Tioga
ENVIRONMENTAL
CONSULTANTS

December 5, 2023

Mr. Leland Hares
Tennessee Department of Environment and Conservation
Division of Solid Waste
8383 Wolf Lake Drive
Bartlett, TN 38133

Civil and Environmental Consultants, Inc.
117 Seaboard Lane, Suite E-100
Franklin, TN 37067

RE: Eplex Construction Landfill
2nd Semi-Annual Groundwater Detection Monitoring Report 2023
November 2023 Sampling Event

Dear Mr. Hares,

Tioga Environmental Consultants is pleased to submit the attached Semi-Annual Groundwater Monitoring Report for the November 10, 2023 sampling event for the Eplex Construction Landfill located in Collierville, Tennessee.

Cobalt was identified in monitoring well MW-1 (the established background well) at a concentration above the EPA tapwater screening level. Based on data from Hazardous Trace Elements in Tennessee Soils and Other Regolith (TDEC Division of Geology, 2001), cobalt has been identified in Shelby County soils at a range of 1.3 to 12 mg/kg. The cobalt concentration identified in monitoring well MW-1 is likely due, at least in some part, to contributions from naturally occurring cobalt concentrations. This is supported by the lack of statistical variance in historical cobalt concentrations. This is further supported by current and historical detections of cobalt in monitoring well MW-1, the historically established background well. No other constituents were identified at concentrations above their respective screening levels.

Statistical analysis of the data from groundwater sampling events at the landfill did not identify a variance for any constituent. Based on the data from the current sampling event, migration of leachate from the landfill is not likely occurring and it is the recommendation of Tioga that the landfill remains in detection monitoring.

The next semi-annual sampling event is scheduled for May 2024 in accordance with the groundwater detection monitoring plan for the site. If you have any questions or we may be of further assistance, please contact us at (901) 791-2432.

Sincerely,
TIOGA ENVIRONMENTAL CONSULTANTS, INC.

Karim Bouzeid

Karim Bouzeid, PG
Geologist

CC: 561416.02

2nd Semi-Annual Groundwater Detection Monitoring Report 2023

EPLEX CONSTRUCTION LANDFILL

November 2023 Event

Project No. 561416.02

Prepared For:

Tennessee Department of Environment and Conservation
Division of Solid Waste
8383 Wolf Lake Drive
Bartlett, TN 38133

Civil and Environmental Consultants, Inc.
117 Seaboard Lane, Suite E-100
Franklin, TN 37067

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1.0 EXECUTIVE SUMMARY

One constituent, cobalt, was identified in monitoring well MW-1, the established upgradient monitoring well, at a concentration above the EPA Region 9 tapwater screening level. However, cobalt has been documented to be at naturally occurring concentrations in Shelby County, Tennessee. The cobalt concentration identified in monitoring well MW-1 is likely due, at least in some part, to contributions from naturally occurring cobalt concentrations. Due to the existence of naturally occurring cobalt, the lack of drinking water wells in the vicinity of the landfill, and the lack of evidence of leachate migration from the landfill, the identified cobalt concentration does not pose a risk to local drinking water sources.

All other constituents were below their respective screening levels. No statistically significant increases over background concentrations were identified. Based on the information collected, migration of leachate from the landfill is not currently occurring.

2.0 BACKGROUND

The Eplex Construction Landfill, located at 10636 Shelton Road in Collierville, TN, was awarded permit #DML790000050 on June 9, 1997. In 2023, the Tennessee Department of Environment and Conservation assumed responsibility for groundwater monitoring of the landfill.

Seven monitoring wells were installed at the Eplex Construction Landfill as part of the monitoring program. Based on current potentiometric data, MW-1 and MW-4 are upgradient and MW-5 and MW-6 are downgradient, indicating a general northwesterly groundwater flow direction towards the Wolf River. Monitoring well MW-1 was previously established as the upgradient well for statistical analysis. Monitoring well MW-7 has been gauged as dry since at least 2021. Original correspondence with TDEC and landfill staff indicated that the well was dry due to construction of a nearby lake. However, it is possible that the casing of the well has collapsed and is inoperable. A vicinity map and site map are included as Figure 1 and Figure 2, respectively, in Appendix 1.

3.0 SAMPLING METHODS

Sample collection was performed by Karim Bouzeid, PG and Thornton Brooksbank, GIT of Tioga Environmental Consultants in Memphis, TN on November 10, 2023. Groundwater samples were collected using low-flow sampling methods. Each monitoring well was opened, and the potentiometric surface elevation was measured. In addition, the total depth of each monitoring well was measured. The pump was lowered to approximately the halfway point of the screened interval of the well and the well was purged. During purging, each monitoring well was monitored for pH, conductivity, temperature, dissolved oxygen, and turbidity. Following parameter stabilization, groundwater samples were collected.

Groundwater samples were delivered to Waypoint Analytical in Memphis, TN for analysis. Sample collection sheets are offered with the laboratory analytical reports in Appendix 3.

4.0 POTENTIOMETRIC DATA

Current potentiometric surface elevation data is offered as Table 1. Monitoring well MW-1 serves as the established background well and is highlighted blue.

Table 1
Potentiometric Elevations
(Elevations in feet above mean sea level)

Well ID	Top of Casing Elevation	Well Depth Below Casing Elevation	Dec 2018*	July 2019*	Jan 2020*	July 2020*	May 2021*	Dec 14, 2021	June 7, 2022	Nov 16, 2022	May 26, 2023	Nov 10, 2023
MW-1	311.50	57.44	263	264	264	265	265	262.19	263.58	262.17	263.57	262.07
MW-2	297.33	72.80	260	262	261	261	262	260.21	261.31	259.82	261.20	259.67
MW-3	294.41	52.94	263	264	264	263	264	260.33	261.47	259.85	261.35	259.80
MW-4	290.16	41.35	263	264	263	263	264	261.21	263.40	260.85	262.27	260.73
MW-5	293.00	53.01	264	264	264	264	266	259.14	260.47	258.90	260.35	258.79
MW-6	312.76	82.30	261	262	262	262	263	259.99	260.41	259.89	261.28	259.80
MW-7	Well gauged dry at 28.78 feet below casing elevation											

Top of Casing Elevations were taken from the Harris & Associates Land Surveyors, LLC ground surface survey dated July 25, 2019 and riser elevations were measured on December 14, 2021 by Tioga. Values reported for July 2018 through May 2021 noted with * were reported by another consultant and cannot be verified for accuracy.

An estimate of the velocity of horizontal movement of groundwater in the aquifer in which the monitoring wells at the Eplex Construction Landfill are installed was calculated using the Darcy equation. The average hydraulic conductivity of 2.5x10-2 cm/s and the effective porosity of 20% were taken from a table of Representative Values of Hydraulic Conductivity and Permeability found in Domenico and Schwartz, Physical and Chemical Hydrogeology (1990), using medium grained sand as the likely aquifer matrix for the Eplex Construction Landfill.

The hydraulic gradient of 0.001 was calculated from data collected during the November 10, 2023 sampling event.

Darcy equation: $V=(K/n)(dH/dL)$

Where: V= average linear velocity of groundwater
K= hydraulic conductivity
n= effective porosity
(dH/dL)= horizontal component of hydraulic gradient
3.28 feet/2,995 feet (Monitoring Wells 1 & 5)

The average linear velocity of groundwater for the uppermost subject aquifer is calculated to be approximately 141 feet per year. This value is based on an assumed hydraulic conductivity and effective porosity.

Based on potentiometric elevation data collected during the groundwater sampling event on November 10, 2023, groundwater flow direction at the Eplex Construction Landfill is primarily to the northwest toward the Wolf River. A potentiometric surface map is offered as Figure 3 in Appendix 1.

5.0 ANALYTICAL RESULTS

Constituents with detectable concentrations in at least one monitoring well from the November 10, 2023 groundwater sampling event are offered in Table 2. Groundwater samples collected from landfill compliance monitoring wells were analyzed by Waypoint Analytical of Memphis, TN in accordance with EPA Methods, 4500NH3D-2011 (Ammonia Nitrogen), 9056A (fluoride/sulfate), and SW-6020B/7470A (metals). Conductivity and pH were measured in the field.

Table 2
Compliance Monitoring Well Groundwater Analytical Detection Summary
November 10, 2023
(in mg/L)

Constituent	MCL	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	Duplicate (MW-6)
Ammonia	--	**0.284**	BDL	BDL	BDL	BDL	BDL	BDL
Arsenic, As	0.01	**0.0049**	**0.0033**	BDL	**0.0056**	**0.0031**	**0.0016**	**0.0016**
Barium, Ba	2	**0.077**	**0.061**	**0.024**	**0.145**	**0.067**	**0.04**	**0.039**
Chromium, Cr	0.1	**0.003**	**0.026**	BDL	BDL	**0.003**	**0.002**	**0.002**
Cobalt, Co	0.006*	**0.032**	**0.002**	BDL	**0.002**	**0.004**	**0.001**	**0.001**
Copper, Cu	1.3	**0.0051**	**0.0116**	BDL	**0.0011**	**0.0067**	**0.001**	**0.0011**
Fluoride	4.0	BDL	BDL	BDL	**0.174**	BDL	BDL	BDL
Lead	0.015	**0.0024**	**0.0068**	BDL	BDL	**0.0019**	BDL	BDL
Nickel, Ni	0.039***	**0.0034**	**0.0058**	BDL	**0.0033**	**0.0023**	BDL	**0.001**
Zinc, Zn	0.6*	**0.015**	**0.0246**	BDL	BDL	**0.0122**	BDL	BDL
Vanadium	0.086	**0.005**	**0.041**	BDL	BDL	**0.01**	**0.005**	**0.005**
Mercury	0.002	BDL	**0.00029**	BDL	BDL	**0.00023**	**0.00136**	**0.0015**
Sulfate	250	**2.87**	BDL	**5.76**	**6.31**	**9.52**	**9.09**	**9.0**
Conductivity (uS/cm^2)	---	**455.3**	**129.1**	**204.4**	**1,278**	**533.1**	**266.4**	---
pH	---	**6.24**	**5.44**	**6.05**	**6.42**	**6.11**	**6.13**	**6.13**

BDL-Below (laboratory) Detection Limit.
MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or
*EPA Region 9 Tapwater Screening Level or
*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk
-- MCL not established Assessment, the EPA tapwater screening level for nickel soluble salts is used.
Background well is highlighted blue.
Bold RED indicates a sample above respective regulatory limit.

Conductivity and pH presented are the last reading taken before sample collection

Cobalt was identified in monitoring well MW-1, at 0.032 mg/L, above the EPA region 9 tapwater screening level of 0.006 mg/L.

5.0 STATISTICAL ANALYSIS

5.1 METHODOLOGY

Statistical analysis of the analytical results was performed in accordance with TDEC Rule 1200-1-7-.04 and the EPA guidance document, “Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance,” EPA 530/R-09-007 by utilizing the ChemStat RCRA analysis software. Constituents which were not identified at detectable concentrations in any monitoring well were not considered for statistical analysis.

First, the Shapiro-Francia Test was used to determine if the data was normally distributed. For each constituent assessed the data exhibited non-normal distribution of values. Constituents with a non-normal distribution were analyzed for variance using the Kruskal-Wallis test.

For constituents where a statistical variance was identified, a Mann-Kendall Trend Analysis was performed. The purpose of the Mann-Kendall Analysis is to statistically assess if there is a monotonic upward or downward trend of the variable of interest over time. A monotonic upward (downward) trend means that the variable consistently increases (decreases) through time. Data results from these tests are included in Appendix 4.

Statistical analysis is performed under the assumption that monitoring well MW-1 is potentiometrically upgradient of the landfill and is a background well. Potentiometric data supports this hypothesis.

5.2 RESULTS

Results from statistical analysis of the Eplex Landfill for the November 10, 2023 sampling event are offered in Table 3. No data sets exhibited a normal distribution using the Shapiro-Francia Test. Analysis of datasets using the Kruskal-Wallis test did not show statistically significant variance in any constituent, therefore, Mann-Kendall trend analysis was not performed.

Table 3
Compliance Monitoring Well Statistical Analysis Summary
November 10, 2023

Constituent	MW-1		MW-2		MW-3		MW-4		MW-5		MW-6	
Statistical Analysis	KW	MK	KW	MK	KW	MK	KW	MK	KW	MK	KW	MK
Ammonia	NO		NO		NO		NO		NO		NO	
Arsenic, As	NO		NO		NO		NO		NO		NO	
Barium, Ba	NO		NO		NO		NO		NO		NO	
Chromium, Cr	NO		NO		NO		NO		NO		NO	
Cobalt, Co	NO		NO		NO		NO		NO		NO	
Copper, Cu	NO		NO		NO		NO		NO		NO	
Fluoride	NO		NO		NO		NO		NO		NO	
Lead	NO		NO		NO		NO		NO		NO	
Nickel, Ni	NO		NO		NO		NO		NO		NO	
Zinc, Zn	NO		NO		NO		NO		NO		NO	
Vanadium	NO		NO		NO		NO		NO		NO	
Mercury	NO		NO		NO		NO		NO		NO	
Sulfate	NO		NO		NO		NO		NO		NO	

Based upon the statistical analysis, statisitically significant increases over background concentrations were not identified.

A historical laboratory analytical results table is included in Appendix 2. A table showing past analytical data is not offered for monitoring well MW-7. The reports made available for review by Tioga did not include data for MW-7 and no sample was collected from this location during the current event. Based on repeated gauging of the monitoring well as “dry” at a consistent elevation higher than the potentiometric surface value for other monitoring wells, it is possible that the casing of monitoring well MW-7 has collapsed. Statistical analysis data is included in Appendix 4.

6.0 RECOMMENDATIONS AND DISCUSSION

The cobalt concentration in monitoring well MW-1 was identified above the EPA region 9 tapwater screening level (0.006 mg/L) at 0.032 mg/L. Based on data from Hazardous Trace Elements in Tennessee Soils and Other Regolith (TDEC Division of Geology, 2001), cobalt has been identified in Shelby County soils at a range of 1.3 to 12 mg/kg. The cobalt concentration identified in monitoring well MW-1 is likely due, at least in some part, to contributions from naturally occurring cobalt concentrations. This is supported by the lack of statistical variance in historical cobalt concentrations. This is further supported by current and historical detections of cobalt in monitoring well MW-1, the historically established background well. In addition to the above-mentioned lines of evidence, the inherent immobility of metals and the lack of drinking water wells in the vicinity of the landfill

suggests that a risk to drinking water supplies from the identified cobalt concentrations is unlikely.

All other constituents were below their respective screening levels. No statistically significant increases over background concentrations were identified. Based on the information collected, migration of leachate from the landfill is not currently occurring.

Continued detection monitoring is recommended. The next semi-annual groundwater monitoring event will be conducted in May 2024.

APPENDIX 1

FIGURES

NOT TO SCALE

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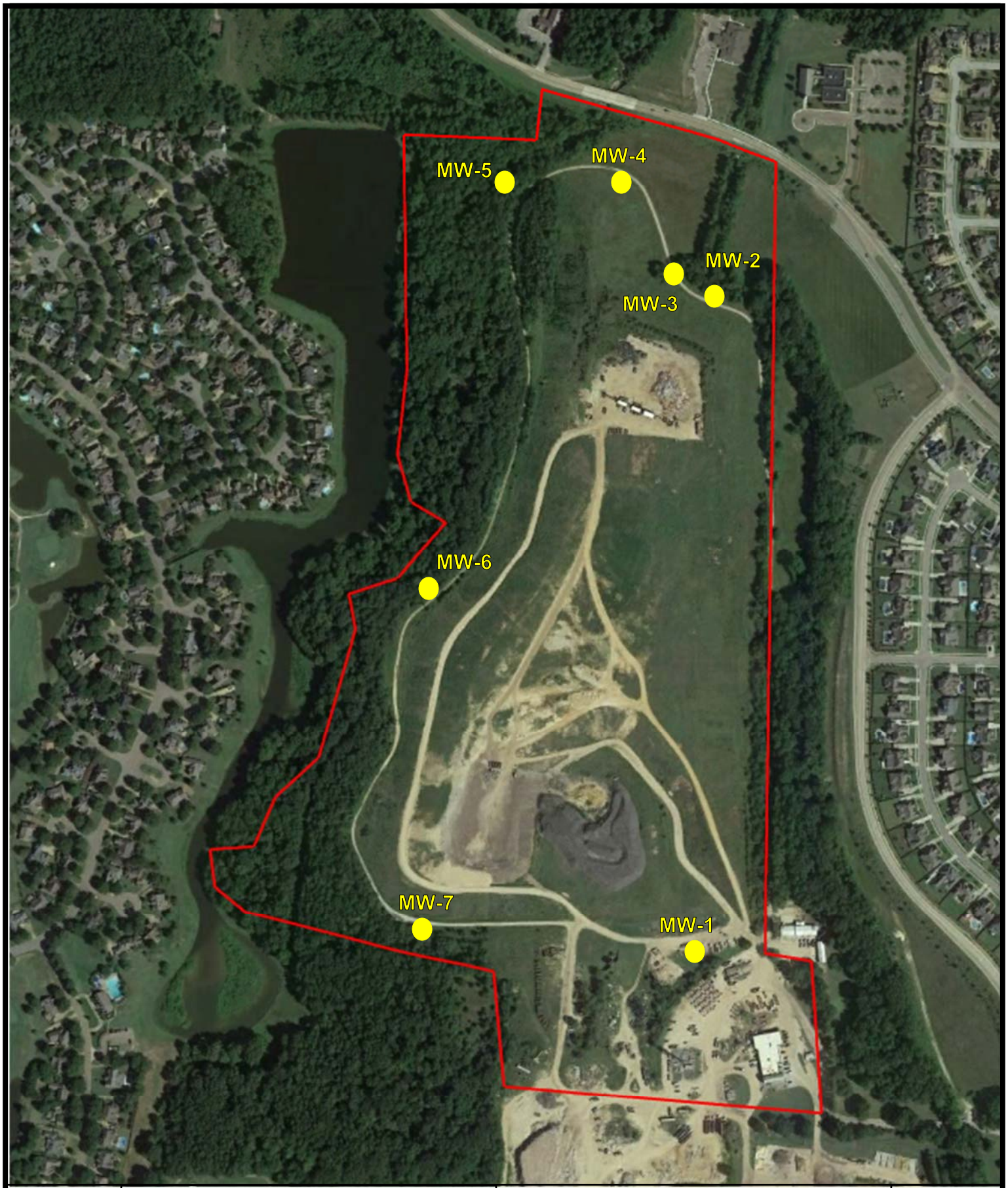
Eplex Construction Landfill Groundwater Monitoring Report - November 2023 Event

DESCRIPTION:	PROJECT #:
Vicinity Map	561416.02
LOCATION:	DATE:
Collierville, TN	November 2023

1



NOT TO SCALE

Tioga
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Eplex Construction Landfill Groundwater Monitoring Report - November 2023 Event

DESCRIPTION:	PROJECT #:
Site Map	561416.02
LOCATION:	DATE:
Collierville, TN	November 2023

2

NOT TO SCALE

Tioga ENVIRONMENTAL CONSULTANTS

Eplex Construction Landfill Groundwater Monitoring Report - November 2023 Event

DESCRIPTION:	PROJECT #:
Potentiometric Map	561416.02
LOCATION:	DATE:
COLLIERVILLE, TN	NOVEMBER 2023

APPENDIX 2

ANALYTICAL RESULTS TABLES

Eplex Construction Landfill: Collierville, TN

MW-1

Constituent	Screening Level	Sample Date																	
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023	11/10/2023
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0058	0.0047	0.0049
Barium, Ba	2	0.023	0.024	0.018	0.2	0.051	0.081	0.095	0.111	0.121	0.268	0.291	0.498	0.14	0.037	0.031	0.073	0.09	0.077
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0004	BD	BD	BD	BD	BD
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD	BD	BD	BD
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	0.009	0.01	BD	BD	BD	BD	BD	0.001	0.003	0.004	0.003
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.086	0.045	BD	0.07	0.035	0.032
Copper, Cu**	1.3	0.066	0.011	BD	0.031	0.038	BD	0.055	0.041	0.046	0.05	0.056	0.063	0.015	0.0017	0.0011	0.0031	0.0139	0.0051
Lead, Pb	0.015	BD	BD	BD	BD	BD	BD	BD	0.006	0.009	0.012	0.015	0.018	0.021	BD	BD	0.002	0.009	0.0024
Nickel, Ni	0.039***	0.008	BD	BD	0.008	0.012	0.027	0.009	0.01	0.01	0.018	0.011	0.01	0.0035	0.0026	BD	0.0049	0.0042	0.0034
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.013	BD	BD	0.006	0.009	0.005
Zinc, Zn**	0.6*	0.088	0.066	0.017	0.101	0.124	1.028	1.11	1.742	1.821	1.221	2.011	2.109	0.071	BD	BD	0.0148	0.0298	0.015
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0002	0.00042	BD
Fluoride, F	0.8*	0.02	0.19	0.22	0.52	0.6	1.55	1	1.76	1.79	2.05	2.57	3.62	BD	0.127	BD	BD	0.149	BD
Ammonia	--	BD	BD	BD	0.37	0.41	0.75	0.55	0.42	0.68	0.74	1.26	1.33	0.12	BD	0.213	BD	0.497	0.284
Sulfate	250**	BD	BD	BD	7	8	12	9	10	14	15	16	32	16	5.09	3.33	3.37	1.58	2.87

BD=Below Laboratory Detection Level

"---" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN

MW-2

Constituent	Screening Level	Sample Date																	
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023	11/10/2023
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0018	BD	0.0033
Barium, Ba	2	0.026	0.035	0.043	0.35	0.044	0.061	0.073	0.078	0.081	0.076	0.081	0.097	0.031	0.03	BD	0.048	0.031	0.061
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD	BD	BD	BD
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	0.014	0.001	0.026
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	0.002
Copper, Cu**	1.3	0.06	0.009	BD	0.038	0.039	0.22	0.02	0.026	0.018	BD	BD	BD	0.024	BD	BD	0.0061	0.0028	0.0116
Lead, Pb	0.015	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.005	BD	BD	0.0034	0.0015	0.0068
Nickel, Ni	0.039***	0.015	BD	BD	BD	0.012	0.01	BD	0.009	0.006	0.006	0.005	BD	0.003	BD	BD	0.0036	BD	0.0058
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.021	0.005	0.041
Zinc, Zn**	0.6*	0.155	0.061	0.018	0.086	0.091	0.121	0.141	0.732	0.887	0.92	0.753	0.807	0.054	0.0109	BD	0.0171	0.0125	0.0246
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.00026	0.00029
Fluoride, F	0.8*	0.18	0.24	0.29	0.61	0.75	0.96	1.09	1.05	1.03	0.5	0.78	1.001	BD	BD	BD	BD	BD	BD
Ammonia,	--	BD	BD	BD	0.38	0.42	0.5	0.59	0.49	0.3	0.29	0.65	0.81	BD	BD	BD	BD	BD	BD
Sulfate,	250**	BD	BD	BD	3	5	8	11	10	10	9	9	12	BD	1.74	BD	BD	BD	BD

