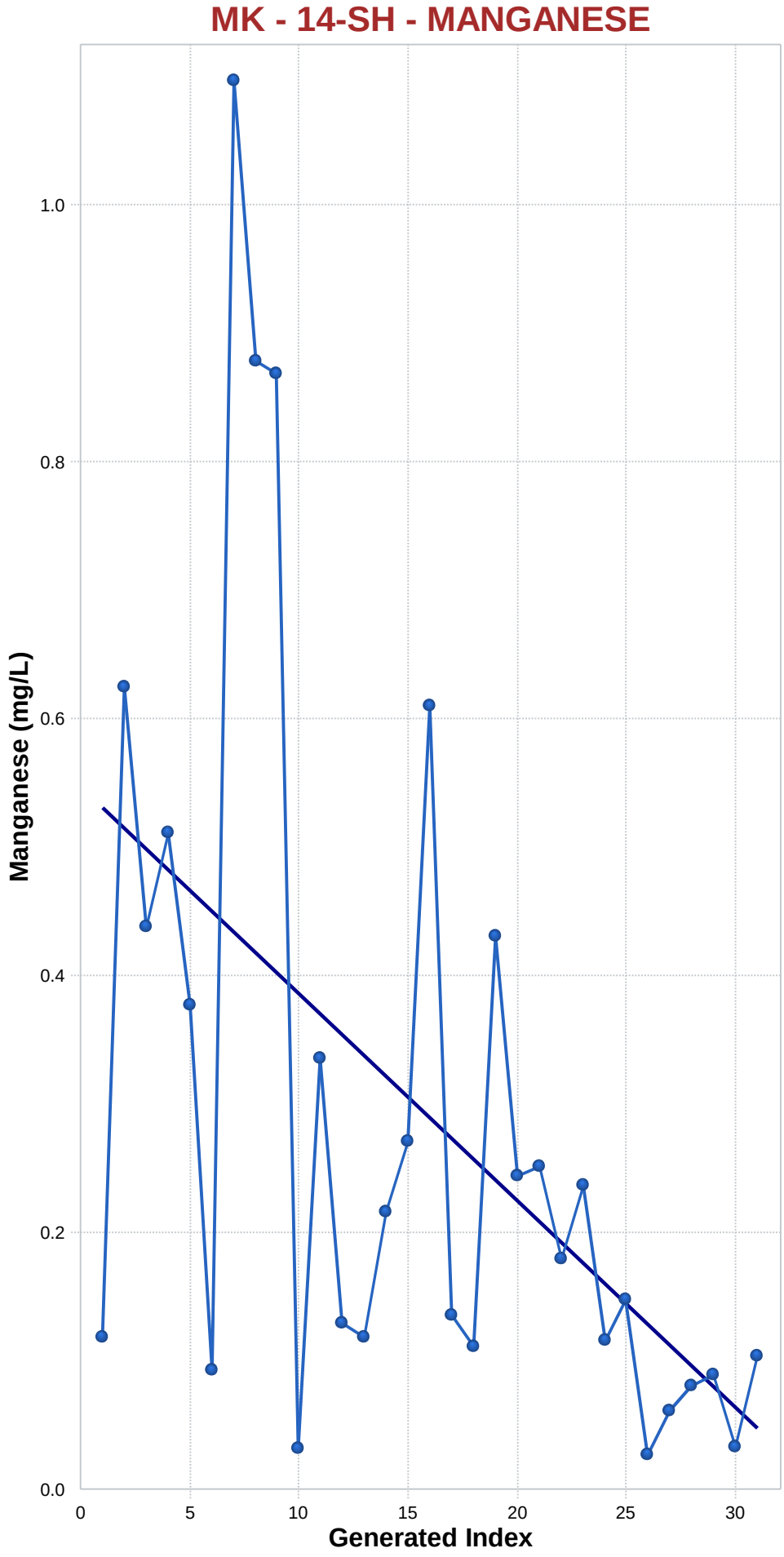
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	2.4174
M-K Test Value (S)	157
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0078

OLS Regression Line (Blue)

OLS Regression Slope	0.5371
OLS Regression Intercept	25.1920

Statistically significant evidence of an increasing trend at the specified level of significance.



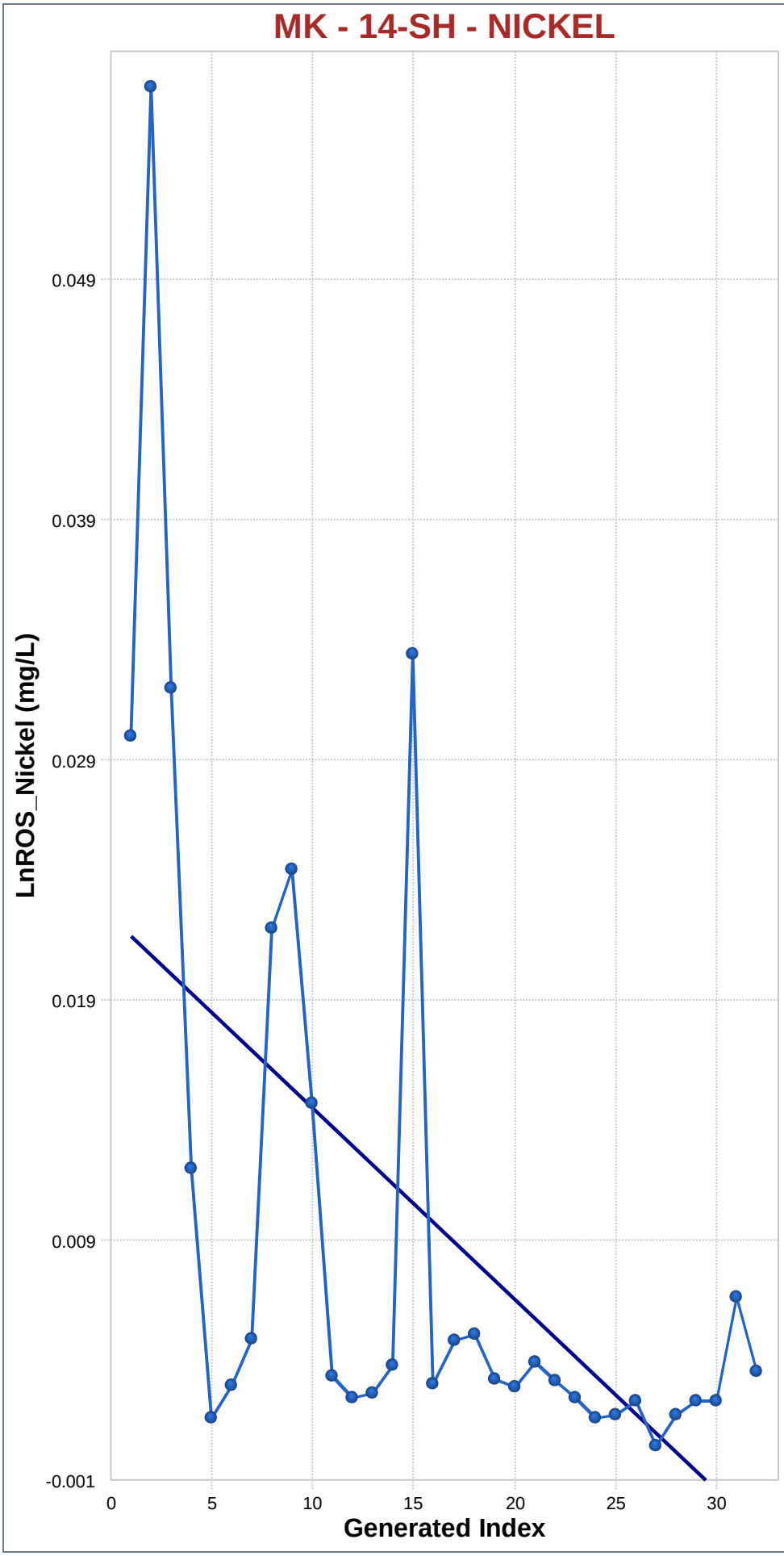
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8274
Standardized Value of S	-3.3488
M-K Test Value (S)	-198
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0004

OLS Regression Line (Blue)

OLS Regression Slope	-0.0161
OLS Regression Intercept	0.5202

Statistically significant evidence of a decreasing trend at the specified level of significance.



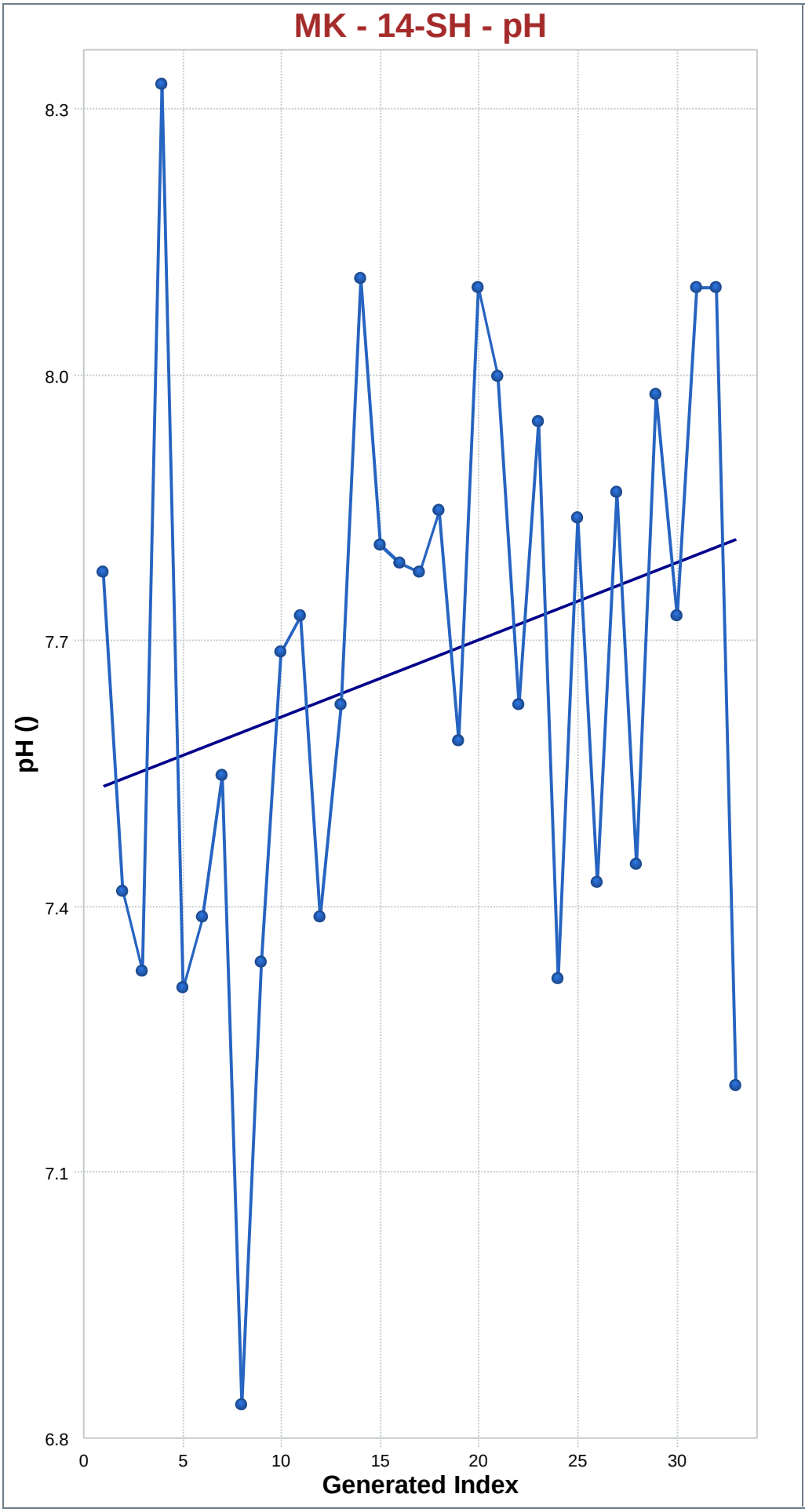
Mann-Kendall Trend Analysis

n	32
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	61.6658
Standardized Value of S	-3.3244
M-K Test Value (S)	-206
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0004

OLS Regression Line (Blue)

OLS Regression Slope	-0.0008
OLS Regression Intercept	0.0225

Statistically significant evidence of a decreasing trend at the specified level of significance.



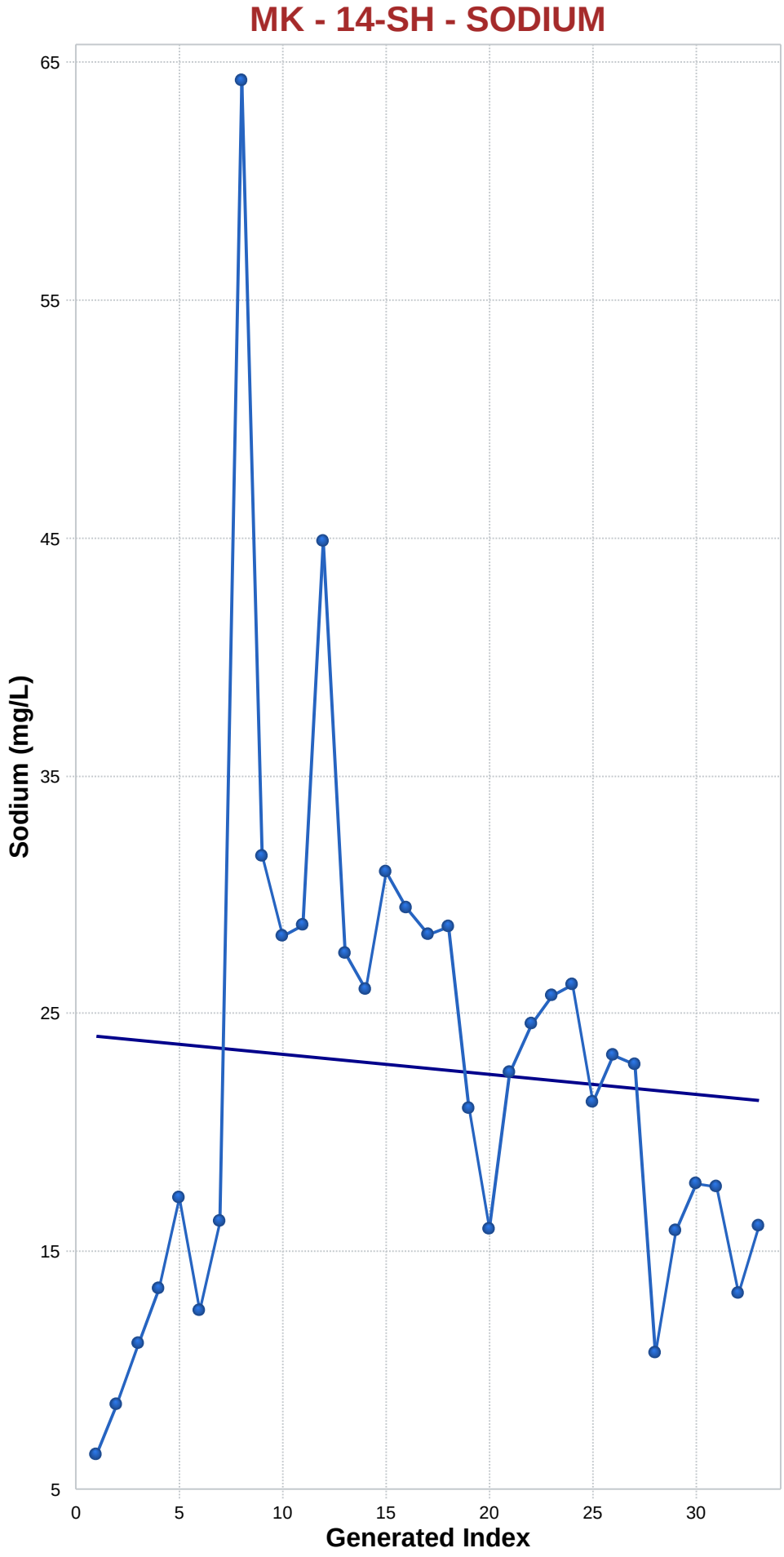
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.4800
Standardized Value of S	1.8921
M-K Test Value (S)	123
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0292

OLS Regression Line (Blue)

OLS Regression Slope	0.0087
OLS Regression Intercept	7.5492

Statistically significant evidence of an increasing trend at the specified level of significance.



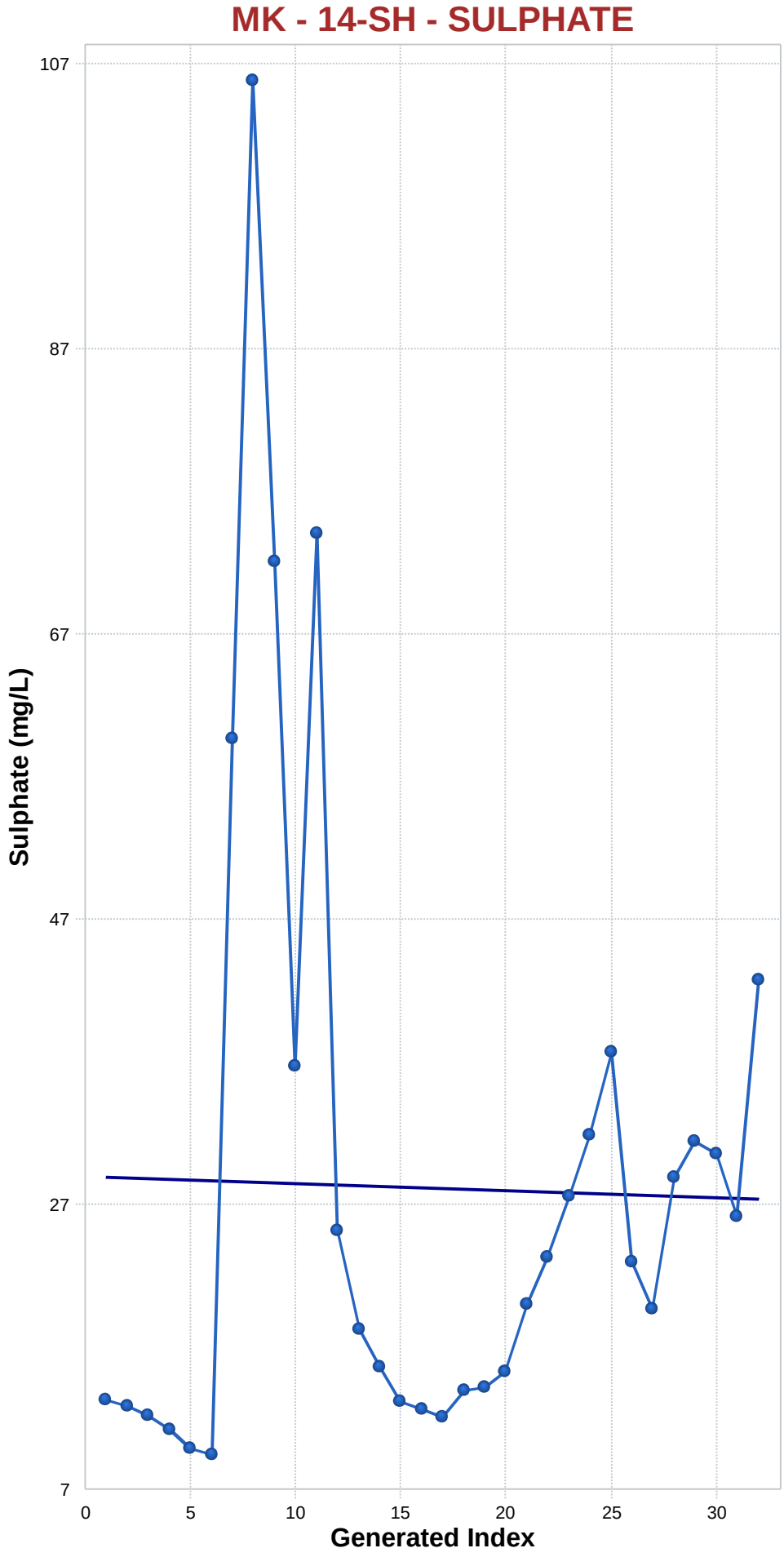
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5394
Standardized Value of S	-0.6663
M-K Test Value (S)	-44
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.2526

OLS Regression Line (Blue)

OLS Regression Slope	-0.0848
OLS Regression Intercept	24.0002

Insufficient statistical evidence of a significant trend at the specified level of significance.



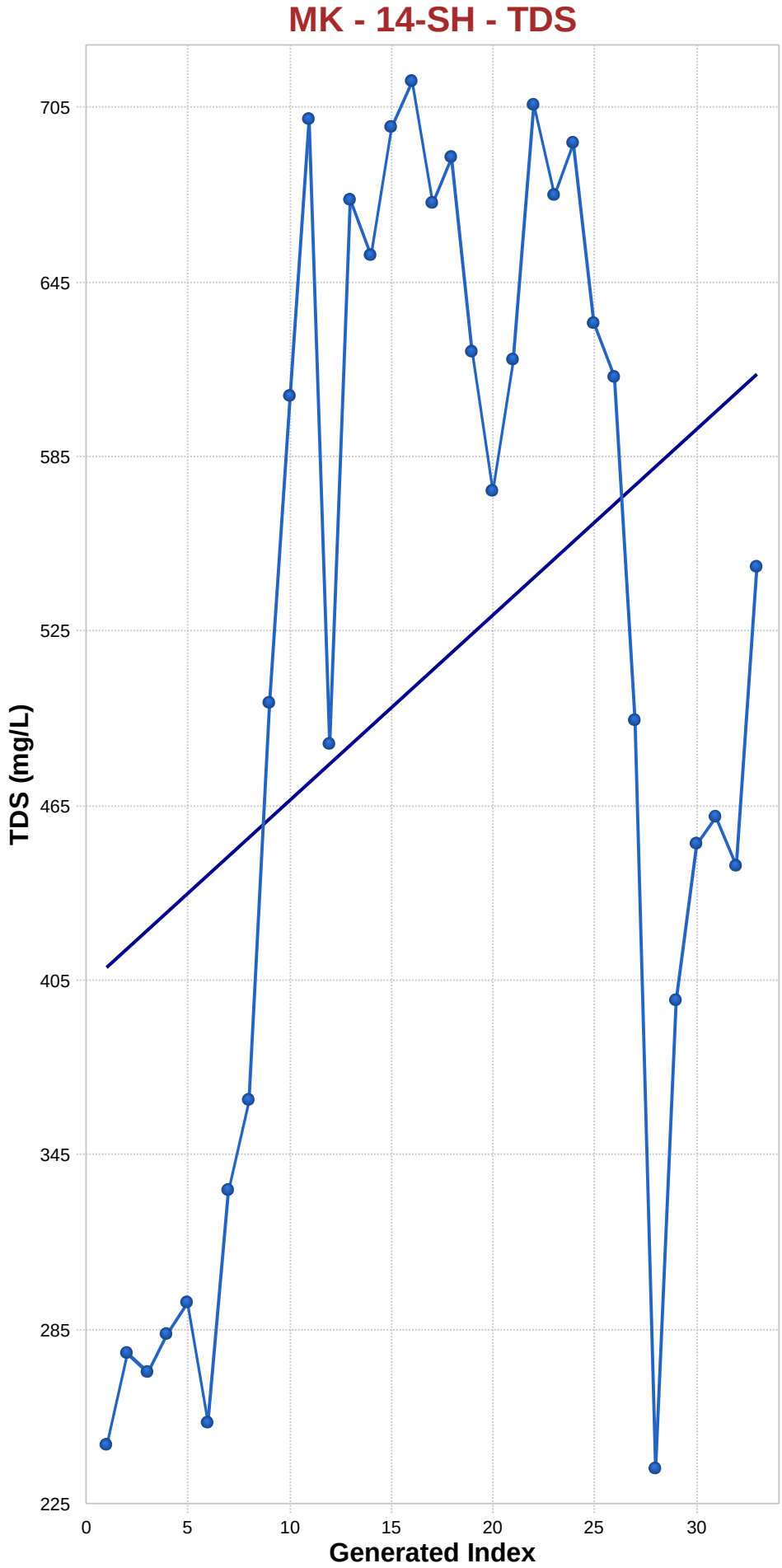
Mann-Kendall Trend Analysis

n	32
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	61.6658
Standardized Value of S	2.1892
M-K Test Value (S)	136
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0143

OLS Regression Line (Blue)

OLS Regression Slope	-0.0477
OLS Regression Intercept	29.0875

Statistically significant evidence of an increasing trend at the specified level of significance.



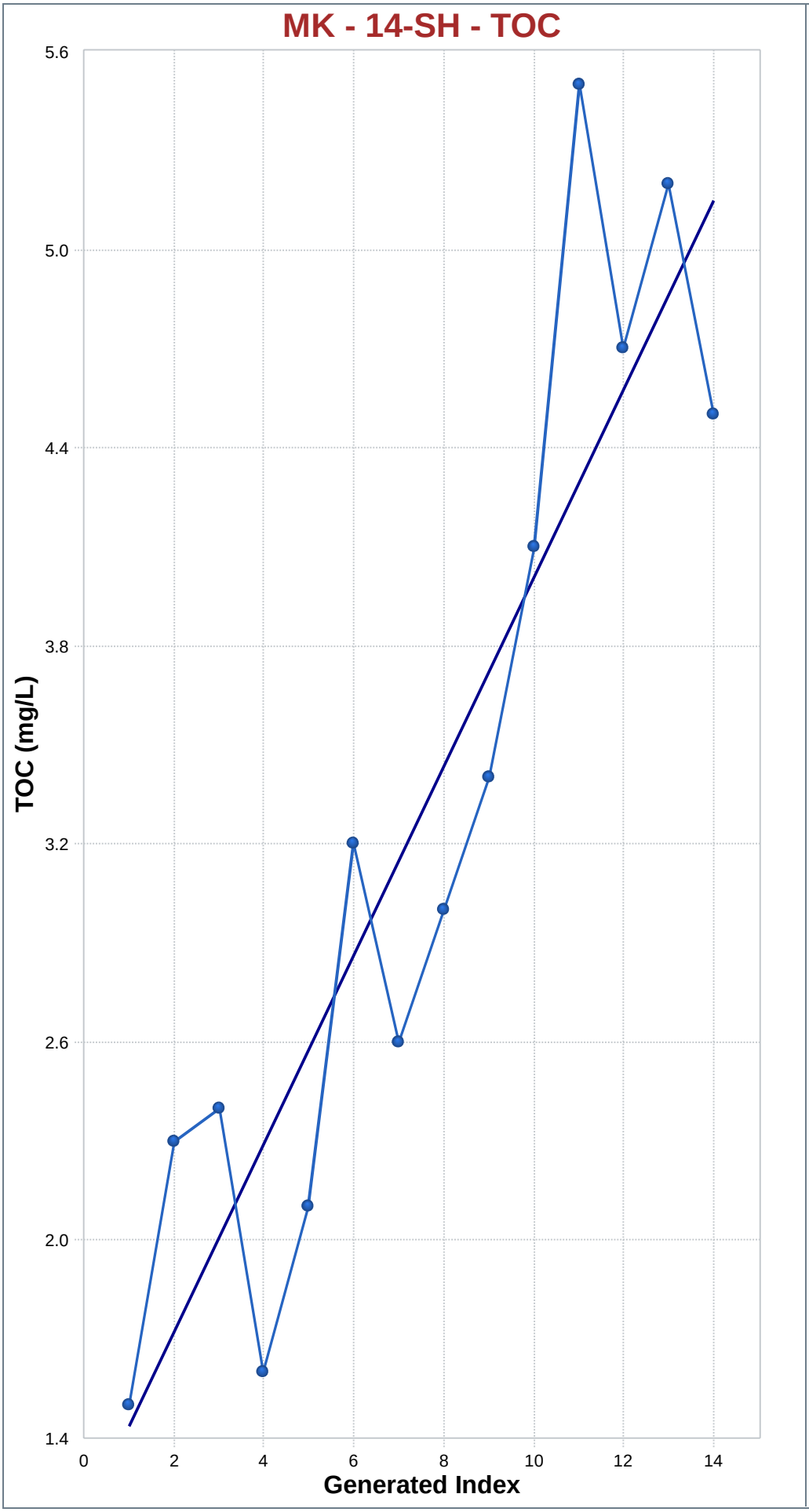
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5394
Standardized Value of S	1.5339
M-K Test Value (S)	100
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0625

OLS Regression Line (Blue)

OLS Regression Slope	6.3770
OLS Regression Intercept	402.8939

Insufficient statistical evidence of a significant trend at the specified level of significance.



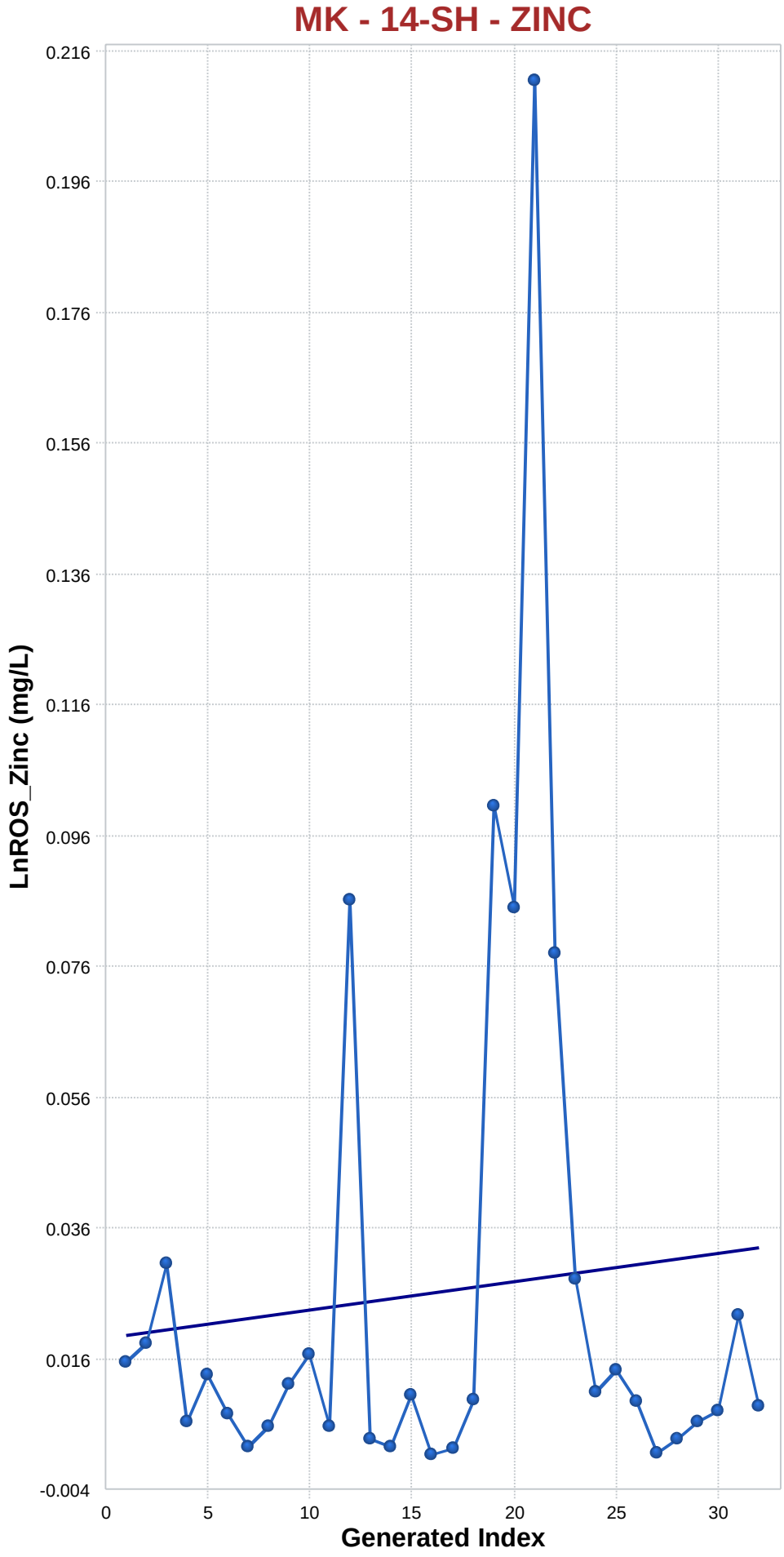
Mann-Kendall Trend Analysis

n	14
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	18.2665
Standardized Value of S	3.7227
M-K Test Value (S)	69
Tabulated p-value	0.0000
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	0.2855
OLS Regression Intercept	1.1516

Statistically significant evidence of an increasing trend at the specified level of significance.



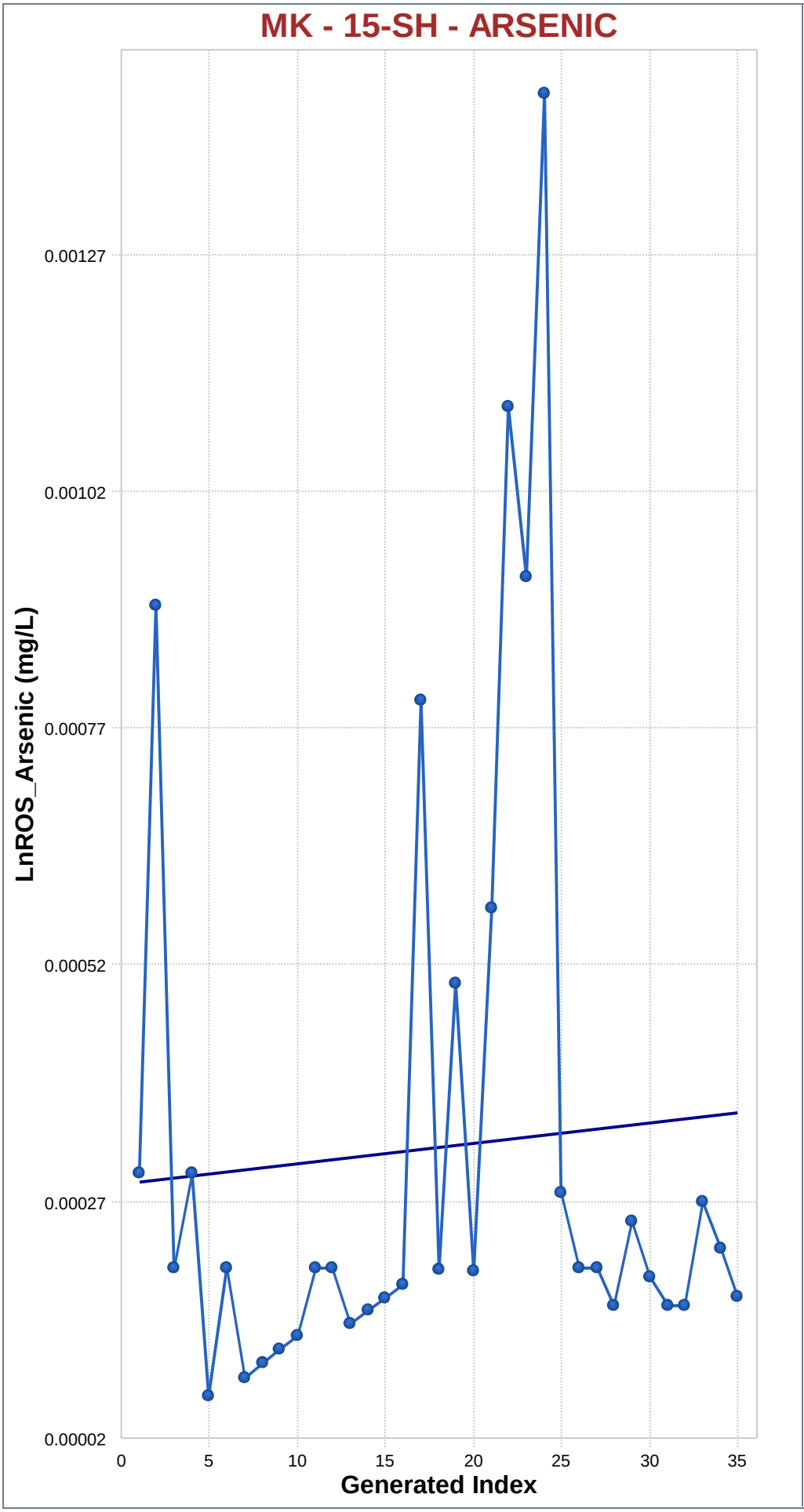
Mann-Kendall Trend Analysis

n	32
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	61.6495
Standardized Value of S	-0.4380
M-K Test Value (S)	-28
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3307

OLS Regression Line (Blue)

OLS Regression Slope	0.0004
OLS Regression Intercept	0.0186

Insufficient statistical evidence of a significant trend at the specified level of significance.



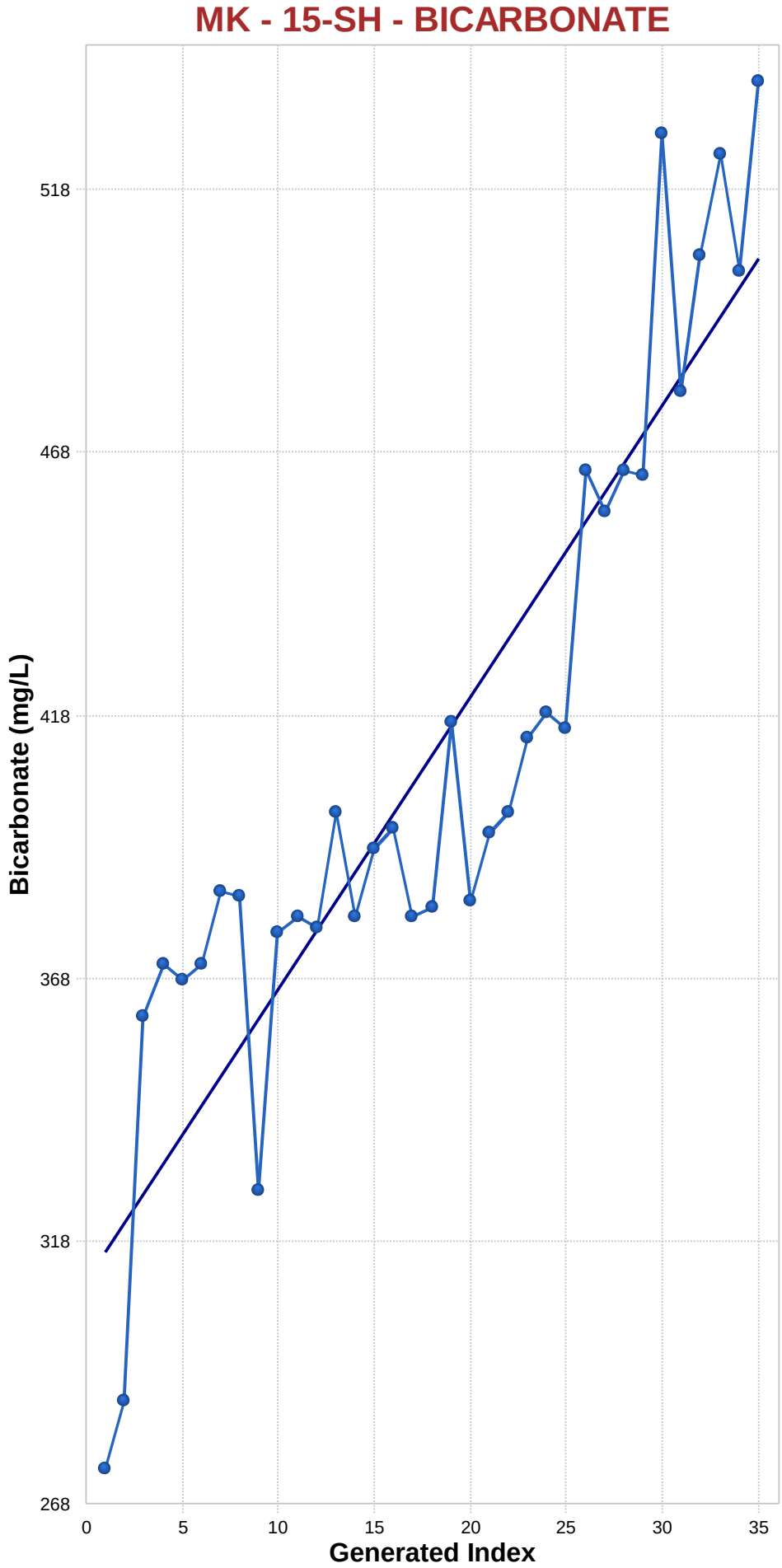
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.1807
Standardized Value of S	0.9262
M-K Test Value (S)	66
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1772

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0003

Insufficient statistical evidence of a significant trend at the specified level of significance.



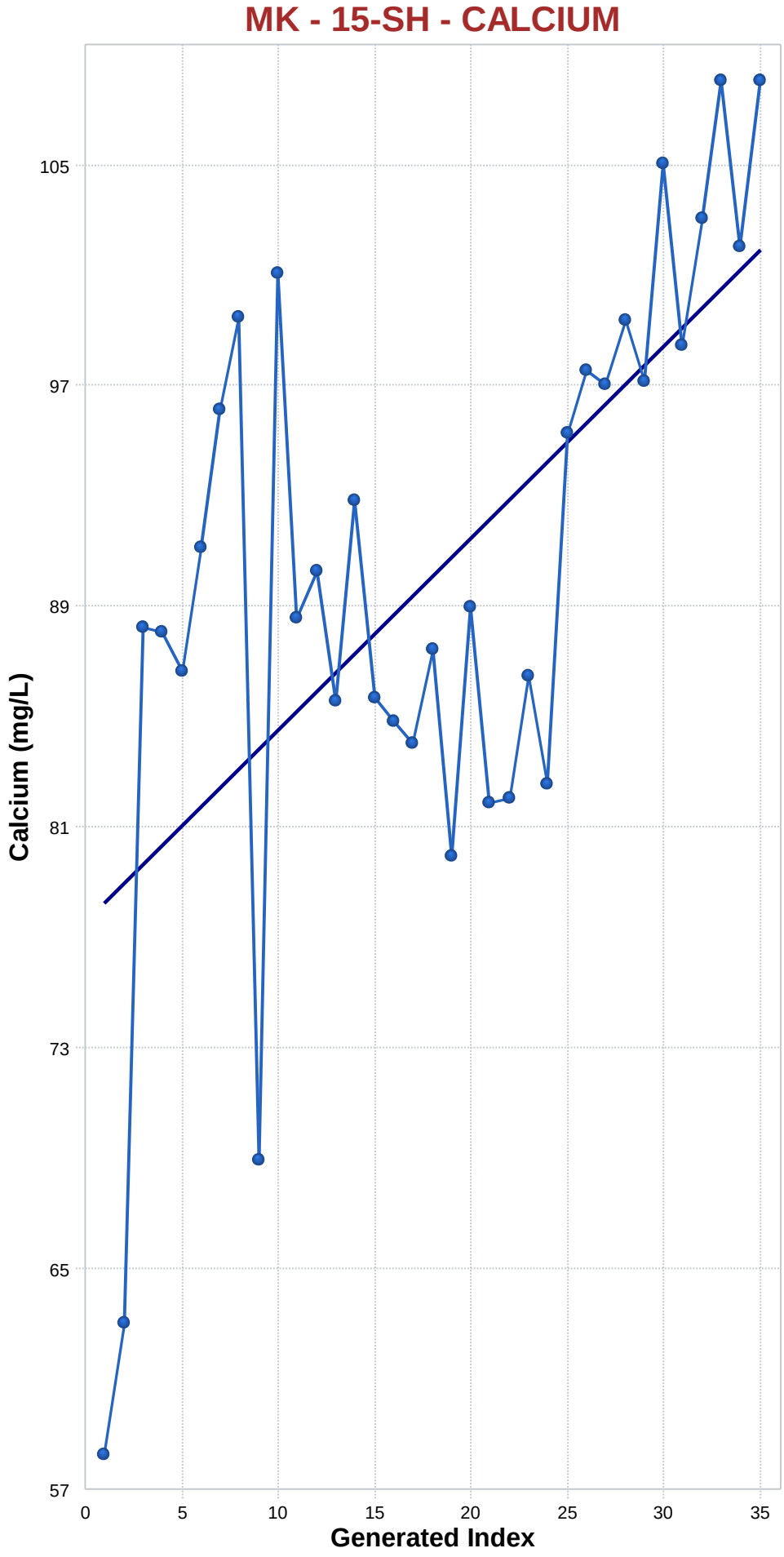
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3681
Standardized Value of S	6.8781
M-K Test Value (S)	485
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	5.5574
OLS Regression Intercept	310.7092

Statistically significant evidence of an increasing trend at the specified level of significance.



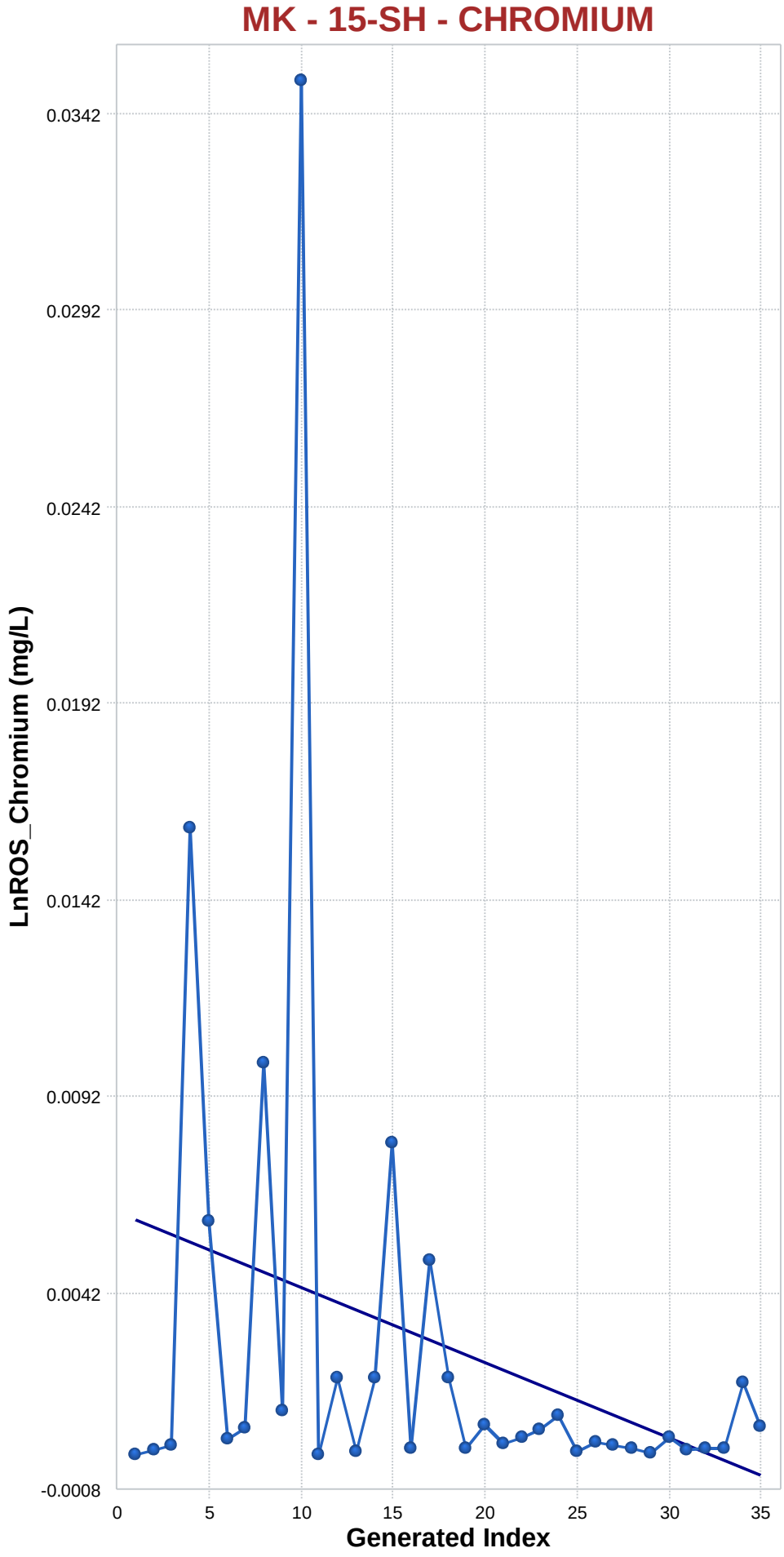
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.4083
Standardized Value of S	3.3945
M-K Test Value (S)	240
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	0.6968
OLS Regression Intercept	77.4956

Statistically significant evidence of an increasing trend at the specified level of significance.



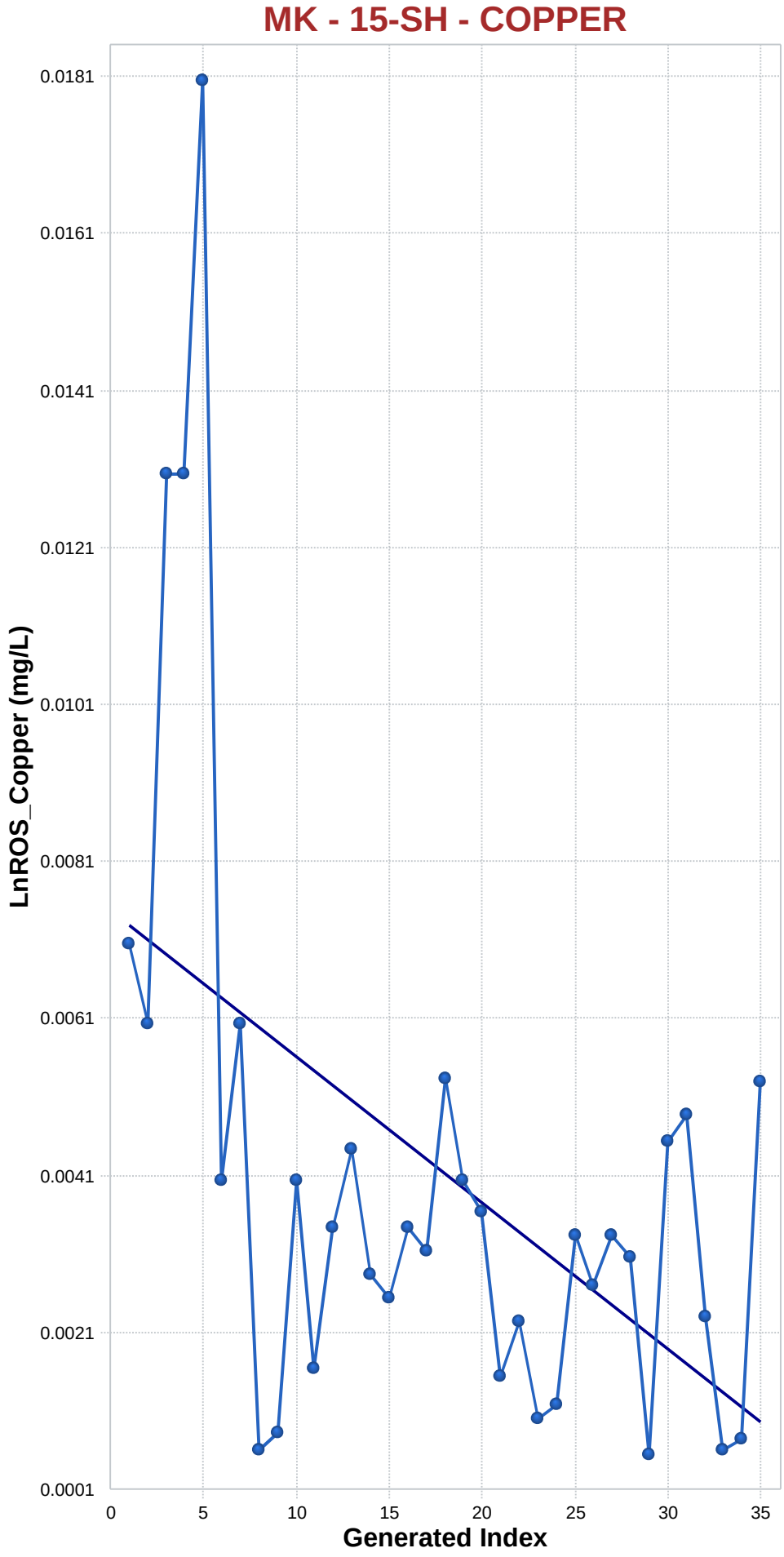
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3823
Standardized Value of S	-1.1651
M-K Test Value (S)	-83
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1220

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0062

Insufficient statistical evidence of a significant trend at the specified level of significance.



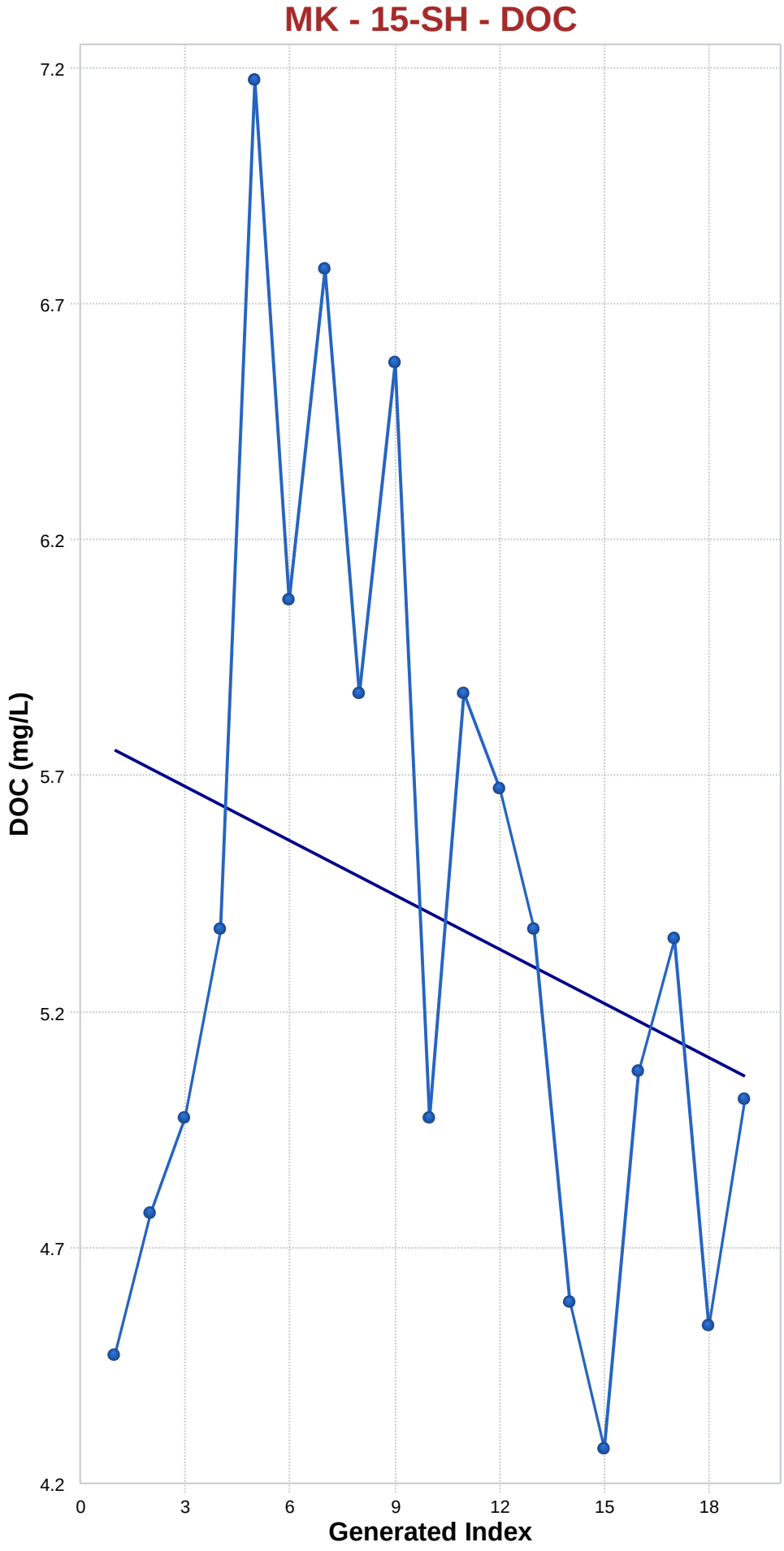
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3681
Standardized Value of S	-2.6717
M-K Test Value (S)	-189
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0038

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0074

Statistically significant evidence of a decreasing trend at the specified level of significance.



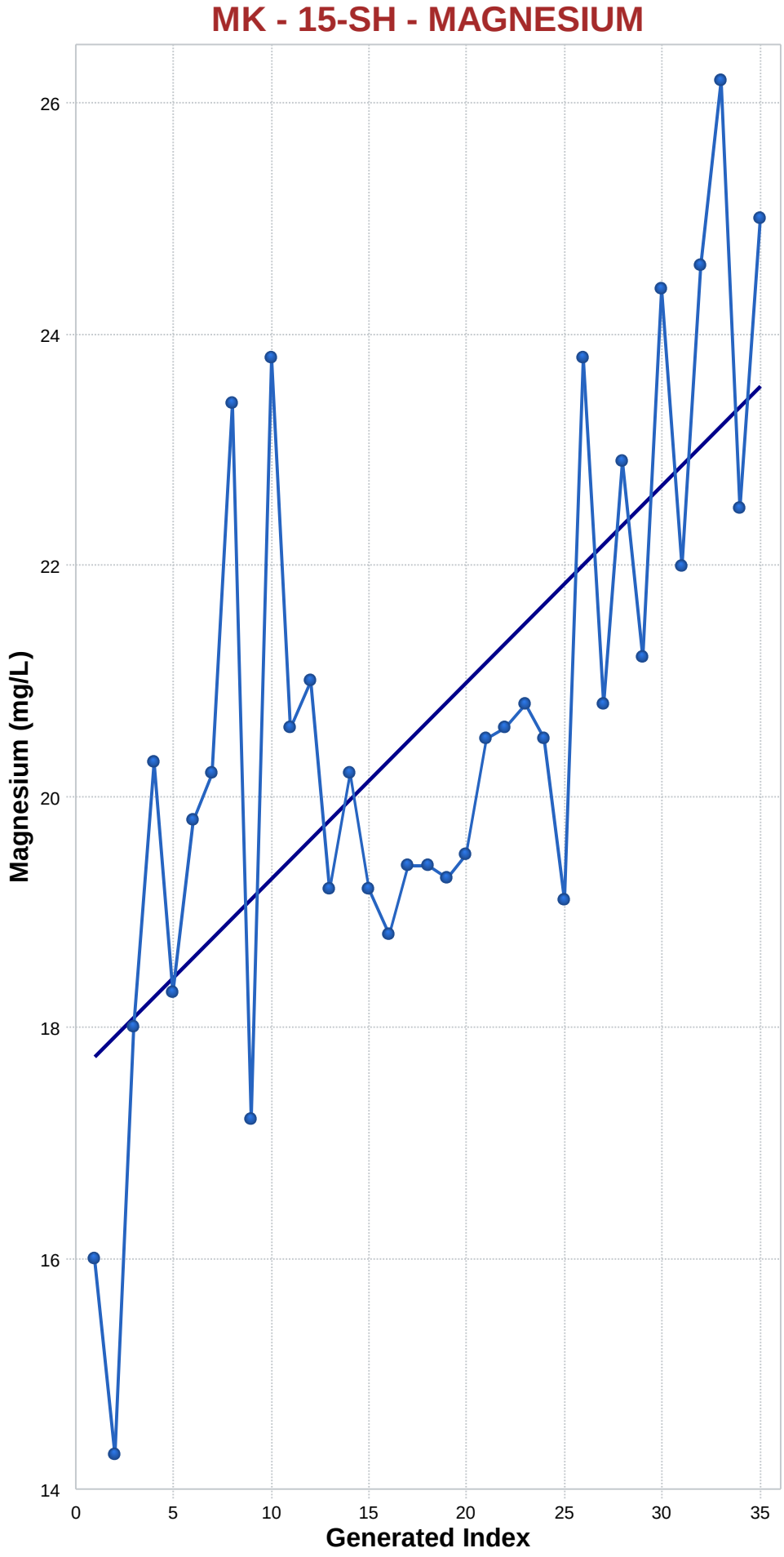
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5307
Standardized Value of S	-1.0865
M-K Test Value (S)	-32
Tabulated p-value	0.1330
Approximate p-value	0.1386

OLS Regression Line (Blue)

OLS Regression Slope	-0.0385
OLS Regression Intercept	5.8216

Insufficient statistical evidence of a significant trend at the specified level of significance.



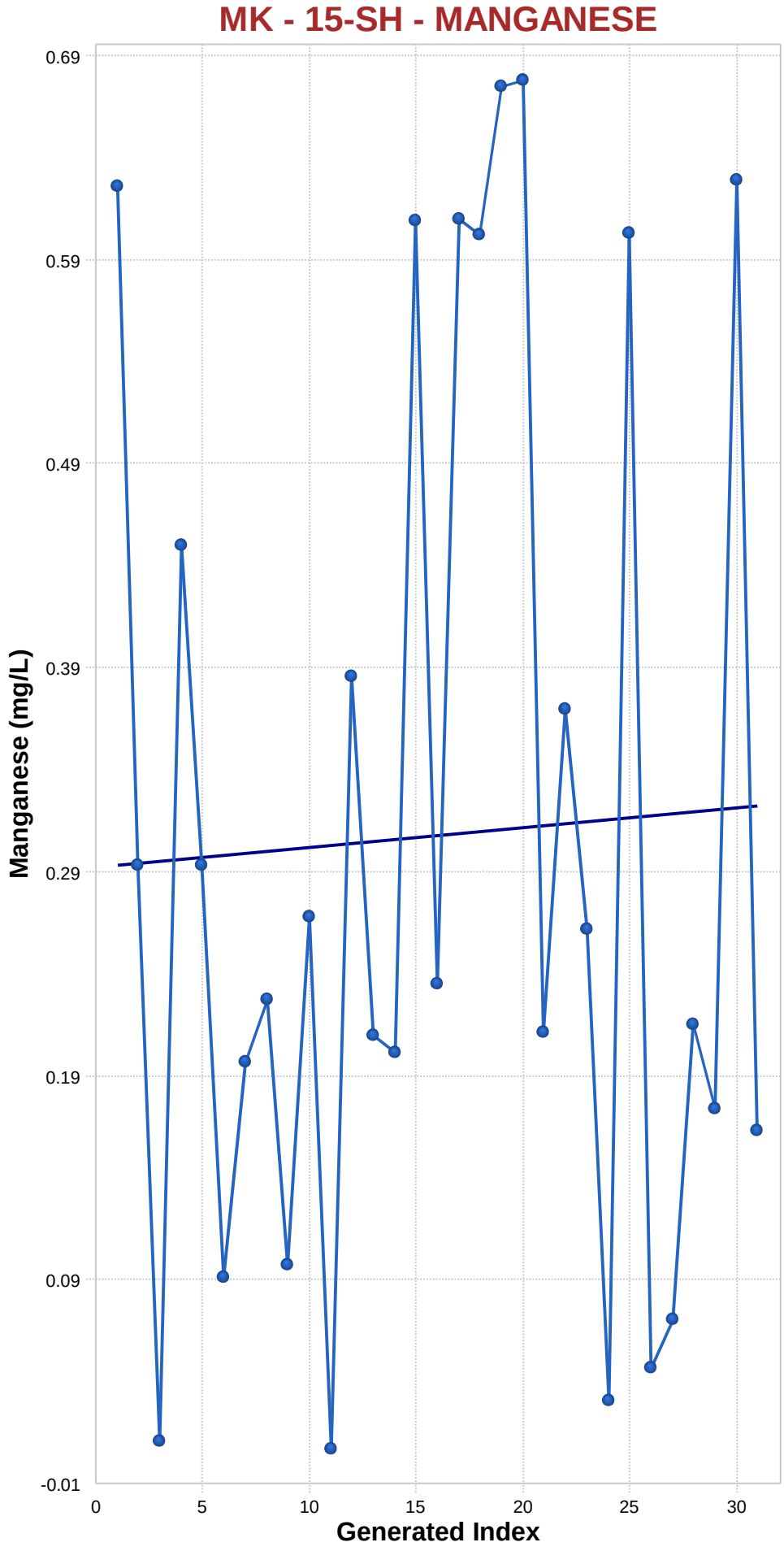
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3657
Standardized Value of S	4.4766
M-K Test Value (S)	316
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.1710
OLS Regression Intercept	17.2738

Statistically significant evidence of an increasing trend at the specified level of significance.



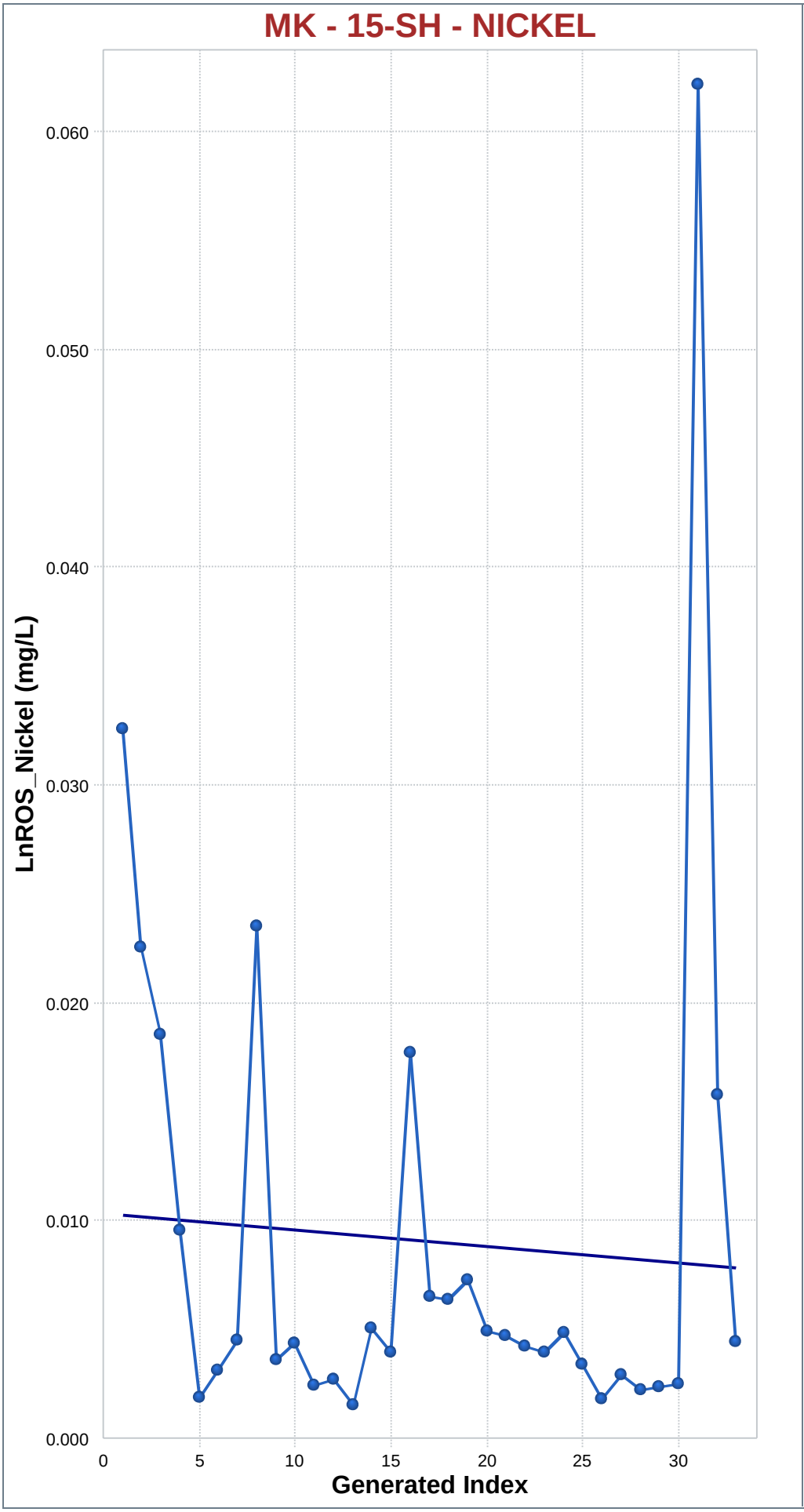
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8274
Standardized Value of S	
M-K Test Value (S)	0
Appx. Critical Value (0.05)	
Approximate p-value	

OLS Regression Line (Blue)

OLS Regression Slope	0.0010
OLS Regression Intercept	0.2922

Insufficient statistical evidence of a significant trend at the specified level of significance.



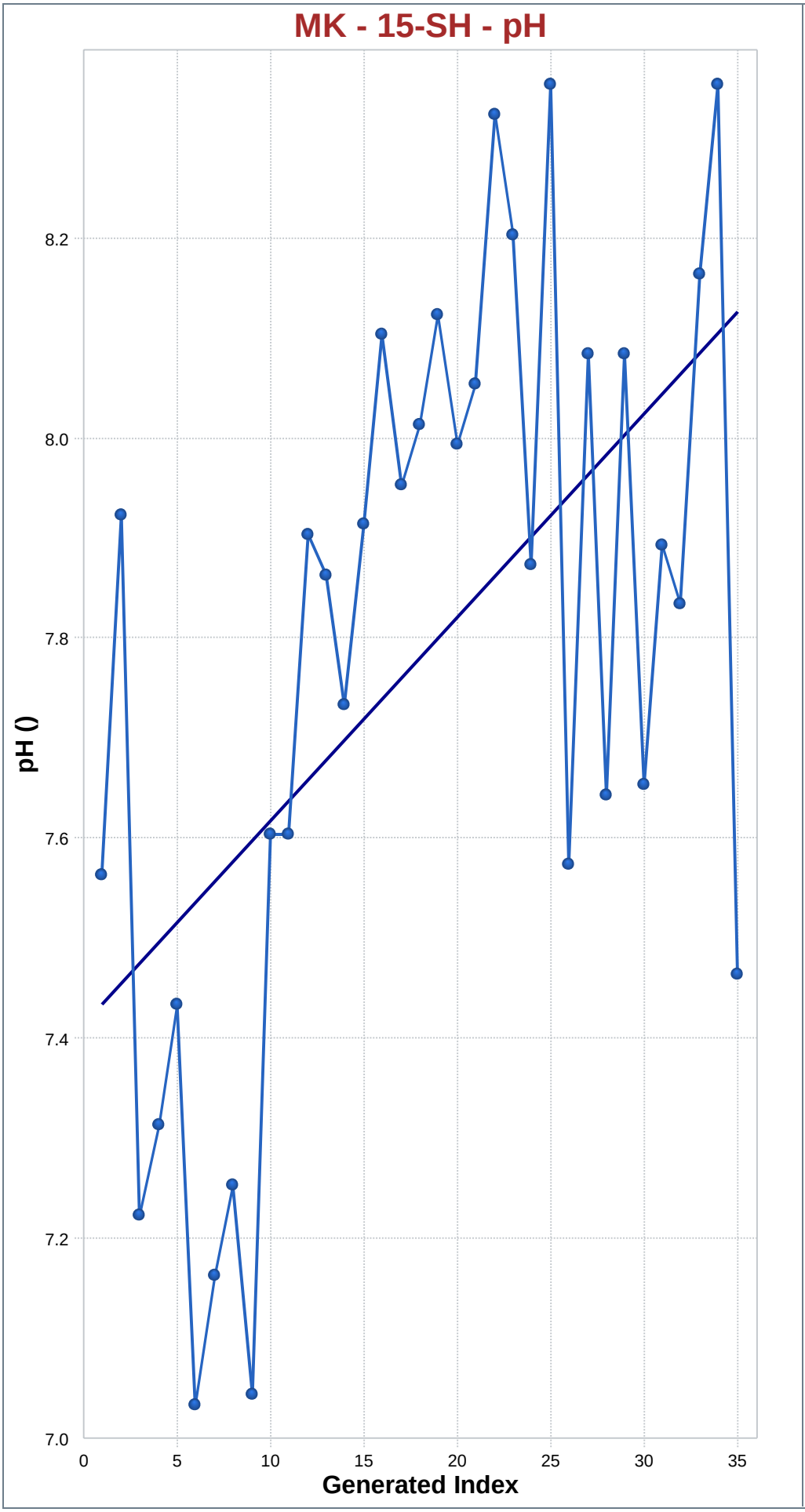
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5394
Standardized Value of S	-1.5959
M-K Test Value (S)	-104
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0553

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0108

Insufficient statistical evidence of a significant trend at the specified level of significance.



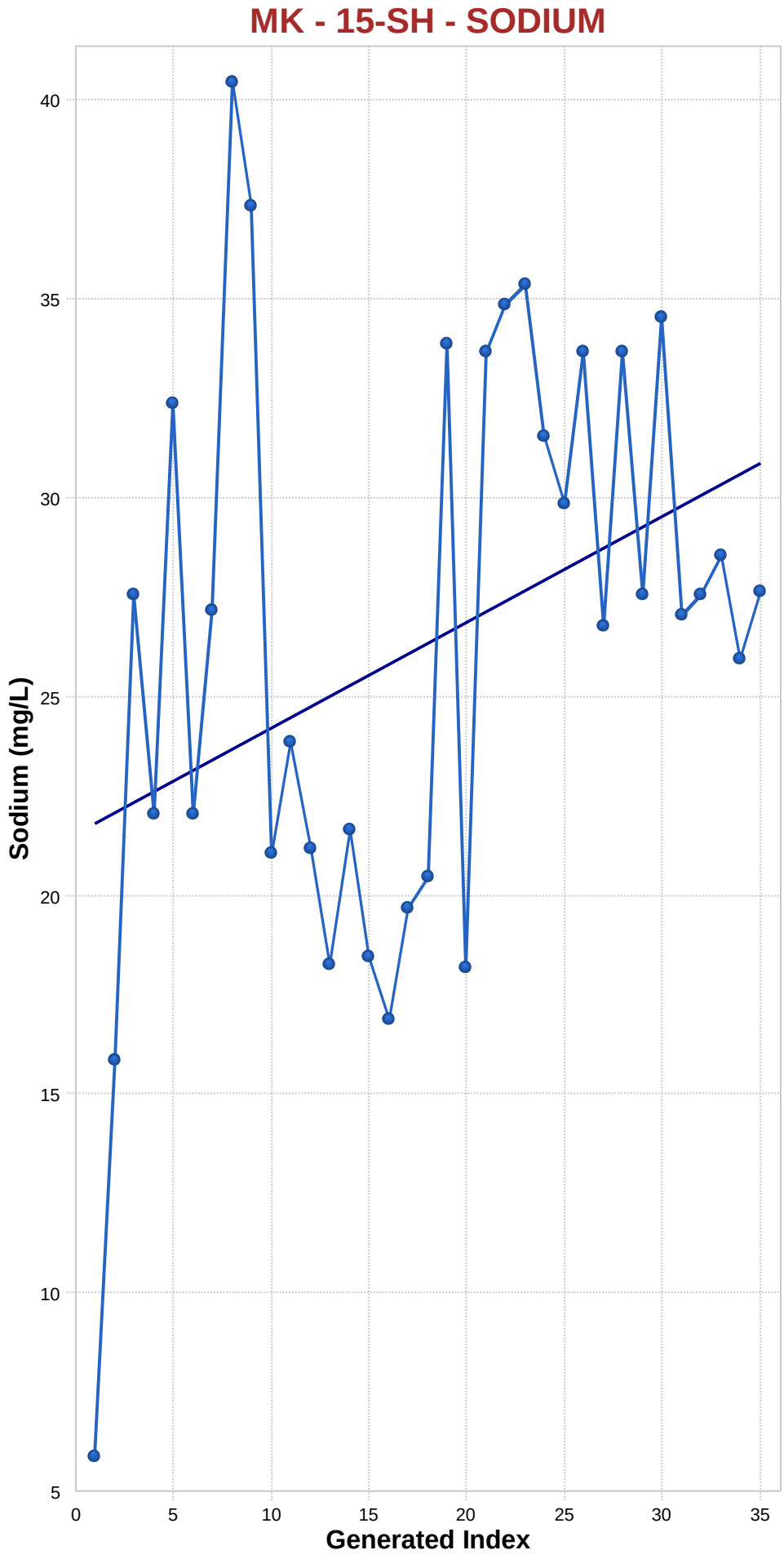
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3941
Standardized Value of S	3.3952
M-K Test Value (S)	240
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	0.0203
OLS Regression Intercept	7.3907

Statistically significant evidence of an increasing trend at the specified level of significance.



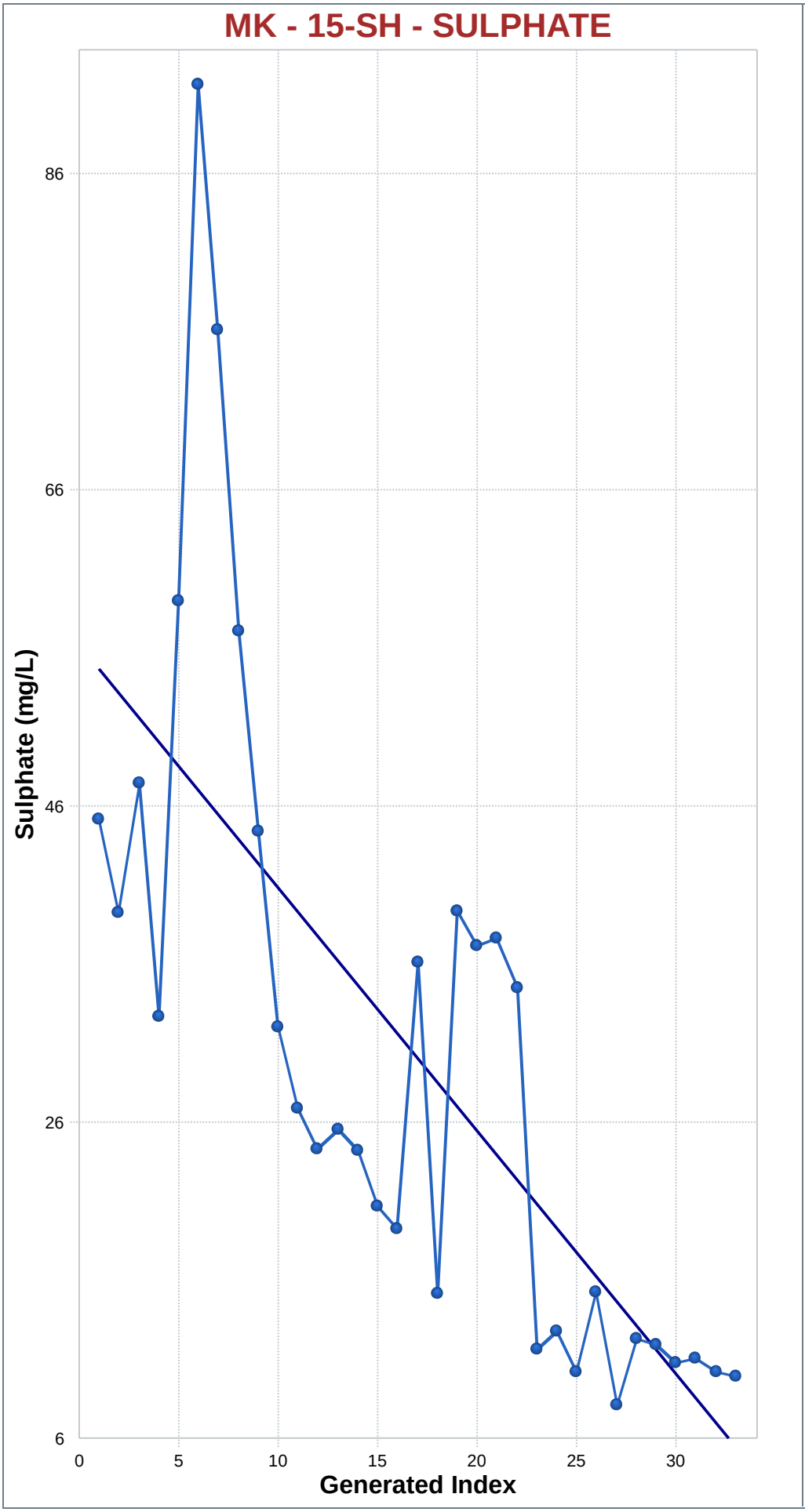
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3562
Standardized Value of S	1.5777
M-K Test Value (S)	112
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0573

OLS Regression Line (Blue)

OLS Regression Slope	0.2667
OLS Regression Intercept	21.3973

Insufficient statistical evidence of a significant trend at the specified level of significance.



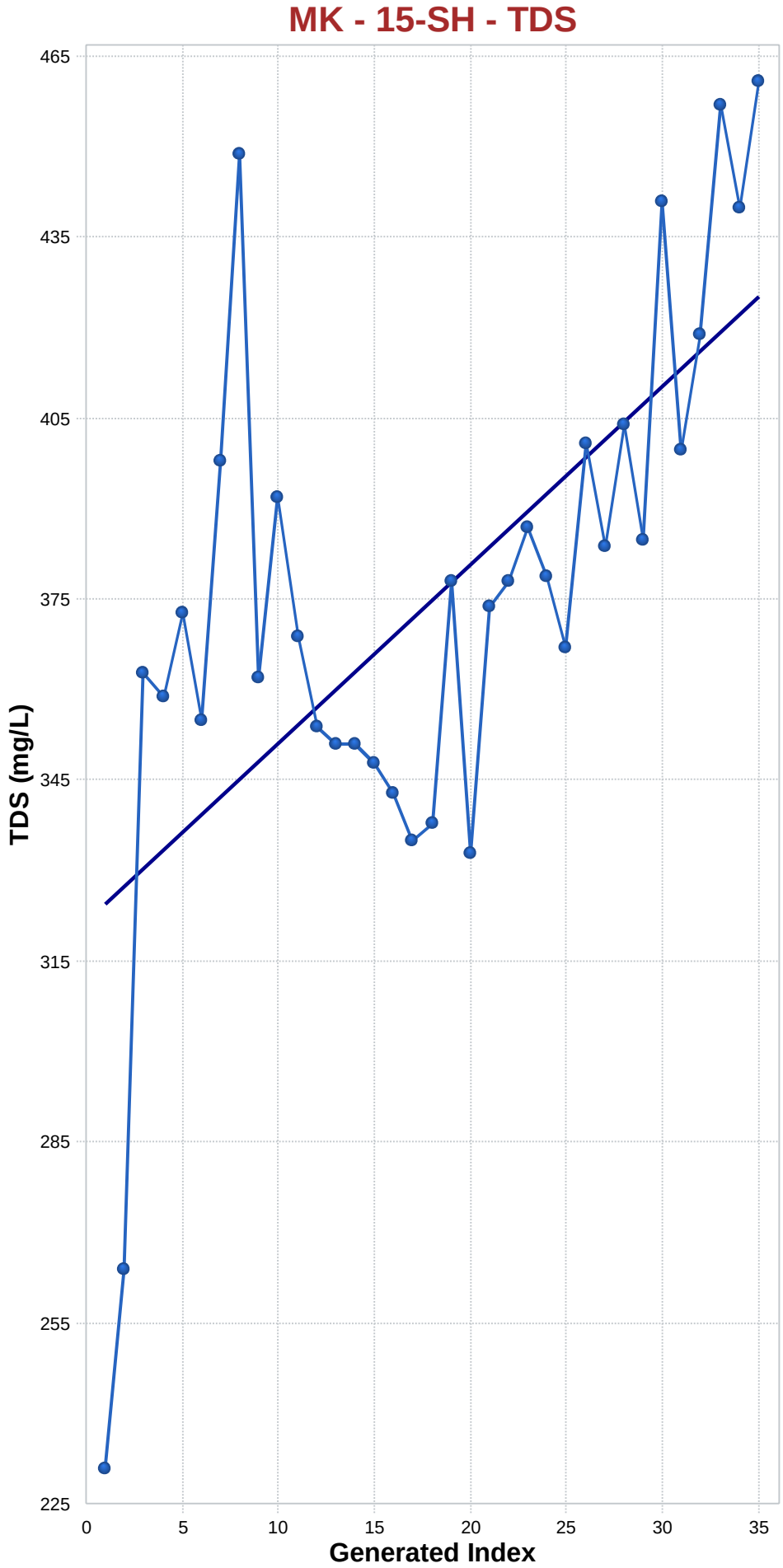
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5316
Standardized Value of S	-5.3617
M-K Test Value (S)	-347
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-1.5421
OLS Regression Intercept	56.0768

Statistically significant evidence of a decreasing trend at the specified level of significance.



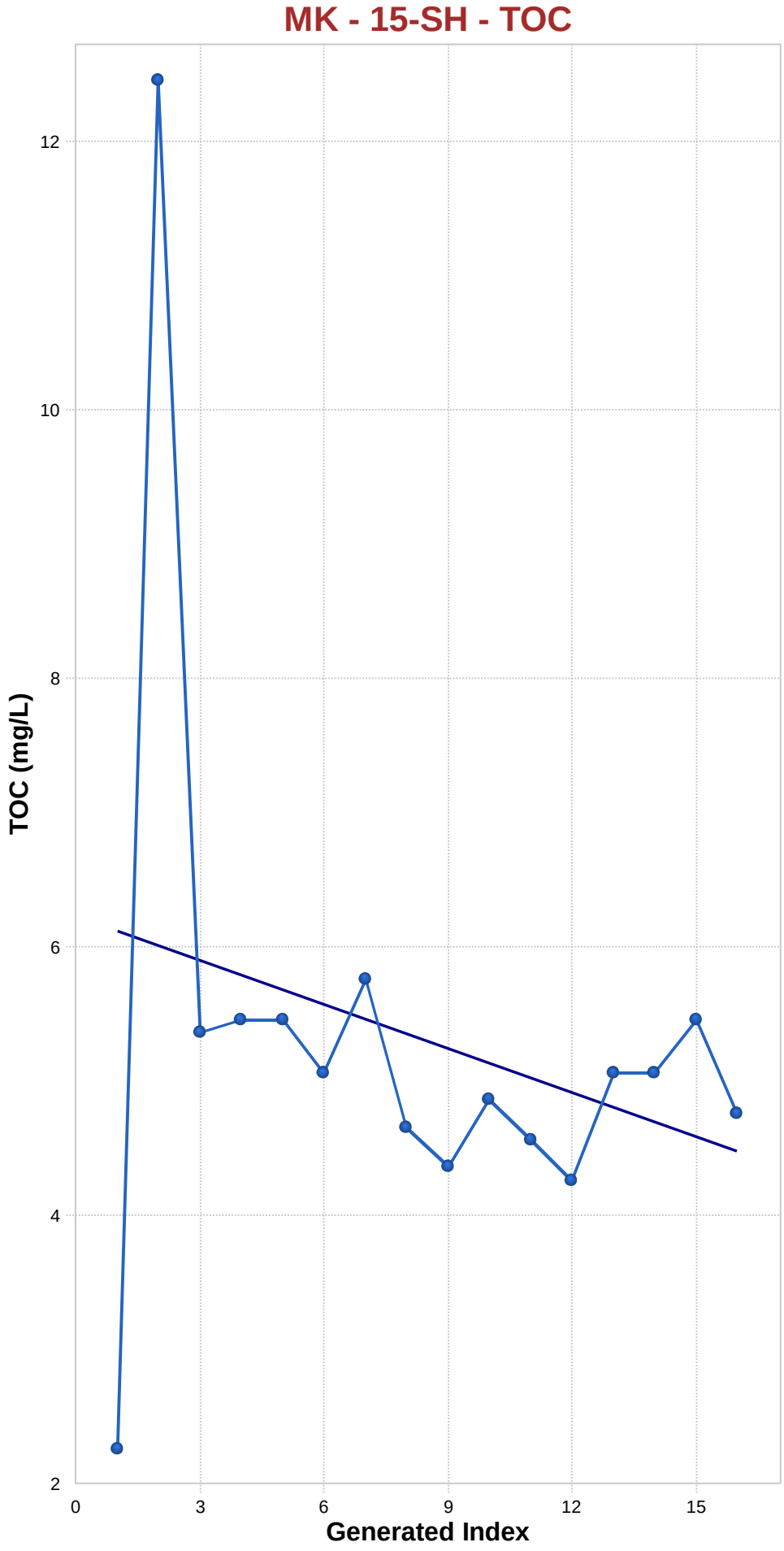
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.4012
Standardized Value of S	3.7783
M-K Test Value (S)	267
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	2.9583
OLS Regression Intercept	321.6941

Statistically significant evidence of an increasing trend at the specified level of significance.



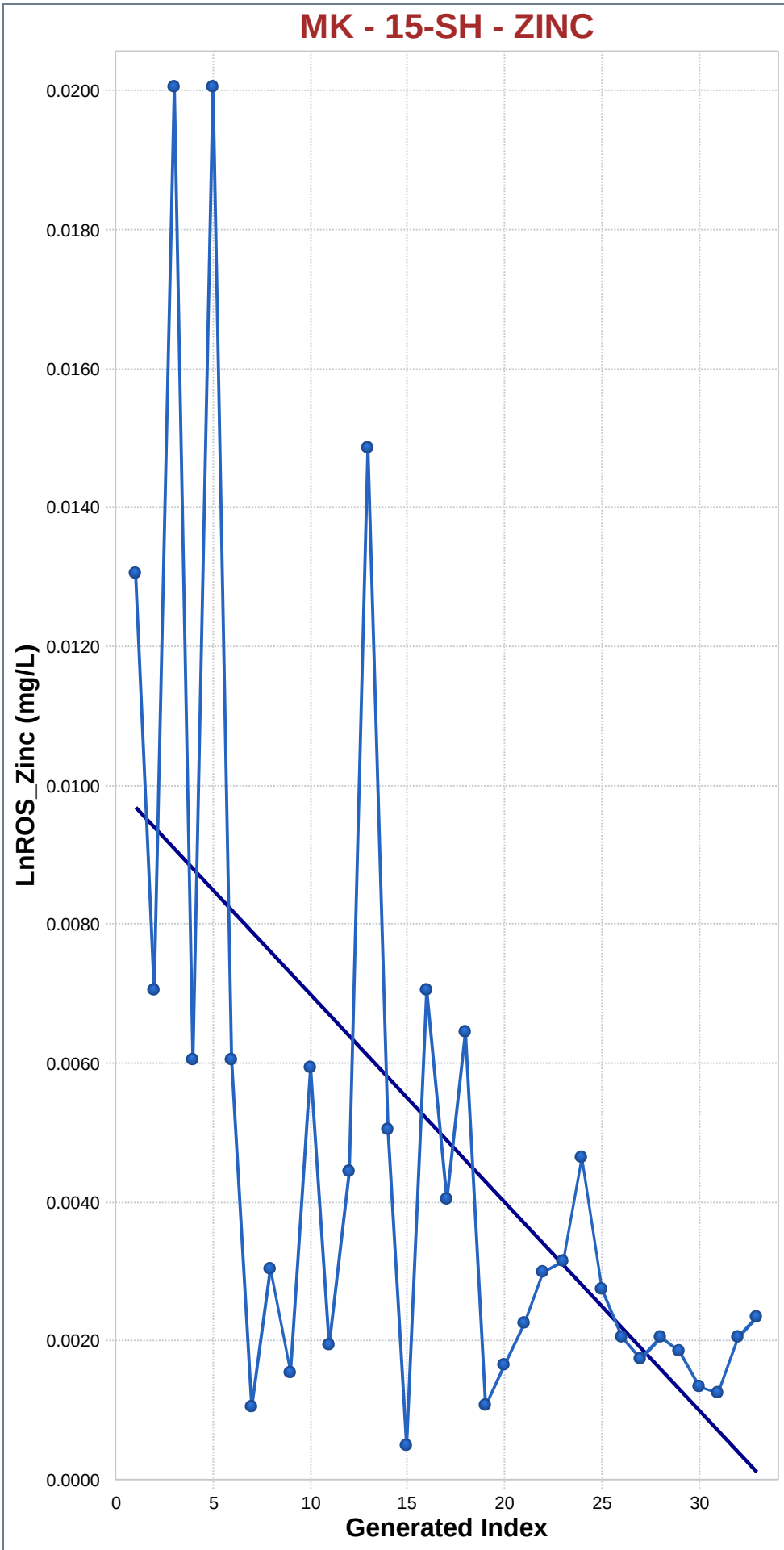
Mann-Kendall Trend Analysis

n	16
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	22.0454
Standardized Value of S	-0.8619
M-K Test Value (S)	-20
Tabulated p-value	0.1990
Approximate p-value	0.1944

OLS Regression Line (Blue)

OLS Regression Slope	-0.1093
OLS Regression Intercept	6.2725

Insufficient statistical evidence of a significant trend at the specified level of significance.



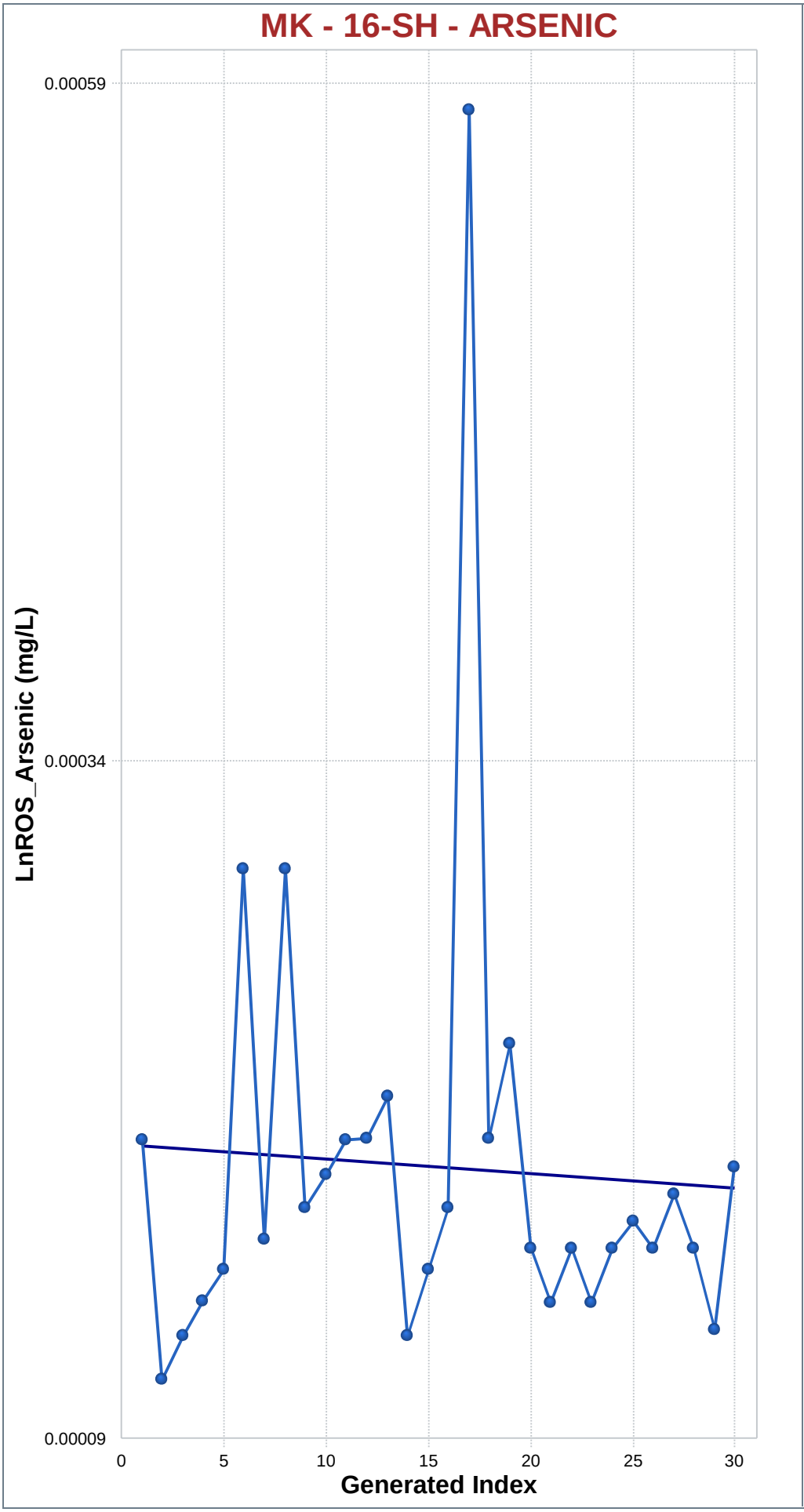
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.4877
Standardized Value of S	-3.1789
M-K Test Value (S)	-206
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0007

OLS Regression Line (Blue)

OLS Regression Slope	-0.0003
OLS Regression Intercept	0.0099

Statistically significant evidence of a decreasing trend at the specified level of significance.



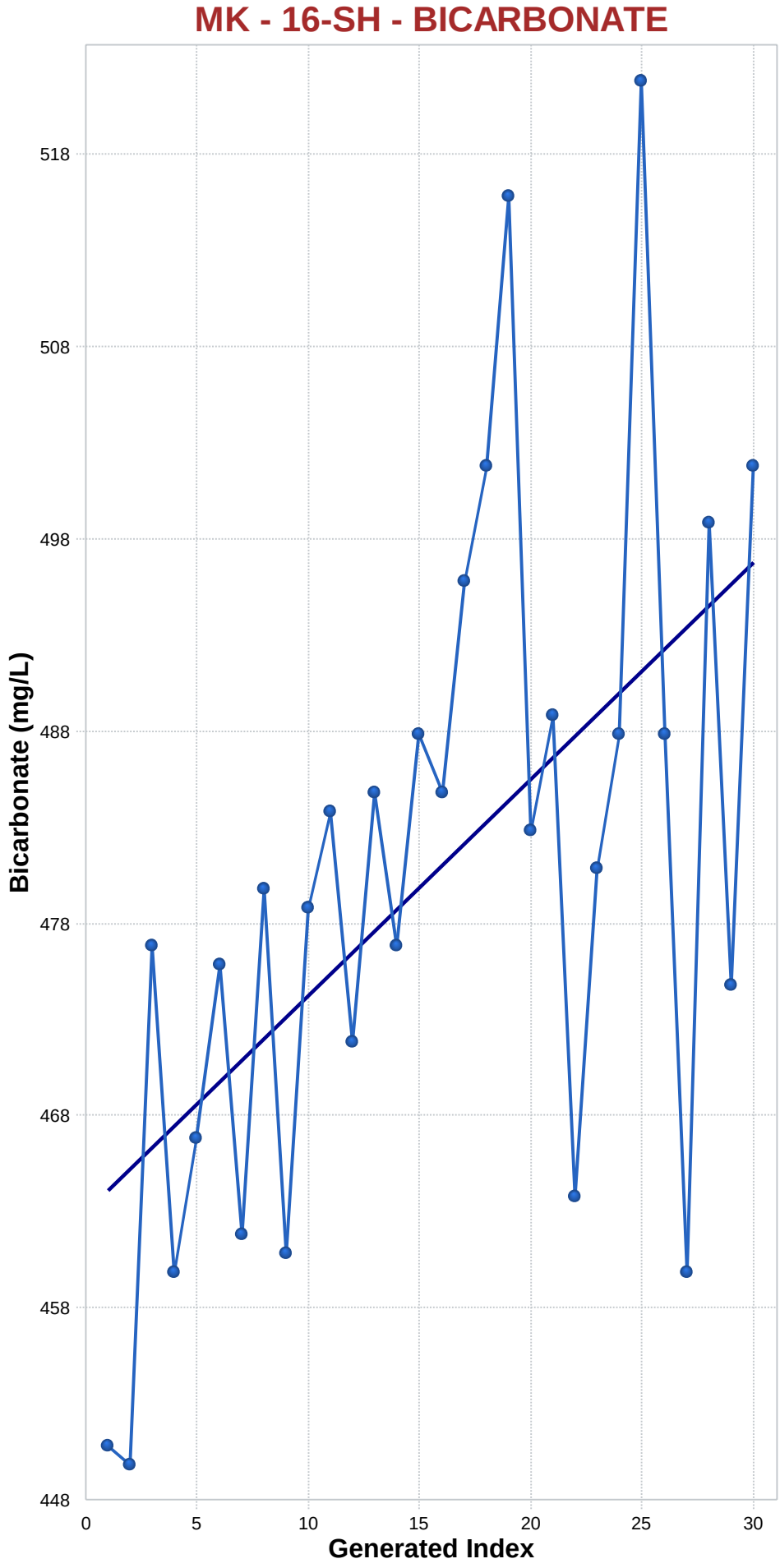
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.8480
Standardized Value of S	-0.0716
M-K Test Value (S)	-5
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4715

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0002

Insufficient statistical evidence of a significant trend at the specified level of significance.



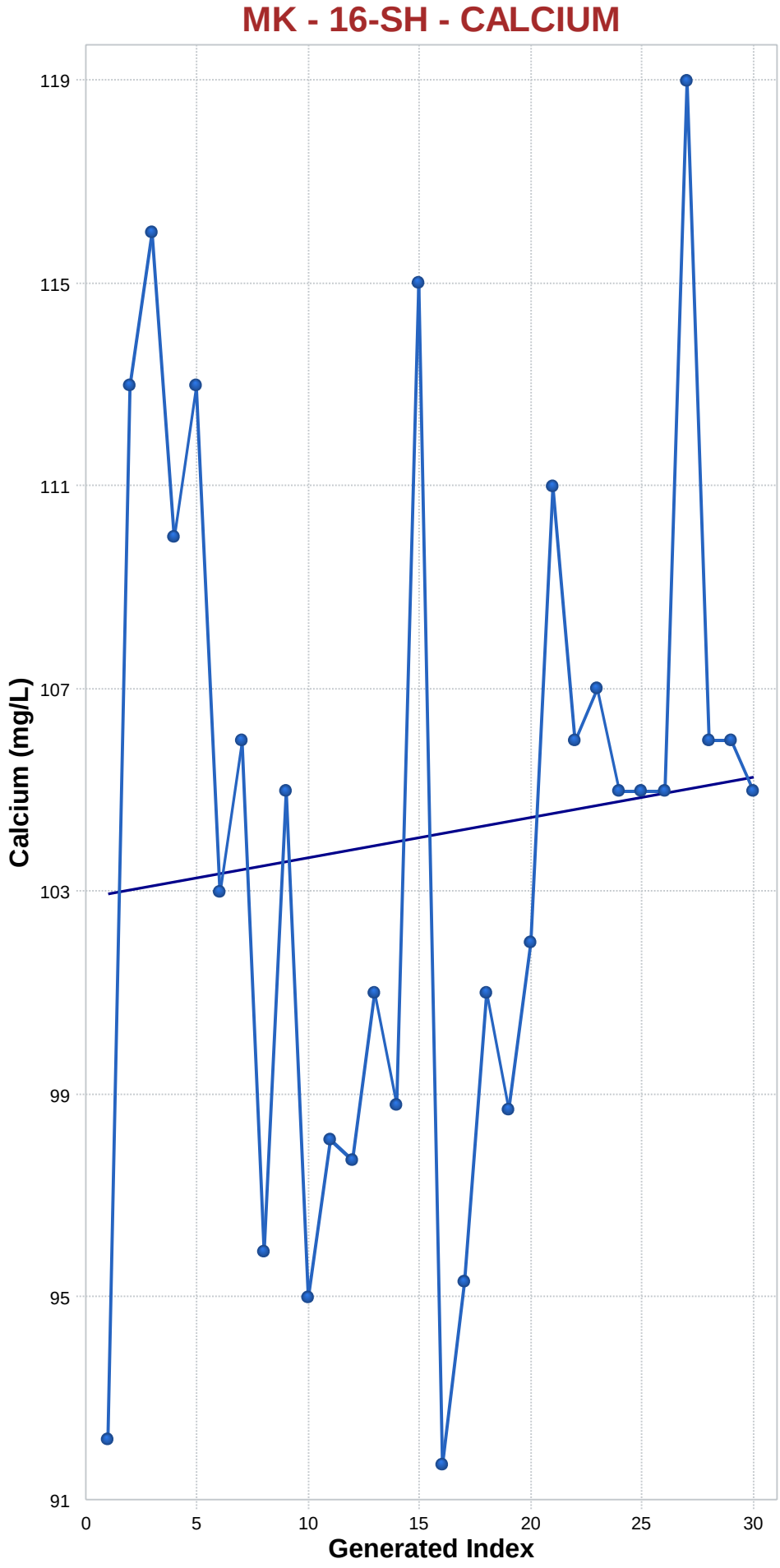
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9821
Standardized Value of S	3.5547
M-K Test Value (S)	200
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	1.1264
OLS Regression Intercept	463.1747

Statistically significant evidence of an increasing trend at the specified level of significance.



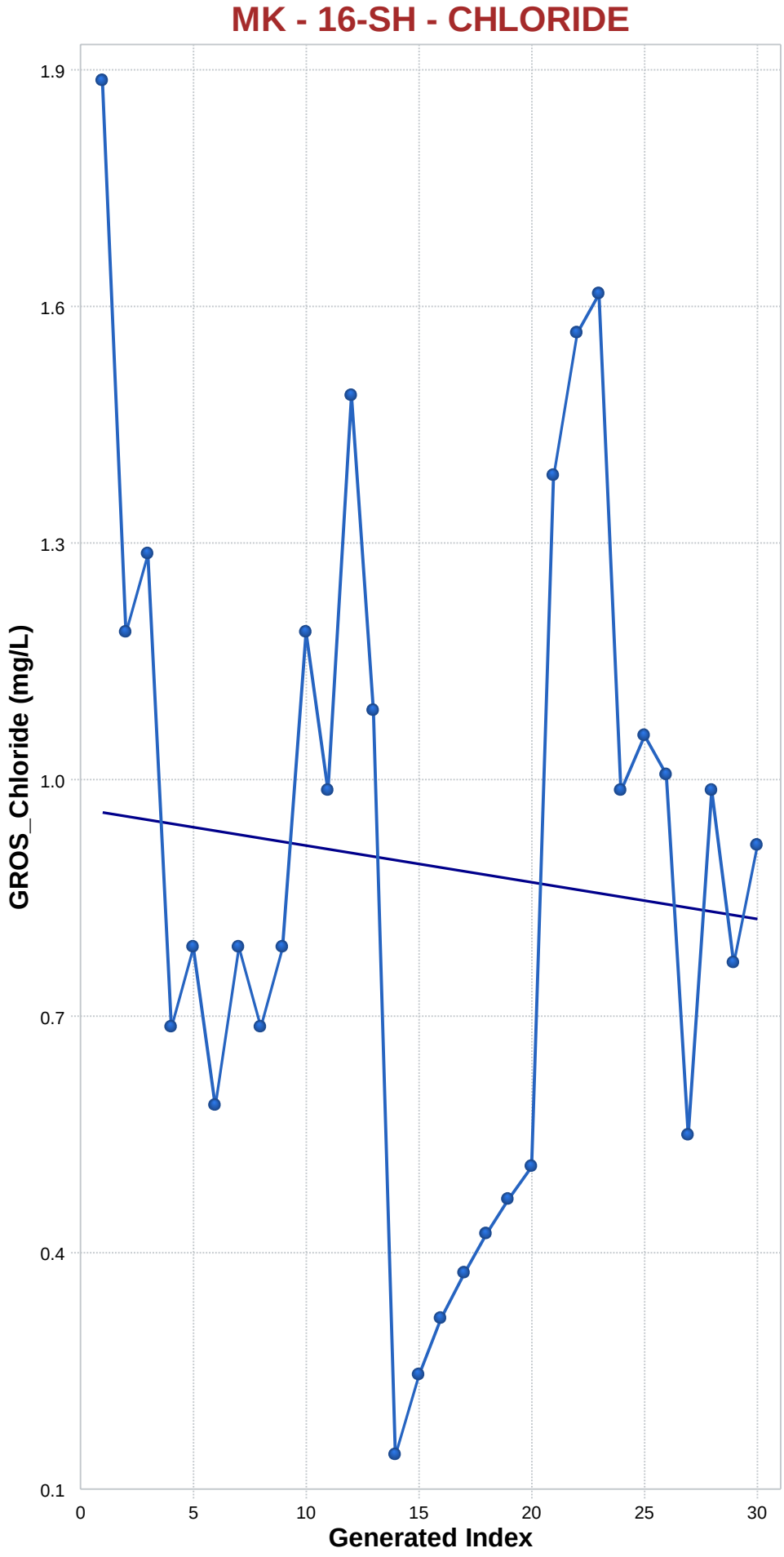
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.8062
Standardized Value of S	0.7526
M-K Test Value (S)	43
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2258

OLS Regression Line (Blue)

OLS Regression Slope	0.0792
OLS Regression Intercept	102.8857

Insufficient statistical evidence of a significant trend at the specified level of significance.



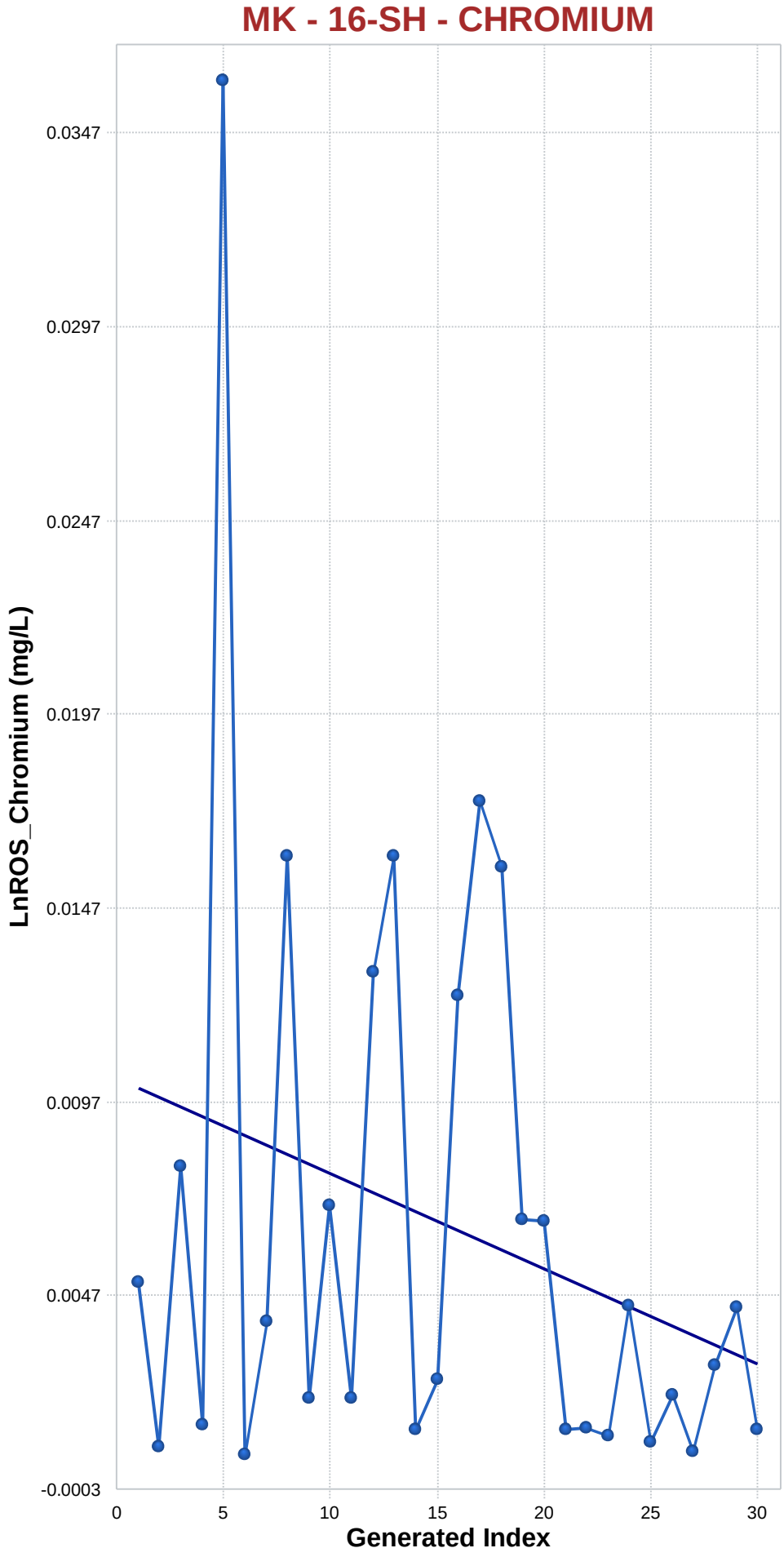
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9673
Standardized Value of S	-0.2144
M-K Test Value (S)	-13
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4151

OLS Regression Line (Blue)

OLS Regression Slope	-0.0046
OLS Regression Intercept	0.9768

Insufficient statistical evidence of a significant trend at the specified level of significance.



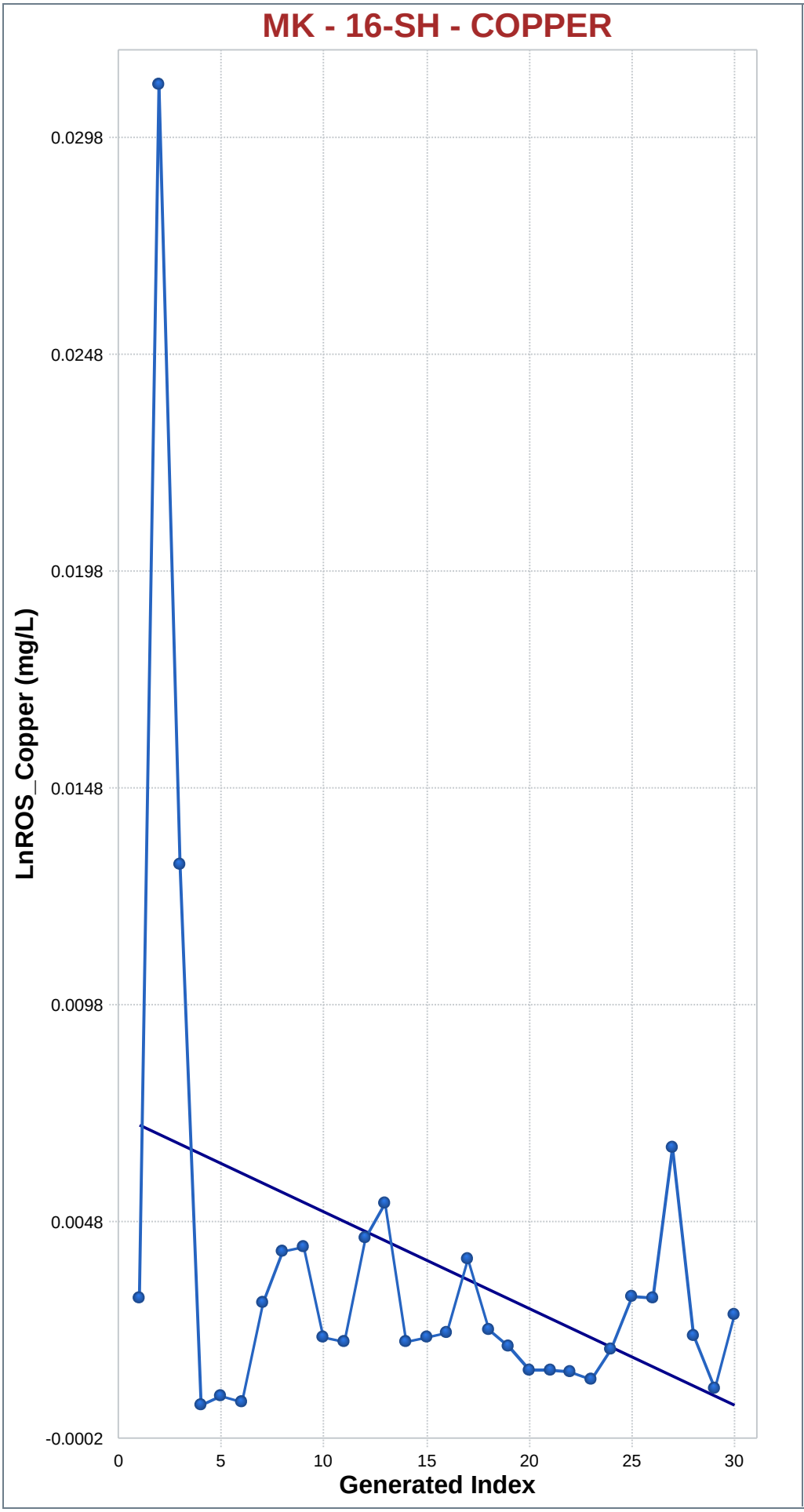
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0327
Standardized Value of S	-1.3564
M-K Test Value (S)	-77
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0875

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0103

Insufficient statistical evidence of a significant trend at the specified level of significance.



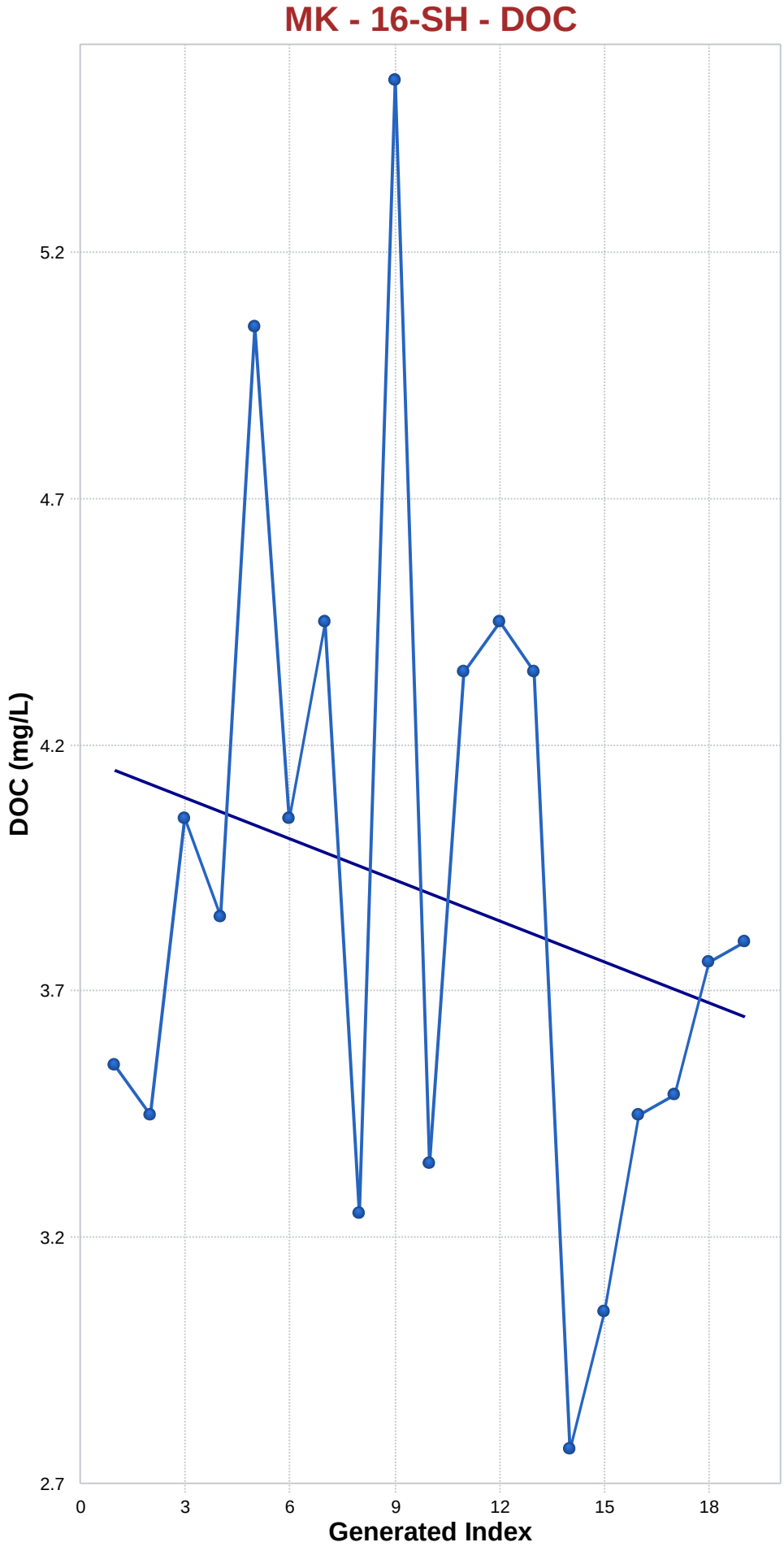
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0327
Standardized Value of S	-0.9280
M-K Test Value (S)	-53
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1767

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0072

Insufficient statistical evidence of a significant trend at the specified level of significance.



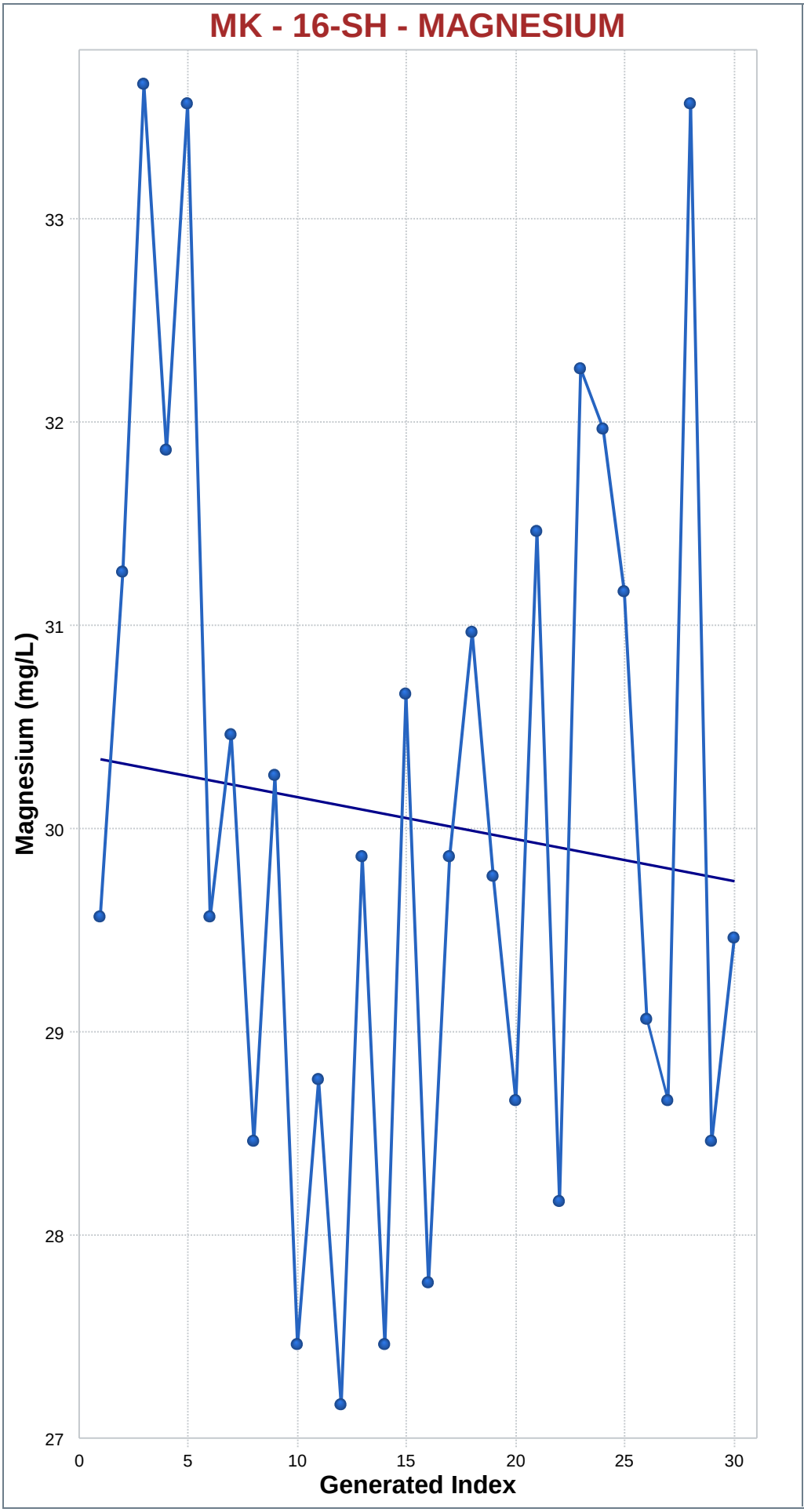
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5132
Standardized Value of S	-0.5611
M-K Test Value (S)	-17
Tabulated p-value	0.2900
Approximate p-value	0.2873

OLS Regression Line (Blue)

OLS Regression Slope	-0.0277
OLS Regression Intercept	4.1258

Insufficient statistical evidence of a significant trend at the specified level of significance.



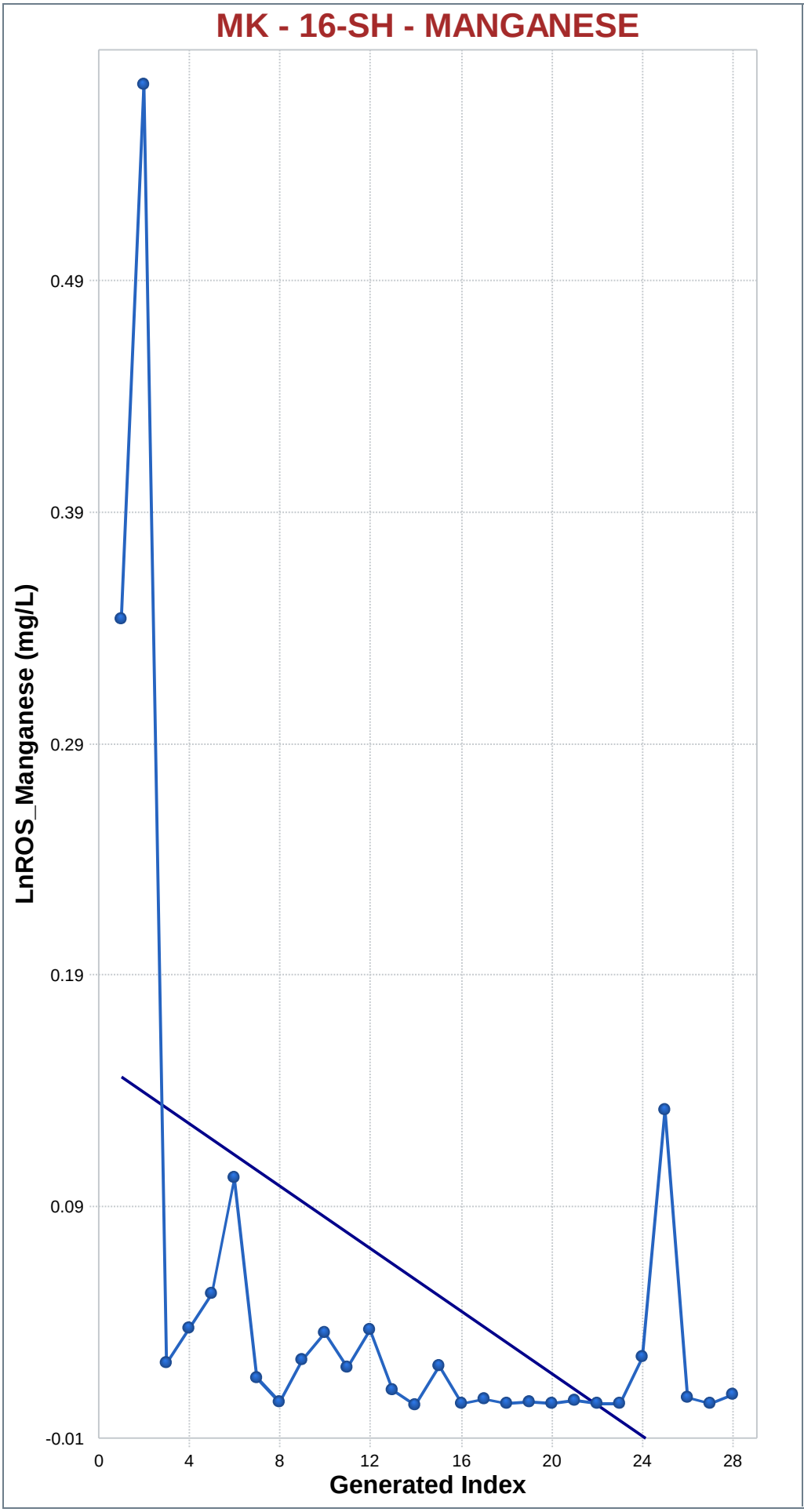
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9970
Standardized Value of S	-0.4286
M-K Test Value (S)	-25
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3341

OLS Regression Line (Blue)

OLS Regression Slope	-0.0206
OLS Regression Intercept	30.1986

Insufficient statistical evidence of a significant trend at the specified level of significance.



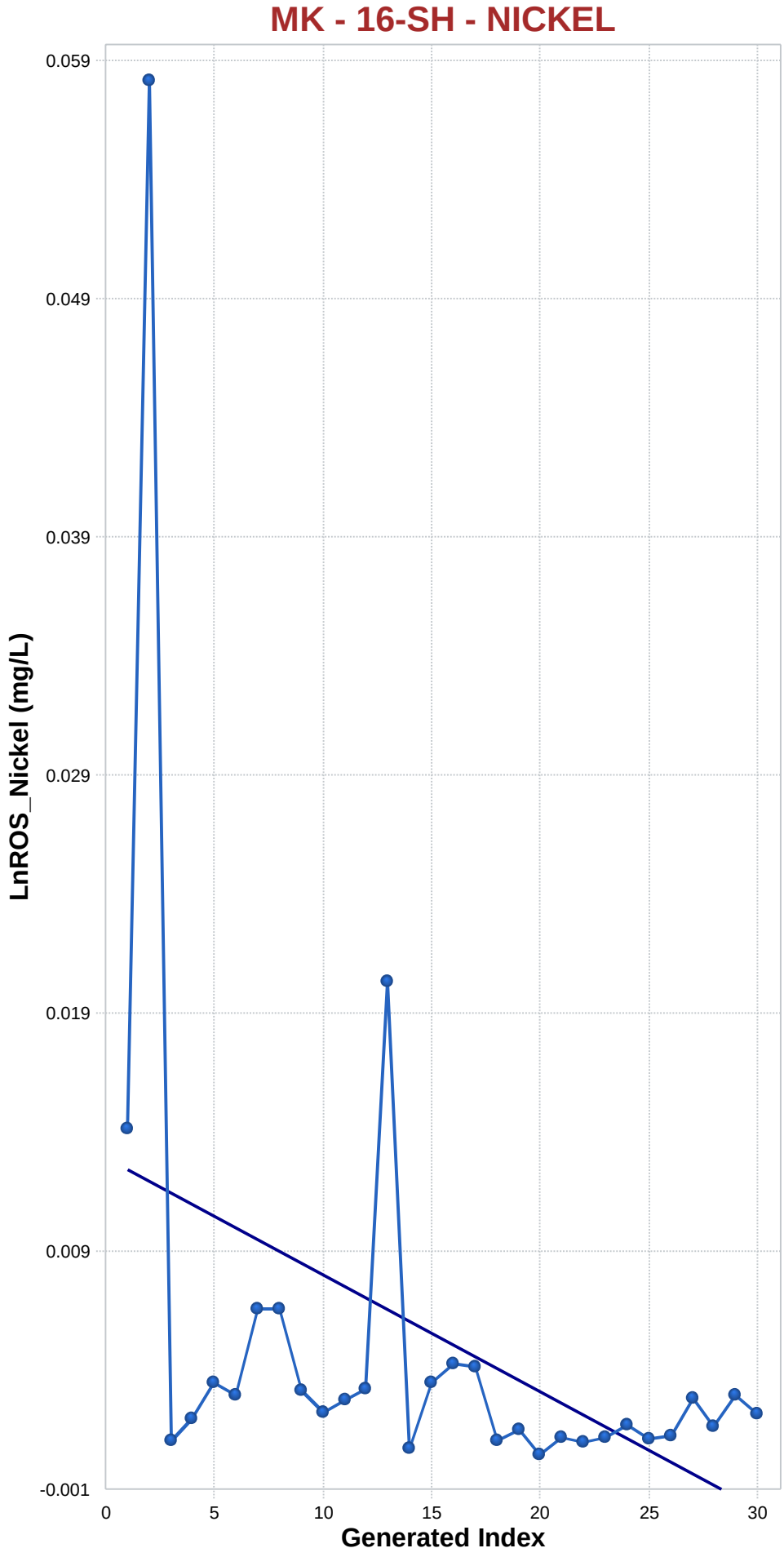
Mann-Kendall Trend Analysis

n	28
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	50.6063
Standardized Value of S	-3.0036
M-K Test Value (S)	-153
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0013

OLS Regression Line (Blue)

OLS Regression Slope	-0.0068
OLS Regression Intercept	0.1491

Statistically significant evidence of a decreasing trend at the specified level of significance.



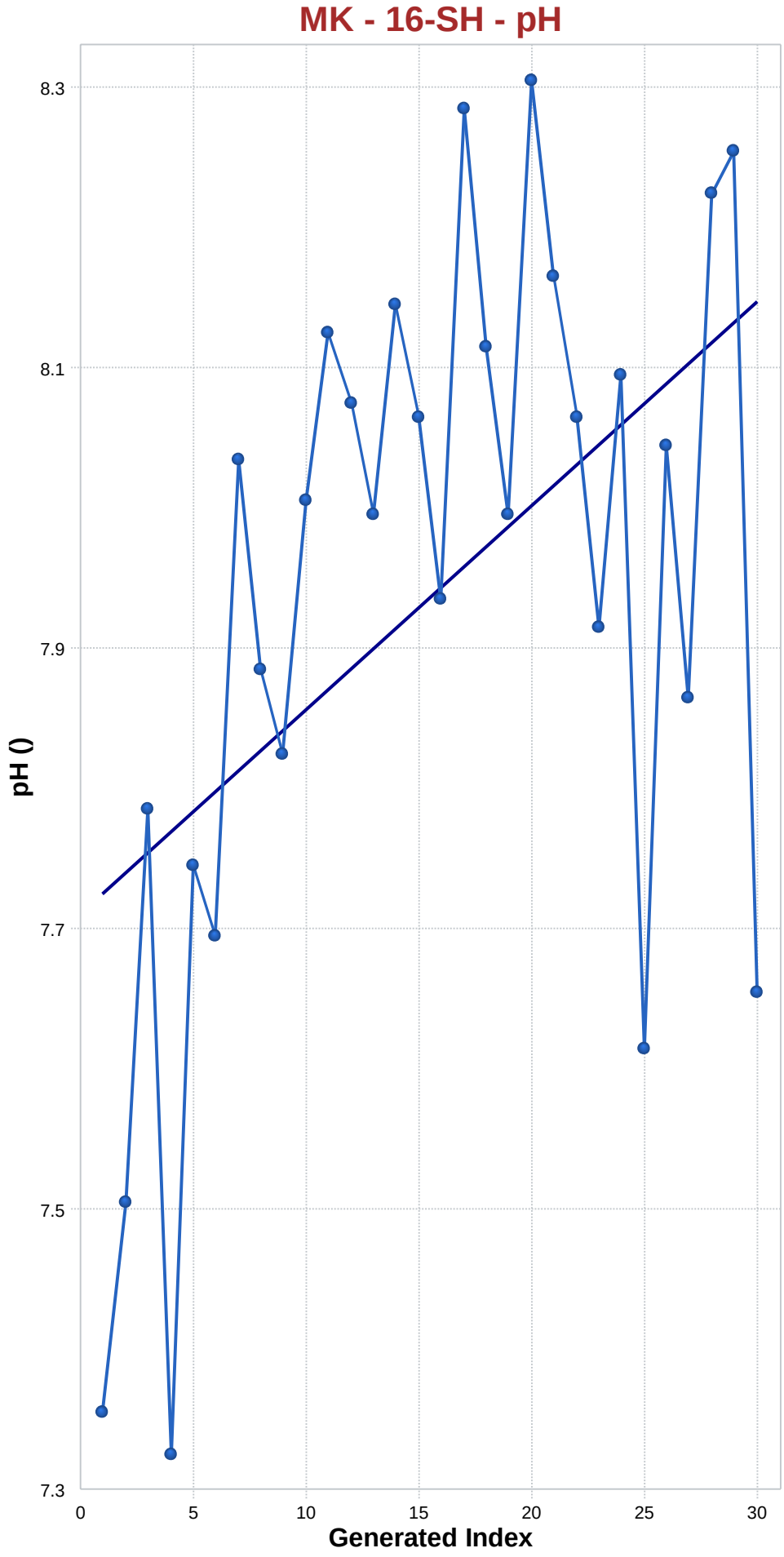
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0238
Standardized Value of S	-2.0884
M-K Test Value (S)	-118
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0184

OLS Regression Line (Blue)

OLS Regression Slope	-0.0005
OLS Regression Intercept	0.0128

Statistically significant evidence of a decreasing trend at the specified level of significance.



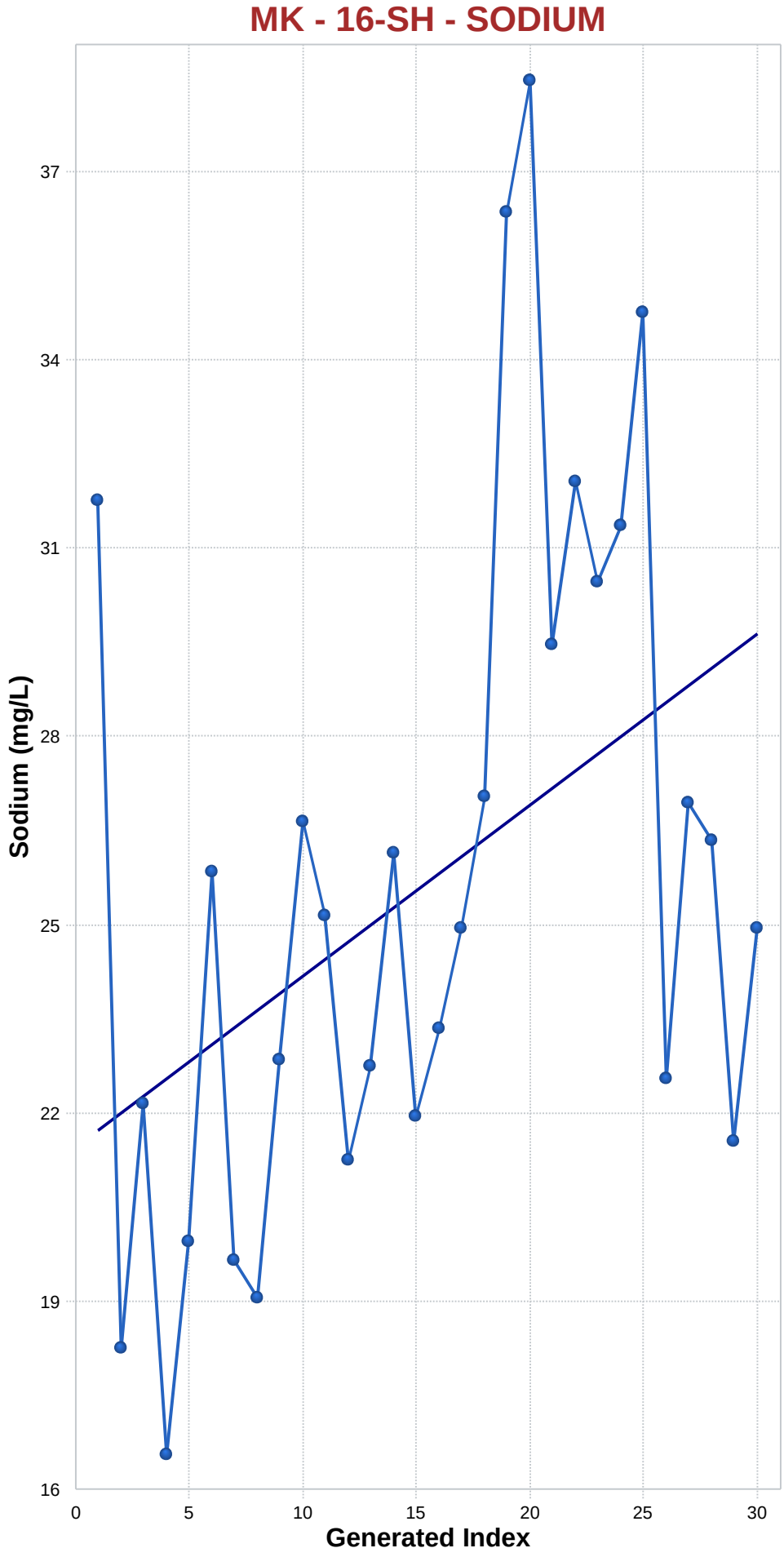
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0327
Standardized Value of S	2.6056
M-K Test Value (S)	147
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0046

OLS Regression Line (Blue)

OLS Regression Slope	0.0146
OLS Regression Intercept	7.6660

Statistically significant evidence of an increasing trend at the specified level of significance.



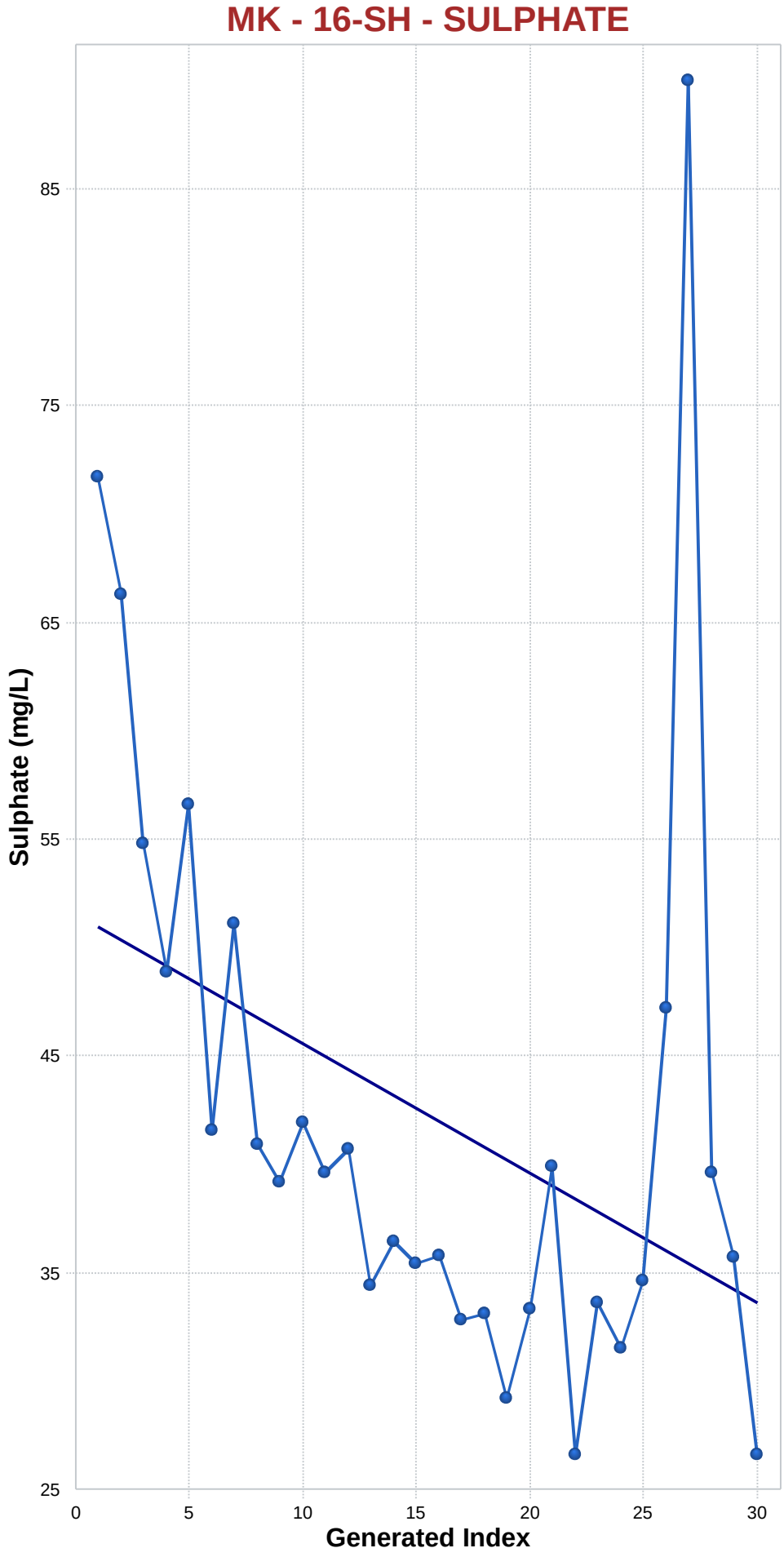
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0417
Standardized Value of S	2.5874
M-K Test Value (S)	146
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0048

OLS Regression Line (Blue)

OLS Regression Slope	0.2725
OLS Regression Intercept	21.3099

Statistically significant evidence of an increasing trend at the specified level of significance.



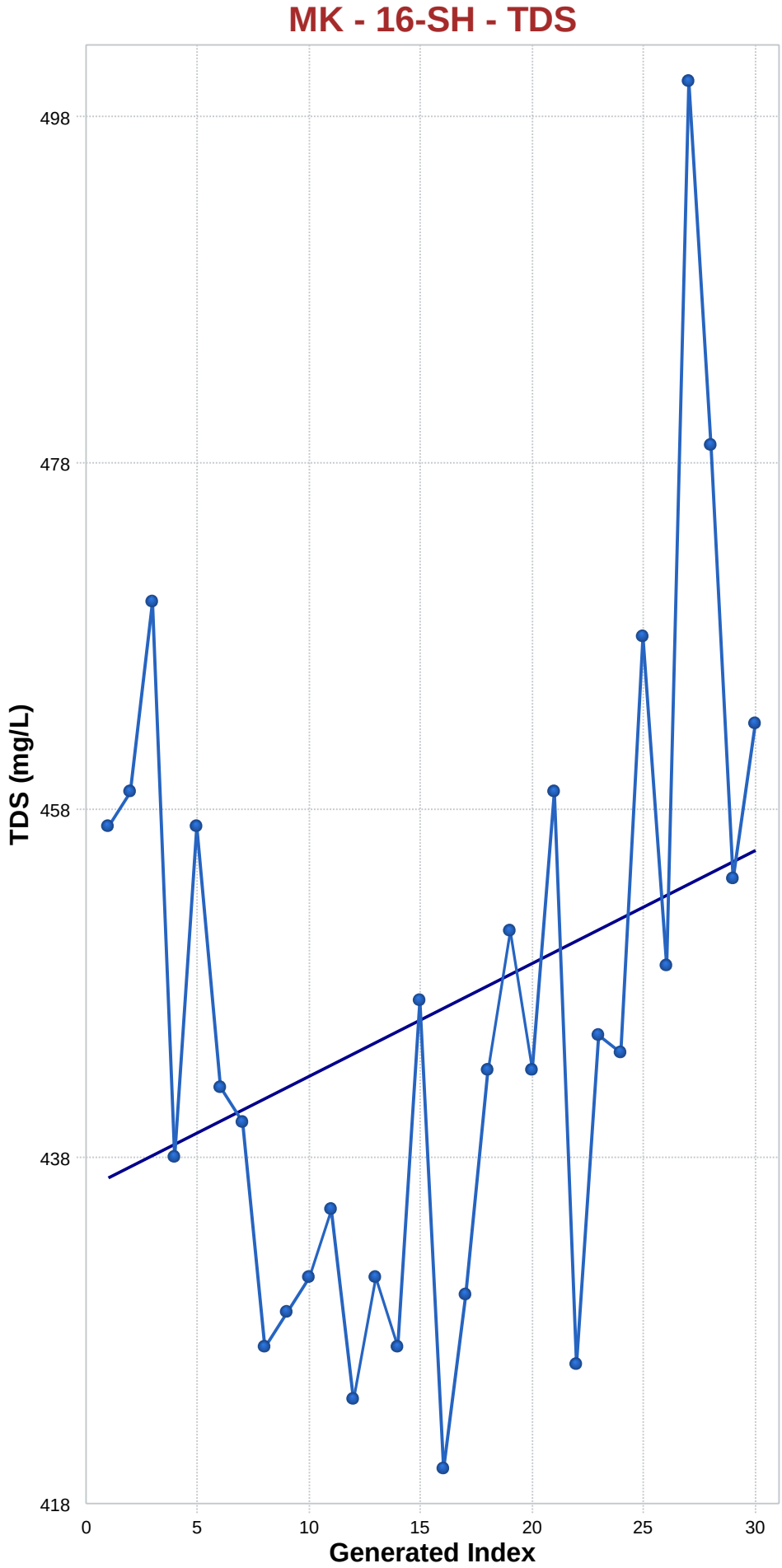
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0327
Standardized Value of S	-3.7478
M-K Test Value (S)	-211
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.5966
OLS Regression Intercept	51.6476

Statistically significant evidence of a decreasing trend at the specified level of significance.



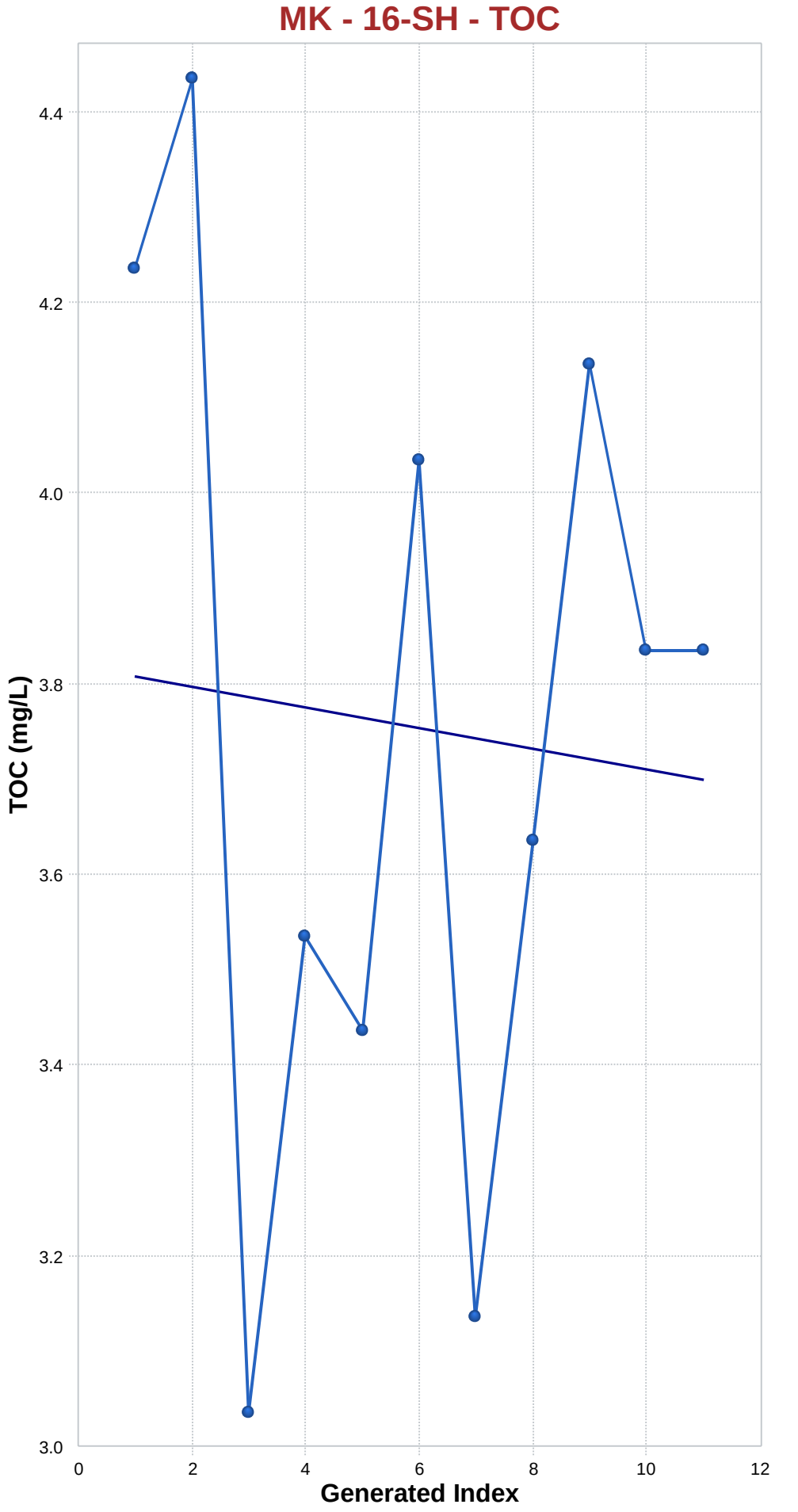
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0060
Standardized Value of S	1.4820
M-K Test Value (S)	84
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0692

OLS Regression Line (Blue)

OLS Regression Slope	0.6509
OLS Regression Intercept	436.1770

Insufficient statistical evidence of a significant trend at the specified level of significance.



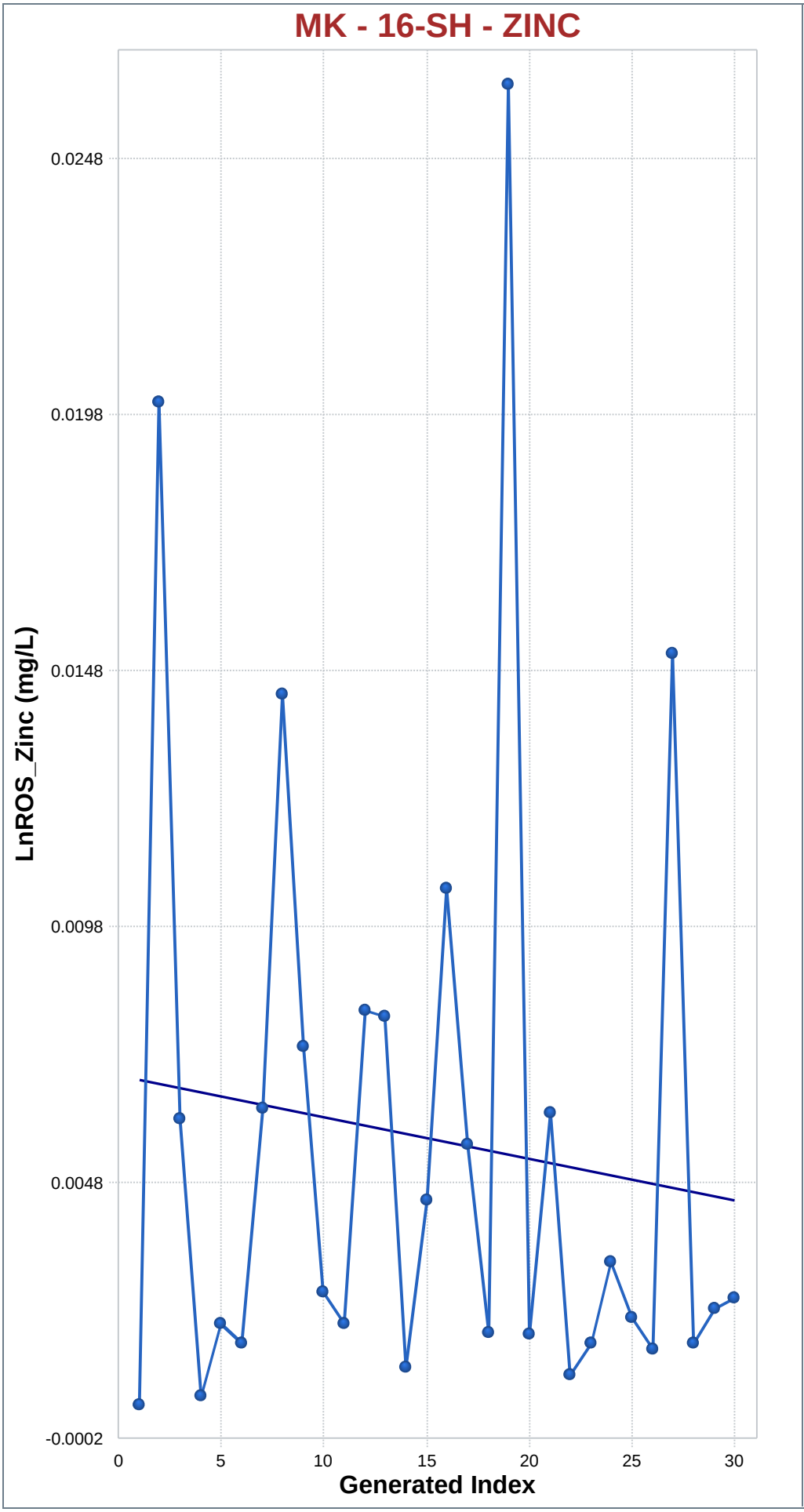
Mann-Kendall Trend Analysis

n	11
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	12.8062
Standardized Value of S	
M-K Test Value (S)	0
Tabulated p-value	0.5000
Approximate p-value	

OLS Regression Line (Blue)

OLS Regression Slope	-0.0109
OLS Regression Intercept	3.7836

Insufficient statistical evidence of a significant trend at the specified level of significance.



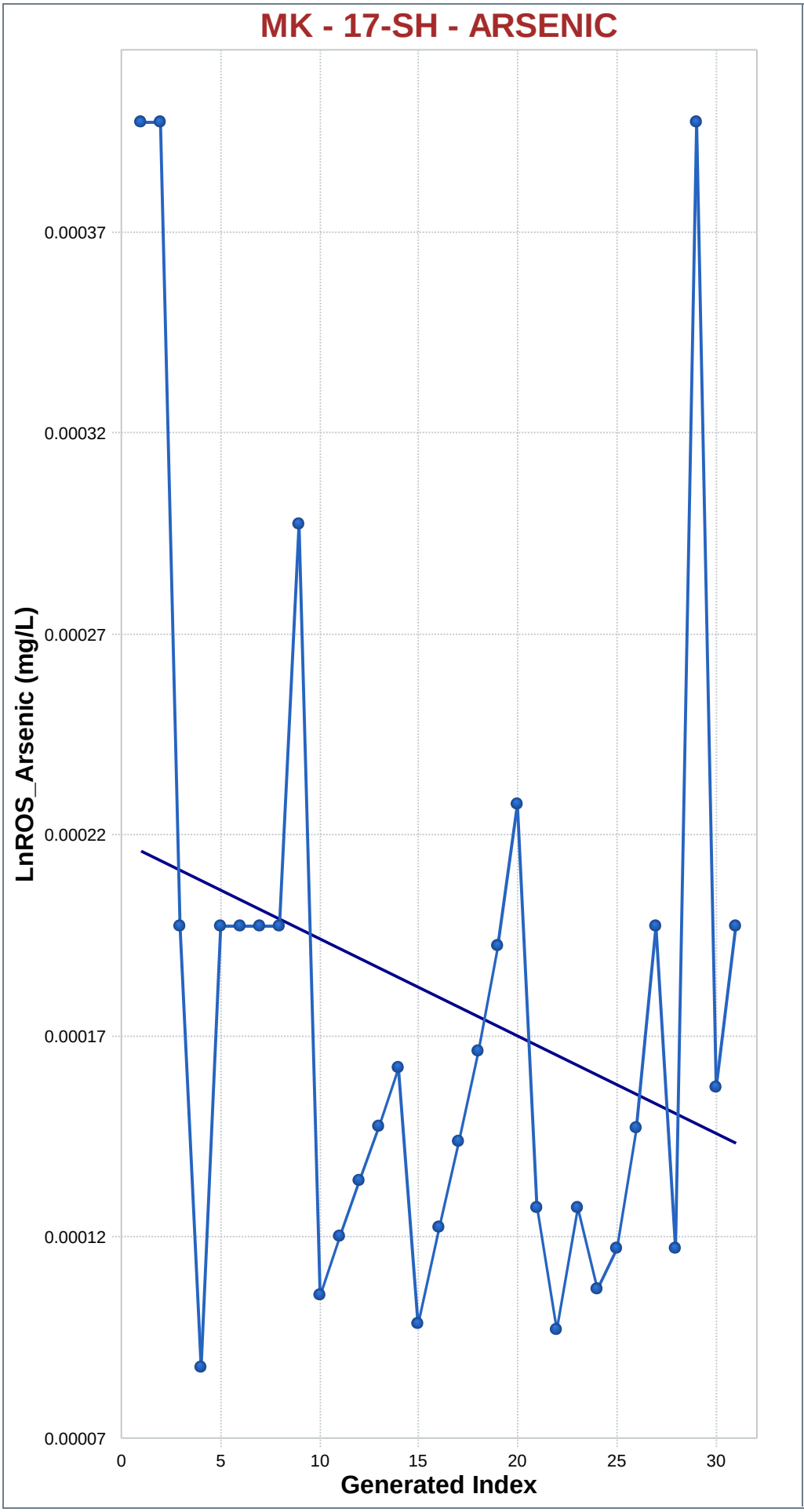
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0089
Standardized Value of S	-0.3928
M-K Test Value (S)	-23
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3472

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0069

Insufficient statistical evidence of a significant trend at the specified level of significance.



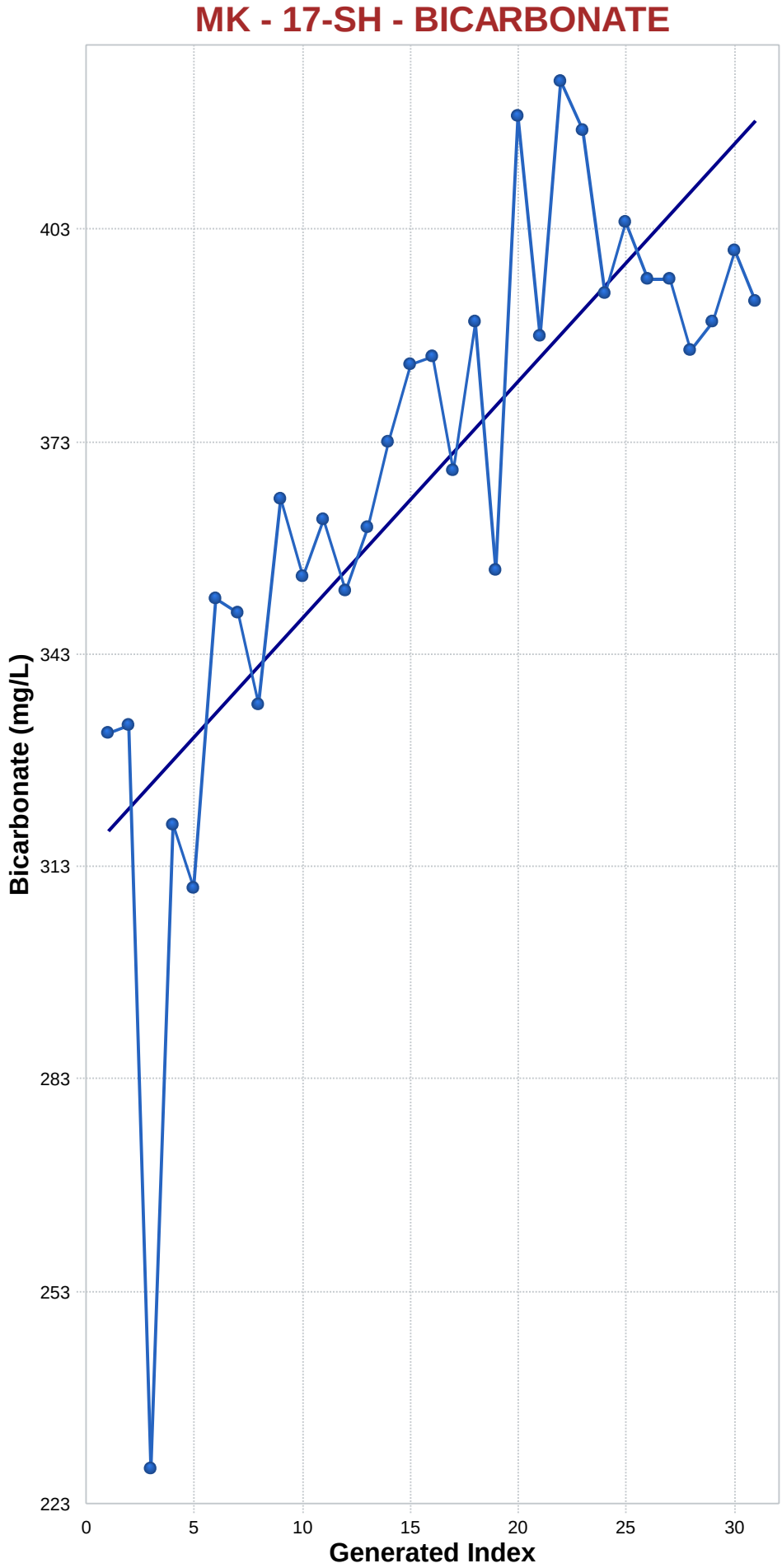
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.4095
Standardized Value of S	-1.1300
M-K Test Value (S)	-67
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1292

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0002

Insufficient statistical evidence of a significant trend at the specified level of significance.



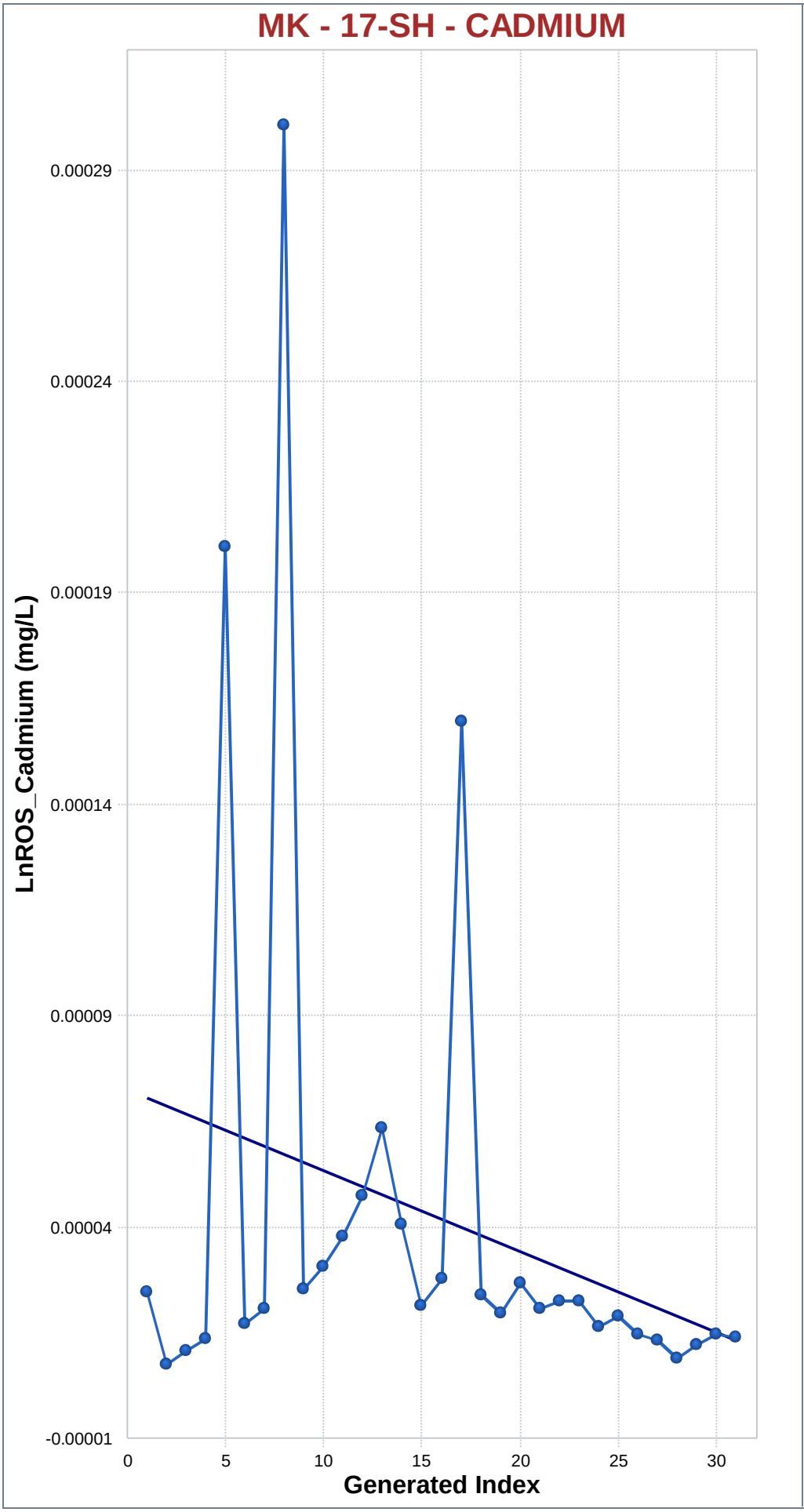
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8189
Standardized Value of S	5.3384
M-K Test Value (S)	315
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	3.3472
OLS Regression Intercept	314.6710

Statistically significant evidence of an increasing trend at the specified level of significance.



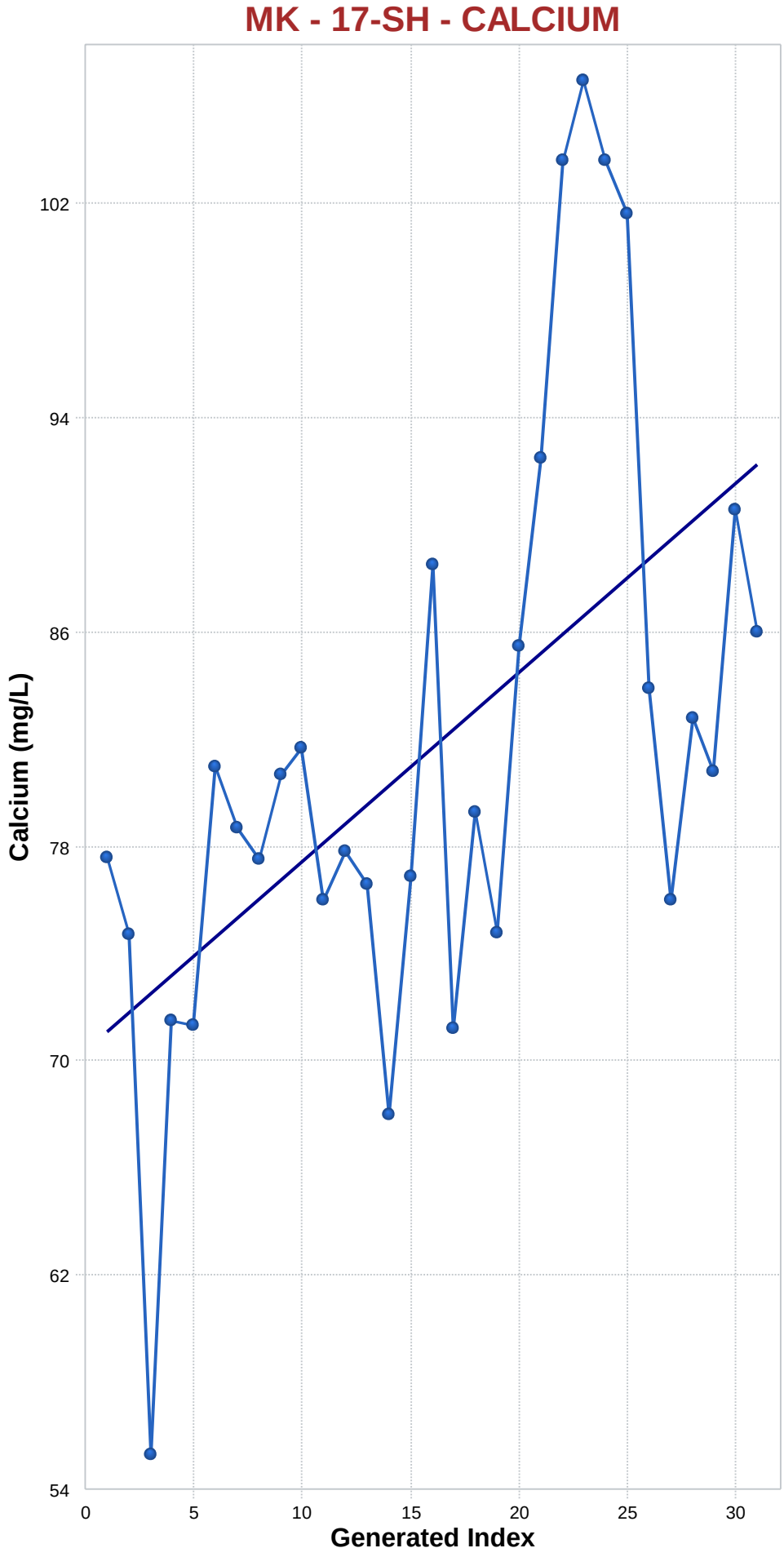
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8189
Standardized Value of S	-2.1762
M-K Test Value (S)	-129
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0148

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0001

Statistically significant evidence of a decreasing trend at the specified level of significance.



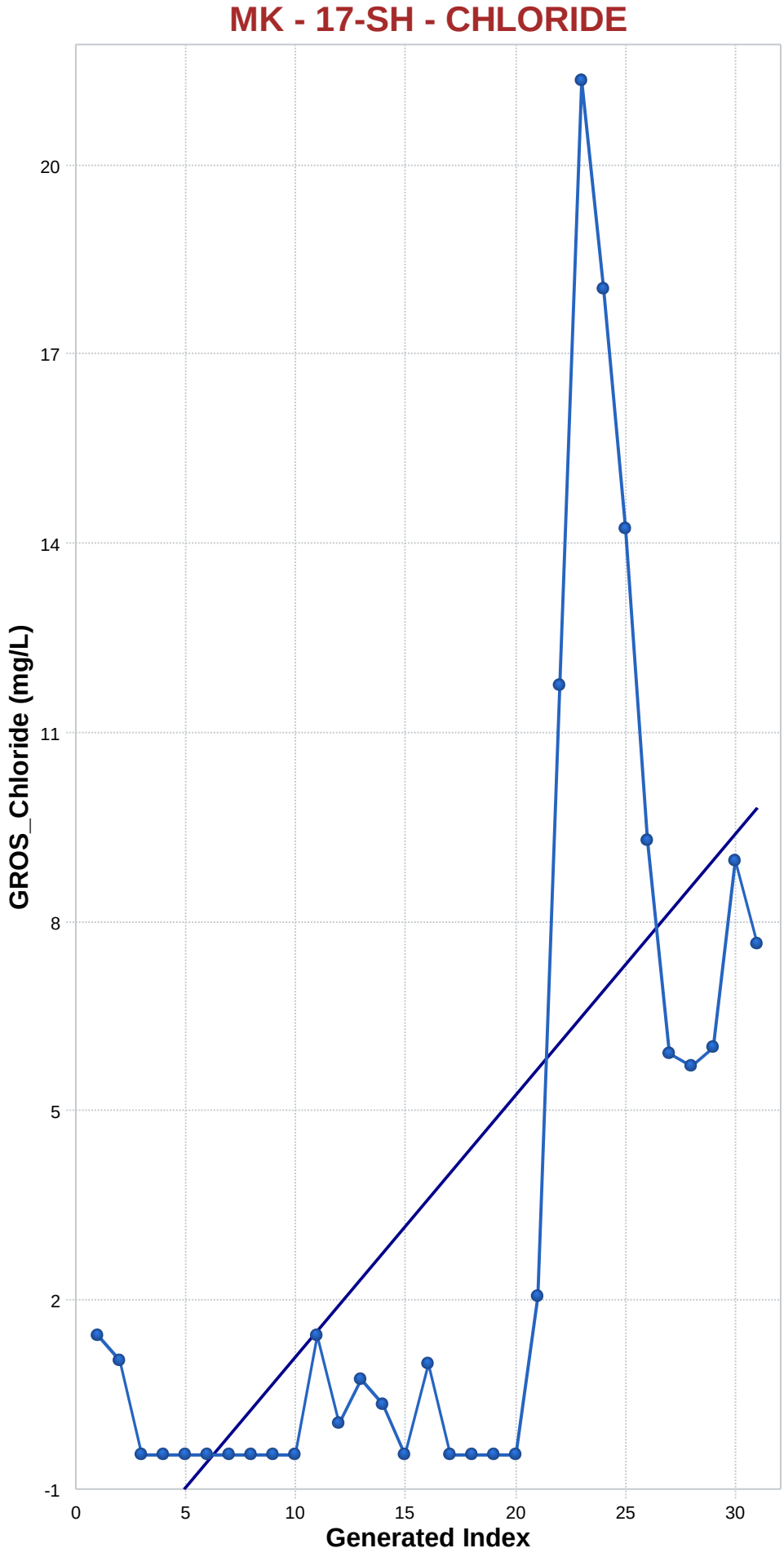
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8189
Standardized Value of S	3.0942
M-K Test Value (S)	183
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0010

OLS Regression Line (Blue)

OLS Regression Slope	0.7052
OLS Regression Intercept	70.8142

Statistically significant evidence of an increasing trend at the specified level of significance.



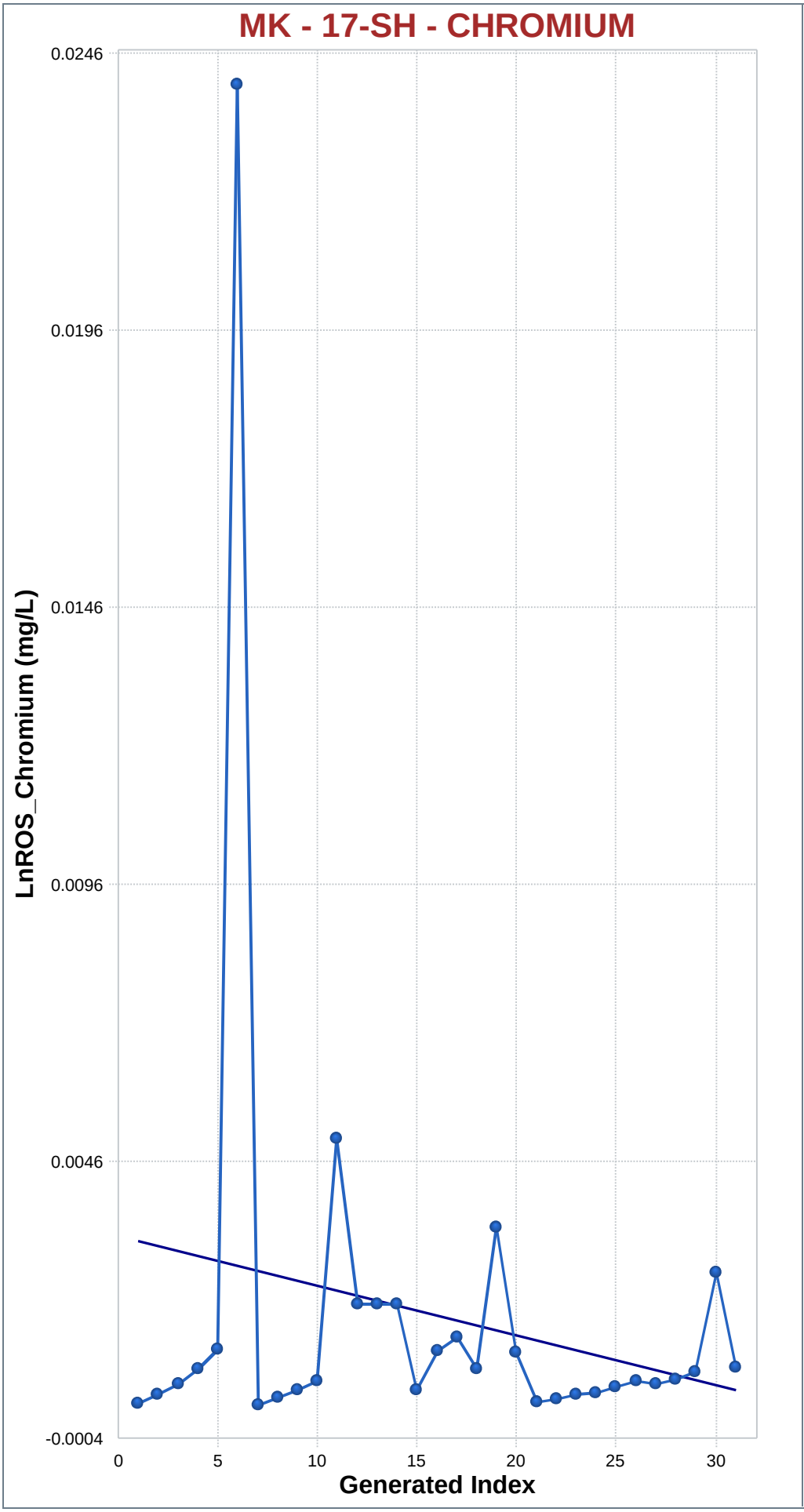
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.4978
Standardized Value of S	3.3453
M-K Test Value (S)	190
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0004

OLS Regression Line (Blue)

OLS Regression Slope	0.4158
OLS Regression Intercept	-2.6072

Statistically significant evidence of an increasing trend at the specified level of significance.



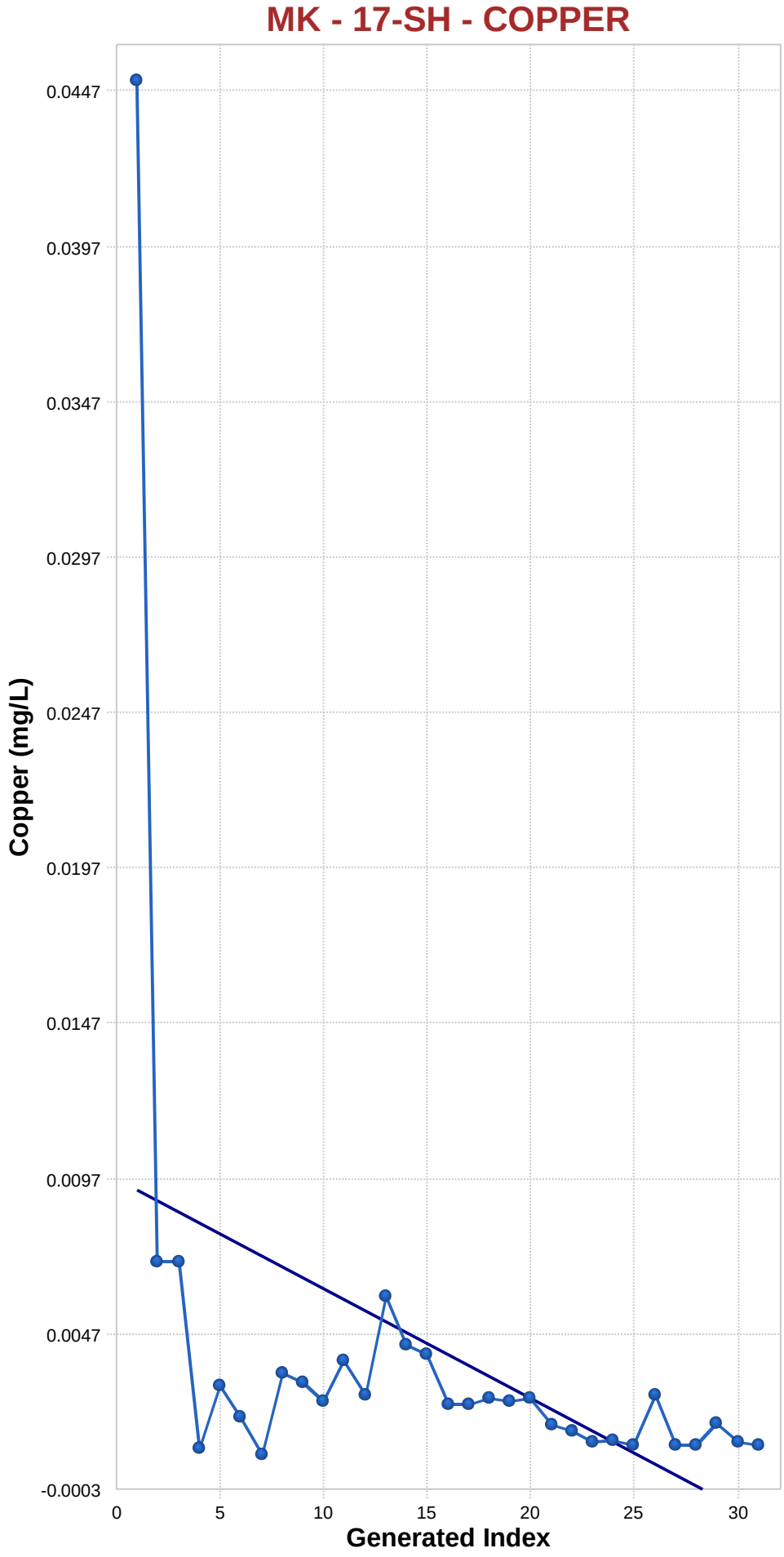
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8048
Standardized Value of S	0.5952
M-K Test Value (S)	36
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2759

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0033

Insufficient statistical evidence of a significant trend at the specified level of significance.



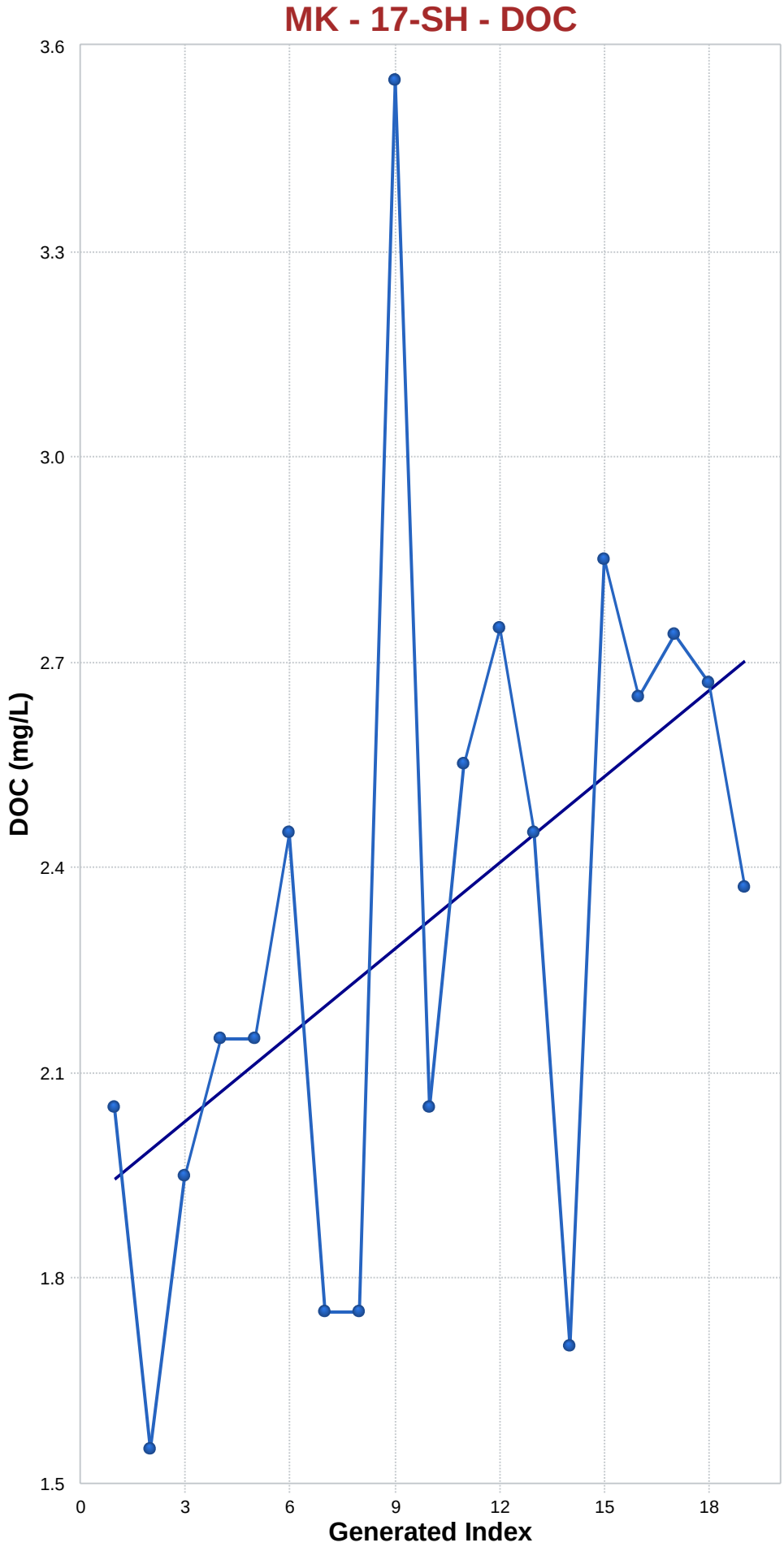
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.7849
Standardized Value of S	-3.5723
M-K Test Value (S)	-211
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	-0.0004
OLS Regression Intercept	0.0097

Statistically significant evidence of a decreasing trend at the specified level of significance.



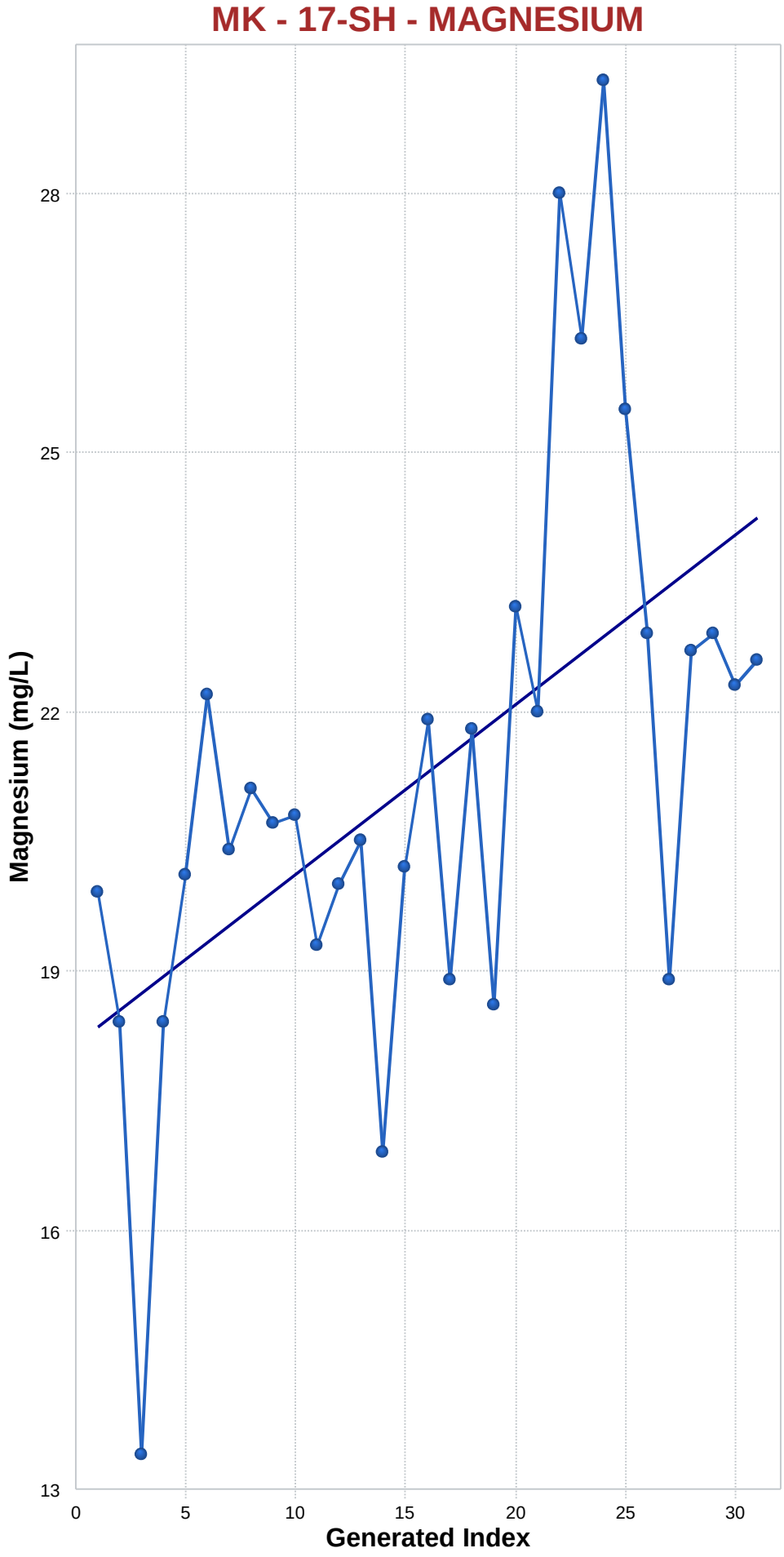
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5132
Standardized Value of S	2.1043
M-K Test Value (S)	61
Tabulated p-value	0.0170
Approximate p-value	0.0177

OLS Regression Line (Blue)

OLS Regression Slope	0.0421
OLS Regression Intercept	1.9521

Statistically significant evidence of an increasing trend at the specified level of significance.



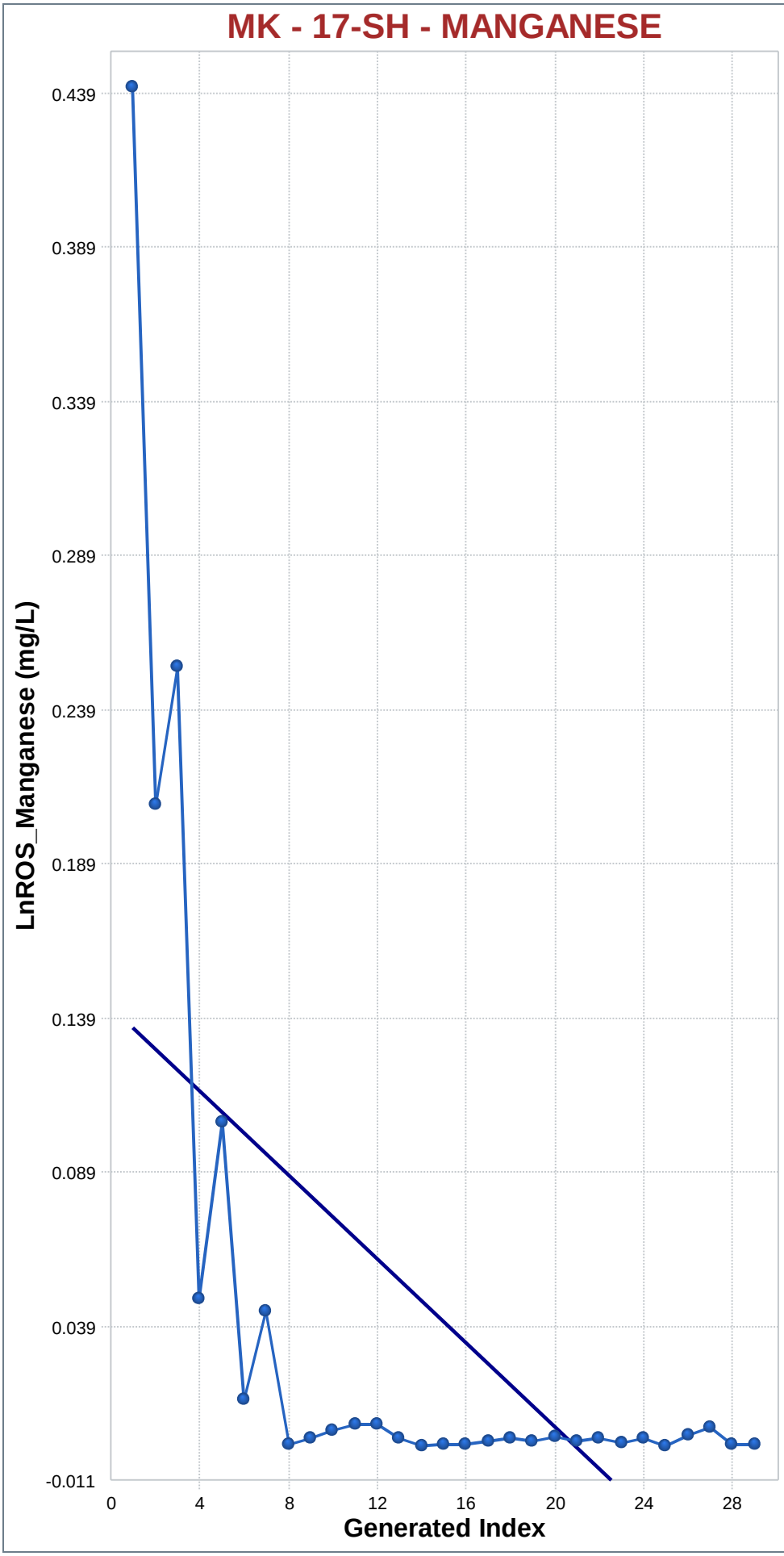
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8104
Standardized Value of S	3.3497
M-K Test Value (S)	198
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0004

OLS Regression Line (Blue)

OLS Regression Slope	0.1964
OLS Regression Intercept	18.3516

Statistically significant evidence of an increasing trend at the specified level of significance.



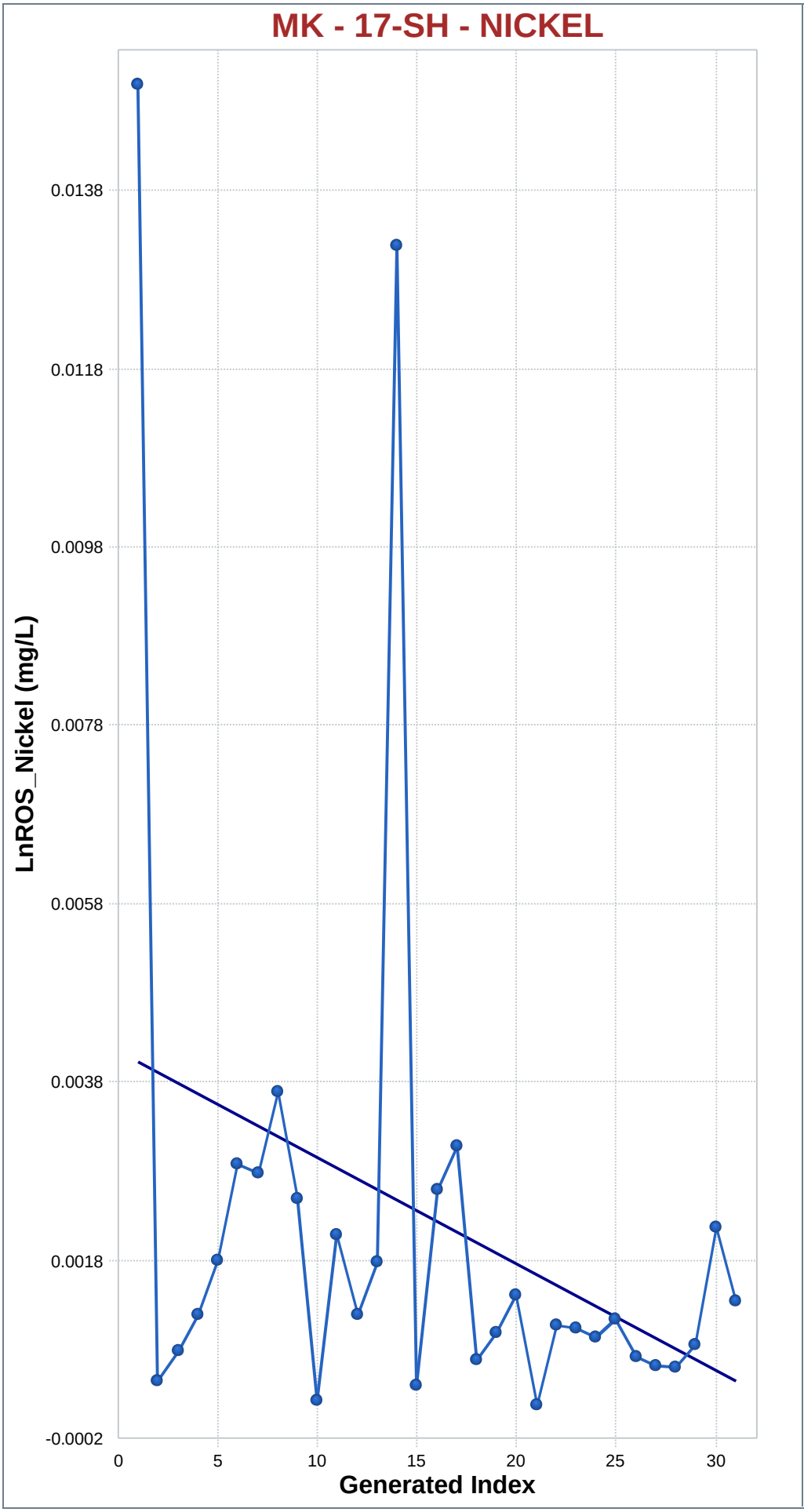
Mann-Kendall Trend Analysis

n	29
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	53.3010
Standardized Value of S	-3.5647
M-K Test Value (S)	-191
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	-0.0068
OLS Regression Intercept	0.1427

Statistically significant evidence of a decreasing trend at the specified level of significance.



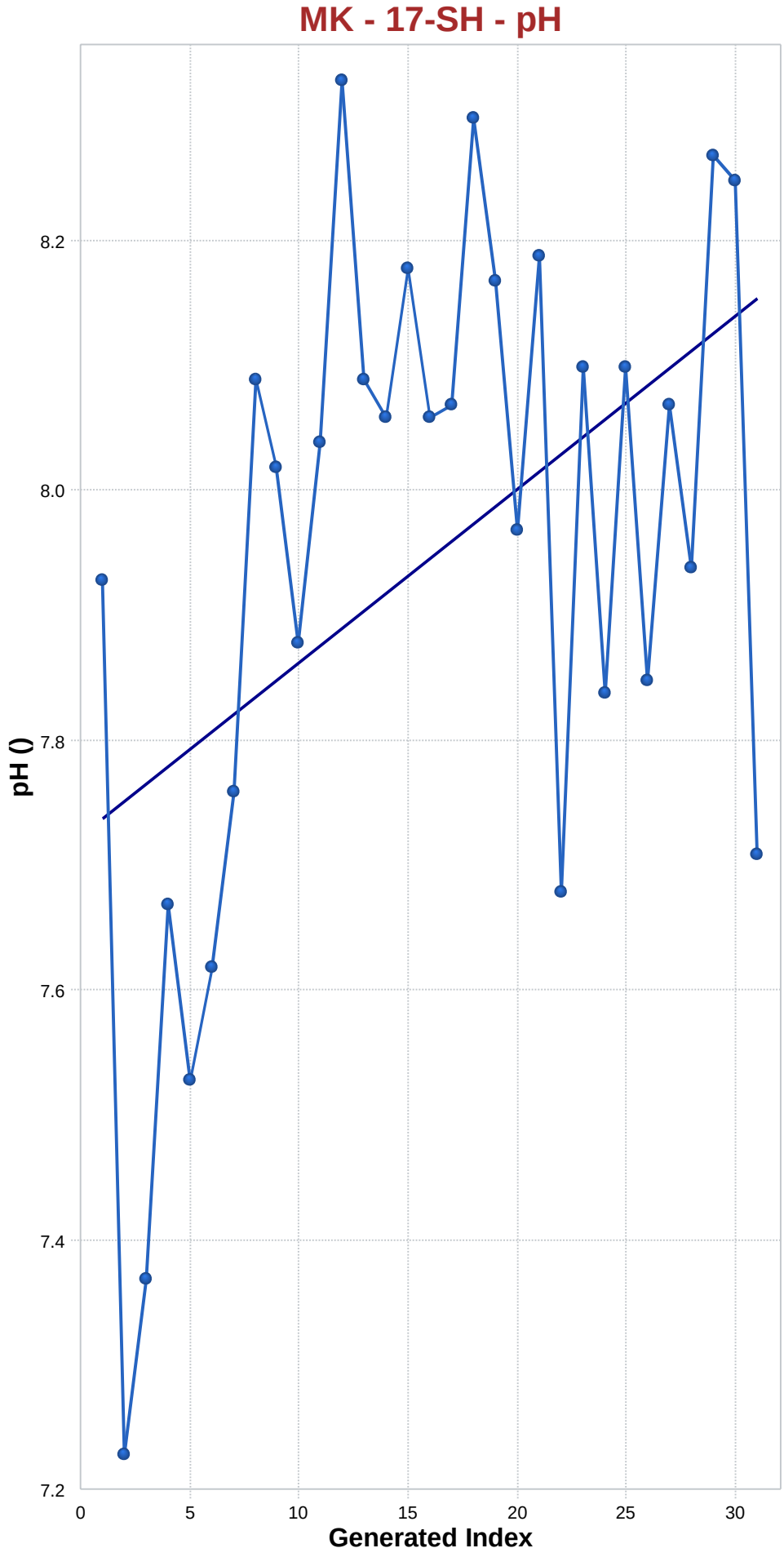
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8359
Standardized Value of S	-1.8016
M-K Test Value (S)	-107
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0358

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0042

Statistically significant evidence of a decreasing trend at the specified level of significance.



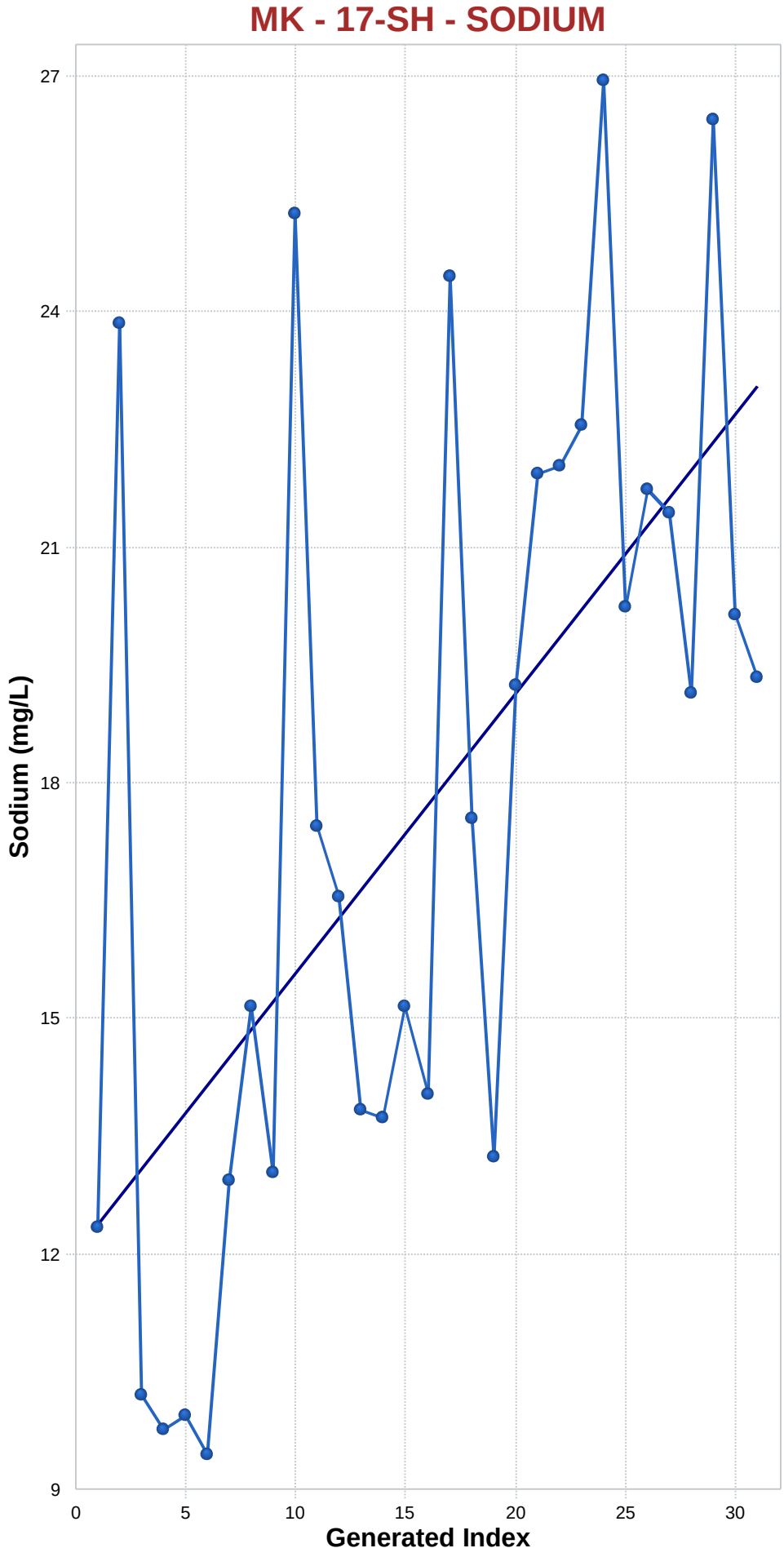
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8019
Standardized Value of S	2.5169
M-K Test Value (S)	149
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0059

OLS Regression Line (Blue)

OLS Regression Slope	0.0139
OLS Regression Intercept	7.7448

Statistically significant evidence of an increasing trend at the specified level of significance.



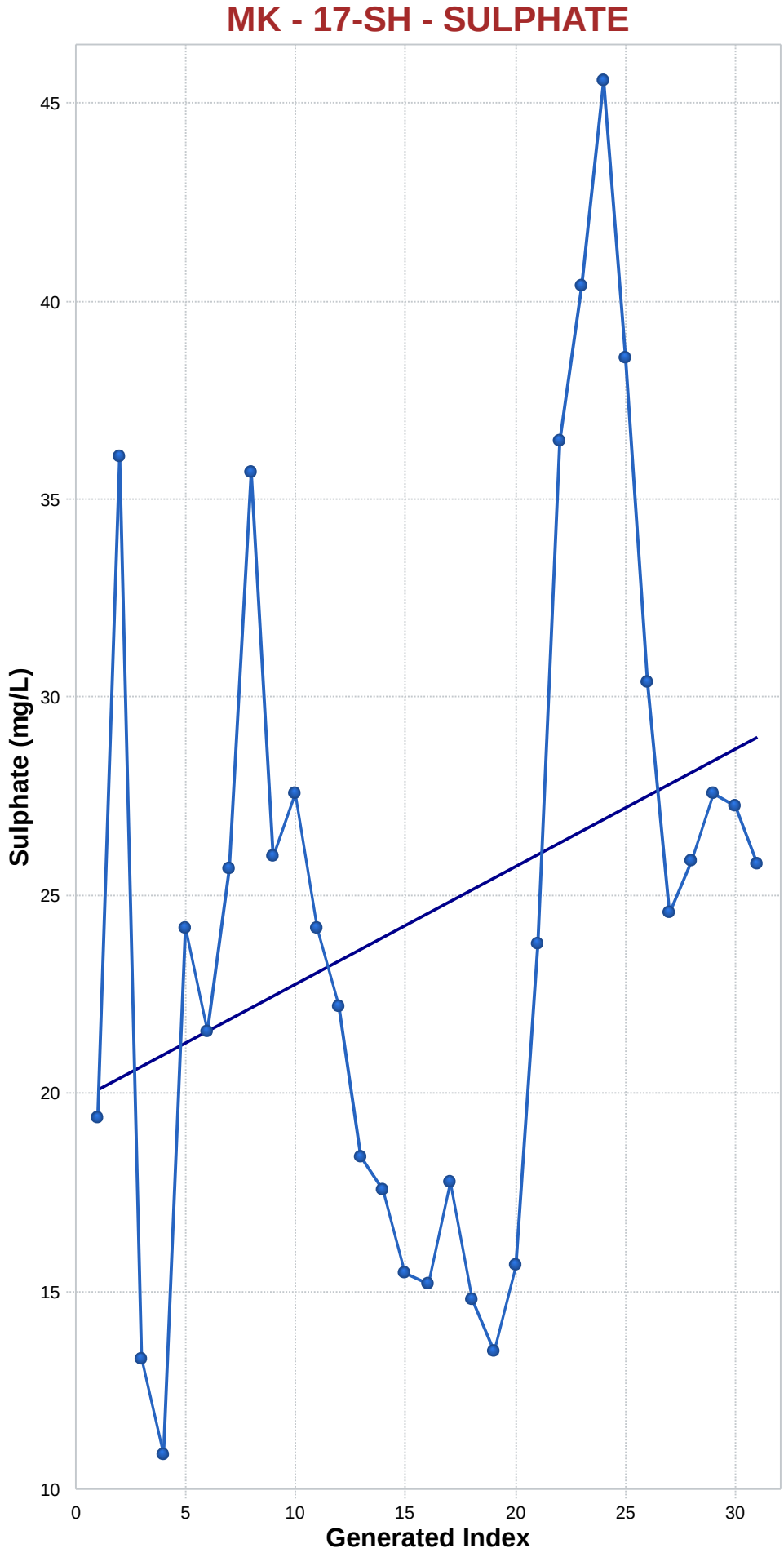
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8274
Standardized Value of S	3.5528
M-K Test Value (S)	210
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	0.3557
OLS Regression Intercept	11.5788

Statistically significant evidence of an increasing trend at the specified level of significance.



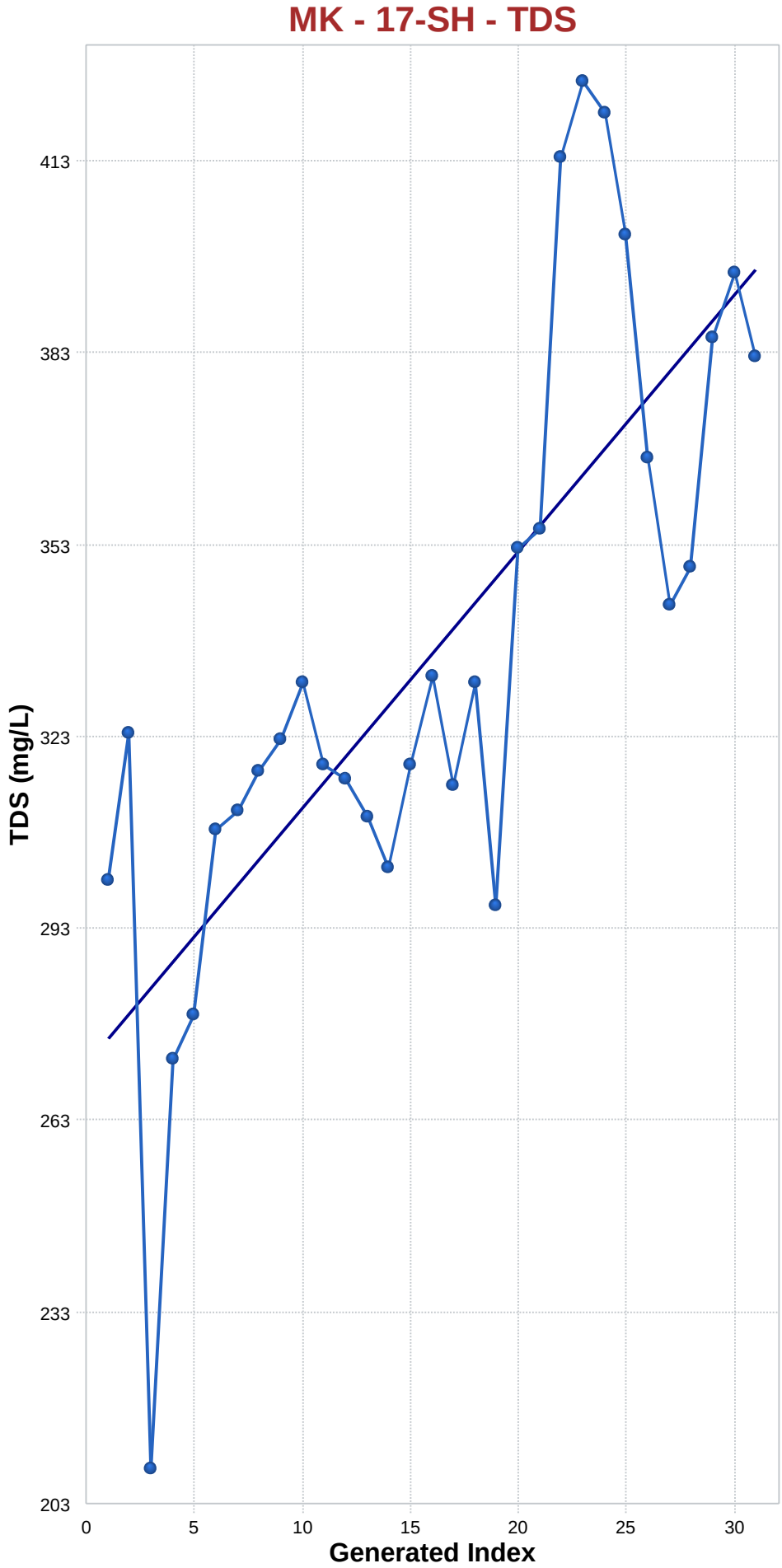
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8189
Standardized Value of S	1.4281
M-K Test Value (S)	85
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0766

OLS Regression Line (Blue)

OLS Regression Slope	0.2962
OLS Regression Intercept	19.3381

Insufficient statistical evidence of a significant trend at the specified level of significance.



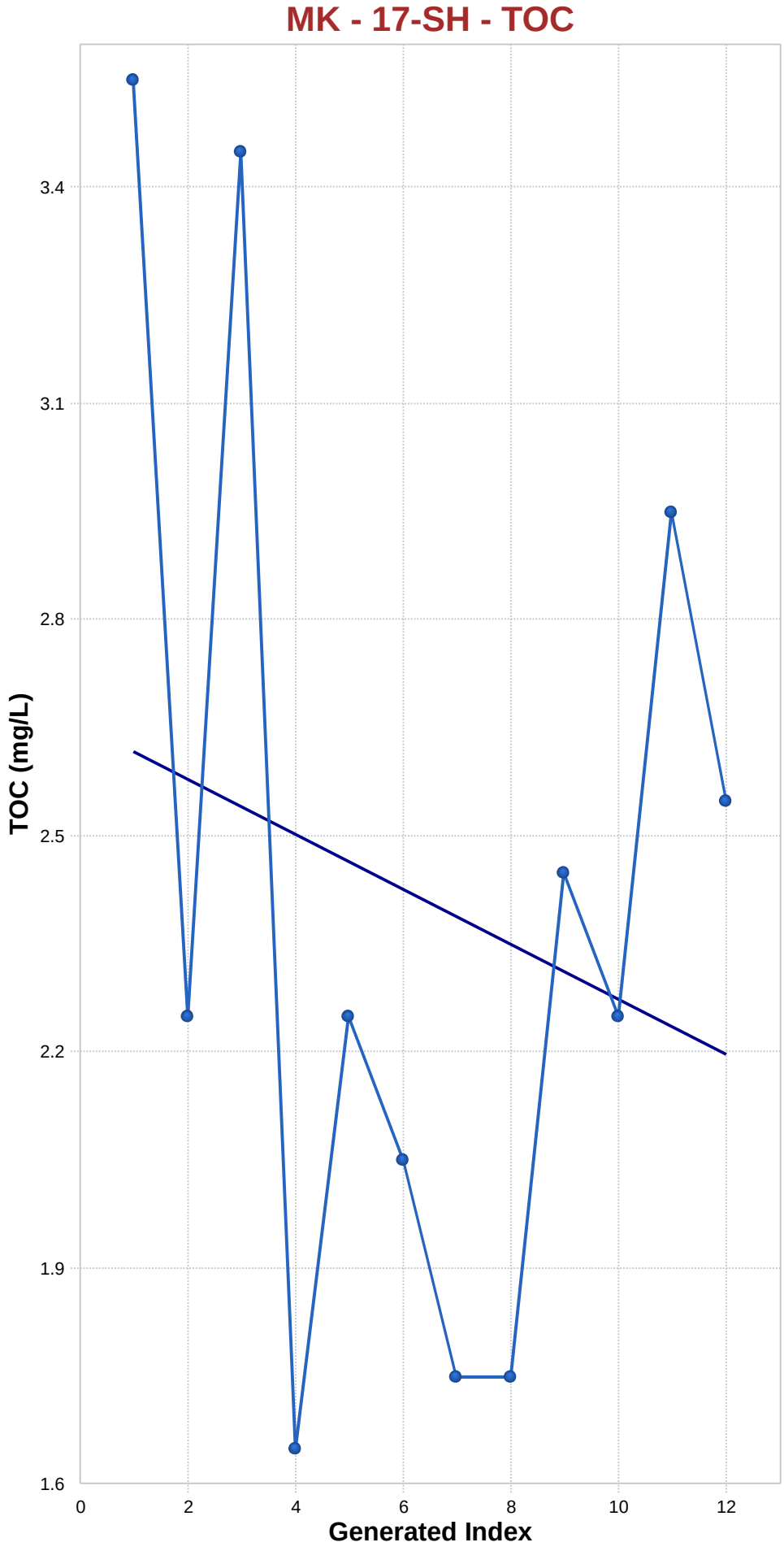
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8189
Standardized Value of S	4.5564
M-K Test Value (S)	269
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	4.0065
OLS Regression Intercept	271.2194

Statistically significant evidence of an increasing trend at the specified level of significance.



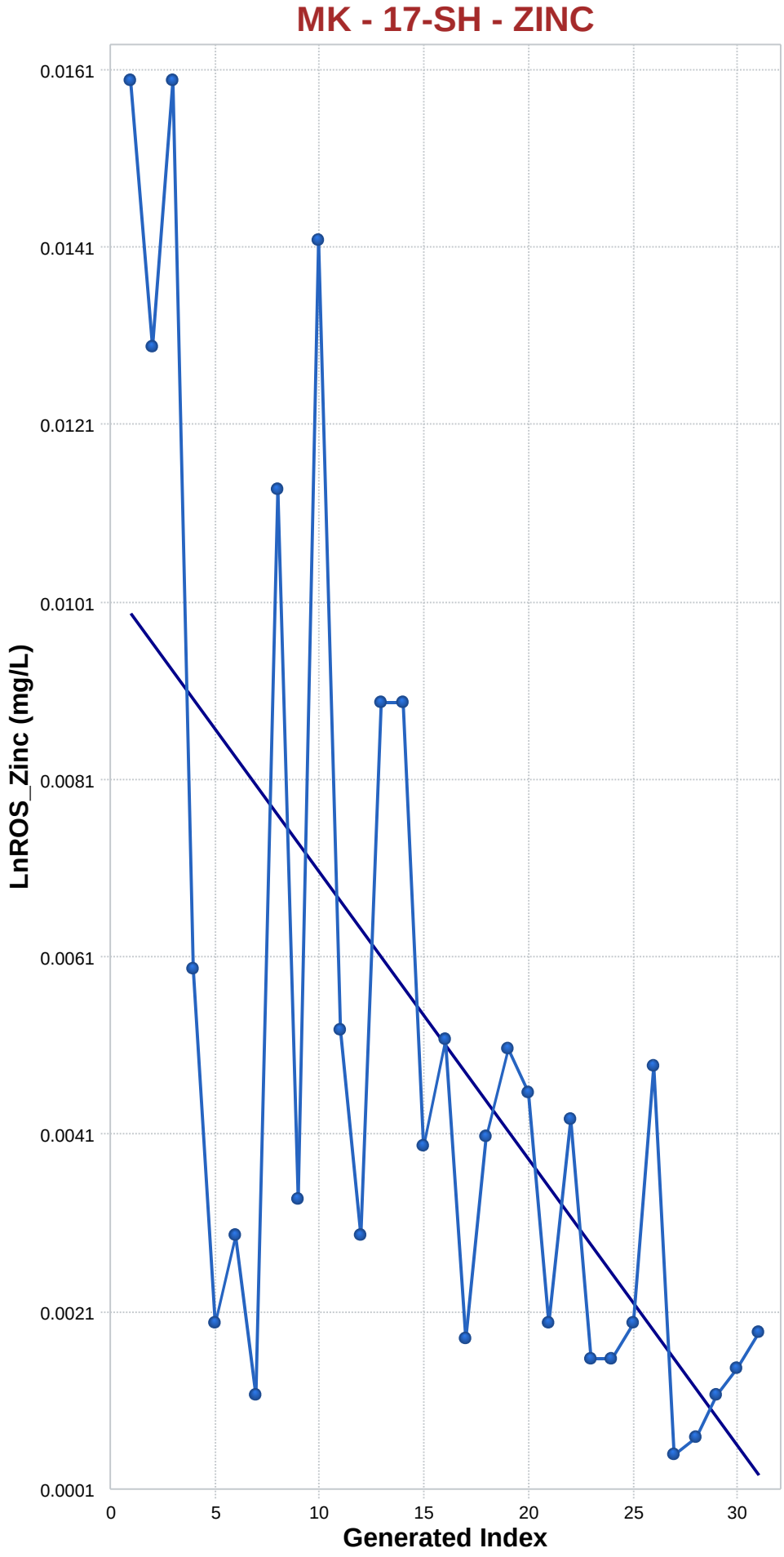
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.4222
Standardized Value of S	
M-K Test Value (S)	0
Tabulated p-value	0.5270
Approximate p-value	

OLS Regression Line (Blue)

OLS Regression Slope	-0.0381
OLS Regression Intercept	2.6061

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.7622
Standardized Value of S	-3.7779
M-K Test Value (S)	-223
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0003
OLS Regression Intercept	0.0103

Statistically significant evidence of a decreasing trend at the specified level of significance.

AECOM

App G5 - Sen's Slope/Mann-Kendall Trend Analysis Output – All Data - Intermediate

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/7/2025 2:23:12 PM
4	From File	2024-IntermediateProUCL_b.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	01A-IN	
9	Sulphate (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	46
13	Number of Distinct Observations	44
14	Minimum	0.3
15	Maximum	182
16	Mean of Raw Data	68.81
17	Standard Deviation of Raw Data	49.68
18	Khat	0.882
19	Theta hat	78.01
20	Kstar	0.839
21	Theta star	82.01
22	Mean of Log Transformed Data	3.567
23	Standard Deviation of Log Transformed Data	1.693
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.972
28	Shapiro Wilk Test Statistic	0.927
29	Shapiro Wilk Critical (0.05) Value	0.945
30	Approximate Shapiro Wilk P Value	0.00757
31	Lilliefors Test Statistic	0.127
32	Lilliefors Critical (0.05) Value	0.129
33	Data appear Approximate Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.93
38	A-D Test Statistic	2.615
39	A-D Critical (0.05) Value	0.784
40	K-S Test Statistic	0.235
41	K-S Critical(0.05) Value	0.135
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.872
47	Shapiro Wilk Test Statistic	0.755
48	Shapiro Wilk Critical (0.05) Value	0.945
49	Approximate Shapiro Wilk P Value	1.4937E-9
50	Lilliefors Test Statistic	0.28
51	Lilliefors Critical (0.05) Value	0.129
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Iron (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	29						
58					Number of Distinct Observations	28						
59					Minimum	0.01						
60					Maximum	33.8						
61					Mean of Raw Data	12.75						
62					Standard Deviation of Raw Data	11.46						
63					Khat	0.6						
64					Theta hat	21.23						
65					Kstar	0.561						
66					Theta star	22.71						
67					Mean of Log Transformed Data	1.517						
68					Standard Deviation of Log Transformed Data	2.209						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.95						
73					Shapiro Wilk Test Statistic	0.88						
74					Shapiro Wilk Critical (0.05) Value	0.926						
75					Approximate Shapiro Wilk P Value	0.00312						
76					Lilliefors Test Statistic	0.158						
77					Lilliefors Critical (0.05) Value	0.161						
78	Data appear Approximate Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.891						
83					A-D Test Statistic	0.858						
84					A-D Critical (0.05) Value	0.8						
85					K-S Test Statistic	0.148						
86					K-S Critical(0.05) Value	0.171						
87	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.899						
92					Shapiro Wilk Test Statistic	0.805						
93					Shapiro Wilk Critical (0.05) Value	0.926						
94					Approximate Shapiro Wilk P Value	5.1787E-5						
95					Lilliefors Test Statistic	0.196						
96					Lilliefors Critical (0.05) Value	0.161						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Copper (mg/L)											
100												
101				Raw Statistics								
102					Number of Valid Observations	47						
103					Number of Distinct Observations	30						
104					Minimum	1.0000E-4						
105					Maximum	0.109						
106					Mean of Raw Data	0.00508						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Standard Deviation of Raw Data	0.0158						
108					Khat	0.58						
109					Theta hat	0.00876						
110					Kstar	0.557						
111					Theta star	0.00912						
112					Mean of Log Transformed Data	-6.353						
113					Standard Deviation of Log Transformed Data	1.301						
114												
115			Normal GOF Test Results									
116												
117					Correlation Coefficient R	0.486						
118					Shapiro Wilk Test Statistic	0.279						
119					Shapiro Wilk Critical (0.05) Value	0.946						
120					Approximate Shapiro Wilk P Value	0						
121					Lilliefors Test Statistic	0.376						
122					Lilliefors Critical (0.05) Value	0.128						
123	Data not Normal at (0.05) Significance Level											
124												
125			Gamma GOF Test Results									
126												
127					Correlation Coefficient R	0.744						
128					A-D Test Statistic	2.618						
129					A-D Critical (0.05) Value	0.807						
130					K-S Test Statistic	0.206						
131					K-S Critical(0.05) Value	0.136						
132	Data not Gamma Distributed at (0.05) Significance Level											
133												
134			Lognormal GOF Test Results									
135												
136					Correlation Coefficient R	0.984						
137					Shapiro Wilk Test Statistic	0.98						
138					Shapiro Wilk Critical (0.05) Value	0.946						
139					Approximate Shapiro Wilk P Value	0.726						
140					Lilliefors Test Statistic	0.0812						
141					Lilliefors Critical (0.05) Value	0.128						
142	Data appear Lognormal at (0.05) Significance Level											
143												
144	Nickel (mg/L)											
145												
146			Raw Statistics									
147					Number of Valid Observations	46						
148					Number of Distinct Observations	36						
149					Minimum	5.0000E-4						
150					Maximum	0.13						
151					Mean of Raw Data	0.0118						
152					Standard Deviation of Raw Data	0.0207						
153					Khat	0.722						
154					Theta hat	0.0163						
155					Kstar	0.689						
156					Theta star	0.0171						
157					Mean of Log Transformed Data	-5.277						
158					Standard Deviation of Log Transformed Data	1.359						
159												

	A	B	C	D	E	F	G	H	I	J	K	L
160	Normal GOF Test Results											
161												
162					Correlation Coefficient R	0.69						
163					Shapiro Wilk Test Statistic	0.514						
164					Shapiro Wilk Critical (0.05) Value	0.945						
165					Approximate Shapiro Wilk P Value	1.110E-16						
166					Lilliefors Test Statistic	0.294						
167					Lilliefors Critical (0.05) Value	0.129						
168	Data not Normal at (0.05) Significance Level											
169												
170	Gamma GOF Test Results											
171												
172					Correlation Coefficient R	0.904						
173					A-D Test Statistic	0.987						
174					A-D Critical (0.05) Value	0.793						
175					K-S Test Statistic	0.136						
176					K-S Critical(0.05) Value	0.136						
177	Data not Gamma Distributed at (0.05) Significance Level											
178												
179	Lognormal GOF Test Results											
180												
181					Correlation Coefficient R	0.979						
182					Shapiro Wilk Test Statistic	0.947						
183					Shapiro Wilk Critical (0.05) Value	0.945						
184					Approximate Shapiro Wilk P Value	0.0544						
185					Lilliefors Test Statistic	0.159						
186					Lilliefors Critical (0.05) Value	0.129						
187	Data appear Approximate_Lognormal at (0.05) Significance Level											
188												
189	Zinc (mg/L)											
190												
191	Raw Statistics											
192					Number of Valid Observations	30						
193					Number of Distinct Observations	25						
194					Minimum	0.001						
195					Maximum	0.021						
196					Mean of Raw Data	0.00551						
197					Standard Deviation of Raw Data	0.00461						
198					Khat	1.7						
199					Theta hat	0.00324						
200					Kstar	1.552						
201					Theta star	0.00355						
202					Mean of Log Transformed Data	-5.523						
203					Standard Deviation of Log Transformed Data	0.847						
204												
205	Normal GOF Test Results											
206												
207					Correlation Coefficient R	0.907						
208					Shapiro Wilk Test Statistic	0.829						
209					Shapiro Wilk Critical (0.05) Value	0.927						
210					Approximate Shapiro Wilk P Value	1.4233E-4						
211					Lilliefors Test Statistic	0.164						
212					Lilliefors Critical (0.05) Value	0.159						

	A	B	C	D	E	F	G	H	I	J	K	L
213	Data not Normal at (0.05) Significance Level											
214												
215				Gamma GOF Test Results								
216												
217					Correlation Coefficient R	0.987						
218					A-D Test Statistic	0.382						
219					A-D Critical (0.05) Value	0.761						
220					K-S Test Statistic	0.11						
221					K-S Critical(0.05) Value	0.163						
222	Data appear Gamma Distributed at (0.05) Significance Level											
223												
224				Lognormal GOF Test Results								
225												
226					Correlation Coefficient R	0.982						
227					Shapiro Wilk Test Statistic	0.95						
228					Shapiro Wilk Critical (0.05) Value	0.927						
229					Approximate Shapiro Wilk P Value	0.203						
230					Lilliefors Test Statistic	0.119						
231					Lilliefors Critical (0.05) Value	0.159						
232	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/8/2025 8:26:36 AM
4	From File	2024-IntermediateProUCL_c.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	03-IN	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	46
13	Number of Distinct Observations	33
14	Minimum	0.5
15	Maximum	4.7
16	Mean of Raw Data	1.952
17	Standard Deviation of Raw Data	1.223
18	Khat	2.397
19	Theta hat	0.814
20	Kstar	2.255
21	Theta star	0.865
22	Mean of Log Transformed Data	0.446
23	Standard Deviation of Log Transformed Data	0.71
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.965
28	Shapiro Wilk Test Statistic	0.91
29	Shapiro Wilk Critical (0.05) Value	0.945
30	Approximate Shapiro Wilk P Value	0.00152
31	Lilliefors Test Statistic	0.118
32	Lilliefors Critical (0.05) Value	0.129
33	Data appear Approximate Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.977
38	A-D Test Statistic	0.68
39	A-D Critical (0.05) Value	0.759
40	K-S Test Statistic	0.0954
41	K-S Critical(0.05) Value	0.132
42	Data appear Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.972
47	Shapiro Wilk Test Statistic	0.918
48	Shapiro Wilk Critical (0.05) Value	0.945
49	Approximate Shapiro Wilk P Value	0.00325
50	Lilliefors Test Statistic	0.12
51	Lilliefors Critical (0.05) Value	0.129
52	Data appear Approximate_Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Manganese (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	22						
58					Number of Distinct Observations	18						
59					Minimum	5.1000E-4						
60					Maximum	0.347						
61					Mean of Raw Data	0.0623						
62					Standard Deviation of Raw Data	0.0828						
63					Khat	0.581						
64					Theta hat	0.107						
65					Kstar	0.532						
66					Theta star	0.117						
67					Mean of Log Transformed Data	-3.844						
68					Standard Deviation of Log Transformed Data	1.761						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.849						
73					Shapiro Wilk Test Statistic	0.733						
74					Shapiro Wilk Critical (0.05) Value	0.911						
75					Approximate Shapiro Wilk P Value	2.1498E-5						
76					Lilliefors Test Statistic	0.228						
77					Lilliefors Critical (0.05) Value	0.184						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.988						
83					A-D Test Statistic	0.65						
84					A-D Critical (0.05) Value	0.797						
85					K-S Test Statistic	0.181						
86					K-S Critical(0.05) Value	0.195						
87	Data appear Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.967						
92					Shapiro Wilk Test Statistic	0.93						
93					Shapiro Wilk Critical (0.05) Value	0.911						
94					Approximate Shapiro Wilk P Value	0.121						
95					Lilliefors Test Statistic	0.182						
96					Lilliefors Critical (0.05) Value	0.184						
97	Data appear Lognormal at (0.05) Significance Level											
98												
99	Chromium (mg/L)											
100												
101				Raw Statistics								
102					Number of Valid Observations	39						
103					Number of Distinct Observations	24						
104					Minimum	3.4000E-4						
105					Maximum	0.088						
106					Mean of Raw Data	0.00641						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Standard Deviation of Raw Data	0.0144						
108					Khat	0.638						
109					Theta hat	0.0101						
110					Kstar	0.606						
111					Theta star	0.0106						
112					Mean of Log Transformed Data	-6.009						
113					Standard Deviation of Log Transformed Data	1.249						
114												
115			Normal GOF Test Results									
116												
117					Correlation Coefficient R	0.613						
118					Shapiro Wilk Test Statistic	0.415						
119					Shapiro Wilk Critical (0.05) Value	0.939						
120					Approximate Shapiro Wilk P Value	1.221E-15						
121					Lilliefors Test Statistic	0.336						
122					Lilliefors Critical (0.05) Value	0.14						
123	Data not Normal at (0.05) Significance Level											
124												
125			Gamma GOF Test Results									
126												
127					Correlation Coefficient R	0.857						
128					A-D Test Statistic	3.072						
129					A-D Critical (0.05) Value	0.8						
130					K-S Test Statistic	0.227						
131					K-S Critical(0.05) Value	0.148						
132	Data not Gamma Distributed at (0.05) Significance Level											
133												
134			Lognormal GOF Test Results									
135												
136					Correlation Coefficient R	0.94						
137					Shapiro Wilk Test Statistic	0.886						
138					Shapiro Wilk Critical (0.05) Value	0.939						
139					Approximate Shapiro Wilk P Value	6.1802E-4						
140					Lilliefors Test Statistic	0.226						
141					Lilliefors Critical (0.05) Value	0.14						
142	Data not Lognormal at (0.05) Significance Level											
143												
144	Non-parametric GOF Test Results											
145												
146	Data do not follow a discernible distribution at (0.05) Level of Signif											
147												
148	Copper (mg/L)											
149												
150			Raw Statistics									
151					Number of Valid Observations	39						
152					Number of Distinct Observations	24						
153					Minimum	6.1000E-4						
154					Maximum	0.021						
155					Mean of Raw Data	0.00344						
156					Standard Deviation of Raw Data	0.00369						
157					Khat	1.466						
158					Theta hat	0.00235						
159					Kstar	1.37						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Theta star	0.00251						
161					Mean of Log Transformed Data	-6.052						
162					Standard Deviation of Log Transformed Data	0.851						
163												
164				Normal GOF Test Results								
165												
166					Correlation Coefficient R	0.812						
167					Shapiro Wilk Test Statistic	0.686						
168					Shapiro Wilk Critical (0.05) Value	0.939						
169					Approximate Shapiro Wilk P Value	8.919E-10						
170					Lilliefors Test Statistic	0.222						
171					Lilliefors Critical (0.05) Value	0.14						
172	Data not Normal at (0.05) Significance Level											
173												
174				Gamma GOF Test Results								
175												
176					Correlation Coefficient R	0.943						
177					A-D Test Statistic	0.905						
178					A-D Critical (0.05) Value	0.767						
179					K-S Test Statistic	0.136						
180					K-S Critical(0.05) Value	0.144						
181	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
182												
183				Lognormal GOF Test Results								
184												
185					Correlation Coefficient R	0.98						
186					Shapiro Wilk Test Statistic	0.953						
187					Shapiro Wilk Critical (0.05) Value	0.939						
188					Approximate Shapiro Wilk P Value	0.149						
189					Lilliefors Test Statistic	0.125						
190					Lilliefors Critical (0.05) Value	0.14						
191	Data appear Lognormal at (0.05) Significance Level											
192												
193	Arsenic (mg/L)											
194												
195				Raw Statistics								
196					Number of Valid Observations	39						
197					Number of Distinct Observations	15						
198					Minimum	1.6000E-4						
199					Maximum	0.00245						
200					Mean of Raw Data	4.8538E-4						
201					Standard Deviation of Raw Data	4.2184E-4						
202					Khat	2.255						
203					Theta hat	2.1525E-4						
204					Kstar	2.099						
205					Theta star	2.3129E-4						
206					Mean of Log Transformed Data	-7.868						
207					Standard Deviation of Log Transformed Data	0.657						
208												
209				Normal GOF Test Results								
210												
211					Correlation Coefficient R	0.816						
212					Shapiro Wilk Test Statistic	0.692						

213	Shapiro Wilk Critical (0.05) Value	0.939
214	Approximate Shapiro Wilk P Value	1.2193E-9
215	Lilliefors Test Statistic	0.22
216	Lilliefors Critical (0.05) Value	0.14
217	Data not Normal at (0.05) Significance Level	
218		
219	Gamma GOF Test Results	
220		
221	Correlation Coefficient R	0.93
222	A-D Test Statistic	1.279
223	A-D Critical (0.05) Value	0.758
224	K-S Test Statistic	0.151
225	K-S Critical(0.05) Value	0.143
226	Data not Gamma Distributed at (0.05) Significance Level	
227		
228	Lognormal GOF Test Results	
229		
230	Correlation Coefficient R	0.962
231	Shapiro Wilk Test Statistic	0.92
232	Shapiro Wilk Critical (0.05) Value	0.939
233	Approximate Shapiro Wilk P Value	0.00964
234	Lilliefors Test Statistic	0.159
235	Lilliefors Critical (0.05) Value	0.14
236	Data not Lognormal at (0.05) Significance Level	
237		
238	Non-parametric GOF Test Results	
239		
240	Data do not follow a discernible distribution at (0.05) Level of Signif	
241		
242	Nickel (mg/L)	
243		
244	Raw Statistics	
245	Number of Valid Observations	20
246	Number of Distinct Observations	17
247	Minimum	7.0000E-4
248	Maximum	0.036
249	Mean of Raw Data	0.00392
250	Standard Deviation of Raw Data	0.00771
251	Khat	0.941
252	Theta hat	0.00417
253	Kstar	0.833
254	Theta star	0.00471
255	Mean of Log Transformed Data	-6.159
256	Standard Deviation of Log Transformed Data	0.919
257		
258	Normal GOF Test Results	
259		
260	Correlation Coefficient R	0.602
261	Shapiro Wilk Test Statistic	0.392
262	Shapiro Wilk Critical (0.05) Value	0.905
263	Approximate Shapiro Wilk P Value	8.820E-10
264	Lilliefors Test Statistic	0.391
265	Lilliefors Critical (0.05) Value	0.192

	A	B	C	D	E	F	G	H	I	J	K	L
266	Data not Normal at (0.05) Significance Level											
267												
268				Gamma GOF Test Results								
269												
270					Correlation Coefficient R	0.815						
271					A-D Test Statistic	1.959						
272					A-D Critical (0.05) Value	0.771						
273					K-S Test Statistic	0.271						
274					K-S Critical(0.05) Value	0.2						
275	Data not Gamma Distributed at (0.05) Significance Level											
276												
277				Lognormal GOF Test Results								
278												
279					Correlation Coefficient R	0.928						
280					Shapiro Wilk Test Statistic	0.874						
281					Shapiro Wilk Critical (0.05) Value	0.905						
282					Approximate Shapiro Wilk P Value	0.0123						
283					Lilliefors Test Statistic	0.159						
284					Lilliefors Critical (0.05) Value	0.192						
285	Data appear Approximate_Lognormal at (0.05) Significance Level											
286												
287	Zinc (mg/L)											
288												
289				Raw Statistics								
290					Number of Valid Observations	20						
291					Number of Distinct Observations	17						
292					Minimum	0.001						
293					Maximum	0.036						
294					Mean of Raw Data	0.00509						
295					Standard Deviation of Raw Data	0.00752						
296					Khat	1.311						
297					Theta hat	0.00388						
298					Kstar	1.148						
299					Theta star	0.00444						
300					Mean of Log Transformed Data	-5.708						
301					Standard Deviation of Log Transformed Data	0.823						
302												
303				Normal GOF Test Results								
304												
305					Correlation Coefficient R	0.658						
306					Shapiro Wilk Test Statistic	0.463						
307					Shapiro Wilk Critical (0.05) Value	0.905						
308					Approximate Shapiro Wilk P Value	6.0683E-9						
309					Lilliefors Test Statistic	0.341						
310					Lilliefors Critical (0.05) Value	0.192						
311	Data not Normal at (0.05) Significance Level											
312												
313				Gamma GOF Test Results								
314												
315					Correlation Coefficient R	0.826						
316					A-D Test Statistic	1.196						
317					A-D Critical (0.05) Value	0.762						
318					K-S Test Statistic	0.2						

	A	B	C	D	E	F	G	H	I	J	K	L
319					K-S Critical(0.05) Value	0.198						
320	Data not Gamma Distributed at (0.05) Significance Level											
321												
322				Lognormal GOF Test Results								
323												
324					Correlation Coefficient R	0.953						
325					Shapiro Wilk Test Statistic	0.919						
326					Shapiro Wilk Critical (0.05) Value	0.905						
327					Approximate Shapiro Wilk P Value	0.0949						
328					Lilliefors Test Statistic	0.124						
329					Lilliefors Critical (0.05) Value	0.192						
330	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/8/2025 9:13:01 AM
4	From File	2024-IntermediateProUCL_d.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	14-IN	
9	Manganese (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	18
13	Number of Distinct Observations	18
14	Minimum	0.004
15	Maximum	0.727
16	Mean of Raw Data	0.33
17	Standard Deviation of Raw Data	0.249
18	Khat	1.108
19	Theta hat	0.298
20	Kstar	0.961
21	Theta star	0.344
22	Mean of Log Transformed Data	-1.622
23	Standard Deviation of Log Transformed Data	1.345
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.964
28	Shapiro Wilk Test Statistic	0.909
29	Shapiro Wilk Critical (0.05) Value	0.897
30	Approximate Shapiro Wilk P Value	0.106
31	Lilliefors Test Statistic	0.173
32	Lilliefors Critical (0.05) Value	0.202
33	Data appear Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.91
38	A-D Test Statistic	0.547
39	A-D Critical (0.05) Value	0.764
40	K-S Test Statistic	0.175
41	K-S Critical(0.05) Value	0.209
42	Data appear Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.915
47	Shapiro Wilk Test Statistic	0.844
48	Shapiro Wilk Critical (0.05) Value	0.897
49	Approximate Shapiro Wilk P Value	0.0057
50	Lilliefors Test Statistic	0.2
51	Lilliefors Critical (0.05) Value	0.202
52	Data appear Approximate_Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Arsenic (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	22						
58					Number of Distinct Observations	21						
59					Minimum	2.0000E-4						
60					Maximum	0.0052						
61					Mean of Raw Data	0.00288						
62					Standard Deviation of Raw Data	0.00103						
63					Khat	4.607						
64					Theta hat	6.2435E-4						
65					Kstar	4.009						
66					Theta star	7.1746E-4						
67					Mean of Log Transformed Data	-5.964						
68					Standard Deviation of Log Transformed Data	0.625						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.945						
73					Shapiro Wilk Test Statistic	0.911						
74					Shapiro Wilk Critical (0.05) Value	0.911						
75					Approximate Shapiro Wilk P Value	0.0479						
76					Lilliefors Test Statistic	0.191						
77					Lilliefors Critical (0.05) Value	0.184						
78	Data appear Approximate Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.937						
83					A-D Test Statistic	1.65						
84					A-D Critical (0.05) Value	0.747						
85					K-S Test Statistic	0.205						
86					K-S Critical(0.05) Value	0.186						
87	Data not Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.761						
92					Shapiro Wilk Test Statistic	0.611						
93					Shapiro Wilk Critical (0.05) Value	0.911						
94					Approximate Shapiro Wilk P Value	3.3441E-7						
95					Lilliefors Test Statistic	0.269						
96					Lilliefors Critical (0.05) Value	0.184						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Chromium (mg/L)											
100												
101				Raw Statistics								
102					Number of Valid Observations	22						
103					Number of Distinct Observations	16						
104					Minimum	2.0000E-4						
105					Maximum	0.0124						
106					Mean of Raw Data	0.00235						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Standard Deviation of Raw Data	0.00302						
108					Khat	1.024						
109					Theta hat	0.00229						
110					Kstar	0.914						
111					Theta star	0.00257						
112					Mean of Log Transformed Data	-6.617						
113					Standard Deviation of Log Transformed Data	1.051						
114												
115			Normal GOF Test Results									
116												
117					Correlation Coefficient R	0.805						
118					Shapiro Wilk Test Statistic	0.661						
119					Shapiro Wilk Critical (0.05) Value	0.911						
120					Approximate Shapiro Wilk P Value	1.6581E-6						
121					Lilliefors Test Statistic	0.303						
122					Lilliefors Critical (0.05) Value	0.184						
123	Data not Normal at (0.05) Significance Level											
124												
125			Gamma GOF Test Results									
126												
127					Correlation Coefficient R	0.964						
128					A-D Test Statistic	1.073						
129					A-D Critical (0.05) Value	0.77						
130					K-S Test Statistic	0.28						
131					K-S Critical(0.05) Value	0.191						
132	Data not Gamma Distributed at (0.05) Significance Level											
133												
134			Lognormal GOF Test Results									
135												
136					Correlation Coefficient R	0.977						
137					Shapiro Wilk Test Statistic	0.954						
138					Shapiro Wilk Critical (0.05) Value	0.911						
139					Approximate Shapiro Wilk P Value	0.367						
140					Lilliefors Test Statistic	0.227						
141					Lilliefors Critical (0.05) Value	0.184						
142	Data appear Approximate_Lognormal at (0.05) Significance Level											
143												
144	Nickel (mg/L)											
145												
146			Raw Statistics									
147					Number of Valid Observations	15						
148					Number of Distinct Observations	14						
149					Minimum	7.4000E-4						
150					Maximum	0.0047						
151					Mean of Raw Data	0.00224						
152					Standard Deviation of Raw Data	0.00109						
153					Khat	5.339						
154					Theta hat	4.1920E-4						
155					Kstar	4.315						
156					Theta star	5.1861E-4						
157					Mean of Log Transformed Data	-6.199						
158					Standard Deviation of Log Transformed Data	0.452						
159												

	A	B	C	D	E	F	G	H	I	J	K	L
160	Normal GOF Test Results											
161												
162					Correlation Coefficient R	0.894						
163					Shapiro Wilk Test Statistic	0.807						
164					Shapiro Wilk Critical (0.05) Value	0.881						
165					Approximate Shapiro Wilk P Value	0.00366						
166					Lilliefors Test Statistic	0.259						
167					Lilliefors Critical (0.05) Value	0.22						
168	Data not Normal at (0.05) Significance Level											
169												
170	Gamma GOF Test Results											
171												
172					Correlation Coefficient R	0.936						
173					A-D Test Statistic	0.762						
174					A-D Critical (0.05) Value	0.738						
175					K-S Test Statistic	0.198						
176					K-S Critical(0.05) Value	0.222						
177	Data appear Gamma Distributed at (0.05) Significance Level											
178												
179	Lognormal GOF Test Results											
180												
181					Correlation Coefficient R	0.949						
182					Shapiro Wilk Test Statistic	0.916						
183					Shapiro Wilk Critical (0.05) Value	0.881						
184					Approximate Shapiro Wilk P Value	0.135						
185					Lilliefors Test Statistic	0.174						
186					Lilliefors Critical (0.05) Value	0.22						
187	Data appear Lognormal at (0.05) Significance Level											
188												
189	Zinc (mg/L)											
190												
191				Raw Statistics								
192					Number of Valid Observations	15						
193					Number of Distinct Observations	13						
194					Minimum	0.001						
195					Maximum	0.0048						
196					Mean of Raw Data	0.00215						
197					Standard Deviation of Raw Data	0.00114						
198					Khat	4.215						
199					Theta hat	5.1090E-4						
200					Kstar	3.416						
201					Theta star	6.3032E-4						
202					Mean of Log Transformed Data	-6.264						
203					Standard Deviation of Log Transformed Data	0.51						
204												
205	Normal GOF Test Results											
206												
207					Correlation Coefficient R	0.946						
208					Shapiro Wilk Test Statistic	0.889						
209					Shapiro Wilk Critical (0.05) Value	0.881						
210					Approximate Shapiro Wilk P Value	0.0721						
211					Lilliefors Test Statistic	0.157						
212					Lilliefors Critical (0.05) Value	0.22						

	A	B	C	D	E	F	G	H	I	J	K	L
213	Data appear Normal at (0.05) Significance Level											
214												
215				Gamma GOF Test Results								
216												
217					Correlation Coefficient R	0.988						
218					A-D Test Statistic	0.351						
219					A-D Critical (0.05) Value	0.74						
220					K-S Test Statistic	0.144						
221					K-S Critical(0.05) Value	0.222						
222	Data appear Gamma Distributed at (0.05) Significance Level											
223												
224				Lognormal GOF Test Results								
225												
226					Correlation Coefficient R	0.979						
227					Shapiro Wilk Test Statistic	0.941						
228					Shapiro Wilk Critical (0.05) Value	0.881						
229					Approximate Shapiro Wilk P Value	0.481						
230					Lilliefors Test Statistic	0.127						
231					Lilliefors Critical (0.05) Value	0.22						
232	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/8/2025 11:02:14 AM
4	From File	2024-IntermediateProUCL_e.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	05-IN	
9	Iron (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	27
13	Number of Distinct Observations	15
14	Minimum	0.01
15	Maximum	0.778
16	Mean of Raw Data	0.126
17	Standard Deviation of Raw Data	0.198
18	Khat	0.549
19	Theta hat	0.23
20	Kstar	0.513
21	Theta star	0.246
22	Mean of Log Transformed Data	-3.211
23	Standard Deviation of Log Transformed Data	1.521
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.805
28	Shapiro Wilk Test Statistic	0.655
29	Shapiro Wilk Critical (0.05) Value	0.923
30	Approximate Shapiro Wilk P Value	1.6431E-7
31	Lilliefors Test Statistic	0.316
32	Lilliefors Critical (0.05) Value	0.167
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.978
38	A-D Test Statistic	2.274
39	A-D Critical (0.05) Value	0.803
40	K-S Test Statistic	0.278
41	K-S Critical(0.05) Value	0.177
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.919
47	Shapiro Wilk Test Statistic	0.826
48	Shapiro Wilk Critical (0.05) Value	0.923
49	Approximate Shapiro Wilk P Value	2.5864E-4
50	Lilliefors Test Statistic	0.211
51	Lilliefors Critical (0.05) Value	0.167
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Arsenic (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		43						
62				Number of Missing Observations		1						
63				Number of Distinct Observations		24						
64				Minimum		2.0000E-4						
65				Maximum		0.00341						
66				Mean of Raw Data		8.2326E-4						
67				Standard Deviation of Raw Data		6.7140E-4						
68				Khat		2.884						
69				Theta hat		2.8548E-4						
70				Kstar		2.698						
71				Theta star		3.0512E-4						
72				Mean of Log Transformed Data		-7.286						
73				Standard Deviation of Log Transformed Data		0.552						
74												
75				Normal GOF Test Results								
76												
77				Correlation Coefficient R		0.768						
78				Shapiro Wilk Test Statistic		0.607						
79				Shapiro Wilk Critical (0.05) Value		0.943						
80				Approximate Shapiro Wilk P Value		4.415E-13						
81				Lilliefors Test Statistic		0.304						
82				Lilliefors Critical (0.05) Value		0.134						
83	Data not Normal at (0.05) Significance Level											
84												
85				Gamma GOF Test Results								
86												
87				Correlation Coefficient R		0.876						
88				A-D Test Statistic		2.519						
89				A-D Critical (0.05) Value		0.756						
90				K-S Test Statistic		0.223						
91				K-S Critical(0.05) Value		0.136						
92	Data not Gamma Distributed at (0.05) Significance Level											
93												
94				Lognormal GOF Test Results								
95												
96				Correlation Coefficient R		0.946						
97				Shapiro Wilk Test Statistic		0.907						
98				Shapiro Wilk Critical (0.05) Value		0.943						
99				Approximate Shapiro Wilk P Value		0.00165						
100				Lilliefors Test Statistic		0.172						
101				Lilliefors Critical (0.05) Value		0.134						
102	Data not Lognormal at (0.05) Significance Level											
103												
104	Non-parametric GOF Test Results											
105												
106	Data do not follow a discernible distribution at (0.05) Level of Signif											

	A	B	C	D	E	F	G	H	I	J	K	L
107												
108	Copper (mg/L)											
109												
110				Raw Statistics								
111					Number of Valid Observations	44						
112					Number of Distinct Observations	29						
113					Minimum	6.0000E-4						
114					Maximum	0.0669						
115					Mean of Raw Data	0.00563						
116					Standard Deviation of Raw Data	0.0111						
117					Khat	0.862						
118					Theta hat	0.00653						
119					Kstar	0.818						
120					Theta star	0.00688						
121					Mean of Log Transformed Data	-5.861						
122					Standard Deviation of Log Transformed Data	0.979						
123												
124				Normal GOF Test Results								
125												
126					Correlation Coefficient R	0.631						
127					Shapiro Wilk Test Statistic	0.434						
128					Shapiro Wilk Critical (0.05) Value	0.944						
129					Approximate Shapiro Wilk P Value	0						
130					Lilliefors Test Statistic	0.364						
131					Lilliefors Critical (0.05) Value	0.132						
132	Data not Normal at (0.05) Significance Level											
133												
134				Gamma GOF Test Results								
135												
136					Correlation Coefficient R	0.864						
137					A-D Test Statistic	4.048						
138					A-D Critical (0.05) Value	0.784						
139					K-S Test Statistic	0.286						
140					K-S Critical(0.05) Value	0.138						
141	Data not Gamma Distributed at (0.05) Significance Level											
142												
143				Lognormal GOF Test Results								
144												
145					Correlation Coefficient R	0.943						
146					Shapiro Wilk Test Statistic	0.894						
147					Shapiro Wilk Critical (0.05) Value	0.944						
148					Approximate Shapiro Wilk P Value	4.5611E-4						
149					Lilliefors Test Statistic	0.203						
150					Lilliefors Critical (0.05) Value	0.132						
151	Data not Lognormal at (0.05) Significance Level											
152												
153	Non-parametric GOF Test Results											
154												
155	Data do not follow a discernible distribution at (0.05) Level of Signif											
156												
157	Nickel (mg/L)											
158												
159				Raw Statistics								

	A	B	C	D	E	F	G	H	I	J	K	L
160					Number of Valid Observations	26						
161					Number of Missing Observations	1						
162					Number of Distinct Observations	25						
163					Minimum	0.00111						
164					Maximum	0.0082						
165					Mean of Raw Data	0.00398						
166					Standard Deviation of Raw Data	0.00242						
167					Khat	2.807						
168					Theta hat	0.00142						
169					Kstar	2.509						
170					Theta star	0.00158						
171					Mean of Log Transformed Data	-5.716						
172					Standard Deviation of Log Transformed Data	0.638						
173												
174			Normal GOF Test Results									
175												
176					Correlation Coefficient R	0.944						
177					Shapiro Wilk Test Statistic	0.871						
178					Shapiro Wilk Critical (0.05) Value	0.92						
179					Approximate Shapiro Wilk P Value	0.00339						
180					Lilliefors Test Statistic	0.195						
181					Lilliefors Critical (0.05) Value	0.17						
182	Data not Normal at (0.05) Significance Level											
183												
184			Gamma GOF Test Results									
185												
186					Correlation Coefficient R	0.955						
187					A-D Test Statistic	0.758						
188					A-D Critical (0.05) Value	0.752						
189					K-S Test Statistic	0.136						
190					K-S Critical(0.05) Value	0.173						
191	Data appear Gamma Distributed at (0.05) Significance Level											
192												
193			Lognormal GOF Test Results									
194												
195					Correlation Coefficient R	0.974						
196					Shapiro Wilk Test Statistic	0.929						
197					Shapiro Wilk Critical (0.05) Value	0.92						
198					Approximate Shapiro Wilk P Value	0.0811						
199					Lilliefors Test Statistic	0.12						
200					Lilliefors Critical (0.05) Value	0.17						
201	Data appear Lognormal at (0.05) Significance Level											
202												
203	Zinc (mg/L)											
204												
205			Raw Statistics									
206					Number of Valid Observations	27						
207					Number of Distinct Observations	24						
208					Minimum	0.001						
209					Maximum	0.0345						
210					Mean of Raw Data	0.00771						
211					Standard Deviation of Raw Data	0.0087						
212					Khat	1.217						

	A	B	C	D	E	F	G	H	I	J	K	L
213					Theta hat	0.00633						
214					Kstar	1.107						
215					Theta star	0.00697						
216					Mean of Log Transformed Data	-5.329						
217					Standard Deviation of Log Transformed Data	0.952						
218												
219				Normal GOF Test Results								
220												
221					Correlation Coefficient R	0.836						
222					Shapiro Wilk Test Statistic	0.703						
223					Shapiro Wilk Critical (0.05) Value	0.923						
224					Approximate Shapiro Wilk P Value	1.0866E-6						
225					Lilliefors Test Statistic	0.245						
226					Lilliefors Critical (0.05) Value	0.167						
227	Data not Normal at (0.05) Significance Level											
228												
229				Gamma GOF Test Results								
230												
231					Correlation Coefficient R	0.963						
232					A-D Test Statistic	0.949						
233					A-D Critical (0.05) Value	0.769						
234					K-S Test Statistic	0.199						
235					K-S Critical(0.05) Value	0.172						
236	Data not Gamma Distributed at (0.05) Significance Level											
237												
238				Lognormal GOF Test Results								
239												
240					Correlation Coefficient R	0.985						
241					Shapiro Wilk Test Statistic	0.961						
242					Shapiro Wilk Critical (0.05) Value	0.923						
243					Approximate Shapiro Wilk P Value	0.422						
244					Lilliefors Test Statistic	0.143						
245					Lilliefors Critical (0.05) Value	0.167						
246	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/8/2025 12:35:54 PM
4	From File	2024-IntermediateProUCL_f.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	06R-IN	
9	Iron (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	25
13	Number of Distinct Observations	18
14	Minimum	0.01
15	Maximum	3.05
16	Mean of Raw Data	0.566
17	Standard Deviation of Raw Data	0.768
18	Khat	0.464
19	Theta hat	1.221
20	Kstar	0.435
21	Theta star	1.302
22	Mean of Log Transformed Data	-1.955
23	Standard Deviation of Log Transformed Data	2.073
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.865
28	Shapiro Wilk Test Statistic	0.753
29	Shapiro Wilk Critical (0.05) Value	0.918
30	Approximate Shapiro Wilk P Value	1.7083E-5
31	Lilliefors Test Statistic	0.26
32	Lilliefors Critical (0.05) Value	0.173
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.988
38	A-D Test Statistic	0.888
39	A-D Critical (0.05) Value	0.815
40	K-S Test Statistic	0.193
41	K-S Critical(0.05) Value	0.185
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.939
47	Shapiro Wilk Test Statistic	0.86
48	Shapiro Wilk Critical (0.05) Value	0.918
49	Approximate Shapiro Wilk P Value	0.00231
50	Lilliefors Test Statistic	0.187
51	Lilliefors Critical (0.05) Value	0.173
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Manganese (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		25						
62				Number of Distinct Observations		23						
63				Minimum		0.001						
64				Maximum		3.34						
65				Mean of Raw Data		1.261						
66				Standard Deviation of Raw Data		0.816						
67				Khat		0.886						
68				Theta hat		1.424						
69				Kstar		0.806						
70				Theta star		1.564						
71				Mean of Log Transformed Data		-0.429						
72				Standard Deviation of Log Transformed Data		1.956						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.983						
77				Shapiro Wilk Test Statistic		0.965						
78				Shapiro Wilk Critical (0.05) Value		0.918						
79				Approximate Shapiro Wilk P Value		0.539						
80				Lilliefors Test Statistic		0.0886						
81				Lilliefors Critical (0.05) Value		0.173						
82	Data appear Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.934						
87				A-D Test Statistic		2.06						
88				A-D Critical (0.05) Value		0.778						
89				K-S Test Statistic		0.245						
90				K-S Critical(0.05) Value		0.18						
91	Data not Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.795						
96				Shapiro Wilk Test Statistic		0.644						
97				Shapiro Wilk Critical (0.05) Value		0.918						
98				Approximate Shapiro Wilk P Value		2.7254E-7						
99				Lilliefors Test Statistic		0.276						
100				Lilliefors Critical (0.05) Value		0.173						
101	Data not Lognormal at (0.05) Significance Level											
102												
103	Arsenic (mg/L)											
104												
105				Raw Statistics								
106				Number of Valid Observations		48						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	30						
108					Minimum	2.0000E-4						
109					Maximum	0.0151						
110					Mean of Raw Data	0.00172						
111					Standard Deviation of Raw Data	0.00291						
112					Khat	0.943						
113					Theta hat	0.00183						
114					Kstar	0.898						
115					Theta star	0.00192						
116					Mean of Log Transformed Data	-6.98						
117					Standard Deviation of Log Transformed Data	0.96						
118												
119				Normal GOF Test Results								
120												
121					Correlation Coefficient R	0.689						
122					Shapiro Wilk Test Statistic	0.497						
123					Shapiro Wilk Critical (0.05) Value	0.947						
124					Approximate Shapiro Wilk P Value	0						
125					Lilliefors Test Statistic	0.3						
126					Lilliefors Critical (0.05) Value	0.127						
127	Data not Normal at (0.05) Significance Level											
128												
129				Gamma GOF Test Results								
130												
131					Correlation Coefficient R	0.9						
132					A-D Test Statistic	3.954						
133					A-D Critical (0.05) Value	0.782						
134					K-S Test Statistic	0.199						
135					K-S Critical(0.05) Value	0.132						
136	Data not Gamma Distributed at (0.05) Significance Level											
137												
138				Lognormal GOF Test Results								
139												
140					Correlation Coefficient R	0.946						
141					Shapiro Wilk Test Statistic	0.893						
142					Shapiro Wilk Critical (0.05) Value	0.947						
143					Approximate Shapiro Wilk P Value	1.9354E-4						
144					Lilliefors Test Statistic	0.176						
145					Lilliefors Critical (0.05) Value	0.127						
146	Data not Lognormal at (0.05) Significance Level											
147												
148	Non-parametric GOF Test Results											
149												
150	Data do not follow a discernible distribution at (0.05) Level of Signif											
151												
152	Copper (mg/L)											
153												
154				Raw Statistics								
155					Number of Valid Observations	48						
156					Number of Distinct Observations	23						
157					Minimum	2.0000E-4						
158					Maximum	0.0171						
159					Mean of Raw Data	0.00292						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Standard Deviation of Raw Data	0.00346						
161					Khat	1.103						
162					Theta hat	0.00265						
163					Kstar	1.048						
164					Theta star	0.00279						
165					Mean of Log Transformed Data	-6.354						
166					Standard Deviation of Log Transformed Data	1.07						
167												
168			Normal GOF Test Results									
169												
170					Correlation Coefficient R	0.804						
171					Shapiro Wilk Test Statistic	0.66						
172					Shapiro Wilk Critical (0.05) Value	0.947						
173					Approximate Shapiro Wilk P Value	2.912E-13						
174					Lilliefors Test Statistic	0.253						
175					Lilliefors Critical (0.05) Value	0.127						
176	Data not Normal at (0.05) Significance Level											
177												
178			Gamma GOF Test Results									
179												
180					Correlation Coefficient R	0.944						
181					A-D Test Statistic	1.021						
182					A-D Critical (0.05) Value	0.776						
183					K-S Test Statistic	0.129						
184					K-S Critical(0.05) Value	0.131						
185	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
186												
187			Lognormal GOF Test Results									
188												
189					Correlation Coefficient R	0.979						
190					Shapiro Wilk Test Statistic	0.948						
191					Shapiro Wilk Critical (0.05) Value	0.947						
192					Approximate Shapiro Wilk P Value	0.0517						
193					Lilliefors Test Statistic	0.142						
194					Lilliefors Critical (0.05) Value	0.127						
195	Data appear Approximate_Lognormal at (0.05) Significance Level											
196												
197	Nickel (mg/L)											
198												
199			Raw Statistics									
200					Number of Valid Observations	26						
201					Number of Distinct Observations	25						
202					Minimum	0.0016						
203					Maximum	0.108						
204					Mean of Raw Data	0.0184						
205					Standard Deviation of Raw Data	0.0211						
206					Khat	1.339						
207					Theta hat	0.0137						
208					Kstar	1.21						
209					Theta star	0.0152						
210					Mean of Log Transformed Data	-4.415						
211					Standard Deviation of Log Transformed Data	0.929						
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213				Normal GOF Test Results								
214												
215					Correlation Coefficient R	0.788						
216					Shapiro Wilk Test Statistic	0.648						
217					Shapiro Wilk Critical (0.05) Value	0.92						
218					Approximate Shapiro Wilk P Value	2.0167E-7						
219					Lilliefors Test Statistic	0.215						
220					Lilliefors Critical (0.05) Value	0.17						
221	Data not Normal at (0.05) Significance Level											
222												
223				Gamma GOF Test Results								
224												
225					Correlation Coefficient R	0.925						
226					A-D Test Statistic	0.365						
227					A-D Critical (0.05) Value	0.765						
228					K-S Test Statistic	0.097						
229					K-S Critical(0.05) Value	0.175						
230	Data appear Gamma Distributed at (0.05) Significance Level											
231												
232				Lognormal GOF Test Results								
233												
234					Correlation Coefficient R	0.993						
235					Shapiro Wilk Test Statistic	0.992						
236					Shapiro Wilk Critical (0.05) Value	0.92						
237					Approximate Shapiro Wilk P Value	0.998						
238					Lilliefors Test Statistic	0.0707						
239					Lilliefors Critical (0.05) Value	0.17						
240	Data appear Lognormal at (0.05) Significance Level											
241												
242	Zinc (mg/L)											
243												
244				Raw Statistics								
245					Number of Valid Observations	26						
246					Number of Distinct Observations	25						
247					Minimum	0.001						
248					Maximum	0.201						
249					Mean of Raw Data	0.0301						
250					Standard Deviation of Raw Data	0.0521						
251					Khat	0.595						
252					Theta hat	0.0505						
253					Kstar	0.552						
254					Theta star	0.0544						
255					Mean of Log Transformed Data	-4.544						
256					Standard Deviation of Log Transformed Data	1.504						
257												
258				Normal GOF Test Results								
259												
260					Correlation Coefficient R	0.737						
261					Shapiro Wilk Test Statistic	0.554						
262					Shapiro Wilk Critical (0.05) Value	0.92						
263					Approximate Shapiro Wilk P Value	7.7908E-9						
264					Lilliefors Test Statistic	0.308						
265					Lilliefors Critical (0.05) Value	0.17						

	A	B	C	D	E	F	G	H	I	J	K	L
266	Data not Normal at (0.05) Significance Level											
267												
268				Gamma GOF Test Results								
269												
270					Correlation Coefficient R	0.931						
271					A-D Test Statistic	0.865						
272					A-D Critical (0.05) Value	0.799						
273					K-S Test Statistic	0.142						
274					K-S Critical(0.05) Value	0.18						
275	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
276												
277				Lognormal GOF Test Results								
278												
279					Correlation Coefficient R	0.985						
280					Shapiro Wilk Test Statistic	0.957						
281					Shapiro Wilk Critical (0.05) Value	0.92						
282					Approximate Shapiro Wilk P Value	0.361						
283					Lilliefors Test Statistic	0.0937						
284					Lilliefors Critical (0.05) Value	0.17						
285	Data appear Lognormal at (0.05) Significance Level											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/9/2025 8:23:34 AM
	From File	2024-IntermediateProUCL_g.xls
	Full Precision	OFF
	Confidence Coefficient	0.95
07-IN		
Chloride (mg/L)		
	Raw Statistics	
	Number of Valid Observations	51
	Number of Distinct Observations	20
	Minimum	1.0000E-5
	Maximum	2.9
	Mean of Raw Data	0.83
	Standard Deviation of Raw Data	0.597
	Khat	1.293
	Theta hat	0.642
	Kstar	1.23
	Theta star	0.675
	Mean of Log Transformed Data	-0.62
	Standard Deviation of Log Transformed Data	1.753
	Normal GOF Test Results	
	Correlation Coefficient R	0.88
	Approximate Shapiro Wilk Test Statistic	0.783
	Approximate Shapiro Wilk P Value	1.3720E-9
	Lilliefors Test Statistic	0.258
	Lilliefors Critical (0.05) Value	0.123
Data not Normal at (0.05) Significance Level		
	Gamma GOF Test Results	
	Correlation Coefficient R	0.965
	A-D Test Statistic	4.335
	A-D Critical (0.05) Value	0.773
	K-S Test Statistic	0.313
	K-S Critical(0.05) Value	0.127
Data not Gamma Distributed at (0.05) Significance Level		
	Lognormal GOF Test Results	
	Correlation Coefficient R	0.643
	Approximate Shapiro Wilk Test Statistic	0.461
	Approximate Shapiro Wilk P Value	0
	Lilliefors Test Statistic	0.385
	Lilliefors Critical (0.05) Value	0.123
Data not Lognormal at (0.05) Significance Level		
Non-parametric GOF Test Results		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Data do not follow a discernible distribution at (0.05) Level of Signif											
55												
56	Iron (mg/L)											
57												
58				Raw Statistics								
59				Number of Valid Observations		26						
60				Number of Distinct Observations		20						
61				Minimum		0.01						
62				Maximum		0.737						
63				Mean of Raw Data		0.219						
64				Standard Deviation of Raw Data		0.226						
65				Khat		0.845						
66				Theta hat		0.259						
67				Kstar		0.773						
68				Theta star		0.284						
69				Mean of Log Transformed Data		-2.216						
70				Standard Deviation of Log Transformed Data		1.387						
71												
72				Normal GOF Test Results								
73												
74				Correlation Coefficient R		0.915						
75				Shapiro Wilk Test Statistic		0.825						
76				Shapiro Wilk Critical (0.05) Value		0.92						
77				Approximate Shapiro Wilk P Value		3.2965E-4						
78				Lilliefors Test Statistic		0.184						
79				Lilliefors Critical (0.05) Value		0.17						
80	Data not Normal at (0.05) Significance Level											
81												
82				Gamma GOF Test Results								
83												
84				Correlation Coefficient R		0.966						
85				A-D Test Statistic		0.351						
86				A-D Critical (0.05) Value		0.78						
87				K-S Test Statistic		0.0929						
88				K-S Critical(0.05) Value		0.177						
89	Data appear Gamma Distributed at (0.05) Significance Level											
90												
91				Lognormal GOF Test Results								
92												
93				Correlation Coefficient R		0.97						
94				Shapiro Wilk Test Statistic		0.921						
95				Shapiro Wilk Critical (0.05) Value		0.92						
96				Approximate Shapiro Wilk P Value		0.0511						
97				Lilliefors Test Statistic		0.131						
98				Lilliefors Critical (0.05) Value		0.17						
99	Data appear Lognormal at (0.05) Significance Level											
100												
101	Copper (mg/L)											
102												
103				Raw Statistics								
104				Number of Valid Observations		49						
105				Number of Distinct Observations		26						
106				Minimum		2.0000E-4						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Maximum	0.0061						
108					Mean of Raw Data	0.00215						
109					Standard Deviation of Raw Data	0.00149						
110					Khat	1.836						
111					Theta hat	0.00117						
112					Kstar	1.737						
113					Theta star	0.00124						
114					Mean of Log Transformed Data	-6.439						
115					Standard Deviation of Log Transformed Data	0.857						
116												
117				Normal GOF Test Results								
118												
119					Correlation Coefficient R	0.958						
120					Shapiro Wilk Test Statistic	0.905						
121					Shapiro Wilk Critical (0.05) Value	0.947						
122					Approximate Shapiro Wilk P Value	5.2281E-4						
123					Lilliefors Test Statistic	0.193						
124					Lilliefors Critical (0.05) Value	0.126						
125	Data not Normal at (0.05) Significance Level											
126												
127				Gamma GOF Test Results								
128												
129					Correlation Coefficient R	0.977						
130					A-D Test Statistic	1.02						
131					A-D Critical (0.05) Value	0.764						
132					K-S Test Statistic	0.153						
133					K-S Critical(0.05) Value	0.128						
134	Data not Gamma Distributed at (0.05) Significance Level											
135												
136				Lognormal GOF Test Results								
137												
138					Correlation Coefficient R	0.965						
139					Shapiro Wilk Test Statistic	0.918						
140					Shapiro Wilk Critical (0.05) Value	0.947						
141					Approximate Shapiro Wilk P Value	0.00208						
142					Lilliefors Test Statistic	0.149						
143					Lilliefors Critical (0.05) Value	0.126						
144	Data not Lognormal at (0.05) Significance Level											
145												
146	Non-parametric GOF Test Results											
147												
148	Data do not follow a discernible distribution at (0.05) Level of Signif											
149												
150	Nickel (mg/L)											
151												
152				Raw Statistics								
153					Number of Valid Observations	27						
154					Number of Distinct Observations	24						
155					Minimum	0.002						
156					Maximum	0.0191						
157					Mean of Raw Data	0.00501						
158					Standard Deviation of Raw Data	0.0035						
159					Khat	3.898						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Theta hat	0.00128						
161					Kstar	3.49						
162					Theta star	0.00144						
163					Mean of Log Transformed Data	-5.43						
164					Standard Deviation of Log Transformed Data	0.471						
165												
166				Normal GOF Test Results								
167												
168					Correlation Coefficient R	0.763						
169					Shapiro Wilk Test Statistic	0.606						
170					Shapiro Wilk Critical (0.05) Value	0.923						
171					Approximate Shapiro Wilk P Value	2.7840E-8						
172					Lilliefors Test Statistic	0.309						
173					Lilliefors Critical (0.05) Value	0.167						
174	Data not Normal at (0.05) Significance Level											
175												
176				Gamma GOF Test Results								
177												
178					Correlation Coefficient R	0.863						
179					A-D Test Statistic	2.018						
180					A-D Critical (0.05) Value	0.749						
181					K-S Test Statistic	0.24						
182					K-S Critical(0.05) Value	0.169						
183	Data not Gamma Distributed at (0.05) Significance Level											
184												
185				Lognormal GOF Test Results								
186												
187					Correlation Coefficient R	0.923						
188					Shapiro Wilk Test Statistic	0.868						
189					Shapiro Wilk Critical (0.05) Value	0.923						
190					Approximate Shapiro Wilk P Value	0.00229						
191					Lilliefors Test Statistic	0.195						
192					Lilliefors Critical (0.05) Value	0.167						
193	Data not Lognormal at (0.05) Significance Level											
194												
195	Non-parametric GOF Test Results											
196												
197	Data do not follow a discernible distribution at (0.05) Level of Signif											
198												
199	Zinc (mg/L)											
200												
201				Raw Statistics								
202					Number of Valid Observations	27						
203					Number of Distinct Observations	27						
204					Minimum	0.0013						
205					Maximum	0.159						
206					Mean of Raw Data	0.0142						
207					Standard Deviation of Raw Data	0.0296						
208					Khat	0.952						
209					Theta hat	0.0149						
210					Kstar	0.871						
211					Theta star	0.0163						
212					Mean of Log Transformed Data	-4.863						

	A	B	C	D	E	F	G	H	I	J	K	L
213					Standard Deviation of Log Transformed Data	0.917						
214												
215				Normal GOF Test Results								
216												
217					Correlation Coefficient R	0.572						
218					Shapiro Wilk Test Statistic	0.36						
219					Shapiro Wilk Critical (0.05) Value	0.923						
220					Approximate Shapiro Wilk P Value	1.279E-11						
221					Lilliefors Test Statistic	0.361						
222					Lilliefors Critical (0.05) Value	0.167						
223	Data not Normal at (0.05) Significance Level											
224												
225				Gamma GOF Test Results								
226												
227					Correlation Coefficient R	0.783						
228					A-D Test Statistic	2.188						
229					A-D Critical (0.05) Value	0.775						
230					K-S Test Statistic	0.233						
231					K-S Critical(0.05) Value	0.173						
232	Data not Gamma Distributed at (0.05) Significance Level											
233												
234				Lognormal GOF Test Results								
235												
236					Correlation Coefficient R	0.95						
237					Shapiro Wilk Test Statistic	0.925						
238					Shapiro Wilk Critical (0.05) Value	0.923						
239					Approximate Shapiro Wilk P Value	0.0568						
240					Lilliefors Test Statistic	0.128						
241					Lilliefors Critical (0.05) Value	0.167						
242	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/9/2025 11:09:32 AM
4	From File	2024-IntermediateProUCL_h.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	08-IN	
9	Manganese (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	21
13	Number of Distinct Observations	19
14	Minimum	0.0019
15	Maximum	1.09
16	Mean of Raw Data	0.189
17	Standard Deviation of Raw Data	0.354
18	Khat	0.398
19	Theta hat	0.475
20	Kstar	0.373
21	Theta star	0.507
22	Mean of Log Transformed Data	-3.319
23	Standard Deviation of Log Transformed Data	1.996
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.741
28	Shapiro Wilk Test Statistic	0.551
29	Shapiro Wilk Critical (0.05) Value	0.908
30	Approximate Shapiro Wilk P Value	8.9394E-8
31	Lilliefors Test Statistic	0.359
32	Lilliefors Critical (0.05) Value	0.188
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.92
38	A-D Test Statistic	1.081
39	A-D Critical (0.05) Value	0.826
40	K-S Test Statistic	0.163
41	K-S Critical(0.05) Value	0.203
42	Data follow Appr. Gamma Distribution at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.979
47	Shapiro Wilk Test Statistic	0.943
48	Shapiro Wilk Critical (0.05) Value	0.908
49	Approximate Shapiro Wilk P Value	0.25
50	Lilliefors Test Statistic	0.125
51	Lilliefors Critical (0.05) Value	0.188
52	Data appear Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Chromium (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	38						
58					Number of Distinct Observations	22						
59					Minimum	6.6000E-4						
60					Maximum	0.075						
61					Mean of Raw Data	0.00623						
62					Standard Deviation of Raw Data	0.0139						
63					Khat	0.629						
64					Theta hat	0.00991						
65					Kstar	0.597						
66					Theta star	0.0104						
67					Mean of Log Transformed Data	-6.055						
68					Standard Deviation of Log Transformed Data	1.183						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.635						
73					Shapiro Wilk Test Statistic	0.434						
74					Shapiro Wilk Critical (0.05) Value	0.938						
75					Approximate Shapiro Wilk P Value	7.550E-15						
76					Lilliefors Test Statistic	0.377						
77					Lilliefors Critical (0.05) Value	0.142						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.899						
83					A-D Test Statistic	4.232						
84					A-D Critical (0.05) Value	0.8						
85					K-S Test Statistic	0.239						
86					K-S Critical(0.05) Value	0.15						
87	Data not Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.909						
92					Shapiro Wilk Test Statistic	0.822						
93					Shapiro Wilk Critical (0.05) Value	0.938						
94					Approximate Shapiro Wilk P Value	7.4294E-6						
95					Lilliefors Test Statistic	0.231						
96					Lilliefors Critical (0.05) Value	0.142						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Non-parametric GOF Test Results											
100												
101	Data do not follow a discernible distribution at (0.05) Level of Signif											
102												
103	Copper (mg/L)											
104												
105				Raw Statistics								
106					Number of Valid Observations	38						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	28						
108					Minimum	7.2000E-4						
109					Maximum	0.028						
110					Mean of Raw Data	0.00475						
111					Standard Deviation of Raw Data	0.00618						
112					Khat	1.1						
113					Theta hat	0.00432						
114					Kstar	1.03						
115					Theta star	0.00461						
116					Mean of Log Transformed Data	-5.868						
117					Standard Deviation of Log Transformed Data	0.967						
118												
119				Normal GOF Test Results								
120												
121					Correlation Coefficient R	0.787						
122					Shapiro Wilk Test Statistic	0.631						
123					Shapiro Wilk Critical (0.05) Value	0.938						
124					Approximate Shapiro Wilk P Value	8.158E-11						
125					Lilliefors Test Statistic	0.293						
126					Lilliefors Critical (0.05) Value	0.142						
127	Data not Normal at (0.05) Significance Level											
128												
129				Gamma GOF Test Results								
130												
131					Correlation Coefficient R	0.949						
132					A-D Test Statistic	1.551						
133					A-D Critical (0.05) Value	0.775						
134					K-S Test Statistic	0.162						
135					K-S Critical(0.05) Value	0.147						
136	Data not Gamma Distributed at (0.05) Significance Level											
137												
138				Lognormal GOF Test Results								
139												
140					Correlation Coefficient R	0.974						
141					Shapiro Wilk Test Statistic	0.936						
142					Shapiro Wilk Critical (0.05) Value	0.938						
143					Approximate Shapiro Wilk P Value	0.0409						
144					Lilliefors Test Statistic	0.121						
145					Lilliefors Critical (0.05) Value	0.142						
146	Data appear Approximate_Lognormal at (0.05) Significance Level											
147												
148	Zinc (mg/L)											
149												
150				Raw Statistics								
151					Number of Valid Observations	19						
152					Number of Distinct Observations	18						
153					Minimum	0.001						
154					Maximum	0.0198						
155					Mean of Raw Data	0.00687						
156					Standard Deviation of Raw Data	0.00659						
157					Khat	1.365						
158					Theta hat	0.00503						
159					Kstar	1.185						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Theta star	0.0058						
161					Mean of Log Transformed Data	-5.39						
162					Standard Deviation of Log Transformed Data	0.926						
163												
164				Normal GOF Test Results								
165												
166					Correlation Coefficient R	0.879						
167					Shapiro Wilk Test Statistic	0.76						
168					Shapiro Wilk Critical (0.05) Value	0.901						
169					Approximate Shapiro Wilk P Value	1.7529E-4						
170					Lilliefors Test Statistic	0.29						
171					Lilliefors Critical (0.05) Value	0.197						
172	Data not Normal at (0.05) Significance Level											
173												
174				Gamma GOF Test Results								
175												
176					Correlation Coefficient R	0.943						
177					A-D Test Statistic	0.825						
178					A-D Critical (0.05) Value	0.76						
179					K-S Test Statistic	0.199						
180					K-S Critical(0.05) Value	0.203						
181	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
182												
183				Lognormal GOF Test Results								
184												
185					Correlation Coefficient R	0.977						
186					Shapiro Wilk Test Statistic	0.94						
187					Shapiro Wilk Critical (0.05) Value	0.901						
188					Approximate Shapiro Wilk P Value	0.3						
189					Lilliefors Test Statistic	0.138						
190					Lilliefors Critical (0.05) Value	0.197						
191	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/9/2025 2:41:37 PM
4	From File	2024-IntermediateProUCL_i.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	11-IN	
9	Iron (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	29
13	Number of Distinct Observations	21
14	Minimum	0.01
15	Maximum	2.79
16	Mean of Raw Data	0.371
17	Standard Deviation of Raw Data	0.586
18	Khat	0.505
19	Theta hat	0.734
20	Kstar	0.476
21	Theta star	0.779
22	Mean of Log Transformed Data	-2.247
23	Standard Deviation of Log Transformed Data	1.774
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.797
28	Shapiro Wilk Test Statistic	0.655
29	Shapiro Wilk Critical (0.05) Value	0.926
30	Approximate Shapiro Wilk P Value	6.3532E-8
31	Lilliefors Test Statistic	0.269
32	Lilliefors Critical (0.05) Value	0.161
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.98
38	A-D Test Statistic	1.023
39	A-D Critical (0.05) Value	0.811
40	K-S Test Statistic	0.197
41	K-S Critical(0.05) Value	0.172
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.965
47	Shapiro Wilk Test Statistic	0.912
48	Shapiro Wilk Critical (0.05) Value	0.926
49	Approximate Shapiro Wilk P Value	0.0214
50	Lilliefors Test Statistic	0.161
51	Lilliefors Critical (0.05) Value	0.161
52	Data appear Approximate_Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Arsenic (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	35						
58					Number of Distinct Observations	29						
59					Minimum	1.6000E-4						
60					Maximum	0.0033						
61					Mean of Raw Data	9.9543E-4						
62					Standard Deviation of Raw Data	7.1157E-4						
63					Khat	2.265						
64					Theta hat	4.3944E-4						
65					Kstar	2.09						
66					Theta star	4.7626E-4						
67					Mean of Log Transformed Data	-7.149						
68					Standard Deviation of Log Transformed Data	0.721						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.928						
73					Shapiro Wilk Test Statistic	0.865						
74					Shapiro Wilk Critical (0.05) Value	0.934						
75					Approximate Shapiro Wilk P Value	3.3036E-4						
76					Lilliefors Test Statistic	0.182						
77					Lilliefors Critical (0.05) Value	0.148						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.99						
83					A-D Test Statistic	0.211						
84					A-D Critical (0.05) Value	0.758						
85					K-S Test Statistic	0.0983						
86					K-S Critical(0.05) Value	0.15						
87	Data appear Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.993						
92					Shapiro Wilk Test Statistic	0.98						
93					Shapiro Wilk Critical (0.05) Value	0.934						
94					Approximate Shapiro Wilk P Value	0.804						
95					Lilliefors Test Statistic	0.0642						
96					Lilliefors Critical (0.05) Value	0.148						
97	Data appear Lognormal at (0.05) Significance Level											
98												
99	Copper (mg/L)											
100												
101				Raw Statistics								
102					Number of Valid Observations	35						
103					Number of Distinct Observations	24						
104					Minimum	2.0000E-4						
105					Maximum	0.0082						
106					Mean of Raw Data	0.00215						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Standard Deviation of Raw Data	0.00192						
108					Khat	1.41						
109					Theta hat	0.00152						
110					Kstar	1.309						
111					Theta star	0.00164						
112					Mean of Log Transformed Data	-6.539						
113					Standard Deviation of Log Transformed Data	0.961						
114												
115			Normal GOF Test Results									
116												
117					Correlation Coefficient R	0.908						
118					Shapiro Wilk Test Statistic	0.826						
119					Shapiro Wilk Critical (0.05) Value	0.934						
120					Approximate Shapiro Wilk P Value	2.5608E-5						
121					Lilliefors Test Statistic	0.192						
122					Lilliefors Critical (0.05) Value	0.148						
123	Data not Normal at (0.05) Significance Level											
124												
125			Gamma GOF Test Results									
126												
127					Correlation Coefficient R	0.988						
128					A-D Test Statistic	0.49						
129					A-D Critical (0.05) Value	0.768						
130					K-S Test Statistic	0.123						
131					K-S Critical(0.05) Value	0.152						
132	Data appear Gamma Distributed at (0.05) Significance Level											
133												
134			Lognormal GOF Test Results									
135												
136					Correlation Coefficient R	0.983						
137					Shapiro Wilk Test Statistic	0.954						
138					Shapiro Wilk Critical (0.05) Value	0.934						
139					Approximate Shapiro Wilk P Value	0.194						
140					Lilliefors Test Statistic	0.151						
141					Lilliefors Critical (0.05) Value	0.148						
142	Data appear Approximate_Lognormal at (0.05) Significance Level											
143												
144	Nickel (mg/L)											
145												
146			Raw Statistics									
147					Number of Valid Observations	31						
148					Number of Distinct Observations	25						
149					Minimum	0.00203						
150					Maximum	0.0744						
151					Mean of Raw Data	0.0133						
152					Standard Deviation of Raw Data	0.0171						
153					Khat	1.054						
154					Theta hat	0.0127						
155					Kstar	0.974						
156					Theta star	0.0137						
157					Mean of Log Transformed Data	-4.861						
158					Standard Deviation of Log Transformed Data	0.992						
159												

	A	B	C	D	E	F	G	H	I	J	K	L
160	Normal GOF Test Results											
161												
162					Correlation Coefficient R	0.805						
163					Shapiro Wilk Test Statistic	0.659						
164					Shapiro Wilk Critical (0.05) Value	0.929						
165					Approximate Shapiro Wilk P Value	2.6542E-8						
166					Lilliefors Test Statistic	0.289						
167					Lilliefors Critical (0.05) Value	0.156						
168	Data not Normal at (0.05) Significance Level											
169												
170	Gamma GOF Test Results											
171												
172					Correlation Coefficient R	0.963						
173					A-D Test Statistic	1.665						
174					A-D Critical (0.05) Value	0.774						
175					K-S Test Statistic	0.21						
176					K-S Critical(0.05) Value	0.162						
177	Data not Gamma Distributed at (0.05) Significance Level											
178												
179	Lognormal GOF Test Results											
180												
181					Correlation Coefficient R	0.969						
182					Shapiro Wilk Test Statistic	0.926						
183					Shapiro Wilk Critical (0.05) Value	0.929						
184					Approximate Shapiro Wilk P Value	0.0405						
185					Lilliefors Test Statistic	0.148						
186					Lilliefors Critical (0.05) Value	0.156						
187	Data appear Approximate_Lognormal at (0.05) Significance Level											
188												
189	Zinc (mg/L)											
190												
191	Raw Statistics											
192					Number of Valid Observations	31						
193					Number of Distinct Observations	25						
194					Minimum	8.0000E-4						
195					Maximum	0.03						
196					Mean of Raw Data	0.00492						
197					Standard Deviation of Raw Data	0.00563						
198					Khat	1.524						
199					Theta hat	0.00323						
200					Kstar	1.398						
201					Theta star	0.00352						
202					Mean of Log Transformed Data	-5.677						
203					Standard Deviation of Log Transformed Data	0.828						
204												
205	Normal GOF Test Results											
206												
207					Correlation Coefficient R	0.752						
208					Shapiro Wilk Test Statistic	0.593						
209					Shapiro Wilk Critical (0.05) Value	0.929						
210					Approximate Shapiro Wilk P Value	1.7291E-9						
211					Lilliefors Test Statistic	0.312						
212					Lilliefors Critical (0.05) Value	0.156						

	A	B	C	D	E	F	G	H	I	J	K	L
213	Data not Normal at (0.05) Significance Level											
214												
215				Gamma GOF Test Results								
216												
217					Correlation Coefficient R	0.899						
218					A-D Test Statistic	1.408						
219					A-D Critical (0.05) Value	0.763						
220					K-S Test Statistic	0.198						
221					K-S Critical(0.05) Value	0.161						
222	Data not Gamma Distributed at (0.05) Significance Level											
223												
224				Lognormal GOF Test Results								
225												
226					Correlation Coefficient R	0.961						
227					Shapiro Wilk Test Statistic	0.926						
228					Shapiro Wilk Critical (0.05) Value	0.929						
229					Approximate Shapiro Wilk P Value	0.04						
230					Lilliefors Test Statistic	0.178						
231					Lilliefors Critical (0.05) Value	0.156						
232	Data not Lognormal at (0.05) Significance Level											
233												
234	Non-parametric GOF Test Results											
235												
236	Data do not follow a discernible distribution at (0.05) Level of Signif											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/10/2025 9:44:25 AM
4	From File	2024-IntermediateProUCL_j.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	12-IN	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	41
13	Number of Distinct Observations	14
14	Minimum	0.01
15	Maximum	2.9
16	Mean of Raw Data	0.923
17	Standard Deviation of Raw Data	0.541
18	Khat	2.522
19	Theta hat	0.366
20	Kstar	2.353
21	Theta star	0.392
22	Mean of Log Transformed Data	-0.291
23	Standard Deviation of Log Transformed Data	0.848
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.917
28	Shapiro Wilk Test Statistic	0.859
29	Shapiro Wilk Critical (0.05) Value	0.941
30	Approximate Shapiro Wilk P Value	4.5249E-5
31	Lilliefors Test Statistic	0.193
32	Lilliefors Critical (0.05) Value	0.137
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.975
38	A-D Test Statistic	1.683
39	A-D Critical (0.05) Value	0.757
40	K-S Test Statistic	0.229
41	K-S Critical(0.05) Value	0.139
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.803
47	Shapiro Wilk Test Statistic	0.689
48	Shapiro Wilk Critical (0.05) Value	0.941
49	Approximate Shapiro Wilk P Value	2.975E-10
50	Lilliefors Test Statistic	0.293
51	Lilliefors Critical (0.05) Value	0.137
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Iron (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		28						
62				Number of Distinct Observations		23						
63				Minimum		0.01						
64				Maximum		1.91						
65				Mean of Raw Data		0.532						
66				Standard Deviation of Raw Data		0.581						
67				Khat		0.579						
68				Theta hat		0.919						
69				Kstar		0.541						
70				Theta star		0.984						
71				Mean of Log Transformed Data		-1.704						
72				Standard Deviation of Log Transformed Data		1.859						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.923						
77				Shapiro Wilk Test Statistic		0.839						
78				Shapiro Wilk Critical (0.05) Value		0.924						
79				Approximate Shapiro Wilk P Value		3.9799E-4						
80				Lilliefors Test Statistic		0.19						
81				Lilliefors Critical (0.05) Value		0.164						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.952						
87				A-D Test Statistic		0.679						
88				A-D Critical (0.05) Value		0.802						
89				K-S Test Statistic		0.132						
90				K-S Critical(0.05) Value		0.174						
91	Data appear Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.95						
96				Shapiro Wilk Test Statistic		0.879						
97				Shapiro Wilk Critical (0.05) Value		0.924						
98				Approximate Shapiro Wilk P Value		0.0035						
99				Lilliefors Test Statistic		0.159						
100				Lilliefors Critical (0.05) Value		0.164						
101	Data appear Approximate_Lognormal at (0.05) Significance Level											
102												
103	Cadmium (mg/L)											
104												
105				Raw Statistics								
106				Number of Valid Observations		40						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	24						
108					Minimum	2.9400E-5						
109					Maximum	0.003						
110					Mean of Raw Data	5.2282E-4						
111					Standard Deviation of Raw Data	7.9041E-4						
112					Khat	0.708						
113					Theta hat	7.3841E-4						
114					Kstar	0.672						
115					Theta star	7.7847E-4						
116					Mean of Log Transformed Data	-8.408						
117					Standard Deviation of Log Transformed Data	1.306						
118												
119			Normal GOF Test Results									
120												
121					Correlation Coefficient R	0.778						
122					Shapiro Wilk Test Statistic	0.607						
123					Shapiro Wilk Critical (0.05) Value	0.94						
124					Approximate Shapiro Wilk P Value	5.207E-12						
125					Lilliefors Test Statistic	0.287						
126					Lilliefors Critical (0.05) Value	0.139						
127	Data not Normal at (0.05) Significance Level											
128												
129			Gamma GOF Test Results									
130												
131					Correlation Coefficient R	0.939						
132					A-D Test Statistic	1.872						
133					A-D Critical (0.05) Value	0.793						
134					K-S Test Statistic	0.234						
135					K-S Critical(0.05) Value	0.145						
136	Data not Gamma Distributed at (0.05) Significance Level											
137												
138			Lognormal GOF Test Results									
139												
140					Correlation Coefficient R	0.976						
141					Shapiro Wilk Test Statistic	0.934						
142					Shapiro Wilk Critical (0.05) Value	0.94						
143					Approximate Shapiro Wilk P Value	0.0282						
144					Lilliefors Test Statistic	0.158						
145					Lilliefors Critical (0.05) Value	0.139						
146	Data not Lognormal at (0.05) Significance Level											
147												
148	Non-parametric GOF Test Results											
149												
150	Data do not follow a discernible distribution at (0.05) Level of Signif											
151												
152	Arsenic (mg/L)											
153												
154			Raw Statistics									
155					Number of Valid Observations	40						
156					Number of Distinct Observations	28						
157					Minimum	2.0000E-4						
158					Maximum	0.0106						
159					Mean of Raw Data	0.00272						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Standard Deviation of Raw Data	0.00305						
161					Khat	0.896						
162					Theta hat	0.00304						
163					Kstar	0.846						
164					Theta star	0.00322						
165					Mean of Log Transformed Data	-6.558						
166					Standard Deviation of Log Transformed Data	1.187						
167												
168			Normal GOF Test Results									
169												
170					Correlation Coefficient R	0.882						
171					Shapiro Wilk Test Statistic	0.767						
172					Shapiro Wilk Critical (0.05) Value	0.94						
173					Approximate Shapiro Wilk P Value	7.7010E-8						
174					Lilliefors Test Statistic	0.243						
175					Lilliefors Critical (0.05) Value	0.139						
176	Data not Normal at (0.05) Significance Level											
177												
178			Gamma GOF Test Results									
179												
180					Correlation Coefficient R	0.961						
181					A-D Test Statistic	1.688						
182					A-D Critical (0.05) Value	0.783						
183					K-S Test Statistic	0.174						
184					K-S Critical(0.05) Value	0.144						
185	Data not Gamma Distributed at (0.05) Significance Level											
186												
187			Lognormal GOF Test Results									
188												
189					Correlation Coefficient R	0.971						
190					Shapiro Wilk Test Statistic	0.921						
191					Shapiro Wilk Critical (0.05) Value	0.94						
192					Approximate Shapiro Wilk P Value	0.00976						
193					Lilliefors Test Statistic	0.149						
194					Lilliefors Critical (0.05) Value	0.139						
195	Data not Lognormal at (0.05) Significance Level											
196												
197	Non-parametric GOF Test Results											
198												
199	Data do not follow a discernible distribution at (0.05) Level of Signif											
200												
201	Copper (mg/L)											
202												
203			Raw Statistics									
204					Number of Valid Observations	40						
205					Number of Distinct Observations	28						
206					Minimum	2.0000E-4						
207					Maximum	0.0726						
208					Mean of Raw Data	0.0111						
209					Standard Deviation of Raw Data	0.0169						
210					Khat	0.705						
211					Theta hat	0.0157						
212					Kstar	0.669						

	A	B	C	D	E	F	G	H	I	J	K	L
213					Theta star	0.0166						
214					Mean of Log Transformed Data	-5.358						
215					Standard Deviation of Log Transformed Data	1.338						
216												
217				Normal GOF Test Results								
218												
219					Correlation Coefficient R	0.783						
220					Shapiro Wilk Test Statistic	0.622						
221					Shapiro Wilk Critical (0.05) Value	0.94						
222					Approximate Shapiro Wilk P Value	1.194E-11						
223					Lilliefors Test Statistic	0.272						
224					Lilliefors Critical (0.05) Value	0.139						
225	Data not Normal at (0.05) Significance Level											
226												
227				Gamma GOF Test Results								
228												
229					Correlation Coefficient R	0.962						
230					A-D Test Statistic	1.552						
231					A-D Critical (0.05) Value	0.793						
232					K-S Test Statistic	0.193						
233					K-S Critical(0.05) Value	0.145						
234	Data not Gamma Distributed at (0.05) Significance Level											
235												
236				Lognormal GOF Test Results								
237												
238					Correlation Coefficient R	0.981						
239					Shapiro Wilk Test Statistic	0.959						
240					Shapiro Wilk Critical (0.05) Value	0.94						
241					Approximate Shapiro Wilk P Value	0.212						
242					Lilliefors Test Statistic	0.107						
243					Lilliefors Critical (0.05) Value	0.139						
244	Data appear Lognormal at (0.05) Significance Level											
245												
246	Nickel (mg/L)											
247												
248				Raw Statistics								
249					Number of Valid Observations	30						
250					Number of Distinct Observations	28						
251					Minimum	0.00444						
252					Maximum	1.52						
253					Mean of Raw Data	0.132						
254					Standard Deviation of Raw Data	0.304						
255					Khat	0.406						
256					Theta hat	0.326						
257					Kstar	0.387						
258					Theta star	0.342						
259					Mean of Log Transformed Data	-3.639						
260					Standard Deviation of Log Transformed Data	1.714						
261												
262				Normal GOF Test Results								
263												
264					Correlation Coefficient R	0.675						
265					Shapiro Wilk Test Statistic	0.483						

	A	B	C	D	E	F	G	H	I	J	K	L
266					Shapiro Wilk Critical (0.05) Value	0.927						
267					Approximate Shapiro Wilk P Value	6.117E-11						
268					Lilliefors Test Statistic	0.337						
269					Lilliefors Critical (0.05) Value	0.159						
270	Data not Normal at (0.05) Significance Level											
271												
272				Gamma GOF Test Results								
273												
274					Correlation Coefficient R	0.958						
275					A-D Test Statistic	2.781						
276					A-D Critical (0.05) Value	0.83						
277					K-S Test Statistic	0.294						
278					K-S Critical(0.05) Value	0.171						
279	Data not Gamma Distributed at (0.05) Significance Level											
280												
281				Lognormal GOF Test Results								
282												
283					Correlation Coefficient R	0.935						
284					Shapiro Wilk Test Statistic	0.861						
285					Shapiro Wilk Critical (0.05) Value	0.927						
286					Approximate Shapiro Wilk P Value	8.1908E-4						
287					Lilliefors Test Statistic	0.226						
288					Lilliefors Critical (0.05) Value	0.159						
289	Data not Lognormal at (0.05) Significance Level											
290												
291	Non-parametric GOF Test Results											
292												
293	Data do not follow a discernible distribution at (0.05) Level of Signif											
294												
295	Zinc (mg/L)											
296												
297				Raw Statistics								
298					Number of Valid Observations	30						
299					Number of Distinct Observations	27						
300					Minimum	0.001						
301					Maximum	1.19						
302					Mean of Raw Data	0.318						
303					Standard Deviation of Raw Data	0.379						
304					Khat	0.504						
305					Theta hat	0.632						
306					Kstar	0.476						
307					Theta star	0.669						
308					Mean of Log Transformed Data	-2.404						
309					Standard Deviation of Log Transformed Data	2.176						
310												
311				Normal GOF Test Results								
312												
313					Correlation Coefficient R	0.891						
314					Shapiro Wilk Test Statistic	0.781						
315					Shapiro Wilk Critical (0.05) Value	0.927						
316					Approximate Shapiro Wilk P Value	1.1433E-5						
317					Lilliefors Test Statistic	0.237						
318					Lilliefors Critical (0.05) Value	0.159						

	A	B	C	D	E	F	G	H	I	J	K	L
319	Data not Normal at (0.05) Significance Level											
320												
321				Gamma GOF Test Results								
322												
323					Correlation Coefficient R	0.944						
324					A-D Test Statistic	0.465						
325					A-D Critical (0.05) Value	0.809						
326					K-S Test Statistic	0.116						
327					K-S Critical(0.05) Value	0.169						
328	Data appear Gamma Distributed at (0.05) Significance Level											
329												
330				Lognormal GOF Test Results								
331												
332					Correlation Coefficient R	0.95						
333					Shapiro Wilk Test Statistic	0.885						
334					Shapiro Wilk Critical (0.05) Value	0.927						
335					Approximate Shapiro Wilk P Value	0.00338						
336					Lilliefors Test Statistic	0.209						
337					Lilliefors Critical (0.05) Value	0.159						
338	Data not Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/10/2025 10:11:14 AM
4	From File	2024-IntermediateProUCL_k.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	13-IN	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	37
13	Number of Distinct Observations	15
14	Minimum	0.5
15	Maximum	2
16	Mean of Raw Data	0.784
17	Standard Deviation of Raw Data	0.367
18	Khat	6.124
19	Theta hat	0.128
20	Kstar	5.646
21	Theta star	0.139
22	Mean of Log Transformed Data	-0.327
23	Standard Deviation of Log Transformed Data	0.394
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.881
28	Shapiro Wilk Test Statistic	0.776
29	Shapiro Wilk Critical (0.05) Value	0.936
30	Approximate Shapiro Wilk P Value	5.4109E-7
31	Lilliefors Test Statistic	0.22
32	Lilliefors Critical (0.05) Value	0.144
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.947
38	A-D Test Statistic	2.043
39	A-D Critical (0.05) Value	0.75
40	K-S Test Statistic	0.189
41	K-S Critical(0.05) Value	0.145
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.929
47	Shapiro Wilk Test Statistic	0.85
48	Shapiro Wilk Critical (0.05) Value	0.936
49	Approximate Shapiro Wilk P Value	7.0029E-5
50	Lilliefors Test Statistic	0.184
51	Lilliefors Critical (0.05) Value	0.144
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Arsenic (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		36						
62				Number of Distinct Observations		22						
63				Minimum		2.0000E-4						
64				Maximum		0.007						
65				Mean of Raw Data		8.0750E-4						
66				Standard Deviation of Raw Data		0.0012						
67				Khat		1.305						
68				Theta hat		6.1897E-4						
69				Kstar		1.214						
70				Theta star		6.6495E-4						
71				Mean of Log Transformed Data		-7.551						
72				Standard Deviation of Log Transformed Data		0.795						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.674						
77				Shapiro Wilk Test Statistic		0.488						
78				Shapiro Wilk Critical (0.05) Value		0.935						
79				Approximate Shapiro Wilk P Value		5.296E-13						
80				Lilliefors Test Statistic		0.308						
81				Lilliefors Critical (0.05) Value		0.145						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.861						
87				A-D Test Statistic		2.704						
88				A-D Critical (0.05) Value		0.77						
89				K-S Test Statistic		0.193						
90				K-S Critical(0.05) Value		0.15						
91	Data not Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.937						
96				Shapiro Wilk Test Statistic		0.88						
97				Shapiro Wilk Critical (0.05) Value		0.935						
98				Approximate Shapiro Wilk P Value		7.8771E-4						
99				Lilliefors Test Statistic		0.162						
100				Lilliefors Critical (0.05) Value		0.145						
101	Data not Lognormal at (0.05) Significance Level											
102												
103	Non-parametric GOF Test Results											
104												
105	Data do not follow a discernible distribution at (0.05) Level of Signif											
106												

	A	B	C	D	E	F	G	H	I	J	K	L
107	Copper (mg/L)											
108												
109				Raw Statistics								
110					Number of Valid Observations	36						
111					Number of Distinct Observations	22						
112					Minimum	7.8000E-6						
113					Maximum	0.0042						
114					Mean of Raw Data	0.00122						
115					Standard Deviation of Raw Data	9.0382E-4						
116					Khat	1.571						
117					Theta hat	7.7671E-4						
118					Kstar	1.458						
119					Theta star	8.3656E-4						
120					Mean of Log Transformed Data	-7.06						
121					Standard Deviation of Log Transformed Data	1.093						
122												
123				Normal GOF Test Results								
124												
125					Correlation Coefficient R	0.924						
126					Shapiro Wilk Test Statistic	0.862						
127					Shapiro Wilk Critical (0.05) Value	0.935						
128					Approximate Shapiro Wilk P Value	2.0881E-4						
129					Lilliefors Test Statistic	0.275						
130					Lilliefors Critical (0.05) Value	0.145						
131	Data not Normal at (0.05) Significance Level											
132												
133				Gamma GOF Test Results								
134												
135					Correlation Coefficient R	0.982						
136					A-D Test Statistic	1.031						
137					A-D Critical (0.05) Value	0.765						
138					K-S Test Statistic	0.165						
139					K-S Critical(0.05) Value	0.149						
140	Data not Gamma Distributed at (0.05) Significance Level											
141												
142				Lognormal GOF Test Results								
143												
144					Correlation Coefficient R	0.876						
145					Shapiro Wilk Test Statistic	0.797						
146					Shapiro Wilk Critical (0.05) Value	0.935						
147					Approximate Shapiro Wilk P Value	2.9538E-6						
148					Lilliefors Test Statistic	0.215						
149					Lilliefors Critical (0.05) Value	0.145						
150	Data not Lognormal at (0.05) Significance Level											
151												
152	Non-parametric GOF Test Results											
153												
154	Data do not follow a discernible distribution at (0.05) Level of Signif											
155												
156	Nickel (mg/L)											
157												
158				Raw Statistics								
159					Number of Valid Observations	31						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Number of Distinct Observations	25						
161					Minimum	7.0000E-4						
162					Maximum	0.02						
163					Mean of Raw Data	0.0044						
164					Standard Deviation of Raw Data	0.00452						
165					Khat	1.661						
166					Theta hat	0.00265						
167					Kstar	1.522						
168					Theta star	0.00289						
169					Mean of Log Transformed Data	-5.757						
170					Standard Deviation of Log Transformed Data	0.78						
171												
172				Normal GOF Test Results								
173												
174					Correlation Coefficient R	0.805						
175					Shapiro Wilk Test Statistic	0.659						
176					Shapiro Wilk Critical (0.05) Value	0.929						
177					Approximate Shapiro Wilk P Value	2.6470E-8						
178					Lilliefors Test Statistic	0.286						
179					Lilliefors Critical (0.05) Value	0.156						
180	Data not Normal at (0.05) Significance Level											
181												
182				Gamma GOF Test Results								
183												
184					Correlation Coefficient R	0.933						
185					A-D Test Statistic	1.31						
186					A-D Critical (0.05) Value	0.762						
187					K-S Test Statistic	0.189						
188					K-S Critical(0.05) Value	0.16						
189	Data not Gamma Distributed at (0.05) Significance Level											
190												
191				Lognormal GOF Test Results								
192												
193					Correlation Coefficient R	0.974						
194					Shapiro Wilk Test Statistic	0.949						
195					Shapiro Wilk Critical (0.05) Value	0.929						
196					Approximate Shapiro Wilk P Value	0.169						
197					Lilliefors Test Statistic	0.144						
198					Lilliefors Critical (0.05) Value	0.156						
199	Data appear Lognormal at (0.05) Significance Level											
200												
201	Zinc (mg/L)											
202												
203				Raw Statistics								
204					Number of Valid Observations	31						
205					Number of Distinct Observations	24						
206					Minimum	6.0000E-4						
207					Maximum	0.082						
208					Mean of Raw Data	0.00654						
209					Standard Deviation of Raw Data	0.0144						
210					Khat	0.824						
211					Theta hat	0.00794						
212					Kstar	0.766						

	A	B	C	D	E	F	G	H	I	J	K	L
213					Theta star	0.00854						
214					Mean of Log Transformed Data	-5.748						
215					Standard Deviation of Log Transformed Data	1.04						
216												
217				Normal GOF Test Results								
218												
219					Correlation Coefficient R	0.573						
220					Shapiro Wilk Test Statistic	0.364						
221					Shapiro Wilk Critical (0.05) Value	0.929						
222					Approximate Shapiro Wilk P Value	5.611E-13						
223					Lilliefors Test Statistic	0.34						
224					Lilliefors Critical (0.05) Value	0.156						
225	Data not Normal at (0.05) Significance Level											
226												
227				Gamma GOF Test Results								
228												
229					Correlation Coefficient R	0.79						
230					A-D Test Statistic	1.795						
231					A-D Critical (0.05) Value	0.784						
232					K-S Test Statistic	0.18						
233					K-S Critical(0.05) Value	0.163						
234	Data not Gamma Distributed at (0.05) Significance Level											
235												
236				Lognormal GOF Test Results								
237												
238					Correlation Coefficient R	0.969						
239					Shapiro Wilk Test Statistic	0.948						
240					Shapiro Wilk Critical (0.05) Value	0.929						
241					Approximate Shapiro Wilk P Value	0.167						
242					Lilliefors Test Statistic	0.107						
243					Lilliefors Critical (0.05) Value	0.156						
244	Data appear Lognormal at (0.05) Significance Level											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/10/2025 11:30:39 AM
	From File	2024-IntermediateProUCL_I.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

15-IN

Chloride (mg/L)

Raw Statistics	
Number of Valid Observations	30
Number of Distinct Observations	14
Minimum	0.5
Maximum	3.1
Mean of Raw Data	0.793
Standard Deviation of Raw Data	0.542
Khat	3.904
Theta hat	0.203
Kstar	3.535
Theta star	0.224
Mean of Log Transformed Data	-0.365
Standard Deviation of Log Transformed Data	0.469

Normal GOF Test Results	
Correlation Coefficient R	0.766
Shapiro Wilk Test Statistic	0.608
Shapiro Wilk Critical (0.05) Value	0.927
Approximate Shapiro Wilk P Value	5.8843E-9
Lilliefors Test Statistic	0.294
Lilliefors Critical (0.05) Value	0.159

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.88
A-D Test Statistic	3.212
A-D Critical (0.05) Value	0.75
K-S Test Statistic	0.283
K-S Critical(0.05) Value	0.161

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.864
Shapiro Wilk Test Statistic	0.748
Shapiro Wilk Critical (0.05) Value	0.927
Approximate Shapiro Wilk P Value	2.2703E-6
Lilliefors Test Statistic	0.284
Lilliefors Critical (0.05) Value	0.159

Data not Lognormal at (0.05) Significance Level

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Cadmium (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		30						
62				Number of Distinct Observations		19						
63				Minimum		1.0000E-5						
64				Maximum		0.003						
65				Mean of Raw Data		2.2565E-4						
66				Standard Deviation of Raw Data		5.5513E-4						
67				Khat		0.588						
68				Theta hat		3.8386E-4						
69				Kstar		0.551						
70				Theta star		4.0932E-4						
71				Mean of Log Transformed Data		-9.451						
72				Standard Deviation of Log Transformed Data		1.301						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.578						
77				Shapiro Wilk Test Statistic		0.367						
78				Shapiro Wilk Critical (0.05) Value		0.927						
79				Approximate Shapiro Wilk P Value		1.478E-12						
80				Lilliefors Test Statistic		0.452						
81				Lilliefors Critical (0.05) Value		0.159						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.832						
87				A-D Test Statistic		2.673						
88				A-D Critical (0.05) Value		0.802						
89				K-S Test Statistic		0.296						
90				K-S Critical(0.05) Value		0.168						
91	Data not Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.94						
96				Shapiro Wilk Test Statistic		0.887						
97				Shapiro Wilk Critical (0.05) Value		0.927						
98				Approximate Shapiro Wilk P Value		0.00403						
99				Lilliefors Test Statistic		0.197						
100				Lilliefors Critical (0.05) Value		0.159						
101	Data not Lognormal at (0.05) Significance Level											
102												
103	Non-parametric GOF Test Results											
104												
105	Data do not follow a discernible distribution at (0.05) Level of Signif											
106												

	A	B	C	D	E	F	G	H	I	J	K	L
107	Copper (mg/L)											
108												
109				Raw Statistics								
110					Number of Valid Observations	30						
111					Number of Distinct Observations	24						
112					Minimum	2.0000E-4						
113					Maximum	0.01						
114					Mean of Raw Data	0.00278						
115					Standard Deviation of Raw Data	0.00202						
116					Khat	2.033						
117					Theta hat	0.00137						
118					Kstar	1.852						
119					Theta star	0.0015						
120					Mean of Log Transformed Data	-6.151						
121					Standard Deviation of Log Transformed Data	0.803						
122												
123				Normal GOF Test Results								
124												
125					Correlation Coefficient R	0.923						
126					Shapiro Wilk Test Statistic	0.866						
127					Shapiro Wilk Critical (0.05) Value	0.927						
128					Approximate Shapiro Wilk P Value	0.00115						
129					Lilliefors Test Statistic	0.146						
130					Lilliefors Critical (0.05) Value	0.159						
131	Data appear Approximate Normal at (0.05) Significance Level											
132												
133				Gamma GOF Test Results								
134												
135					Correlation Coefficient R	0.982						
136					A-D Test Statistic	0.328						
137					A-D Critical (0.05) Value	0.758						
138					K-S Test Statistic	0.0964						
139					K-S Critical(0.05) Value	0.162						
140	Data appear Gamma Distributed at (0.05) Significance Level											
141												
142				Lognormal GOF Test Results								
143												
144					Correlation Coefficient R	0.97						
145					Shapiro Wilk Test Statistic	0.951						
146					Shapiro Wilk Critical (0.05) Value	0.927						
147					Approximate Shapiro Wilk P Value	0.217						
148					Lilliefors Test Statistic	0.145						
149					Lilliefors Critical (0.05) Value	0.159						
150	Data appear Lognormal at (0.05) Significance Level											
151												
152	Nickel (mg/L)											
153												
154				Raw Statistics								
155					Number of Valid Observations	30						
156					Number of Distinct Observations	27						
157					Minimum	0.0039						
158					Maximum	0.092						
159					Mean of Raw Data	0.0127						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Standard Deviation of Raw Data	0.0164						
161					Khat	1.565						
162					Theta hat	0.00814						
163					Kstar	1.431						
164					Theta star	0.0089						
165					Mean of Log Transformed Data	-4.716						
166					Standard Deviation of Log Transformed Data	0.738						
167												
168				Normal GOF Test Results								
169												
170					Correlation Coefficient R	0.692						
171					Shapiro Wilk Test Statistic	0.511						
172					Shapiro Wilk Critical (0.05) Value	0.927						
173					Approximate Shapiro Wilk P Value	1.627E-10						
174					Lilliefors Test Statistic	0.295						
175					Lilliefors Critical (0.05) Value	0.159						
176	Data not Normal at (0.05) Significance Level											
177												
178				Gamma GOF Test Results								
179												
180					Correlation Coefficient R	0.855						
181					A-D Test Statistic	1.978						
182					A-D Critical (0.05) Value	0.762						
183					K-S Test Statistic	0.206						
184					K-S Critical(0.05) Value	0.163						
185	Data not Gamma Distributed at (0.05) Significance Level											
186												
187				Lognormal GOF Test Results								
188												
189					Correlation Coefficient R	0.934						
190					Shapiro Wilk Test Statistic	0.876						
191					Shapiro Wilk Critical (0.05) Value	0.927						
192					Approximate Shapiro Wilk P Value	0.00202						
193					Lilliefors Test Statistic	0.165						
194					Lilliefors Critical (0.05) Value	0.159						
195	Data not Lognormal at (0.05) Significance Level											
196												
197	Non-parametric GOF Test Results											
198												
199	Data do not follow a discernible distribution at (0.05) Level of Signif											
200												
201	Zinc (mg/L)											
202												
203				Raw Statistics								
204					Number of Valid Observations	30						
205					Number of Distinct Observations	23						
206					Minimum	0.001						
207					Maximum	0.026						
208					Mean of Raw Data	0.00497						
209					Standard Deviation of Raw Data	0.00537						
210					Khat	1.583						
211					Theta hat	0.00314						
212					Kstar	1.447						

	A	B	C	D	E	F	G	H	I	J	K	L
213					Theta star	0.00344						
214					Mean of Log Transformed Data	-5.652						
215					Standard Deviation of Log Transformed Data	0.791						
216												
217				Normal GOF Test Results								
218												
219					Correlation Coefficient R	0.798						
220					Shapiro Wilk Test Statistic	0.654						
221					Shapiro Wilk Critical (0.05) Value	0.927						
222					Approximate Shapiro Wilk P Value	3.6991E-8						
223					Lilliefors Test Statistic	0.232						
224					Lilliefors Critical (0.05) Value	0.159						
225	Data not Normal at (0.05) Significance Level											
226												
227				Gamma GOF Test Results								
228												
229					Correlation Coefficient R	0.936						
230					A-D Test Statistic	1.056						
231					A-D Critical (0.05) Value	0.762						
232					K-S Test Statistic	0.142						
233					K-S Critical(0.05) Value	0.163						
234	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
235												
236				Lognormal GOF Test Results								
237												
238					Correlation Coefficient R	0.979						
239					Shapiro Wilk Test Statistic	0.954						
240					Shapiro Wilk Critical (0.05) Value	0.927						
241					Approximate Shapiro Wilk P Value	0.252						
242					Lilliefors Test Statistic	0.118						
243					Lilliefors Critical (0.05) Value	0.159						
244	Data appear Lognormal at (0.05) Significance Level											

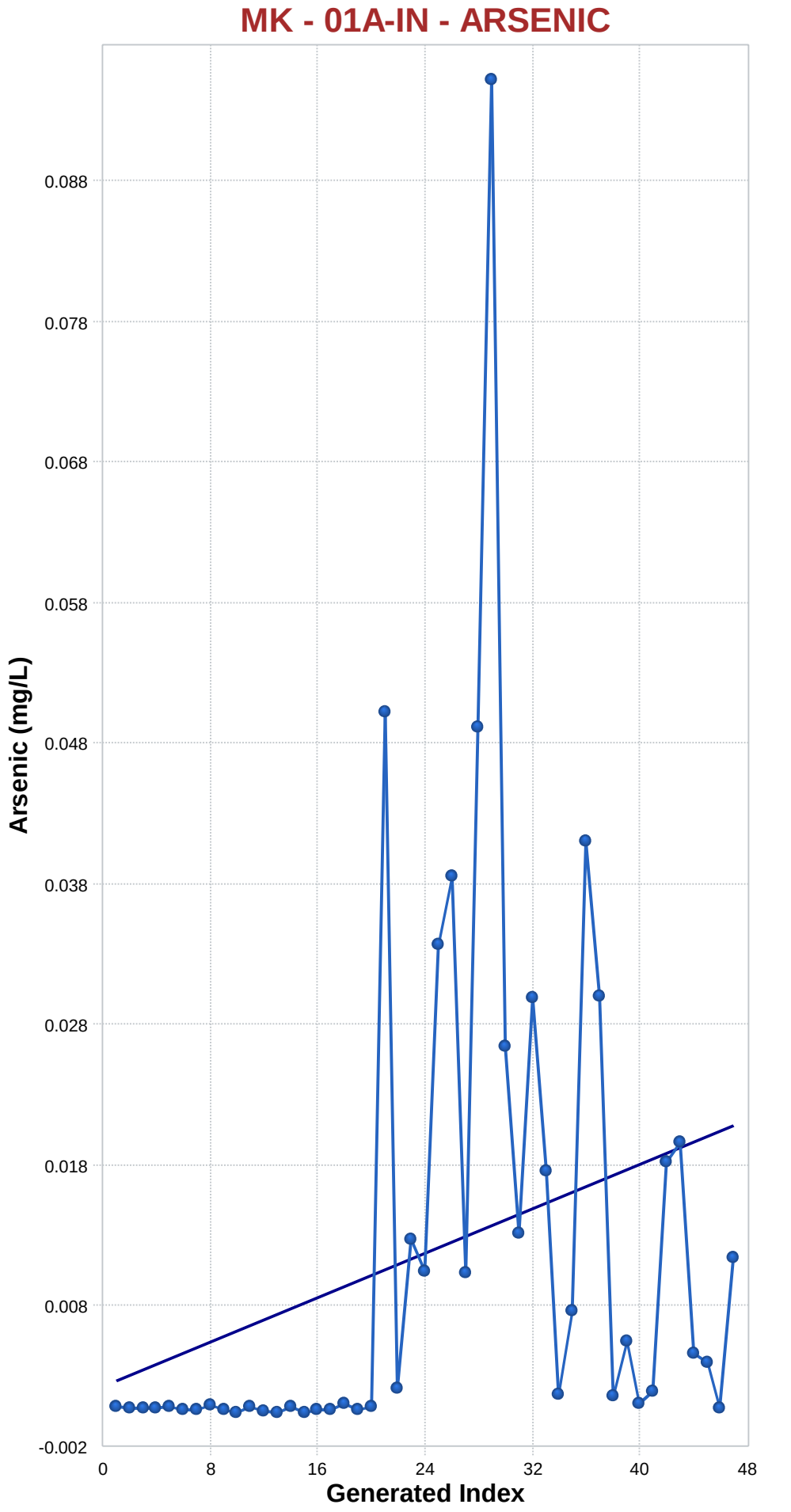
1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/10/2025 12:04:18 PM
4	From File	2024-IntermediateProUCL_n.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	17-IN	
9	Arsenic (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	30
13	Number of Distinct Observations	15
14	Minimum	1.8000E-4
15	Maximum	0.00106
16	Mean of Raw Data	3.6300E-4
17	Standard Deviation of Raw Data	2.1948E-4
18	Khat	3.764
19	Theta hat	9.6428E-5
20	Kstar	3.41
21	Theta star	1.0644E-4
22	Mean of Log Transformed Data	-8.06
23	Standard Deviation of Log Transformed Data	0.509
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.885
28	Shapiro Wilk Test Statistic	0.785
29	Shapiro Wilk Critical (0.05) Value	0.927
30	Approximate Shapiro Wilk P Value	1.3975E-5
31	Lilliefors Test Statistic	0.233
32	Lilliefors Critical (0.05) Value	0.159
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.96
38	A-D Test Statistic	1.387
39	A-D Critical (0.05) Value	0.75
40	K-S Test Statistic	0.164
41	K-S Critical(0.05) Value	0.161
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.95
47	Shapiro Wilk Test Statistic	0.889
48	Shapiro Wilk Critical (0.05) Value	0.927
49	Approximate Shapiro Wilk P Value	0.00448
50	Lilliefors Test Statistic	0.161
51	Lilliefors Critical (0.05) Value	0.159
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Cadmium (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		30						
62				Number of Distinct Observations		19						
63				Minimum		8.8000E-6						
64				Maximum		3.0000E-4						
65				Mean of Raw Data		1.0244E-4						
66				Standard Deviation of Raw Data		9.1499E-5						
67				Khat		1.053						
68				Theta hat		9.7308E-5						
69				Kstar		0.97						
70				Theta star		1.0564E-4						
71				Mean of Log Transformed Data		-9.731						
72				Standard Deviation of Log Transformed Data		1.154						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.889						
77				Shapiro Wilk Test Statistic		0.777						
78				Shapiro Wilk Critical (0.05) Value		0.927						
79				Approximate Shapiro Wilk P Value		9.3919E-6						
80				Lilliefors Test Statistic		0.283						
81				Lilliefors Critical (0.05) Value		0.159						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.868						
87				A-D Test Statistic		2.078						
88				A-D Critical (0.05) Value		0.774						
89				K-S Test Statistic		0.261						
90				K-S Critical(0.05) Value		0.165						
91	Data not Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.94						
96				Shapiro Wilk Test Statistic		0.864						
97				Shapiro Wilk Critical (0.05) Value		0.927						
98				Approximate Shapiro Wilk P Value		0.00101						
99				Lilliefors Test Statistic		0.254						
100				Lilliefors Critical (0.05) Value		0.159						
101	Data not Lognormal at (0.05) Significance Level											
102												
103	Non-parametric GOF Test Results											
104												
105	Data do not follow a discernible distribution at (0.05) Level of Signif											
106												

	A	B	C	D	E	F	G	H	I	J	K	L
107	Copper (mg/L)											
108												
109				Raw Statistics								
110					Number of Valid Observations	30						
111					Number of Distinct Observations	26						
112					Minimum	2.0000E-4						
113					Maximum	0.01						
114					Mean of Raw Data	0.00294						
115					Standard Deviation of Raw Data	0.00215						
116					Khat	2.515						
117					Theta hat	0.00117						
118					Kstar	2.285						
119					Theta star	0.00129						
120					Mean of Log Transformed Data	-6.042						
121					Standard Deviation of Log Transformed Data	0.701						
122												
123				Normal GOF Test Results								
124												
125					Correlation Coefficient R	0.848						
126					Shapiro Wilk Test Statistic	0.734						
127					Shapiro Wilk Critical (0.05) Value	0.927						
128					Approximate Shapiro Wilk P Value	1.1779E-6						
129					Lilliefors Test Statistic	0.251						
130					Lilliefors Critical (0.05) Value	0.159						
131	Data not Normal at (0.05) Significance Level											
132												
133				Gamma GOF Test Results								
134												
135					Correlation Coefficient R	0.934						
136					A-D Test Statistic	1.216						
137					A-D Critical (0.05) Value	0.755						
138					K-S Test Statistic	0.165						
139					K-S Critical(0.05) Value	0.162						
140	Data not Gamma Distributed at (0.05) Significance Level											
141												
142				Lognormal GOF Test Results								
143												
144					Correlation Coefficient R	0.924						
145					Shapiro Wilk Test Statistic	0.882						
146					Shapiro Wilk Critical (0.05) Value	0.927						
147					Approximate Shapiro Wilk P Value	0.00288						
148					Lilliefors Test Statistic	0.15						
149					Lilliefors Critical (0.05) Value	0.159						
150	Data appear Approximate_Lognormal at (0.05) Significance Level											
151												
152	Nickel (mg/L)											
153												
154				Raw Statistics								
155					Number of Valid Observations	30						
156					Number of Distinct Observations	26						
157					Minimum	0.00211						
158					Maximum	0.04						
159					Mean of Raw Data	0.00577						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Standard Deviation of Raw Data	0.00685						
161					Khat	2.108						
162					Theta hat	0.00274						
163					Kstar	1.92						
164					Theta star	0.00301						
165					Mean of Log Transformed Data	-5.41						
166					Standard Deviation of Log Transformed Data	0.604						
167												
168				Normal GOF Test Results								
169												
170					Correlation Coefficient R	0.645						
171					Shapiro Wilk Test Statistic	0.451						
172					Shapiro Wilk Critical (0.05) Value	0.927						
173					Approximate Shapiro Wilk P Value	2.139E-11						
174					Lilliefors Test Statistic	0.32						
175					Lilliefors Critical (0.05) Value	0.159						
176	Data not Normal at (0.05) Significance Level											
177												
178				Gamma GOF Test Results								
179												
180					Correlation Coefficient R	0.79						
181					A-D Test Statistic	2.119						
182					A-D Critical (0.05) Value	0.758						
183					K-S Test Statistic	0.22						
184					K-S Critical(0.05) Value	0.162						
185	Data not Gamma Distributed at (0.05) Significance Level											
186												
187				Lognormal GOF Test Results								
188												
189					Correlation Coefficient R	0.921						
190					Shapiro Wilk Test Statistic	0.864						
191					Shapiro Wilk Critical (0.05) Value	0.927						
192					Approximate Shapiro Wilk P Value	9.8155E-4						
193					Lilliefors Test Statistic	0.147						
194					Lilliefors Critical (0.05) Value	0.159						
195	Data appear Approximate_Lognormal at (0.05) Significance Level											
196												
197	Zinc (mg/L)											
198												
199				Raw Statistics								
200					Number of Valid Observations	30						
201					Number of Distinct Observations	23						
202					Minimum	6.0000E-4						
203					Maximum	0.015						
204					Mean of Raw Data	0.00422						
205					Standard Deviation of Raw Data	0.0034						
206					Khat	1.663						
207					Theta hat	0.00254						
208					Kstar	1.519						
209					Theta star	0.00278						
210					Mean of Log Transformed Data	-5.798						
211					Standard Deviation of Log Transformed Data	0.861						
212												

	A	B	C	D	E	F	G	H	I	J	K	L
213	Normal GOF Test Results											
214												
215					Correlation Coefficient R	0.931						
216					Shapiro Wilk Test Statistic	0.869						
217					Shapiro Wilk Critical (0.05) Value	0.927						
218					Approximate Shapiro Wilk P Value	0.00135						
219					Lilliefors Test Statistic	0.157						
220					Lilliefors Critical (0.05) Value	0.159						
221	Data appear Approximate Normal at (0.05) Significance Level											
222												
223	Gamma GOF Test Results											
224												
225					Correlation Coefficient R	0.992						
226					A-D Test Statistic	0.554						
227					A-D Critical (0.05) Value	0.762						
228					K-S Test Statistic	0.12						
229					K-S Critical(0.05) Value	0.163						
230	Data appear Gamma Distributed at (0.05) Significance Level											
231												
232	Lognormal GOF Test Results											
233												
234					Correlation Coefficient R	0.98						
235					Shapiro Wilk Test Statistic	0.949						
236					Shapiro Wilk Critical (0.05) Value	0.927						
237					Approximate Shapiro Wilk P Value	0.183						
238					Lilliefors Test Statistic	0.159						
239					Lilliefors Critical (0.05) Value	0.159						
240	Data appear Approximate_Lognormal at (0.05) Significance Level											



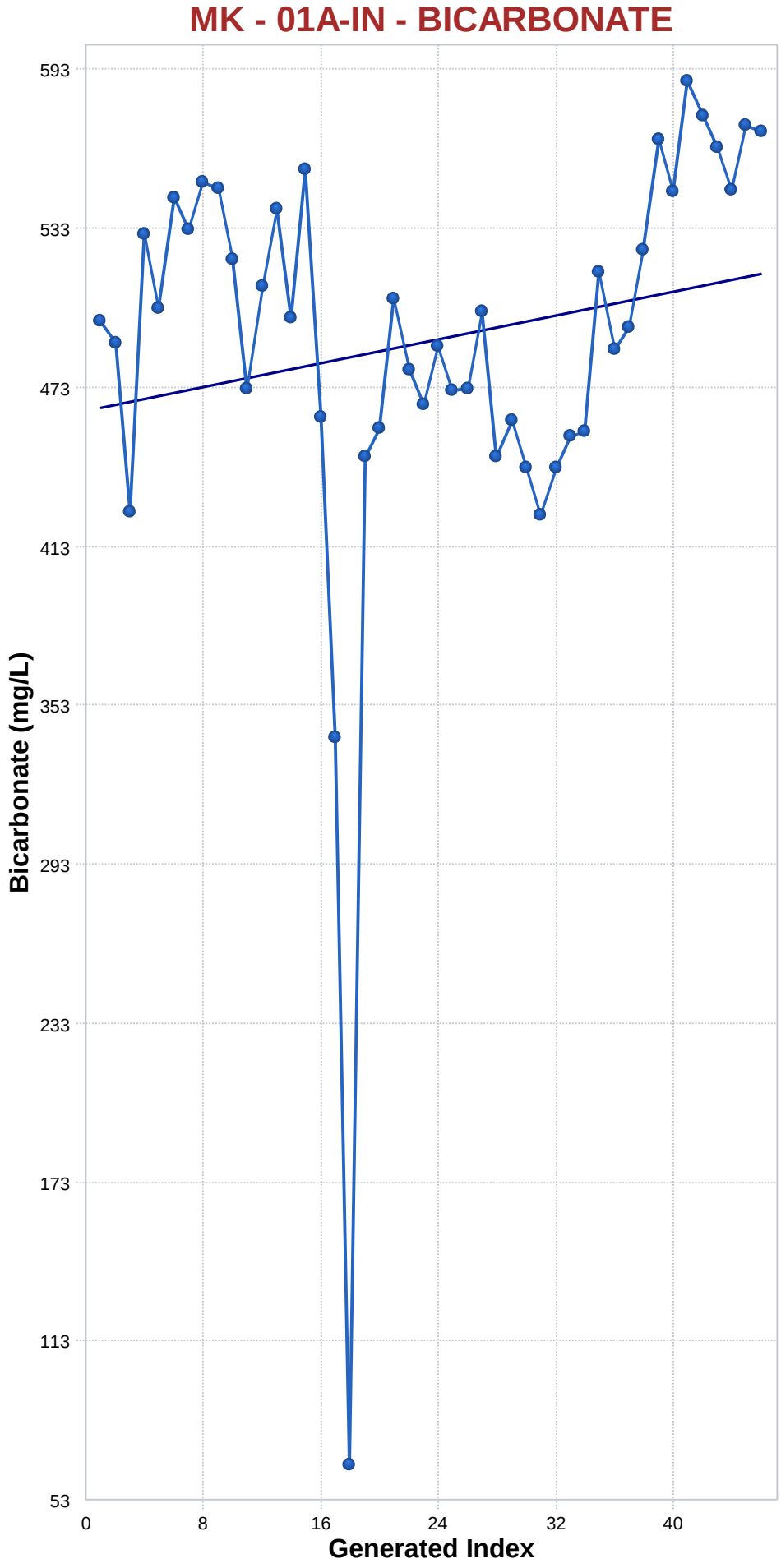
Mann-Kendall Trend Analysis

n	47
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	108.8056
Standardized Value of S	3.5384
M-K Test Value (S)	386
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	0.0004
OLS Regression Intercept	0.0021

Statistically significant evidence of an increasing trend at the specified level of significance.



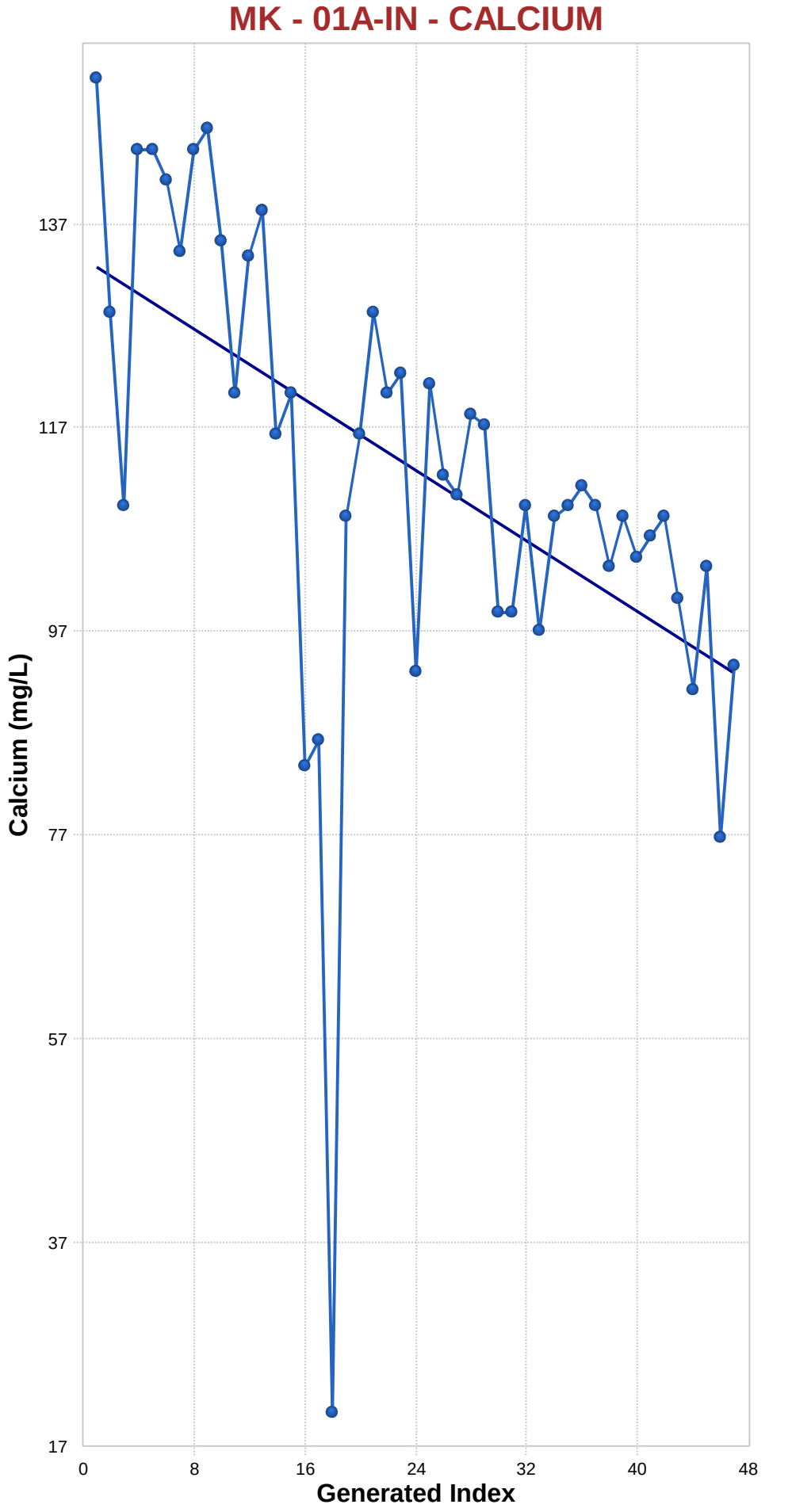
Mann-Kendall Trend Analysis

n	46
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	105.6078
Standardized Value of S	1.2120
M-K Test Value (S)	129
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1128

OLS Regression Line (Blue)

OLS Regression Slope	1.1148
OLS Regression Intercept	463.7391

Insufficient statistical evidence of a significant trend at the specified level of significance.



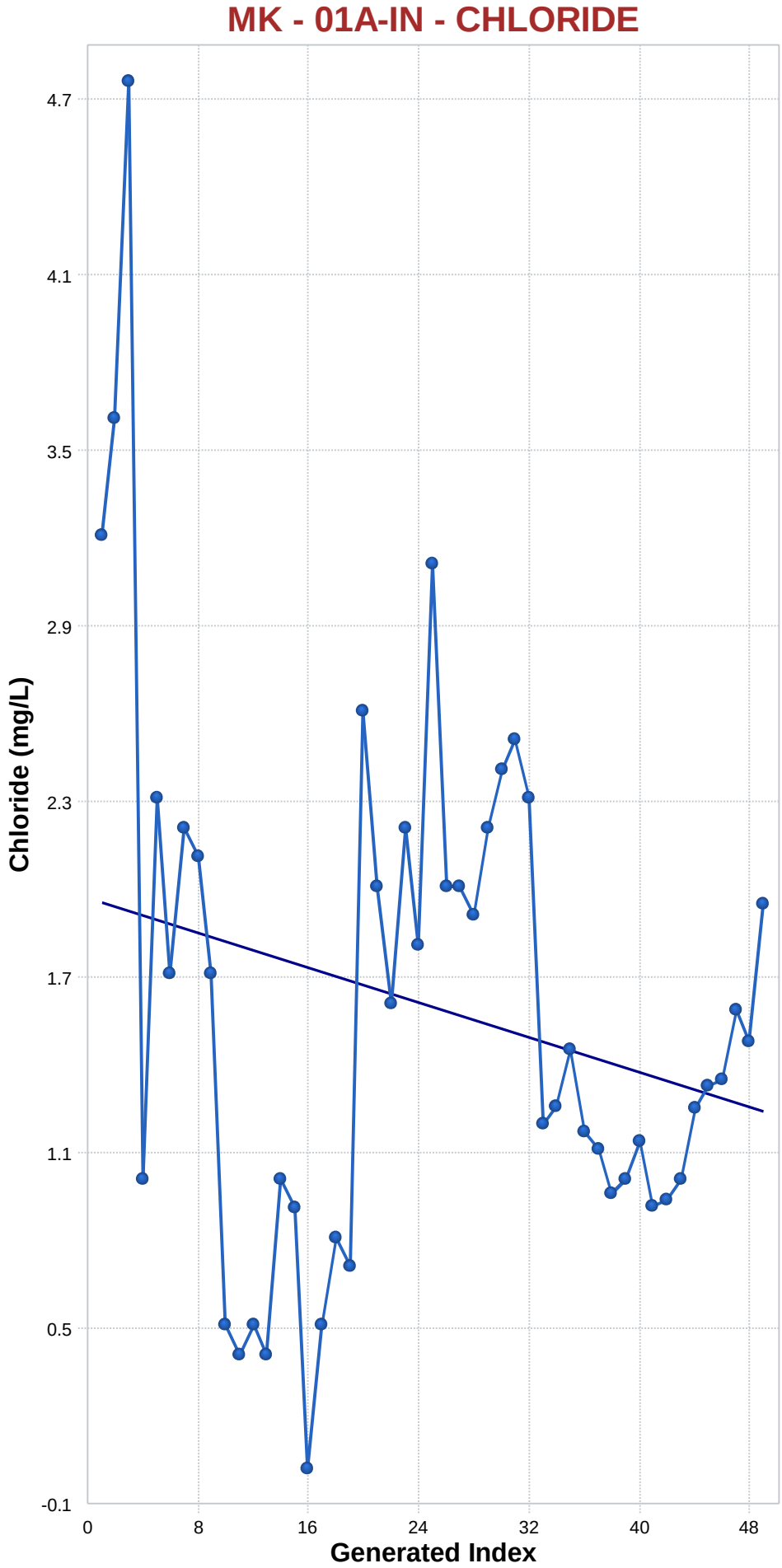
Mann-Kendall Trend Analysis

n	47
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	108.9189
Standardized Value of S	-5.2792
M-K Test Value (S)	-576
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.8660
OLS Regression Intercept	133.3445

Statistically significant evidence of a decreasing trend at the specified level of significance.



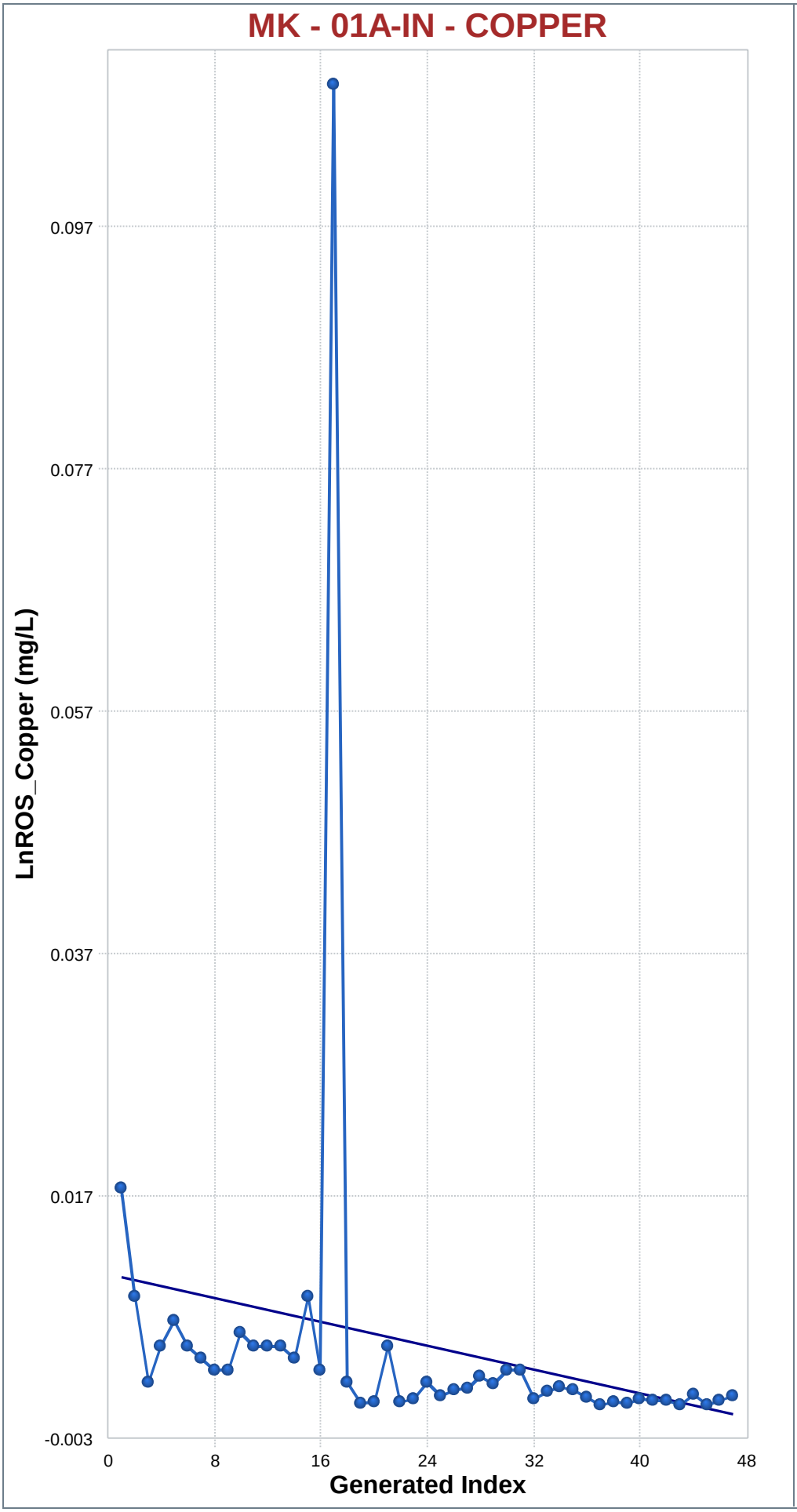
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	115.9138
Standardized Value of S	-0.8196
M-K Test Value (S)	-96
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.2062

OLS Regression Line (Blue)

OLS Regression Slope	-0.0150
OLS Regression Intercept	1.9618

Insufficient statistical evidence of a significant trend at the specified level of significance.



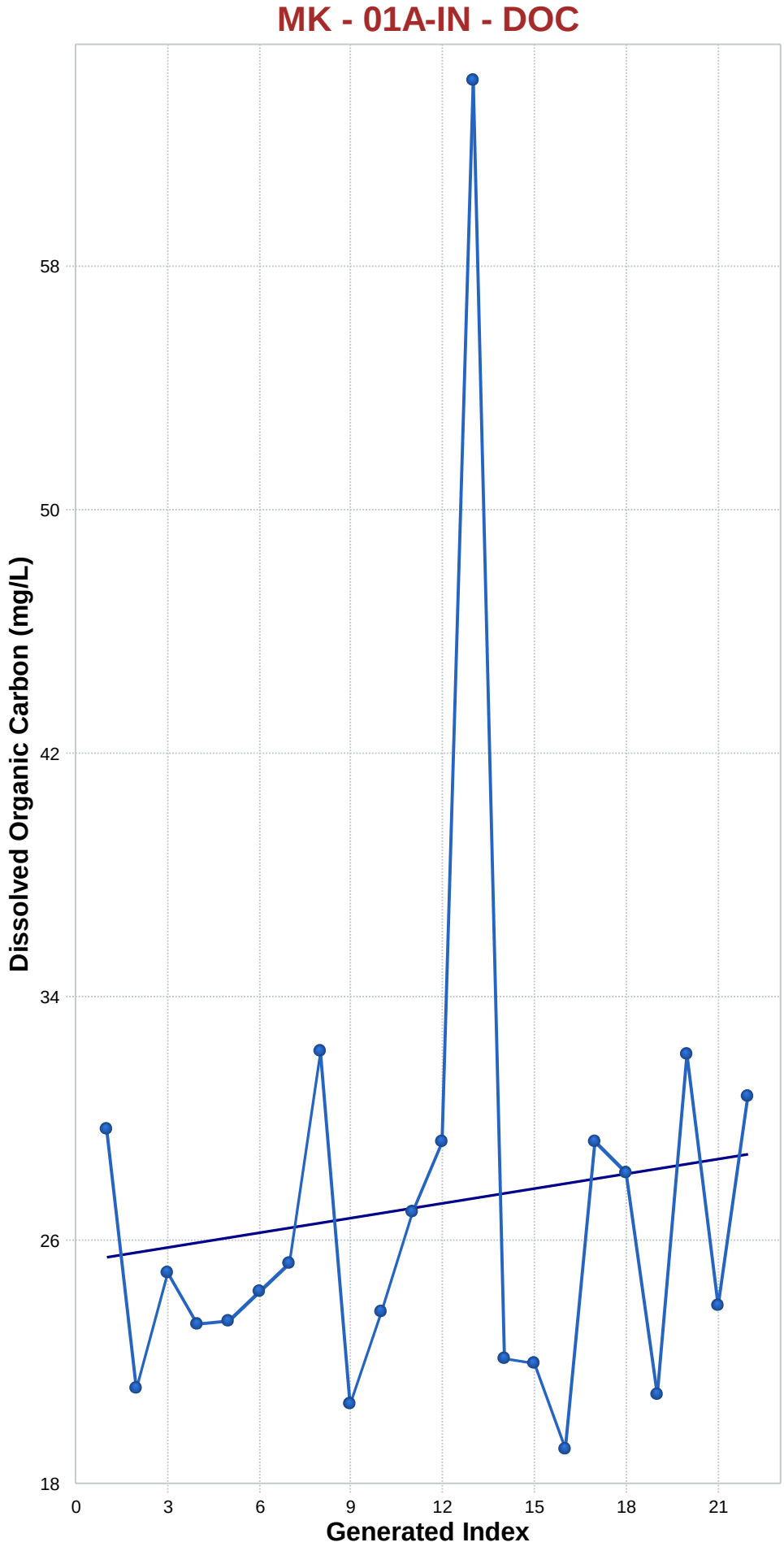
Mann-Kendall Trend Analysis

n	47
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	108.8210
Standardized Value of S	-5.4861
M-K Test Value (S)	-598
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0109

Statistically significant evidence of a decreasing trend at the specified level of significance.



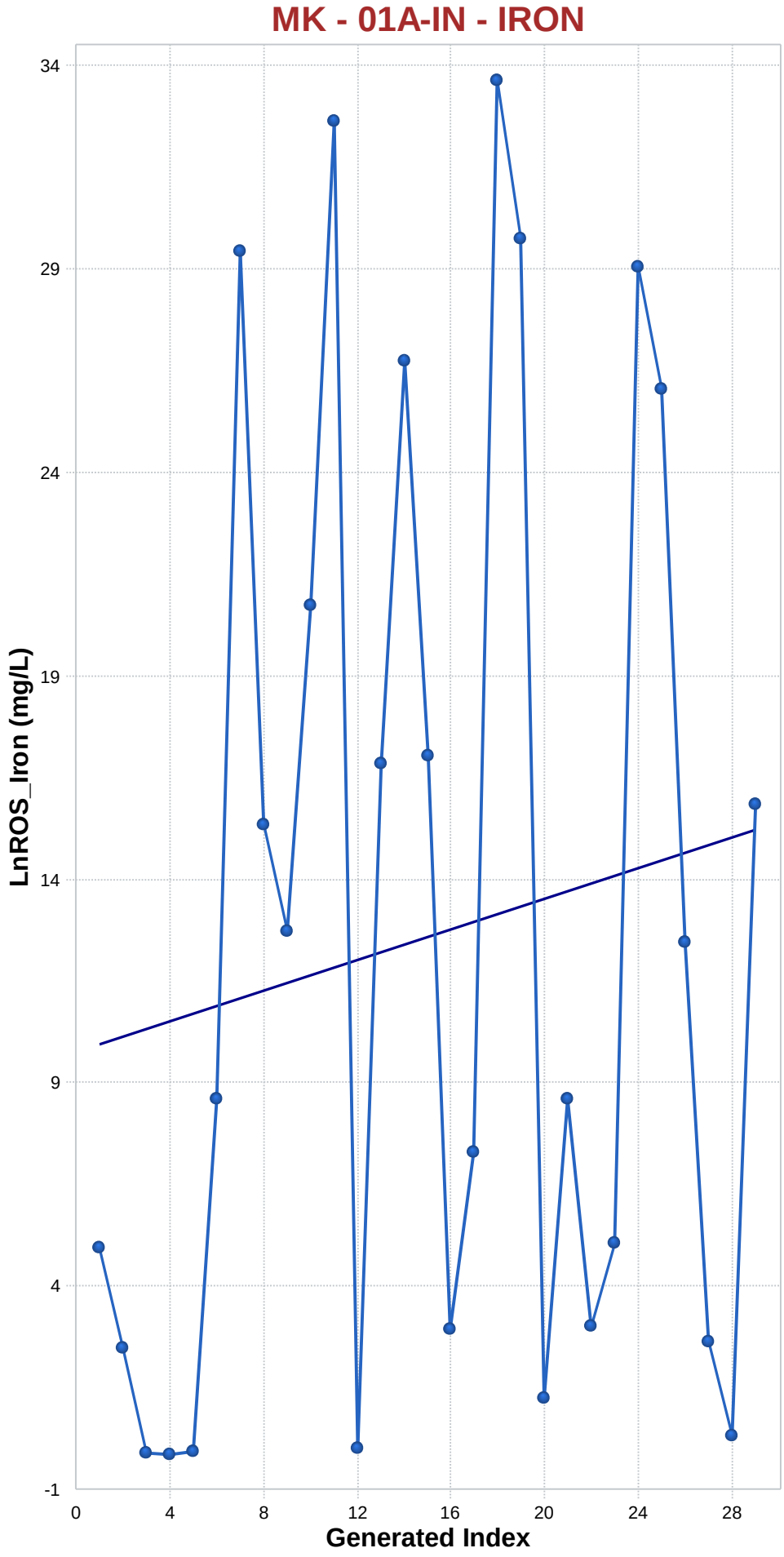
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4495
Standardized Value of S	0.5924
M-K Test Value (S)	22
Tabulated p-value	0.2700
Approximate p-value	0.2768

OLS Regression Line (Blue)

OLS Regression Slope	0.1605
OLS Regression Intercept	24.9545

Insufficient statistical evidence of a significant trend at the specified level of significance.



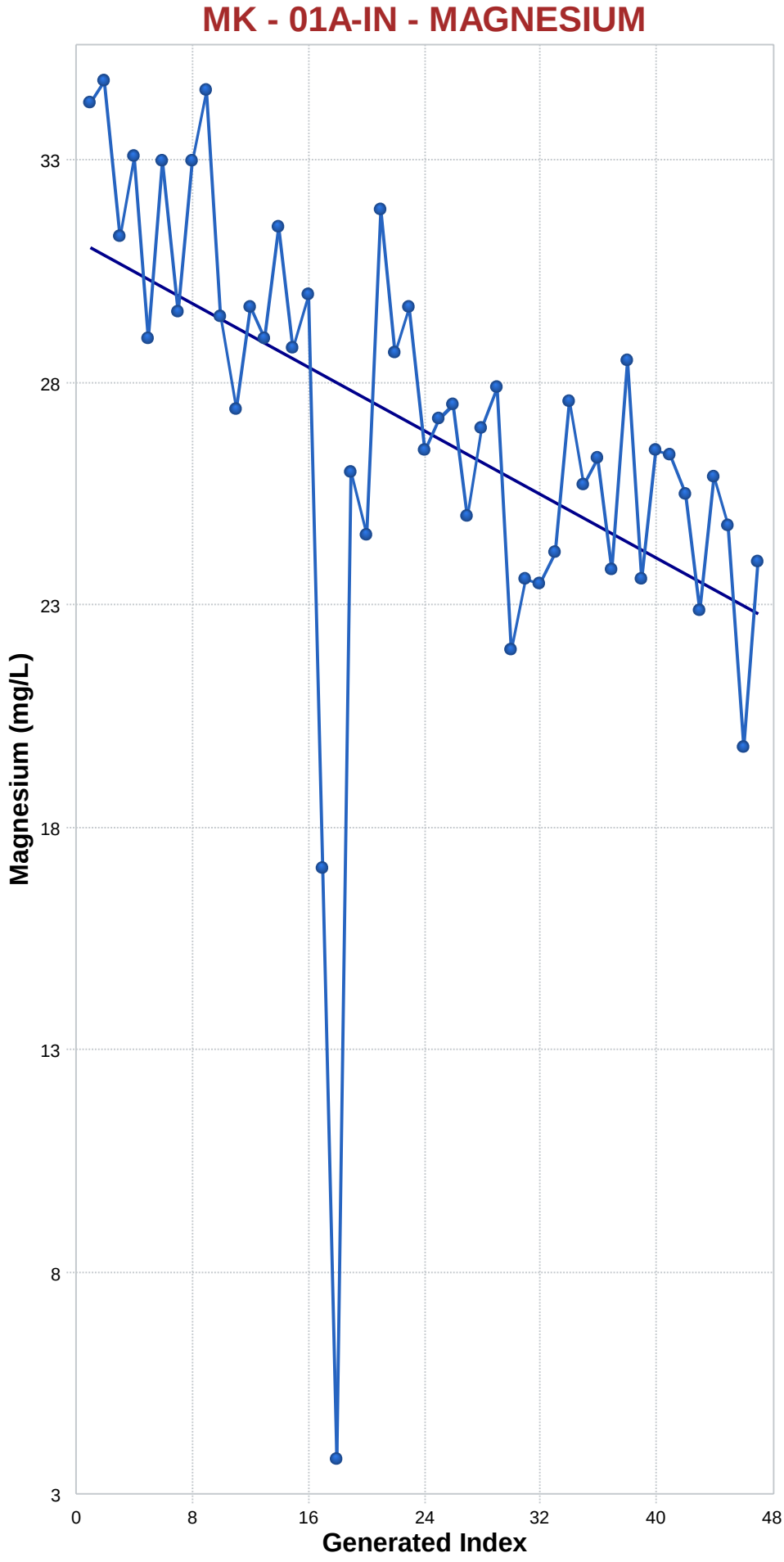
Mann-Kendall Trend Analysis

n	29
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	53.3010
Standardized Value of S	0.9381
M-K Test Value (S)	51
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1741

OLS Regression Line (Blue)

OLS Regression Slope	0.1888
OLS Regression Intercept	9.9206

Insufficient statistical evidence of a significant trend at the specified level of significance.



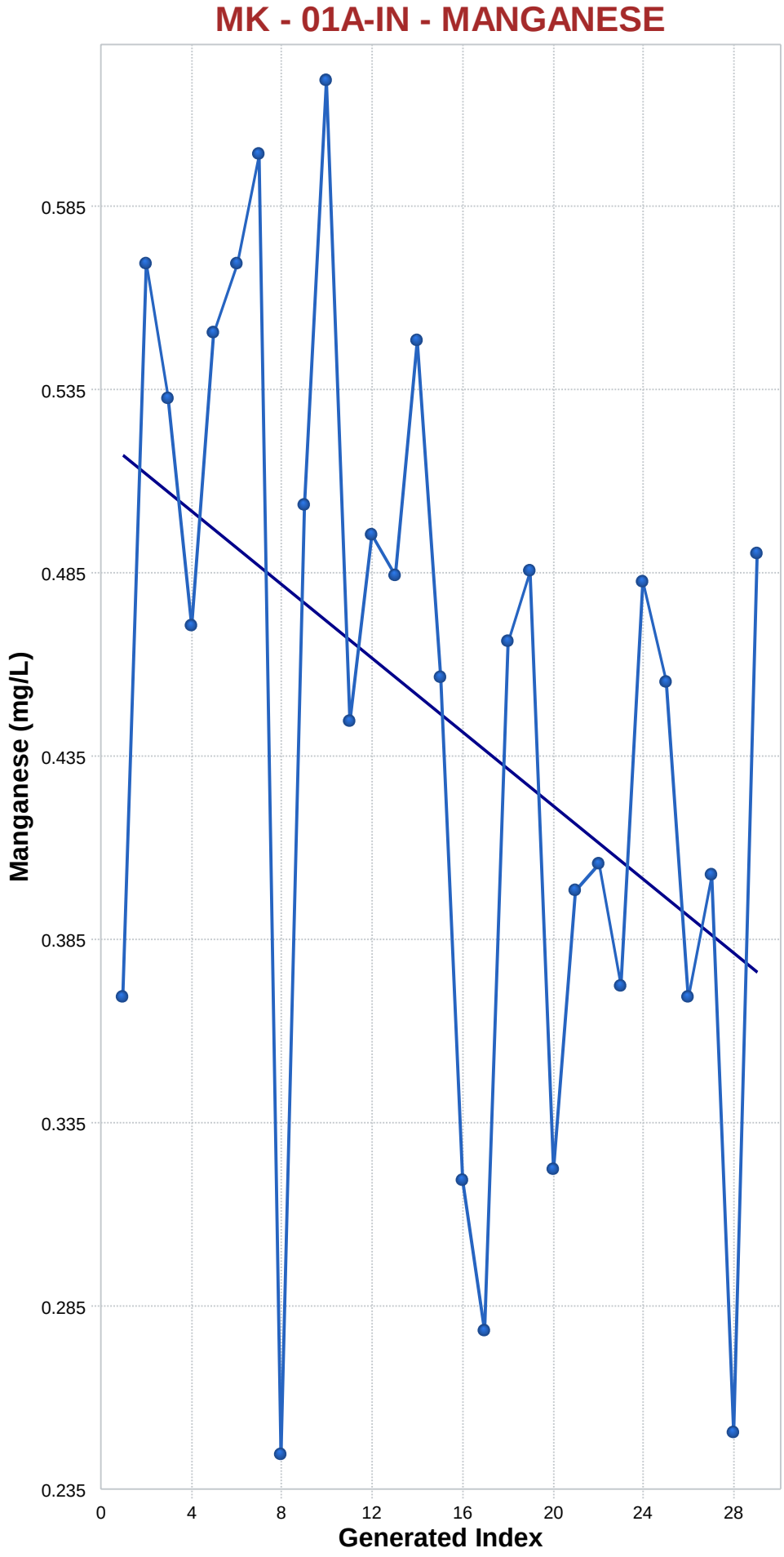
Mann-Kendall Trend Analysis

n	47
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	109.0229
Standardized Value of S	-5.2558
M-K Test Value (S)	-574
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.1785
OLS Regression Intercept	31.2227

Statistically significant evidence of a decreasing trend at the specified level of significance.



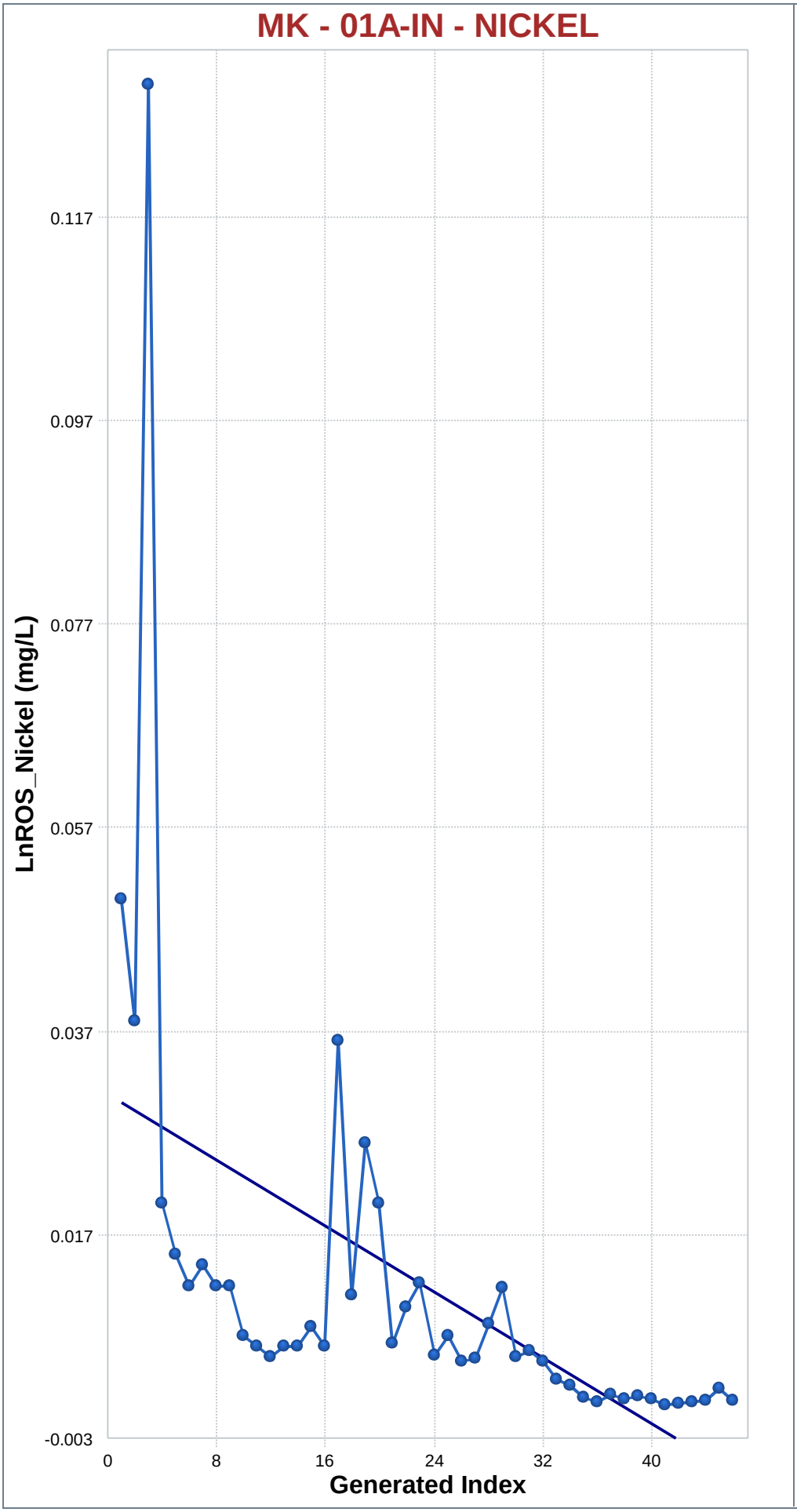
Mann-Kendall Trend Analysis

n	29
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	53.2917
Standardized Value of S	-2.3831
M-K Test Value (S)	-128
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0086

OLS Regression Line (Blue)

OLS Regression Slope	-0.0050
OLS Regression Intercept	0.5219

Statistically significant evidence of a decreasing trend at the specified level of significance.



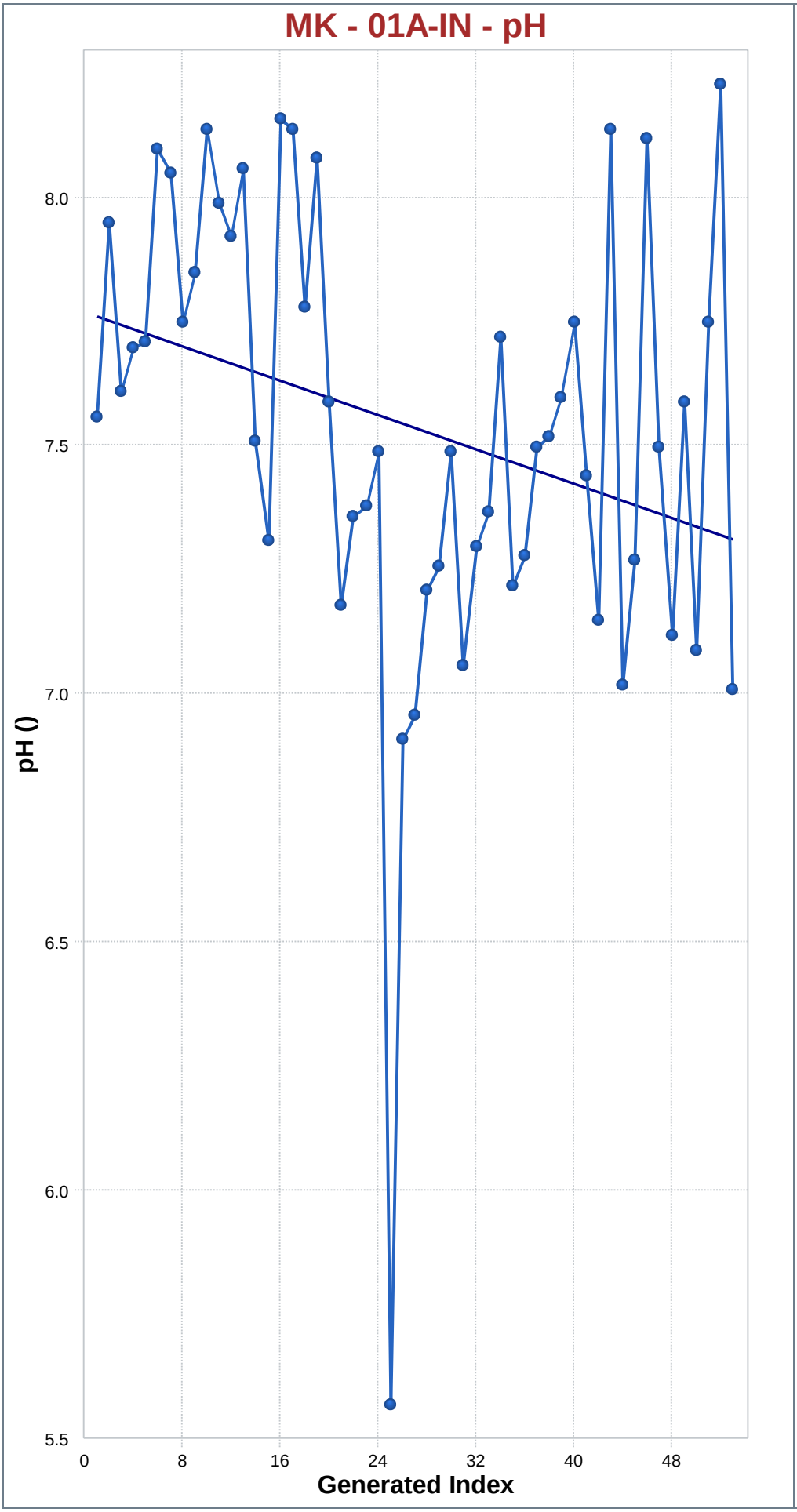
Mann-Kendall Trend Analysis

n	46
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	105.5494
Standardized Value of S	-6.7172
M-K Test Value (S)	-710
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0008
OLS Regression Intercept	0.0308

Statistically significant evidence of a decreasing trend at the specified level of significance.



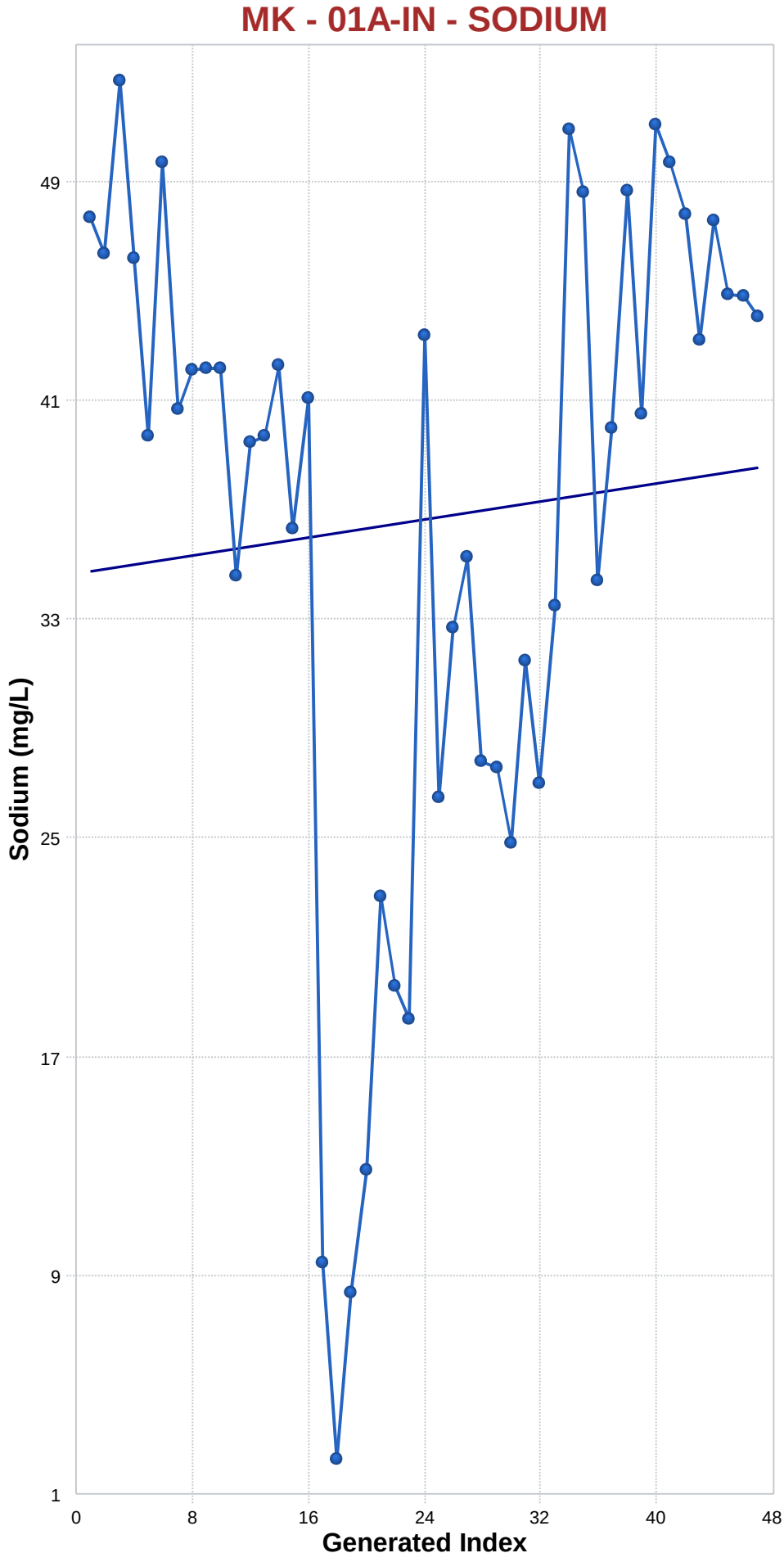
Mann-Kendall Trend Analysis

n	53
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	130.3265
Standardized Value of S	-2.3479
M-K Test Value (S)	-307
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0094

OLS Regression Line (Blue)

OLS Regression Slope	-0.0086
OLS Regression Intercept	7.7703

Statistically significant evidence of a decreasing trend at the specified level of significance.



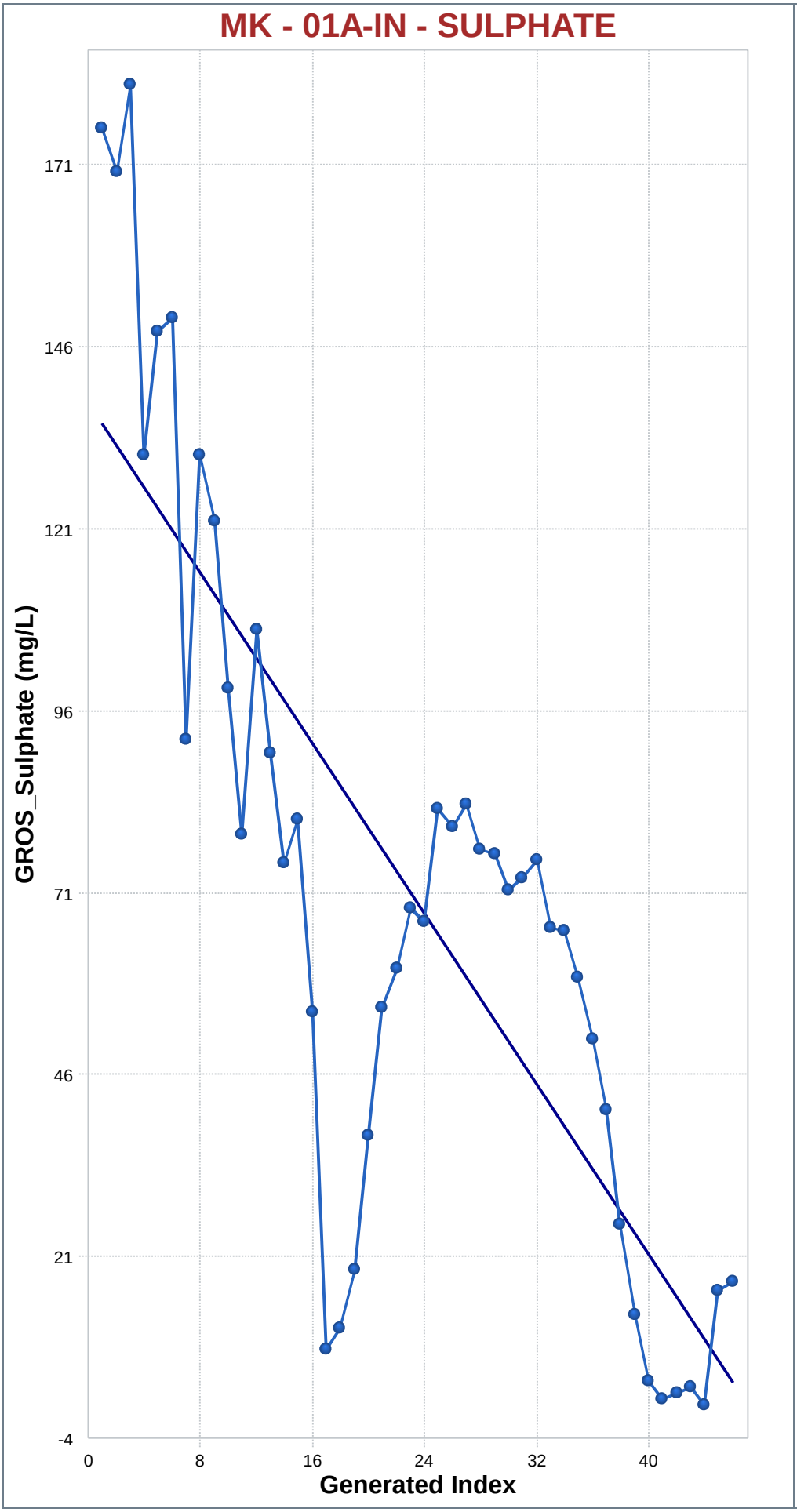
Mann-Kendall Trend Analysis

n	47
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	109.0321
Standardized Value of S	0.6328
M-K Test Value (S)	70
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2634

OLS Regression Line (Blue)

OLS Regression Slope	0.0823
OLS Regression Intercept	34.9943

Insufficient statistical evidence of a significant trend at the specified level of significance.