BD=Below Laboratory Detection Level

"---" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN
MW-3

Constituent	Screening Level	Sample Date																	
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023	11/10/2023
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	0.0011	BD
Barium, Ba	2	0.039	0.042	0.031	0.039	0.033	0.028	0.031	0.084	0.064	0.055	0.078	0.09	0.084	0.037	0.123	0.055	0.124	0.024
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	BD	BD	BD	BD
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.009	BD	BD	BD	BD	BD
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.004	0.001	0.004	0.002	0.005	BD
Copper, Cu**	1.3	0.054	0.008	BD	0.45	0.043	0.031	0.033	0.049	0.04	BD	BD	BD	0.031	0.0132	0.001	0.0035	BD	BD
Lead, Pb	0.015	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0075	BD	BD	BD	BD
Nickel, Ni	0.039***	0.008	BD	BD	BD	BD	BD	BD	0.009	0.009	0.009	0.006	0.007	0.008	BD	0.0137	0.003	0.0139	BD
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD	BD	BD	BD
Zinc, Zn**	0.6*	0.028	0.061	0.021	0.164	0.141	0.173	1.002	1	1.11	0.107	0.324	0.543	0.061	0.0191	0.0114	BD	0.0149	BD
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Fluoride, F	0.8*	0.26	0.13	0.18	0.34	0.22	0.75	1	0.92	0.58	0.49	0.62	0.745	BD	BD	BD	BD	BD	BD
Ammonia,	--	BD	BD	BD	0.36	0.4	0.55	0.62	0.71	0.31	0.3	0.59	0.71	0.11	BD	BD	BD	BD	BD
Sulfate,	250**	BD	BD	BD	2	4	7	8	11	10	11	11	9	BD	15.9	10.6	16.8	13.8	5.76

BD=Below Laboratory Detection Level

"---" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN

MW-4

Constituent	Screening Level	Sample Date																	
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023	11/10/2023
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0052	0.0035	0.0261	0.0094	0.0056
Barium, Ba	2	0.037	0.063	0.044	0.086	0.081	0.07	0.083	0.095	0.055	0.053	0.079	0.091	0.19	0.131	0.194	0.278	0.0197	0.145
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	BD	BD	BD	BD
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	BD	BD	BD	BD
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD	BD	BD
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.008	0.001	0.006	0.003	0.007	0.002
Copper, Cu**	1.3	0.055	0.009	BD	0.017	0.022	0.031	0.039	0.052	0.032	0.032	BD	BD	0.057	0.0012	0.0011	0.0018	BD	0.0011
Lead, Pb	0.015	BD	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.016	0.001	BD	BD	BD	BD
Nickel, Ni	0.039***	0.007	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.006	0.0026	0.0046	0.0072	0.0054	0.0033
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.003	BD	BD	BD	BD	BD
Zinc, Zn**	0.6*	0.103	0.06	0.034	0.091	0.112	0.121	0.115	0.129	0.099	0.117	0.505	0.67	0.067	BD	BD	BD	BD	BD
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Fluoride, F	0.8*	0.12	BD	BD	0.41	0.56	0.52	0.47	1.24	1.09	0.65	0.73	0.791	BD	0.162	BD	BD	BD	0.174
Ammonia,	--	BD	BD	BD	0.45	0.46	0.4	0.59	0.63	0.4	0.37	0.42	0.52	1.1	BD	BD	BD	1.47	BD
Sulfate,	250**	BD	BD	BD	13	9	9	10	12	11	9	15	11	BD	6.64	5.99	6.49	4.65	6.31

BD=Below Laboratory Detection Level

"---" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN
MW-5

Constituent	Screening Level	Sample Date																	
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023	11/10/2023
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0013	BD	BD	0.0021	0.0031
Barium, Ba	2	0.023	0.03	0.071	0.023	0.036	0.044	0.055	0.06	0.059	0.052	0.072	0.088	0.031	0.058	0.049	0.051	0.054	0.067
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.005	BD	BD	BD	BD	BD
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	0.001	0.002	0.003
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	0.001	0.003	0.004
Copper, Cu**	1.3	0.026	0.006	BD	0.028	0.026	0.025	0.027	0.031	0.028	BD	BD	BD	0.013	0.0016	BD	BD	0.0017	0.0067
Lead, Pb	0.015	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0011	BD	BD	0.001	0.0019
Nickel, Ni	0.039***	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0013	BD	0.0011	0.0011	0.0023
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	0.006	BD	BD	0.005	0.01
Zinc, Zn**	0.6*	0.051	0.053	0.022	0.222	0.184	0.15	0.109	0.274	0.374	0.222	0.446	0.544	BD	BD	BD	BD	BD	0.0122
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.00023	BD	BD	BD	0.00023
Fluoride, F	0.8*	0.11	0.22	0.25	1.26	0.92	0.76	0.83	0.88	0.74	0.6	0.97	0.781	BD	BD	BD	BD	BD	BD
Ammonia,	--	BD	BD	BD	0.39	0.42	0.36	0.6	0.61	0.6	0.48	0.81	0.74	BD	BD	BD	BD	BD	BD
Sulfate,	250**	BD	BD	BD	98	84	28	17	16	13	10	15	18	11	8.53	11.1	6.41	9.73	9.52

BD=Below Laboratory Detection Level

"---" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN

MW-6

Constituent	Screening Level	Sample Date																	
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023	11/10/2023
Antimony, Sb	**0.006**	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	**0.01**	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0036	**0.0017**	**0.0016**
Barium, Ba	**2**	**0.017**	**0.022**	**0.009**	**0.023**	**0.061**	**0.034**	**0.044**	**0.063**	**0.071**	**0.092**	**0.089**	**0.078**	**0.031**	**0.033**	**0.049**	**0.042**	**0.047**	**0.04**
Beryllium, Be	**0.004**	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Cadmium, Cd	**0.005**	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Chromium, Cr	**0.1**	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	**0.002**	BD	0.005	**0.001**	**0.002**
Cobalt, Co	**0.006***	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	**0.002**	BD	**0.006**	**0.002**	**0.004**	**0.001**
Copper, Cu**	**1.3**	**0.046**	**0.008**	**0.005**	**0.046**	**0.048**	**0.027**	**0.03**	**0.038**	**0.022**	BD	BD	BD	**0.018**	**0.0018**	BD	0.0017	BD	**0.001**
Lead, Pb	**0.015**	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0012	BD	BD
Nickel, Ni	**0.039*****	BD	BD	BD	**0.012**	**0.006**	**0.006**	**0.006**	**0.006**	**0.006**	BD	BD	BD	BD	BD	**0.0025**	**0.0026**	BD	BD
Selenium, Se	**0.05**	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD
Silver, Ag	**0.094***	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Thallium, Tl	**0.002**	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Vanadium, V**	**0.086***	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	**0.001**	**0.005**	BD	0.013	BD	**0.005**
Zinc, Zn**	**0.6***	**0.076**	**0.069**	**0.1**	**0.16**	**0.1**	**0.114**	**0.272**	**0.37**	**0.355**	**0.103**	**0.247**	**0.372**	BD	BD	BD	BD	BD	BD
Mercury, Hg (Total)	**0.002**	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	**0.00025**	BD	BD	**0.00119**	**0.00136**
Fluoride, F	**0.8***	BD	BD	BD	**0.35**	**0.21**	**0.19**	**0.55**	**0.92**	**0.79**	**0.61**	**0.76**	**0.209**	BD	BD	BD	BD	BD	BD
Ammonia	**--**	BD	BD	BD	**0.41**	**0.44**	**0.36**	**0.42**	**0.44**	**0.57**	**0.44**	**0.57**	**0.68**	**0.42**	**0.42**	**0.543**	**BD**	**0.705**	BD
Sulfate	**250****	BD	BD	BD	**9**	**10**	**11**	**10**	**11**	**10**	**9**	**11**	**12**	**8**	**8.89**	**11.1**	**9.02**	**10.1**	**9.09**

BD=Below Laboratory Detection Level

"---" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

APPENDIX 3

LABORATORY RESULTS, CHAIN OF CUSTODY, AND FIELD SHEETS

Waypoint ANALYTICAL

2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 ⁰ Fax 901.213.2440
www.waypointanalytical.com

11/28/2023

Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis, TN, 38103

Ref: Analytical Testing
Lab Report Number: 23-317-0032
Client Project Description: Blaylock and Brown Construction LF
Project 561416.01
Project Number: Walnut Grove Rd Landfill

Dear Mr. Luke Hall:
Waypoint Analytical, LLC. received sample(s) on 11/10/2023 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method. Where the laboratory was not responsible for the sampling stage (refer to the chain of custody) results apply to the sample as received.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Rebekah Ross

Rebekah Ross
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

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Certification Summary

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/29/2024
Arkansas	State Program	88-0650	02/07/2024
California	State Program	2904	06/30/2024
Florida	State Program - NELAP	E871157	06/30/2024
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/31/2024
Kentucky	State Program	80215	06/30/2024
Kentucky	State Program	KY90047	12/31/2023
Louisiana	State Program - NELAP	LA037	12/31/2023
Louisiana	State Program - NELAP	04015	06/30/2024
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2024
North Carolina	State Program	415	12/31/2023
Pennsylvania	State Program - NELAP	68-03195	05/31/2024
South Carolina	State Program	84002	06/30/2024
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2024
Virginia	State Program	00106	06/30/2024
Virginia	State Program - NELAP	460181	09/14/2024

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Sample Summary Table

Report Number: **23-317-0032**

Client Project Description: **Blaylock and Brown Construction LF Project 561416.01**

Lab No	Client Sample ID	Matrix	Date Collected	Date Received
90770	MW-1	Aqueous	11/10/2023 16:12	11/10/2023
90771	Rinse Blank	Aqueous	11/10/2023	11/10/2023
90772	MW-6	Aqueous	11/10/2023 15:15	11/10/2023
90773	Duplicate	Aqueous	11/10/2023	11/10/2023
90774	MW-5	Aqueous	11/10/2023 13:58	11/10/2023
90775	MW-4	Aqueous	11/10/2023 12:43	11/10/2023
90776	MW-3	Aqueous	11/10/2023 11:20	11/10/2023
90777	MW-2	Aqueous	11/10/2023 09:57	11/10/2023

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06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock and Brown Construction LF
Information : Project 561416.01

Report Date : 11/28/2023
Received : 11/10/2023

Rebekah Ross
Project Manager

Report Number : **23-317-0032**

REPORT OF ANALYSIS

Lab No : **90770**
Sample ID : **MW-1**

Matrix: **Aqueous**
Sampled: **11/10/2023 16:12**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	11/15/23 19:49	CPW	6020B
Arsenic	**0.0049**	mg/L	0.0010	1	11/15/23 19:49	CPW	6020B
Barium	**0.077**	mg/L	0.001	1	11/15/23 19:49	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	11/15/23 19:49	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	11/15/23 19:49	CPW	6020B
Cobalt	**0.032**	mg/L	0.001	1	11/15/23 19:49	CPW	6020B
Chromium	**0.003**	mg/L	0.001	1	11/15/23 19:49	CPW	6020B
Copper	**0.0051**	mg/L	0.0010	1	11/15/23 19:49	CPW	6020B
Nickel	**0.0034**	mg/L	0.0010	1	11/16/23 17:32	CPW	6020B
Lead	**0.0024**	mg/L	0.0010	1	11/15/23 19:49	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	11/15/23 19:49	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	11/15/23 19:49	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	11/15/23 19:49	CPW	6020B
Vanadium	**0.005**	mg/L	0.005	1	11/15/23 19:49	CPW	6020B
Zinc	**15.0**	µg/L	10.0	1	11/15/23 19:49	CPW	6020B
Mercury	<0.00020	mg/L	0.00020	1	11/15/23 14:22	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	11/22/23 14:59	HMQ	9056A
Ammonia Nitrogen	**0.284**	mg/L	0.100	1	11/27/23 15:46		4500NH3D-2011
Sulfate	**2.87**	mg/L	1.00	1	11/22/23 14:59	HMQ	9056A

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock and Brown Construction LF
Information : Project 561416.01

Report Date : 11/28/2023
Received : 11/10/2023

Rebekah Ross
Project Manager

Report Number : **23-317-0032**

REPORT OF ANALYSIS

Lab No : **90771**
Sample ID : **Rinse Blank**

Matrix: **Aqueous**
Sampled: **11/10/2023 0:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	11/15/23 19:53	CPW	6020B
Arsenic	<0.0010	mg/L	0.0010	1	11/15/23 19:53	CPW	6020B
Barium	<0.001	mg/L	0.001	1	11/15/23 19:53	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	11/15/23 19:53	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	11/15/23 19:53	CPW	6020B
Cobalt	<0.001	mg/L	0.001	1	11/15/23 19:53	CPW	6020B
Chromium	<0.001	mg/L	0.001	1	11/15/23 19:53	CPW	6020B
Copper	<0.0010	mg/L	0.0010	1	11/15/23 19:53	CPW	6020B
Nickel	<0.0010	mg/L	0.0010	1	11/16/23 17:44	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	11/15/23 19:53	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	11/15/23 19:53	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	11/15/23 19:53	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	11/15/23 19:53	CPW	6020B
Vanadium	<0.005	mg/L	0.005	1	11/15/23 19:53	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	11/15/23 19:53	CPW	6020B
Mercury	<0.00020	mg/L	0.00020	1	11/15/23 14:23	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	11/22/23 15:25	HMQ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	11/27/23 15:46	JFM	4500NH3D-2011
Sulfate	<1.00	mg/L	1.00	1	11/22/23 15:25	HMQ	9056A

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 º Fax 901.213.2440
www.waypointanalytical.com

06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock and Brown Construction LF
Information : Project 561416.01

Report Date : 11/28/2023
Received : 11/10/2023

Rebekah Ross
Project Manager

Report Number : **23-317-0032**

REPORT OF ANALYSIS

Lab No : **90772**
Sample ID : **MW-6**

Matrix: **Aqueous**
Sampled: **11/10/2023 15:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	11/15/23 19:57	CPW	6020B
Arsenic	**0.0016**	mg/L	0.0010	1	11/15/23 19:57	CPW	6020B
Barium	**0.040**	mg/L	0.001	1	11/15/23 19:57	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	11/15/23 19:57	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	11/15/23 19:57	CPW	6020B
Cobalt	**0.001**	mg/L	0.001	1	11/15/23 19:57	CPW	6020B
Chromium	**0.002**	mg/L	0.001	1	11/15/23 19:57	CPW	6020B
Copper	**0.0010**	mg/L	0.0010	1	11/15/23 19:57	CPW	6020B
Nickel	<0.0010	mg/L	0.0010	1	11/16/23 17:48	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	11/15/23 19:57	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	11/15/23 19:57	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	11/15/23 19:57	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	11/15/23 19:57	CPW	6020B
Vanadium	**0.005**	mg/L	0.005	1	11/15/23 19:57	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	11/15/23 19:57	CPW	6020B
Mercury	**0.00136**	mg/L	0.00020	1	11/15/23 14:25	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	11/22/23 15:51	HMQ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	11/27/23 15:46	JFM	4500NH3D-2011
Sulfate	**9.09**	mg/L	1.00	1	11/22/23 15:51	HMQ	9056A

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Tioga Environmental Consultants
Mr. Luke Hall
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Memphis , TN 38103

Project ID :
Project Blaylock and Brown Construction LF
Information : Project 561416.01

Report Date : 11/28/2023
Received : 11/10/2023

Rebekah Ross
Project Manager

Report Number : **23-317-0032**

REPORT OF ANALYSIS

Lab No : **90773**
Sample ID : **Duplicate**

Matrix: **Aqueous**
Sampled: **11/10/2023 0:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	11/15/23 20:01	CPW	6020B
Arsenic	**0.0016**	mg/L	0.0010	1	11/15/23 20:01	CPW	6020B
Barium	**0.039**	mg/L	0.001	1	11/15/23 20:01	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	11/15/23 20:01	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	11/15/23 20:01	CPW	6020B
Cobalt	**0.001**	mg/L	0.001	1	11/15/23 20:01	CPW	6020B
Chromium	**0.002**	mg/L	0.001	1	11/15/23 20:01	CPW	6020B
Copper	**0.0011**	mg/L	0.0010	1	11/15/23 20:01	CPW	6020B
Nickel	**0.0010**	mg/L	0.0010	1	11/16/23 17:52	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	11/15/23 20:01	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	11/15/23 20:01	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	11/15/23 20:01	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	11/15/23 20:01	CPW	6020B
Vanadium	**0.005**	mg/L	0.005	1	11/15/23 20:01	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	11/15/23 20:01	CPW	6020B
Mercury	**0.00150**	mg/L	0.00020	1	11/15/23 14:26	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	11/22/23 16:16	HMQ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	11/27/23 15:46	JFM	4500NH3D-2011
Sulfate	**9.00**	mg/L	1.00	1	11/22/23 16:16	HMQ	9056A

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock and Brown Construction LF
Information : Project 561416.01

Report Date : 11/28/2023
Received : 11/10/2023

Rebekah Ross
Project Manager

Report Number : **23-317-0032**

REPORT OF ANALYSIS

Lab No : **90774**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/10/2023 13:58**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	11/15/23 20:06	CPW	6020B
Arsenic	**0.0031**	mg/L	0.0010	1	11/15/23 20:06	CPW	6020B
Barium	**0.067**	mg/L	0.001	1	11/15/23 20:06	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	11/15/23 20:06	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	11/15/23 20:06	CPW	6020B
Cobalt	**0.004**	mg/L	0.001	1	11/15/23 20:06	CPW	6020B
Chromium	**0.003**	mg/L	0.001	1	11/15/23 20:06	CPW	6020B
Copper	**0.0067**	mg/L	0.0010	1	11/15/23 20:06	CPW	6020B
Nickel	**0.0023**	mg/L	0.0010	1	11/16/23 17:56	CPW	6020B
Lead	**0.0019**	mg/L	0.0010	1	11/15/23 20:06	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	11/15/23 20:06	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	11/15/23 20:06	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	11/15/23 20:06	CPW	6020B
Vanadium	**0.010**	mg/L	0.005	1	11/15/23 20:06	CPW	6020B
Zinc	**12.2**	µg/L	10.0	1	11/15/23 20:06	CPW	6020B
Mercury	**0.00023**	mg/L	0.00020	1	11/15/23 14:28	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	11/22/23 16:42	HMQ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	11/27/23 15:46	JFM	4500NH3D-2011
Sulfate	**9.52**	mg/L	1.00	1	11/22/23 16:42	HMQ	9056A

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock and Brown Construction LF
Information : Project 561416.01

Report Date : 11/28/2023
Received : 11/10/2023

Rebekah Ross
Project Manager

Report Number : **23-317-0032**

REPORT OF ANALYSIS

Lab No : **90775**
Sample ID : **MW-4**

Matrix: **Aqueous**
Sampled: **11/10/2023 12:43**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	11/15/23 20:10	CPW	6020B
Arsenic	**0.0056**	mg/L	0.0010	1	11/15/23 20:10	CPW	6020B
Barium	**0.145**	mg/L	0.001	1	11/15/23 20:10	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	11/15/23 20:10	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	11/15/23 20:10	CPW	6020B
Cobalt	**0.002**	mg/L	0.001	1	11/15/23 20:10	CPW	6020B
Chromium	<0.001	mg/L	0.001	1	11/15/23 20:10	CPW	6020B
Copper	**0.0011**	mg/L	0.0010	1	11/15/23 20:10	CPW	6020B
Nickel	**0.0033**	mg/L	0.0010	1	11/16/23 18:01	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	11/15/23 20:10	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	11/15/23 20:10	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	11/15/23 20:10	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	11/15/23 20:10	CPW	6020B
Vanadium	<0.005	mg/L	0.005	1	11/15/23 20:10	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	11/15/23 20:10	CPW	6020B
Mercury	<0.00020	mg/L	0.00020	1	11/15/23 14:29	FDS	7470A
Fluoride (w/o distillation)	**0.174**	mg/L	0.125	1	11/22/23 17:34	HMQ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	11/27/23 15:46	JFM	4500NH3D-2011
Sulfate	**6.31**	mg/L	1.00	1	11/22/23 17:34	HMQ	9056A

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Mr. Luke Hall
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Project ID :
Project Blaylock and Brown Construction LF
Information : Project 561416.01

Report Date : 11/28/2023
Received : 11/10/2023

Rebekah Ross
Project Manager

Report Number : **23-317-0032**

REPORT OF ANALYSIS

Lab No : **90776**
Sample ID : **MW-3**

Matrix: **Aqueous**
Sampled: **11/10/2023 11:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	11/15/23 20:14	CPW	6020B
Arsenic	<0.0010	mg/L	0.0010	1	11/15/23 20:14	CPW	6020B
Barium	**0.024**	mg/L	0.001	1	11/15/23 20:14	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	11/15/23 20:14	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	11/15/23 20:14	CPW	6020B
Cobalt	<0.001	mg/L	0.001	1	11/15/23 20:14	CPW	6020B
Chromium	<0.001	mg/L	0.001	1	11/15/23 20:14	CPW	6020B
Copper	<0.0010	mg/L	0.0010	1	11/15/23 20:14	CPW	6020B
Nickel	<0.0010	mg/L	0.0010	1	11/16/23 18:05	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	11/15/23 20:14	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	11/15/23 20:14	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	11/15/23 20:14	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	11/15/23 20:14	CPW	6020B
Vanadium	<0.005	mg/L	0.005	1	11/15/23 20:14	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	11/15/23 20:14	CPW	6020B
Mercury	<0.00020	mg/L	0.00020	1	11/15/23 14:31	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	11/22/23 18:00	HMQ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	11/27/23 15:46	JFM	4500NH3D-2011
Sulfate	**5.76**	mg/L	1.00	1	11/22/23 18:00	HMQ	9056A

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Tioga Environmental Consultants
Mr. Luke Hall
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Memphis , TN 38103

Project ID :
Project Blaylock and Brown Construction LF
Information : Project 561416.01

Report Date : 11/28/2023
Received : 11/10/2023

Rebekah Ross
Project Manager

Report Number : **23-317-0032**

REPORT OF ANALYSIS

Lab No : **90777**
Sample ID : **MW-2**

Matrix: **Aqueous**
Sampled: **11/10/2023 9:57**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	11/15/23 20:18	CPW	6020B
Arsenic	**0.0033**	mg/L	0.0010	1	11/15/23 20:18	CPW	6020B
Barium	**0.061**	mg/L	0.001	1	11/15/23 20:18	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	11/15/23 20:18	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	11/15/23 20:18	CPW	6020B
Cobalt	**0.002**	mg/L	0.001	1	11/15/23 20:18	CPW	6020B
Chromium	**0.026**	mg/L	0.001	1	11/15/23 20:18	CPW	6020B
Copper	**0.0116**	mg/L	0.0010	1	11/15/23 20:18	CPW	6020B
Nickel	**0.0058**	mg/L	0.0010	1	11/16/23 18:09	CPW	6020B
Lead	**0.0068**	mg/L	0.0010	1	11/15/23 20:18	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	11/15/23 20:18	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	11/15/23 20:18	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	11/15/23 20:18	CPW	6020B
Vanadium	**0.041**	mg/L	0.005	1	11/15/23 20:18	CPW	6020B
Zinc	**24.6**	µg/L	10.0	1	11/15/23 20:18	CPW	6020B
Mercury	**0.00029**	mg/L	0.00020	1	11/15/23 14:32	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	11/22/23 18:25	HMQ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	11/27/23 15:46	JFM	4500NH3D-2011
Sulfate	<1.00	mg/L	1.00	1	11/22/23 18:25	HMQ	9056A

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Shipment Receipt Form

Customer Number: **06510**
Customer Name: **Tioga Environmental Consultants**
Report Number: **23-317-0032**

Shipping Method

◯ Fed Ex	◯ US Postal	◯ Lab	◯ Other :	
◯ UPS	◉ Client	◯ Courier	Thermometer ID:	T135

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◉ Yes	◯ No	◯ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)
☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Mallory Earle Date & Time: 11/13/2023 12:12:34

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Kit ID:	222318
Initiated By:	Rebekah Barger Ross
Initiated Date:	10/24/2023
Project Comment	

CHAIN-OF-CUSTODY

23-317-0032
06510
11-13-2023
10:22:53
Tioga Environmental Consultants
Blaylock and Brown Construction Landfill

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
Tioga Environmental Consultants	06510	Mr. Luke Hall	
Site Name	**Project Number**	☐ RUSH – Additional charges apply ☐ Special Detection Limits(s) Date Results Needed	**Method of Shipment** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☒ Client Drop Off Other
Blaylock & Brown Construction LF	56141 6.01		
LIMS Project ID	**Project Manager Phone #**	**Project Manager Email**	**Site/Facility ID #**
	901-791-2432	lhall@tiogaenv.com	