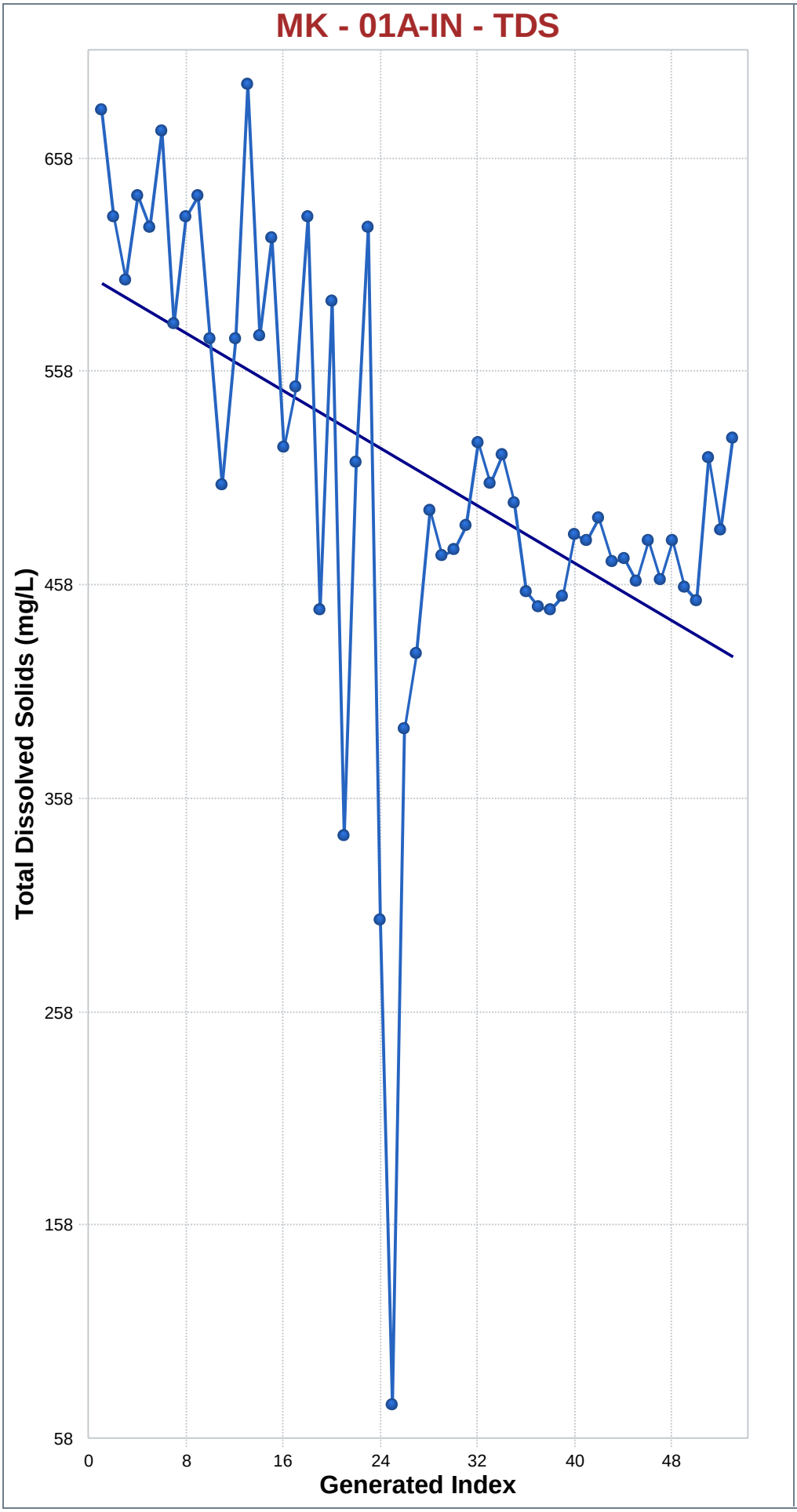
Mann-Kendall Trend Analysis

n	46
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	105.6125
Standardized Value of S	-6.2587
M-K Test Value (S)	-662
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-2.9271
OLS Regression Intercept	138.3136

Statistically significant evidence of a decreasing trend at the specified level of significance.



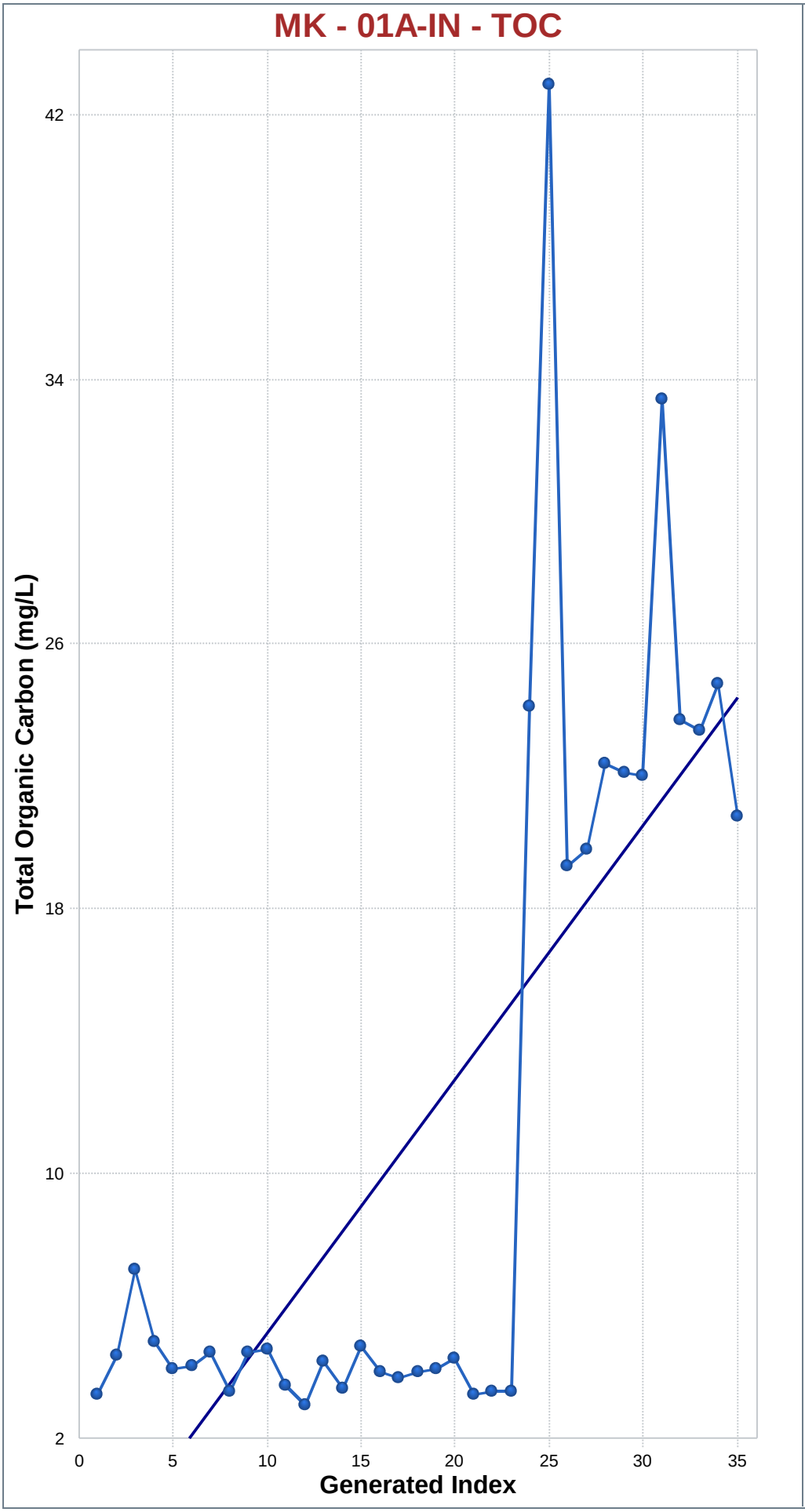
Mann-Kendall Trend Analysis

n	53
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	130.3227
Standardized Value of S	-4.4275
M-K Test Value (S)	-578
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-3.3707
OLS Regression Intercept	602.2177

Statistically significant evidence of a decreasing trend at the specified level of significance.



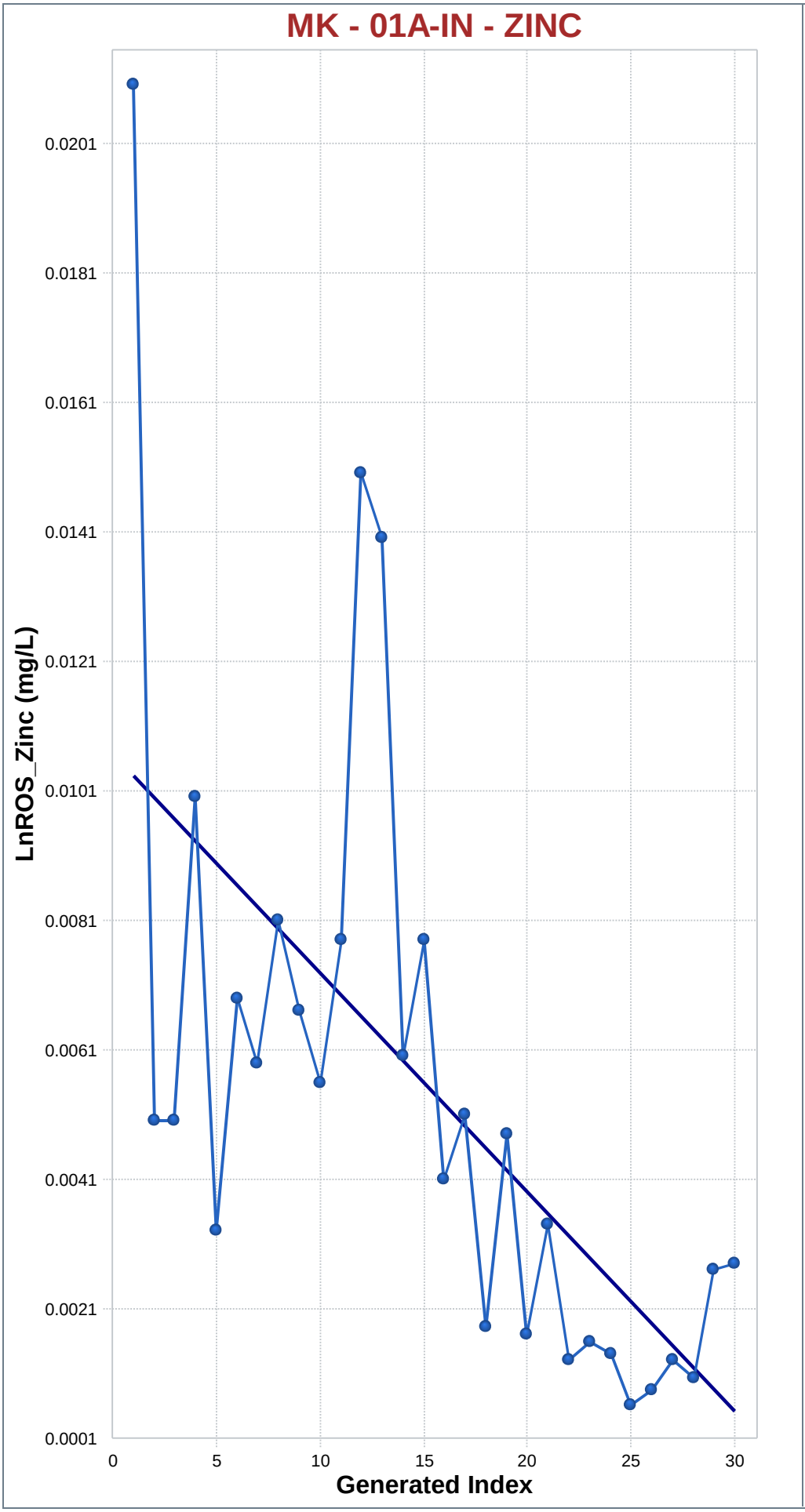
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3610
Standardized Value of S	3.0272
M-K Test Value (S)	214
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0012

OLS Regression Line (Blue)

OLS Regression Slope	0.7714
OLS Regression Intercept	-2.5371

Statistically significant evidence of an increasing trend at the specified level of significance.



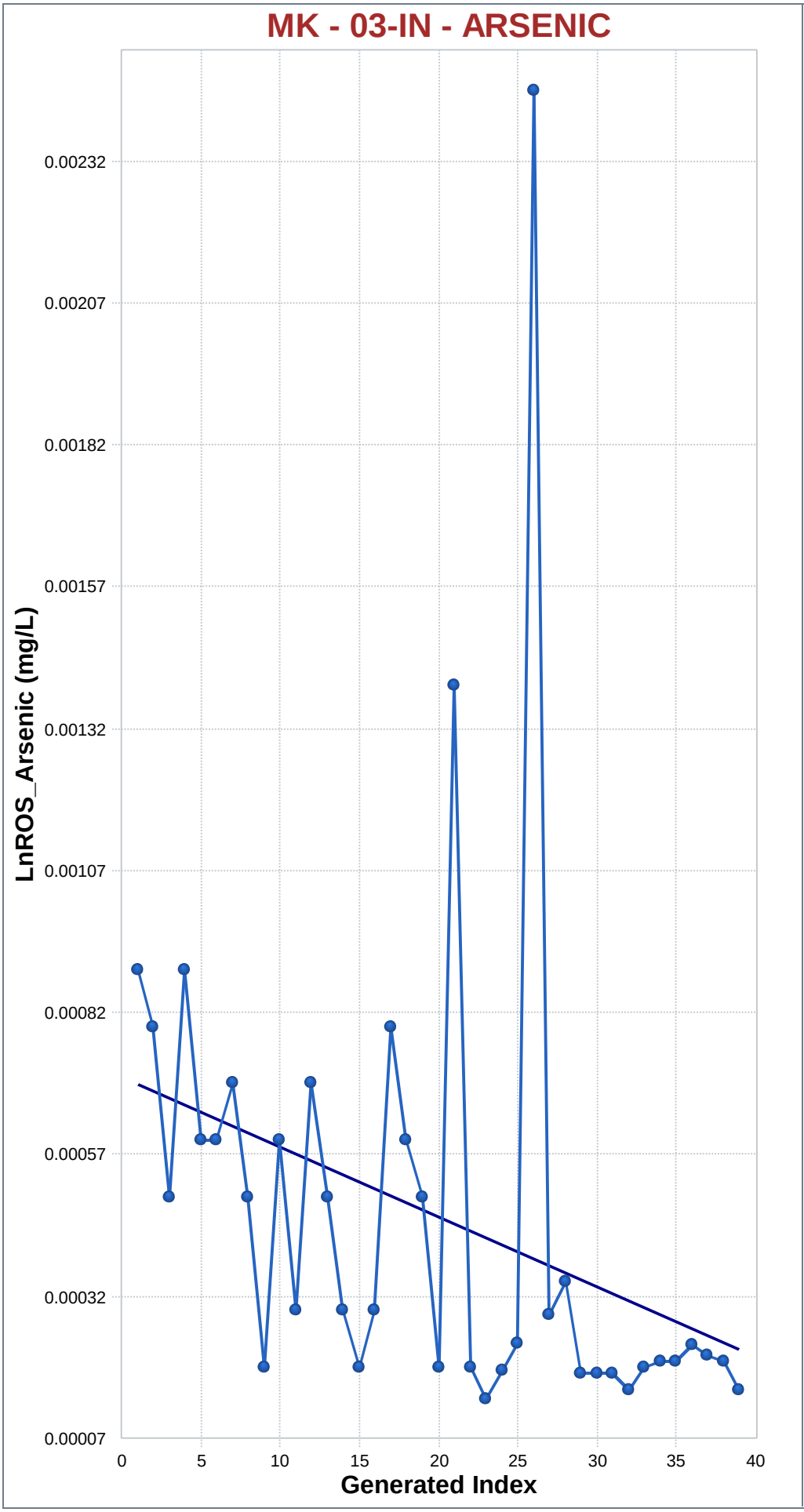
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0238
Standardized Value of S	-4.2303
M-K Test Value (S)	-238
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0003
OLS Regression Intercept	0.0107

Statistically significant evidence of a decreasing trend at the specified level of significance.



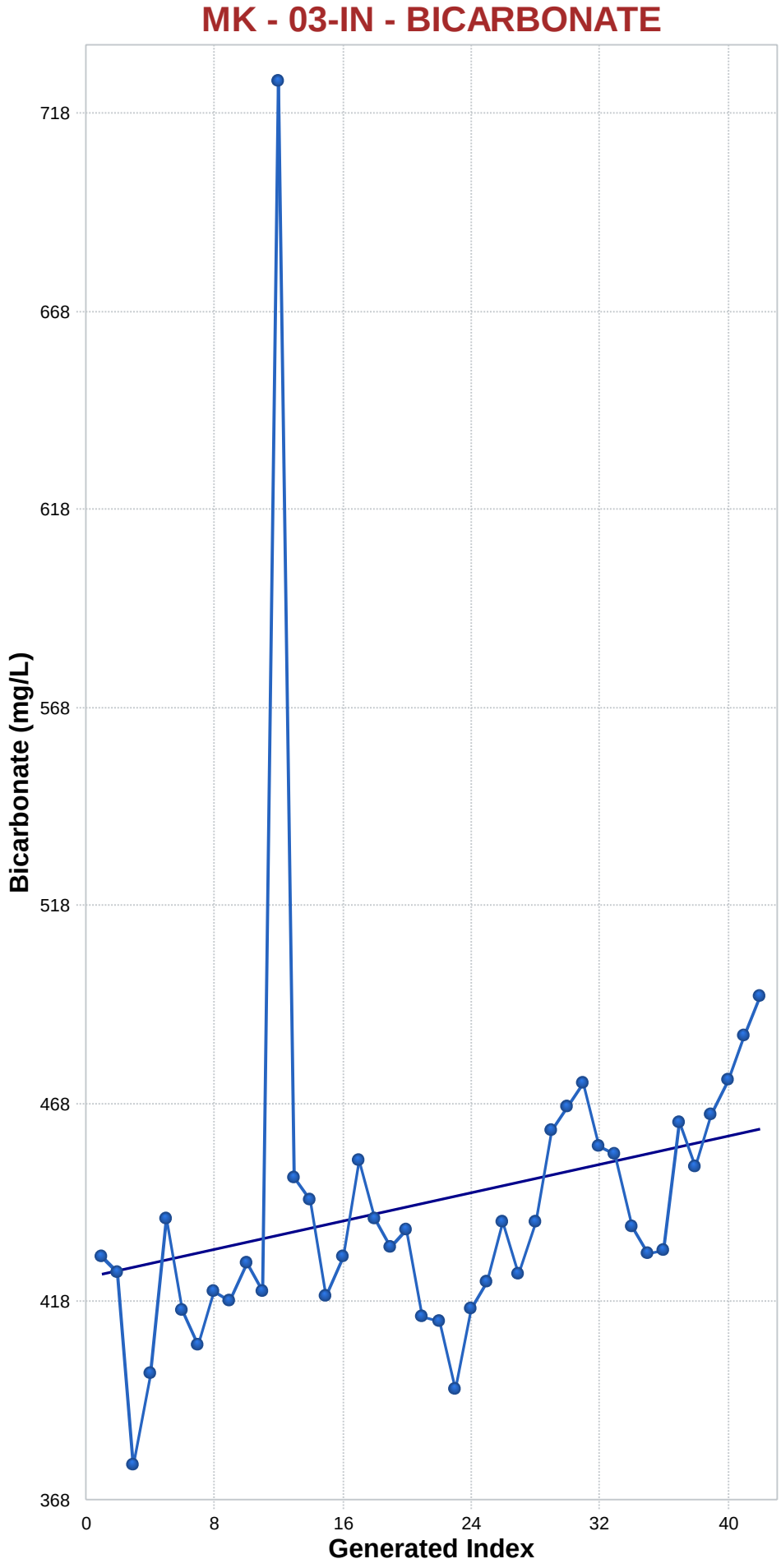
Mann-Kendall Trend Analysis

n	39
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	82.3691
Standardized Value of S	-3.9699
M-K Test Value (S)	-328
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0007

Statistically significant evidence of a decreasing trend at the specified level of significance.



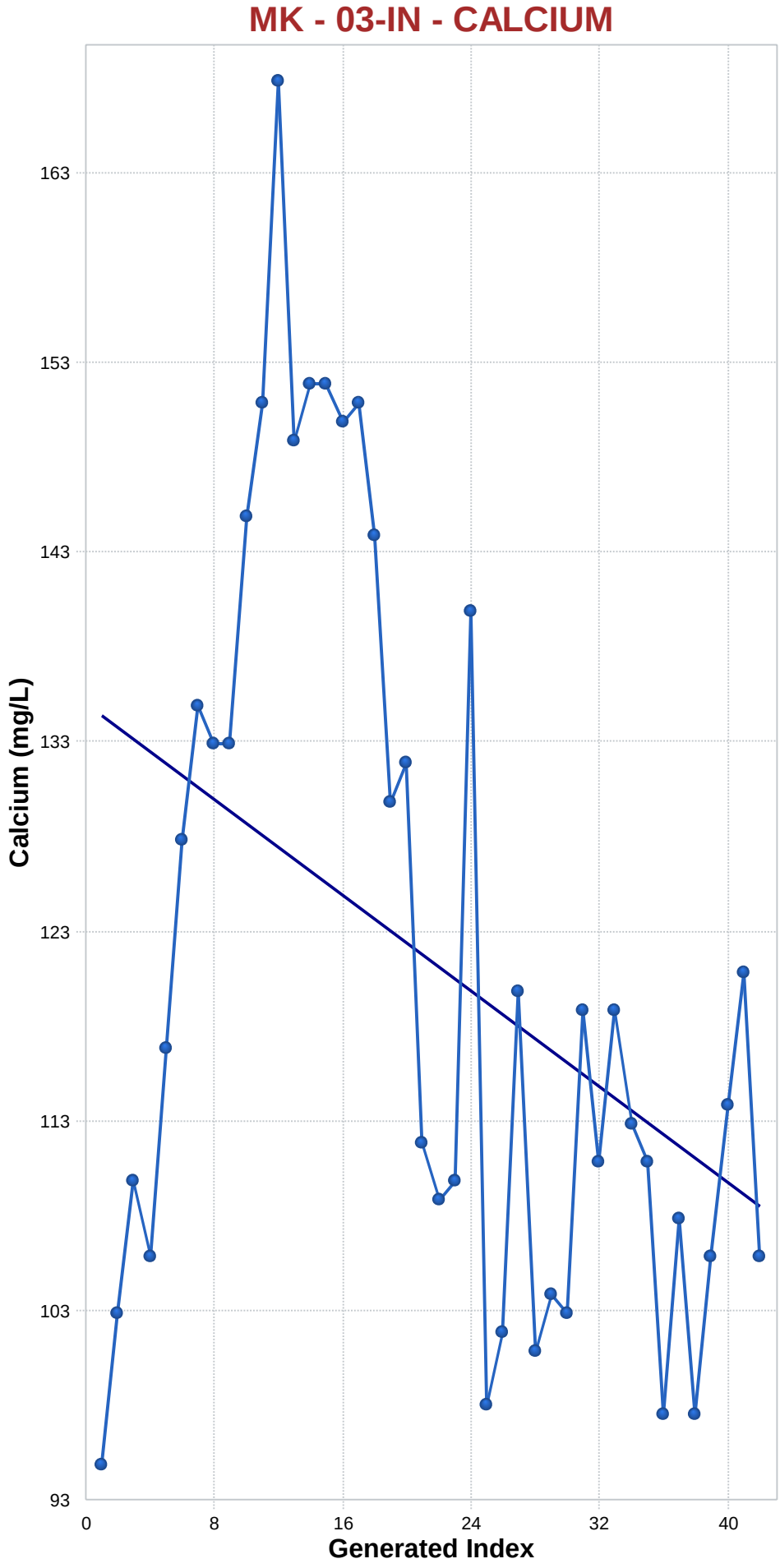
Mann-Kendall Trend Analysis

n	42
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	92.2515
Standardized Value of S	4.0541
M-K Test Value (S)	375
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.9014
OLS Regression Intercept	423.8304

Statistically significant evidence of an increasing trend at the specified level of significance.



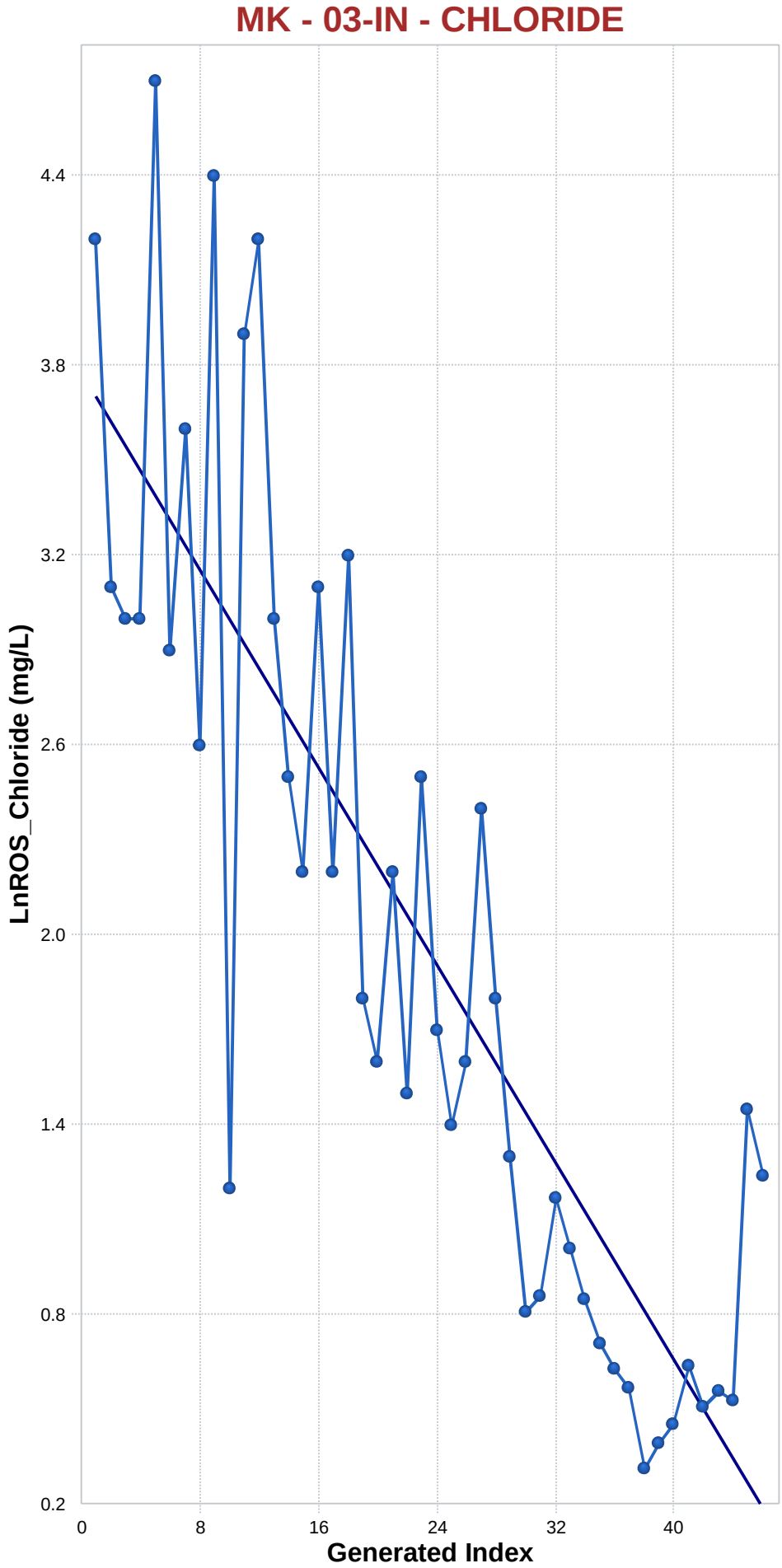
Mann-Kendall Trend Analysis

n	42
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	92.2099
Standardized Value of S	-2.1798
M-K Test Value (S)	-202
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0146

OLS Regression Line (Blue)

OLS Regression Slope	-0.6301
OLS Regression Intercept	135.1331

Statistically significant evidence of a decreasing trend at the specified level of significance.



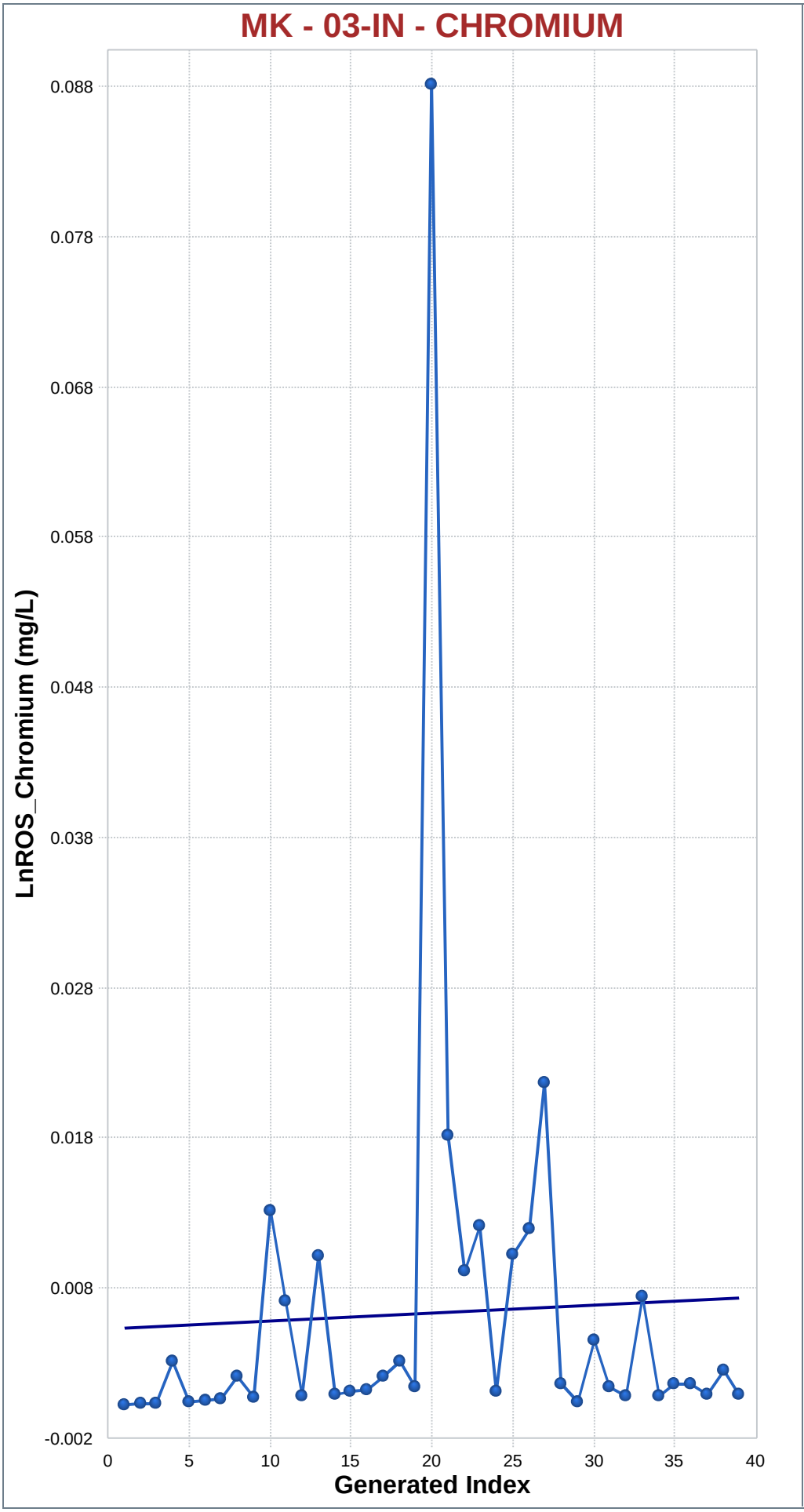
Mann-Kendall Trend Analysis

n	46
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	105.5588
Standardized Value of S	-6.8303
M-K Test Value (S)	-722
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0781
OLS Regression Intercept	3.7812

Statistically significant evidence of a decreasing trend at the specified level of significance.



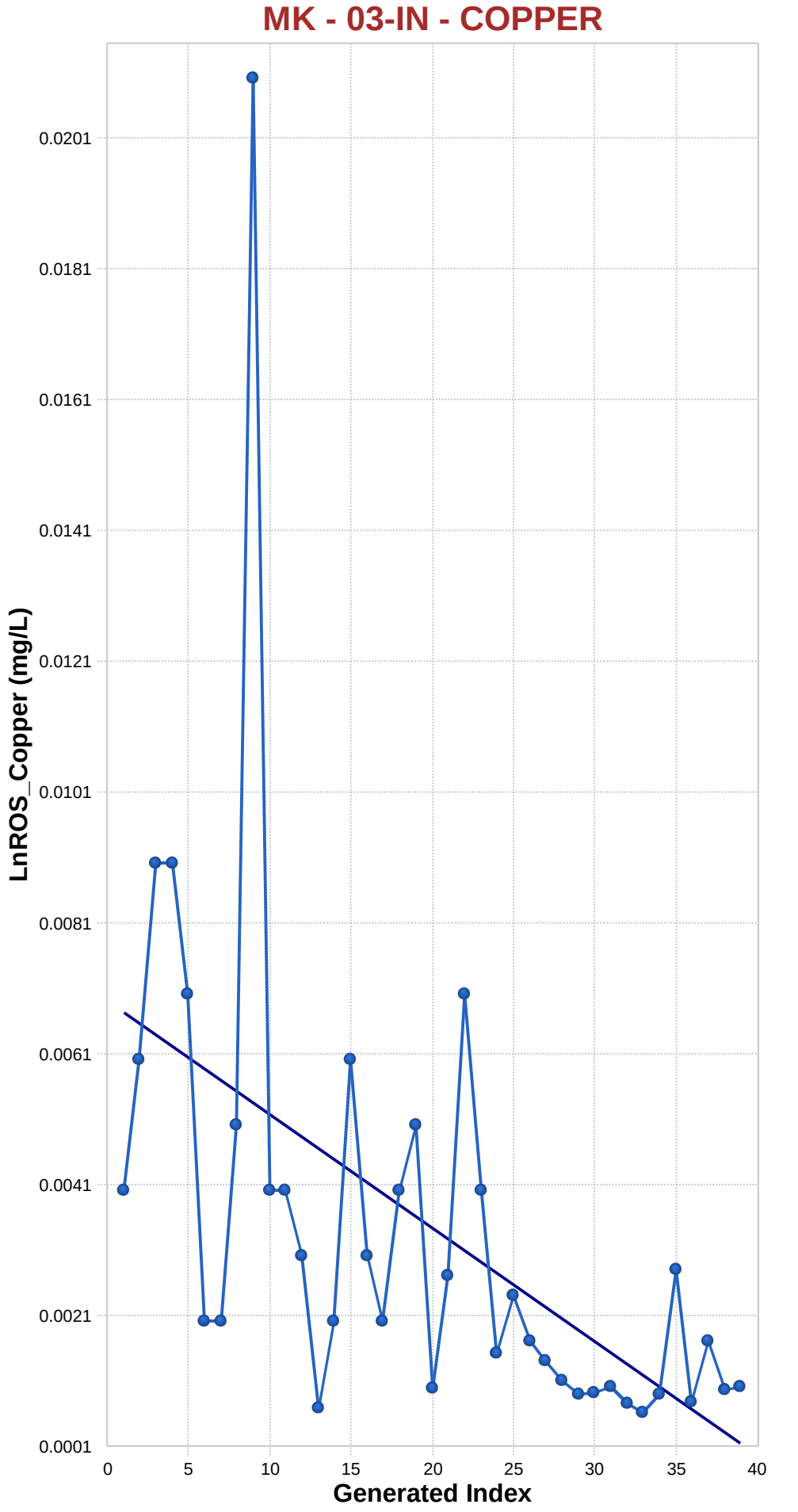
Mann-Kendall Trend Analysis

n	39
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	82.6478
Standardized Value of S	1.8754
M-K Test Value (S)	156
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0304

OLS Regression Line (Blue)

OLS Regression Slope	0.0001
OLS Regression Intercept	0.0052

Statistically significant evidence of an increasing trend at the specified level of significance.



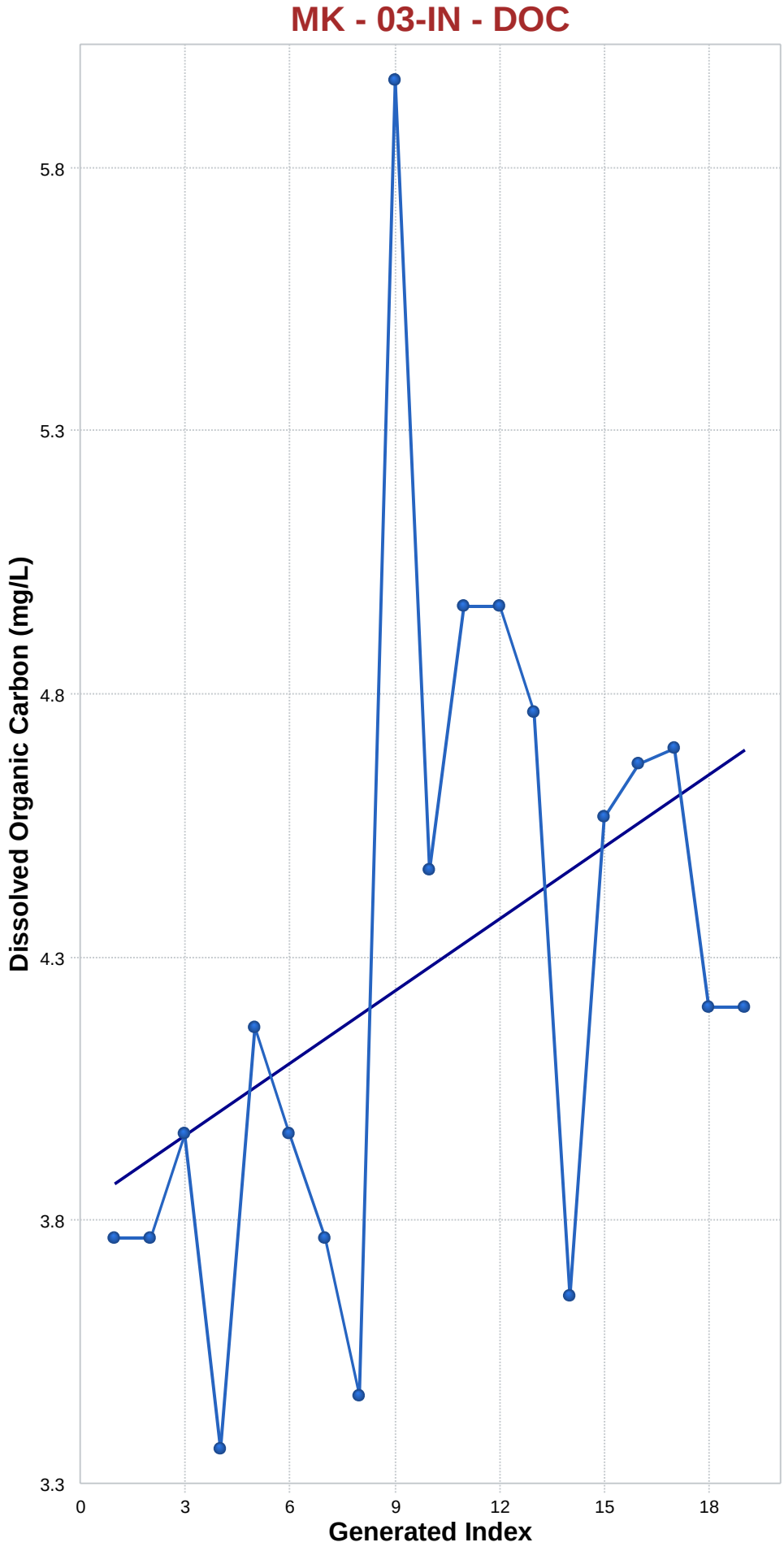
Mann-Kendall Trend Analysis

n	39
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	82.4763
Standardized Value of S	-4.6801
M-K Test Value (S)	-387
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0069

Statistically significant evidence of a decreasing trend at the specified level of significance.



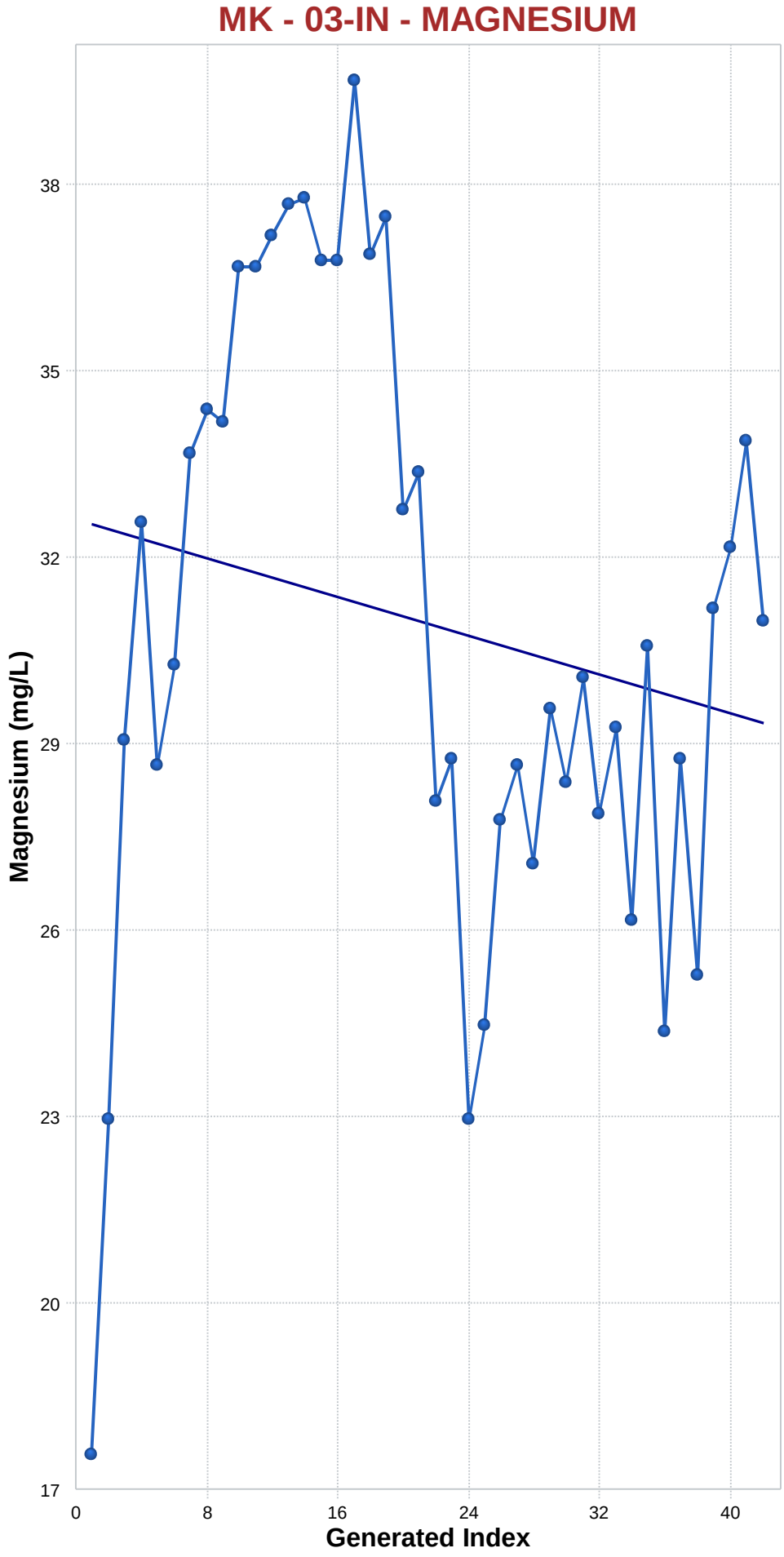
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4664
Standardized Value of S	1.6862
M-K Test Value (S)	49
Tabulated p-value	0.0470
Approximate p-value	0.0459

OLS Regression Line (Blue)

OLS Regression Slope	0.0459
OLS Regression Intercept	3.8570

Statistically significant evidence of an increasing trend at the specified level of significance.



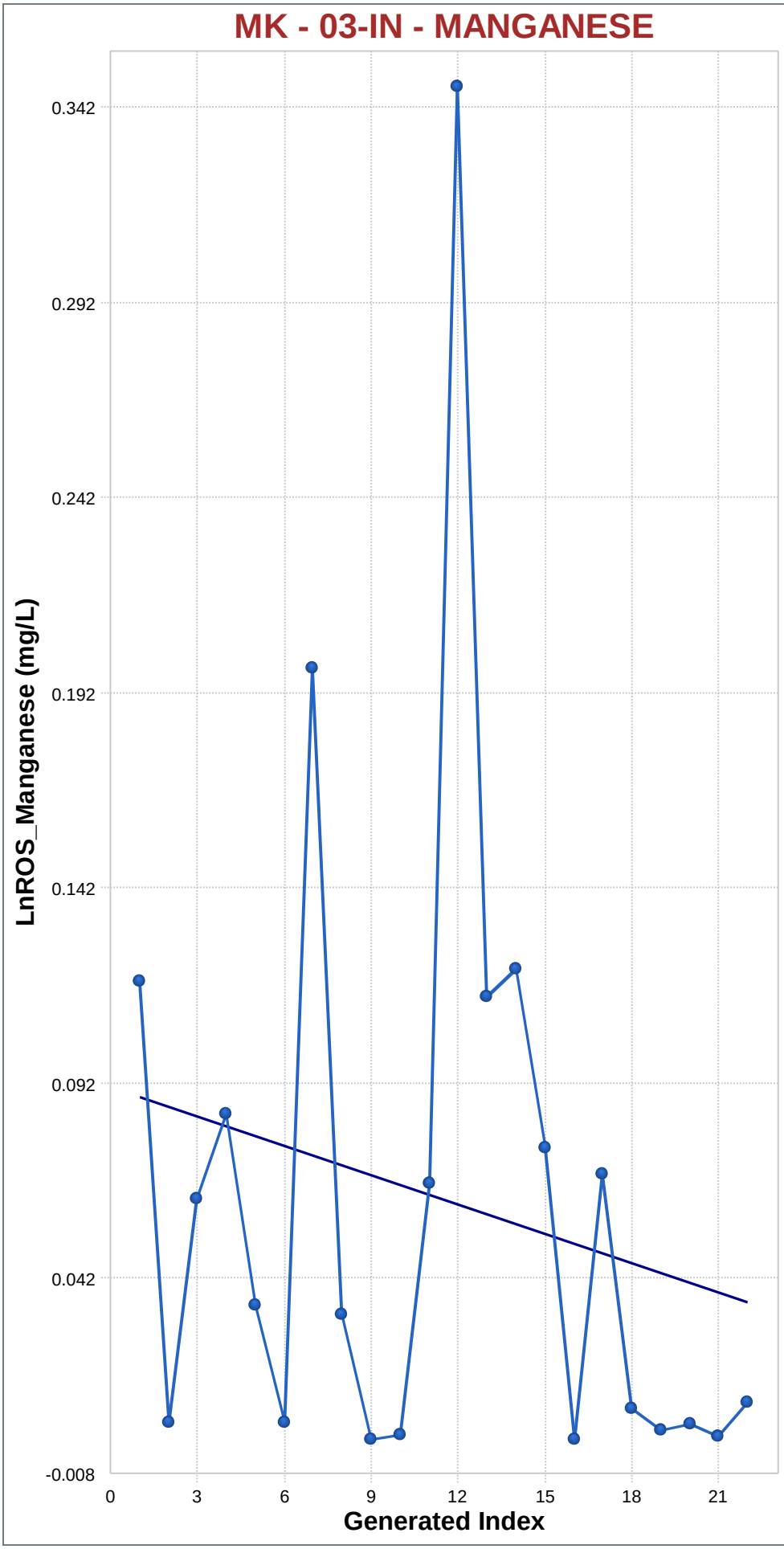
Mann-Kendall Trend Analysis

n	42
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	92.2460
Standardized Value of S	-1.0949
M-K Test Value (S)	-102
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1368

OLS Regression Line (Blue)

OLS Regression Slope	-0.0778
OLS Regression Intercept	32.1380

Insufficient statistical evidence of a significant trend at the specified level of significance.



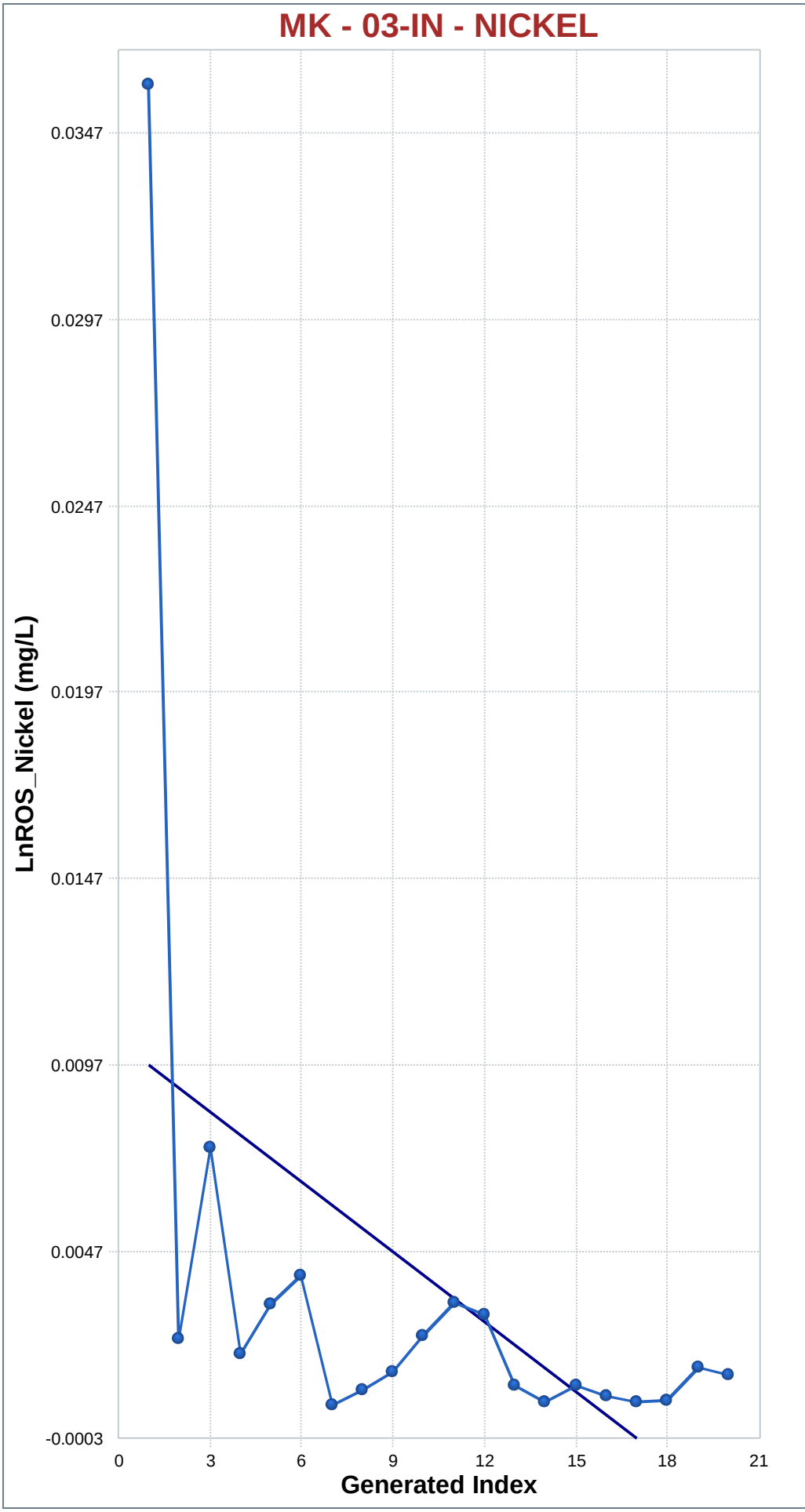
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4636
Standardized Value of S	-1.3535
M-K Test Value (S)	-49
Tabulated p-value	0.0890
Approximate p-value	0.0879

OLS Regression Line (Blue)

OLS Regression Slope	-0.0025
OLS Regression Intercept	0.0907

Insufficient statistical evidence of a significant trend at the specified level of significance.



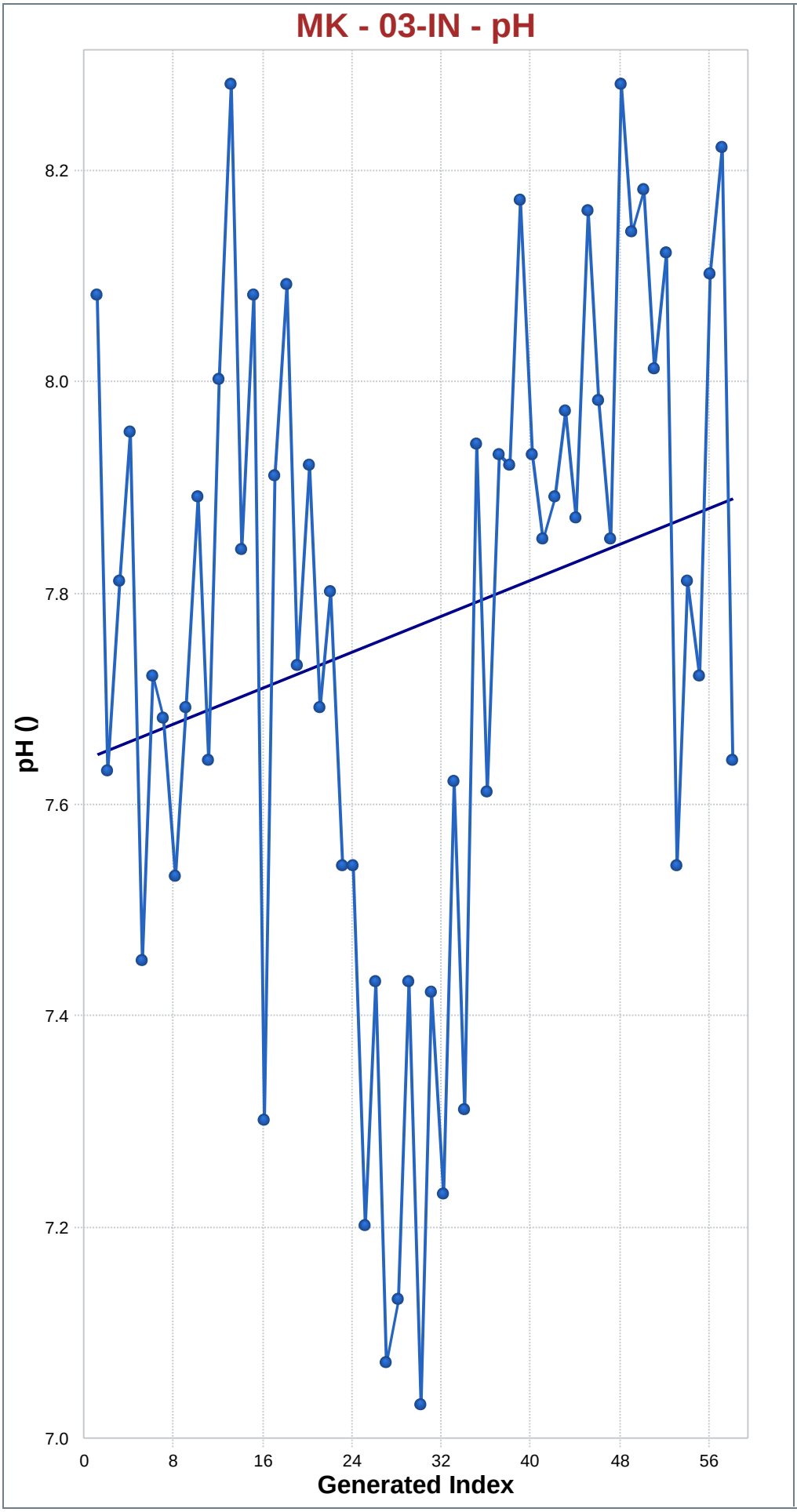
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.8221
Standardized Value of S	-2.3684
M-K Test Value (S)	-74
Tabulated p-value	0.0080
Approximate p-value	0.0089

OLS Regression Line (Blue)

OLS Regression Slope	-0.0006
OLS Regression Intercept	0.0104

Statistically significant evidence of a decreasing trend at the specified level of significance.



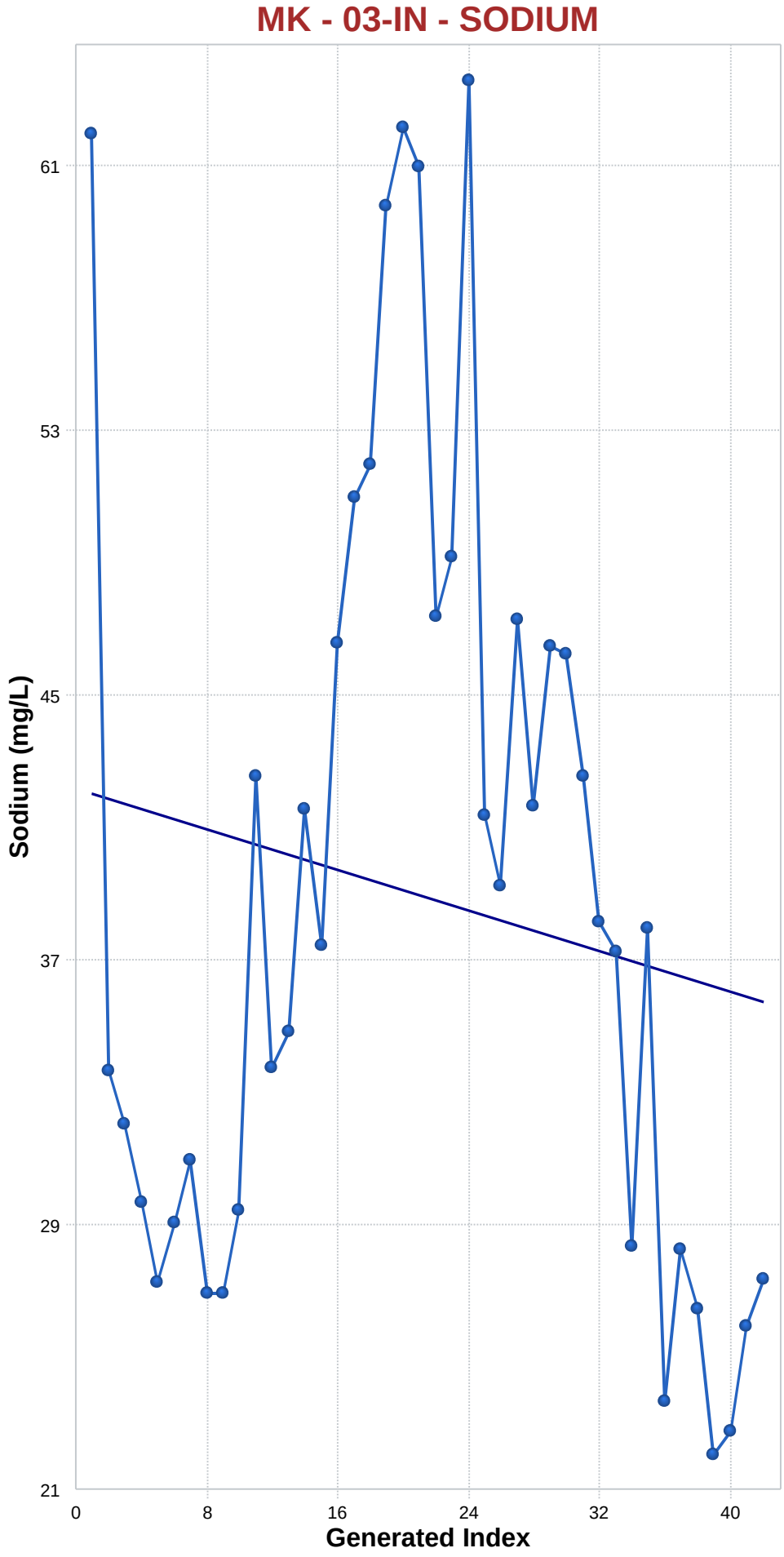
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	149.0268
Standardized Value of S	1.8654
M-K Test Value (S)	279
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0311

OLS Regression Line (Blue)

OLS Regression Slope	0.0043
OLS Regression Intercept	7.6513

Statistically significant evidence of an increasing trend at the specified level of significance.



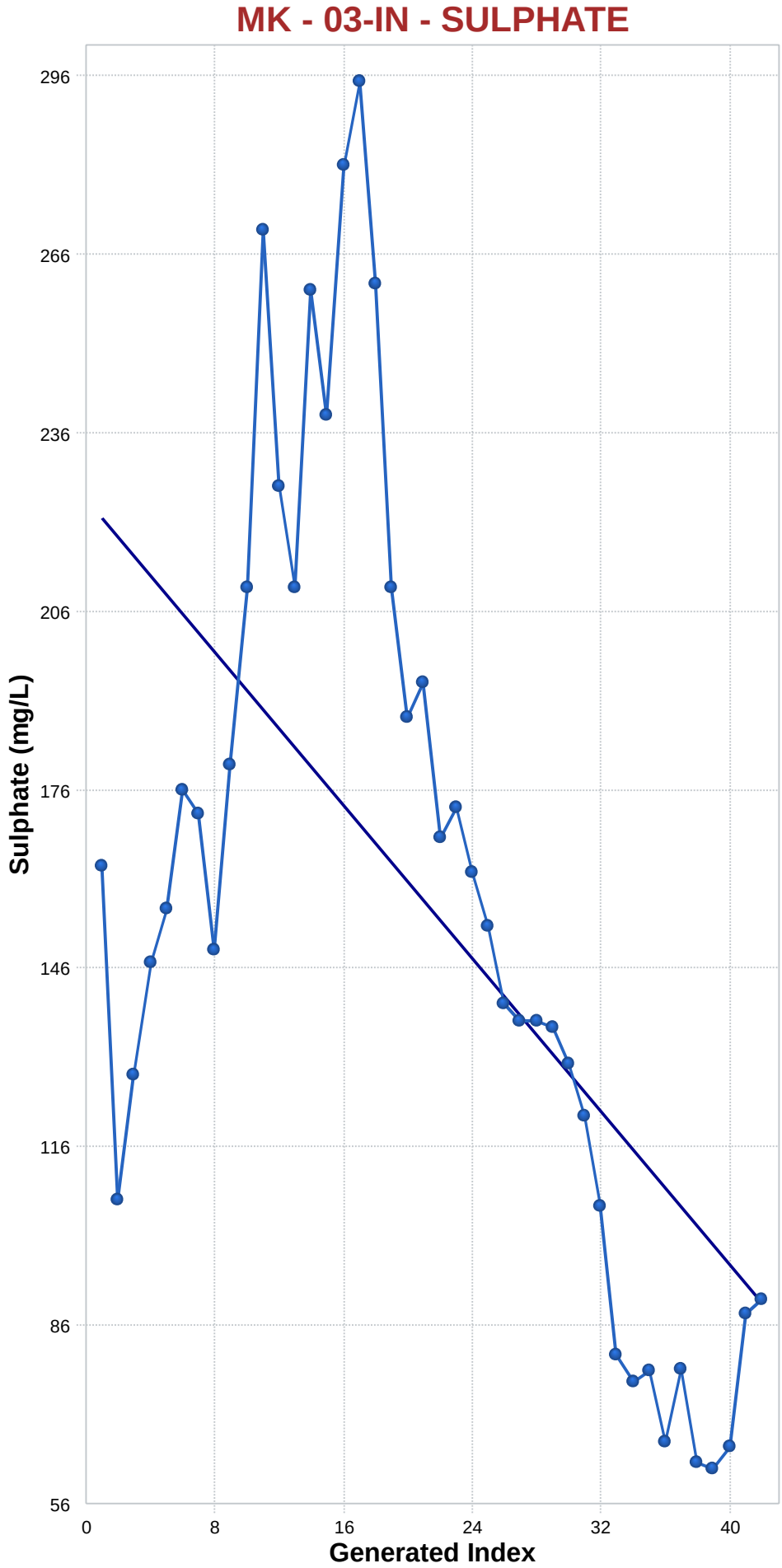
Mann-Kendall Trend Analysis

n	42
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	92.2623
Standardized Value of S	-1.1923
M-K Test Value (S)	-111
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1166

OLS Regression Line (Blue)

OLS Regression Slope	-0.1531
OLS Regression Intercept	42.2294

Insufficient statistical evidence of a significant trend at the specified level of significance.



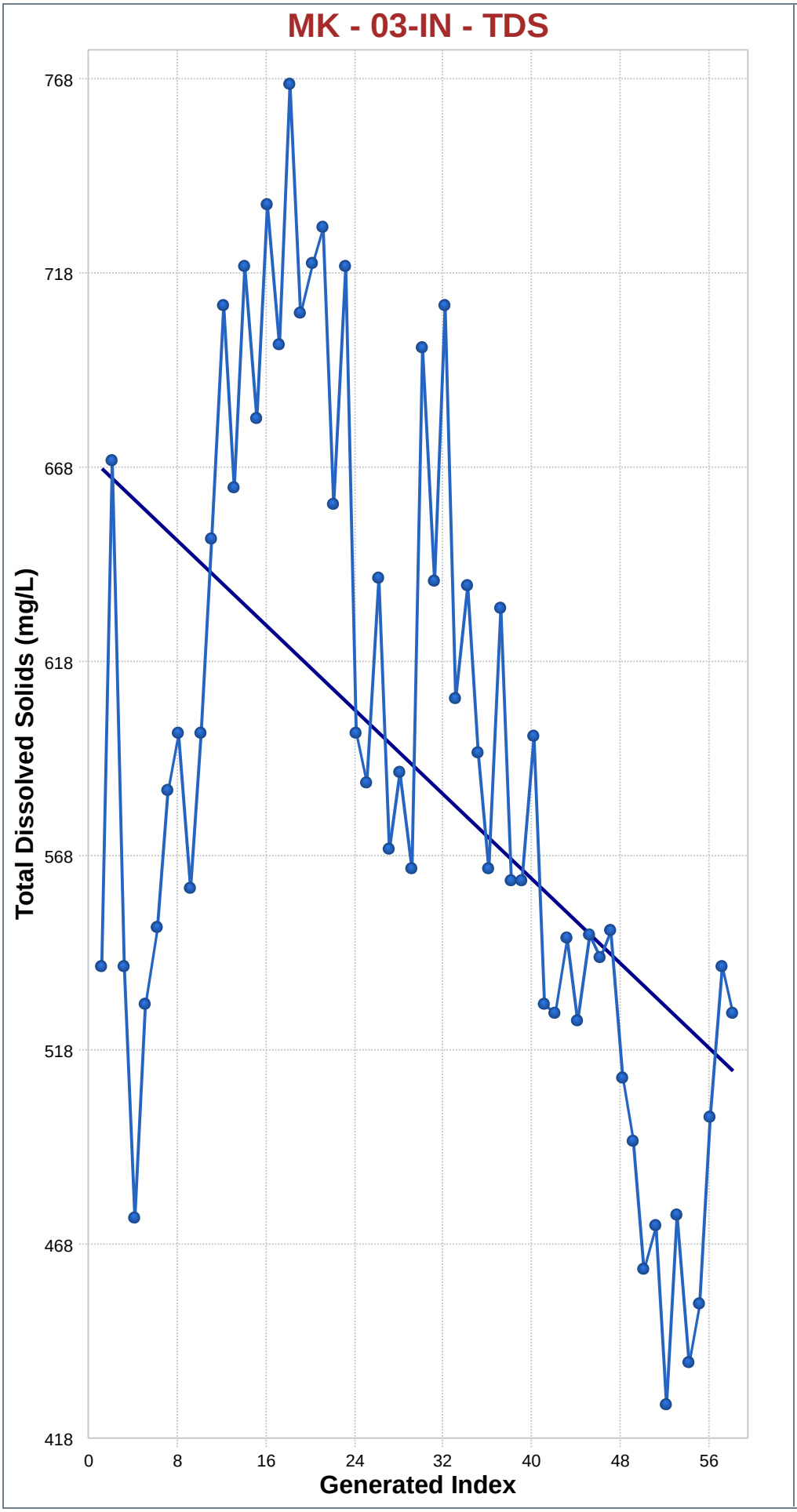
Mann-Kendall Trend Analysis

n	42
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	92.2479
Standardized Value of S	-4.5313
M-K Test Value (S)	-419
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-3.2158
OLS Regression Intercept	224.7397

Statistically significant evidence of a decreasing trend at the specified level of significance.



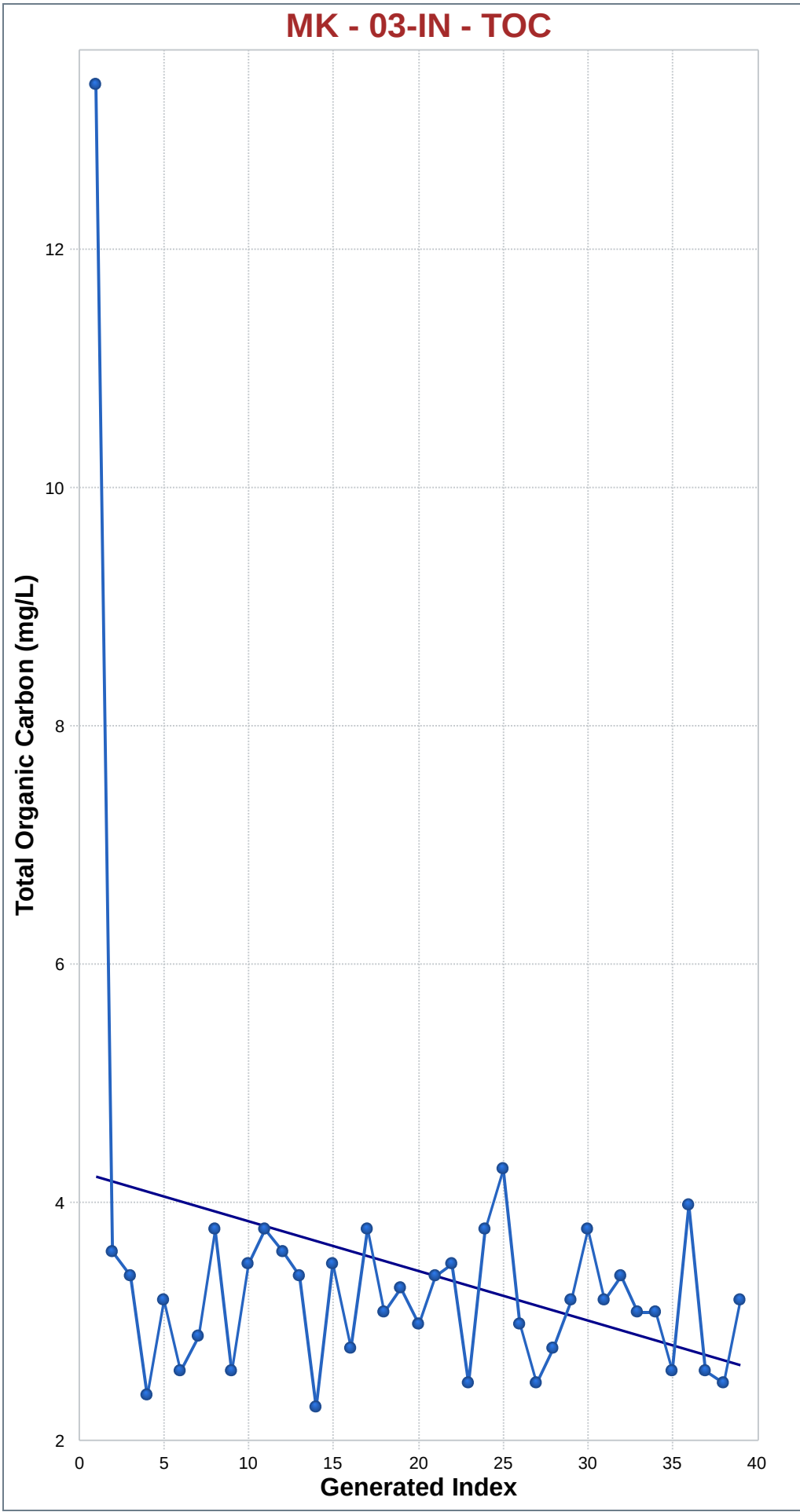
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	149.0313
Standardized Value of S	-4.6165
M-K Test Value (S)	-689
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-2.7243
OLS Regression Intercept	670.9002

Statistically significant evidence of a decreasing trend at the specified level of significance.



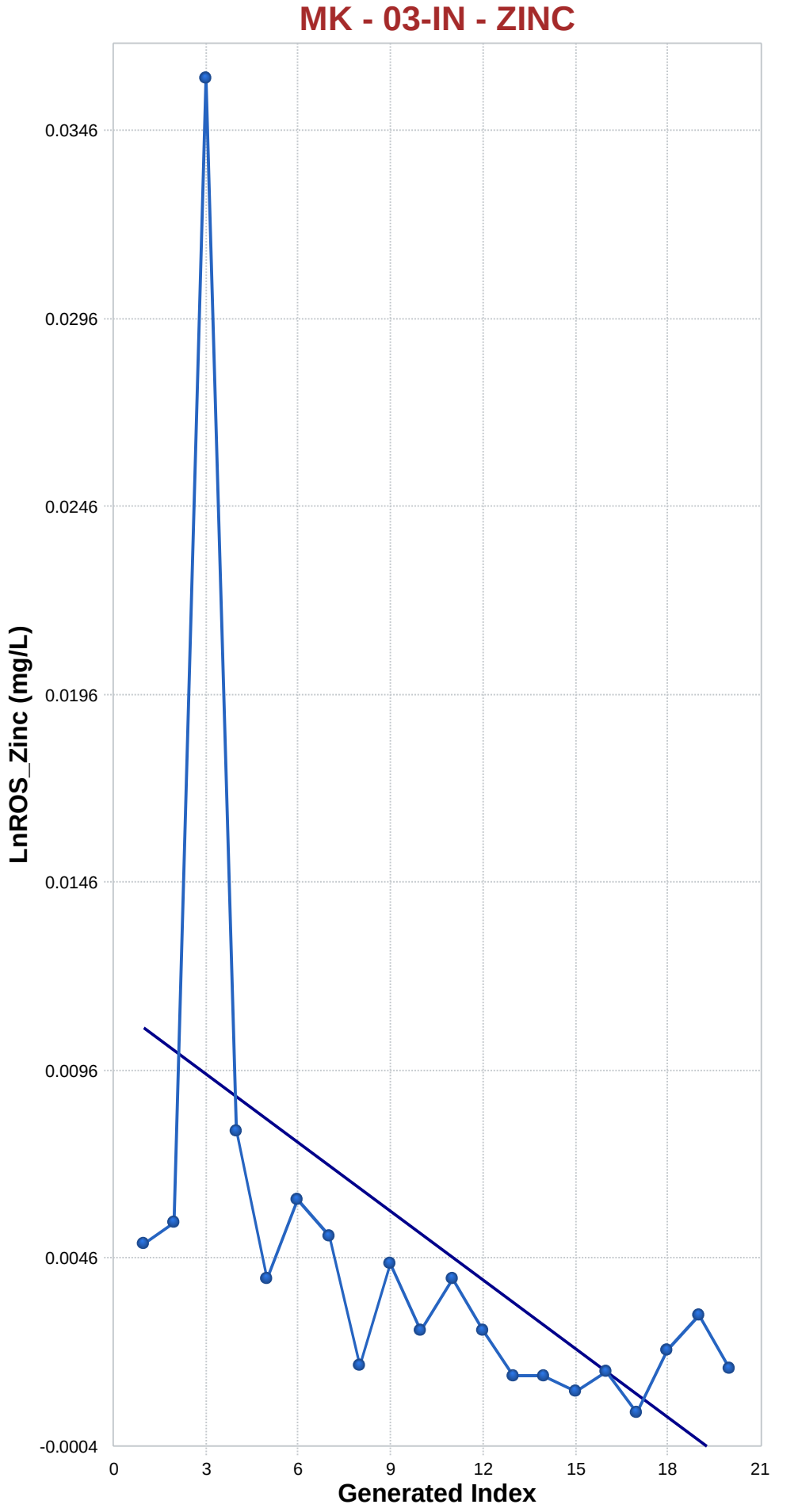
Mann-Kendall Trend Analysis

n	39
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	82.3225
Standardized Value of S	-0.9961
M-K Test Value (S)	-83
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1596

OLS Regression Line (Blue)

OLS Regression Slope	-0.0415
OLS Regression Intercept	4.6791

Insufficient statistical evidence of a significant trend at the specified level of significance.



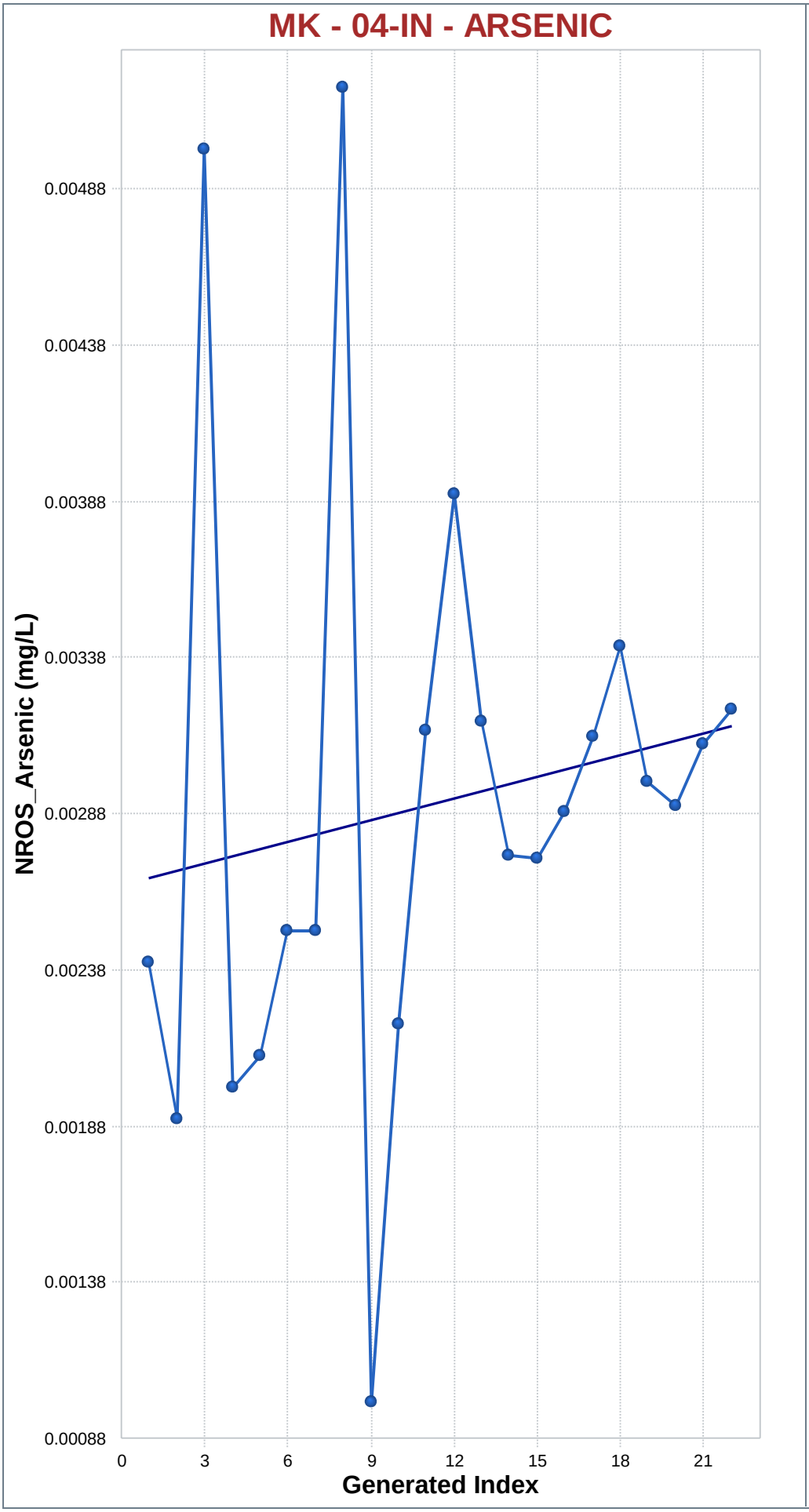
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.7734
Standardized Value of S	-3.5095
M-K Test Value (S)	-109
Tabulated p-value	0.0000
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	-0.0006
OLS Regression Intercept	0.0114

Statistically significant evidence of a decreasing trend at the specified level of significance.



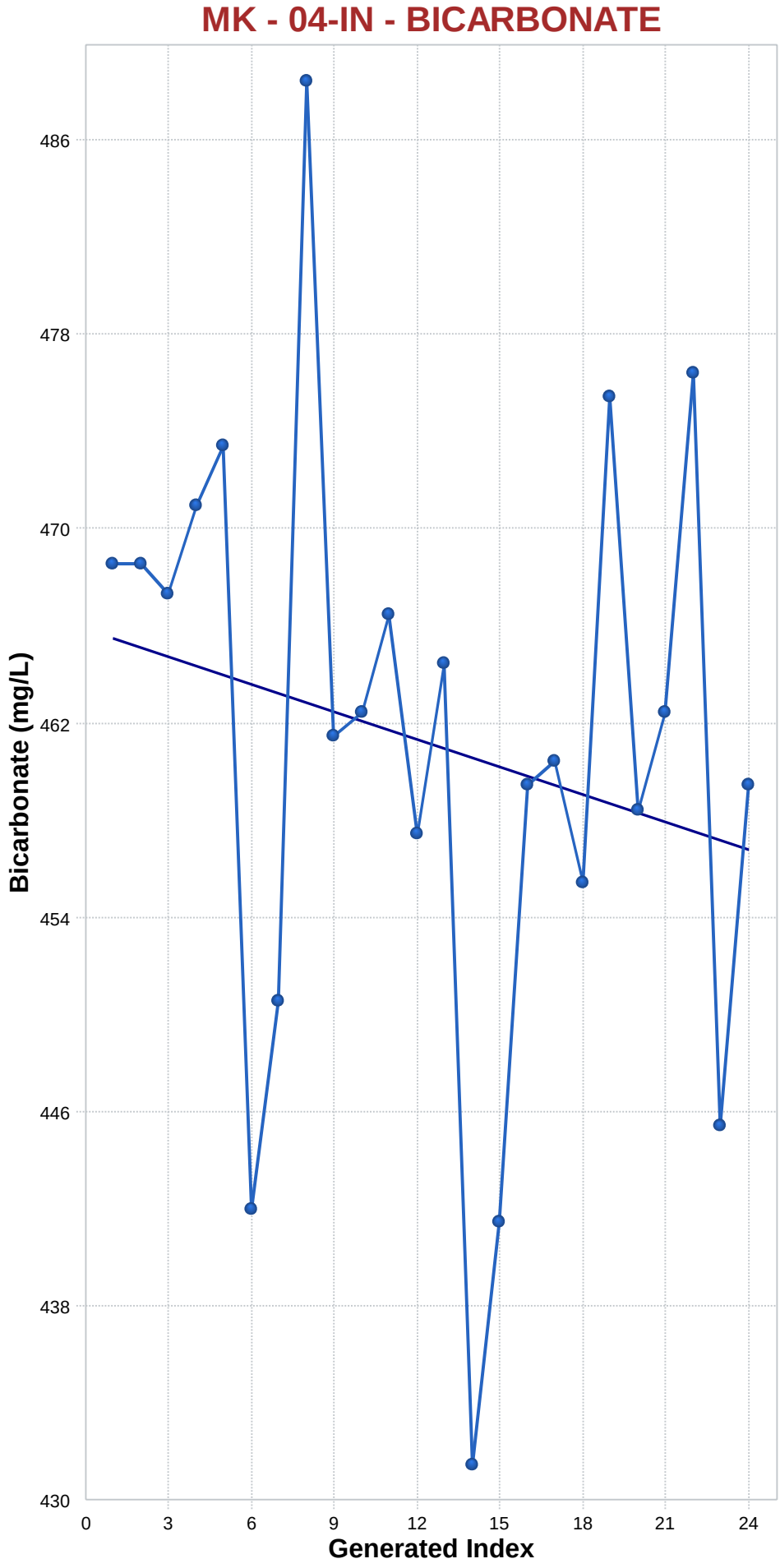
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4495
Standardized Value of S	2.1157
M-K Test Value (S)	76
Tabulated p-value	0.0150
Approximate p-value	0.0172

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0026

Statistically significant evidence of an increasing trend at the specified level of significance.



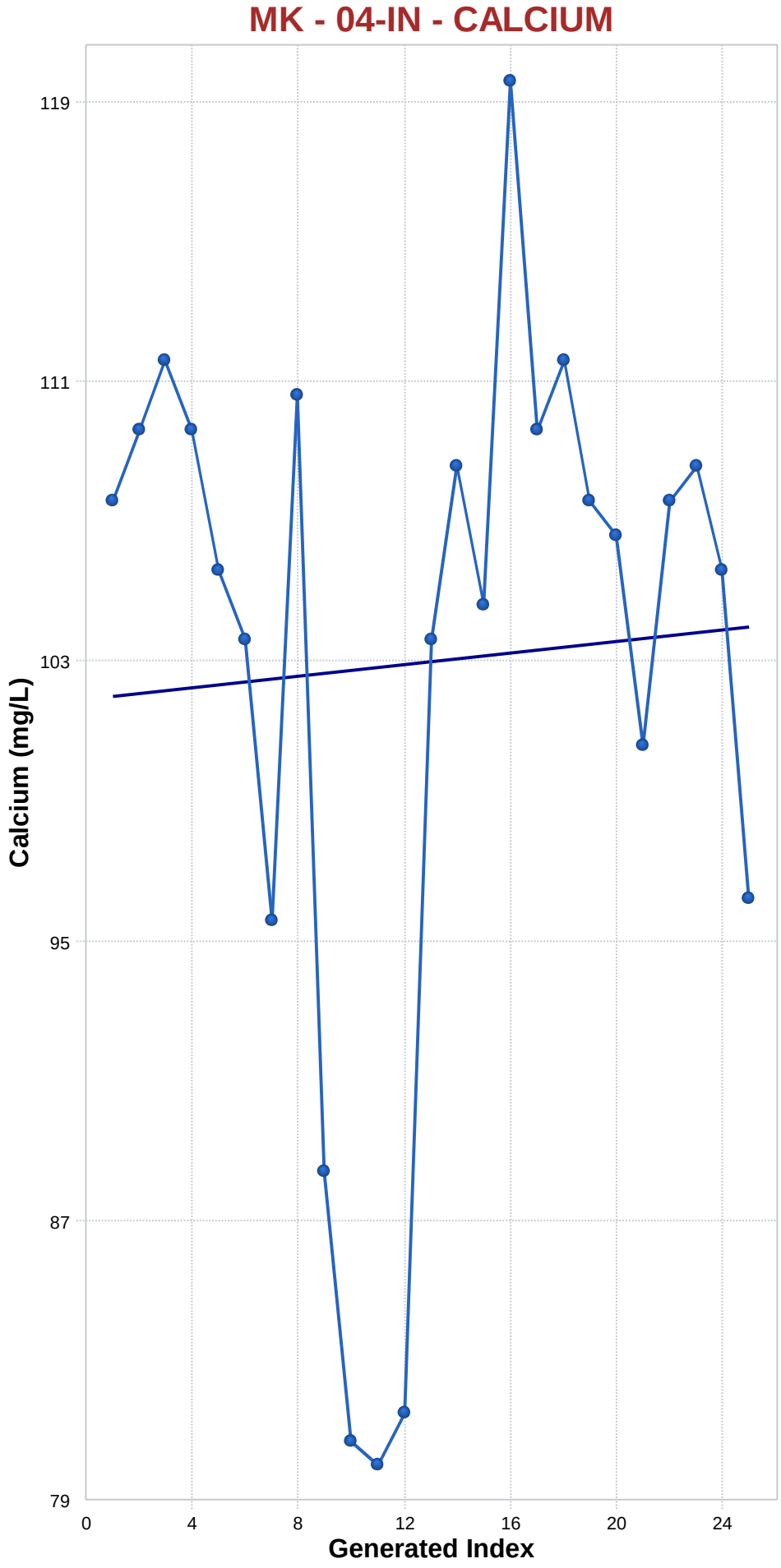
Mann-Kendall Trend Analysis

n	24
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	40.2782
Standardized Value of S	-1.2414
M-K Test Value (S)	-51
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1072

OLS Regression Line (Blue)

OLS Regression Slope	-0.3785
OLS Regression Intercept	465.4482

Insufficient statistical evidence of a significant trend at the specified level of significance.



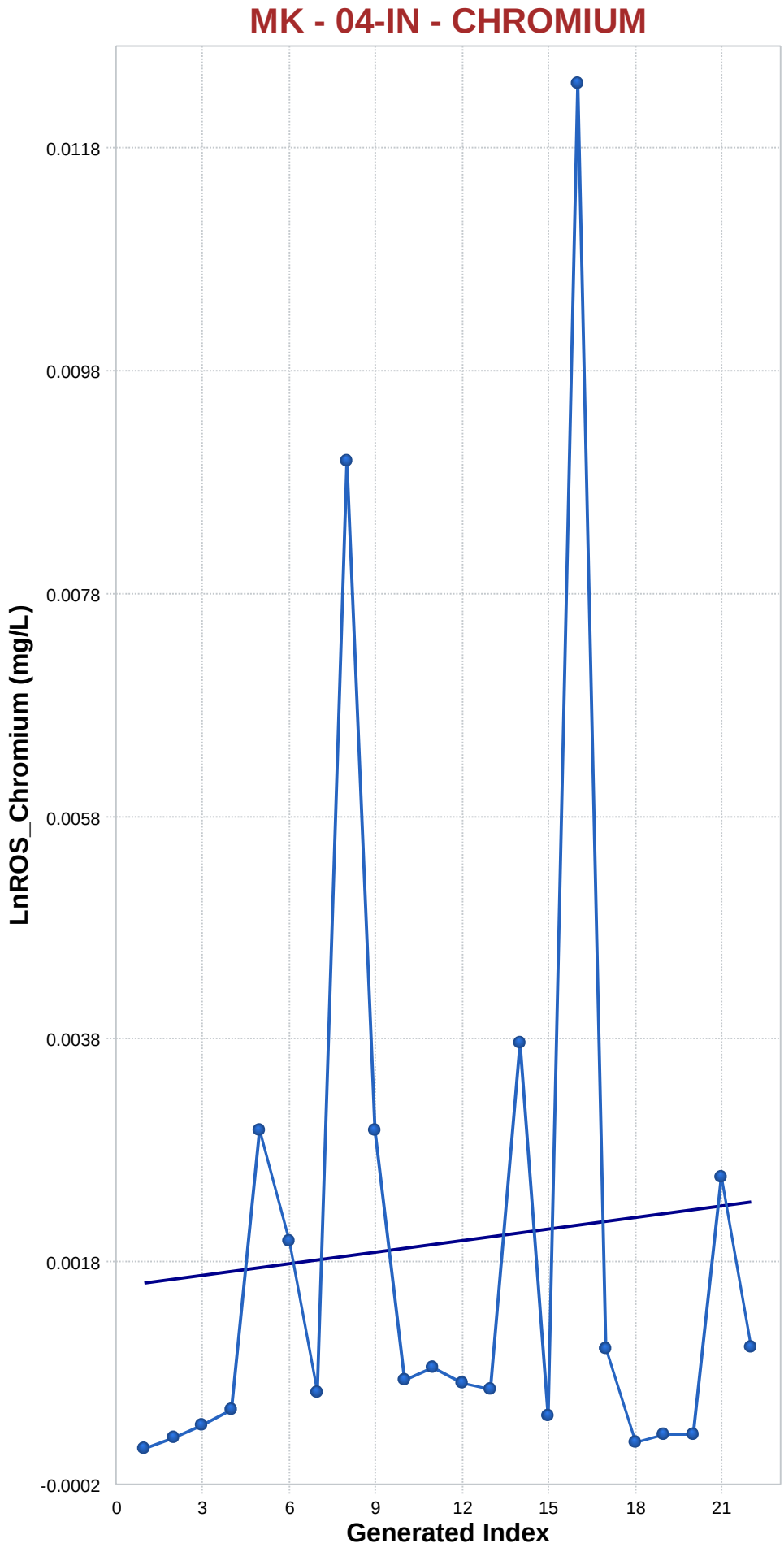
Mann-Kendall Trend Analysis

n	25
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	42.6849
Standardized Value of S	-0.3983
M-K Test Value (S)	-18
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3452

OLS Regression Line (Blue)

OLS Regression Slope	0.0823
OLS Regression Intercept	102.3220

Insufficient statistical evidence of a significant trend at the specified level of significance.



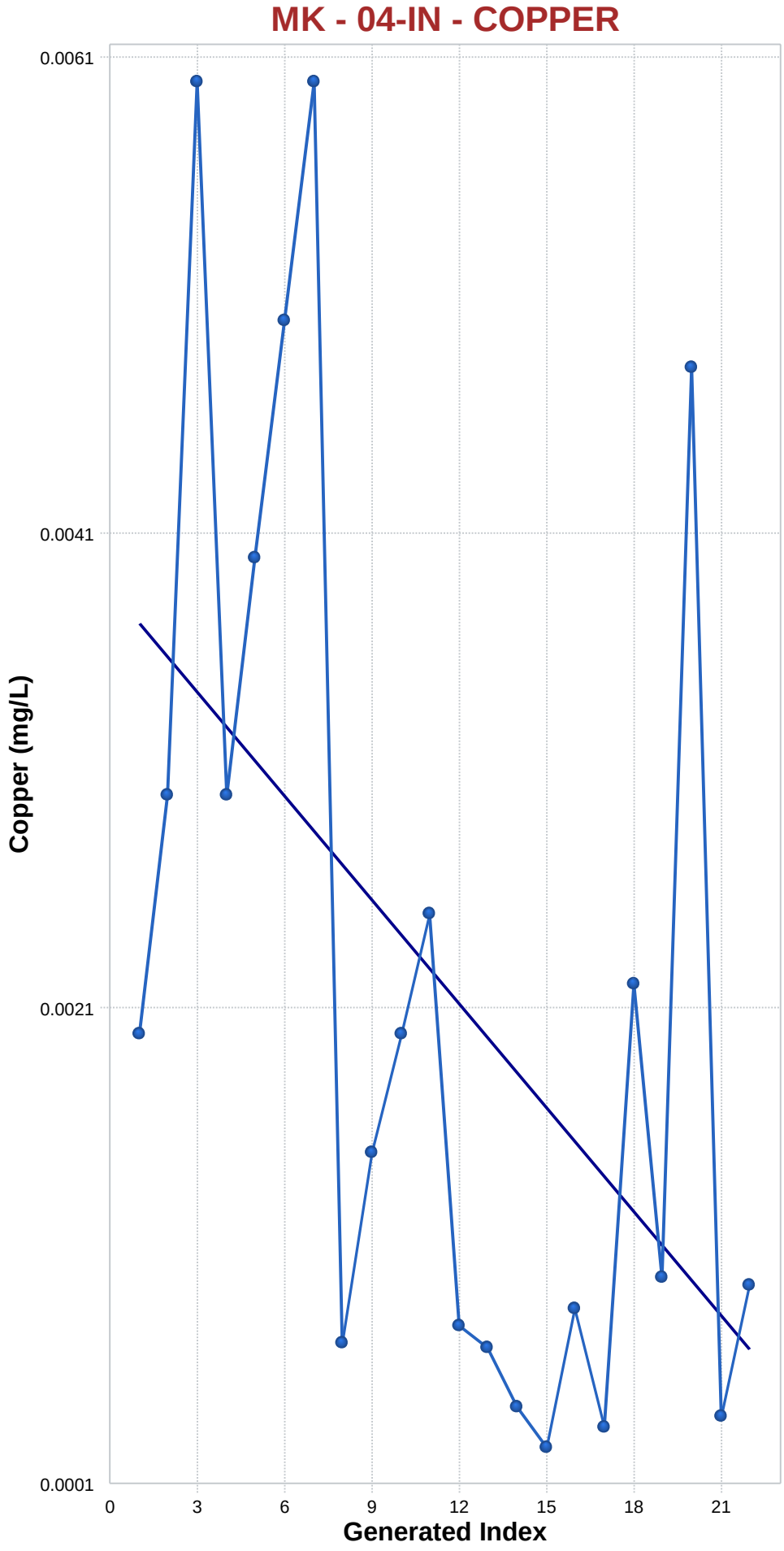
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4495
Standardized Value of S	0.7052
M-K Test Value (S)	26
Tabulated p-value	0.2340
Approximate p-value	0.2403

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0016

Insufficient statistical evidence of a significant trend at the specified level of significance.



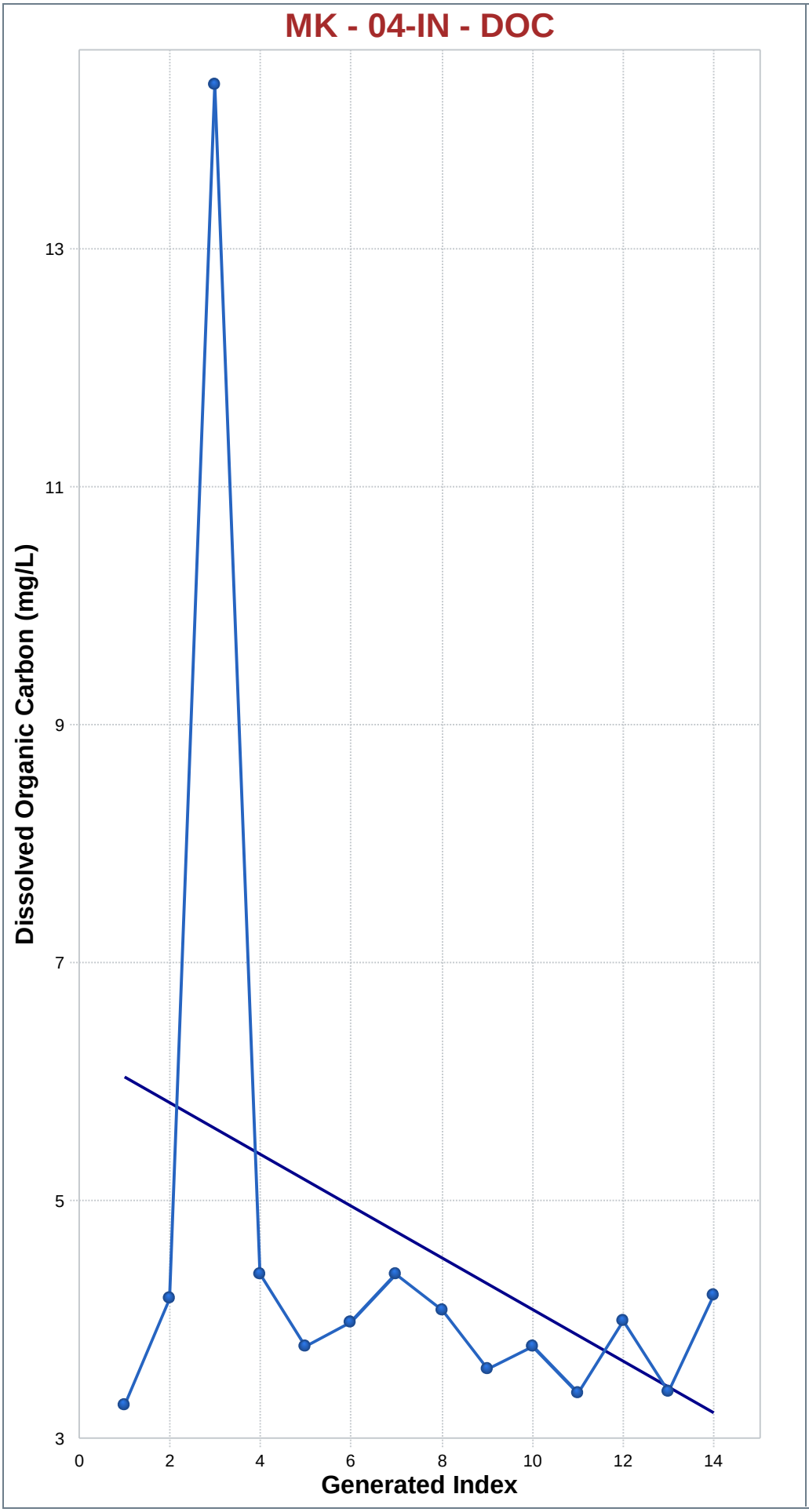
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4213
Standardized Value of S	-2.2868
M-K Test Value (S)	-82
Tabulated p-value	0.0100
Approximate p-value	0.0111

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0039

Statistically significant evidence of a decreasing trend at the specified level of significance.



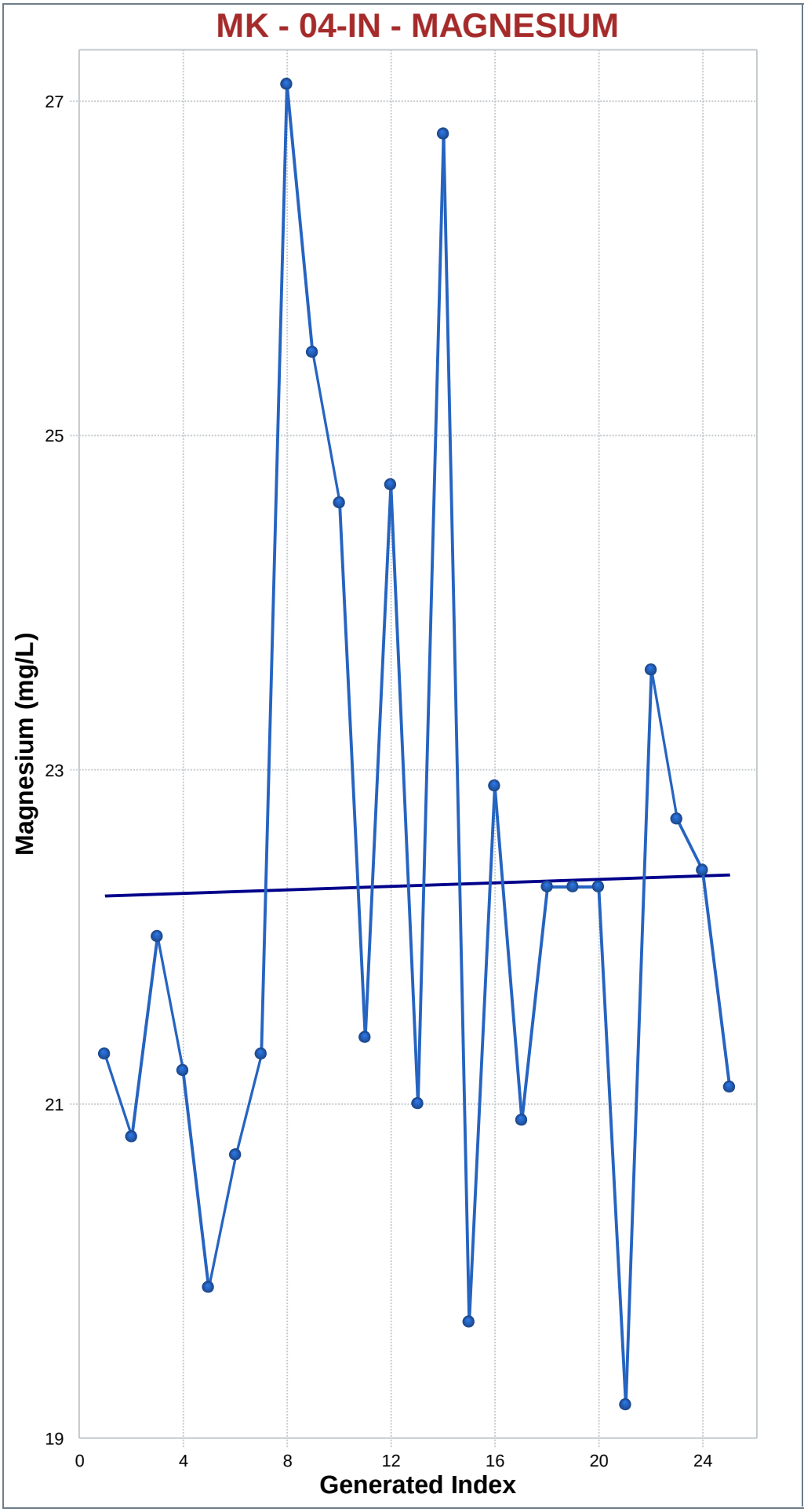
Mann-Kendall Trend Analysis

n	14
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	18.2117
Standardized Value of S	-0.7687
M-K Test Value (S)	-15
Tabulated p-value	0.2250
Approximate p-value	0.2210

OLS Regression Line (Blue)

OLS Regression Slope	-0.2167
OLS Regression Intercept	6.0724

Insufficient statistical evidence of a significant trend at the specified level of significance.



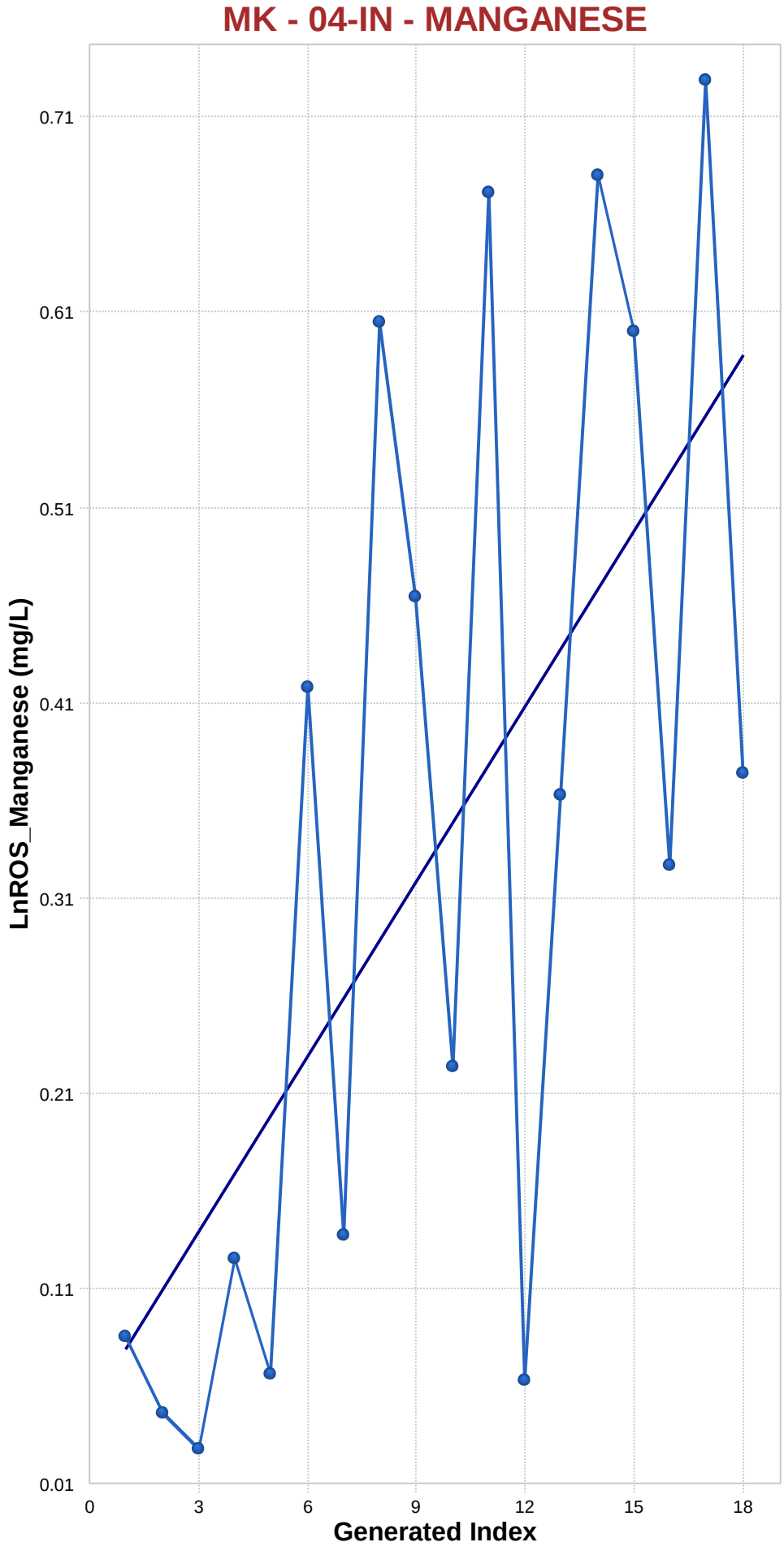
Mann-Kendall Trend Analysis

n	25
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	42.7629
Standardized Value of S	0.4911
M-K Test Value (S)	22
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3117

OLS Regression Line (Blue)

OLS Regression Slope	0.0051
OLS Regression Intercept	22.5420

Insufficient statistical evidence of a significant trend at the specified level of significance.



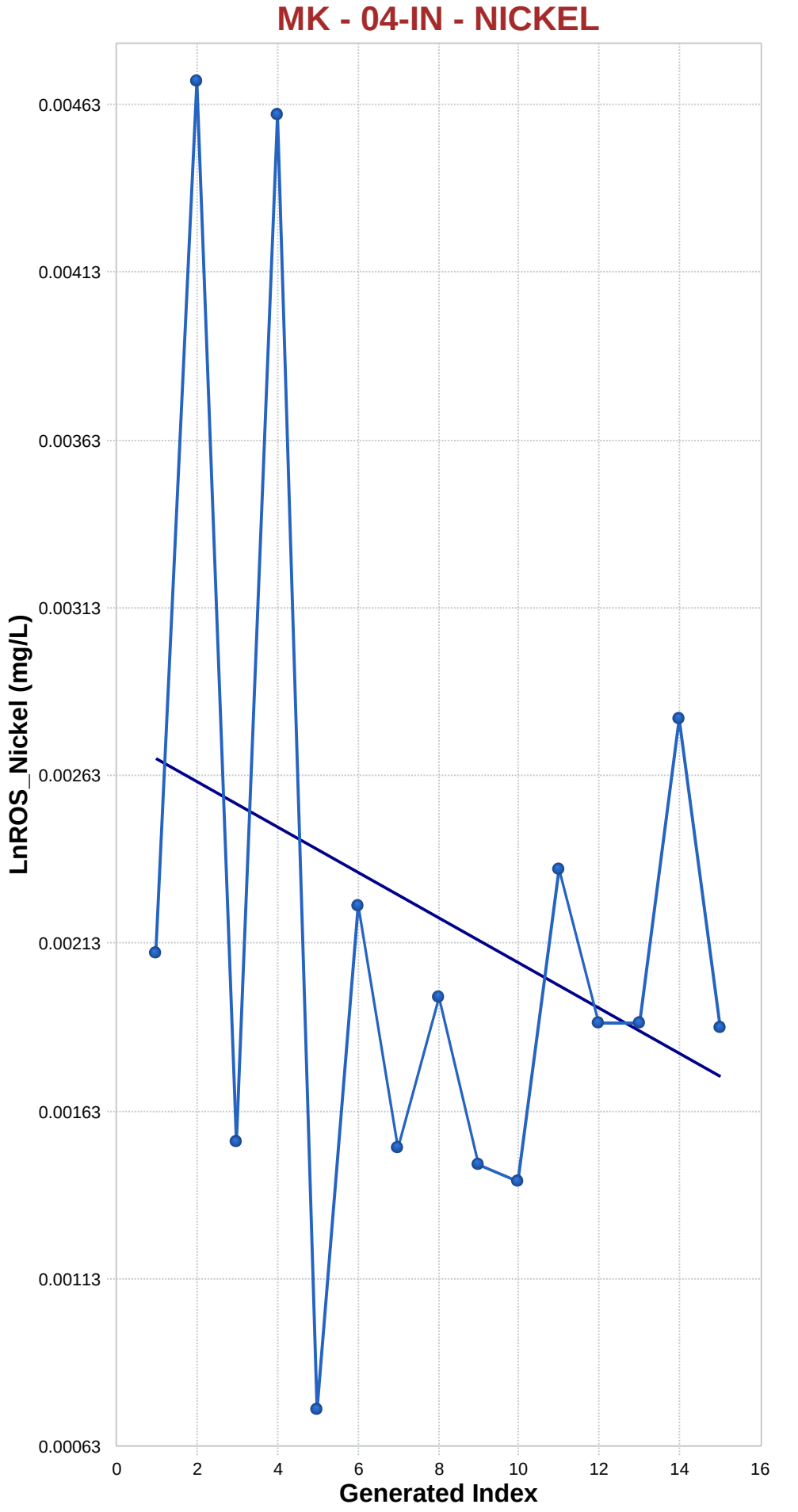
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.4008
Standardized Value of S	2.7272
M-K Test Value (S)	73
Tabulated p-value	0.0030
Approximate p-value	0.0032

OLS Regression Line (Blue)

OLS Regression Slope	0.0299
OLS Regression Intercept	0.0473

Statistically significant evidence of an increasing trend at the specified level of significance.



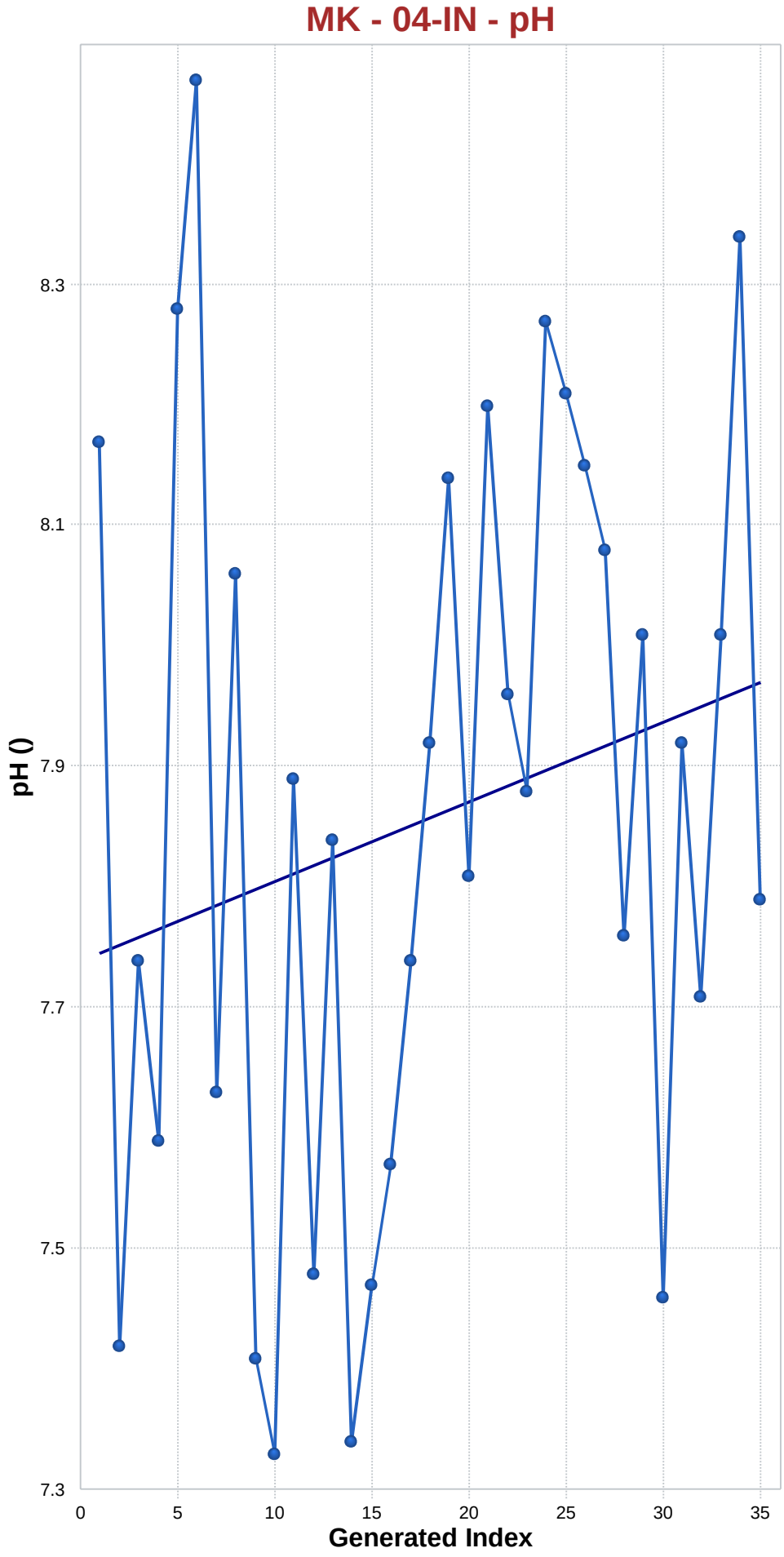
Mann-Kendall Trend Analysis

n	15
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	20.1825
Standardized Value of S	-0.5450
M-K Test Value (S)	-12
Tabulated p-value	0.2790
Approximate p-value	0.2929

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0027

Insufficient statistical evidence of a significant trend at the specified level of significance.



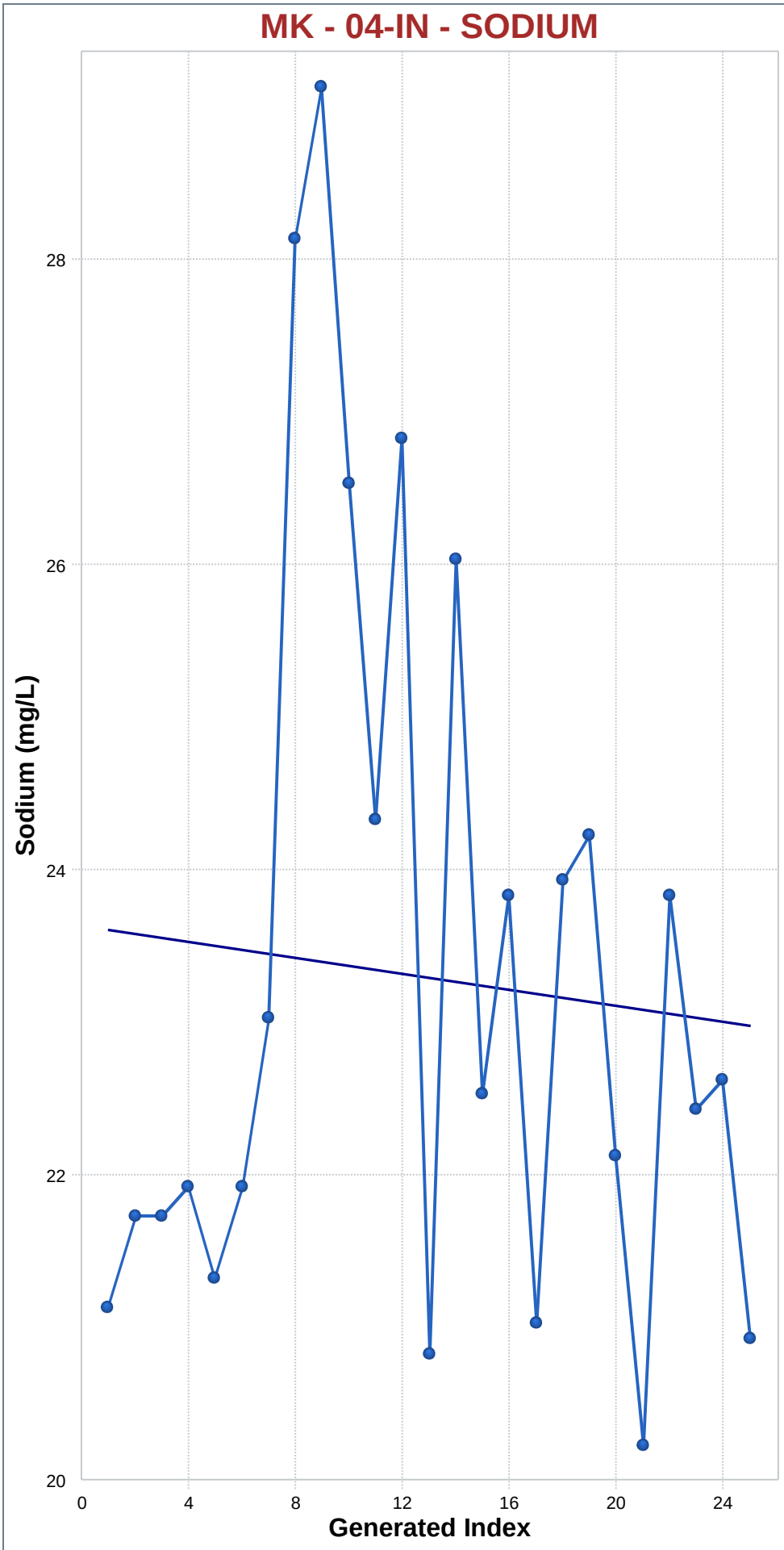
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3941
Standardized Value of S	1.3495
M-K Test Value (S)	96
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0886

OLS Regression Line (Blue)

OLS Regression Slope	0.0066
OLS Regression Intercept	7.7091

Insufficient statistical evidence of a significant trend at the specified level of significance.



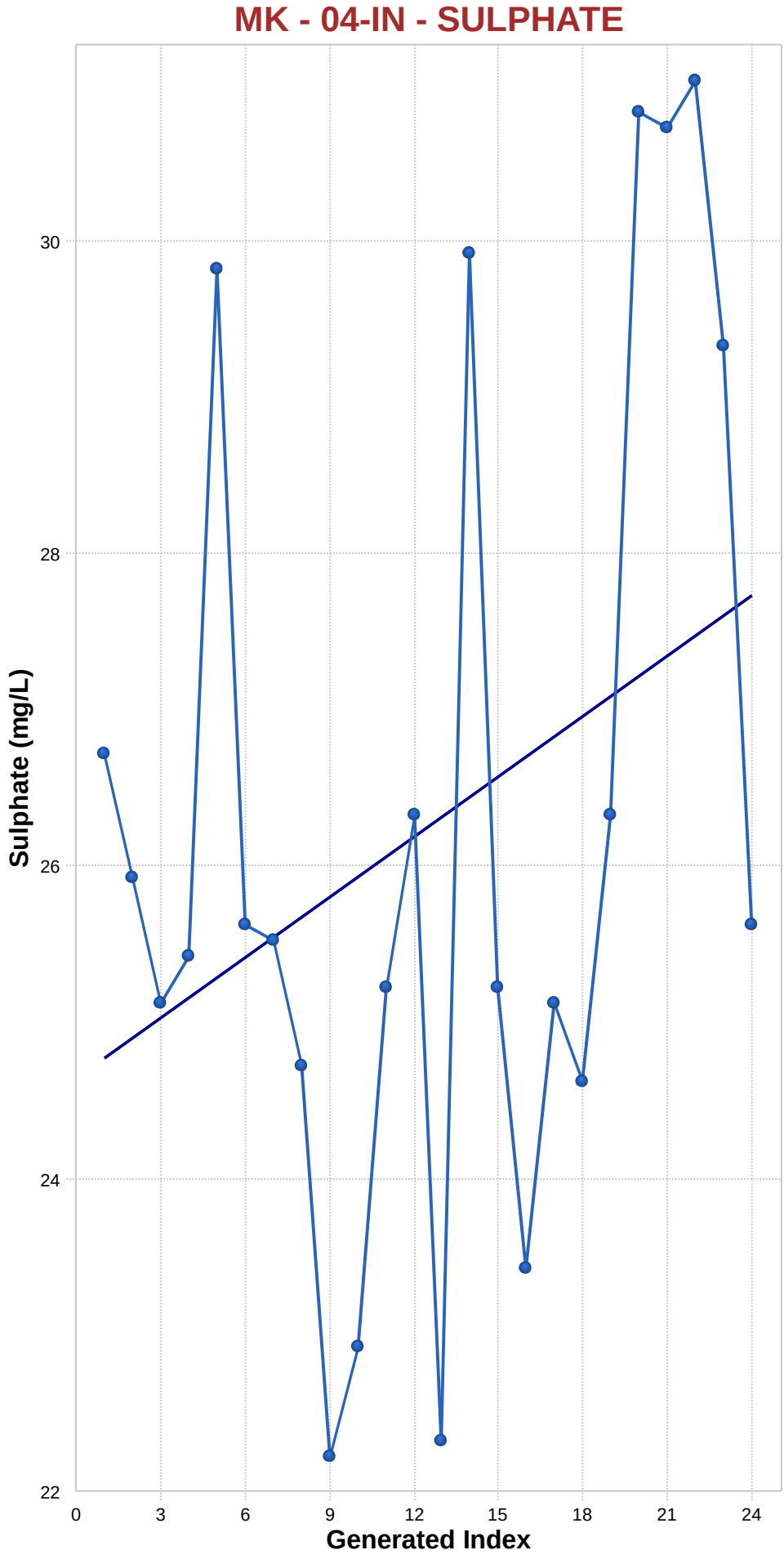
Mann-Kendall Trend Analysis

n	25
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	42.7824
Standardized Value of S	-0.0467
M-K Test Value (S)	-3
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4814

OLS Regression Line (Blue)

OLS Regression Slope	-0.0265
OLS Regression Intercept	23.8090

Insufficient statistical evidence of a significant trend at the specified level of significance.



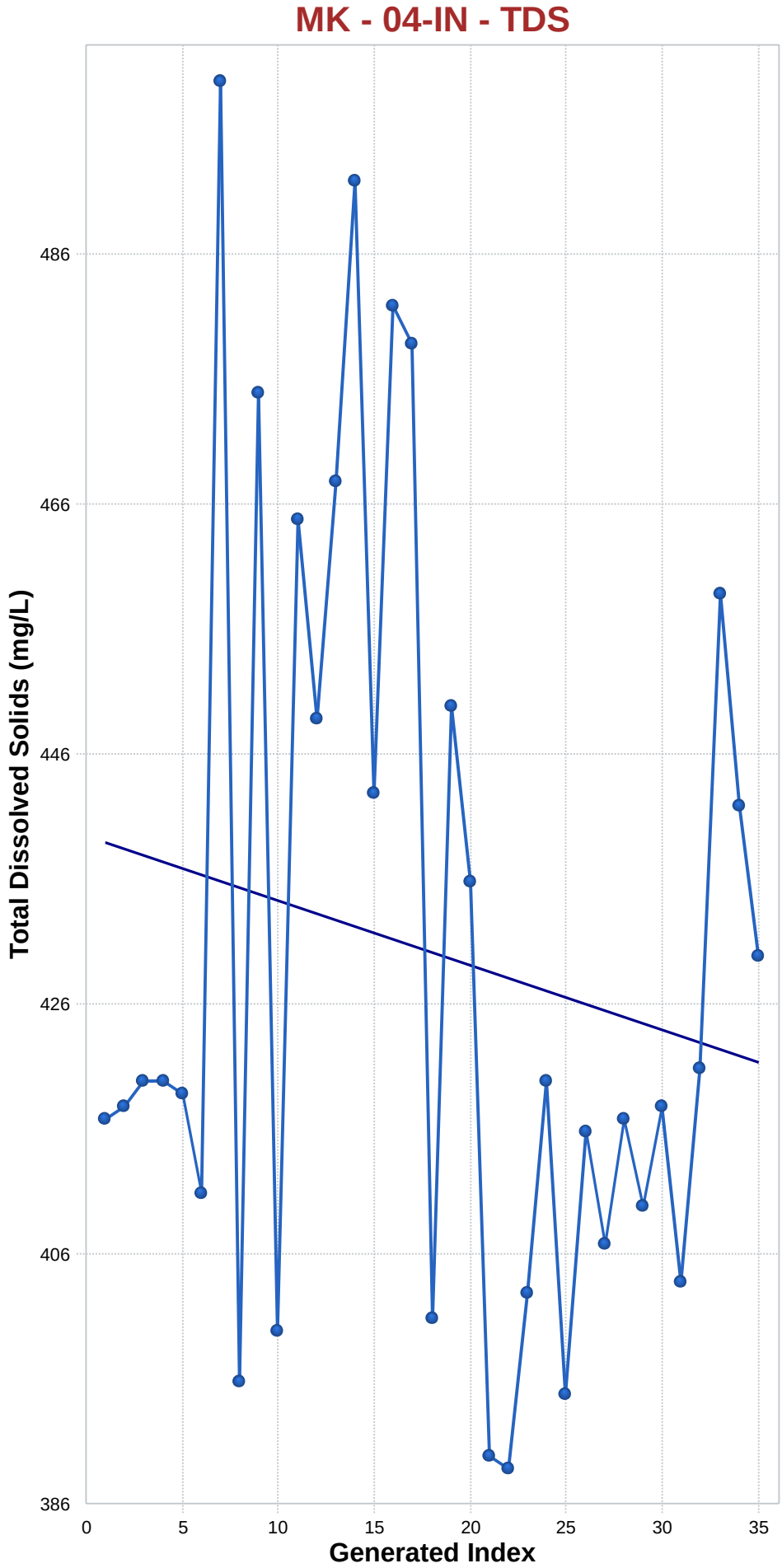
Mann-Kendall Trend Analysis

n	24
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	40.2658
Standardized Value of S	0.9686
M-K Test Value (S)	40
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1664

OLS Regression Line (Blue)

OLS Regression Slope	0.1287
OLS Regression Intercept	24.6199

Insufficient statistical evidence of a significant trend at the specified level of significance.



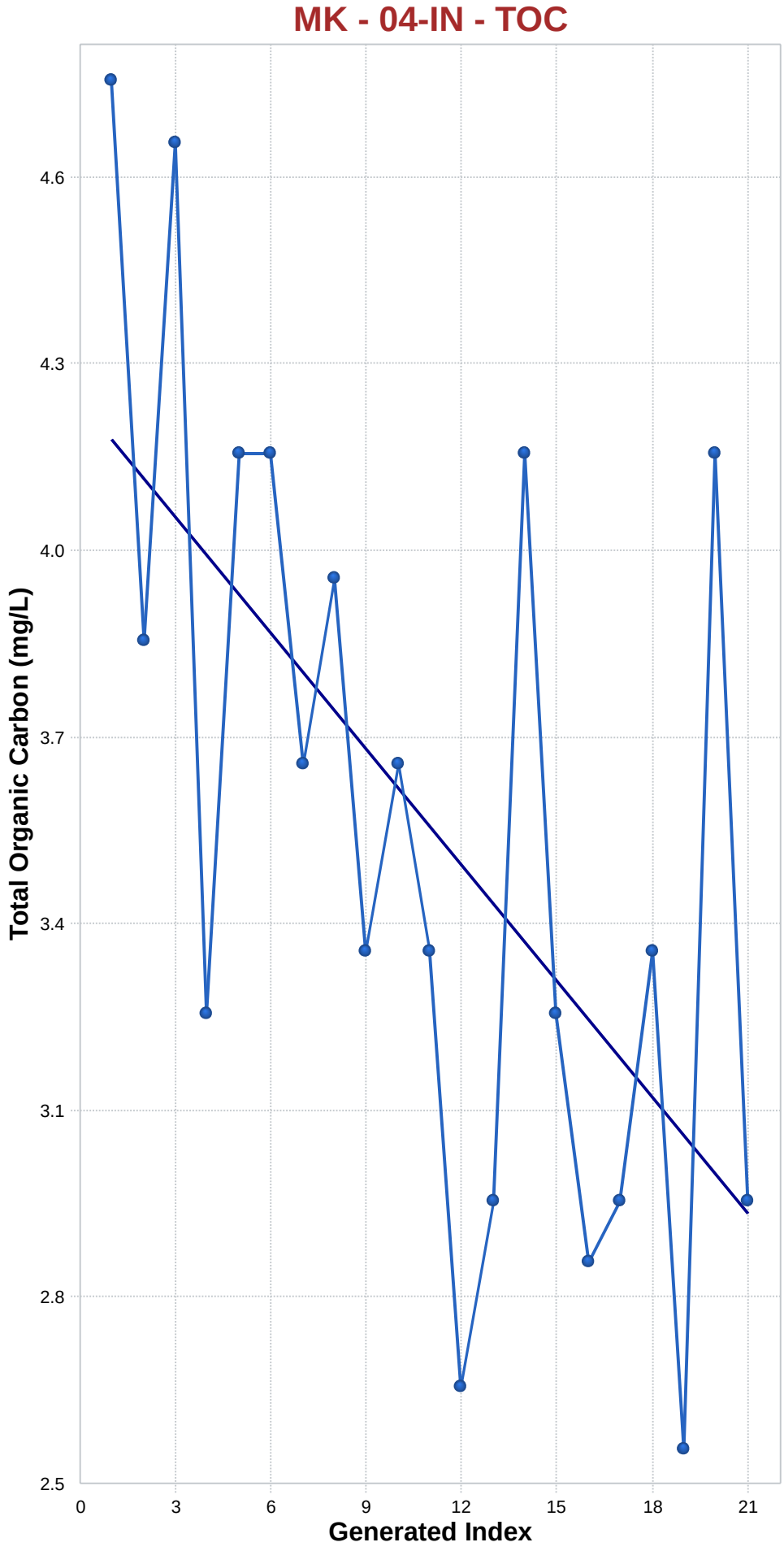
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3752
Standardized Value of S	-0.6110
M-K Test Value (S)	-44
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.2706

OLS Regression Line (Blue)

OLS Regression Slope	-0.5188
OLS Regression Intercept	439.6807

Insufficient statistical evidence of a significant trend at the specified level of significance.



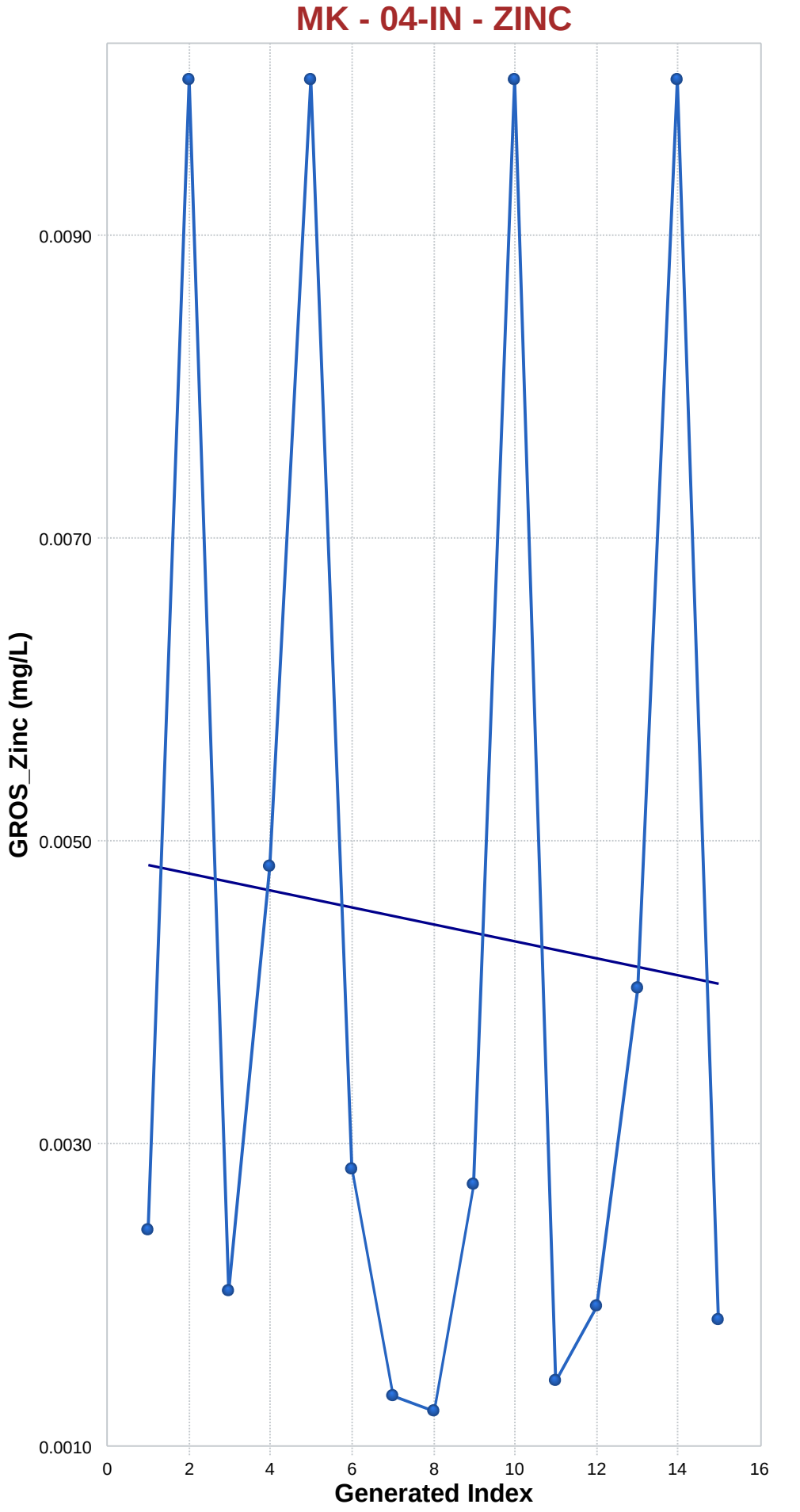
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	32.8431
Standardized Value of S	-2.8316
M-K Test Value (S)	-94
Tabulated p-value	0.0020
Approximate p-value	0.0023

OLS Regression Line (Blue)

OLS Regression Slope	-0.0622
OLS Regression Intercept	4.2843

Statistically significant evidence of a decreasing trend at the specified level of significance.



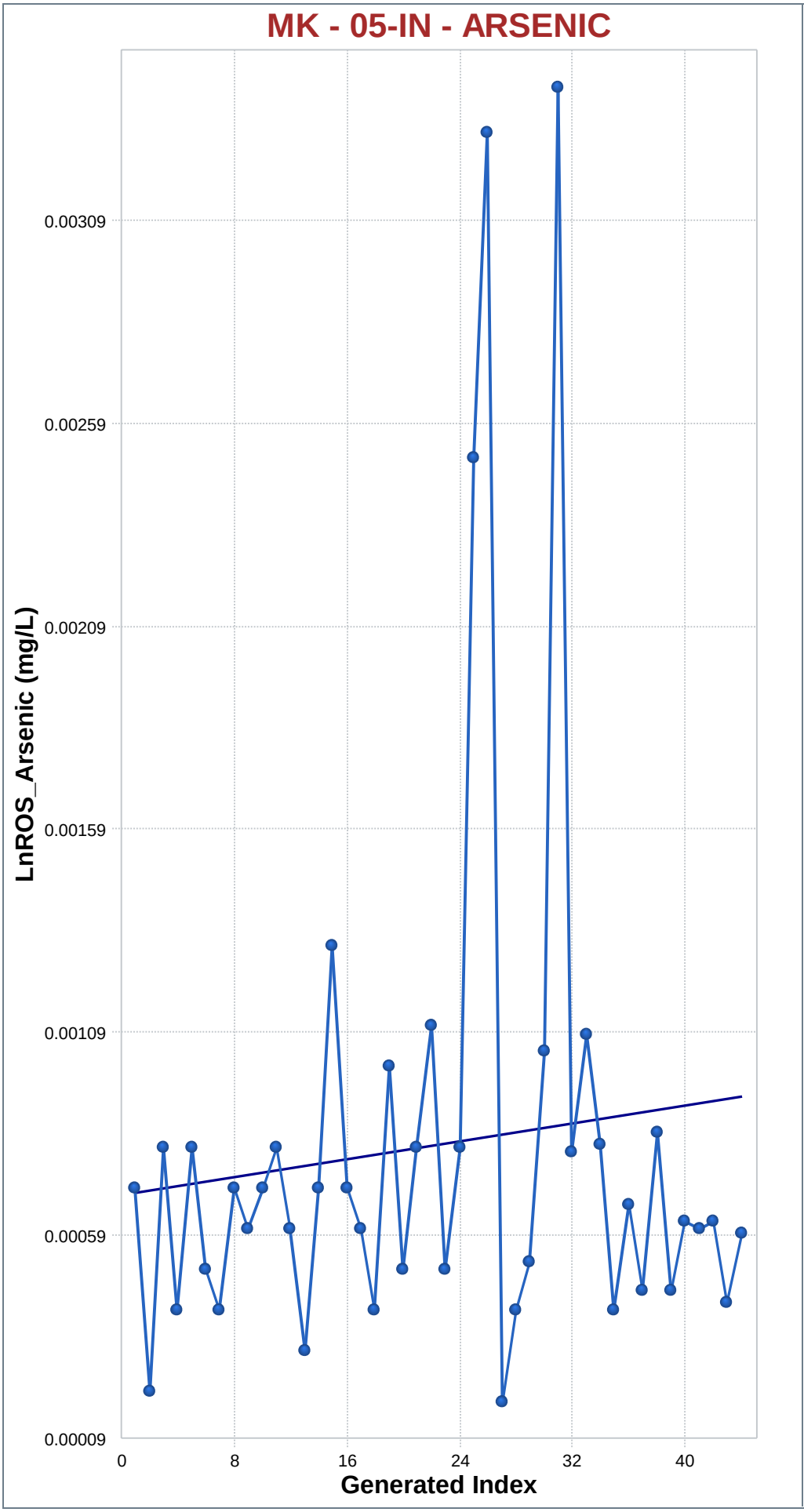
Mann-Kendall Trend Analysis

n	15
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	19.9917
Standardized Value of S	-0.4002
M-K Test Value (S)	-9
Tabulated p-value	0.3490
Approximate p-value	0.3445

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0049

Insufficient statistical evidence of a significant trend at the specified level of significance.



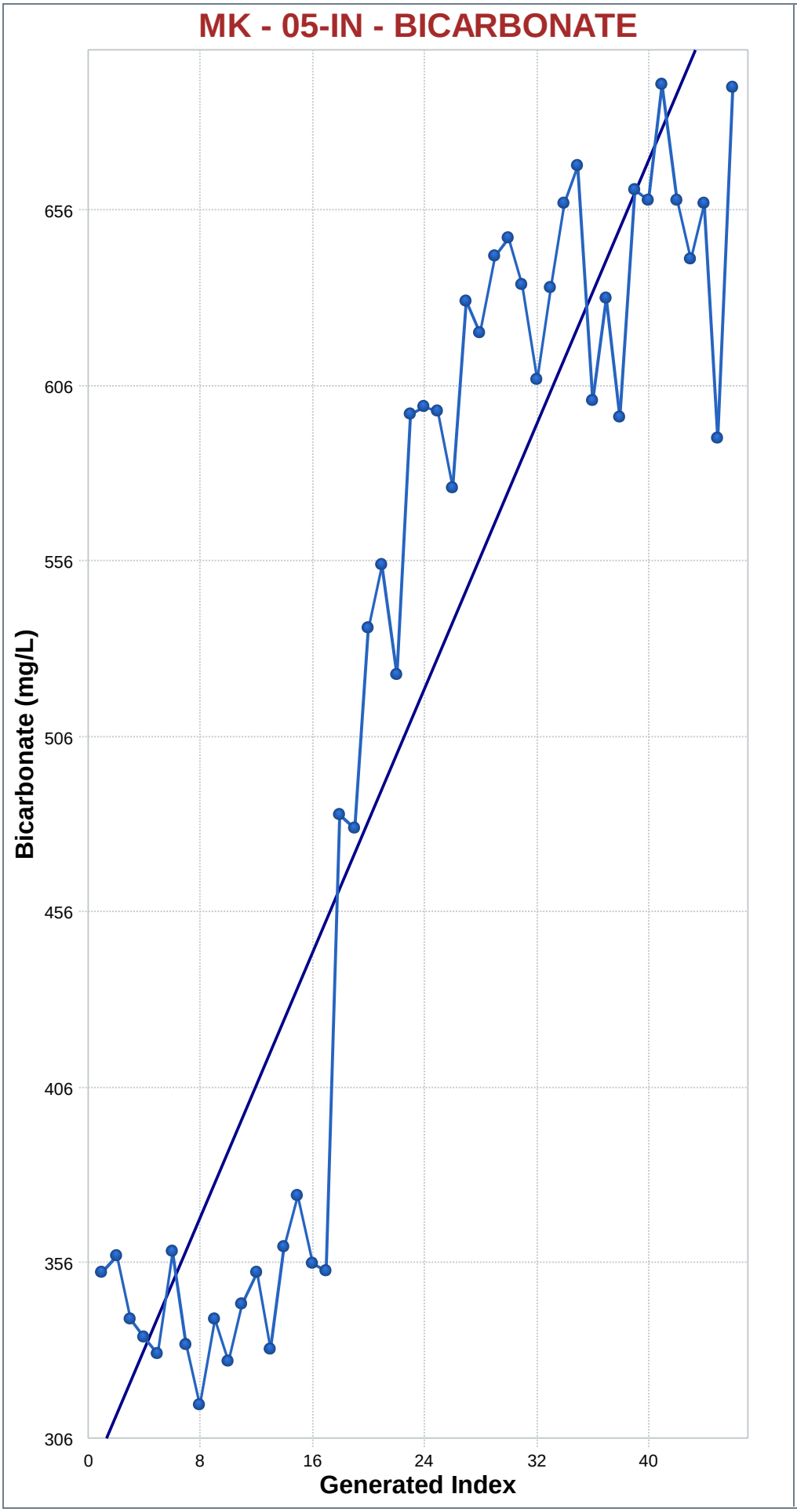
Mann-Kendall Trend Analysis

n	44
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	98.5444
Standardized Value of S	0.3653
M-K Test Value (S)	37
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3574

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0007

Insufficient statistical evidence of a significant trend at the specified level of significance.



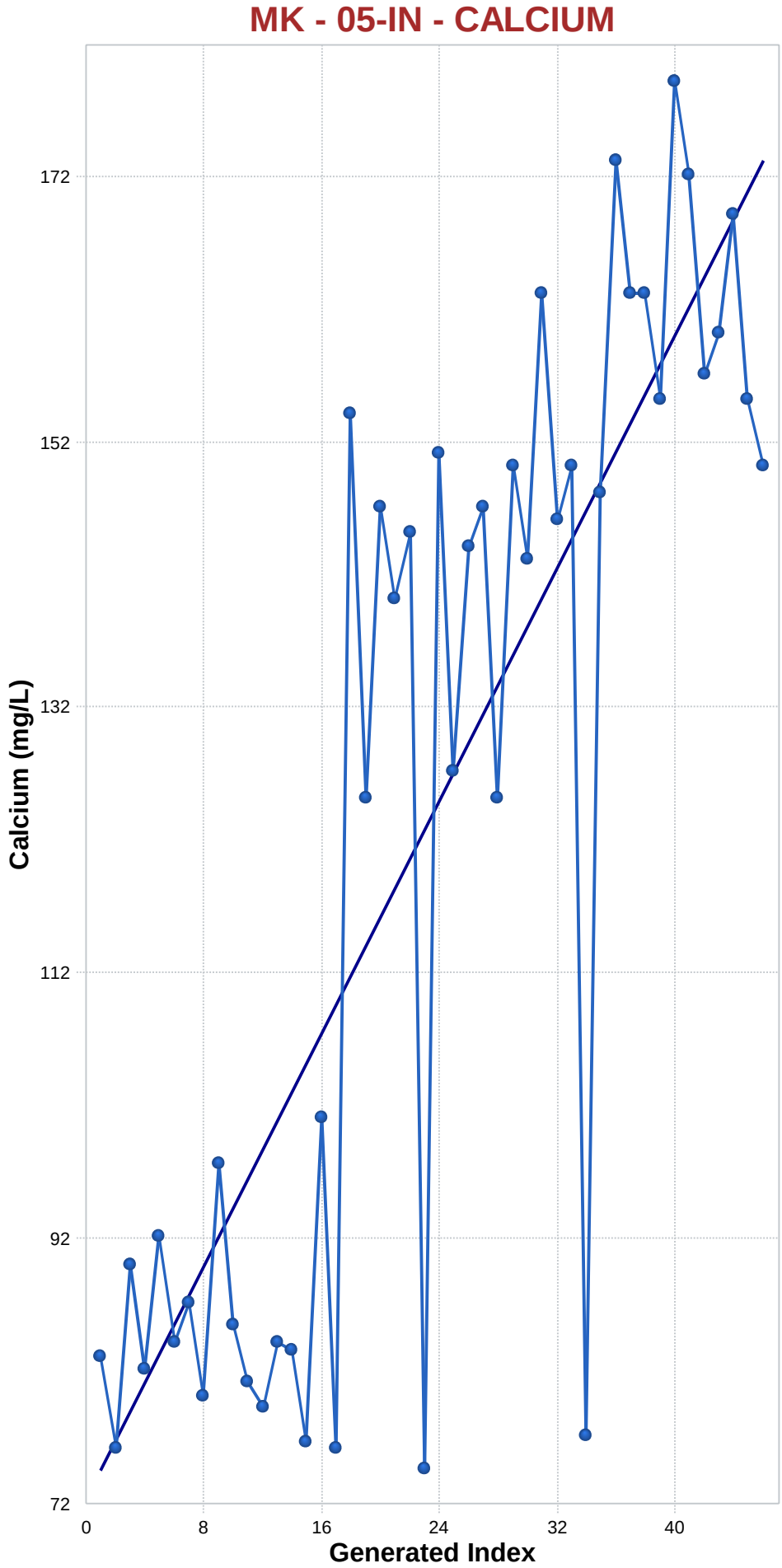
Mann-Kendall Trend Analysis

n	46
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	105.5983
Standardized Value of S	7.0456
M-K Test Value (S)	745
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	9.4245
OLS Regression Intercept	292.7319

Statistically significant evidence of an increasing trend at the specified level of significance.



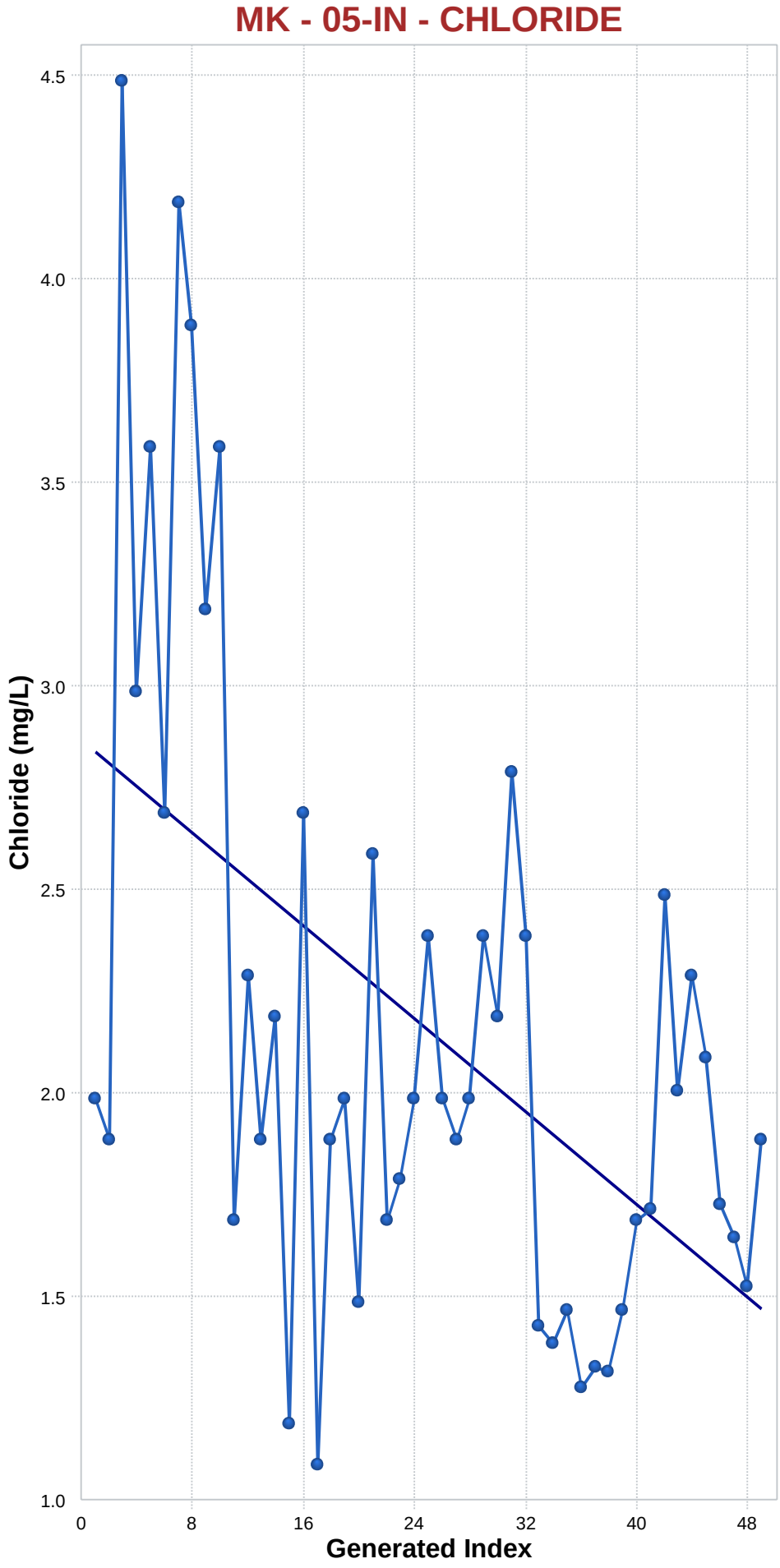
Mann-Kendall Trend Analysis

n	46
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	105.5588
Standardized Value of S	5.5230
M-K Test Value (S)	584
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	2.1904
OLS Regression Intercept	72.2319

Statistically significant evidence of an increasing trend at the specified level of significance.



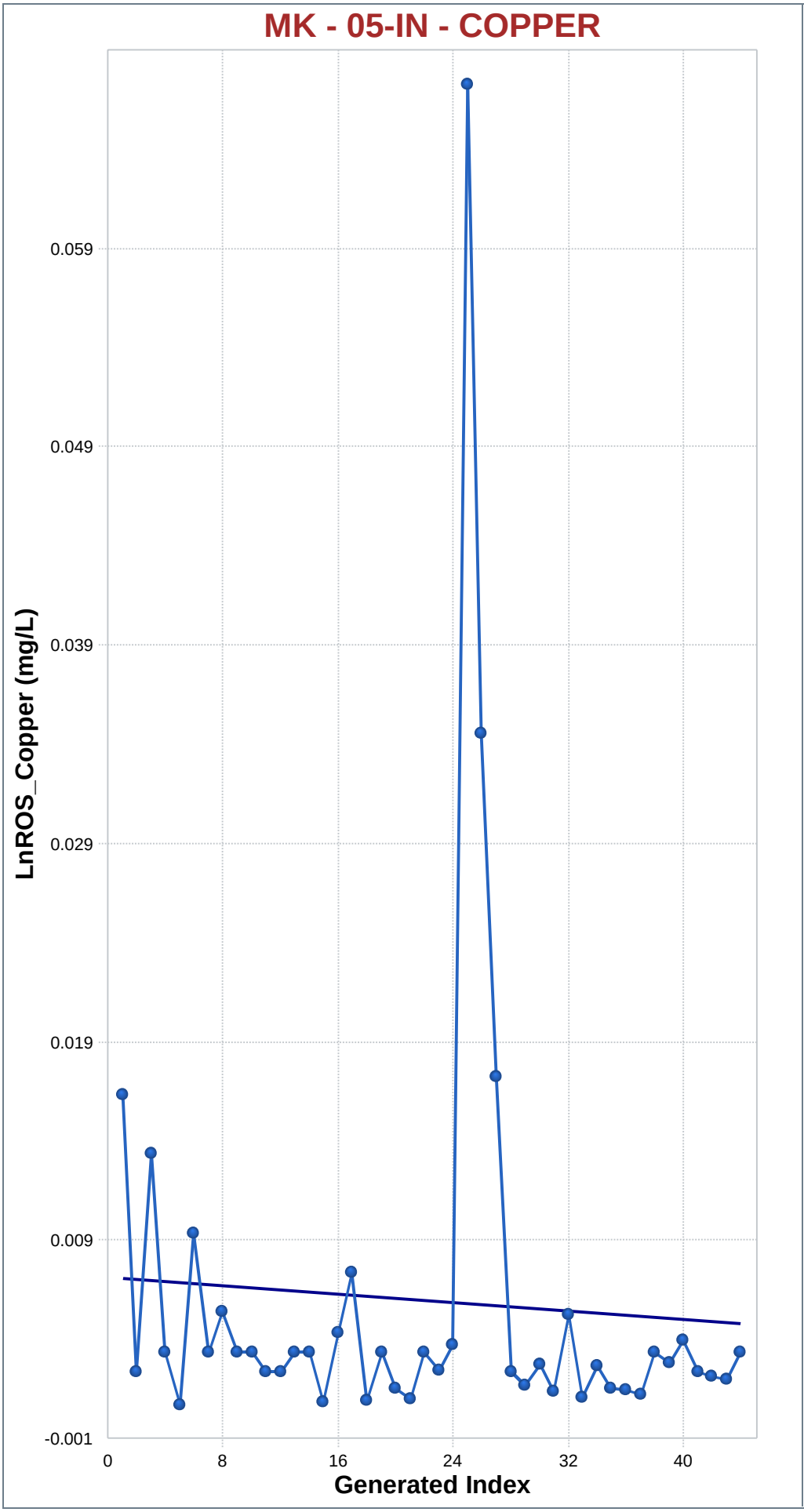
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	115.8145
Standardized Value of S	-3.0048
M-K Test Value (S)	-349
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0013

OLS Regression Line (Blue)

OLS Regression Slope	-0.0284
OLS Regression Intercept	2.8795

Statistically significant evidence of a decreasing trend at the specified level of significance.



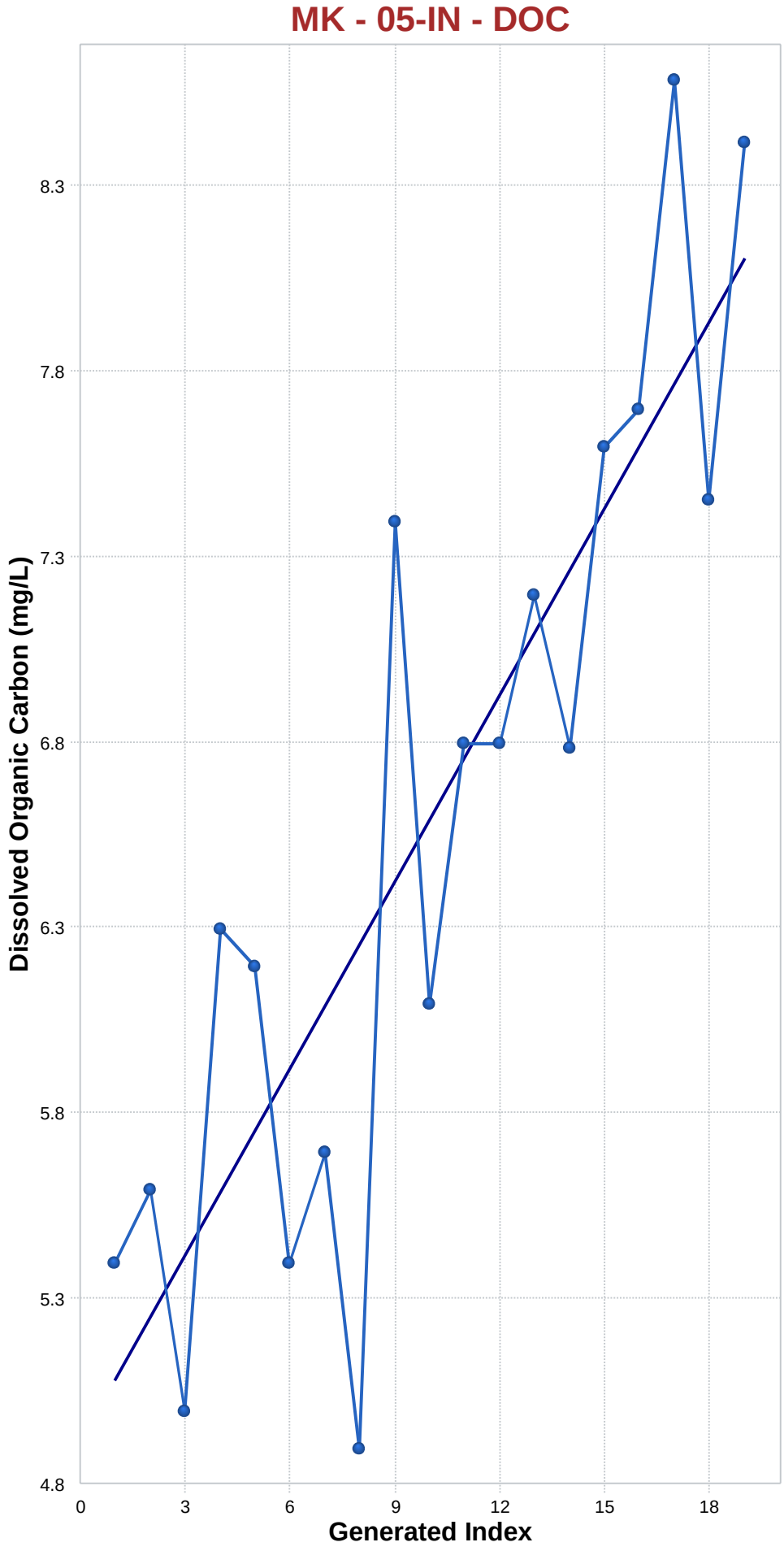
Mann-Kendall Trend Analysis

n	44
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	98.4547
Standardized Value of S	-1.5134
M-K Test Value (S)	-150
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0651

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0068

Insufficient statistical evidence of a significant trend at the specified level of significance.



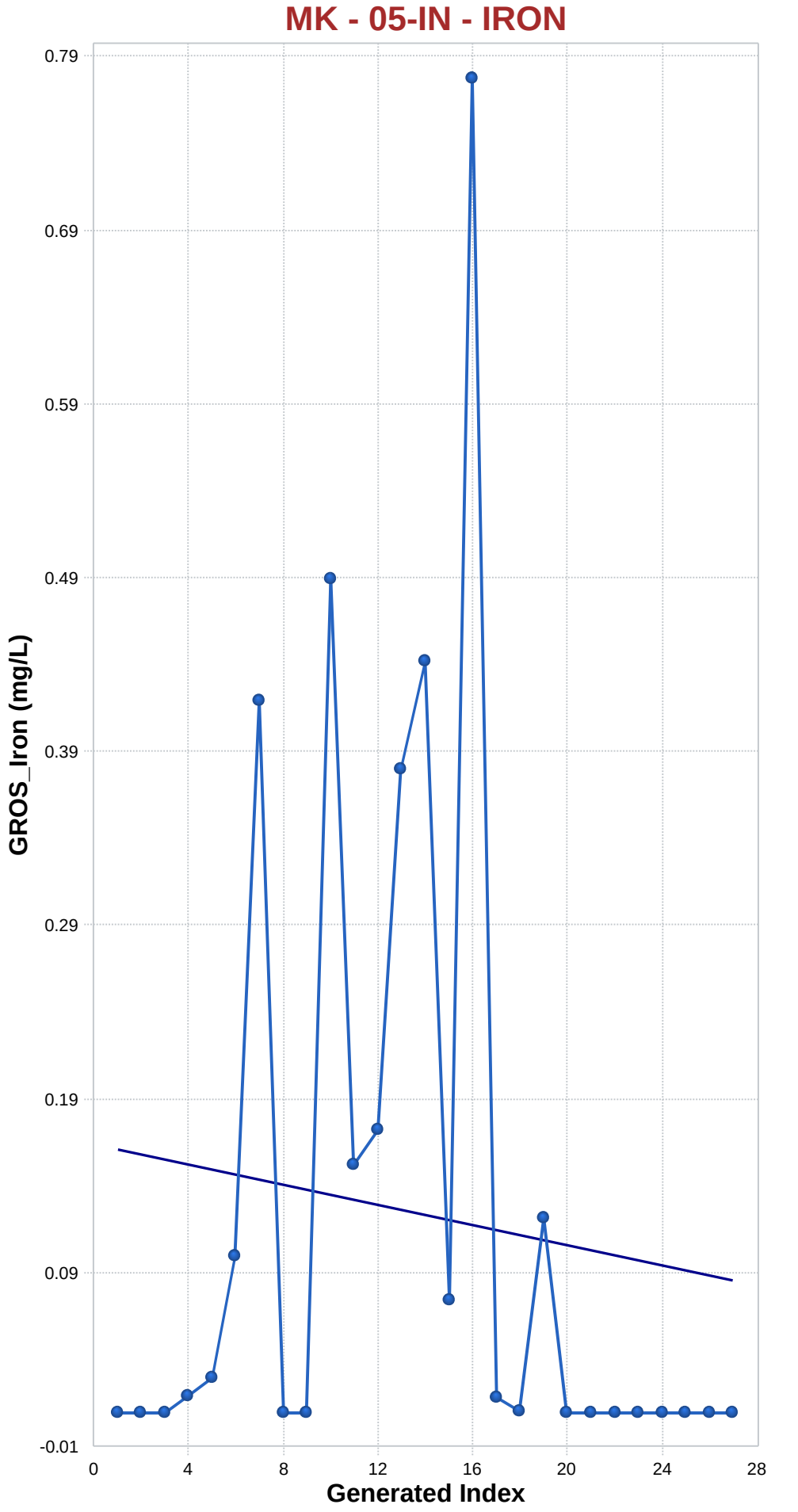
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	3.8531
M-K Test Value (S)	111
Tabulated p-value	0.0000
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	0.1682
OLS Regression Intercept	4.9163

Statistically significant evidence of an increasing trend at the specified level of significance.



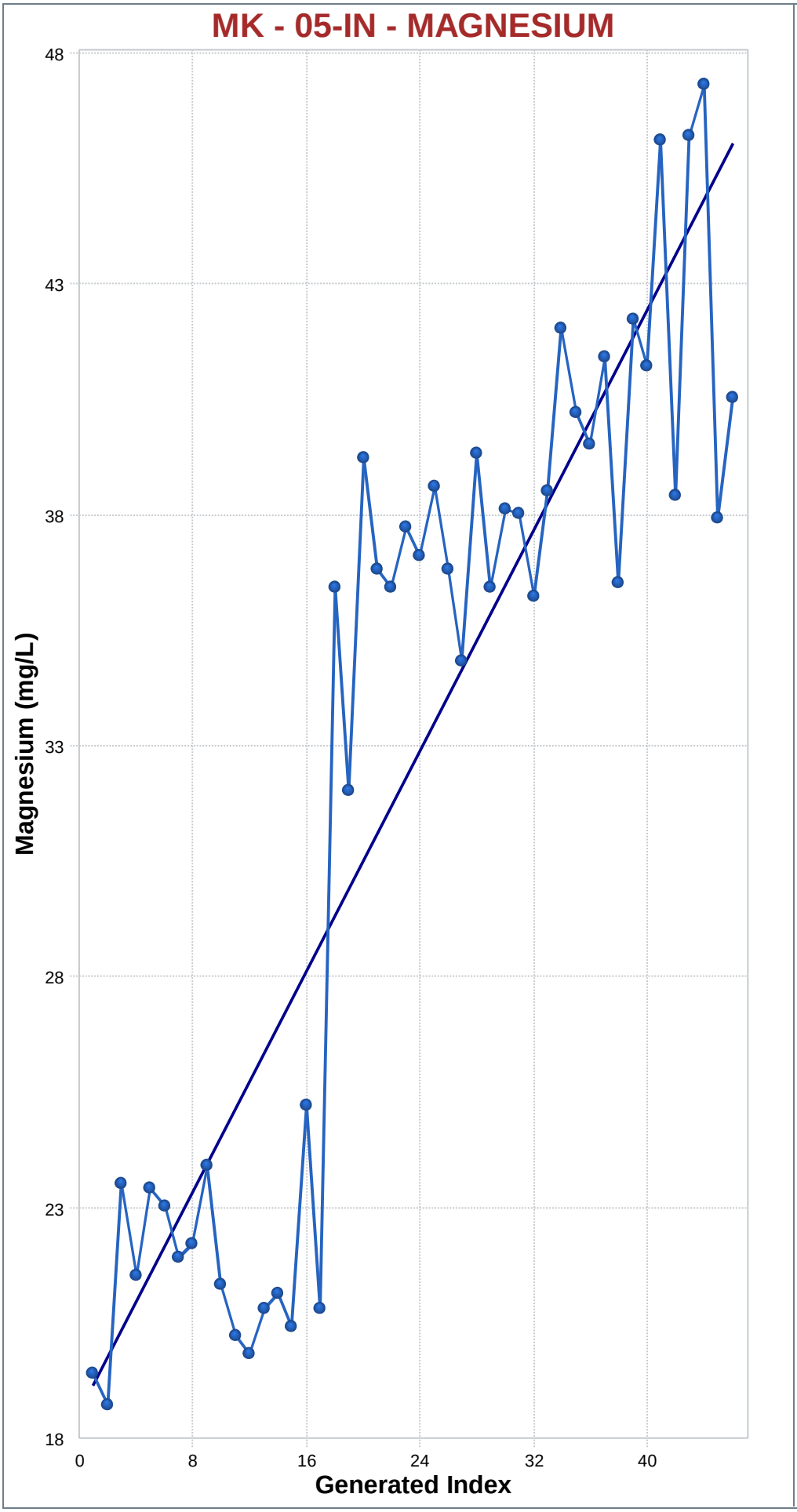
Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	45.0814
Standardized Value of S	-1.1978
M-K Test Value (S)	-55
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1155

OLS Regression Line (Blue)

OLS Regression Slope	-0.0029
OLS Regression Intercept	0.1642

Insufficient statistical evidence of a significant trend at the specified level of significance.



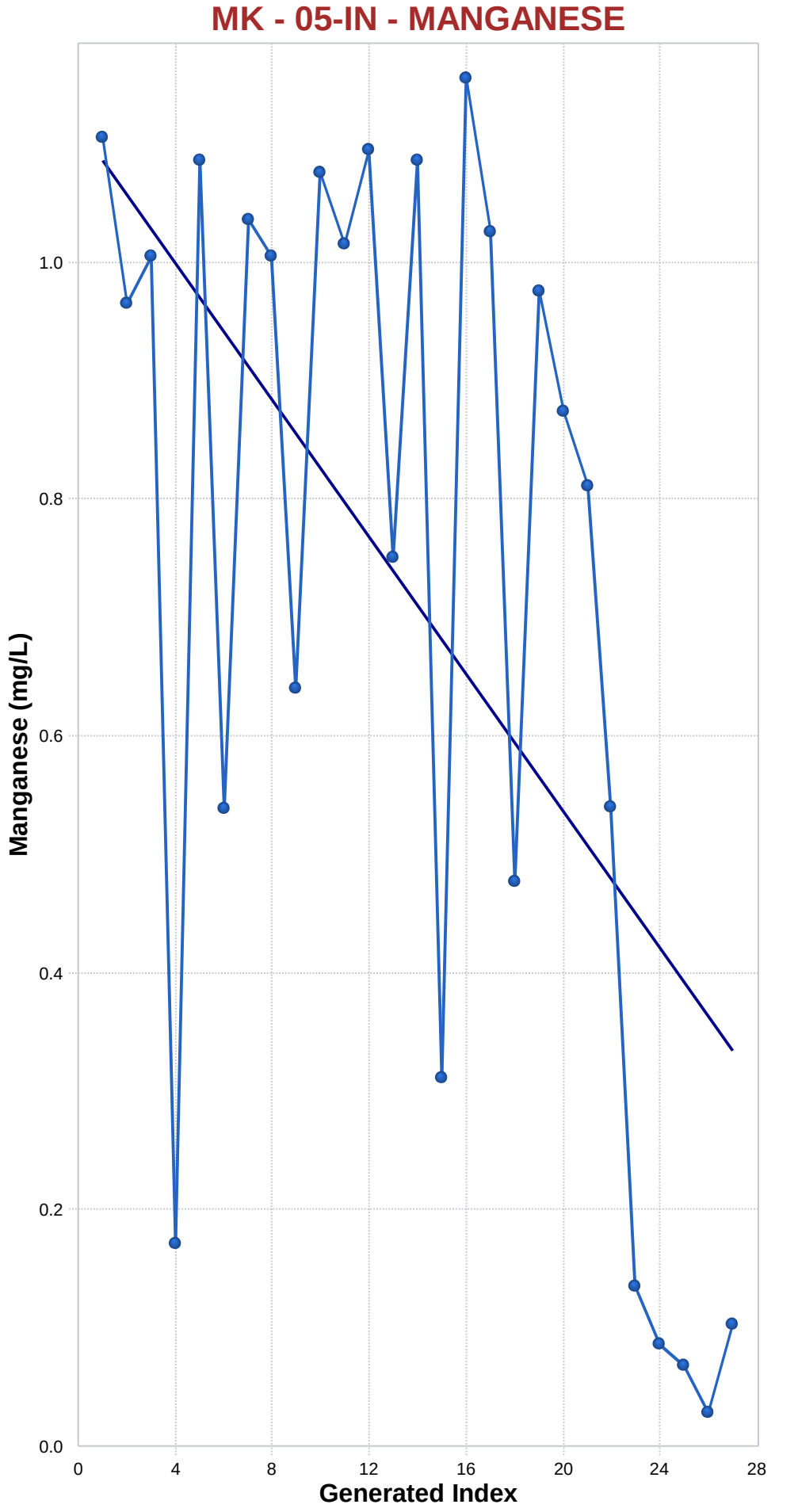
Mann-Kendall Trend Analysis

n	46
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	105.5904
Standardized Value of S	6.4305
M-K Test Value (S)	680
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.5980
OLS Regression Intercept	18.4296

Statistically significant evidence of an increasing trend at the specified level of significance.



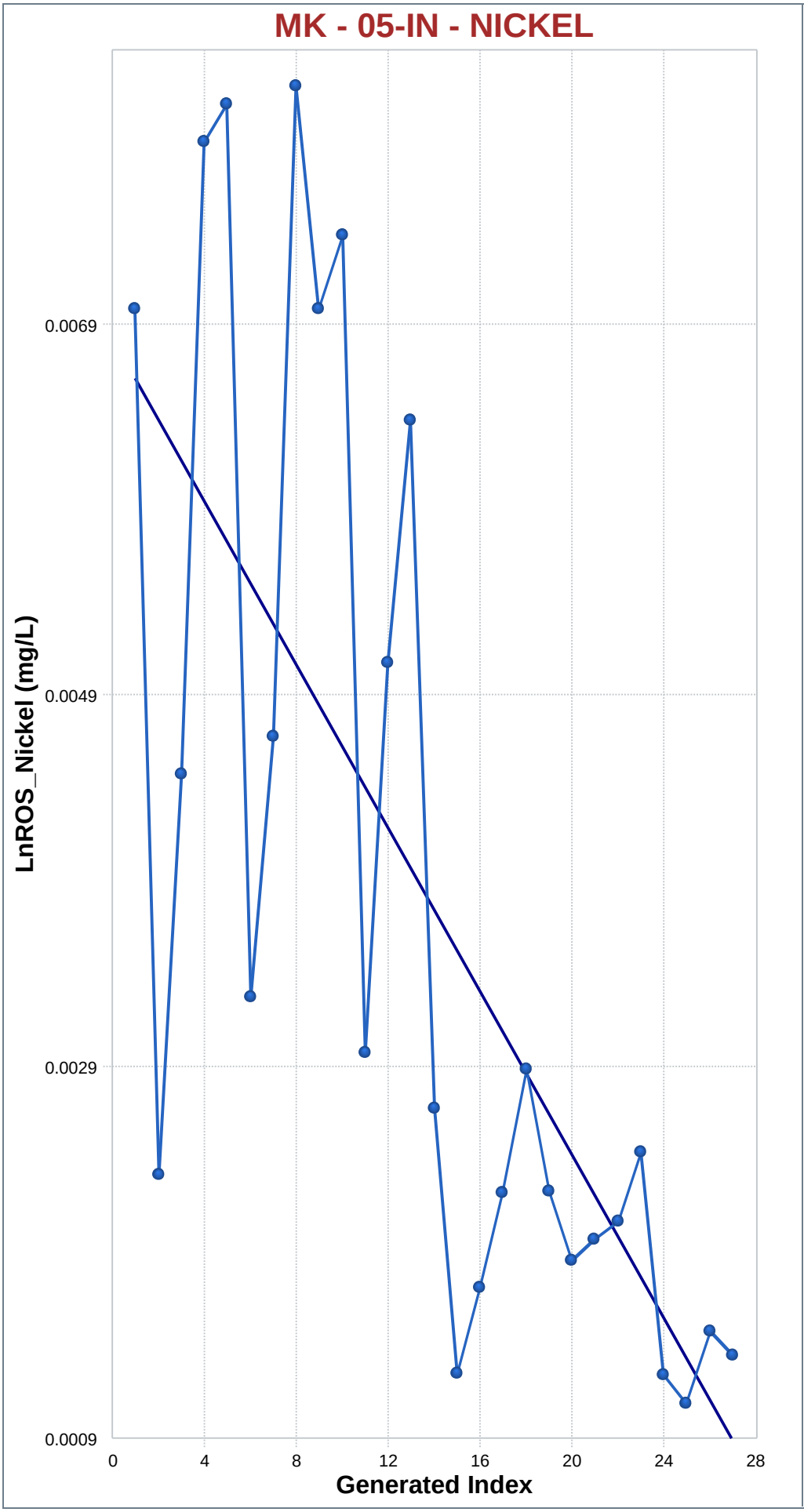
Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9479
Standardized Value of S	-2.9615
M-K Test Value (S)	-143
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0015

OLS Regression Line (Blue)

OLS Regression Slope	-0.0289
OLS Regression Intercept	1.1590

Statistically significant evidence of a decreasing trend at the specified level of significance.



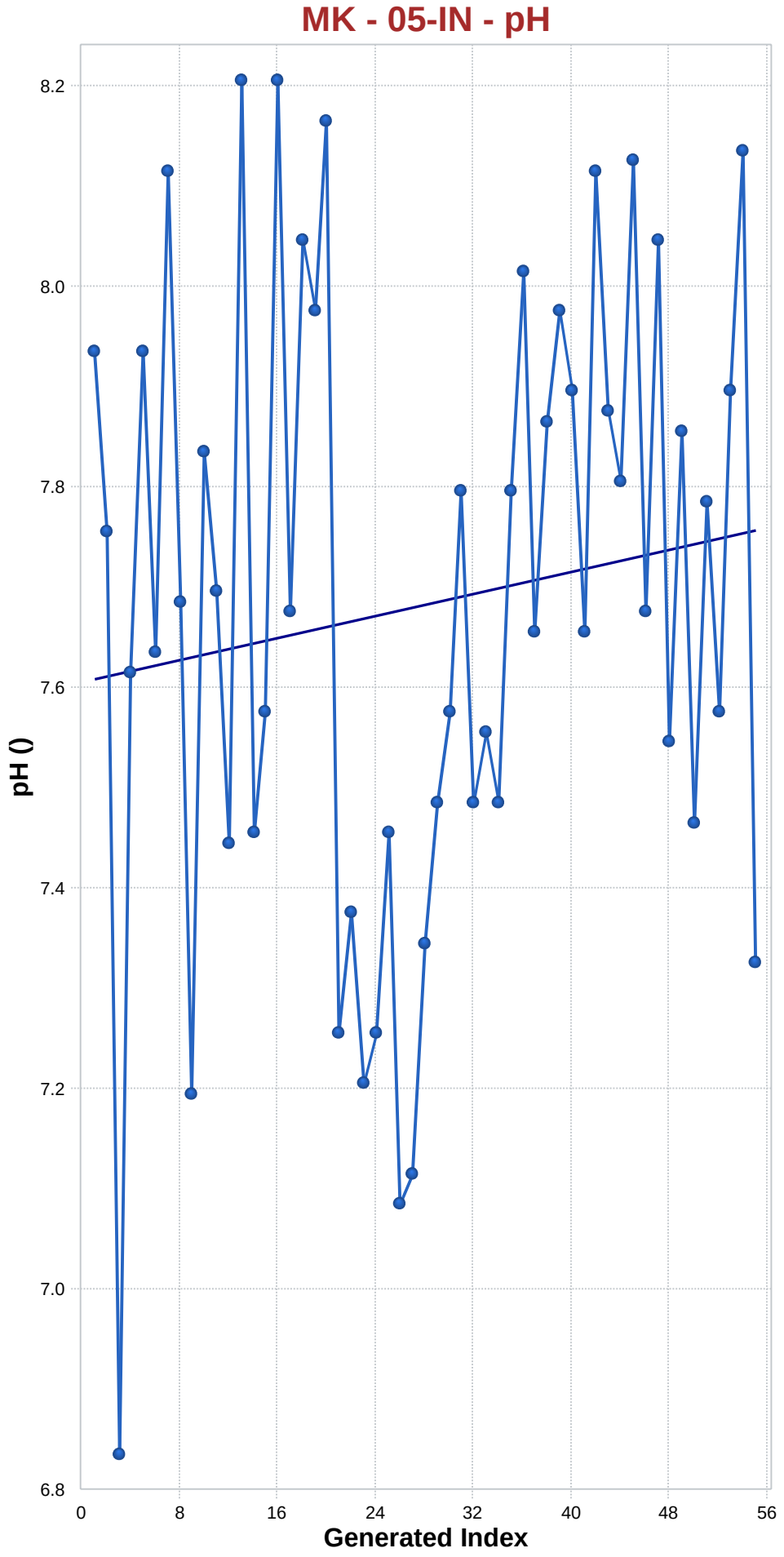
Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9583
Standardized Value of S	-4.1077
M-K Test Value (S)	-198
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0068

Statistically significant evidence of a decreasing trend at the specified level of significance.



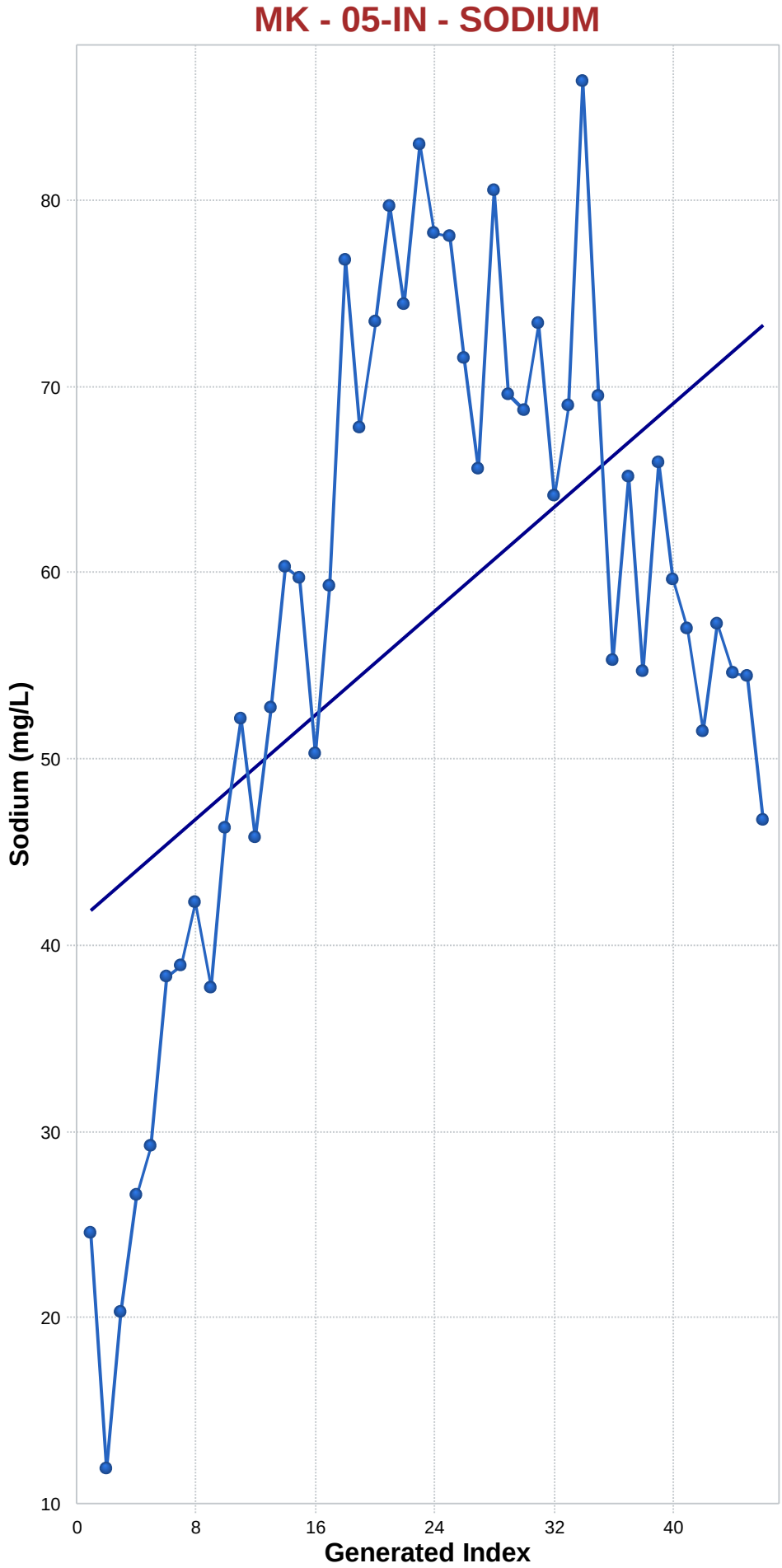
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.6832
Standardized Value of S	1.0241
M-K Test Value (S)	142
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1529

OLS Regression Line (Blue)

OLS Regression Slope	0.0028
OLS Regression Intercept	7.6298

Insufficient statistical evidence of a significant trend at the specified level of significance.



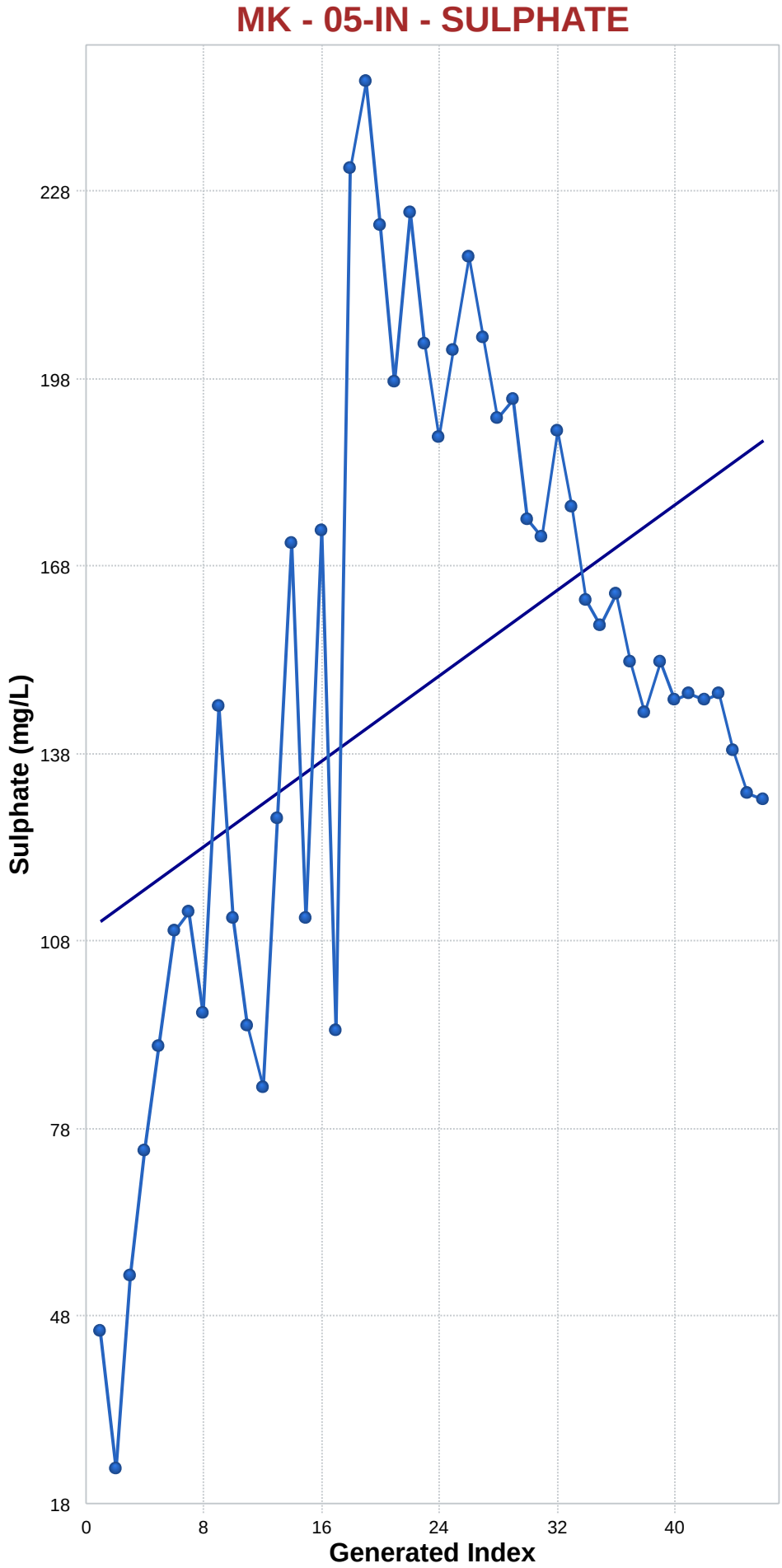
Mann-Kendall Trend Analysis

n	46
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	105.6172
Standardized Value of S	2.7647
M-K Test Value (S)	293
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0028

OLS Regression Line (Blue)

OLS Regression Slope	0.6975
OLS Regression Intercept	40.8875

Statistically significant evidence of an increasing trend at the specified level of significance.



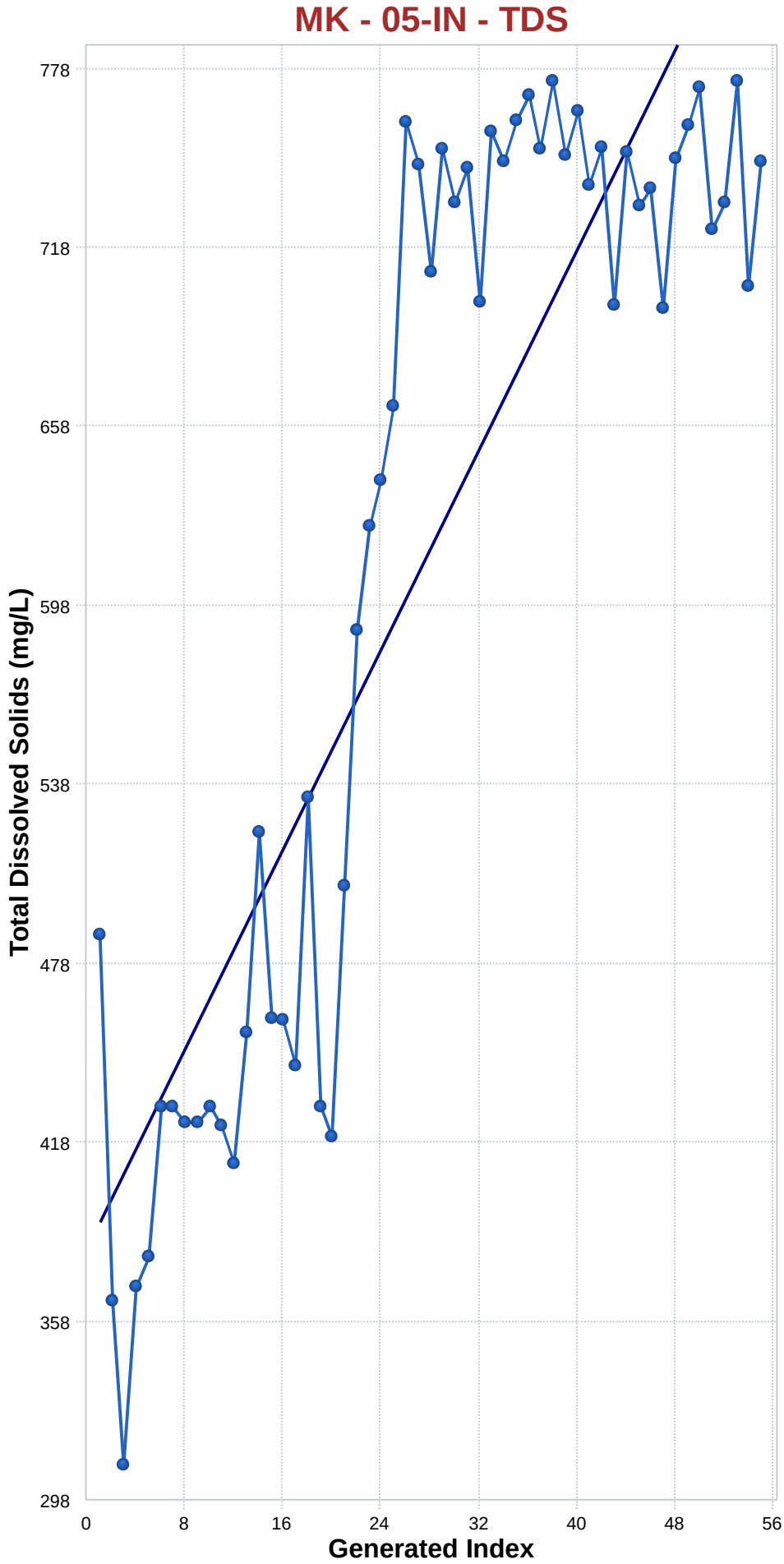
Mann-Kendall Trend Analysis

n	46
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	105.5983
Standardized Value of S	1.5341
M-K Test Value (S)	163
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0625

OLS Regression Line (Blue)

OLS Regression Slope	1.7103
OLS Regression Intercept	109.9275

Insufficient statistical evidence of a significant trend at the specified level of significance.