Date	Time	Sample ID	Matrix	Grab/ Comp	# of Cont	Container Type	Preservation	Analyses
11/10/23	16:12	MW-1	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
11/10/23	16:12	MW-1	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
11/10/23	16:12	MW-1	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
11/10/23		rinse Blank	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
11/10/23		rinse Blank	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
11/10/23		Rinse Blank	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
11/10/23	15:15	MW-6	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
11/10/23	15:15	MW-6	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia

For Laboratory Use Only			Sampled by (Name - Print)	Client Remarks/Comments			
Ice	Custody Seals	Lab Comments	Karim Bouzeid & Thornton Brooksbank				
Y/N	Y/N		Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date Time
Blank/Cooler Temp				11/10/23	1706		
1.4°C			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date Time
TB5 me			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date Time
							11/10/23 1709

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Kit ID:	**222318**
Initiated By:	**Rebekah Barger Ross**
Initiated Date:	**10/24/2023**
Project Comment	

CHAIN-OF-CUSTODY

23-317-0032
06510
11-13-2023
10:22:53
Tioga Environmental Consultants
Blaylock and Brown Construction Landfill

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
Tioga Environmental Consultants	06510	Mr. Luke Hall	
Site Name	**Project Number**	☐ RUSH – Additional charges apply ☐ Special Detection Limits(s) Date Results Needed	**Method of Shipment** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☒ Client Drop Off Other
Blaylock & Brown Construction LF	561416.01		
LIMS Project ID	**Project Manager Phone #**	**Project Manager Email**	**Site/Facility ID #**
	901-791-2432	lhall@tiogaenv.com	

Date	Time	Sample ID	Matrix	Grab/ Comp	# of Cont	Container Type	Preservation	Analyses
11/10/23	15:15	MW-6	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
11/10/23		Duplicate	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
11/10/23		Duplicate	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
11/10/23		Duplicate	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
11/10/23	13:58	MW-5	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
11/10/23	13:58	MW-5	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
11/10/23	13:58	MW-5	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
11/10/23	12:43	MW-4	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate

For Laboratory Use Only			Sampled by (Name - Print)	Client Remarks/Comments			
Ice	Custody Seals	Lab Comments	Karim Bouzeid Thornton Brooksbank				
(Y)/N	Y/(N)		Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
Blank/Cooler Temp				11/10/23 17:00			
1.4°C			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
TBS			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
						11/10/23	1709

Waypoint ANALYTICAL
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Kit ID:	**222318**
Initiated By:	**Rebekah Barger Ross**
Initiated Date:	**10/24/2023**
Project Comment	

CHAIN-OF-CUSTODY

23-317-0032
06510
11-13-2023
10:22:53
Tioga Environmental Consultants
Blaylock and Brown Construction Landfill

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
Tioga Environmental Consultants	06510	Mr. Luke Hall	
Site Name	**Project Number**	☐ RUSH – Additional charges apply ☐ Special Detection Limits(s) Date Results Needed	**Method of Shipment** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☒ Client Drop Off Other
Blaylock & Brown Construction LF	561416.01		
LIMS Project ID	**Project Manager Phone #**	**Project Manager Email**	**Site/Facility ID #**
	901-791-2432	lhall@tiogaenv.com	

Date	Time	Sample ID	Matrix	Grab/ Comp	# of Cont	Container Type	Preservation	Analyses
11/10/23	12:43	MW-4	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
11/10/23	12:43	MW-4	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
11/10/23	11:20	MW-3	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
11/10/23	11:20	MW-3	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
11/10/23	11:20	MW-3	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
11/10/23	09:57	MW-2	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
11/10/23	09:57	MW-2	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
11/10/23	09:57	MW-2	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals

For Laboratory Use Only			Sampled by (Name - Print)	Client Remarks/Comments			
Ice	Custody Seals	Lab Comments	Karim Bouzeid & Thornton Brooksbank				
(Y)N	Y/(N)		Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
Blank/Cooler Temp			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
1.4°C T135			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
						11/10/23	1709

APPENDIX 4

STATISTICAL ANALYSIS DATA

Concentrations (mg/l)

Parameter: Ammonia

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 43
Percent Non-Detects: 39.8148%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	5 (27.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.37	0.37
			12/1/2016	0.41	0.41
			6/1/2017	0.75	0.75
			12/1/2017	0.55	0.55
			7/1/2018	0.42	0.42
			12/1/2018	0.68	0.68
			7/1/2019	0.74	0.74
			1/1/2020	1.26	1.26
			7/1/2020	1.33	1.33
			5/1/2021	0.12	0.12
			12/14/2021	ND<0	ND<0
			6/7/2022	0.213	0.213
			11/16/2022	ND<0	ND<0
			5/26/2023	0.497	0.497
			11/10/2023	0.284	0.284

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	9 (50%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.38	0.38
			12/1/2016	0.42	0.42
			6/1/2017	0.5	0.5
			12/1/2017	0.59	0.59
			7/1/2018	0.49	0.49
			12/1/2018	0.3	0.3
			7/1/2019	0.29	0.29
			1/1/2020	0.65	0.65
			7/1/2020	0.81	0.81
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-3	18	8 (44.4444%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

			8/1/2016	0.36	0.36
			12/1/2016	0.4	0.4
			6/1/2017	0.55	0.55
			12/1/2017	0.62	0.62
			7/1/2018	0.71	0.71
			12/1/2018	0.31	0.31
			7/1/2019	0.3	0.3
			1/1/2020	0.59	0.59
			7/1/2020	0.71	0.71
			5/1/2021	0.11	0.11
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-4	18	7 (38.8889%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.45	0.45
			12/1/2016	0.46	0.46
			6/1/2017	0.4	0.4
			12/1/2017	0.59	0.59
			7/1/2018	0.63	0.63
			12/1/2018	0.4	0.4
			7/1/2019	0.37	0.37
			1/1/2020	0.42	0.42
			7/1/2020	0.52	0.52
			5/1/2021	1.1	1.1
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	1.47	1.47
			11/10/2023	ND<0	ND<0
MW-5	18	9 (50%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.39	0.39
			12/1/2016	0.42	0.42
			6/1/2017	0.36	0.36
			12/1/2017	0.6	0.6
			7/1/2018	0.61	0.61
			12/1/2018	0.6	0.6
			7/1/2019	0.48	0.48
			1/1/2020	0.81	0.81
			7/1/2020	0.74	0.74
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-6	18	5 (27.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	0.41	0.41
12/1/2016	0.44	0.44
6/1/2017	0.36	0.36
12/1/2017	0.42	0.42
7/1/2018	0.44	0.44
12/1/2018	0.57	0.57
7/1/2019	0.44	0.44
1/1/2020	0.57	0.57
7/1/2020	0.68	0.68
5/1/2021	0.42	0.42
12/14/2021	0.42	0.42
6/7/2022	0.543	0.543
11/16/2022	ND<0	ND<0
5/26/2023	0.705	0.705
11/10/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 90
Percent Non-Detects: 83.3333%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	15 (83.3333%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0058	0.0058
			5/26/2023	0.0047	0.0047
			11/10/2023	0.0049	0.0049

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	16 (88.8889%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0018	0.0018
			5/26/2023	ND<0	ND<0
			11/10/2023	0.0033	0.0033
MW-3	18	16 (88.8889%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.001	0.001
			5/26/2023	0.0011	0.0011
			11/10/2023	ND<0	ND<0
MW-4	18	13 (72.2222%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0052	0.0052
			6/7/2022	0.0035	0.0035
			11/16/2022	0.0261	0.0261
			5/26/2023	0.0094	0.0094
			11/10/2023	0.0056	0.0056
MW-5	18	15 (83.3333%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0013	0.0013
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.0021	0.0021
			11/10/2023	0.0031	0.0031
MW-6	18	15 (83.3333%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	ND<0	ND<0
12/1/2016	ND<0	ND<0
6/1/2017	ND<0	ND<0
12/1/2017	ND<0	ND<0
7/1/2018	ND<0	ND<0
12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	ND<0	ND<0
11/16/2022	0.0036	0.0036
5/26/2023	0.0017	0.0017
11/10/2023	0.0016	0.0016

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: BariUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 1
Percent Non-Detects: 0.925926%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	0 (0%)	7/1/2014	0.023	0.023
			8/1/2015	0.024	0.024
			12/1/2015	0.018	0.018
			8/1/2016	0.2	0.2
			12/1/2016	0.051	0.051
			6/1/2017	0.081	0.081
			12/1/2017	0.095	0.095
			7/1/2018	0.111	0.111
			12/1/2018	0.121	0.121
			7/1/2019	0.268	0.268
			1/1/2020	0.291	0.291
			7/1/2020	0.498	0.498
			5/1/2021	0.14	0.14
			12/14/2021	0.037	0.037
			6/7/2022	0.031	0.031
			11/16/2022	0.073	0.073
			5/26/2023	0.09	0.09
			11/10/2023	0.077	0.077

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	1 (5.55556%)	7/1/2014	0.026	0.026
			8/1/2015	0.035	0.035
			12/1/2015	0.043	0.043
			8/1/2016	0.35	0.35
			12/1/2016	0.044	0.044
			6/1/2017	0.061	0.061
			12/1/2017	0.073	0.073
			7/1/2018	0.078	0.078
			12/1/2018	0.081	0.081
			7/1/2019	0.076	0.076
			1/1/2020	0.081	0.081
			7/1/2020	0.097	0.097
			5/1/2021	0.031	0.031
			12/14/2021	0.03	0.03
			6/7/2022	ND<0	ND<0
			11/16/2022	0.048	0.048
			5/26/2023	0.031	0.031
			11/10/2023	0.061	0.061
MW-3	18	0 (0%)	7/1/2014	0.039	0.039
			8/1/2015	0.042	0.042
			12/1/2015	0.031	0.031

			8/1/2016	0.039	0.039
			12/1/2016	0.033	0.033
			6/1/2017	0.028	0.028
			12/1/2017	0.031	0.031
			7/1/2018	0.084	0.084
			12/1/2018	0.064	0.064
			7/1/2019	0.055	0.055
			1/1/2020	0.078	0.078
			7/1/2020	0.09	0.09
			5/1/2021	0.084	0.084
			12/14/2021	0.037	0.037
			6/7/2022	0.123	0.123
			11/16/2022	0.055	0.055
			5/26/2023	0.124	0.124
			11/10/2023	0.024	0.024
MW-4	18	0 (0%)	7/1/2014	0.037	0.037
			8/1/2015	0.063	0.063
			12/1/2015	0.044	0.044
			8/1/2016	0.086	0.086
			12/1/2016	0.081	0.081
			6/1/2017	0.07	0.07
			12/1/2017	0.083	0.083
			7/1/2018	0.095	0.095
			12/1/2018	0.055	0.055
			7/1/2019	0.053	0.053
			1/1/2020	0.079	0.079
			7/1/2020	0.091	0.091
			5/1/2021	0.19	0.19
			12/14/2021	0.131	0.131
			6/7/2022	0.194	0.194
			11/16/2022	0.278	0.278
			5/26/2023	0.197	0.197
			11/10/2023	0.145	0.145
MW-5	18	0 (0%)	7/1/2014	0.023	0.023
			8/1/2015	0.03	0.03
			12/1/2015	0.071	0.071
			8/1/2016	0.023	0.023
			12/1/2016	0.036	0.036
			6/1/2017	0.044	0.044
			12/1/2017	0.055	0.055
			7/1/2018	0.06	0.06
			12/1/2018	0.059	0.059
			7/1/2019	0.052	0.052
			1/1/2020	0.072	0.072
			7/1/2020	0.088	0.088
			5/1/2021	0.031	0.031
			12/14/2021	0.058	0.058
			6/7/2022	0.049	0.049
			11/16/2022	0.051	0.051
			5/26/2023	0.054	0.054
			11/10/2023	0.067	0.067
MW-6	18	0 (0%)	7/1/2014	0.017	0.017
			8/1/2015	0.022	0.022
			12/1/2015	0.009	0.009

8/1/2016	0.023	0.023
12/1/2016	0.061	0.061
6/1/2017	0.034	0.034
12/1/2017	0.044	0.044
7/1/2018	0.063	0.063
12/1/2018	0.071	0.071
7/1/2019	0.092	0.092
1/1/2020	0.089	0.089
7/1/2020	0.078	0.078
5/1/2021	0.031	0.031
12/14/2021	0.033	0.033
6/7/2022	0.049	0.049
11/16/2022	0.042	0.042
5/26/2023	0.047	0.047
11/10/2023	0.04	0.04

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: ChromiUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 89
Percent Non-Detects: 82.4074%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	12 (66.6667%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	0.009	0.009
			12/1/2018	0.01	0.01
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	0.001	0.001
			11/16/2022	0.003	0.003
			5/26/2023	0.004	0.004
			11/10/2023	0.003	0.003

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	14 (77.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.001	0.001
			6/7/2022	ND<0	ND<0
			11/16/2022	0.014	0.014
			5/26/2023	0.001	0.001
			11/10/2023	0.026	0.026
MW-3	18	18 (100%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-4	18	17 (94.4444%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.001	0.001
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-5	18	14 (77.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.002	0.002
			6/7/2022	ND<0	ND<0
			11/16/2022	0.001	0.001
			5/26/2023	0.002	0.002
			11/10/2023	0.003	0.003
MW-6	18	14 (77.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	ND<0	ND<0
12/1/2016	ND<0	ND<0
6/1/2017	ND<0	ND<0
12/1/2017	ND<0	ND<0
7/1/2018	ND<0	ND<0
12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	0.002	0.002
6/7/2022	ND<0	ND<0
11/16/2022	0.005	0.005
5/26/2023	0.001	0.001
11/10/2023	0.002	0.002

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 81
Percent Non-Detects: 75%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	13 (72.2222%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.086	0.086
			12/14/2021	0.045	0.045
			6/7/2022	ND<0	ND<0
			11/16/2022	0.07	0.07
			5/26/2023	0.035	0.035
			11/10/2023	0.032	0.032

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	16 (88.8889%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.001	0.001
			5/26/2023	ND<0	ND<0
			11/10/2023	0.002	0.002
MW-3	18	13 (72.2222%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.004	0.004
			12/14/2021	0.001	0.001
			6/7/2022	0.004	0.004
			11/16/2022	0.002	0.002
			5/26/2023	0.005	0.005
			11/10/2023	ND<0	ND<0
MW-4	18	12 (66.6667%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.008	0.008
			12/14/2021	0.001	0.001
			6/7/2022	0.006	0.006
			11/16/2022	0.003	0.003
			5/26/2023	0.007	0.007
			11/10/2023	0.002	0.002
MW-5	18	14 (77.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.002	0.002
			6/7/2022	ND<0	ND<0
			11/16/2022	0.001	0.001
			5/26/2023	0.003	0.003
			11/10/2023	0.004	0.004
MW-6	18	13 (72.2222%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	ND<0	ND<0
12/1/2016	ND<0	ND<0
6/1/2017	ND<0	ND<0
12/1/2017	ND<0	ND<0
7/1/2018	ND<0	ND<0
12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	0.002	0.002
12/14/2021	ND<0	ND<0
6/7/2022	0.006	0.006
11/16/2022	0.002	0.002
5/26/2023	0.004	0.004
11/10/2023	0.001	0.001

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 29
Percent Non-Detects: 26.8519%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	2 (11.1111%)	7/1/2014	0.066	0.066
			8/1/2015	0.011	0.011
			12/1/2015	ND<0	ND<0
			8/1/2016	0.031	0.031
			12/1/2016	0.038	0.038
			6/1/2017	ND<0	ND<0
			12/1/2017	0.055	0.055
			7/1/2018	0.041	0.041
			12/1/2018	0.046	0.046
			7/1/2019	0.05	0.05
			1/1/2020	0.056	0.056
			7/1/2020	0.063	0.063
			5/1/2021	0.015	0.015
			12/14/2021	0.0017	0.0017
			6/7/2022	0.0011	0.0011
			11/16/2022	0.0031	0.0031
			5/26/2023	0.0139	0.0139
			11/10/2023	0.0051	0.0051

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	6 (33.3333%)	7/1/2014	0.06	0.06
			8/1/2015	0.009	0.009
			12/1/2015	ND<0	ND<0
			8/1/2016	0.038	0.038
			12/1/2016	0.039	0.039
			6/1/2017	0.22	0.22
			12/1/2017	0.02	0.02
			7/1/2018	0.026	0.026
			12/1/2018	0.018	0.018
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.024	0.024
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0061	0.0061
			5/26/2023	0.0028	0.0028
			11/10/2023	0.0116	0.0116
MW-3	18	6 (33.3333%)	7/1/2014	0.054	0.054
			8/1/2015	0.008	0.008
			12/1/2015	ND<0	ND<0

			8/1/2016	0.45	0.45
			12/1/2016	0.043	0.043
			6/1/2017	0.031	0.031
			12/1/2017	0.033	0.033
			7/1/2018	0.049	0.049
			12/1/2018	0.04	0.04
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.031	0.031
			12/14/2021	0.0132	0.0132
			6/7/2022	0.001	0.001
			11/16/2022	0.0035	0.0035
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-4	18	4 (22.2222%)	7/1/2014	0.055	0.055
			8/1/2015	0.009	0.009
			12/1/2015	ND<0	ND<0
			8/1/2016	0.017	0.017
			12/1/2016	0.022	0.022
			6/1/2017	0.031	0.031
			12/1/2017	0.039	0.039
			7/1/2018	0.052	0.052
			12/1/2018	0.032	0.032
			7/1/2019	0.032	0.032
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.057	0.057
			12/14/2021	0.0012	0.0012
			6/7/2022	0.0011	0.0011
			11/16/2022	0.0018	0.0018
			5/26/2023	ND<0	ND<0
			11/10/2023	0.0011	0.0011
MW-5	18	6 (33.3333%)	7/1/2014	0.026	0.026
			8/1/2015	0.006	0.006
			12/1/2015	ND<0	ND<0
			8/1/2016	0.028	0.028
			12/1/2016	0.026	0.026
			6/1/2017	0.025	0.025
			12/1/2017	0.027	0.027
			7/1/2018	0.031	0.031
			12/1/2018	0.028	0.028
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.013	0.013
			12/14/2021	0.0016	0.0016
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.0017	0.0017
			11/10/2023	0.0067	0.0067
MW-6	18	5 (27.7778%)	7/1/2014	0.046	0.046
			8/1/2015	0.008	0.008
			12/1/2015	0.005	0.005

8/1/2016	0.046	0.046
12/1/2016	0.048	0.048
6/1/2017	0.027	0.027
12/1/2017	0.03	0.03
7/1/2018	0.038	0.038
12/1/2018	0.022	0.022
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	0.018	0.018
12/14/2021	0.0018	0.0018
6/7/2022	ND<0	ND<0
11/16/2022	0.0017	0.0017
5/26/2023	ND<0	ND<0
11/10/2023	0.001	0.001

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: FlUoriDe

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 37
Percent Non-Detects: 34.2593%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	4 (22.2222%)	7/1/2014	0.02	0.02
			8/1/2015	0.19	0.19
			12/1/2015	0.22	0.22
			8/1/2016	0.52	0.52
			12/1/2016	0.6	0.6
			6/1/2017	1.55	1.55
			12/1/2017	1	1
			7/1/2018	1.76	1.76
			12/1/2018	1.79	1.79
			7/1/2019	2.05	2.05
			1/1/2020	2.57	2.57
			7/1/2020	3.62	3.62
			5/1/2021	ND<0	ND<0
			12/14/2021	0.127	0.127
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.149	0.149
			11/10/2023	ND<0	ND<0

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	6 (33.3333%)	7/1/2014	0.18	0.18
			8/1/2015	0.24	0.24
			12/1/2015	0.29	0.29
			8/1/2016	0.61	0.61
			12/1/2016	0.75	0.75
			6/1/2017	0.96	0.96
			12/1/2017	1.09	1.09
			7/1/2018	1.05	1.05
			12/1/2018	1.03	1.03
			7/1/2019	0.5	0.5
			1/1/2020	0.78	0.78
			7/1/2020	1.001	1.001
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-3	18	6 (33.3333%)	7/1/2014	0.26	0.26
			8/1/2015	0.13	0.13
			12/1/2015	0.18	0.18

			8/1/2016	0.34	0.34
			12/1/2016	0.22	0.22
			6/1/2017	0.75	0.75
			12/1/2017	1	1
			7/1/2018	0.92	0.92
			12/1/2018	0.58	0.58
			7/1/2019	0.49	0.49
			1/1/2020	0.62	0.62
			7/1/2020	0.745	0.745
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-4	18	6 (33.3333%)	7/1/2014	0.12	0.12
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.41	0.41
			12/1/2016	0.56	0.56
			6/1/2017	0.52	0.52
			12/1/2017	0.47	0.47
			7/1/2018	1.24	1.24
			12/1/2018	1.09	1.09
			7/1/2019	0.65	0.65
			1/1/2020	0.73	0.73
			7/1/2020	0.791	0.791
			5/1/2021	ND<0	ND<0
			12/14/2021	0.162	0.162
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	0.174	0.174
MW-5	18	6 (33.3333%)	7/1/2014	0.11	0.11
			8/1/2015	0.22	0.22
			12/1/2015	0.25	0.25
			8/1/2016	1.26	1.26
			12/1/2016	0.92	0.92
			6/1/2017	0.76	0.76
			12/1/2017	0.83	0.83
			7/1/2018	0.88	0.88
			12/1/2018	0.74	0.74
			7/1/2019	0.6	0.6
			1/1/2020	0.97	0.97
			7/1/2020	0.781	0.781
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-6	18	9 (50%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	0.35	0.35
12/1/2016	0.21	0.21
6/1/2017	0.19	0.19
12/1/2017	0.55	0.55
7/1/2018	0.92	0.92
12/1/2018	0.79	0.79
7/1/2019	0.61	0.61
1/1/2020	0.76	0.76
7/1/2020	0.209	0.209
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	ND<0	ND<0
11/16/2022	ND<0	ND<0
5/26/2023	ND<0	ND<0
11/10/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: LeaD

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 87
Percent Non-Detects: 80.5556%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	9 (50%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	0.006	0.006
			12/1/2018	0.009	0.009
			7/1/2019	0.012	0.012
			1/1/2020	0.015	0.015
			7/1/2020	0.018	0.018
			5/1/2021	0.021	0.021
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.002	0.002
			5/26/2023	0.009	0.009
			11/10/2023	0.0024	0.0024

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	14 (77.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.005	0.005
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0034	0.0034
			5/26/2023	0.0015	0.0015
			11/10/2023	0.0068	0.0068
MW-3	18	17 (94.4444%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0075	0.0075
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-4	18	15 (83.3333%)	7/1/2014	ND<0	ND<0
			8/1/2015	0.006	0.006
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.016	0.016
			12/14/2021	0.001	0.001
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-5	18	15 (83.3333%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0011	0.0011
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.001	0.001
			11/10/2023	0.0019	0.0019
MW-6	18	17 (94.4444%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	ND<0	ND<0
12/1/2016	ND<0	ND<0
6/1/2017	ND<0	ND<0
12/1/2017	ND<0	ND<0
7/1/2018	ND<0	ND<0
12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	ND<0	ND<0
11/16/2022	0.0012	0.0012
5/26/2023	ND<0	ND<0
11/10/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: MercUry

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 99
Percent Non-Detects: 91.6667%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	16 (88.8889%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0002	0.0002
			5/26/2023	0.00042	0.00042
			11/10/2023	ND<0	ND<0

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	16 (88.8889%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.00026	0.00026
			11/10/2023	0.00029	0.00029
MW-3	18	18 (100%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-4	18	18 (100%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-5	18	16 (88.8889%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.00023	0.00023
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	0.00023	0.00023
MW-6	18	15 (83.3333%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	ND<0	ND<0
12/1/2016	ND<0	ND<0
6/1/2017	ND<0	ND<0
12/1/2017	ND<0	ND<0
7/1/2018	ND<0	ND<0
12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	0.00025	0.00025
6/7/2022	ND<0	ND<0
11/16/2022	ND<0	ND<0
5/26/2023	0.00119	0.00119
11/10/2023	0.00136	0.00136

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 54
Percent Non-Detects: 50%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	3 (16.6667%)	7/1/2014	0.008	0.008
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.008	0.008
			12/1/2016	0.012	0.012
			6/1/2017	0.027	0.027
			12/1/2017	0.009	0.009
			7/1/2018	0.01	0.01
			12/1/2018	0.01	0.01
			7/1/2019	0.018	0.018
			1/1/2020	0.011	0.011
			7/1/2020	0.01	0.01
			5/1/2021	0.0035	0.0035
			12/14/2021	0.0026	0.0026
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0049	0.0049
			5/26/2023	0.0042	0.0042
			11/10/2023	0.0034	0.0034

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	8 (44.4444%)	7/1/2014	0.015	0.015
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	0.012	0.012
			6/1/2017	0.01	0.01
			12/1/2017	ND<0	ND<0
			7/1/2018	0.009	0.009
			12/1/2018	0.006	0.006
			7/1/2019	0.006	0.006
			1/1/2020	0.005	0.005
			7/1/2020	ND<0	ND<0
			5/1/2021	0.003	0.003
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0036	0.0036
			5/26/2023	ND<0	ND<0
			11/10/2023	0.0058	0.0058
MW-3	18	8 (44.4444%)	7/1/2014	0.008	0.008
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	0.009	0.009
			12/1/2018	0.009	0.009
			7/1/2019	0.009	0.009
			1/1/2020	0.006	0.006
			7/1/2020	0.007	0.007
			5/1/2021	0.008	0.008
			12/14/2021	ND<0	ND<0
			6/7/2022	0.0137	0.0137
			11/16/2022	0.003	0.003
			5/26/2023	0.0139	0.0139
			11/10/2023	ND<0	ND<0
MW-4	18	11 (61.1111%)	7/1/2014	0.007	0.007
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.006	0.006
			12/14/2021	0.0026	0.0026
			6/7/2022	0.0046	0.0046
			11/16/2022	0.0072	0.0072
			5/26/2023	0.0054	0.0054
			11/10/2023	0.0033	0.0033
MW-5	18	14 (77.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0013	0.0013
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0011	0.0011
			5/26/2023	0.0011	0.0011
			11/10/2023	0.0023	0.0023
MW-6	18	10 (55.5556%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	0.012	0.012
12/1/2016	0.006	0.006
6/1/2017	0.006	0.006
12/1/2017	0.006	0.006
7/1/2018	0.006	0.006
12/1/2018	0.006	0.006
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	0.0025	0.0025
11/16/2022	0.0026	0.0026
5/26/2023	ND<0	ND<0
11/10/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: SUlfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 25
Percent Non-Detects: 23.1481%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	3 (16.6667%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	7	7
			12/1/2016	8	8
			6/1/2017	12	12
			12/1/2017	9	9
			7/1/2018	10	10
			12/1/2018	14	14
			7/1/2019	15	15
			1/1/2020	16	16
			7/1/2020	32	32
			5/1/2021	16	16
			12/14/2021	5.09	5.09
			6/7/2022	3.33	3.33
			11/16/2022	3.37	3.37
			5/26/2023	1.58	1.58
			11/10/2023	2.87	2.87

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	8 (44.4444%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	3	3
			12/1/2016	5	5
			6/1/2017	8	8
			12/1/2017	11	11
			7/1/2018	10	10
			12/1/2018	10	10
			7/1/2019	9	9
			1/1/2020	9	9
			7/1/2020	12	12
			5/1/2021	ND<0	ND<0
			12/14/2021	1.74	1.74
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-3	18	4 (22.2222%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

			8/1/2016	2	2
			12/1/2016	4	4
			6/1/2017	7	7
			12/1/2017	8	8
			7/1/2018	11	11
			12/1/2018	10	10
			7/1/2019	11	11
			1/1/2020	11	11
			7/1/2020	9	9
			5/1/2021	ND<0	ND<0
			12/14/2021	15.9	15.9
			6/7/2022	10.6	10.6
			11/16/2022	16.8	16.8
			5/26/2023	13.8	13.8
			11/10/2023	5.76	5.76
MW-4	18	4 (22.2222%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	13	13
			12/1/2016	9	9
			6/1/2017	9	9
			12/1/2017	10	10
			7/1/2018	12	12
			12/1/2018	11	11
			7/1/2019	9	9
			1/1/2020	15	15
			7/1/2020	11	11
			5/1/2021	ND<0	ND<0
			12/14/2021	6.64	6.64
			6/7/2022	5.99	5.99
			11/16/2022	6.49	6.49
			5/26/2023	4.65	4.65
			11/10/2023	6.31	6.31
MW-5	18	3 (16.6667%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	98	98
			12/1/2016	84	84
			6/1/2017	28	28
			12/1/2017	17	17
			7/1/2018	16	16
			12/1/2018	13	13
			7/1/2019	10	10
			1/1/2020	15	15
			7/1/2020	18	18
			5/1/2021	11	11
			12/14/2021	8.53	8.53
			6/7/2022	11.1	11.1
			11/16/2022	6.41	6.41
			5/26/2023	9.73	9.73
			11/10/2023	9.52	9.52
MW-6	18	3 (16.6667%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	9	9
12/1/2016	10	10
6/1/2017	11	11
12/1/2017	10	10
7/1/2018	11	11
12/1/2018	10	10
7/1/2019	9	9
1/1/2020	11	11
7/1/2020	12	12
5/1/2021	8	8
12/14/2021	8.89	8.89
6/7/2022	11.1	11.1
11/16/2022	9.02	9.02
5/26/2023	10.1	10.1
11/10/2023	9.09	9.09

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: VanaDiUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 92
Percent Non-Detects: 85.1852%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	14 (77.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.013	0.013
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.006	0.006
			5/26/2023	0.009	0.009
			11/10/2023	0.005	0.005

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	16 (88.8889%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.005	0.005
			11/10/2023	0.041	0.041
MW-3	18	17 (94.4444%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.001	0.001
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-4	18	17 (94.4444%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.003	0.003
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-5	18	14 (77.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.002	0.002
			12/14/2021	0.006	0.006
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.005	0.005
			11/10/2023	0.01	0.01
MW-6	18	14 (77.7778%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0

8/1/2016	ND<0	ND<0
12/1/2016	ND<0	ND<0
6/1/2017	ND<0	ND<0
12/1/2017	ND<0	ND<0
7/1/2018	ND<0	ND<0
12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	0.001	0.001
12/14/2021	0.005	0.005
6/7/2022	ND<0	ND<0
11/16/2022	0.013	0.013
5/26/2023	ND<0	ND<0
11/10/2023	0.005	0.005

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Concentrations (mg/l)

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 108
Total Non-Detect: 21
Percent Non-Detects: 19.4444%
Total Background Measurements: 18
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	18	2 (11.1111%)	7/1/2014	0.088	0.088
			8/1/2015	0.066	0.066
			12/1/2015	0.017	0.017
			8/1/2016	0.101	0.101
			12/1/2016	0.124	0.124
			6/1/2017	1.028	1.028
			12/1/2017	1.11	1.11
			7/1/2018	1.742	1.742
			12/1/2018	1.821	1.821
			7/1/2019	1.221	1.221
			1/1/2020	2.011	2.011
			7/1/2020	2.109	2.109
			5/1/2021	0.071	0.071
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	14.8	14.8
			5/26/2023	0.0298	0.0298
			11/10/2023	0.015	0.015

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	18	1 (5.55556%)	7/1/2014	0.155	0.155
			8/1/2015	0.061	0.061
			12/1/2015	0.018	0.018
			8/1/2016	0.086	0.086
			12/1/2016	0.091	0.091
			6/1/2017	0.121	0.121
			12/1/2017	0.141	0.141
			7/1/2018	0.732	0.732
			12/1/2018	0.887	0.887
			7/1/2019	0.92	0.92
			1/1/2020	0.753	0.753
			7/1/2020	0.807	0.807
			5/1/2021	0.054	0.054
			12/14/2021	0.011	0.011
			6/7/2022	ND<0	ND<0
			11/16/2022	17.1	17.1
			5/26/2023	0.0125	0.0125
			11/10/2023	0.0246	0.0246
MW-3	18	2 (11.1111%)	7/1/2014	0.028	0.028
			8/1/2015	0.061	0.061
			12/1/2015	0.021	0.021

			8/1/2016	0.164	0.164
			12/1/2016	0.141	0.141
			6/1/2017	0.173	0.173
			12/1/2017	1.002	1.002
			7/1/2018	1	1
			12/1/2018	1.11	1.11
			7/1/2019	0.107	0.107
			1/1/2020	0.324	0.324
			7/1/2020	0.543	0.543
			5/1/2021	0.061	0.061
			12/14/2021	0.012	0.012
			6/7/2022	0.0114	0.0114
			11/16/2022	ND<0	ND<0
			5/26/2023	0.0149	0.0149
			11/10/2023	ND<0	ND<0
MW-4	18	5 (27.7778%)	7/1/2014	0.103	0.103
			8/1/2015	0.06	0.06
			12/1/2015	0.034	0.034
			8/1/2016	0.091	0.091
			12/1/2016	0.112	0.112
			6/1/2017	0.121	0.121
			12/1/2017	0.115	0.115
			7/1/2018	0.129	0.129
			12/1/2018	0.099	0.099
			7/1/2019	0.117	0.117
			1/1/2020	0.505	0.505
			7/1/2020	0.67	0.67
			5/1/2021	0.067	0.067
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	ND<0	ND<0
MW-5	18	5 (27.7778%)	7/1/2014	0.051	0.051
			8/1/2015	0.053	0.053
			12/1/2015	0.022	0.022
			8/1/2016	0.222	0.222
			12/1/2016	0.184	0.184
			6/1/2017	0.15	0.15
			12/1/2017	0.109	0.109
			7/1/2018	0.274	0.274
			12/1/2018	0.374	0.374
			7/1/2019	0.222	0.222
			1/1/2020	0.446	0.446
			7/1/2020	0.544	0.544
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
			11/10/2023	0.0122	0.0122
MW-6	18	6 (33.3333%)	7/1/2014	0.076	0.076
			8/1/2015	0.069	0.069
			12/1/2015	0.1	0.1

8/1/2016	0.16	0.16
12/1/2016	0.1	0.1
6/1/2017	0.114	0.114
12/1/2017	0.272	0.272
7/1/2018	0.37	0.37
12/1/2018	0.355	0.355
7/1/2019	0.103	0.103
1/1/2020	0.247	0.247
7/1/2020	0.372	0.372
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	ND<0	ND<0
11/16/2022	ND<0	ND<0
5/26/2023	ND<0	ND<0
11/10/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Ammonia

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0	-0.597761	47.7393	0
31	0	-0.570999	48.0653	0
32	0	-0.544642	48.3619	0
33	0	-0.518658	48.6309	0
34	0	-0.493018	48.874	0
35	0	-0.464904	49.0901	0
36	0	-0.439913	49.2837	0
37	0	-0.415193	49.456	0
38	0	-0.390726	49.6087	0
39	0	-0.36649	49.743	0
40	0	-0.342466	49.8603	0
41	0	-0.316004	49.9602	0
42	0	-0.292375	50.0457	0
43	0	-0.268908	50.118	0
44	0.11	-0.24559	50.1783	-0.0270149
45	0.12	-0.222403	50.2277	-0.0537033
46	0.213	-0.196779	50.2665	-0.0956173
47	0.284	-0.173829	50.2967	-0.144985

48	0.29	-0.150969	50.3195	-0.188766
49	0.3	-0.128189	50.3359	-0.227223
50	0.3	-0.105474	50.347	-0.258865
51	0.31	-0.0828129	50.3539	-0.284537
52	0.36	-0.0576847	50.3572	-0.305303
53	0.36	-0.0350997	50.3584	-0.317939
54	0.36	-0.0125328	50.3586	-0.322451
55	0.37	0.0125328	50.3588	-0.317814
56	0.37	0.0350997	50.36	-0.304827
57	0.38	0.0576847	50.3633	-0.282907
58	0.39	0.0828129	50.3702	-0.25061
59	0.4	0.105474	50.3813	-0.20842
60	0.4	0.128189	50.3977	-0.157145
61	0.4	0.150969	50.4205	-0.0967569
62	0.41	0.173829	50.4507	-0.0254868
63	0.41	0.196779	50.4895	0.0551927
64	0.42	0.222403	50.5389	0.148602
65	0.42	0.24559	50.5992	0.25175
66	0.42	0.268908	50.6716	0.364691
67	0.42	0.292375	50.757	0.487489
68	0.42	0.316004	50.8569	0.62021
69	0.42	0.342466	50.9742	0.764046
70	0.42	0.36649	51.1085	0.917972
71	0.44	0.390726	51.2612	1.08989
72	0.44	0.415193	51.4335	1.27258
73	0.44	0.439913	51.6271	1.46614
74	0.45	0.464904	51.8432	1.67535
75	0.46	0.493018	52.0863	1.90213
76	0.48	0.518658	52.3553	2.15109
77	0.49	0.544642	52.6519	2.41796
78	0.497	0.570999	52.978	2.70175
79	0.5	0.597761	53.3353	3.00063
80	0.52	0.624956	53.7258	3.32561
81	0.543	0.655726	54.1558	3.68167
82	0.55	0.68396	54.6236	4.05784
83	0.55	0.712751	55.1316	4.44986
84	0.57	0.742143	55.6824	4.87288
85	0.57	0.772193	56.2787	5.31303
86	0.59	0.802956	56.9234	5.78677
87	0.59	0.838054	57.6258	6.28123
88	0.59	0.87055	58.3836	6.79485
89	0.6	0.903992	59.2008	7.33725
90	0.6	0.938476	60.0816	7.90033
91	0.61	0.974114	61.0305	8.49454
92	0.62	1.01522	62.0611	9.12398
93	0.63	1.05375	63.1715	9.78784
94	0.65	1.0939	64.3681	10.4989
95	0.68	1.1359	65.6584	11.2713
96	0.68	1.18	67.0508	12.0737
97	0.705	1.22653	68.5552	12.9384
98	0.71	1.28155	70.1975	13.8483
99	0.71	1.33462	71.9788	14.7959
100	0.74	1.39175	73.9157	15.8258
101	0.74	1.4538	76.0293	16.9016
102	0.75	1.52203	78.3458	18.0431
103	0.81	1.59819	80.9001	19.3376
104	0.81	1.6954	83.7744	20.7109

105	1.1	1.79912	87.0113	22.6899
106	1.26	1.92684	90.724	25.1178
107	1.33	2.09693	95.1211	27.9067
108	1.47	2.36561	100.717	31.3841

Data Set Standard Deviation = 0.327284
Numerator = 984.963
Denominator = 1154.35
W Statistic = 0.853262 = 984.963 / 1154.35

5% Critical value of 0.976 exceeds 0.853262
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.853262
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Arsenic

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0	-0.597761	47.7393	0
31	0	-0.570999	48.0653	0
32	0	-0.544642	48.3619	0
33	0	-0.518658	48.6309	0
34	0	-0.493018	48.874	0
35	0	-0.464904	49.0901	0
36	0	-0.439913	49.2837	0
37	0	-0.415193	49.456	0
38	0	-0.390726	49.6087	0
39	0	-0.36649	49.743	0
40	0	-0.342466	49.8603	0
41	0	-0.316004	49.9602	0
42	0	-0.292375	50.0457	0
43	0	-0.268908	50.118	0
44	0	-0.24559	50.1783	0
45	0	-0.222403	50.2277	0
46	0	-0.196779	50.2665	0
47	0	-0.173829	50.2967	0

48	0	-0.150969	50.3195	0
49	0	-0.128189	50.3359	0
50	0	-0.105474	50.347	0
51	0	-0.0828129	50.3539	0
52	0	-0.0576847	50.3572	0
53	0	-0.0350997	50.3584	0
54	0	-0.0125328	50.3586	0
55	0	0.0125328	50.3588	0
56	0	0.0350997	50.36	0
57	0	0.0576847	50.3633	0
58	0	0.0828129	50.3702	0
59	0	0.105474	50.3813	0
60	0	0.128189	50.3977	0
61	0	0.150969	50.4205	0
62	0	0.173829	50.4507	0
63	0	0.196779	50.4895	0
64	0	0.222403	50.5389	0
65	0	0.24559	50.5992	0
66	0	0.268908	50.6716	0
67	0	0.292375	50.757	0
68	0	0.316004	50.8569	0
69	0	0.342466	50.9742	0
70	0	0.36649	51.1085	0
71	0	0.390726	51.2612	0
72	0	0.415193	51.4335	0
73	0	0.439913	51.6271	0
74	0	0.464904	51.8432	0
75	0	0.493018	52.0863	0
76	0	0.518658	52.3553	0
77	0	0.544642	52.6519	0
78	0	0.570999	52.978	0
79	0	0.597761	53.3353	0
80	0	0.624956	53.7258	0
81	0	0.655726	54.1558	0
82	0	0.68396	54.6236	0
83	0	0.712751	55.1316	0
84	0	0.742143	55.6824	0
85	0	0.772193	56.2787	0
86	0	0.802956	56.9234	0
87	0	0.838054	57.6258	0
88	0	0.87055	58.3836	0
89	0	0.903992	59.2008	0
90	0	0.938476	60.0816	0
91	0.001	0.974114	61.0305	0.000974114
92	0.0011	1.01522	62.0611	0.00209086
93	0.0013	1.05375	63.1715	0.00346073
94	0.0016	1.0939	64.3681	0.00521096
95	0.0017	1.1359	65.6584	0.00714198
96	0.0018	1.18	67.0508	0.00926599
97	0.0021	1.22653	68.5552	0.0118417
98	0.0031	1.28155	70.1975	0.0158145
99	0.0033	1.33462	71.9788	0.0202188
100	0.0035	1.39175	73.9157	0.0250899
101	0.0036	1.4538	76.0293	0.0303236
102	0.0047	1.52203	78.3458	0.0374771
103	0.0049	1.59819	80.9001	0.0453083
104	0.0052	1.6954	83.7744	0.0541243

105	0.0056	1.79912	87.0113	0.0641994
106	0.0058	1.92684	90.724	0.0753751
107	0.0094	2.09693	95.1211	0.0950862
108	0.0261	2.36561	100.717	0.156829

Data Set Standard Deviation = 0.00290384
Numerator = 0.0245952
Denominator = 0.0908728
W Statistic = 0.270656 = 0.0245952 / 0.0908728

5% Critical value of 0.976 exceeds 0.270656
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.270656
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: BariUm

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0.009	-2.09693	9.99325	-0.0188724
3	0.017	-1.92684	13.706	-0.0516286
4	0.018	-1.79912	16.9428	-0.0840127
5	0.022	-1.6954	19.8171	-0.121311
6	0.023	-1.59819	22.3714	-0.15807
7	0.023	-1.52203	24.688	-0.193077
8	0.023	-1.4538	26.8015	-0.226514
9	0.023	-1.39175	28.7385	-0.258524
10	0.024	-1.33462	30.5197	-0.290555
11	0.024	-1.28155	32.162	-0.321313
12	0.026	-1.22653	33.6664	-0.353202
13	0.028	-1.18	35.0588	-0.386242
14	0.03	-1.1359	36.3491	-0.420319
15	0.03	-1.0939	37.5457	-0.453136
16	0.031	-1.05375	38.6561	-0.485802
17	0.031	-1.01522	39.6867	-0.517274
18	0.031	-0.974114	40.6356	-0.547472
19	0.031	-0.938476	41.5164	-0.576564
20	0.031	-0.903992	42.3336	-0.604588
21	0.031	-0.87055	43.0914	-0.631575
22	0.031	-0.838054	43.7938	-0.657555
23	0.033	-0.802956	44.4385	-0.684052
24	0.033	-0.772193	45.0348	-0.709535
25	0.034	-0.742143	45.5856	-0.734768
26	0.035	-0.712751	46.0936	-0.759714
27	0.036	-0.68396	46.5614	-0.784336
28	0.037	-0.655726	46.9914	-0.808598
29	0.037	-0.624956	47.3819	-0.831722
30	0.037	-0.597761	47.7393	-0.853839
31	0.039	-0.570999	48.0653	-0.876108
32	0.039	-0.544642	48.3619	-0.897349
33	0.04	-0.518658	48.6309	-0.918095
34	0.042	-0.493018	48.874	-0.938802
35	0.042	-0.464904	49.0901	-0.958328
36	0.043	-0.439913	49.2837	-0.977244
37	0.044	-0.415193	49.456	-0.995513
38	0.044	-0.390726	49.6087	-1.0127
39	0.044	-0.36649	49.743	-1.02883
40	0.044	-0.342466	49.8603	-1.0439
41	0.047	-0.316004	49.9602	-1.05875
42	0.048	-0.292375	50.0457	-1.07278
43	0.049	-0.268908	50.118	-1.08596
44	0.049	-0.24559	50.1783	-1.098
45	0.051	-0.222403	50.2277	-1.10934
46	0.051	-0.196779	50.2665	-1.11937
47	0.052	-0.173829	50.2967	-1.12841

48	0.053	-0.150969	50.3195	-1.13641
49	0.054	-0.128189	50.3359	-1.14334
50	0.055	-0.105474	50.347	-1.14914
51	0.055	-0.0828129	50.3539	-1.15369
52	0.055	-0.0576847	50.3572	-1.15686
53	0.055	-0.0350997	50.3584	-1.1588
54	0.058	-0.0125328	50.3586	-1.15952
55	0.059	0.0125328	50.3588	-1.15878
56	0.06	0.0350997	50.36	-1.15668
57	0.061	0.0576847	50.3633	-1.15316
58	0.061	0.0828129	50.3702	-1.14811
59	0.061	0.105474	50.3813	-1.14167
60	0.063	0.128189	50.3977	-1.1336
61	0.063	0.150969	50.4205	-1.12409
62	0.064	0.173829	50.4507	-1.11296
63	0.067	0.196779	50.4895	-1.09978
64	0.07	0.222403	50.5389	-1.08421
65	0.071	0.24559	50.5992	-1.06677
66	0.071	0.268908	50.6716	-1.04768
67	0.072	0.292375	50.757	-1.02663
68	0.073	0.316004	50.8569	-1.00356
69	0.073	0.342466	50.9742	-0.978559
70	0.076	0.36649	51.1085	-0.950706
71	0.077	0.390726	51.2612	-0.92062
72	0.078	0.415193	51.4335	-0.888235
73	0.078	0.439913	51.6271	-0.853922
74	0.078	0.464904	51.8432	-0.817659
75	0.079	0.493018	52.0863	-0.778711
76	0.081	0.518658	52.3553	-0.7367
77	0.081	0.544642	52.6519	-0.692584
78	0.081	0.570999	52.978	-0.646333
79	0.081	0.597761	53.3353	-0.597914
80	0.083	0.624956	53.7258	-0.546043
81	0.084	0.655726	54.1558	-0.490962
82	0.084	0.68396	54.6236	-0.433509
83	0.086	0.712751	55.1316	-0.372212
84	0.088	0.742143	55.6824	-0.306904
85	0.089	0.772193	56.2787	-0.238179
86	0.09	0.802956	56.9234	-0.165913
87	0.09	0.838054	57.6258	-0.0904878
88	0.091	0.87055	58.3836	-0.0112677
89	0.092	0.903992	59.2008	0.0718996
90	0.095	0.938476	60.0816	0.161055
91	0.095	0.974114	61.0305	0.253596
92	0.097	1.01522	62.0611	0.352072
93	0.111	1.05375	63.1715	0.469038
94	0.121	1.0939	64.3681	0.601399
95	0.123	1.1359	65.6584	0.741114
96	0.124	1.18	67.0508	0.887435
97	0.131	1.22653	68.5552	1.04811
98	0.14	1.28155	70.1975	1.22753
99	0.145	1.33462	71.9788	1.42105
100	0.19	1.39175	73.9157	1.68548
101	0.194	1.4538	76.0293	1.96752
102	0.197	1.52203	78.3458	2.26736
103	0.2	1.59819	80.9001	2.587
104	0.268	1.6954	83.7744	3.04136