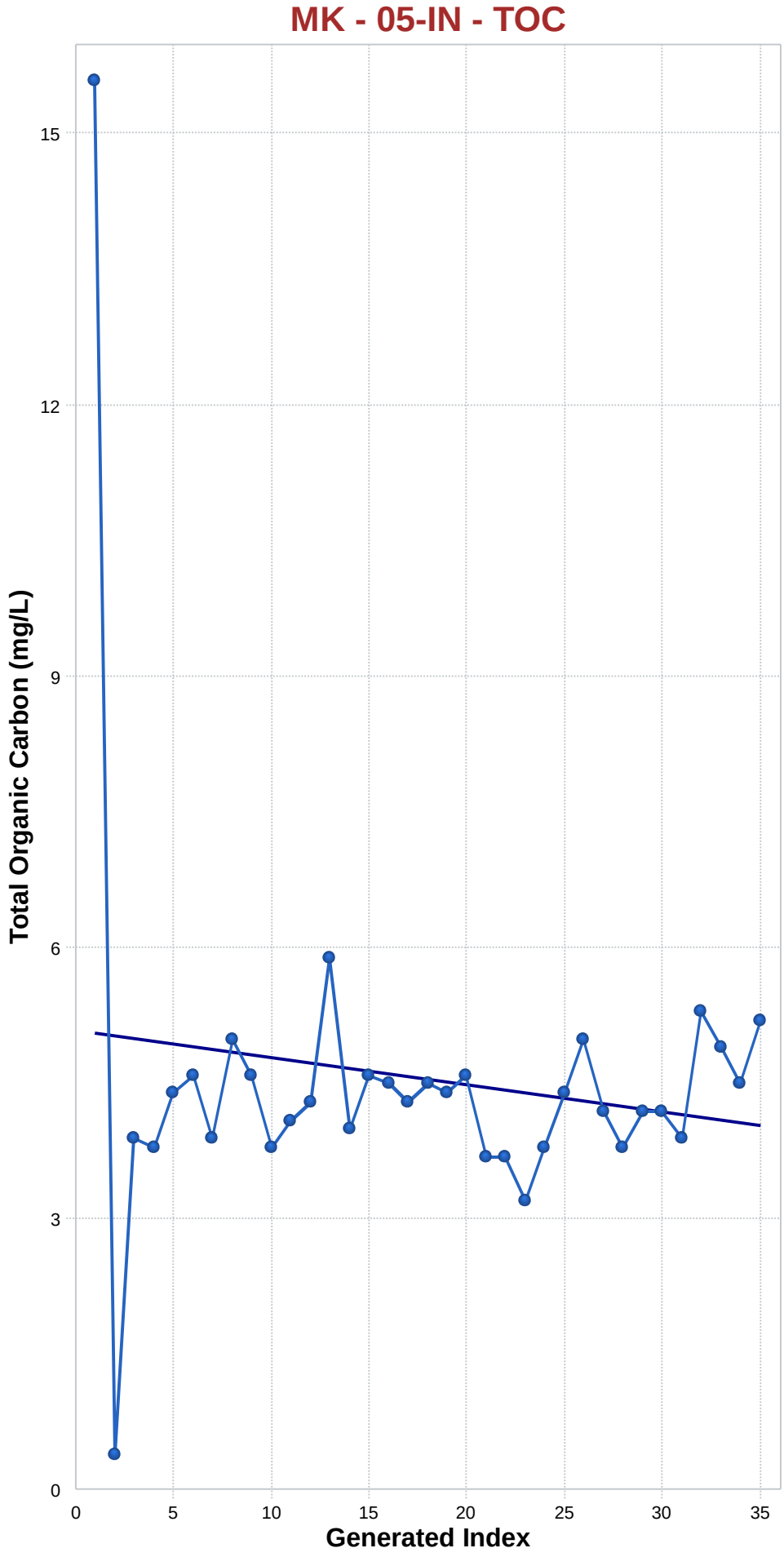
Mann-Kendall Trend Analysis

n	55
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	137.7002
Standardized Value of S	6.5287
M-K Test Value (S)	900
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	8.3532
OLS Regression Intercept	382.8909

Statistically significant evidence of an increasing trend at the specified level of significance.



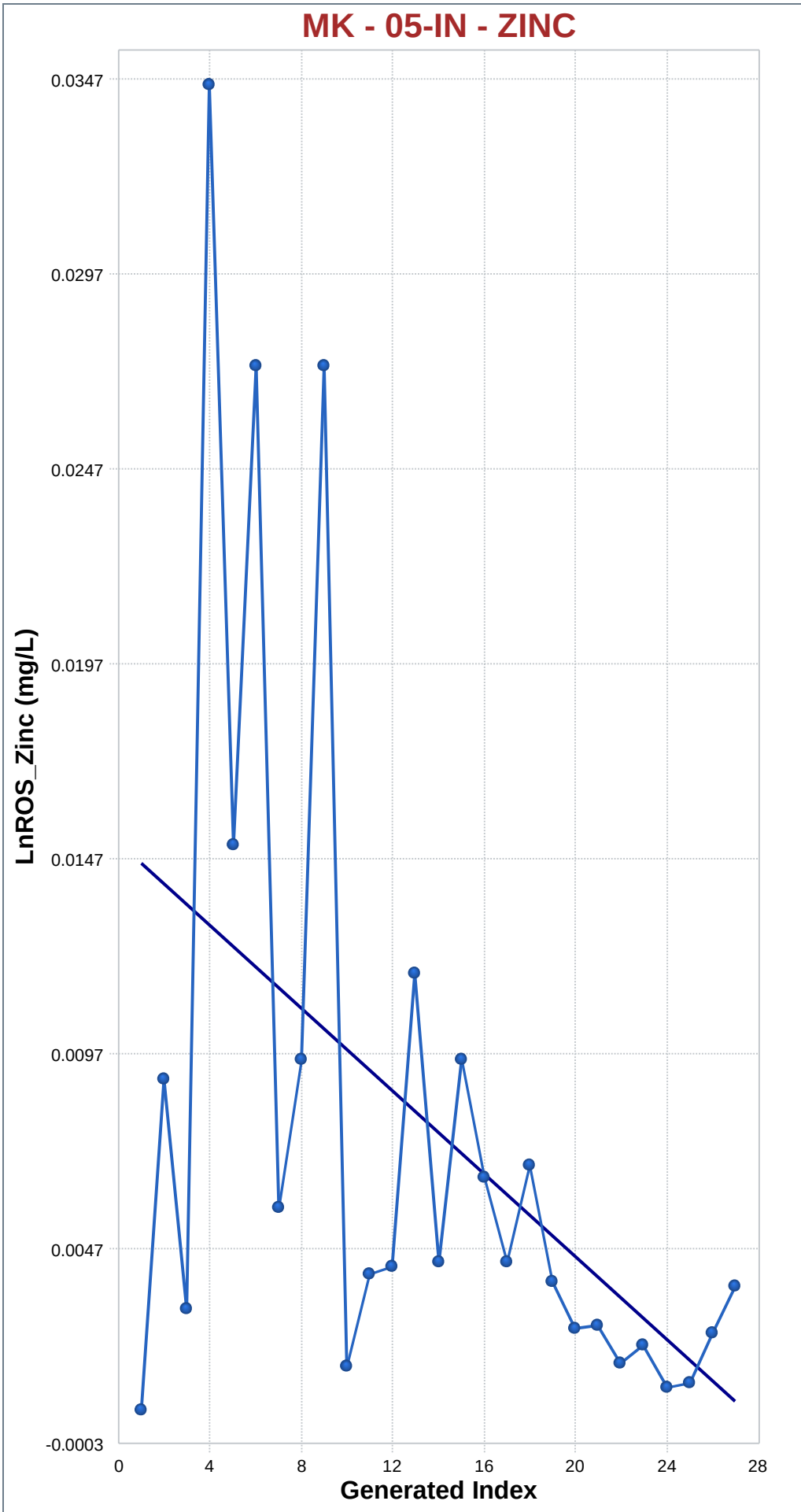
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.1665
Standardized Value of S	0.5558
M-K Test Value (S)	40
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2892

OLS Regression Line (Blue)

OLS Regression Slope	-0.0300
OLS Regression Intercept	5.4891

Insufficient statistical evidence of a significant trend at the specified level of significance.



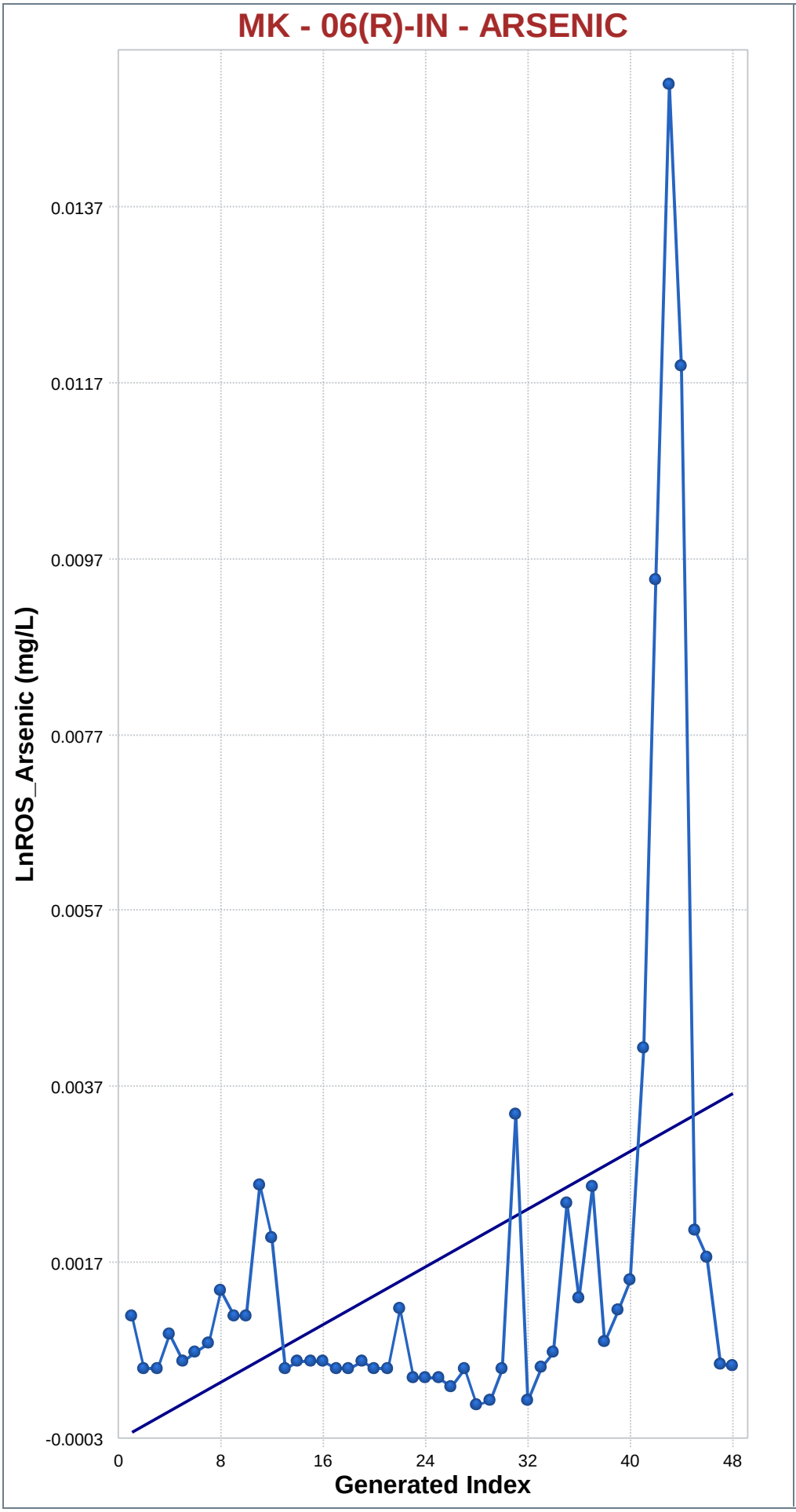
Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9375
Standardized Value of S	-2.8162
M-K Test Value (S)	-136
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0024

OLS Regression Line (Blue)

OLS Regression Slope	-0.0005
OLS Regression Intercept	0.0151

Statistically significant evidence of a decreasing trend at the specified level of significance.



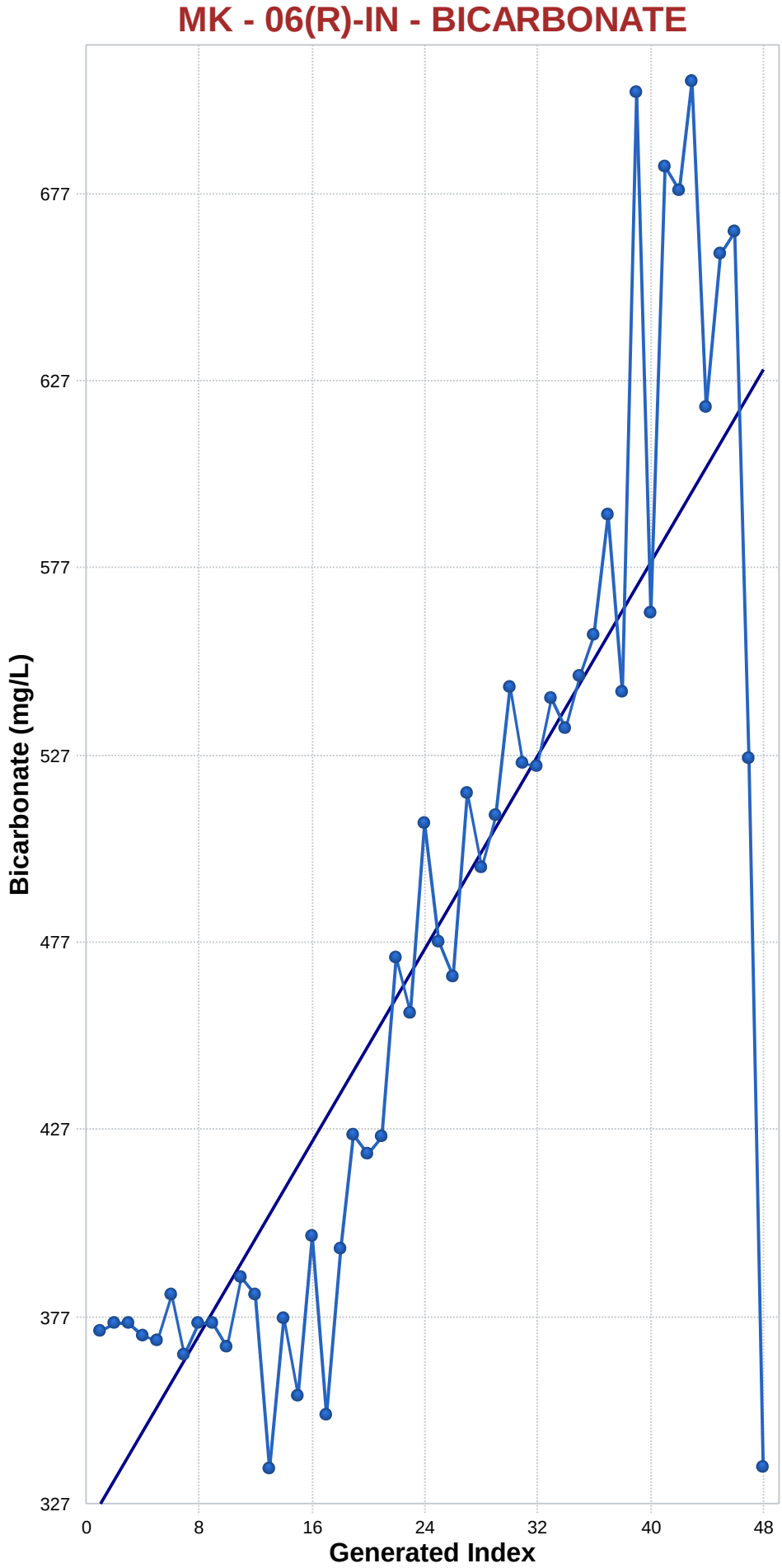
Mann-Kendall Trend Analysis

n	48
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	111.9940
Standardized Value of S	1.4197
M-K Test Value (S)	160
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0778

OLS Regression Line (Blue)

OLS Regression Slope	0.0001
OLS Regression Intercept	-0.0003

Insufficient statistical evidence of a significant trend at the specified level of significance.



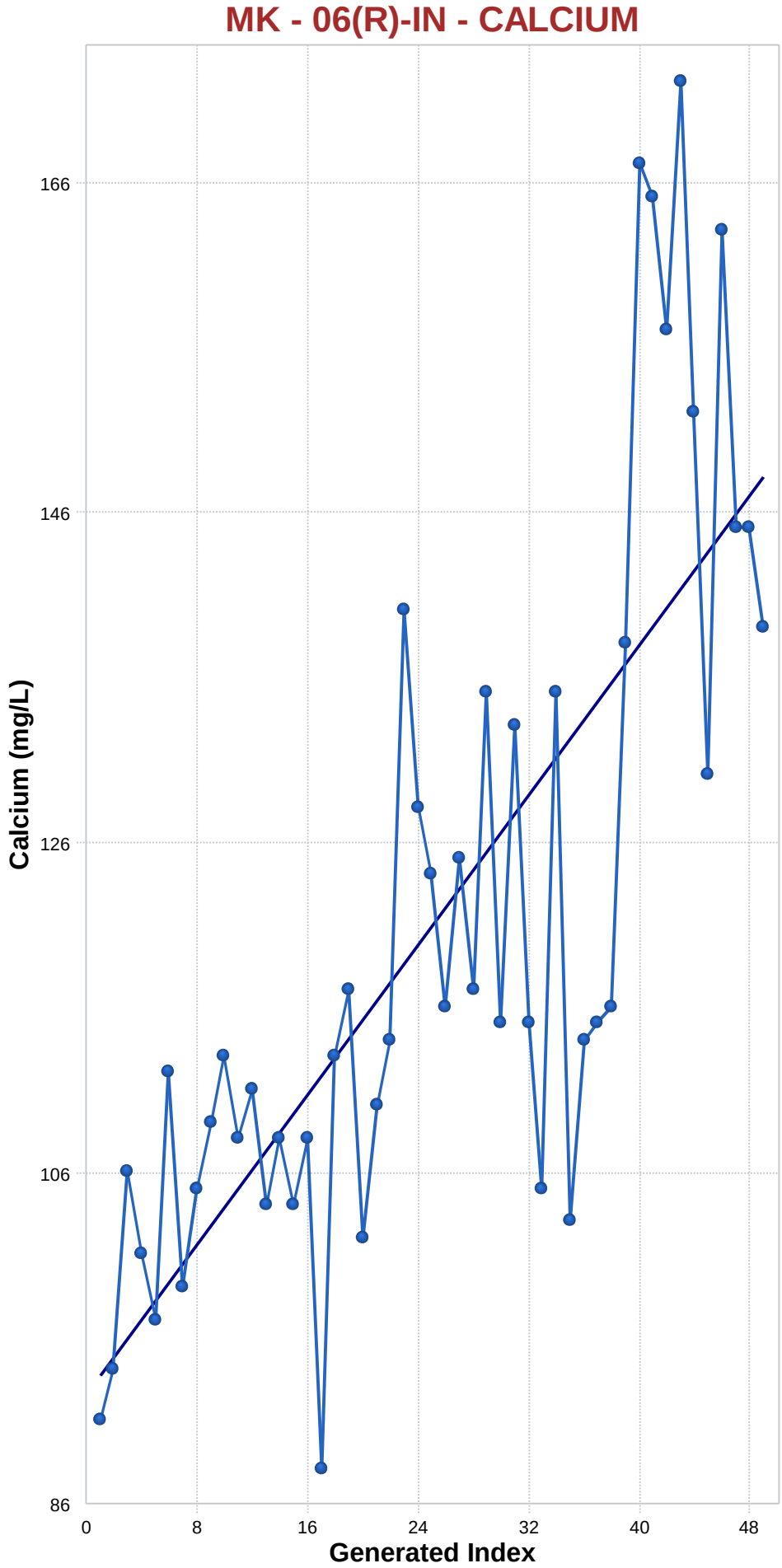
Mann-Kendall Trend Analysis

n	48
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	112.4678
Standardized Value of S	7.0065
M-K Test Value (S)	789
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	6.4569
OLS Regression Intercept	320.1753

Statistically significant evidence of an increasing trend at the specified level of significance.



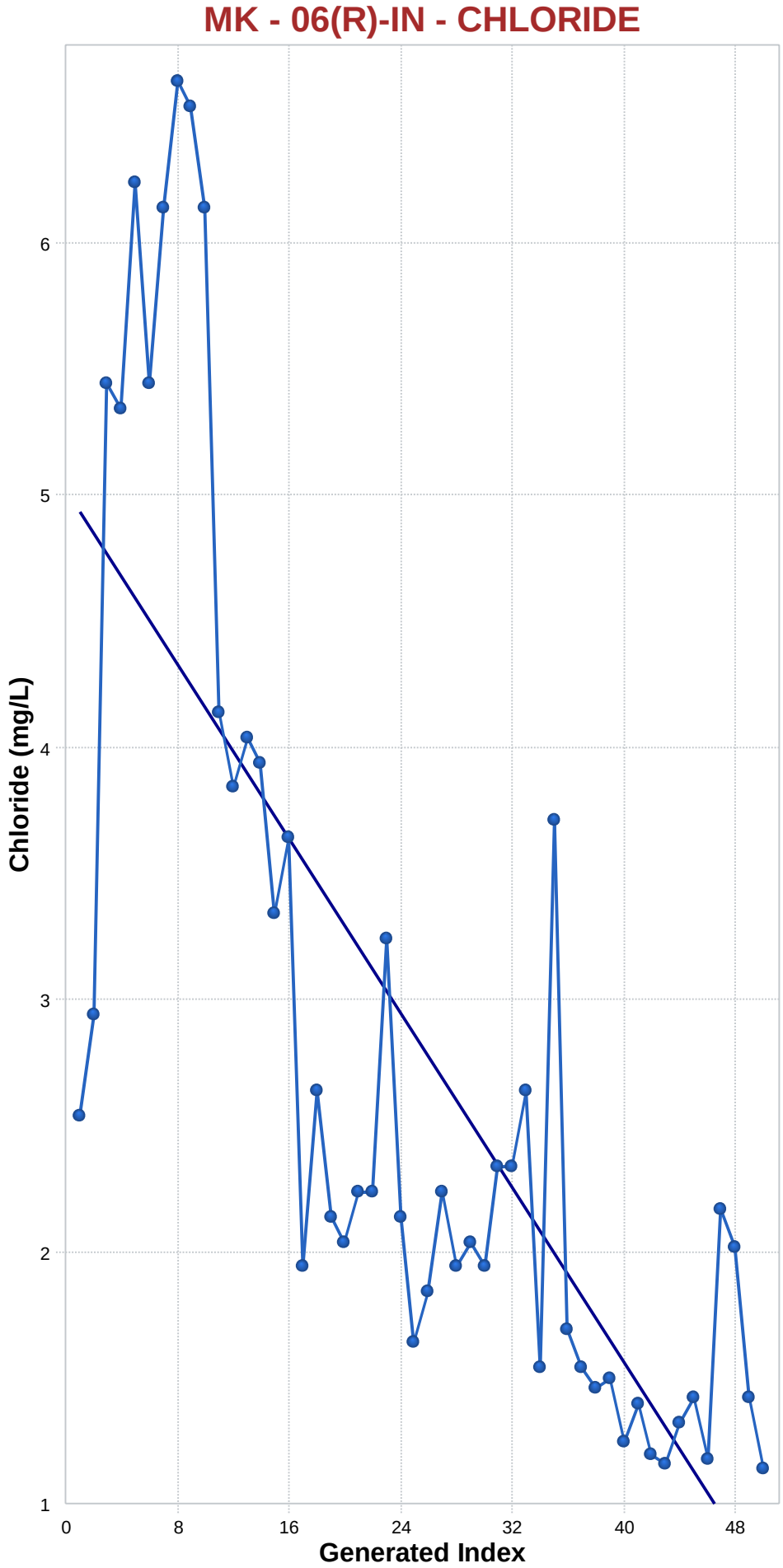
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	115.9454
Standardized Value of S	6.0804
M-K Test Value (S)	706
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.1330
OLS Regression Intercept	92.5536

Statistically significant evidence of an increasing trend at the specified level of significance.



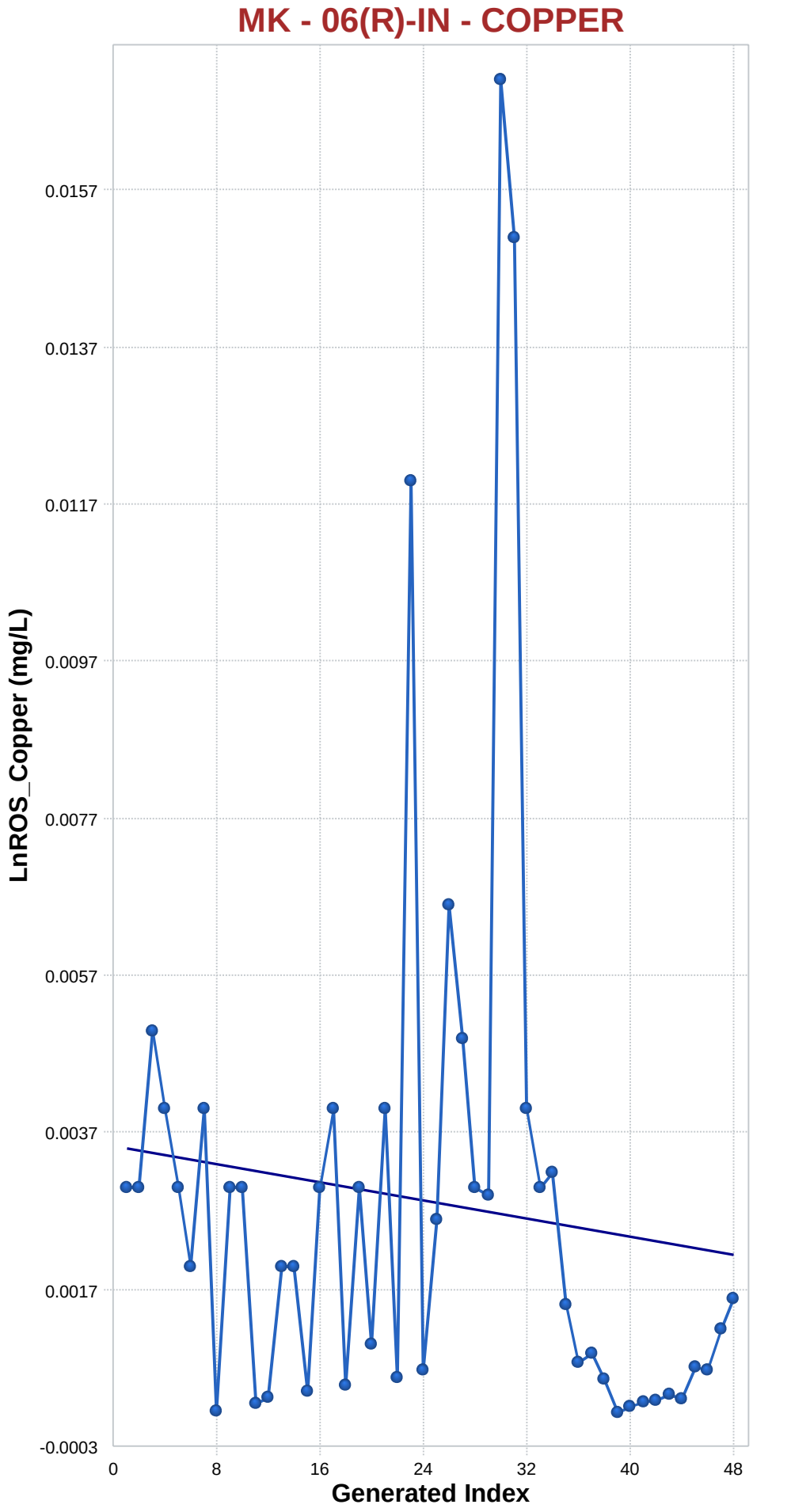
Mann-Kendall Trend Analysis

n	50
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	119.4836
Standardized Value of S	-6.7122
M-K Test Value (S)	-803
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0864
OLS Regression Intercept	4.6834

Statistically significant evidence of a decreasing trend at the specified level of significance.



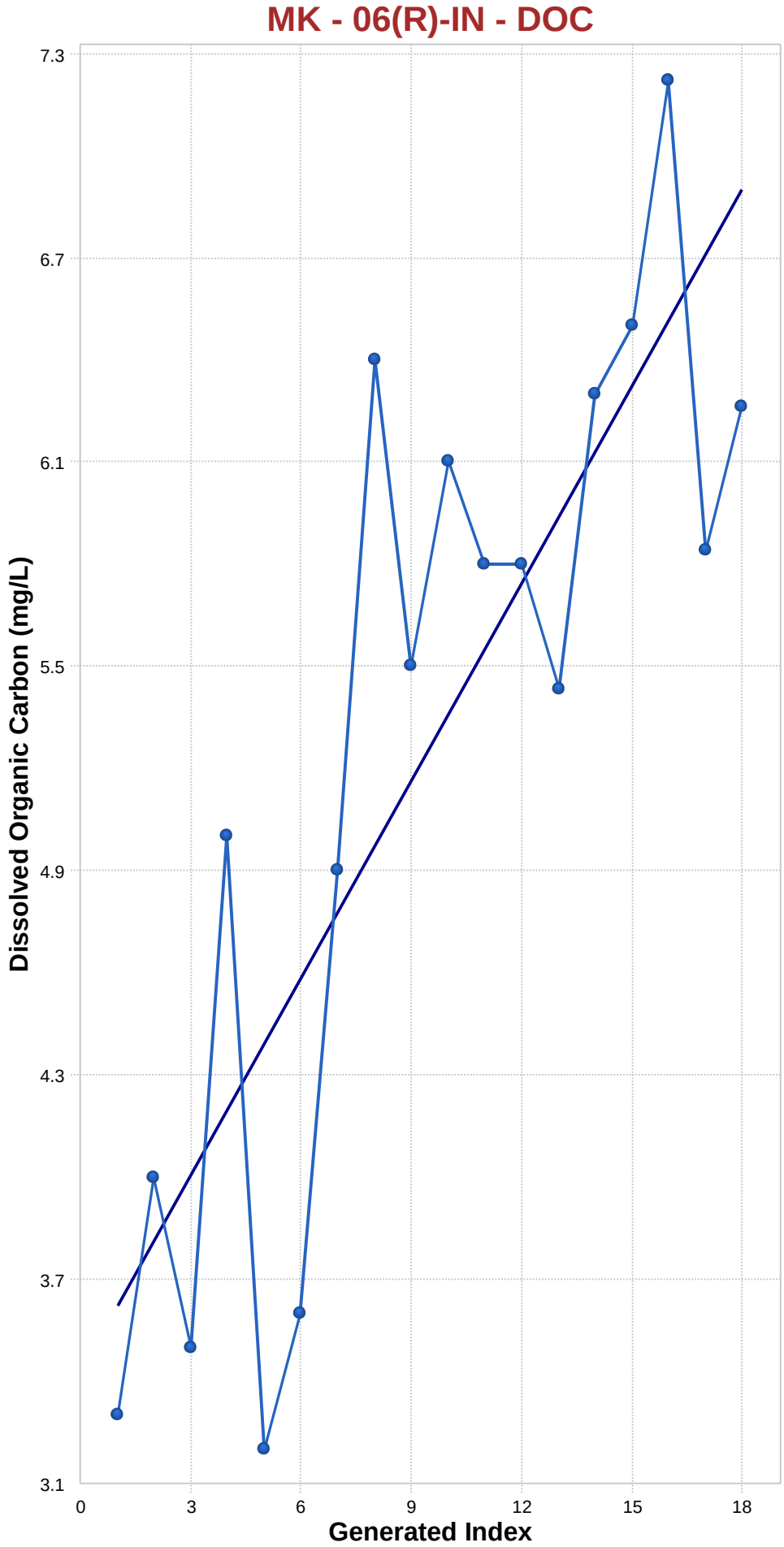
Mann-Kendall Trend Analysis

n	48
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	112.0104
Standardized Value of S	-2.0355
M-K Test Value (S)	-229
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0209

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0035

Statistically significant evidence of a decreasing trend at the specified level of significance.



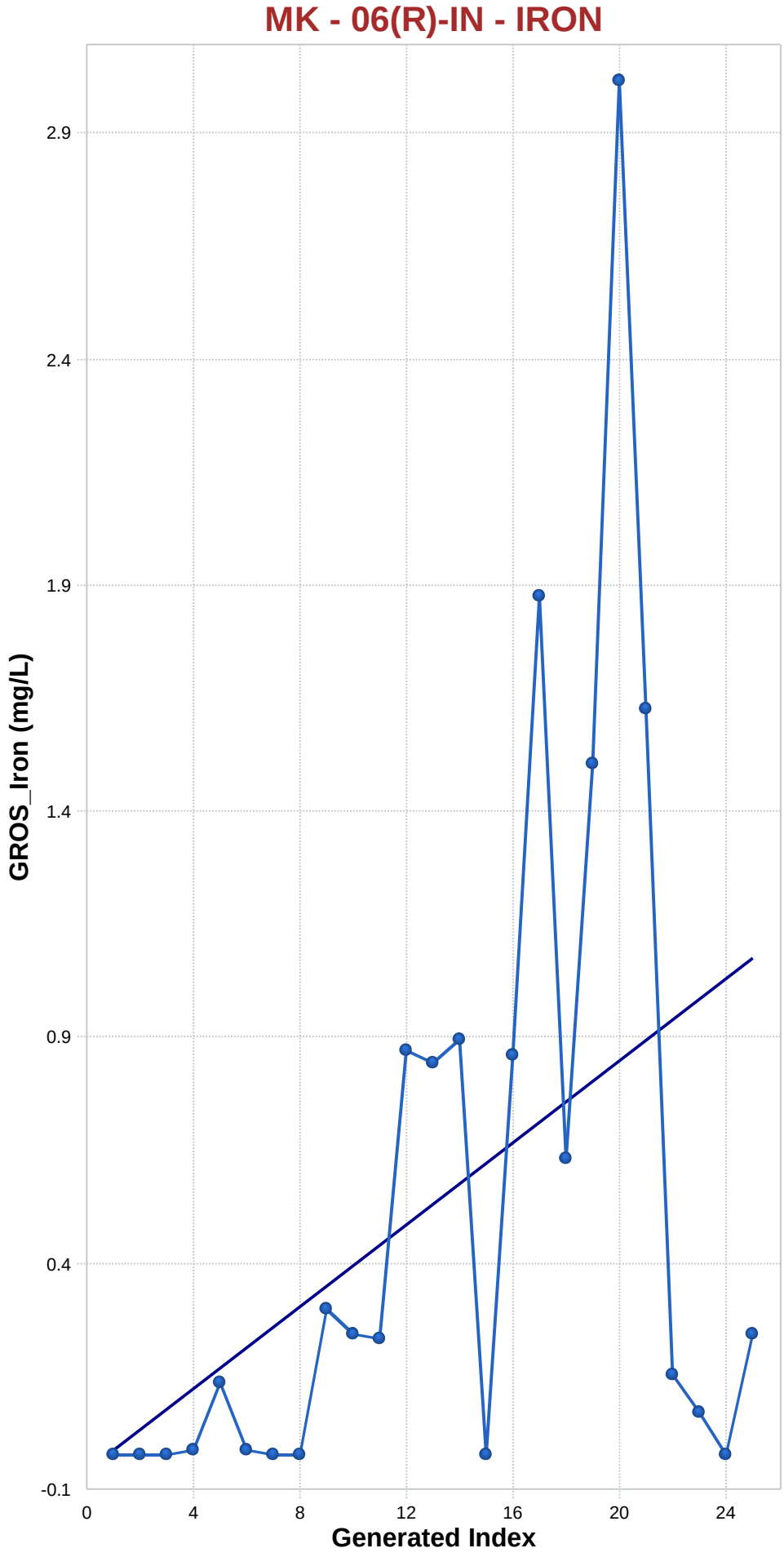
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.3818
Standardized Value of S	3.5252
M-K Test Value (S)	94
Tabulated p-value	0.0000
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	0.1928
OLS Regression Intercept	3.4271

Statistically significant evidence of an increasing trend at the specified level of significance.



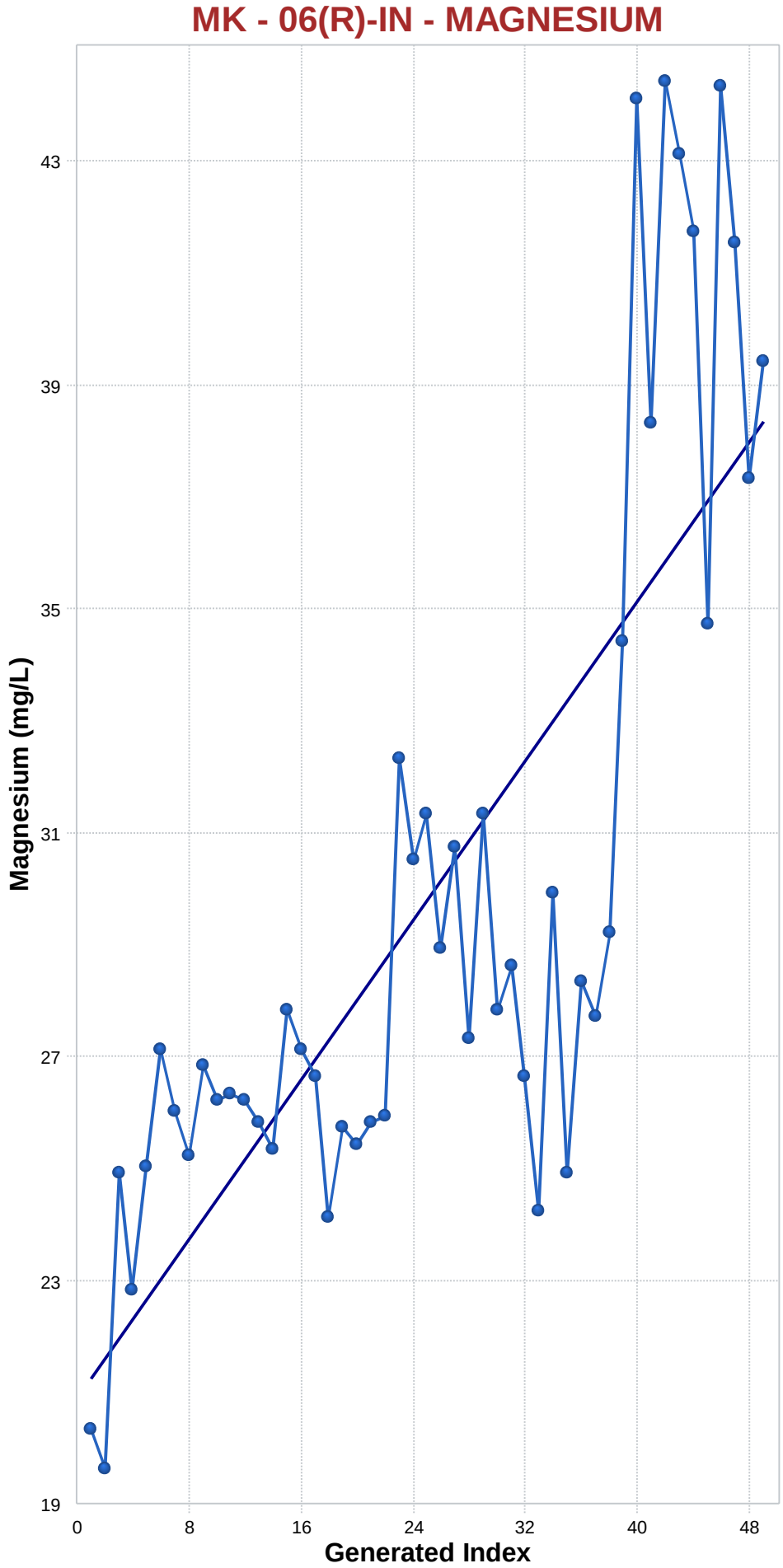
Mann-Kendall Trend Analysis

n	25
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	42.2847
Standardized Value of S	2.5778
M-K Test Value (S)	110
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0050

OLS Regression Line (Blue)

OLS Regression Slope	0.0453
OLS Regression Intercept	-0.0231

Statistically significant evidence of an increasing trend at the specified level of significance.



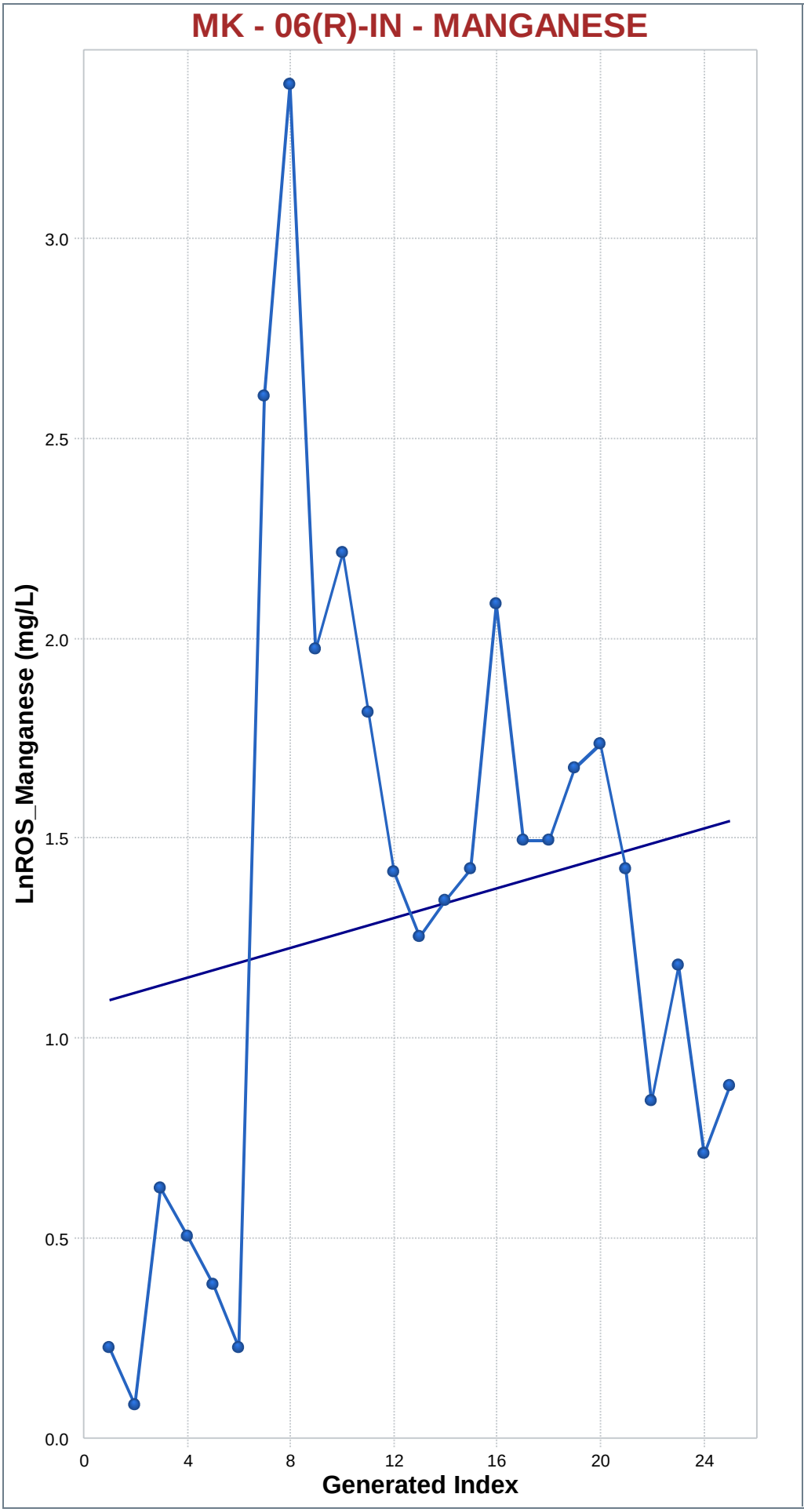
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	115.9813
Standardized Value of S	5.9492
M-K Test Value (S)	691
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.3565
OLS Regression Intercept	21.2546

Statistically significant evidence of an increasing trend at the specified level of significance.



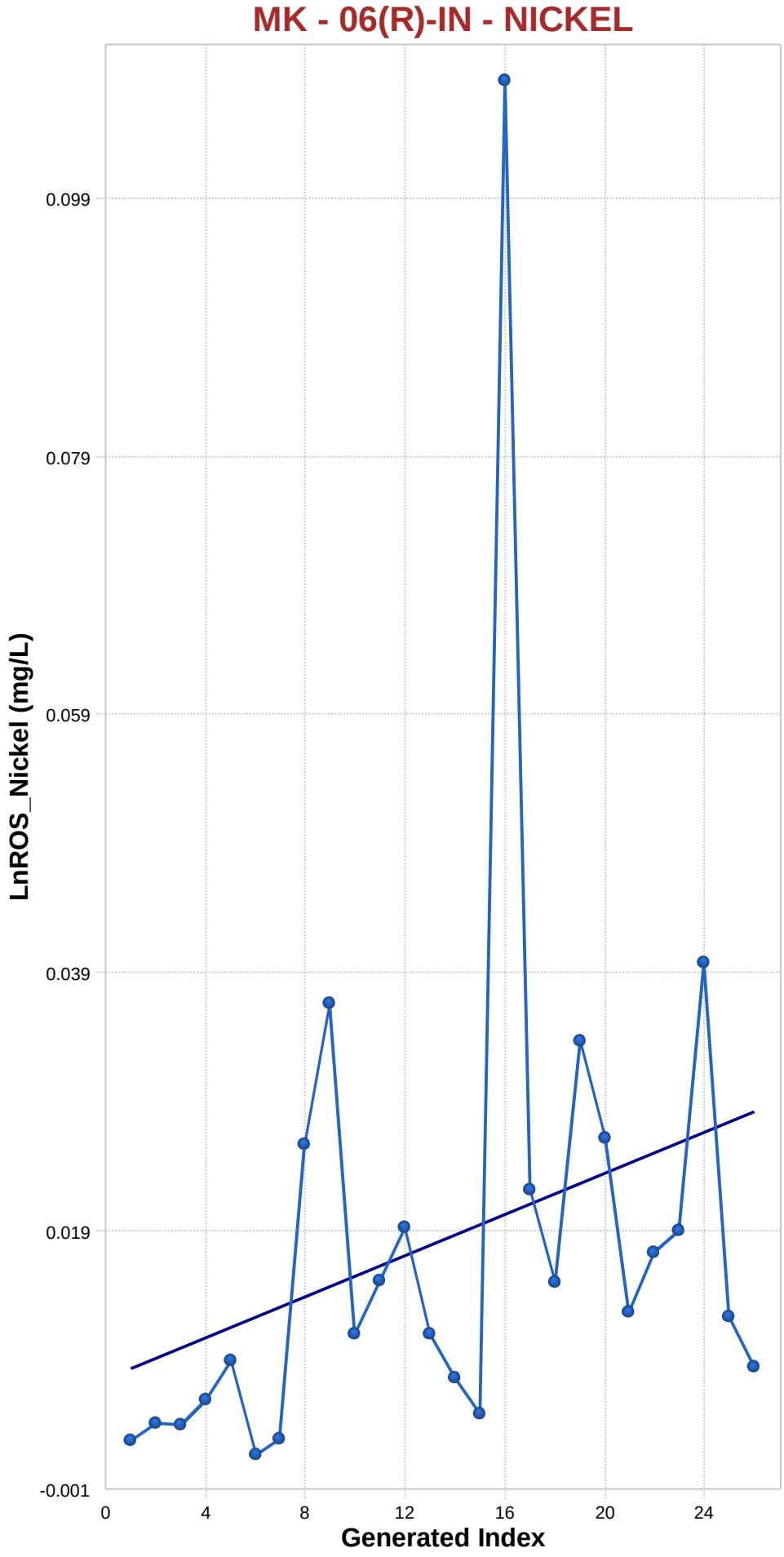
Mann-Kendall Trend Analysis

n	25
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	42.7824
Standardized Value of S	0.5142
M-K Test Value (S)	23
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3035

OLS Regression Line (Blue)

OLS Regression Slope	0.0185
OLS Regression Intercept	1.0349

Insufficient statistical evidence of a significant trend at the specified level of significance.



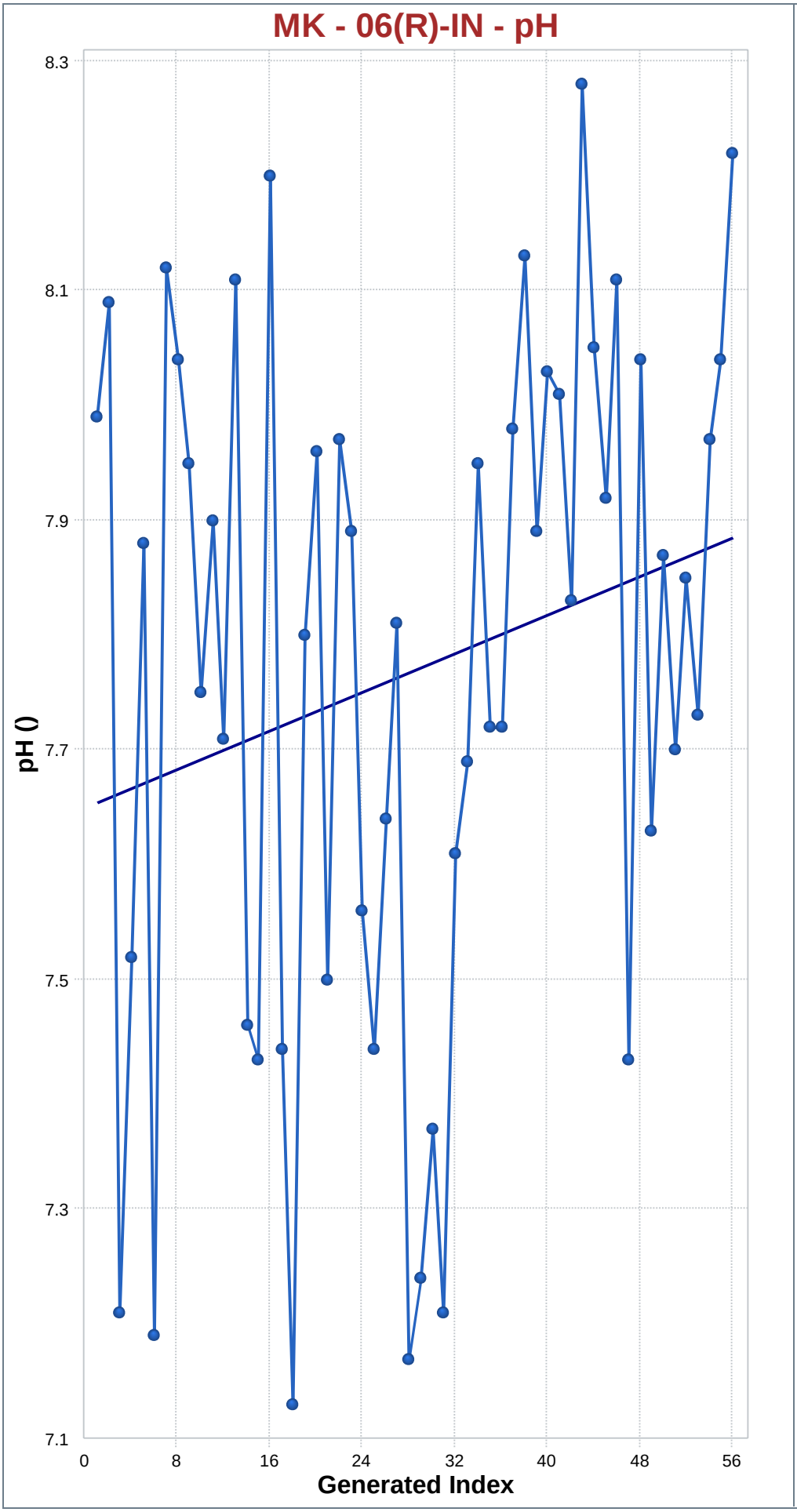
Mann-Kendall Trend Analysis

n	26
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	45.3689
Standardized Value of S	2.5127
M-K Test Value (S)	115
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0060

OLS Regression Line (Blue)

OLS Regression Slope	0.0008
OLS Regression Intercept	0.0075

Statistically significant evidence of an increasing trend at the specified level of significance.



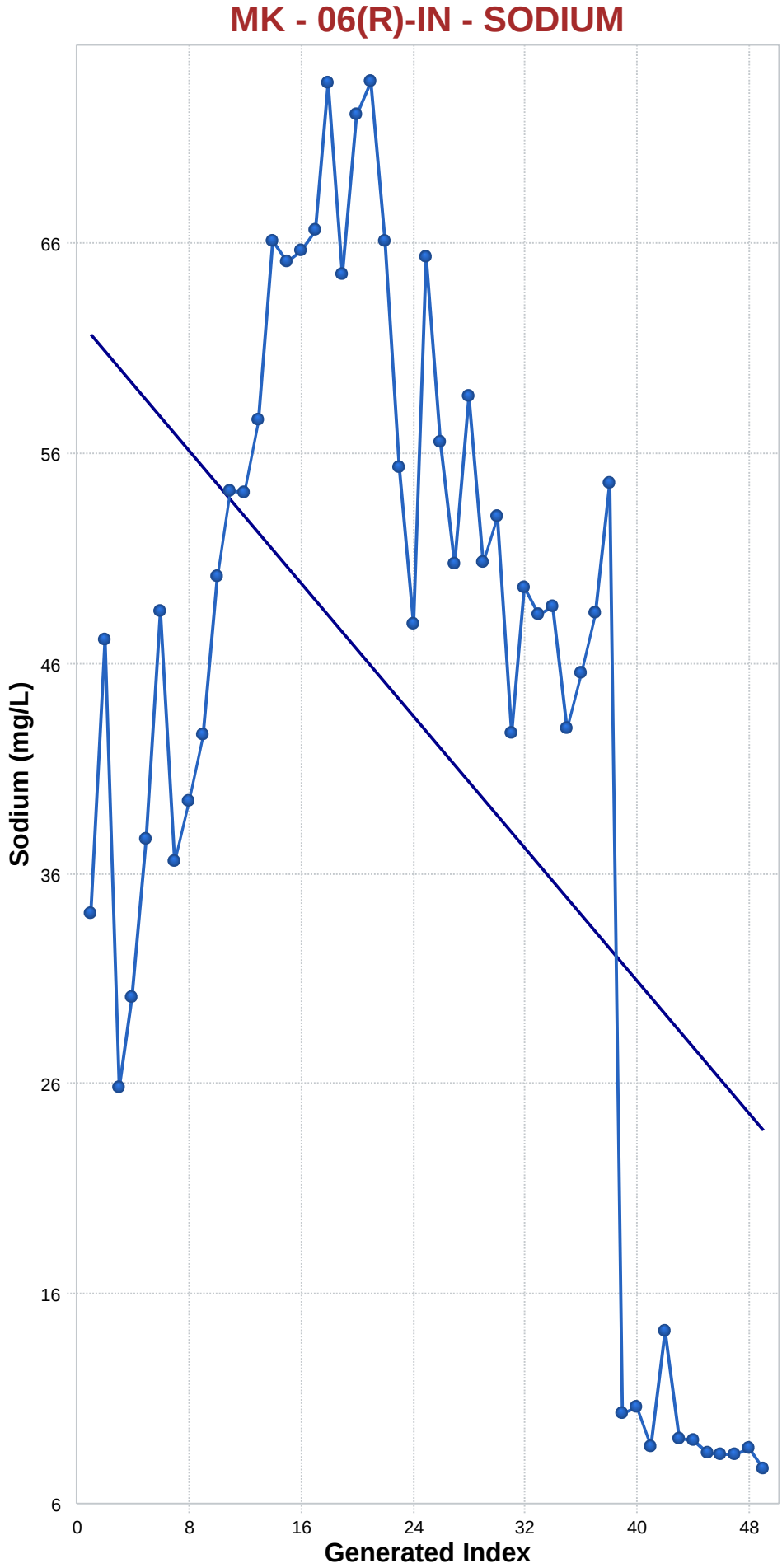
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4508
Standardized Value of S	1.5553
M-K Test Value (S)	221
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0599

OLS Regression Line (Blue)

OLS Regression Slope	0.0042
OLS Regression Intercept	7.6197

Insufficient statistical evidence of a significant trend at the specified level of significance.



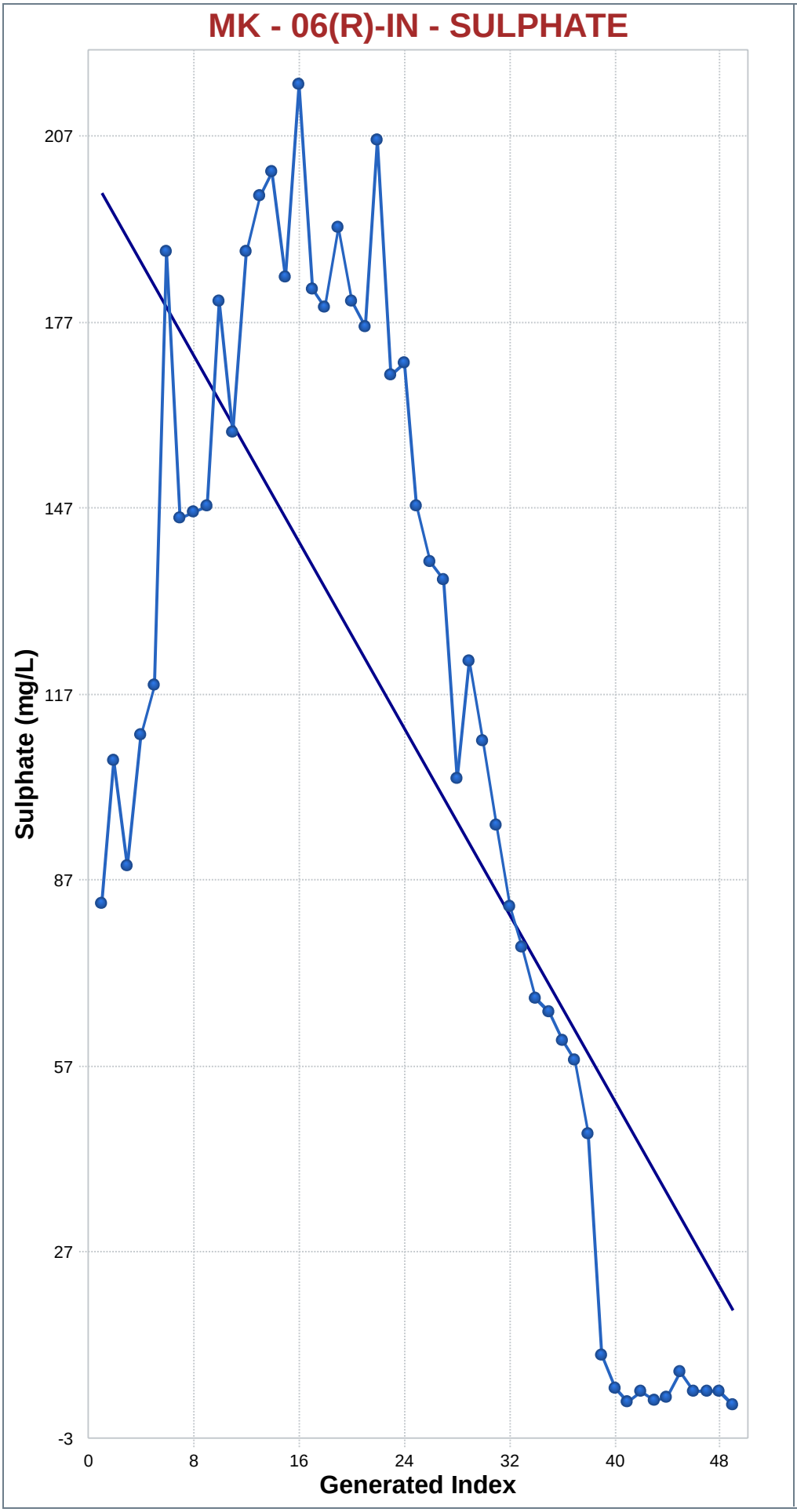
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	116.0072
Standardized Value of S	-3.0171
M-K Test Value (S)	-351
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0013

OLS Regression Line (Blue)

OLS Regression Slope	-0.7886
OLS Regression Intercept	62.3367

Statistically significant evidence of a decreasing trend at the specified level of significance.



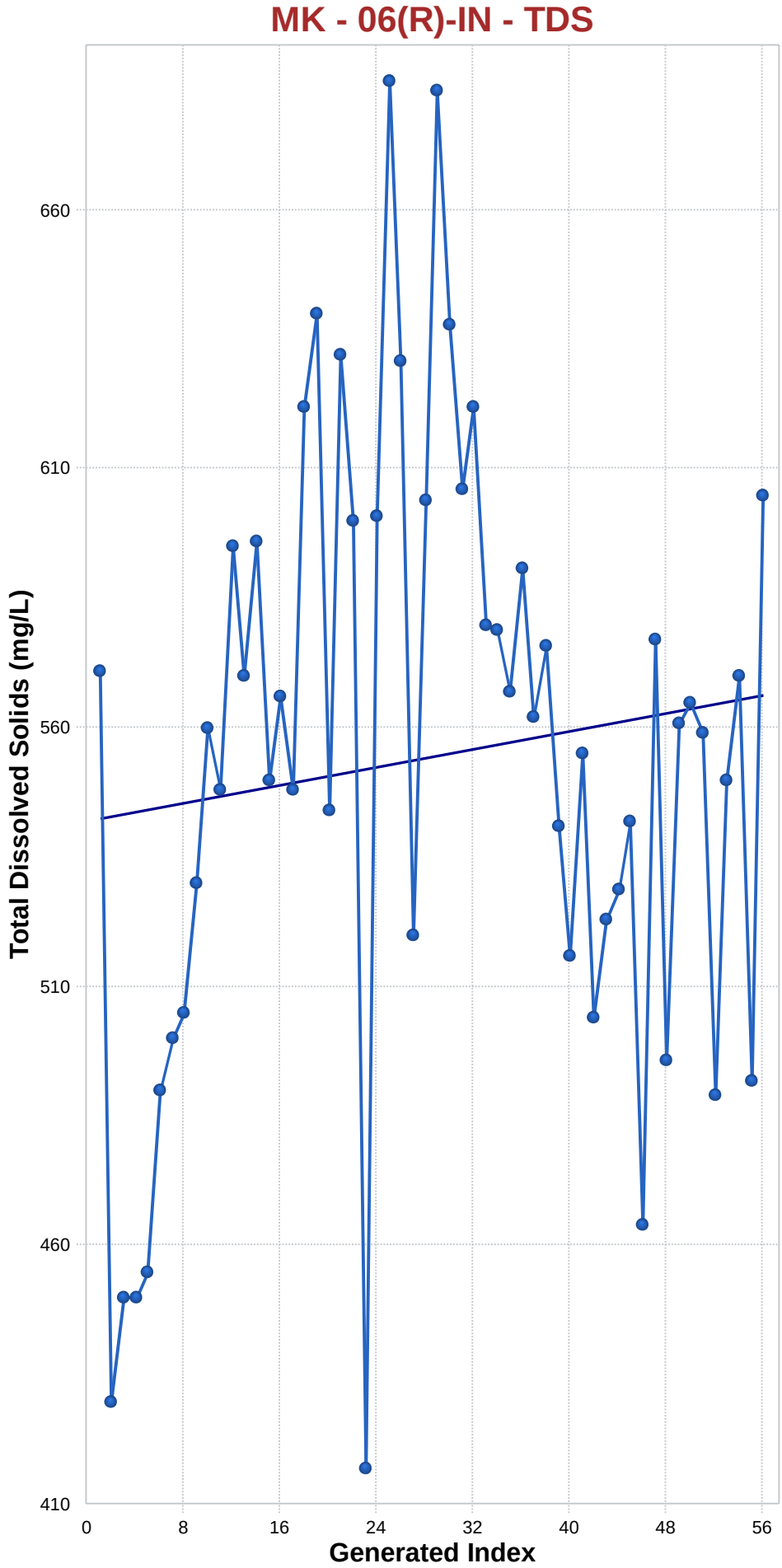
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	115.9986
Standardized Value of S	-5.7587
M-K Test Value (S)	-669
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-3.7505
OLS Regression Intercept	201.1748

Statistically significant evidence of a decreasing trend at the specified level of significance.



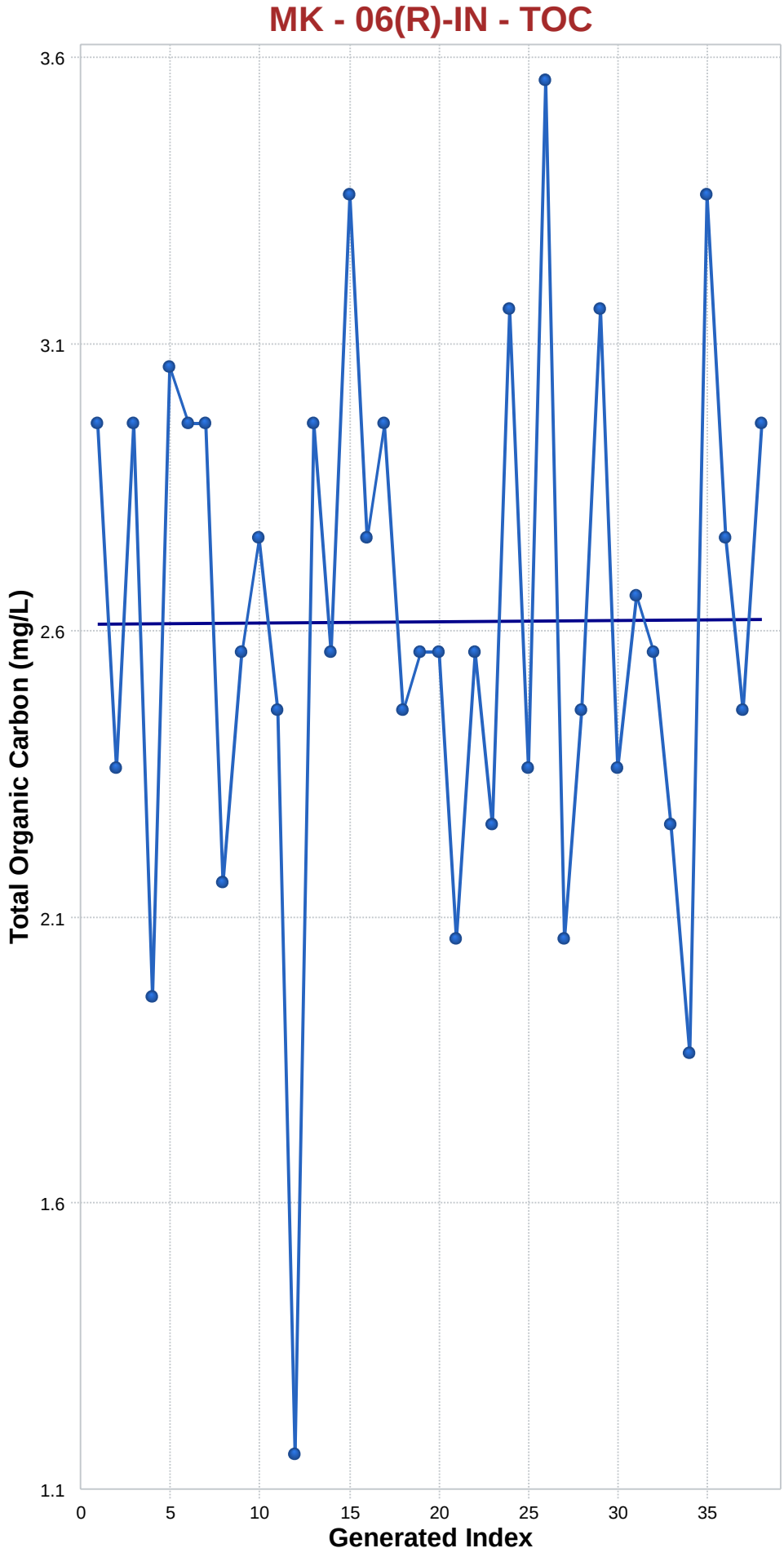
Mann-Kendall Trend Analysis

n	56
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	141.4744
Standardized Value of S	0.3958
M-K Test Value (S)	57
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3461

OLS Regression Line (Blue)

OLS Regression Slope	0.4357
OLS Regression Intercept	542.0831

Insufficient statistical evidence of a significant trend at the specified level of significance.



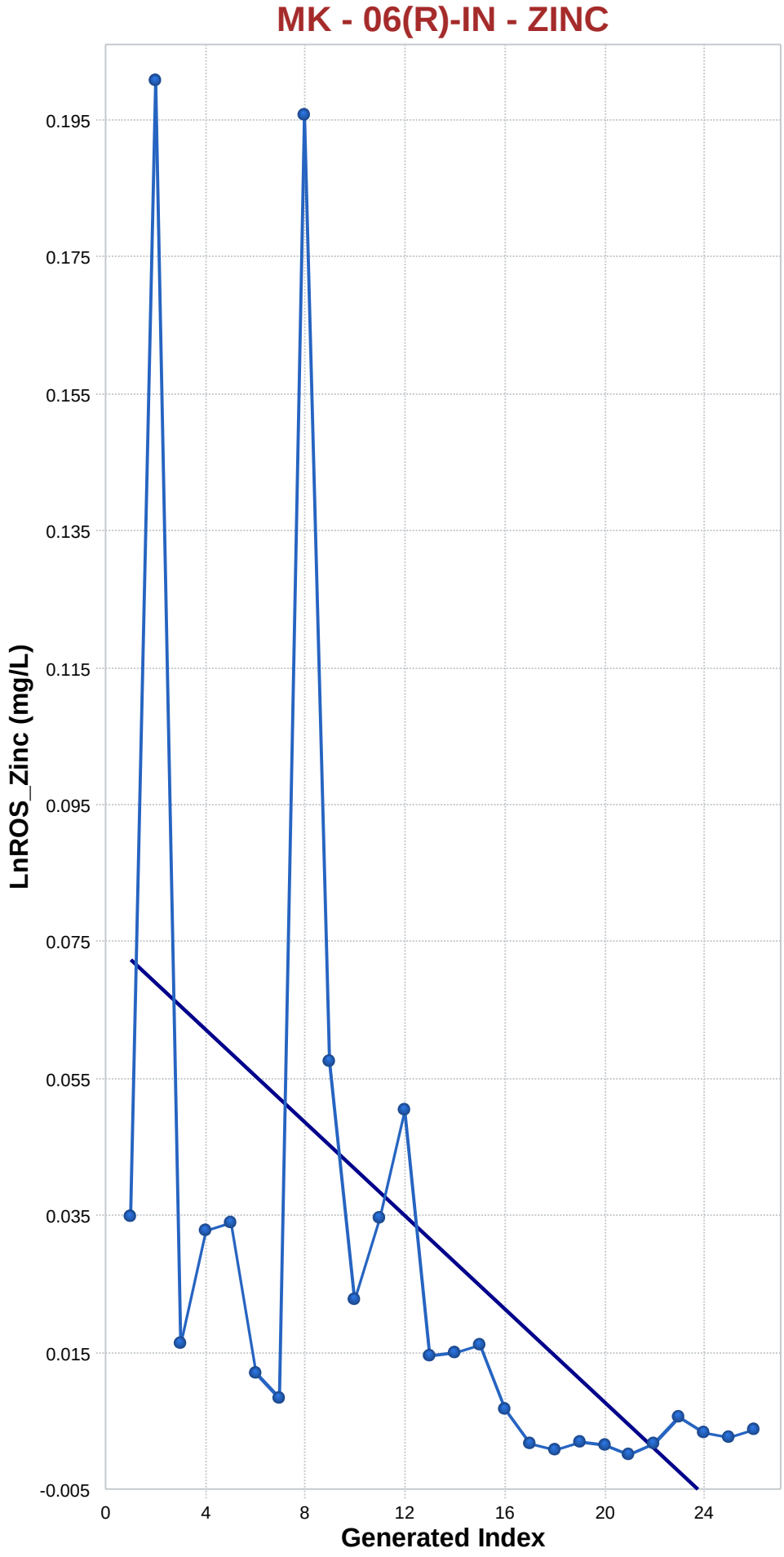
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	78.9578
Standardized Value of S	-0.4306
M-K Test Value (S)	-35
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3334

OLS Regression Line (Blue)

OLS Regression Slope	0.0002
OLS Regression Intercept	2.6508

Insufficient statistical evidence of a significant trend at the specified level of significance.



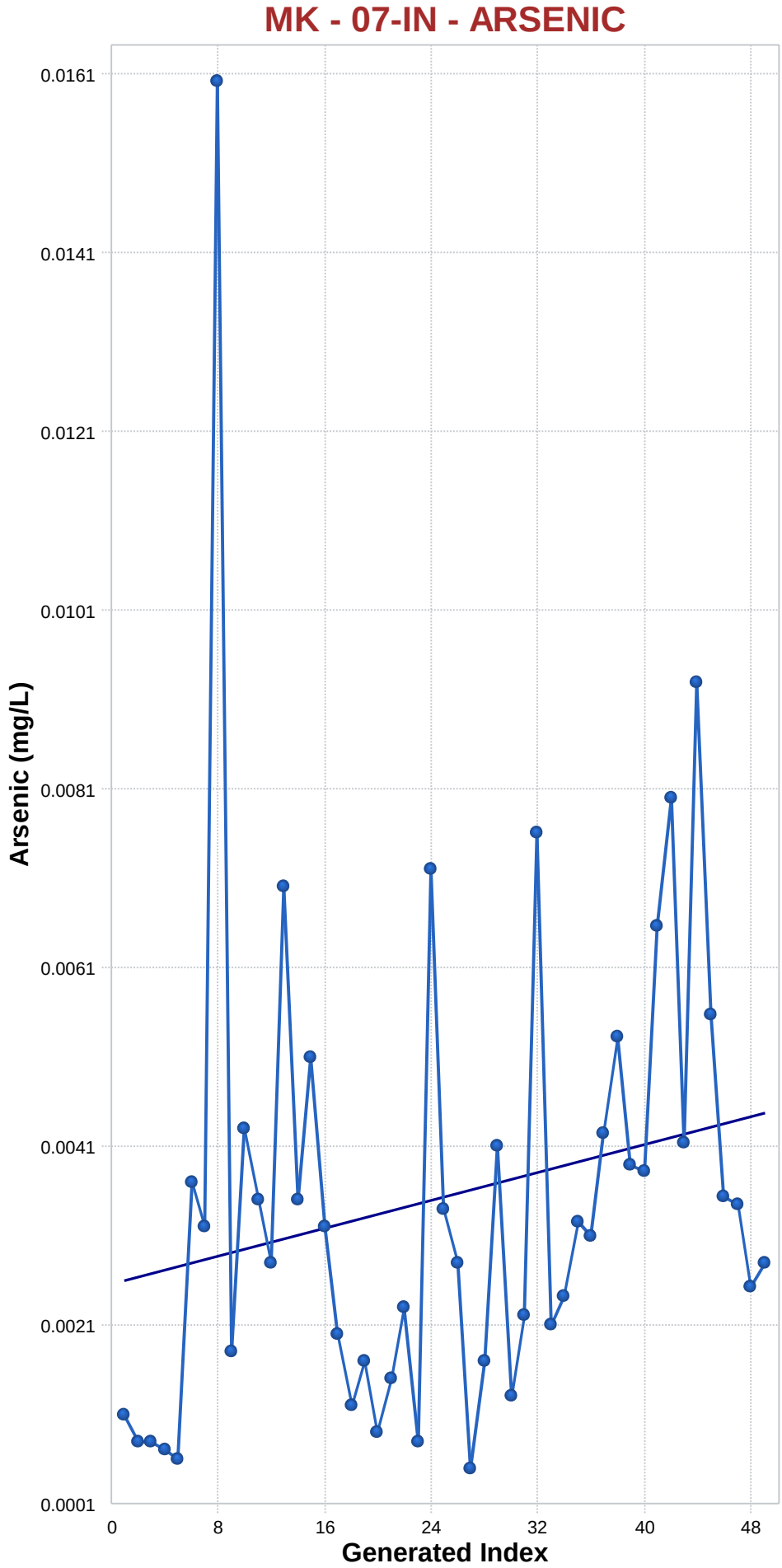
Mann-Kendall Trend Analysis

n	26
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	45.3578
Standardized Value of S	-3.8582
M-K Test Value (S)	-176
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0034
OLS Regression Intercept	0.0760

Statistically significant evidence of a decreasing trend at the specified level of significance.



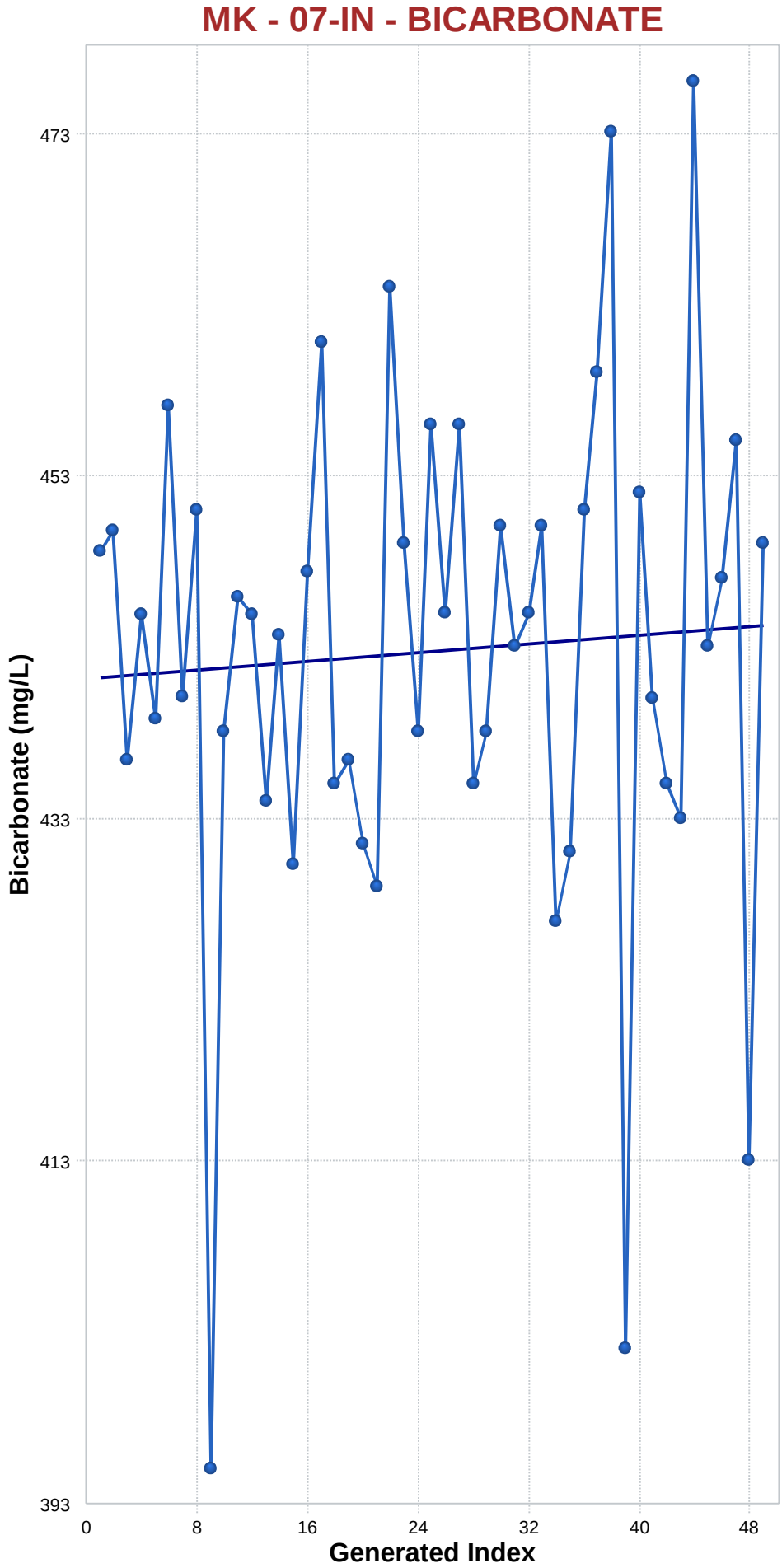
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	115.9784
Standardized Value of S	2.6384
M-K Test Value (S)	307
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0042

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0026

Statistically significant evidence of an increasing trend at the specified level of significance.



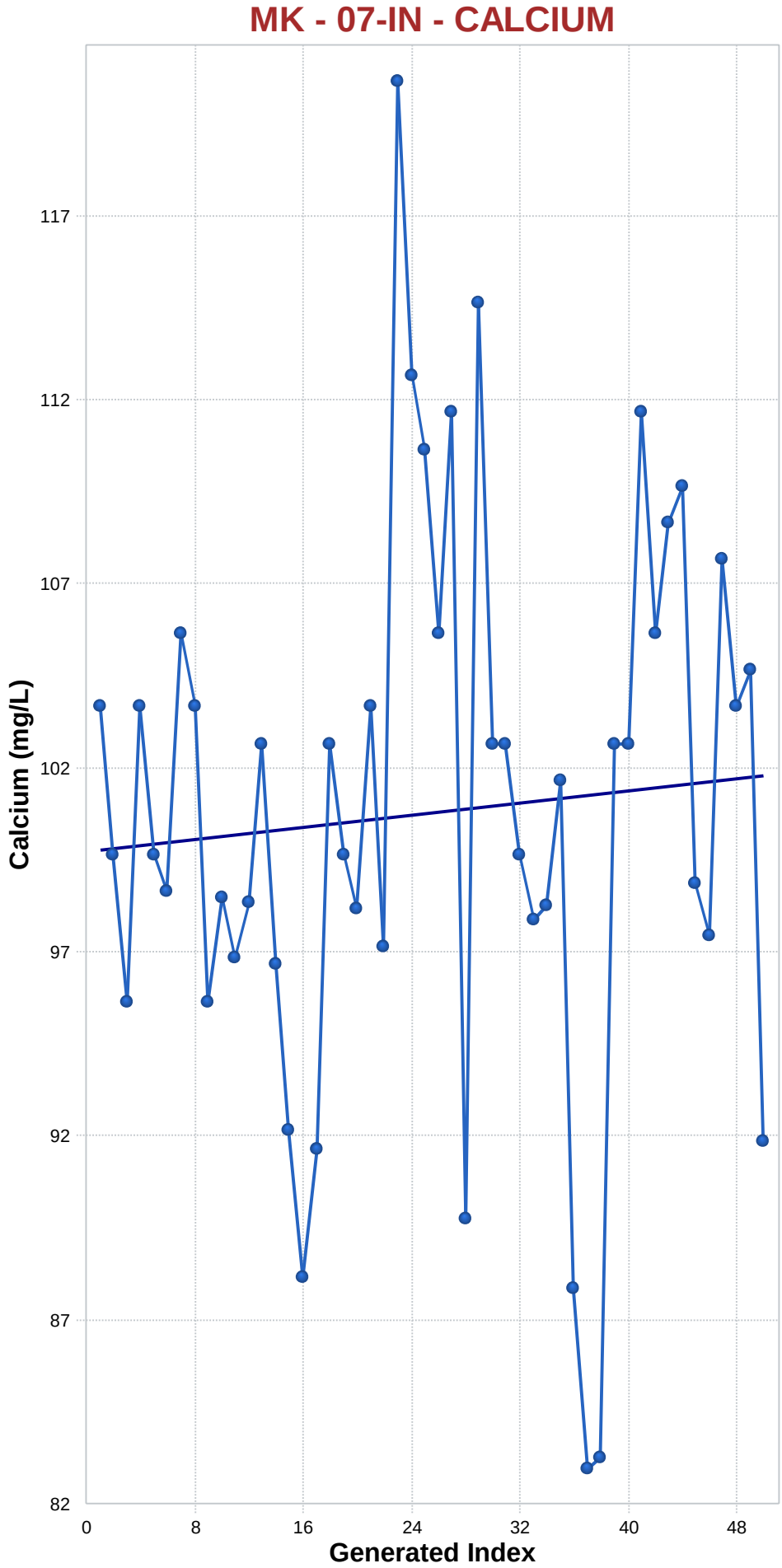
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	115.9454
Standardized Value of S	0.3881
M-K Test Value (S)	46
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3490

OLS Regression Line (Blue)

OLS Regression Slope	0.0643
OLS Regression Intercept	441.1196

Insufficient statistical evidence of a significant trend at the specified level of significance.



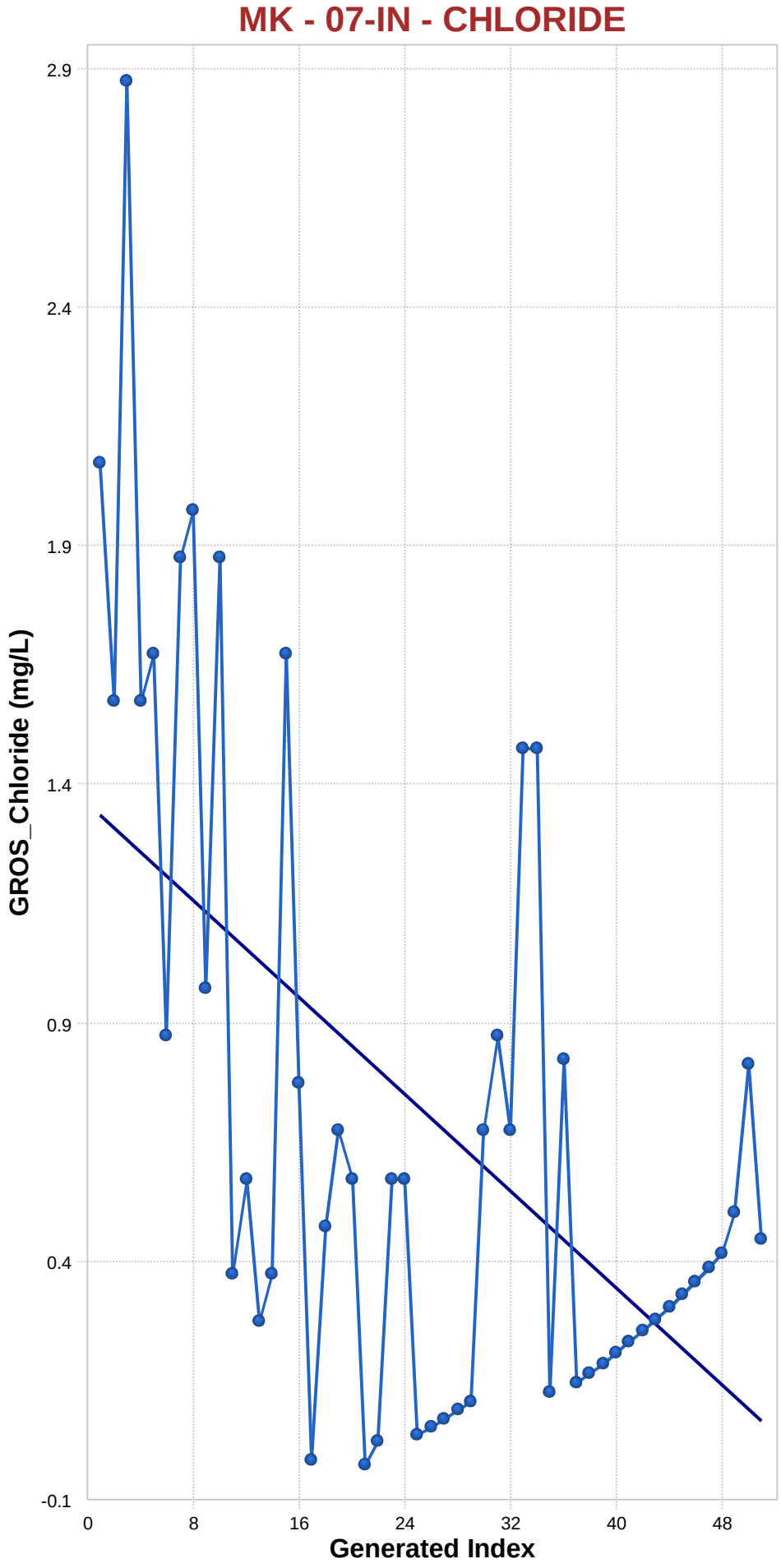
Mann-Kendall Trend Analysis

n	50
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	119.2993
Standardized Value of S	0.7041
M-K Test Value (S)	85
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2407

OLS Regression Line (Blue)

OLS Regression Slope	0.0413
OLS Regression Intercept	100.0853

Insufficient statistical evidence of a significant trend at the specified level of significance.



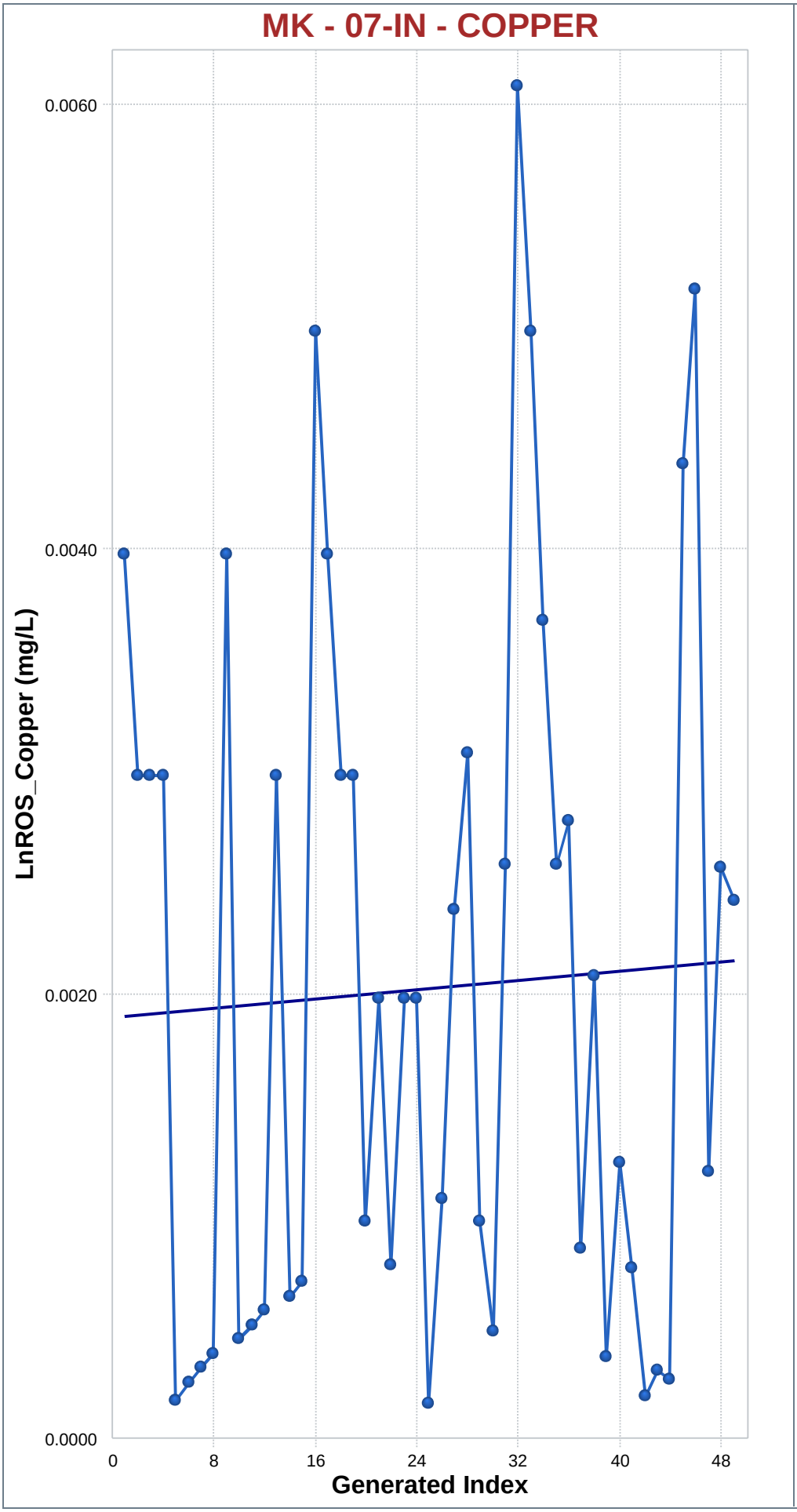
Mann-Kendall Trend Analysis

n	51
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	123.0447
Standardized Value of S	-2.3975
M-K Test Value (S)	-296
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0083

OLS Regression Line (Blue)

OLS Regression Slope	-0.0254
OLS Regression Intercept	1.3864

Statistically significant evidence of a decreasing trend at the specified level of significance.



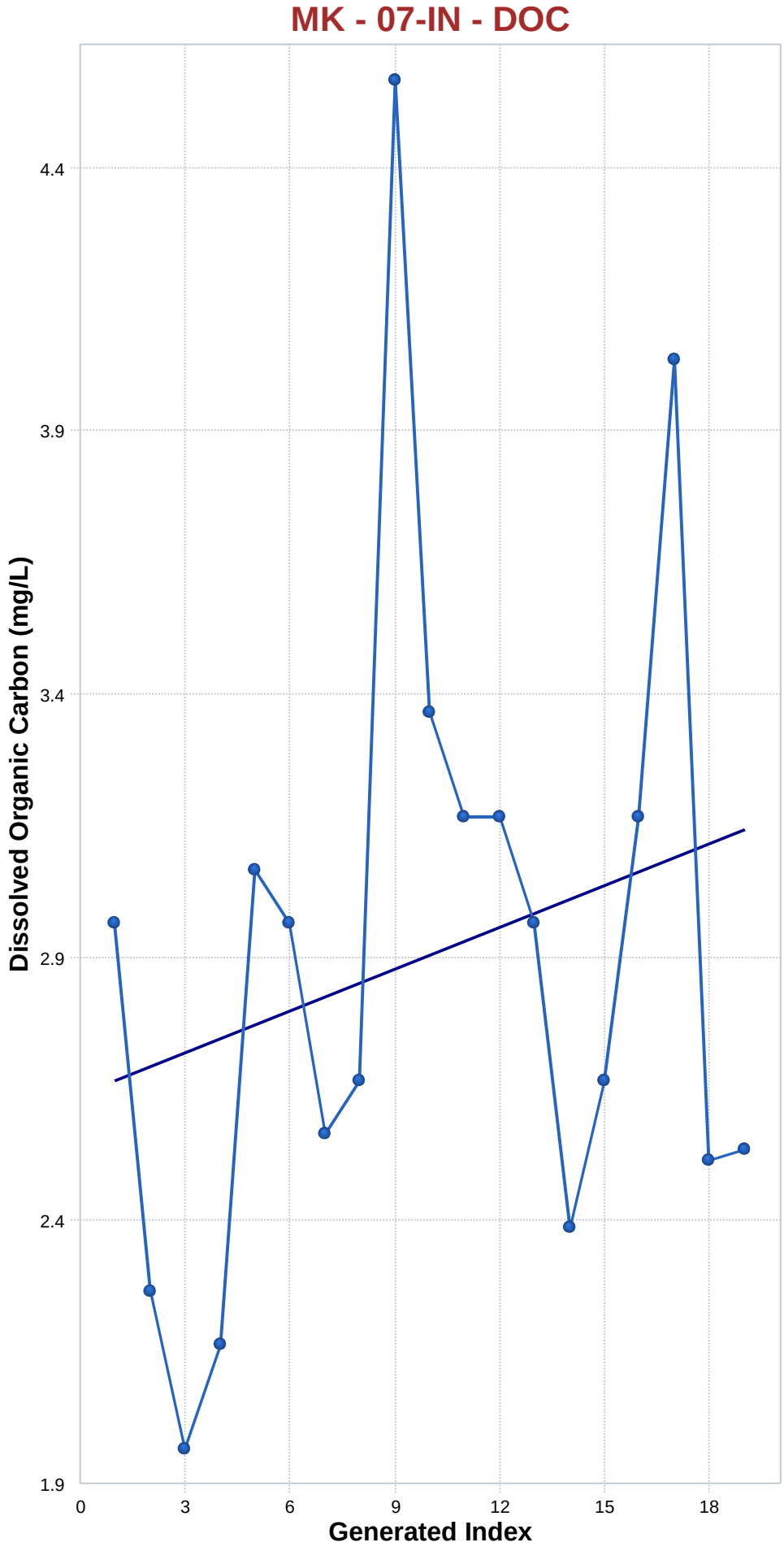
Mann-Kendall Trend Analysis

n	49
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	115.8447
Standardized Value of S	0.3539
M-K Test Value (S)	42
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3617

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0019

Insufficient statistical evidence of a significant trend at the specified level of significance.



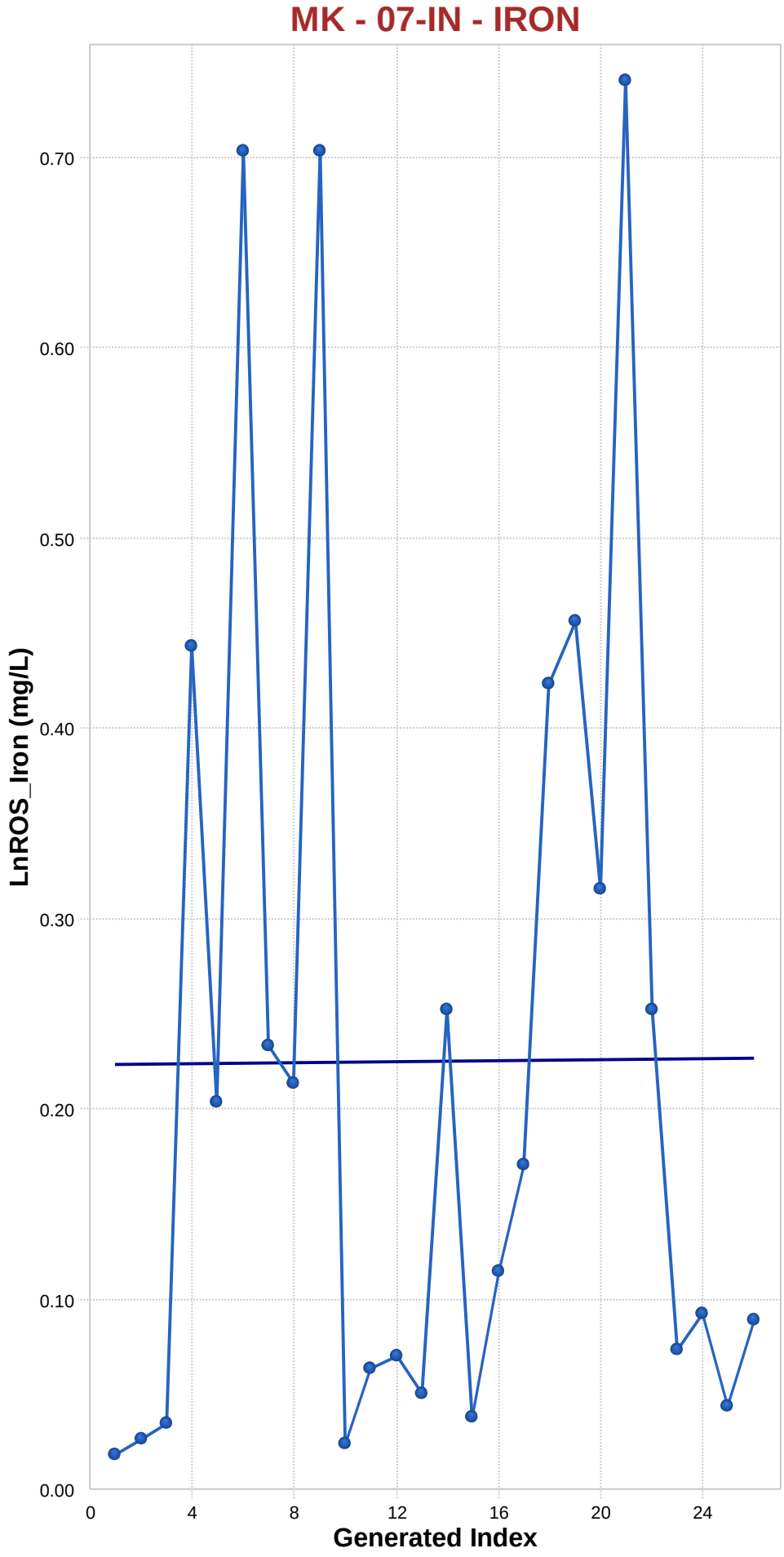
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.4371
Standardized Value of S	0.8791
M-K Test Value (S)	26
Tabulated p-value	0.1840
Approximate p-value	0.1897

OLS Regression Line (Blue)

OLS Regression Slope	0.0265
OLS Regression Intercept	2.6725

Insufficient statistical evidence of a significant trend at the specified level of significance.



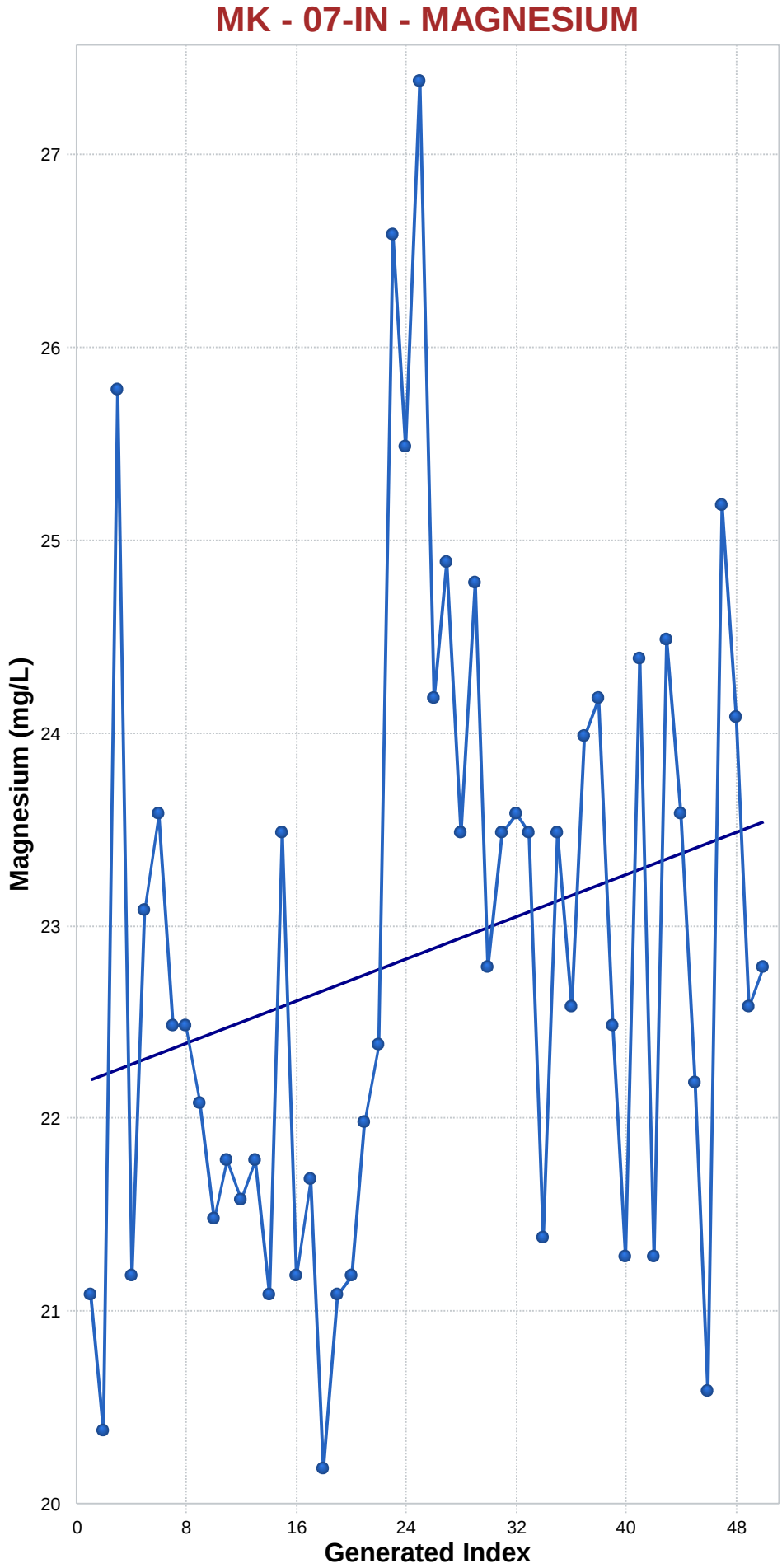
Mann-Kendall Trend Analysis

n	26
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	45.3468
Standardized Value of S	0.9262
M-K Test Value (S)	43
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1772

OLS Regression Line (Blue)

OLS Regression Slope	0.0001
OLS Regression Intercept	0.2201

Insufficient statistical evidence of a significant trend at the specified level of significance.



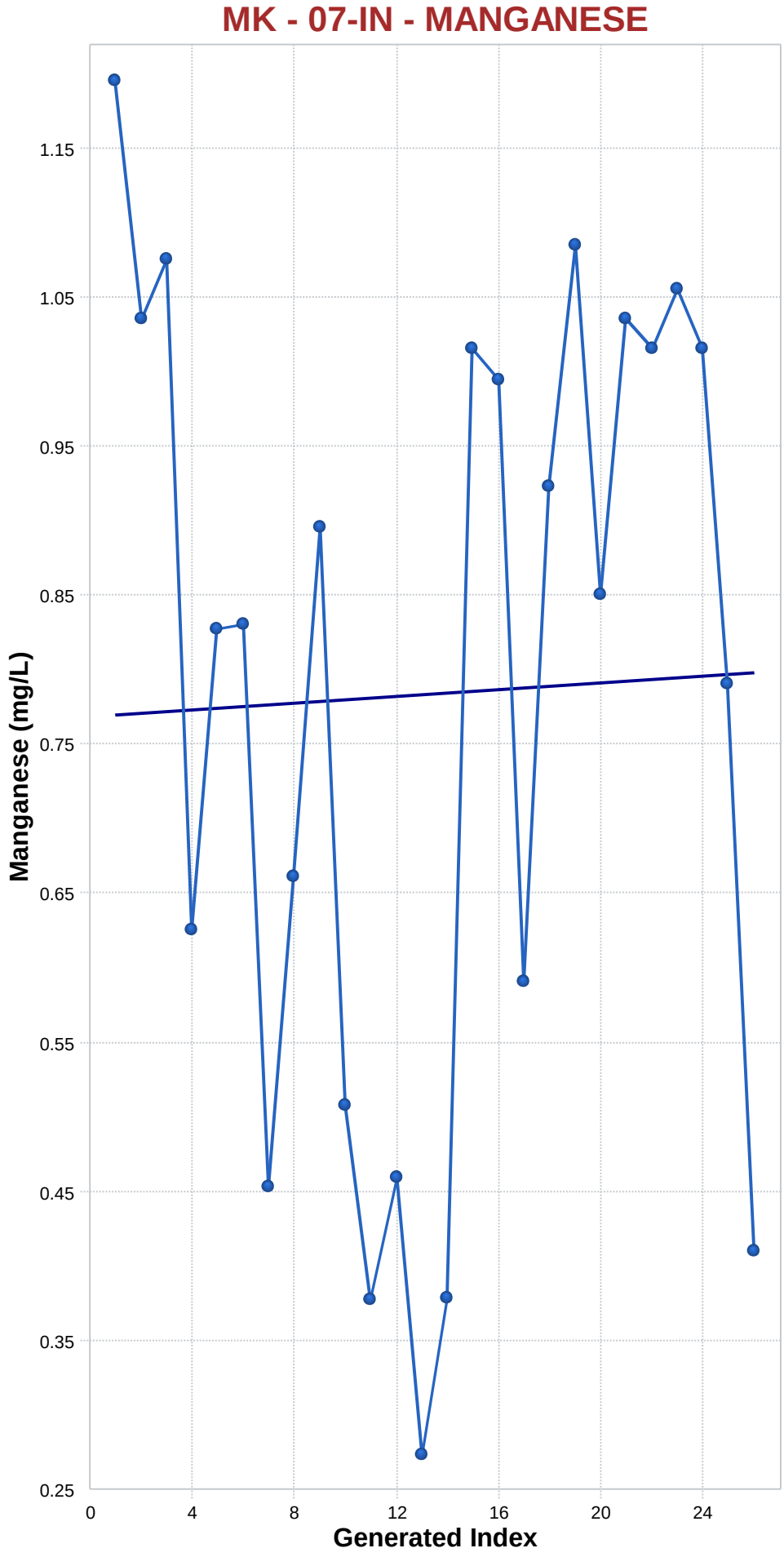
Mann-Kendall Trend Analysis

n	50
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	119.3957
Standardized Value of S	1.9347
M-K Test Value (S)	232
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0265

OLS Regression Line (Blue)

OLS Regression Slope	0.0272
OLS Regression Intercept	21.9966

Statistically significant evidence of an increasing trend at the specified level of significance.



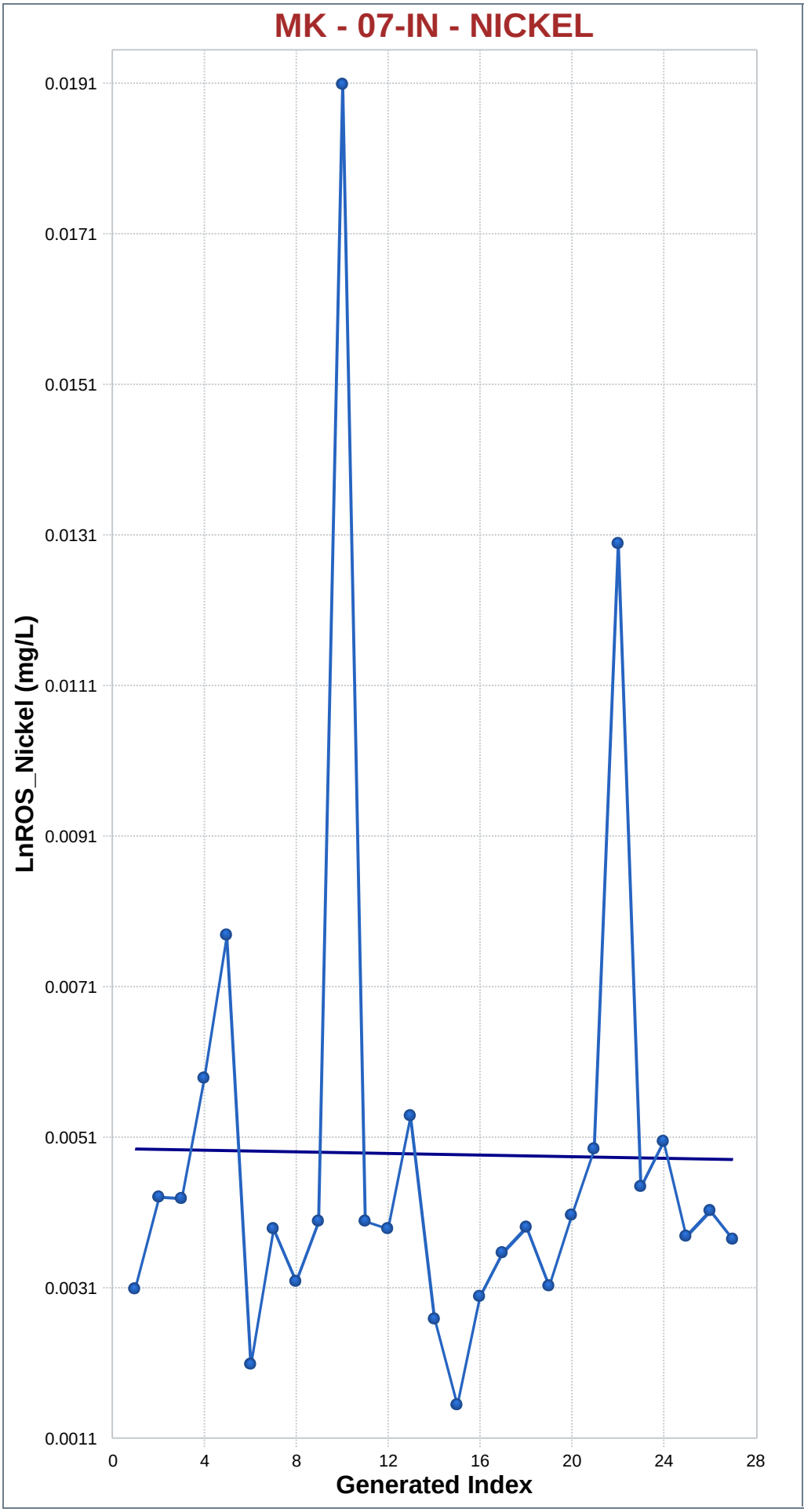
Mann-Kendall Trend Analysis

n	26
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	45.3174
Standardized Value of S	0.0000
M-K Test Value (S)	1
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.5000

OLS Regression Line (Blue)

OLS Regression Slope	0.0012
OLS Regression Intercept	0.7726

Insufficient statistical evidence of a significant trend at the specified level of significance.



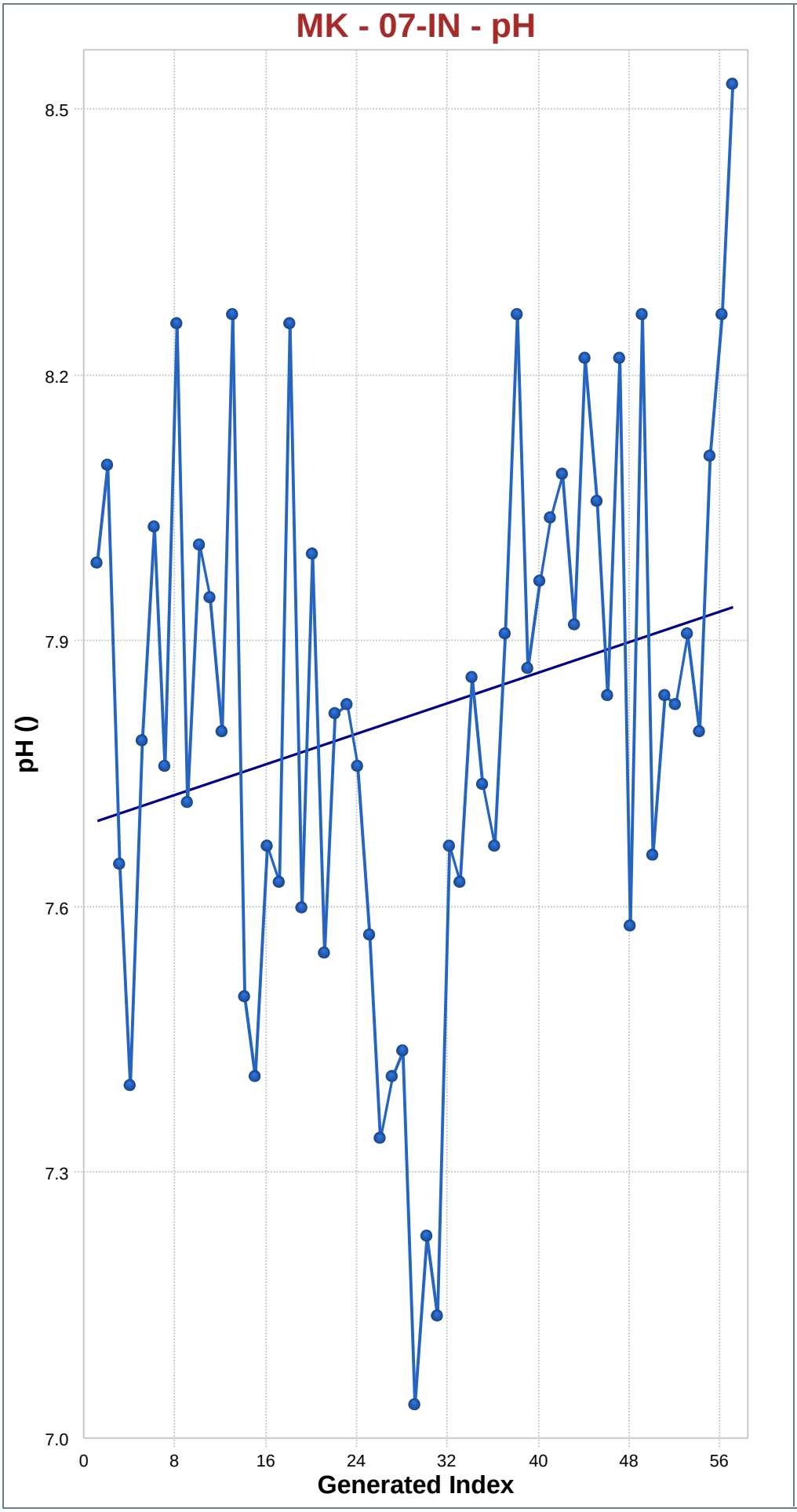
Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9479
Standardized Value of S	0.2086
M-K Test Value (S)	11
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4174

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0050

Insufficient statistical evidence of a significant trend at the specified level of significance.



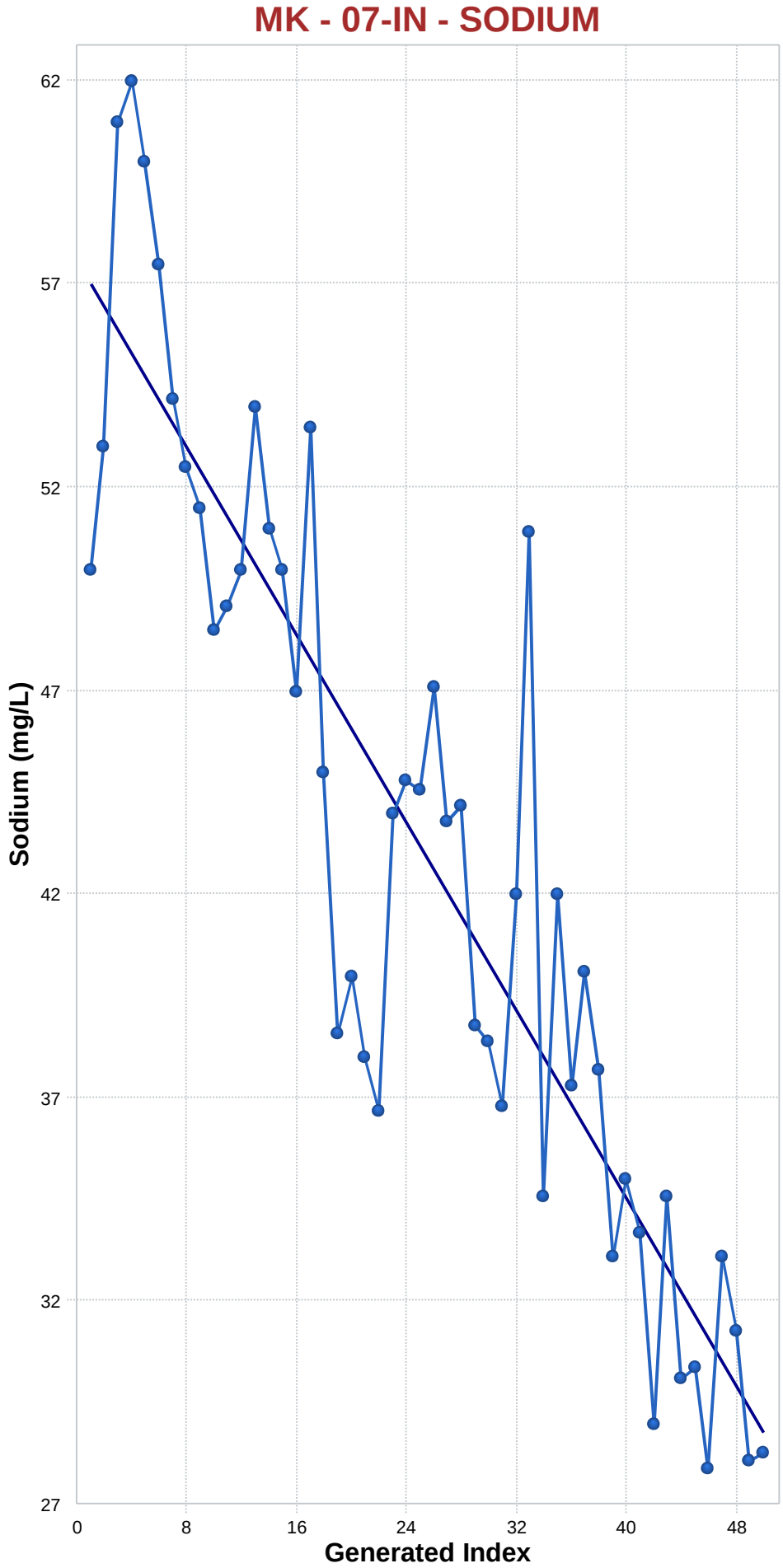
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	145.1941
Standardized Value of S	1.8251
M-K Test Value (S)	266
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0340

OLS Regression Line (Blue)

OLS Regression Slope	0.0043
OLS Regression Intercept	7.6542

Statistically significant evidence of an increasing trend at the specified level of significance.



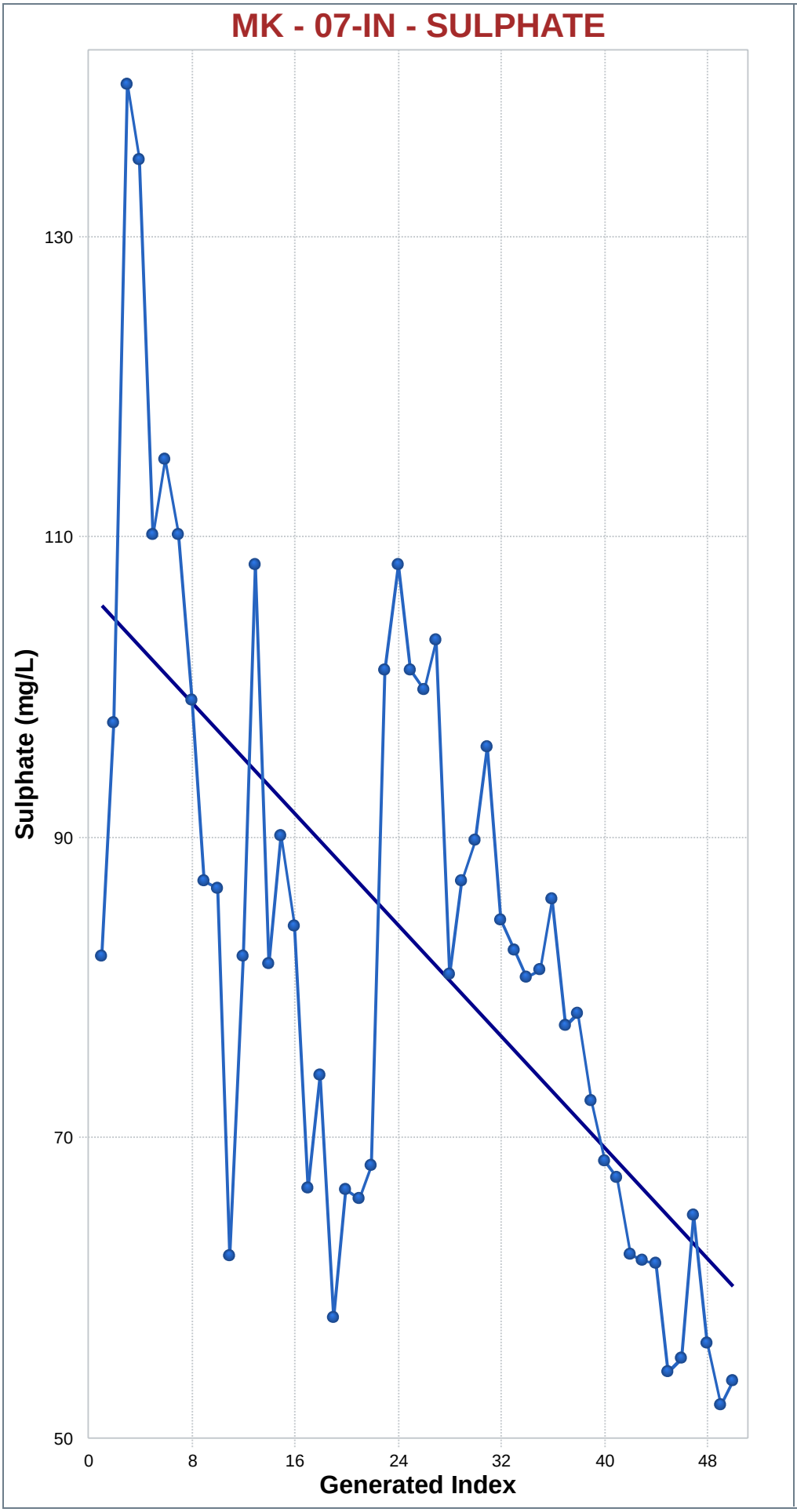
Mann-Kendall Trend Analysis

n	50
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	119.5199
Standardized Value of S	-7.6473
M-K Test Value (S)	-915
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.5760
OLS Regression Intercept	57.5842

Statistically significant evidence of a decreasing trend at the specified level of significance.



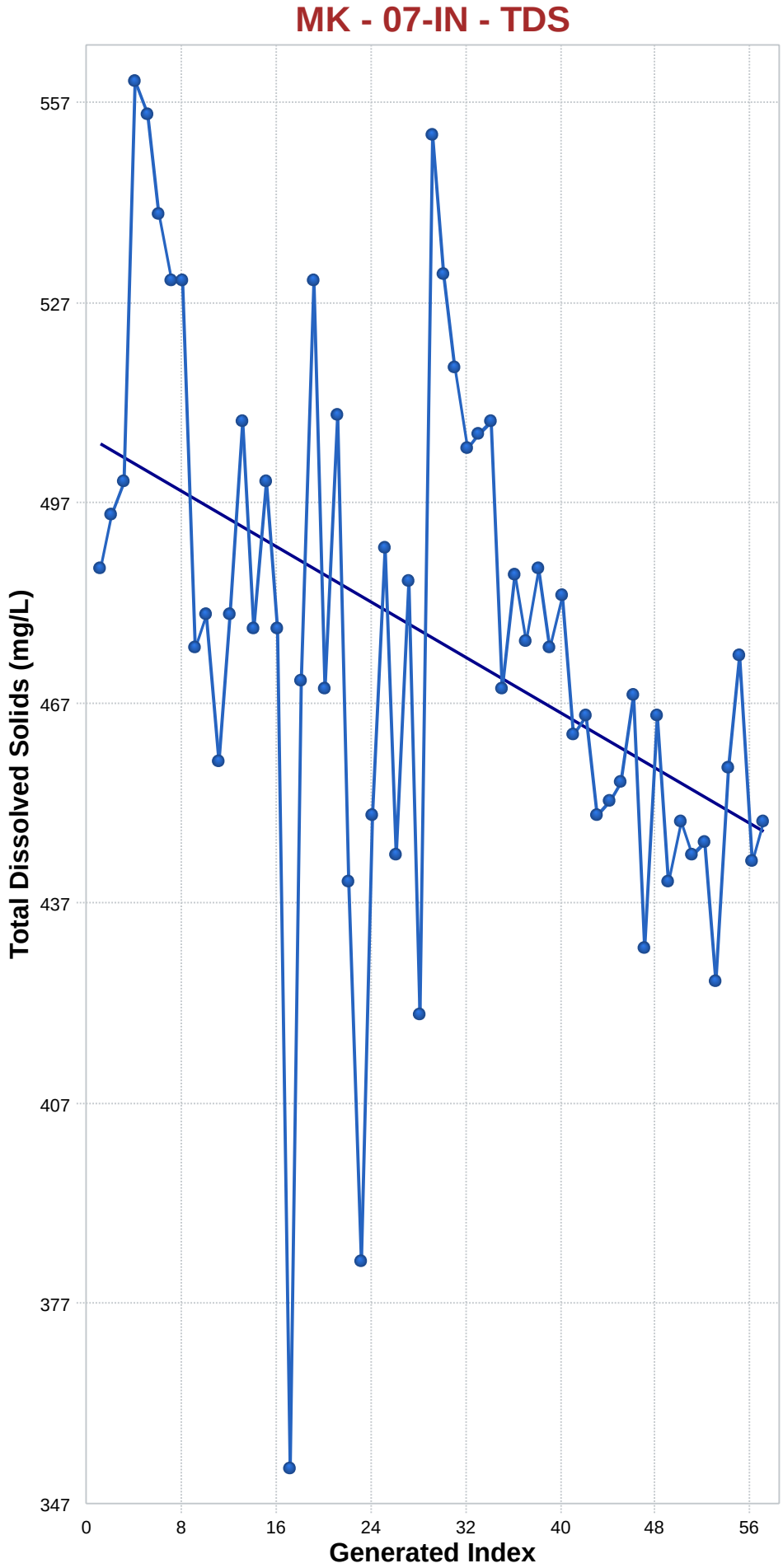
Mann-Kendall Trend Analysis

n	50
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	119.5268
Standardized Value of S	-5.4297
M-K Test Value (S)	-650
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.9241
OLS Regression Intercept	106.2356

Statistically significant evidence of a decreasing trend at the specified level of significance.



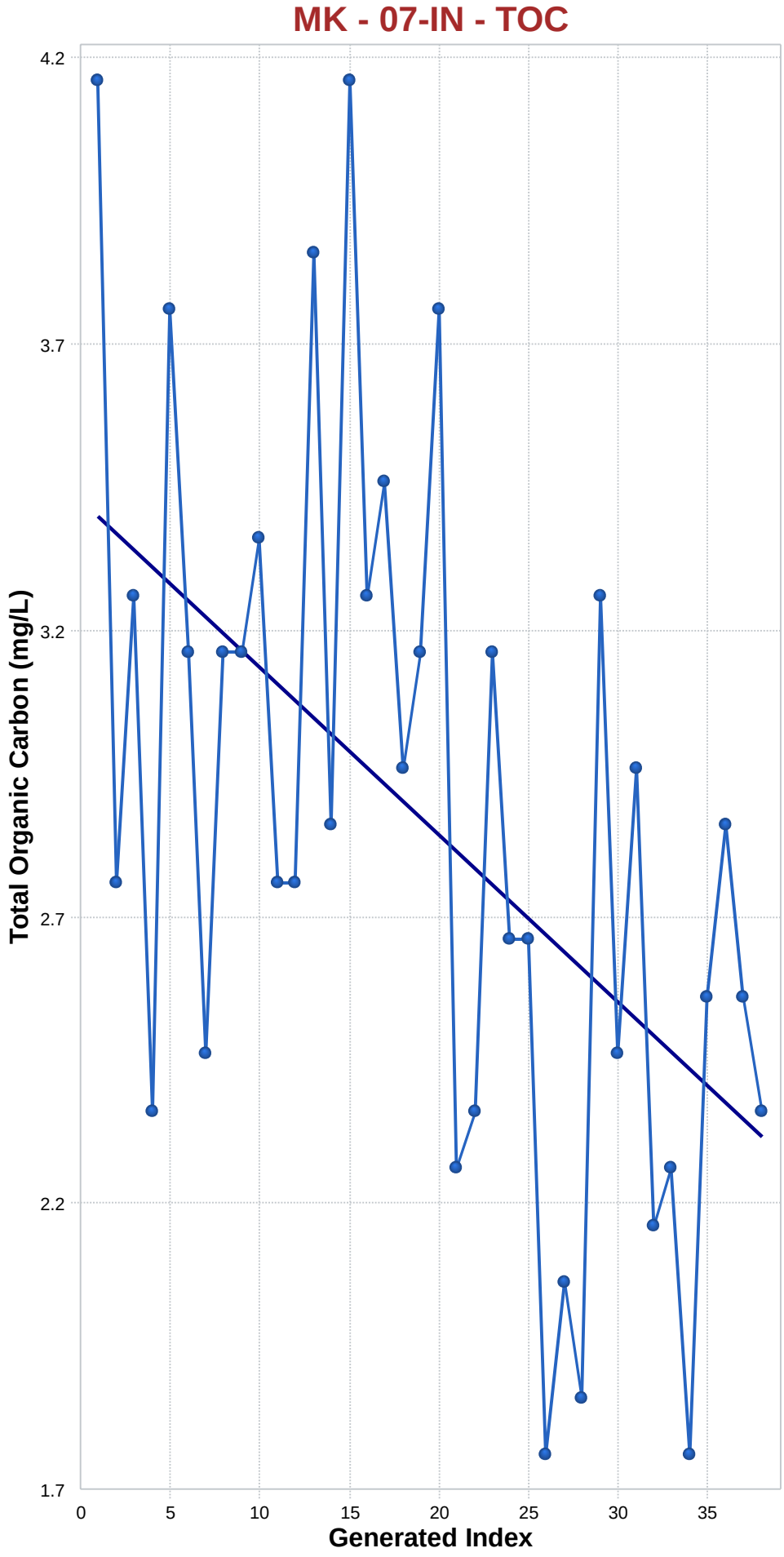
Mann-Kendall Trend Analysis

n	57
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	145.2136
Standardized Value of S	-4.4348
M-K Test Value (S)	-645
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-1.0402
OLS Regression Intercept	506.8145

Statistically significant evidence of a decreasing trend at the specified level of significance.



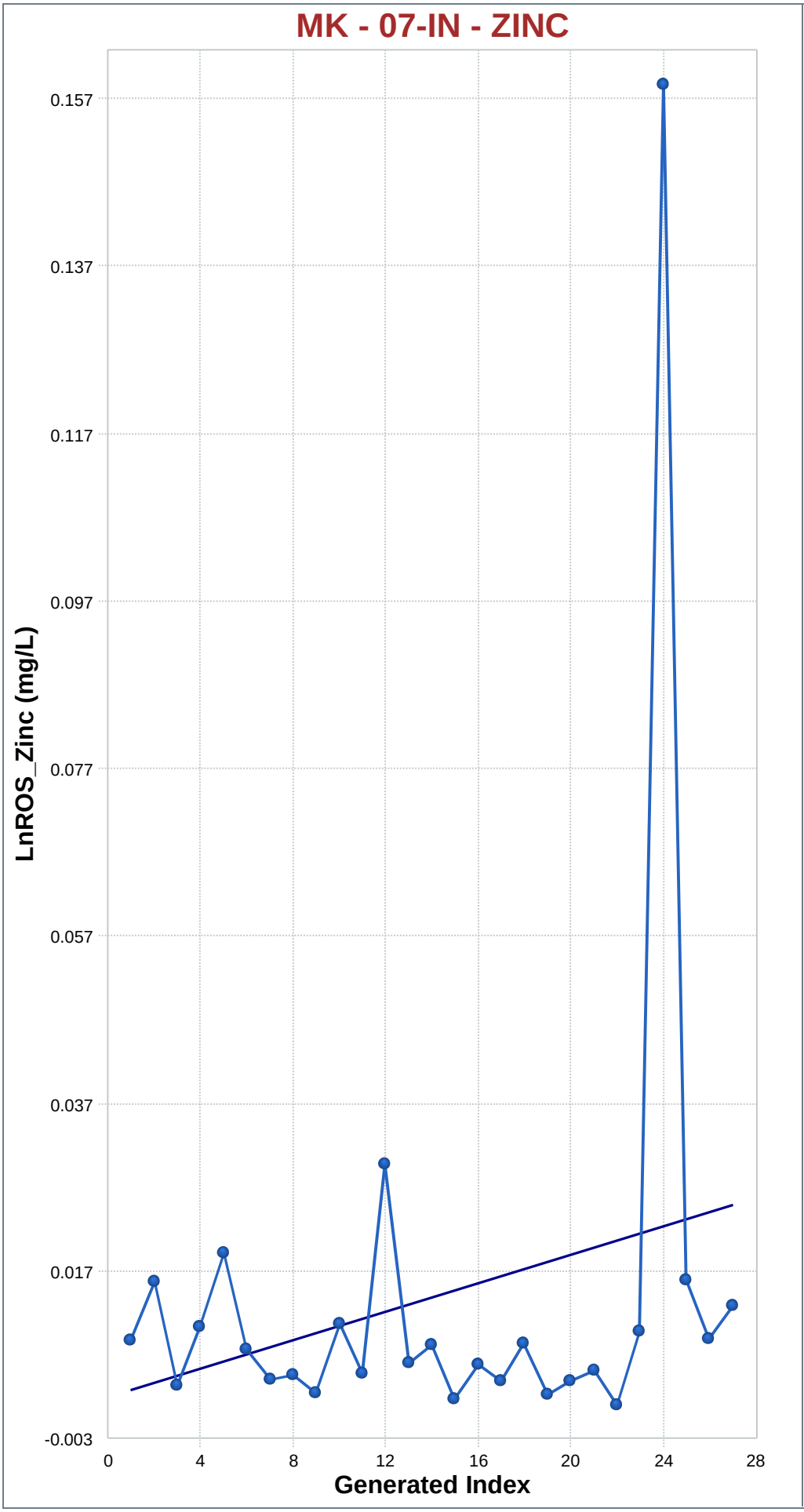
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.3116
Standardized Value of S	-3.1017
M-K Test Value (S)	-247
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0010

OLS Regression Line (Blue)

OLS Regression Slope	-0.0293
OLS Regression Intercept	3.4694

Statistically significant evidence of a decreasing trend at the specified level of significance.



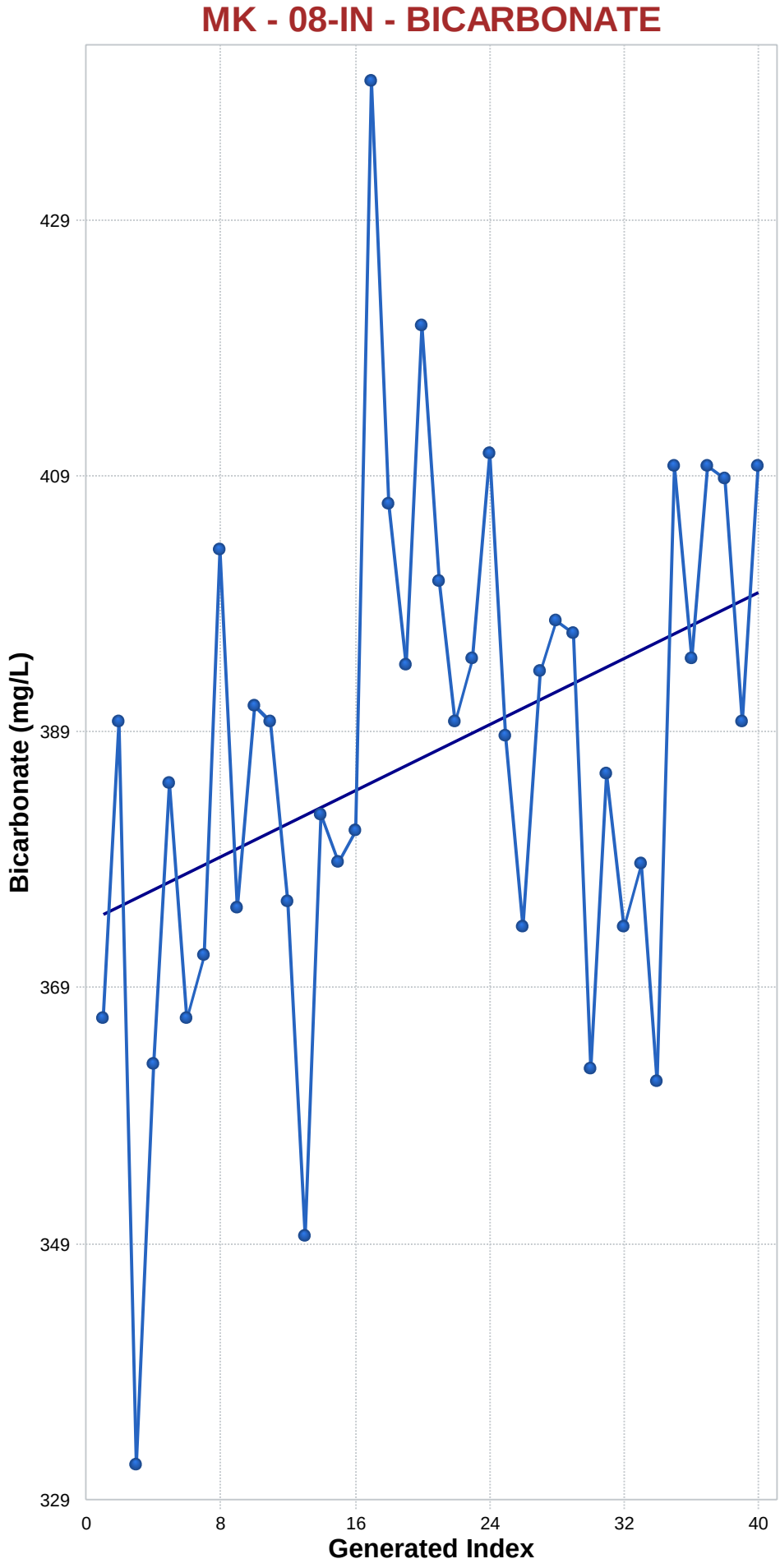
Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9687
Standardized Value of S	0.1251
M-K Test Value (S)	7
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4502

OLS Regression Line (Blue)

OLS Regression Slope	0.0009
OLS Regression Intercept	0.0022

Insufficient statistical evidence of a significant trend at the specified level of significance.



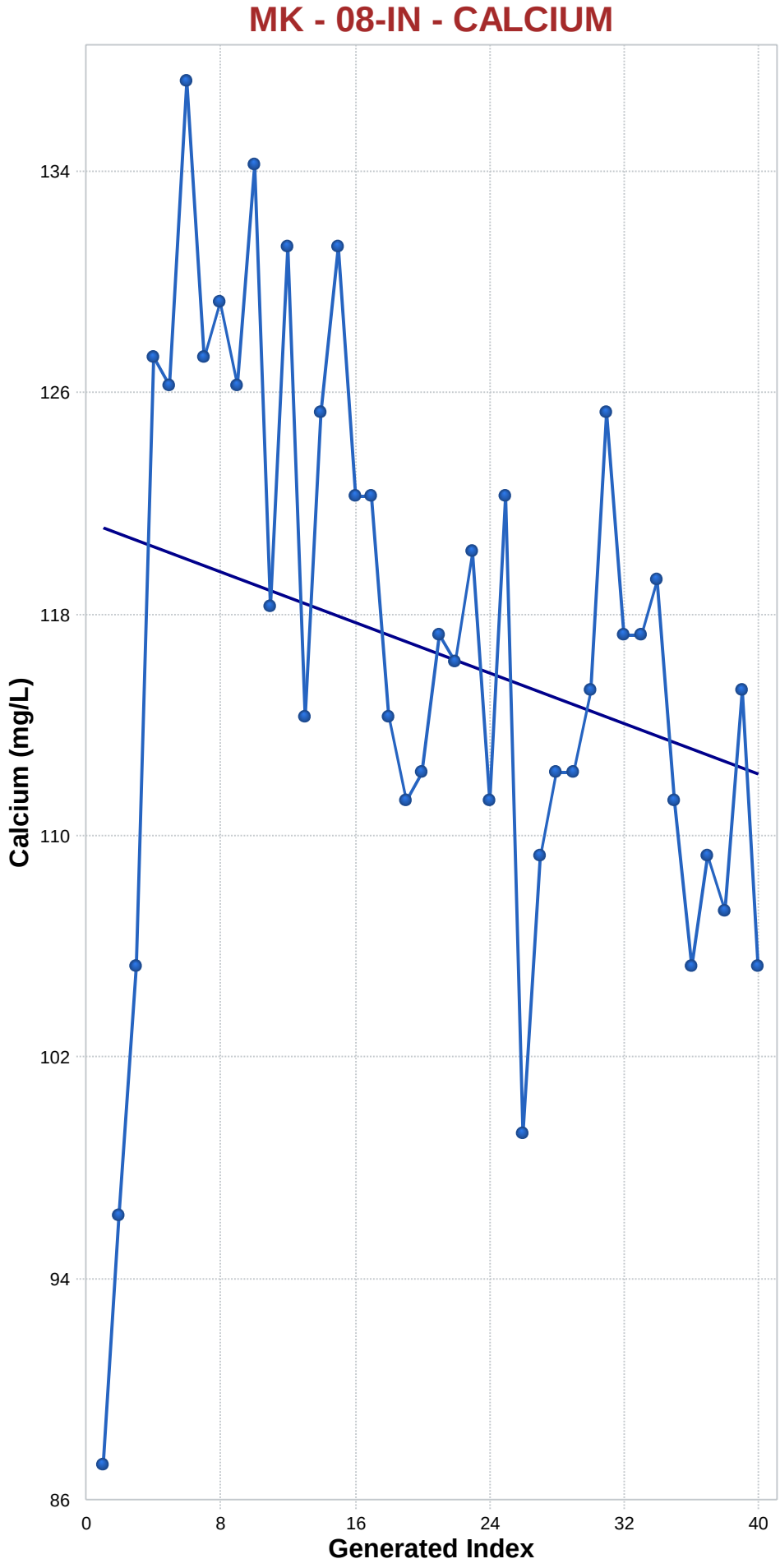
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.7788
Standardized Value of S	2.3666
M-K Test Value (S)	204
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0090

OLS Regression Line (Blue)

OLS Regression Slope	0.6442
OLS Regression Intercept	374.4342

Statistically significant evidence of an increasing trend at the specified level of significance.



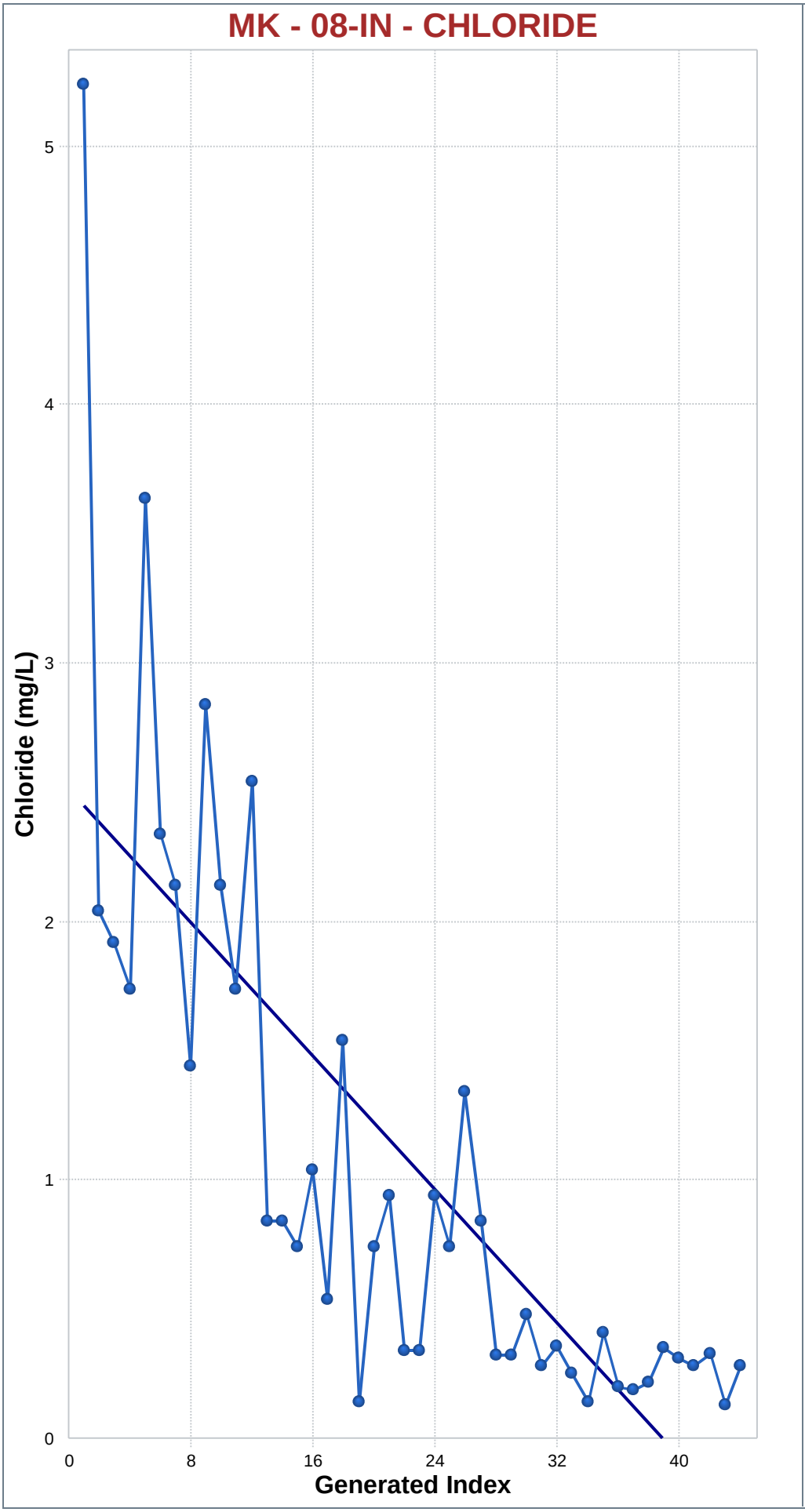
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.6816
Standardized Value of S	-2.7661
M-K Test Value (S)	-238
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0028

OLS Regression Line (Blue)

OLS Regression Slope	-0.2282
OLS Regression Intercept	121.1038

Statistically significant evidence of a decreasing trend at the specified level of significance.



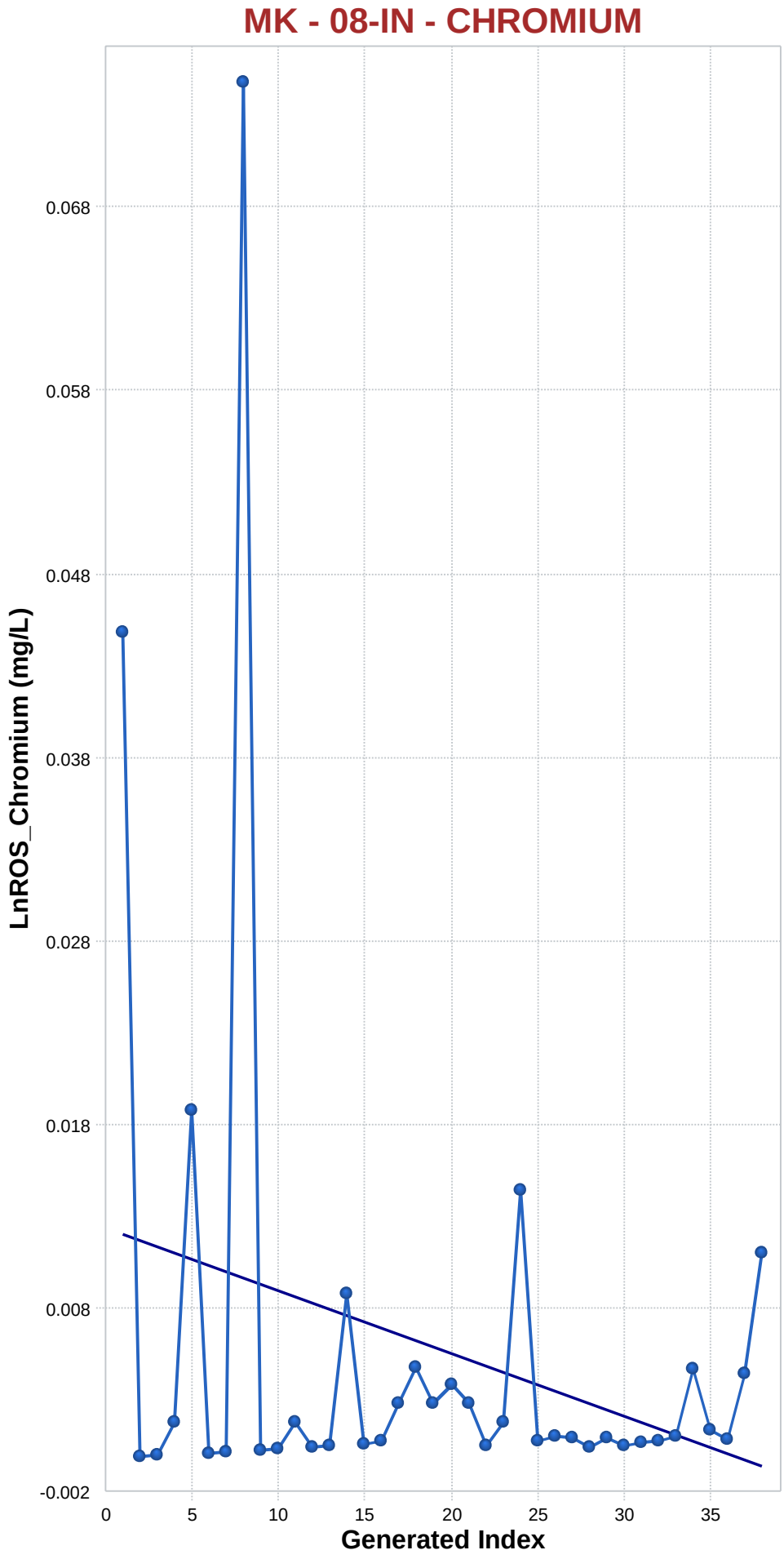
Mann-Kendall Trend Analysis

n	44
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	98.7843
Standardized Value of S	-6.3370
M-K Test Value (S)	-627
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0646
OLS Regression Intercept	2.9715

Statistically significant evidence of a decreasing trend at the specified level of significance.



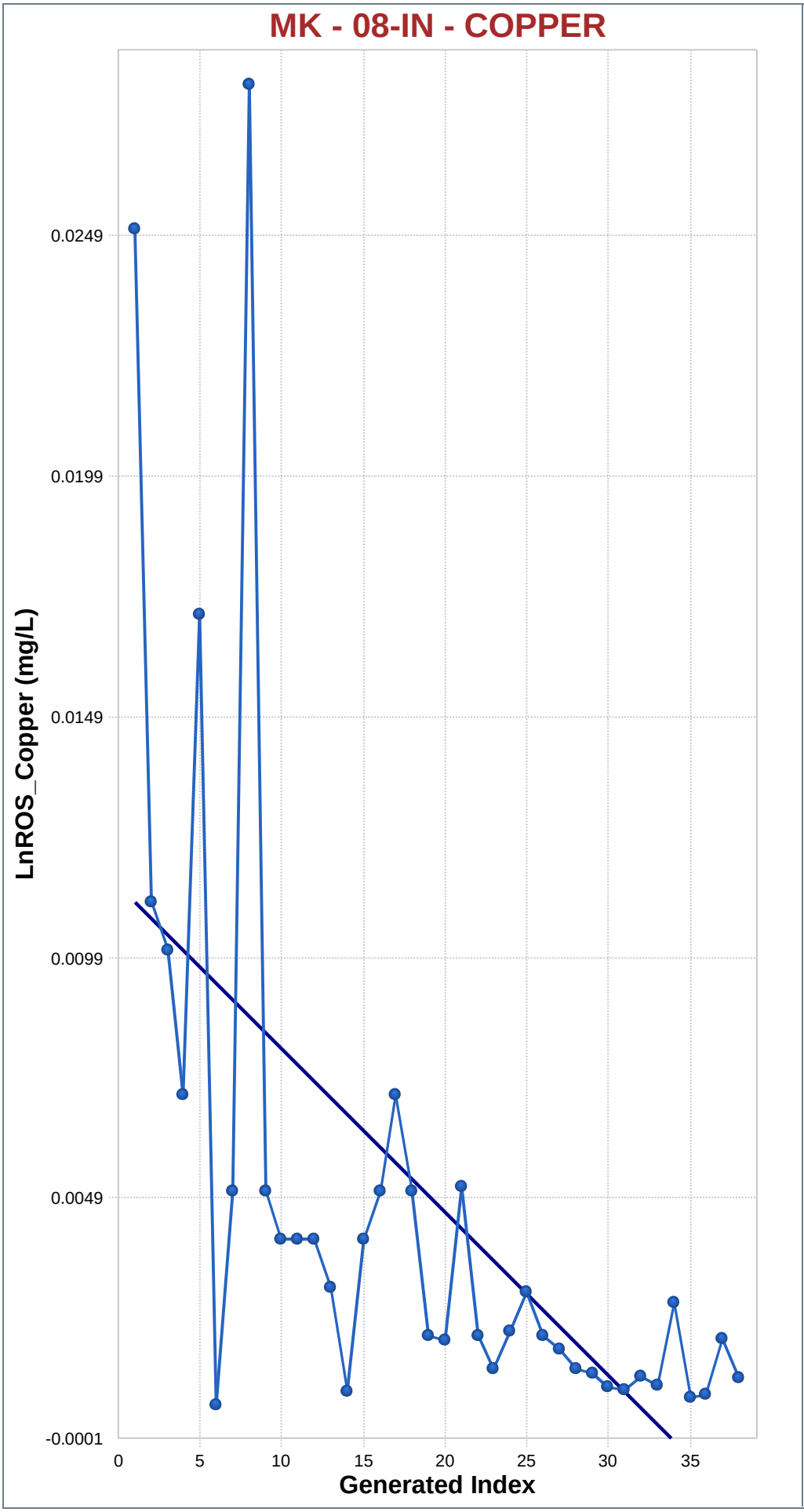
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5131
Standardized Value of S	1.4840
M-K Test Value (S)	119
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0689

OLS Regression Line (Blue)

OLS Regression Slope	-0.0003
OLS Regression Intercept	0.0125

Insufficient statistical evidence of a significant trend at the specified level of significance.



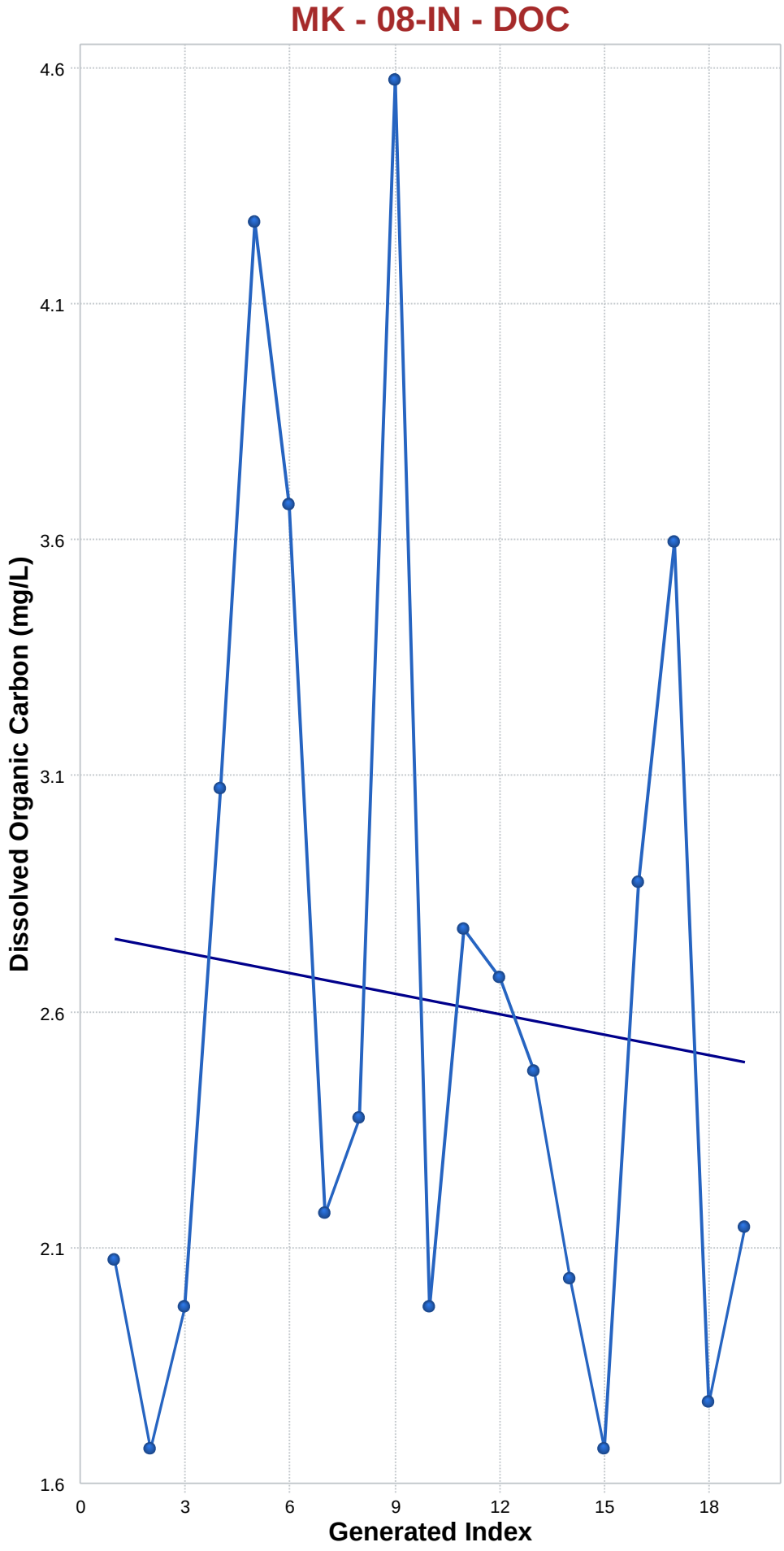
Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.4040
Standardized Value of S	-5.1131
M-K Test Value (S)	-407
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0003
OLS Regression Intercept	0.0114

Statistically significant evidence of a decreasing trend at the specified level of significance.



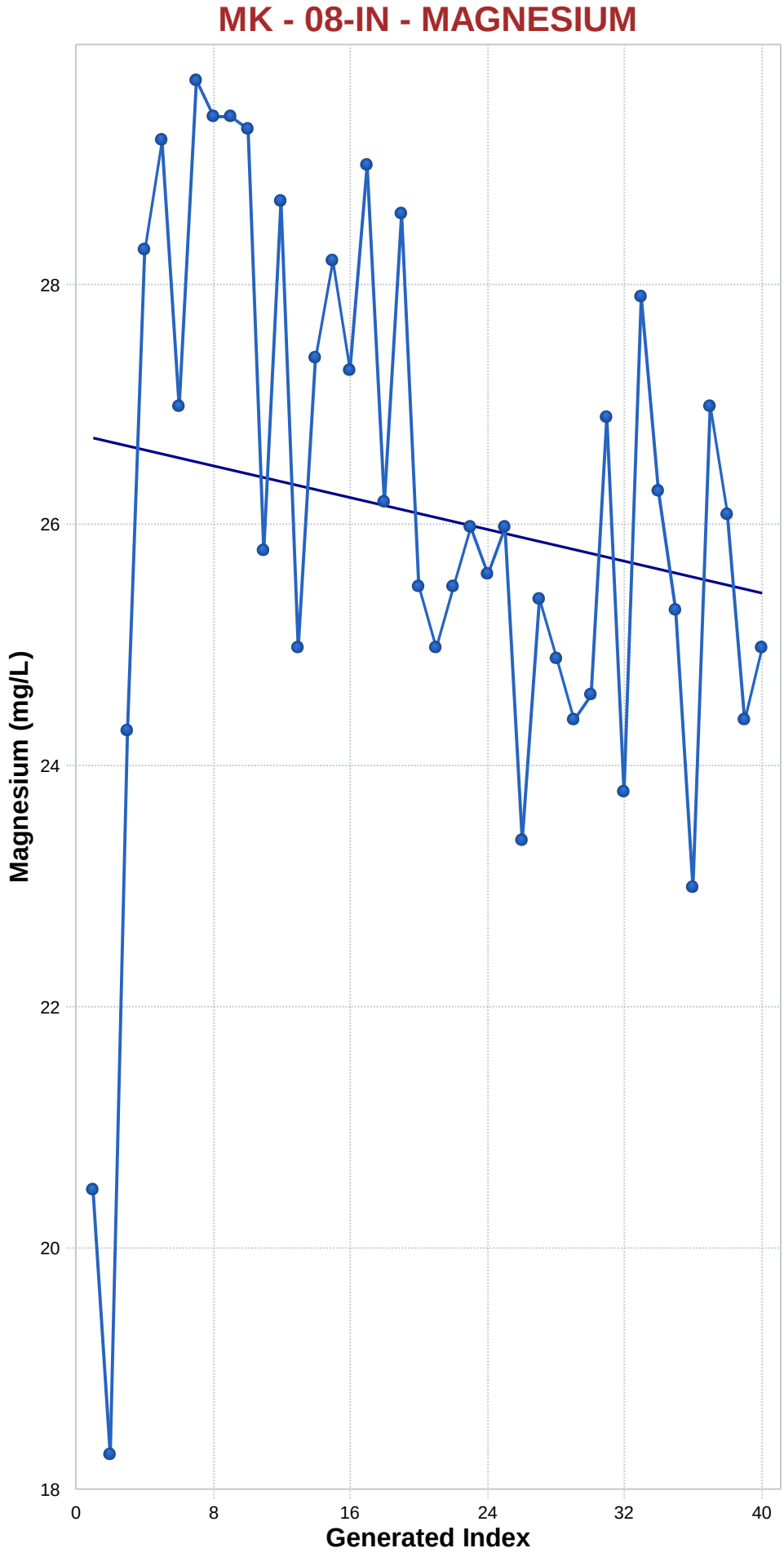
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	-0.1401
M-K Test Value (S)	-5
Tabulated p-value	0.4450
Approximate p-value	0.4443

OLS Regression Line (Blue)

OLS Regression Slope	-0.0145
OLS Regression Intercept	2.7954

Insufficient statistical evidence of a significant trend at the specified level of significance.



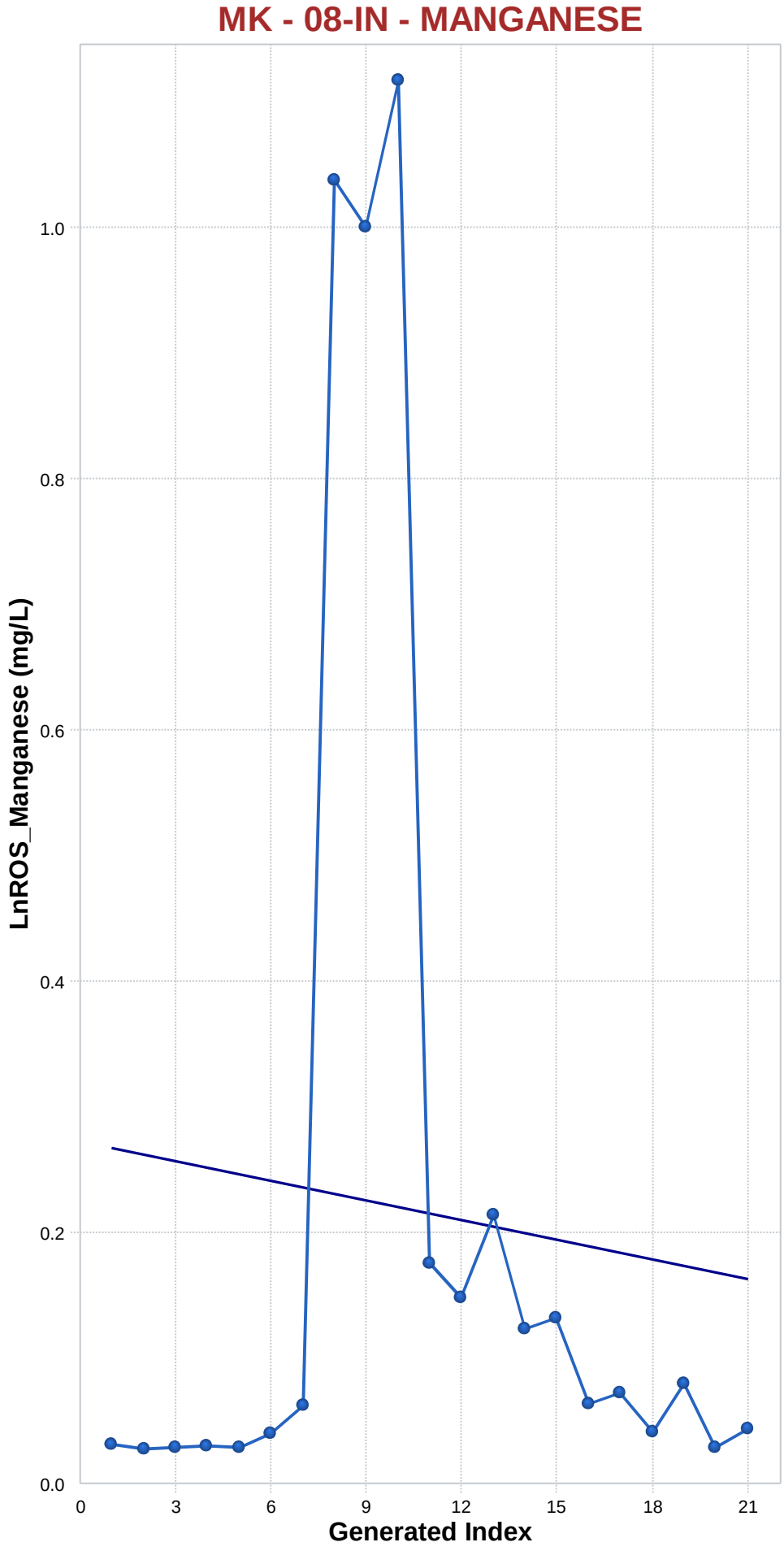
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.7788
Standardized Value of S	-2.4598
M-K Test Value (S)	-212
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0070

OLS Regression Line (Blue)

OLS Regression Slope	-0.0329
OLS Regression Intercept	27.0654

Statistically significant evidence of a decreasing trend at the specified level of significance.



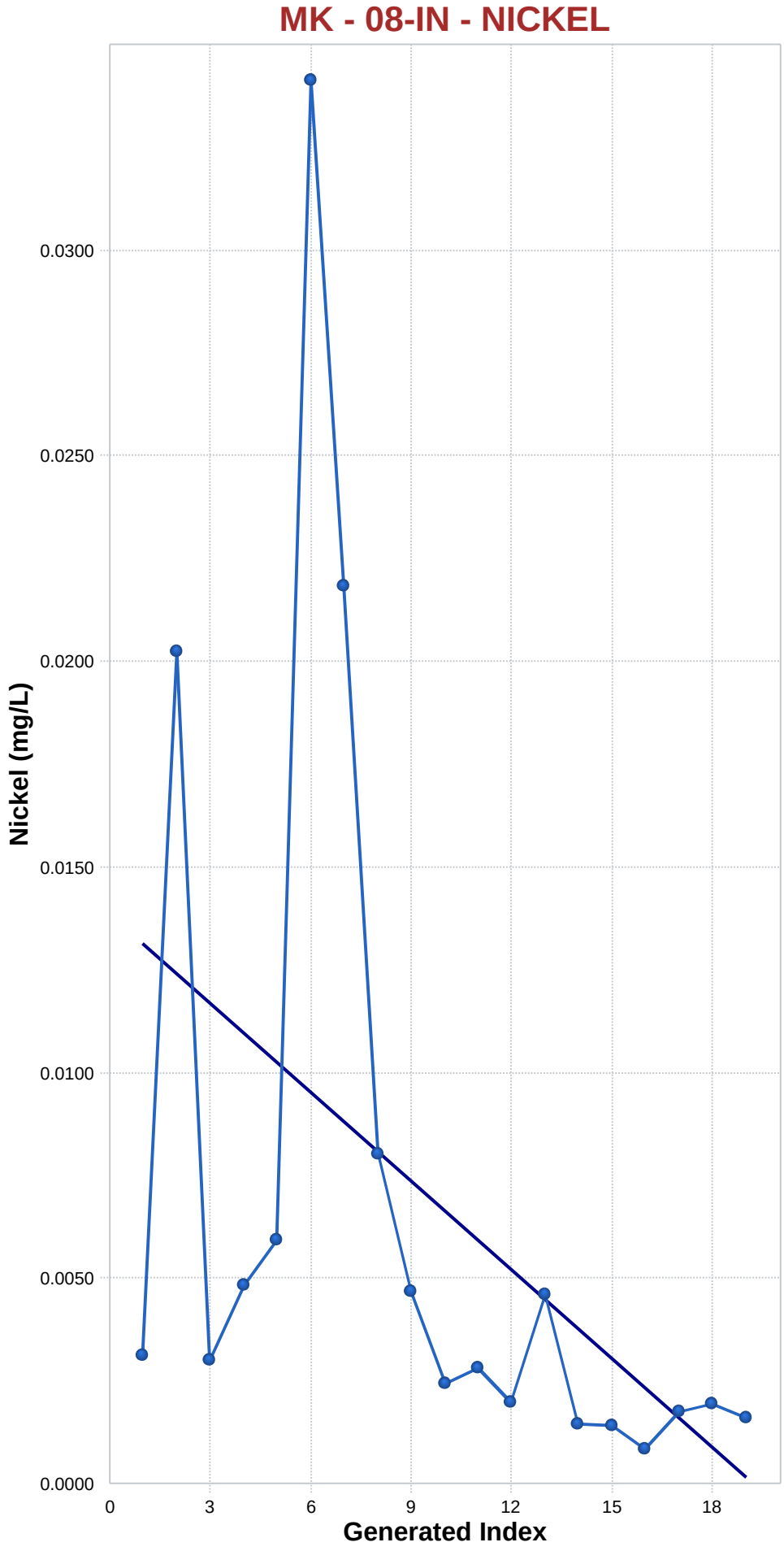
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.1160
Standardized Value of S	0.6945
M-K Test Value (S)	24
Tabulated p-value	0.2460
Approximate p-value	0.2437

OLS Regression Line (Blue)

OLS Regression Slope	-0.0052
OLS Regression Intercept	0.2461

Insufficient statistical evidence of a significant trend at the specified level of significance.



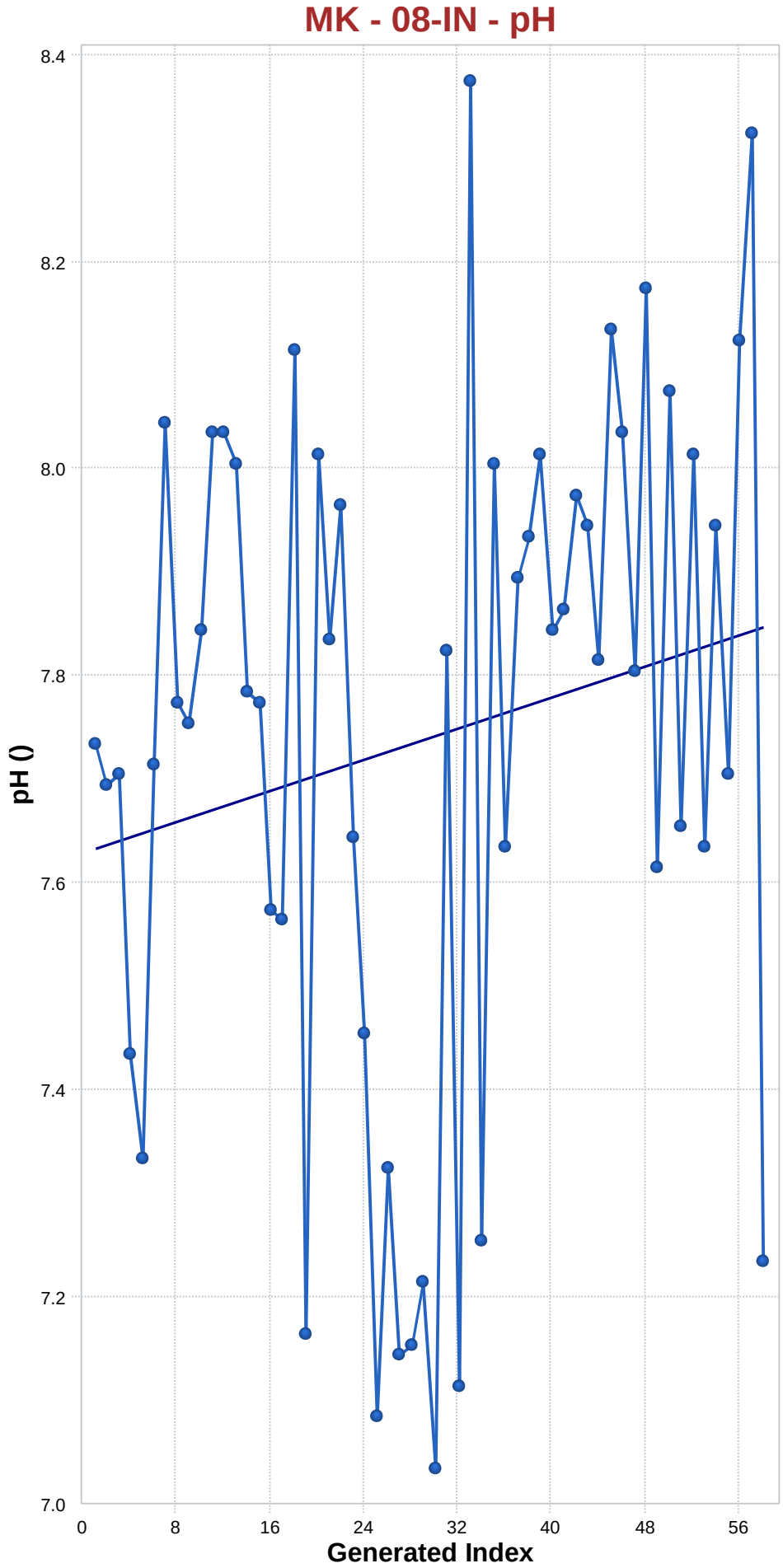
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5832
Standardized Value of S	-3.2886
M-K Test Value (S)	-95
Tabulated p-value	0.0000
Approximate p-value	0.0005

OLS Regression Line (Blue)

OLS Regression Slope	-0.0007
OLS Regression Intercept	0.0139

Statistically significant evidence of a decreasing trend at the specified level of significance.



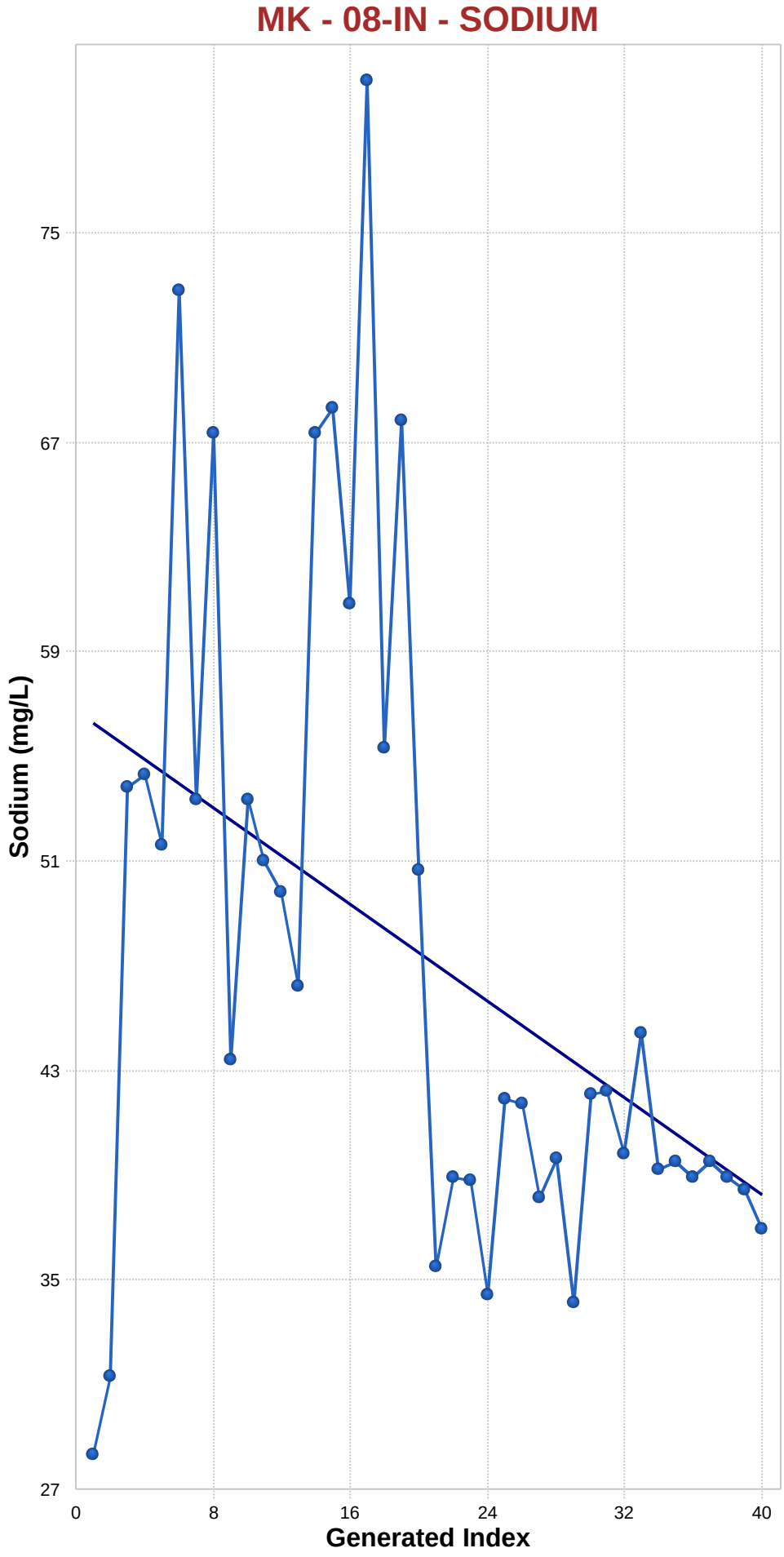
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	149.0313
Standardized Value of S	1.5701
M-K Test Value (S)	235
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0582

OLS Regression Line (Blue)

OLS Regression Slope	0.0038
OLS Regression Intercept	7.6548

Insufficient statistical evidence of a significant trend at the specified level of significance.



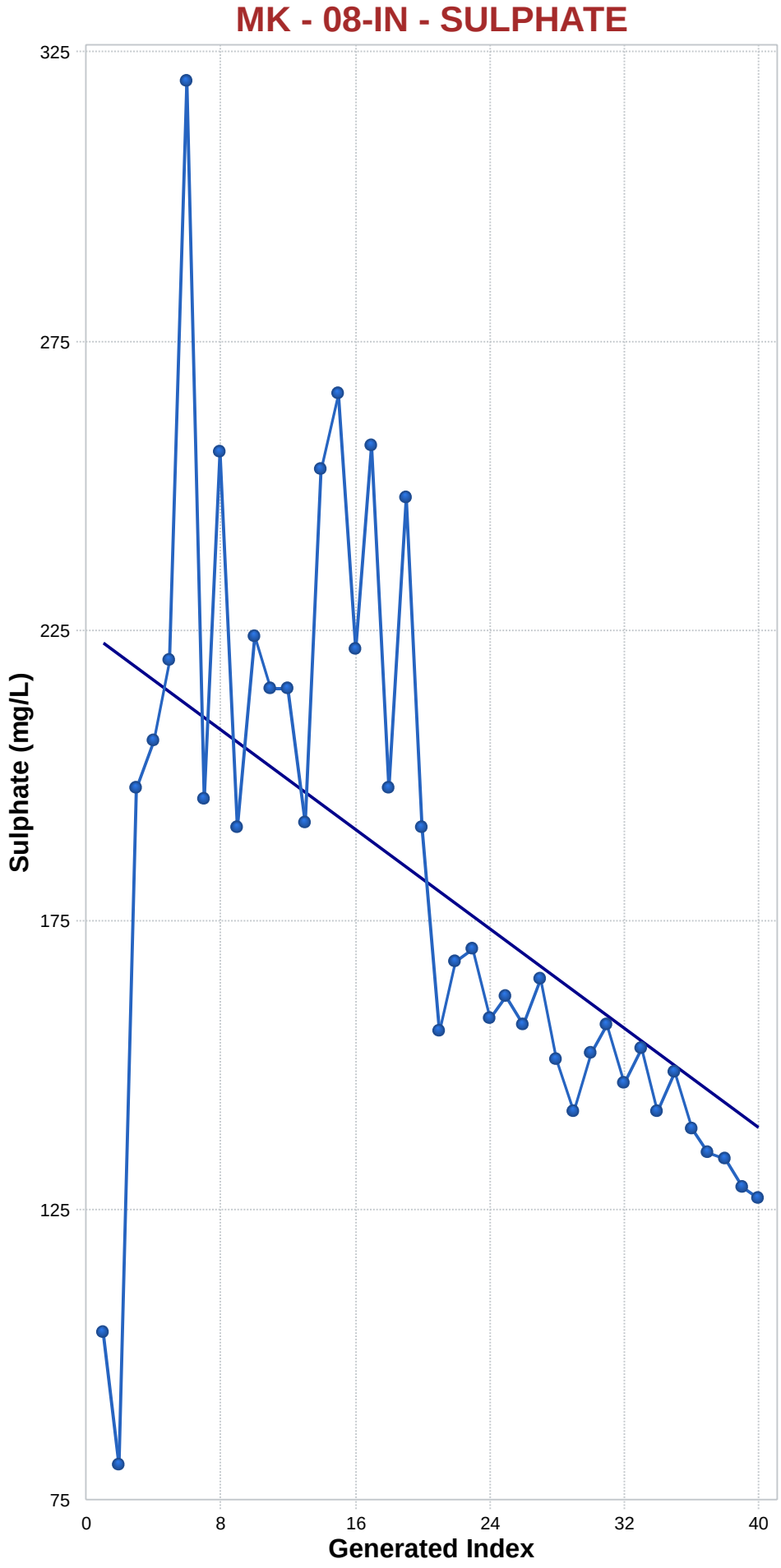
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.7904
Standardized Value of S	-3.1122
M-K Test Value (S)	-268
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0009

OLS Regression Line (Blue)

OLS Regression Slope	-0.4622
OLS Regression Intercept	56.9269

Statistically significant evidence of a decreasing trend at the specified level of significance.



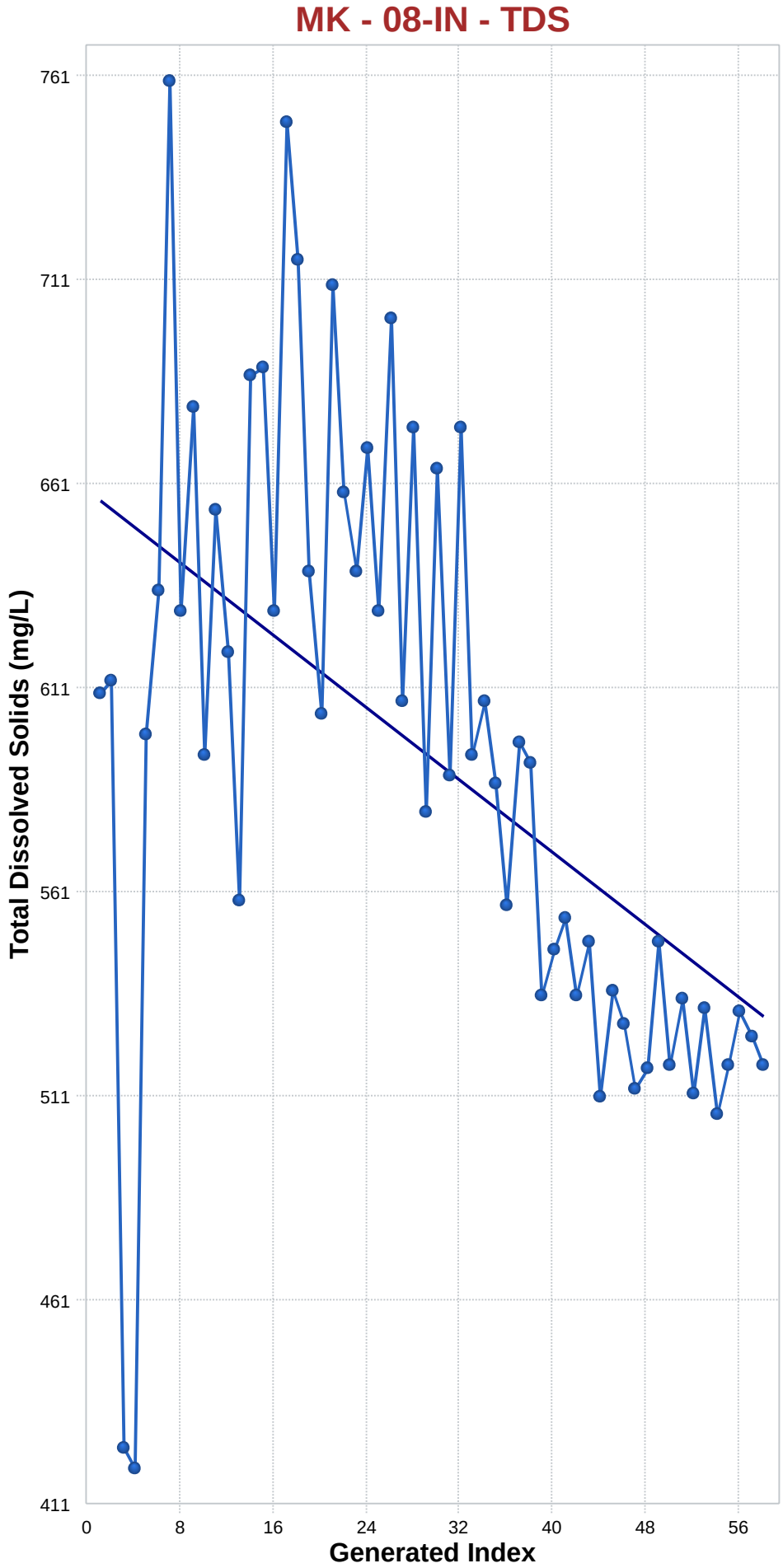
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.8002
Standardized Value of S	-4.8485
M-K Test Value (S)	-417
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-2.1460
OLS Regression Intercept	225.1423

Statistically significant evidence of a decreasing trend at the specified level of significance.