105	0.278	1.79912	87.0113	3.54152
106	0.291	1.92684	90.724	4.10223
107	0.35	2.09693	95.1211	4.83615
108	0.498	2.36561	100.717	6.01423

Data Set Standard Deviation = 0.0717584
Numerator = 36.1709
Denominator = 55.4923
W Statistic = 0.651819 = 36.1709 / 55.4923

5% Critical value of 0.976 exceeds 0.651819
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.651819
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: ChromiUm

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0	-0.597761	47.7393	0
31	0	-0.570999	48.0653	0
32	0	-0.544642	48.3619	0
33	0	-0.518658	48.6309	0
34	0	-0.493018	48.874	0
35	0	-0.464904	49.0901	0
36	0	-0.439913	49.2837	0
37	0	-0.415193	49.456	0
38	0	-0.390726	49.6087	0
39	0	-0.36649	49.743	0
40	0	-0.342466	49.8603	0
41	0	-0.316004	49.9602	0
42	0	-0.292375	50.0457	0
43	0	-0.268908	50.118	0
44	0	-0.24559	50.1783	0
45	0	-0.222403	50.2277	0
46	0	-0.196779	50.2665	0
47	0	-0.173829	50.2967	0

48	0	-0.150969	50.3195	0
49	0	-0.128189	50.3359	0
50	0	-0.105474	50.347	0
51	0	-0.0828129	50.3539	0
52	0	-0.0576847	50.3572	0
53	0	-0.0350997	50.3584	0
54	0	-0.0125328	50.3586	0
55	0	0.0125328	50.3588	0
56	0	0.0350997	50.36	0
57	0	0.0576847	50.3633	0
58	0	0.0828129	50.3702	0
59	0	0.105474	50.3813	0
60	0	0.128189	50.3977	0
61	0	0.150969	50.4205	0
62	0	0.173829	50.4507	0
63	0	0.196779	50.4895	0
64	0	0.222403	50.5389	0
65	0	0.24559	50.5992	0
66	0	0.268908	50.6716	0
67	0	0.292375	50.757	0
68	0	0.316004	50.8569	0
69	0	0.342466	50.9742	0
70	0	0.36649	51.1085	0
71	0	0.390726	51.2612	0
72	0	0.415193	51.4335	0
73	0	0.439913	51.6271	0
74	0	0.464904	51.8432	0
75	0	0.493018	52.0863	0
76	0	0.518658	52.3553	0
77	0	0.544642	52.6519	0
78	0	0.570999	52.978	0
79	0	0.597761	53.3353	0
80	0	0.624956	53.7258	0
81	0	0.655726	54.1558	0
82	0	0.68396	54.6236	0
83	0	0.712751	55.1316	0
84	0	0.742143	55.6824	0
85	0	0.772193	56.2787	0
86	0	0.802956	56.9234	0
87	0	0.838054	57.6258	0
88	0	0.87055	58.3836	0
89	0	0.903992	59.2008	0
90	0.001	0.938476	60.0816	0.000938476
91	0.001	0.974114	61.0305	0.00191259
92	0.001	1.01522	62.0611	0.00292781
93	0.001	1.05375	63.1715	0.00398156
94	0.001	1.0939	64.3681	0.00507545
95	0.001	1.1359	65.6584	0.00621135
96	0.002	1.18	67.0508	0.00857135
97	0.002	1.22653	68.5552	0.0110244
98	0.002	1.28155	70.1975	0.0135875
99	0.002	1.33462	71.9788	0.0162568
100	0.003	1.39175	73.9157	0.020432
101	0.003	1.4538	76.0293	0.0247934
102	0.003	1.52203	78.3458	0.0293595
103	0.004	1.59819	80.9001	0.0357523
104	0.005	1.6954	83.7744	0.0442293

105	0.009	1.79912	87.0113	0.0604213
106	0.01	1.92684	90.724	0.0796897
107	0.014	2.09693	95.1211	0.109047
108	0.026	2.36561	100.717	0.170553

Data Set Standard Deviation = 0.00315684
Numerator = 0.0290882
Denominator = 0.107397
W Statistic = 0.270847 = 0.0290882 / 0.107397

5% Critical value of 0.976 exceeds 0.270847
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.270847
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Cobalt

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0	-0.597761	47.7393	0
31	0	-0.570999	48.0653	0
32	0	-0.544642	48.3619	0
33	0	-0.518658	48.6309	0
34	0	-0.493018	48.874	0
35	0	-0.464904	49.0901	0
36	0	-0.439913	49.2837	0
37	0	-0.415193	49.456	0
38	0	-0.390726	49.6087	0
39	0	-0.36649	49.743	0
40	0	-0.342466	49.8603	0
41	0	-0.316004	49.9602	0
42	0	-0.292375	50.0457	0
43	0	-0.268908	50.118	0
44	0	-0.24559	50.1783	0
45	0	-0.222403	50.2277	0
46	0	-0.196779	50.2665	0
47	0	-0.173829	50.2967	0

48	0	-0.150969	50.3195	0
49	0	-0.128189	50.3359	0
50	0	-0.105474	50.347	0
51	0	-0.0828129	50.3539	0
52	0	-0.0576847	50.3572	0
53	0	-0.0350997	50.3584	0
54	0	-0.0125328	50.3586	0
55	0	0.0125328	50.3588	0
56	0	0.0350997	50.36	0
57	0	0.0576847	50.3633	0
58	0	0.0828129	50.3702	0
59	0	0.105474	50.3813	0
60	0	0.128189	50.3977	0
61	0	0.150969	50.4205	0
62	0	0.173829	50.4507	0
63	0	0.196779	50.4895	0
64	0	0.222403	50.5389	0
65	0	0.24559	50.5992	0
66	0	0.268908	50.6716	0
67	0	0.292375	50.757	0
68	0	0.316004	50.8569	0
69	0	0.342466	50.9742	0
70	0	0.36649	51.1085	0
71	0	0.390726	51.2612	0
72	0	0.415193	51.4335	0
73	0	0.439913	51.6271	0
74	0	0.464904	51.8432	0
75	0	0.493018	52.0863	0
76	0	0.518658	52.3553	0
77	0	0.544642	52.6519	0
78	0	0.570999	52.978	0
79	0	0.597761	53.3353	0
80	0	0.624956	53.7258	0
81	0	0.655726	54.1558	0
82	0.001	0.68396	54.6236	0.00068396
83	0.001	0.712751	55.1316	0.00139671
84	0.001	0.742143	55.6824	0.00213885
85	0.001	0.772193	56.2787	0.00291105
86	0.001	0.802956	56.9234	0.003714
87	0.002	0.838054	57.6258	0.00539011
88	0.002	0.87055	58.3836	0.00713121
89	0.002	0.903992	59.2008	0.0089392
90	0.002	0.938476	60.0816	0.0108161
91	0.002	0.974114	61.0305	0.0127644
92	0.002	1.01522	62.0611	0.0147948
93	0.003	1.05375	63.1715	0.0179561
94	0.003	1.0939	64.3681	0.0212377
95	0.004	1.1359	65.6584	0.0257813
96	0.004	1.18	67.0508	0.0305013
97	0.004	1.22653	68.5552	0.0354074
98	0.004	1.28155	70.1975	0.0405336
99	0.005	1.33462	71.9788	0.0472068
100	0.006	1.39175	73.9157	0.0555572
101	0.006	1.4538	76.0293	0.0642801
102	0.007	1.52203	78.3458	0.0749343
103	0.008	1.59819	80.9001	0.0877198
104	0.032	1.6954	83.7744	0.141973

105	0.035	1.79912	87.0113	0.204942
106	0.045	1.92684	90.724	0.291649
107	0.07	2.09693	95.1211	0.438435
108	0.086	2.36561	100.717	0.641877

Data Set Standard Deviation = 0.012162
Numerator = 0.412006
Denominator = 1.59404
W Statistic = 0.258466 = 0.412006 / 1.59404

5% Critical value of 0.976 exceeds 0.258466
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.258466
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Copper

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0.001	-0.597761	47.7393	-0.000597761
31	0.001	-0.570999	48.0653	-0.00116876
32	0.0011	-0.544642	48.3619	-0.00176787
33	0.0011	-0.518658	48.6309	-0.00233839
34	0.0011	-0.493018	48.874	-0.00288071
35	0.0012	-0.464904	49.0901	-0.00343859
36	0.0016	-0.439913	49.2837	-0.00414246
37	0.0017	-0.415193	49.456	-0.00484828
38	0.0017	-0.390726	49.6087	-0.00551252
39	0.0017	-0.36649	49.743	-0.00613555
40	0.0018	-0.342466	49.8603	-0.00675199
41	0.0018	-0.316004	49.9602	-0.0073208
42	0.0028	-0.292375	50.0457	-0.00813945
43	0.0031	-0.268908	50.118	-0.00897306
44	0.0035	-0.24559	50.1783	-0.00983263
45	0.005	-0.222403	50.2277	-0.0109446
46	0.0051	-0.196779	50.2665	-0.0119482
47	0.006	-0.173829	50.2967	-0.0129912

48	0.0061	-0.150969	50.3195	-0.0139121
49	0.0067	-0.128189	50.3359	-0.014771
50	0.008	-0.105474	50.347	-0.0156148
51	0.008	-0.0828129	50.3539	-0.0162773
52	0.009	-0.0576847	50.3572	-0.0167964
53	0.009	-0.0350997	50.3584	-0.0171123
54	0.011	-0.0125328	50.3586	-0.0172502
55	0.0116	0.0125328	50.3588	-0.0171048
56	0.013	0.0350997	50.36	-0.0166485
57	0.0132	0.0576847	50.3633	-0.0158871
58	0.0139	0.0828129	50.3702	-0.014736
59	0.015	0.105474	50.3813	-0.0131539
60	0.017	0.128189	50.3977	-0.0109747
61	0.018	0.150969	50.4205	-0.00825721
62	0.018	0.173829	50.4507	-0.00512828
63	0.02	0.196779	50.4895	-0.00119269
64	0.022	0.222403	50.5389	0.00370018
65	0.022	0.24559	50.5992	0.00910316
66	0.024	0.268908	50.6716	0.015557
67	0.025	0.292375	50.757	0.0228663
68	0.026	0.316004	50.8569	0.0310824
69	0.026	0.342466	50.9742	0.0399865
70	0.026	0.36649	51.1085	0.0495153
71	0.027	0.390726	51.2612	0.0600649
72	0.027	0.415193	51.4335	0.0712751
73	0.028	0.439913	51.6271	0.0835927
74	0.028	0.464904	51.8432	0.09661
75	0.03	0.493018	52.0863	0.111401
76	0.031	0.518658	52.3553	0.127479
77	0.031	0.544642	52.6519	0.144363
78	0.031	0.570999	52.978	0.162064
79	0.031	0.597761	53.3353	0.180594
80	0.031	0.624956	53.7258	0.199968
81	0.032	0.655726	54.1558	0.220951
82	0.032	0.68396	54.6236	0.242838
83	0.033	0.712751	55.1316	0.266359
84	0.038	0.742143	55.6824	0.29456
85	0.038	0.772193	56.2787	0.323904
86	0.038	0.802956	56.9234	0.354416
87	0.039	0.838054	57.6258	0.3871
88	0.039	0.87055	58.3836	0.421051
89	0.04	0.903992	59.2008	0.457211
90	0.041	0.938476	60.0816	0.495689
91	0.043	0.974114	61.0305	0.537576
92	0.046	1.01522	62.0611	0.584276
93	0.046	1.05375	63.1715	0.632748
94	0.046	1.0939	64.3681	0.683067
95	0.048	1.1359	65.6584	0.73759
96	0.049	1.18	67.0508	0.79541
97	0.05	1.22653	68.5552	0.856737
98	0.052	1.28155	70.1975	0.923377
99	0.054	1.33462	71.9788	0.995447
100	0.055	1.39175	73.9157	1.07199
101	0.055	1.4538	76.0293	1.15195
102	0.056	1.52203	78.3458	1.23719
103	0.057	1.59819	80.9001	1.32828
104	0.06	1.6954	83.7744	1.43001

105	0.063	1.79912	87.0113	1.54335
106	0.066	1.92684	90.724	1.67052
107	0.22	2.09693	95.1211	2.13185
108	0.45	2.36561	100.717	3.19637

Data Set Standard Deviation = 0.0496409
Numerator = 10.2168
Denominator = 26.5562
W Statistic = 0.384724 = 10.2168 / 26.5562

5% Critical value of 0.976 exceeds 0.384724
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.384724
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: FlUoriDe

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0	-0.597761	47.7393	0
31	0	-0.570999	48.0653	0
32	0	-0.544642	48.3619	0
33	0	-0.518658	48.6309	0
34	0	-0.493018	48.874	0
35	0	-0.464904	49.0901	0
36	0	-0.439913	49.2837	0
37	0	-0.415193	49.456	0
38	0.02	-0.390726	49.6087	-0.00781451
39	0.11	-0.36649	49.743	-0.0481284
40	0.12	-0.342466	49.8603	-0.0892243
41	0.127	-0.316004	49.9602	-0.129357
42	0.13	-0.292375	50.0457	-0.167366
43	0.149	-0.268908	50.118	-0.207433
44	0.162	-0.24559	50.1783	-0.247218
45	0.174	-0.222403	50.2277	-0.285917
46	0.18	-0.196779	50.2665	-0.321337
47	0.18	-0.173829	50.2967	-0.352626

48	0.19	-0.150969	50.3195	-0.38131
49	0.19	-0.128189	50.3359	-0.405666
50	0.209	-0.105474	50.347	-0.42771
51	0.21	-0.0828129	50.3539	-0.445101
52	0.22	-0.0576847	50.3572	-0.457792
53	0.22	-0.0350997	50.3584	-0.465514
54	0.22	-0.0125328	50.3586	-0.468271
55	0.24	0.0125328	50.3588	-0.465263
56	0.25	0.0350997	50.36	-0.456488
57	0.26	0.0576847	50.3633	-0.44149
58	0.29	0.0828129	50.3702	-0.417474
59	0.34	0.105474	50.3813	-0.381613
60	0.35	0.128189	50.3977	-0.336747
61	0.41	0.150969	50.4205	-0.27485
62	0.47	0.173829	50.4507	-0.19315
63	0.49	0.196779	50.4895	-0.0967278
64	0.5	0.222403	50.5389	0.0144738
65	0.52	0.24559	50.5992	0.14218
66	0.52	0.268908	50.6716	0.282013
67	0.55	0.292375	50.757	0.442819
68	0.56	0.316004	50.8569	0.619781
69	0.58	0.342466	50.9742	0.818411
70	0.6	0.36649	51.1085	1.03831
71	0.6	0.390726	51.2612	1.27274
72	0.61	0.415193	51.4335	1.52601
73	0.61	0.439913	51.6271	1.79436
74	0.62	0.464904	51.8432	2.0826
75	0.65	0.493018	52.0863	2.40306
76	0.73	0.518658	52.3553	2.78168
77	0.74	0.544642	52.6519	3.18471
78	0.745	0.570999	52.978	3.61011
79	0.75	0.597761	53.3353	4.05843
80	0.75	0.624956	53.7258	4.52714
81	0.76	0.655726	54.1558	5.0255
82	0.76	0.68396	54.6236	5.54531
83	0.78	0.712751	55.1316	6.10125
84	0.781	0.742143	55.6824	6.68087
85	0.79	0.772193	56.2787	7.2909
86	0.791	0.802956	56.9234	7.92604
87	0.83	0.838054	57.6258	8.62162
88	0.88	0.87055	58.3836	9.38771
89	0.92	0.903992	59.2008	10.2194
90	0.92	0.938476	60.0816	11.0828
91	0.92	0.974114	61.0305	11.979
92	0.96	1.01522	62.0611	12.9536
93	0.97	1.05375	63.1715	13.9757
94	1	1.0939	64.3681	15.0696
95	1	1.1359	65.6584	16.2055
96	1.001	1.18	67.0508	17.3867
97	1.03	1.22653	68.5552	18.65
98	1.05	1.28155	70.1975	19.9956
99	1.09	1.33462	71.9788	21.4504
100	1.09	1.39175	73.9157	22.9674
101	1.24	1.4538	76.0293	24.7701
102	1.26	1.52203	78.3458	26.6879
103	1.55	1.59819	80.9001	29.1651
104	1.76	1.6954	83.7744	32.149

105	1.79	1.79912	87.0113	35.3694
106	2.05	1.92684	90.724	39.3194
107	2.57	2.09693	95.1211	44.7085
108	3.62	2.36561	100.717	53.272

Data Set Standard Deviation = 0.59109
Numerator = 2837.91
Denominator = 3765.25
W Statistic = 0.75371 = 2837.91 / 3765.25

5% Critical value of 0.976 exceeds 0.75371
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.75371
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: LeaD

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0	-0.597761	47.7393	0
31	0	-0.570999	48.0653	0
32	0	-0.544642	48.3619	0
33	0	-0.518658	48.6309	0
34	0	-0.493018	48.874	0
35	0	-0.464904	49.0901	0
36	0	-0.439913	49.2837	0
37	0	-0.415193	49.456	0
38	0	-0.390726	49.6087	0
39	0	-0.36649	49.743	0
40	0	-0.342466	49.8603	0
41	0	-0.316004	49.9602	0
42	0	-0.292375	50.0457	0
43	0	-0.268908	50.118	0
44	0	-0.24559	50.1783	0
45	0	-0.222403	50.2277	0
46	0	-0.196779	50.2665	0
47	0	-0.173829	50.2967	0

48	0	-0.150969	50.3195	0
49	0	-0.128189	50.3359	0
50	0	-0.105474	50.347	0
51	0	-0.0828129	50.3539	0
52	0	-0.0576847	50.3572	0
53	0	-0.0350997	50.3584	0
54	0	-0.0125328	50.3586	0
55	0	0.0125328	50.3588	0
56	0	0.0350997	50.36	0
57	0	0.0576847	50.3633	0
58	0	0.0828129	50.3702	0
59	0	0.105474	50.3813	0
60	0	0.128189	50.3977	0
61	0	0.150969	50.4205	0
62	0	0.173829	50.4507	0
63	0	0.196779	50.4895	0
64	0	0.222403	50.5389	0
65	0	0.24559	50.5992	0
66	0	0.268908	50.6716	0
67	0	0.292375	50.757	0
68	0	0.316004	50.8569	0
69	0	0.342466	50.9742	0
70	0	0.36649	51.1085	0
71	0	0.390726	51.2612	0
72	0	0.415193	51.4335	0
73	0	0.439913	51.6271	0
74	0	0.464904	51.8432	0
75	0	0.493018	52.0863	0
76	0	0.518658	52.3553	0
77	0	0.544642	52.6519	0
78	0	0.570999	52.978	0
79	0	0.597761	53.3353	0
80	0	0.624956	53.7258	0
81	0	0.655726	54.1558	0
82	0	0.68396	54.6236	0
83	0	0.712751	55.1316	0
84	0	0.742143	55.6824	0
85	0	0.772193	56.2787	0
86	0	0.802956	56.9234	0
87	0	0.838054	57.6258	0
88	0.001	0.87055	58.3836	0.00087055
89	0.001	0.903992	59.2008	0.00177454
90	0.0011	0.938476	60.0816	0.00280687
91	0.0012	0.974114	61.0305	0.0039758
92	0.0015	1.01522	62.0611	0.00549863
93	0.0019	1.05375	63.1715	0.00750075
94	0.002	1.0939	64.3681	0.00968854
95	0.0024	1.1359	65.6584	0.0124147
96	0.0034	1.18	67.0508	0.0164267
97	0.005	1.22653	68.5552	0.0225593
98	0.006	1.28155	70.1975	0.0302486
99	0.006	1.33462	71.9788	0.0382564
100	0.0068	1.39175	73.9157	0.0477203
101	0.0075	1.4538	76.0293	0.0586238
102	0.009	1.52203	78.3458	0.0723221
103	0.009	1.59819	80.9001	0.0867058
104	0.012	1.6954	83.7744	0.107051

105	0.015	1.79912	87.0113	0.134037
106	0.016	1.92684	90.724	0.164867
107	0.018	2.09693	95.1211	0.202612
108	0.021	2.36561	100.717	0.252289

Data Set Standard Deviation = 0.0038473
Numerator = 0.0636499
Denominator = 0.159514
W Statistic = 0.399024 = 0.0636499 / 0.159514

5% Critical value of 0.976 exceeds 0.399024
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.399024
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: MercUry

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0	-0.597761	47.7393	0
31	0	-0.570999	48.0653	0
32	0	-0.544642	48.3619	0
33	0	-0.518658	48.6309	0
34	0	-0.493018	48.874	0
35	0	-0.464904	49.0901	0
36	0	-0.439913	49.2837	0
37	0	-0.415193	49.456	0
38	0	-0.390726	49.6087	0
39	0	-0.36649	49.743	0
40	0	-0.342466	49.8603	0
41	0	-0.316004	49.9602	0
42	0	-0.292375	50.0457	0
43	0	-0.268908	50.118	0
44	0	-0.24559	50.1783	0
45	0	-0.222403	50.2277	0
46	0	-0.196779	50.2665	0
47	0	-0.173829	50.2967	0

48	0	-0.150969	50.3195	0
49	0	-0.128189	50.3359	0
50	0	-0.105474	50.347	0
51	0	-0.0828129	50.3539	0
52	0	-0.0576847	50.3572	0
53	0	-0.0350997	50.3584	0
54	0	-0.0125328	50.3586	0
55	0	0.0125328	50.3588	0
56	0	0.0350997	50.36	0
57	0	0.0576847	50.3633	0
58	0	0.0828129	50.3702	0
59	0	0.105474	50.3813	0
60	0	0.128189	50.3977	0
61	0	0.150969	50.4205	0
62	0	0.173829	50.4507	0
63	0	0.196779	50.4895	0
64	0	0.222403	50.5389	0
65	0	0.24559	50.5992	0
66	0	0.268908	50.6716	0
67	0	0.292375	50.757	0
68	0	0.316004	50.8569	0
69	0	0.342466	50.9742	0
70	0	0.36649	51.1085	0
71	0	0.390726	51.2612	0
72	0	0.415193	51.4335	0
73	0	0.439913	51.6271	0
74	0	0.464904	51.8432	0
75	0	0.493018	52.0863	0
76	0	0.518658	52.3553	0
77	0	0.544642	52.6519	0
78	0	0.570999	52.978	0
79	0	0.597761	53.3353	0
80	0	0.624956	53.7258	0
81	0	0.655726	54.1558	0
82	0	0.68396	54.6236	0
83	0	0.712751	55.1316	0
84	0	0.742143	55.6824	0
85	0	0.772193	56.2787	0
86	0	0.802956	56.9234	0
87	0	0.838054	57.6258	0
88	0	0.87055	58.3836	0
89	0	0.903992	59.2008	0
90	0	0.938476	60.0816	0
91	0	0.974114	61.0305	0
92	0	1.01522	62.0611	0
93	0	1.05375	63.1715	0
94	0	1.0939	64.3681	0
95	0	1.1359	65.6584	0
96	0	1.18	67.0508	0
97	0	1.22653	68.5552	0
98	0	1.28155	70.1975	0
99	0	1.33462	71.9788	0
100	0.0002	1.39175	73.9157	0.000278349
101	0.00023	1.4538	76.0293	0.000612724
102	0.00023	1.52203	78.3458	0.000962792
103	0.00025	1.59819	80.9001	0.00136234
104	0.00026	1.6954	83.7744	0.00180314

105	0.00029	1.79912	87.0113	0.00232489
106	0.00042	1.92684	90.724	0.00313416
107	0.00119	2.09693	95.1211	0.00562951
108	0.00136	2.36561	100.717	0.00884674

Data Set Standard Deviation = 0.000183944
Numerator = 7.82648e-005
Denominator = 0.000364635
W Statistic = 0.214639 = 7.82648e-005 / 0.000364635

5% Critical value of 0.976 exceeds 0.214639
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.214639
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Nickel

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0	-0.597761	47.7393	0
31	0	-0.570999	48.0653	0
32	0	-0.544642	48.3619	0
33	0	-0.518658	48.6309	0
34	0	-0.493018	48.874	0
35	0	-0.464904	49.0901	0
36	0	-0.439913	49.2837	0
37	0	-0.415193	49.456	0
38	0	-0.390726	49.6087	0
39	0	-0.36649	49.743	0
40	0	-0.342466	49.8603	0
41	0	-0.316004	49.9602	0
42	0	-0.292375	50.0457	0
43	0	-0.268908	50.118	0
44	0	-0.24559	50.1783	0
45	0	-0.222403	50.2277	0
46	0	-0.196779	50.2665	0
47	0	-0.173829	50.2967	0

48	0	-0.150969	50.3195	0
49	0	-0.128189	50.3359	0
50	0	-0.105474	50.347	0
51	0	-0.0828129	50.3539	0
52	0	-0.0576847	50.3572	0
53	0	-0.0350997	50.3584	0
54	0	-0.0125328	50.3586	0
55	0.0011	0.0125328	50.3588	1.37861e-005
56	0.0011	0.0350997	50.36	5.23958e-005
57	0.0013	0.0576847	50.3633	0.000127386
58	0.0023	0.0828129	50.3702	0.000317856
59	0.0025	0.105474	50.3813	0.000581541
60	0.0026	0.128189	50.3977	0.000914832
61	0.0026	0.150969	50.4205	0.00130735
62	0.0026	0.173829	50.4507	0.00175931
63	0.003	0.196779	50.4895	0.00234965
64	0.003	0.222403	50.5389	0.00301686
65	0.0033	0.24559	50.5992	0.0038273
66	0.0034	0.268908	50.6716	0.00474159
67	0.0035	0.292375	50.757	0.0057649
68	0.0036	0.316004	50.8569	0.00690252
69	0.0042	0.342466	50.9742	0.00834087
70	0.0046	0.36649	51.1085	0.0100267
71	0.0049	0.390726	51.2612	0.0119413
72	0.005	0.415193	51.4335	0.0140173
73	0.0054	0.439913	51.6271	0.0163928
74	0.0058	0.464904	51.8432	0.0190892
75	0.006	0.493018	52.0863	0.0220473
76	0.006	0.518658	52.3553	0.0251593
77	0.006	0.544642	52.6519	0.0284271
78	0.006	0.570999	52.978	0.0318531
79	0.006	0.597761	53.3353	0.0354397
80	0.006	0.624956	53.7258	0.0391894
81	0.006	0.655726	54.1558	0.0431238
82	0.006	0.68396	54.6236	0.0472275
83	0.006	0.712751	55.1316	0.051504
84	0.007	0.742143	55.6824	0.056699
85	0.007	0.772193	56.2787	0.0621044
86	0.0072	0.802956	56.9234	0.0678857
87	0.008	0.838054	57.6258	0.0745901
88	0.008	0.87055	58.3836	0.0815545
89	0.008	0.903992	59.2008	0.0887865
90	0.008	0.938476	60.0816	0.0962943
91	0.009	0.974114	61.0305	0.105061
92	0.009	1.01522	62.0611	0.114198
93	0.009	1.05375	63.1715	0.123682
94	0.009	1.0939	64.3681	0.133527
95	0.009	1.1359	65.6584	0.14375
96	0.01	1.18	67.0508	0.15555
97	0.01	1.22653	68.5552	0.167815
98	0.01	1.28155	70.1975	0.180631
99	0.01	1.33462	71.9788	0.193977
100	0.011	1.39175	73.9157	0.209286
101	0.012	1.4538	76.0293	0.226732
102	0.012	1.52203	78.3458	0.244996
103	0.012	1.59819	80.9001	0.264175
104	0.0137	1.6954	83.7744	0.287402

105	0.0139	1.79912	87.0113	0.312409
106	0.015	1.92684	90.724	0.341312
107	0.018	2.09693	95.1211	0.379057
108	0.027	2.36561	100.717	0.442928

Data Set Standard Deviation = 0.00490257
Numerator = 0.196185
Denominator = 0.259021
W Statistic = 0.757411 = 0.196185 / 0.259021

5% Critical value of 0.976 exceeds 0.757411
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.757411
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: SUlfate

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	1.58	-0.712751	46.0936	-1.12615
27	1.74	-0.68396	46.5614	-2.31624
28	2	-0.655726	46.9914	-3.62769
29	2.87	-0.624956	47.3819	-5.42131
30	3	-0.597761	47.7393	-7.2146
31	3.33	-0.570999	48.0653	-9.11602
32	3.37	-0.544642	48.3619	-10.9515
33	4	-0.518658	48.6309	-13.0261
34	4.65	-0.493018	48.874	-15.3186
35	5	-0.464904	49.0901	-17.6431
36	5.09	-0.439913	49.2837	-19.8823
37	5.76	-0.415193	49.456	-22.2738
38	5.99	-0.390726	49.6087	-24.6143
39	6.31	-0.36649	49.743	-26.9268
40	6.41	-0.342466	49.8603	-29.122
41	6.49	-0.316004	49.9602	-31.1729
42	6.64	-0.292375	50.0457	-33.1143
43	7	-0.268908	50.118	-34.9966
44	7	-0.24559	50.1783	-36.7157
45	8	-0.222403	50.2277	-38.495
46	8	-0.196779	50.2665	-40.0692
47	8	-0.173829	50.2967	-41.4598

48	8	-0.150969	50.3195	-42.6676
49	8.53	-0.128189	50.3359	-43.761
50	8.89	-0.105474	50.347	-44.6987
51	9	-0.0828129	50.3539	-45.444
52	9	-0.0576847	50.3572	-45.9632
53	9	-0.0350997	50.3584	-46.2791
54	9	-0.0125328	50.3586	-46.3919
55	9	0.0125328	50.3588	-46.2791
56	9	0.0350997	50.36	-45.9632
57	9	0.0576847	50.3633	-45.444
58	9	0.0828129	50.3702	-44.6987
59	9	0.105474	50.3813	-43.7494
60	9.02	0.128189	50.3977	-42.5932
61	9.09	0.150969	50.4205	-41.2209
62	9.52	0.173829	50.4507	-39.566
63	9.73	0.196779	50.4895	-37.6514
64	10	0.222403	50.5389	-35.4273
65	10	0.24559	50.5992	-32.9714
66	10	0.268908	50.6716	-30.2823
67	10	0.292375	50.757	-27.3586
68	10	0.316004	50.8569	-24.1986
69	10	0.342466	50.9742	-20.7739
70	10	0.36649	51.1085	-17.109
71	10	0.390726	51.2612	-13.2017
72	10	0.415193	51.4335	-9.0498
73	10.1	0.439913	51.6271	-4.60668
74	10.6	0.464904	51.8432	0.321307
75	11	0.493018	52.0863	5.7445
76	11	0.518658	52.3553	11.4497
77	11	0.544642	52.6519	17.4408
78	11	0.570999	52.978	23.7218
79	11	0.597761	53.3353	30.2972
80	11	0.624956	53.7258	37.1717
81	11	0.655726	54.1558	44.3847
82	11	0.68396	54.6236	51.9082
83	11	0.712751	55.1316	59.7485
84	11	0.742143	55.6824	67.9121
85	11.1	0.772193	56.2787	76.4834
86	11.1	0.802956	56.9234	85.3962
87	12	0.838054	57.6258	95.4529
88	12	0.87055	58.3836	105.899
89	12	0.903992	59.2008	116.747
90	12	0.938476	60.0816	128.009
91	13	0.974114	61.0305	140.673
92	13	1.01522	62.0611	153.87
93	13.8	1.05375	63.1715	168.412
94	14	1.0939	64.3681	183.727
95	15	1.1359	65.6584	200.765
96	15	1.18	67.0508	218.465
97	15	1.22653	68.5552	236.863
98	15.9	1.28155	70.1975	257.24
99	16	1.33462	71.9788	278.594
100	16	1.39175	73.9157	300.862
101	16	1.4538	76.0293	324.122
102	16.8	1.52203	78.3458	349.693
103	17	1.59819	80.9001	376.862
104	18	1.6954	83.7744	407.379

105	28	1.79912	87.0113	457.754
106	32	1.92684	90.724	519.413
107	84	2.09693	95.1211	695.555
108	98	2.36561	100.717	927.386

Data Set Standard Deviation = 12.8127
Numerator = 860044
Denominator = 1.76917e+006
W Statistic = 0.486127 = 860044 / 1.76917e+006

5% Critical value of 0.976 exceeds 0.486127
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.486127
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: VanaDiUm

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0	-0.838054	43.7938	0
23	0	-0.802956	44.4385	0
24	0	-0.772193	45.0348	0
25	0	-0.742143	45.5856	0
26	0	-0.712751	46.0936	0
27	0	-0.68396	46.5614	0
28	0	-0.655726	46.9914	0
29	0	-0.624956	47.3819	0
30	0	-0.597761	47.7393	0
31	0	-0.570999	48.0653	0
32	0	-0.544642	48.3619	0
33	0	-0.518658	48.6309	0
34	0	-0.493018	48.874	0
35	0	-0.464904	49.0901	0
36	0	-0.439913	49.2837	0
37	0	-0.415193	49.456	0
38	0	-0.390726	49.6087	0
39	0	-0.36649	49.743	0
40	0	-0.342466	49.8603	0
41	0	-0.316004	49.9602	0
42	0	-0.292375	50.0457	0
43	0	-0.268908	50.118	0
44	0	-0.24559	50.1783	0
45	0	-0.222403	50.2277	0
46	0	-0.196779	50.2665	0
47	0	-0.173829	50.2967	0

48	0	-0.150969	50.3195	0
49	0	-0.128189	50.3359	0
50	0	-0.105474	50.347	0
51	0	-0.0828129	50.3539	0
52	0	-0.0576847	50.3572	0
53	0	-0.0350997	50.3584	0
54	0	-0.0125328	50.3586	0
55	0	0.0125328	50.3588	0
56	0	0.0350997	50.36	0
57	0	0.0576847	50.3633	0
58	0	0.0828129	50.3702	0
59	0	0.105474	50.3813	0
60	0	0.128189	50.3977	0
61	0	0.150969	50.4205	0
62	0	0.173829	50.4507	0
63	0	0.196779	50.4895	0
64	0	0.222403	50.5389	0
65	0	0.24559	50.5992	0
66	0	0.268908	50.6716	0
67	0	0.292375	50.757	0
68	0	0.316004	50.8569	0
69	0	0.342466	50.9742	0
70	0	0.36649	51.1085	0
71	0	0.390726	51.2612	0
72	0	0.415193	51.4335	0
73	0	0.439913	51.6271	0
74	0	0.464904	51.8432	0
75	0	0.493018	52.0863	0
76	0	0.518658	52.3553	0
77	0	0.544642	52.6519	0
78	0	0.570999	52.978	0
79	0	0.597761	53.3353	0
80	0	0.624956	53.7258	0
81	0	0.655726	54.1558	0
82	0	0.68396	54.6236	0
83	0	0.712751	55.1316	0
84	0	0.742143	55.6824	0
85	0	0.772193	56.2787	0
86	0	0.802956	56.9234	0
87	0	0.838054	57.6258	0
88	0	0.87055	58.3836	0
89	0	0.903992	59.2008	0
90	0	0.938476	60.0816	0
91	0	0.974114	61.0305	0
92	0	1.01522	62.0611	0
93	0.001	1.05375	63.1715	0.00105375
94	0.001	1.0939	64.3681	0.00214764
95	0.002	1.1359	65.6584	0.00441943
96	0.003	1.18	67.0508	0.00795944
97	0.005	1.22653	68.5552	0.0140921
98	0.005	1.28155	70.1975	0.0204998
99	0.005	1.33462	71.9788	0.027173
100	0.005	1.39175	73.9157	0.0341317
101	0.005	1.4538	76.0293	0.0414007
102	0.006	1.52203	78.3458	0.0505329
103	0.006	1.59819	80.9001	0.0601221
104	0.009	1.6954	83.7744	0.0753806

105	0.01	1.79912	87.0113	0.0933718
106	0.013	1.92684	90.724	0.118421
107	0.013	2.09693	95.1211	0.145681
108	0.041	2.36561	100.717	0.242671

Data Set Standard Deviation = 0.00459125
Numerator = 0.0588892
Denominator = 0.22717
W Statistic = 0.25923 = 0.0588892 / 0.22717

5% Critical value of 0.976 exceeds 0.25923
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.25923
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Zinc

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 108

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.09693	9.99325	0
3	0	-1.92684	13.706	0
4	0	-1.79912	16.9428	0
5	0	-1.6954	19.8171	0
6	0	-1.59819	22.3714	0
7	0	-1.52203	24.688	0
8	0	-1.4538	26.8015	0
9	0	-1.39175	28.7385	0
10	0	-1.33462	30.5197	0
11	0	-1.28155	32.162	0
12	0	-1.22653	33.6664	0
13	0	-1.18	35.0588	0
14	0	-1.1359	36.3491	0
15	0	-1.0939	37.5457	0
16	0	-1.05375	38.6561	0
17	0	-1.01522	39.6867	0
18	0	-0.974114	40.6356	0
19	0	-0.938476	41.5164	0
20	0	-0.903992	42.3336	0
21	0	-0.87055	43.0914	0
22	0.011	-0.838054	43.7938	-0.00921859
23	0.0114	-0.802956	44.4385	-0.0183723
24	0.012	-0.772193	45.0348	-0.0276386
25	0.0122	-0.742143	45.5856	-0.0366928
26	0.0125	-0.712751	46.0936	-0.0456021
27	0.0149	-0.68396	46.5614	-0.0557931
28	0.015	-0.655726	46.9914	-0.065629
29	0.017	-0.624956	47.3819	-0.0762533
30	0.018	-0.597761	47.7393	-0.087013
31	0.021	-0.570999	48.0653	-0.099004
32	0.022	-0.544642	48.3619	-0.110986
33	0.0246	-0.518658	48.6309	-0.123745
34	0.028	-0.493018	48.874	-0.13755
35	0.0298	-0.464904	49.0901	-0.151404
36	0.034	-0.439913	49.2837	-0.166361
37	0.051	-0.415193	49.456	-0.187536
38	0.053	-0.390726	49.6087	-0.208244
39	0.054	-0.36649	49.743	-0.228035
40	0.06	-0.342466	49.8603	-0.248582
41	0.061	-0.316004	49.9602	-0.267859
42	0.061	-0.292375	50.0457	-0.285694
43	0.061	-0.268908	50.118	-0.302097
44	0.066	-0.24559	50.1783	-0.318306
45	0.067	-0.222403	50.2277	-0.333207
46	0.069	-0.196779	50.2665	-0.346785
47	0.071	-0.173829	50.2967	-0.359127

48	0.076	-0.150969	50.3195	-0.3706
49	0.086	-0.128189	50.3359	-0.381625
50	0.088	-0.105474	50.347	-0.390906
51	0.091	-0.0828129	50.3539	-0.398442
52	0.091	-0.0576847	50.3572	-0.403692
53	0.099	-0.0350997	50.3584	-0.407166
54	0.1	-0.0125328	50.3586	-0.40842
55	0.1	0.0125328	50.3588	-0.407166
56	0.101	0.0350997	50.36	-0.403621
57	0.103	0.0576847	50.3633	-0.39768
58	0.103	0.0828129	50.3702	-0.38915
59	0.107	0.105474	50.3813	-0.377864
60	0.109	0.128189	50.3977	-0.363892
61	0.112	0.150969	50.4205	-0.346983
62	0.114	0.173829	50.4507	-0.327167
63	0.115	0.196779	50.4895	-0.304537
64	0.117	0.222403	50.5389	-0.278516
65	0.121	0.24559	50.5992	-0.248799
66	0.121	0.268908	50.6716	-0.216262
67	0.124	0.292375	50.757	-0.180007
68	0.129	0.316004	50.8569	-0.139243
69	0.141	0.342466	50.9742	-0.0909549
70	0.141	0.36649	51.1085	-0.0392798
71	0.15	0.390726	51.2612	0.019329
72	0.155	0.415193	51.4335	0.083684
73	0.16	0.439913	51.6271	0.15407
74	0.164	0.464904	51.8432	0.230314
75	0.173	0.493018	52.0863	0.315607
76	0.184	0.518658	52.3553	0.41104
77	0.222	0.544642	52.6519	0.53195
78	0.222	0.570999	52.978	0.658712
79	0.247	0.597761	53.3353	0.806359
80	0.272	0.624956	53.7258	0.976347
81	0.274	0.655726	54.1558	1.15602
82	0.324	0.68396	54.6236	1.37762
83	0.355	0.712751	55.1316	1.63065
84	0.37	0.742143	55.6824	1.90524
85	0.372	0.772193	56.2787	2.19249
86	0.374	0.802956	56.9234	2.4928
87	0.446	0.838054	57.6258	2.86657
88	0.505	0.87055	58.3836	3.3062
89	0.543	0.903992	59.2008	3.79707
90	0.544	0.938476	60.0816	4.3076
91	0.67	0.974114	61.0305	4.96025
92	0.732	1.01522	62.0611	5.7034
93	0.753	1.05375	63.1715	6.49687
94	0.807	1.0939	64.3681	7.37964
95	0.887	1.1359	65.6584	8.38718
96	0.92	1.18	67.0508	9.47278
97	1	1.22653	68.5552	10.6993
98	1.002	1.28155	70.1975	11.9834
99	1.028	1.33462	71.9788	13.3554
100	1.11	1.39175	73.9157	14.9003
101	1.11	1.4538	76.0293	16.514
102	1.221	1.52203	78.3458	18.3724
103	1.742	1.59819	80.9001	21.1564
104	1.821	1.6954	83.7744	24.2438

105	2.011	1.79912	87.0113	27.8618
106	2.109	1.92684	90.724	31.9255
107	14.8	2.09693	95.1211	62.9601
108	17.1	2.36561	100.717	103.412

Data Set Standard Deviation = 2.17448
Numerator = 10694.1
Denominator = 50956.3
W Statistic = 0.209867 = 10694.1 / 50956.3

5% Critical value of 0.976 exceeds 0.209867
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.209867
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Ammonia

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	22
	8/1/2015	ND<0	22
	12/1/2015	ND<0	22
	8/1/2016	0.37	55
	12/1/2016	0.41	62
	6/1/2017	0.75	102
	12/1/2017	0.55	82
	7/1/2018	0.42	64
	12/1/2018	0.68	95
	7/1/2019	0.74	100
	1/1/2020	1.26	106
	7/1/2020	1.33	107
	5/1/2021	0.12	45
	12/14/2021	ND<0	22
	6/7/2022	0.213	46
	11/16/2022	ND<0	22
	5/26/2023	0.497	78
	11/10/2023	0.284	47

Rank Sum = 1099
Rank Mean = 61.0556

Background Rank Sum = 1099
Background Rank Mean = 61.0556

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	22
	8/1/2015	ND<0	22
	12/1/2015	ND<0	22
	8/1/2016	0.38	57
	12/1/2016	0.42	65
	6/1/2017	0.5	79
	12/1/2017	0.59	86
	7/1/2018	0.49	77
	12/1/2018	0.3	49
	7/1/2019	0.29	48
	1/1/2020	0.65	94
	7/1/2020	0.81	103
	5/1/2021	ND<0	22
	12/14/2021	ND<0	22
	6/7/2022	ND<0	22
	11/16/2022	ND<0	22
	5/26/2023	ND<0	22
	11/10/2023	ND<0	22

Rank Sum = 856

Rank Mean = 47.5556

MW-3	7/1/2014	ND<0	22
	8/1/2015	ND<0	22
	12/1/2015	ND<0	22
	8/1/2016	0.36	52
	12/1/2016	0.4	59
	6/1/2017	0.55	83
	12/1/2017	0.62	92
	7/1/2018	0.71	98
	12/1/2018	0.31	51
	7/1/2019	0.3	50
	1/1/2020	0.59	87
	7/1/2020	0.71	99
	5/1/2021	0.11	44
	12/14/2021	ND<0	22
	6/7/2022	ND<0	22
	11/16/2022	ND<0	22
	5/26/2023	ND<0	22
	11/10/2023	ND<0	22

Rank Sum = 891
Rank Mean = 49.5

MW-4	7/1/2014	ND<0	22
	8/1/2015	ND<0	22
	12/1/2015	ND<0	22
	8/1/2016	0.45	74
	12/1/2016	0.46	75
	6/1/2017	0.4	60
	12/1/2017	0.59	88
	7/1/2018	0.63	93
	12/1/2018	0.4	61
	7/1/2019	0.37	56
	1/1/2020	0.42	66
	7/1/2020	0.52	80
	5/1/2021	1.1	105
	12/14/2021	ND<0	22
	6/7/2022	ND<0	22
	11/16/2022	ND<0	22
	5/26/2023	1.47	108
	11/10/2023	ND<0	22

Rank Sum = 1020
Rank Mean = 56.6667

MW-5	7/1/2014	ND<0	22
	8/1/2015	ND<0	22
	12/1/2015	ND<0	22
	8/1/2016	0.39	58
	12/1/2016	0.42	67
	6/1/2017	0.36	53
	12/1/2017	0.6	89
	7/1/2018	0.61	91
	12/1/2018	0.6	90
	7/1/2019	0.48	76
	1/1/2020	0.81	104
	7/1/2020	0.74	101
	5/1/2021	ND<0	22

	12/14/2021	ND<0	22
	6/7/2022	ND<0	22
	11/16/2022	ND<0	22
	5/26/2023	ND<0	22
	11/10/2023	ND<0	22

Rank Sum = 927
Rank Mean = 51.5

MW-6	7/1/2014	ND<0	22
	8/1/2015	ND<0	22
	12/1/2015	ND<0	22
	8/1/2016	0.41	63
	12/1/2016	0.44	71
	6/1/2017	0.36	54
	12/1/2017	0.42	68
	7/1/2018	0.44	72
	12/1/2018	0.57	84
	7/1/2019	0.44	73
	1/1/2020	0.57	85
	7/1/2020	0.68	96
	5/1/2021	0.42	69
	12/14/2021	0.42	70
	6/7/2022	0.543	81
	11/16/2022	ND<0	22
	5/26/2023	0.705	97
	11/10/2023	ND<0	22

Rank Sum = 1093
Rank Mean = 60.7222

Calculation Results:

Kruskal-Wallis H Statistic = 3.09378
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 3.3021
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
3.09378 < 11.0705 indicating no significant group difference at 5% significance level
3.3021 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	ND<0	45.5
	12/14/2021	ND<0	45.5
	6/7/2022	ND<0	45.5
	11/16/2022	0.0058	106
	5/26/2023	0.0047	102
	11/10/2023	0.0049	103

Rank Sum = 993.5
Rank Mean = 55.1944

Background Rank Sum = 993.5
Background Rank Mean = 55.1944

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	ND<0	45.5
	12/14/2021	ND<0	45.5
	6/7/2022	ND<0	45.5
	11/16/2022	0.0018	96
	5/26/2023	ND<0	45.5
	11/10/2023	0.0033	99

Rank Sum = 923

Rank Mean = 51.2778

MW-3	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	ND<0	45.5
	12/14/2021	ND<0	45.5
	6/7/2022	ND<0	45.5
	11/16/2022	0.001	91
	5/26/2023	0.0011	92
	11/10/2023	ND<0	45.5

Rank Sum = 911
Rank Mean = 50.6111

MW-4	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	ND<0	45.5
	12/14/2021	0.0052	104
	6/7/2022	0.0035	100
	11/16/2022	0.0261	108
	5/26/2023	0.0094	107
	11/10/2023	0.0056	105