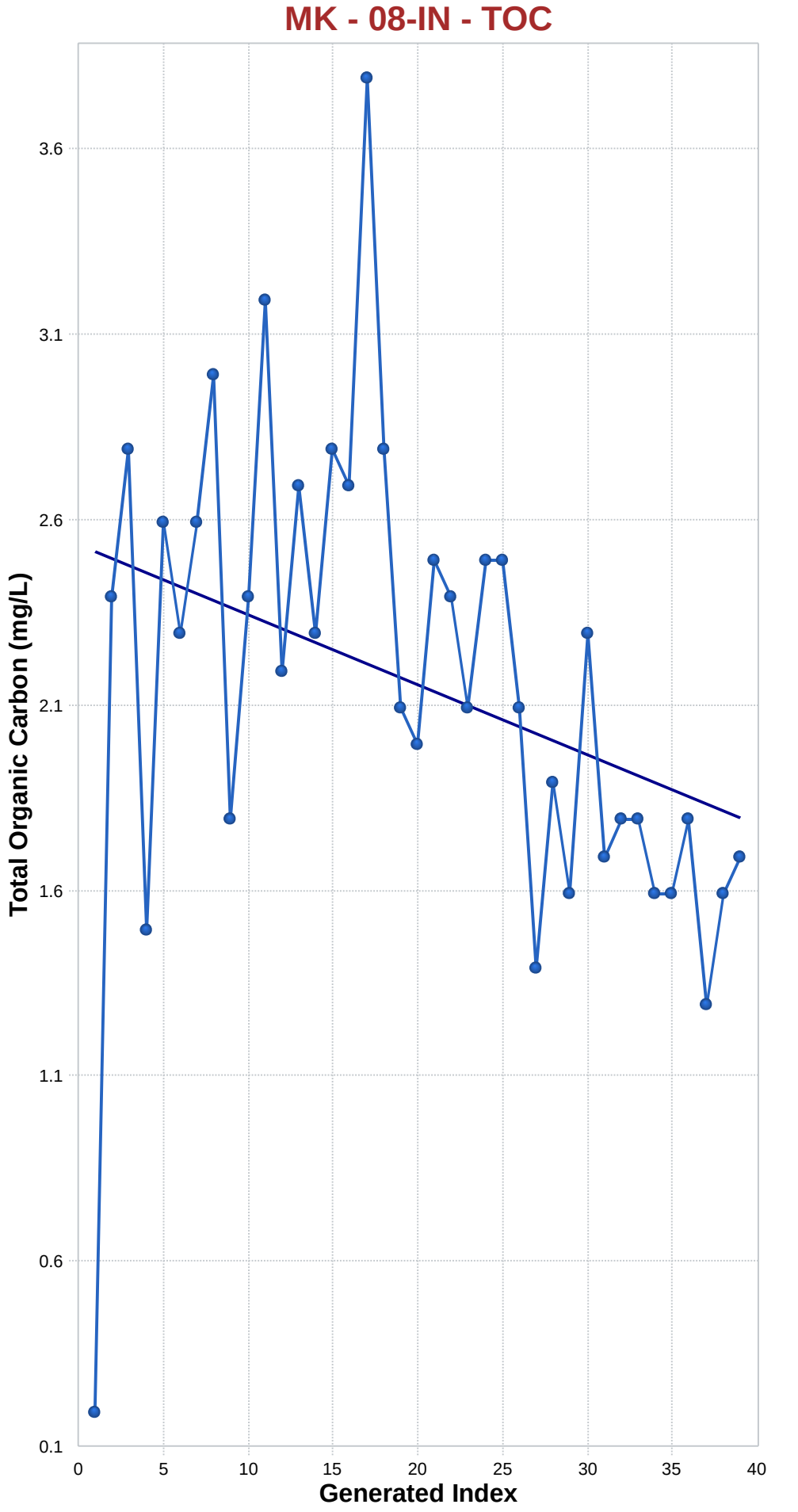
Mann-Kendall Trend Analysis

n	58
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	149.0313
Standardized Value of S	-5.3412
M-K Test Value (S)	-797
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-2.2172
OLS Regression Intercept	659.3376

Statistically significant evidence of a decreasing trend at the specified level of significance.



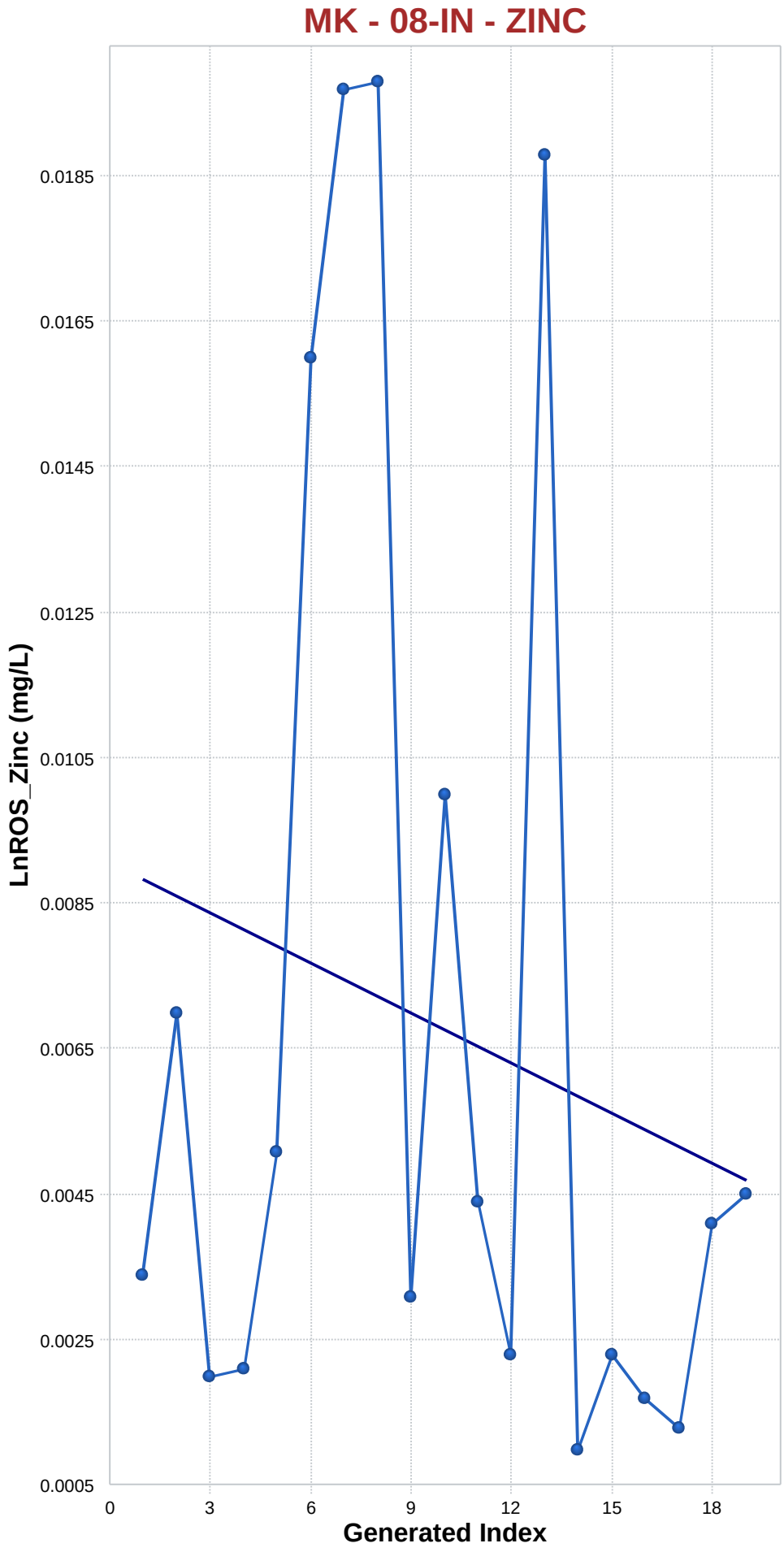
Mann-Kendall Trend Analysis

n	39
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	82.4318
Standardized Value of S	-3.3725
M-K Test Value (S)	-279
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0004

OLS Regression Line (Blue)

OLS Regression Slope	-0.0189
OLS Regression Intercept	2.5414

Statistically significant evidence of a decreasing trend at the specified level of significance.



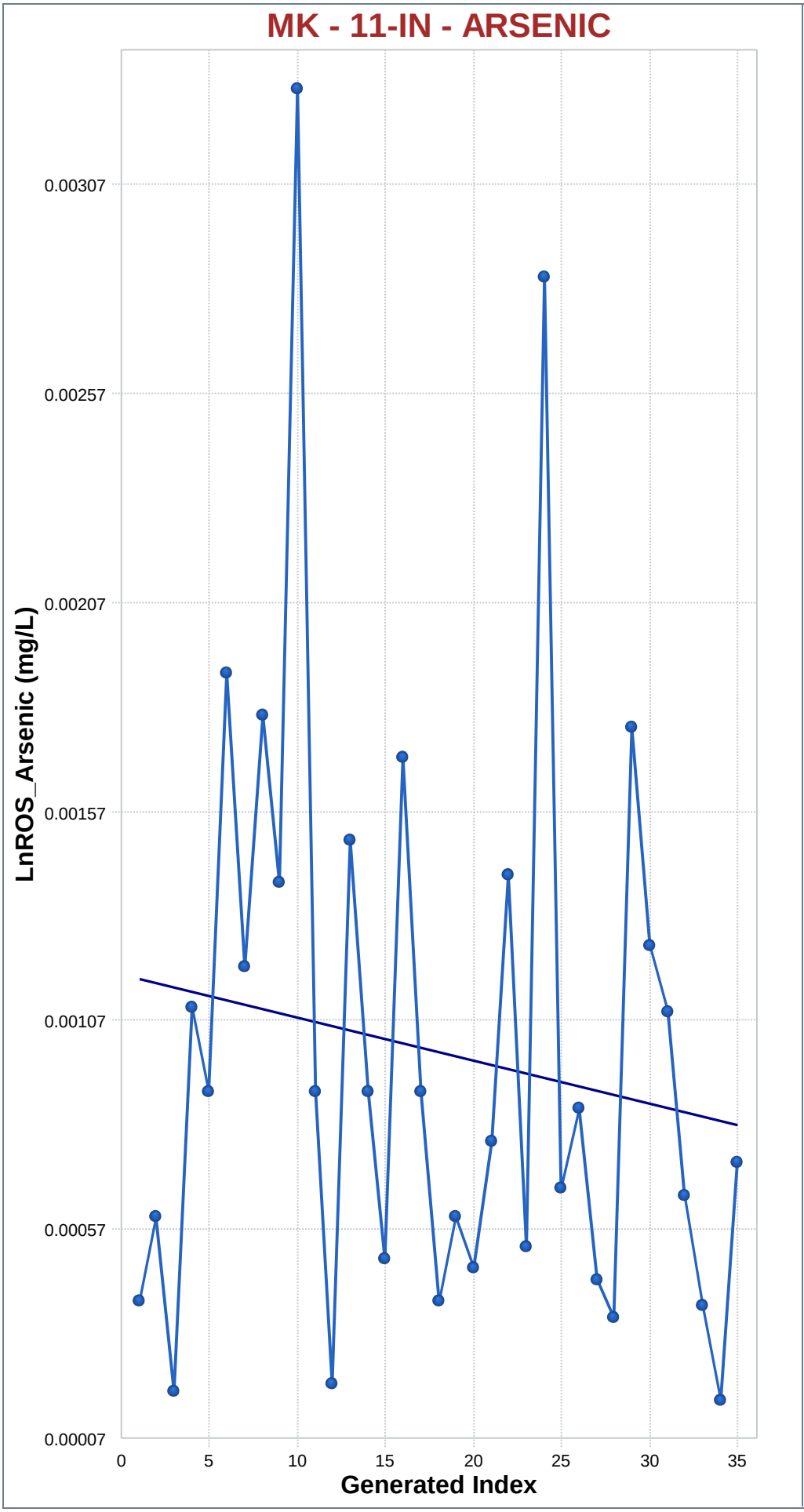
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5657
Standardized Value of S	-0.8752
M-K Test Value (S)	-26
Tabulated p-value	0.1840
Approximate p-value	0.1907

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0091

Insufficient statistical evidence of a significant trend at the specified level of significance.



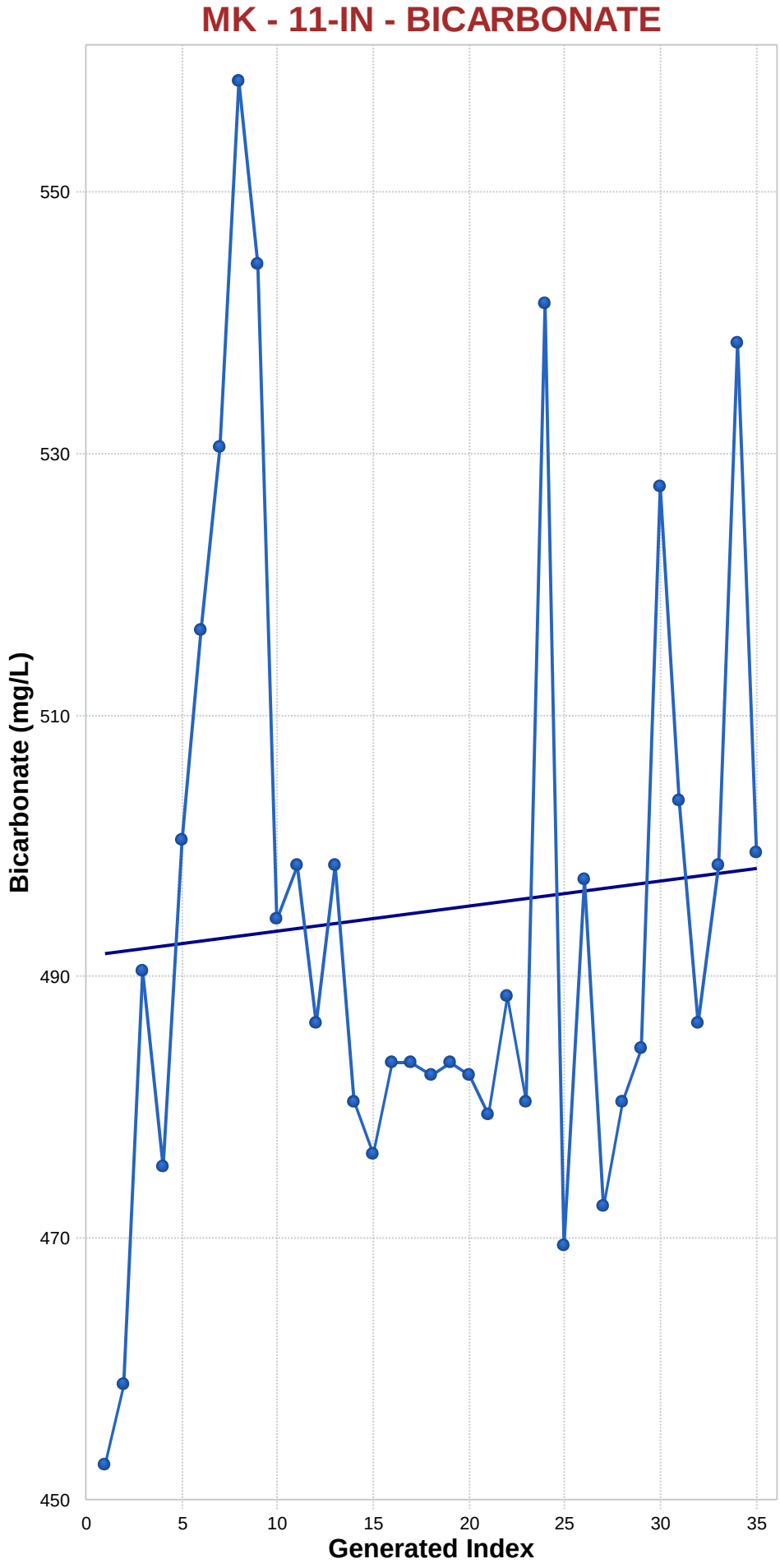
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3397
Standardized Value of S	-1.0805
M-K Test Value (S)	-77
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1400

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0012

Insufficient statistical evidence of a significant trend at the specified level of significance.



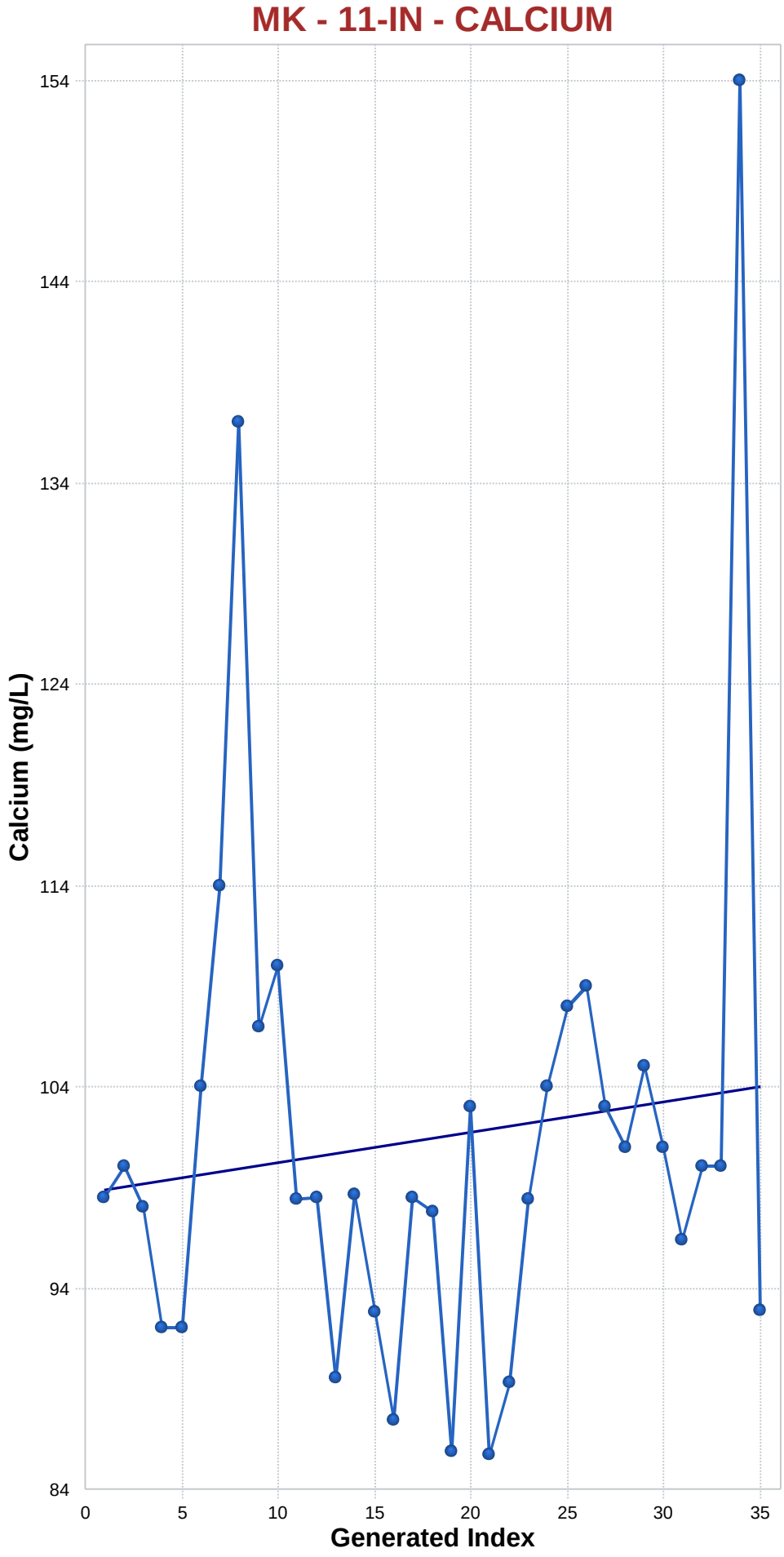
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3231
Standardized Value of S	0.5546
M-K Test Value (S)	40
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2896

OLS Regression Line (Blue)

OLS Regression Slope	0.1910
OLS Regression Intercept	491.1195

Insufficient statistical evidence of a significant trend at the specified level of significance.



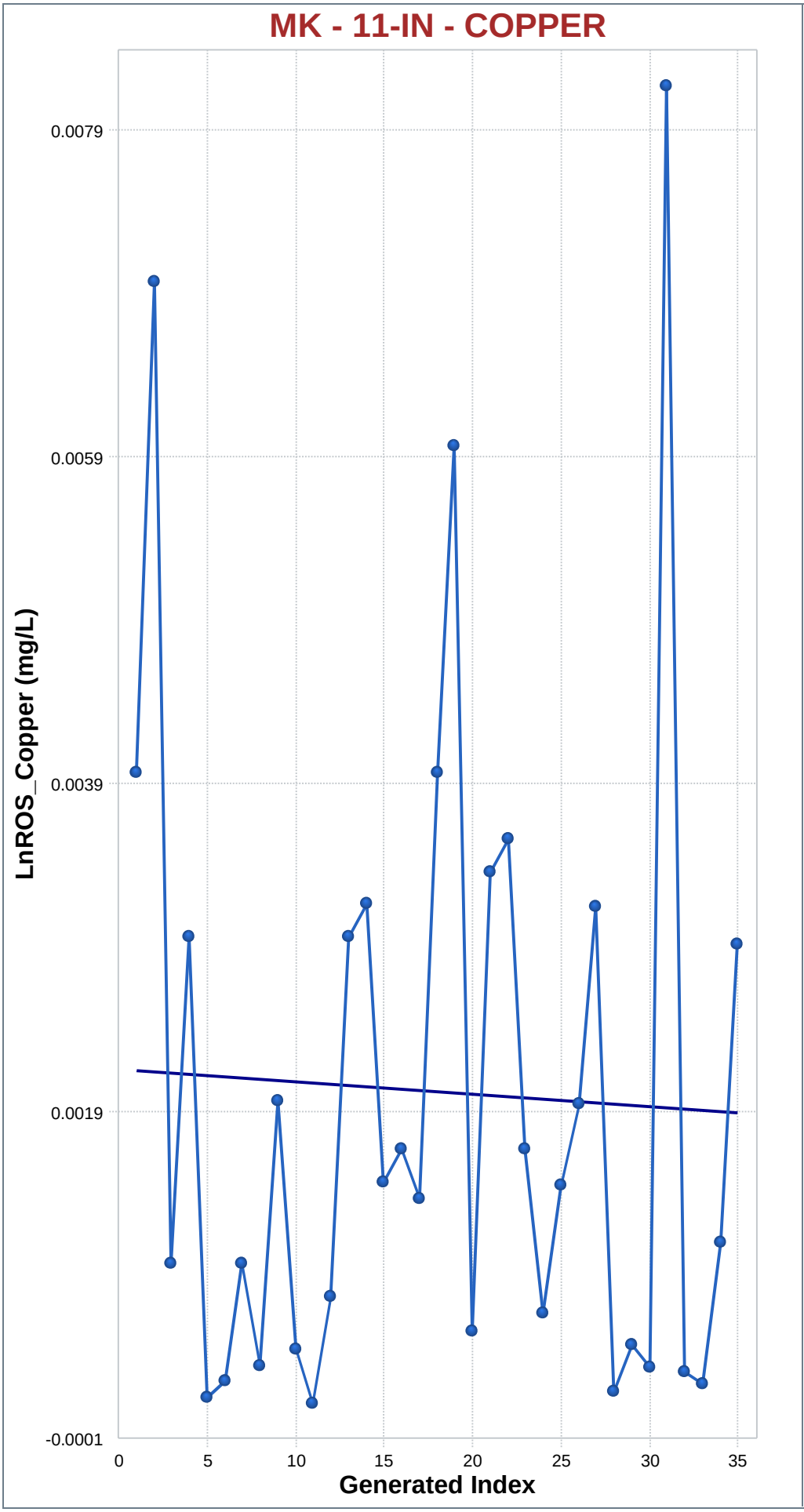
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3278
Standardized Value of S	0.3555
M-K Test Value (S)	26
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3611

OLS Regression Line (Blue)

OLS Regression Slope	0.1495
OLS Regression Intercept	98.7543

Insufficient statistical evidence of a significant trend at the specified level of significance.



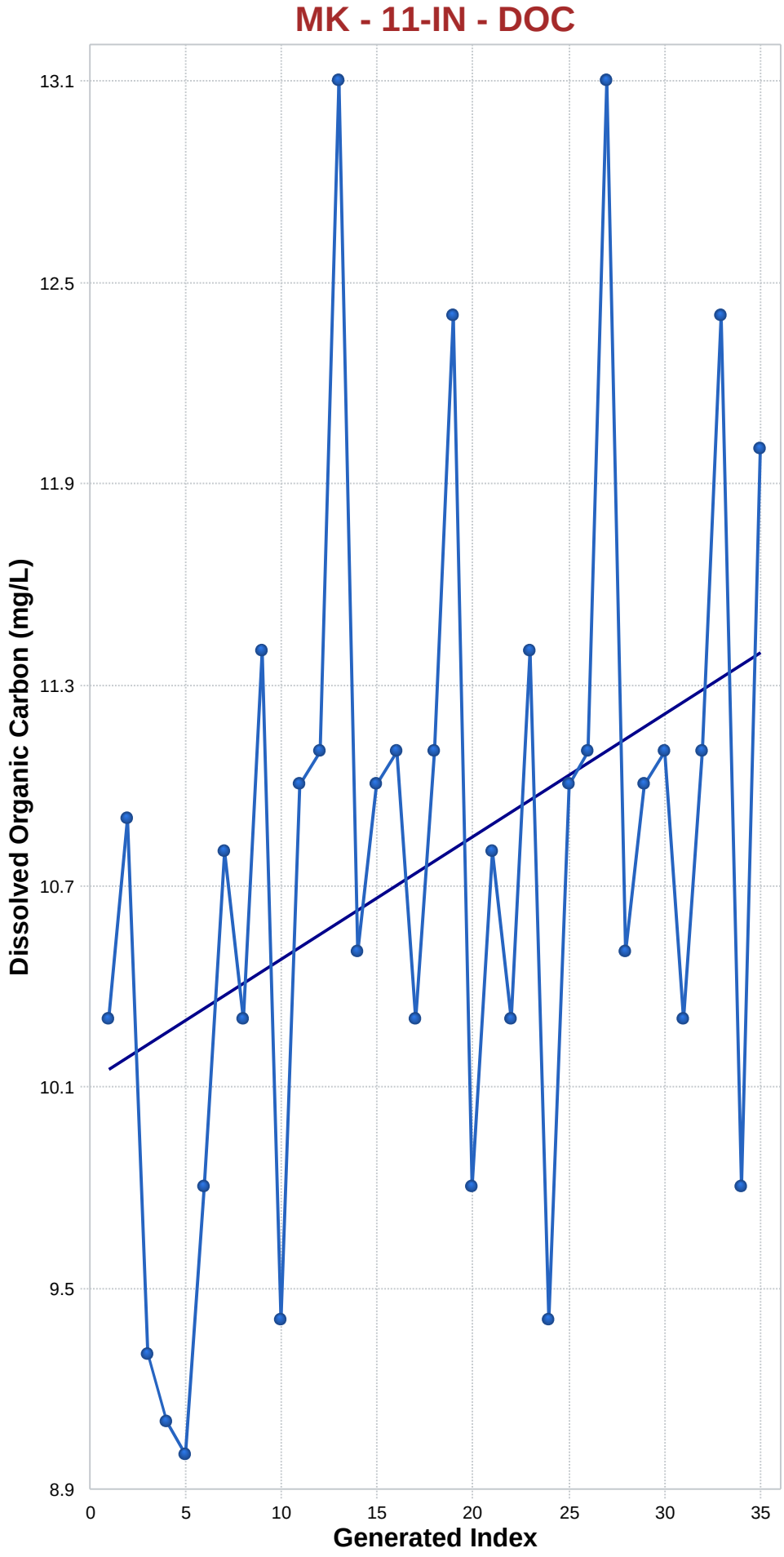
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3870
Standardized Value of S	-0.3126
M-K Test Value (S)	-23
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3773

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0022

Insufficient statistical evidence of a significant trend at the specified level of significance.



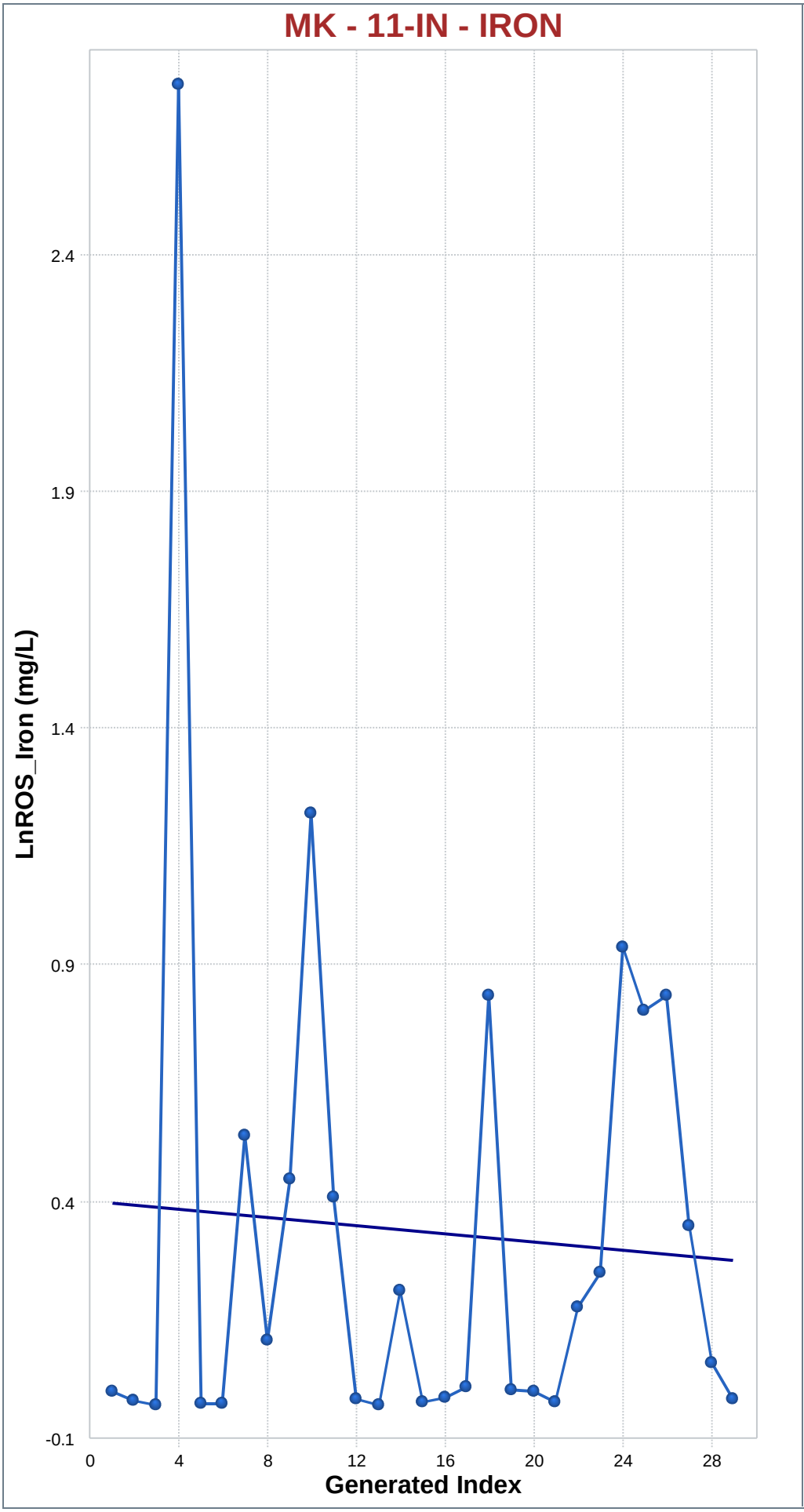
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	69.9643
Standardized Value of S	2.2869
M-K Test Value (S)	161
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0111

OLS Regression Line (Blue)

OLS Regression Slope	0.0366
OLS Regression Intercept	10.1119

Statistically significant evidence of an increasing trend at the specified level of significance.



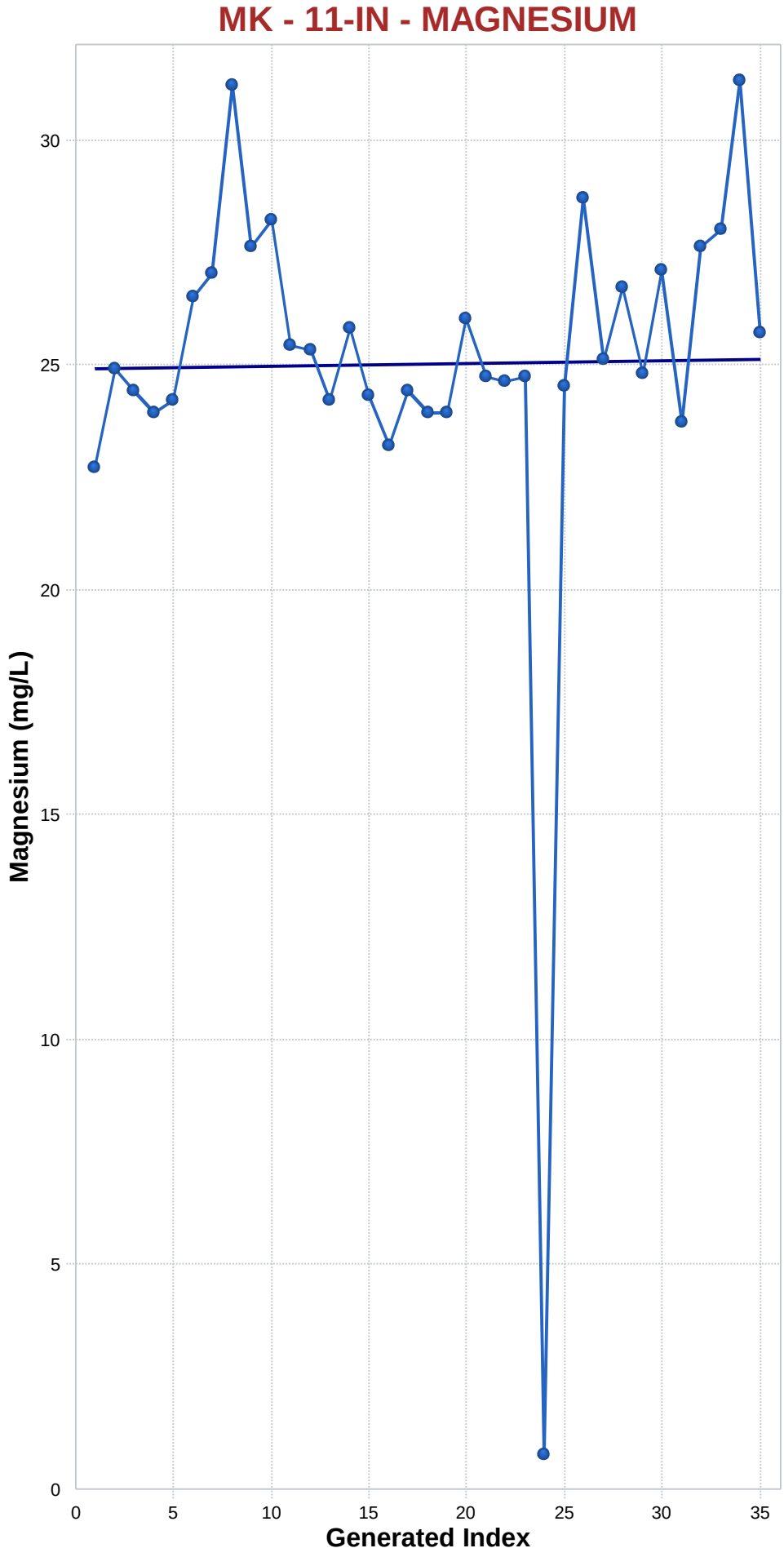
Mann-Kendall Trend Analysis

n	29
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	53.3010
Standardized Value of S	1.2382
M-K Test Value (S)	67
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1078

OLS Regression Line (Blue)

OLS Regression Slope	-0.0043
OLS Regression Intercept	0.4317

Insufficient statistical evidence of a significant trend at the specified level of significance.



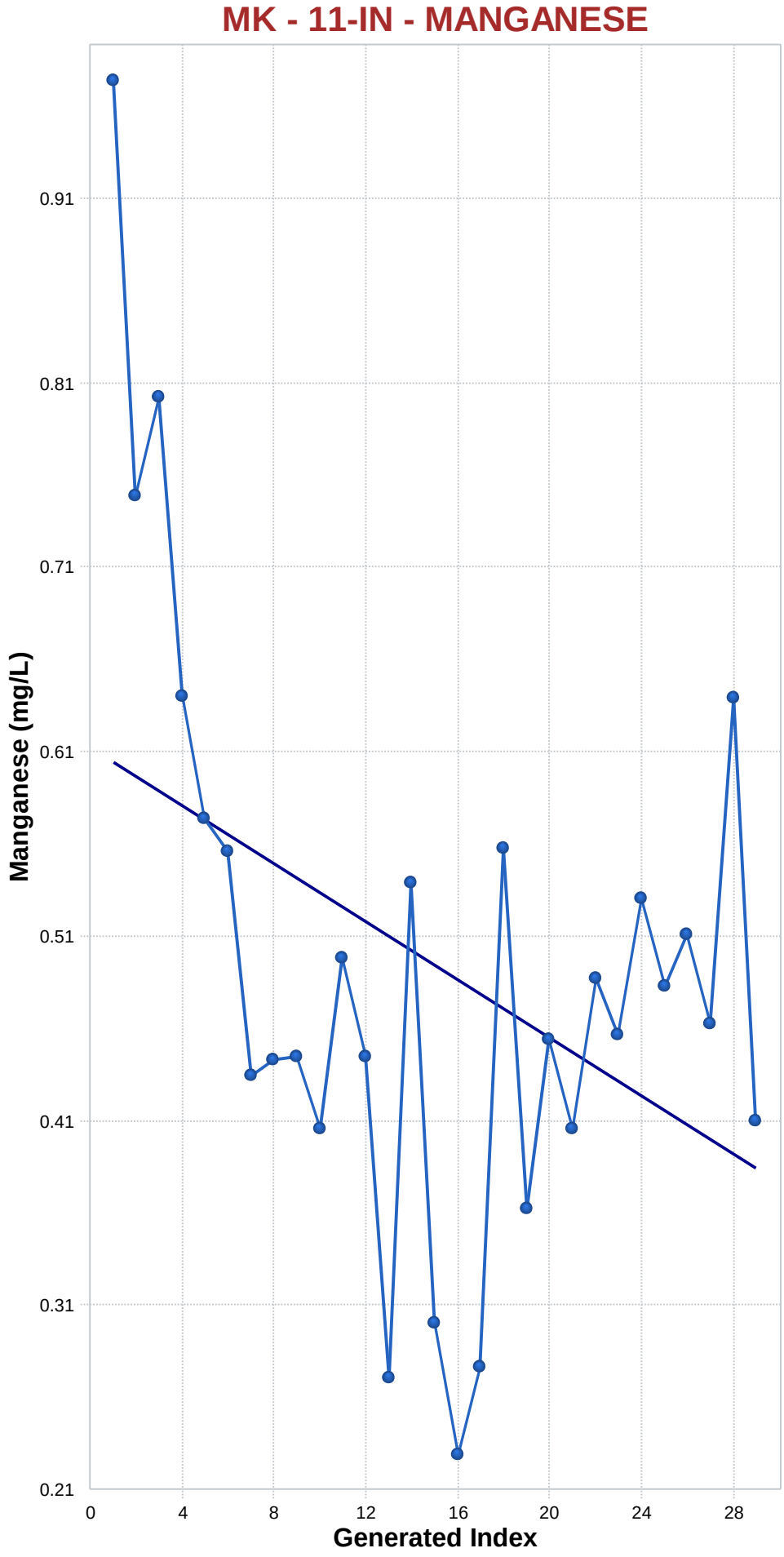
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3610
Standardized Value of S	1.4070
M-K Test Value (S)	100
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0797

OLS Regression Line (Blue)

OLS Regression Slope	0.0063
OLS Regression Intercept	24.6846

Insufficient statistical evidence of a significant trend at the specified level of significance.



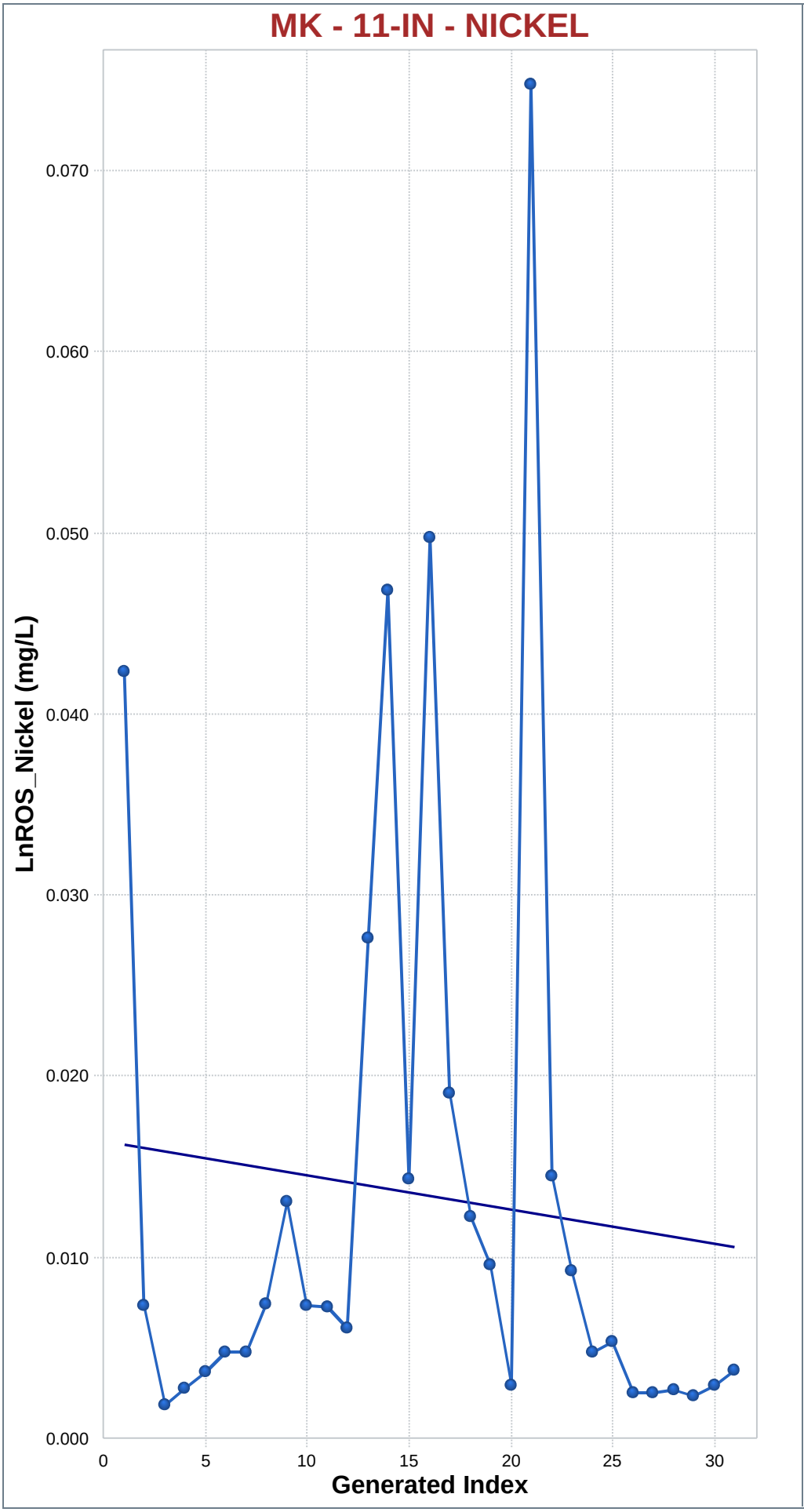
Mann-Kendall Trend Analysis

n	29
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	53.2917
Standardized Value of S	-1.4449
M-K Test Value (S)	-78
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0742

OLS Regression Line (Blue)

OLS Regression Slope	-0.0079
OLS Regression Intercept	0.6076

Insufficient statistical evidence of a significant trend at the specified level of significance.



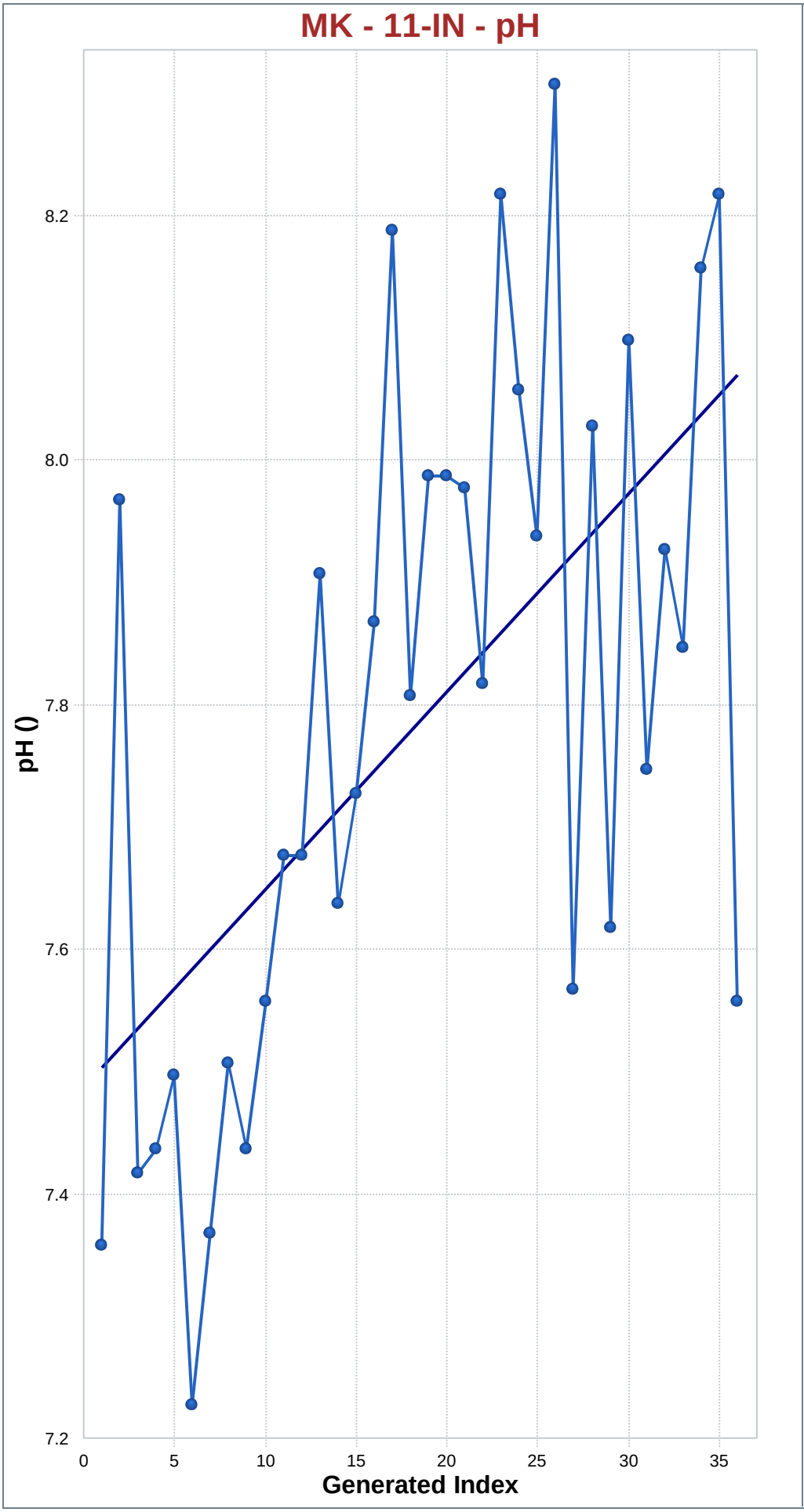
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8189
Standardized Value of S	-1.0541
M-K Test Value (S)	-63
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1459

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0161

Insufficient statistical evidence of a significant trend at the specified level of significance.



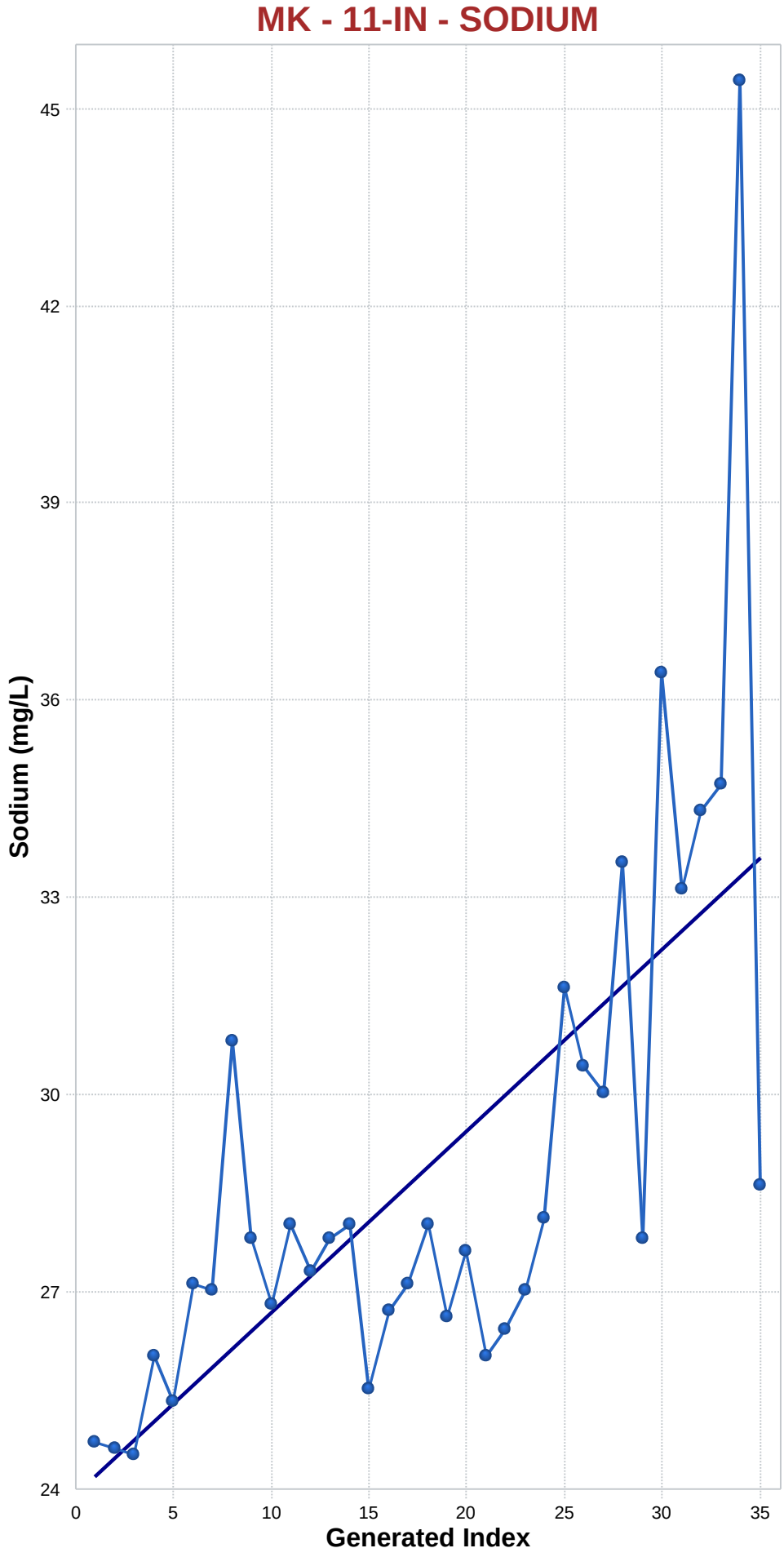
Mann-Kendall Trend Analysis

n	36
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	73.3826
Standardized Value of S	4.0064
M-K Test Value (S)	295
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.0162
OLS Regression Intercept	7.5000

Statistically significant evidence of an increasing trend at the specified level of significance.



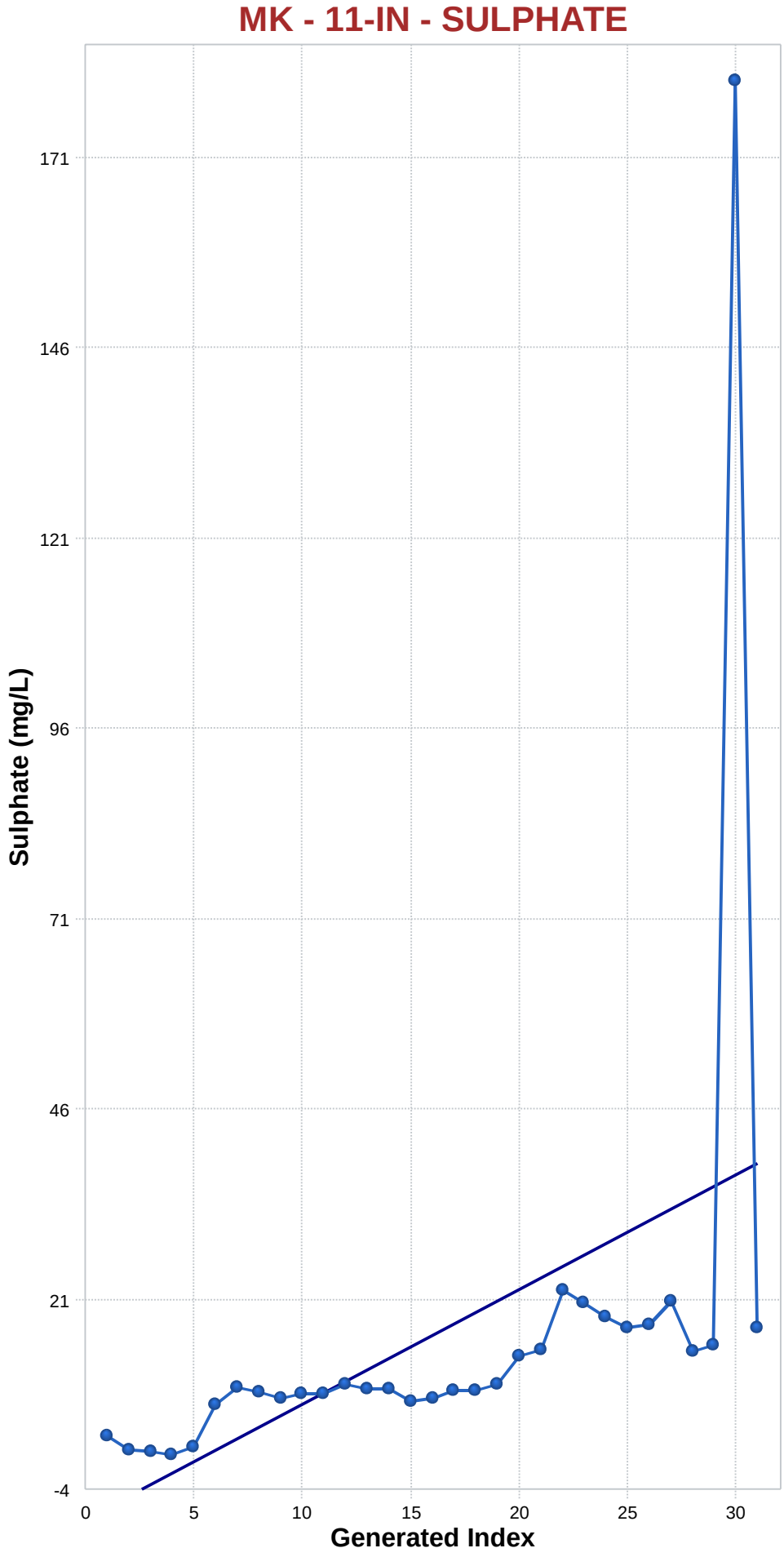
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3420
Standardized Value of S	4.6771
M-K Test Value (S)	330
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.2768
OLS Regression Intercept	23.4894

Statistically significant evidence of an increasing trend at the specified level of significance.



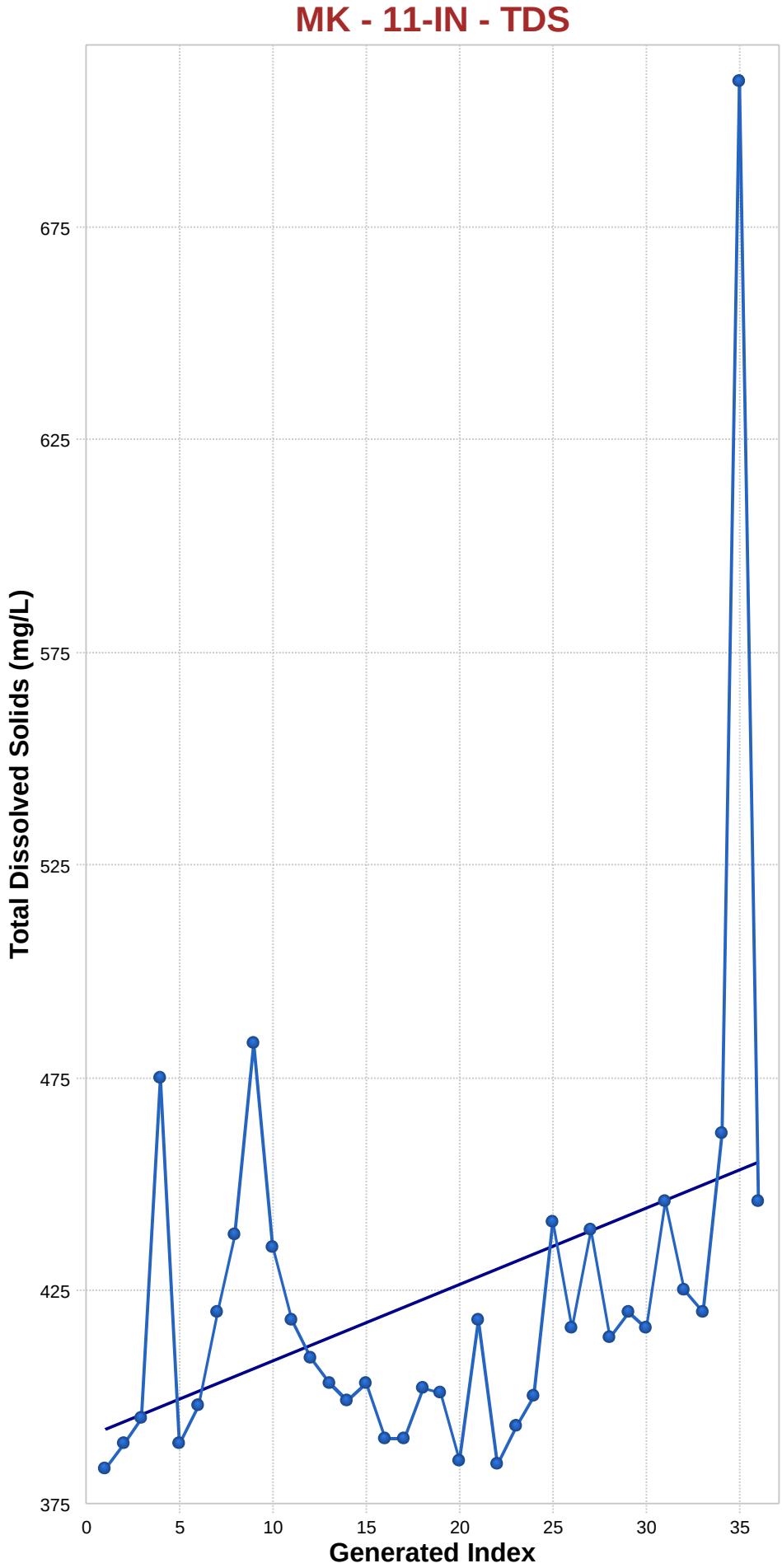
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8274
Standardized Value of S	5.3886
M-K Test Value (S)	318
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.5151
OLS Regression Intercept	-8.1061

Statistically significant evidence of an increasing trend at the specified level of significance.



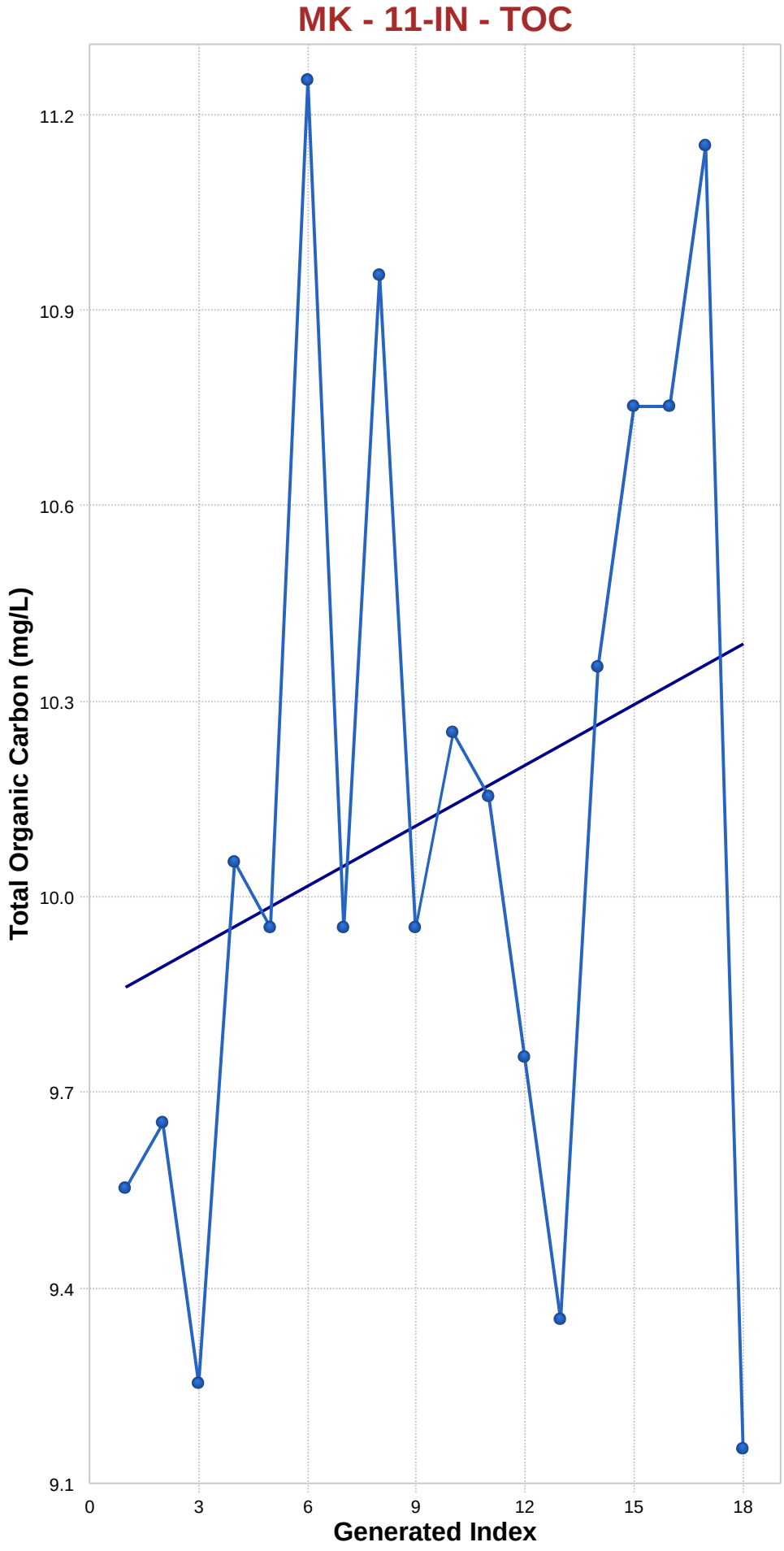
Mann-Kendall Trend Analysis

n	36
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	73.3508
Standardized Value of S	2.5630
M-K Test Value (S)	189
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0052

OLS Regression Line (Blue)

OLS Regression Slope	1.8013
OLS Regression Intercept	390.3984

Statistically significant evidence of an increasing trend at the specified level of significance.



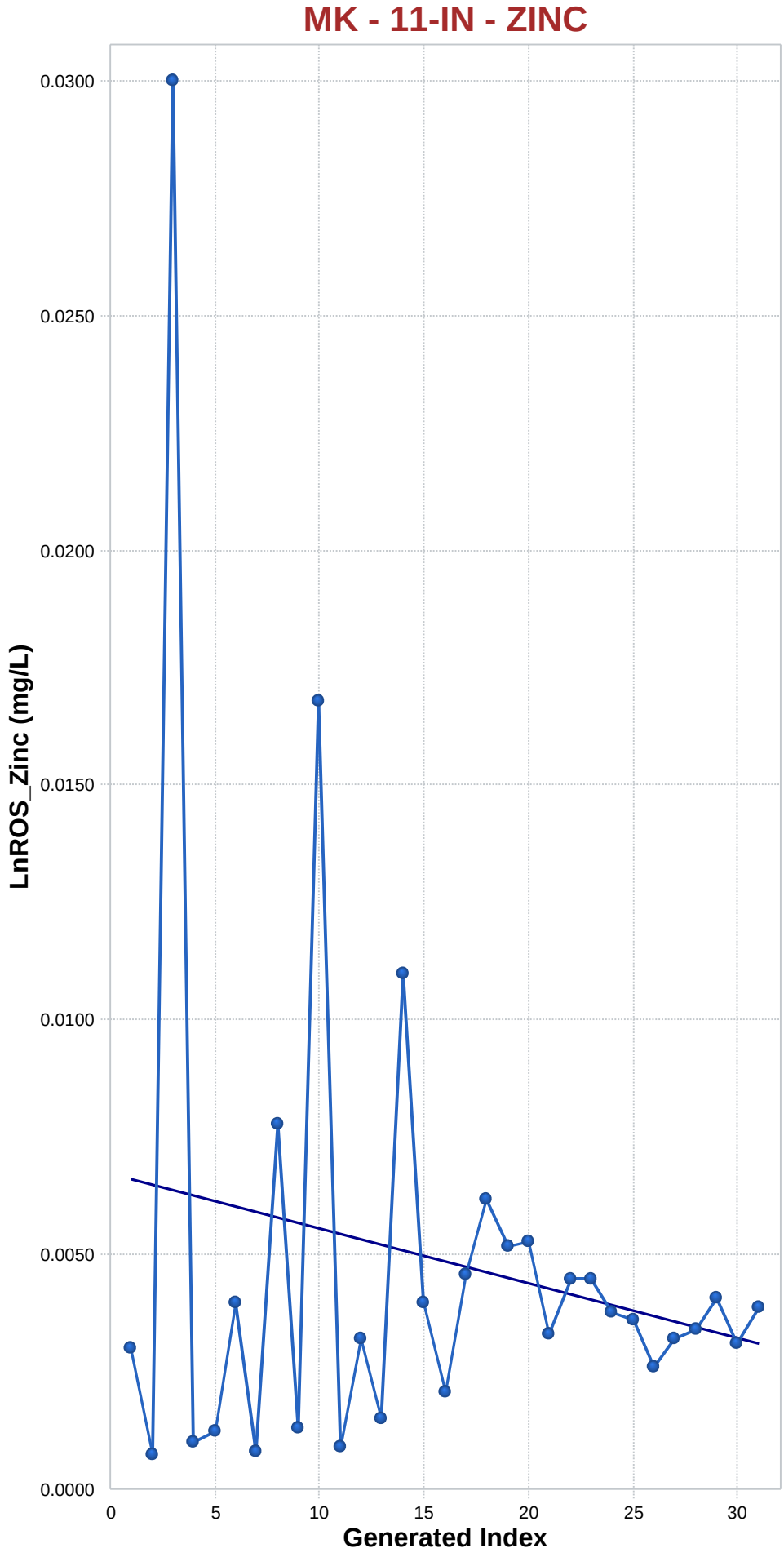
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.3122
Standardized Value of S	1.2922
M-K Test Value (S)	35
Tabulated p-value	0.1000
Approximate p-value	0.0981

OLS Regression Line (Blue)

OLS Regression Slope	0.0311
OLS Regression Intercept	9.8771

Insufficient statistical evidence of a significant trend at the specified level of significance.



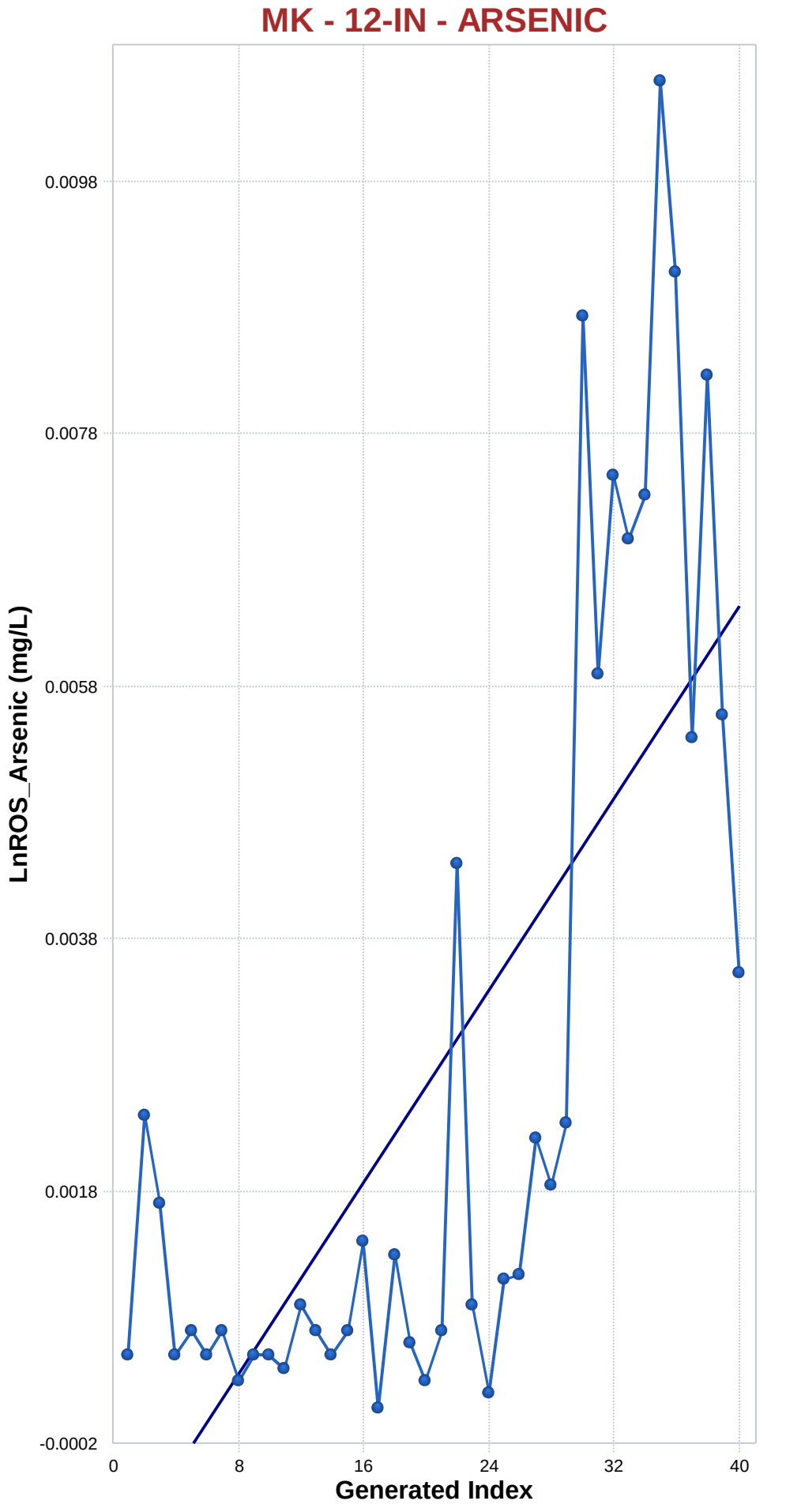
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8104
Standardized Value of S	0.8332
M-K Test Value (S)	50
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2024

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0067

Insufficient statistical evidence of a significant trend at the specified level of significance.



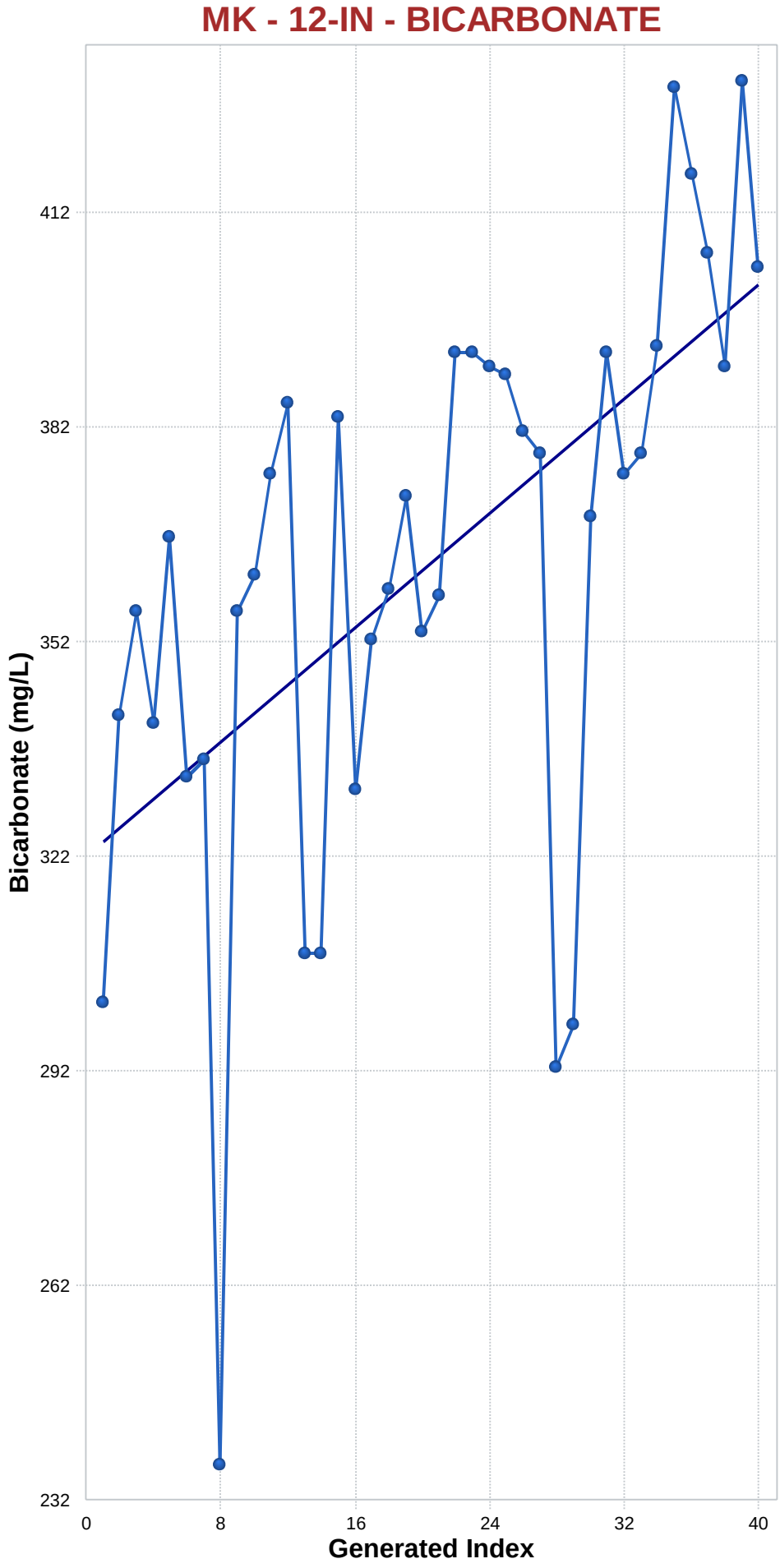
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.5551
Standardized Value of S	4.5818
M-K Test Value (S)	393
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.0002
OLS Regression Intercept	-0.0012

Statistically significant evidence of an increasing trend at the specified level of significance.



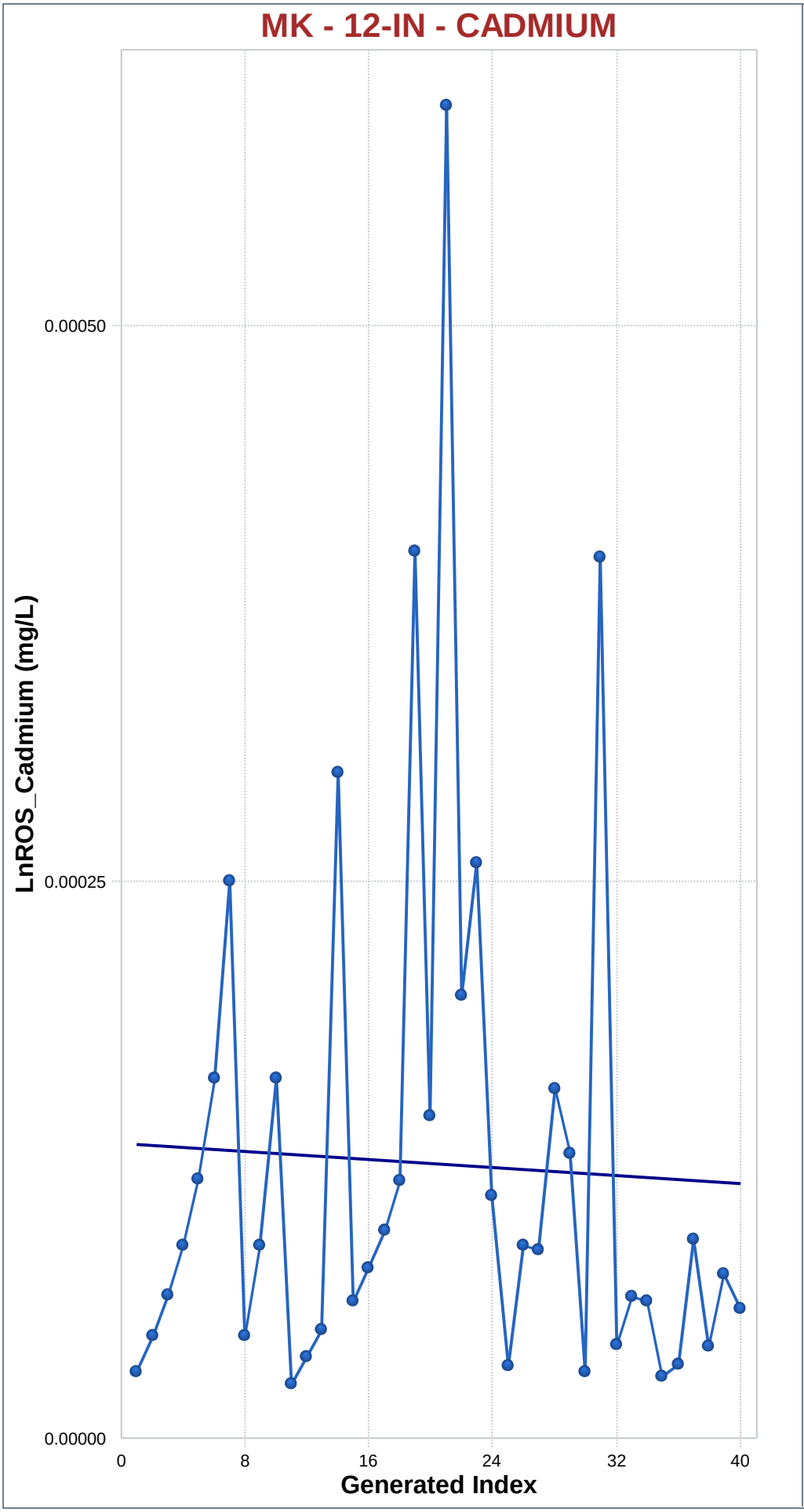
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.7788
Standardized Value of S	4.4883
M-K Test Value (S)	386
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	1.9971
OLS Regression Intercept	321.6842

Statistically significant evidence of an increasing trend at the specified level of significance.



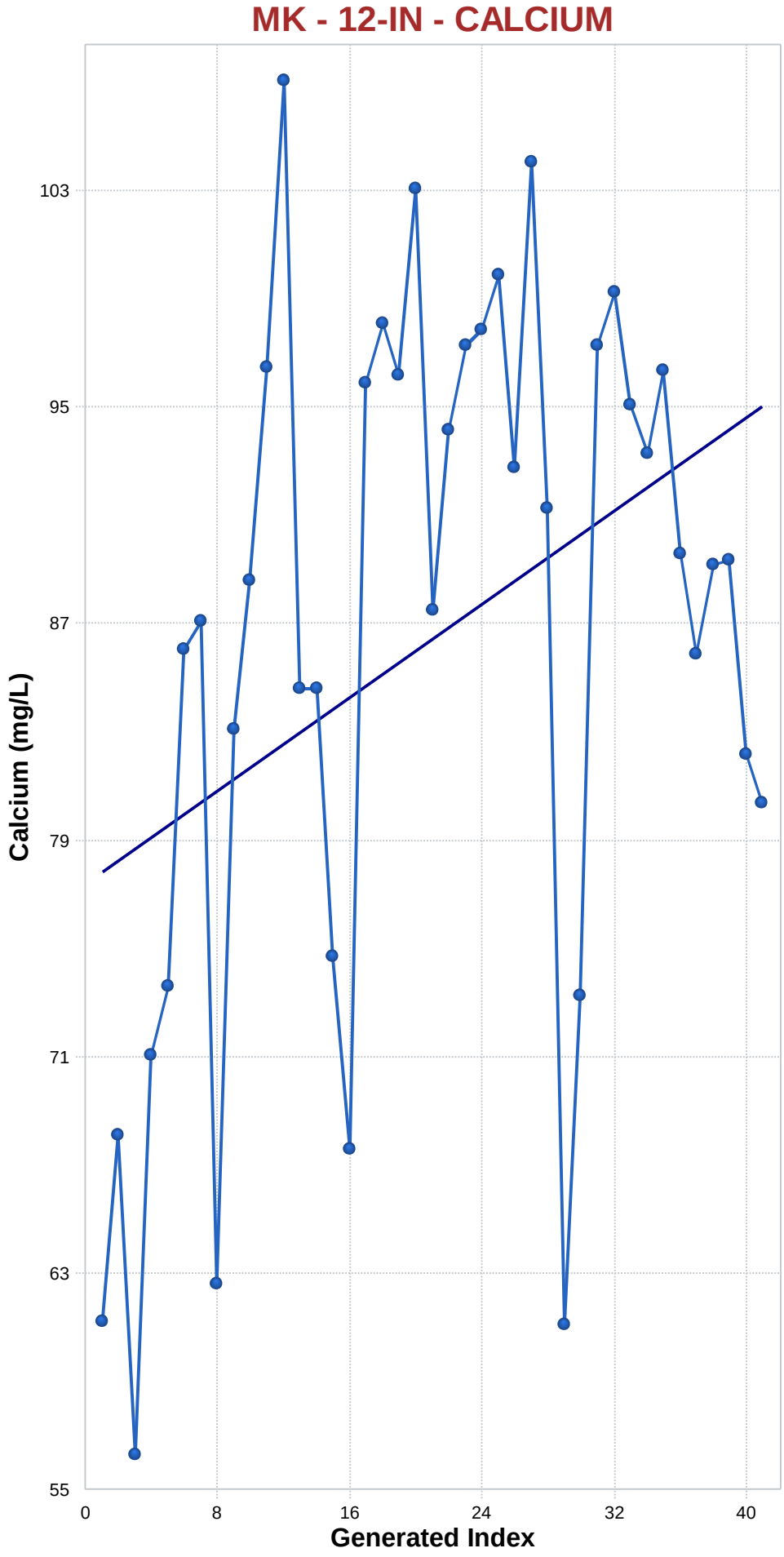
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.8118
Standardized Value of S	-0.5361
M-K Test Value (S)	-47
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.2960

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0001

Insufficient statistical evidence of a significant trend at the specified level of significance.



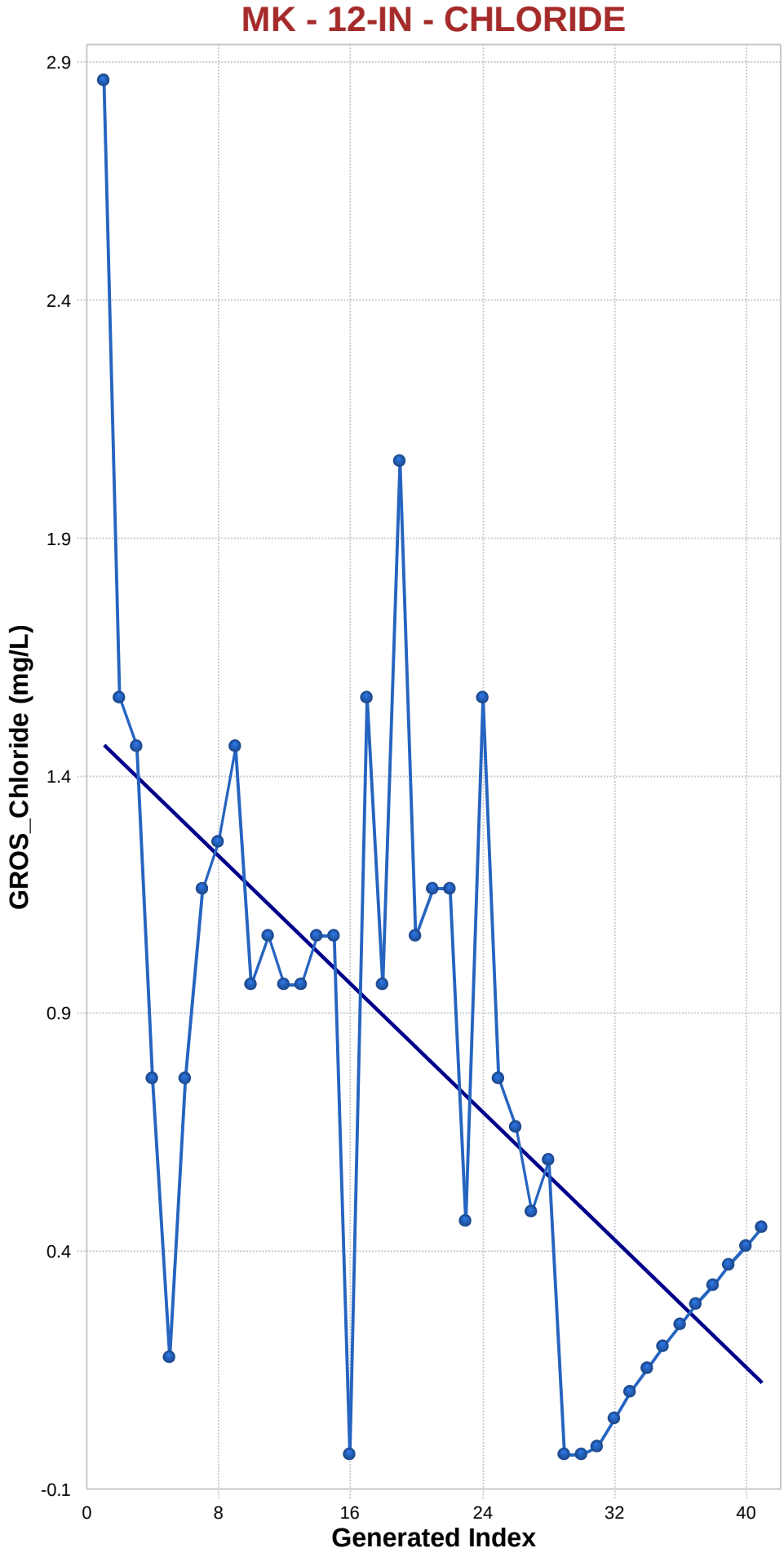
Mann-Kendall Trend Analysis

n	41
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	89.0206
Standardized Value of S	1.9209
M-K Test Value (S)	172
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0274

OLS Regression Line (Blue)

OLS Regression Slope	0.4302
OLS Regression Intercept	77.2970

Statistically significant evidence of an increasing trend at the specified level of significance.



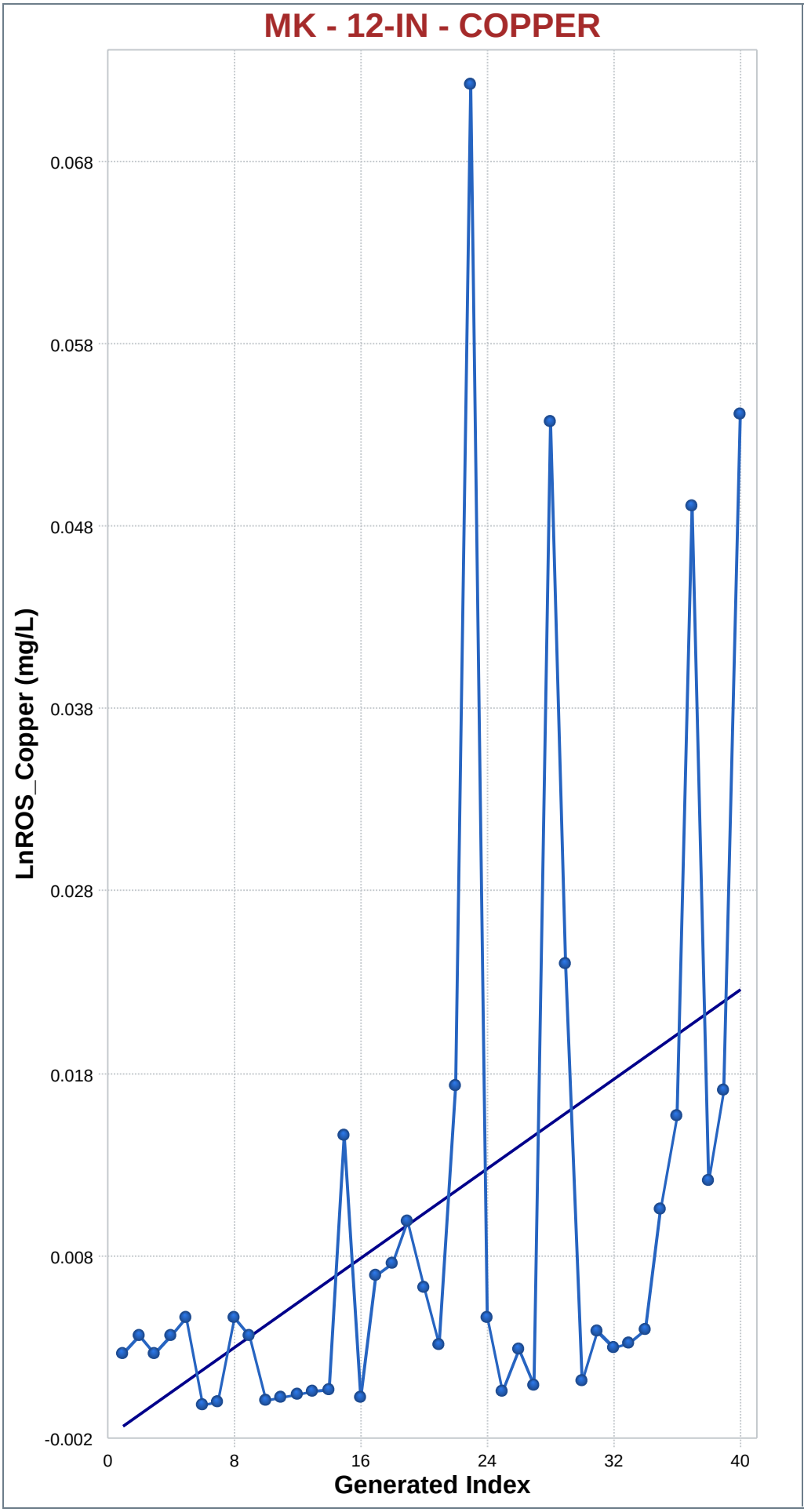
Mann-Kendall Trend Analysis

n	41
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	88.8463
Standardized Value of S	-3.6693
M-K Test Value (S)	-327
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0336
OLS Regression Intercept	1.5368

Statistically significant evidence of a decreasing trend at the specified level of significance.



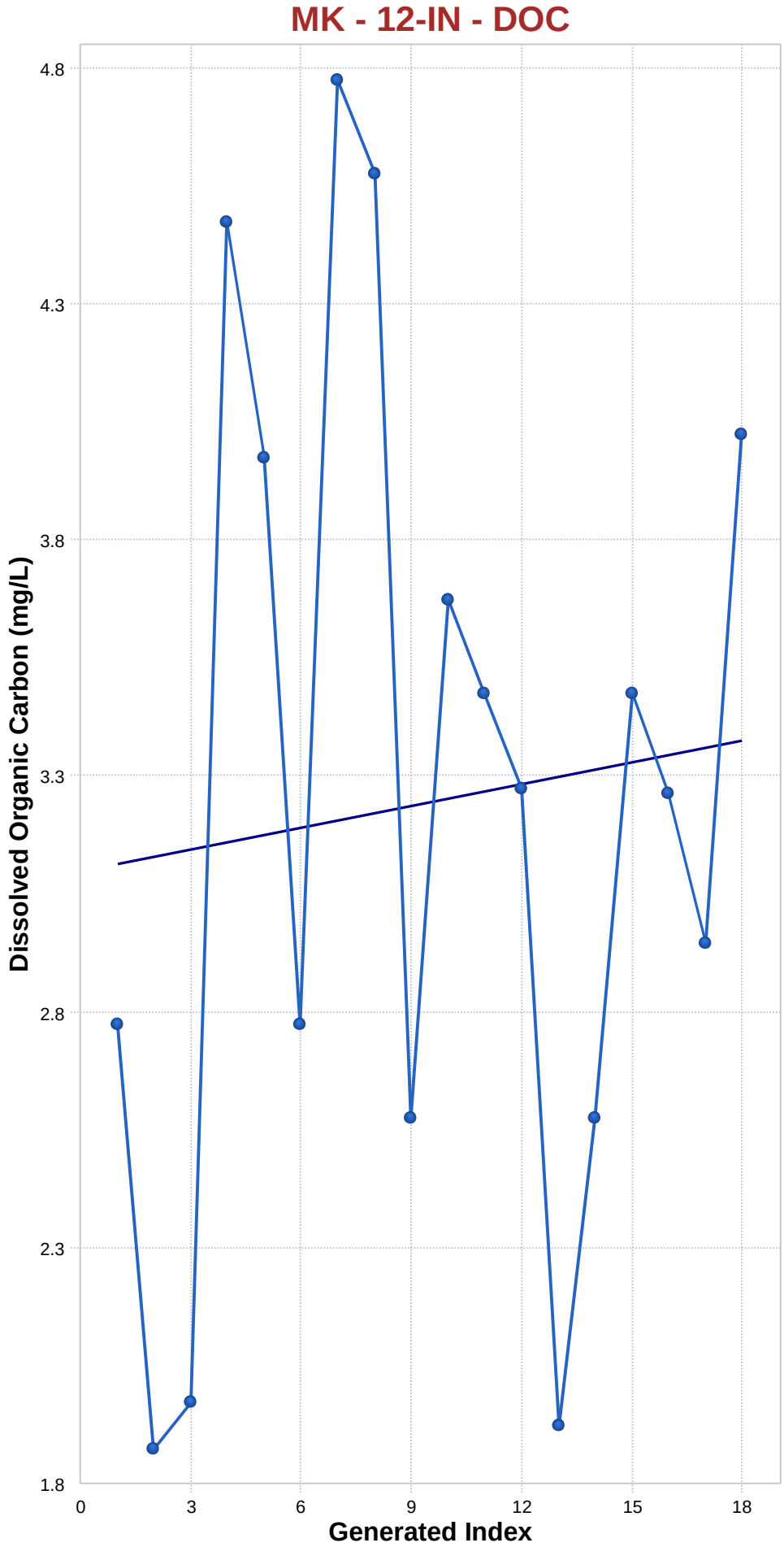
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.7749
Standardized Value of S	3.5325
M-K Test Value (S)	304
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	0.0006
OLS Regression Intercept	-0.0016

Statistically significant evidence of an increasing trend at the specified level of significance.



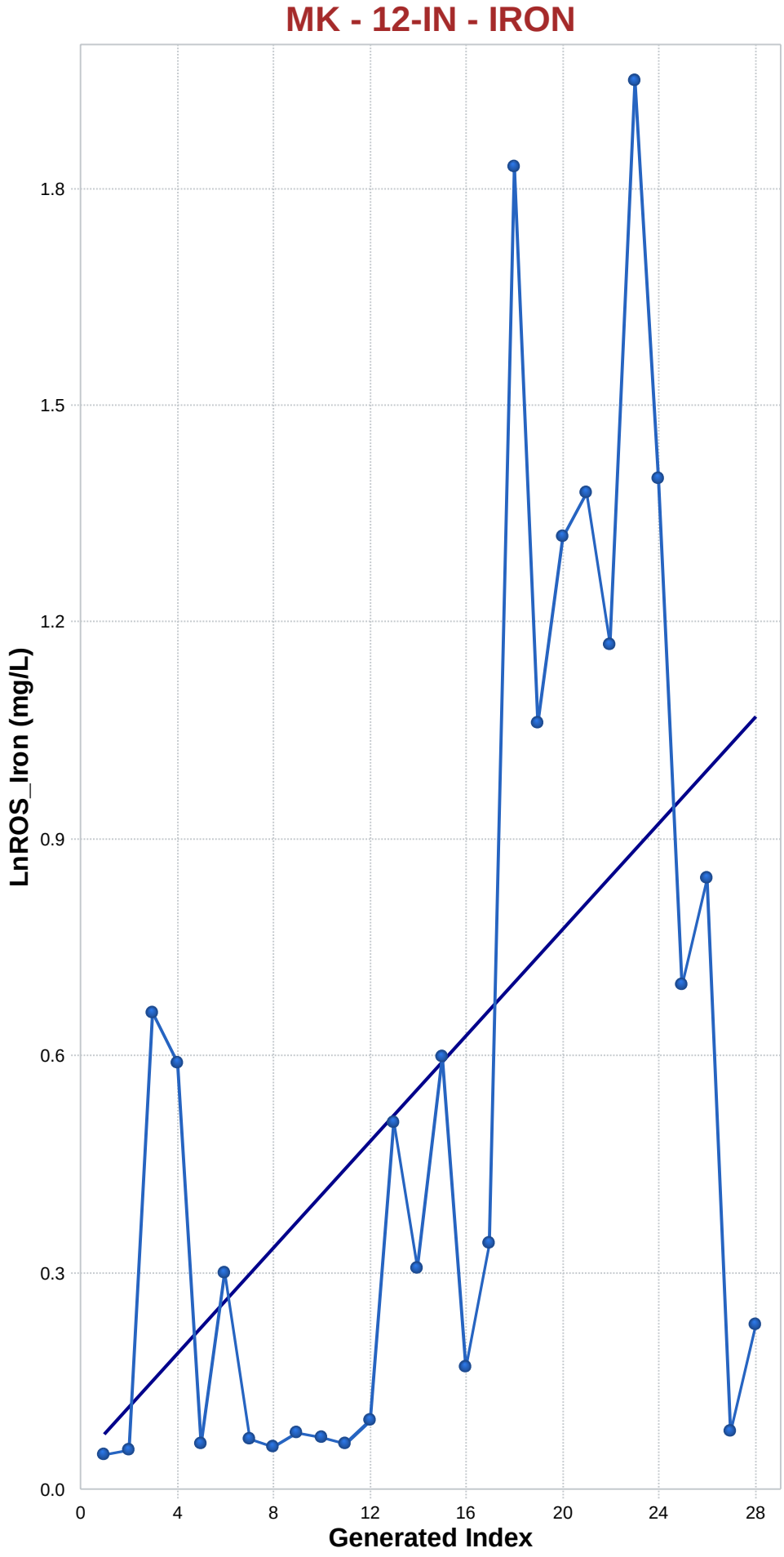
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.3439
Standardized Value of S	0.1898
M-K Test Value (S)	6
Tabulated p-value	0.4110
Approximate p-value	0.4247

OLS Regression Line (Blue)

OLS Regression Slope	0.0153
OLS Regression Intercept	3.1247

Insufficient statistical evidence of a significant trend at the specified level of significance.



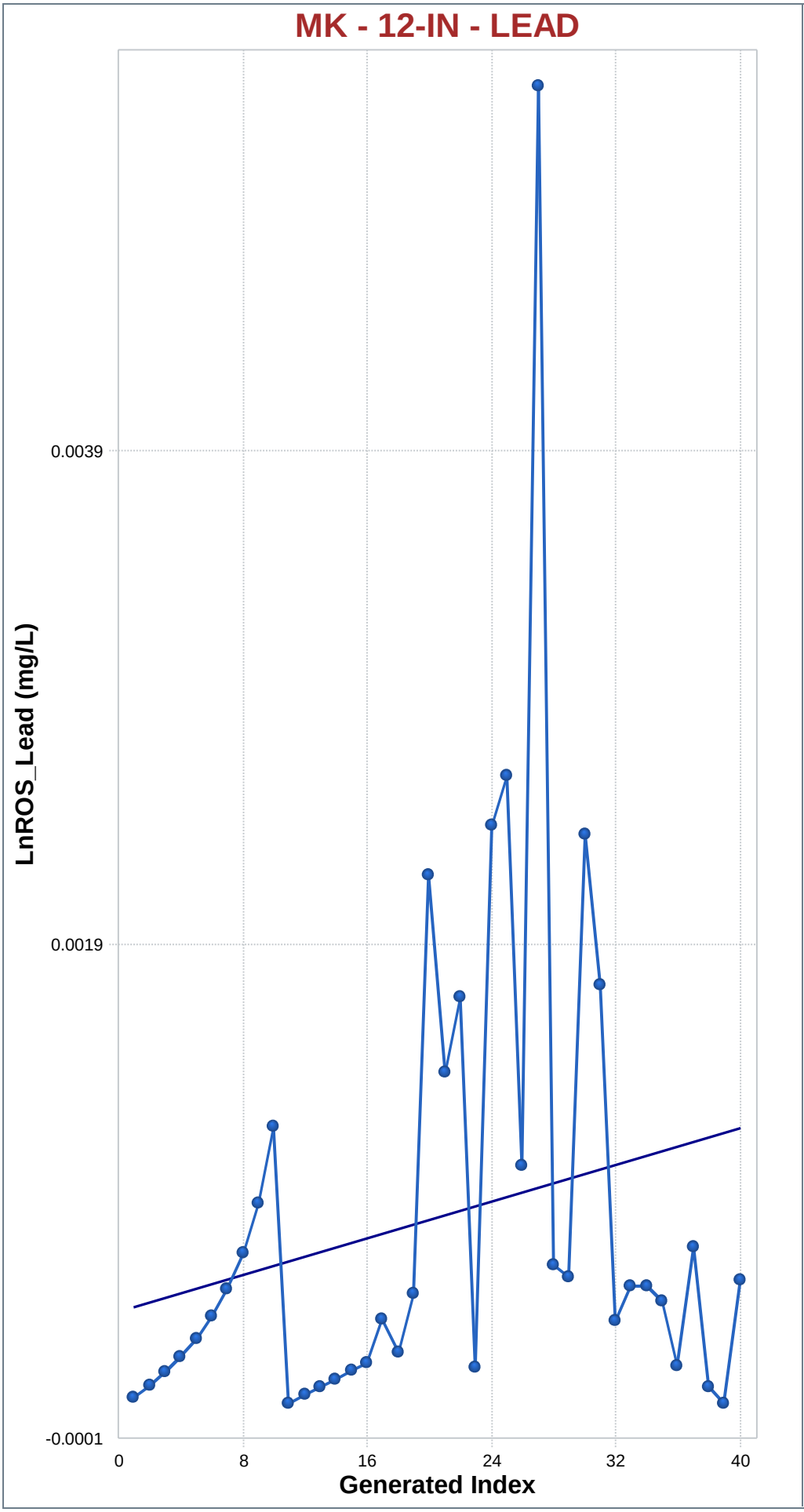
Mann-Kendall Trend Analysis

n	28
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	50.6162
Standardized Value of S	3.4574
M-K Test Value (S)	176
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	0.0368
OLS Regression Intercept	-0.0008

Statistically significant evidence of an increasing trend at the specified level of significance.



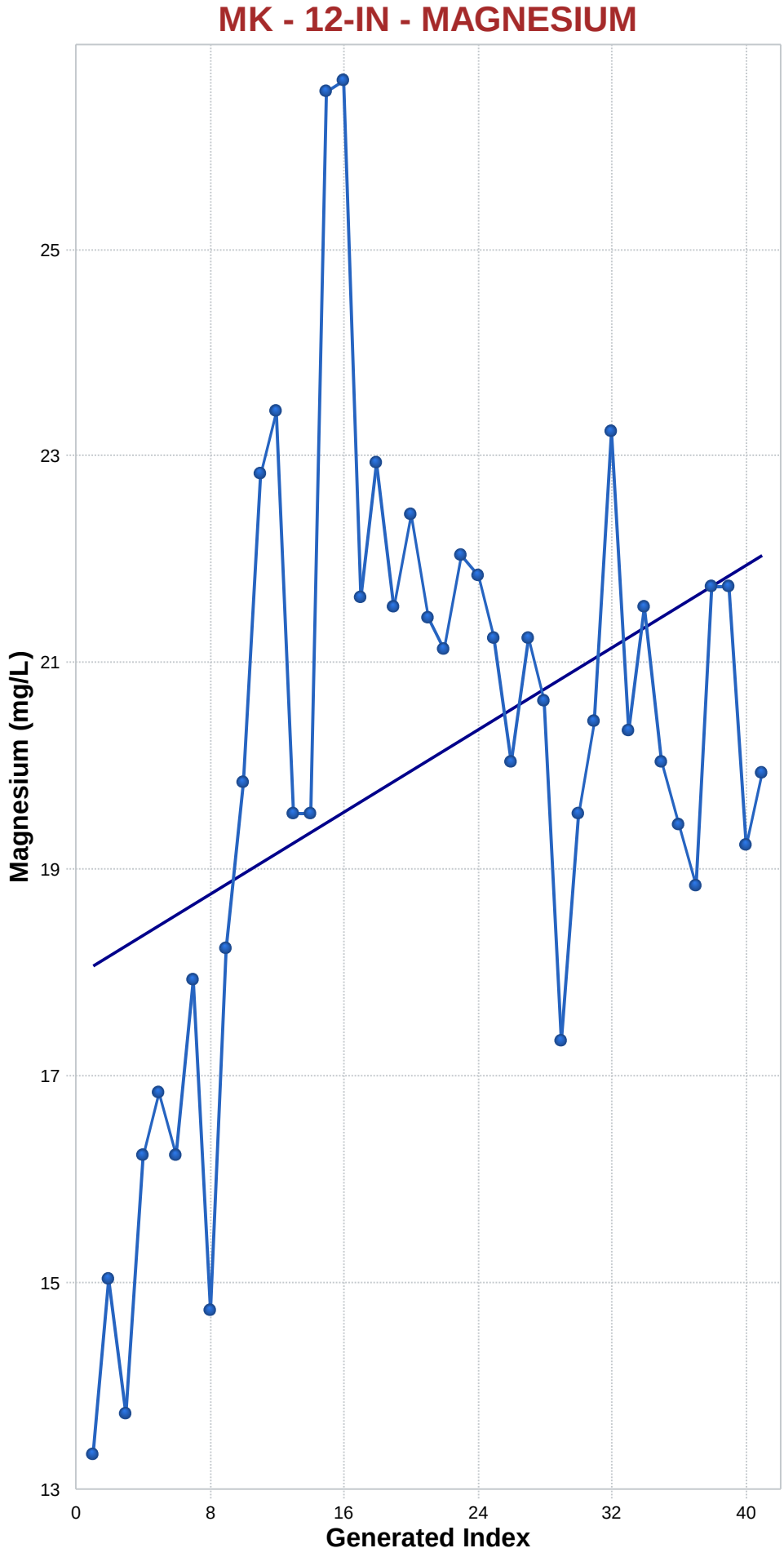
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.8176
Standardized Value of S	1.9693
M-K Test Value (S)	170
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0245

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0004

Statistically significant evidence of an increasing trend at the specified level of significance.



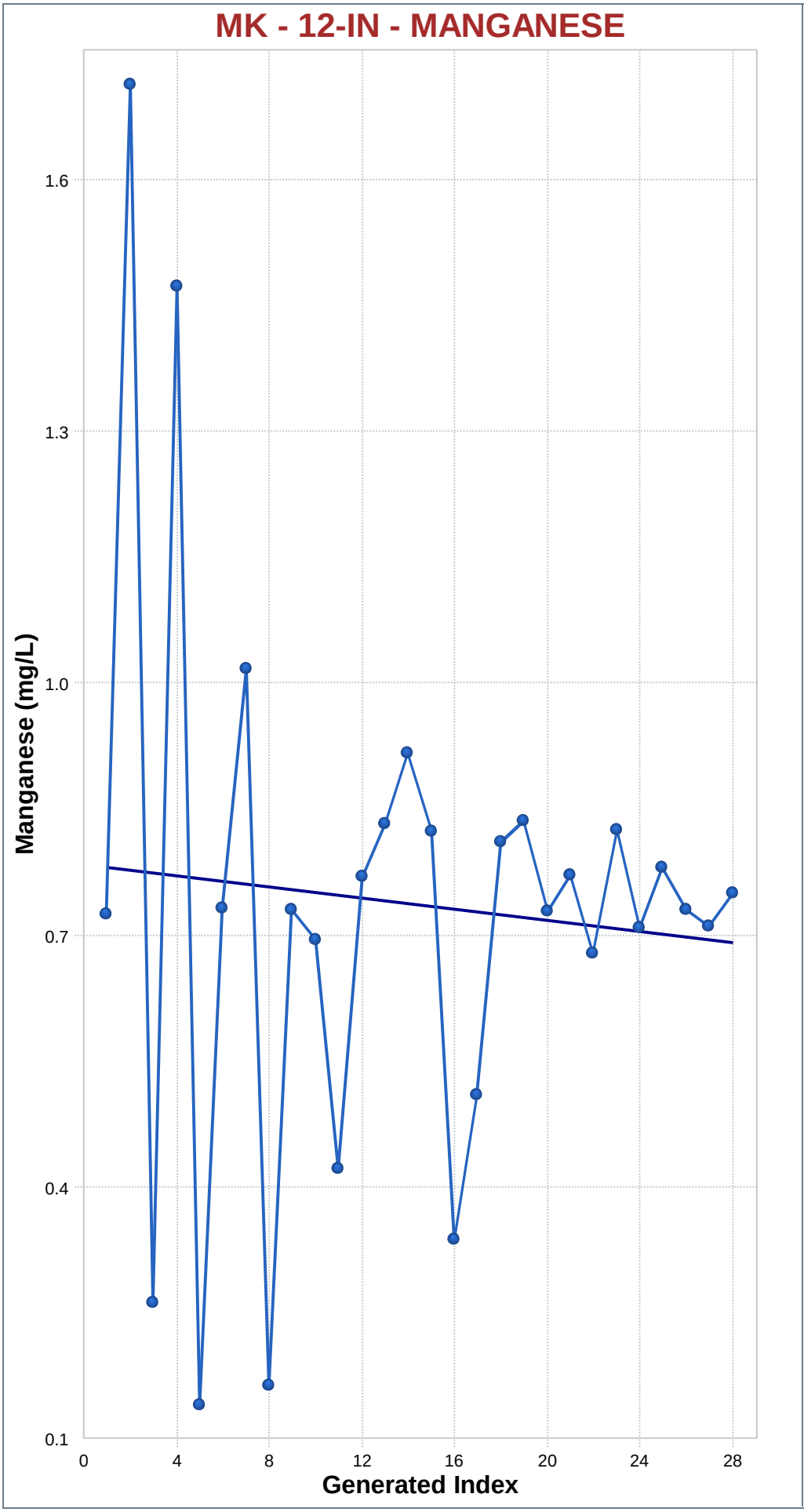
Mann-Kendall Trend Analysis

n	41
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	88.9831
Standardized Value of S	1.6520
M-K Test Value (S)	148
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0493

OLS Regression Line (Blue)

OLS Regression Slope	0.0994
OLS Regression Intercept	17.7291

Statistically significant evidence of an increasing trend at the specified level of significance.



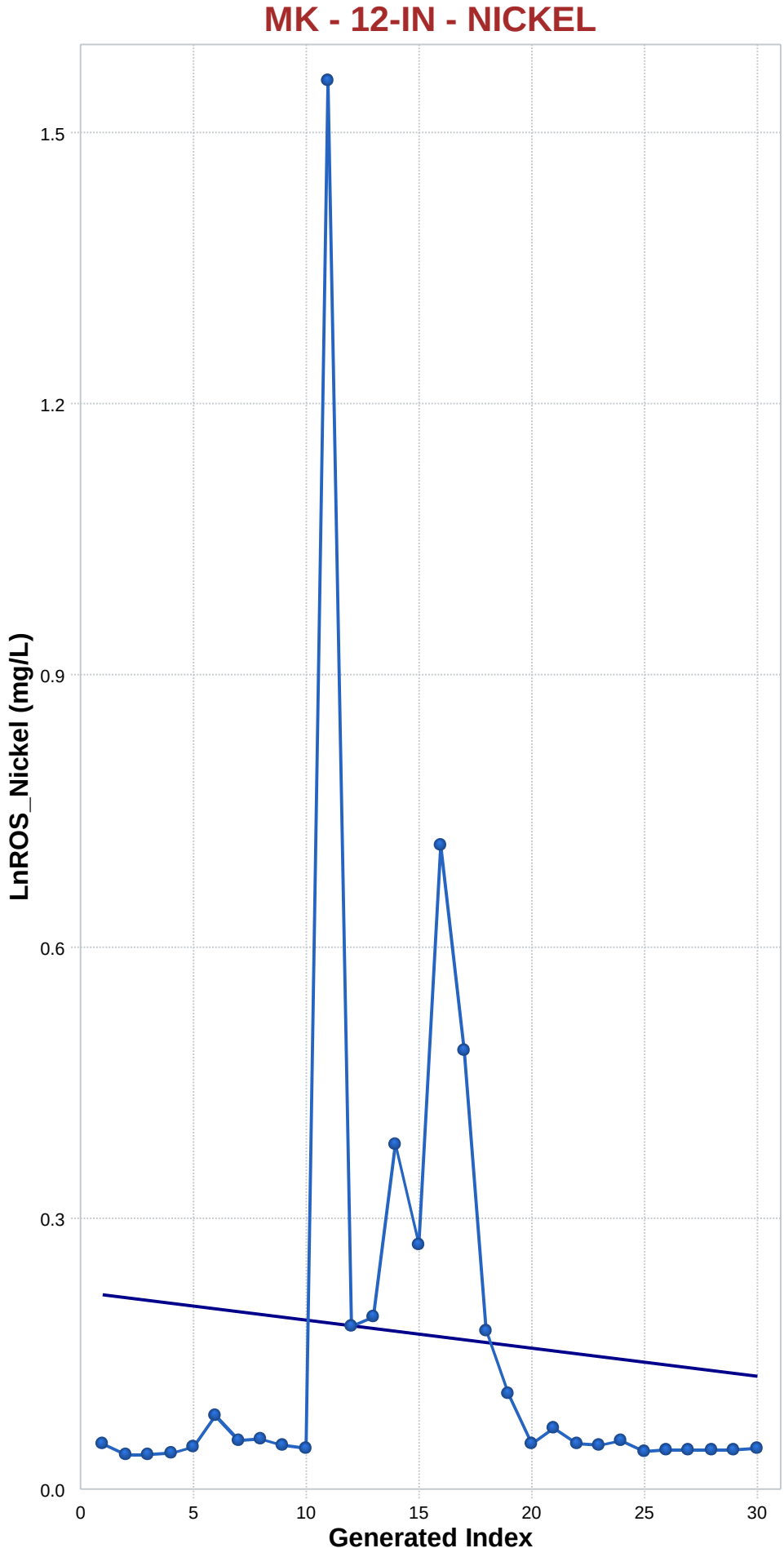
Mann-Kendall Trend Analysis

n	28
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	50.6063
Standardized Value of S	0.0395
M-K Test Value (S)	3
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4842

OLS Regression Line (Blue)

OLS Regression Slope	-0.0033
OLS Regression Intercept	0.7591

Insufficient statistical evidence of a significant trend at the specified level of significance.



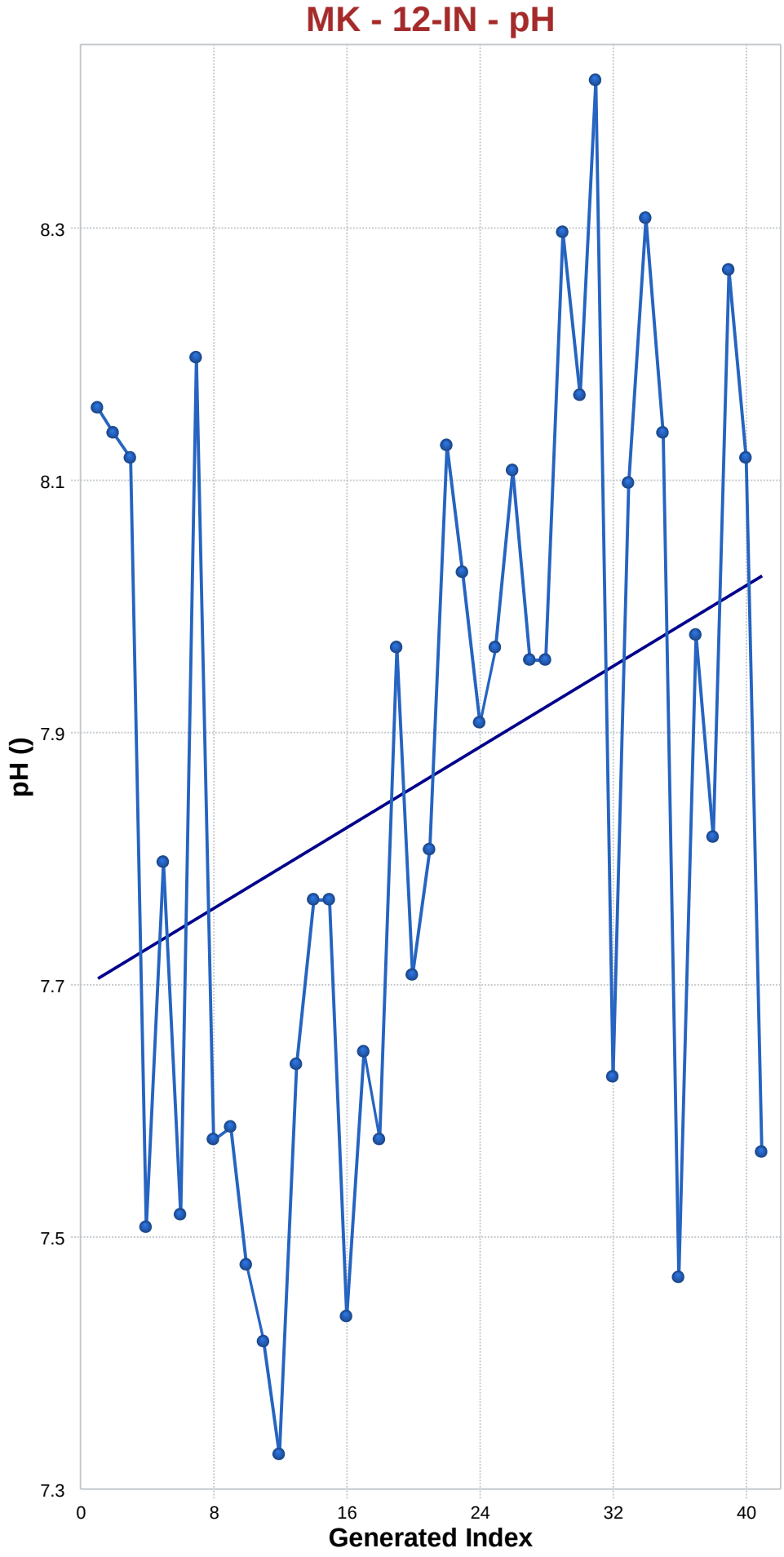
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0506
Standardized Value of S	-0.4995
M-K Test Value (S)	-29
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3087

OLS Regression Line (Blue)

OLS Regression Slope	-0.0031
OLS Regression Intercept	0.1801

Insufficient statistical evidence of a significant trend at the specified level of significance.



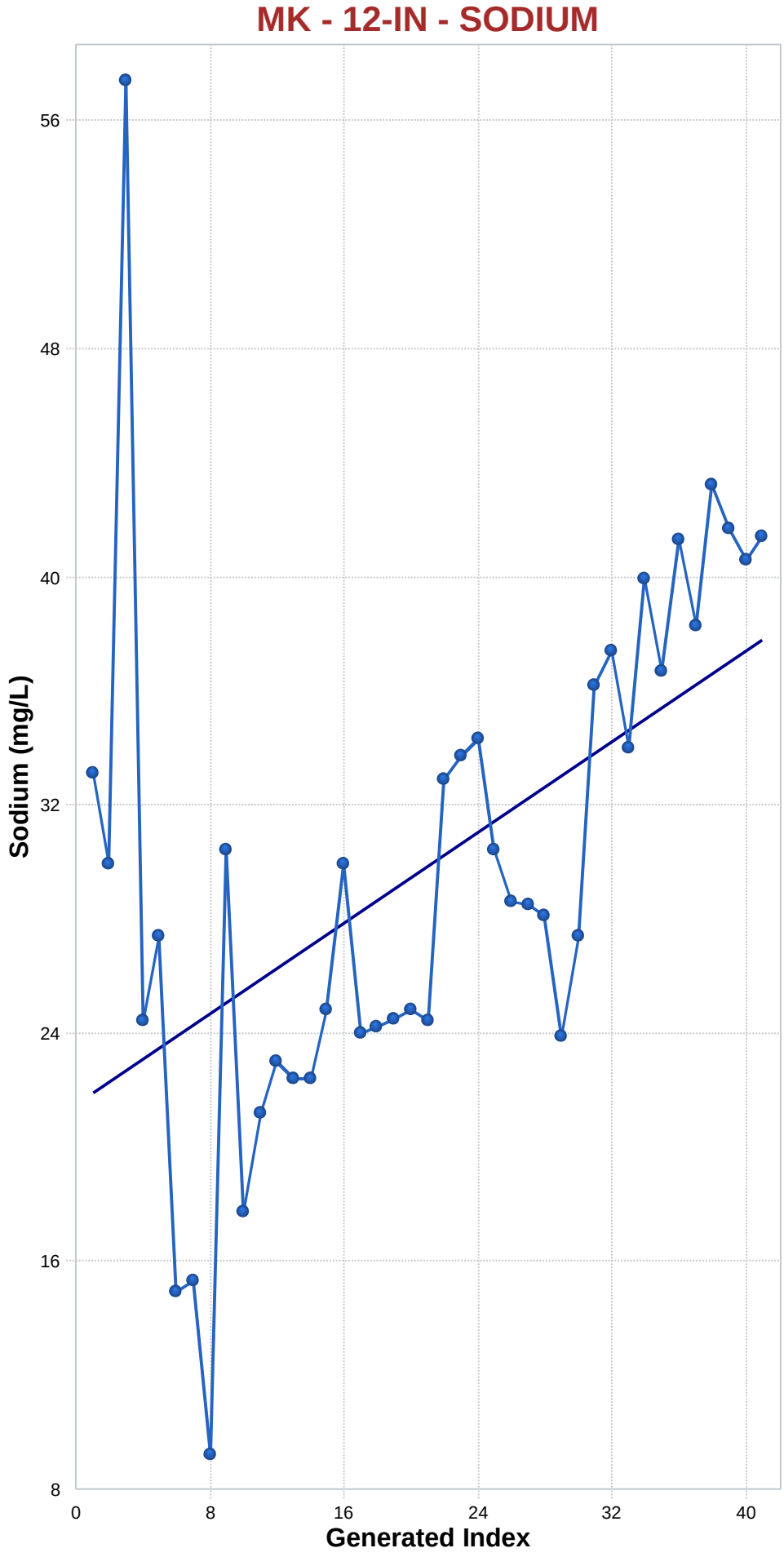
Mann-Kendall Trend Analysis

n	41
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	88.9981
Standardized Value of S	2.1911
M-K Test Value (S)	196
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0142

OLS Regression Line (Blue)

OLS Regression Slope	0.0080
OLS Regression Intercept	7.6897

Statistically significant evidence of an increasing trend at the specified level of significance.



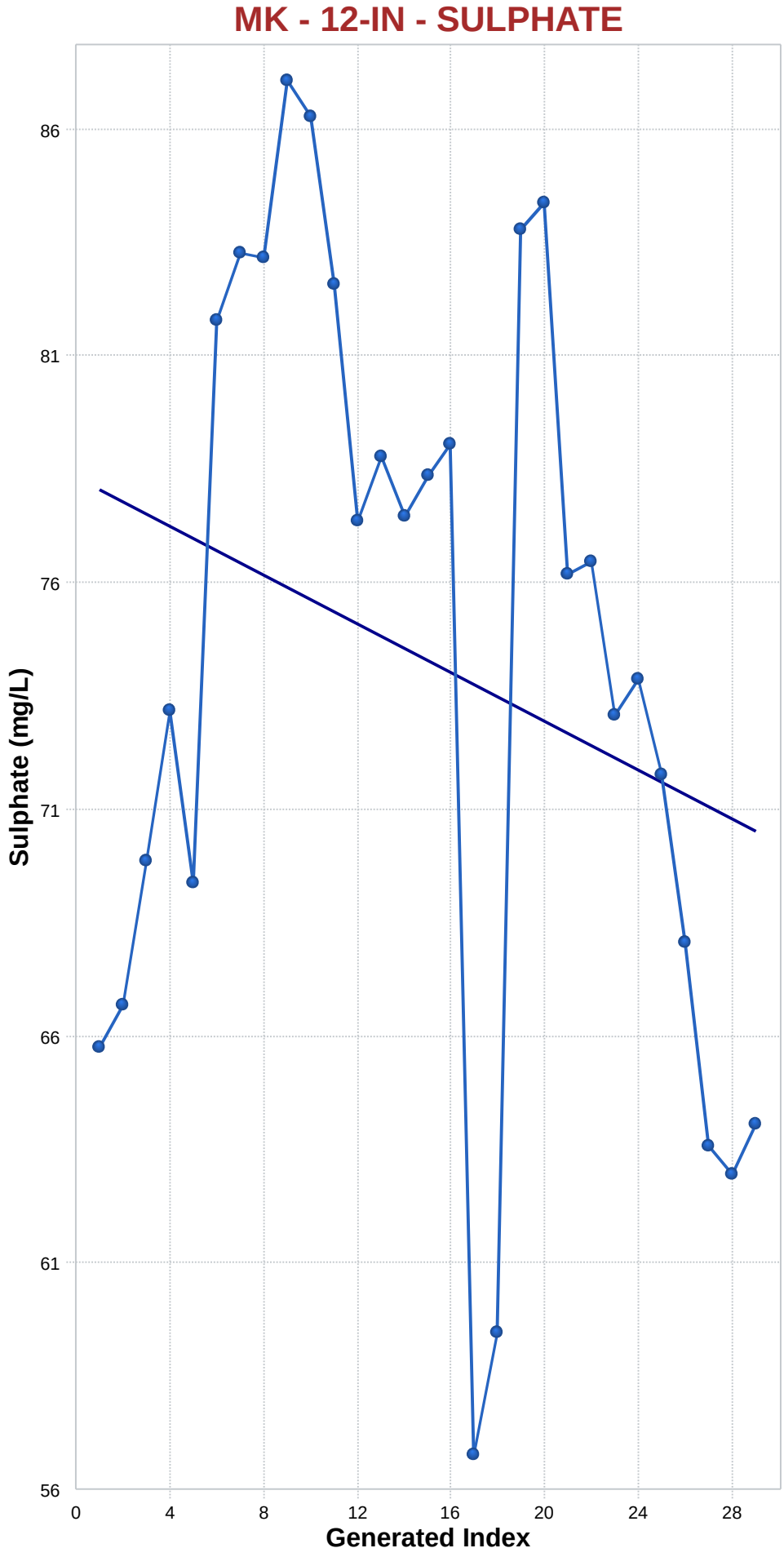
Mann-Kendall Trend Analysis

n	41
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	88.9981
Standardized Value of S	4.6630
M-K Test Value (S)	416
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.3963
OLS Regression Intercept	21.6260

Statistically significant evidence of an increasing trend at the specified level of significance.



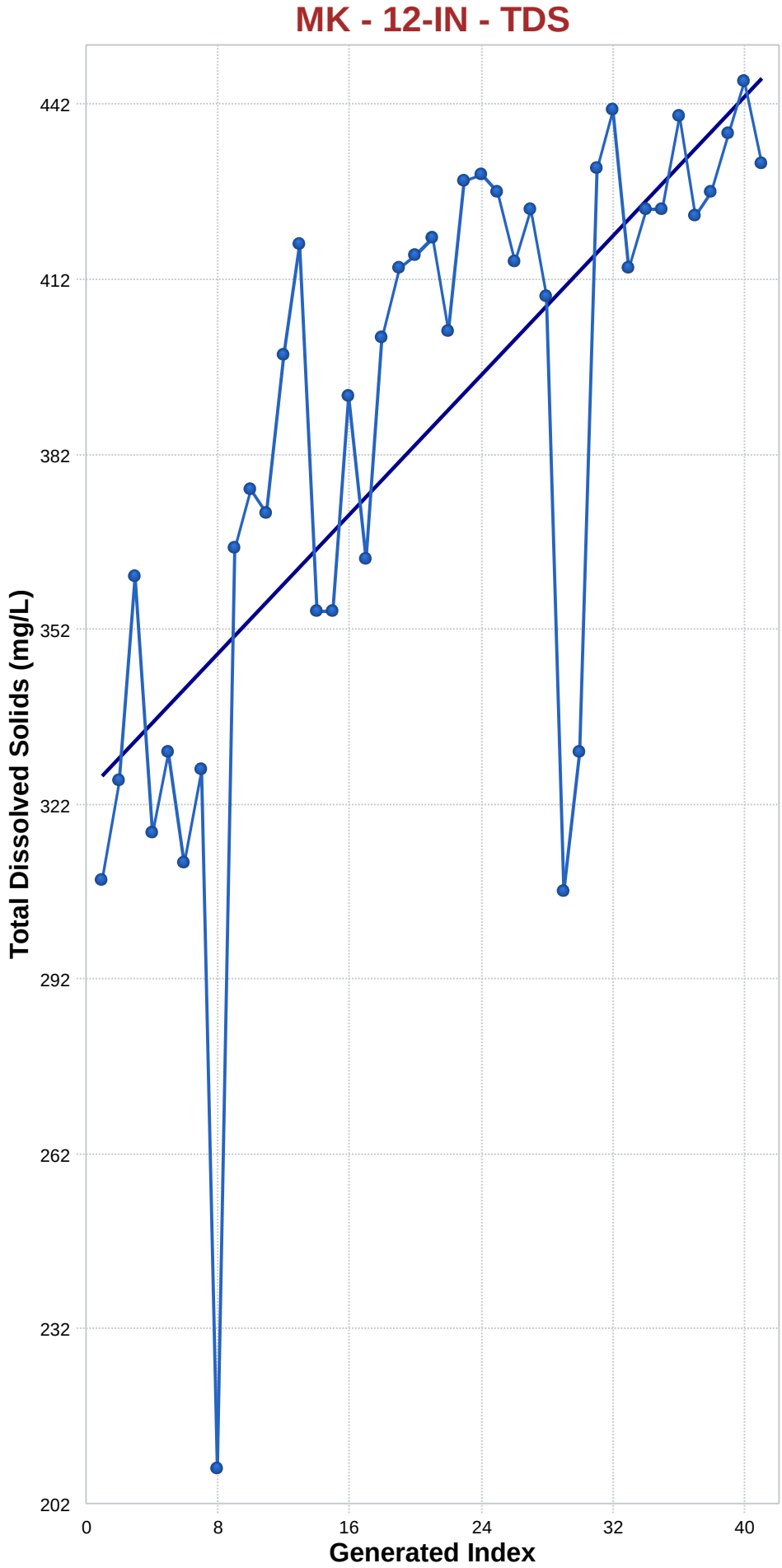
Mann-Kendall Trend Analysis

n	29
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	53.3104
Standardized Value of S	-1.5569
M-K Test Value (S)	-84
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0597

OLS Regression Line (Blue)

OLS Regression Slope	-0.2687
OLS Regression Intercept	78.3507

Insufficient statistical evidence of a significant trend at the specified level of significance.



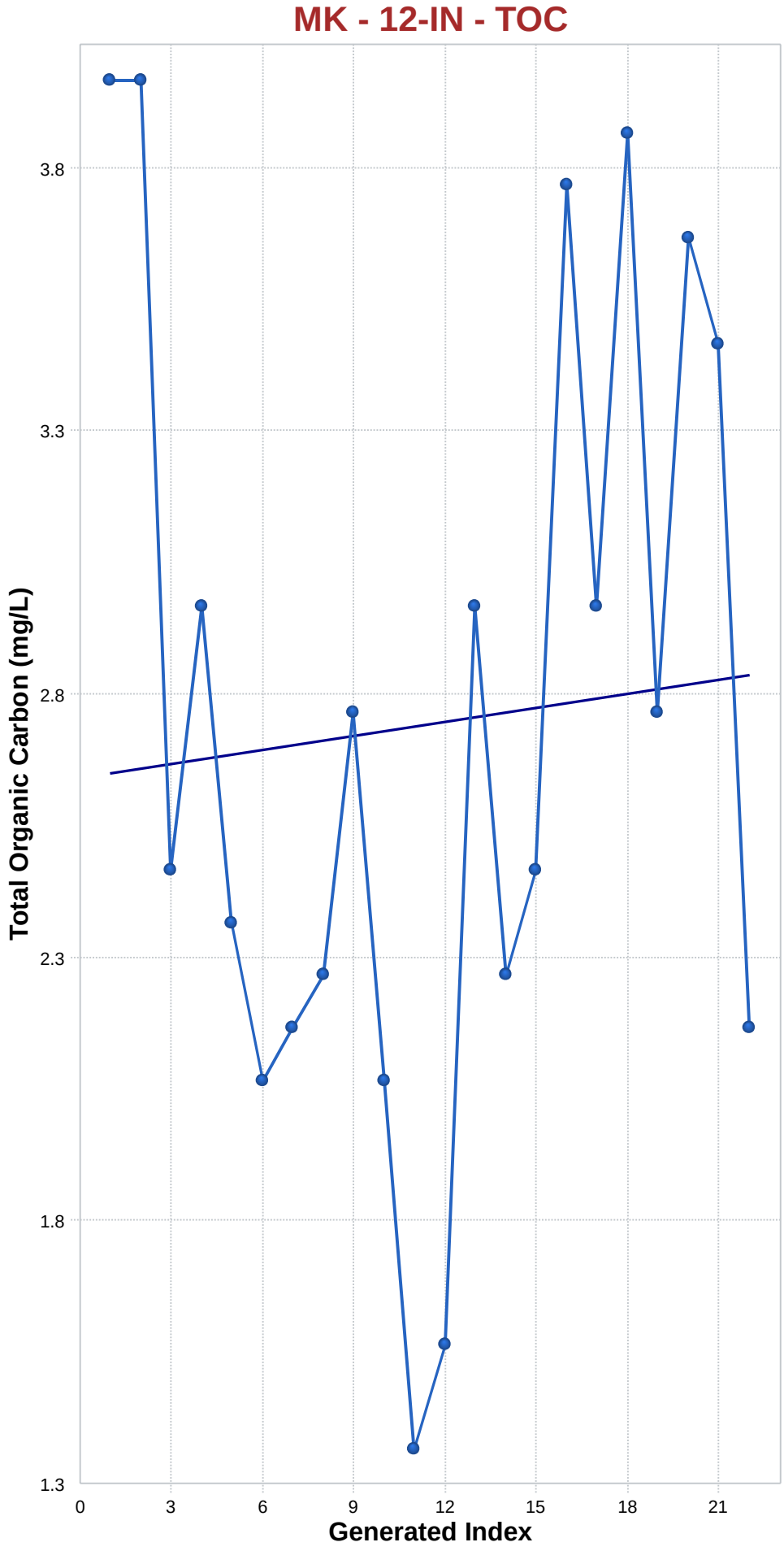
Mann-Kendall Trend Analysis

n	41
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	88.9888
Standardized Value of S	5.6861
M-K Test Value (S)	507
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	2.9901
OLS Regression Intercept	323.8915

Statistically significant evidence of an increasing trend at the specified level of significance.



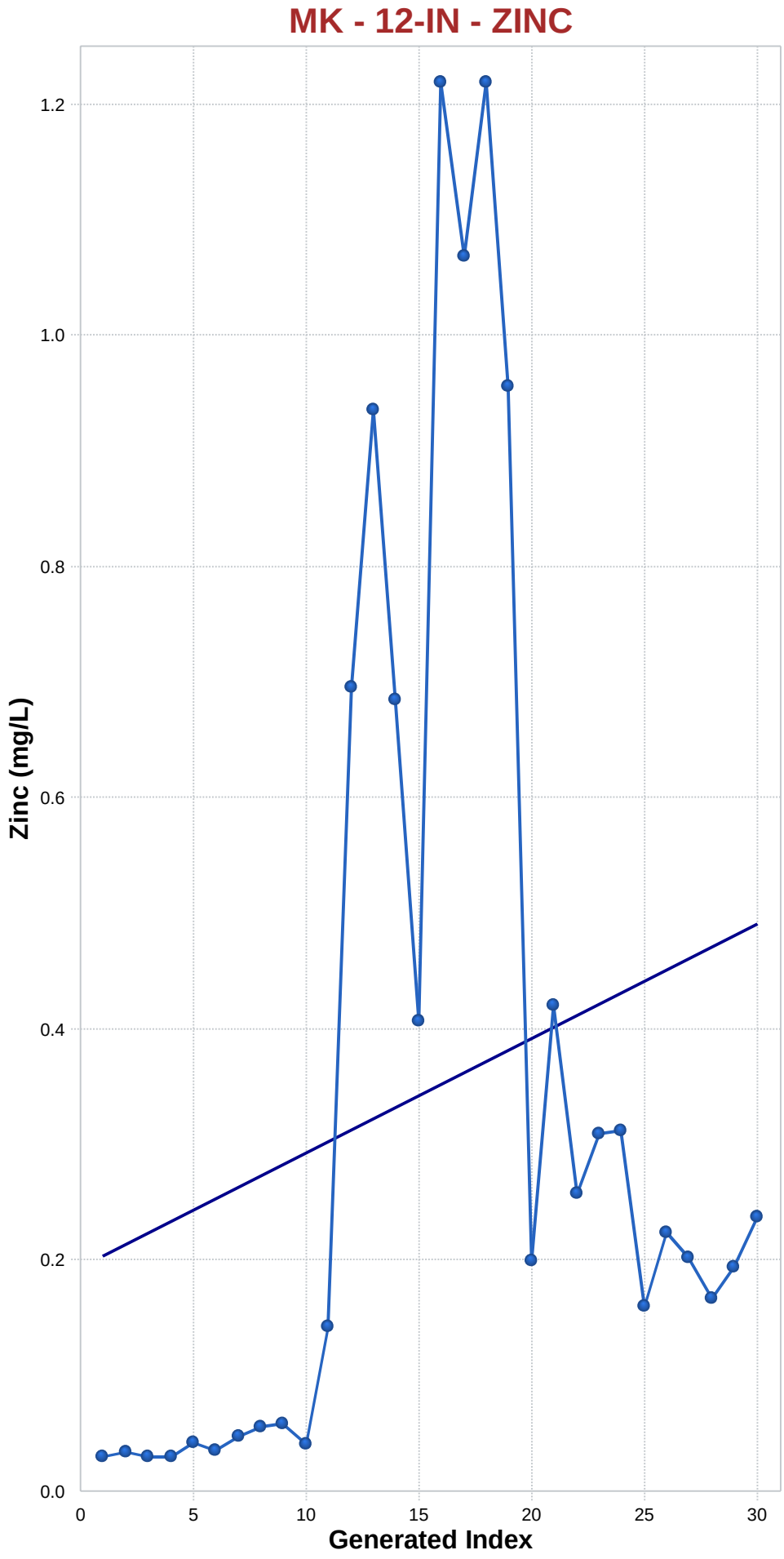
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.3270
Standardized Value of S	0.1981
M-K Test Value (S)	8
Tabulated p-value	0.4120
Approximate p-value	0.4215

OLS Regression Line (Blue)

OLS Regression Slope	0.0089
OLS Regression Intercept	2.6753

Insufficient statistical evidence of a significant trend at the specified level of significance.



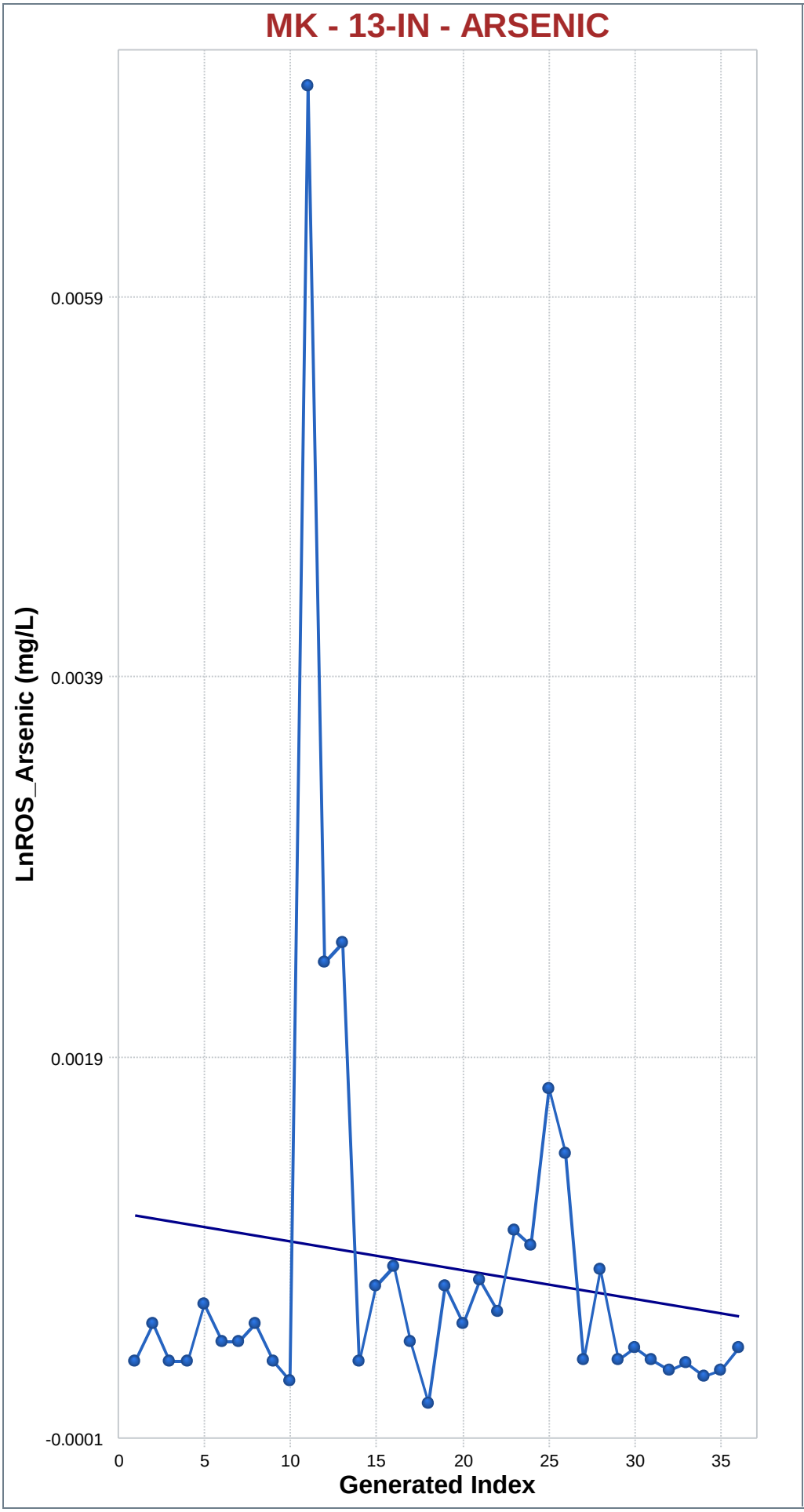
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0089
Standardized Value of S	2.7496
M-K Test Value (S)	155
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0030

OLS Regression Line (Blue)

OLS Regression Slope	0.0099
OLS Regression Intercept	0.1643

Statistically significant evidence of an increasing trend at the specified level of significance.



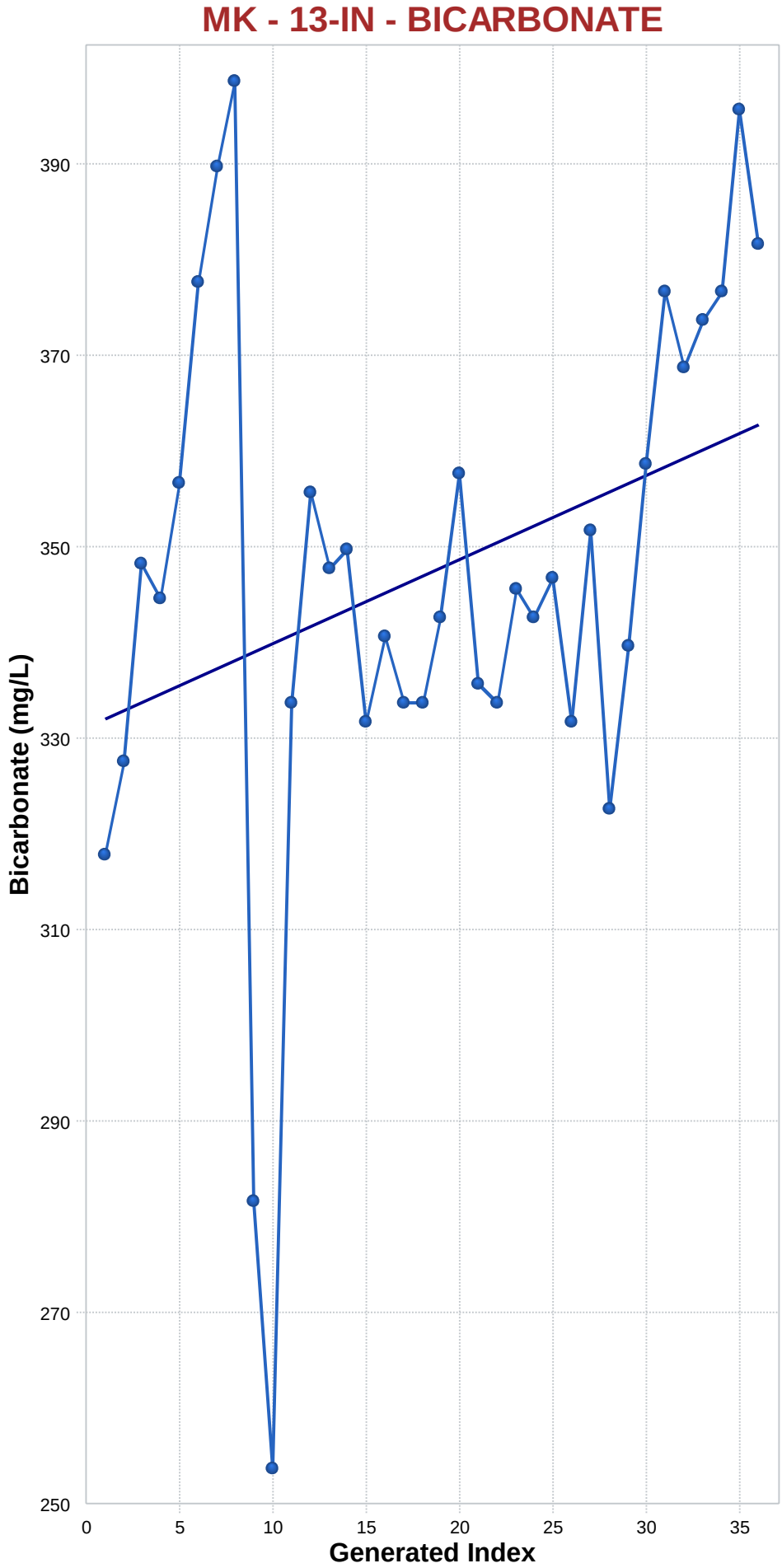
Mann-Kendall Trend Analysis

n	36
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	73.2075
Standardized Value of S	-0.5874
M-K Test Value (S)	-44
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.2785

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0011

Insufficient statistical evidence of a significant trend at the specified level of significance.



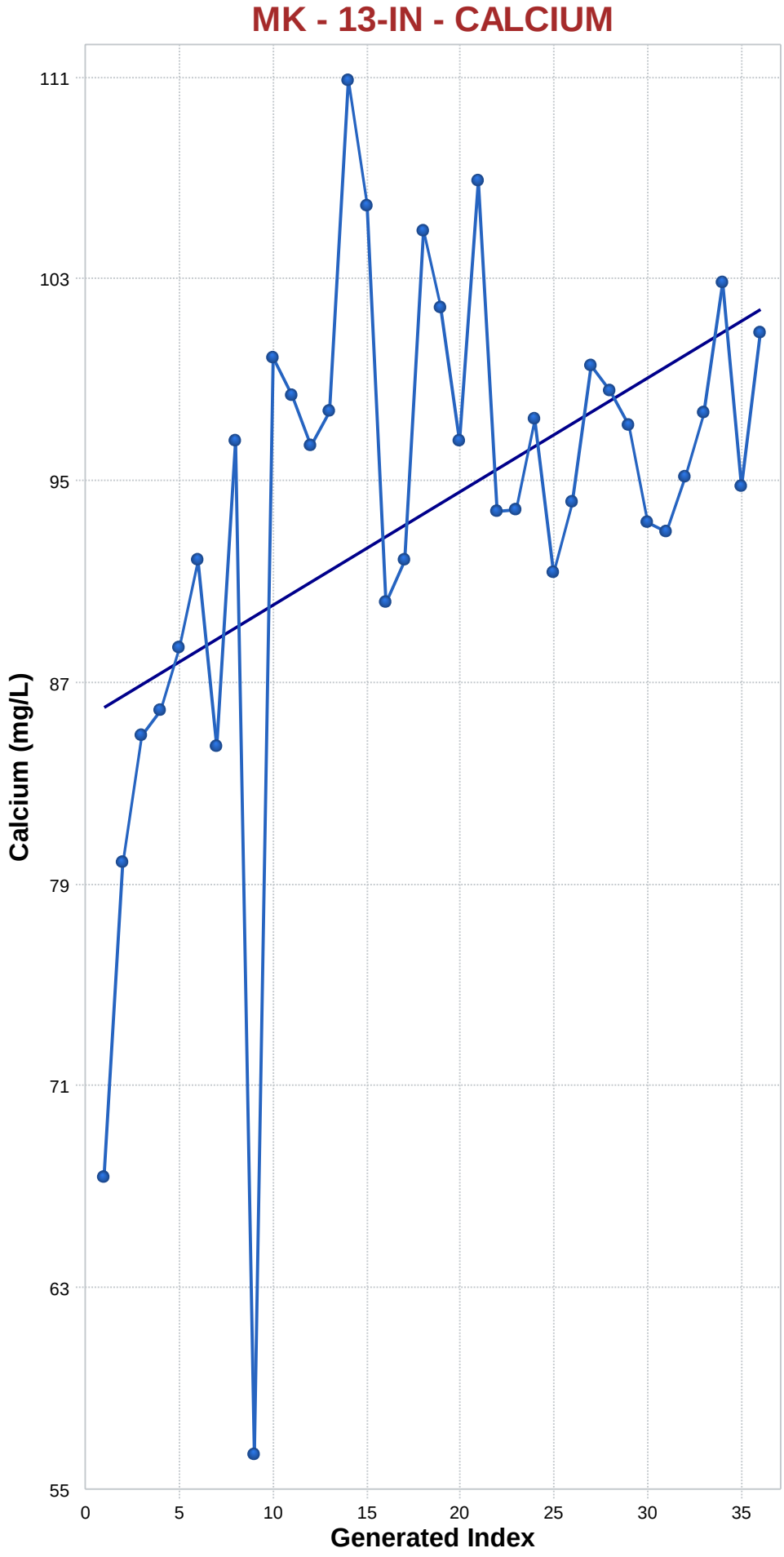
Mann-Kendall Trend Analysis

n	36
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	73.3371
Standardized Value of S	2.1544
M-K Test Value (S)	159
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0156

OLS Regression Line (Blue)

OLS Regression Slope	0.8785
OLS Regression Intercept	331.4344

Statistically significant evidence of an increasing trend at the specified level of significance.



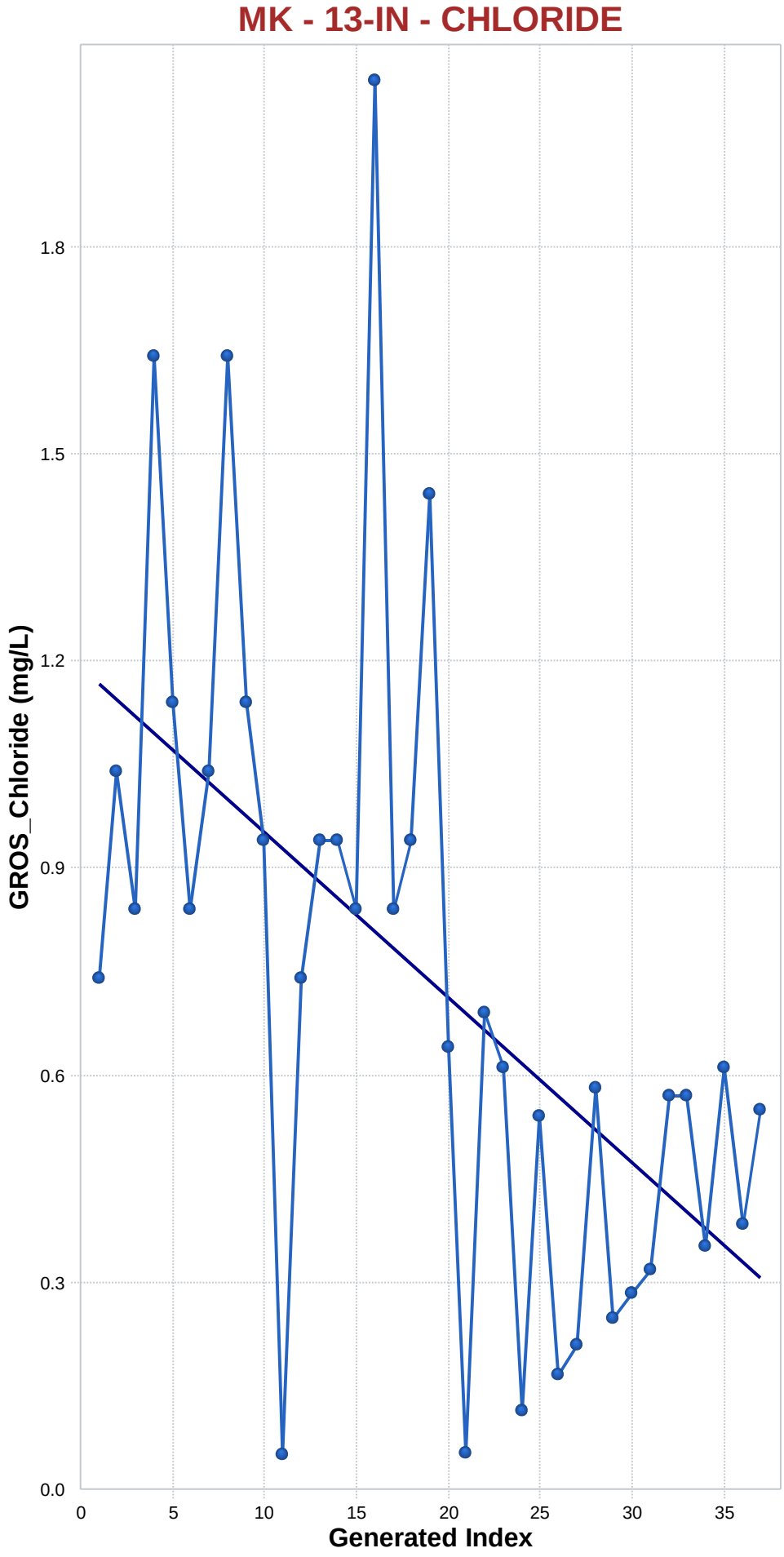
Mann-Kendall Trend Analysis

n	36
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	73.4030
Standardized Value of S	2.5748
M-K Test Value (S)	190
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0050

OLS Regression Line (Blue)

OLS Regression Slope	0.4524
OLS Regression Intercept	85.6668

Statistically significant evidence of an increasing trend at the specified level of significance.



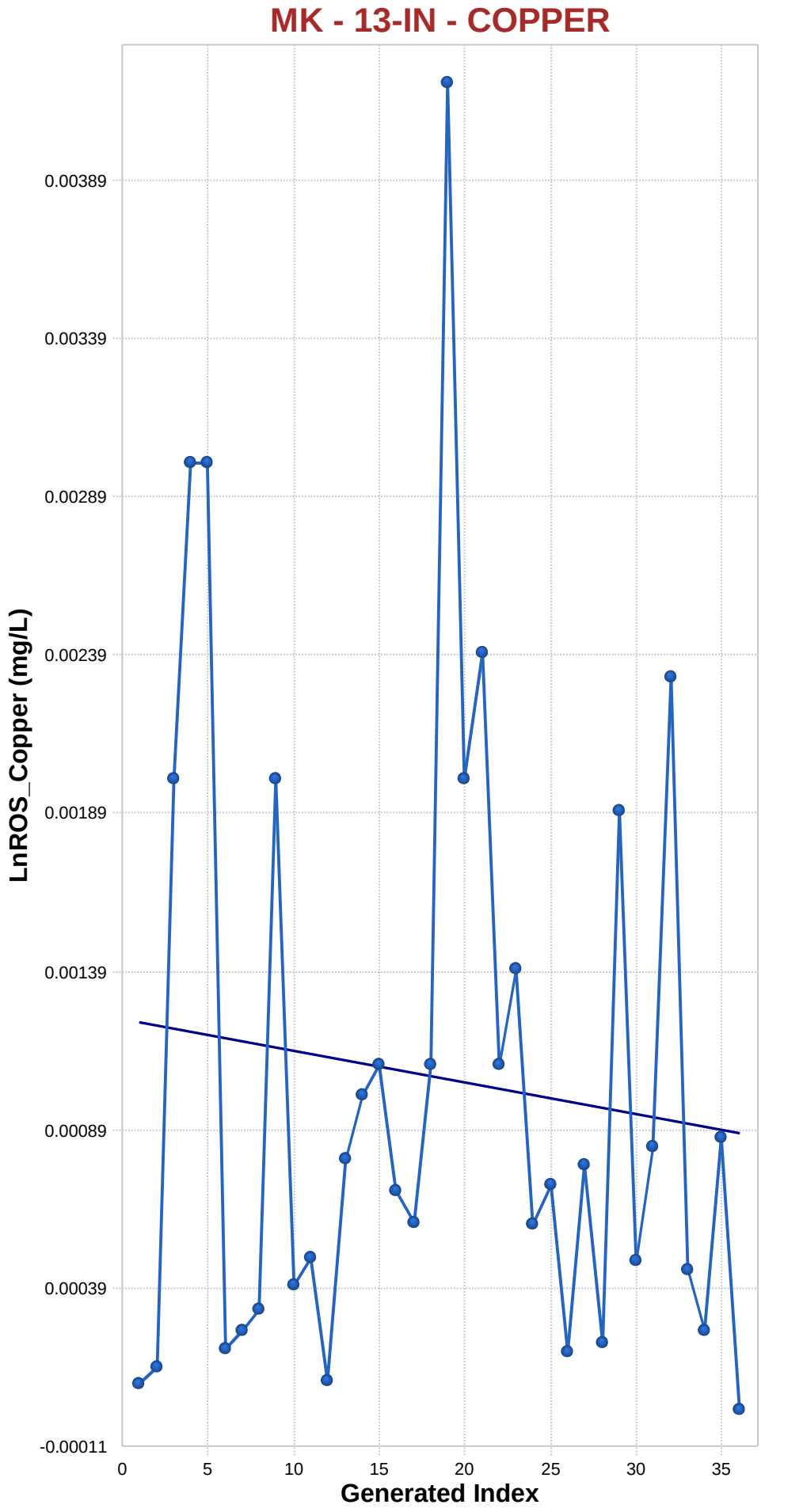
Mann-Kendall Trend Analysis

n	37
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	76.3064
Standardized Value of S	-3.7087
M-K Test Value (S)	-284
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0239
OLS Regression Intercept	1.1514

Statistically significant evidence of a decreasing trend at the specified level of significance.



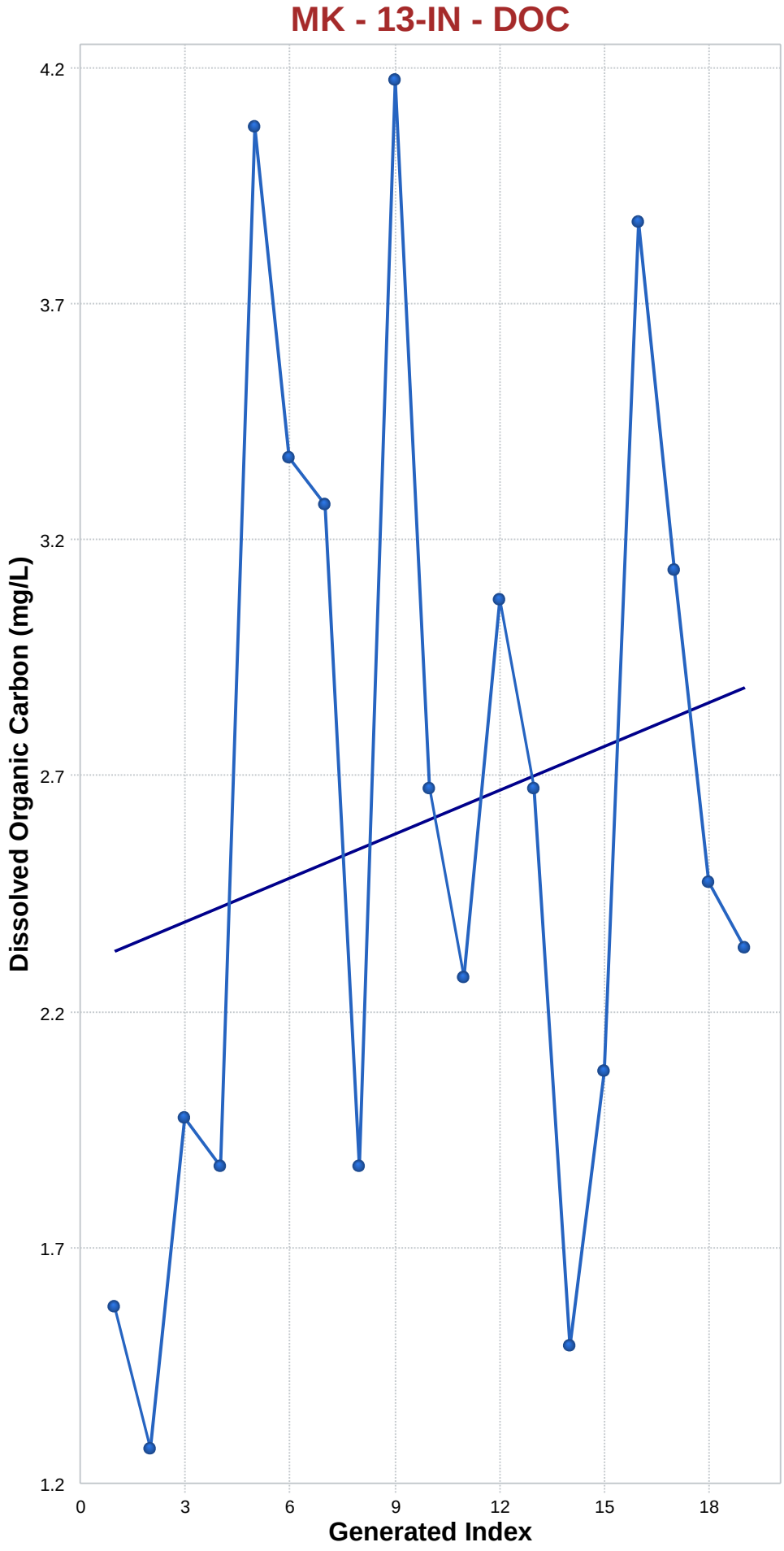
Mann-Kendall Trend Analysis

n	36
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	73.3598
Standardized Value of S	0.1091
M-K Test Value (S)	9
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4566

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0012

Insufficient statistical evidence of a significant trend at the specified level of significance.



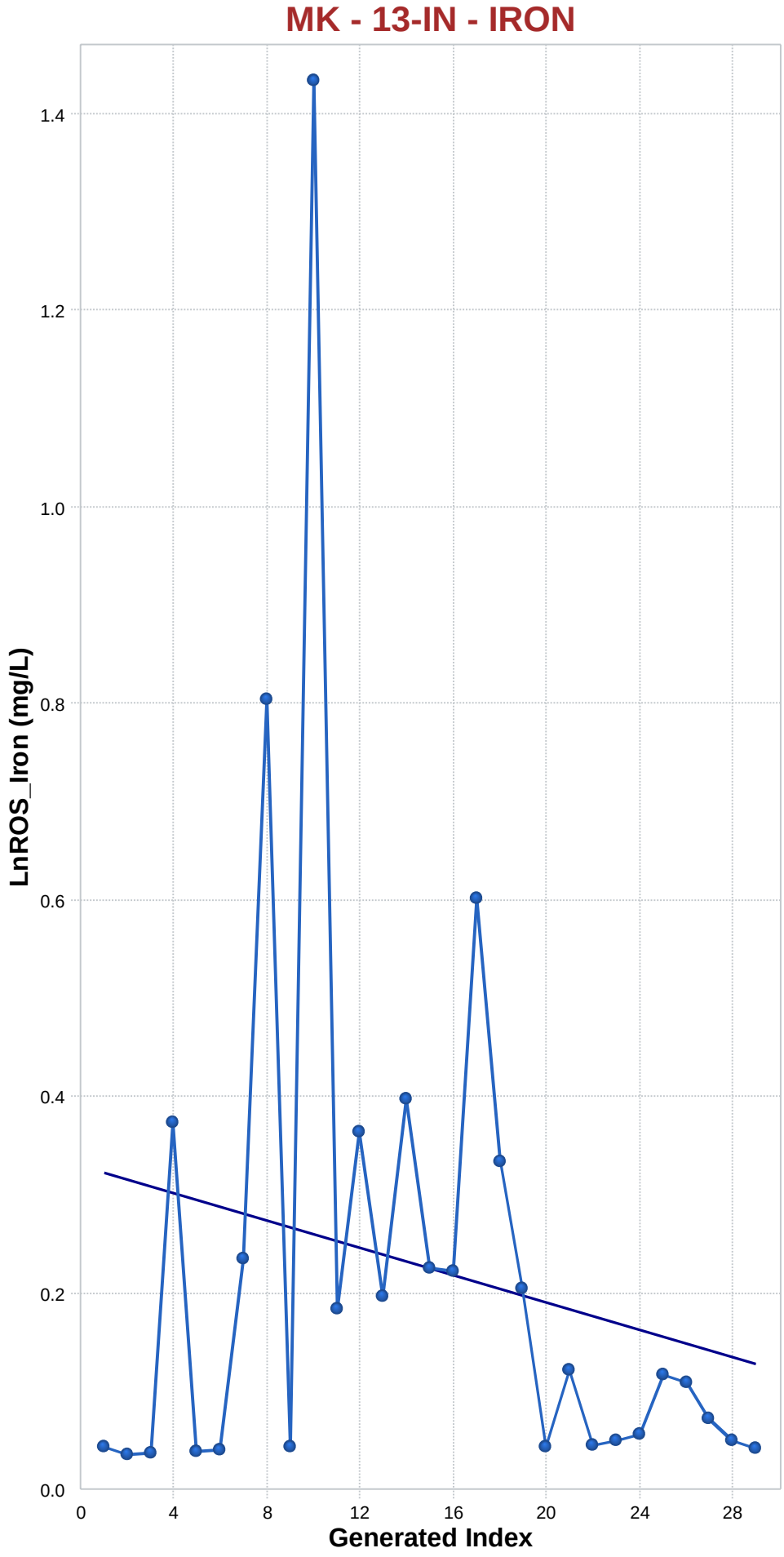
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	0.7706
M-K Test Value (S)	23
Tabulated p-value	0.2230
Approximate p-value	0.2205

OLS Regression Line (Blue)

OLS Regression Slope	0.0311
OLS Regression Intercept	2.3225

Insufficient statistical evidence of a significant trend at the specified level of significance.



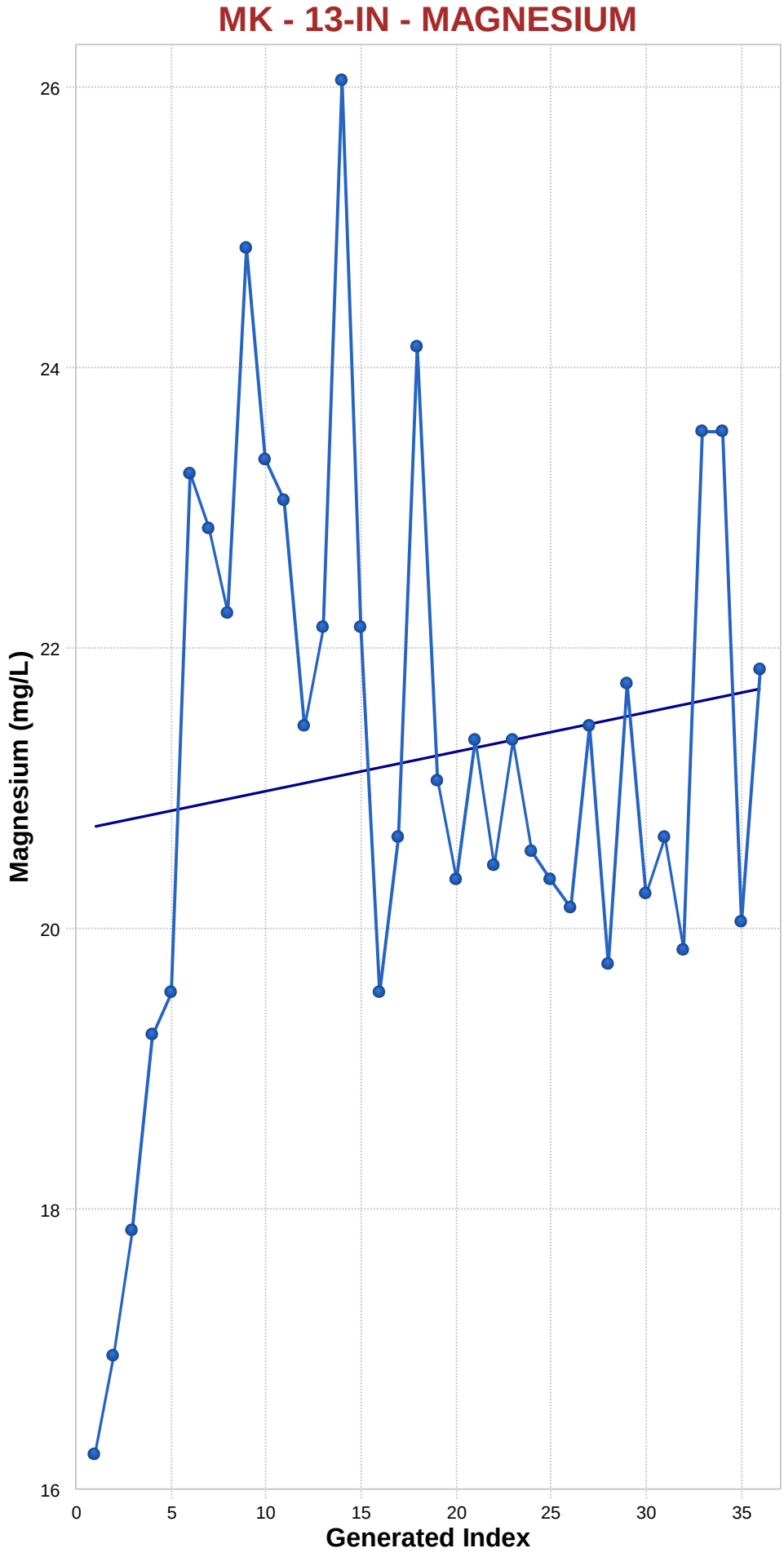
Mann-Kendall Trend Analysis

n	29
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	53.2760
Standardized Value of S	-0.3003
M-K Test Value (S)	-17
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3820

OLS Regression Line (Blue)

OLS Regression Slope	-0.0069
OLS Regression Intercept	0.2946

Insufficient statistical evidence of a significant trend at the specified level of significance.



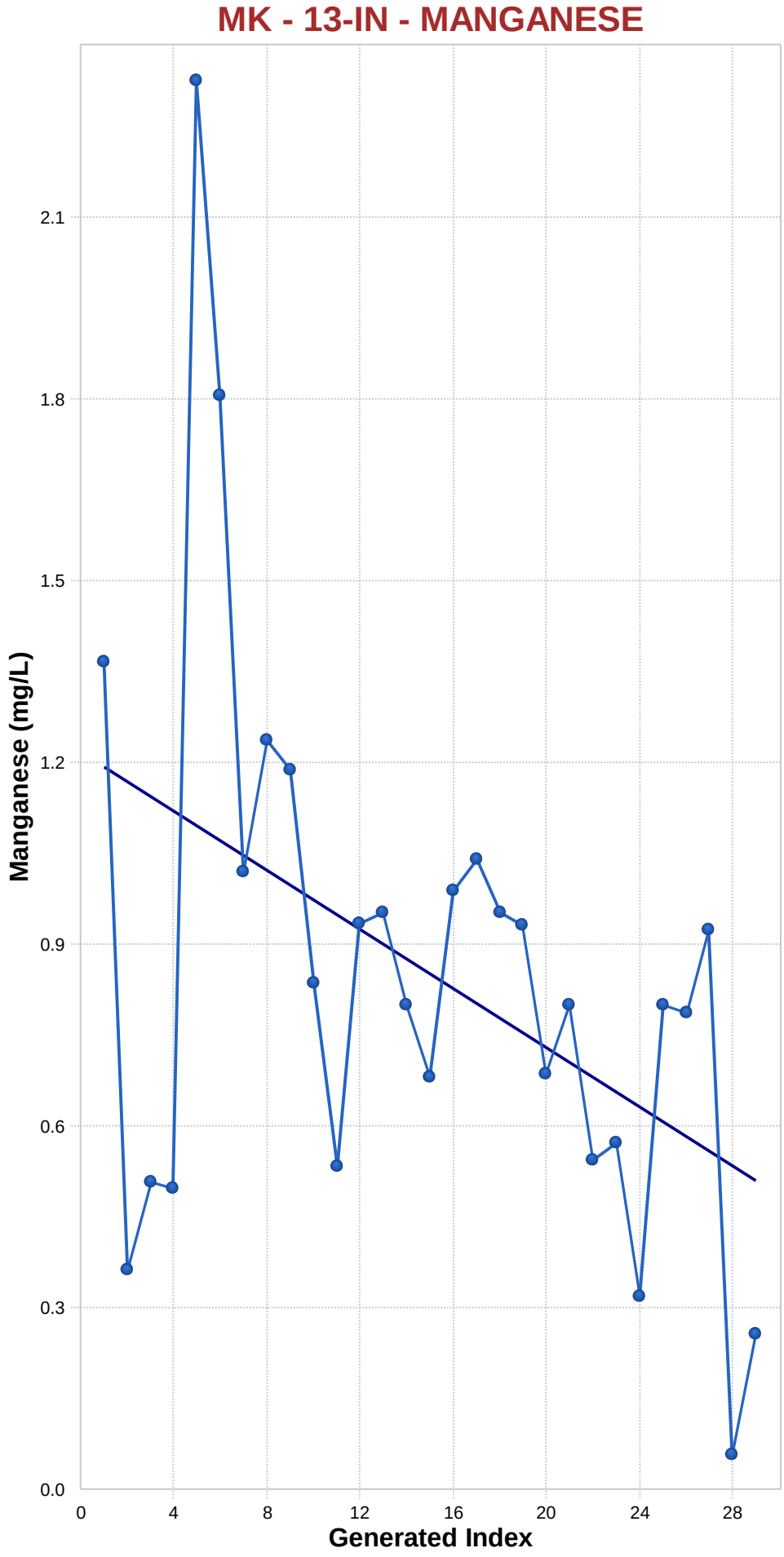
Mann-Kendall Trend Analysis

n	36
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	73.3689
Standardized Value of S	0.1636
M-K Test Value (S)	13
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4350

OLS Regression Line (Blue)

OLS Regression Slope	0.0281
OLS Regression Intercept	20.4487

Insufficient statistical evidence of a significant trend at the specified level of significance.



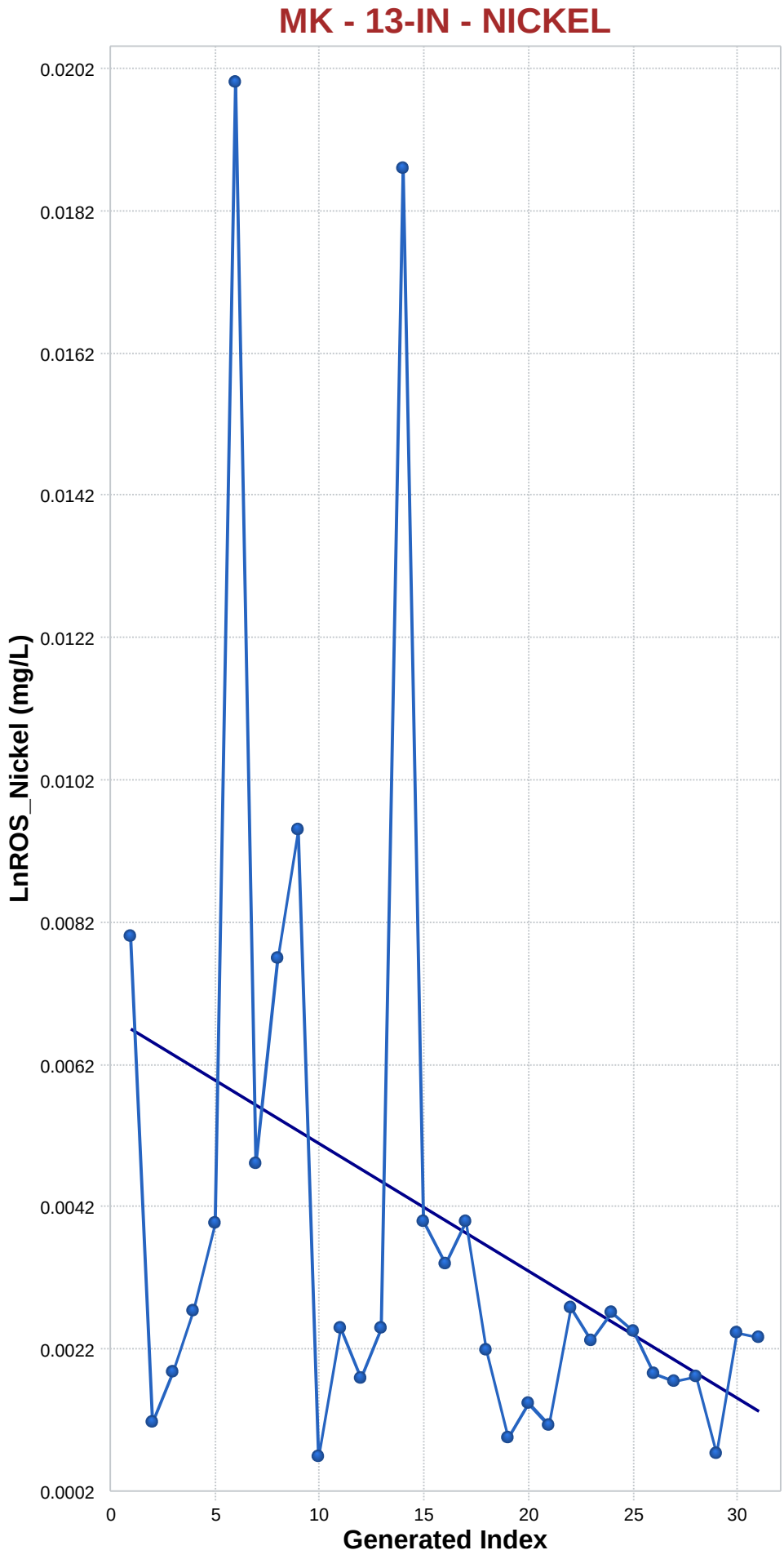
Mann-Kendall Trend Analysis

n	29
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	53.3010
Standardized Value of S	-2.4390
M-K Test Value (S)	-131
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0074

OLS Regression Line (Blue)

OLS Regression Slope	-0.0243
OLS Regression Intercept	1.1705

Statistically significant evidence of a decreasing trend at the specified level of significance.



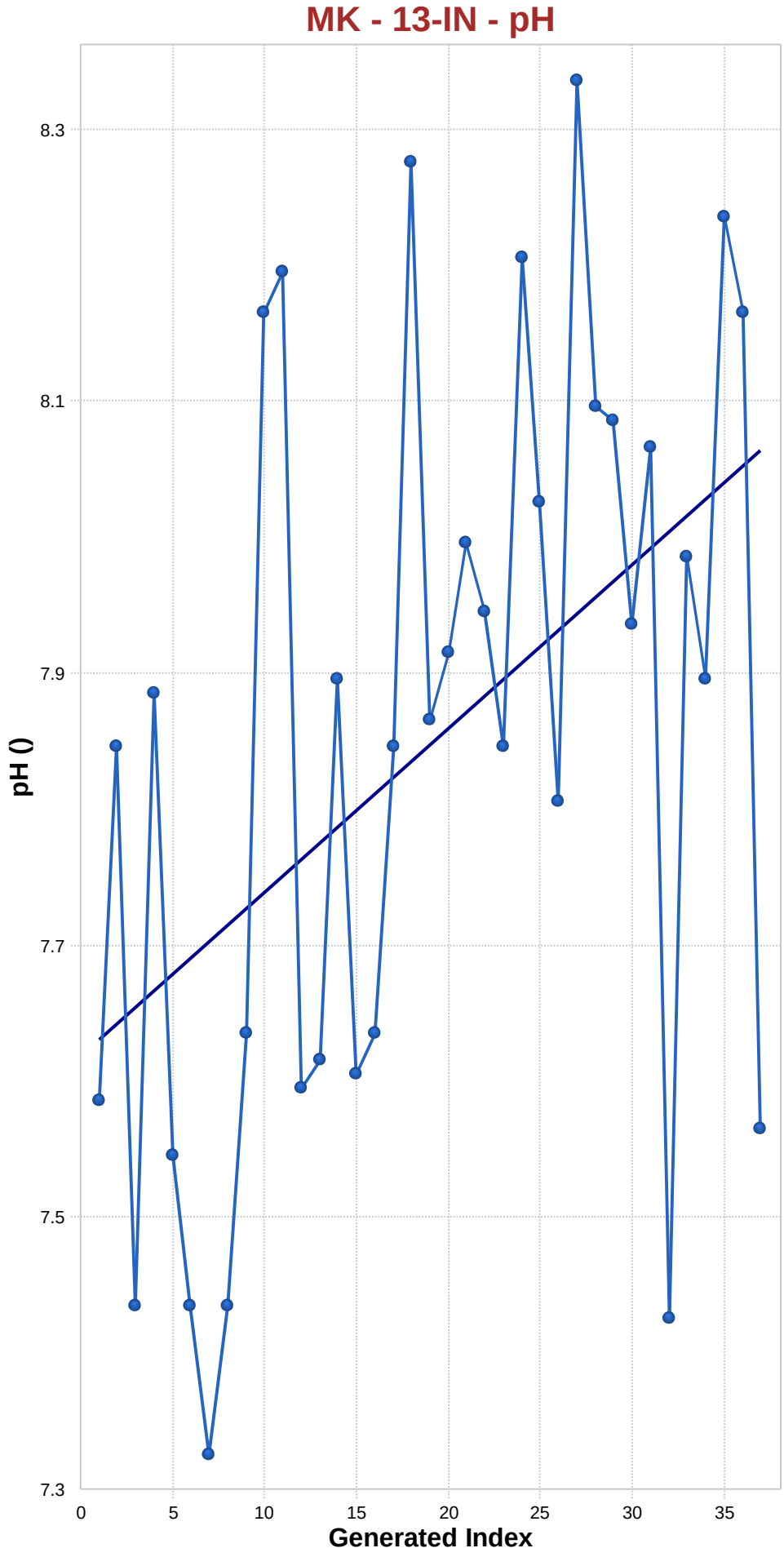
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8189
Standardized Value of S	-2.2102
M-K Test Value (S)	-131
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0135

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0069

Statistically significant evidence of a decreasing trend at the specified level of significance.



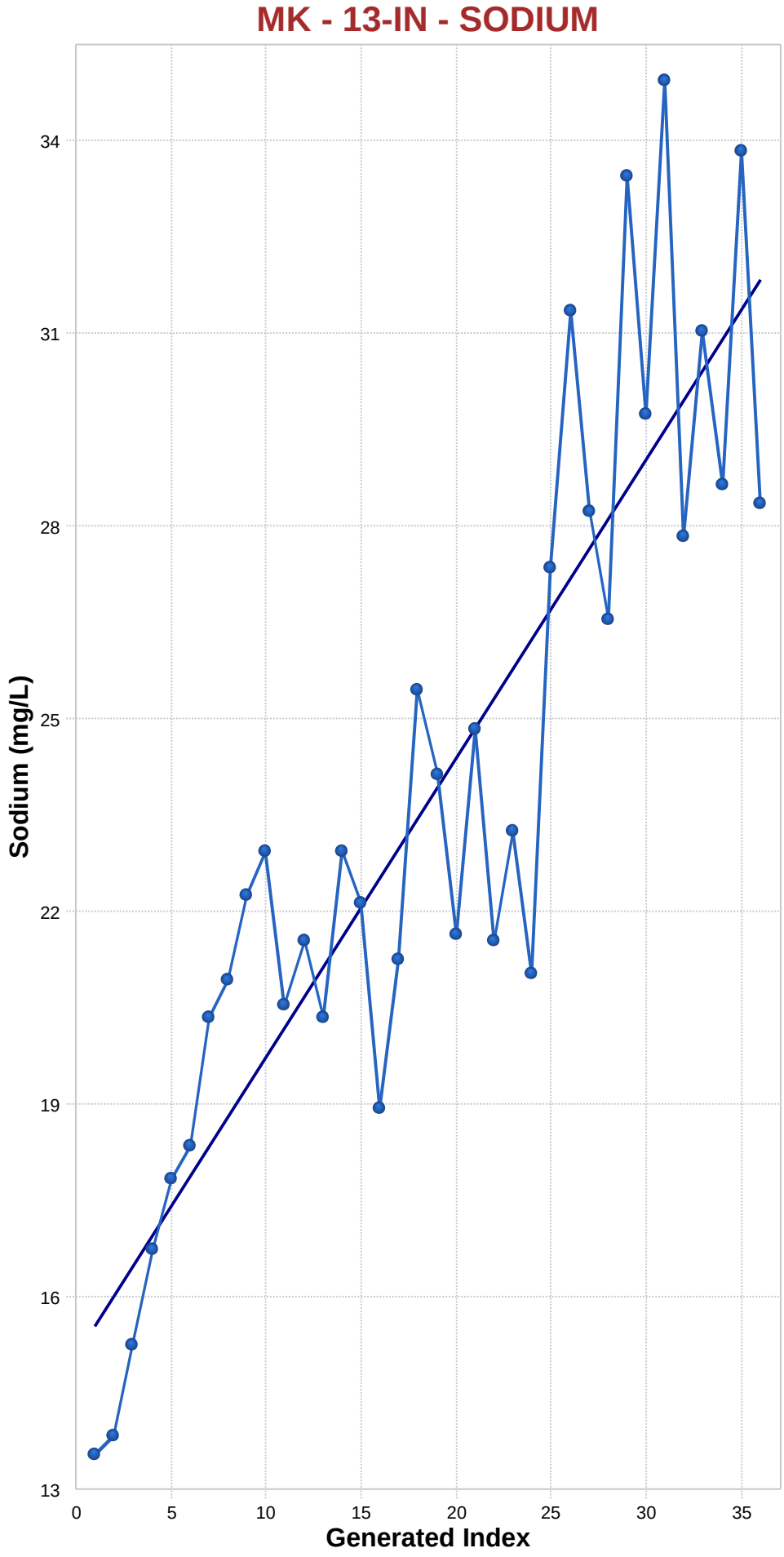
Mann-Kendall Trend Analysis

n	37
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	76.3915
Standardized Value of S	3.0632
M-K Test Value (S)	235
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0011

OLS Regression Line (Blue)

OLS Regression Slope	0.0120
OLS Regression Intercept	7.6233

Statistically significant evidence of an increasing trend at the specified level of significance.



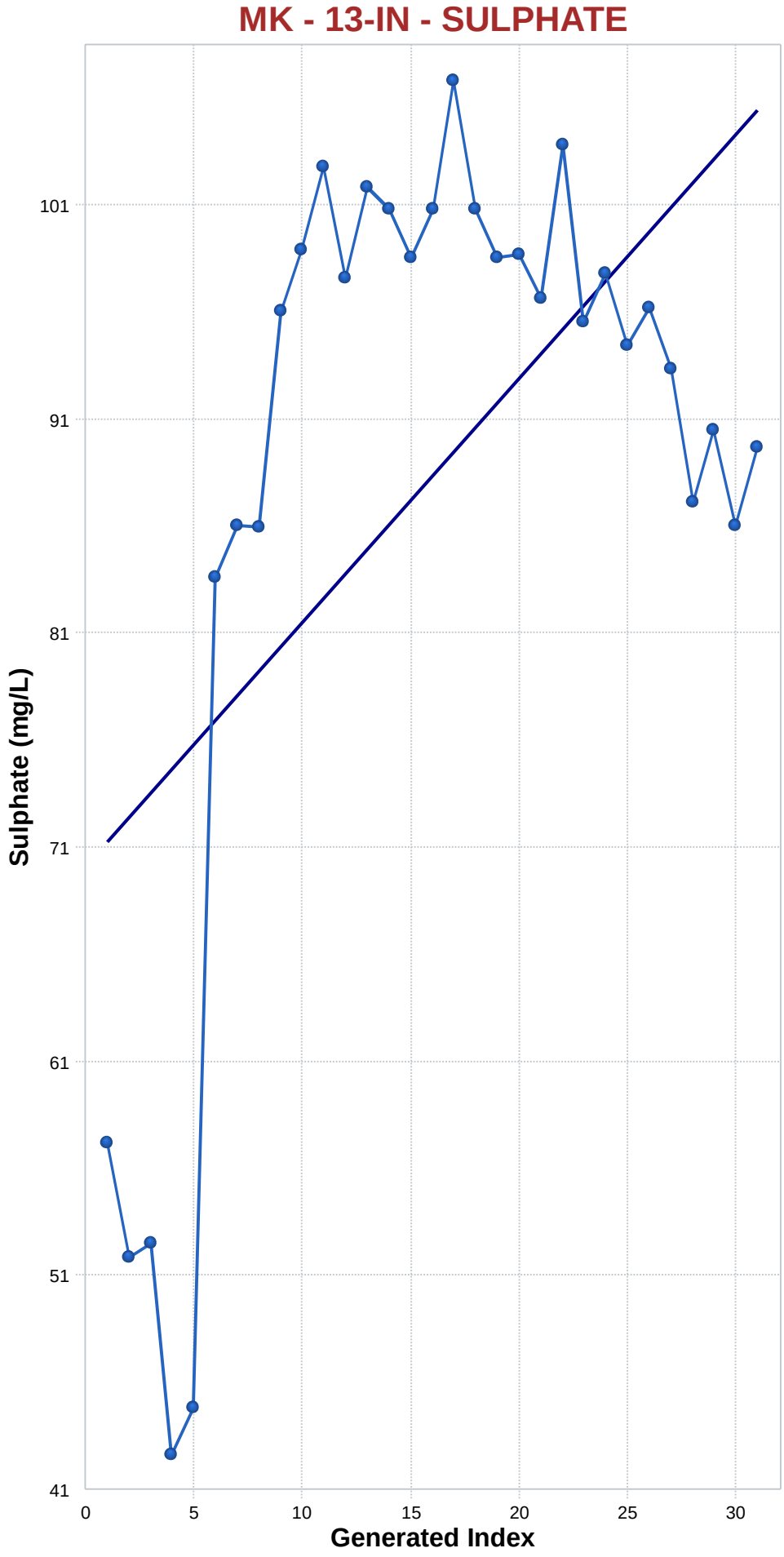
Mann-Kendall Trend Analysis

n	36
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	73.3962
Standardized Value of S	6.2129
M-K Test Value (S)	457
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.4655
OLS Regression Intercept	15.0390

Statistically significant evidence of an increasing trend at the specified level of significance.



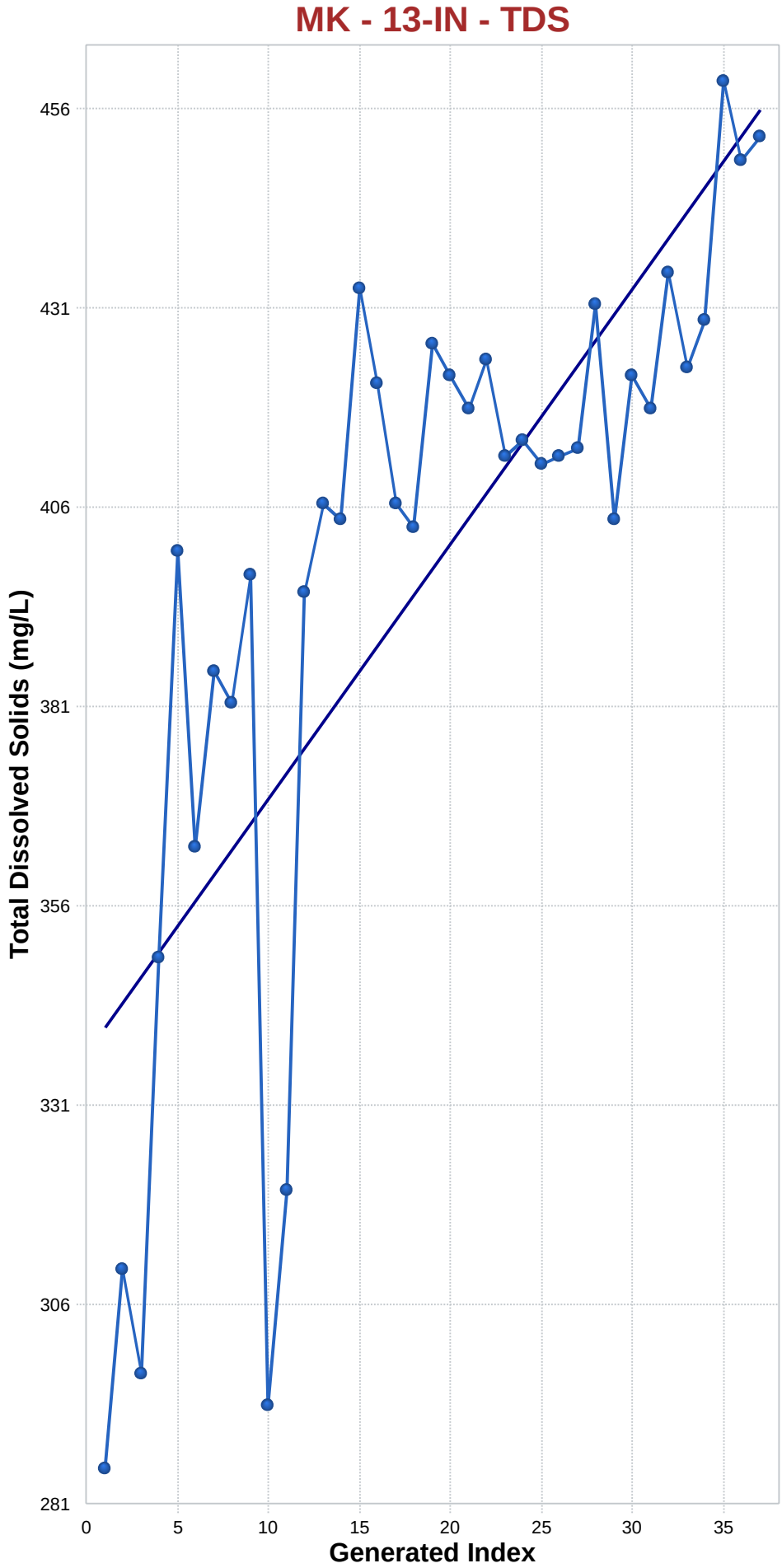
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.7878
Standardized Value of S	0.9696
M-K Test Value (S)	58
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1661

OLS Regression Line (Blue)

OLS Regression Slope	1.1380
OLS Regression Intercept	70.2916

Insufficient statistical evidence of a significant trend at the specified level of significance.



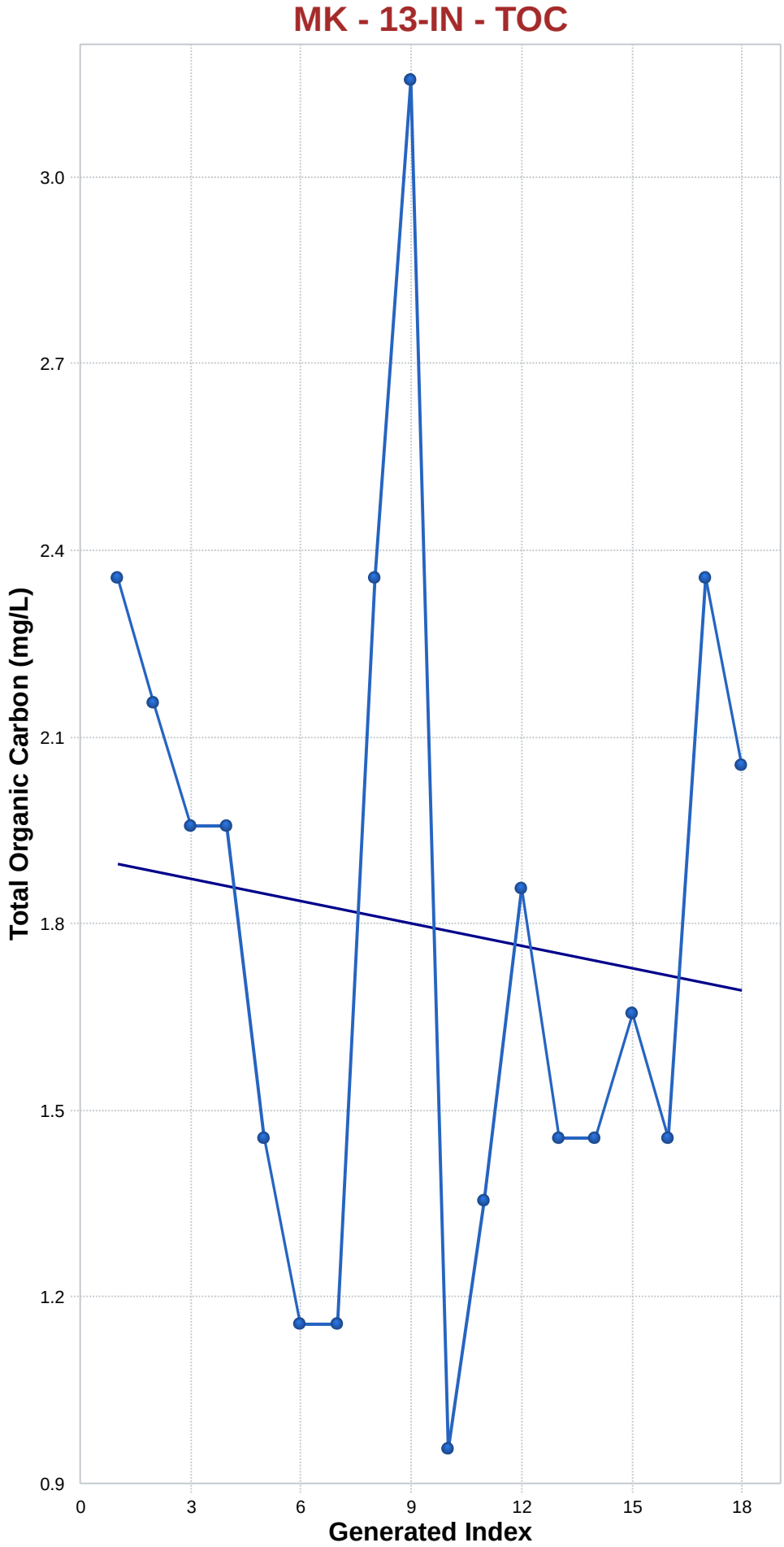
Mann-Kendall Trend Analysis

n	37
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	76.4264
Standardized Value of S	5.7572
M-K Test Value (S)	441
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	3.1980
OLS Regression Intercept	337.1306

Statistically significant evidence of an increasing trend at the specified level of significance.



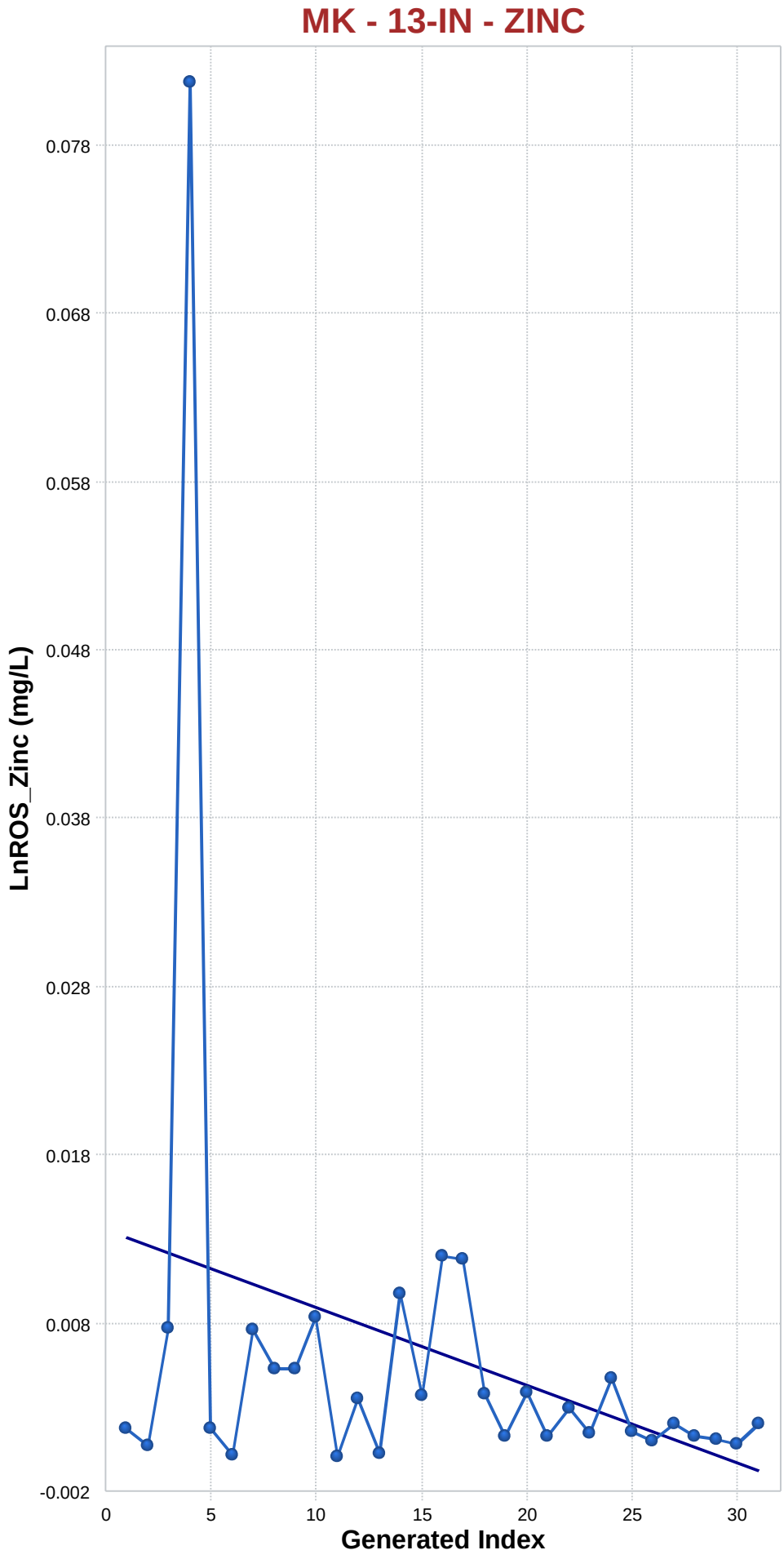
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.1279
Standardized Value of S	-0.3445
M-K Test Value (S)	-10
Tabulated p-value	0.3540
Approximate p-value	0.3653

OLS Regression Line (Blue)

OLS Regression Slope	-0.0119
OLS Regression Intercept	1.9516

Insufficient statistical evidence of a significant trend at the specified level of significance.



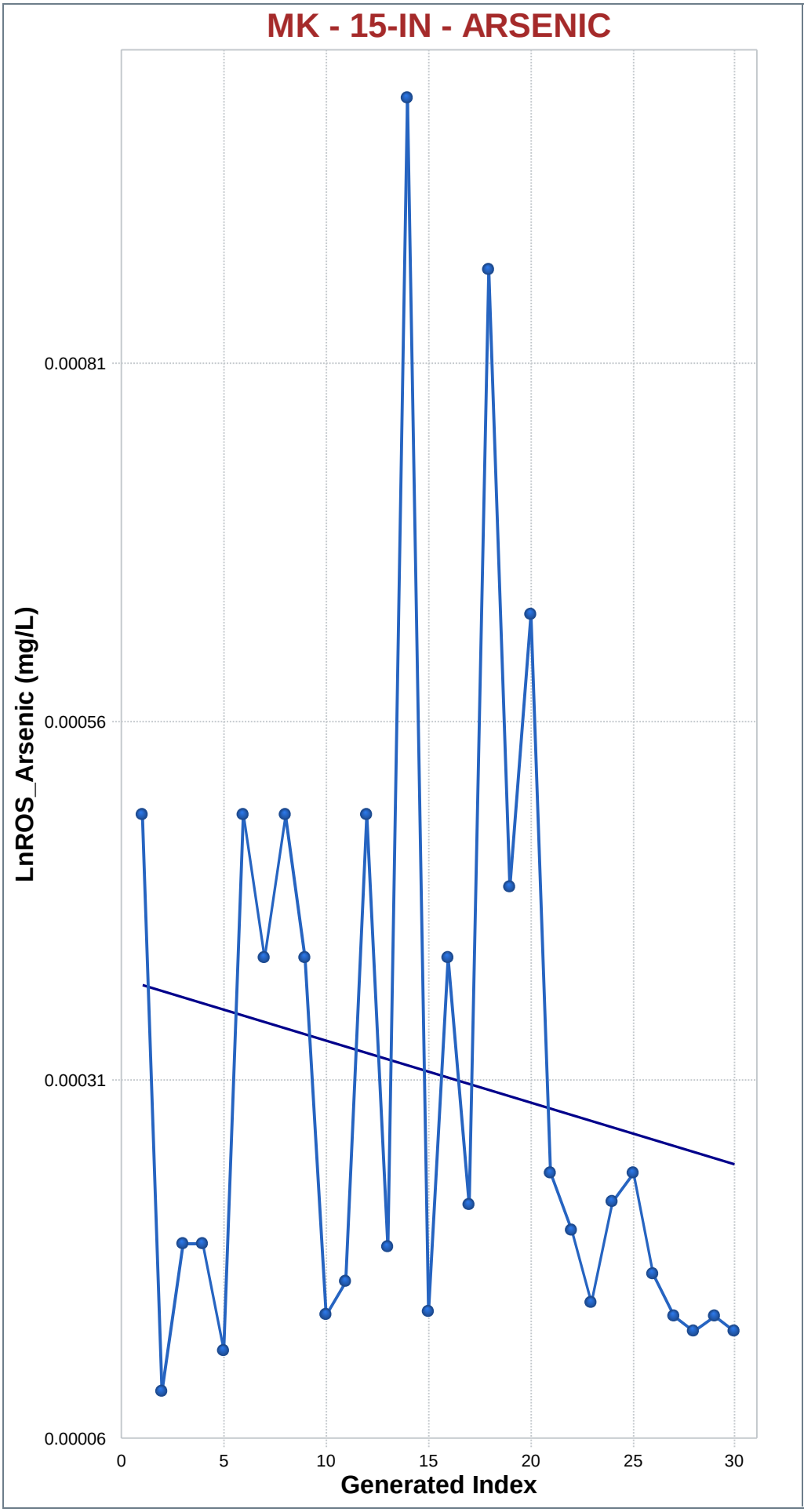
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.8019
Standardized Value of S	-1.4965
M-K Test Value (S)	-89
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0673

OLS Regression Line (Blue)

OLS Regression Slope	-0.0005
OLS Regression Intercept	0.0138

Insufficient statistical evidence of a significant trend at the specified level of significance.



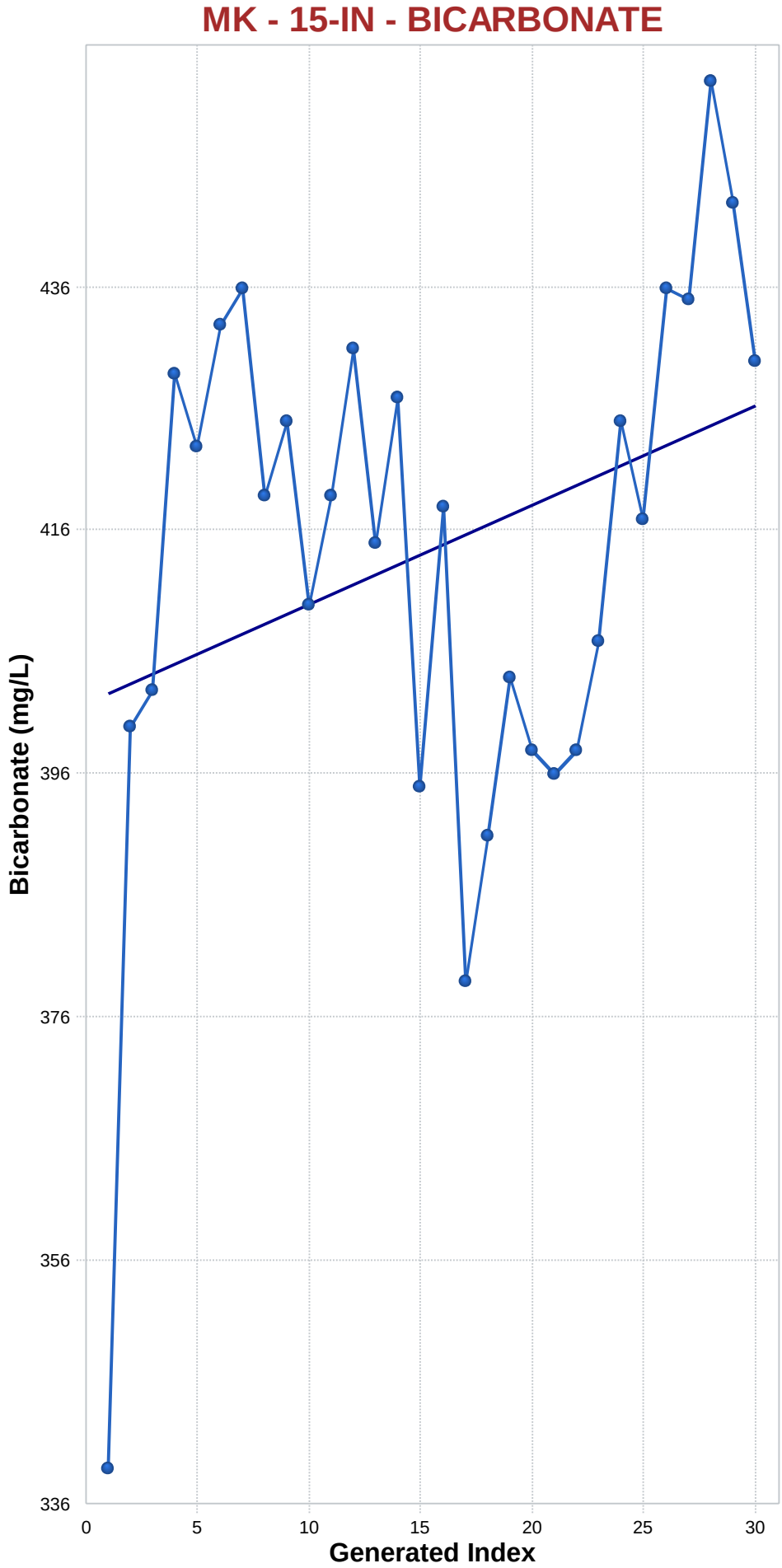
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9047
Standardized Value of S	-1.3416
M-K Test Value (S)	-76
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0899

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0004

Insufficient statistical evidence of a significant trend at the specified level of significance.



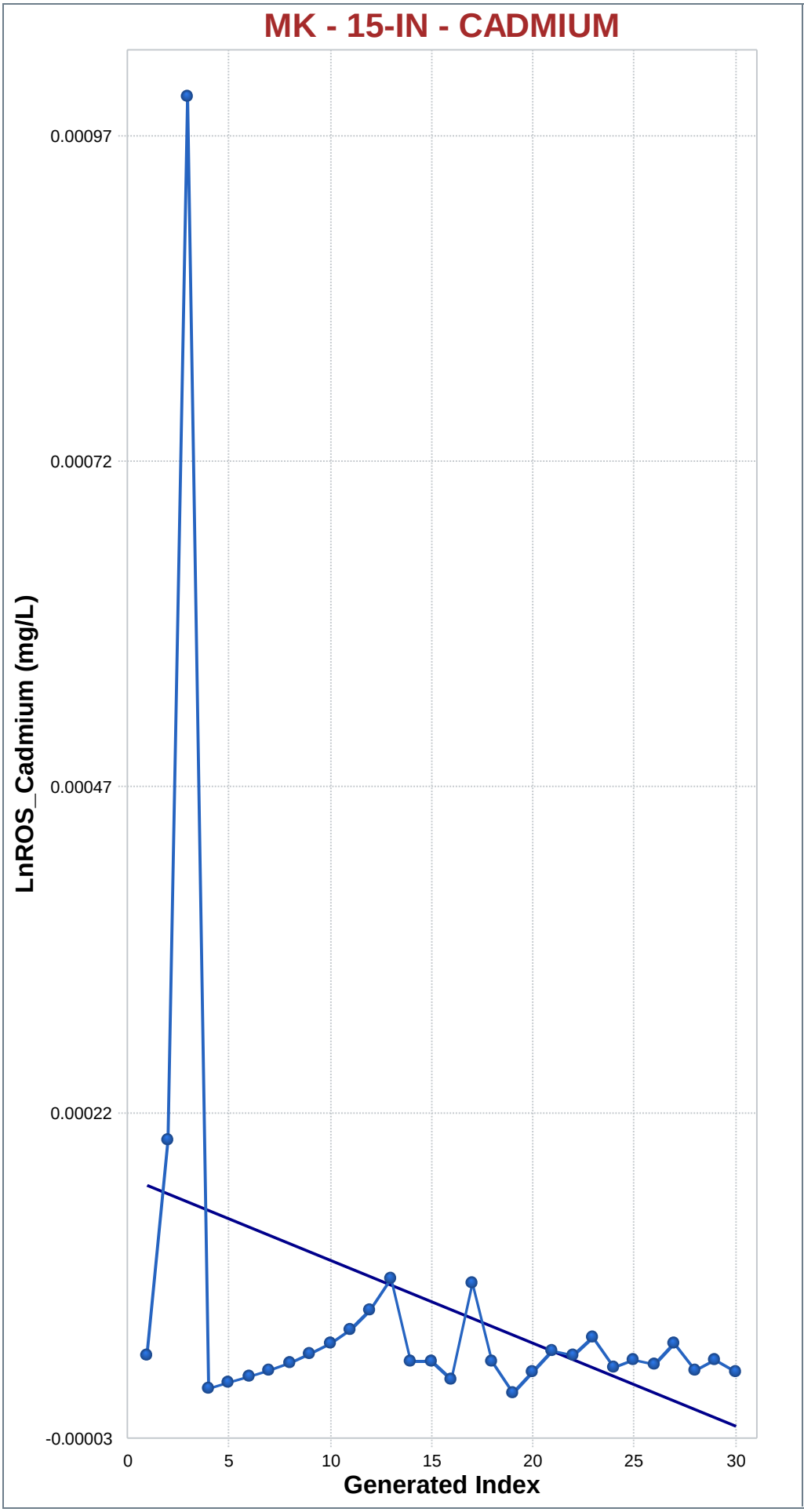
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0149
Standardized Value of S	1.2140
M-K Test Value (S)	69
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1124

OLS Regression Line (Blue)

OLS Regression Slope	0.8156
OLS Regression Intercept	401.8253

Insufficient statistical evidence of a significant trend at the specified level of significance.



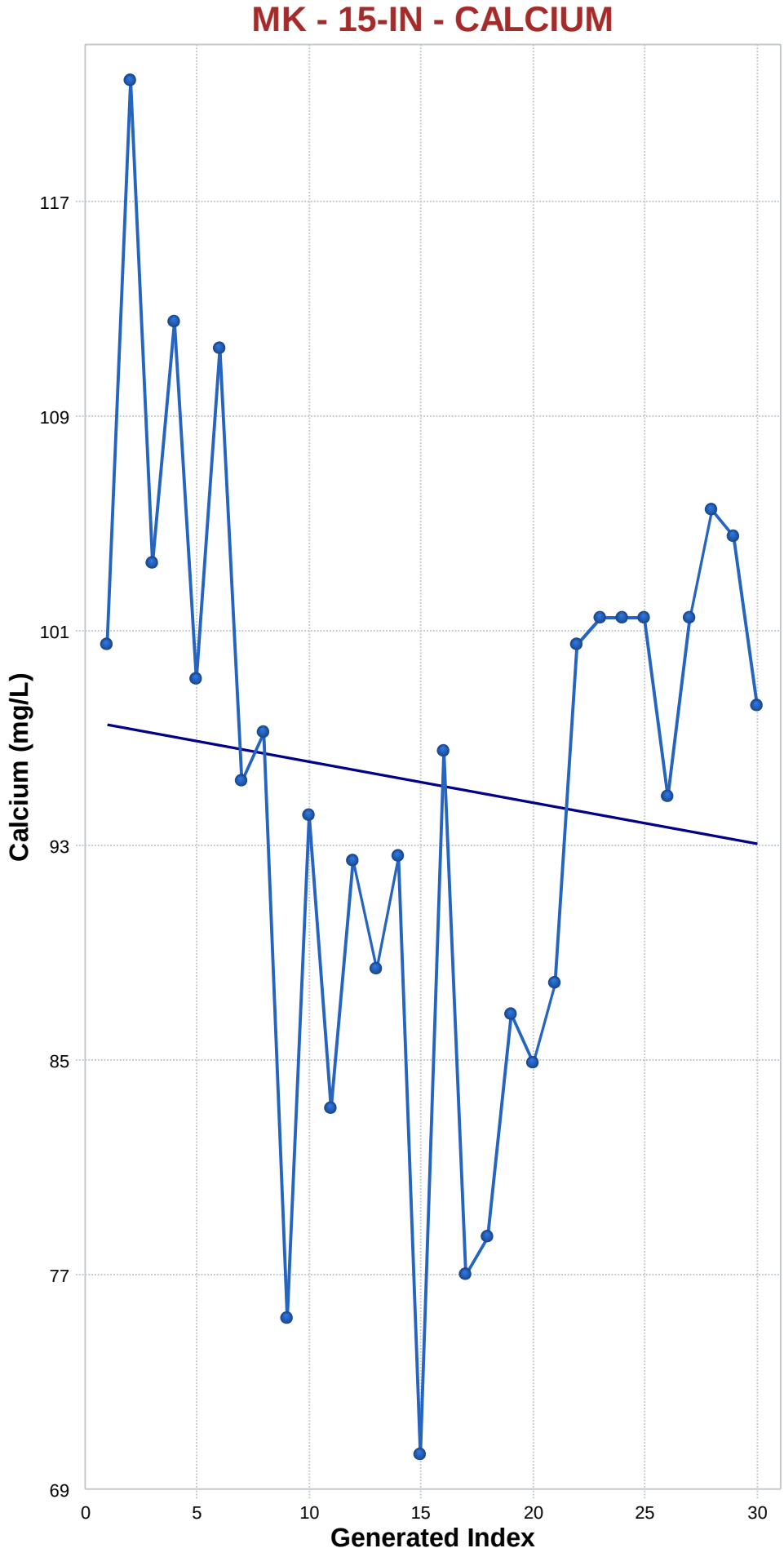
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0417
Standardized Value of S	-0.5532
M-K Test Value (S)	-32
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.2901

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0002

Insufficient statistical evidence of a significant trend at the specified level of significance.



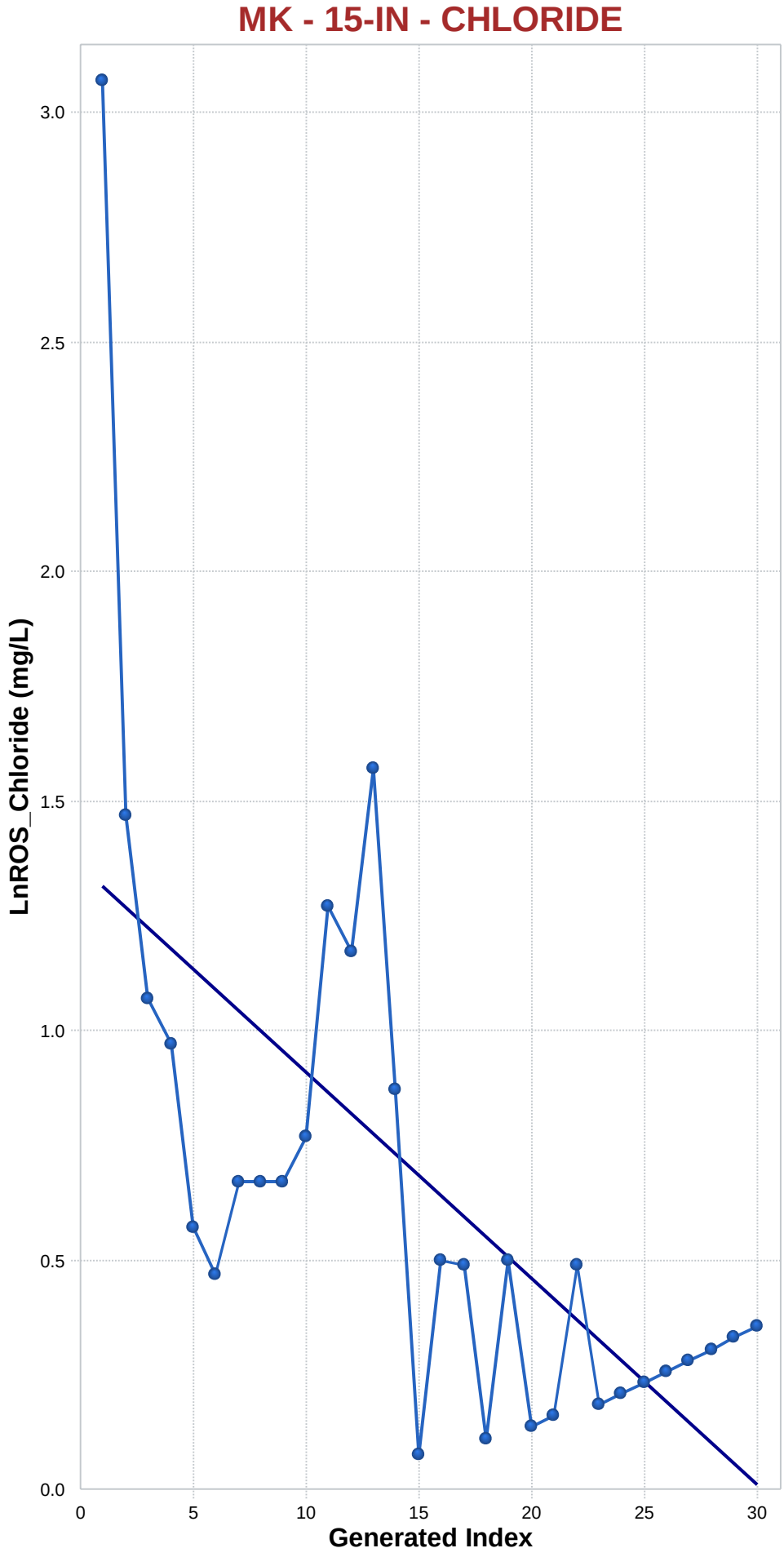
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9643
Standardized Value of S	-0.0179
M-K Test Value (S)	-2
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4929

OLS Regression Line (Blue)

OLS Regression Slope	-0.1513
OLS Regression Intercept	97.1315

Insufficient statistical evidence of a significant trend at the specified level of significance.



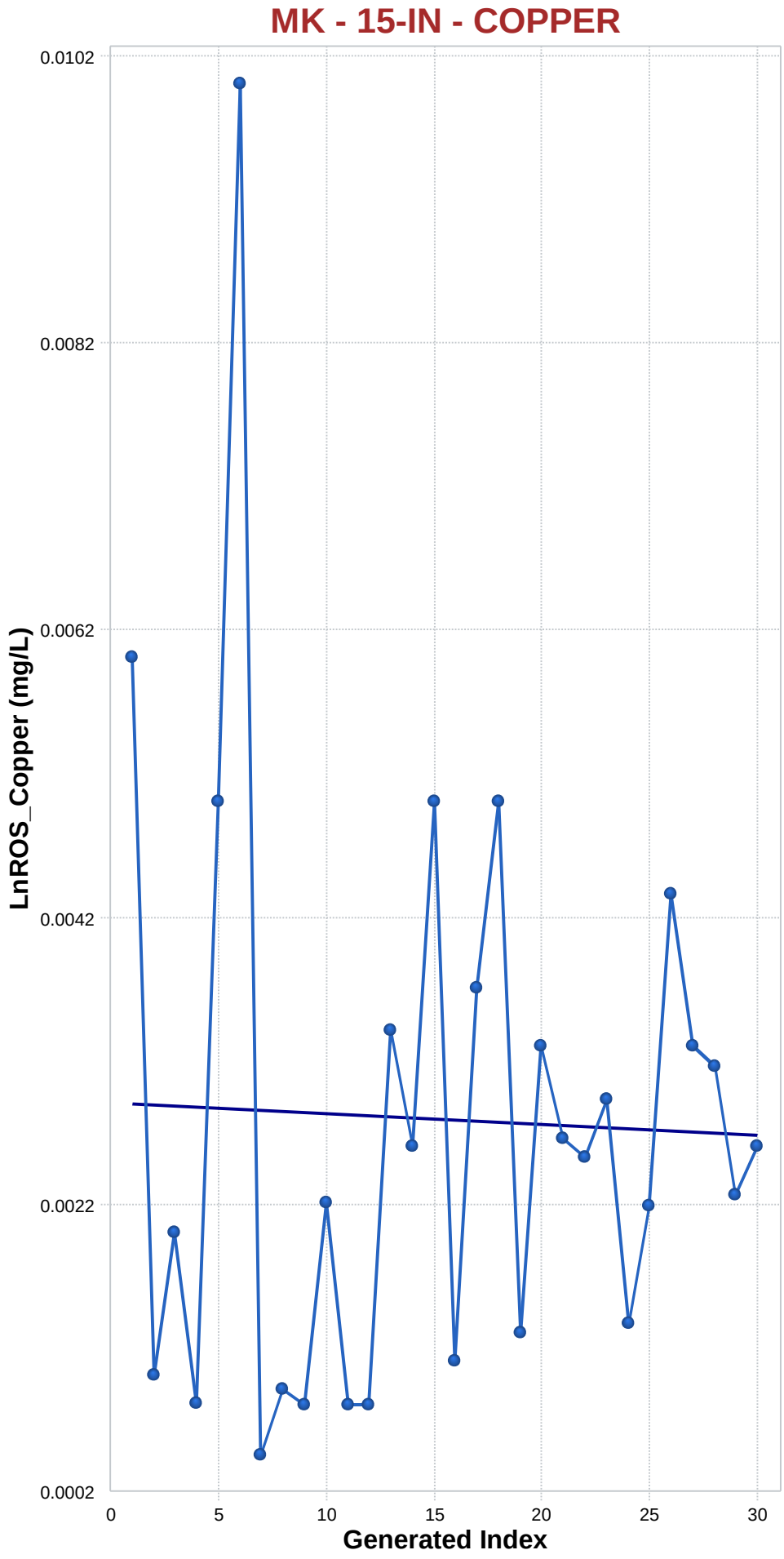
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0000
Standardized Value of S	-3.2679
M-K Test Value (S)	-184
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0005

OLS Regression Line (Blue)

OLS Regression Slope	-0.0450
OLS Regression Intercept	1.3916

Statistically significant evidence of a decreasing trend at the specified level of significance.



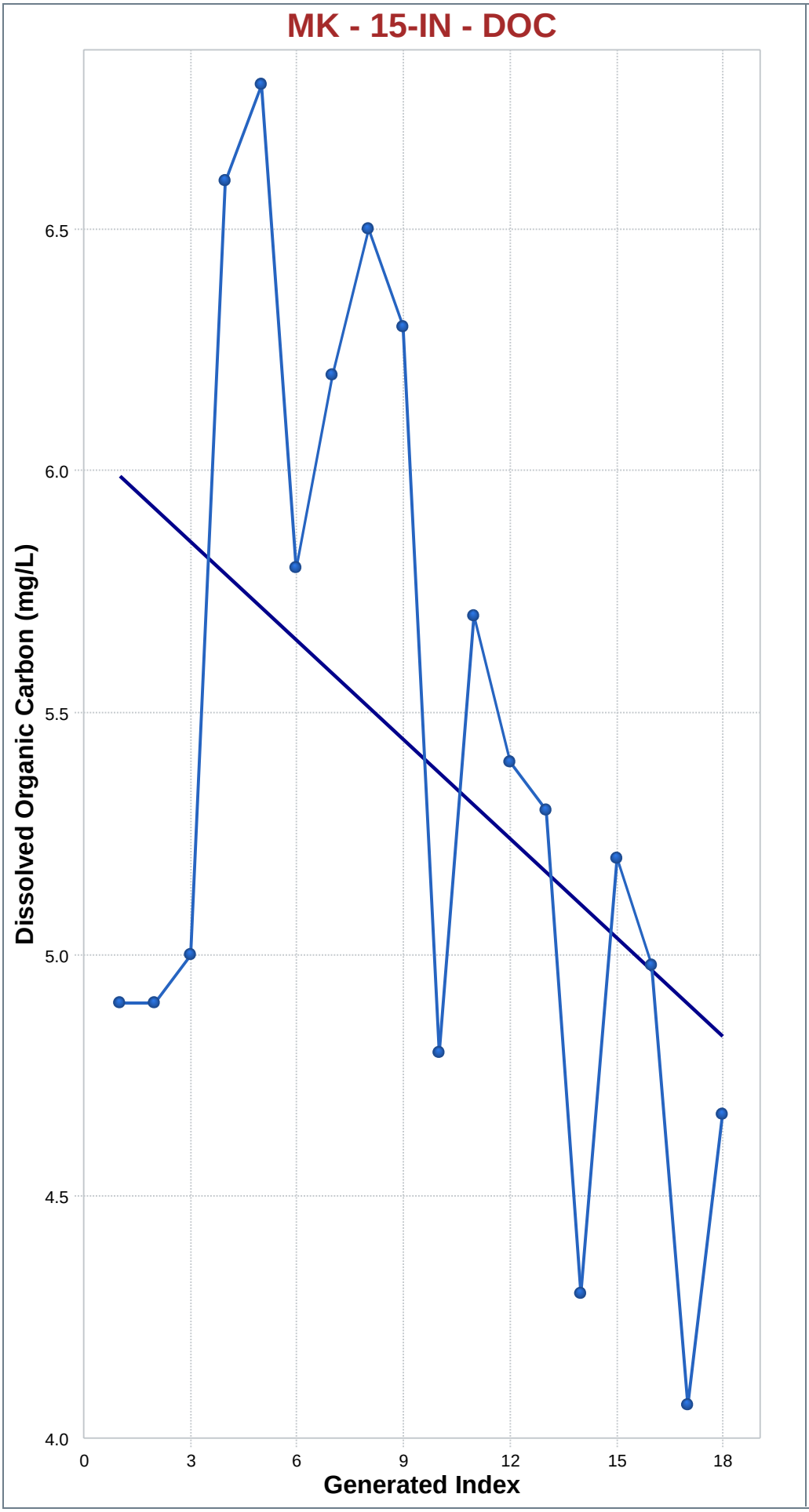
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9762
Standardized Value of S	0.9111
M-K Test Value (S)	52
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1811

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0029

Insufficient statistical evidence of a significant trend at the specified level of significance.



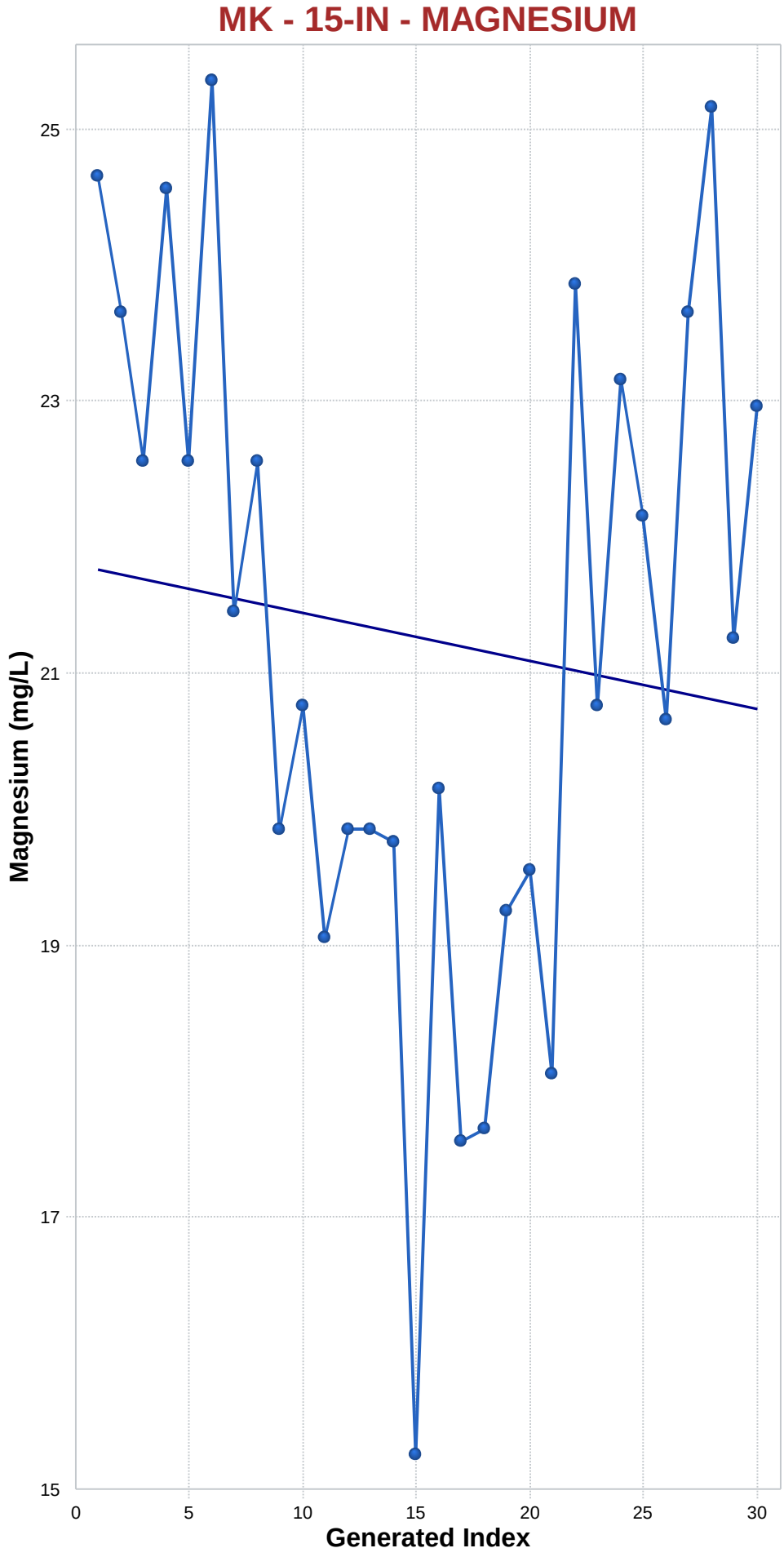
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.3818
Standardized Value of S	-2.0090
M-K Test Value (S)	-54
Tabulated p-value	0.0200
Approximate p-value	0.0223

OLS Regression Line (Blue)

OLS Regression Slope	-0.0680
OLS Regression Intercept	6.0585

Statistically significant evidence of a decreasing trend at the specified level of significance.



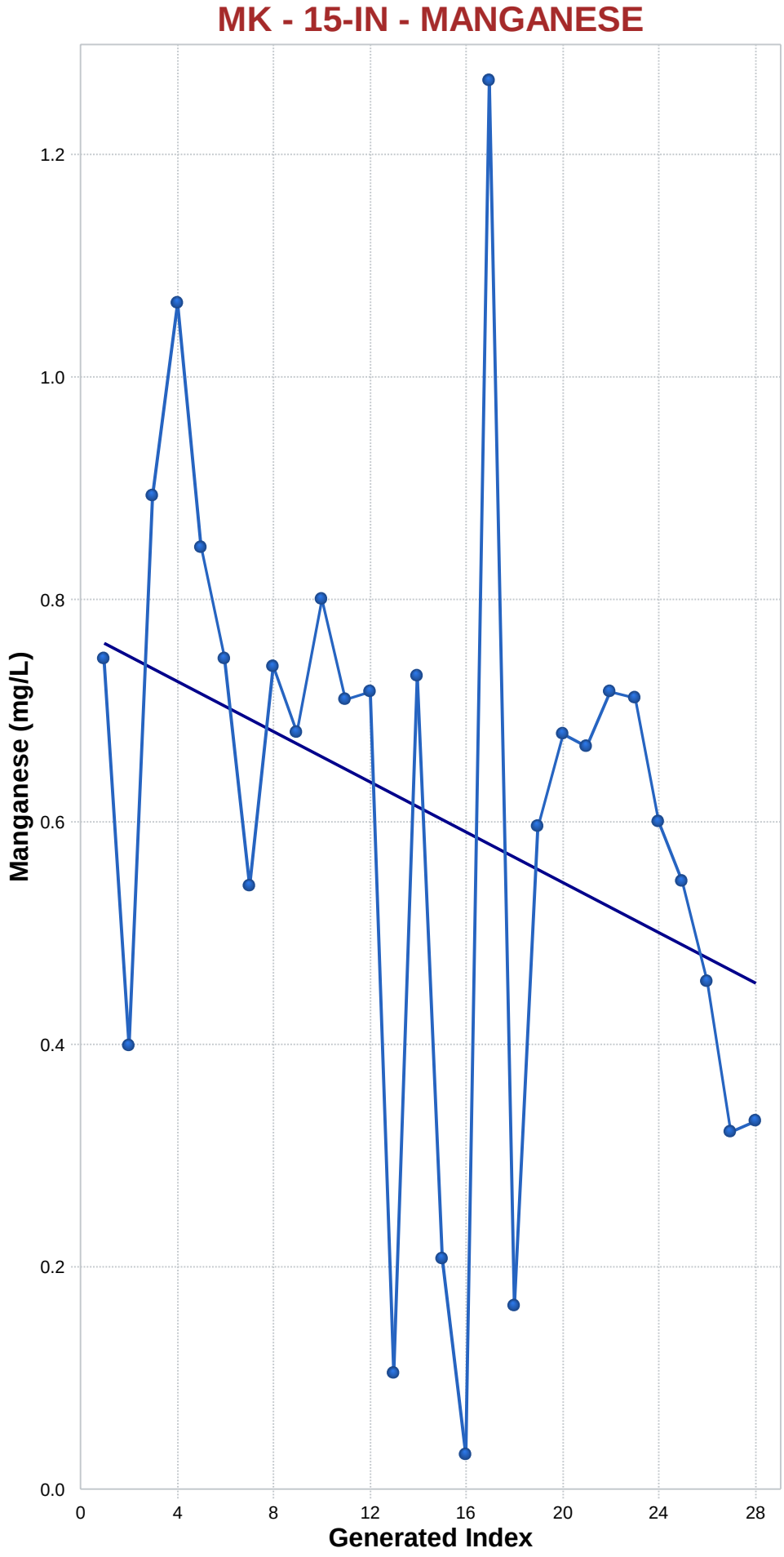
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9673
Standardized Value of S	-0.7862
M-K Test Value (S)	-45
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.2159

OLS Regression Line (Blue)

OLS Regression Slope	-0.0353
OLS Regression Intercept	22.1439

Insufficient statistical evidence of a significant trend at the specified level of significance.



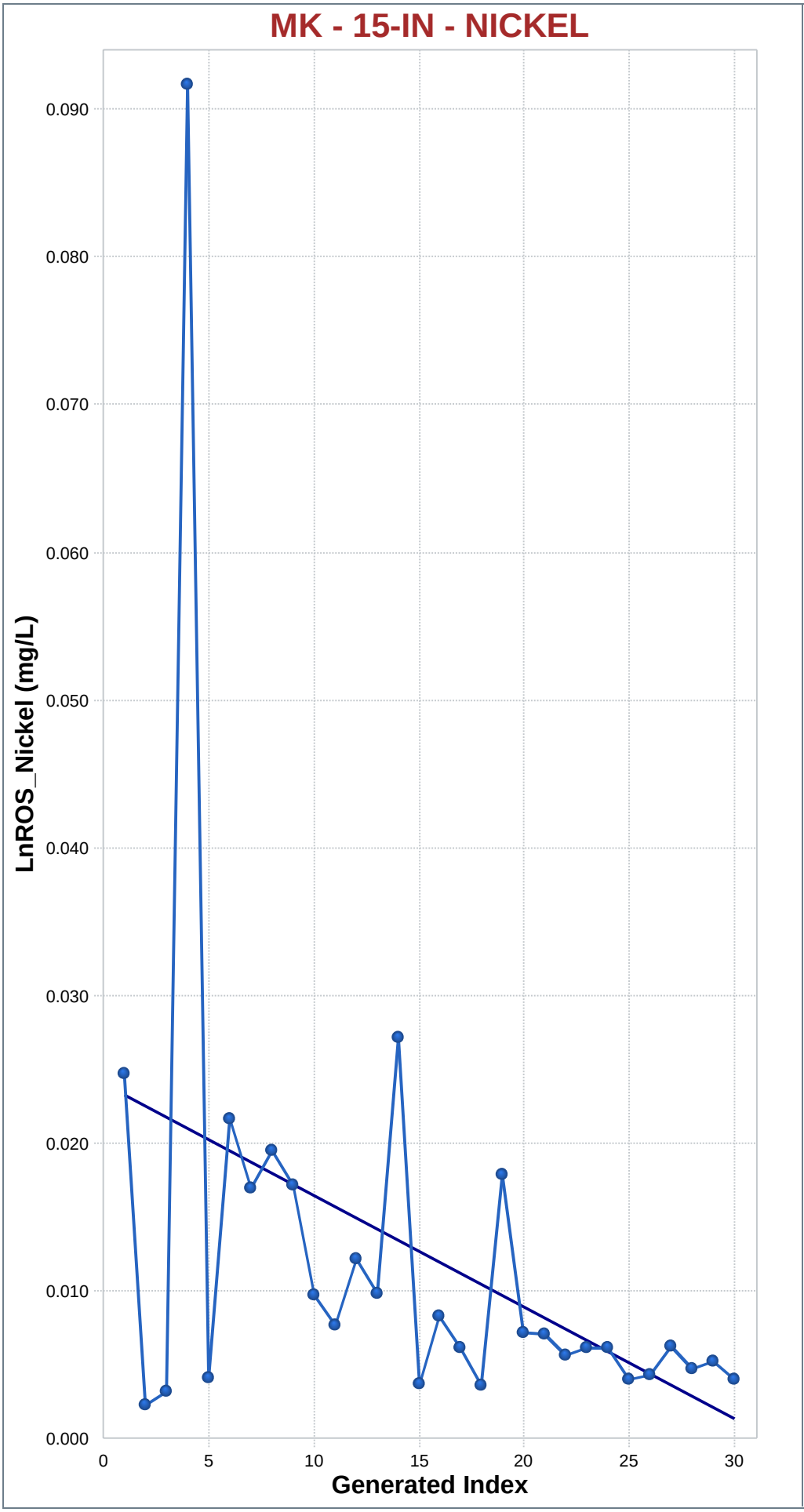
Mann-Kendall Trend Analysis

n	28
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	50.5964
Standardized Value of S	-2.6682
M-K Test Value (S)	-136
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0038

OLS Regression Line (Blue)

OLS Regression Slope	-0.0113
OLS Regression Intercept	0.7854

Statistically significant evidence of a decreasing trend at the specified level of significance.



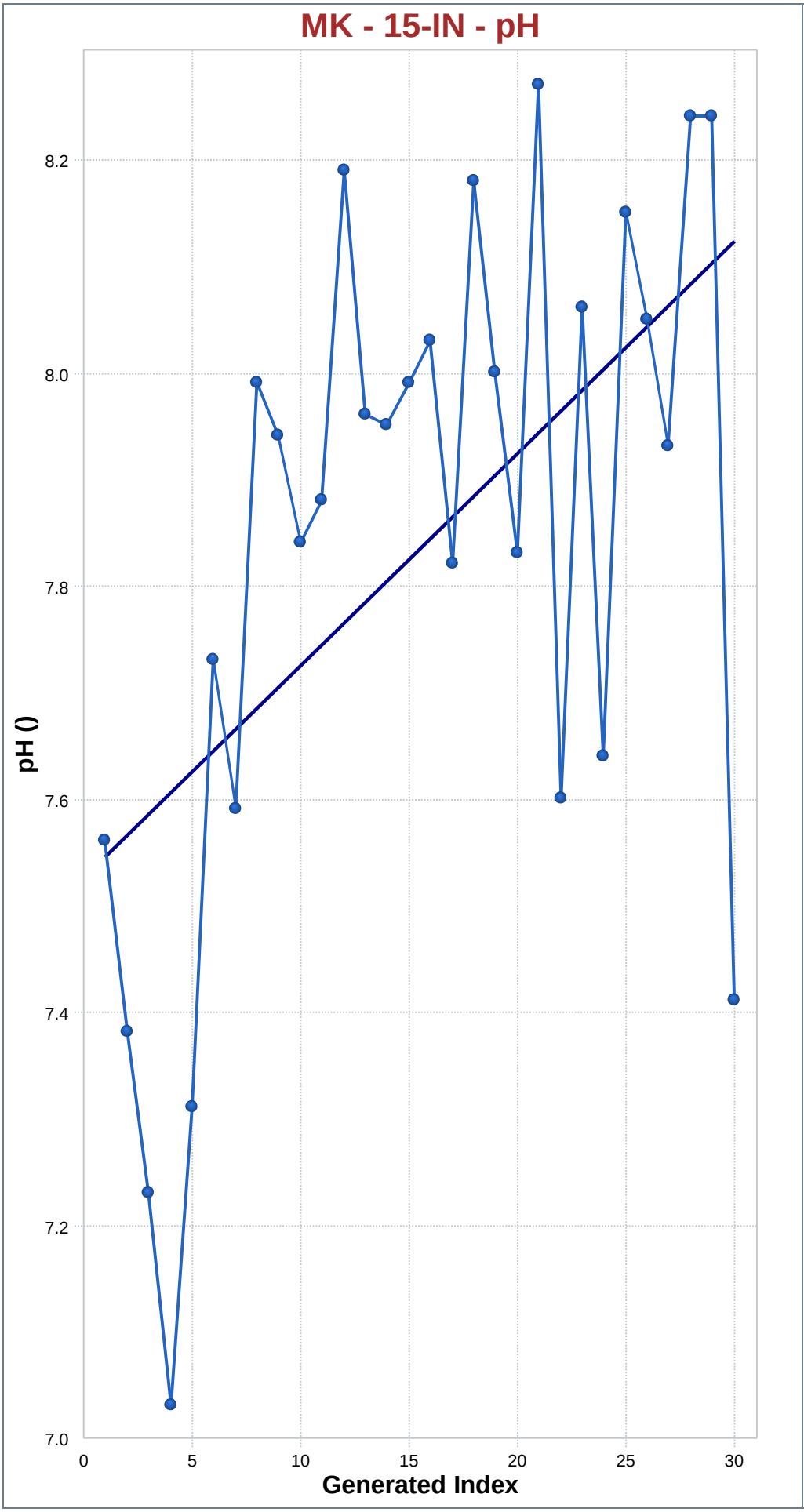
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0417
Standardized Value of S	-2.6230
M-K Test Value (S)	-148
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0044

OLS Regression Line (Blue)

OLS Regression Slope	-0.0008
OLS Regression Intercept	0.0243

Statistically significant evidence of a decreasing trend at the specified level of significance.



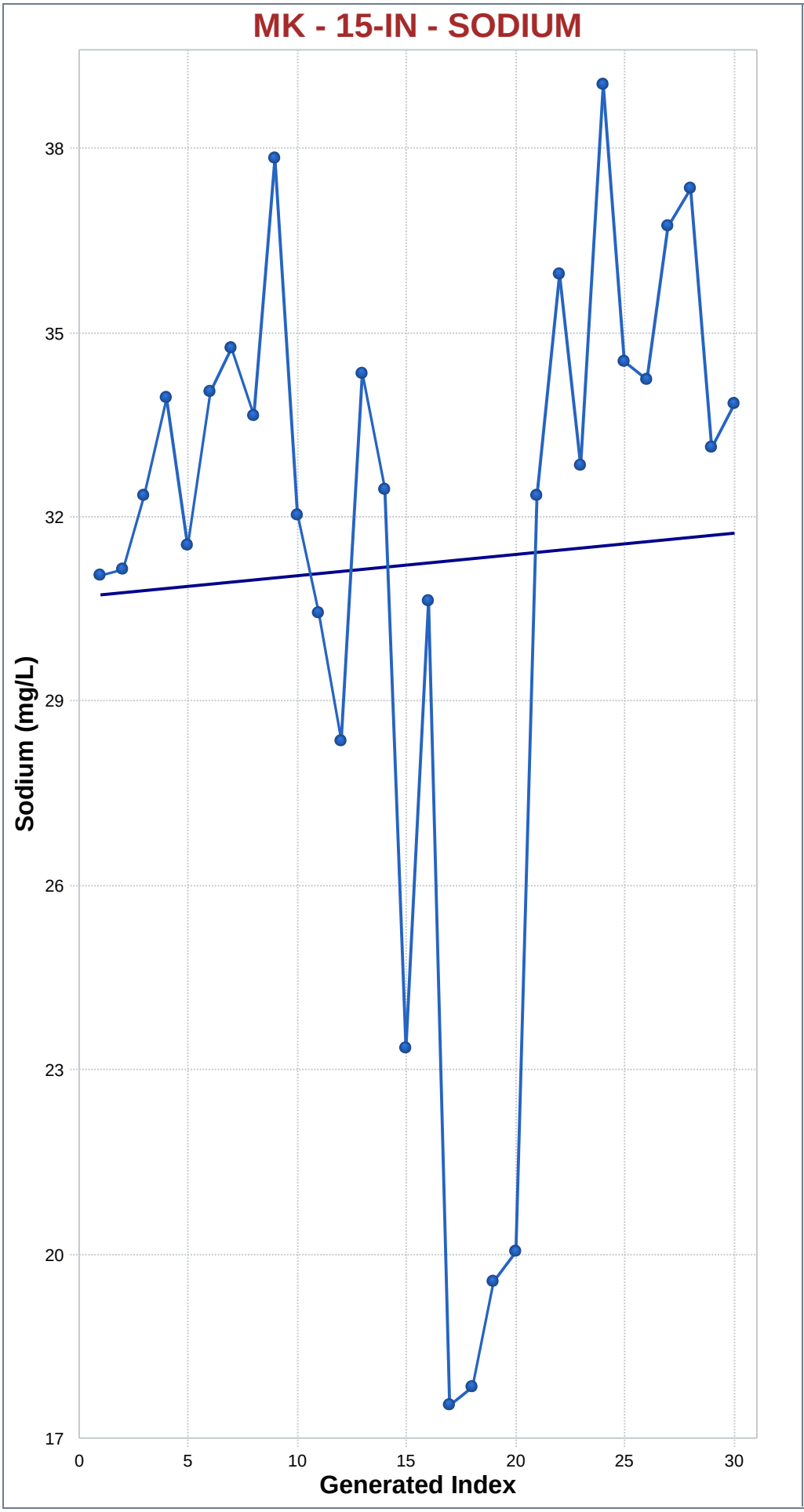
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0327
Standardized Value of S	3.1767
M-K Test Value (S)	179
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0007

OLS Regression Line (Blue)

OLS Regression Slope	0.0199
OLS Regression Intercept	7.5353

Statistically significant evidence of an increasing trend at the specified level of significance.



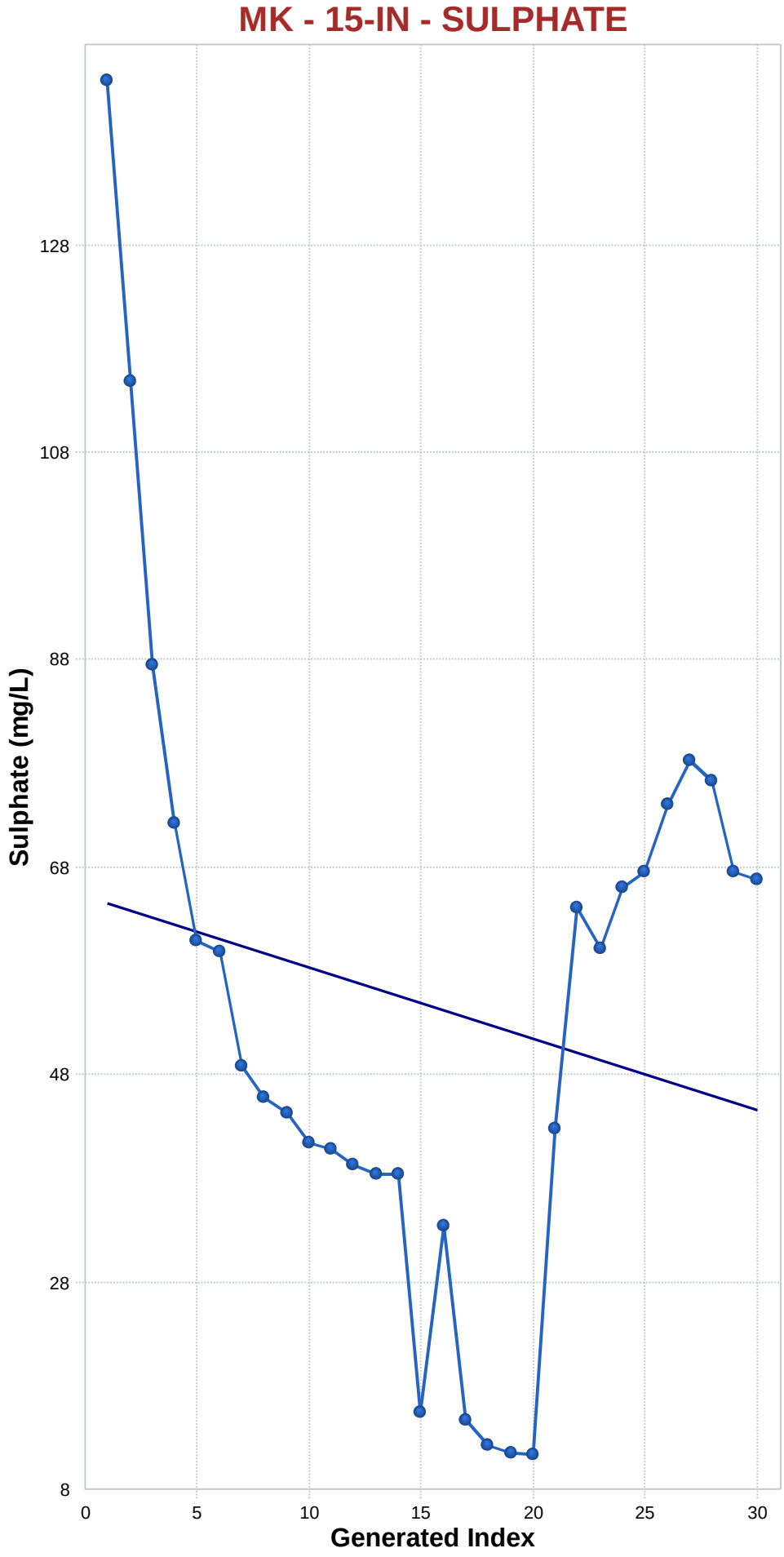
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0417
Standardized Value of S	1.2312
M-K Test Value (S)	70
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1091

OLS Regression Line (Blue)

OLS Regression Slope	0.0346
OLS Regression Intercept	30.6508

Insufficient statistical evidence of a significant trend at the specified level of significance.



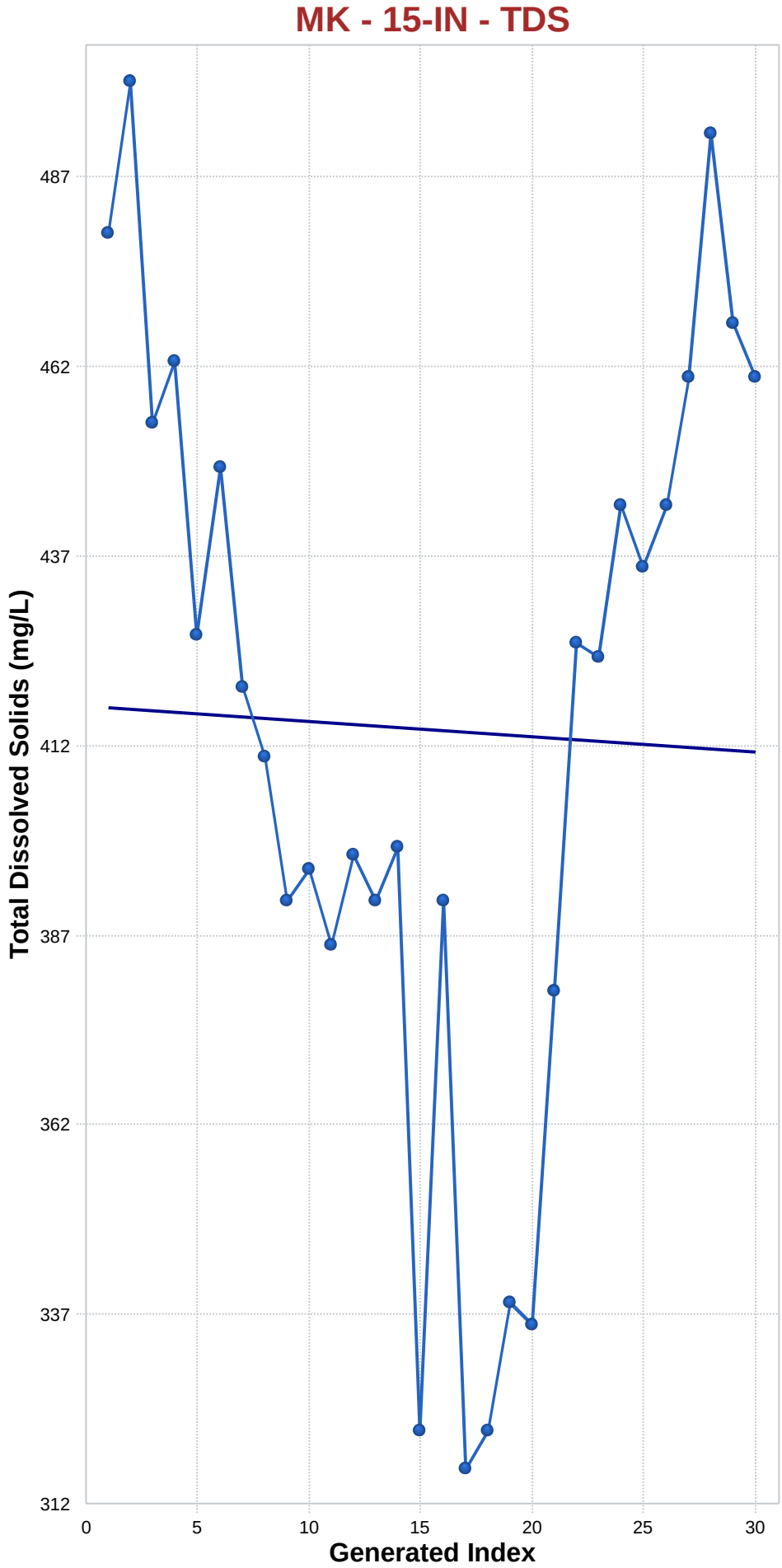
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0327
Standardized Value of S	-0.8566
M-K Test Value (S)	-49
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1958

OLS Regression Line (Blue)

OLS Regression Slope	-0.6885
OLS Regression Intercept	65.4444

Insufficient statistical evidence of a significant trend at the specified level of significance.



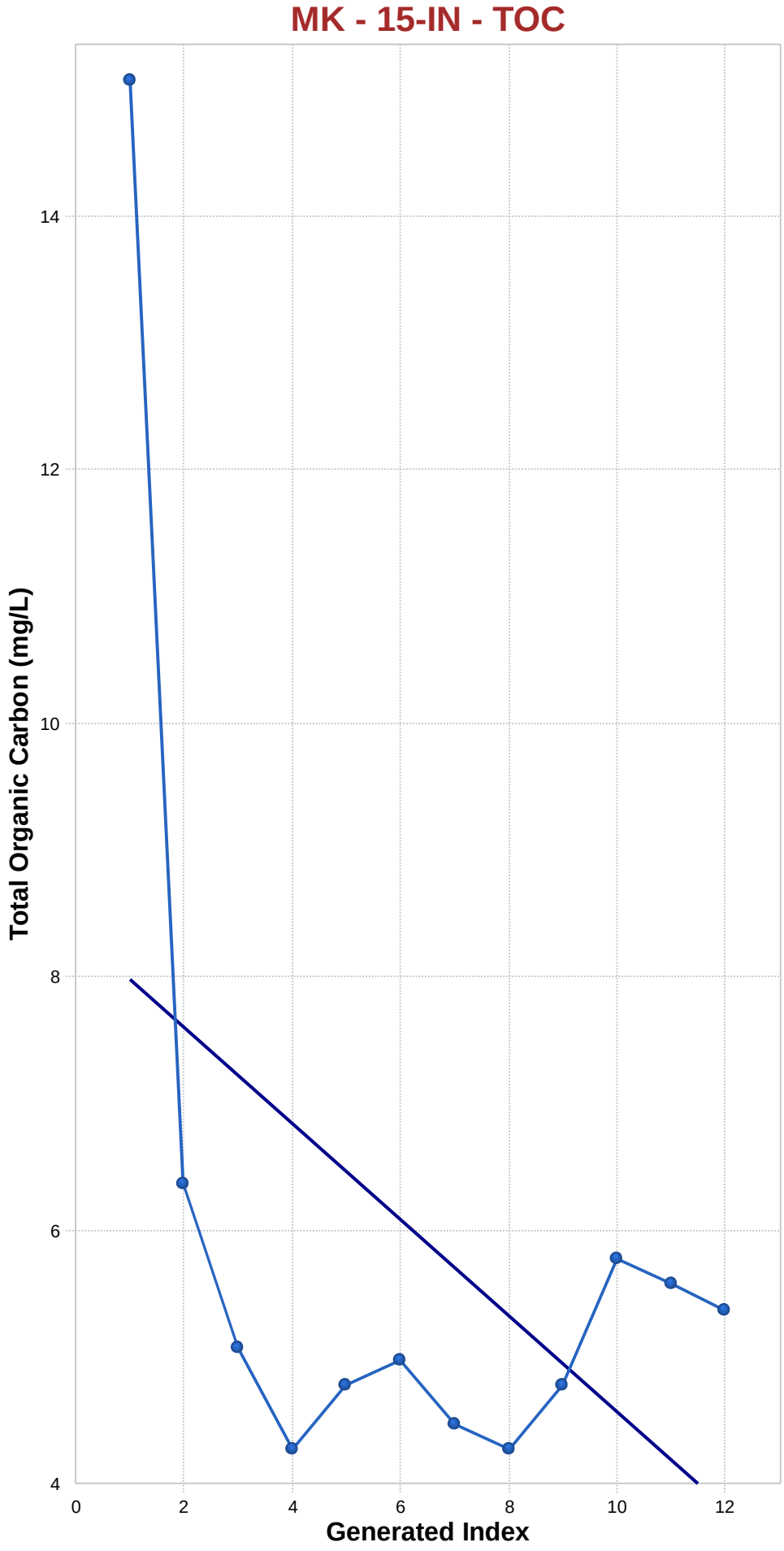
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9911
Standardized Value of S	-0.1786
M-K Test Value (S)	-11
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4291

OLS Regression Line (Blue)

OLS Regression Slope	-0.2049
OLS Regression Intercept	417.6092

Insufficient statistical evidence of a significant trend at the specified level of significance.



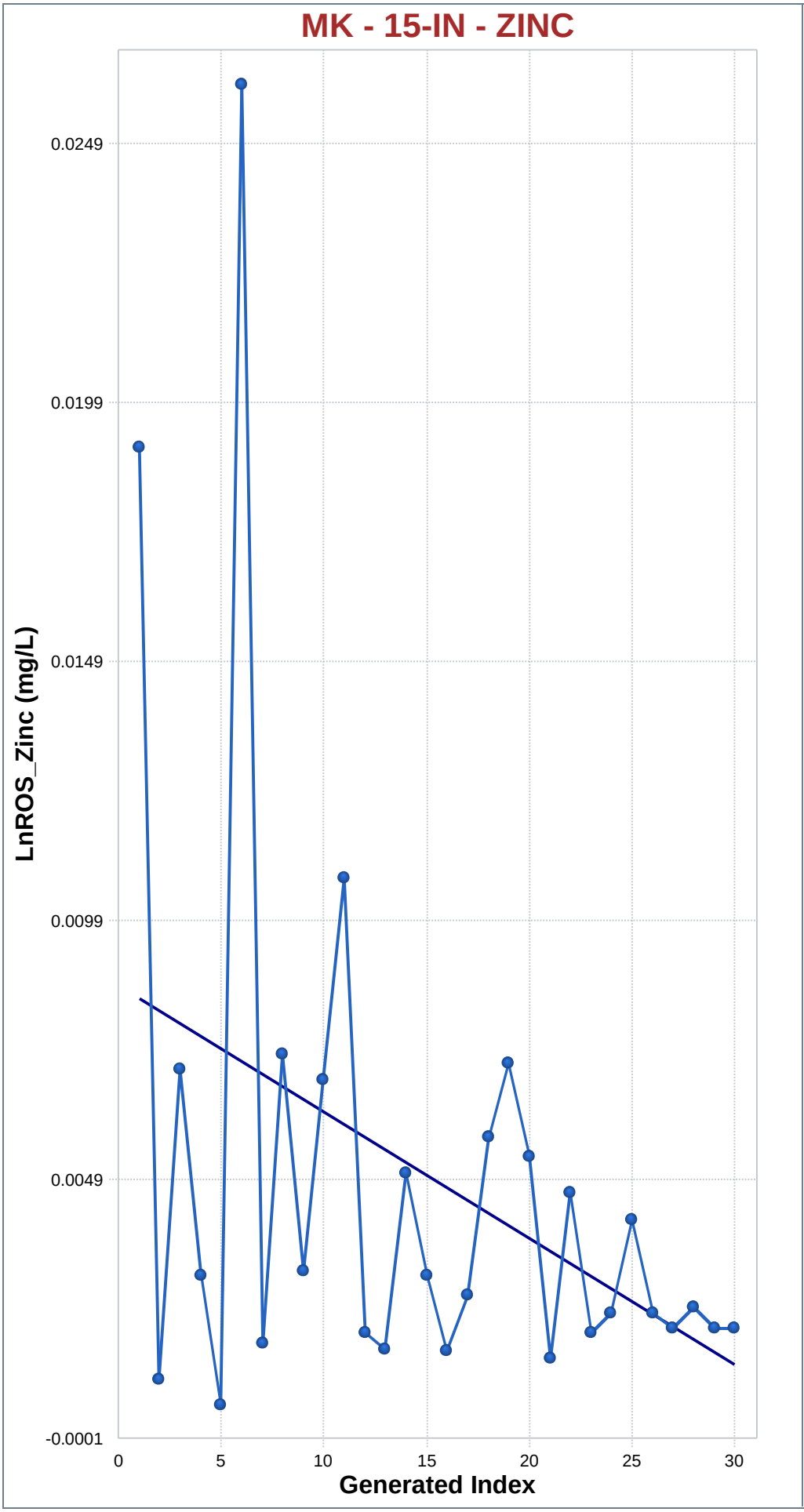
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.5144
Standardized Value of S	-0.4823
M-K Test Value (S)	-8
Tabulated p-value	0.3190
Approximate p-value	0.3148

OLS Regression Line (Blue)

OLS Regression Slope	-0.3794
OLS Regression Intercept	8.2909

Insufficient statistical evidence of a significant trend at the specified level of significance.



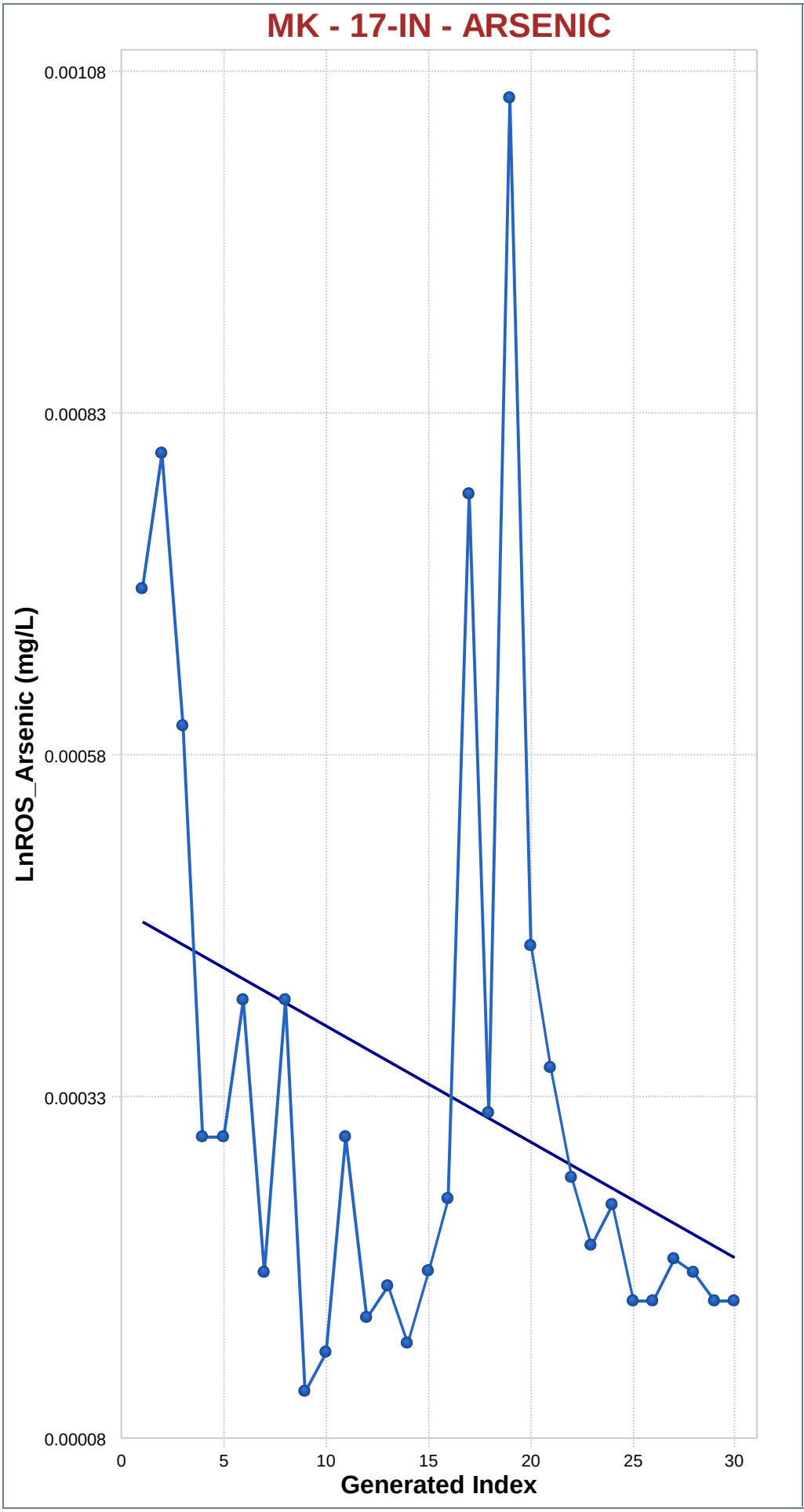
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9911
Standardized Value of S	-1.3931
M-K Test Value (S)	-79
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0818

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0086

Insufficient statistical evidence of a significant trend at the specified level of significance.



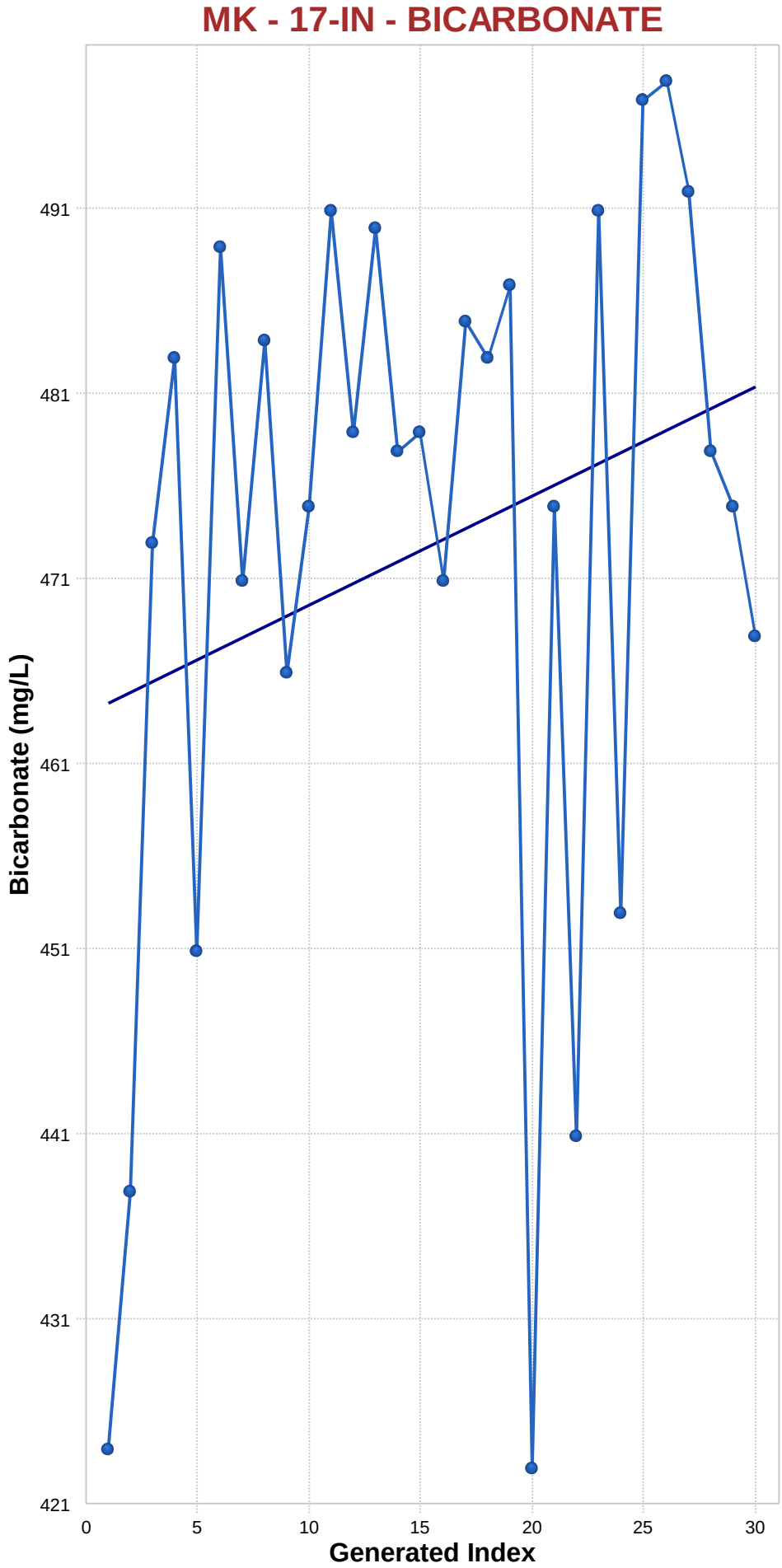
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9226
Standardized Value of S	-2.0207
M-K Test Value (S)	-114
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0217

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0005

Statistically significant evidence of a decreasing trend at the specified level of significance.



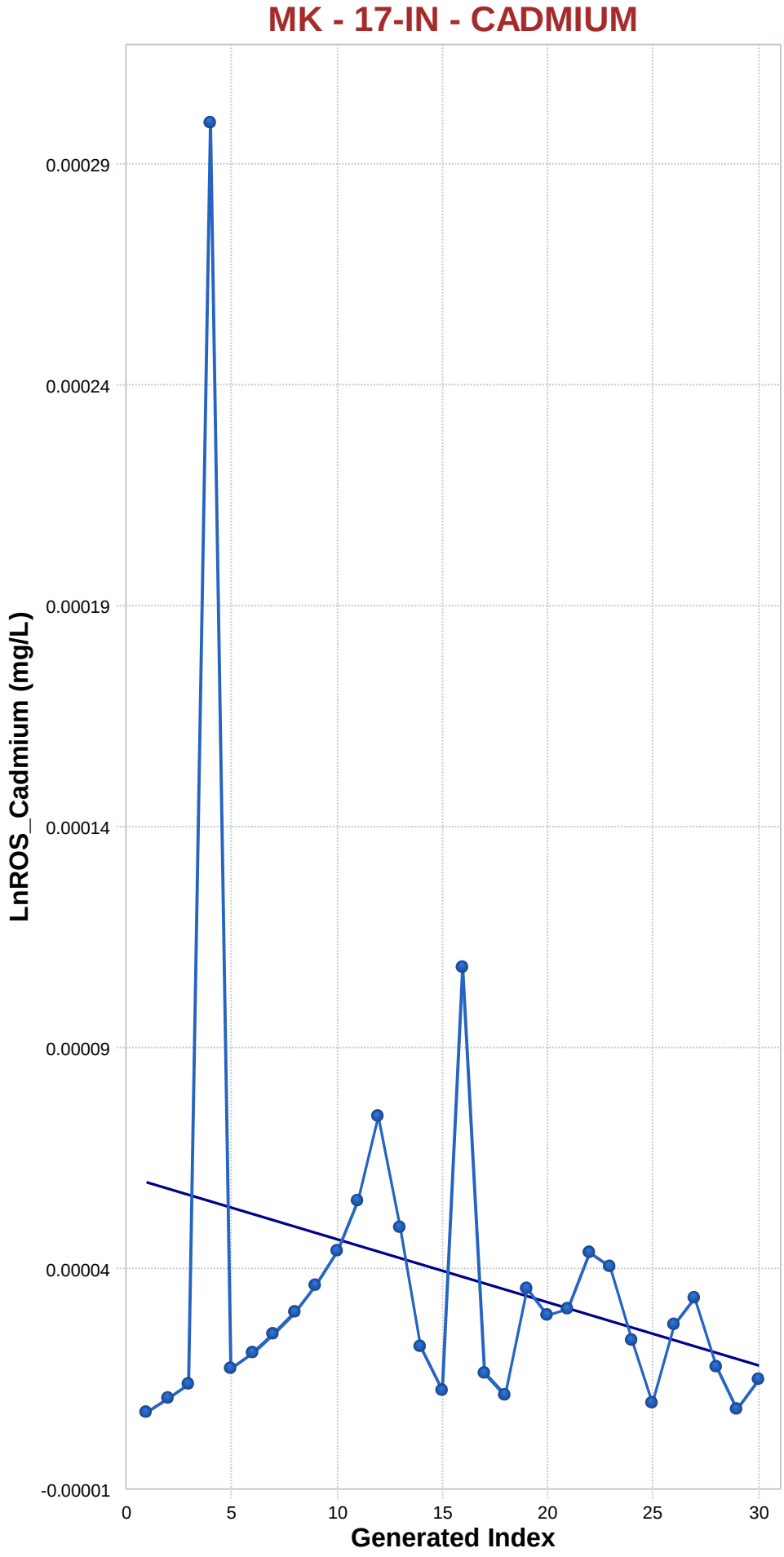
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9732
Standardized Value of S	1.5007
M-K Test Value (S)	85
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0667

OLS Regression Line (Blue)

OLS Regression Slope	0.5878
OLS Regression Intercept	463.8230

Insufficient statistical evidence of a significant trend at the specified level of significance.



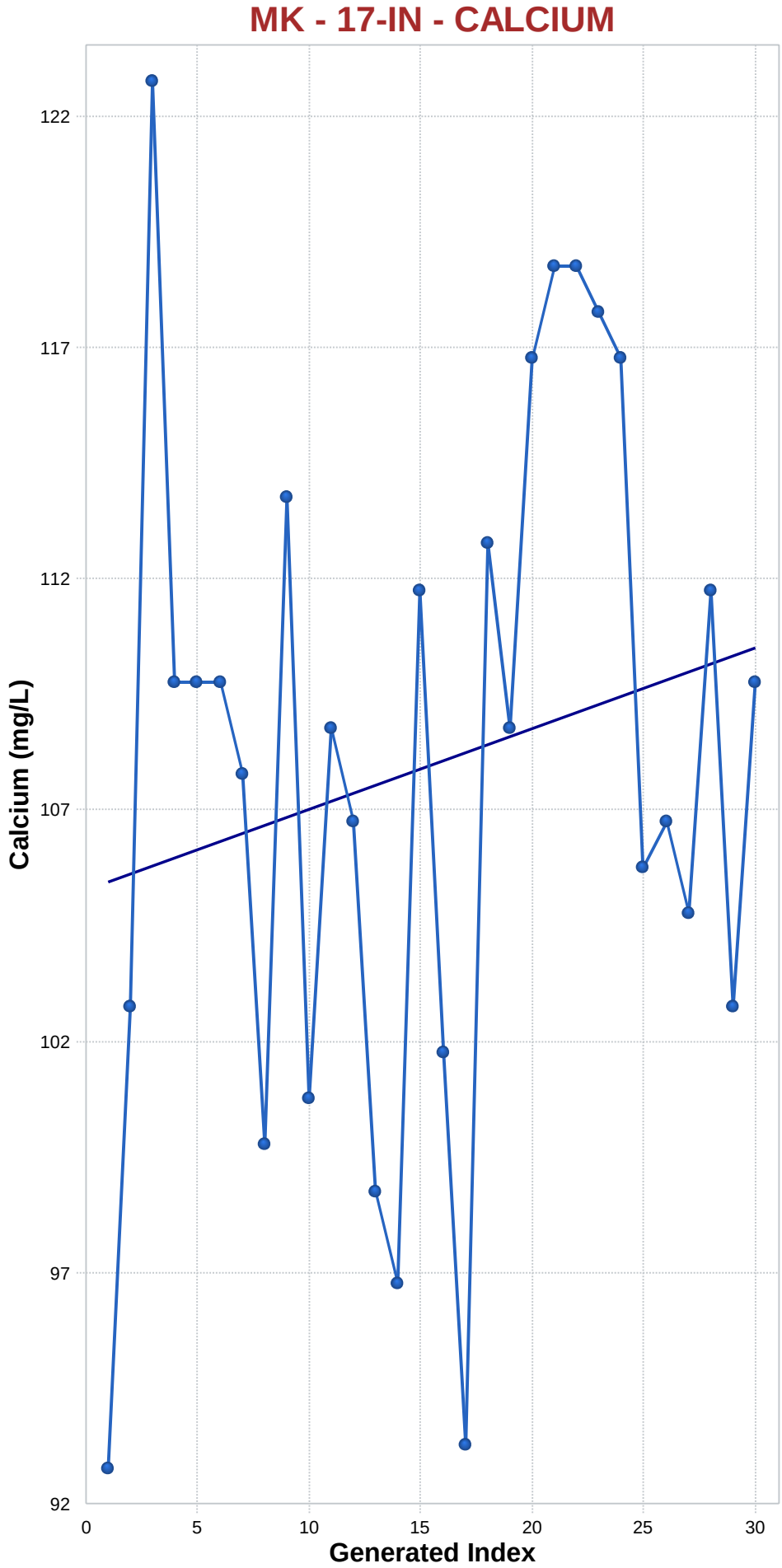
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0506
Standardized Value of S	-0.2141
M-K Test Value (S)	-13
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4152

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0001

Insufficient statistical evidence of a significant trend at the specified level of significance.



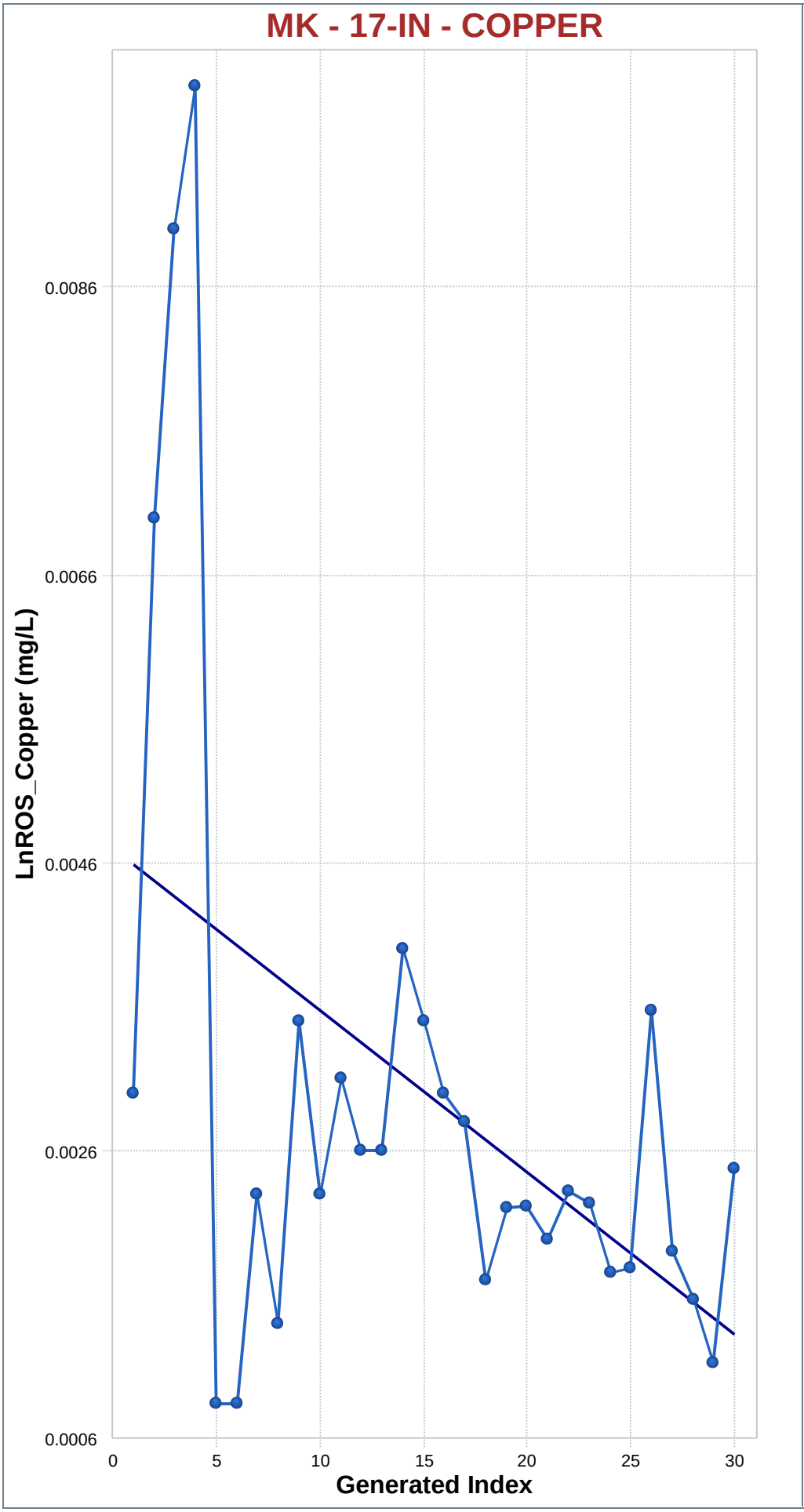
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9196
Standardized Value of S	0.7868
M-K Test Value (S)	45
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2157

OLS Regression Line (Blue)

OLS Regression Slope	0.1747
OLS Regression Intercept	105.5080

Insufficient statistical evidence of a significant trend at the specified level of significance.



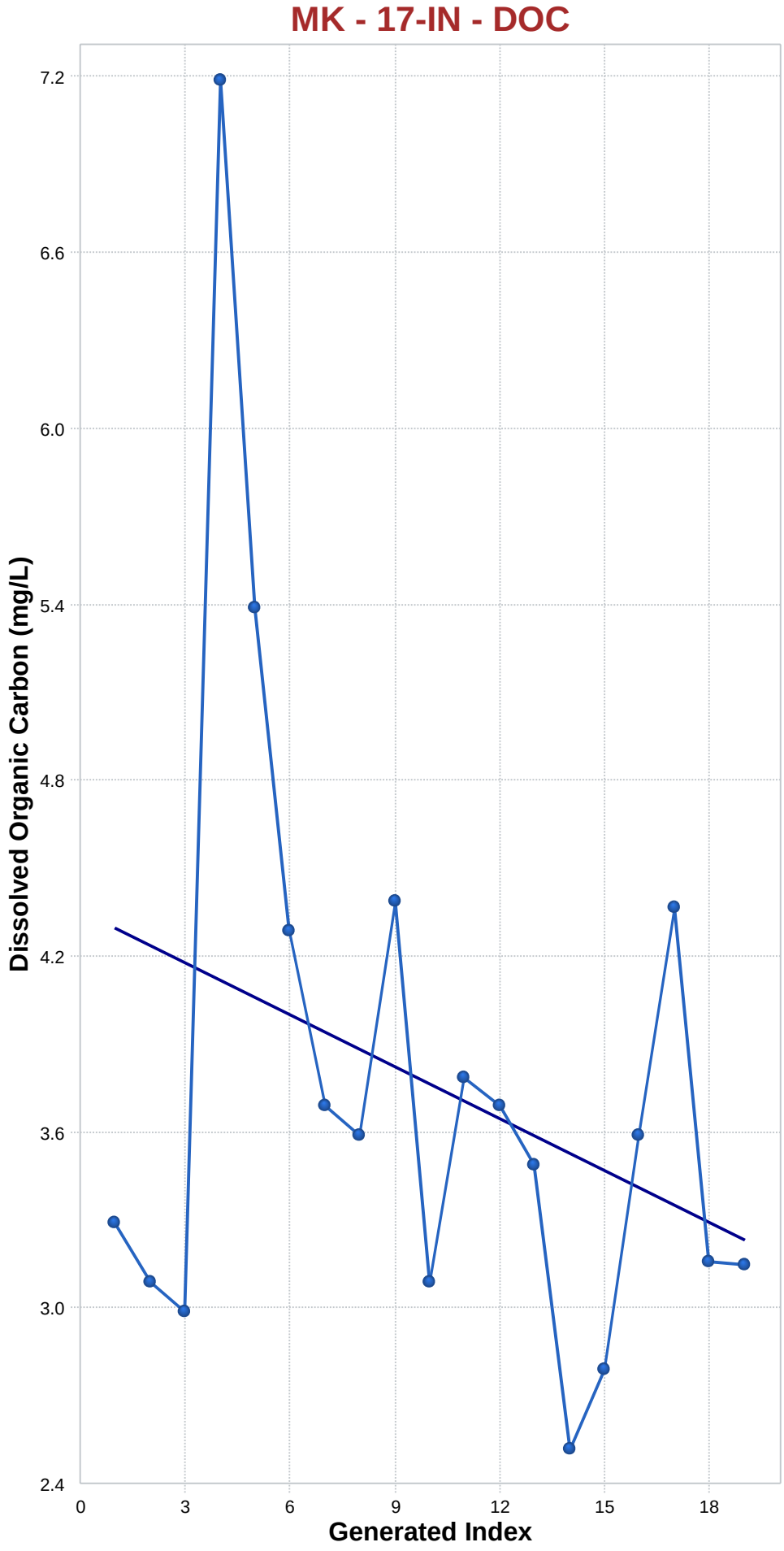
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0060
Standardized Value of S	-2.0891
M-K Test Value (S)	-118
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0184

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0047

Statistically significant evidence of a decreasing trend at the specified level of significance.



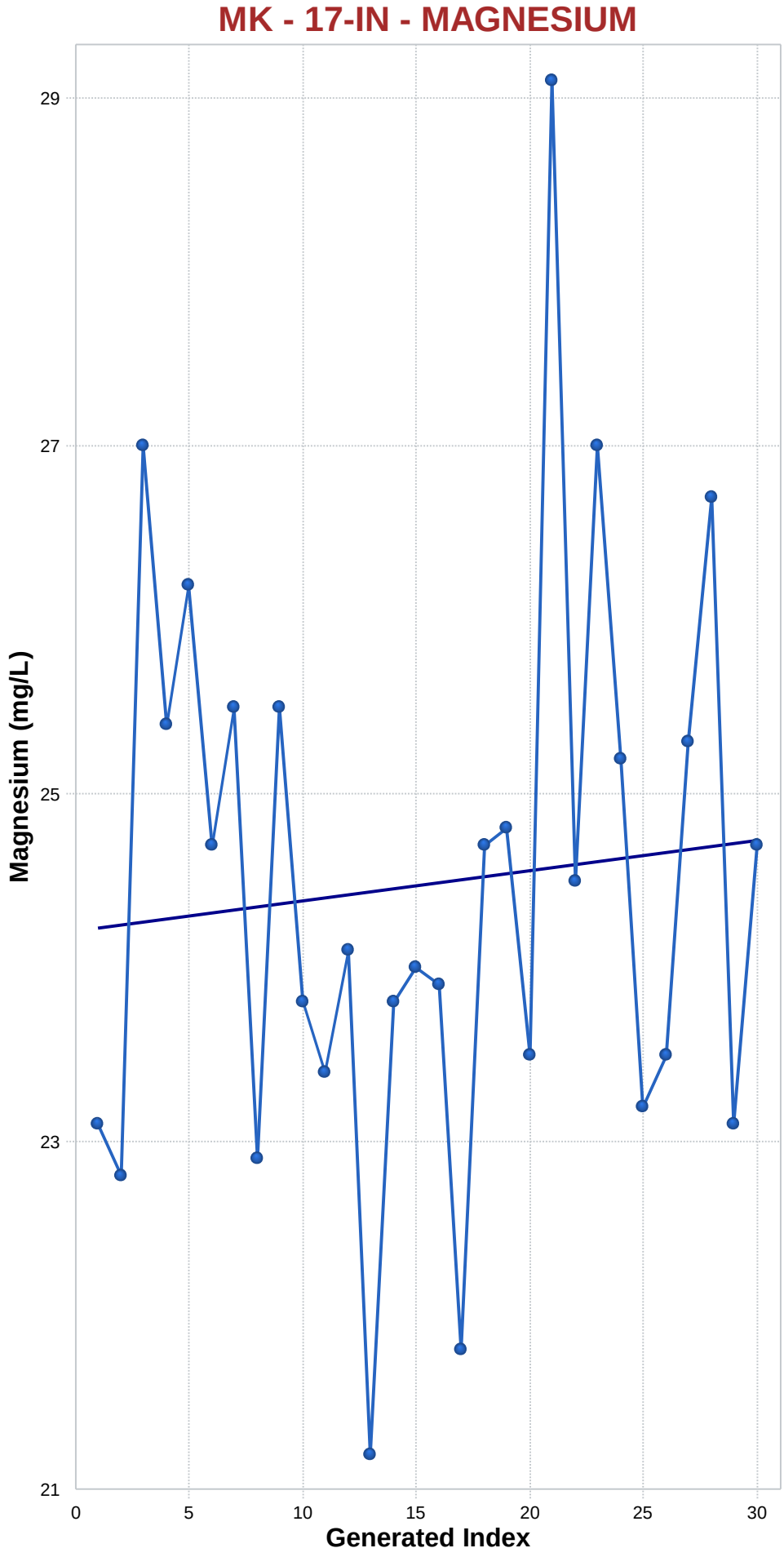
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5307
Standardized Value of S	-1.0865
M-K Test Value (S)	-32
Tabulated p-value	0.1330
Approximate p-value	0.1386

OLS Regression Line (Blue)

OLS Regression Slope	-0.0592
OLS Regression Intercept	4.3674

Insufficient statistical evidence of a significant trend at the specified level of significance.



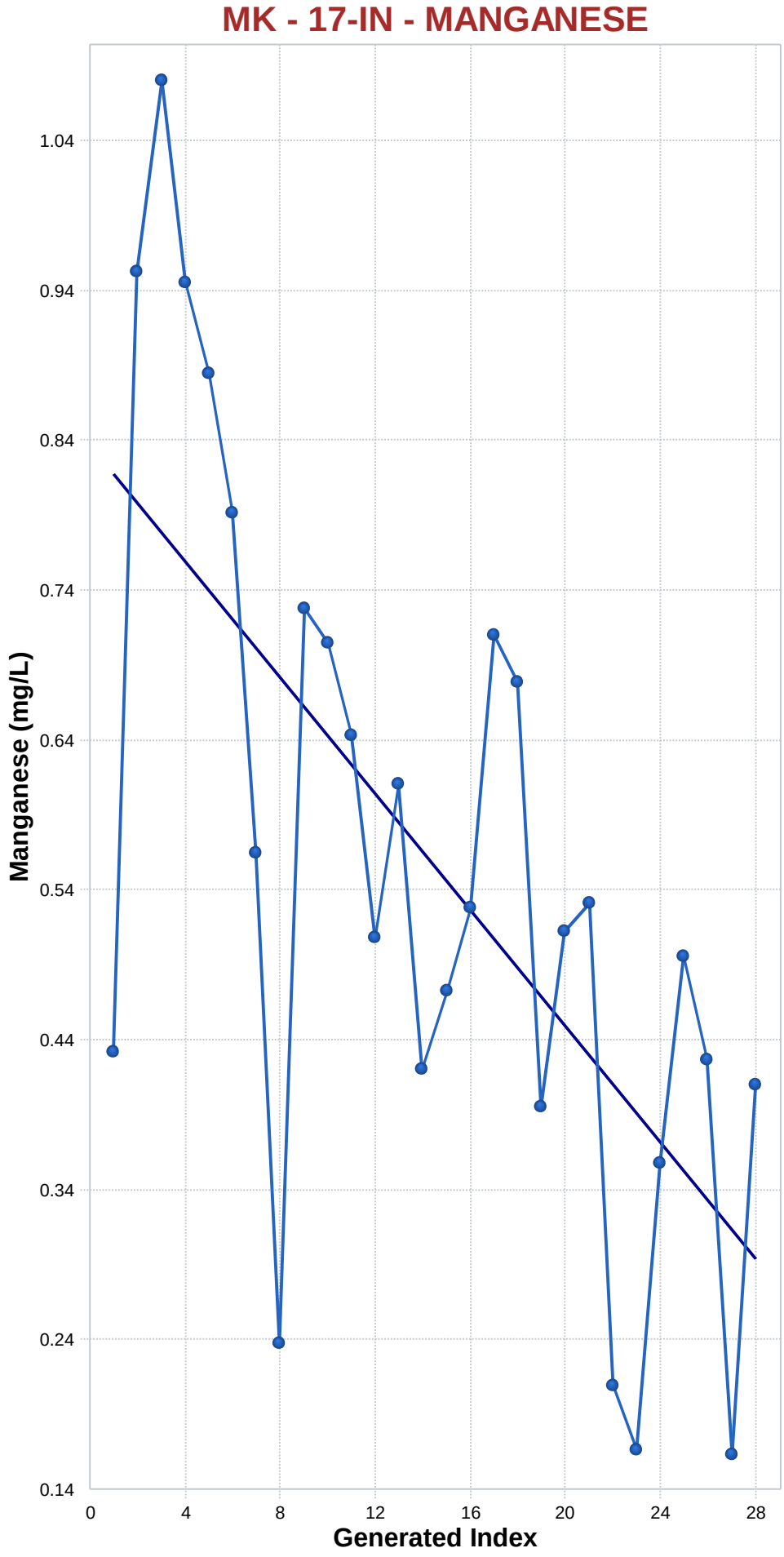
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9732
Standardized Value of S	0.3216
M-K Test Value (S)	19
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3739

OLS Regression Line (Blue)

OLS Regression Slope	0.0174
OLS Regression Intercept	23.9097

Insufficient statistical evidence of a significant trend at the specified level of significance.



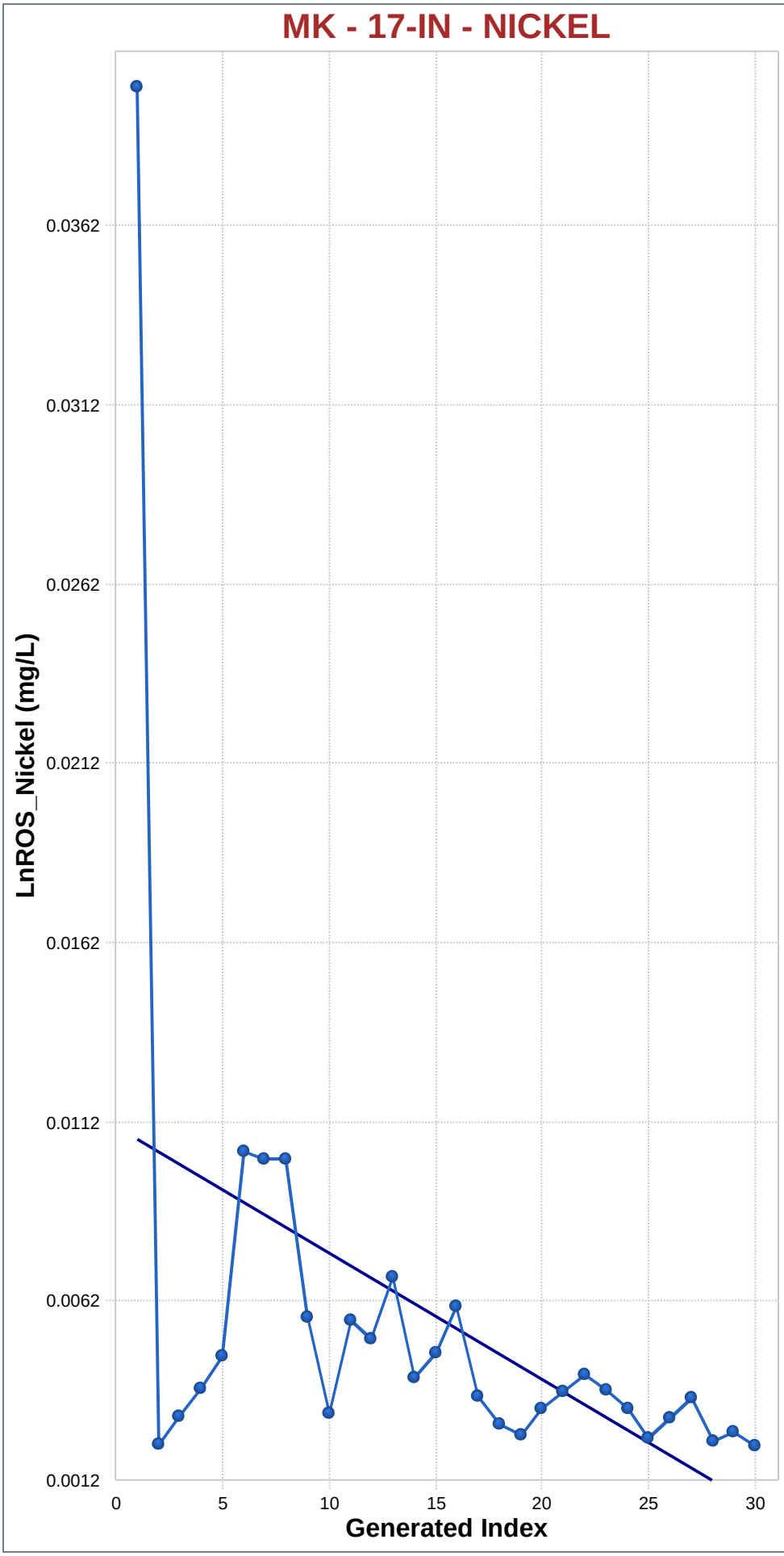
Mann-Kendall Trend Analysis

n	28
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	50.6162
Standardized Value of S	-3.9711
M-K Test Value (S)	-202
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0194
OLS Regression Intercept	0.8374

Statistically significant evidence of a decreasing trend at the specified level of significance.



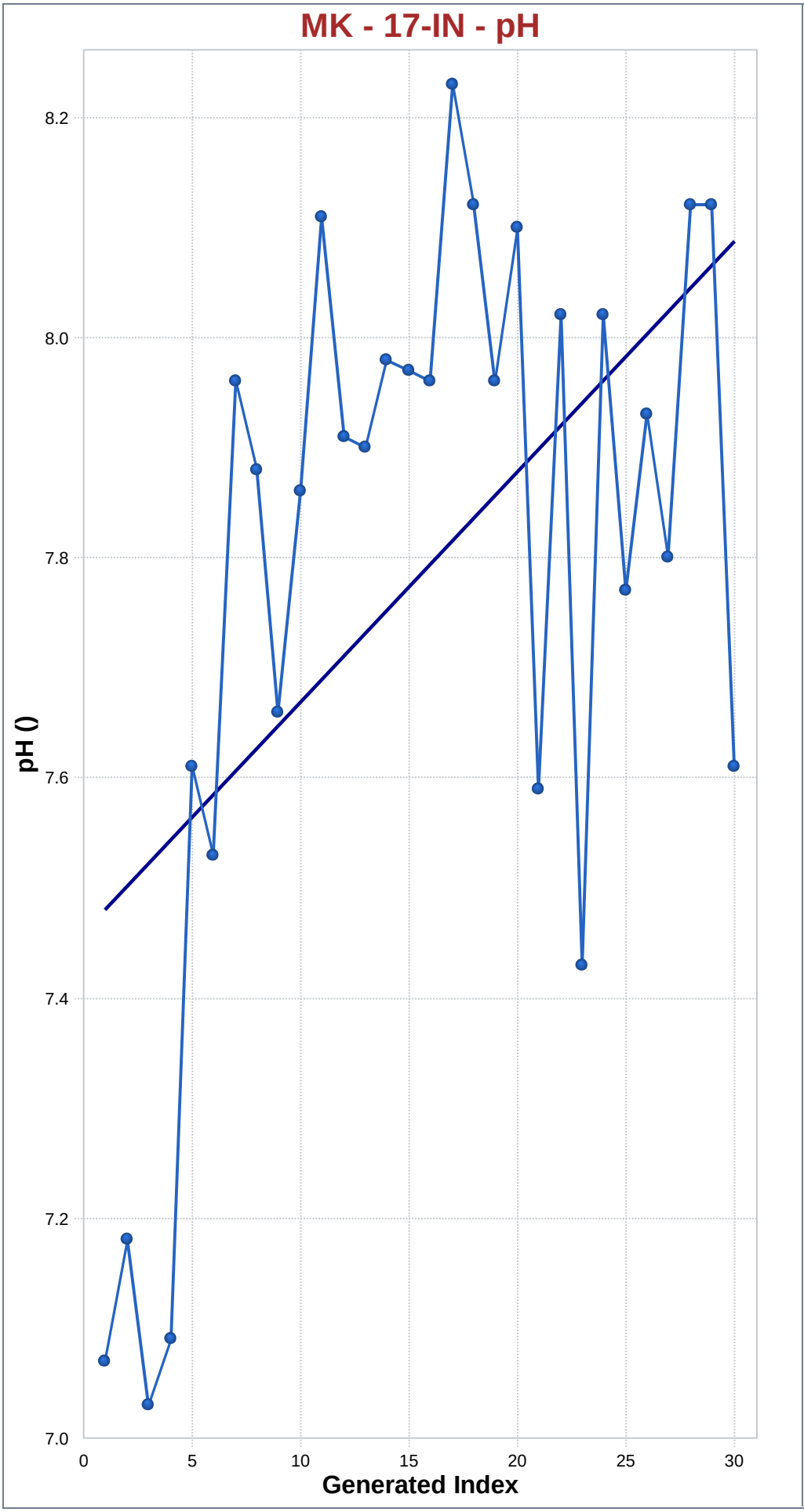
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0417
Standardized Value of S	-3.4082
M-K Test Value (S)	-192
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	-0.0004
OLS Regression Intercept	0.0110

Statistically significant evidence of a decreasing trend at the specified level of significance.



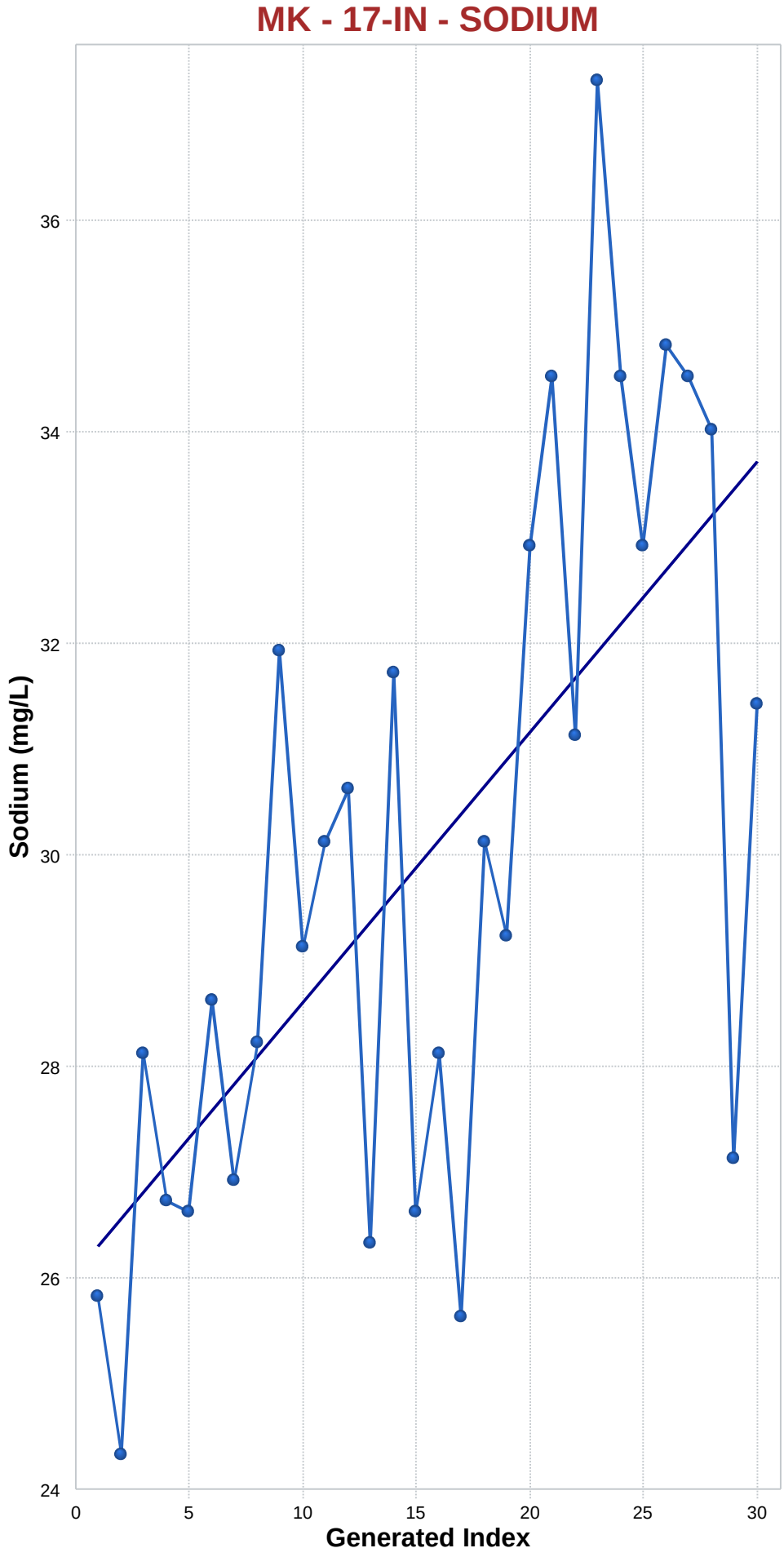
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9673
Standardized Value of S	2.7873
M-K Test Value (S)	157
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0027

OLS Regression Line (Blue)

OLS Regression Slope	0.0209
OLS Regression Intercept	7.4799

Statistically significant evidence of an increasing trend at the specified level of significance.



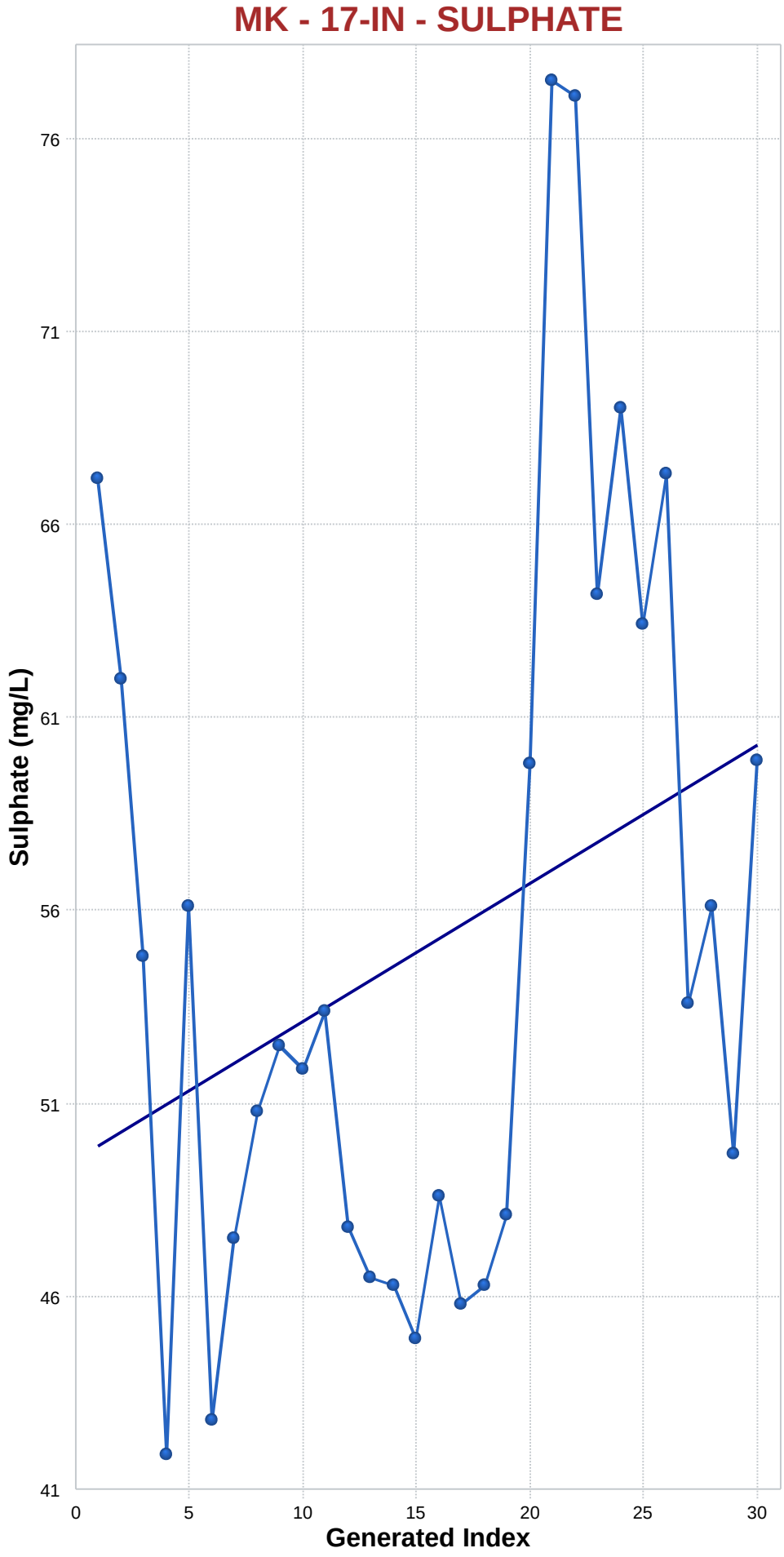
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9821
Standardized Value of S	3.8048
M-K Test Value (S)	214
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	0.2561
OLS Regression Intercept	26.3140

Statistically significant evidence of an increasing trend at the specified level of significance.



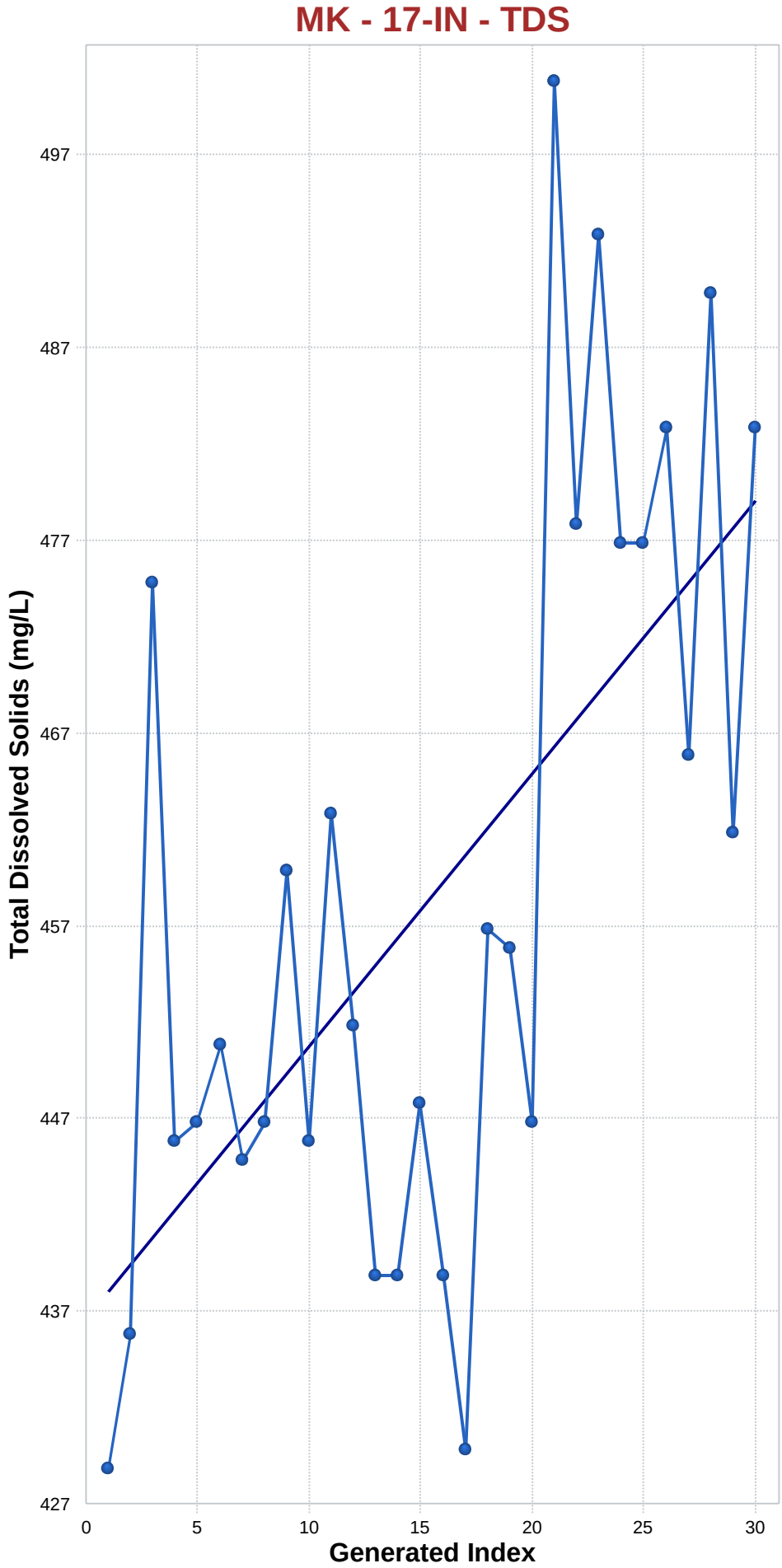
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0327
Standardized Value of S	1.3920
M-K Test Value (S)	79
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0820

OLS Regression Line (Blue)

OLS Regression Slope	0.3589
OLS Regression Intercept	49.5306

Insufficient statistical evidence of a significant trend at the specified level of significance.



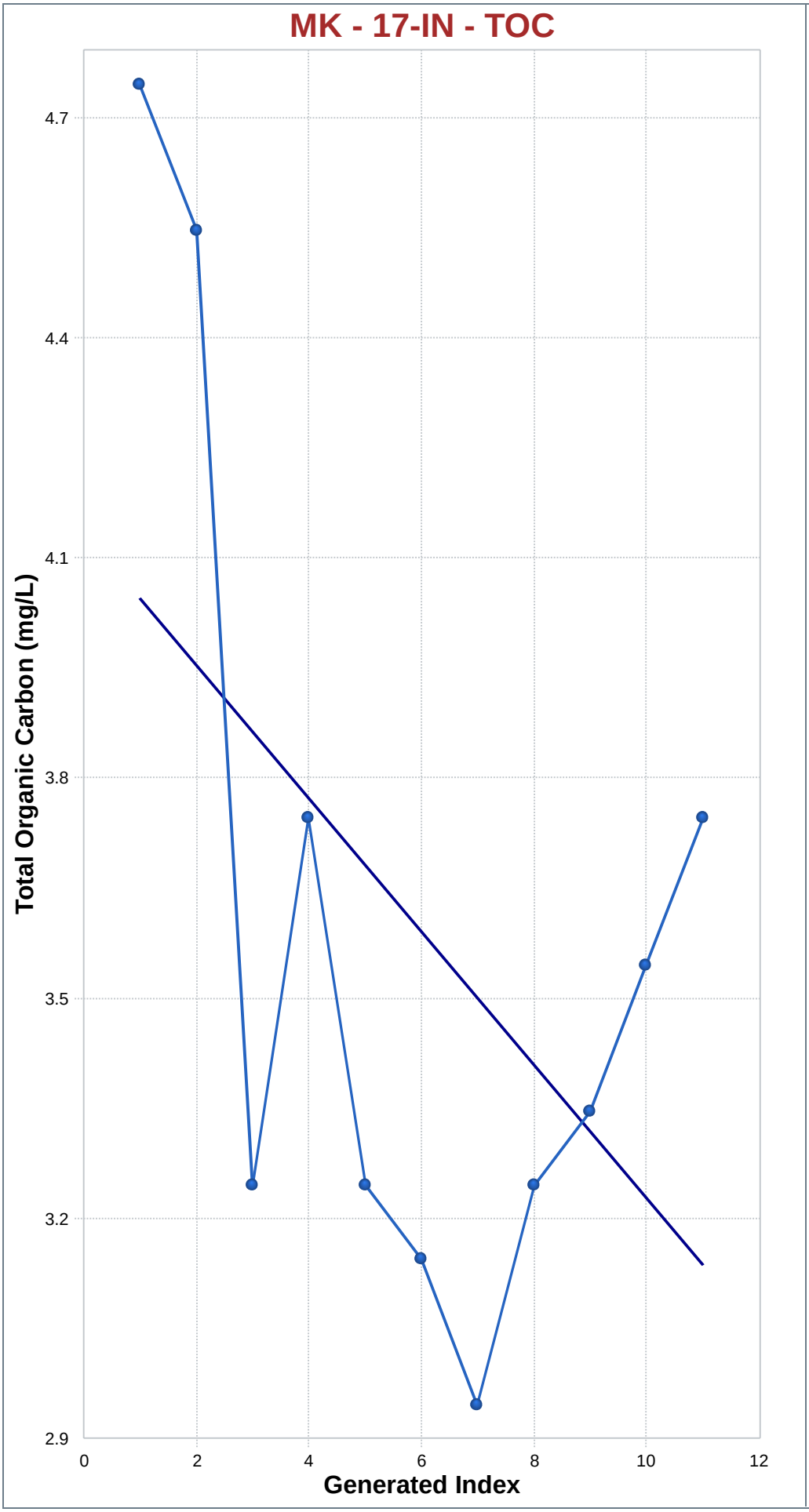
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9583
Standardized Value of S	3.4133
M-K Test Value (S)	192
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	1.4158
OLS Regression Intercept	436.7885

Statistically significant evidence of an increasing trend at the specified level of significance.



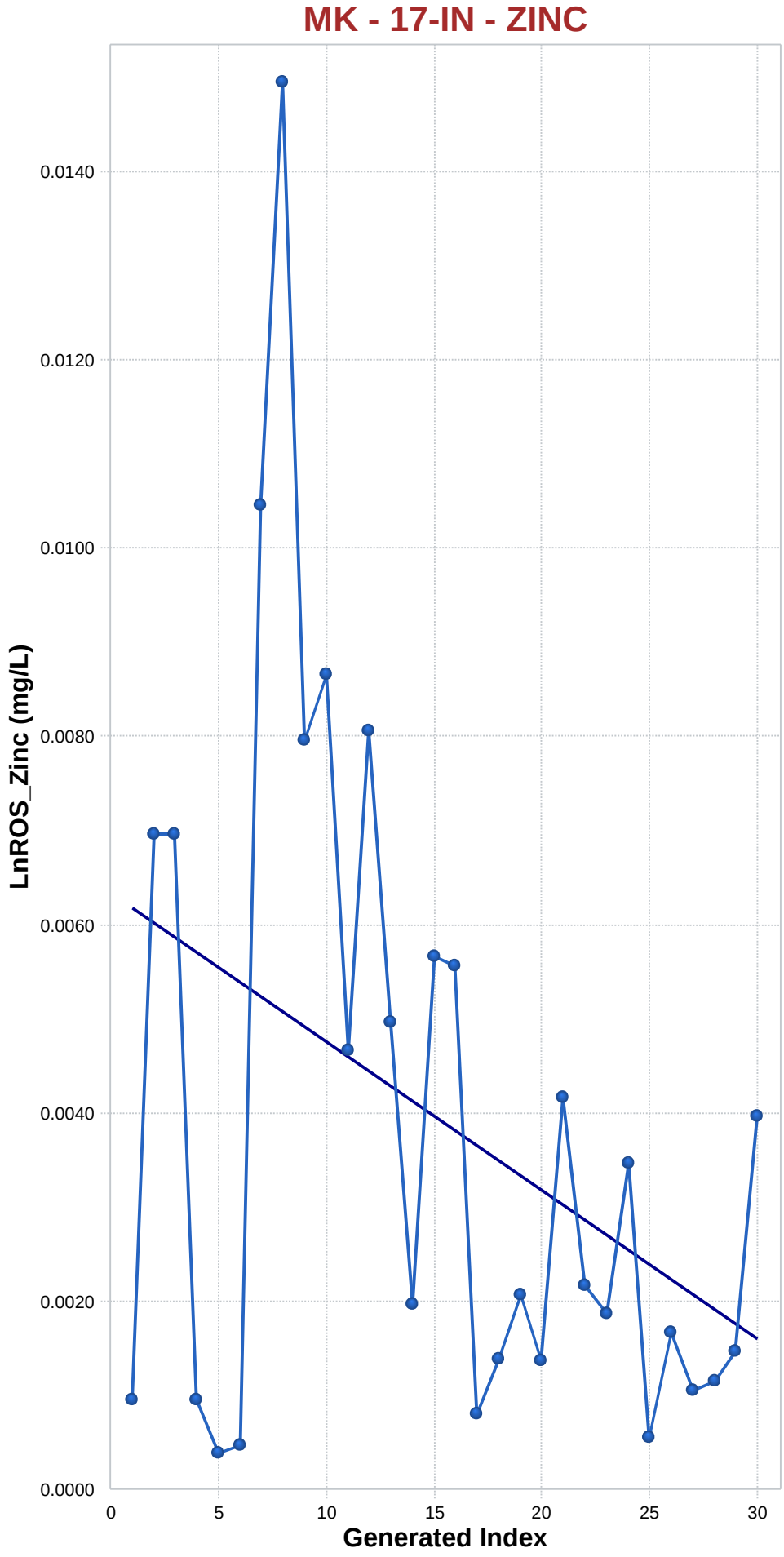
Mann-Kendall Trend Analysis

n	11
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	12.6623
Standardized Value of S	-0.6318
M-K Test Value (S)	-9
Tabulated p-value	0.2710
Approximate p-value	0.2638

OLS Regression Line (Blue)

OLS Regression Slope	-0.0909
OLS Regression Intercept	4.0909

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0327
Standardized Value of S	-1.6776
M-K Test Value (S)	-95
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0467

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0064

Statistically significant evidence of a decreasing trend at the specified level of significance.

AECOM

App G6 - Sen's Slope/Mann-Kendall Trend Analysis Output – All Data - Sandstone

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/13/2025 8:43:05 AM
4	From File	2024-SandstoneProUCL_b.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	04-SS	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	30
13	Number of Distinct Observations	10
14	Minimum	1.0000E-5
15	Maximum	1.9
16	Mean of Raw Data	0.484
17	Standard Deviation of Raw Data	0.336
18	Khat	0.926
19	Theta hat	0.523
20	Kstar	0.856
21	Theta star	0.566
22	Mean of Log Transformed Data	-1.355
23	Standard Deviation of Log Transformed Data	2.204
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.843
28	Shapiro Wilk Test Statistic	0.743
29	Shapiro Wilk Critical (0.05) Value	0.927
30	Approximate Shapiro Wilk P Value	1.7735E-6
31	Lilliefors Test Statistic	0.248
32	Lilliefors Critical (0.05) Value	0.159
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.887
38	A-D Test Statistic	4.03
39	A-D Critical (0.05) Value	0.779
40	K-S Test Statistic	0.341
41	K-S Critical(0.05) Value	0.165
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.686
47	Shapiro Wilk Test Statistic	0.505
48	Shapiro Wilk Critical (0.05) Value	0.927
49	Approximate Shapiro Wilk P Value	1.333E-10
50	Lilliefors Test Statistic	0.394
51	Lilliefors Critical (0.05) Value	0.159
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Copper (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		30						
62				Number of Distinct Observations		16						
63				Minimum		2.0000E-4						
64				Maximum		0.014						
65				Mean of Raw Data		0.00203						
66				Standard Deviation of Raw Data		0.00264						
67				Khat		1.193						
68				Theta hat		0.0017						
69				Kstar		1.096						
70				Theta star		0.00185						
71				Mean of Log Transformed Data		-6.674						
72				Standard Deviation of Log Transformed Data		0.952						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.749						
77				Shapiro Wilk Test Statistic		0.589						
78				Shapiro Wilk Critical (0.05) Value		0.927						
79				Approximate Shapiro Wilk P Value		2.7840E-9						
80				Lilliefors Test Statistic		0.303						
81				Lilliefors Critical (0.05) Value		0.159						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.912						
87				A-D Test Statistic		1.389						
88				A-D Critical (0.05) Value		0.771						
89				K-S Test Statistic		0.244						
90				K-S Critical(0.05) Value		0.164						
91	Data not Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.97						
96				Shapiro Wilk Test Statistic		0.945						
97				Shapiro Wilk Critical (0.05) Value		0.927						
98				Approximate Shapiro Wilk P Value		0.145						
99				Lilliefors Test Statistic		0.197						
100				Lilliefors Critical (0.05) Value		0.159						
101	Data appear Approximate_Lognormal at (0.05) Significance Level											
102												
103	Iron (mg/L)											
104												
105				Raw Statistics								
106				Number of Valid Observations		13						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	9						
108					Minimum	0.01						
109					Maximum	3.17						
110					Mean of Raw Data	0.891						
111					Standard Deviation of Raw Data	1.186						
112					Khat	0.362						
113					Theta hat	2.459						
114					Kstar	0.33						
115					Theta star	2.699						
116					Mean of Log Transformed Data	-1.961						
117					Standard Deviation of Log Transformed Data	2.427						
118												
119				Normal GOF Test Results								
120												
121					Correlation Coefficient R	0.879						
122					Shapiro Wilk Test Statistic	0.757						
123					Shapiro Wilk Critical (0.05) Value	0.866						
124					Approximate Shapiro Wilk P Value	0.0022						
125					Lilliefors Test Statistic	0.316						
126					Lilliefors Critical (0.05) Value	0.234						
127	Data not Normal at (0.05) Significance Level											
128												
129				Gamma GOF Test Results								
130												
131					Correlation Coefficient R	0.907						
132					A-D Test Statistic	0.953						
133					A-D Critical (0.05) Value	0.817						
134					K-S Test Statistic	0.235						
135					K-S Critical(0.05) Value	0.254						
136	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
137												
138				Lognormal GOF Test Results								
139												
140					Correlation Coefficient R	0.929						
141					Shapiro Wilk Test Statistic	0.831						
142					Shapiro Wilk Critical (0.05) Value	0.866						
143					Approximate Shapiro Wilk P Value	0.0264						
144					Lilliefors Test Statistic	0.202						
145					Lilliefors Critical (0.05) Value	0.234						
146	Data appear Approximate_Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/13/2025 11:18:24 AM
4	From File	2024-SandstoneProUCL_c.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	05-SS	
9	DOC (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	17
13	Number of Distinct Observations	13
14	Minimum	0.7
15	Maximum	10.1
16	Mean of Raw Data	2.474
17	Standard Deviation of Raw Data	2.855
18	Khat	1.378
19	Theta hat	1.795
20	Kstar	1.174
21	Theta star	2.107
22	Mean of Log Transformed Data	0.501
23	Standard Deviation of Log Transformed Data	0.826
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.788
28	Shapiro Wilk Test Statistic	0.627
29	Shapiro Wilk Critical (0.05) Value	0.892
30	Approximate Shapiro Wilk P Value	5.9190E-6
31	Lilliefors Test Statistic	0.346
32	Lilliefors Critical (0.05) Value	0.207
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.933
38	A-D Test Statistic	1.892
39	A-D Critical (0.05) Value	0.758
40	K-S Test Statistic	0.316
41	K-S Critical(0.05) Value	0.213
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.903
47	Shapiro Wilk Test Statistic	0.811
48	Shapiro Wilk Critical (0.05) Value	0.892
49	Approximate Shapiro Wilk P Value	0.00243
50	Lilliefors Test Statistic	0.268
51	Lilliefors Critical (0.05) Value	0.207
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Arsenic (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		19						
62				Number of Distinct Observations		18						
63				Minimum		1.9000E-4						
64				Maximum		0.0097						
65				Mean of Raw Data		0.00265						
66				Standard Deviation of Raw Data		0.00298						
67				Khat		0.819						
68				Theta hat		0.00324						
69				Kstar		0.725						
70				Theta star		0.00366						
71				Mean of Log Transformed Data		-6.654						
72				Standard Deviation of Log Transformed Data		1.313						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.899						
77				Shapiro Wilk Test Statistic		0.801						
78				Shapiro Wilk Critical (0.05) Value		0.901						
79				Approximate Shapiro Wilk P Value		8.3929E-4						
80				Lilliefors Test Statistic		0.225						
81				Lilliefors Critical (0.05) Value		0.197						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.973						
87				A-D Test Statistic		0.669						
88				A-D Critical (0.05) Value		0.776						
89				K-S Test Statistic		0.194						
90				K-S Critical(0.05) Value		0.206						
91	Data appear Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.973						
96				Shapiro Wilk Test Statistic		0.927						
97				Shapiro Wilk Critical (0.05) Value		0.901						
98				Approximate Shapiro Wilk P Value		0.194						
99				Lilliefors Test Statistic		0.149						
100				Lilliefors Critical (0.05) Value		0.197						
101	Data appear Lognormal at (0.05) Significance Level											
102												
103	Iron (mg/L)											
104												
105				Raw Statistics								
106				Number of Valid Observations		19						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	15						
108					Minimum	0.01						
109					Maximum	2.19						
110					Mean of Raw Data	0.832						
111					Standard Deviation of Raw Data	0.835						
112					Khat	0.509						
113					Theta hat	1.633						
114					Kstar	0.464						
115					Theta star	1.793						
116					Mean of Log Transformed Data	-1.429						
117					Standard Deviation of Log Transformed Data	2.099						
118												
119				Normal GOF Test Results								
120												
121					Correlation Coefficient R	0.925						
122					Shapiro Wilk Test Statistic	0.833						
123					Shapiro Wilk Critical (0.05) Value	0.901						
124					Approximate Shapiro Wilk P Value	0.00348						
125					Lilliefors Test Statistic	0.233						
126					Lilliefors Critical (0.05) Value	0.197						
127	Data not Normal at (0.05) Significance Level											
128												
129				Gamma GOF Test Results								
130												
131					Correlation Coefficient R	0.85						
132					A-D Test Statistic	1.143						
133					A-D Critical (0.05) Value	0.802						
134					K-S Test Statistic	0.213						
135					K-S Critical(0.05) Value	0.21						
136	Data not Gamma Distributed at (0.05) Significance Level											
137												
138				Lognormal GOF Test Results								
139												
140					Correlation Coefficient R	0.927						
141					Shapiro Wilk Test Statistic	0.835						
142					Shapiro Wilk Critical (0.05) Value	0.901						
143					Approximate Shapiro Wilk P Value	0.00387						
144					Lilliefors Test Statistic	0.221						
145					Lilliefors Critical (0.05) Value	0.197						
146	Data not Lognormal at (0.05) Significance Level											
147												
148	Non-parametric GOF Test Results											
149												
150	Data do not follow a discernible distribution at (0.05) Level of Signif											
151												
152	Lead (mg/L)											
153												
154				Raw Statistics								
155					Number of Valid Observations	19						
156					Number of Distinct Observations	11						
157					Minimum	5.0000E-5						
158					Maximum	0.101						
159					Mean of Raw Data	0.00729						

	A	B	C	D	E	F	G	H	I	J	K	L
160					Standard Deviation of Raw Data	0.023						
161					Khat	0.252						
162					Theta hat	0.0289						
163					Kstar	0.247						
164					Theta star	0.0295						
165					Mean of Log Transformed Data	-7.738						
166					Standard Deviation of Log Transformed Data	2.472						
167												
168				Normal GOF Test Results								
169												
170					Correlation Coefficient R	0.562						
171					Shapiro Wilk Test Statistic	0.345						
172					Shapiro Wilk Critical (0.05) Value	0.901						
173					Approximate Shapiro Wilk P Value	5.754E-10						
174					Lilliefors Test Statistic	0.401						
175					Lilliefors Critical (0.05) Value	0.197						
176	Data not Normal at (0.05) Significance Level											
177												
178				Gamma GOF Test Results								
179												
180					Correlation Coefficient R	0.902						
181					A-D Test Statistic	1.95						
182					A-D Critical (0.05) Value	0.866						
183					K-S Test Statistic	0.251						
184					K-S Critical(0.05) Value	0.218						
185	Data not Gamma Distributed at (0.05) Significance Level											
186												
187				Lognormal GOF Test Results								
188												
189					Correlation Coefficient R	0.914						
190					Shapiro Wilk Test Statistic	0.823						
191					Shapiro Wilk Critical (0.05) Value	0.901						
192					Approximate Shapiro Wilk P Value	0.00212						
193					Lilliefors Test Statistic	0.283						
194					Lilliefors Critical (0.05) Value	0.197						
195	Data not Lognormal at (0.05) Significance Level											
196												
197	Non-parametric GOF Test Results											
198												
199	Data do not follow a discernible distribution at (0.05) Level of Signif											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/13/2025 11:48:26 AM
4	From File	2024-SandstoneProUCL_d.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	07R-SS	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	35
13	Number of Distinct Observations	19
14	Minimum	0.01
15	Maximum	9.31
16	Mean of Raw Data	1.114
17	Standard Deviation of Raw Data	1.745
18	Khat	0.958
19	Theta hat	1.163
20	Kstar	0.895
21	Theta star	1.245
22	Mean of Log Transformed Data	-0.498
23	Standard Deviation of Log Transformed Data	1.277
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.649
28	Shapiro Wilk Test Statistic	0.452
29	Shapiro Wilk Critical (0.05) Value	0.934
30	Approximate Shapiro Wilk P Value	3.076E-13
31	Lilliefors Test Statistic	0.386
32	Lilliefors Critical (0.05) Value	0.148
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.844
38	A-D Test Statistic	2.75
39	A-D Critical (0.05) Value	0.778
40	K-S Test Statistic	0.241
41	K-S Critical(0.05) Value	0.153
42	Data not Gamma Distributed at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.862
47	Shapiro Wilk Test Statistic	0.767
48	Shapiro Wilk Critical (0.05) Value	0.934
49	Approximate Shapiro Wilk P Value	7.5160E-7
50	Lilliefors Test Statistic	0.296
51	Lilliefors Critical (0.05) Value	0.148
52	Data not Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Non-parametric GOF Test Results											
55												
56	Data do not follow a discernible distribution at (0.05) Level of Signif											
57												
58	Copper (mg/L)											
59												
60				Raw Statistics								
61				Number of Valid Observations		31						
62				Number of Distinct Observations		17						
63				Minimum		1.7000E-4						
64				Maximum		0.009						
65				Mean of Raw Data		0.00199						
66				Standard Deviation of Raw Data		0.00217						
67				Khat		1						
68				Theta hat		0.00199						
69				Kstar		0.925						
70				Theta star		0.00216						
71				Mean of Log Transformed Data		-6.795						
72				Standard Deviation of Log Transformed Data		1.161						
73												
74				Normal GOF Test Results								
75												
76				Correlation Coefficient R		0.881						
77				Shapiro Wilk Test Statistic		0.779						
78				Shapiro Wilk Critical (0.05) Value		0.929						
79				Approximate Shapiro Wilk P Value		7.0826E-6						
80				Lilliefors Test Statistic		0.241						
81				Lilliefors Critical (0.05) Value		0.156						
82	Data not Normal at (0.05) Significance Level											
83												
84				Gamma GOF Test Results								
85												
86				Correlation Coefficient R		0.991						
87				A-D Test Statistic		0.646						
88				A-D Critical (0.05) Value		0.776						
89				K-S Test Statistic		0.129						
90				K-S Critical(0.05) Value		0.162						
91	Data appear Gamma Distributed at (0.05) Significance Level											
92												
93				Lognormal GOF Test Results								
94												
95				Correlation Coefficient R		0.976						
96				Shapiro Wilk Test Statistic		0.935						
97				Shapiro Wilk Critical (0.05) Value		0.929						
98				Approximate Shapiro Wilk P Value		0.0705						
99				Lilliefors Test Statistic		0.171						
100				Lilliefors Critical (0.05) Value		0.156						
101	Data appear Approximate_Lognormal at (0.05) Significance Level											
102												
103	Zinc (mg/L)											
104												
105				Raw Statistics								
106				Number of Valid Observations		12						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	7						
108					Minimum	0.001						
109					Maximum	0.0043						
110					Mean of Raw Data	0.00184						
111					Standard Deviation of Raw Data	0.00126						
112					Khat	3.085						
113					Theta hat	5.9703E-4						
114					Kstar	2.369						
115					Theta star	7.7737E-4						
116					Mean of Log Transformed Data	-6.468						
117					Standard Deviation of Log Transformed Data	0.572						
118												
119				Normal GOF Test Results								
120												
121					Correlation Coefficient R	0.843						
122					Shapiro Wilk Test Statistic	0.699						
123					Shapiro Wilk Critical (0.05) Value	0.859						
124					Approximate Shapiro Wilk P Value	5.9789E-4						
125					Lilliefors Test Statistic	0.326						
126					Lilliefors Critical (0.05) Value	0.243						
127	Data not Normal at (0.05) Significance Level											
128												
129				Gamma GOF Test Results								
130												
131					Correlation Coefficient R	0.92						
132					A-D Test Statistic	1.466						
133					A-D Critical (0.05) Value	0.739						
134					K-S Test Statistic	0.277						
135					K-S Critical(0.05) Value	0.247						
136	Data not Gamma Distributed at (0.05) Significance Level											
137												
138				Lognormal GOF Test Results								
139												
140					Correlation Coefficient R	0.881						
141					Shapiro Wilk Test Statistic	0.757						
142					Shapiro Wilk Critical (0.05) Value	0.859						
143					Approximate Shapiro Wilk P Value	0.00323						
144					Lilliefors Test Statistic	0.257						
145					Lilliefors Critical (0.05) Value	0.243						
146	Data not Lognormal at (0.05) Significance Level											
147												
148	Non-parametric GOF Test Results											
149												
150	Data do not follow a discernible distribution at (0.05) Level of Signif											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/13/2025 1:53:37 PM
	From File	2024-SandstoneProUCL_e.xls
	Full Precision	OFF
	Confidence Coefficient	0.95
13R-SS		
DOC (mg/L)		
	Raw Statistics	
	Number of Valid Observations	16
	Number of Distinct Observations	15
	Minimum	0.73
	Maximum	10.1
	Mean of Raw Data	2.673
	Standard Deviation of Raw Data	2.295
	Khat	2.217
	Theta hat	1.206
	Kstar	1.843
	Theta star	1.45
	Mean of Log Transformed Data	0.741
	Standard Deviation of Log Transformed Data	0.683
	Normal GOF Test Results	
	Correlation Coefficient R	0.84
	Shapiro Wilk Test Statistic	0.726
	Shapiro Wilk Critical (0.05) Value	0.887
	Approximate Shapiro Wilk P Value	1.7479E-4
	Lilliefors Test Statistic	0.222
	Lilliefors Critical (0.05) Value	0.213
Data not Normal at (0.05) Significance Level		
	Gamma GOF Test Results	
	Correlation Coefficient R	0.944
	A-D Test Statistic	0.428
	A-D Critical (0.05) Value	0.749
	K-S Test Statistic	0.121
	K-S Critical(0.05) Value	0.218
Data appear Gamma Distributed at (0.05) Significance Level		
	Lognormal GOF Test Results	
	Correlation Coefficient R	0.983
	Shapiro Wilk Test Statistic	0.968
	Shapiro Wilk Critical (0.05) Value	0.887
	Approximate Shapiro Wilk P Value	0.777
	Lilliefors Test Statistic	0.098
	Lilliefors Critical (0.05) Value	0.213
Data appear Lognormal at (0.05) Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
54	Cadmium (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	21						
58					Number of Distinct Observations	18						
59					Minimum	5.0000E-6						
60					Maximum	0.003						
61					Mean of Raw Data	4.3452E-4						
62					Standard Deviation of Raw Data	8.8321E-4						
63					Khat	0.434						
64					Theta hat	0.001						
65					Kstar	0.404						
66					Theta star	0.00108						
67					Mean of Log Transformed Data	-9.238						
68					Standard Deviation of Log Transformed Data	1.792						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.71						
73					Shapiro Wilk Test Statistic	0.511						
74					Shapiro Wilk Critical (0.05) Value	0.908						
75					Approximate Shapiro Wilk P Value	2.9101E-8						
76					Lilliefors Test Statistic	0.357						
77					Lilliefors Critical (0.05) Value	0.188						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.931						
83					A-D Test Statistic	1.201						
84					A-D Critical (0.05) Value	0.819						
85					K-S Test Statistic	0.185						
86					K-S Critical(0.05) Value	0.202						
87	Data follow Appr. Gamma Distribution at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.986						
92					Shapiro Wilk Test Statistic	0.965						
93					Shapiro Wilk Critical (0.05) Value	0.908						
94					Approximate Shapiro Wilk P Value	0.606						
95					Lilliefors Test Statistic	0.117						
96					Lilliefors Critical (0.05) Value	0.188						
97	Data appear Lognormal at (0.05) Significance Level											
98												
99	Copper (mg/L)											
100												
101				Raw Statistics								
102					Number of Valid Observations	20						
103					Number of Missing Observations	1						
104					Number of Distinct Observations	19						
105					Minimum	7.9000E-4						
106					Maximum	0.083						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Mean of Raw Data	0.0158						
108					Standard Deviation of Raw Data	0.0243						
109					Khat	0.634						
110					Theta hat	0.0249						
111					Kstar	0.572						
112					Theta star	0.0276						
113					Mean of Log Transformed Data	-5.114						
114					Standard Deviation of Log Transformed Data	1.391						
115												
116				Normal GOF Test Results								
117												
118					Correlation Coefficient R	0.801						
119					Shapiro Wilk Test Statistic	0.645						
120					Shapiro Wilk Critical (0.05) Value	0.905						
121					Approximate Shapiro Wilk P Value	1.7716E-6						
122					Lilliefors Test Statistic	0.33						
123					Lilliefors Critical (0.05) Value	0.192						
124	Data not Normal at (0.05) Significance Level											
125												
126				Gamma GOF Test Results								
127												
128					Correlation Coefficient R	0.968						
129					A-D Test Statistic	1.385						
130					A-D Critical (0.05) Value	0.79						
131					K-S Test Statistic	0.27						
132					K-S Critical(0.05) Value	0.203						
133	Data not Gamma Distributed at (0.05) Significance Level											
134												
135				Lognormal GOF Test Results								
136												
137					Correlation Coefficient R	0.964						
138					Shapiro Wilk Test Statistic	0.918						
139					Shapiro Wilk Critical (0.05) Value	0.905						
140					Approximate Shapiro Wilk P Value	0.103						
141					Lilliefors Test Statistic	0.213						
142					Lilliefors Critical (0.05) Value	0.192						
143	Data appear Approximate_Lognormal at (0.05) Significance Level											
144												
145	Manganese (mg/L)											
146												
147				Raw Statistics								
148					Number of Valid Observations	19						
149					Number of Distinct Observations	18						
150					Minimum	0.0022						
151					Maximum	0.92						
152					Mean of Raw Data	0.348						
153					Standard Deviation of Raw Data	0.289						
154					Khat	0.771						
155					Theta hat	0.452						
156					Kstar	0.684						
157					Theta star	0.509						
158					Mean of Log Transformed Data	-1.829						
159					Standard Deviation of Log Transformed Data	1.781						

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161				Normal GOF Test Results								
162												
163					Correlation Coefficient R	0.968						
164					Shapiro Wilk Test Statistic	0.922						
165					Shapiro Wilk Critical (0.05) Value	0.901						
166					Approximate Shapiro Wilk P Value	0.145						
167					Lilliefors Test Statistic	0.117						
168					Lilliefors Critical (0.05) Value	0.197						
169	Data appear Normal at (0.05) Significance Level											
170												
171				Gamma GOF Test Results								
172												
173					Correlation Coefficient R	0.935						
174					A-D Test Statistic	0.67						
175					A-D Critical (0.05) Value	0.778						
176					K-S Test Statistic	0.154						
177					K-S Critical(0.05) Value	0.206						
178	Data appear Gamma Distributed at (0.05) Significance Level											
179												
180				Lognormal GOF Test Results								
181												
182					Correlation Coefficient R	0.91						
183					Shapiro Wilk Test Statistic	0.824						
184					Shapiro Wilk Critical (0.05) Value	0.901						
185					Approximate Shapiro Wilk P Value	0.00204						
186					Lilliefors Test Statistic	0.222						
187					Lilliefors Critical (0.05) Value	0.197						
188	Data not Lognormal at (0.05) Significance Level											
189												
190	Nickel (mg/L)											
191												
192				Raw Statistics								
193					Number of Valid Observations	18						
194					Number of Distinct Observations	18						
195					Minimum	5.0000E-4						
196					Maximum	0.0227						
197					Mean of Raw Data	0.00707						
198					Standard Deviation of Raw Data	0.00689						
199					Khat	1.221						
200					Theta hat	0.00579						
201					Kstar	1.055						
202					Theta star	0.0067						
203					Mean of Log Transformed Data	-5.415						
204					Standard Deviation of Log Transformed Data	1.056						
205												
206				Normal GOF Test Results								
207												
208					Correlation Coefficient R	0.886						
209					Shapiro Wilk Test Statistic	0.78						
210					Shapiro Wilk Critical (0.05) Value	0.897						
211					Approximate Shapiro Wilk P Value	5.3150E-4						
212					Lilliefors Test Statistic	0.319						

	A	B	C	D	E	F	G	H	I	J	K	L
213					Lilliefors Critical (0.05) Value	0.202						
214	Data not Normal at (0.05) Significance Level											
215												
216				Gamma GOF Test Results								
217												
218					Correlation Coefficient R	0.964						
219					A-D Test Statistic	0.767						
220					A-D Critical (0.05) Value	0.762						
221					K-S Test Statistic	0.238						
222					K-S Critical(0.05) Value	0.208						
223	Data not Gamma Distributed at (0.05) Significance Level											
224												
225				Lognormal GOF Test Results								
226												
227					Correlation Coefficient R	0.962						
228					Shapiro Wilk Test Statistic	0.923						
229					Shapiro Wilk Critical (0.05) Value	0.897						
230					Approximate Shapiro Wilk P Value	0.154						
231					Lilliefors Test Statistic	0.18						
232					Lilliefors Critical (0.05) Value	0.202						
233	Data appear Lognormal at (0.05) Significance Level											

1		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
2	User Selected Options	
3	Date/Time of Computation	ProUCL 5.11/14/2025 9:32:57 AM
4	From File	2024-SandstoneProUCL_f.xls
5	Full Precision	OFF
6	Confidence Coefficient	0.95
7		
8	15-2R-SS	
9	Chloride (mg/L)	
10		
11	Raw Statistics	
12	Number of Valid Observations	20
13	Number of Distinct Observations	18
14	Minimum	0.5
15	Maximum	30.1
16	Mean of Raw Data	4.733
17	Standard Deviation of Raw Data	7.016
18	Khat	0.865
19	Theta hat	5.473
20	Kstar	0.768
21	Theta star	6.159
22	Mean of Log Transformed Data	0.875
23	Standard Deviation of Log Transformed Data	1.139
24		
25	Normal GOF Test Results	
26		
27	Correlation Coefficient R	0.77
28	Shapiro Wilk Test Statistic	0.613
29	Shapiro Wilk Critical (0.05) Value	0.905
30	Approximate Shapiro Wilk P Value	5.8633E-7
31	Lilliefors Test Statistic	0.302
32	Lilliefors Critical (0.05) Value	0.192
33	Data not Normal at (0.05) Significance Level	
34		
35	Gamma GOF Test Results	
36		
37	Correlation Coefficient R	0.954
38	A-D Test Statistic	0.831
39	A-D Critical (0.05) Value	0.774
40	K-S Test Statistic	0.153
41	K-S Critical(0.05) Value	0.2
42	Data follow Appr. Gamma Distribution at (0.05) Significance Level	
43		
44	Lognormal GOF Test Results	
45		
46	Correlation Coefficient R	0.982
47	Shapiro Wilk Test Statistic	0.957
48	Shapiro Wilk Critical (0.05) Value	0.905
49	Approximate Shapiro Wilk P Value	0.517
50	Lilliefors Test Statistic	0.0996
51	Lilliefors Critical (0.05) Value	0.192
52	Data appear Lognormal at (0.05) Significance Level	
53		

	A	B	C	D	E	F	G	H	I	J	K	L
54	DOC (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	17						
58					Number of Distinct Observations	17						
59					Minimum	2						
60					Maximum	58.3						
61					Mean of Raw Data	11.5						
62					Standard Deviation of Raw Data	15.28						
63					Khat	0.913						
64					Theta hat	12.59						
65					Kstar	0.791						
66					Theta star	14.53						
67					Mean of Log Transformed Data	1.804						
68					Standard Deviation of Log Transformed Data	1.093						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.815						
73					Shapiro Wilk Test Statistic	0.676						
74					Shapiro Wilk Critical (0.05) Value	0.892						
75					Approximate Shapiro Wilk P Value	2.4314E-5						
76					Lilliefors Test Statistic	0.314						
77					Lilliefors Critical (0.05) Value	0.207						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.976						
83					A-D Test Statistic	1.428						
84					A-D Critical (0.05) Value	0.77						
85					K-S Test Statistic	0.282						
86					K-S Critical(0.05) Value	0.216						
87	Data not Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.931						
92					Shapiro Wilk Test Statistic	0.854						
93					Shapiro Wilk Critical (0.05) Value	0.892						
94					Approximate Shapiro Wilk P Value	0.0137						
95					Lilliefors Test Statistic	0.237						
96					Lilliefors Critical (0.05) Value	0.207						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Non-parametric GOF Test Results											
100												
101	Data do not follow a discernible distribution at (0.05) Level of Signif											
102												
103	Arsenic (mg/L)											
104												
105				Raw Statistics								
106					Number of Valid Observations	22						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Number of Distinct Observations	22						
108					Minimum	2.0000E-4						
109					Maximum	0.0765						
110					Mean of Raw Data	0.0169						
111					Standard Deviation of Raw Data	0.0223						
112					Khat	0.808						
113					Theta hat	0.0209						
114					Kstar	0.728						
115					Theta star	0.0232						
116					Mean of Log Transformed Data	-4.816						
117					Standard Deviation of Log Transformed Data	1.324						
118												
119				Normal GOF Test Results								
120												
121					Correlation Coefficient R	0.825						
122					Shapiro Wilk Test Statistic	0.681						
123					Shapiro Wilk Critical (0.05) Value	0.911						
124					Approximate Shapiro Wilk P Value	3.2869E-6						
125					Lilliefors Test Statistic	0.312						
126					Lilliefors Critical (0.05) Value	0.184						
127	Data not Normal at (0.05) Significance Level											
128												
129				Gamma GOF Test Results								
130												
131					Correlation Coefficient R	0.967						
132					A-D Test Statistic	1.092						
133					A-D Critical (0.05) Value	0.78						
134					K-S Test Statistic	0.215						
135					K-S Critical(0.05) Value	0.192						
136	Data not Gamma Distributed at (0.05) Significance Level											
137												
138				Lognormal GOF Test Results								
139												
140					Correlation Coefficient R	0.951						
141					Shapiro Wilk Test Statistic	0.917						
142					Shapiro Wilk Critical (0.05) Value	0.911						
143					Approximate Shapiro Wilk P Value	0.0625						
144					Lilliefors Test Statistic	0.161						
145					Lilliefors Critical (0.05) Value	0.184						
146	Data appear Lognormal at (0.05) Significance Level											
147												
148	Cadmium (mg/L)											
149												
150				Raw Statistics								
151					Number of Valid Observations	22						
152					Number of Distinct Observations	18						
153					Minimum	5.0000E-6						
154					Maximum	0.003						
155					Mean of Raw Data	2.1535E-4						
156					Standard Deviation of Raw Data	6.3438E-4						
157					Khat	0.375						
158					Theta hat	5.7353E-4						
159					Kstar	0.355						

160	Theta star	6.0734E-4
161	Mean of Log Transformed Data	-10.21
162	Standard Deviation of Log Transformed Data	1.716
163		
164	Normal GOF Test Results	
165		
166	Correlation Coefficient R	0.569
167	Shapiro Wilk Test Statistic	0.351
168	Shapiro Wilk Critical (0.05) Value	0.911
169	Approximate Shapiro Wilk P Value	2.562E-10
170	Lilliefors Test Statistic	0.37
171	Lilliefors Critical (0.05) Value	0.184
172	Data not Normal at (0.05) Significance Level	
173		
174	Gamma GOF Test Results	
175		
176	Correlation Coefficient R	0.871
177	A-D Test Statistic	2.067
178	A-D Critical (0.05) Value	0.831
179	K-S Test Statistic	0.242
180	K-S Critical(0.05) Value	0.199
181	Data not Gamma Distributed at (0.05) Significance Level	
182		
183	Lognormal GOF Test Results	
184		
185	Correlation Coefficient R	0.957
186	Shapiro Wilk Test Statistic	0.912
187	Shapiro Wilk Critical (0.05) Value	0.911
188	Approximate Shapiro Wilk P Value	0.0491
189	Lilliefors Test Statistic	0.152
190	Lilliefors Critical (0.05) Value	0.184
191	Data appear Lognormal at (0.05) Significance Level	
192		
193	Copper (mg/L)	
194		
195	Raw Statistics	
196	Number of Valid Observations	22
197	Number of Distinct Observations	18
198	Minimum	1.3000E-4
199	Maximum	0.454
200	Mean of Raw Data	0.0348
201	Standard Deviation of Raw Data	0.101
202	Khat	0.252
203	Theta hat	0.138
204	Kstar	0.248
205	Theta star	0.141
206	Mean of Log Transformed Data	-6.172
207	Standard Deviation of Log Transformed Data	2.294
208		
209	Normal GOF Test Results	
210		
211	Correlation Coefficient R	0.607
212	Shapiro Wilk Test Statistic	0.393

	A	B	C	D	E	F	G	H	I	J	K	L
213					Shapiro Wilk Critical (0.05) Value	0.911						
214					Approximate Shapiro Wilk P Value	7.260E-10						
215					Lilliefors Test Statistic	0.432						
216					Lilliefors Critical (0.05) Value	0.184						
217	Data not Normal at (0.05) Significance Level											
218												
219				Gamma GOF Test Results								
220												
221					Correlation Coefficient R	0.945						
222					A-D Test Statistic	2.546						
223					A-D Critical (0.05) Value	0.871						
224					K-S Test Statistic	0.298						
225					K-S Critical(0.05) Value	0.203						
226	Data not Gamma Distributed at (0.05) Significance Level											
227												
228				Lognormal GOF Test Results								
229												
230					Correlation Coefficient R	0.952						
231					Shapiro Wilk Test Statistic	0.901						
232					Shapiro Wilk Critical (0.05) Value	0.911						
233					Approximate Shapiro Wilk P Value	0.0282						
234					Lilliefors Test Statistic	0.137						
235					Lilliefors Critical (0.05) Value	0.184						
236	Data appear Approximate_Lognormal at (0.05) Significance Level											
237												
238	Iron (mg/L)											
239												
240				Raw Statistics								
241					Number of Valid Observations	21						
242					Number of Distinct Observations	13						
243					Minimum	0.01						
244					Maximum	19.5						
245					Mean of Raw Data	1.292						
246					Standard Deviation of Raw Data	4.273						
247					Khat	0.254						
248					Theta hat	5.092						
249					Kstar	0.249						
250					Theta star	5.184						
251					Mean of Log Transformed Data	-2.536						
252					Standard Deviation of Log Transformed Data	2.168						
253												
254				Normal GOF Test Results								
255												
256					Correlation Coefficient R	0.555						
257					Shapiro Wilk Test Statistic	0.333						
258					Shapiro Wilk Critical (0.05) Value	0.908						
259					Approximate Shapiro Wilk P Value	3.272E-10						
260					Lilliefors Test Statistic	0.421						
261					Lilliefors Critical (0.05) Value	0.188						
262	Data not Normal at (0.05) Significance Level											
263												
264				Gamma GOF Test Results								
265												

	A	B	C	D	E	F	G	H	I	J	K	L
266					Correlation Coefficient R	0.908						
267					A-D Test Statistic	2.782						
268					A-D Critical (0.05) Value	0.869						
269					K-S Test Statistic	0.319						
270					K-S Critical(0.05) Value	0.208						
271	Data not Gamma Distributed at (0.05) Significance Level											
272												
273				Lognormal GOF Test Results								
274												
275					Correlation Coefficient R	0.927						
276					Shapiro Wilk Test Statistic	0.855						
277					Shapiro Wilk Critical (0.05) Value	0.908						
278					Approximate Shapiro Wilk P Value	0.00404						
279					Lilliefors Test Statistic	0.218						
280					Lilliefors Critical (0.05) Value	0.188						
281	Data not Lognormal at (0.05) Significance Level											
282												
283	Non-parametric GOF Test Results											
284												
285	Data do not follow a discernible distribution at (0.05) Level of Signif											
286												
287	Zinc (mg/L)											
288												
289				Raw Statistics								
290					Number of Valid Observations	21						
291					Number of Distinct Observations	18						
292					Minimum	0.001						
293					Maximum	1.85						
294					Mean of Raw Data	0.108						
295					Standard Deviation of Raw Data	0.4						
296					Khat	0.277						
297					Theta hat	0.389						
298					Kstar	0.269						
299					Theta star	0.4						
300					Mean of Log Transformed Data	-4.755						
301					Standard Deviation of Log Transformed Data	1.955						
302												
303				Normal GOF Test Results								
304												
305					Correlation Coefficient R	0.502						
306					Shapiro Wilk Test Statistic	0.277						
307					Shapiro Wilk Critical (0.05) Value	0.908						
308					Approximate Shapiro Wilk P Value	9.136E-11						
309					Lilliefors Test Statistic	0.459						
310					Lilliefors Critical (0.05) Value	0.188						
311	Data not Normal at (0.05) Significance Level											
312												
313				Gamma GOF Test Results								
314												
315					Correlation Coefficient R	0.845						
316					A-D Test Statistic	2.674						
317					A-D Critical (0.05) Value	0.857						
318					K-S Test Statistic	0.277						

	A	B	C	D	E	F	G	H	I	J	K	L
319					K-S Critical(0.05) Value	0.206						
320	Data not Gamma Distributed at (0.05) Significance Level											
321												
322				Lognormal GOF Test Results								
323												
324					Correlation Coefficient R	0.95						
325					Shapiro Wilk Test Statistic	0.903						
326					Shapiro Wilk Critical (0.05) Value	0.908						
327					Approximate Shapiro Wilk P Value	0.0365						
328					Lilliefors Test Statistic	0.15						
329					Lilliefors Critical (0.05) Value	0.188						
330	Data appear Approximate_Lognormal at (0.05) Significance Level											

		Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
	User Selected Options	
	Date/Time of Computation	ProUCL 5.11/14/2025 10:53:22 AM
	From File	2024-SandstoneProUCL_g.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

89-3

Arsenic (mg/L)

Raw Statistics	
Number of Valid Observations	20
Number of Distinct Observations	18
Minimum	1.0000E-4
Maximum	0.0036
Mean of Raw Data	0.00145
Standard Deviation of Raw Data	0.00111
Khat	1.228
Theta hat	0.00118
Kstar	1.077
Theta star	0.00135
Mean of Log Transformed Data	-6.994
Standard Deviation of Log Transformed Data	1.16

Normal GOF Test Results	
Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.923
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.137
Lilliefors Test Statistic	0.147
Lilliefors Critical (0.05) Value	0.192

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.945
A-D Test Statistic	0.536
A-D Critical (0.05) Value	0.763
K-S Test Statistic	0.132
K-S Critical(0.05) Value	0.198

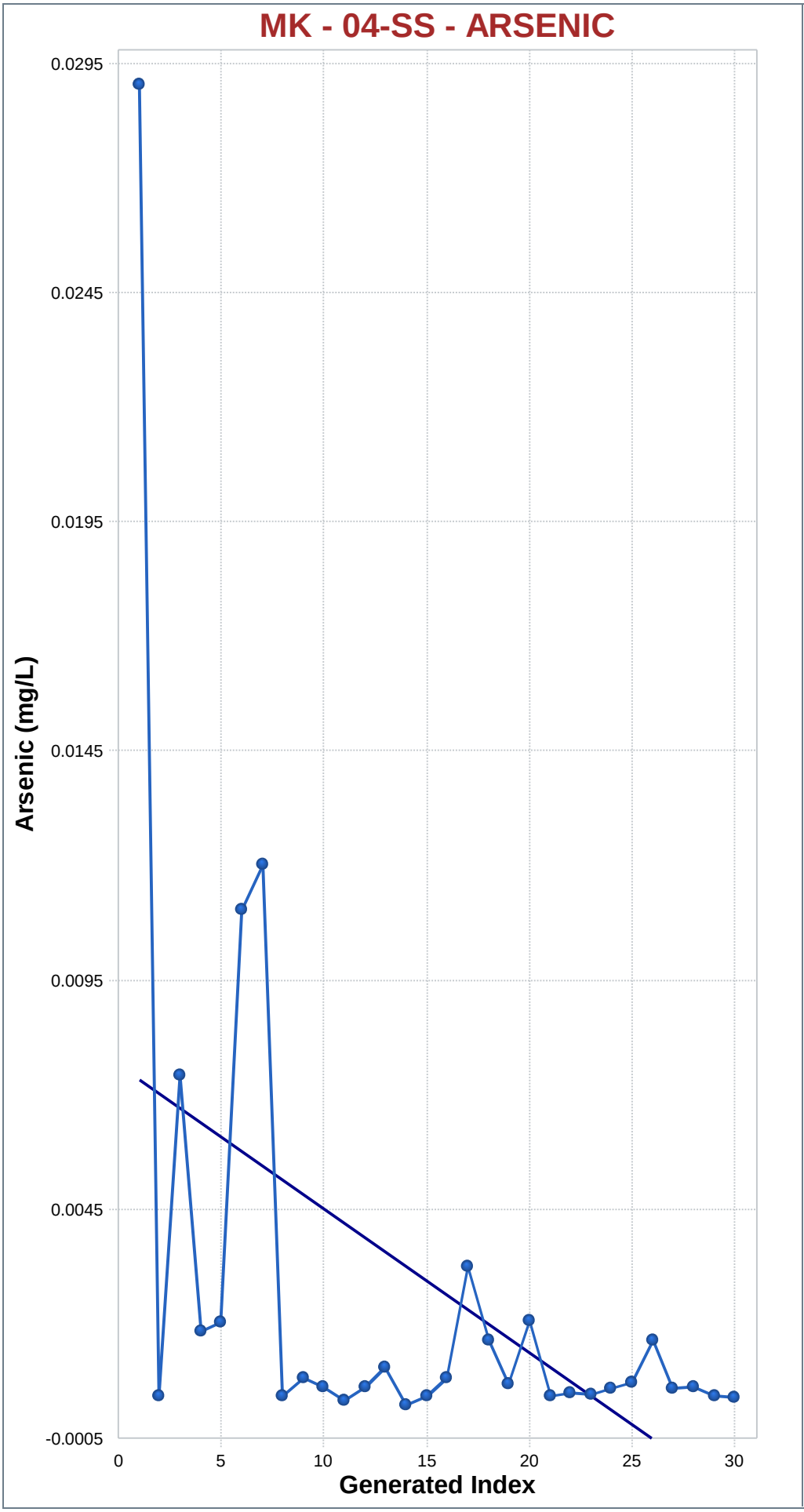
Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.947
Shapiro Wilk Test Statistic	0.883
Shapiro Wilk Critical (0.05) Value	0.905
Approximate Shapiro Wilk P Value	0.0214
Lilliefors Test Statistic	0.179
Lilliefors Critical (0.05) Value	0.192

Data appear Approximate_Lognormal at (0.05) Significance Level

	A	B	C	D	E	F	G	H	I	J	K	L
54	Iron (mg/L)											
55												
56				Raw Statistics								
57					Number of Valid Observations	23						
58					Number of Distinct Observations	22						
59					Minimum	0.01						
60					Maximum	8.95						
61					Mean of Raw Data	2.617						
62					Standard Deviation of Raw Data	3.079						
63					Khat	0.546						
64					Theta hat	4.794						
65					Kstar	0.504						
66					Theta star	5.195						
67					Mean of Log Transformed Data	-0.186						
68					Standard Deviation of Log Transformed Data	2.012						
69												
70				Normal GOF Test Results								
71												
72					Correlation Coefficient R	0.891						
73					Shapiro Wilk Test Statistic	0.781						
74					Shapiro Wilk Critical (0.05) Value	0.914						
75					Approximate Shapiro Wilk P Value	1.0101E-4						
76					Lilliefors Test Statistic	0.266						
77					Lilliefors Critical (0.05) Value	0.18						
78	Data not Normal at (0.05) Significance Level											
79												
80				Gamma GOF Test Results								
81												
82					Correlation Coefficient R	0.932						
83					A-D Test Statistic	0.358						
84					A-D Critical (0.05) Value	0.801						
85					K-S Test Statistic	0.0952						
86					K-S Critical(0.05) Value	0.191						
87	Data appear Gamma Distributed at (0.05) Significance Level											
88												
89				Lognormal GOF Test Results								
90												
91					Correlation Coefficient R	0.96						
92					Shapiro Wilk Test Statistic	0.91						
93					Shapiro Wilk Critical (0.05) Value	0.914						
94					Approximate Shapiro Wilk P Value	0.0398						
95					Lilliefors Test Statistic	0.187						
96					Lilliefors Critical (0.05) Value	0.18						
97	Data not Lognormal at (0.05) Significance Level											
98												
99	Nickel (mg/L)											
100												
101				Raw Statistics								
102					Number of Valid Observations	20						
103					Number of Distinct Observations	15						
104					Minimum	4.8000E-4						
105					Maximum	0.0287						
106					Mean of Raw Data	0.00357						

	A	B	C	D	E	F	G	H	I	J	K	L
107					Standard Deviation of Raw Data	0.00637						
108					Khat	0.724						
109					Theta hat	0.00493						
110					Kstar	0.648						
111					Theta star	0.00551						
112					Mean of Log Transformed Data	-6.467						
113					Standard Deviation of Log Transformed Data	1.219						
114												
115				Normal GOF Test Results								
116												
117					Correlation Coefficient R	0.703						
118					Shapiro Wilk Test Statistic	0.52						
119					Shapiro Wilk Critical (0.05) Value	0.905						
120					Approximate Shapiro Wilk P Value	3.2553E-8						
121					Lilliefors Test Statistic	0.314						
122					Lilliefors Critical (0.05) Value	0.192						
123	Data not Normal at (0.05) Significance Level											
124												
125				Gamma GOF Test Results								
126												
127					Correlation Coefficient R	0.919						
128					A-D Test Statistic	1.398						
129					A-D Critical (0.05) Value	0.782						
130					K-S Test Statistic	0.213						
131					K-S Critical(0.05) Value	0.202						
132	Data not Gamma Distributed at (0.05) Significance Level											
133												
134				Lognormal GOF Test Results								
135												
136					Correlation Coefficient R	0.936						
137					Shapiro Wilk Test Statistic	0.866						
138					Shapiro Wilk Critical (0.05) Value	0.905						
139					Approximate Shapiro Wilk P Value	0.0102						
140					Lilliefors Test Statistic	0.195						
141					Lilliefors Critical (0.05) Value	0.192						
142	Data not Lognormal at (0.05) Significance Level											
143												
144	Non-parametric GOF Test Results											
145												
146	Data do not follow a discernible distribution at (0.05) Level of Signi											



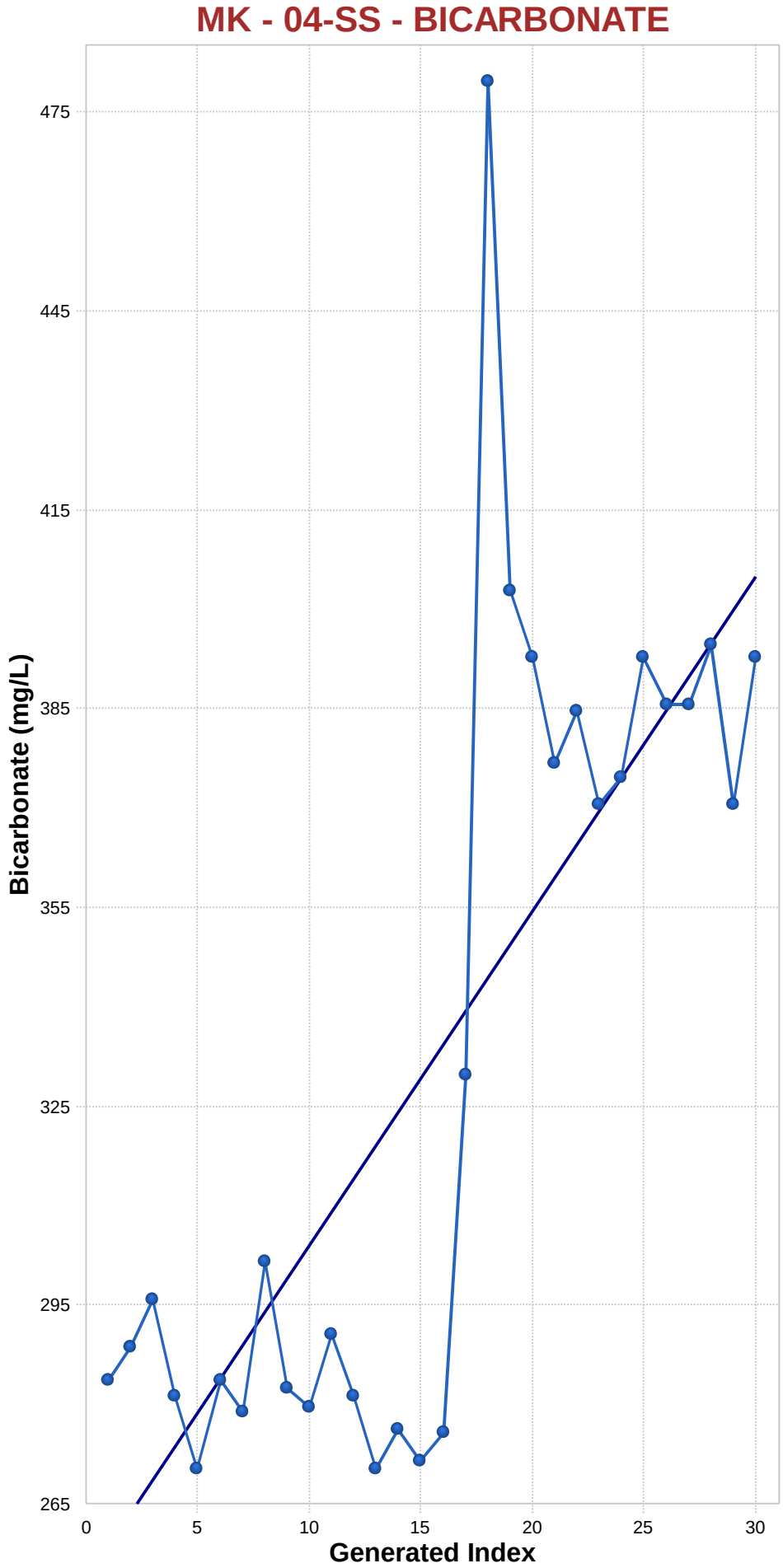
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9911
Standardized Value of S	-2.2146
M-K Test Value (S)	-125
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0134

OLS Regression Line (Blue)

OLS Regression Slope	-0.0003
OLS Regression Intercept	0.0076

Statistically significant evidence of a decreasing trend at the specified level of significance.



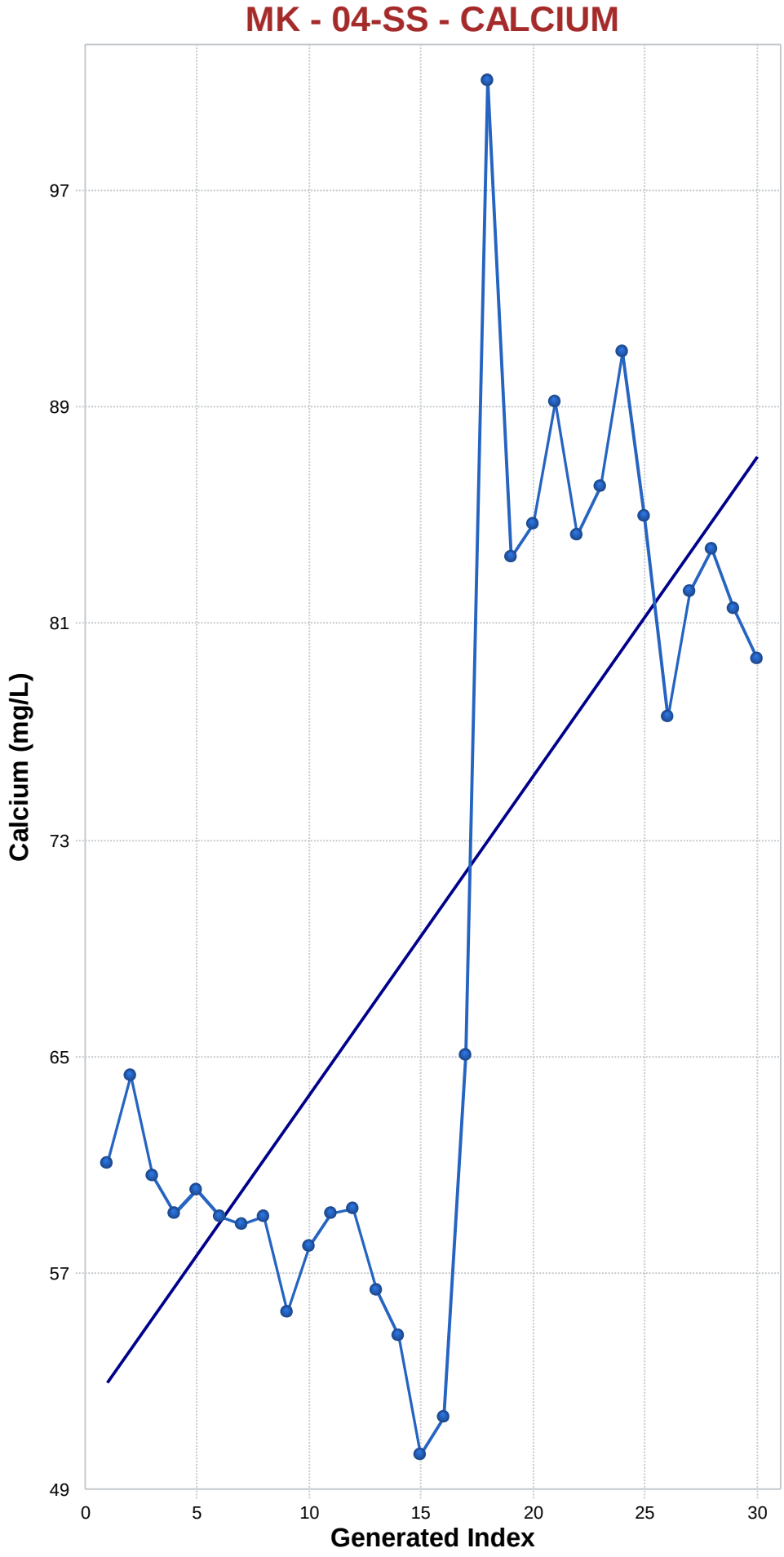
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9732
Standardized Value of S	3.1444
M-K Test Value (S)	177
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0008

OLS Regression Line (Blue)

OLS Regression Slope	5.0684
OLS Regression Intercept	253.2703

Statistically significant evidence of an increasing trend at the specified level of significance.



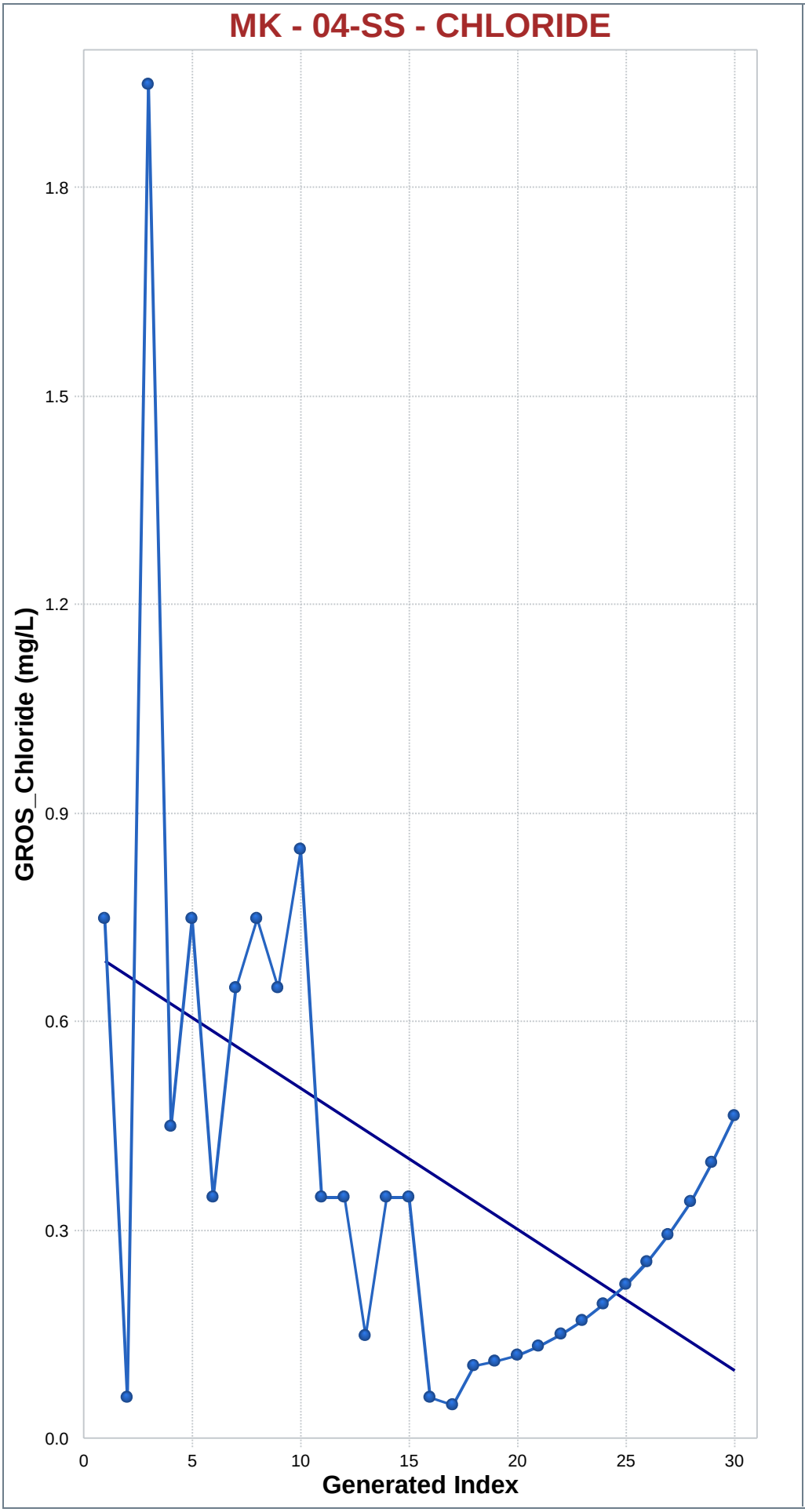
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0327
Standardized Value of S	2.1059
M-K Test Value (S)	119
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0176

OLS Regression Line (Blue)

OLS Regression Slope	1.1790
OLS Regression Intercept	51.7115

Statistically significant evidence of an increasing trend at the specified level of significance.



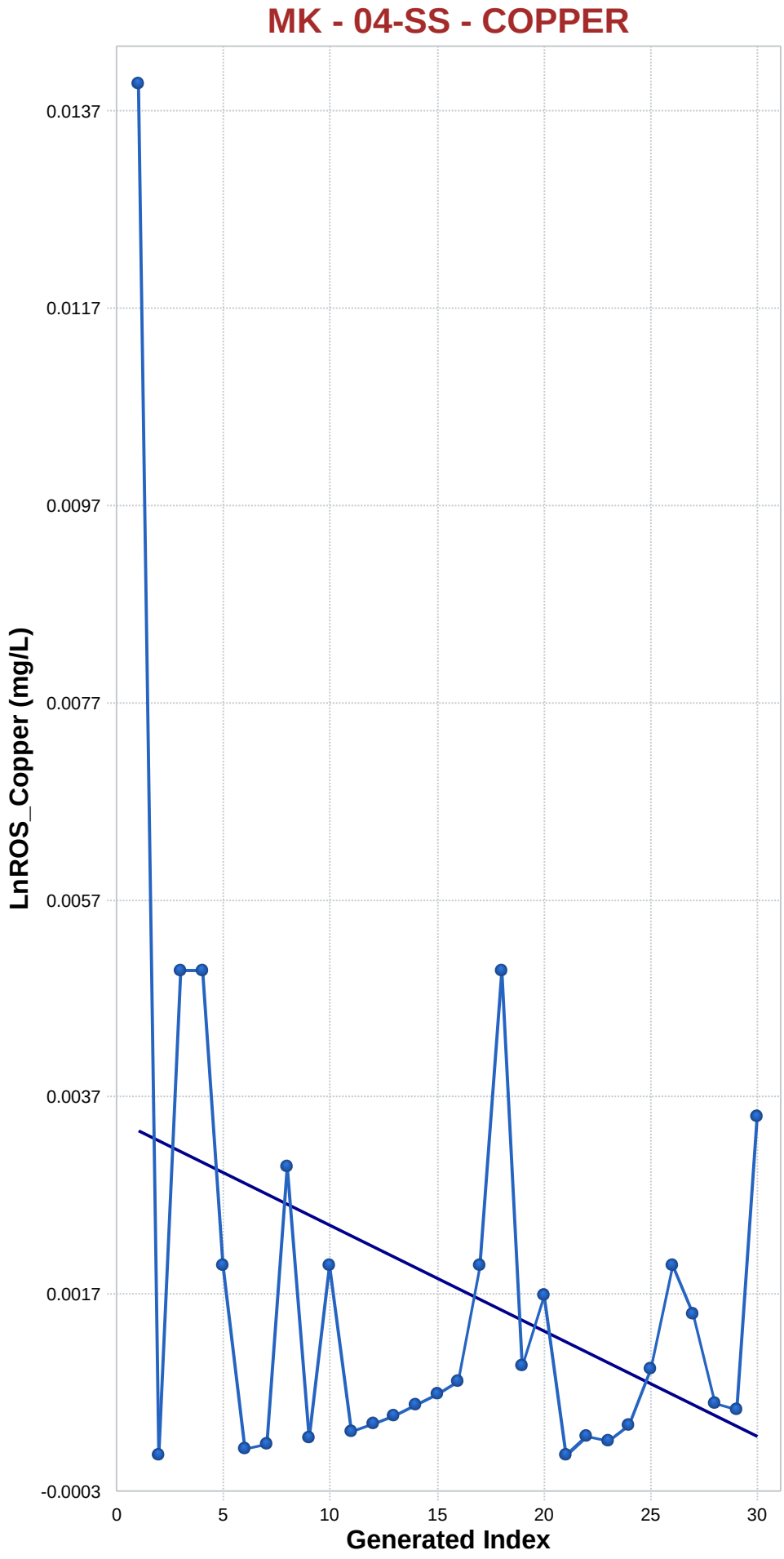
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.8510
Standardized Value of S	-1.4861
M-K Test Value (S)	-84
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0686

OLS Regression Line (Blue)

OLS Regression Slope	-0.0204
OLS Regression Intercept	0.6604

Insufficient statistical evidence of a significant trend at the specified level of significance.



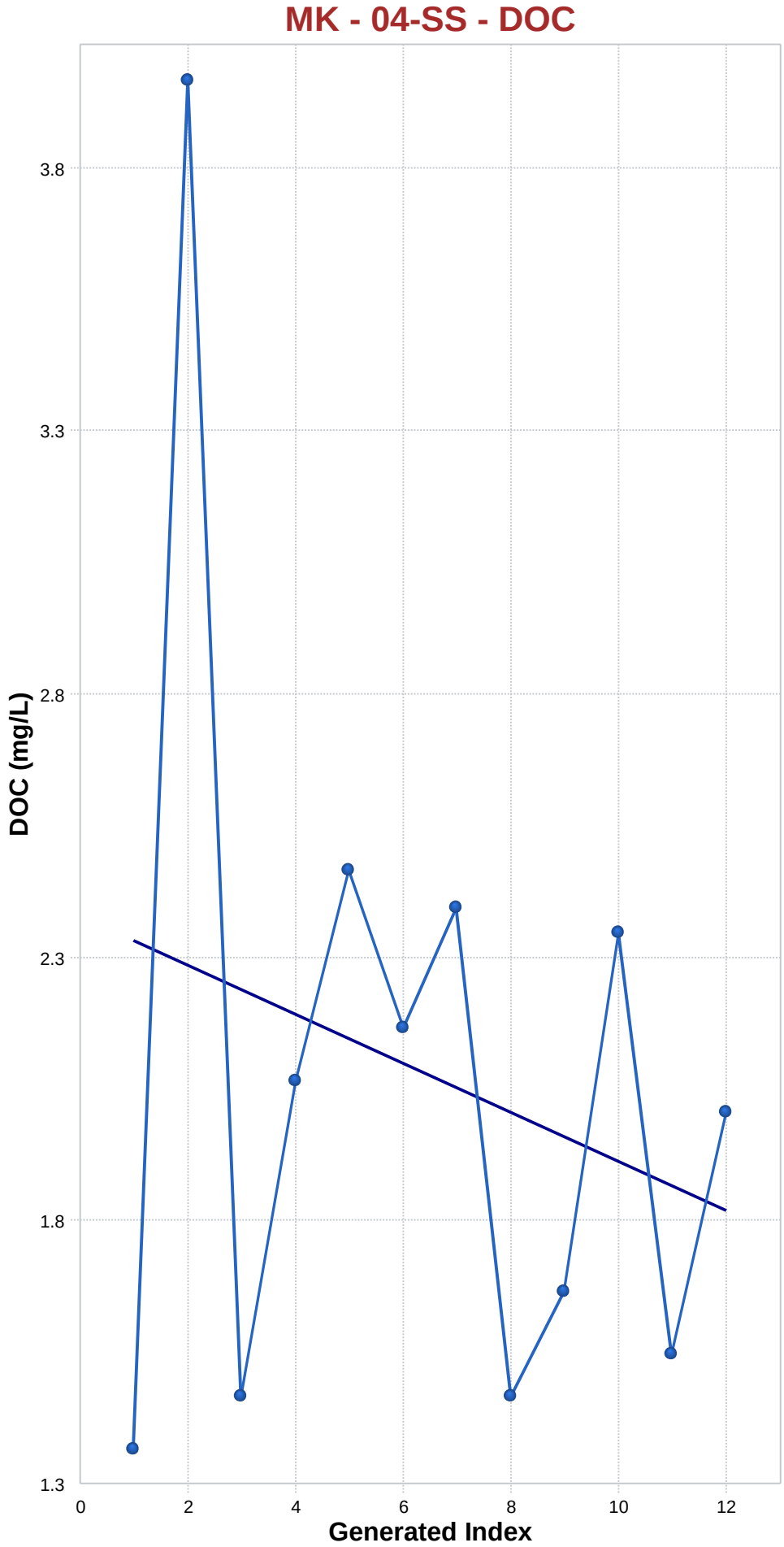
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9851
Standardized Value of S	0.0357
M-K Test Value (S)	3
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4858

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0035

Insufficient statistical evidence of a significant trend at the specified level of significance.



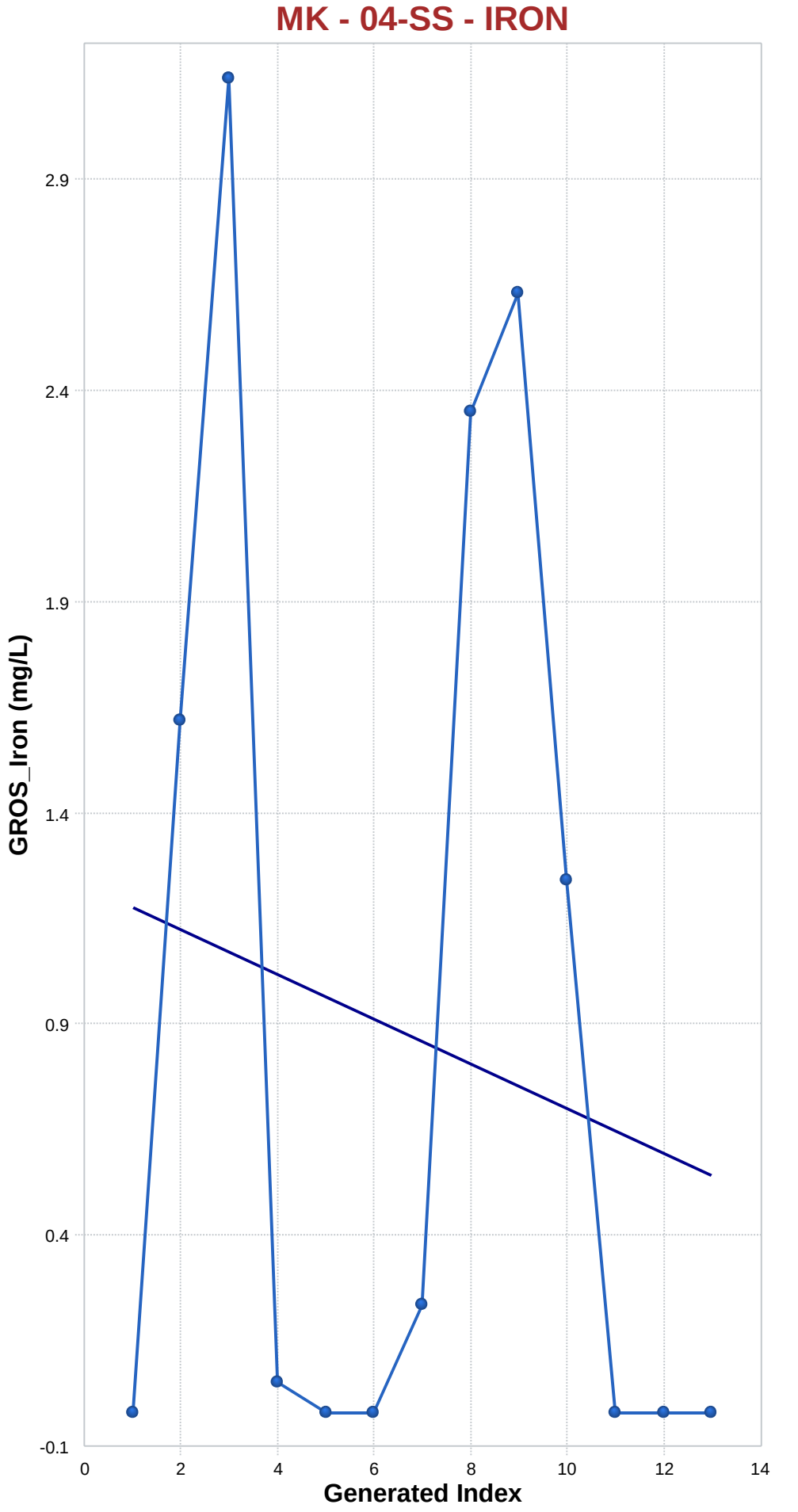
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.5488
Standardized Value of S	0.0000
M-K Test Value (S)	-1
Tabulated p-value	0.5270
Approximate p-value	0.5000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0467
OLS Regression Intercept	2.4142

Insufficient statistical evidence of a significant trend at the specified level of significance.



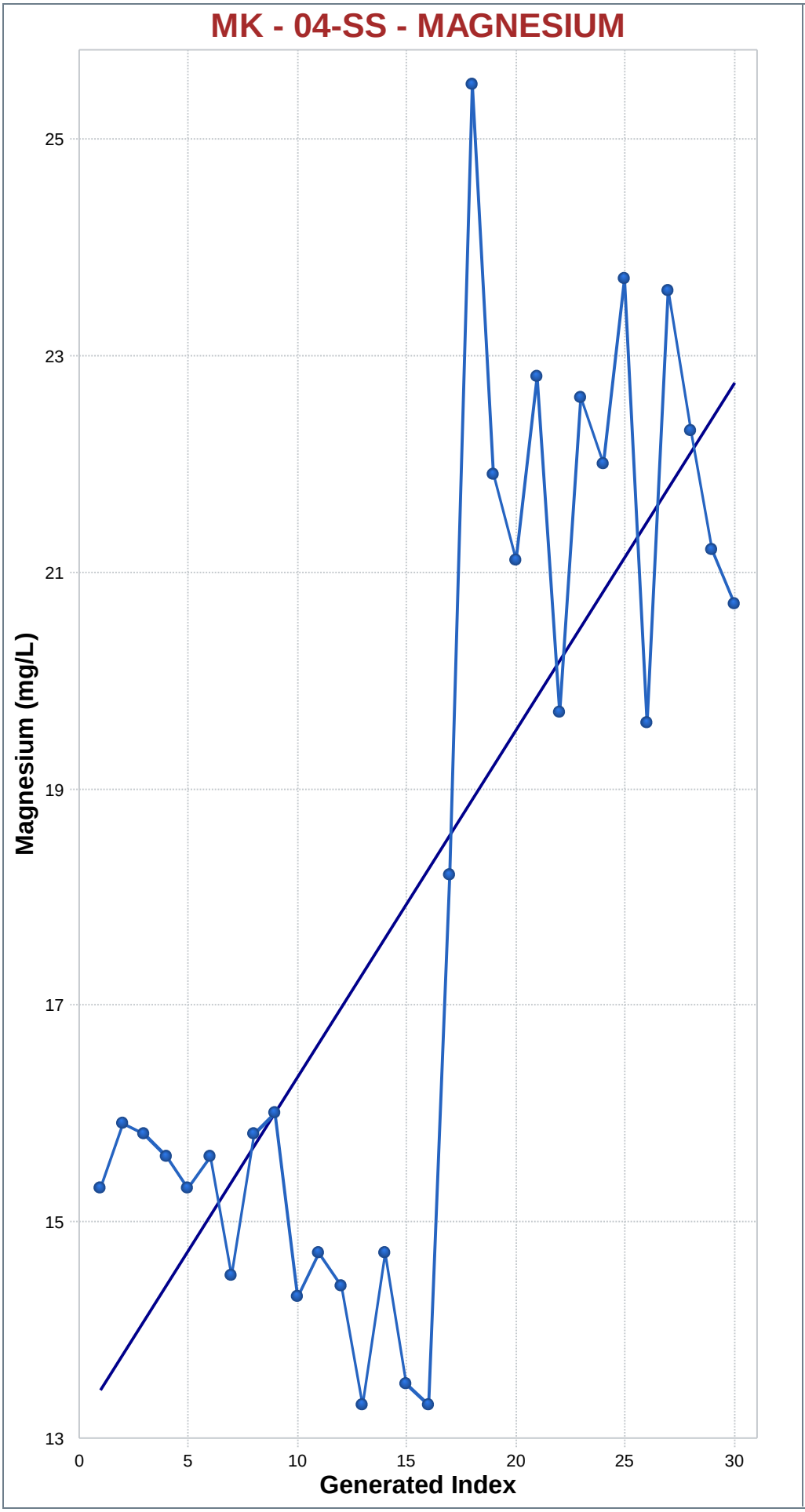
Mann-Kendall Trend Analysis

n	13
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	15.5027
Standardized Value of S	-0.6450
M-K Test Value (S)	-11
Tabulated p-value	0.2950
Approximate p-value	0.2594

OLS Regression Line (Blue)

OLS Regression Slope	-0.0528
OLS Regression Intercept	1.2575

Insufficient statistical evidence of a significant trend at the specified level of significance.



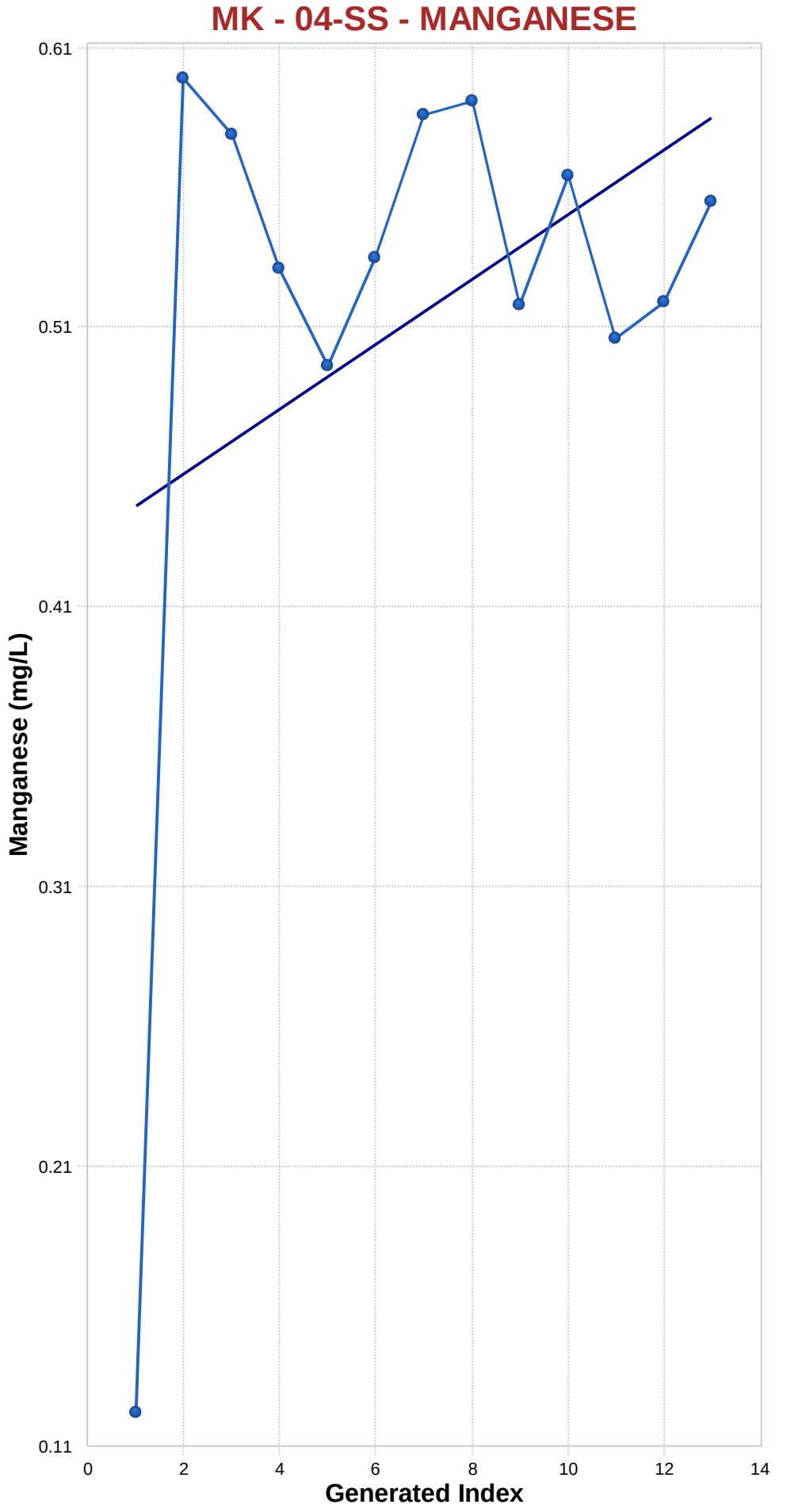
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0060
Standardized Value of S	2.8033
M-K Test Value (S)	158
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0025

OLS Regression Line (Blue)

OLS Regression Slope	0.3210
OLS Regression Intercept	13.6211

Statistically significant evidence of an increasing trend at the specified level of significance.



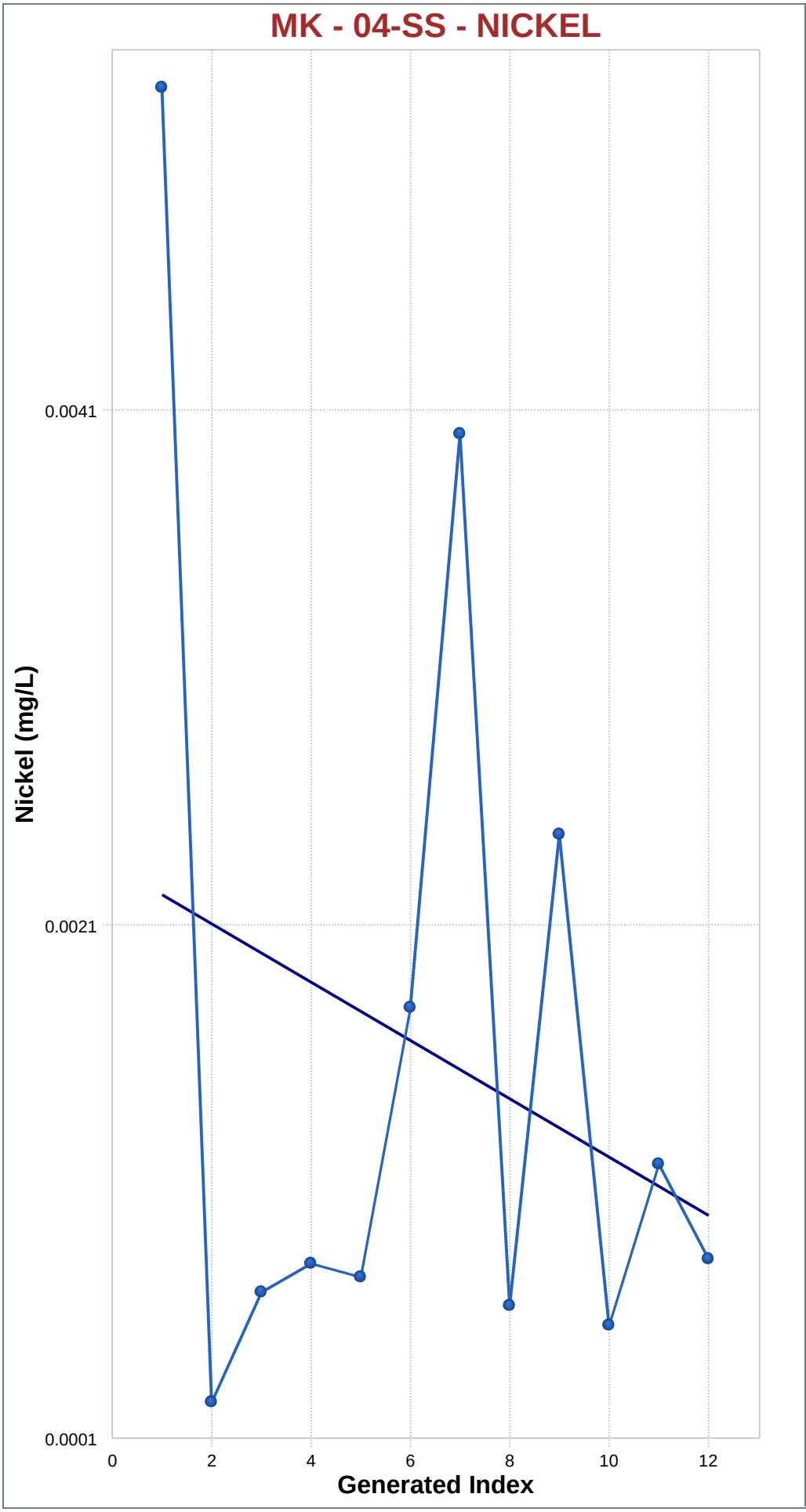
Mann-Kendall Trend Analysis

n	13
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	16.3911
Standardized Value of S	-0.0610
M-K Test Value (S)	-2
Tabulated p-value	0.4760
Approximate p-value	0.4757

OLS Regression Line (Blue)

OLS Regression Slope	0.0116
OLS Regression Intercept	0.4365

Insufficient statistical evidence of a significant trend at the specified level of significance.



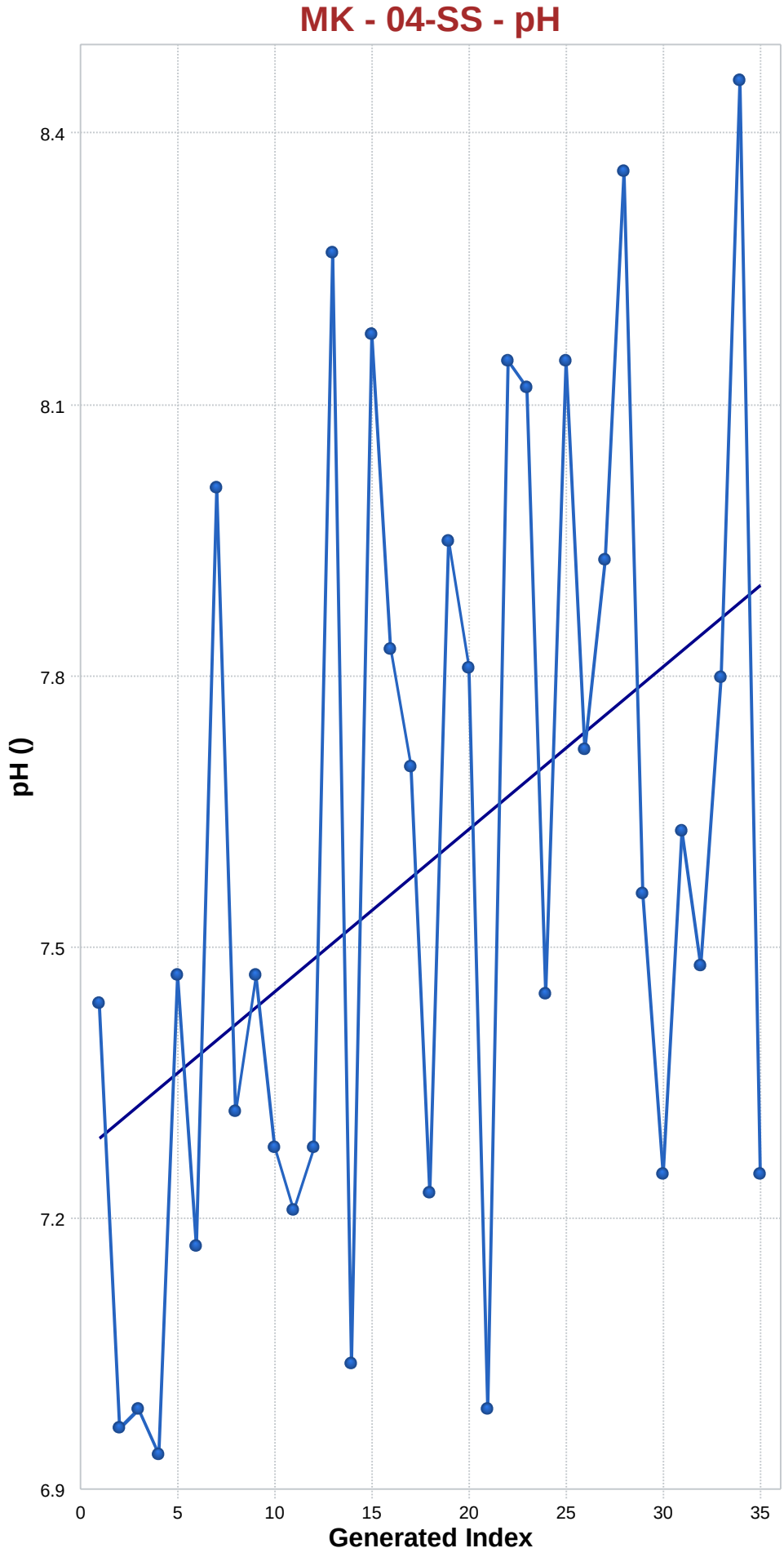
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.5831
Standardized Value of S	0.0686
M-K Test Value (S)	2
Tabulated p-value	0.4730
Approximate p-value	0.4727

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0024

Insufficient statistical evidence of a significant trend at the specified level of significance.



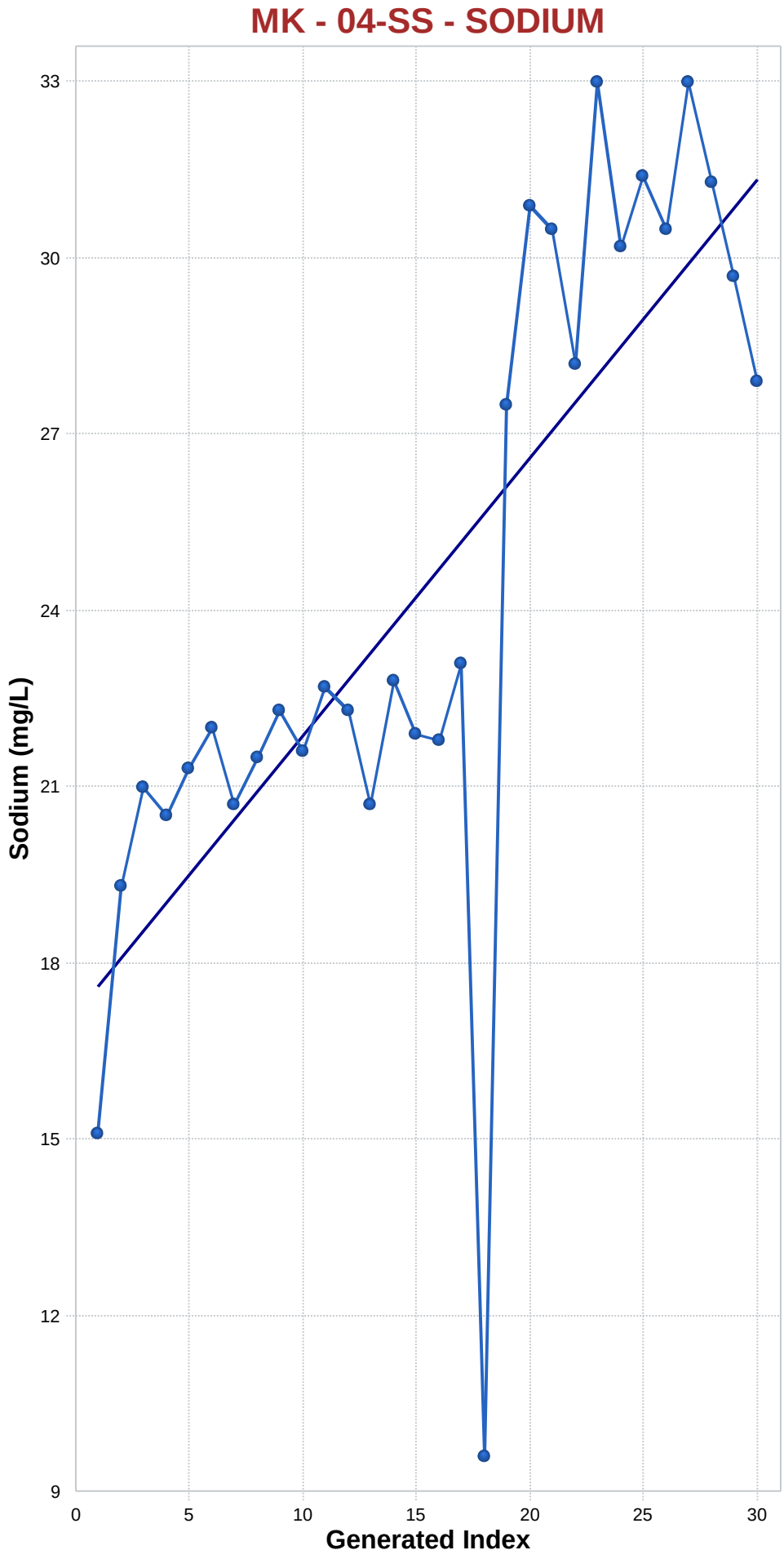
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.3799
Standardized Value of S	2.3160
M-K Test Value (S)	164
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0103

OLS Regression Line (Blue)

OLS Regression Slope	0.0180
OLS Regression Intercept	7.3013

Statistically significant evidence of an increasing trend at the specified level of significance.



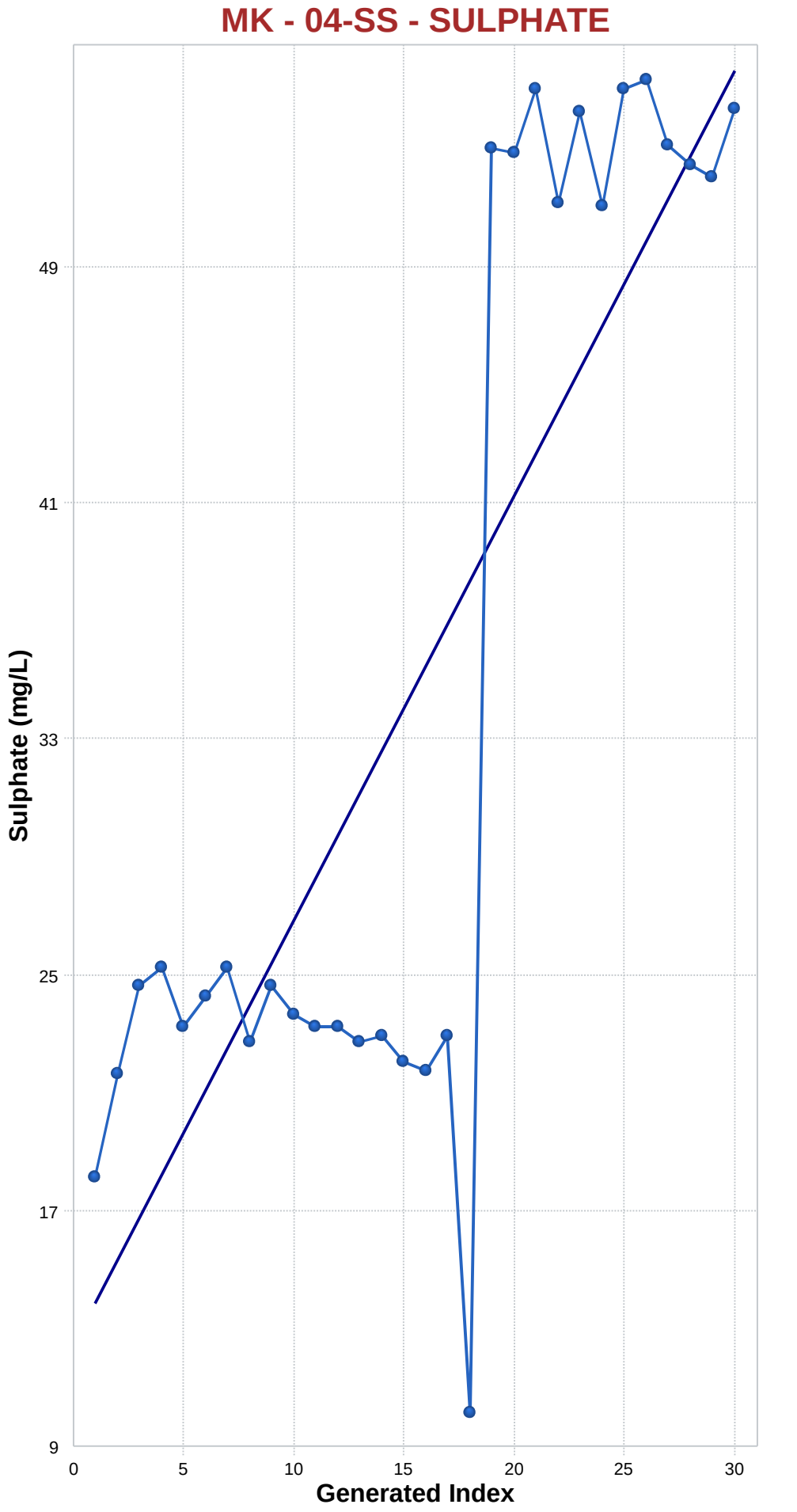
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0149
Standardized Value of S	4.9987
M-K Test Value (S)	281
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.4745
OLS Regression Intercept	16.8218

Statistically significant evidence of an increasing trend at the specified level of significance.



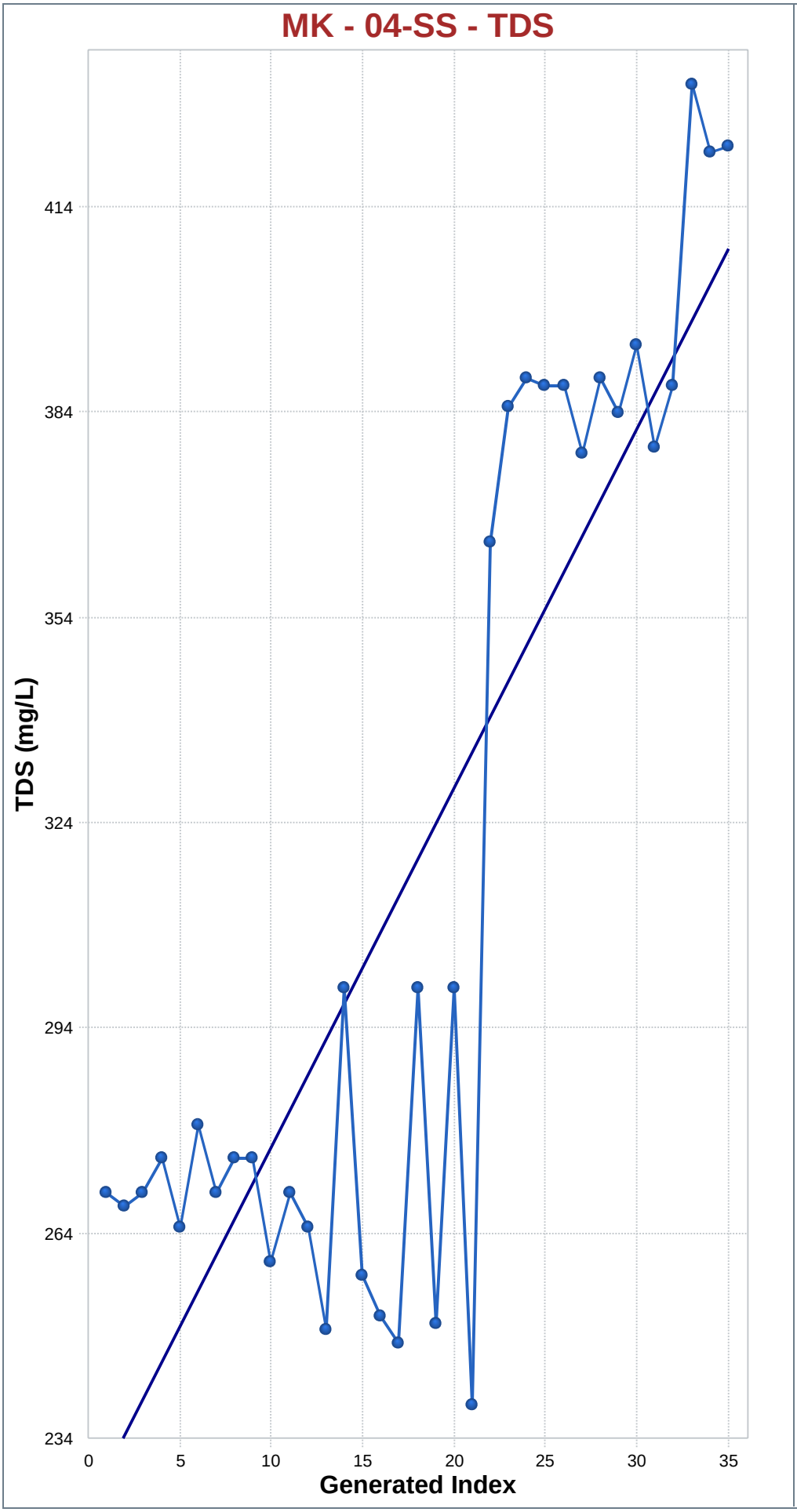
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9732
Standardized Value of S	3.0014
M-K Test Value (S)	169
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0013

OLS Regression Line (Blue)

OLS Regression Slope	1.4414
OLS Regression Intercept	12.7543

Statistically significant evidence of an increasing trend at the specified level of significance.



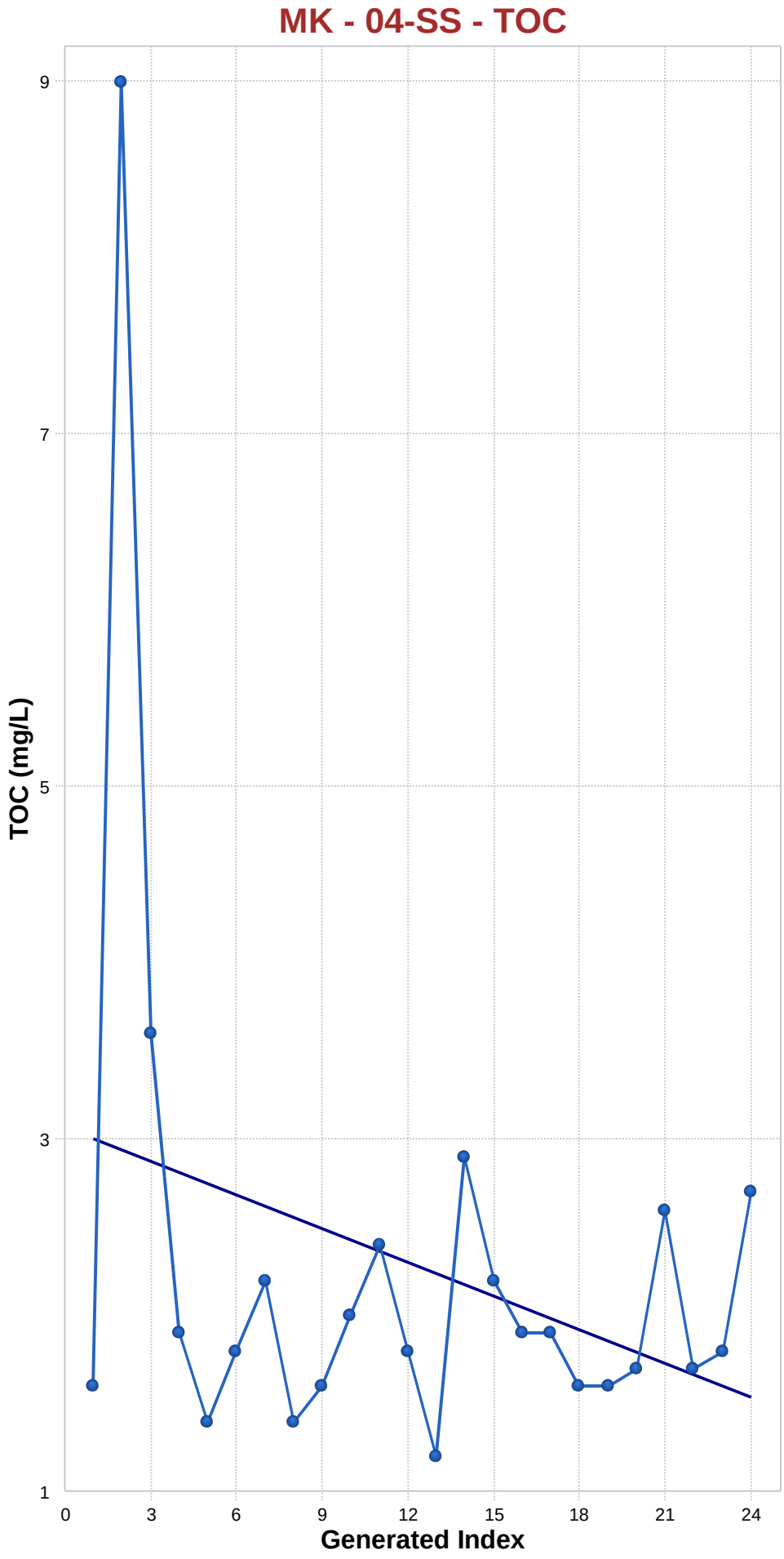
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.2614
Standardized Value of S	4.0847
M-K Test Value (S)	288
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	5.2714
OLS Regression Intercept	223.5429

Statistically significant evidence of an increasing trend at the specified level of significance.



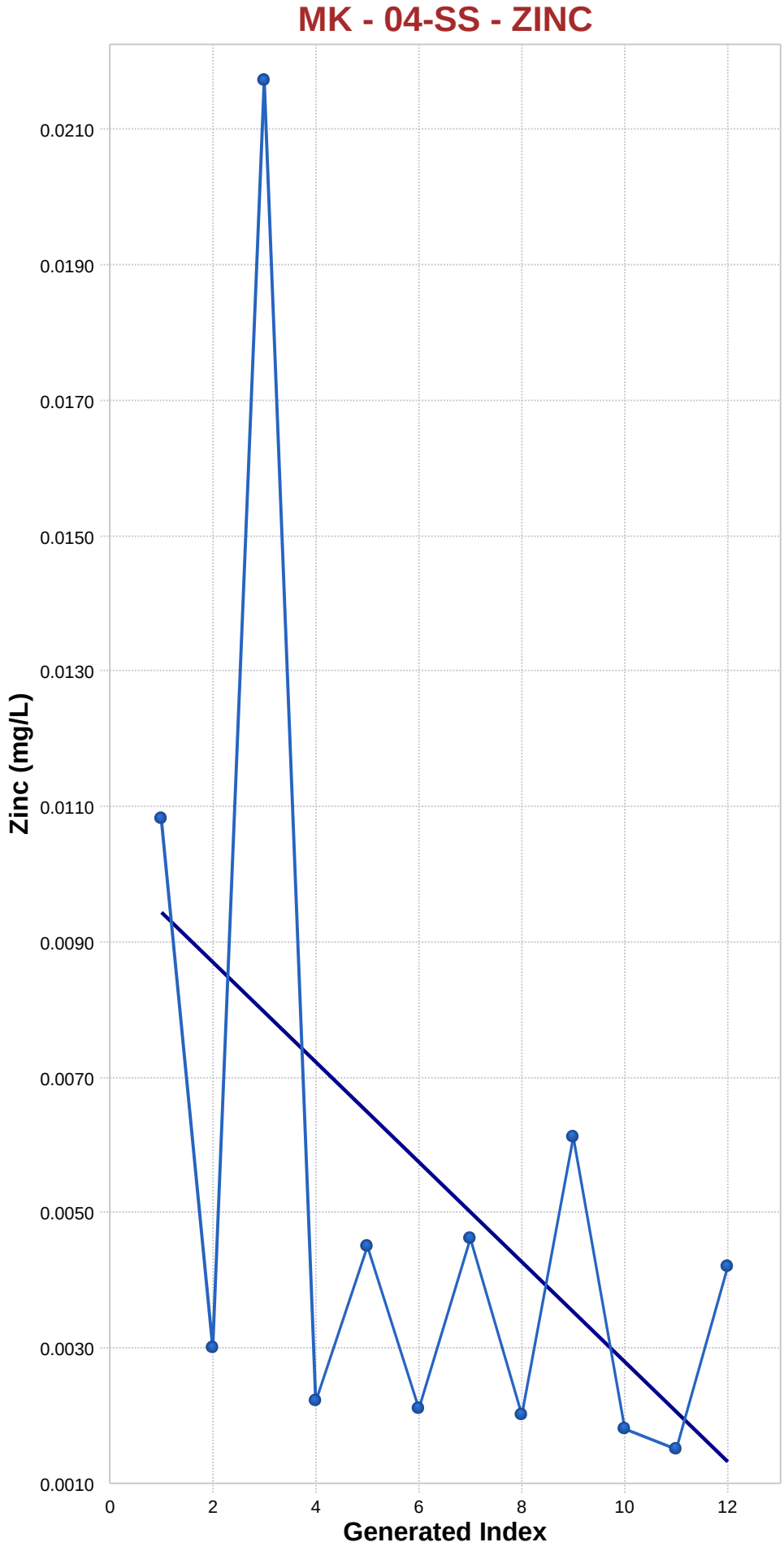
Mann-Kendall Trend Analysis

n	24
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	40.0791
Standardized Value of S	-0.0499
M-K Test Value (S)	-3
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4801

OLS Regression Line (Blue)

OLS Regression Slope	-0.0636
OLS Regression Intercept	2.6659

Insufficient statistical evidence of a significant trend at the specified level of significance.



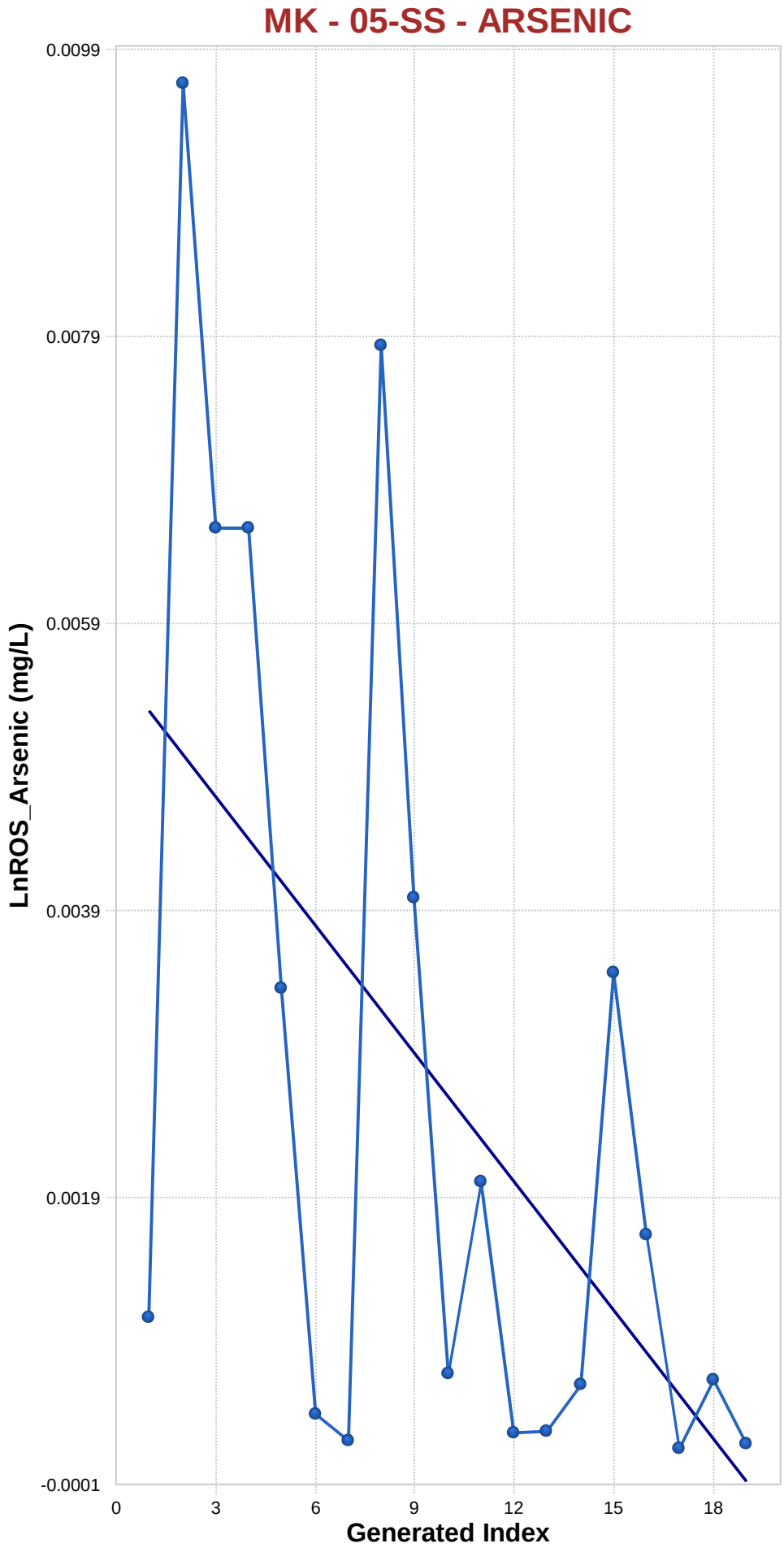
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.5831
Standardized Value of S	-1.7143
M-K Test Value (S)	-26
Tabulated p-value	0.0430
Approximate p-value	0.0432

OLS Regression Line (Blue)

OLS Regression Slope	-0.0007
OLS Regression Intercept	0.0102

Statistically significant evidence of a decreasing trend at the specified level of significance.



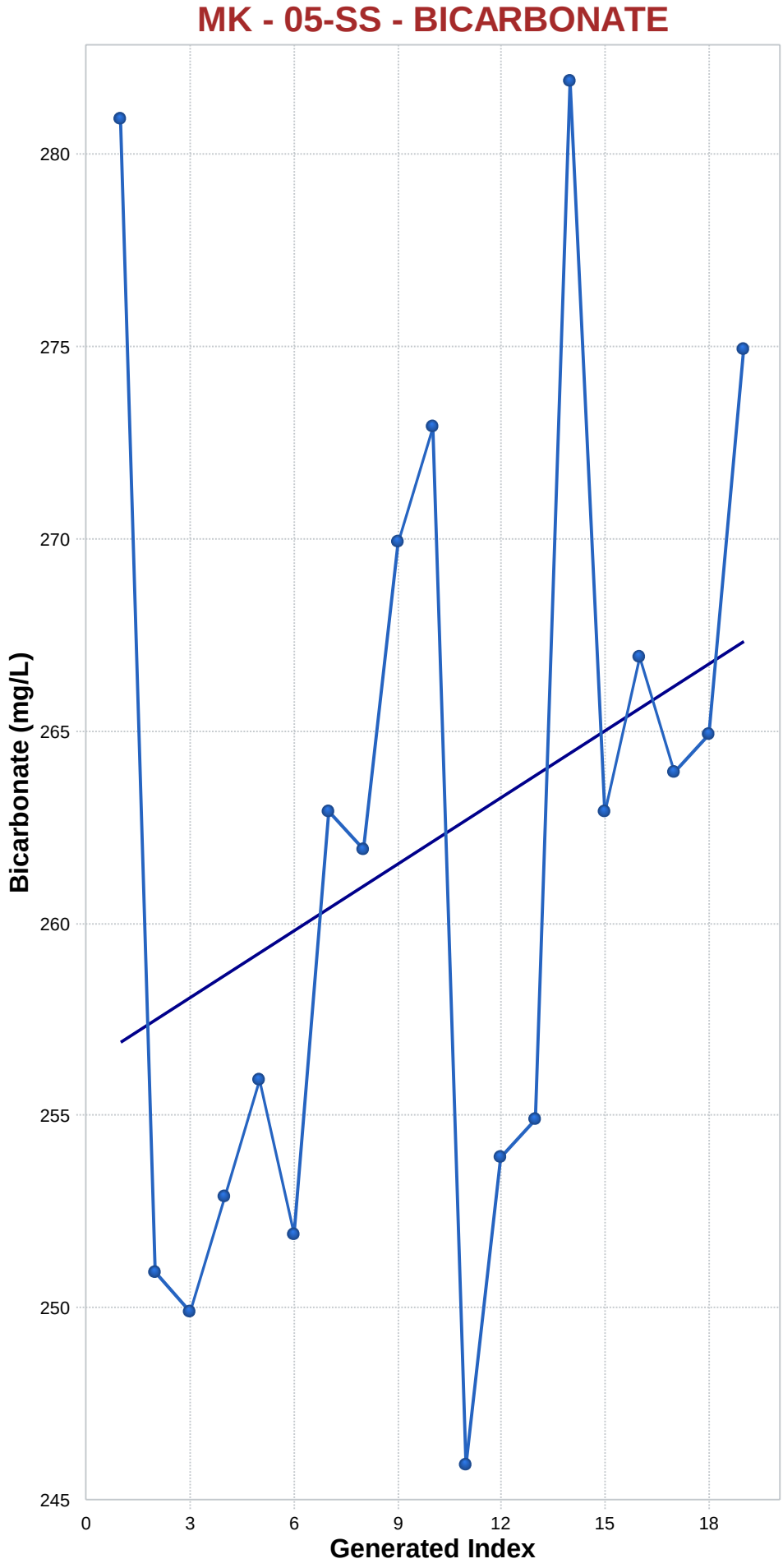
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5657
Standardized Value of S	-2.4155
M-K Test Value (S)	-70
Tabulated p-value	0.0060
Approximate p-value	0.0079

OLS Regression Line (Blue)

OLS Regression Slope	-0.0003
OLS Regression Intercept	0.0056

Statistically significant evidence of a decreasing trend at the specified level of significance.



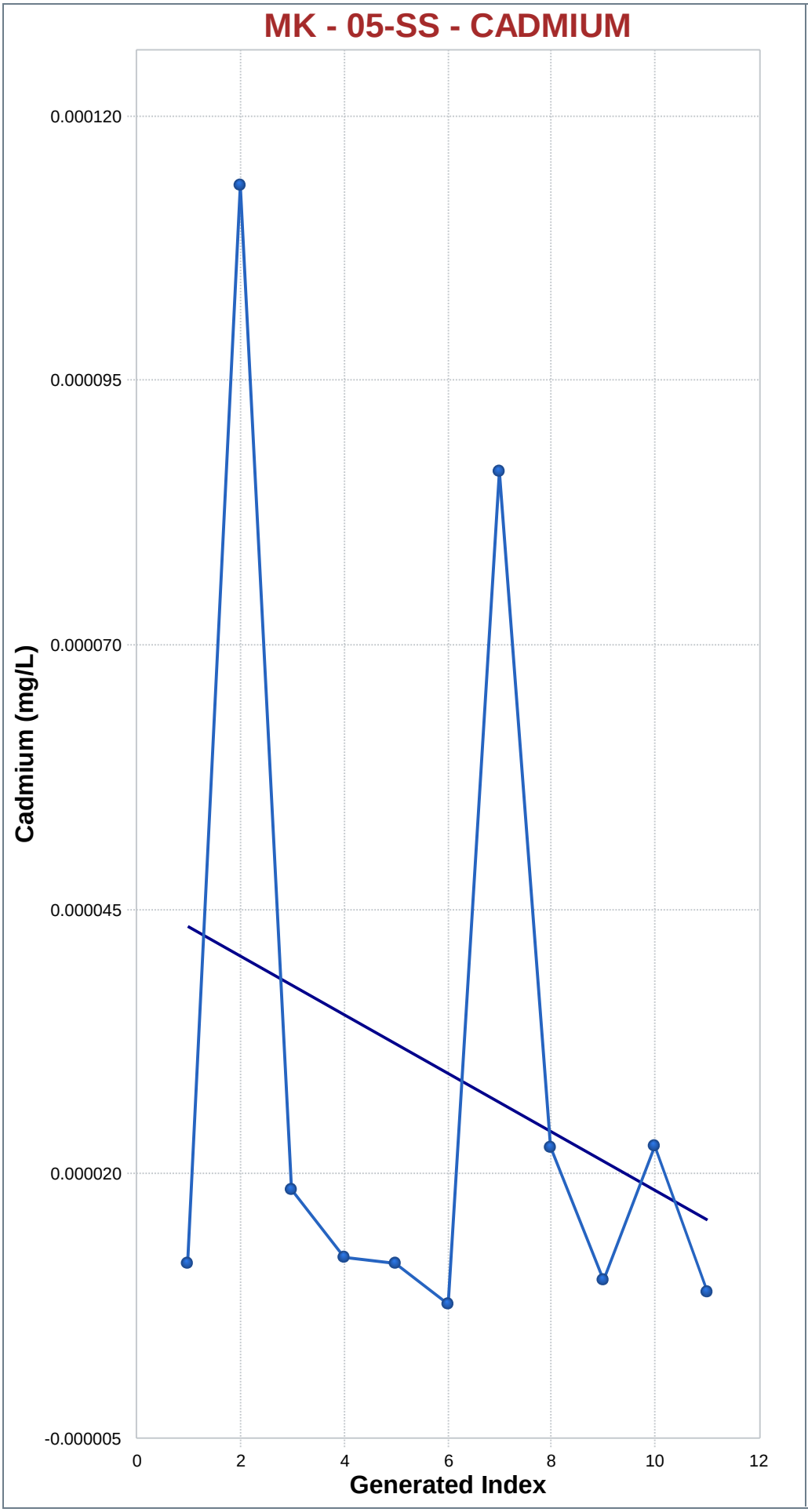
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5657
Standardized Value of S	2.0654
M-K Test Value (S)	60
Tabulated p-value	0.0170
Approximate p-value	0.0194

OLS Regression Line (Blue)

OLS Regression Slope	0.5807
OLS Regression Intercept	256.4035

Statistically significant evidence of an increasing trend at the specified level of significance.



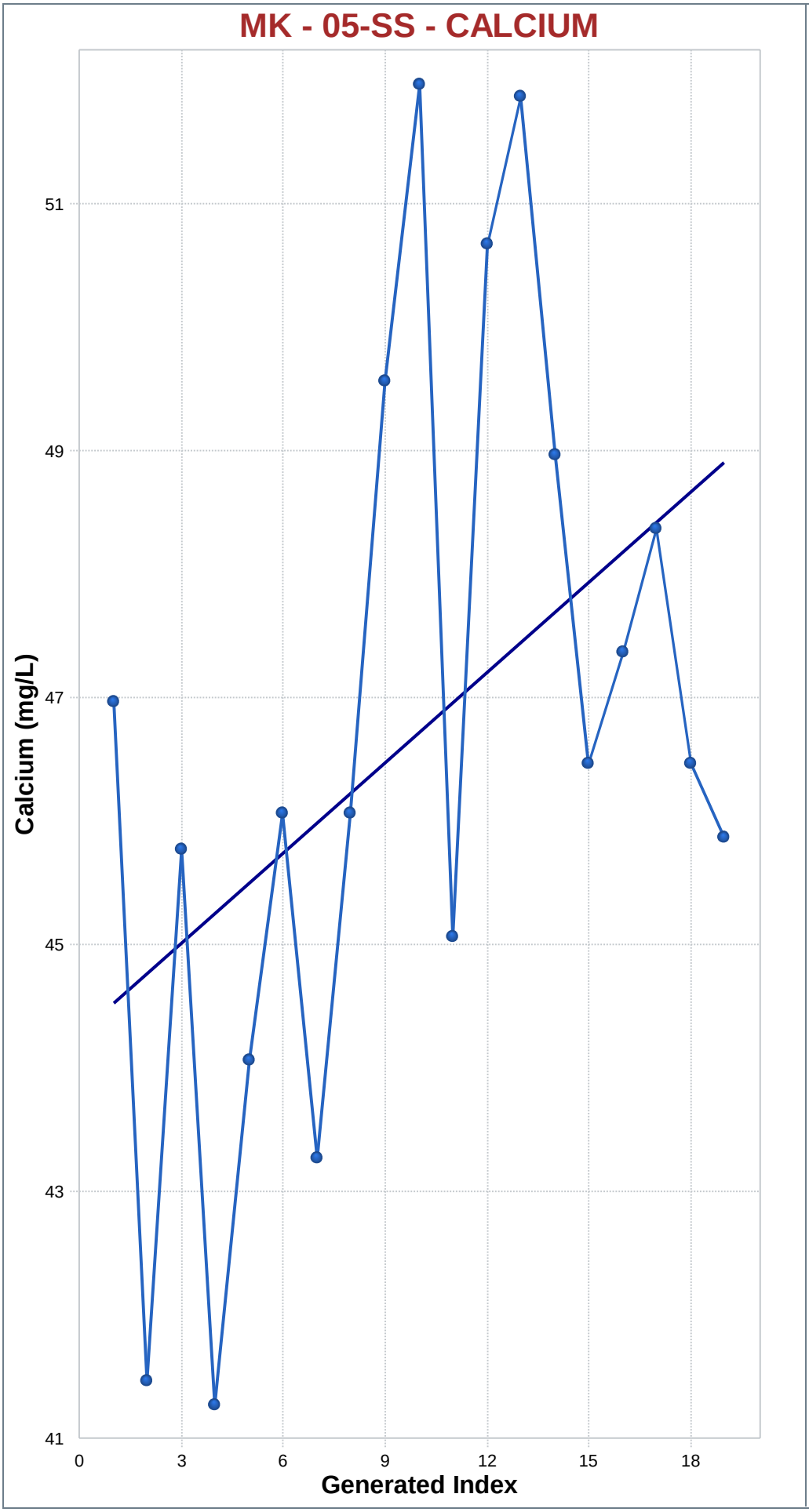
Mann-Kendall Trend Analysis

n	11
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	12.8452
Standardized Value of S	-0.6228
M-K Test Value (S)	-9
Tabulated p-value	0.2710
Approximate p-value	0.2667

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0000

Insufficient statistical evidence of a significant trend at the specified level of significance.



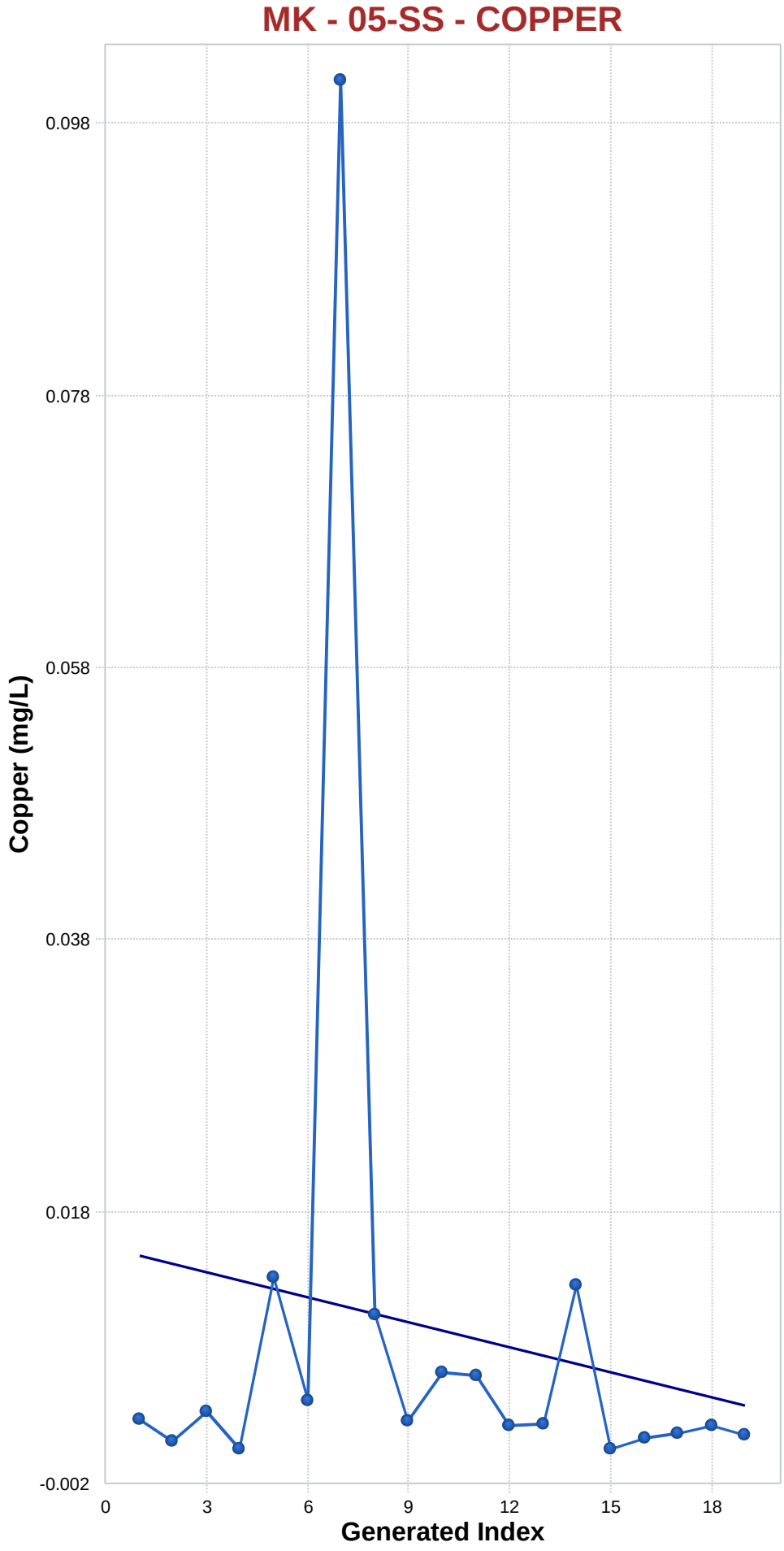
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	1.6113
M-K Test Value (S)	47
Tabulated p-value	0.0540
Approximate p-value	0.0536

OLS Regression Line (Blue)

OLS Regression Slope	0.2439
OLS Regression Intercept	44.7088

Insufficient statistical evidence of a significant trend at the specified level of significance.



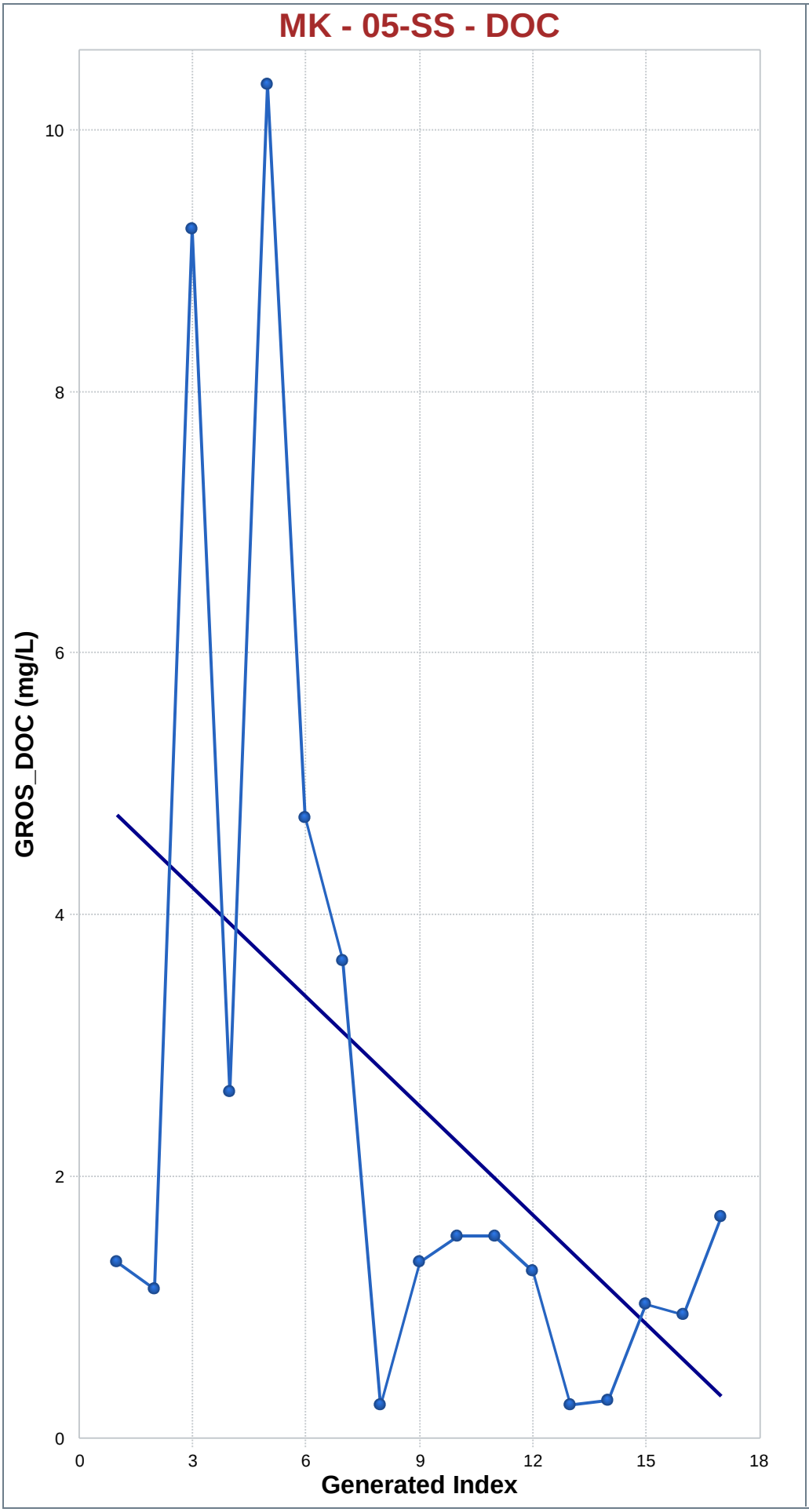
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5832
Standardized Value of S	-1.1895
M-K Test Value (S)	-35
Tabulated p-value	0.1190
Approximate p-value	0.1171

OLS Regression Line (Blue)

OLS Regression Slope	-0.0006
OLS Regression Intercept	0.0152

Insufficient statistical evidence of a significant trend at the specified level of significance.



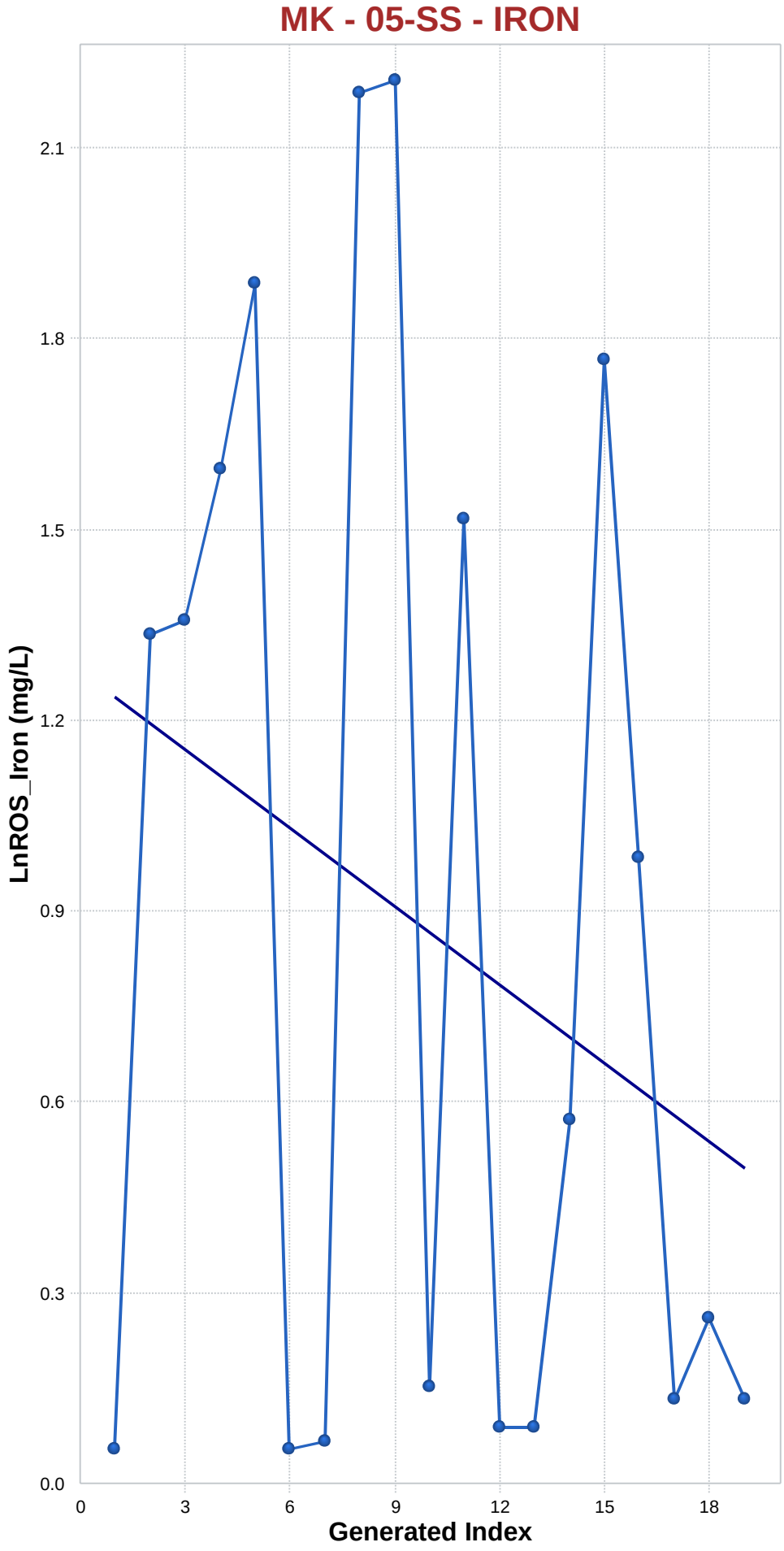
Mann-Kendall Trend Analysis

n	17
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	24.2143
Standardized Value of S	-1.7345
M-K Test Value (S)	-43
Tabulated p-value	0.0460
Approximate p-value	0.0414

OLS Regression Line (Blue)

OLS Regression Slope	-0.2779
OLS Regression Intercept	4.8026

Statistically significant evidence of a decreasing trend at the specified level of significance.



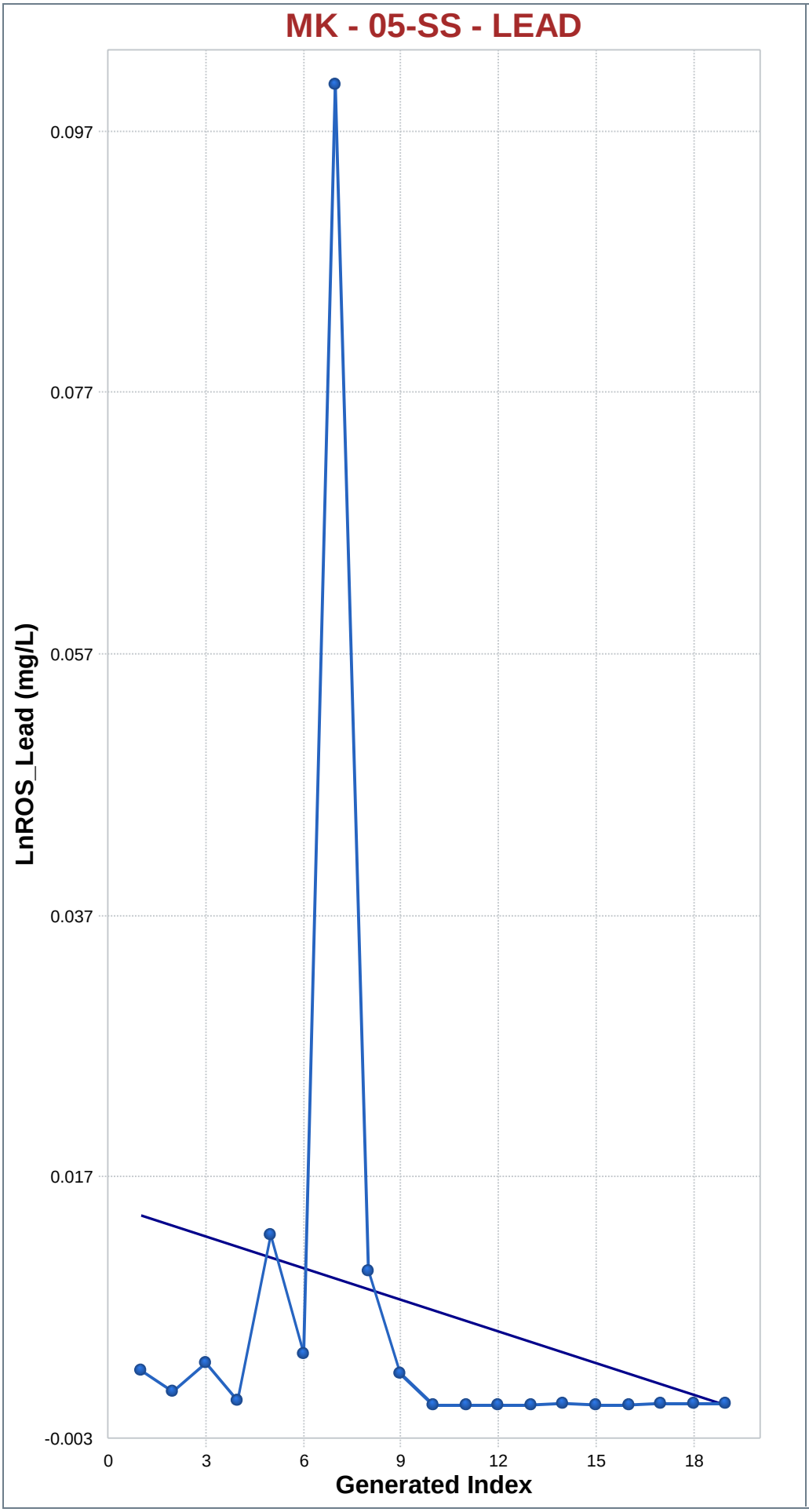
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5307
Standardized Value of S	-0.0350
M-K Test Value (S)	-2
Tabulated p-value	0.4730
Approximate p-value	0.4860

OLS Regression Line (Blue)

OLS Regression Slope	-0.0412
OLS Regression Intercept	1.2609

Insufficient statistical evidence of a significant trend at the specified level of significance.



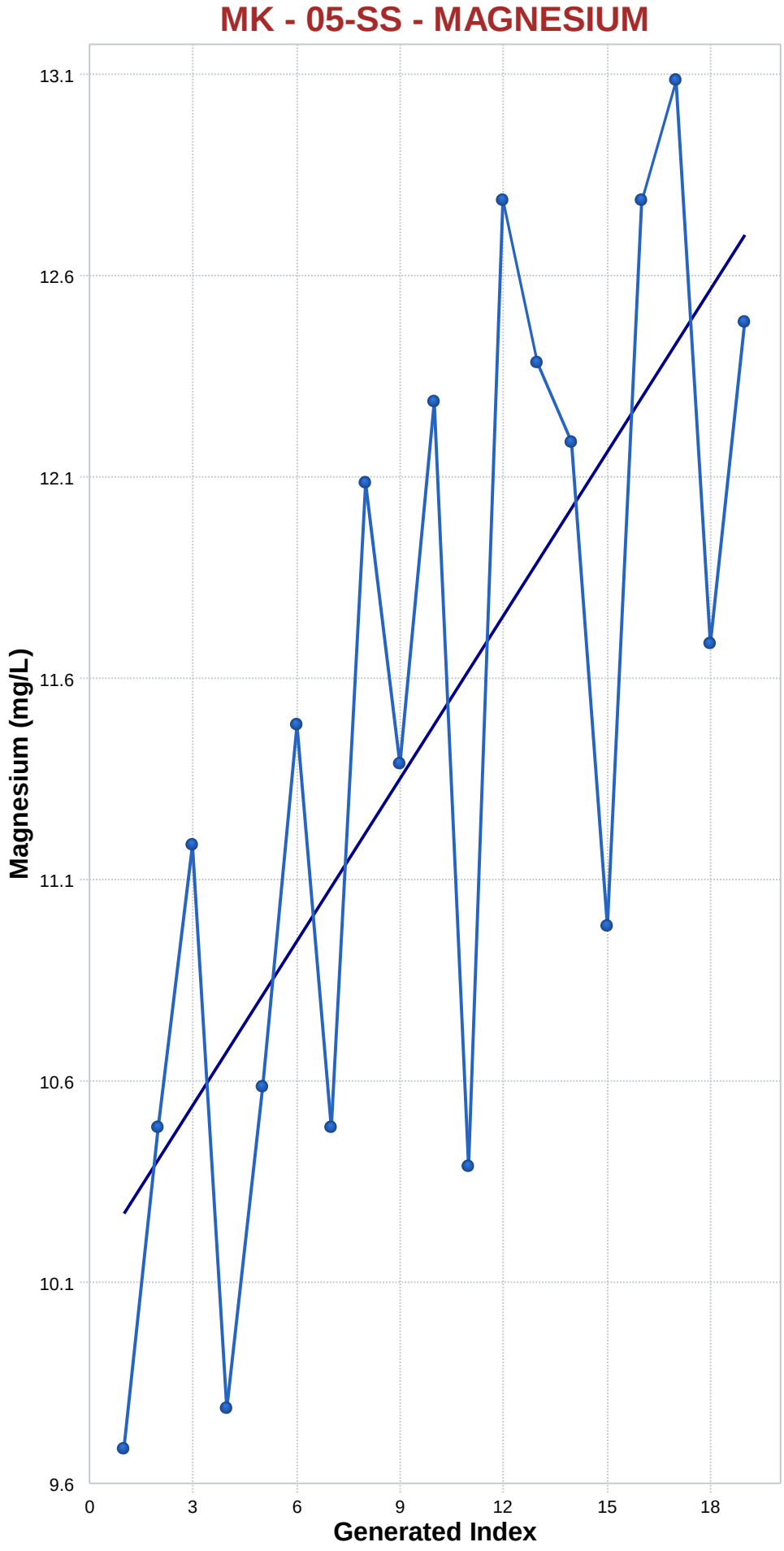
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5832
Standardized Value of S	-1.5394
M-K Test Value (S)	-45
Tabulated p-value	0.0620
Approximate p-value	0.0619

OLS Regression Line (Blue)

OLS Regression Slope	-0.0008
OLS Regression Intercept	0.0153

Insufficient statistical evidence of a significant trend at the specified level of significance.



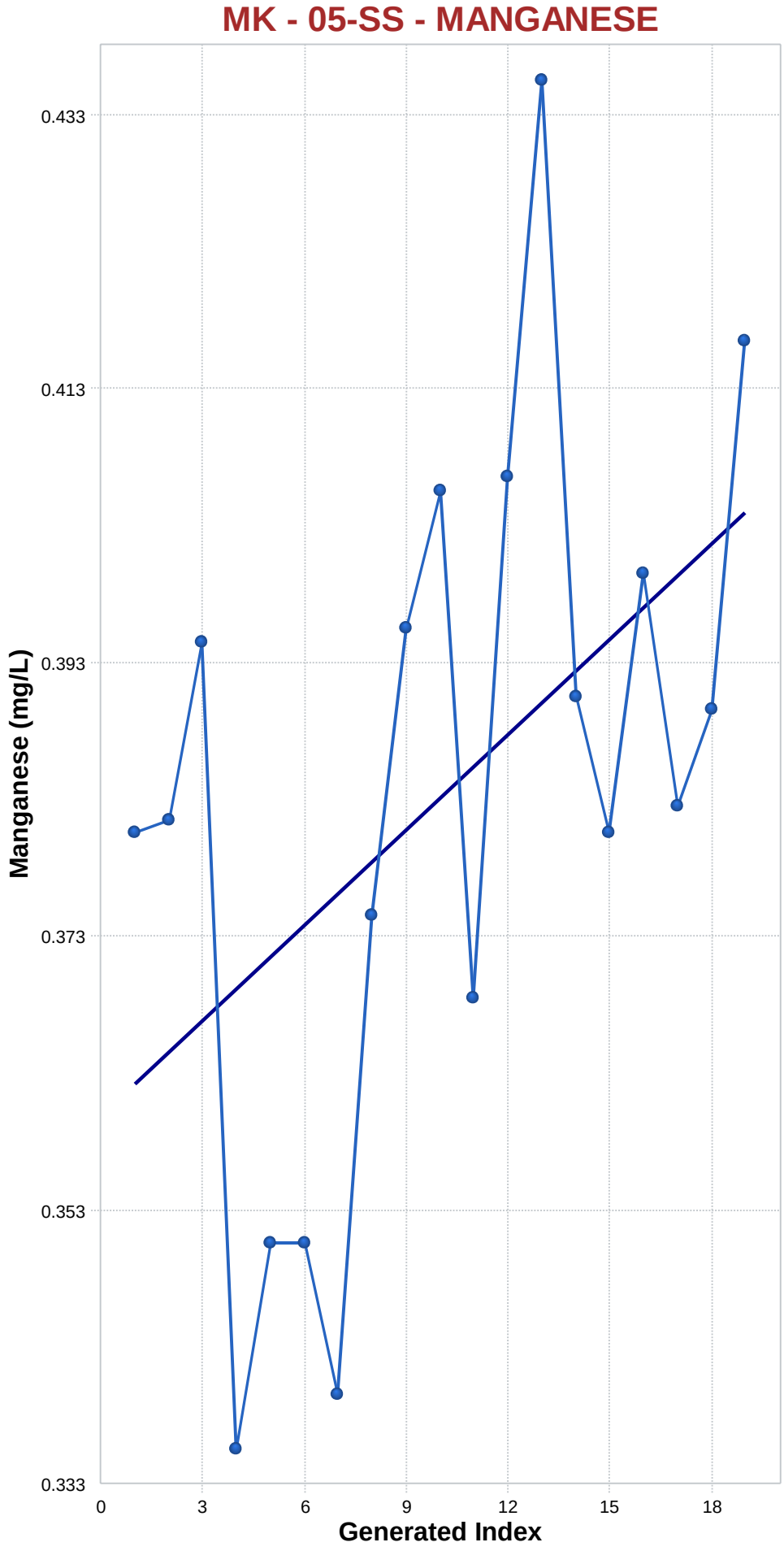
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	3.2226
M-K Test Value (S)	93
Tabulated p-value	0.0000
Approximate p-value	0.0006

OLS Regression Line (Blue)

OLS Regression Slope	0.1351
OLS Regression Intercept	10.1491

Statistically significant evidence of an increasing trend at the specified level of significance.



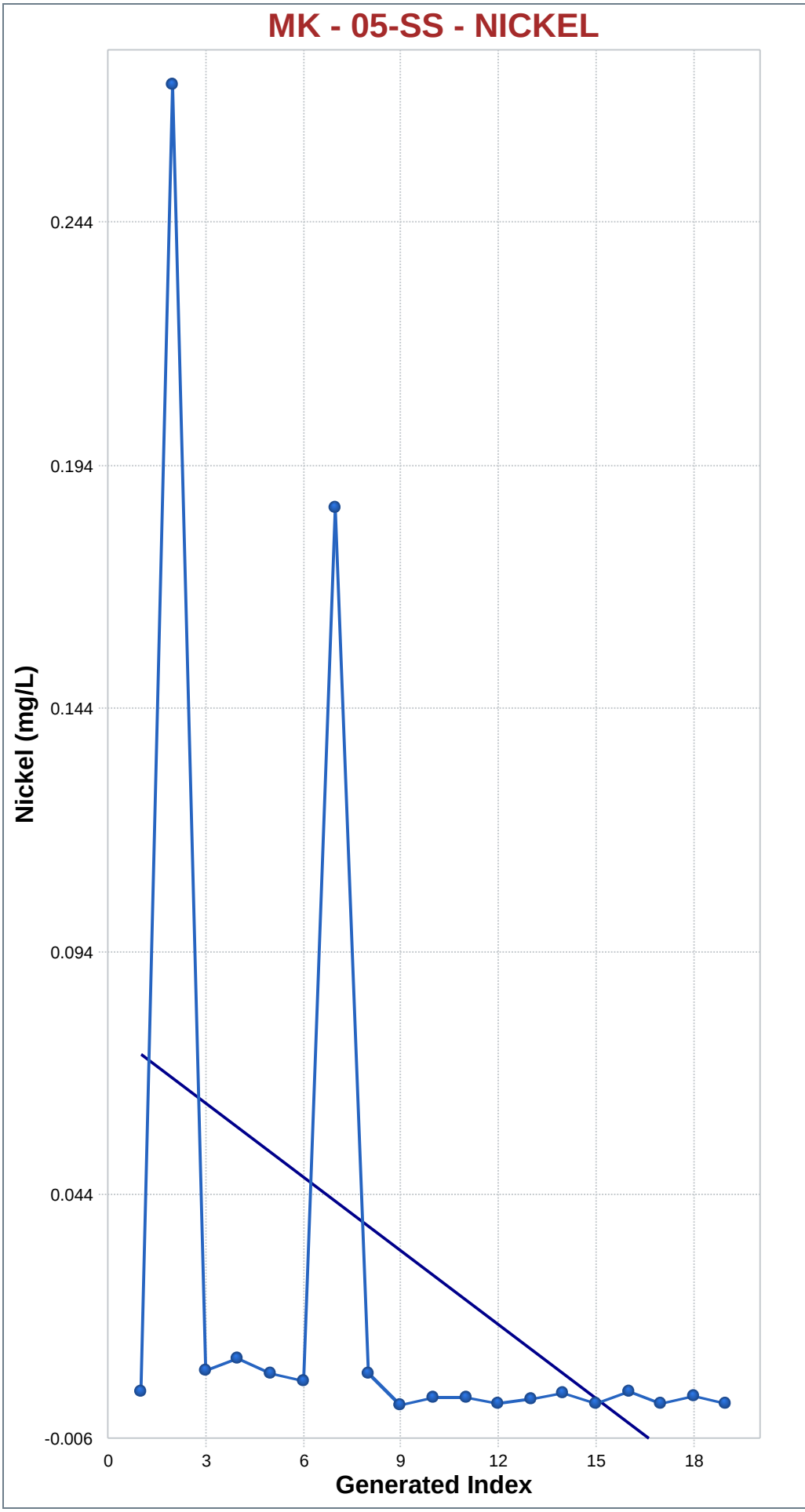
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	2.1718
M-K Test Value (S)	63
Tabulated p-value	0.0140
Approximate p-value	0.0149

OLS Regression Line (Blue)

OLS Regression Slope	0.0023
OLS Regression Intercept	0.3603

Statistically significant evidence of an increasing trend at the specified level of significance.



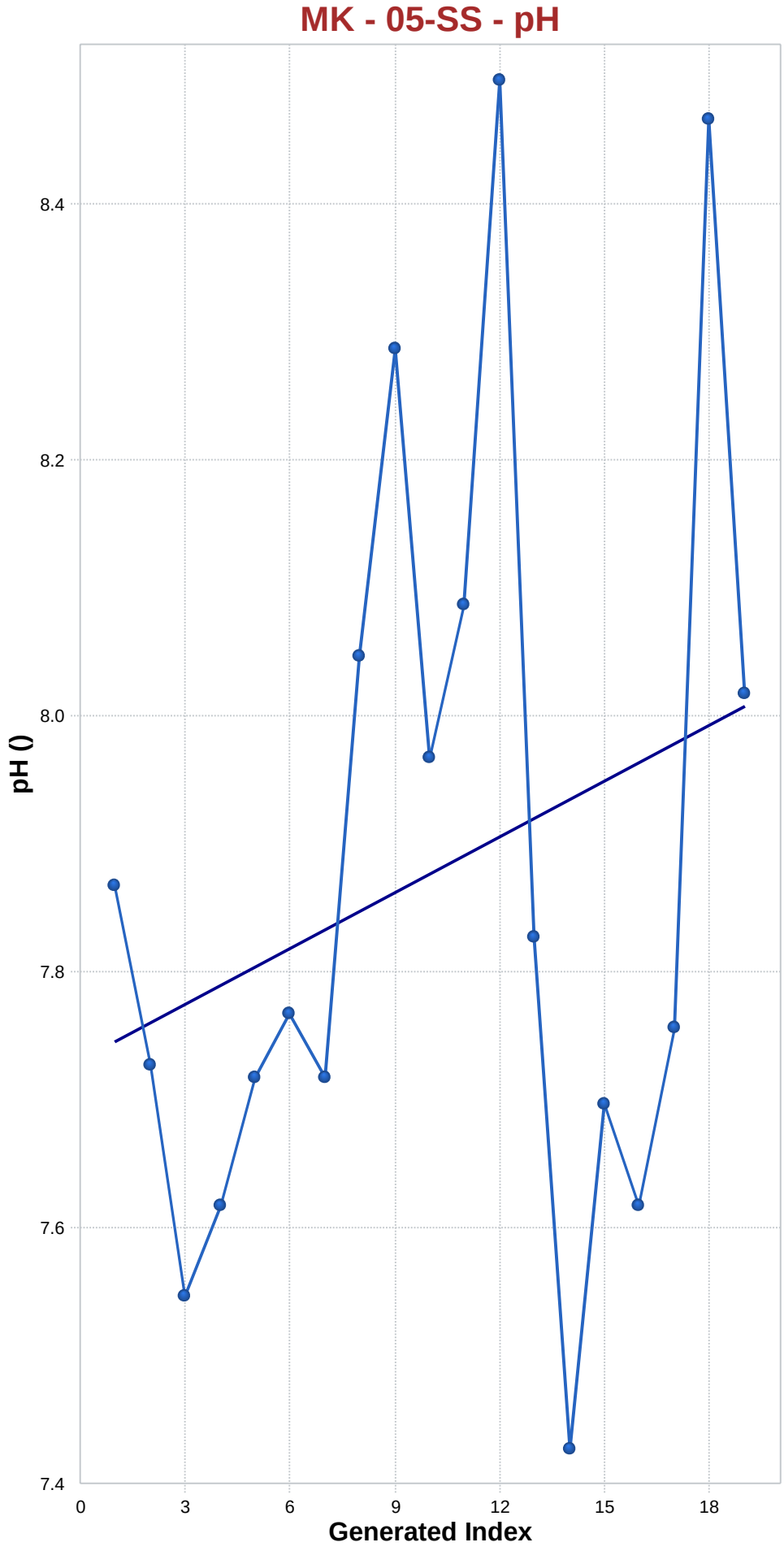
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5657
Standardized Value of S	-2.8356
M-K Test Value (S)	-82
Tabulated p-value	0.0020
Approximate p-value	0.0023

OLS Regression Line (Blue)

OLS Regression Slope	-0.0050
OLS Regression Intercept	0.0775

Statistically significant evidence of a decreasing trend at the specified level of significance.



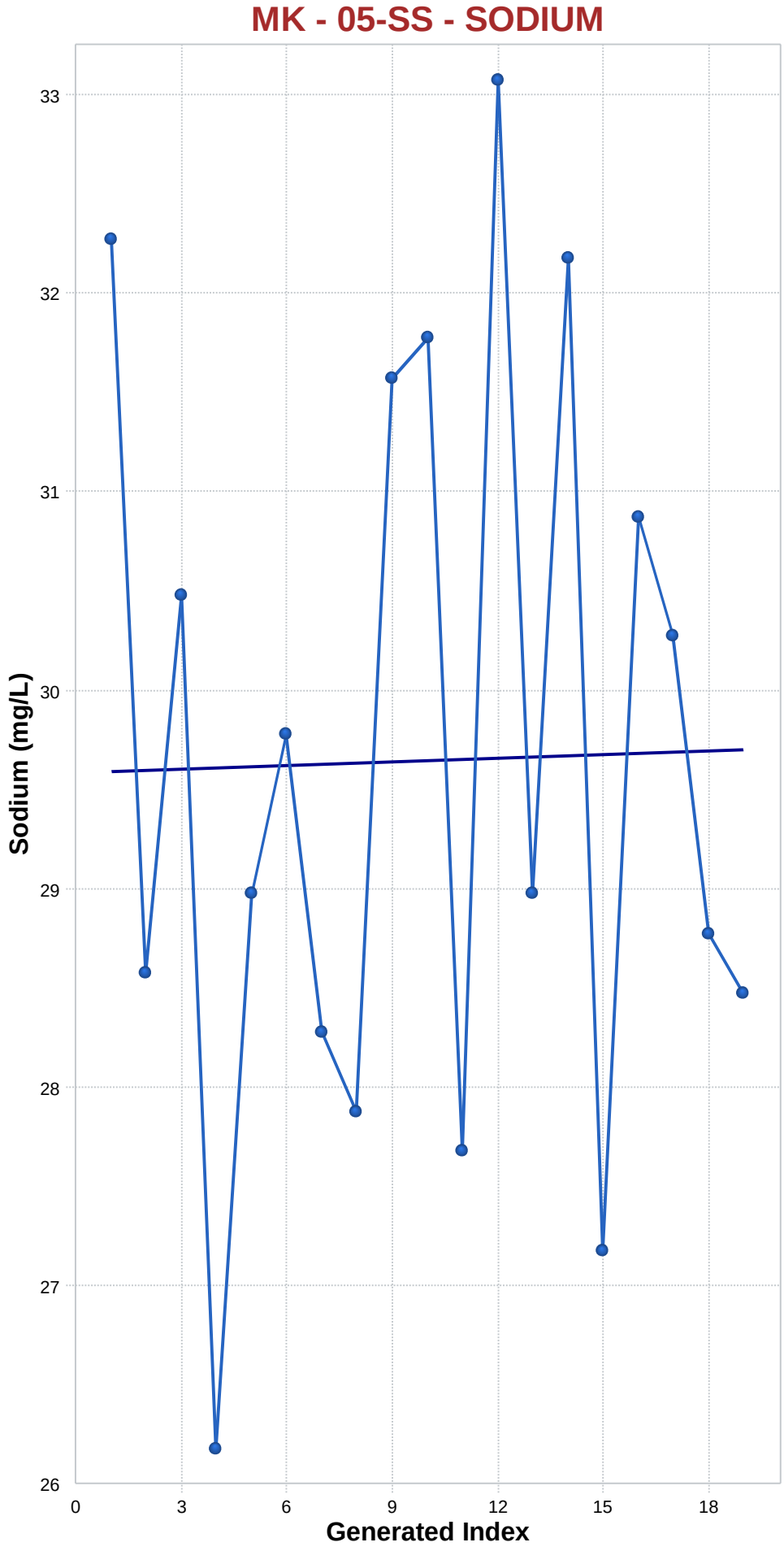
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	0.9808
M-K Test Value (S)	29
Tabulated p-value	0.1660
Approximate p-value	0.1633

OLS Regression Line (Blue)

OLS Regression Slope	0.0146
OLS Regression Intercept	7.7137

Insufficient statistical evidence of a significant trend at the specified level of significance.



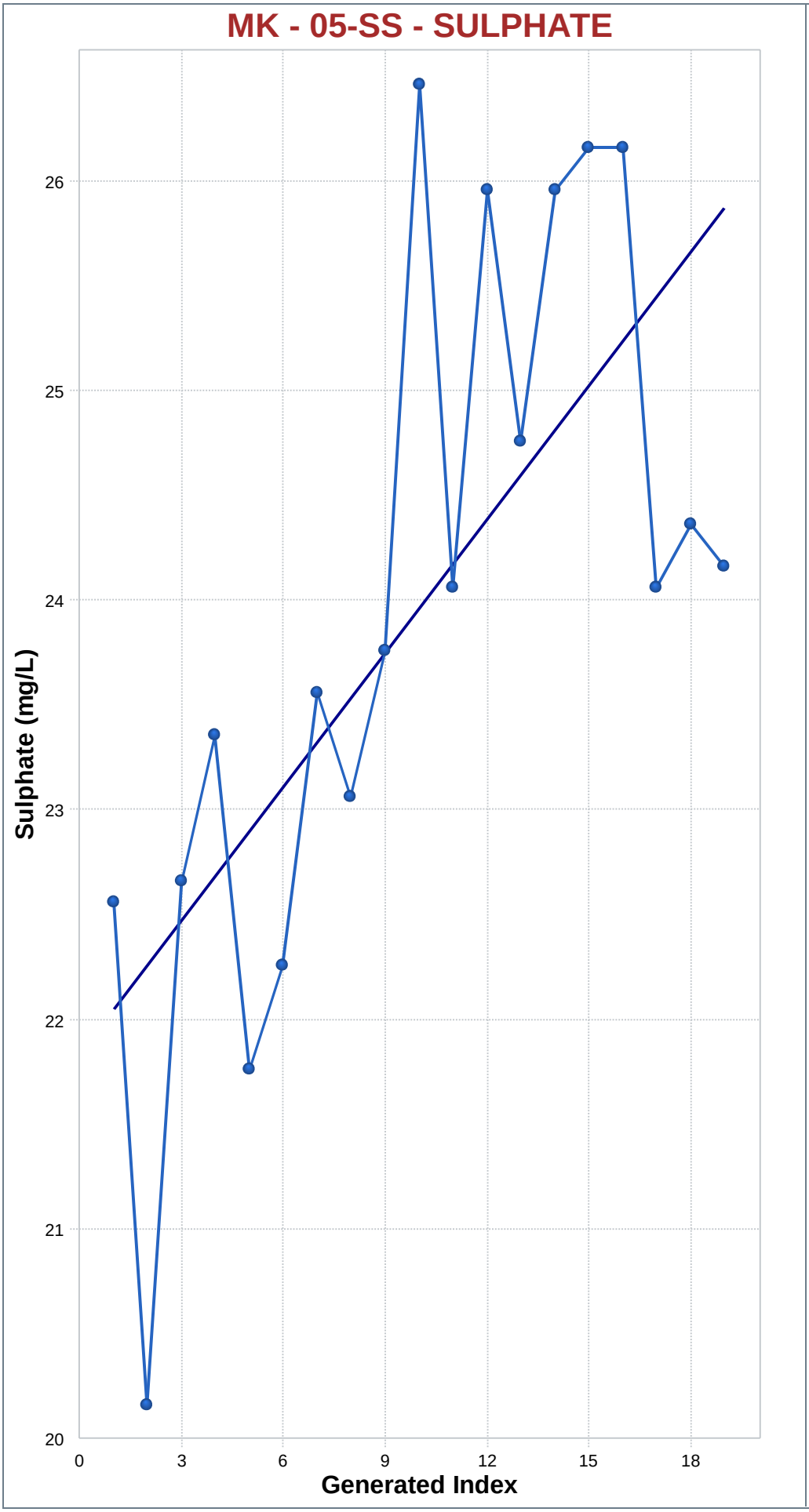
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5657
Standardized Value of S	-0.1750
M-K Test Value (S)	-6
Tabulated p-value	0.4180
Approximate p-value	0.4305

OLS Regression Line (Blue)

OLS Regression Slope	0.0060
OLS Regression Intercept	29.3088

Insufficient statistical evidence of a significant trend at the specified level of significance.



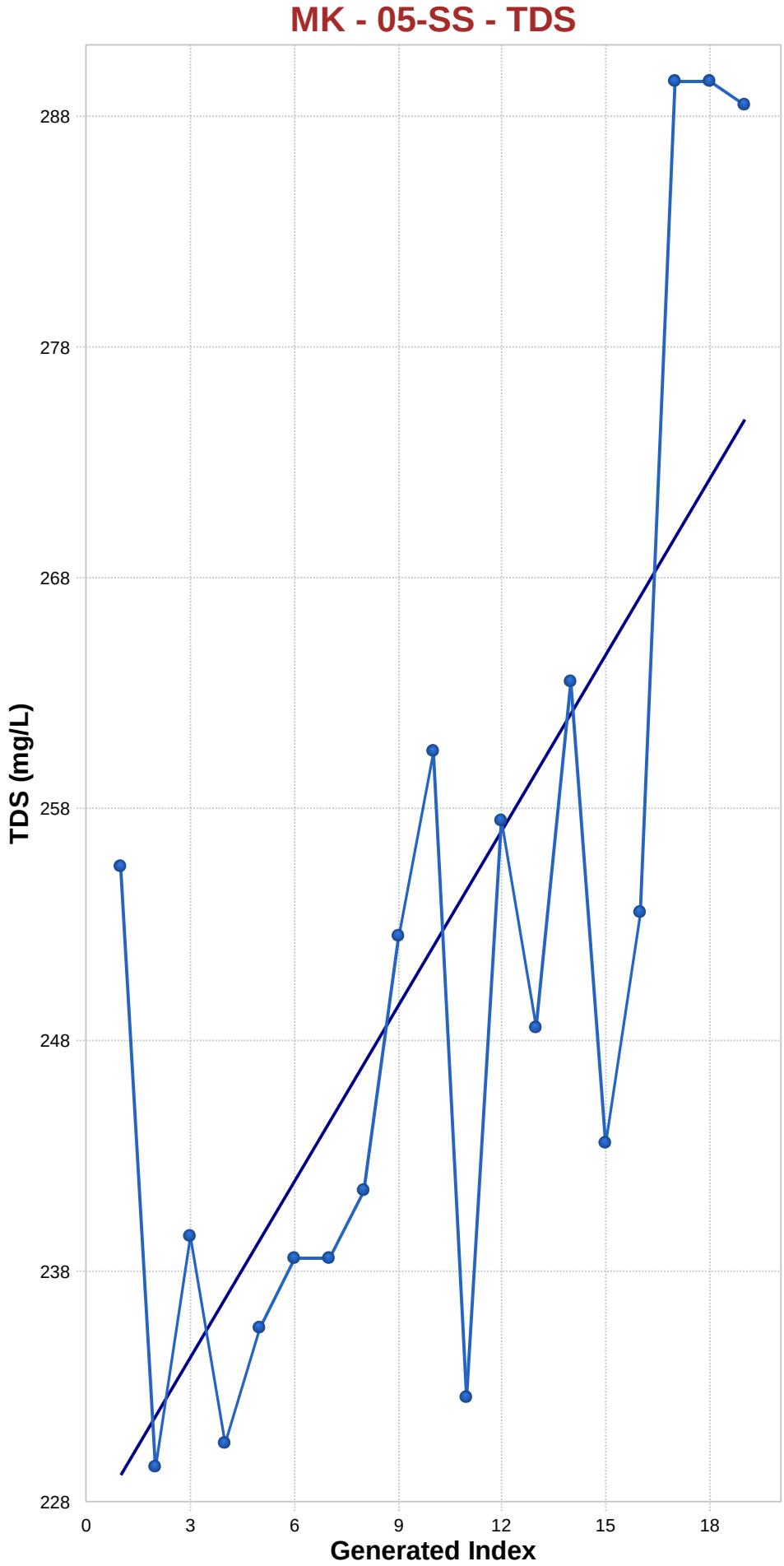
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5307
Standardized Value of S	3.3998
M-K Test Value (S)	98
Tabulated p-value	0.0000
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	0.2125
OLS Regression Intercept	21.6754

Statistically significant evidence of an increasing trend at the specified level of significance.



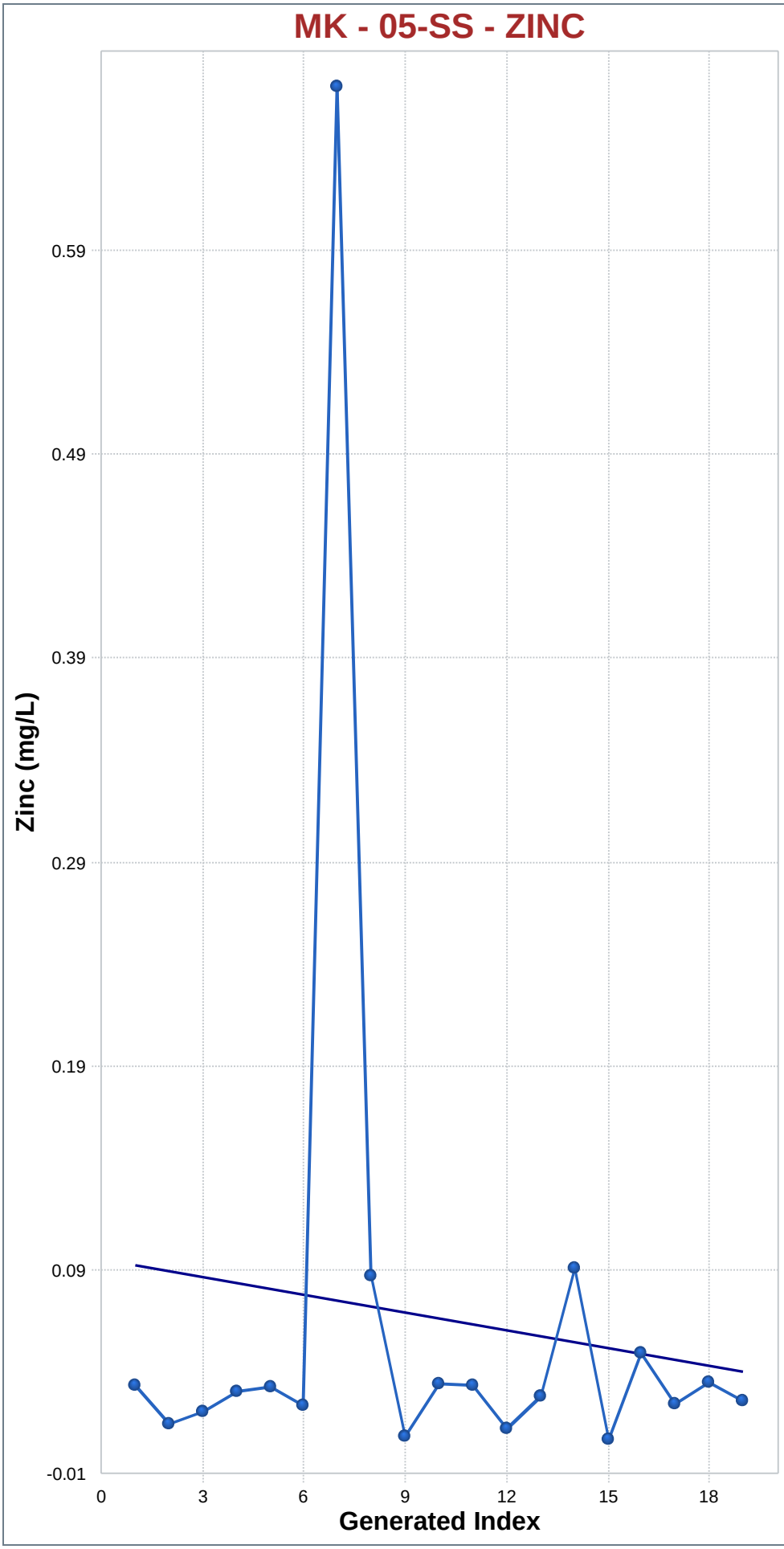
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	3.2927
M-K Test Value (S)	95
Tabulated p-value	0.0000
Approximate p-value	0.0005

OLS Regression Line (Blue)

OLS Regression Slope	2.5386
OLS Regression Intercept	227.1404

Statistically significant evidence of an increasing trend at the specified level of significance.



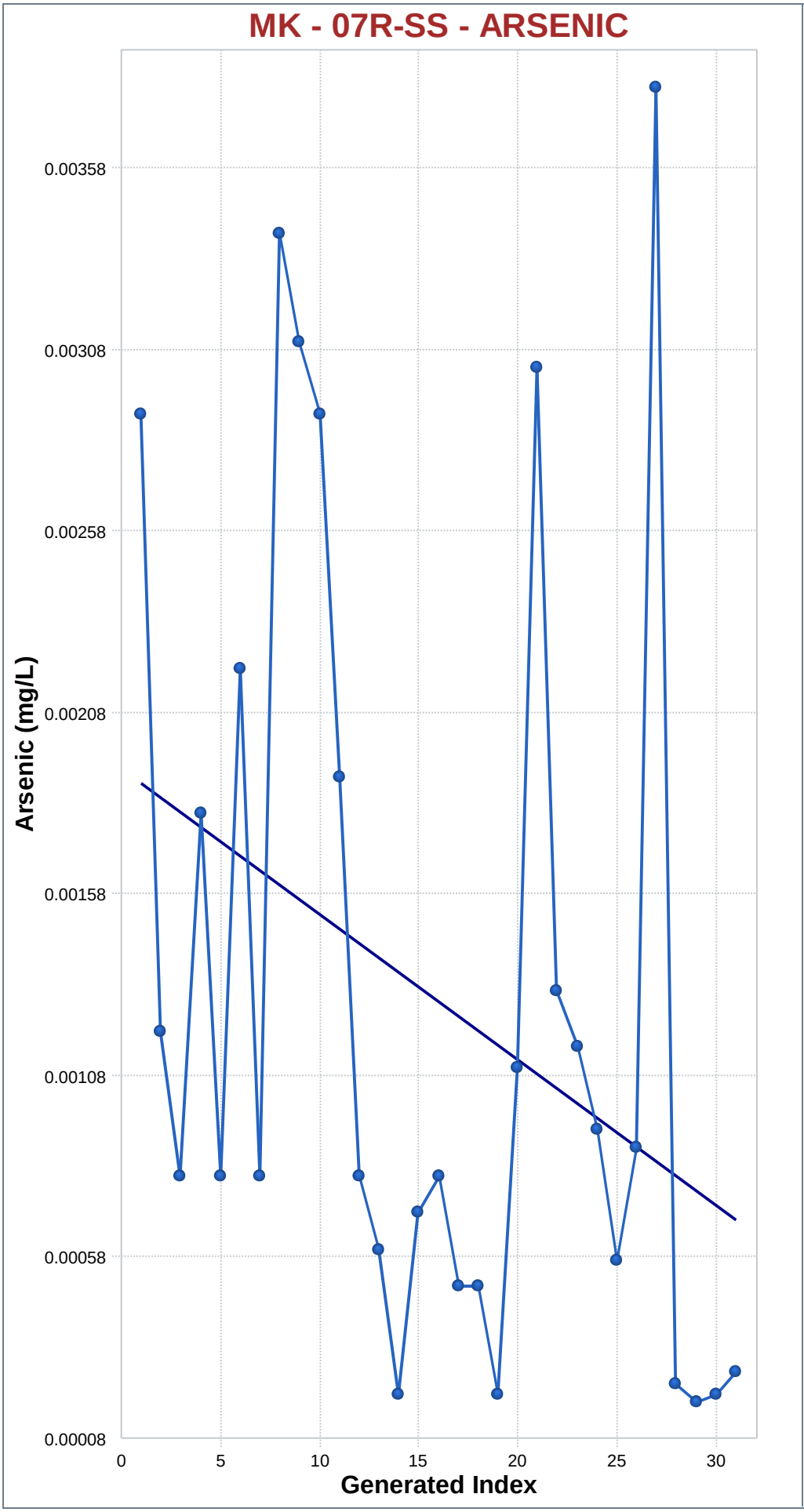
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5832
Standardized Value of S	0.2799
M-K Test Value (S)	9
Tabulated p-value	0.3910
Approximate p-value	0.3898

OLS Regression Line (Blue)

OLS Regression Slope	-0.0029
OLS Regression Intercept	0.0921

Insufficient statistical evidence of a significant trend at the specified level of significance.



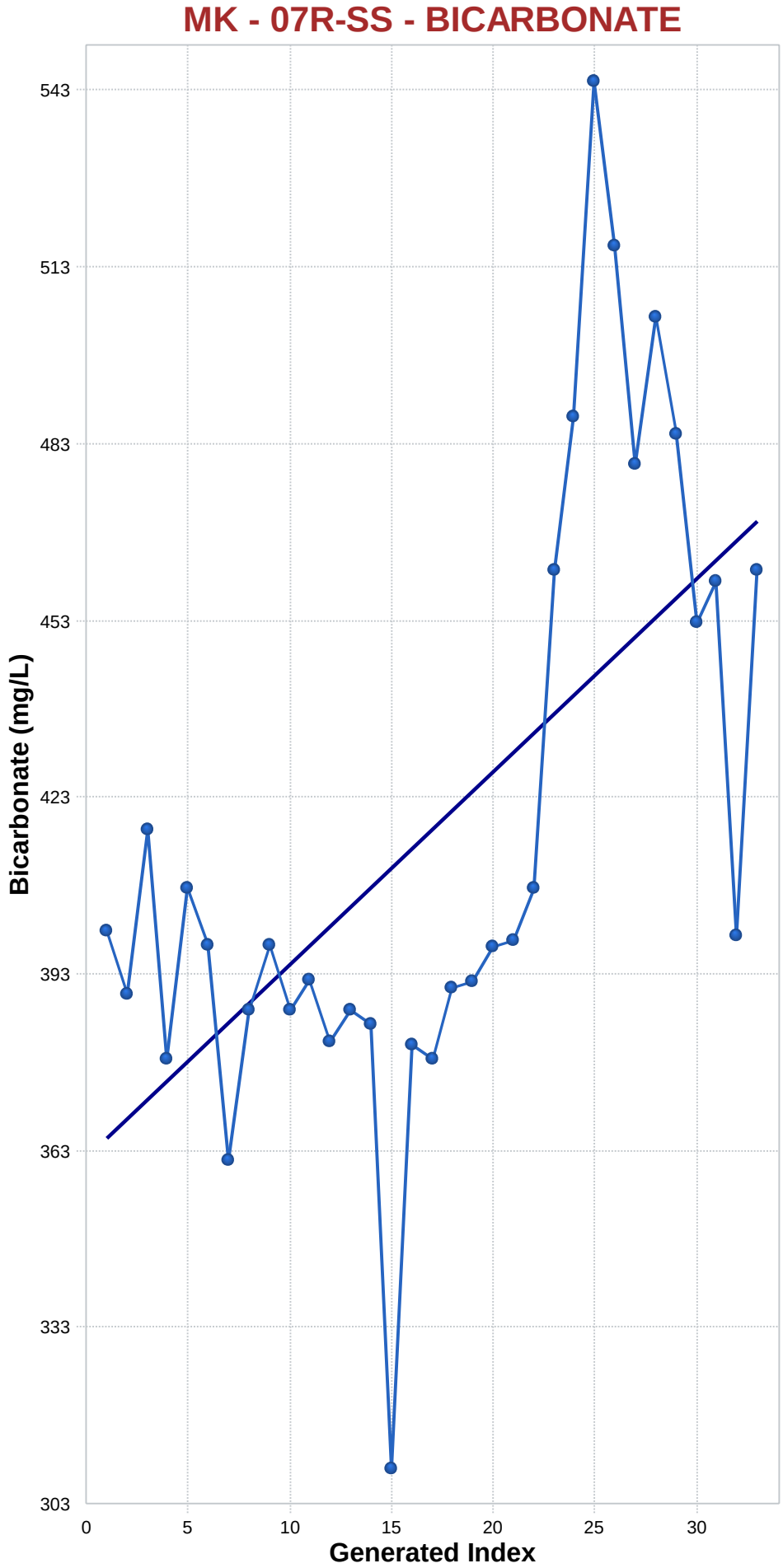
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.6458
Standardized Value of S	-2.4384
M-K Test Value (S)	-144
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0074

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0019

Statistically significant evidence of a decreasing trend at the specified level of significance.



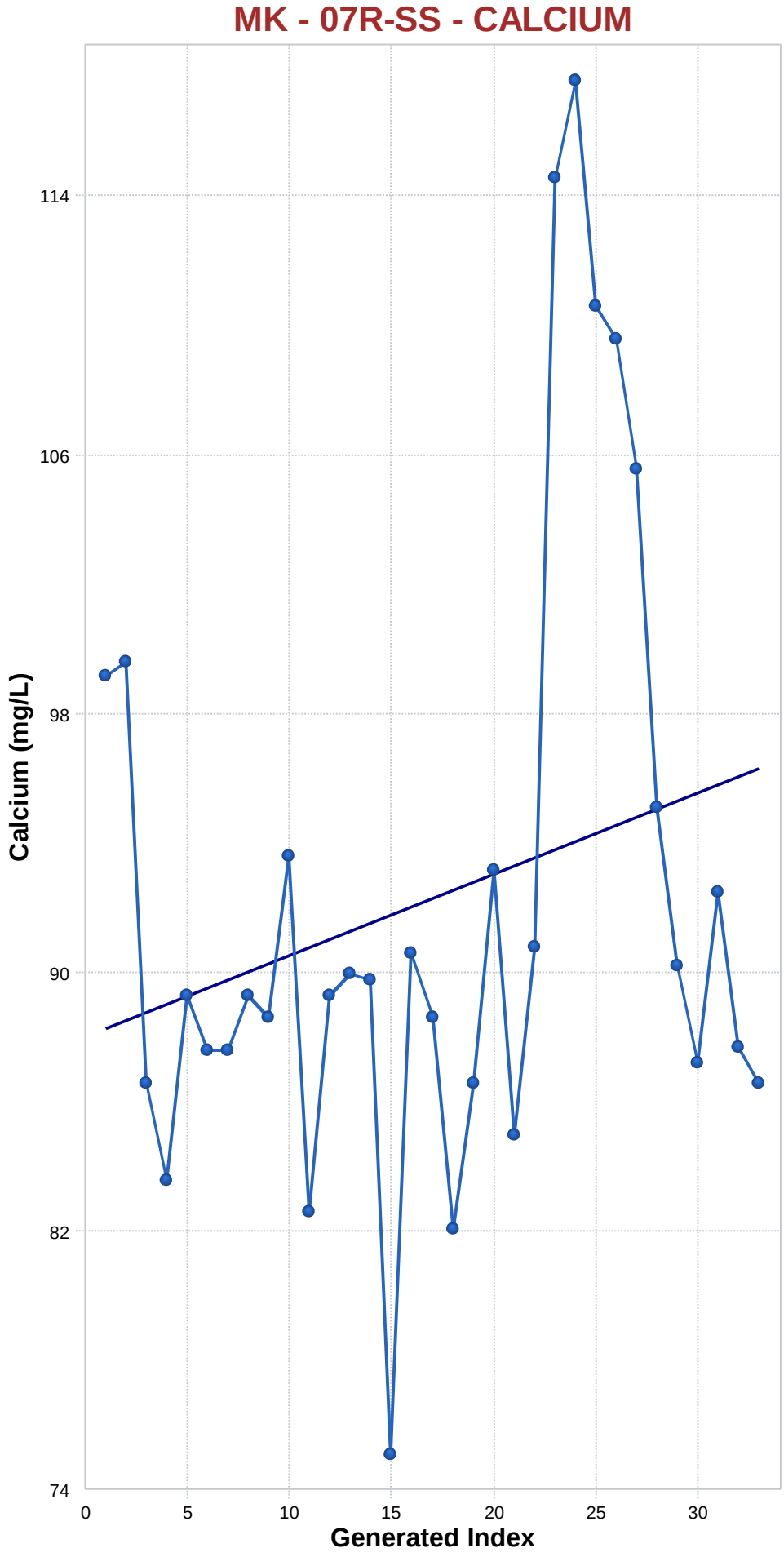
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5084
Standardized Value of S	2.9919
M-K Test Value (S)	194
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0014

OLS Regression Line (Blue)

OLS Regression Slope	3.2794
OLS Regression Intercept	361.1439

Statistically significant evidence of an increasing trend at the specified level of significance.



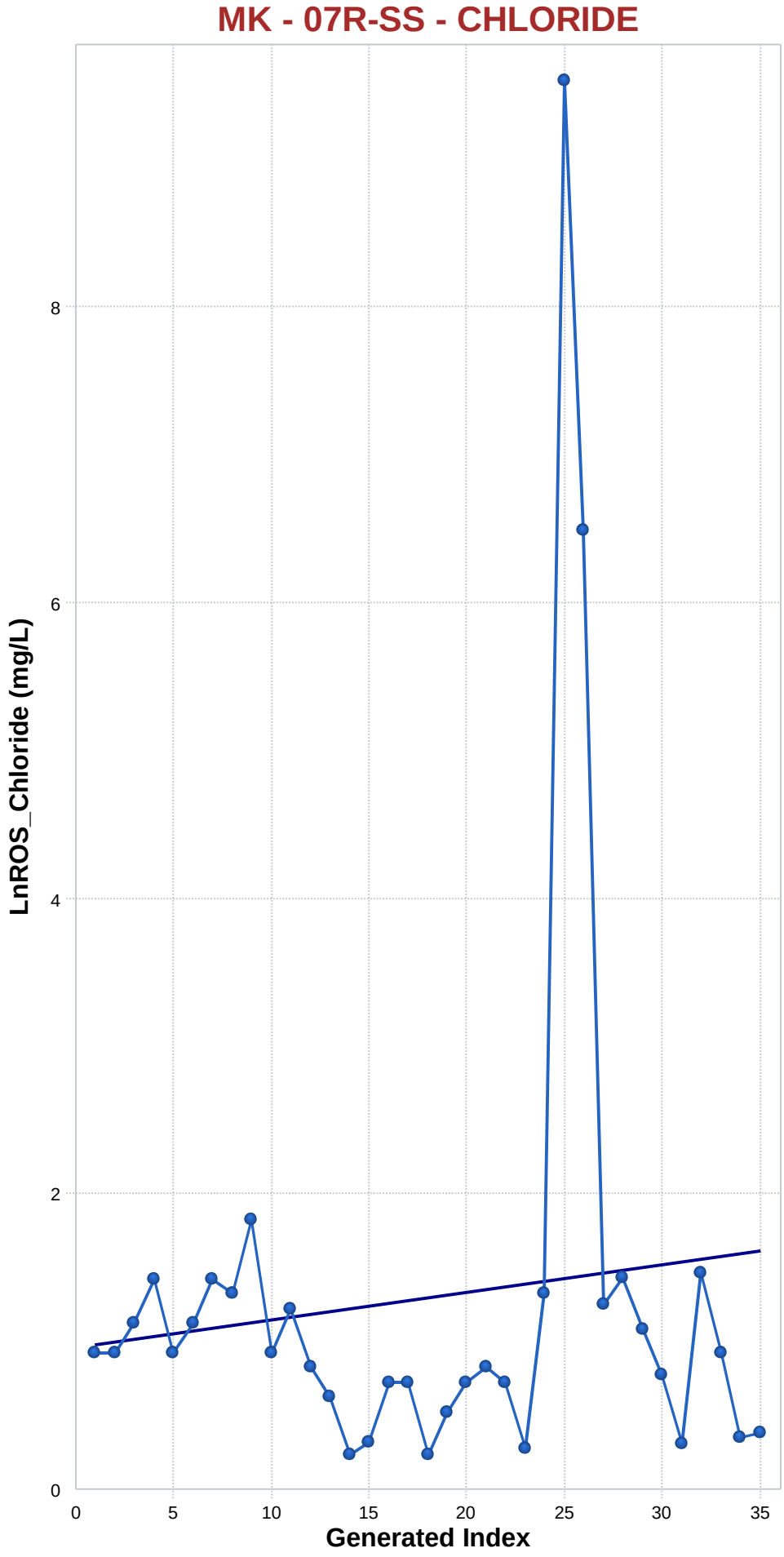
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.4670
Standardized Value of S	1.0703
M-K Test Value (S)	70
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1422

OLS Regression Line (Blue)

OLS Regression Slope	0.2518
OLS Regression Intercept	88.4218

Insufficient statistical evidence of a significant trend at the specified level of significance.



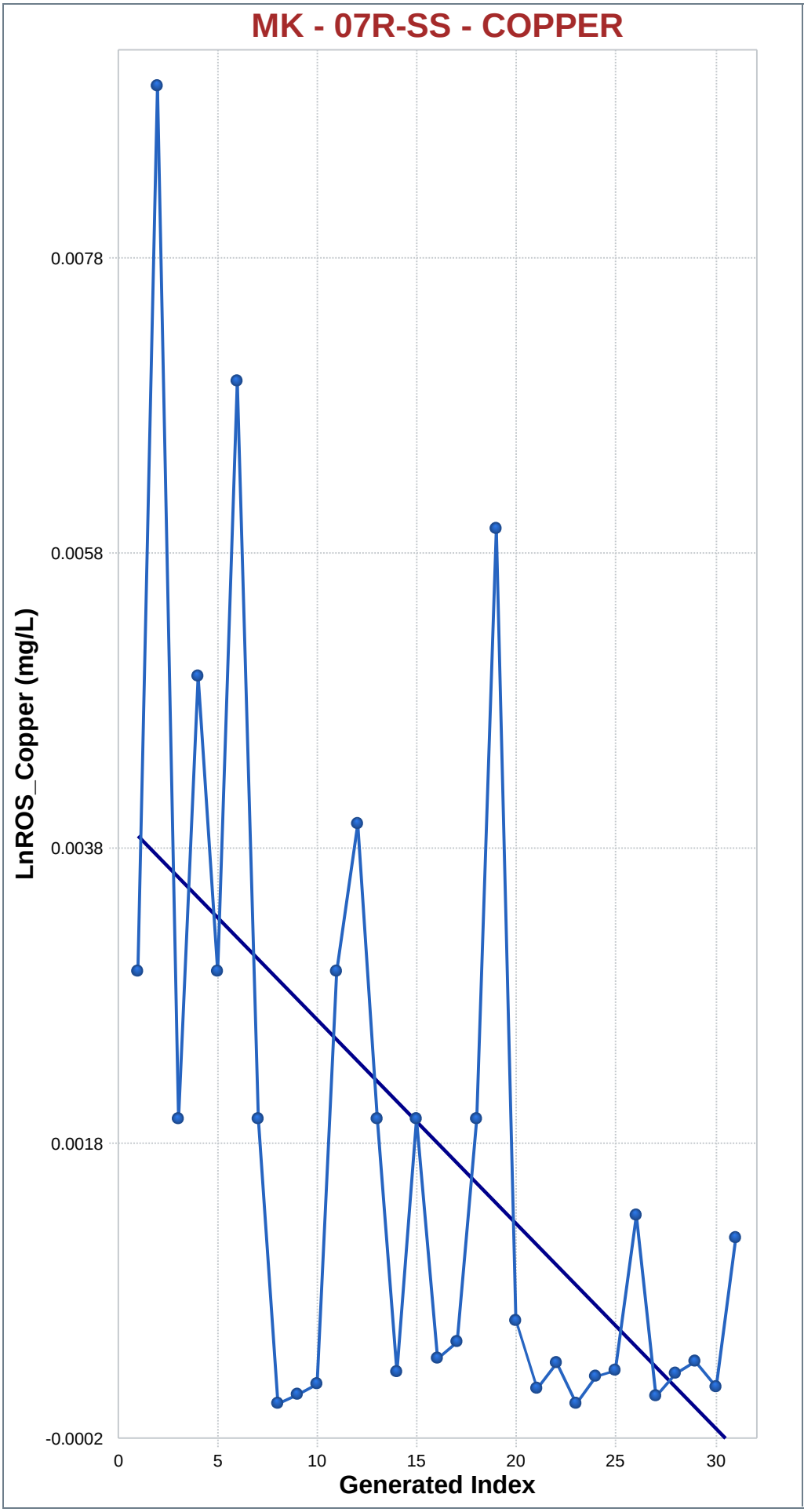
Mann-Kendall Trend Analysis

n	35
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	70.1997
Standardized Value of S	-0.9259
M-K Test Value (S)	-66
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1772

OLS Regression Line (Blue)

OLS Regression Slope	0.0186
OLS Regression Intercept	0.7335

Insufficient statistical evidence of a significant trend at the specified level of significance.



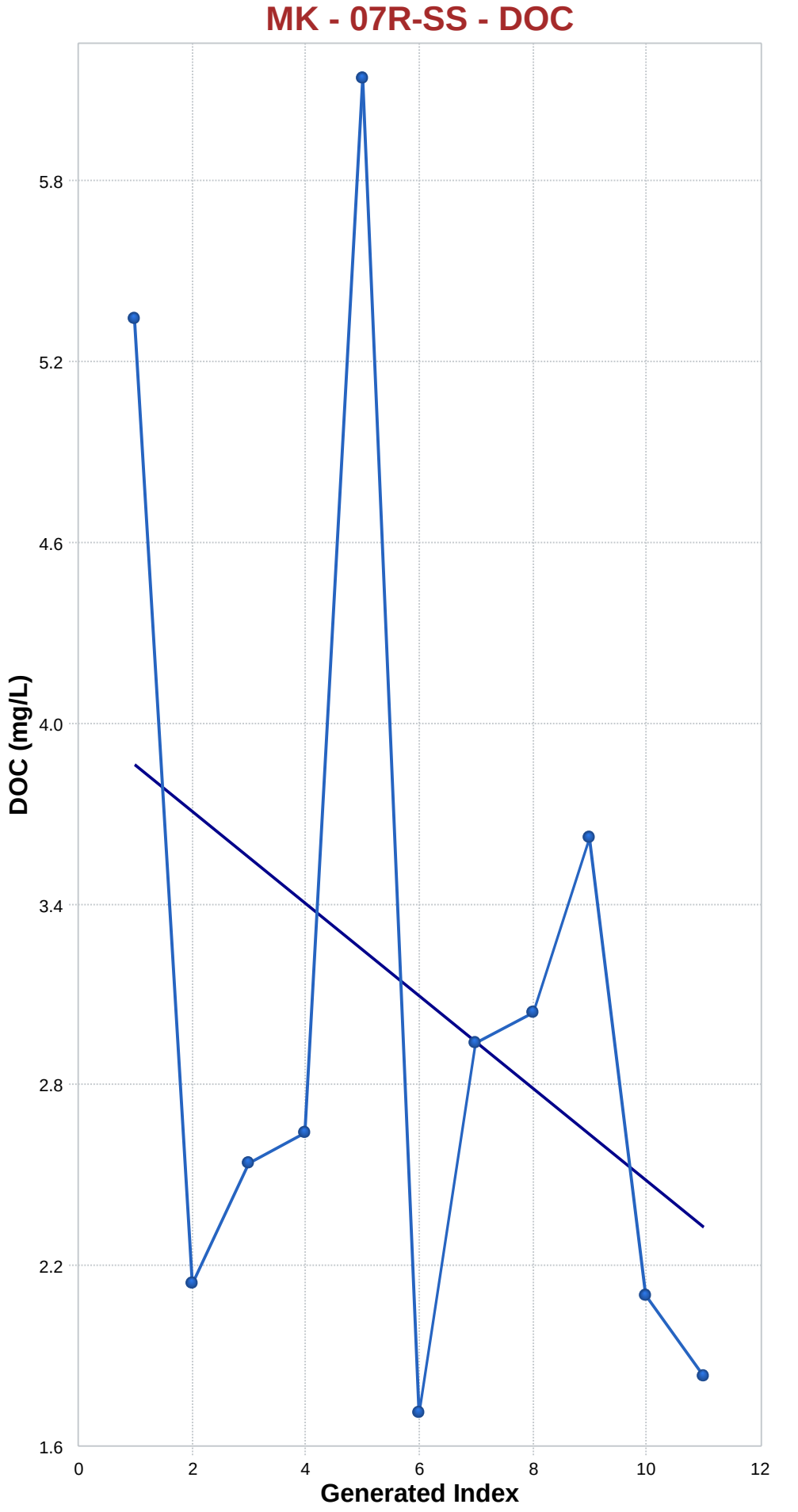
Mann-Kendall Trend Analysis

n	31
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	58.6629
Standardized Value of S	-2.8127
M-K Test Value (S)	-166
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0025

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0041

Statistically significant evidence of a decreasing trend at the specified level of significance.



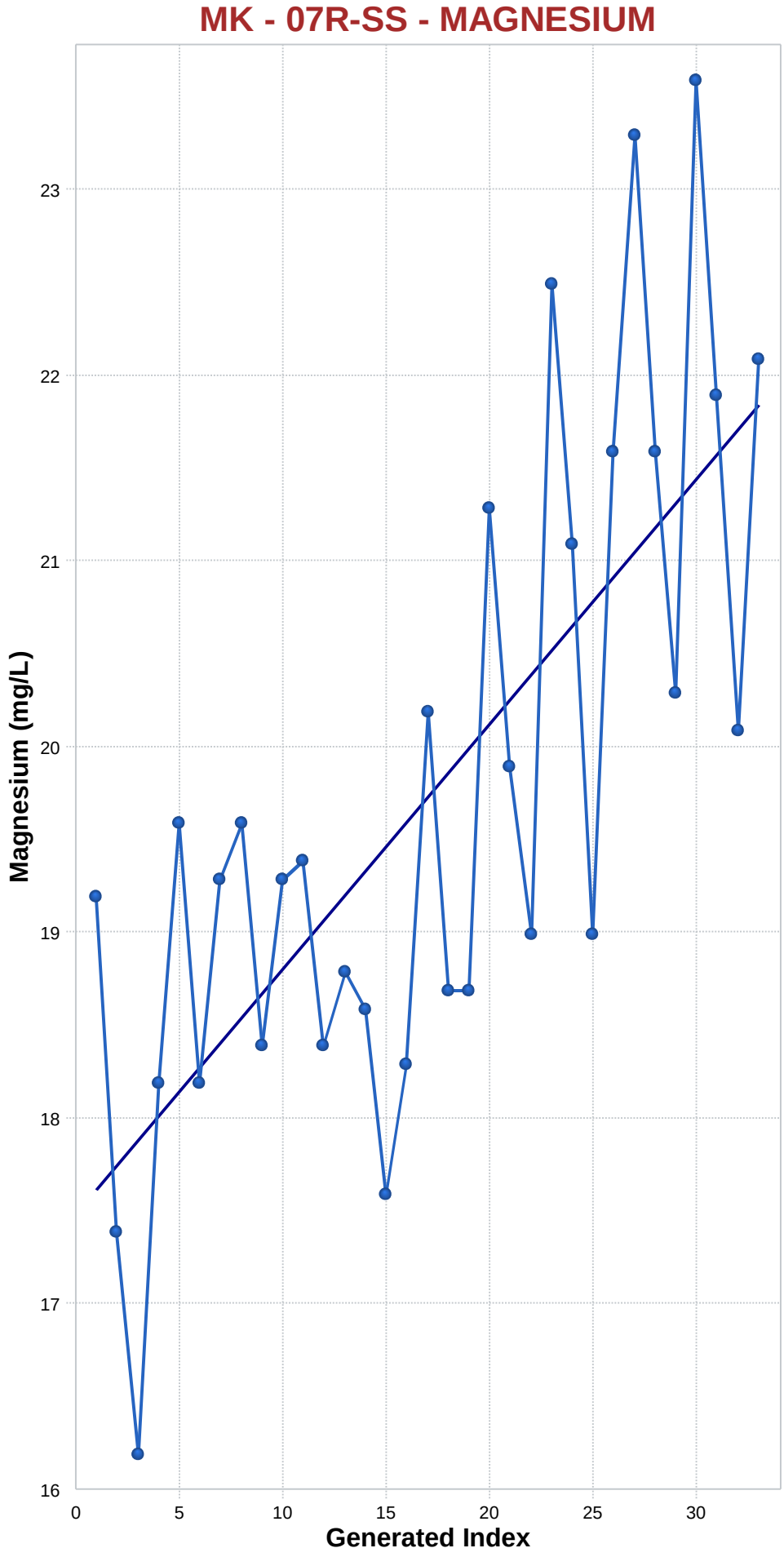
Mann-Kendall Trend Analysis

n	11
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	12.8452
Standardized Value of S	-0.4671
M-K Test Value (S)	-7
Tabulated p-value	0.3240
Approximate p-value	0.3202

OLS Regression Line (Blue)

OLS Regression Slope	-0.1534
OLS Regression Intercept	3.9747

Insufficient statistical evidence of a significant trend at the specified level of significance.



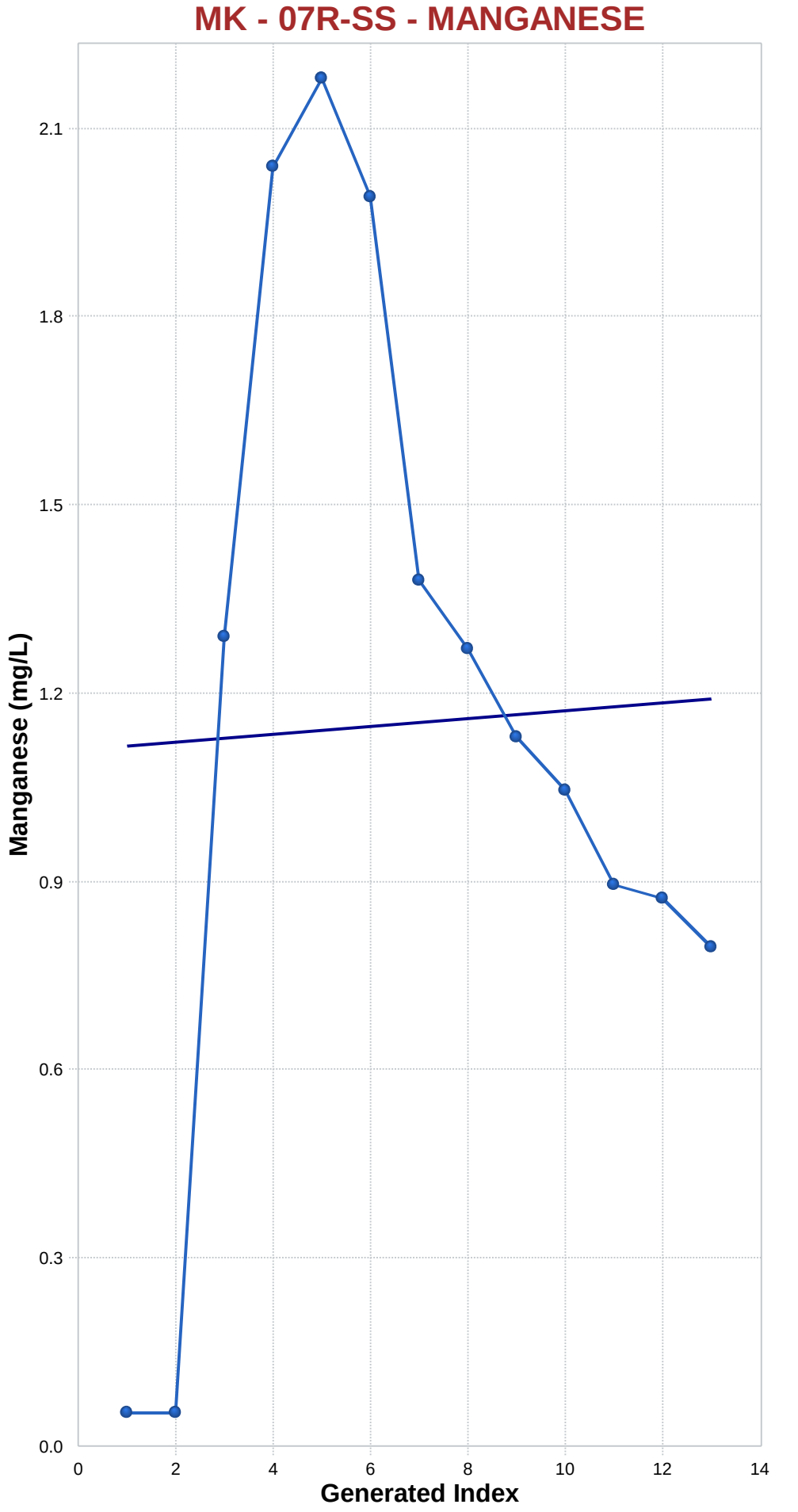
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.4851
Standardized Value of S	4.3111
M-K Test Value (S)	279
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	0.1320
OLS Regression Intercept	17.6962

Statistically significant evidence of an increasing trend at the specified level of significance.



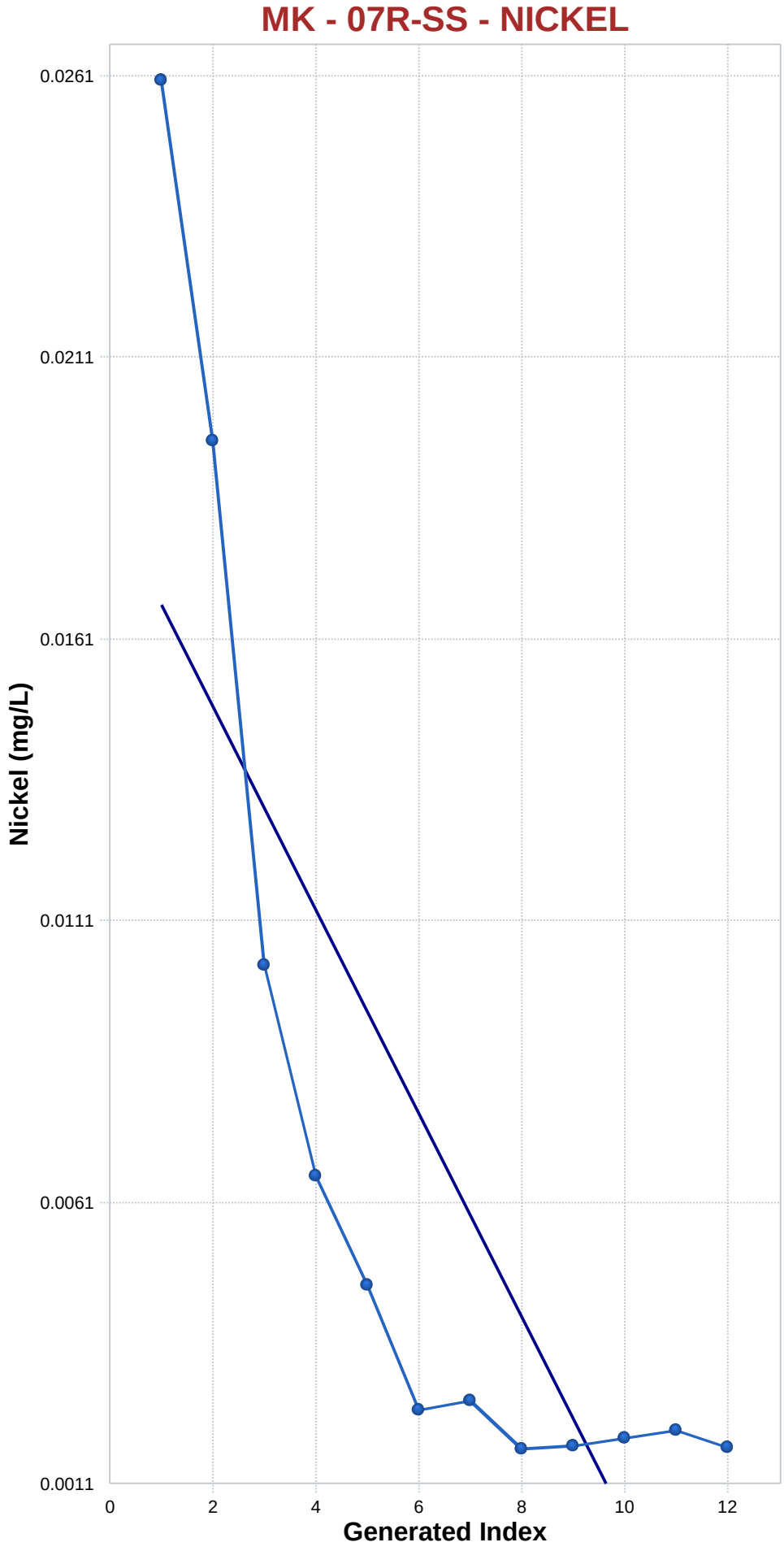
Mann-Kendall Trend Analysis

n	13
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	16.3605
Standardized Value of S	-1.3447
M-K Test Value (S)	-23
Tabulated p-value	0.1020
Approximate p-value	0.0894

OLS Regression Line (Blue)

OLS Regression Slope	0.0064
OLS Regression Intercept	1.0589

Insufficient statistical evidence of a significant trend at the specified level of significance.



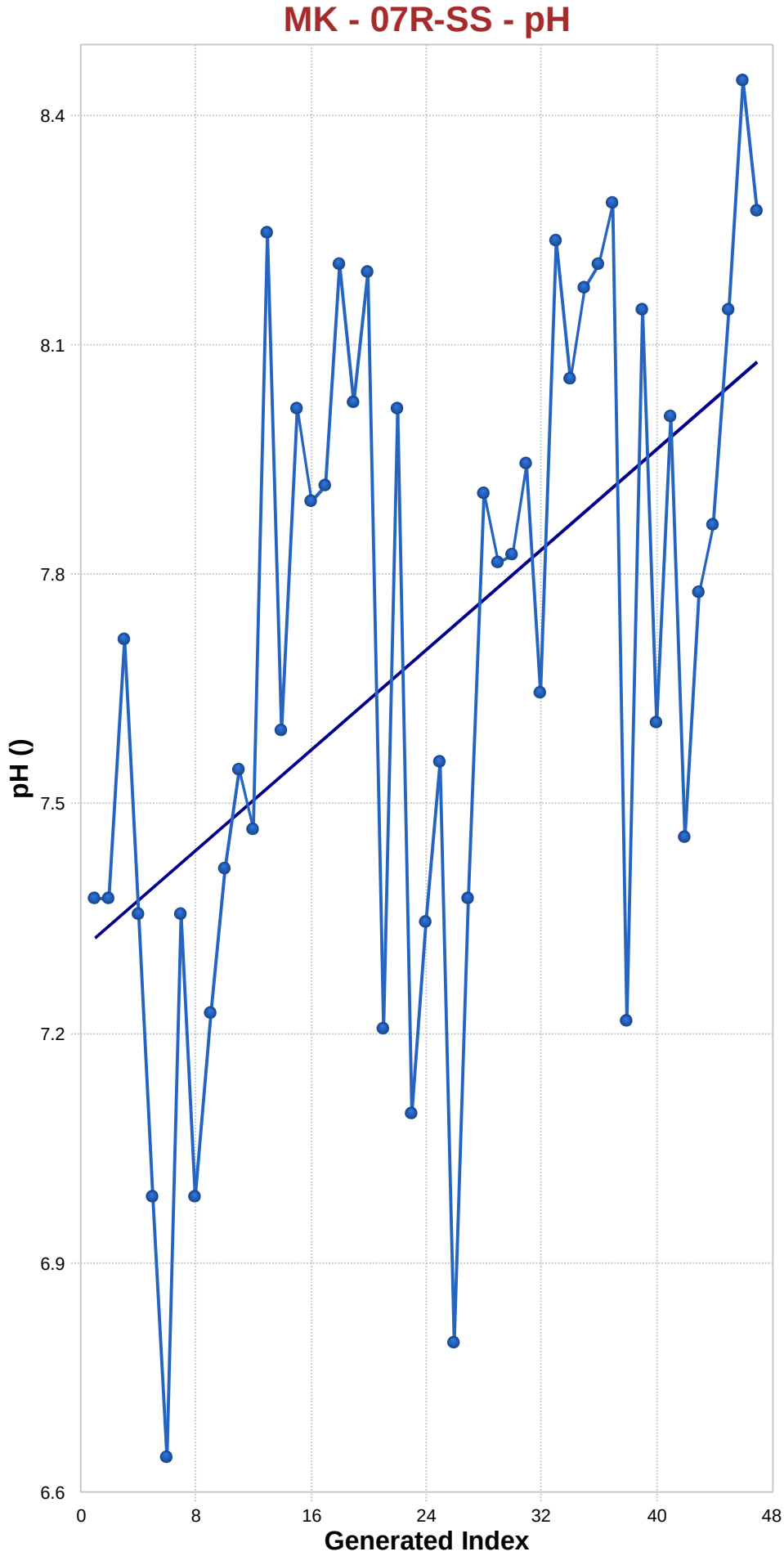
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.5831
Standardized Value of S	-3.3601
M-K Test Value (S)	-50
Tabulated p-value	0.0000
Approximate p-value	0.0004

OLS Regression Line (Blue)

OLS Regression Slope	-0.0018
OLS Regression Intercept	0.0185

Statistically significant evidence of a decreasing trend at the specified level of significance.



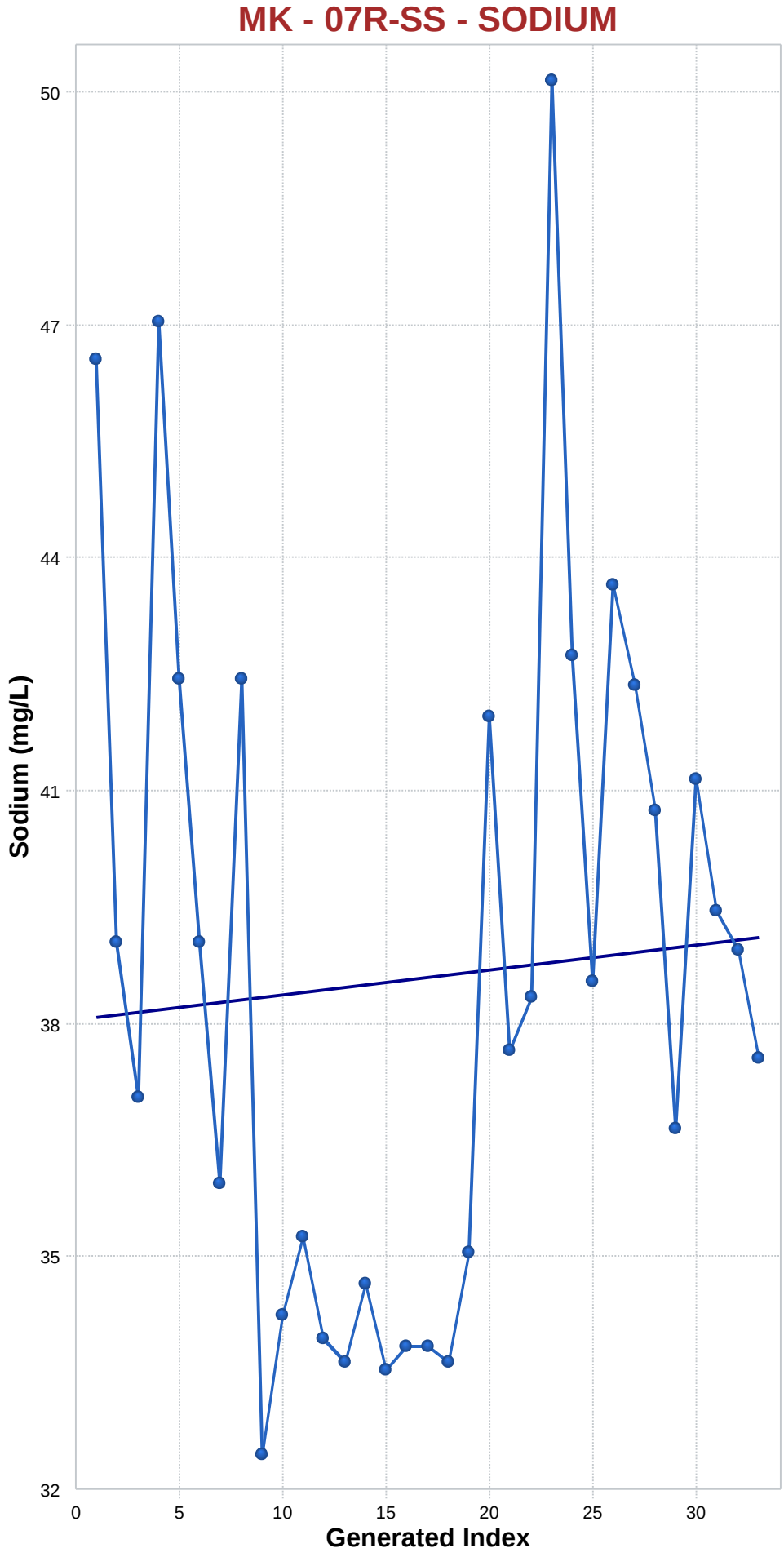
Mann-Kendall Trend Analysis

n	47
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	109.0061
Standardized Value of S	3.5594
M-K Test Value (S)	389
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	0.0164
OLS Regression Intercept	7.3228

Statistically significant evidence of an increasing trend at the specified level of significance.



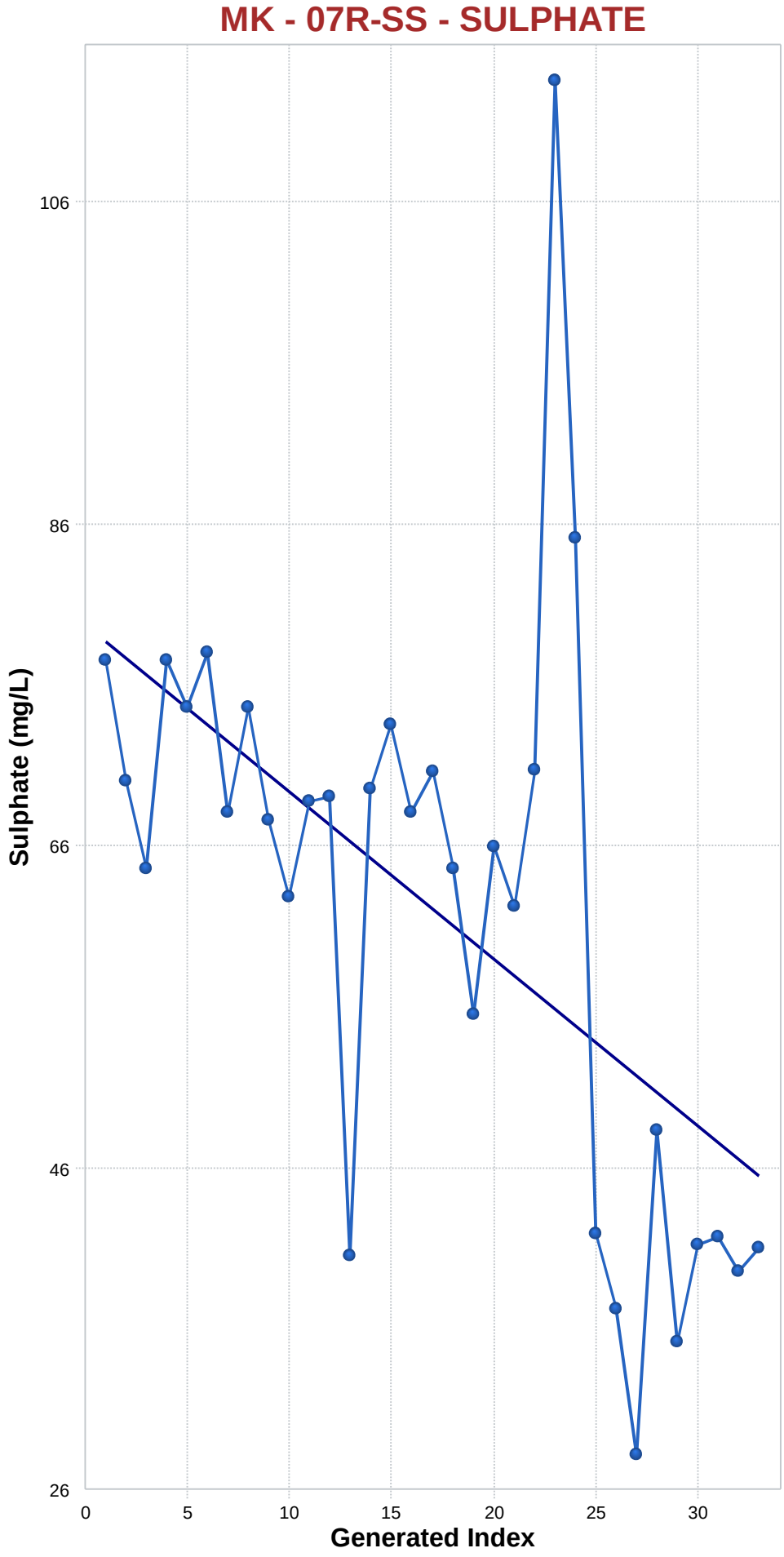
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5084
Standardized Value of S	0.4496
M-K Test Value (S)	30
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3265

OLS Regression Line (Blue)

OLS Regression Slope	0.0320
OLS Regression Intercept	38.0017

Insufficient statistical evidence of a significant trend at the specified level of significance.



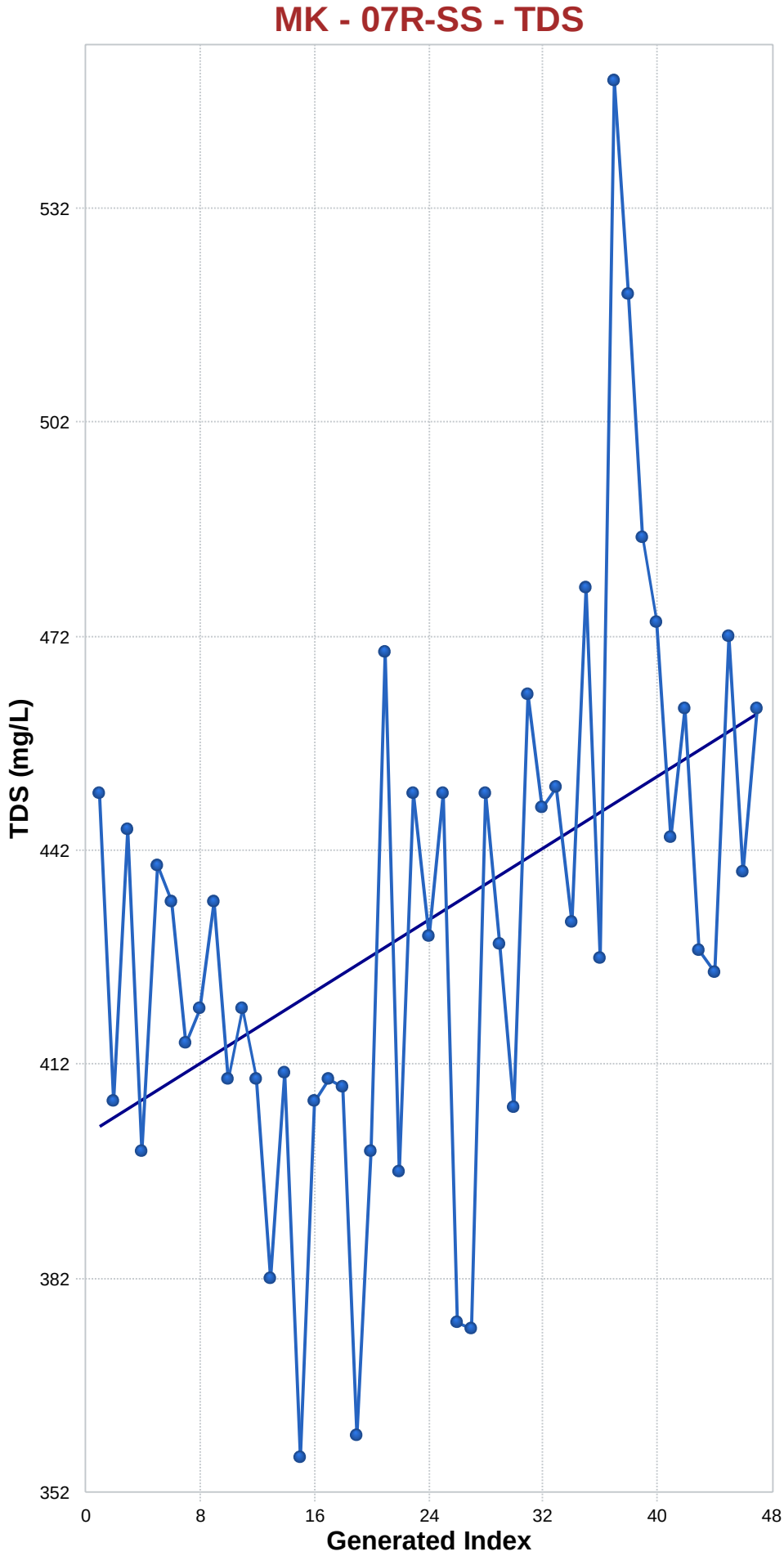
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.5084
Standardized Value of S	-3.6119
M-K Test Value (S)	-234
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	-1.0374
OLS Regression Intercept	80.1297

Statistically significant evidence of a decreasing trend at the specified level of significance.



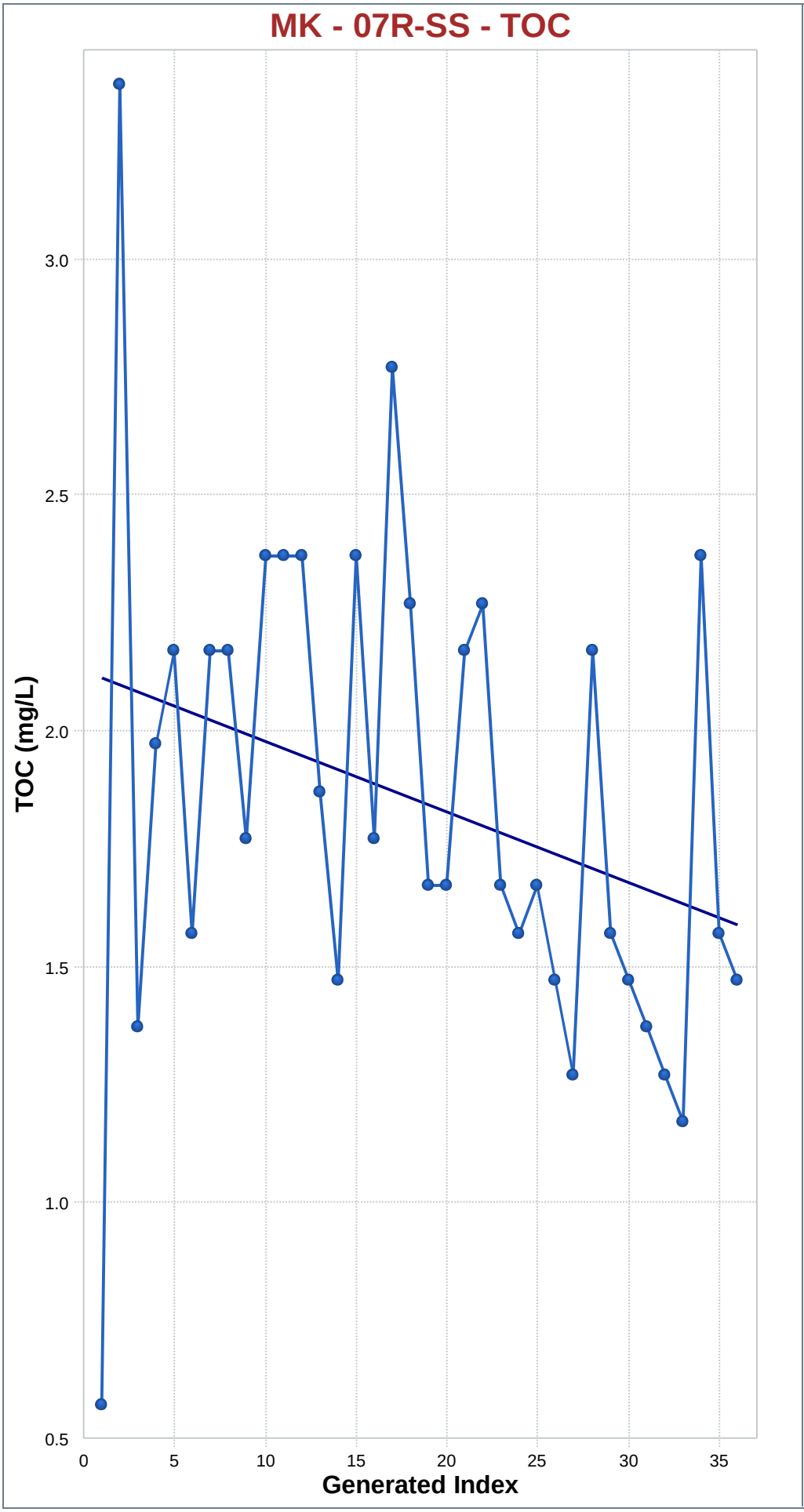
Mann-Kendall Trend Analysis

n	47
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	108.9664
Standardized Value of S	2.6797
M-K Test Value (S)	293
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0037

OLS Regression Line (Blue)

OLS Regression Slope	1.2593
OLS Regression Intercept	402.0971

Statistically significant evidence of an increasing trend at the specified level of significance.



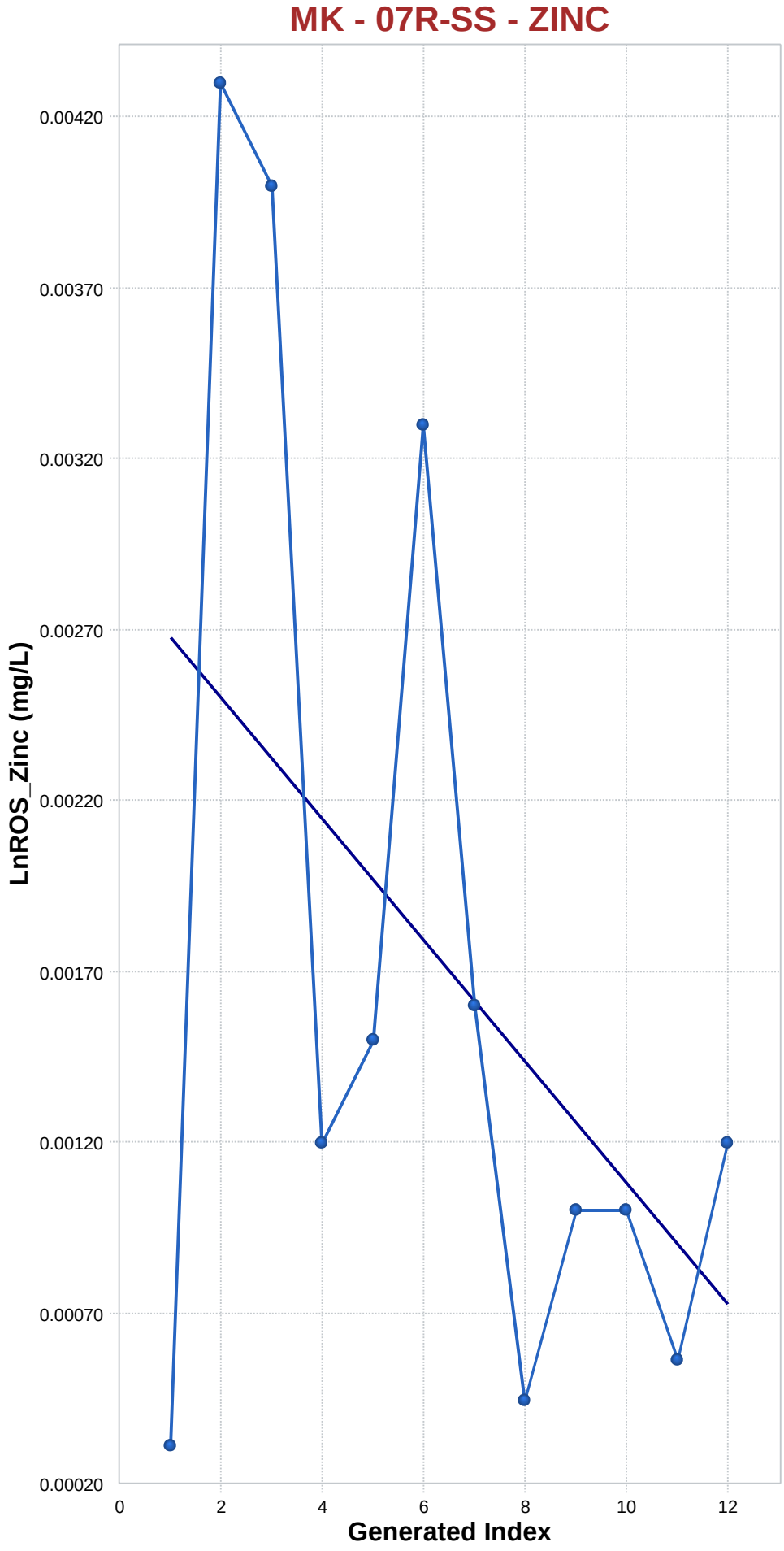
Mann-Kendall Trend Analysis

n	36
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	72.9840
Standardized Value of S	-2.3978
M-K Test Value (S)	-176
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0082

OLS Regression Line (Blue)

OLS Regression Slope	-0.0149
OLS Regression Intercept	2.1565

Statistically significant evidence of a decreasing trend at the specified level of significance.



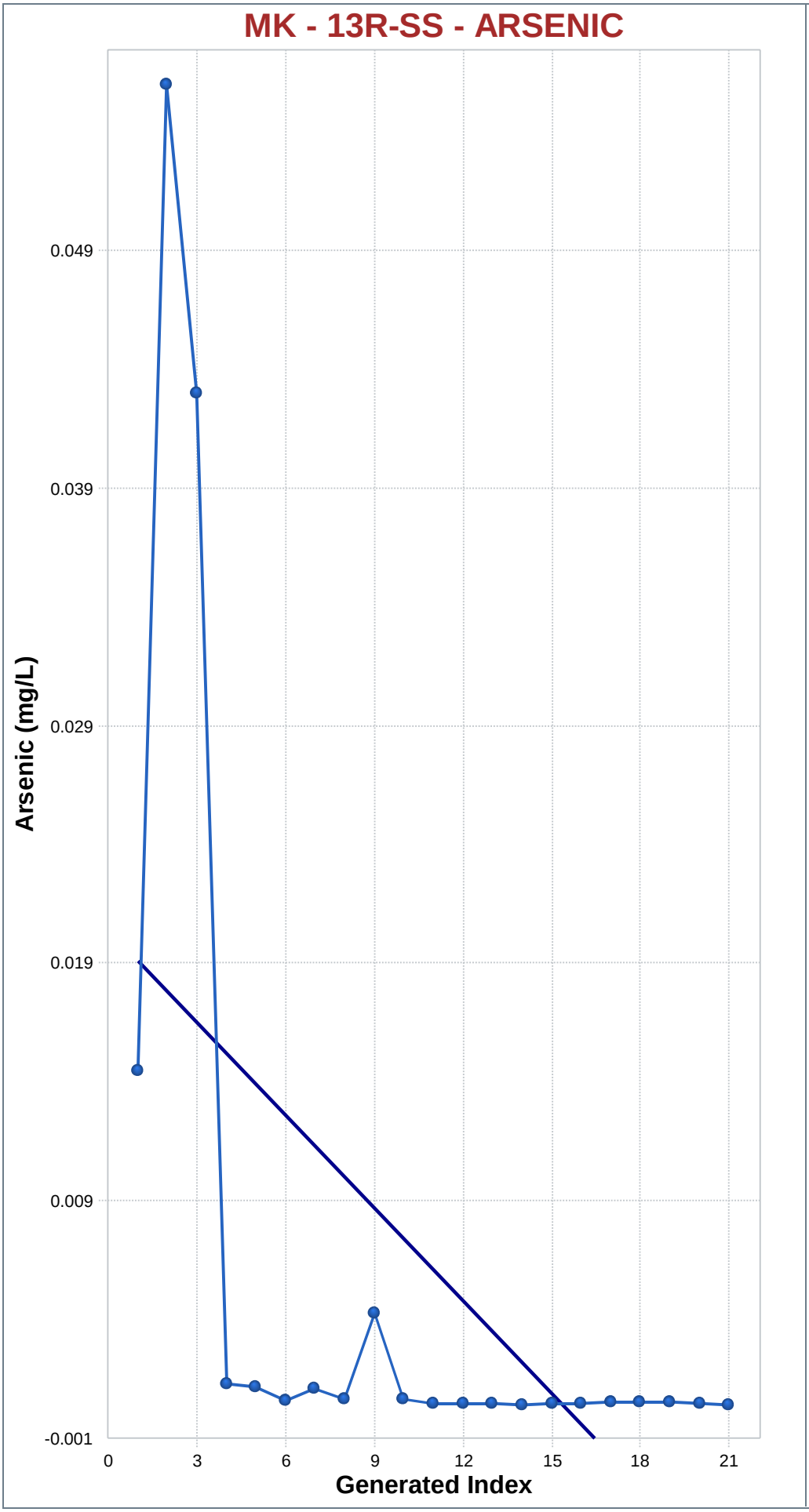
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.5144
Standardized Value of S	-1.1713
M-K Test Value (S)	-18
Tabulated p-value	0.1250
Approximate p-value	0.1207

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0029

Insufficient statistical evidence of a significant trend at the specified level of significance.



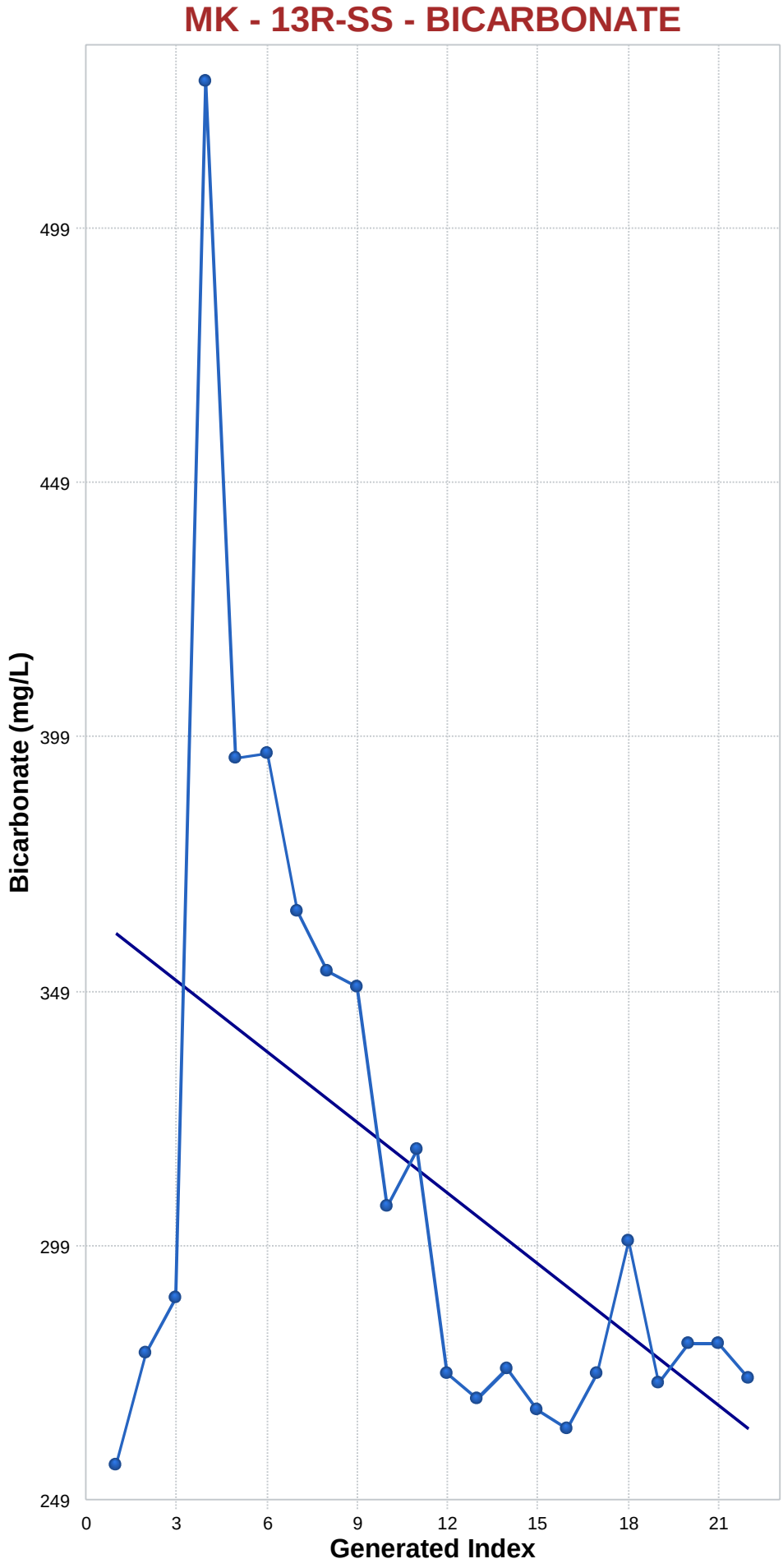
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.0606
Standardized Value of S	-3.7507
M-K Test Value (S)	-125
Tabulated p-value	0.0000
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0013
OLS Regression Intercept	0.0204

Statistically significant evidence of a decreasing trend at the specified level of significance.



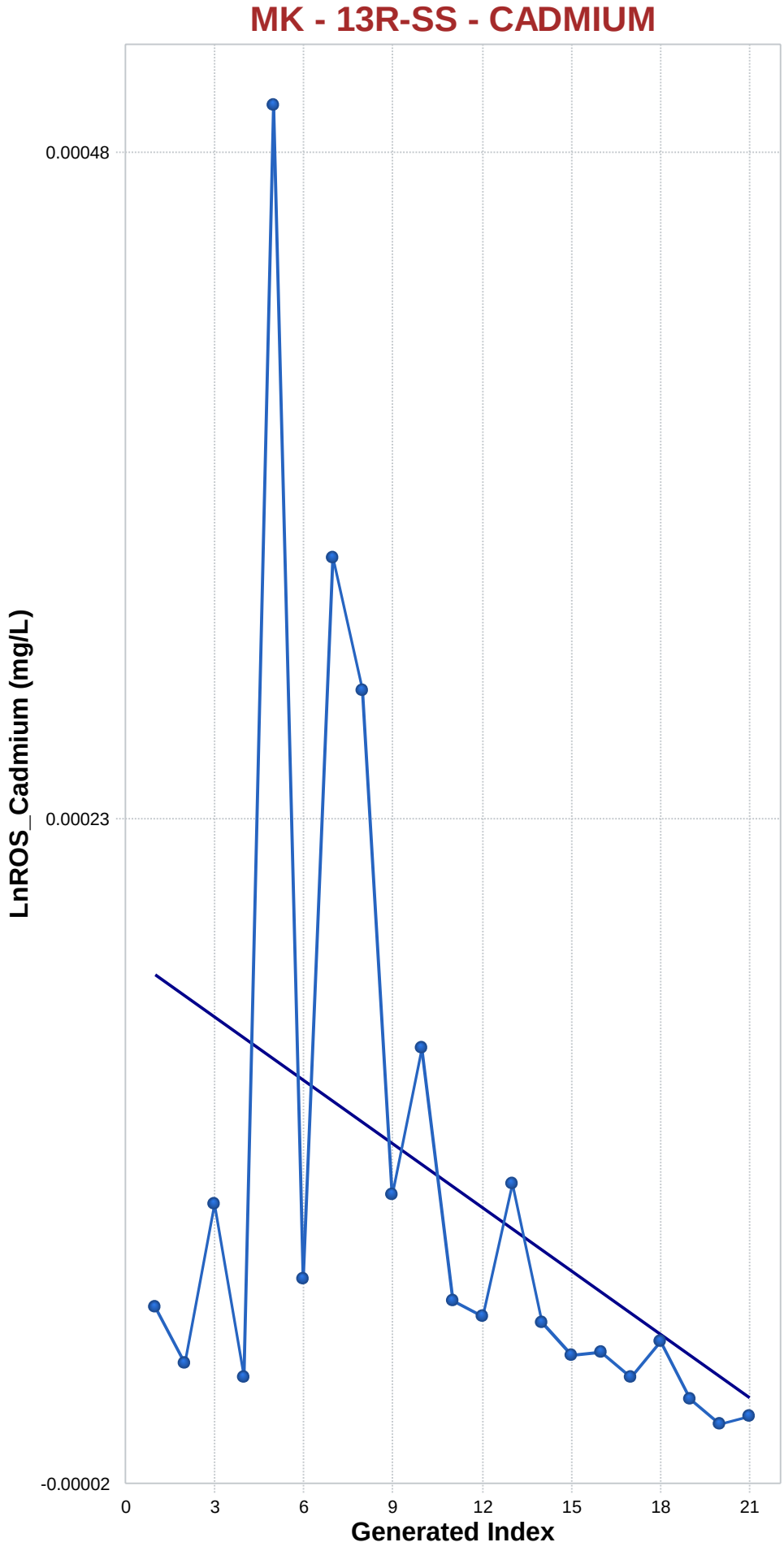
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4354
Standardized Value of S	-2.1447
M-K Test Value (S)	-77
Tabulated p-value	0.0150
Approximate p-value	0.0160

OLS Regression Line (Blue)

OLS Regression Slope	-4.6449
OLS Regression Intercept	365.3208

Statistically significant evidence of a decreasing trend at the specified level of significance.



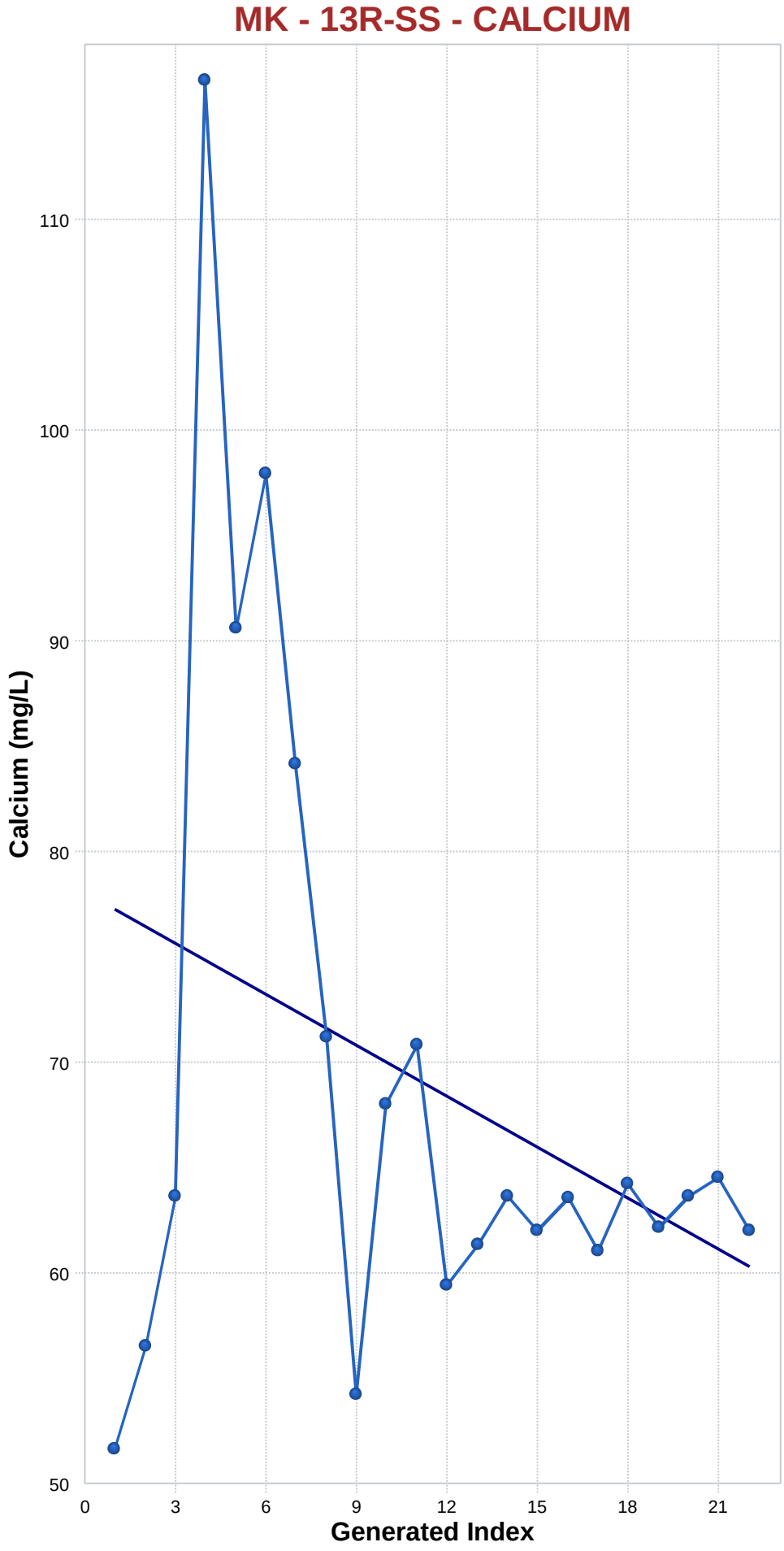
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.1160
Standardized Value of S	-2.8687
M-K Test Value (S)	-96
Tabulated p-value	0.0020
Approximate p-value	0.0021

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0002

Statistically significant evidence of a decreasing trend at the specified level of significance.