Rank Sum = 1115.5
Rank Mean = 61.9722

MW-5	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	ND<0	45.5

	12/14/2021	0.0013	93
	6/7/2022	ND<0	45.5
	11/16/2022	ND<0	45.5
	5/26/2023	0.0021	97
	11/10/2023	0.0031	98

Rank Sum = 970.5
Rank Mean = 53.9167

MW-6	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	ND<0	45.5
	12/14/2021	ND<0	45.5
	6/7/2022	ND<0	45.5
	11/16/2022	0.0036	101
	5/26/2023	0.0017	95
	11/10/2023	0.0016	94

Rank Sum = 972.5
Rank Mean = 54.0278

Calculation Results:

Kruskal-Wallis H Statistic = 1.51167
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 3.58794
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
1.51167 < 11.0705 indicating no significant group difference at 5% significance level
3.58794 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: BariUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.023	6
	8/1/2015	0.024	10
	12/1/2015	0.018	4
	8/1/2016	0.2	103
	12/1/2016	0.051	45
	6/1/2017	0.081	76
	12/1/2017	0.095	90
	7/1/2018	0.111	93
	12/1/2018	0.121	94
	7/1/2019	0.268	104
	1/1/2020	0.291	106
	7/1/2020	0.498	108
	5/1/2021	0.14	98
	12/14/2021	0.037	28
	6/7/2022	0.031	16
	11/16/2022	0.073	68
	5/26/2023	0.09	86
	11/10/2023	0.077	71

Rank Sum = 1206
Rank Mean = 67

Background Rank Sum = 1206
Background Rank Mean = 67

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.026	12
	8/1/2015	0.035	26
	12/1/2015	0.043	36
	8/1/2016	0.35	107
	12/1/2016	0.044	37
	6/1/2017	0.061	57
	12/1/2017	0.073	69
	7/1/2018	0.078	72
	12/1/2018	0.081	77
	7/1/2019	0.076	70
	1/1/2020	0.081	78
	7/1/2020	0.097	92
	5/1/2021	0.031	17
	12/14/2021	0.03	14
	6/7/2022	ND<0	1
	11/16/2022	0.048	42
	5/26/2023	0.031	18
	11/10/2023	0.061	58

Rank Sum = 883

Rank Mean = 49.0556

MW-3	7/1/2014	0.039	31
	8/1/2015	0.042	34
	12/1/2015	0.031	19
	8/1/2016	0.039	32
	12/1/2016	0.033	23
	6/1/2017	0.028	13
	12/1/2017	0.031	20
	7/1/2018	0.084	81
	12/1/2018	0.064	62
	7/1/2019	0.055	50
	1/1/2020	0.078	73
	7/1/2020	0.09	87
	5/1/2021	0.084	82
	12/14/2021	0.037	29
	6/7/2022	0.123	95
	11/16/2022	0.055	51
	5/26/2023	0.124	96
	11/10/2023	0.024	11

Rank Sum = 889
Rank Mean = 49.3889

MW-4	7/1/2014	0.037	30
	8/1/2015	0.063	60
	12/1/2015	0.044	38
	8/1/2016	0.086	83
	12/1/2016	0.081	79
	6/1/2017	0.07	64
	12/1/2017	0.083	80
	7/1/2018	0.095	91
	12/1/2018	0.055	52
	7/1/2019	0.053	48
	1/1/2020	0.079	75
	7/1/2020	0.091	88
	5/1/2021	0.19	100
	12/14/2021	0.131	97
	6/7/2022	0.194	101
	11/16/2022	0.278	105
	5/26/2023	0.197	102
	11/10/2023	0.145	99

Rank Sum = 1392
Rank Mean = 77.3333

MW-5	7/1/2014	0.023	7
	8/1/2015	0.03	15
	12/1/2015	0.071	65
	8/1/2016	0.023	8
	12/1/2016	0.036	27
	6/1/2017	0.044	39
	12/1/2017	0.055	53
	7/1/2018	0.06	56
	12/1/2018	0.059	55
	7/1/2019	0.052	47
	1/1/2020	0.072	67
	7/1/2020	0.088	84
	5/1/2021	0.031	21

	12/14/2021	0.058	54
	6/7/2022	0.049	43
	11/16/2022	0.051	46
	5/26/2023	0.054	49
	11/10/2023	0.067	63

Rank Sum = 799
Rank Mean = 44.3889

MW-6	7/1/2014	0.017	3
	8/1/2015	0.022	5
	12/1/2015	0.009	2
	8/1/2016	0.023	9
	12/1/2016	0.061	59
	6/1/2017	0.034	25
	12/1/2017	0.044	40
	7/1/2018	0.063	61
	12/1/2018	0.071	66
	7/1/2019	0.092	89
	1/1/2020	0.089	85
	7/1/2020	0.078	74
	5/1/2021	0.031	22
	12/14/2021	0.033	24
	6/7/2022	0.049	44
	11/16/2022	0.042	35
	5/26/2023	0.047	41
	11/10/2023	0.04	33

Rank Sum = 717
Rank Mean = 39.8333

Calculation Results:

Kruskal-Wallis H Statistic = 19.2793
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 19.2793
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
19.2793 > 11.0705 indicating a significant group difference at 5% significance level
19.2793 > 11.0705 indicating a significant group difference at 5% significance level when adjusted for ties

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Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 67

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	49.0556	-17.9444	24.2877
MW-3	49.3889	-17.6111	24.2877
MW-4	77.3333	10.3333	24.2877
MW-5	44.3889	-22.6111	24.2877
MW-6	39.8333	-27.1667	24.2877

Individual Well Comparisons at Groupwise 5% Significance Level (1% Significance Level per comparison)

1% Z score is 2.32634
Mean background rank is 67

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	49.0556	-17.9444	24.2877
MW-3	49.3889	-17.6111	24.2877
MW-4	77.3333	10.3333	24.2877
MW-5	44.3889	-22.6111	24.2877

MW-6	39.8333	-27.1667	24.2877

Kruskal-Wallis Non-Parametric Test

Parameter: ChromiUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	0.009	105
	12/1/2018	0.01	106
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	ND<0	45
	6/7/2022	0.001	90
	11/16/2022	0.003	100
	5/26/2023	0.004	103
	11/10/2023	0.003	101

Rank Sum = 1145
Rank Mean = 63.6111

Background Rank Sum = 1145
Background Rank Mean = 63.6111

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	0.001	91
	6/7/2022	ND<0	45
	11/16/2022	0.014	107
	5/26/2023	0.001	92
	11/10/2023	0.026	108

Rank Sum = 1028

Rank Mean = 57.1111

MW-3	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	ND<0	45
	6/7/2022	ND<0	45
	11/16/2022	ND<0	45
	5/26/2023	ND<0	45
	11/10/2023	ND<0	45

Rank Sum = 810
Rank Mean = 45

MW-4	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	0.001	93
	6/7/2022	ND<0	45
	11/16/2022	ND<0	45
	5/26/2023	ND<0	45
	11/10/2023	ND<0	45

Rank Sum = 858
Rank Mean = 47.6667

MW-5	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45

	12/14/2021	0.002	96
	6/7/2022	ND<0	45
	11/16/2022	0.001	94
	5/26/2023	0.002	97
	11/10/2023	0.003	102

Rank Sum = 1019
Rank Mean = 56.6111

MW-6	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	0.002	98
	6/7/2022	ND<0	45
	11/16/2022	0.005	104
	5/26/2023	0.001	95
	11/10/2023	0.002	99

Rank Sum = 1026
Rank Mean = 57

Calculation Results:

Kruskal-Wallis H Statistic = 4.35746
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 9.89442
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
4.35746 < 11.0705 indicating no significant group difference at 5% significance level
9.89442 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	41
	8/1/2015	ND<0	41
	12/1/2015	ND<0	41
	8/1/2016	ND<0	41
	12/1/2016	ND<0	41
	6/1/2017	ND<0	41
	12/1/2017	ND<0	41
	7/1/2018	ND<0	41
	12/1/2018	ND<0	41
	7/1/2019	ND<0	41
	1/1/2020	ND<0	41
	7/1/2020	ND<0	41
	5/1/2021	0.086	108
	12/14/2021	0.045	106
	6/7/2022	ND<0	41
	11/16/2022	0.07	107
	5/26/2023	0.035	105
	11/10/2023	0.032	104

Rank Sum = 1063
Rank Mean = 59.0556

Background Rank Sum = 1063
Background Rank Mean = 59.0556

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	41
	8/1/2015	ND<0	41
	12/1/2015	ND<0	41
	8/1/2016	ND<0	41
	12/1/2016	ND<0	41
	6/1/2017	ND<0	41
	12/1/2017	ND<0	41
	7/1/2018	ND<0	41
	12/1/2018	ND<0	41
	7/1/2019	ND<0	41
	1/1/2020	ND<0	41
	7/1/2020	ND<0	41
	5/1/2021	ND<0	41
	12/14/2021	ND<0	41
	6/7/2022	ND<0	41
	11/16/2022	0.001	82
	5/26/2023	ND<0	41
	11/10/2023	0.002	87

Rank Sum = 825

Rank Mean = 45.8333

MW-3	7/1/2014	ND<0	41
	8/1/2015	ND<0	41
	12/1/2015	ND<0	41
	8/1/2016	ND<0	41
	12/1/2016	ND<0	41
	6/1/2017	ND<0	41
	12/1/2017	ND<0	41
	7/1/2018	ND<0	41
	12/1/2018	ND<0	41
	7/1/2019	ND<0	41
	1/1/2020	ND<0	41
	7/1/2020	ND<0	41
	5/1/2021	0.004	95
	12/14/2021	0.001	83
	6/7/2022	0.004	96
	11/16/2022	0.002	88
	5/26/2023	0.005	99
	11/10/2023	ND<0	41

Rank Sum = 994
Rank Mean = 55.2222

MW-4	7/1/2014	ND<0	41
	8/1/2015	ND<0	41
	12/1/2015	ND<0	41
	8/1/2016	ND<0	41
	12/1/2016	ND<0	41
	6/1/2017	ND<0	41
	12/1/2017	ND<0	41
	7/1/2018	ND<0	41
	12/1/2018	ND<0	41
	7/1/2019	ND<0	41
	1/1/2020	ND<0	41
	7/1/2020	ND<0	41
	5/1/2021	0.008	103
	12/14/2021	0.001	84
	6/7/2022	0.006	100
	11/16/2022	0.003	93
	5/26/2023	0.007	102
	11/10/2023	0.002	89

Rank Sum = 1063
Rank Mean = 59.0556

MW-5	7/1/2014	ND<0	41
	8/1/2015	ND<0	41
	12/1/2015	ND<0	41
	8/1/2016	ND<0	41
	12/1/2016	ND<0	41
	6/1/2017	ND<0	41
	12/1/2017	ND<0	41
	7/1/2018	ND<0	41
	12/1/2018	ND<0	41
	7/1/2019	ND<0	41
	1/1/2020	ND<0	41
	7/1/2020	ND<0	41
	5/1/2021	ND<0	41

	12/14/2021	0.002	90
	6/7/2022	ND<0	41
	11/16/2022	0.001	85
	5/26/2023	0.003	94
	11/10/2023	0.004	97

Rank Sum = 940
Rank Mean = 52.2222

MW-6	7/1/2014	ND<0	41
	8/1/2015	ND<0	41
	12/1/2015	ND<0	41
	8/1/2016	ND<0	41
	12/1/2016	ND<0	41
	6/1/2017	ND<0	41
	12/1/2017	ND<0	41
	7/1/2018	ND<0	41
	12/1/2018	ND<0	41
	7/1/2019	ND<0	41
	1/1/2020	ND<0	41
	7/1/2020	ND<0	41
	5/1/2021	0.002	91
	12/14/2021	ND<0	41
	6/7/2022	0.006	101
	11/16/2022	0.002	92
	5/26/2023	0.004	98
	11/10/2023	0.001	86

Rank Sum = 1001
Rank Mean = 55.6111

Calculation Results:

Kruskal-Wallis H Statistic = 2.26719
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 3.92143
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
2.26719 < 11.0705 indicating no significant group difference at 5% significance level
3.92143 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.066	106
	8/1/2015	0.011	54
	12/1/2015	ND<0	15
	8/1/2016	0.031	76
	12/1/2016	0.038	84
	6/1/2017	ND<0	15
	12/1/2017	0.055	100
	7/1/2018	0.041	90
	12/1/2018	0.046	92
	7/1/2019	0.05	97
	1/1/2020	0.056	102
	7/1/2020	0.063	105
	5/1/2021	0.015	59
	12/14/2021	0.0017	37
	6/7/2022	0.0011	32
	11/16/2022	0.0031	43
	5/26/2023	0.0139	58
	11/10/2023	0.0051	46

Rank Sum = 1211
Rank Mean = 67.2778

Background Rank Sum = 1211
Background Rank Mean = 67.2778

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.06	104
	8/1/2015	0.009	52
	12/1/2015	ND<0	15
	8/1/2016	0.038	85
	12/1/2016	0.039	87
	6/1/2017	0.22	107
	12/1/2017	0.02	63
	7/1/2018	0.026	68
	12/1/2018	0.018	61
	7/1/2019	ND<0	15
	1/1/2020	ND<0	15
	7/1/2020	ND<0	15
	5/1/2021	0.024	66
	12/14/2021	ND<0	15
	6/7/2022	ND<0	15
	11/16/2022	0.0061	48
	5/26/2023	0.0028	42
	11/10/2023	0.0116	55

Rank Sum = 928

Rank Mean = 51.5556

MW-3	7/1/2014	0.054	99
	8/1/2015	0.008	50
	12/1/2015	ND<0	15
	8/1/2016	0.45	108
	12/1/2016	0.043	91
	6/1/2017	0.031	77
	12/1/2017	0.033	83
	7/1/2018	0.049	96
	12/1/2018	0.04	89
	7/1/2019	ND<0	15
	1/1/2020	ND<0	15
	7/1/2020	ND<0	15
	5/1/2021	0.031	78
	12/14/2021	0.0132	57
	6/7/2022	0.001	30
	11/16/2022	0.0035	44
	5/26/2023	ND<0	15
	11/10/2023	ND<0	15

Rank Sum = 992
Rank Mean = 55.1111

MW-4	7/1/2014	0.055	101
	8/1/2015	0.009	53
	12/1/2015	ND<0	15
	8/1/2016	0.017	60
	12/1/2016	0.022	64
	6/1/2017	0.031	79
	12/1/2017	0.039	88
	7/1/2018	0.052	98
	12/1/2018	0.032	81
	7/1/2019	0.032	82
	1/1/2020	ND<0	15
	7/1/2020	ND<0	15
	5/1/2021	0.057	103
	12/14/2021	0.0012	35
	6/7/2022	0.0011	33
	11/16/2022	0.0018	40
	5/26/2023	ND<0	15
	11/10/2023	0.0011	34

Rank Sum = 1011
Rank Mean = 56.1667

MW-5	7/1/2014	0.026	69
	8/1/2015	0.006	47
	12/1/2015	ND<0	15
	8/1/2016	0.028	73
	12/1/2016	0.026	70
	6/1/2017	0.025	67
	12/1/2017	0.027	71
	7/1/2018	0.031	80
	12/1/2018	0.028	74
	7/1/2019	ND<0	15
	1/1/2020	ND<0	15
	7/1/2020	ND<0	15
	5/1/2021	0.013	56

	12/14/2021	0.0016	36
	6/7/2022	ND<0	15
	11/16/2022	ND<0	15
	5/26/2023	0.0017	38
	11/10/2023	0.0067	49

Rank Sum = 820
Rank Mean = 45.5556

MW-6	7/1/2014	0.046	93
	8/1/2015	0.008	51
	12/1/2015	0.005	45
	8/1/2016	0.046	94
	12/1/2016	0.048	95
	6/1/2017	0.027	72
	12/1/2017	0.03	75
	7/1/2018	0.038	86
	12/1/2018	0.022	65
	7/1/2019	ND<0	15
	1/1/2020	ND<0	15
	7/1/2020	ND<0	15
	5/1/2021	0.018	62
	12/14/2021	0.0018	41
	6/7/2022	ND<0	15
	11/16/2022	0.0017	39
	5/26/2023	ND<0	15
	11/10/2023	0.001	31

Rank Sum = 924
Rank Mean = 51.3333

Calculation Results:

Kruskal-Wallis H Statistic = 4.86465
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 4.96059
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
4.86465 < 11.0705 indicating no significant group difference at 5% significance level
4.96059 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: FlUoriDe

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.02	38
	8/1/2015	0.19	48
	12/1/2015	0.22	52
	8/1/2016	0.52	65
	12/1/2016	0.6	70
	6/1/2017	1.55	103
	12/1/2017	1	94
	7/1/2018	1.76	104
	12/1/2018	1.79	105
	7/1/2019	2.05	106
	1/1/2020	2.57	107
	7/1/2020	3.62	108
	5/1/2021	ND<0	19
	12/14/2021	0.127	41
	6/7/2022	ND<0	19
	11/16/2022	ND<0	19
	5/26/2023	0.149	43
	11/10/2023	ND<0	19

Rank Sum = 1160
Rank Mean = 64.4444

Background Rank Sum = 1160
Background Rank Mean = 64.4444

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.18	46
	8/1/2015	0.24	55
	12/1/2015	0.29	58
	8/1/2016	0.61	72
	12/1/2016	0.75	79
	6/1/2017	0.96	92
	12/1/2017	1.09	99
	7/1/2018	1.05	98
	12/1/2018	1.03	97
	7/1/2019	0.5	64
	1/1/2020	0.78	83
	7/1/2020	1.001	96
	5/1/2021	ND<0	19
	12/14/2021	ND<0	19
	6/7/2022	ND<0	19
	11/16/2022	ND<0	19
	5/26/2023	ND<0	19
	11/10/2023	ND<0	19

Rank Sum = 1053

Rank Mean = 58.5

MW-3	7/1/2014	0.26	57
	8/1/2015	0.13	42
	12/1/2015	0.18	47
	8/1/2016	0.34	59
	12/1/2016	0.22	53
	6/1/2017	0.75	80
	12/1/2017	1	95
	7/1/2018	0.92	89
	12/1/2018	0.58	69
	7/1/2019	0.49	63
	1/1/2020	0.62	74
	7/1/2020	0.745	78
	5/1/2021	ND<0	19
	12/14/2021	ND<0	19
	6/7/2022	ND<0	19
	11/16/2022	ND<0	19
	5/26/2023	ND<0	19
	11/10/2023	ND<0	19

Rank Sum = 920
Rank Mean = 51.1111

MW-4	7/1/2014	0.12	40
	8/1/2015	ND<0	19
	12/1/2015	ND<0	19
	8/1/2016	0.41	61
	12/1/2016	0.56	68
	6/1/2017	0.52	66
	12/1/2017	0.47	62
	7/1/2018	1.24	101
	12/1/2018	1.09	100
	7/1/2019	0.65	75
	1/1/2020	0.73	76
	7/1/2020	0.791	86
	5/1/2021	ND<0	19
	12/14/2021	0.162	44
	6/7/2022	ND<0	19
	11/16/2022	ND<0	19
	5/26/2023	ND<0	19
	11/10/2023	0.174	45

Rank Sum = 938
Rank Mean = 52.1111

MW-5	7/1/2014	0.11	39
	8/1/2015	0.22	54
	12/1/2015	0.25	56
	8/1/2016	1.26	102
	12/1/2016	0.92	90
	6/1/2017	0.76	81
	12/1/2017	0.83	87
	7/1/2018	0.88	88
	12/1/2018	0.74	77
	7/1/2019	0.6	71
	1/1/2020	0.97	93
	7/1/2020	0.781	84
	5/1/2021	ND<0	19

	12/14/2021	ND<0	19
	6/7/2022	ND<0	19
	11/16/2022	ND<0	19
	5/26/2023	ND<0	19
	11/10/2023	ND<0	19

Rank Sum = 1036
Rank Mean = 57.5556

MW-6	7/1/2014	ND<0	19
	8/1/2015	ND<0	19
	12/1/2015	ND<0	19
	8/1/2016	0.35	60
	12/1/2016	0.21	51
	6/1/2017	0.19	49
	12/1/2017	0.55	67
	7/1/2018	0.92	91
	12/1/2018	0.79	85
	7/1/2019	0.61	73
	1/1/2020	0.76	82
	7/1/2020	0.209	50
	5/1/2021	ND<0	19
	12/14/2021	ND<0	19
	6/7/2022	ND<0	19
	11/16/2022	ND<0	19
	5/26/2023	ND<0	19
	11/10/2023	ND<0	19

Rank Sum = 779
Rank Mean = 43.2778

Calculation Results:

Kruskal-Wallis H Statistic = 4.90565
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 5.11103
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
4.90565 < 11.0705 indicating no significant group difference at 5% significance level
5.11103 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: LeaD

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	0.006	98
	12/1/2018	0.009	102
	7/1/2019	0.012	104
	1/1/2020	0.015	105
	7/1/2020	0.018	107
	5/1/2021	0.021	108
	12/14/2021	ND<0	44
	6/7/2022	ND<0	44
	11/16/2022	0.002	94
	5/26/2023	0.009	103
	11/10/2023	0.0024	95

Rank Sum = 1312
Rank Mean = 72.8889

Background Rank Sum = 1312
Background Rank Mean = 72.8889

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	0.005	97
	12/14/2021	ND<0	44
	6/7/2022	ND<0	44
	11/16/2022	0.0034	96
	5/26/2023	0.0015	92
	11/10/2023	0.0068	100

Rank Sum = 1001

Rank Mean = 55.6111

MW-3	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	ND<0	44
	12/14/2021	0.0075	101
	6/7/2022	ND<0	44
	11/16/2022	ND<0	44
	5/26/2023	ND<0	44
	11/10/2023	ND<0	44

Rank Sum = 849
Rank Mean = 47.1667

MW-4	7/1/2014	ND<0	44
	8/1/2015	0.006	99
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	0.016	106
	12/14/2021	0.001	88
	6/7/2022	ND<0	44
	11/16/2022	ND<0	44
	5/26/2023	ND<0	44
	11/10/2023	ND<0	44

Rank Sum = 953
Rank Mean = 52.9444

MW-5	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	ND<0	44

	12/14/2021	0.0011	90
	6/7/2022	ND<0	44
	11/16/2022	ND<0	44
	5/26/2023	0.001	89
	11/10/2023	0.0019	93

Rank Sum = 932
Rank Mean = 51.7778

MW-6	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	ND<0	44
	12/14/2021	ND<0	44
	6/7/2022	ND<0	44
	11/16/2022	0.0012	91
	5/26/2023	ND<0	44
	11/10/2023	ND<0	44

Rank Sum = 839
Rank Mean = 46.6111

Calculation Results:

Kruskal-Wallis H Statistic = 8.5363
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 17.8852
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
8.5363 < 11.0705 indicating no significant group difference at 5% significance level
17.8852 > 11.0705 indicating a significant group difference at 5% significance level when adjusted for ties

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Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 72.8889

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	55.6111	-17.2778	24.2877
MW-3	47.1667	-25.7222	24.2877
MW-4	52.9444	-19.9444	24.2877
MW-5	51.7778	-21.1111	24.2877
MW-6	46.6111	-26.2778	24.2877

Individual Well Comparisons at Groupwise 5% Significance Level (1% Significance Level per comparison)

1% Z score is 2.32634
Mean background rank is 72.8889

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	55.6111	-17.2778	24.2877
MW-3	47.1667	-25.7222	24.2877
MW-4	52.9444	-19.9444	24.2877
MW-5	51.7778	-21.1111	24.2877

MW-6	46.6111	-26.2778	24.2877

Kruskal-Wallis Non-Parametric Test

Parameter: MercUry

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	50
	8/1/2015	ND<0	50
	12/1/2015	ND<0	50
	8/1/2016	ND<0	50
	12/1/2016	ND<0	50
	6/1/2017	ND<0	50
	12/1/2017	ND<0	50
	7/1/2018	ND<0	50
	12/1/2018	ND<0	50
	7/1/2019	ND<0	50
	1/1/2020	ND<0	50
	7/1/2020	ND<0	50
	5/1/2021	ND<0	50
	12/14/2021	ND<0	50
	6/7/2022	ND<0	50
	11/16/2022	0.0002	100
	5/26/2023	0.00042	106
	11/10/2023	ND<0	50