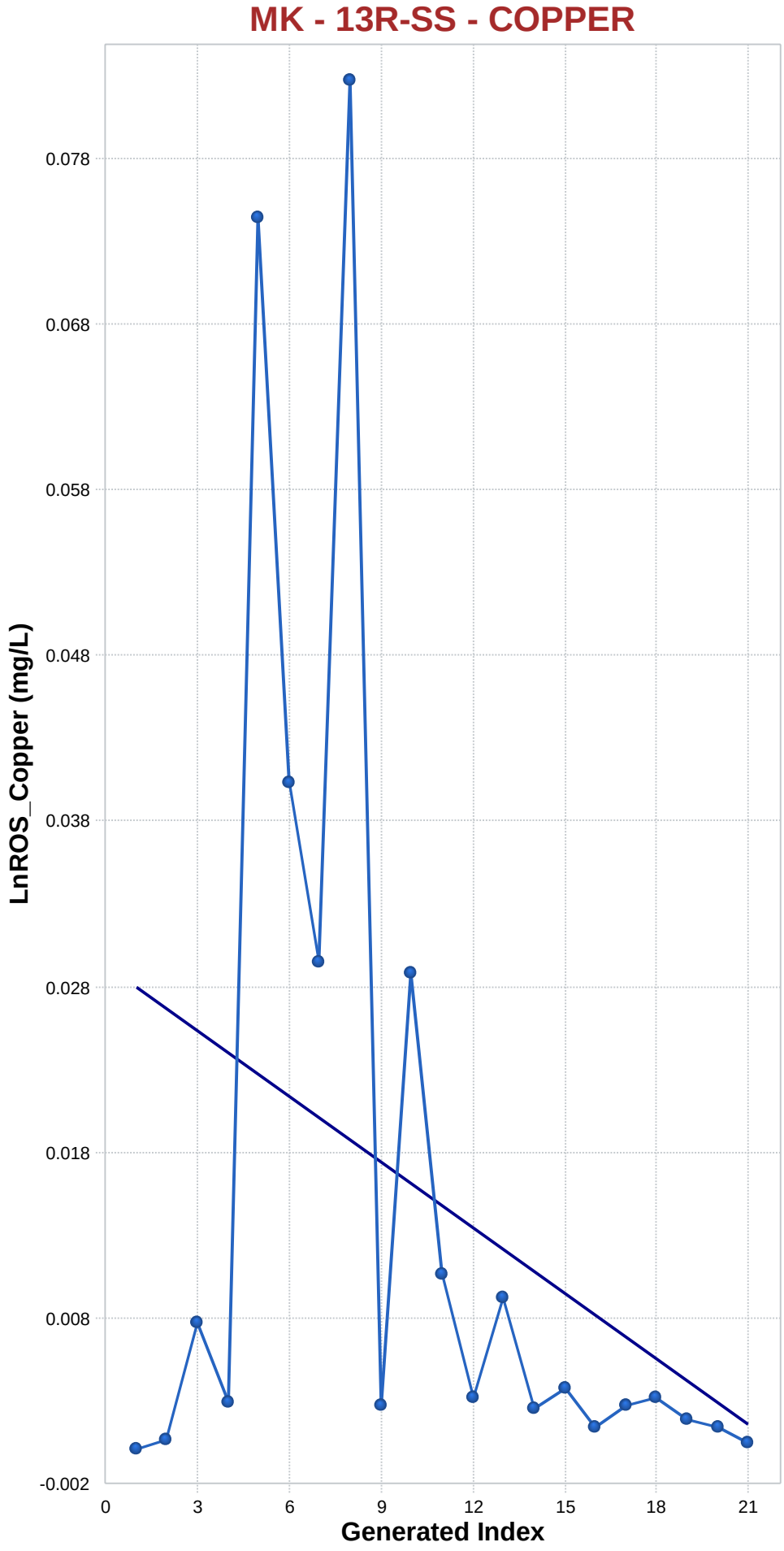
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.3977
Standardized Value of S	-0.6780
M-K Test Value (S)	-25
Tabulated p-value	0.2520
Approximate p-value	0.2489

OLS Regression Line (Blue)

OLS Regression Slope	-0.8077
OLS Regression Intercept	78.4299

Insufficient statistical evidence of a significant trend at the specified level of significance.



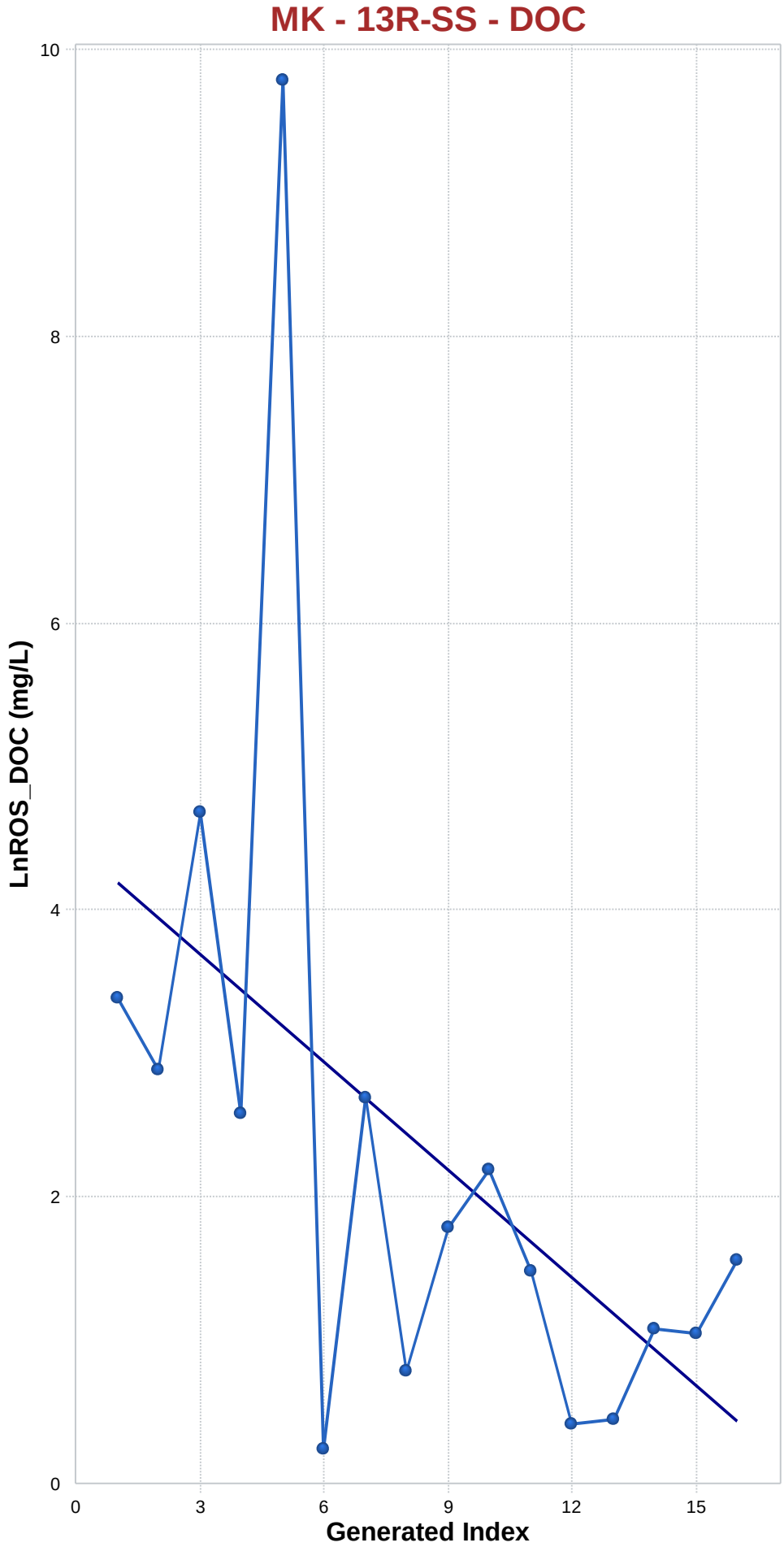
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.1009
Standardized Value of S	-1.8126
M-K Test Value (S)	-61
Tabulated p-value	0.0370
Approximate p-value	0.0349

OLS Regression Line (Blue)

OLS Regression Slope	-0.0013
OLS Regression Intercept	0.0296

Statistically significant evidence of a decreasing trend at the specified level of significance.



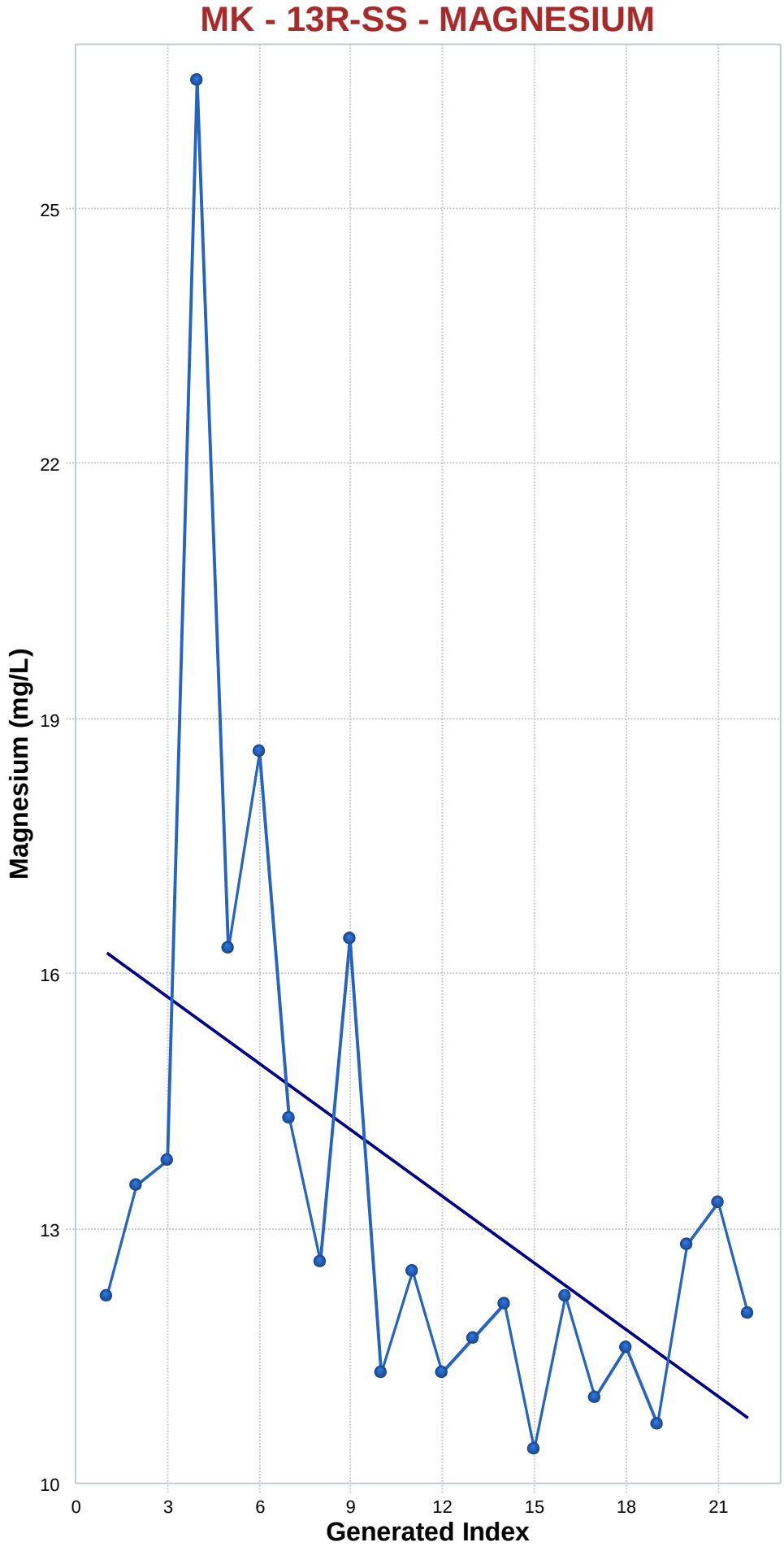
Mann-Kendall Trend Analysis

n	16
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	22.2111
Standardized Value of S	-2.2961
M-K Test Value (S)	-52
Tabulated p-value	0.0100
Approximate p-value	0.0108

OLS Regression Line (Blue)

OLS Regression Slope	-0.2501
OLS Regression Intercept	4.7557

Statistically significant evidence of a decreasing trend at the specified level of significance.



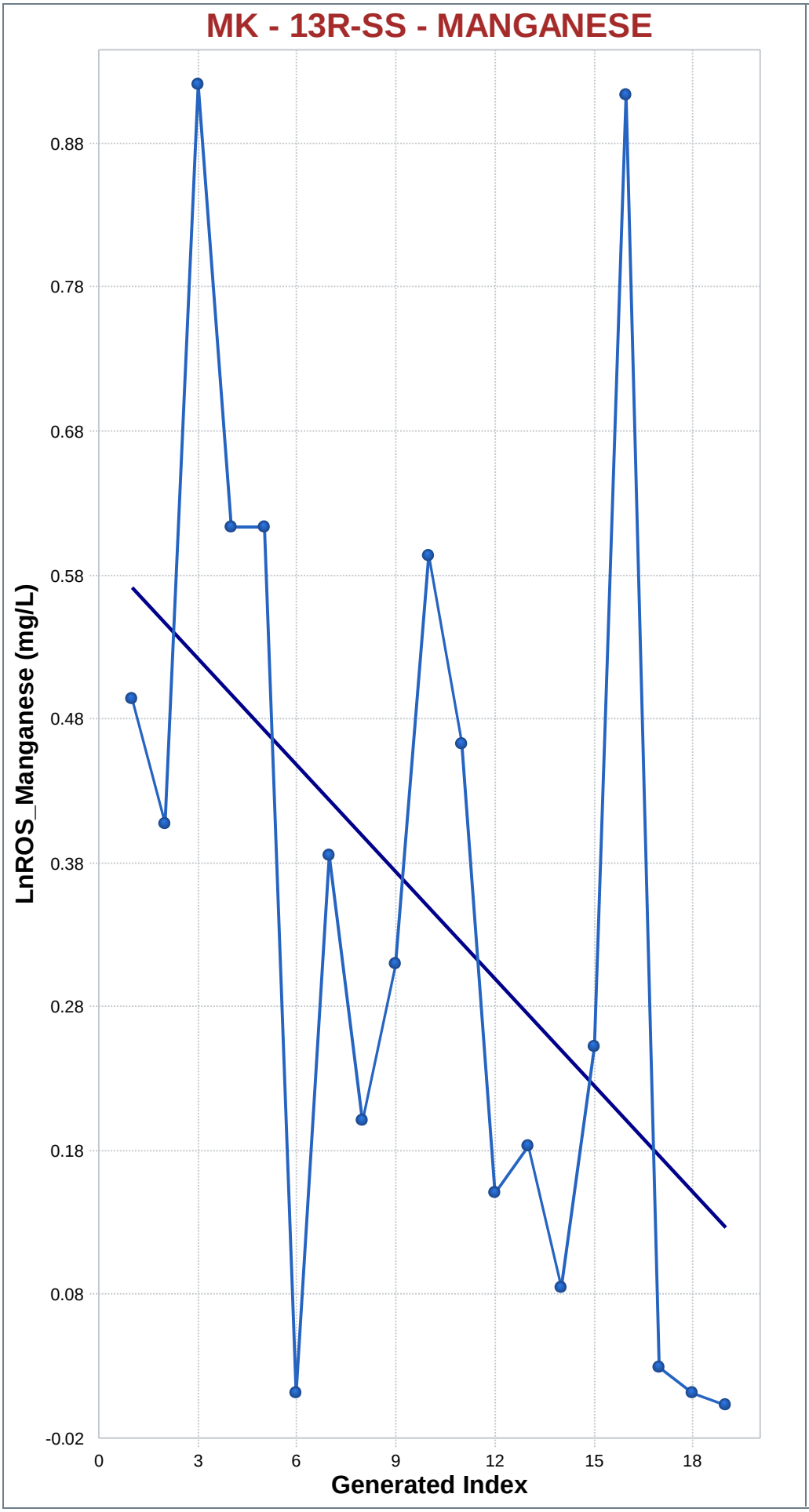
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4354
Standardized Value of S	-2.3141
M-K Test Value (S)	-83
Tabulated p-value	0.0100
Approximate p-value	0.0103

OLS Regression Line (Blue)

OLS Regression Slope	-0.2612
OLS Regression Intercept	16.8078

Statistically significant evidence of a decreasing trend at the specified level of significance.



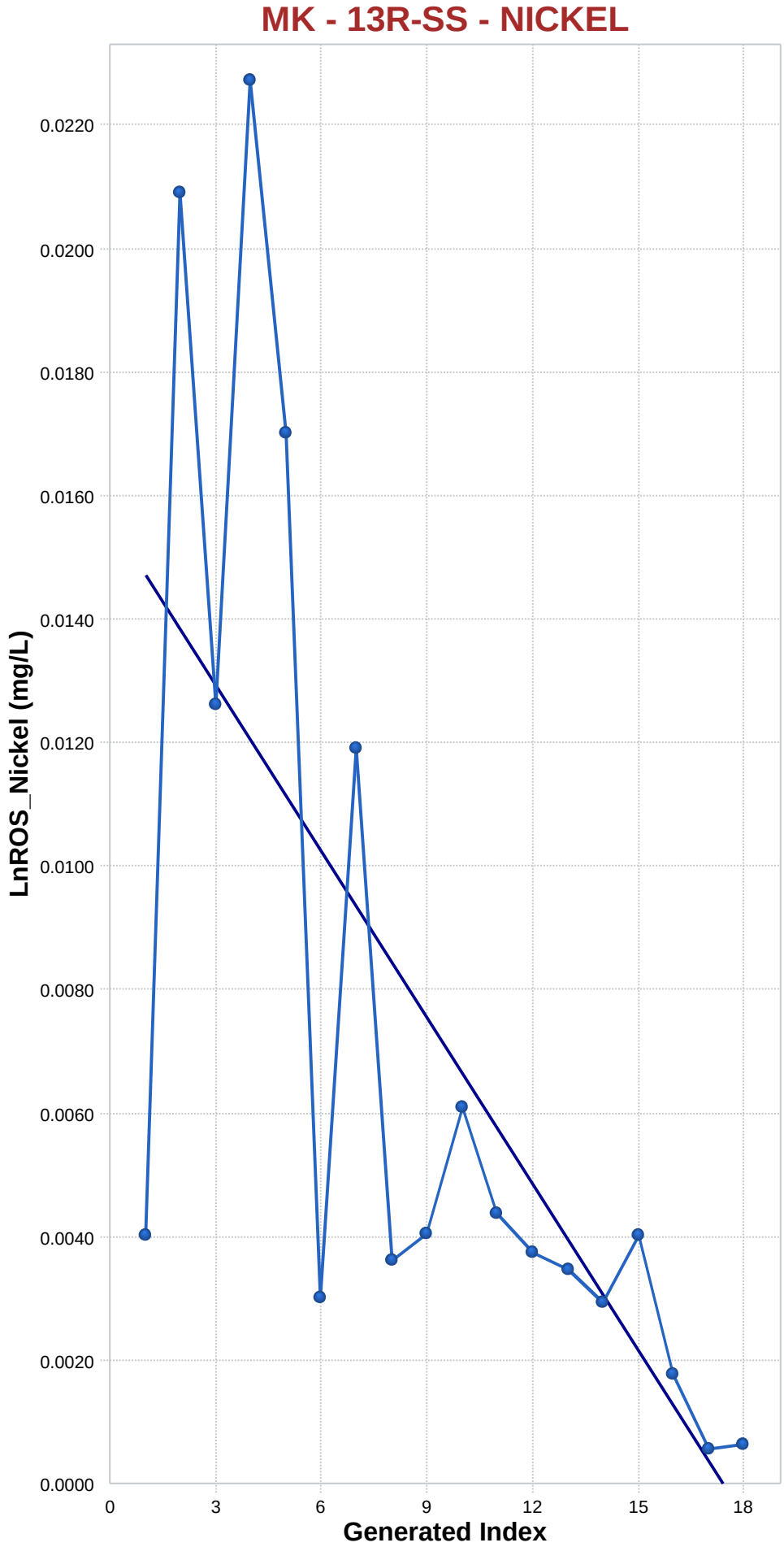
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5657
Standardized Value of S	-2.7656
M-K Test Value (S)	-80
Tabulated p-value	0.0020
Approximate p-value	0.0028

OLS Regression Line (Blue)

OLS Regression Slope	-0.0247
OLS Regression Intercept	0.5955

Statistically significant evidence of a decreasing trend at the specified level of significance.



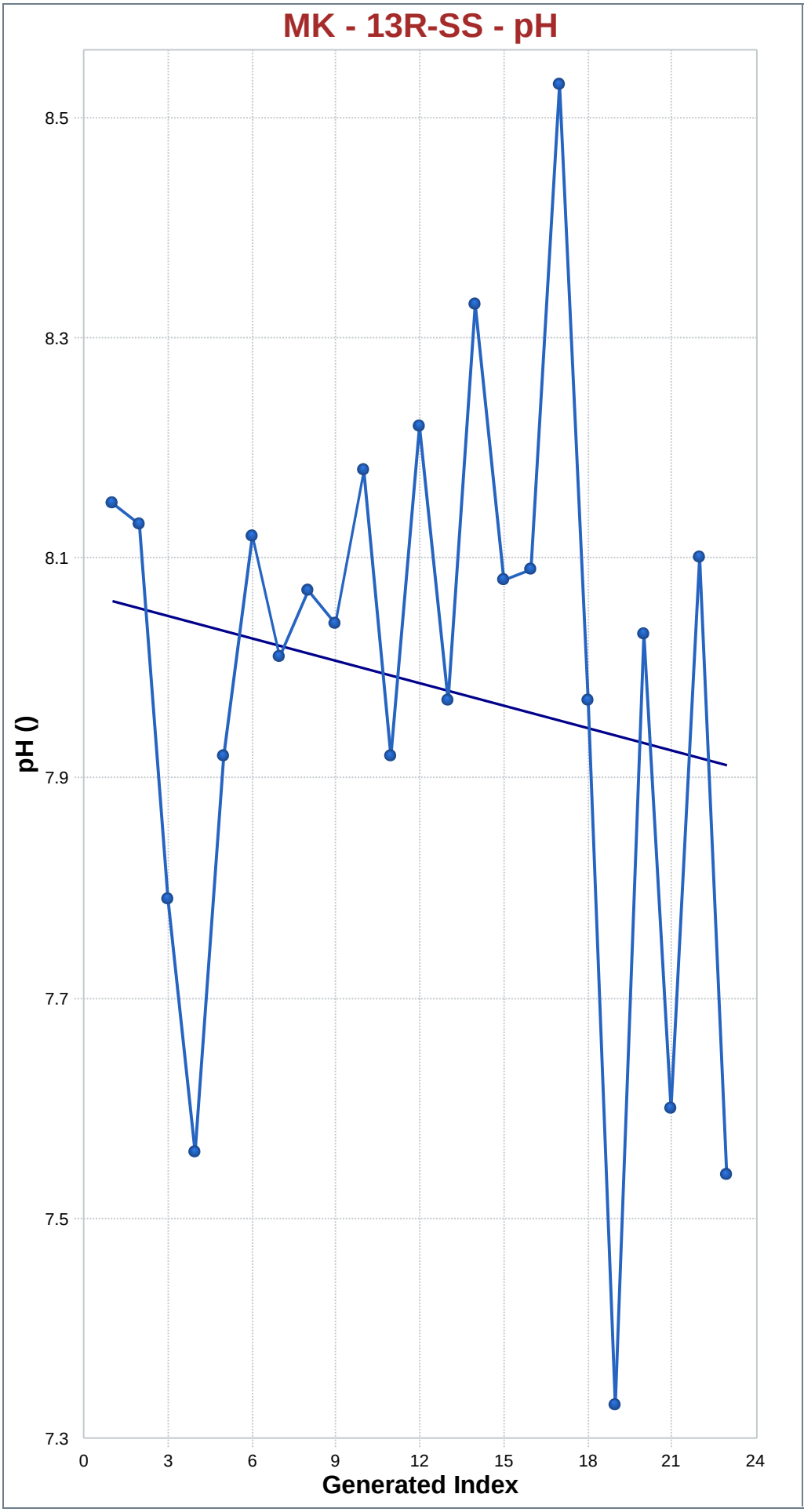
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.4008
Standardized Value of S	-3.4090
M-K Test Value (S)	-91
Tabulated p-value	0.0000
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	-0.0009
OLS Regression Intercept	0.0156

Statistically significant evidence of a decreasing trend at the specified level of significance.



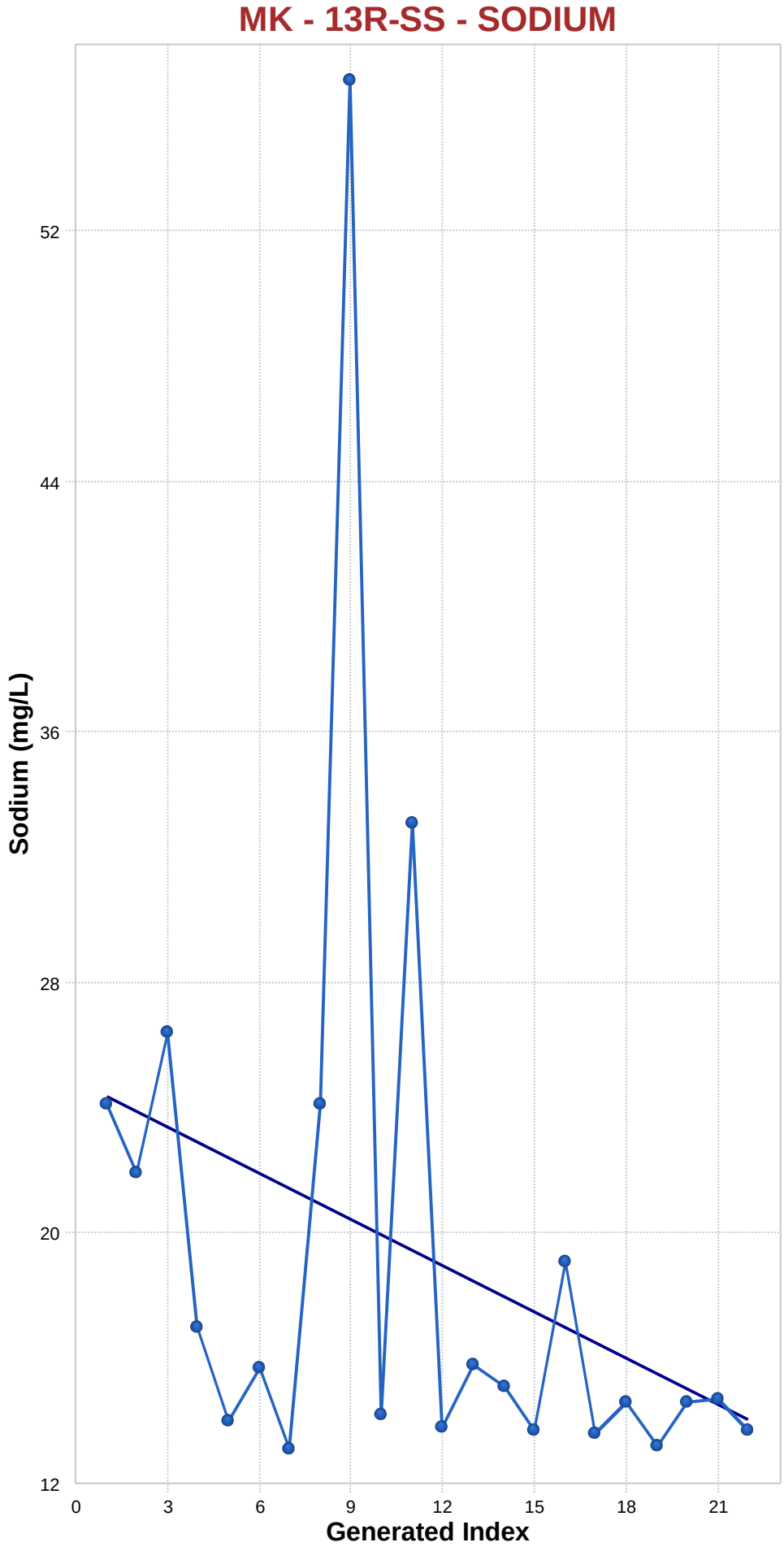
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8374
Standardized Value of S	-0.4229
M-K Test Value (S)	-17
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3362

OLS Regression Line (Blue)

OLS Regression Slope	-0.0068
OLS Regression Intercept	8.0272

Insufficient statistical evidence of a significant trend at the specified level of significance.



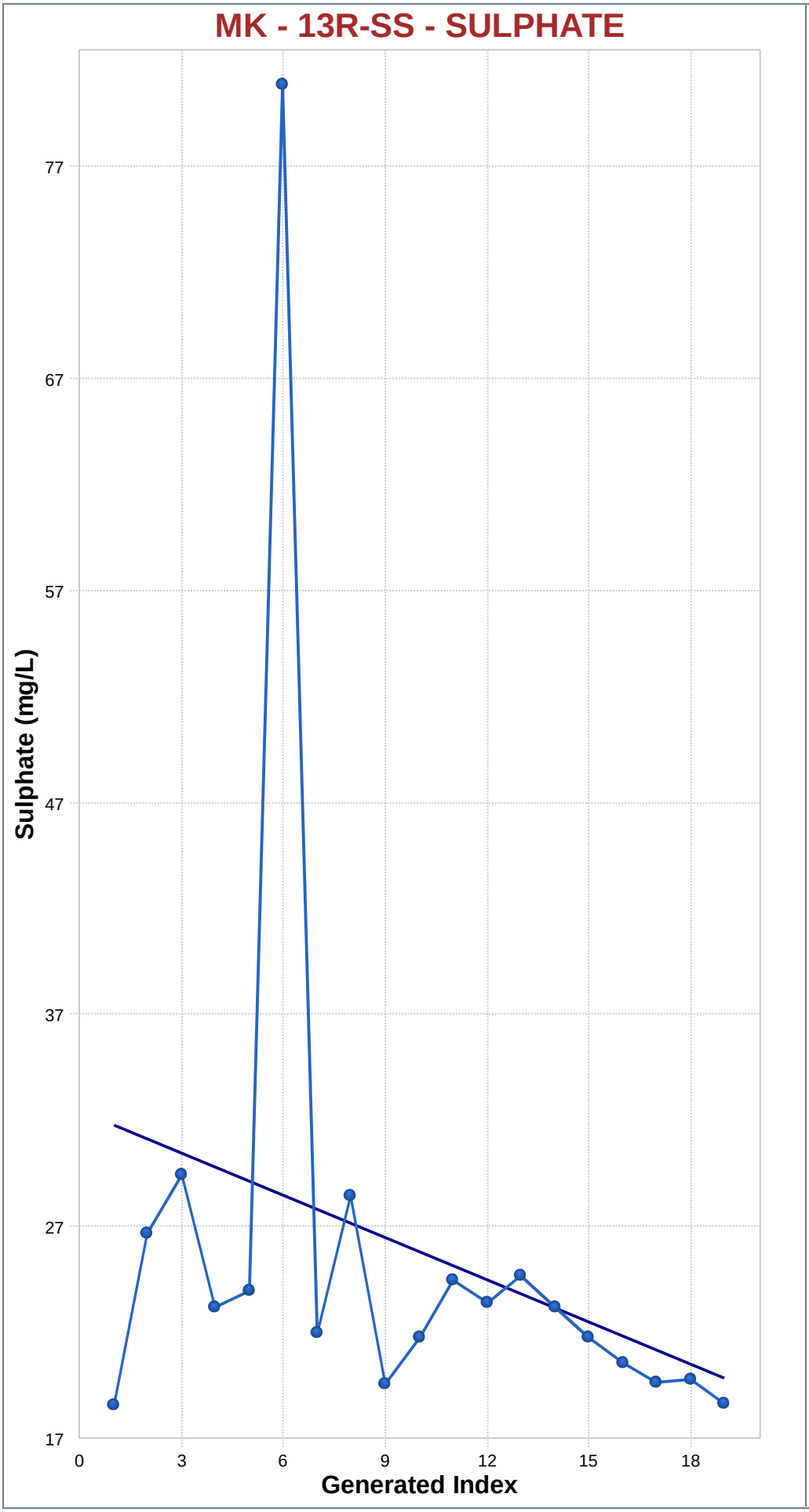
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4213
Standardized Value of S	-2.2303
M-K Test Value (S)	-80
Tabulated p-value	0.0110
Approximate p-value	0.0129

OLS Regression Line (Blue)

OLS Regression Slope	-0.4912
OLS Regression Intercept	24.9442

Statistically significant evidence of a decreasing trend at the specified level of significance.



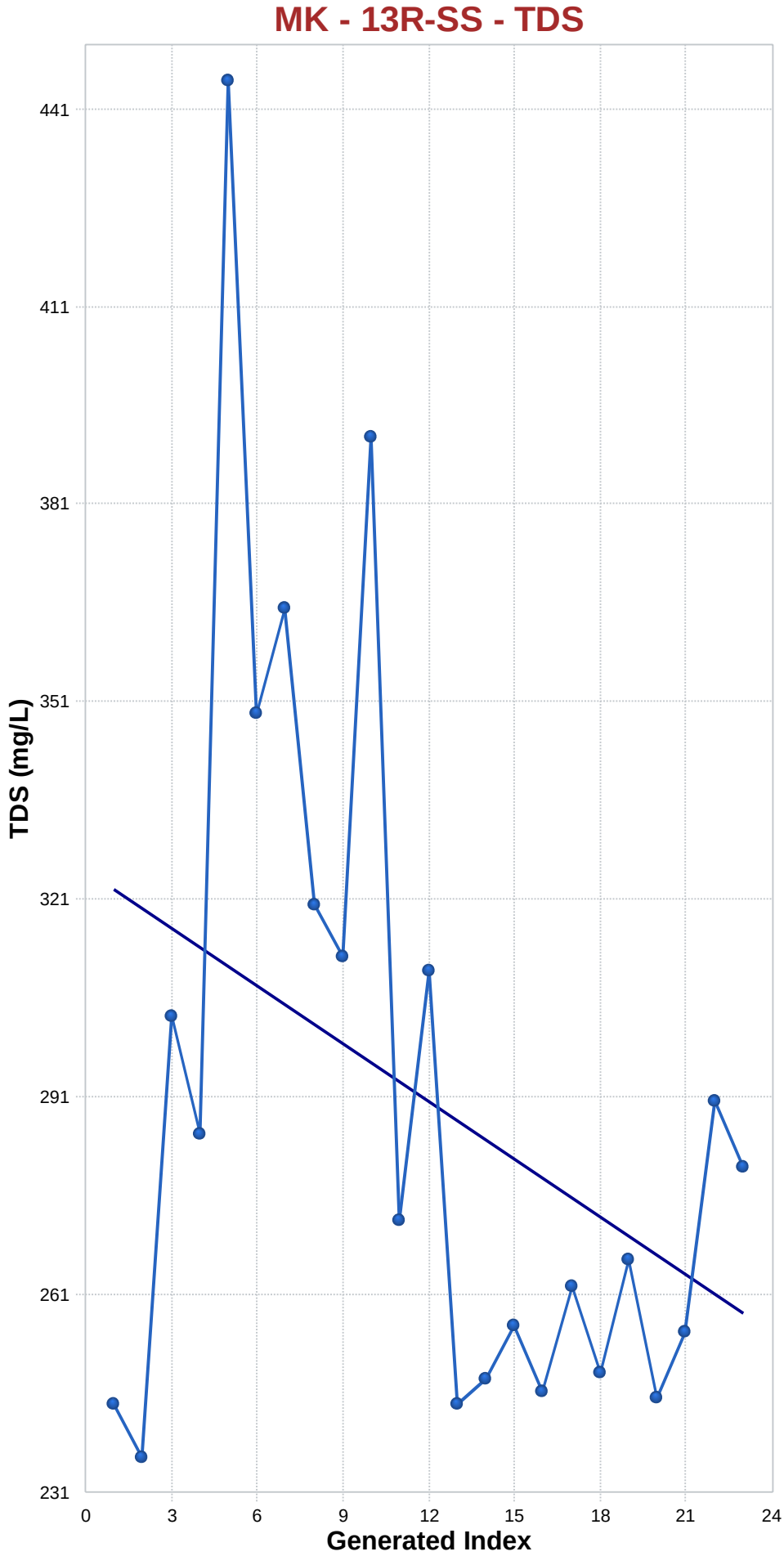
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5482
Standardized Value of S	-2.1718
M-K Test Value (S)	-63
Tabulated p-value	0.0140
Approximate p-value	0.0149

OLS Regression Line (Blue)

OLS Regression Slope	-0.6623
OLS Regression Intercept	32.7754

Statistically significant evidence of a decreasing trend at the specified level of significance.



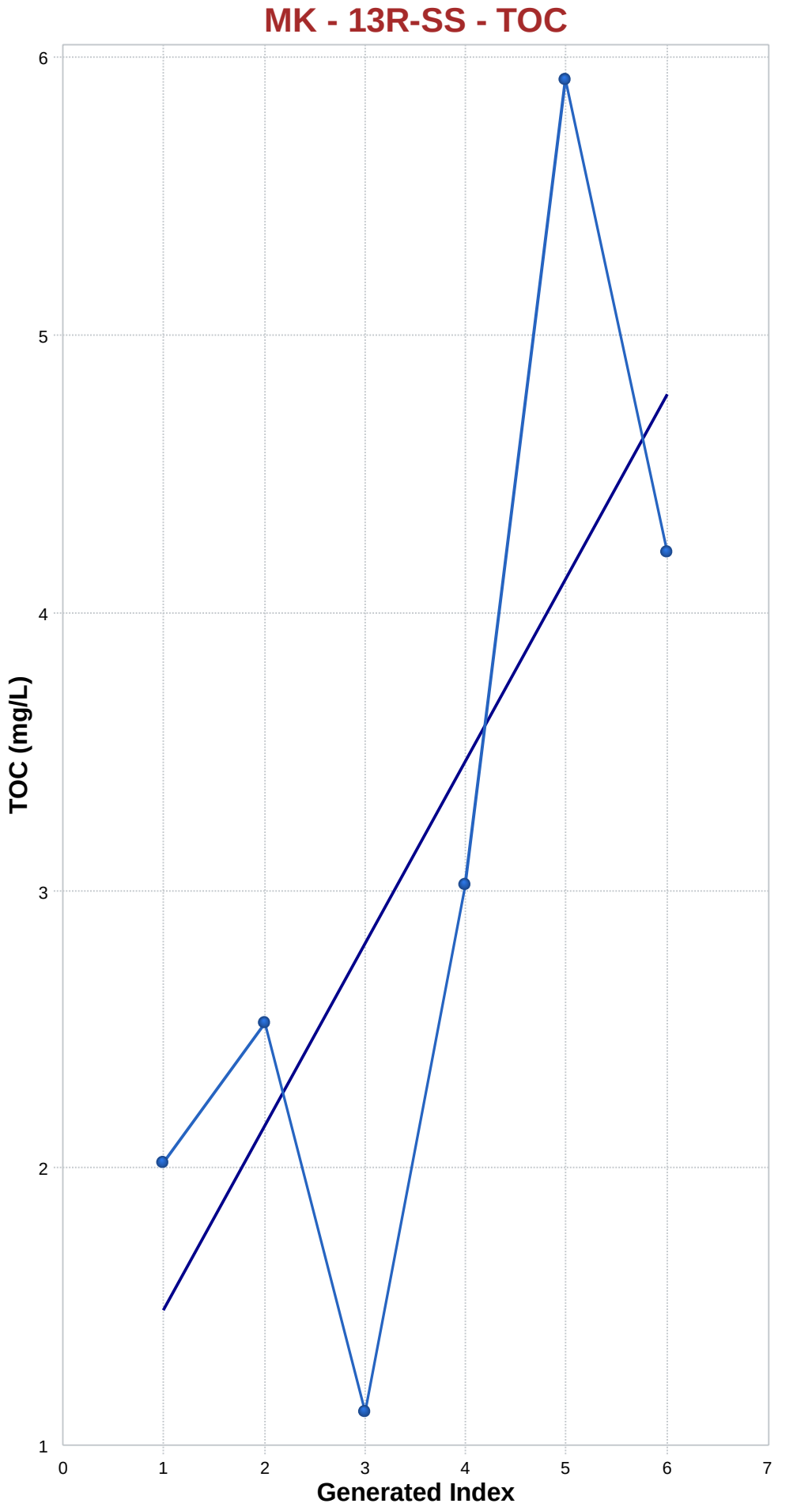
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8506
Standardized Value of S	-1.0832
M-K Test Value (S)	-42
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1394

OLS Regression Line (Blue)

OLS Regression Slope	-2.9269
OLS Regression Intercept	325.2530

Insufficient statistical evidence of a significant trend at the specified level of significance.



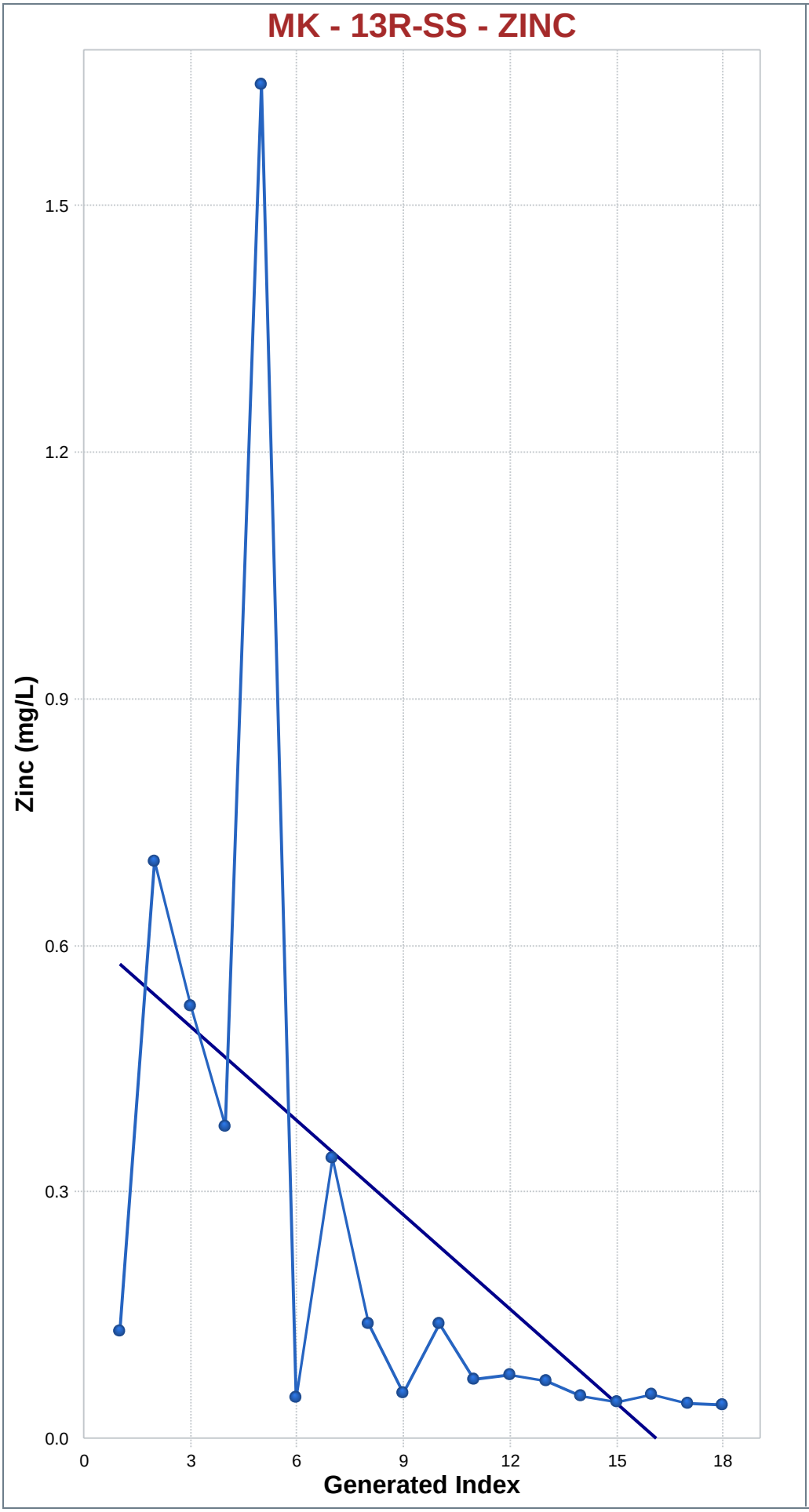
Mann-Kendall Trend Analysis

n	6
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	5.3229
Standardized Value of S	1.5029
M-K Test Value (S)	9
Tabulated p-value	0.0680
Approximate p-value	0.0664

OLS Regression Line (Blue)

OLS Regression Slope	0.6600
OLS Regression Intercept	0.8067

Insufficient statistical evidence of a significant trend at the specified level of significance.



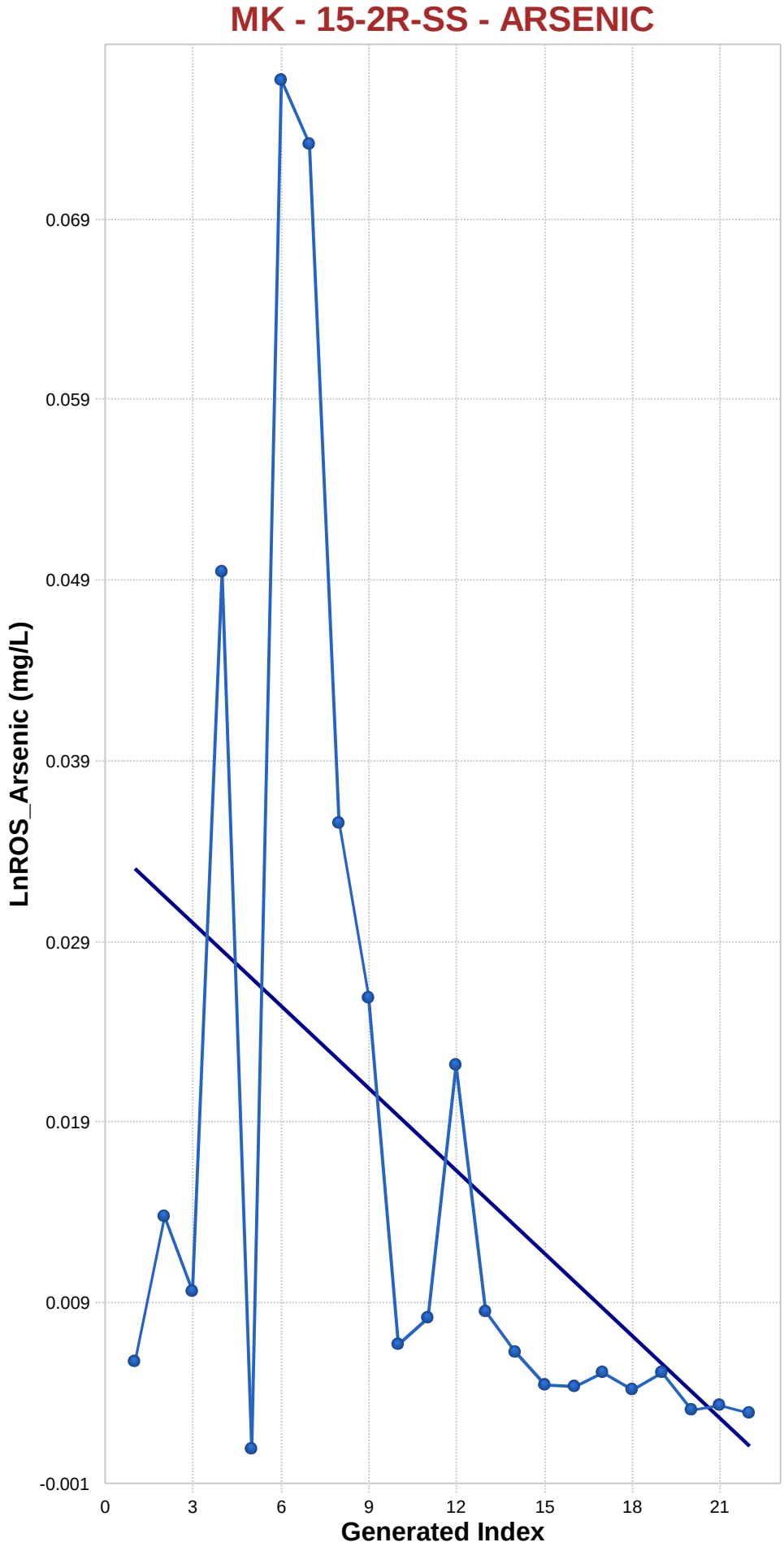
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.3818
Standardized Value of S	-3.7526
M-K Test Value (S)	-100
Tabulated p-value	0.0000
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0381
OLS Regression Intercept	0.5779

Statistically significant evidence of a decreasing trend at the specified level of significance.



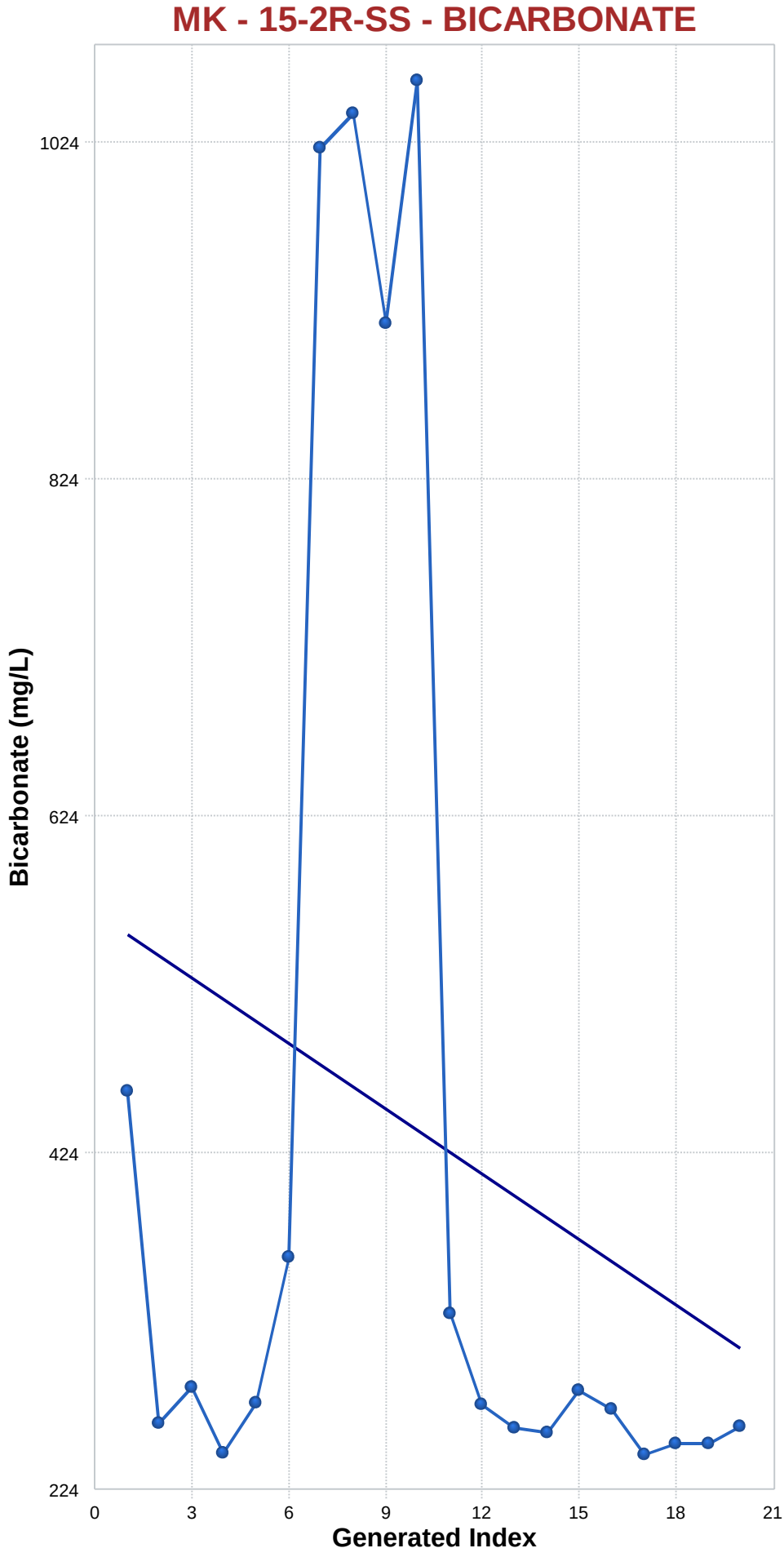
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4636
Standardized Value of S	-3.4401
M-K Test Value (S)	-123
Tabulated p-value	0.0000
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	-0.0015
OLS Regression Intercept	0.0344

Statistically significant evidence of a decreasing trend at the specified level of significance.



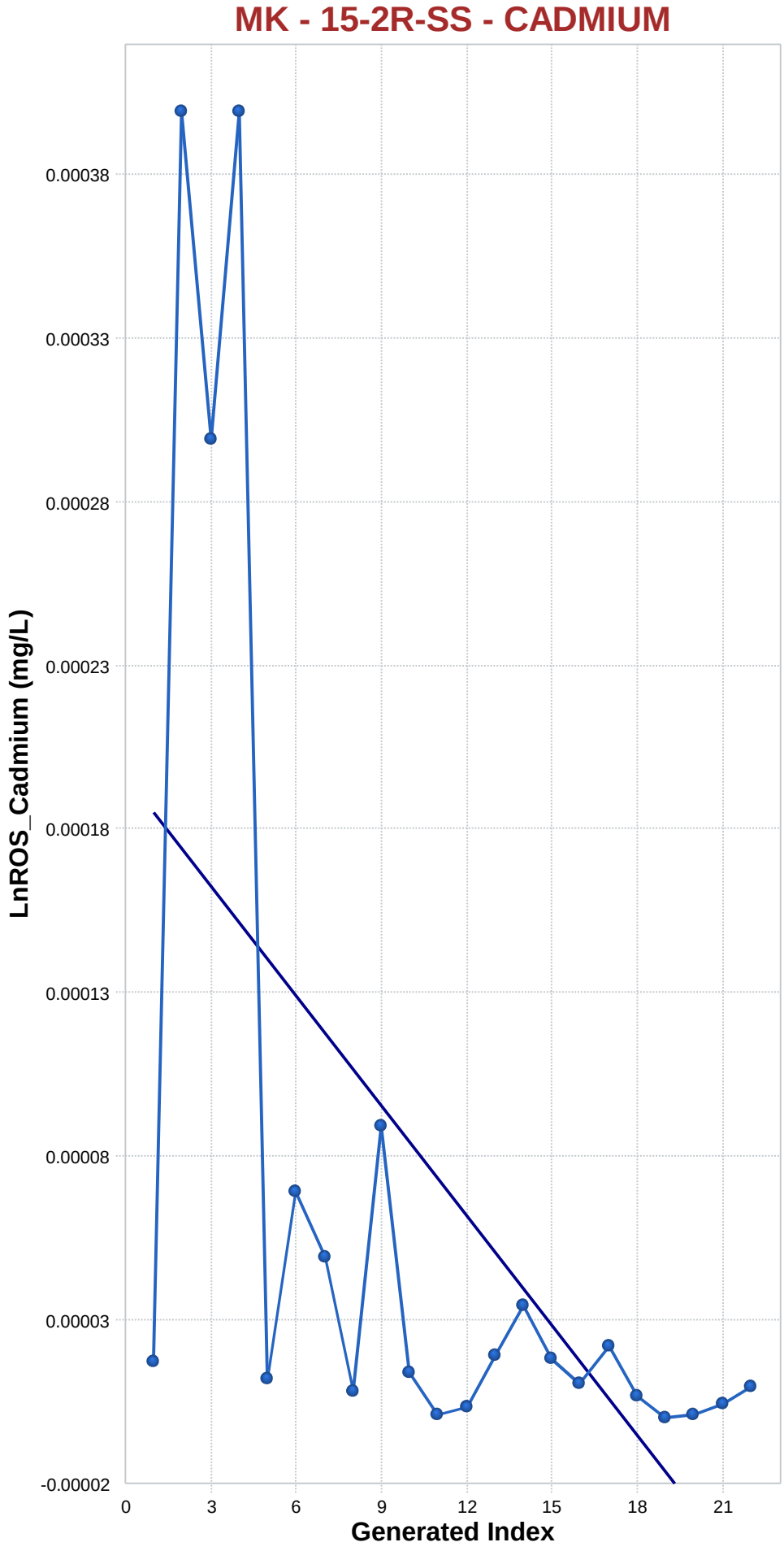
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.8058
Standardized Value of S	-2.0126
M-K Test Value (S)	-63
Tabulated p-value	0.0230
Approximate p-value	0.0221

OLS Regression Line (Blue)

OLS Regression Slope	-12.8925
OLS Regression Intercept	565.5211

Statistically significant evidence of a decreasing trend at the specified level of significance.



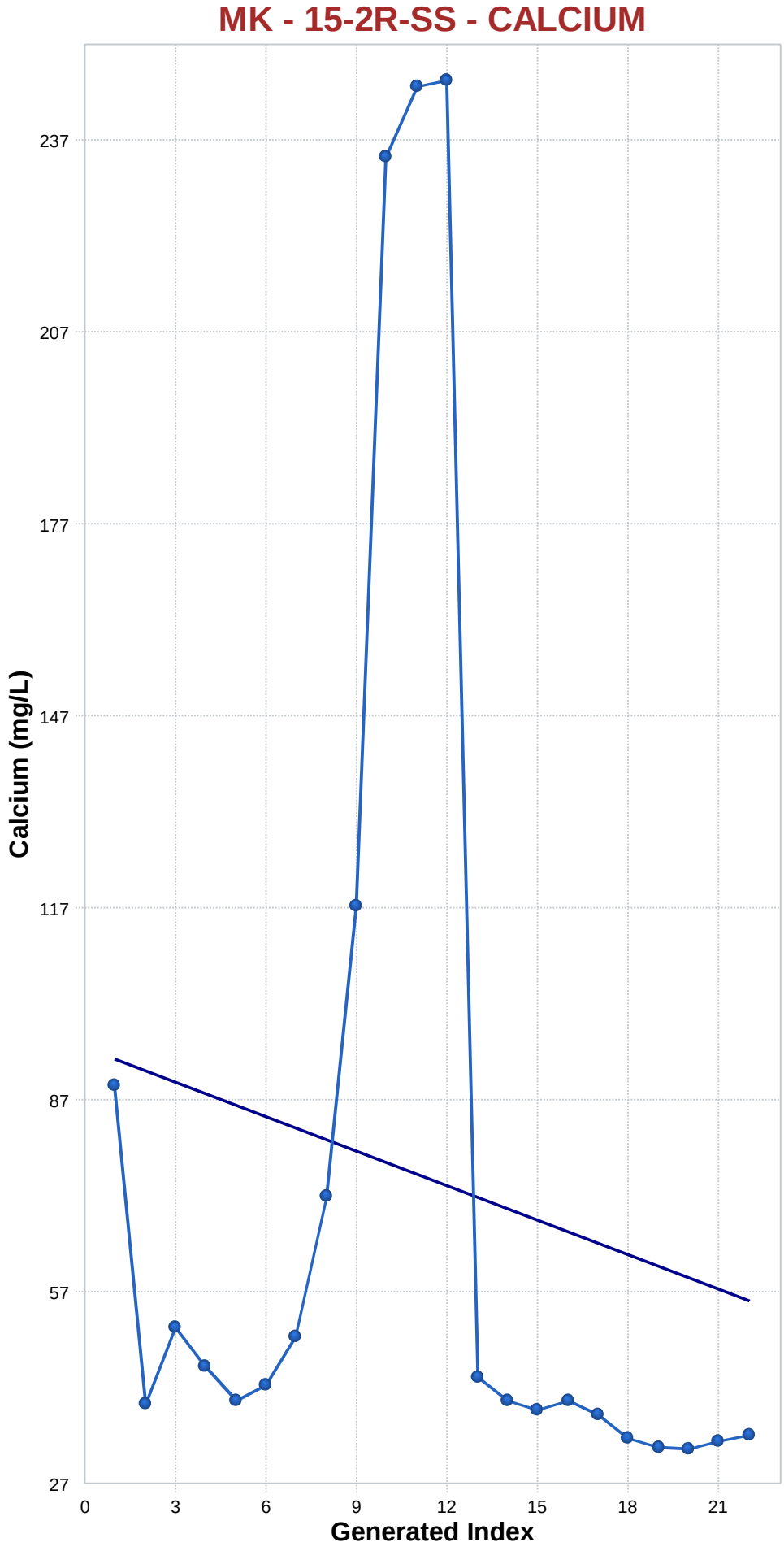
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4354
Standardized Value of S	-2.9914
M-K Test Value (S)	-107
Tabulated p-value	0.0010
Approximate p-value	0.0014

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.0002

Statistically significant evidence of a decreasing trend at the specified level of significance.



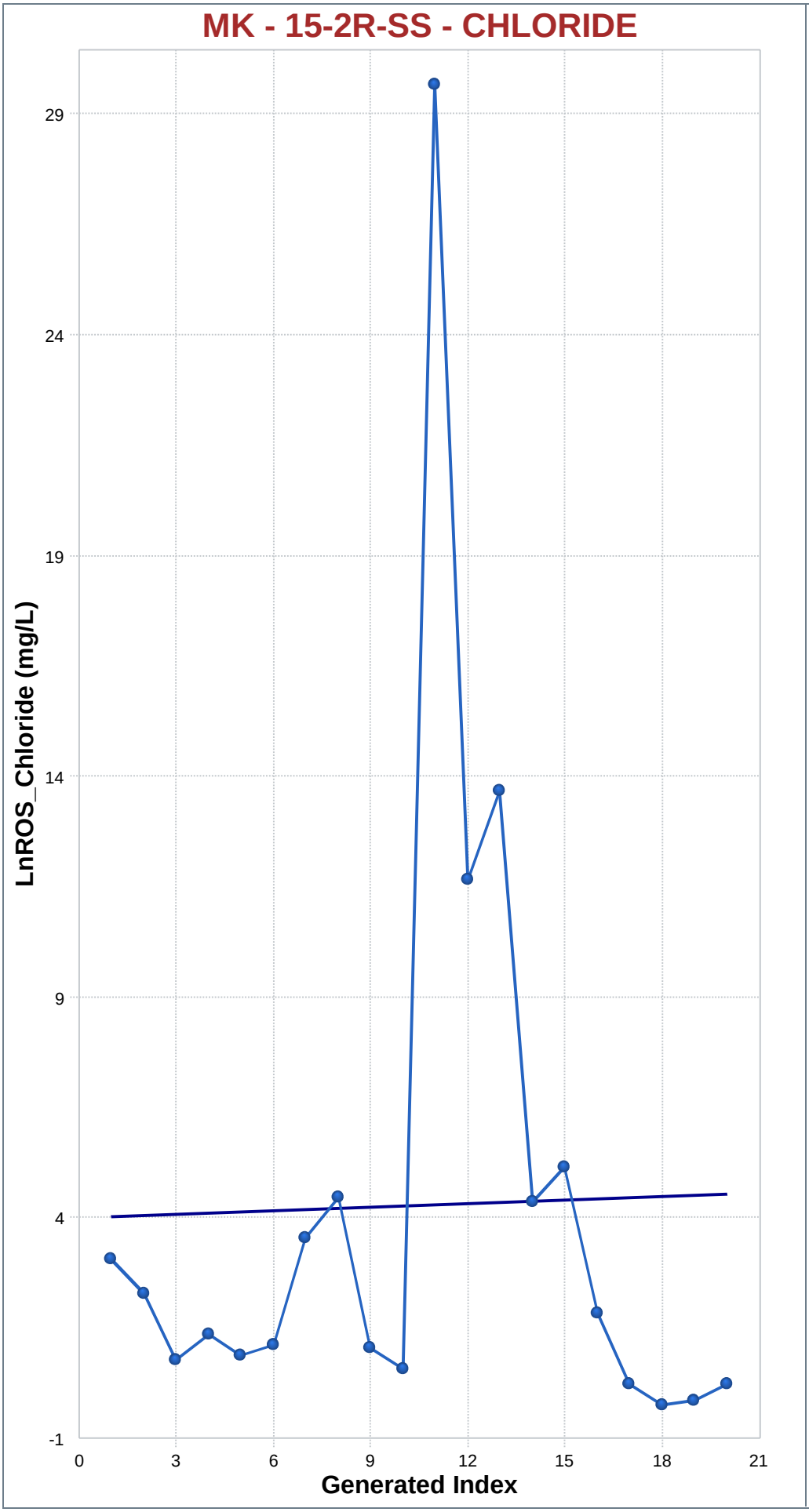
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4119
Standardized Value of S	-2.7392
M-K Test Value (S)	-98
Tabulated p-value	0.0020
Approximate p-value	0.0031

OLS Regression Line (Blue)

OLS Regression Slope	-1.7985
OLS Regression Intercept	94.9286

Statistically significant evidence of a decreasing trend at the specified level of significance.



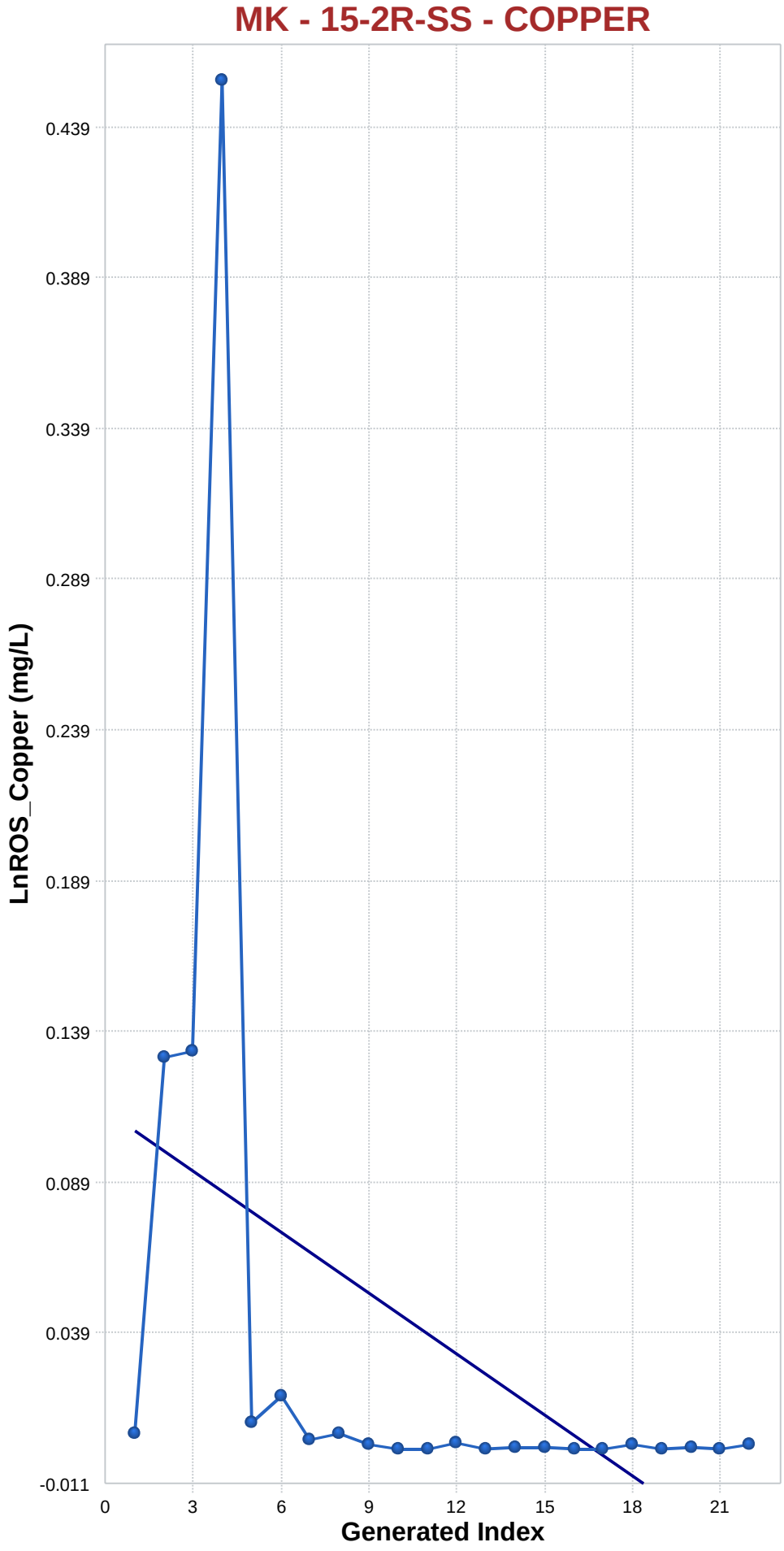
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.8058
Standardized Value of S	-0.9738
M-K Test Value (S)	-31
Tabulated p-value	0.1760
Approximate p-value	0.1651

OLS Regression Line (Blue)

OLS Regression Slope	0.0258
OLS Regression Intercept	4.4357

Insufficient statistical evidence of a significant trend at the specified level of significance.



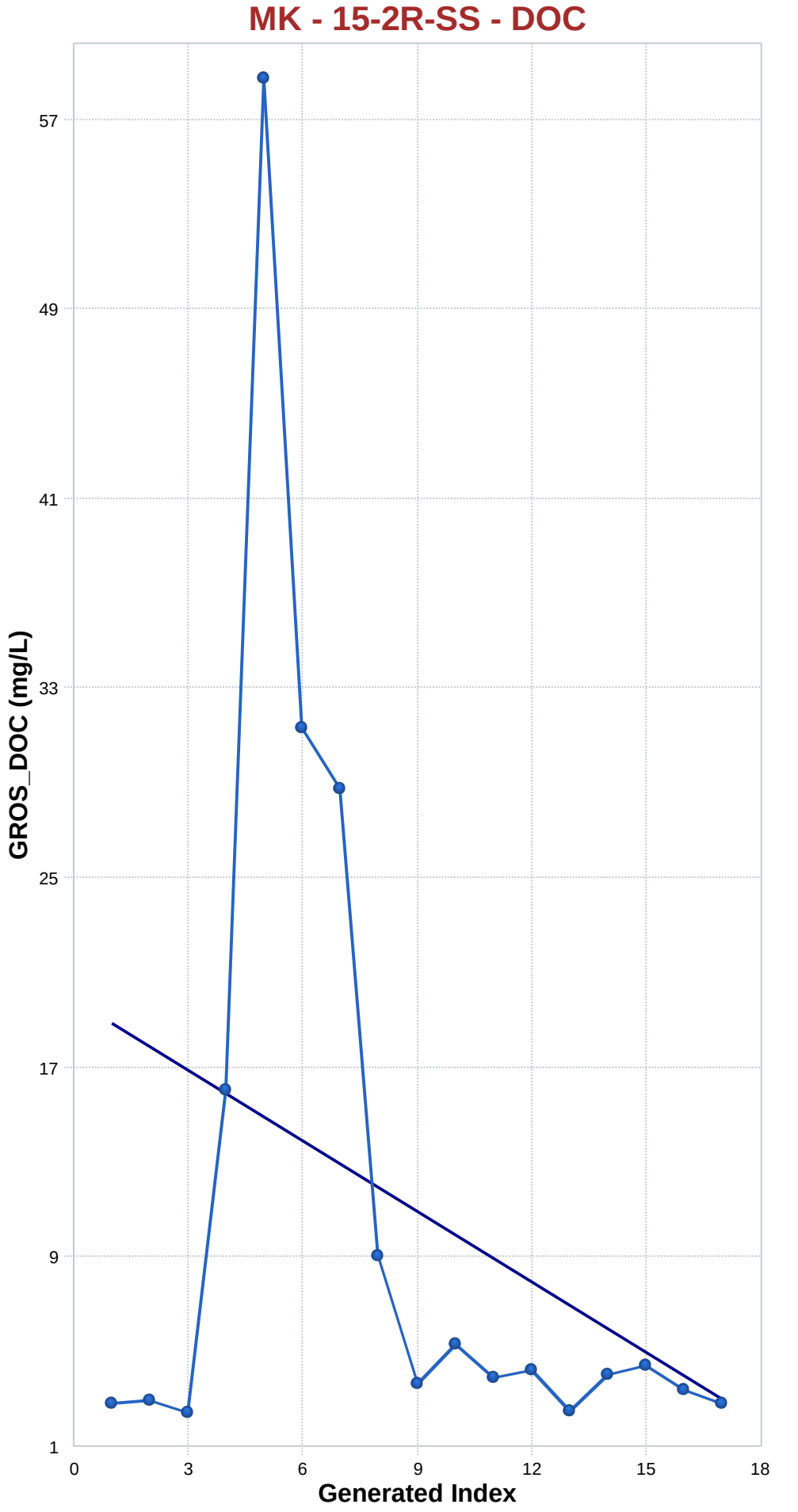
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4495
Standardized Value of S	-3.5826
M-K Test Value (S)	-128
Tabulated p-value	0.0000
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	-0.0067
OLS Regression Intercept	0.1123

Statistically significant evidence of a decreasing trend at the specified level of significance.



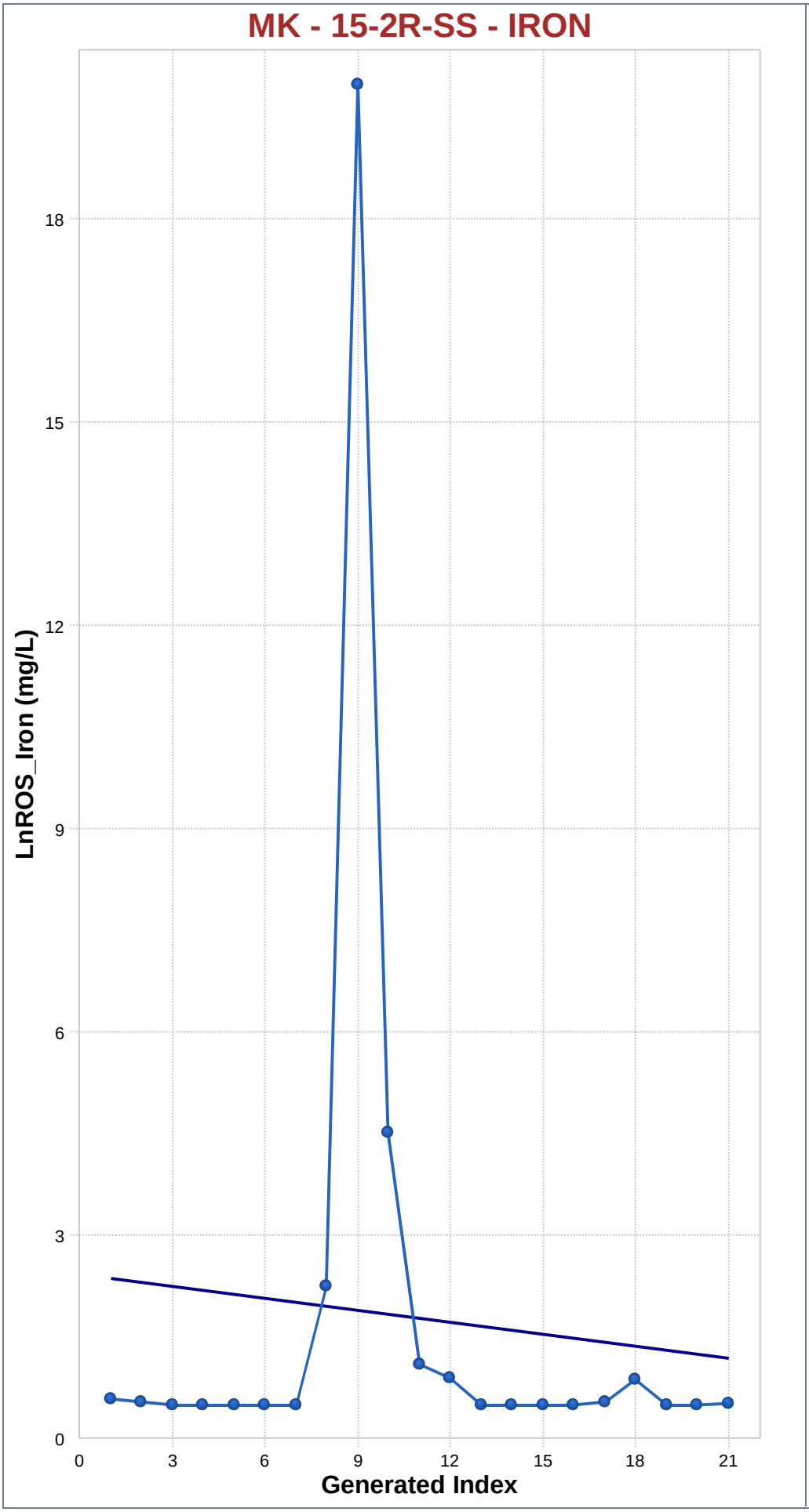
Mann-Kendall Trend Analysis

n	17
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	24.2762
Standardized Value of S	-0.9474
M-K Test Value (S)	-24
Tabulated p-value	0.1740
Approximate p-value	0.1717

OLS Regression Line (Blue)

OLS Regression Slope	-0.9914
OLS Regression Intercept	19.4520

Insufficient statistical evidence of a significant trend at the specified level of significance.



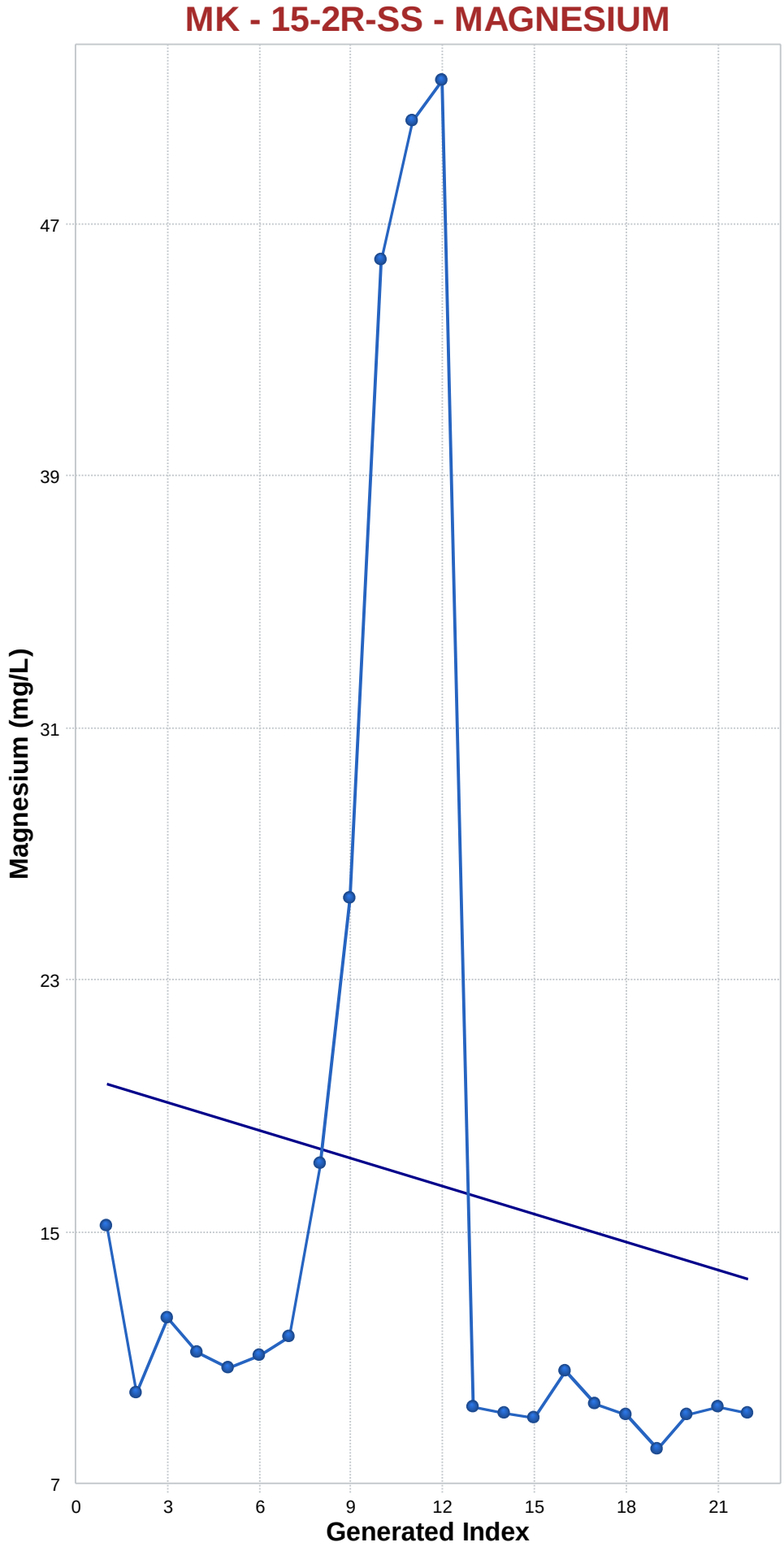
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.0857
Standardized Value of S	0.4534
M-K Test Value (S)	16
Tabulated p-value	0.3270
Approximate p-value	0.3251

OLS Regression Line (Blue)

OLS Regression Slope	-0.0599
OLS Regression Intercept	1.9377

Insufficient statistical evidence of a significant trend at the specified level of significance.



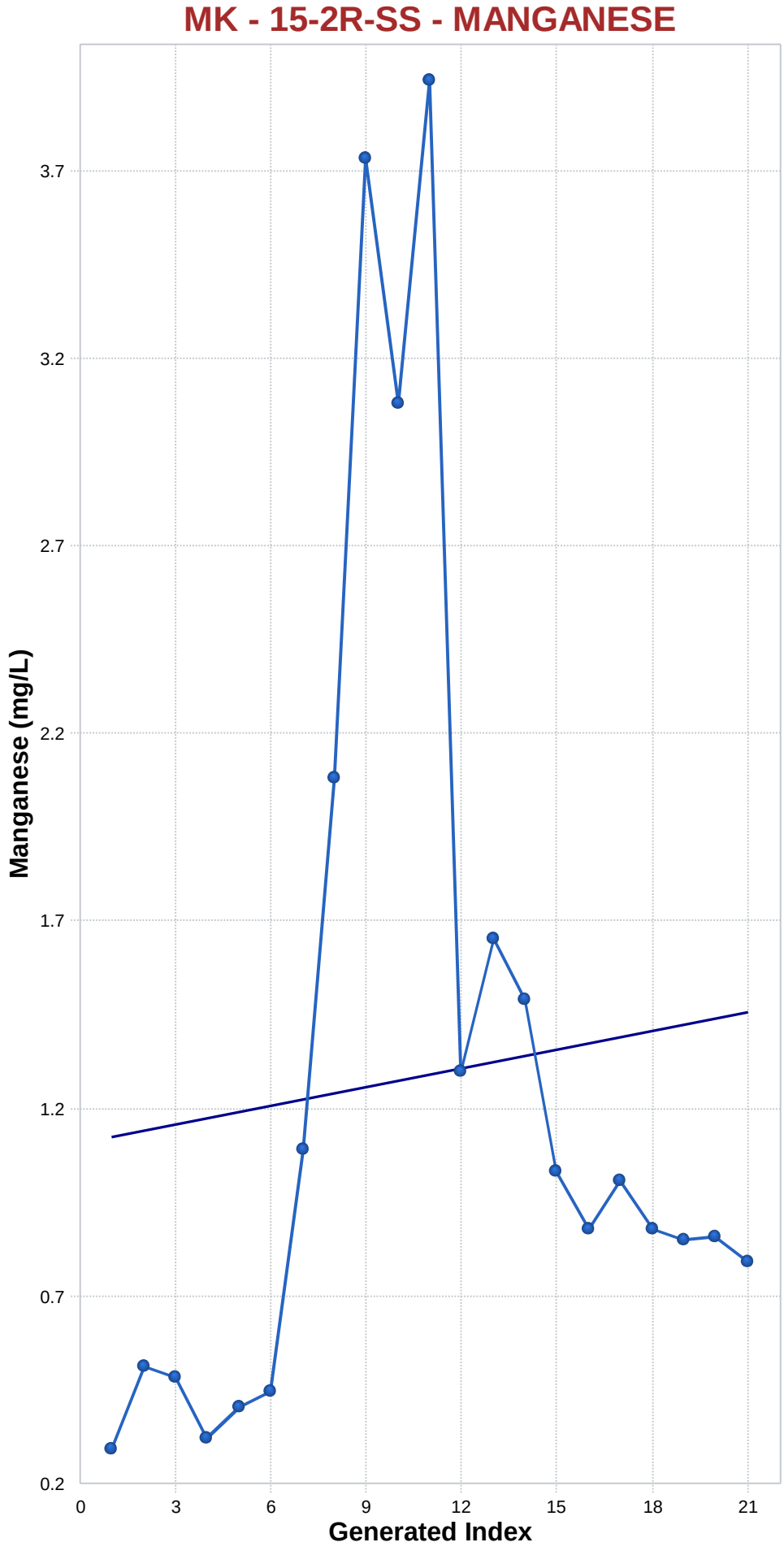
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4636
Standardized Value of S	-2.2558
M-K Test Value (S)	-81
Tabulated p-value	0.0110
Approximate p-value	0.0120

OLS Regression Line (Blue)

OLS Regression Slope	-0.2954
OLS Regression Intercept	20.0351

Statistically significant evidence of a decreasing trend at the specified level of significance.



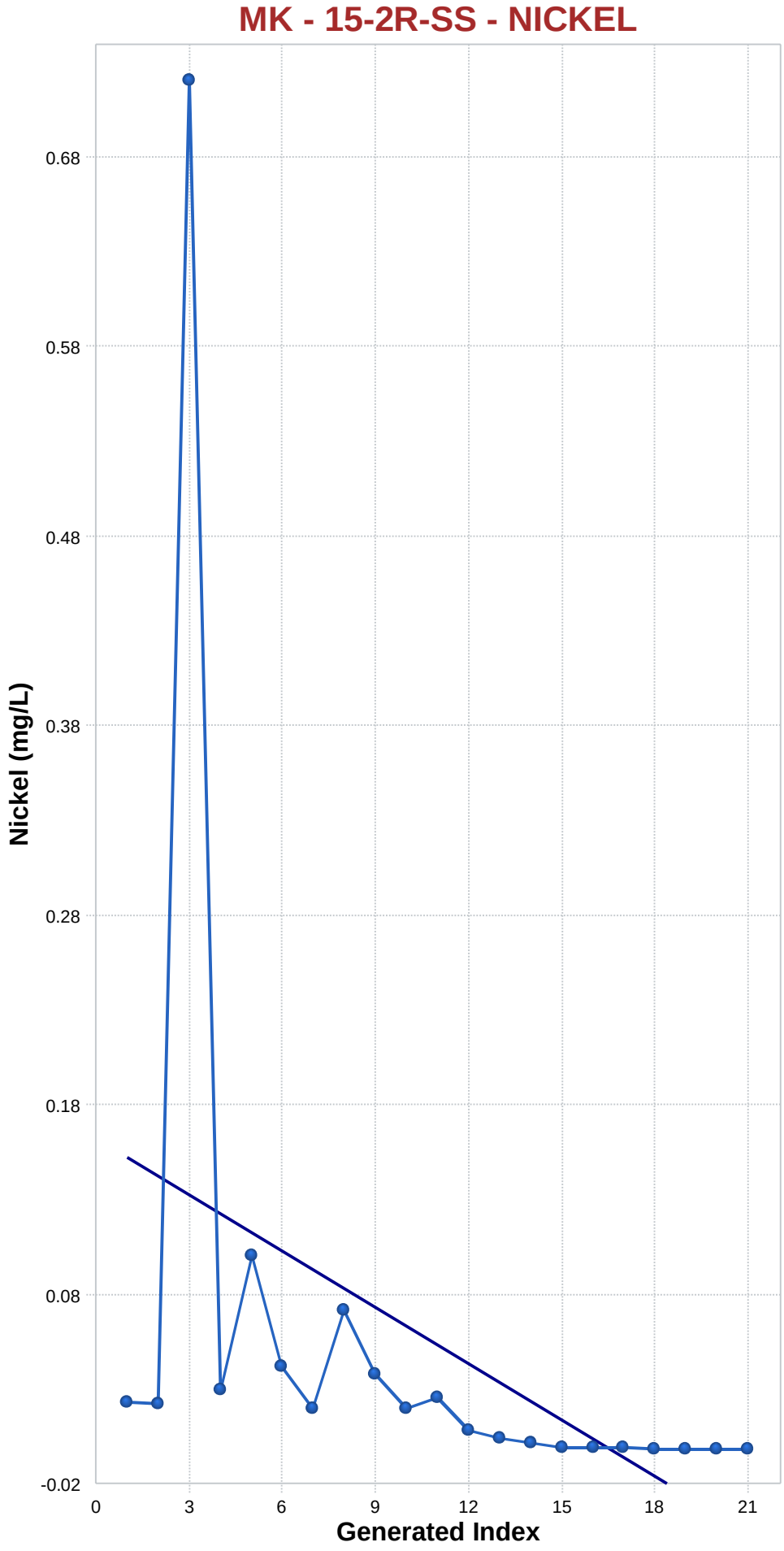
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.1160
Standardized Value of S	0.5737
M-K Test Value (S)	20
Tabulated p-value	0.2850
Approximate p-value	0.2831

OLS Regression Line (Blue)

OLS Regression Slope	0.0166
OLS Regression Intercept	1.0680

Insufficient statistical evidence of a significant trend at the specified level of significance.



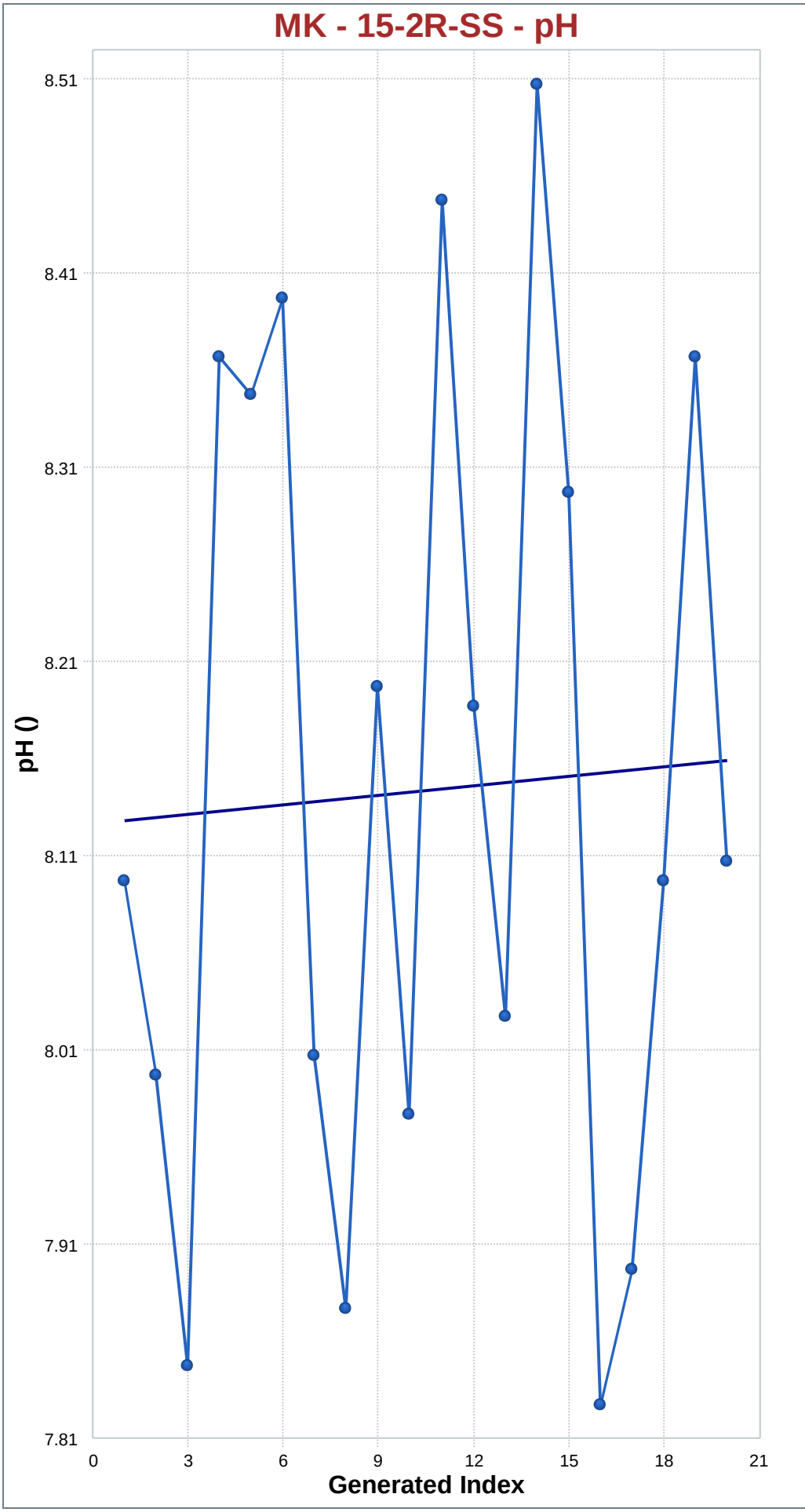
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.1160
Standardized Value of S	-4.8013
M-K Test Value (S)	-160
Tabulated p-value	0.0000
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0099
OLS Regression Intercept	0.1650

Statistically significant evidence of a decreasing trend at the specified level of significance.



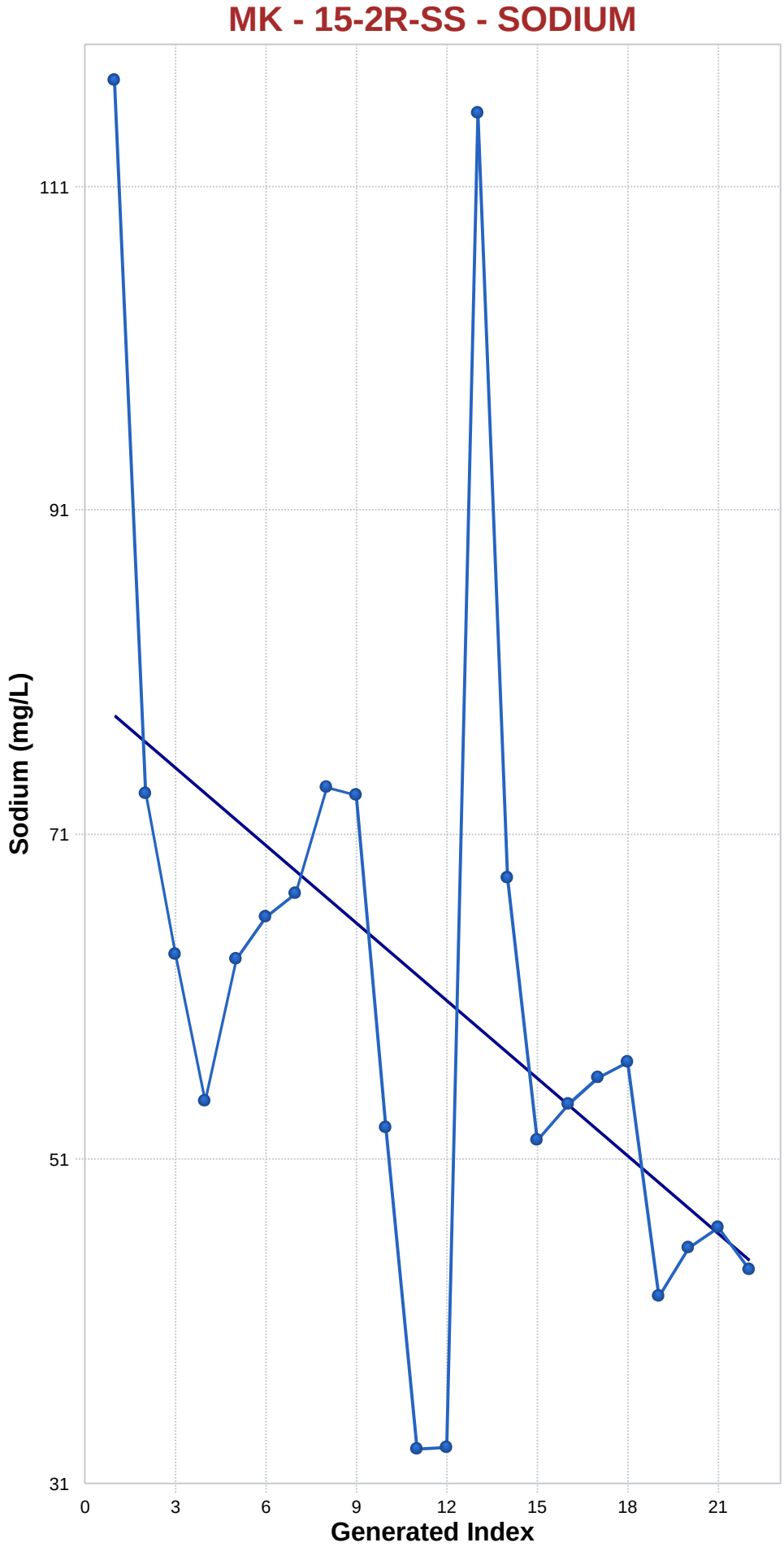
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.7896
Standardized Value of S	0.2923
M-K Test Value (S)	10
Tabulated p-value	0.3870
Approximate p-value	0.3850

OLS Regression Line (Blue)

OLS Regression Slope	0.0016
OLS Regression Intercept	8.1292

Insufficient statistical evidence of a significant trend at the specified level of significance.



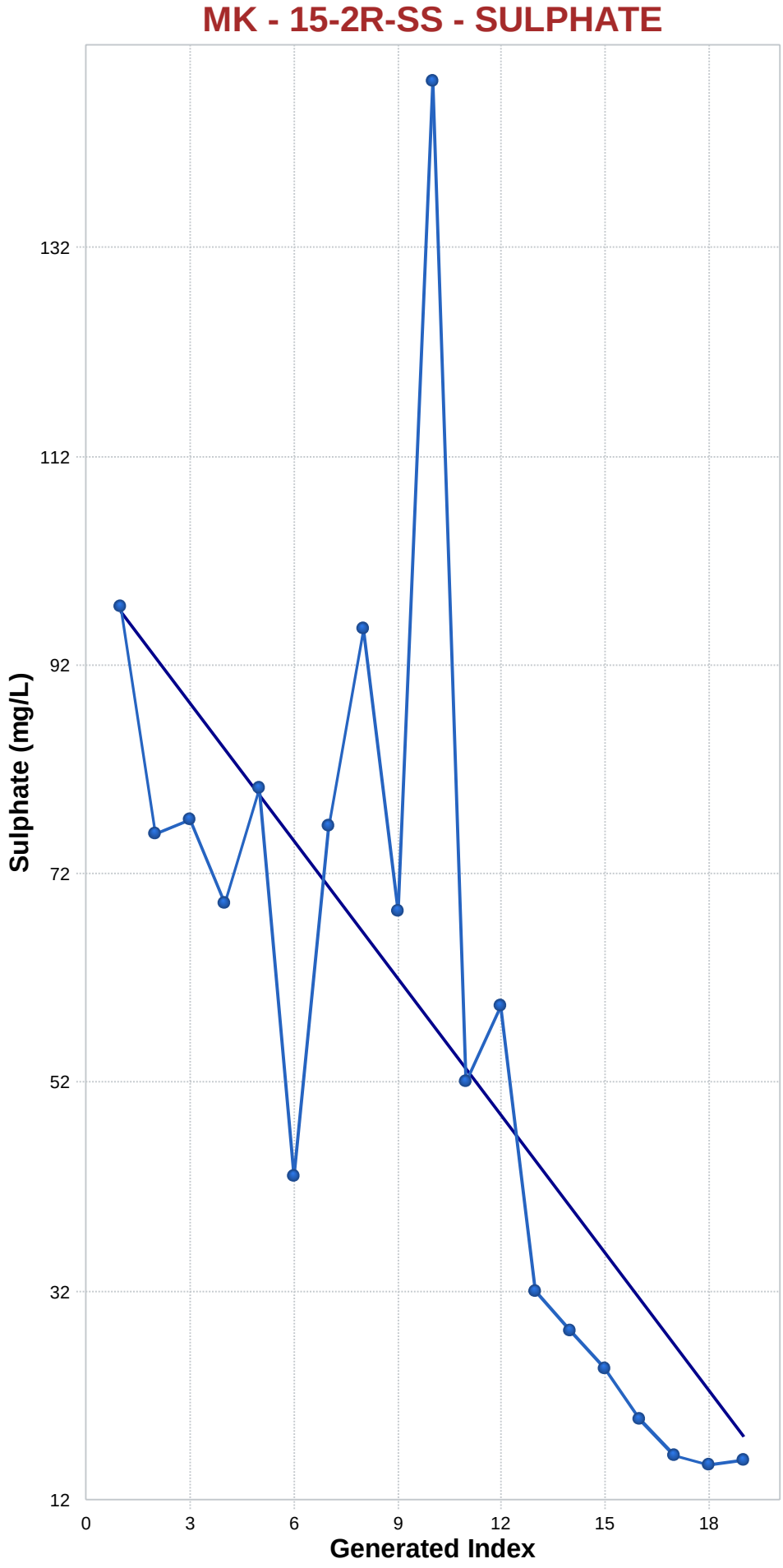
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4636
Standardized Value of S	-2.5378
M-K Test Value (S)	-91
Tabulated p-value	0.0050
Approximate p-value	0.0056

OLS Regression Line (Blue)

OLS Regression Slope	-1.5997
OLS Regression Intercept	80.4740

Statistically significant evidence of a decreasing trend at the specified level of significance.



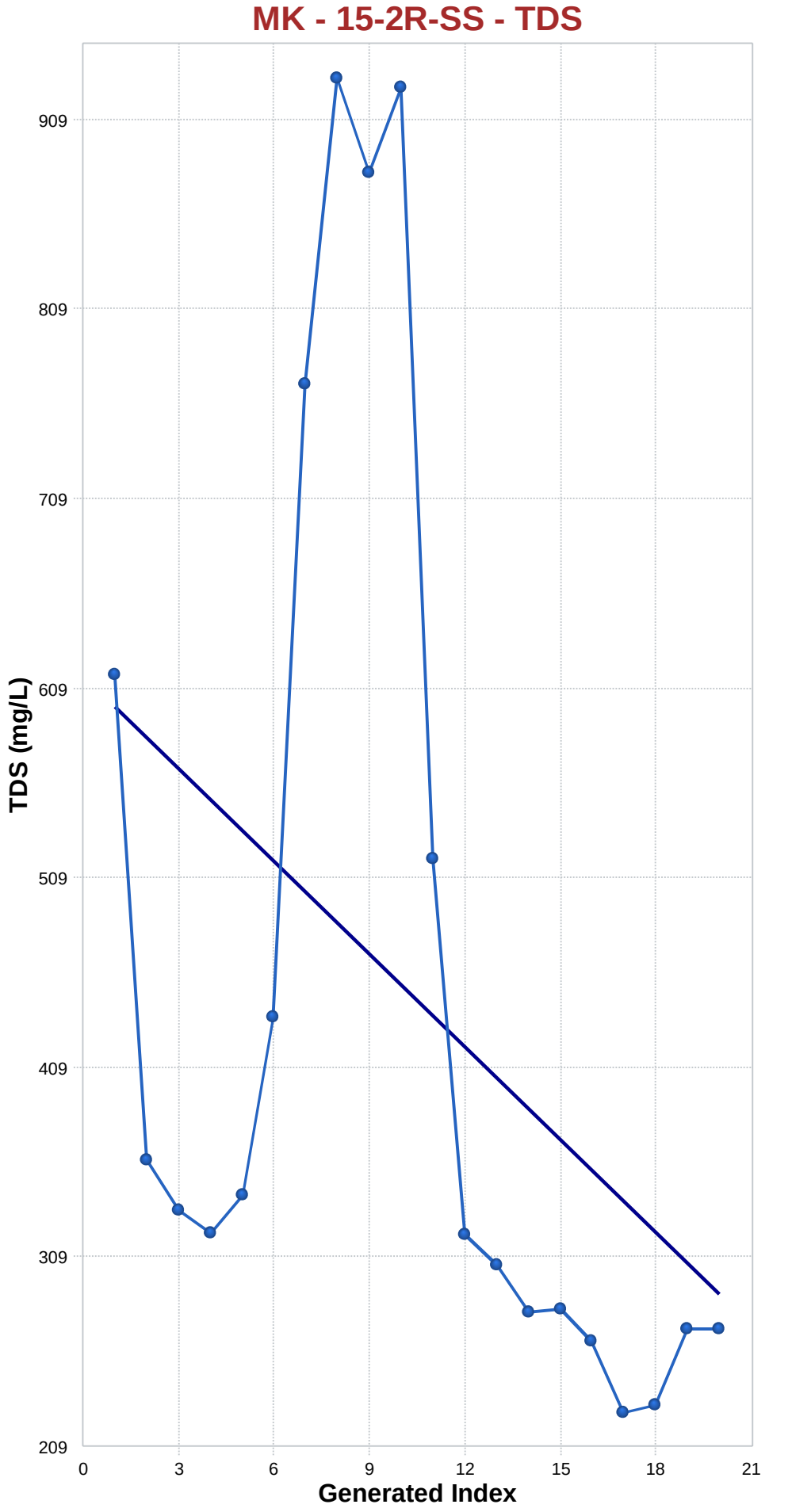
Mann-Kendall Trend Analysis

n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5832
Standardized Value of S	-4.0583
M-K Test Value (S)	-117
Tabulated p-value	0.0000
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-4.3918
OLS Regression Intercept	101.5860

Statistically significant evidence of a decreasing trend at the specified level of significance.



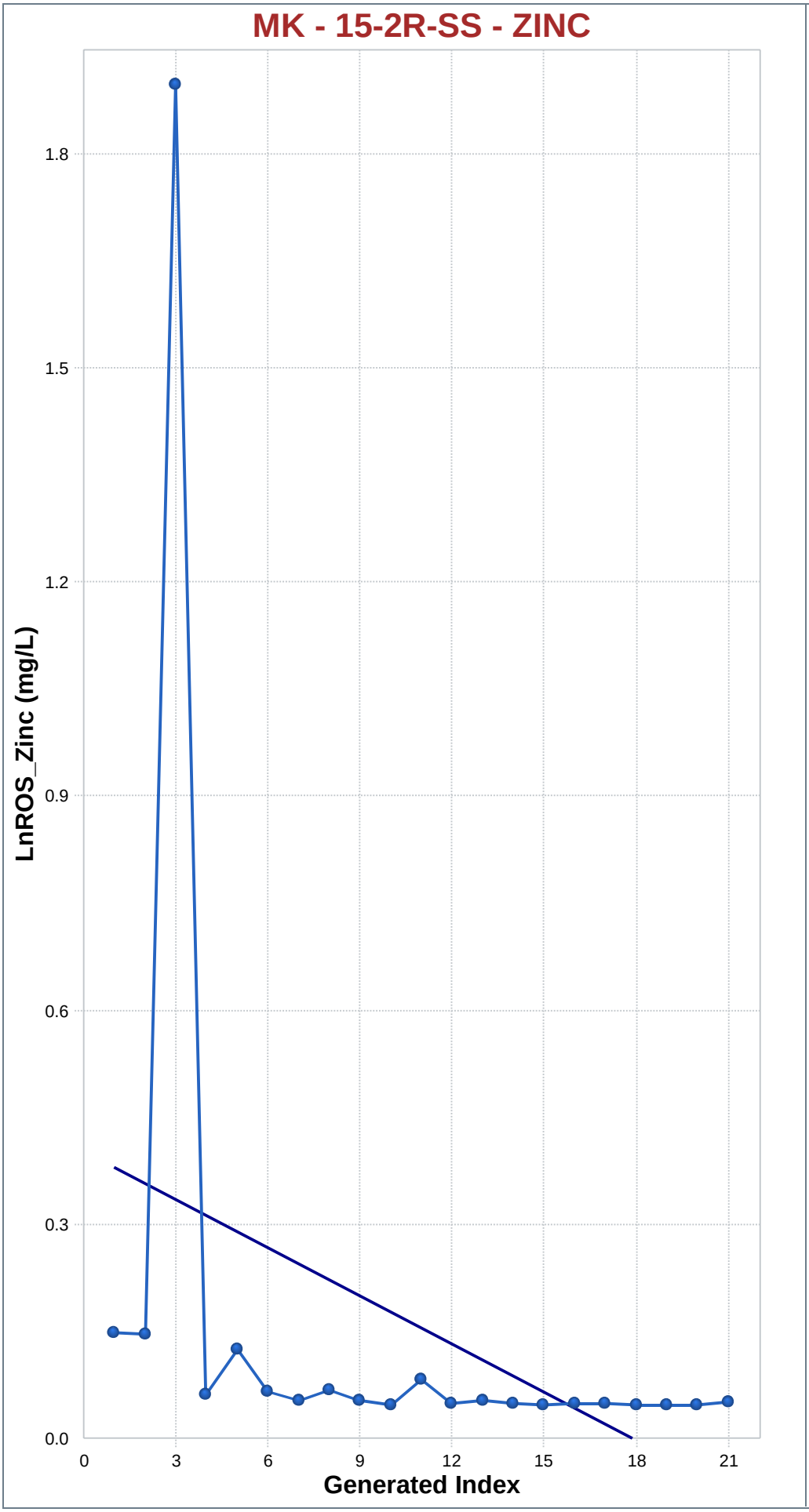
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.8058
Standardized Value of S	-3.0514
M-K Test Value (S)	-95
Tabulated p-value	0.0010
Approximate p-value	0.0011

OLS Regression Line (Blue)

OLS Regression Slope	-16.3368
OLS Regression Intercept	616.0368

Statistically significant evidence of a decreasing trend at the specified level of significance.



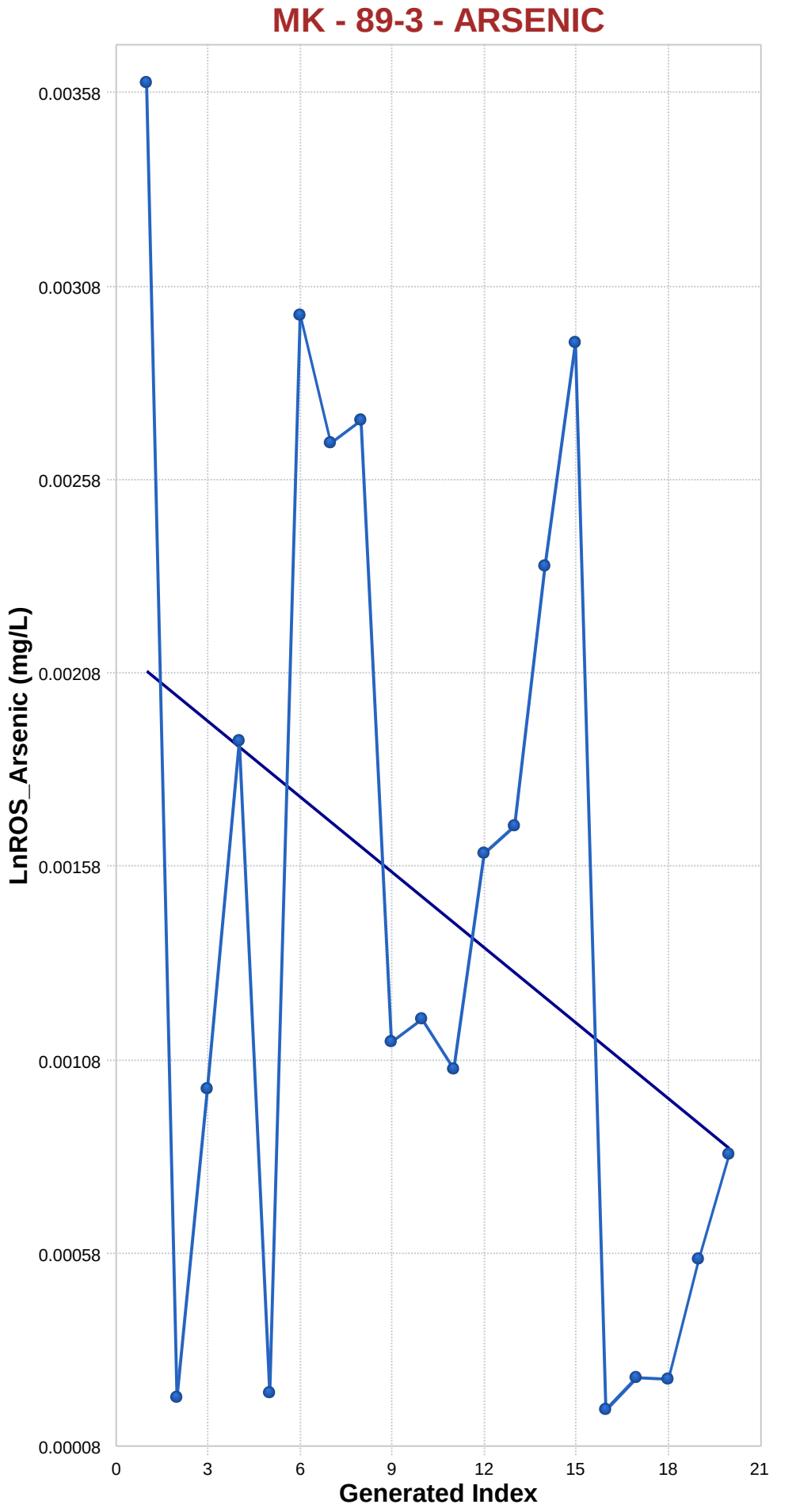
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.1160
Standardized Value of S	-3.7746
M-K Test Value (S)	-126
Tabulated p-value	0.0000
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-0.0226
OLS Regression Intercept	0.3554

Statistically significant evidence of a decreasing trend at the specified level of significance.



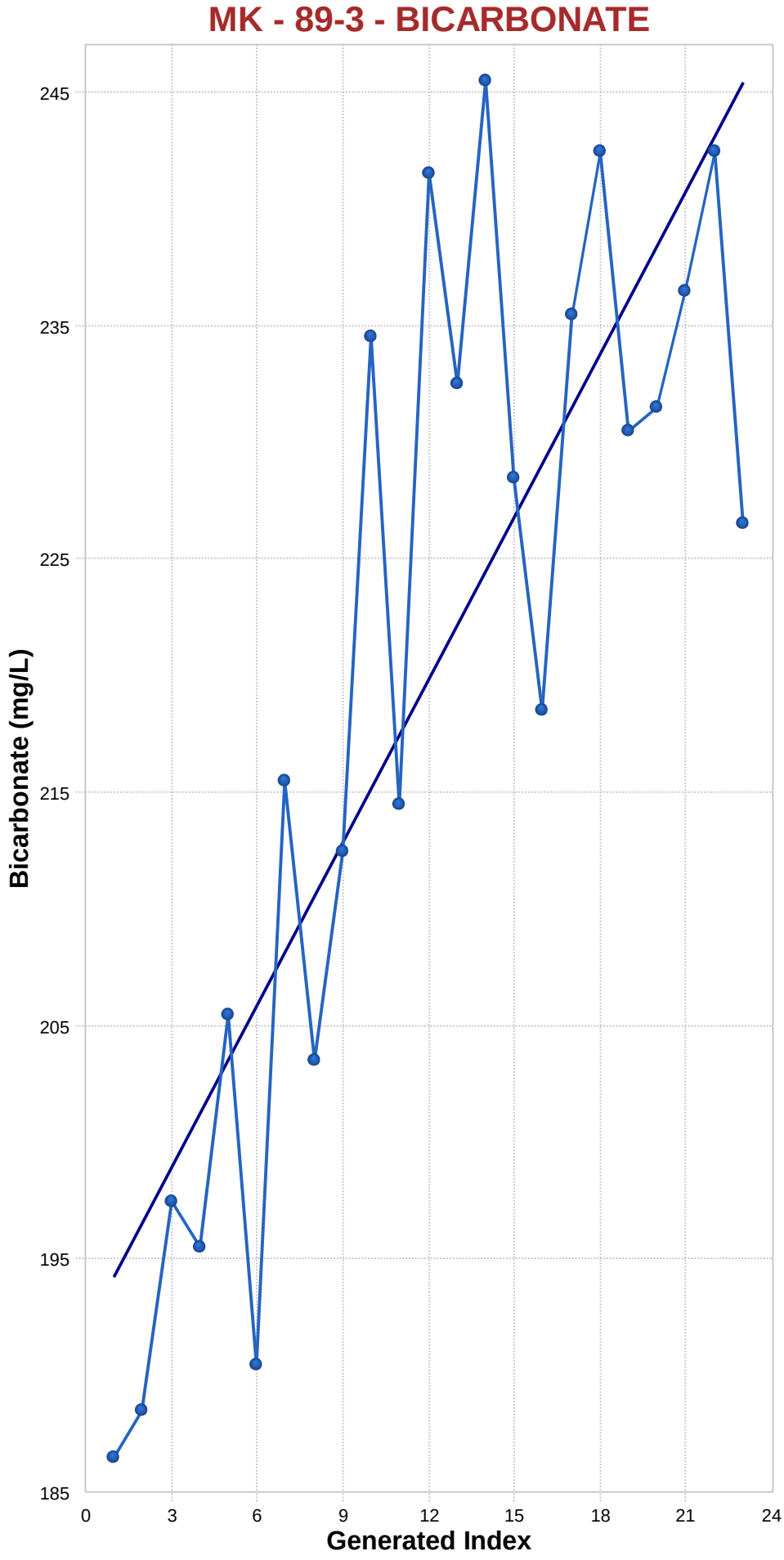
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.8221
Standardized Value of S	-1.0707
M-K Test Value (S)	-34
Tabulated p-value	0.1440
Approximate p-value	0.1422

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0021

Insufficient statistical evidence of a significant trend at the specified level of significance.



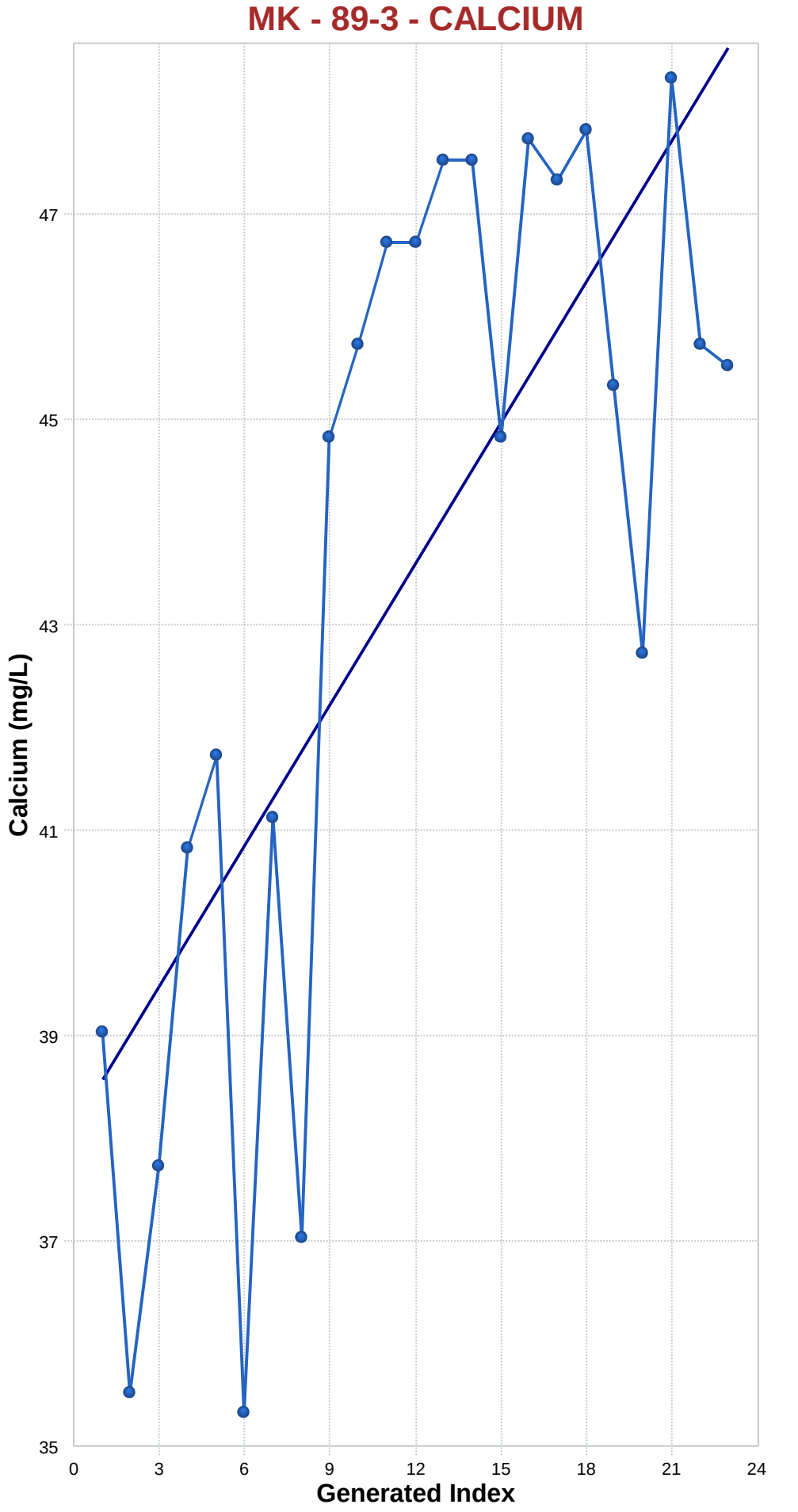
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8506
Standardized Value of S	3.9894
M-K Test Value (S)	152
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	2.3261
OLS Regression Intercept	191.4348

Statistically significant evidence of an increasing trend at the specified level of significance.



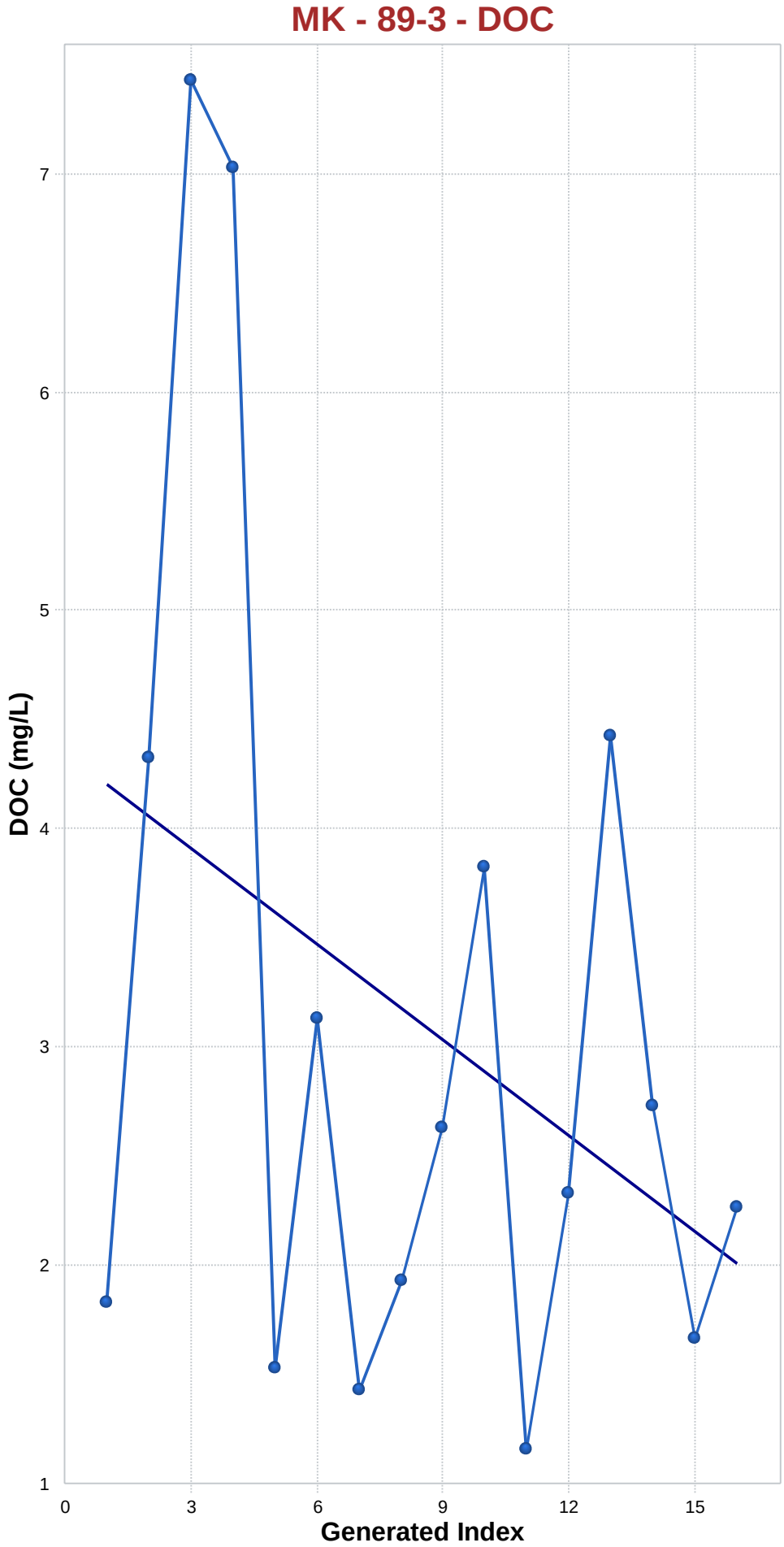
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8109
Standardized Value of S	3.4911
M-K Test Value (S)	133
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	0.4570
OLS Regression Intercept	38.1854

Statistically significant evidence of an increasing trend at the specified level of significance.



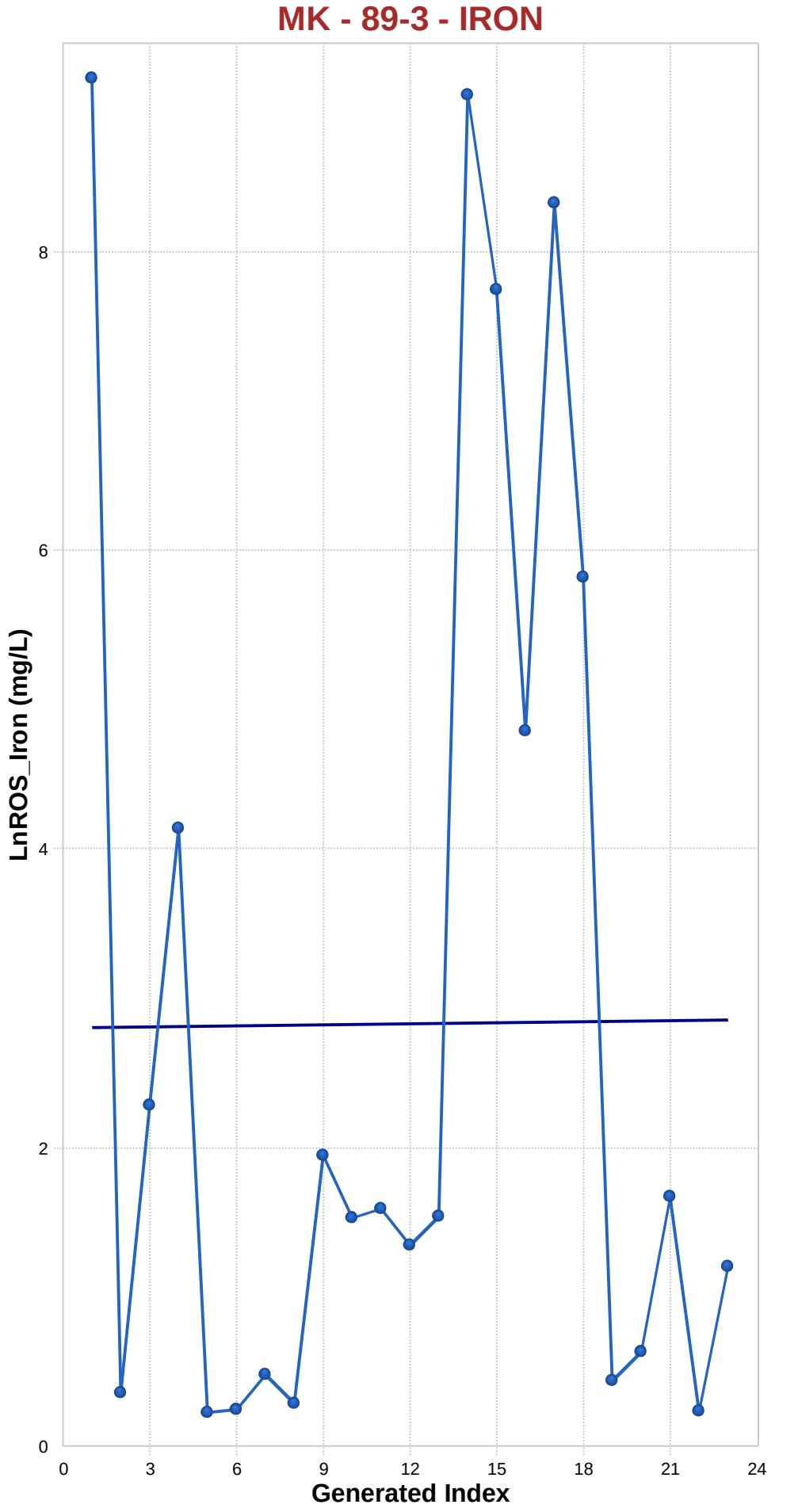
Mann-Kendall Trend Analysis

n	16
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	22.2111
Standardized Value of S	-0.7654
M-K Test Value (S)	-18
Tabulated p-value	0.2250
Approximate p-value	0.2220

OLS Regression Line (Blue)

OLS Regression Slope	-0.1462
OLS Regression Intercept	4.0185

Insufficient statistical evidence of a significant trend at the specified level of significance.



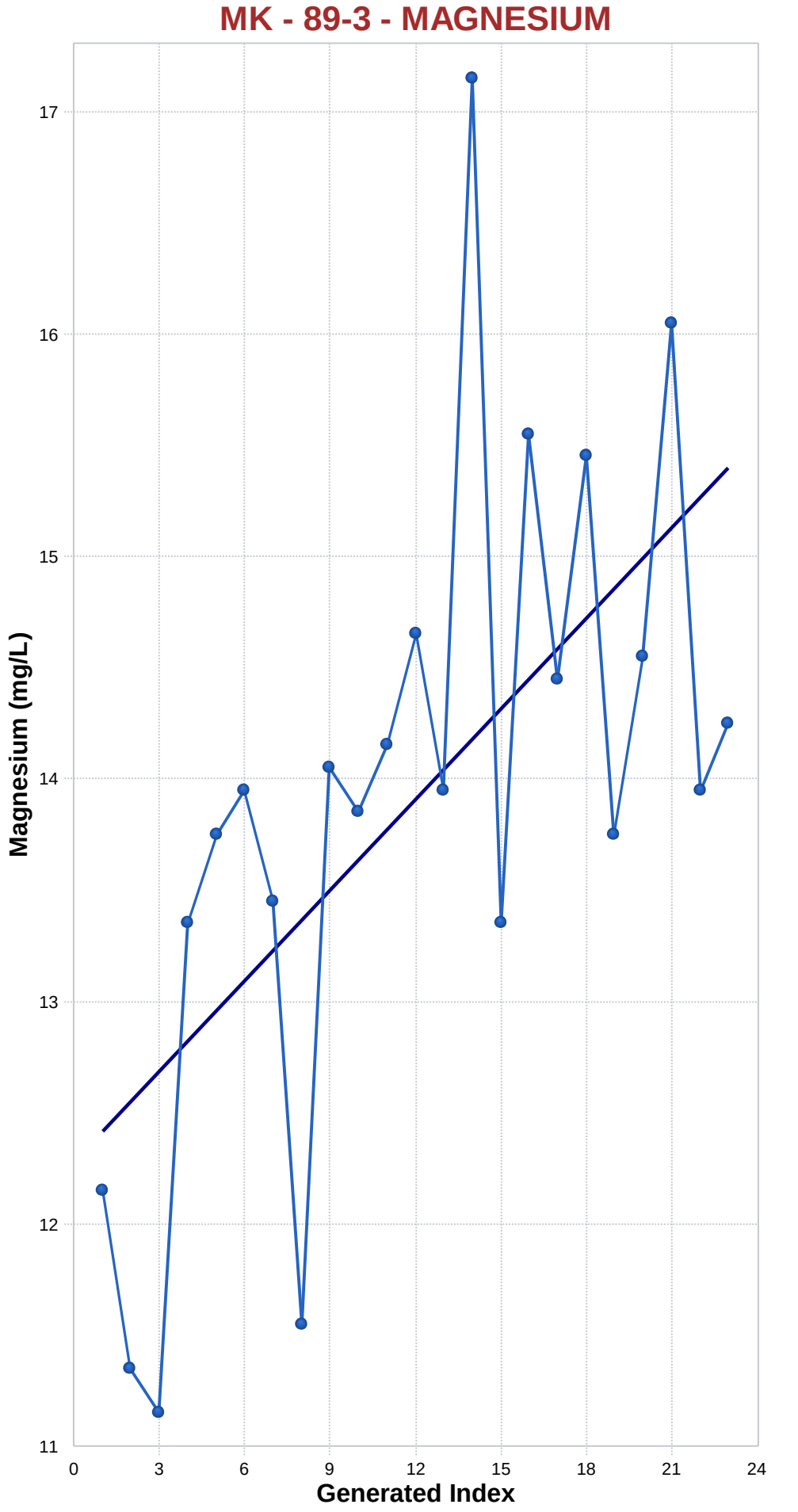
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8638
Standardized Value of S	0.1585
M-K Test Value (S)	7
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4370

OLS Regression Line (Blue)

OLS Regression Slope	0.0021
OLS Regression Intercept	2.5921

Insufficient statistical evidence of a significant trend at the specified level of significance.



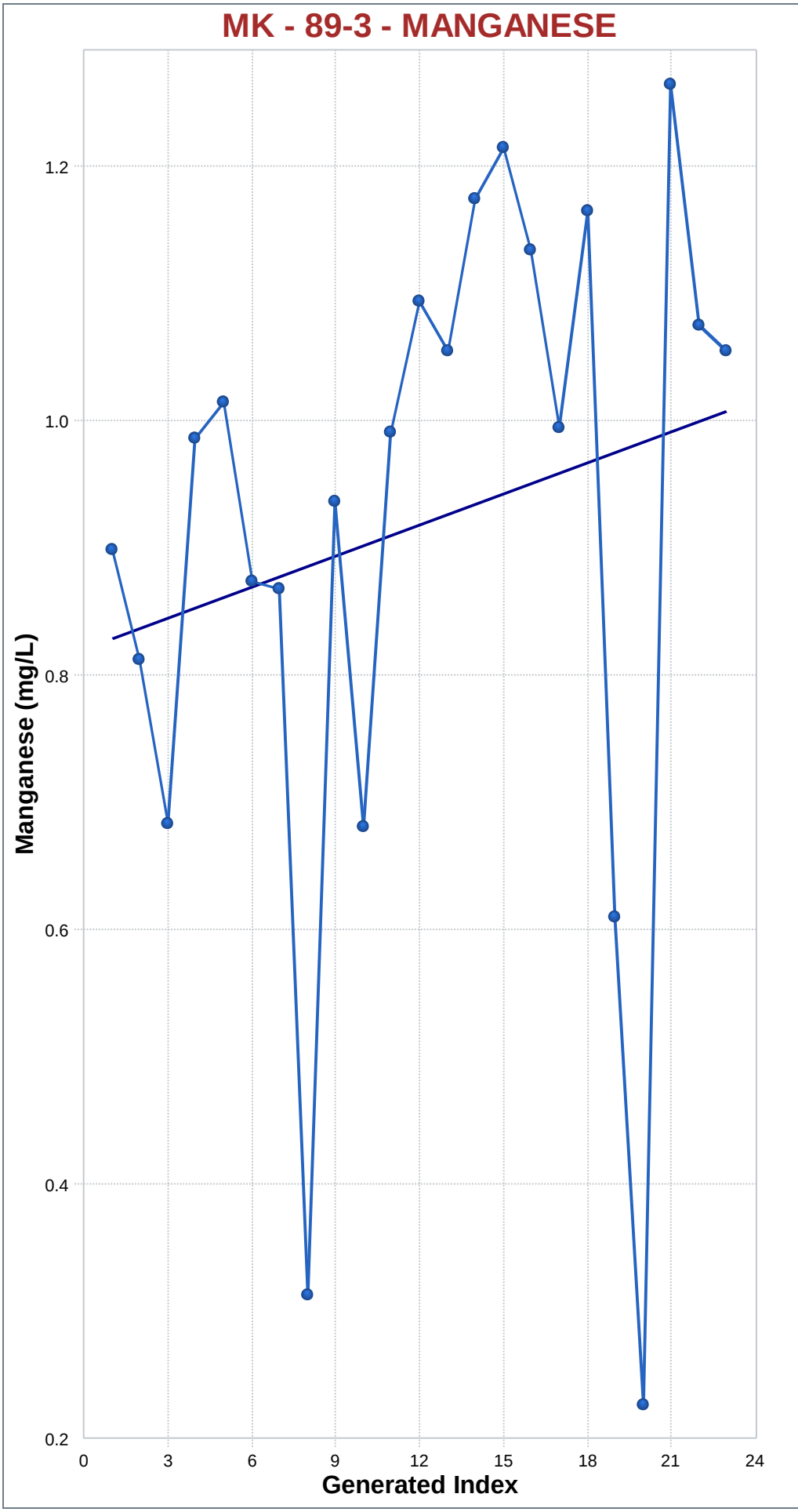
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.7889
Standardized Value of S	3.3079
M-K Test Value (S)	126
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0005

OLS Regression Line (Blue)

OLS Regression Slope	0.1355
OLS Regression Intercept	12.0308

Statistically significant evidence of an increasing trend at the specified level of significance.



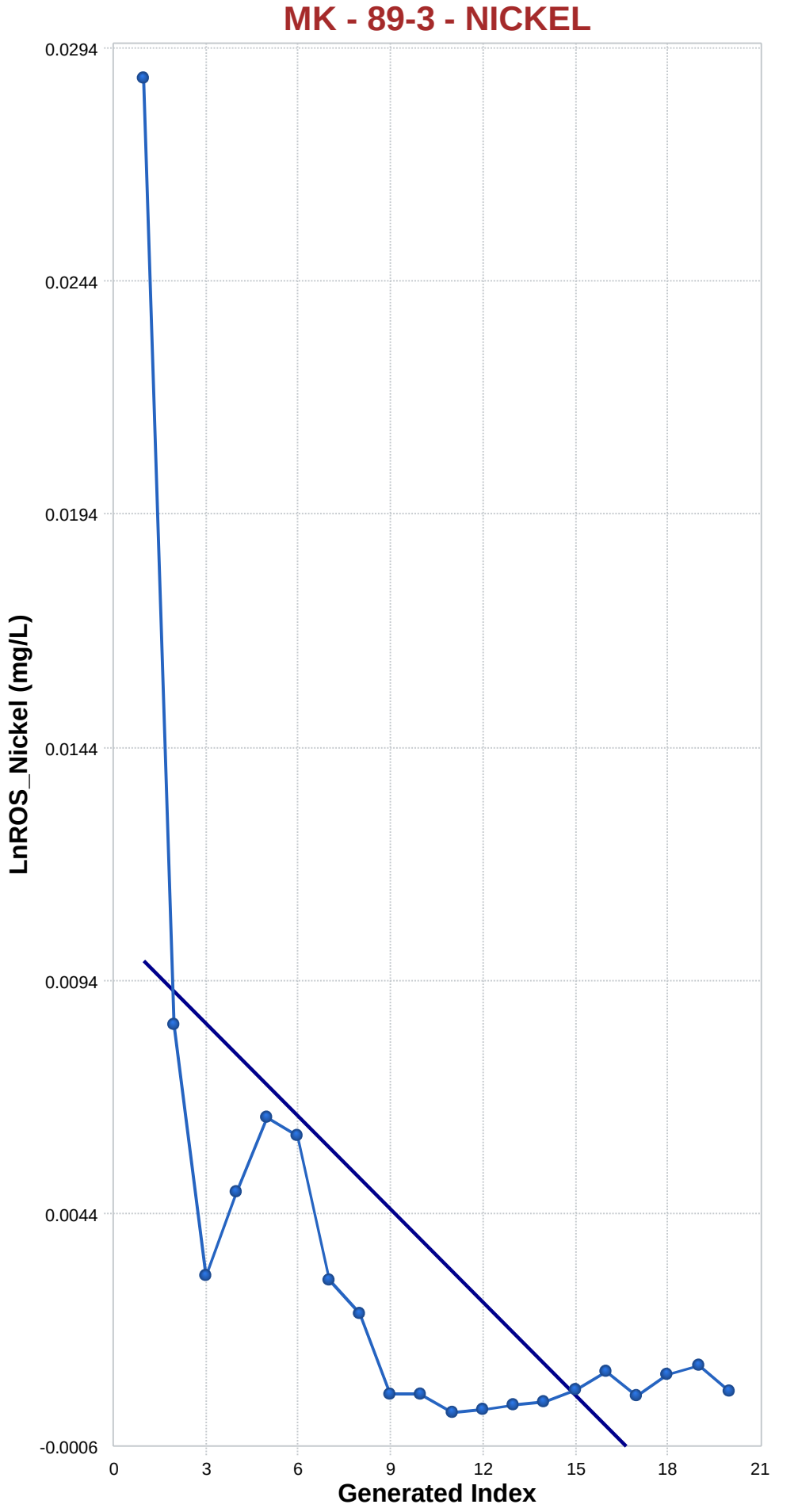
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8506
Standardized Value of S	1.9815
M-K Test Value (S)	76
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0238

OLS Regression Line (Blue)

OLS Regression Slope	0.0081
OLS Regression Intercept	0.8264

Statistically significant evidence of an increasing trend at the specified level of significance.



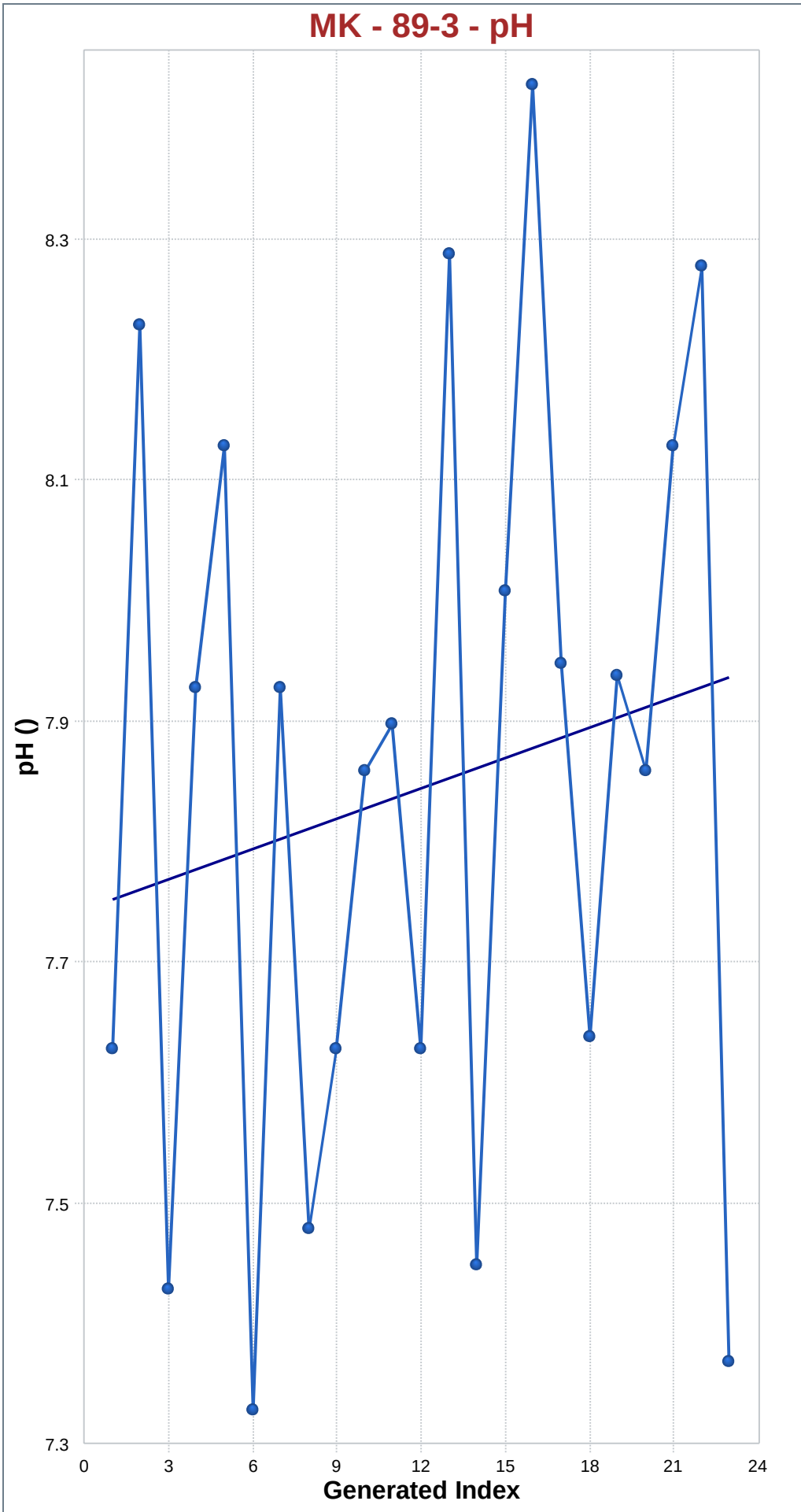
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.8221
Standardized Value of S	-2.6280
M-K Test Value (S)	-82
Tabulated p-value	0.0040
Approximate p-value	0.0043

OLS Regression Line (Blue)

OLS Regression Slope	-0.0007
OLS Regression Intercept	0.0104

Statistically significant evidence of a decreasing trend at the specified level of significance.



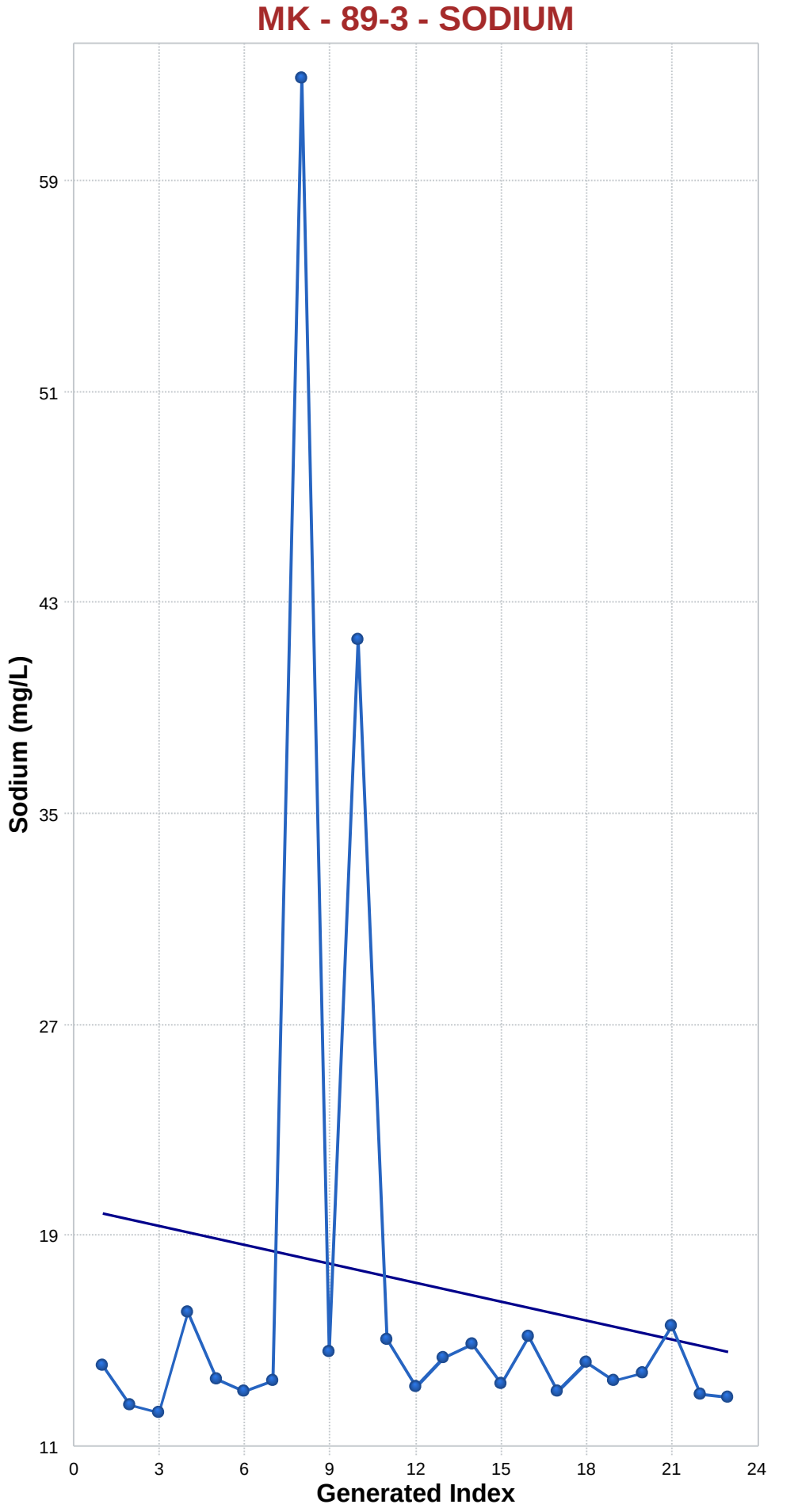
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.7757
Standardized Value of S	0.9530
M-K Test Value (S)	37
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1703

OLS Regression Line (Blue)

OLS Regression Slope	0.0084
OLS Regression Intercept	7.7151

Insufficient statistical evidence of a significant trend at the specified level of significance.



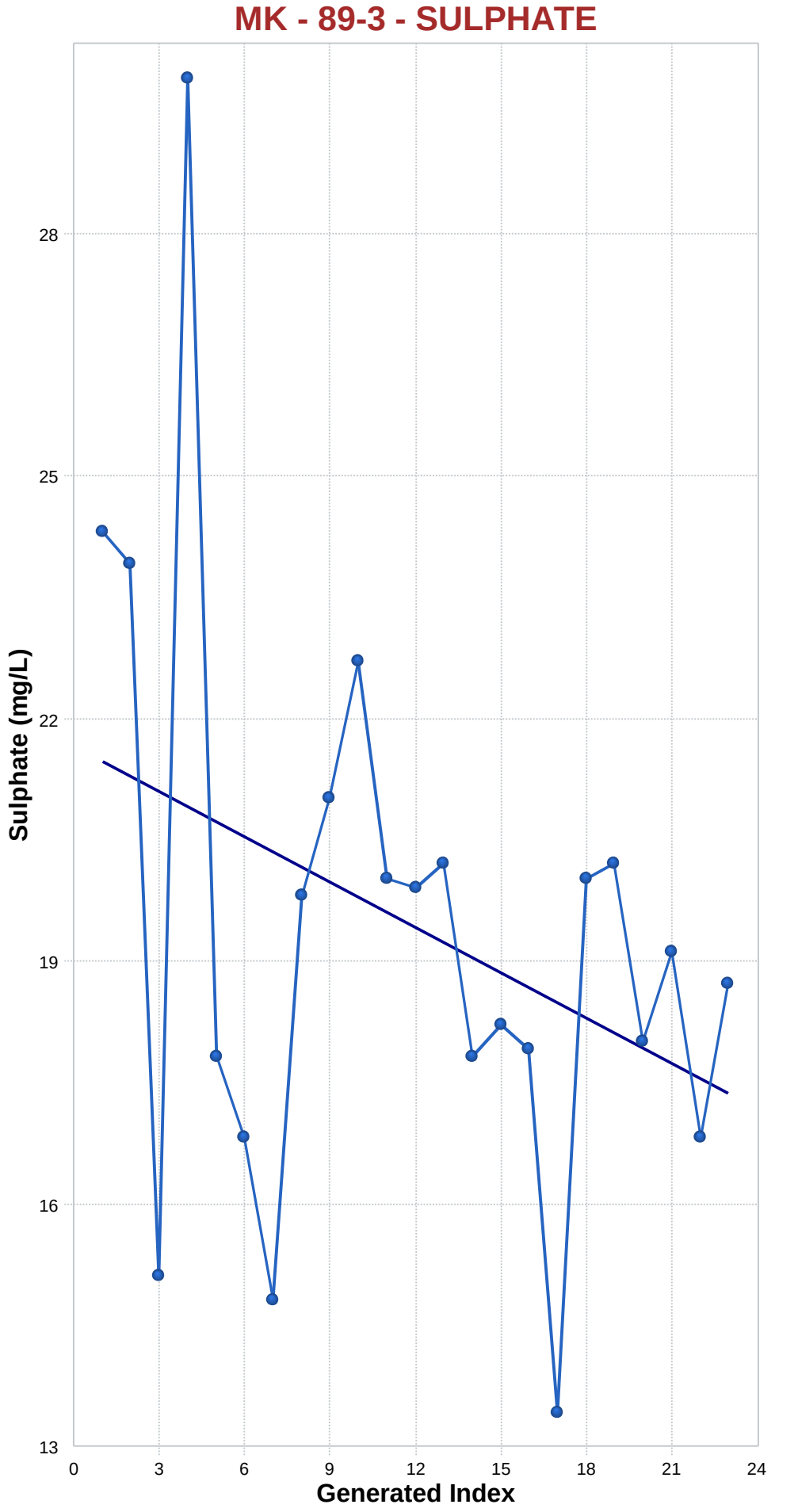
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8374
Standardized Value of S	-0.2643
M-K Test Value (S)	-11
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3958

OLS Regression Line (Blue)

OLS Regression Slope	-0.2396
OLS Regression Intercept	19.6277

Insufficient statistical evidence of a significant trend at the specified level of significance.



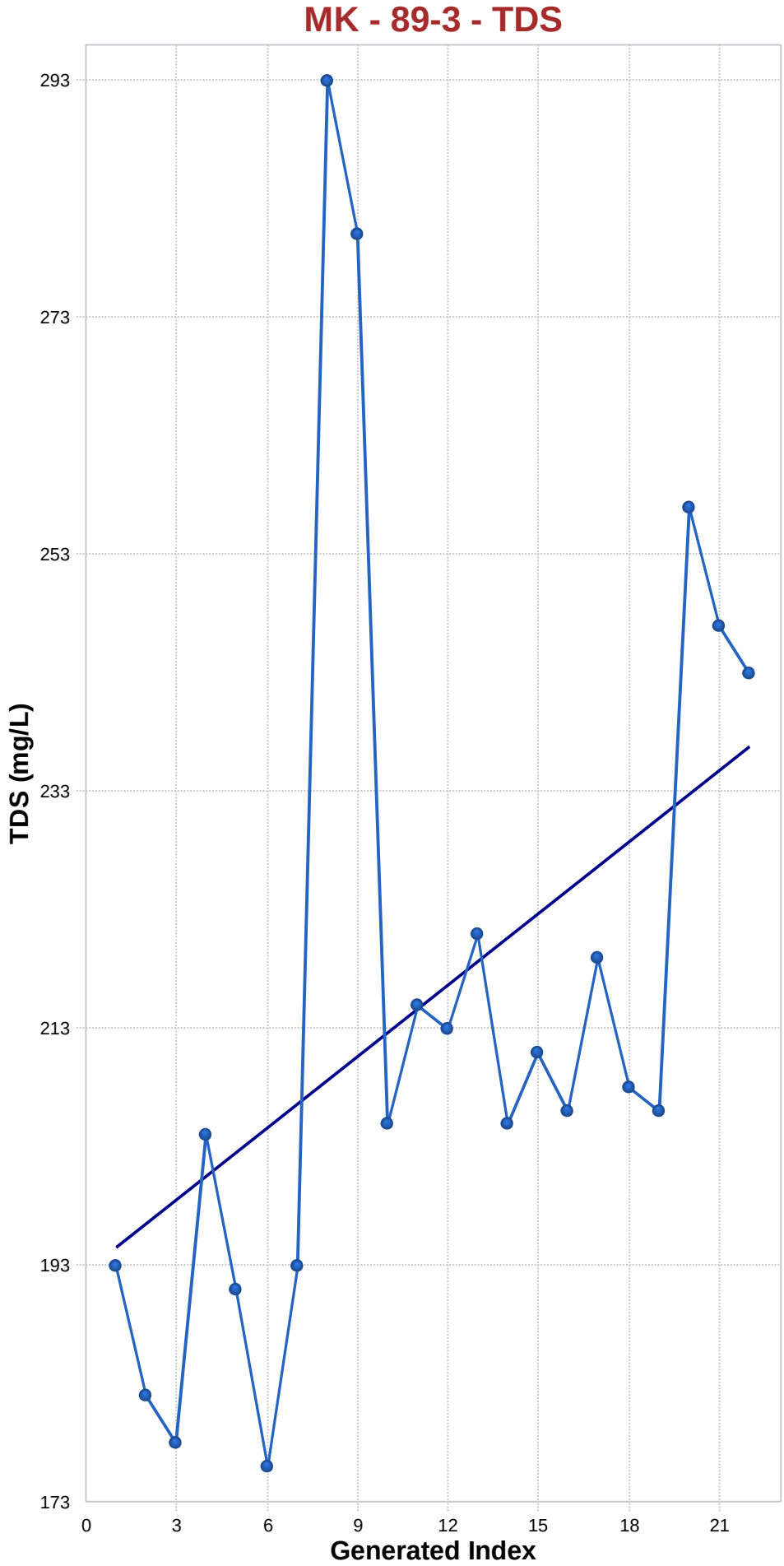
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8109
Standardized Value of S	-1.2166
M-K Test Value (S)	-47
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1119

OLS Regression Line (Blue)

OLS Regression Slope	-0.1862
OLS Regression Intercept	21.8383

Insufficient statistical evidence of a significant trend at the specified level of significance.



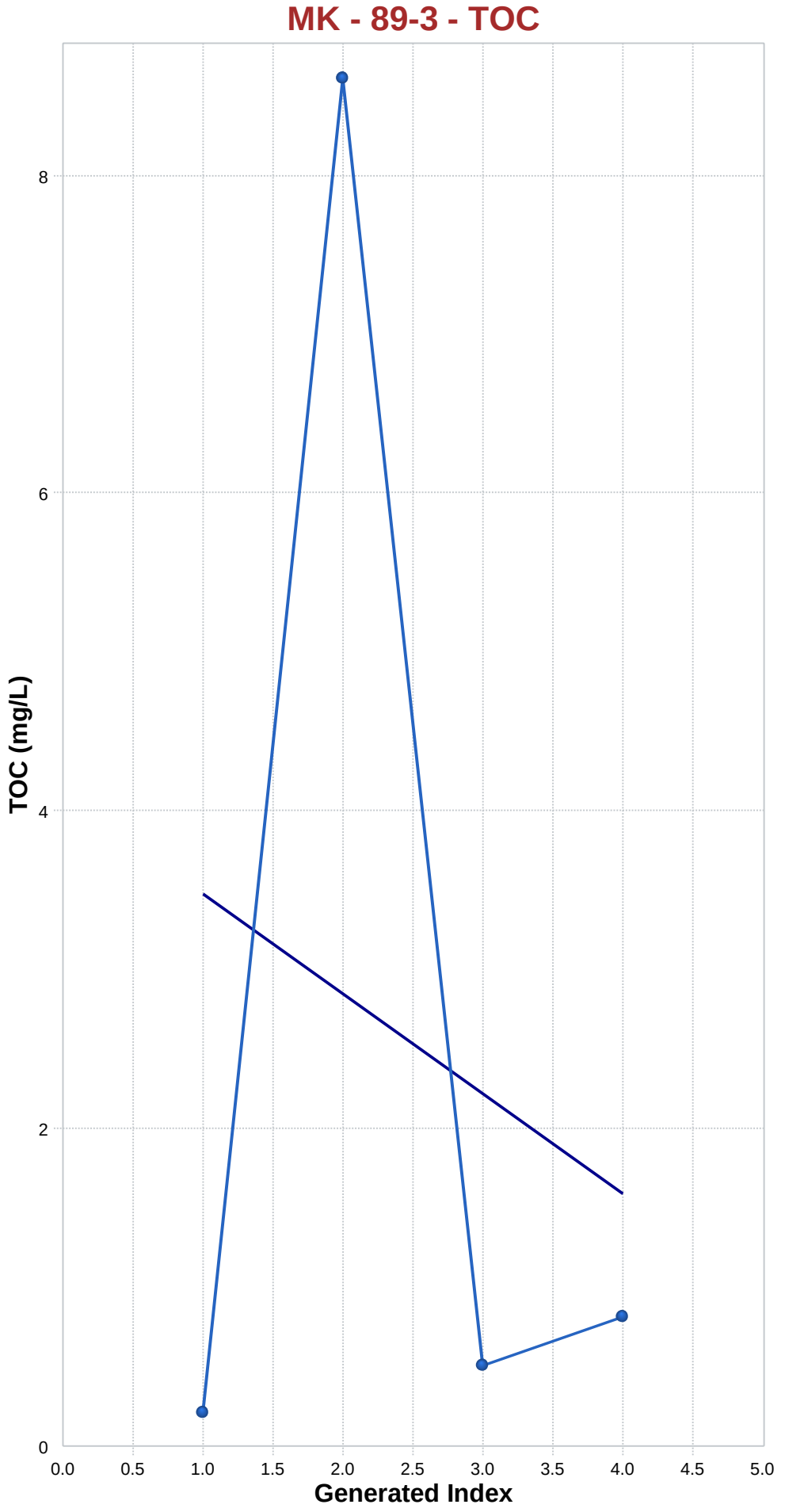
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4213
Standardized Value of S	2.7949
M-K Test Value (S)	100
Tabulated p-value	0.0020
Approximate p-value	0.0026

OLS Regression Line (Blue)

OLS Regression Slope	2.0136
OLS Regression Intercept	192.5714

Statistically significant evidence of an increasing trend at the specified level of significance.



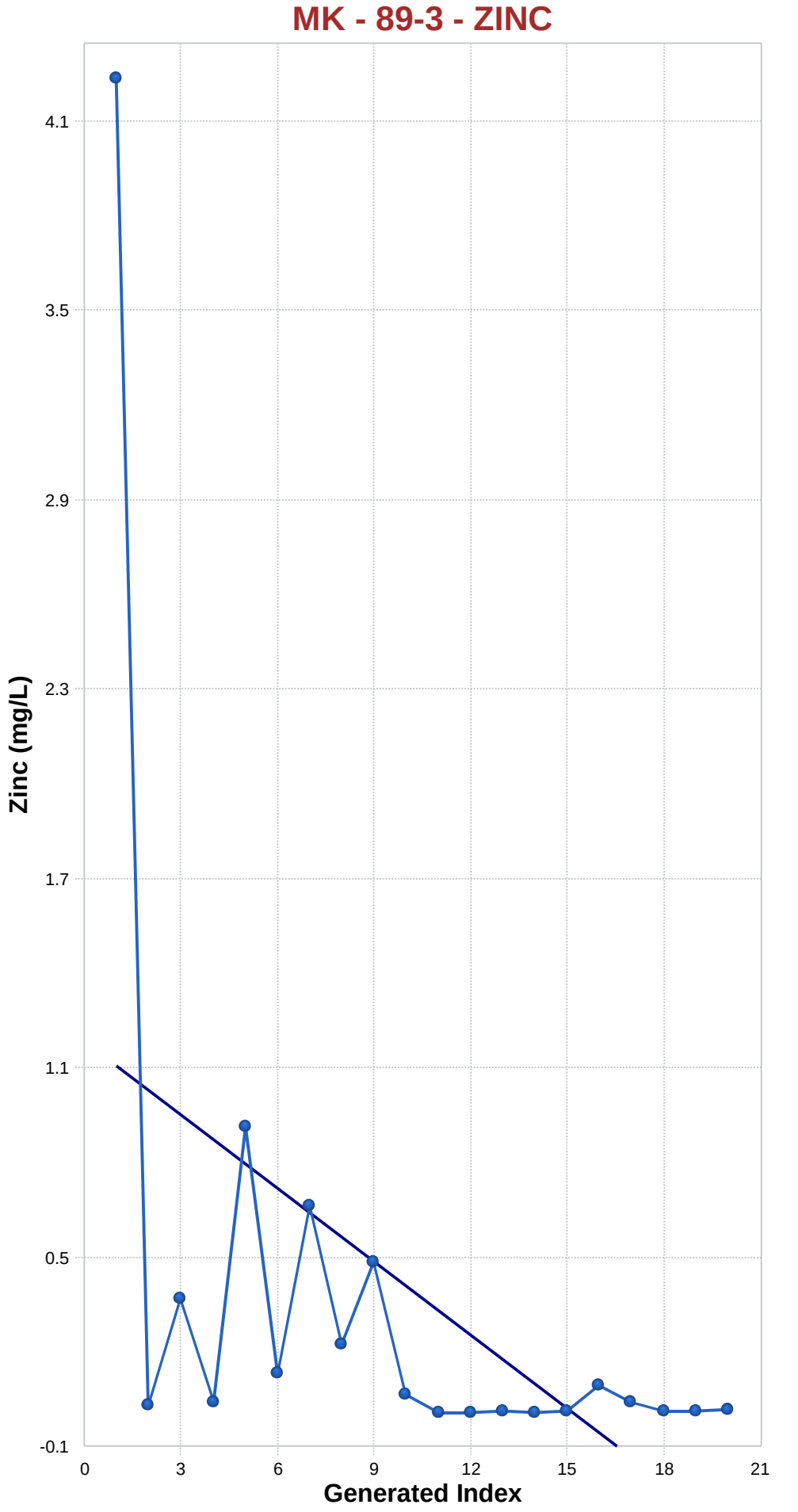
Mann-Kendall Trend Analysis

n	4
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	2.9439
Standardized Value of S	0.3397
M-K Test Value (S)	2
Tabulated p-value	0.3750
Approximate p-value	0.3670

OLS Regression Line (Blue)

OLS Regression Slope	-0.6300
OLS Regression Intercept	4.5000

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.8221
Standardized Value of S	-2.5631
M-K Test Value (S)	-80
Tabulated p-value	0.0050
Approximate p-value	0.0052

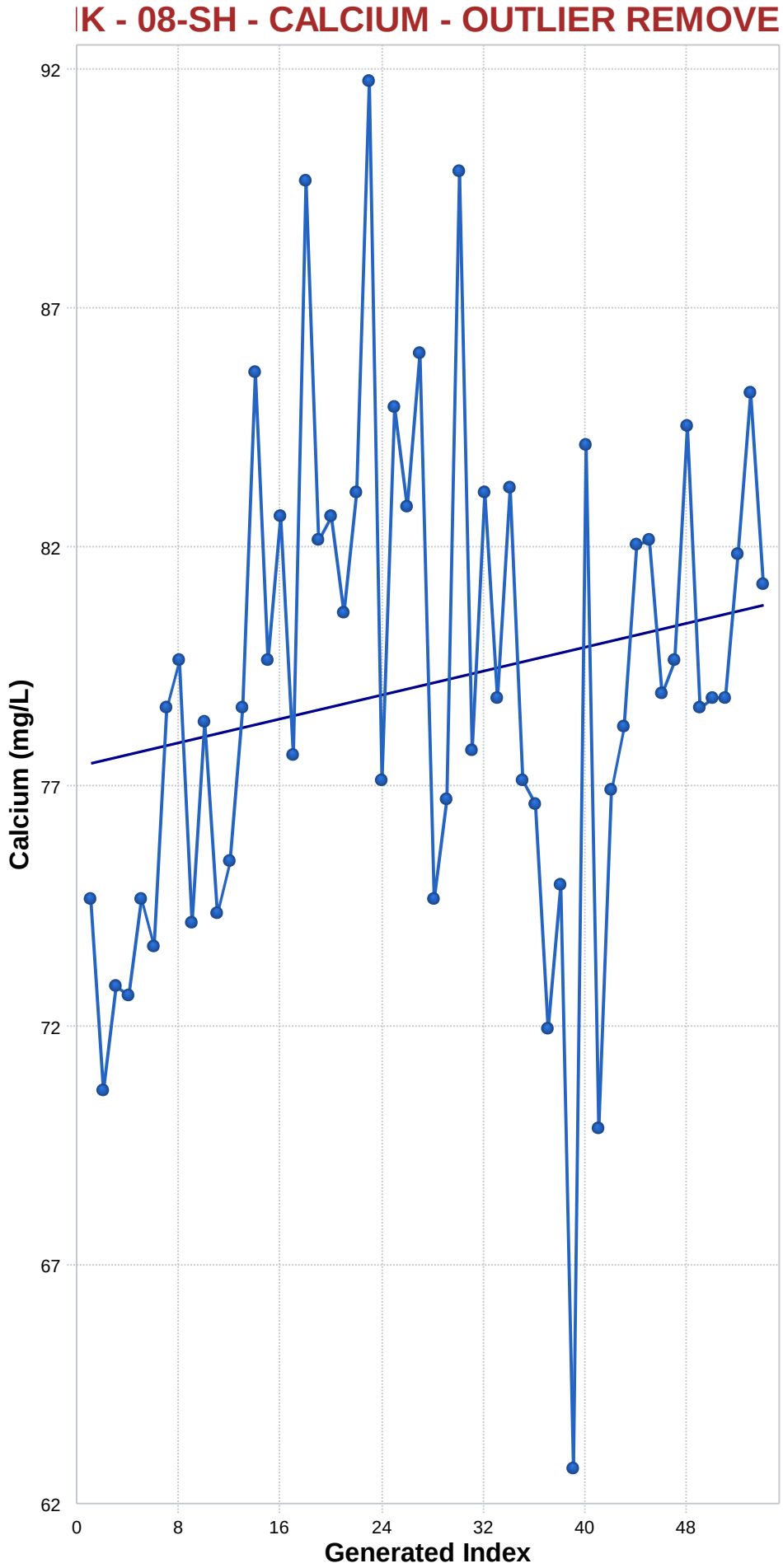
OLS Regression Line (Blue)

OLS Regression Slope	-0.0775
OLS Regression Intercept	1.1769

Statistically significant evidence of a decreasing trend at the specified level of significance.

AECOM

App G7 - Sen's Slope/Mann-Kendall Trend Analysis Output – Outliers Removed - Shallow



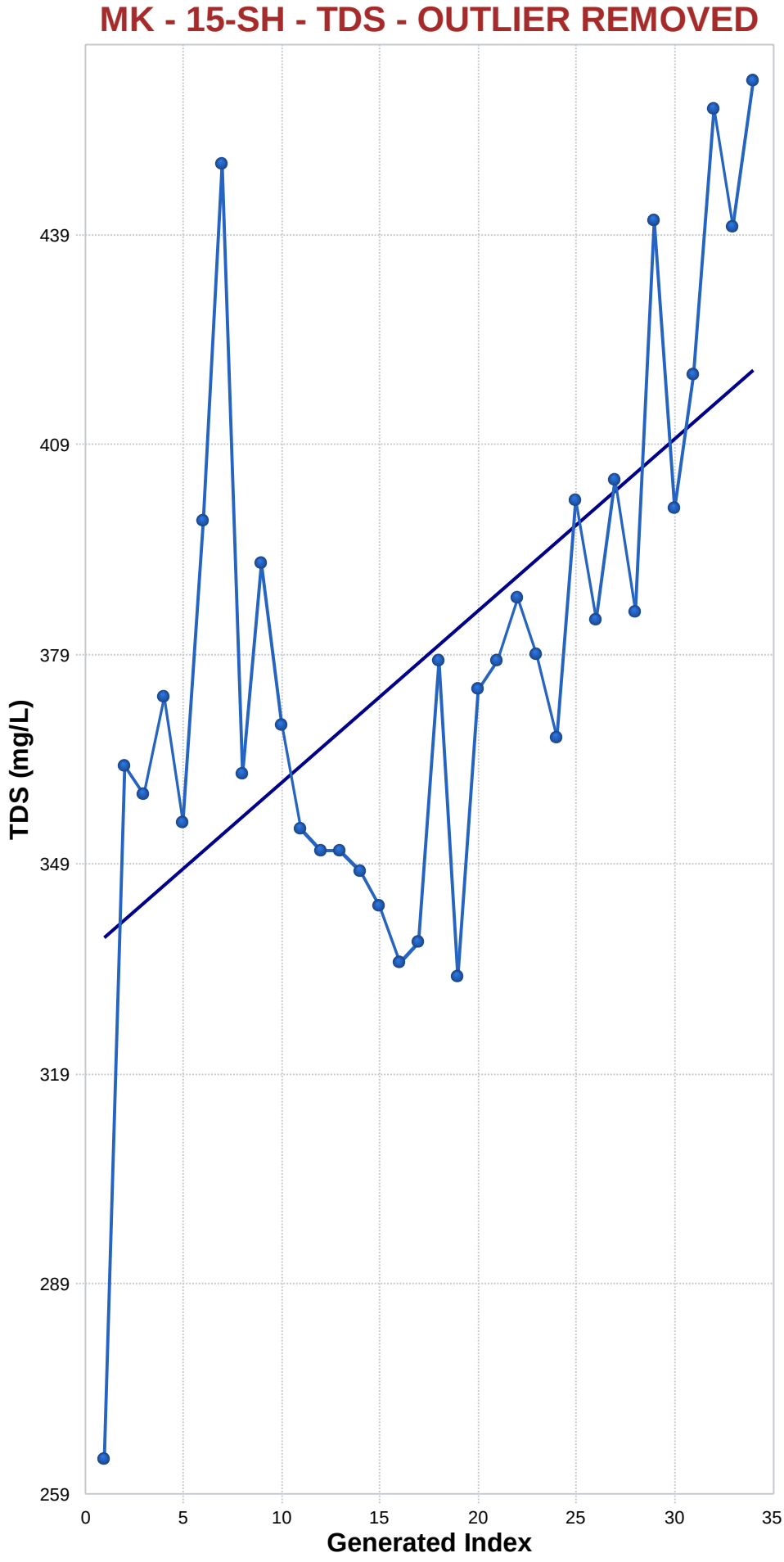
Mann-Kendall Trend Analysis

n	54
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	133.9714
Standardized Value of S	2.1497
M-K Test Value (S)	289
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0158

OLS Regression Line (Blue)

OLS Regression Slope	0.0626
OLS Regression Intercept	77.7749

Statistically significant evidence of an increasing trend at the specified level of significance.



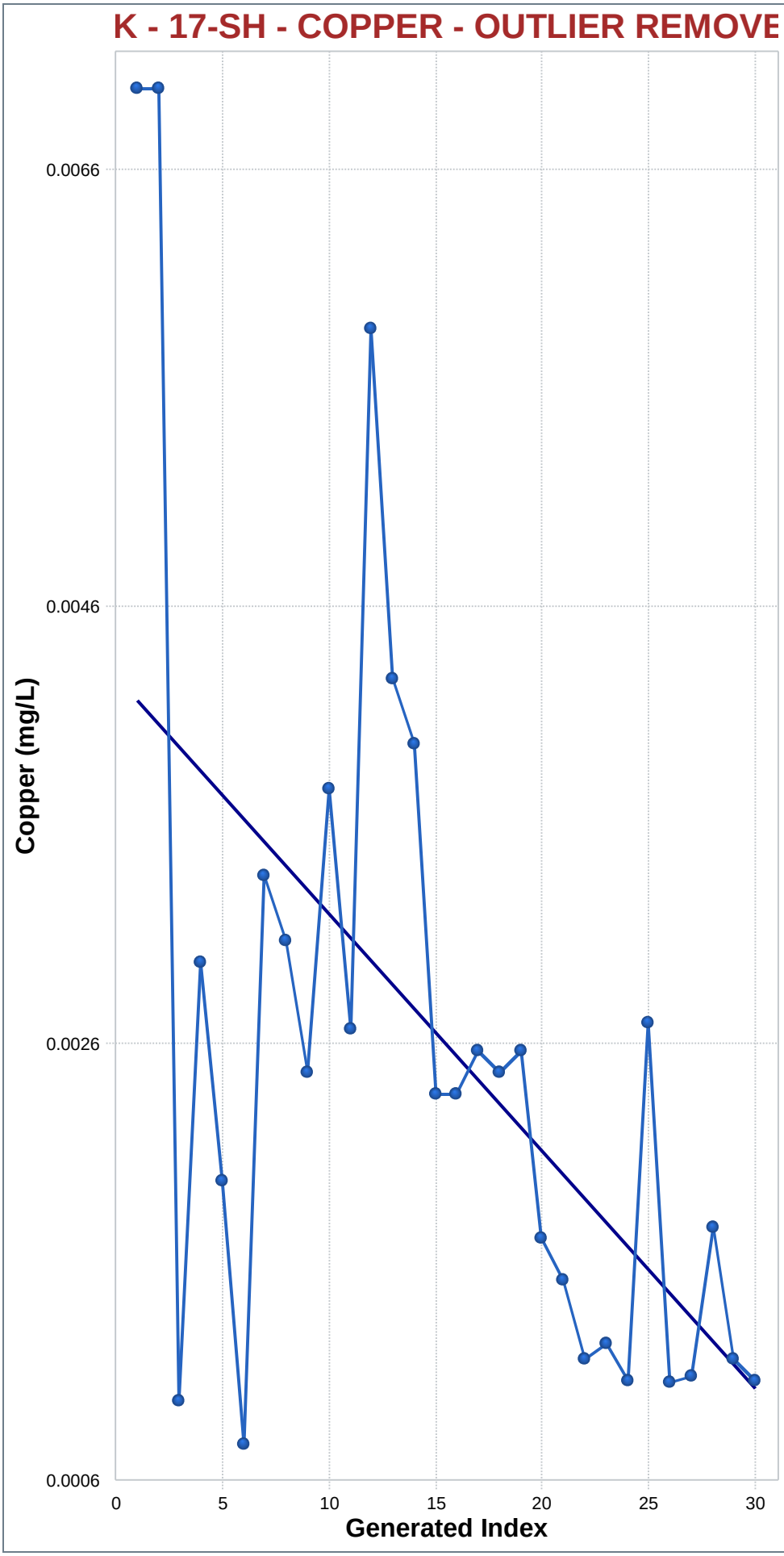
Mann-Kendall Trend Analysis

n	34
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	67.4413
Standardized Value of S	3.4400
M-K Test Value (S)	233
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	2.4574
OLS Regression Intercept	336.1711

Statistically significant evidence of an increasing trend at the specified level of significance.



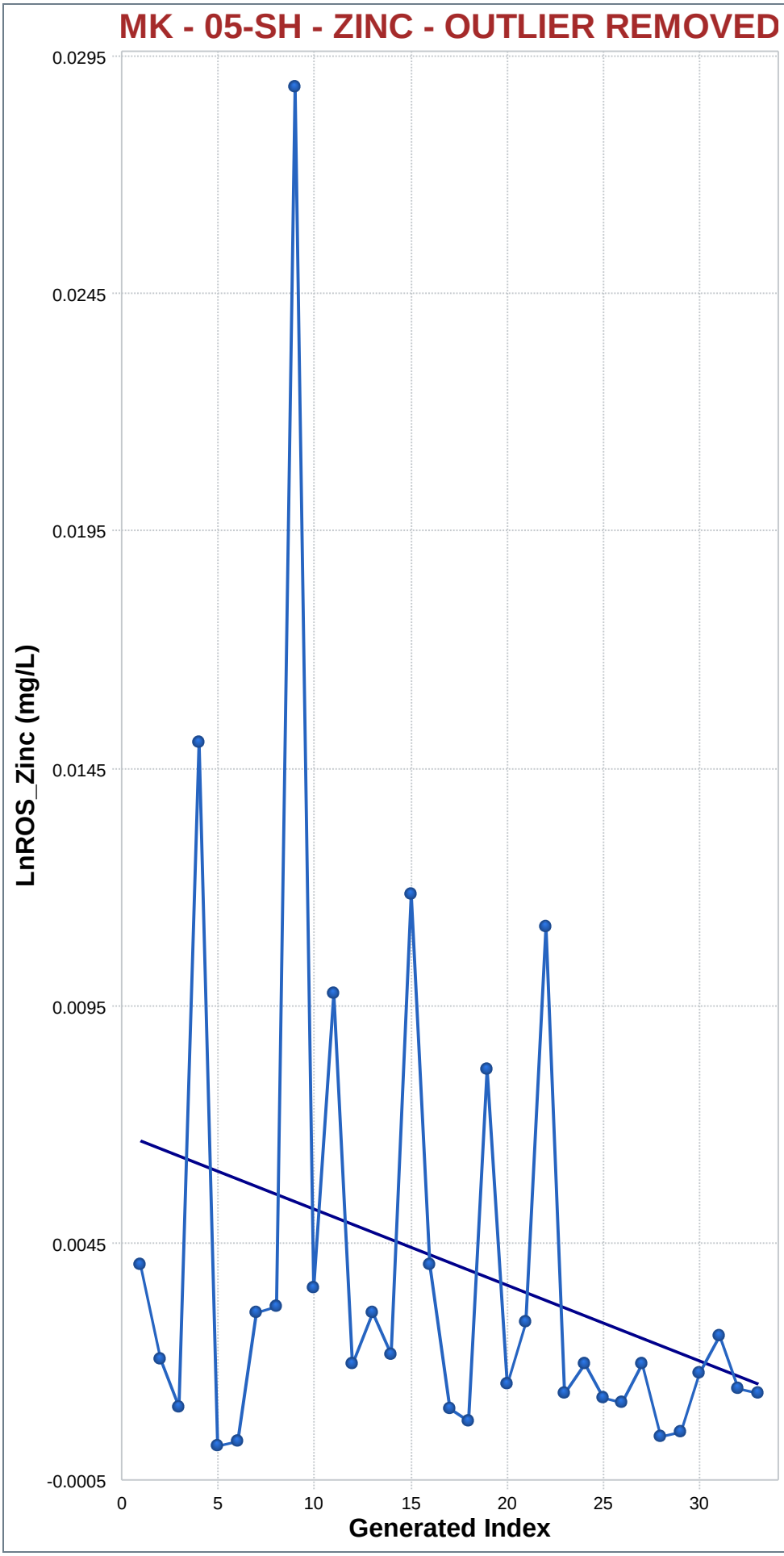
Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9970
Standardized Value of S	-3.2145
M-K Test Value (S)	-181
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0007

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	0.0043

Statistically significant evidence of a decreasing trend at the specified level of significance.



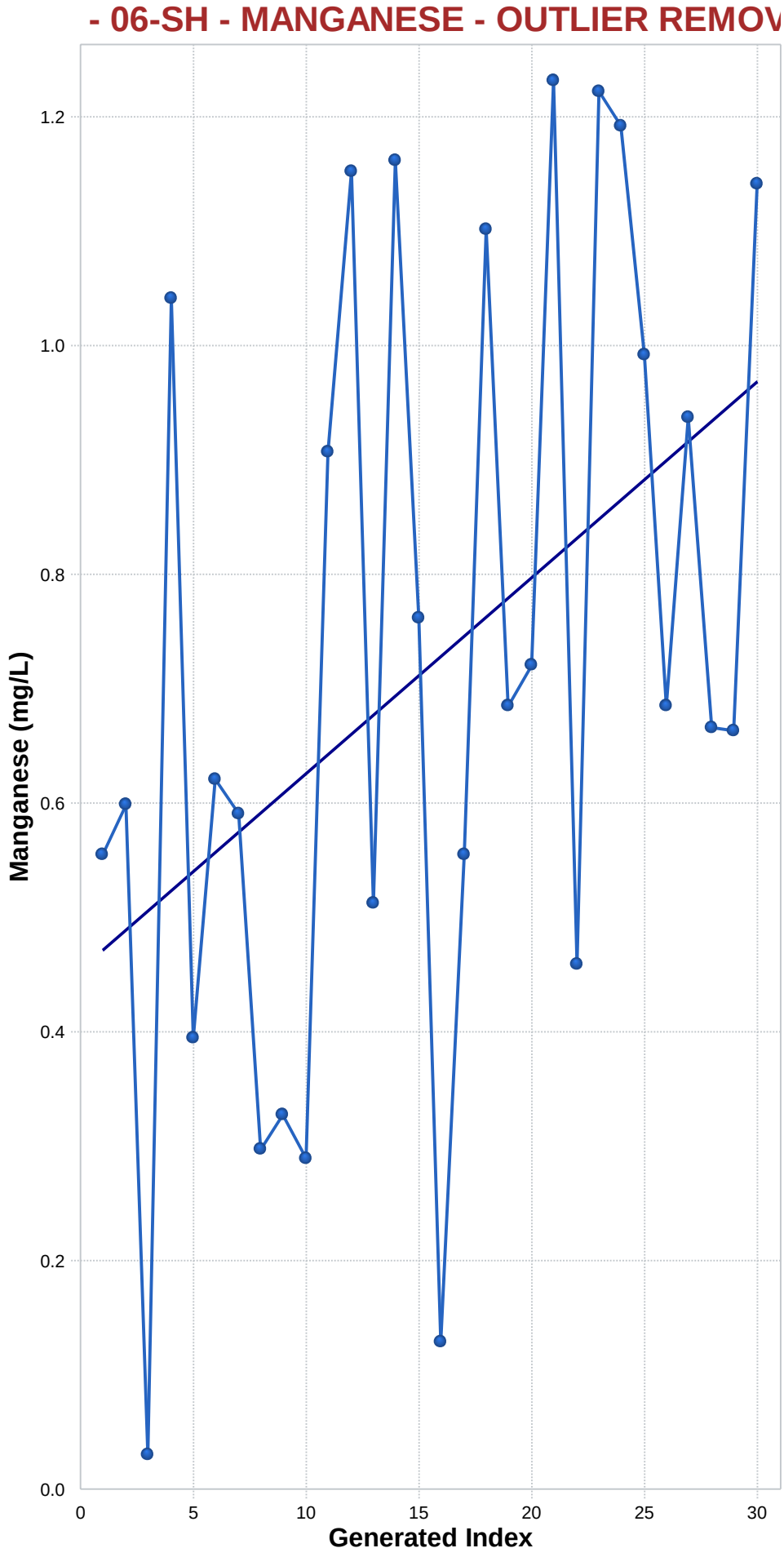
Mann-Kendall Trend Analysis

n	33
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	64.4877
Standardized Value of S	-1.7833
M-K Test Value (S)	-116
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0373

OLS Regression Line (Blue)

OLS Regression Slope	-0.0002
OLS Regression Intercept	0.0068

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0417
Standardized Value of S	2.1591
M-K Test Value (S)	122
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0154

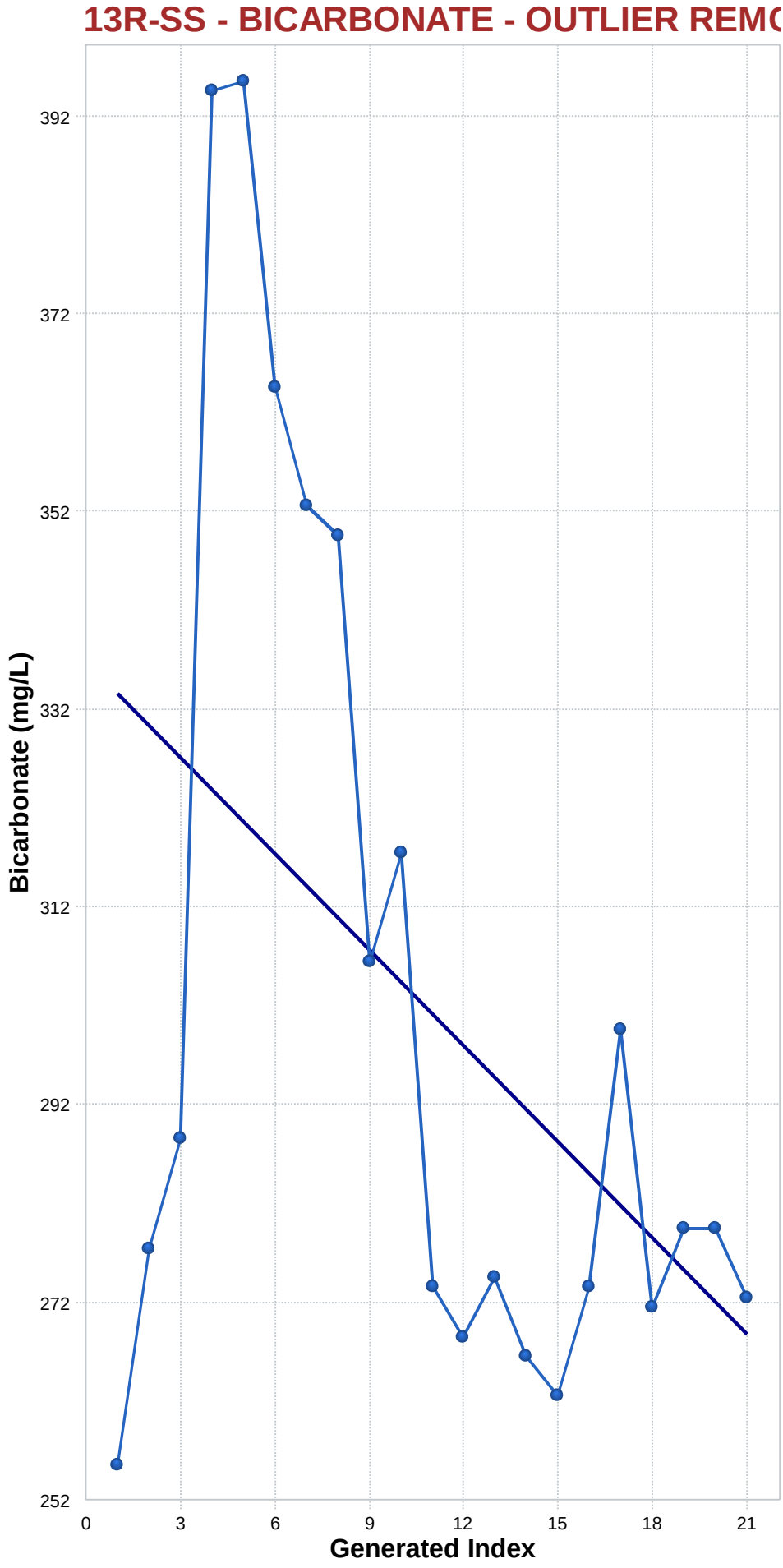
OLS Regression Line (Blue)

OLS Regression Slope	0.0171
OLS Regression Intercept	0.4834

Statistically significant evidence of an increasing trend at the specified level of significance.

AECOM

App G8 - Sen's Slope/Mann-Kendall Trend Analysis Output – Outliers Removed - Sandstone



Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.0857
Standardized Value of S	-1.8437
M-K Test Value (S)	-62
Tabulated p-value	0.0320
Approximate p-value	0.0326

OLS Regression Line (Blue)

OLS Regression Slope	-3.2430
OLS Regression Intercept	337.2871

Statistically significant evidence of a decreasing trend at the specified level of significance.

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