Rank Sum = 1006
Rank Mean = 55.8889

Background Rank Sum = 1006
Background Rank Mean = 55.8889

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	50
	8/1/2015	ND<0	50
	12/1/2015	ND<0	50
	8/1/2016	ND<0	50
	12/1/2016	ND<0	50
	6/1/2017	ND<0	50
	12/1/2017	ND<0	50
	7/1/2018	ND<0	50
	12/1/2018	ND<0	50
	7/1/2019	ND<0	50
	1/1/2020	ND<0	50
	7/1/2020	ND<0	50
	5/1/2021	ND<0	50
	12/14/2021	ND<0	50
	6/7/2022	ND<0	50
	11/16/2022	ND<0	50
	5/26/2023	0.00026	104
	11/10/2023	0.00029	105

Rank Sum = 1009

Rank Mean = 56.0556

MW-3	7/1/2014	ND<0	50
	8/1/2015	ND<0	50
	12/1/2015	ND<0	50
	8/1/2016	ND<0	50
	12/1/2016	ND<0	50
	6/1/2017	ND<0	50
	12/1/2017	ND<0	50
	7/1/2018	ND<0	50
	12/1/2018	ND<0	50
	7/1/2019	ND<0	50
	1/1/2020	ND<0	50
	7/1/2020	ND<0	50
	5/1/2021	ND<0	50
	12/14/2021	ND<0	50
	6/7/2022	ND<0	50
	11/16/2022	ND<0	50
	5/26/2023	ND<0	50
	11/10/2023	ND<0	50

Rank Sum = 900
Rank Mean = 50

MW-4	7/1/2014	ND<0	50
	8/1/2015	ND<0	50
	12/1/2015	ND<0	50
	8/1/2016	ND<0	50
	12/1/2016	ND<0	50
	6/1/2017	ND<0	50
	12/1/2017	ND<0	50
	7/1/2018	ND<0	50
	12/1/2018	ND<0	50
	7/1/2019	ND<0	50
	1/1/2020	ND<0	50
	7/1/2020	ND<0	50
	5/1/2021	ND<0	50
	12/14/2021	ND<0	50
	6/7/2022	ND<0	50
	11/16/2022	ND<0	50
	5/26/2023	ND<0	50
	11/10/2023	ND<0	50

Rank Sum = 900
Rank Mean = 50

MW-5	7/1/2014	ND<0	50
	8/1/2015	ND<0	50
	12/1/2015	ND<0	50
	8/1/2016	ND<0	50
	12/1/2016	ND<0	50
	6/1/2017	ND<0	50
	12/1/2017	ND<0	50
	7/1/2018	ND<0	50
	12/1/2018	ND<0	50
	7/1/2019	ND<0	50
	1/1/2020	ND<0	50
	7/1/2020	ND<0	50
	5/1/2021	ND<0	50

	12/14/2021	0.00023	101
	6/7/2022	ND<0	50
	11/16/2022	ND<0	50
	5/26/2023	ND<0	50
	11/10/2023	0.00023	102

Rank Sum = 1003
Rank Mean = 55.7222

MW-6	7/1/2014	ND<0	50
	8/1/2015	ND<0	50
	12/1/2015	ND<0	50
	8/1/2016	ND<0	50
	12/1/2016	ND<0	50
	6/1/2017	ND<0	50
	12/1/2017	ND<0	50
	7/1/2018	ND<0	50
	12/1/2018	ND<0	50
	7/1/2019	ND<0	50
	1/1/2020	ND<0	50
	7/1/2020	ND<0	50
	5/1/2021	ND<0	50
	12/14/2021	0.00025	103
	6/7/2022	ND<0	50
	11/16/2022	ND<0	50
	5/26/2023	0.00119	107
	11/10/2023	0.00136	108

Rank Sum = 1068
Rank Mean = 59.3333

Calculation Results:

Kruskal-Wallis H Statistic = 1.27897
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 5.56659
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
1.27897 < 11.0705 indicating no significant group difference at 5% significance level
5.56659 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.008	87
	8/1/2015	ND<0	27.5
	12/1/2015	ND<0	27.5
	8/1/2016	0.008	88
	12/1/2016	0.012	101
	6/1/2017	0.027	108
	12/1/2017	0.009	91
	7/1/2018	0.01	96
	12/1/2018	0.01	97
	7/1/2019	0.018	107
	1/1/2020	0.011	100
	7/1/2020	0.01	98
	5/1/2021	0.0035	67
	12/14/2021	0.0026	60
	6/7/2022	ND<0	27.5
	11/16/2022	0.0049	71
	5/26/2023	0.0042	69
	11/10/2023	0.0034	66

Rank Sum = 1388.5
Rank Mean = 77.1389

Background Rank Sum = 1388.5
Background Rank Mean = 77.1389

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.015	106
	8/1/2015	ND<0	27.5
	12/1/2015	ND<0	27.5
	8/1/2016	ND<0	27.5
	12/1/2016	0.012	102
	6/1/2017	0.01	99
	12/1/2017	ND<0	27.5
	7/1/2018	0.009	92
	12/1/2018	0.006	75
	7/1/2019	0.006	76
	1/1/2020	0.005	72
	7/1/2020	ND<0	27.5
	5/1/2021	0.003	63
	12/14/2021	ND<0	27.5
	6/7/2022	ND<0	27.5
	11/16/2022	0.0036	68
	5/26/2023	ND<0	27.5
	11/10/2023	0.0058	74

Rank Sum = 1047

Rank Mean = 58.1667

MW-3	7/1/2014	0.008	89
	8/1/2015	ND<0	27.5
	12/1/2015	ND<0	27.5
	8/1/2016	ND<0	27.5
	12/1/2016	ND<0	27.5
	6/1/2017	ND<0	27.5
	12/1/2017	ND<0	27.5
	7/1/2018	0.009	93
	12/1/2018	0.009	94
	7/1/2019	0.009	95
	1/1/2020	0.006	77
	7/1/2020	0.007	84
	5/1/2021	0.008	90
	12/14/2021	ND<0	27.5
	6/7/2022	0.0137	104
	11/16/2022	0.003	64
	5/26/2023	0.0139	105
	11/10/2023	ND<0	27.5

Rank Sum = 1115
Rank Mean = 61.9444

MW-4	7/1/2014	0.007	85
	8/1/2015	ND<0	27.5
	12/1/2015	ND<0	27.5
	8/1/2016	ND<0	27.5
	12/1/2016	ND<0	27.5
	6/1/2017	ND<0	27.5
	12/1/2017	ND<0	27.5
	7/1/2018	ND<0	27.5
	12/1/2018	ND<0	27.5
	7/1/2019	ND<0	27.5
	1/1/2020	ND<0	27.5
	7/1/2020	ND<0	27.5
	5/1/2021	0.006	78
	12/14/2021	0.0026	61
	6/7/2022	0.0046	70
	11/16/2022	0.0072	86
	5/26/2023	0.0054	73
	11/10/2023	0.0033	65

Rank Sum = 820.5
Rank Mean = 45.5833

MW-5	7/1/2014	ND<0	27.5
	8/1/2015	ND<0	27.5
	12/1/2015	ND<0	27.5
	8/1/2016	ND<0	27.5
	12/1/2016	ND<0	27.5
	6/1/2017	ND<0	27.5
	12/1/2017	ND<0	27.5
	7/1/2018	ND<0	27.5
	12/1/2018	ND<0	27.5
	7/1/2019	ND<0	27.5
	1/1/2020	ND<0	27.5
	7/1/2020	ND<0	27.5
	5/1/2021	ND<0	27.5

	12/14/2021	0.0013	57
	6/7/2022	ND<0	27.5
	11/16/2022	0.0011	55
	5/26/2023	0.0011	56
	11/10/2023	0.0023	58

Rank Sum = 611
Rank Mean = 33.9444

MW-6	7/1/2014	ND<0	27.5
	8/1/2015	ND<0	27.5
	12/1/2015	ND<0	27.5
	8/1/2016	0.012	103
	12/1/2016	0.006	79
	6/1/2017	0.006	80
	12/1/2017	0.006	81
	7/1/2018	0.006	82
	12/1/2018	0.006	83
	7/1/2019	ND<0	27.5
	1/1/2020	ND<0	27.5
	7/1/2020	ND<0	27.5
	5/1/2021	ND<0	27.5
	12/14/2021	ND<0	27.5
	6/7/2022	0.0025	59
	11/16/2022	0.0026	62
	5/26/2023	ND<0	27.5
	11/10/2023	ND<0	27.5

Rank Sum = 904
Rank Mean = 50.2222

Calculation Results:

Kruskal-Wallis H Statistic = 20.2151
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 23.1021
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
20.2151 > 11.0705 indicating a significant group difference at 5% significance level
23.1021 > 11.0705 indicating a significant group difference at 5% significance level when adjusted for ties

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Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 77.1389

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	58.1667	-18.9722	24.2877
MW-3	61.9444	-15.1944	24.2877
MW-4	45.5833	-31.5556	24.2877
MW-5	33.9444	-43.1944	24.2877
MW-6	50.2222	-26.9167	24.2877

Individual Well Comparisons at Groupwise 5% Significance Level (1% Significance Level per comparison)

1% Z score is 2.32634
Mean background rank is 77.1389

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	58.1667	-18.9722	24.2877
MW-3	61.9444	-15.1944	24.2877
MW-4	45.5833	-31.5556	24.2877
MW-5	33.9444	-43.1944	24.2877

MW-6	50.2222	-26.9167	24.2877

Kruskal-Wallis Non-Parametric Test

Parameter: SUlfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	13
	8/1/2015	ND<0	13
	12/1/2015	ND<0	13
	8/1/2016	7	43
	12/1/2016	8	45
	6/1/2017	12	87
	12/1/2017	9	51
	7/1/2018	10	64
	12/1/2018	14	94
	7/1/2019	15	95
	1/1/2020	16	99
	7/1/2020	32	106
	5/1/2021	16	100
	12/14/2021	5.09	36
	6/7/2022	3.33	31
	11/16/2022	3.37	32
	5/26/2023	1.58	26
	11/10/2023	2.87	29

Rank Sum = 977
Rank Mean = 54.2778

Background Rank Sum = 977
Background Rank Mean = 54.2778

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	13
	8/1/2015	ND<0	13
	12/1/2015	ND<0	13
	8/1/2016	3	30
	12/1/2016	5	35
	6/1/2017	8	46
	12/1/2017	11	75
	7/1/2018	10	65
	12/1/2018	10	66
	7/1/2019	9	52
	1/1/2020	9	53
	7/1/2020	12	88
	5/1/2021	ND<0	13
	12/14/2021	1.74	27
	6/7/2022	ND<0	13
	11/16/2022	ND<0	13
	5/26/2023	ND<0	13
	11/10/2023	ND<0	13

Rank Sum = 641

Rank Mean = 35.6111

MW-3	7/1/2014	ND<0	13
	8/1/2015	ND<0	13
	12/1/2015	ND<0	13
	8/1/2016	2	28
	12/1/2016	4	33
	6/1/2017	7	44
	12/1/2017	8	47
	7/1/2018	11	76
	12/1/2018	10	67
	7/1/2019	11	77
	1/1/2020	11	78
	7/1/2020	9	54
	5/1/2021	ND<0	13
	12/14/2021	15.9	98
	6/7/2022	10.6	74
	11/16/2022	16.8	102
	5/26/2023	13.8	93
	11/10/2023	5.76	37

Rank Sum = 960
Rank Mean = 53.3333

MW-4	7/1/2014	ND<0	13
	8/1/2015	ND<0	13
	12/1/2015	ND<0	13
	8/1/2016	13	91
	12/1/2016	9	55
	6/1/2017	9	56
	12/1/2017	10	68
	7/1/2018	12	89
	12/1/2018	11	79
	7/1/2019	9	57
	1/1/2020	15	96
	7/1/2020	11	80
	5/1/2021	ND<0	13
	12/14/2021	6.64	42
	6/7/2022	5.99	38
	11/16/2022	6.49	41
	5/26/2023	4.65	34
	11/10/2023	6.31	39

Rank Sum = 917
Rank Mean = 50.9444

MW-5	7/1/2014	ND<0	13
	8/1/2015	ND<0	13
	12/1/2015	ND<0	13
	8/1/2016	98	108
	12/1/2016	84	107
	6/1/2017	28	105
	12/1/2017	17	103
	7/1/2018	16	101
	12/1/2018	13	92
	7/1/2019	10	69
	1/1/2020	15	97
	7/1/2020	18	104
	5/1/2021	11	81

	12/14/2021	8.53	49
	6/7/2022	11.1	85
	11/16/2022	6.41	40
	5/26/2023	9.73	63
	11/10/2023	9.52	62

Rank Sum = 1305
Rank Mean = 72.5

MW-6	7/1/2014	ND<0	13
	8/1/2015	ND<0	13
	12/1/2015	ND<0	13
	8/1/2016	9	58
	12/1/2016	10	70
	6/1/2017	11	82
	12/1/2017	10	71
	7/1/2018	11	83
	12/1/2018	10	72
	7/1/2019	9	59
	1/1/2020	11	84
	7/1/2020	12	90
	5/1/2021	8	48
	12/14/2021	8.89	50
	6/7/2022	11.1	86
	11/16/2022	9.02	60
	5/26/2023	10.1	73
	11/10/2023	9.09	61

Rank Sum = 1086
Rank Mean = 60.3333

Calculation Results:

Kruskal-Wallis H Statistic = 13.3738
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 13.5415
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
13.3738 > 11.0705 indicating a significant group difference at 5% significance level
13.5415 > 11.0705 indicating a significant group difference at 5% significance level when adjusted for ties

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Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 54.2778

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	35.6111	-18.6667	24.2877
MW-3	53.3333	-0.944444	24.2877
MW-4	50.9444	-3.33333	24.2877
MW-5	72.5	18.2222	24.2877
MW-6	60.3333	6.05556	24.2877

Individual Well Comparisons at Groupwise 5% Significance Level (1% Significance Level per comparison)

1% Z score is 2.32634
Mean background rank is 54.2778

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	35.6111	-18.6667	24.2877
MW-3	53.3333	-0.944444	24.2877
MW-4	50.9444	-3.33333	24.2877
MW-5	72.5	18.2222	24.2877

MW-6	60.3333	6.05556	24.2877

Kruskal-Wallis Non-Parametric Test

Parameter: VanaDiUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	46.5
	8/1/2015	ND<0	46.5
	12/1/2015	ND<0	46.5
	8/1/2016	ND<0	46.5
	12/1/2016	ND<0	46.5
	6/1/2017	ND<0	46.5
	12/1/2017	ND<0	46.5
	7/1/2018	ND<0	46.5
	12/1/2018	ND<0	46.5
	7/1/2019	ND<0	46.5
	1/1/2020	ND<0	46.5
	7/1/2020	ND<0	46.5
	5/1/2021	0.013	106
	12/14/2021	ND<0	46.5
	6/7/2022	ND<0	46.5
	11/16/2022	0.006	102
	5/26/2023	0.009	104
	11/10/2023	0.005	97

Rank Sum = 1060
Rank Mean = 58.8889

Background Rank Sum = 1060
Background Rank Mean = 58.8889

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	46.5
	8/1/2015	ND<0	46.5
	12/1/2015	ND<0	46.5
	8/1/2016	ND<0	46.5
	12/1/2016	ND<0	46.5
	6/1/2017	ND<0	46.5
	12/1/2017	ND<0	46.5
	7/1/2018	ND<0	46.5
	12/1/2018	ND<0	46.5
	7/1/2019	ND<0	46.5
	1/1/2020	ND<0	46.5
	7/1/2020	ND<0	46.5
	5/1/2021	ND<0	46.5
	12/14/2021	ND<0	46.5
	6/7/2022	ND<0	46.5
	11/16/2022	ND<0	46.5
	5/26/2023	0.005	98
	11/10/2023	0.041	108

Rank Sum = 950

Rank Mean = 52.7778

MW-3	7/1/2014	ND<0	46.5
	8/1/2015	ND<0	46.5
	12/1/2015	ND<0	46.5
	8/1/2016	ND<0	46.5
	12/1/2016	ND<0	46.5
	6/1/2017	ND<0	46.5
	12/1/2017	ND<0	46.5
	7/1/2018	ND<0	46.5
	12/1/2018	ND<0	46.5
	7/1/2019	ND<0	46.5
	1/1/2020	ND<0	46.5
	7/1/2020	ND<0	46.5
	5/1/2021	0.001	93
	12/14/2021	ND<0	46.5
	6/7/2022	ND<0	46.5
	11/16/2022	ND<0	46.5
	5/26/2023	ND<0	46.5
	11/10/2023	ND<0	46.5

Rank Sum = 883.5
Rank Mean = 49.0833

MW-4	7/1/2014	ND<0	46.5
	8/1/2015	ND<0	46.5
	12/1/2015	ND<0	46.5
	8/1/2016	ND<0	46.5
	12/1/2016	ND<0	46.5
	6/1/2017	ND<0	46.5
	12/1/2017	ND<0	46.5
	7/1/2018	ND<0	46.5
	12/1/2018	ND<0	46.5
	7/1/2019	ND<0	46.5
	1/1/2020	ND<0	46.5
	7/1/2020	ND<0	46.5
	5/1/2021	0.003	96
	12/14/2021	ND<0	46.5
	6/7/2022	ND<0	46.5
	11/16/2022	ND<0	46.5
	5/26/2023	ND<0	46.5
	11/10/2023	ND<0	46.5

Rank Sum = 886.5
Rank Mean = 49.25

MW-5	7/1/2014	ND<0	46.5
	8/1/2015	ND<0	46.5
	12/1/2015	ND<0	46.5
	8/1/2016	ND<0	46.5
	12/1/2016	ND<0	46.5
	6/1/2017	ND<0	46.5
	12/1/2017	ND<0	46.5
	7/1/2018	ND<0	46.5
	12/1/2018	ND<0	46.5
	7/1/2019	ND<0	46.5
	1/1/2020	ND<0	46.5
	7/1/2020	ND<0	46.5
	5/1/2021	0.002	95

	12/14/2021	0.006	103
	6/7/2022	ND<0	46.5
	11/16/2022	ND<0	46.5
	5/26/2023	0.005	99
	11/10/2023	0.01	105

Rank Sum = 1053
Rank Mean = 58.5

MW-6	7/1/2014	ND<0	46.5
	8/1/2015	ND<0	46.5
	12/1/2015	ND<0	46.5
	8/1/2016	ND<0	46.5
	12/1/2016	ND<0	46.5
	6/1/2017	ND<0	46.5
	12/1/2017	ND<0	46.5
	7/1/2018	ND<0	46.5
	12/1/2018	ND<0	46.5
	7/1/2019	ND<0	46.5
	1/1/2020	ND<0	46.5
	7/1/2020	ND<0	46.5
	5/1/2021	0.001	94
	12/14/2021	0.005	100
	6/7/2022	ND<0	46.5
	11/16/2022	0.013	107
	5/26/2023	ND<0	46.5
	11/10/2023	0.005	101

Rank Sum = 1053
Rank Mean = 58.5

Calculation Results:

Kruskal-Wallis H Statistic = 2.0391
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 5.33975
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
2.0391 < 11.0705 indicating no significant group difference at 5% significance level
5.33975 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.088	50
	8/1/2015	0.066	44
	12/1/2015	0.017	29
	8/1/2016	0.101	56
	12/1/2016	0.124	67
	6/1/2017	1.028	99
	12/1/2017	1.11	100
	7/1/2018	1.742	103
	12/1/2018	1.821	104
	7/1/2019	1.221	102
	1/1/2020	2.011	105
	7/1/2020	2.109	106
	5/1/2021	0.071	47
	12/14/2021	ND<0	11
	6/7/2022	ND<0	11
	11/16/2022	14.8	107
	5/26/2023	0.0298	35
	11/10/2023	0.015	28

Rank Sum = 1204
Rank Mean = 66.8889

Background Rank Sum = 1204
Background Rank Mean = 66.8889

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.155	72
	8/1/2015	0.061	41
	12/1/2015	0.018	30
	8/1/2016	0.086	49
	12/1/2016	0.091	51
	6/1/2017	0.121	65
	12/1/2017	0.141	69
	7/1/2018	0.732	92
	12/1/2018	0.887	95
	7/1/2019	0.92	96
	1/1/2020	0.753	93
	7/1/2020	0.807	94
	5/1/2021	0.054	39
	12/14/2021	0.011	22
	6/7/2022	ND<0	11
	11/16/2022	17.1	108
	5/26/2023	0.0125	26
	11/10/2023	0.0246	33

Rank Sum = 1086

Rank Mean = 60.3333

MW-3	7/1/2014	0.028	34
	8/1/2015	0.061	42
	12/1/2015	0.021	31
	8/1/2016	0.164	74
	12/1/2016	0.141	70
	6/1/2017	0.173	75
	12/1/2017	1.002	98
	7/1/2018	1	97
	12/1/2018	1.11	101
	7/1/2019	0.107	59
	1/1/2020	0.324	82
	7/1/2020	0.543	89
	5/1/2021	0.061	43
	12/14/2021	0.012	24
	6/7/2022	0.0114	23
	11/16/2022	ND<0	11
	5/26/2023	0.0149	27
	11/10/2023	ND<0	11

Rank Sum = 991
Rank Mean = 55.0556

MW-4	7/1/2014	0.103	57
	8/1/2015	0.06	40
	12/1/2015	0.034	36
	8/1/2016	0.091	52
	12/1/2016	0.112	61
	6/1/2017	0.121	66
	12/1/2017	0.115	63
	7/1/2018	0.129	68
	12/1/2018	0.099	53
	7/1/2019	0.117	64
	1/1/2020	0.505	88
	7/1/2020	0.67	91
	5/1/2021	0.067	45
	12/14/2021	ND<0	11
	6/7/2022	ND<0	11
	11/16/2022	ND<0	11
	5/26/2023	ND<0	11
	11/10/2023	ND<0	11

Rank Sum = 839
Rank Mean = 46.6111

MW-5	7/1/2014	0.051	37
	8/1/2015	0.053	38
	12/1/2015	0.022	32
	8/1/2016	0.222	77
	12/1/2016	0.184	76
	6/1/2017	0.15	71
	12/1/2017	0.109	60
	7/1/2018	0.274	81
	12/1/2018	0.374	86
	7/1/2019	0.222	78
	1/1/2020	0.446	87
	7/1/2020	0.544	90
	5/1/2021	ND<0	11

	12/14/2021	ND<0	11
	6/7/2022	ND<0	11
	11/16/2022	ND<0	11
	5/26/2023	ND<0	11
	11/10/2023	0.0122	25

Rank Sum = 893
Rank Mean = 49.6111

MW-6	7/1/2014	0.076	48
	8/1/2015	0.069	46
	12/1/2015	0.1	54
	8/1/2016	0.16	73
	12/1/2016	0.1	55
	6/1/2017	0.114	62
	12/1/2017	0.272	80
	7/1/2018	0.37	84
	12/1/2018	0.355	83
	7/1/2019	0.103	58
	1/1/2020	0.247	79
	7/1/2020	0.372	85
	5/1/2021	ND<0	11
	12/14/2021	ND<0	11
	6/7/2022	ND<0	11
	11/16/2022	ND<0	11
	5/26/2023	ND<0	11
	11/10/2023	ND<0	11

Rank Sum = 873
Rank Mean = 48.5

Calculation Results:

Kruskal-Wallis H Statistic = 5.68728
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 5.72931
95% Confidence comparison value is 11.0705 at 5 degrees of freedom
5.68728 < 11.0705 indicating no significant group difference at 5% significance level
5.72931 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties