

October 5, 2023
File No. 27223186.00

Mr. Mick Leat
Iowa Department of Natural Resources
Land Quality Bureau
Wallace State Office Building
502 East 9th Street
Des Moines, Iowa 50319-0034

Subject: 2023 Annual Water Quality Report & Landfill Gas Report
City of Council Bluffs Alter Trading Corporation ASR Monofill
Permit No. 78-SDP-19-98C

Dear Mick,

SCS Engineers (SCS) has completed the annual water quality monitoring and data evaluation for the closed Alter Trading Corporation Monofill, managed by the City of Council Bluffs, for the year 2023. Our services were performed in general accordance with 1998 Iowa Administrative Code (IAC) 567-103, the landfill closure permit, and subsequent permit amendment requirements for implementation of the Hydrologic Monitoring System Plan (HMSP).

Please find enclosed a copy of the 2023 Annual Water Quality Report for the Alter Trading Corporation Monofill including a summary of the landfill gas monitoring results for 2023. If you have any questions about this report, please contact us as noted below.

Sincerely,



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KAJ/TCB

cc: Jeff Krist - City of Council Bluffs



2023 Annual Water Quality Report

City of Council Bluffs Alter Trading Corporation ASR Monofill
Solid Waste Permit No. 78-SDP-19-98C

Prepared for:

City of Council Bluffs

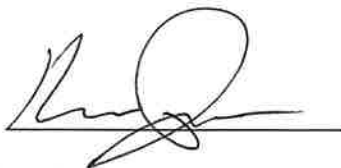
SCS ENGINEERS

27223186.00 | October 5, 2023

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CERTIFICATION

Prepared by: 
Typed: Kevin Jensen

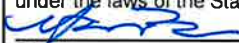
Date: 10/5/2023

Reviewed by: 
Typed: Timothy C. Buelow, P.E.

Date: 10/5/2023

Certification page (113.10(1)“d”)

An annual report summarizing the effect of the facility on groundwater and surface water quality shall be submitted to the department each year. The summary is to be prepared by an engineer registered in the state of Iowa.

	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.	
		Date: <u>10/5/2023</u>
	Timothy C. Buelow, P.E.	
	License No. 14445	
	My license renewal date is December 31, 2023.	
Pages or sheets covered by this seal:		
<u>All except Appendix B-1.</u>		

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EXECUTIVE SUMMARY

ES.1 PERIOD OF REPORT COVERAGE

SCS Engineers (SCS), on behalf of the City of Council Bluffs, has completed the required groundwater sampling of the Alter Trading Corporation Monofill (Monofill) in Council Bluffs, IA. The purpose of this Annual Water Quality Report (AWQR) is to document and statistically evaluate the groundwater sampling results since the 2022 AWQR up to and including the June 2023 annual sampling event. This AWQR was prepared in accordance with the requirements of the 1998 Iowa Administrative Code (IAC) 567-103, the site permit, and current requirements for implementation of the Hydrologic Monitoring System Plan (HMSP).

ES.2 REPORT PRIORITY

The following summarizes report priorities associated with groundwater compliance at the Monofill:

- Department review urgency: None.
- Department review impact on rules schedule: None.
- Actions or activities on hold pending Department review or comment: None.
- Actions and/or permit amendments needed: None.

ES.3 SITE STATUS AND APPLICABLE RULES

- Monofill Status: Closed, Closure Permit.
- Types of waste accepted: Auto Shredder Residue (ASR).
- Applicable IAC rules: 1998 Iowa Administrative Code 567-103.

ES.4 COMMENTS

The following summarizes points of special emphasis: Elevated arsenic concentrations measured in multiple site monitoring wells have been documented and the source investigated. The DNR has concluded that since these elevated concentrations are stable, no drinking water wells exist near the site, and the City of Council Bluffs has enacted a water well ordinance that prohibits the construction of drinking water wells within the city limits, the human health risk posed by groundwater exposure at the site is low (Doc #98623).

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1.0 ACRONYMS/ABBREVIATIONS

AL = Action Level
CCV = Continuing Calibration Verification
CL = Control Limit - Mean plus Two Standard Deviations
DNR = Iowa Department of Natural Resources
DO = Dissolved Oxygen
GWPS = Groundwater Protection Standard
GWQAP = Groundwater Quality Assessment Plan
LEL = Lower Explosive Limit
LCL = Lower Confidence Limit
LCS = Laboratory Control Sample
LN = Lognormal
M+/-2SD = Mean Plus/Minus Two Standard Deviations
MCL = EPA Maximum Contaminant Level
MDL = Method Detection Limit
N = Normal
NC = No Change
NM = Not Measured
ORP = Oxidation-Reduction Potential
PL = Prediction Limit
QA = Quality Assurance
QC = Quality Control
RL = Reporting Limit
SWS = DNR Statewide Standard for a Protected Groundwater Source
SSI = Statistically Significant Increase Above Background
SSL = Statistically Significant Level Above Groundwater Protection Standard
SSS = Site-Specific Standard (Site-Specific GWPS)
TSS = Total Suspended Solids
UCL = Upper Confidence Limit

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2.0 SITE BACKGROUND

2.1 SITE LOCATION

The Monofill property is depicted on Figure 1, Approved Monitoring Network, and summarized on Table 1. The Monofill is located on an approximately 42-acre plot of land on the north side of I-80 and north of 23rd Avenue in Council Bluffs, Iowa. The Monofill is situated in the NE ¼ of Section 3, T74N, R44W, in Pottawattamie County, Iowa.

2.2 GEOLOGY OF THE SITE

The following information pertaining to this section was obtained from the Engineering Design Report dated September 1994, prepared by GBB Engineering Inc.:

Based on borings drilled on-site, the geology beneath the 23rd Avenue Monofill consists of 90 to 130 feet of alluvial sediments overlying Pennsylvanian-age limestone. The alluvial sediments are predominantly stratified sand and gravel deposits. The sand units vary in grain size from a silty fine-grained sand to a well-graded sand. Isolated silt and sandy clay lenses occur throughout the alluvium. In general, the sediments become coarser with depth.

2.3 HYDROLOGY OF THE SITE

According to the above-referenced 1994 Engineering Design Report:

Based on four rounds of water level measurements taken at the site, local groundwater is flowing in a southwesterly direction. The horizontal hydraulic gradient at the site is relatively flat (0.0001 to 0.001), which corresponds to an average groundwater flow velocity of approximately 14 feet/year.

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3.0 FIGURES DISCUSSION

The following figures are attached.

3.1 FIGURE 1 – APPROVED MONITORING NETWORK

The Monofill property and hydrological monitoring system plan (HMSP) network is depicted in **Figure 1**. **Figure 1** indicates the locations of each monitoring well and its respective monitoring program as of the beginning of this reporting period.

3.2 FIGURE 2 – GROUNDWATER CONTOURS – SHALLOW FLOW

A groundwater contour map for the shallower wells based on groundwater levels measured in June 2023 is included as **Figure 2**. Review of the groundwater flow pattern indicates that a generally convergent flow direction exists toward the wetland area in the west-central portion of the site.

3.3 FIGURE 3 – GROUNDWATER CONTOURS – DEEP FLOW

A groundwater contour map for the deeper wells based on groundwater levels measured in June 2023 is included as **Figure 3**. Review of the groundwater flow pattern indicates that the general flow direction is to the west, which is generally consistent with historical groundwater measurements.

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4.0 QA/QC SUMMARY

Date indicates the date(s) of sampling.

4.1 JUNE 28-29, 2023 (2023 ANNUAL SAMPLING EVENT)

Based on the QA review, no samples were rejected as unusable due to QC failures. In general, the quality of the analytical data for this reporting period does not appear to have been compromised by analytical irregularities and results affected by QC anomalies are qualified with the appropriate data flags, which are listed in the laboratory report in **Appendix B-1**. Data validation documentation can be found in **Appendix B-2**.

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5.0 DATA EVALUATION

The historical analytical results of the groundwater monitoring wells for the Monofill are presented in **Appendix C** (Summary of Groundwater Chemistry). The statistical evaluation for samples collected during the 2023 annual sampling event is located in **Appendix D** of this report.

5.1 DATA EVALUATION

Groundwater monitoring for the Monofill consists of sampling from the shallow flow and deep flow portions of the alluvial aquifer. The shallow flow contains an upgradient monitoring well located on the northwest corner of the site and ten downgradient monitoring wells; two located on the north side, three located on the east side, three located along the south side, and two located on the west side of the Monofill within the wetland area. The deep flow contains an upgradient monitoring well located on the northwest corner of the site and three downgradient monitoring wells; one located on the northeast side, one located on the southeast side, and one located on the southwest side of the Monofill.

There were 16 control limit exceedances detected based on 2023 sampling results as listed in **Table 1** compared to 15 control limit exceedances detected based on 2022 sampling results reported in the 2022 AWQR. Most of the control limit exceedances detected based on 2023 sampling results were attributed to monitoring wells MW-2, MW-3, and MW-14R.

Exceedances of action or advisory levels were largely associated with arsenic in monitoring wells MW-2 and MW-3 and with nickel in monitoring well MW-14R as shown in **Table 9**. These monitoring well/constituent pairs were calculated as having stable trending as shown in **Table 10**. The monitoring results continue to demonstrate that the elevated arsenic concentrations remain stable and human health risks posed by groundwater exposure at the site remain low.

5.2 TRENDING IN MONITORING WELLS

Statistically significant decreasing trends at a 99% confidence level ($\alpha=0.01$) were identified in three monitoring well/constituent pairs by Mann-Kendall analysis during this reporting period. A statistically significant increasing trend at a 99% confidence level ($\alpha=0.01$) was identified in one monitoring well/constituent pair by Mann-Kendall analysis during this reporting period. The trend analysis is included in Attachment A of Appendix D of this report. The statistically significant trends were as follows:

Monitoring Point	Constituent	Trend
MW-8	Chloride	Decreasing
MW-8	Specific Conductance	Decreasing
MW-9	Total Extractable Hydrocarbons	Increasing
MW-15R	Nickel	Decreasing

As indicated in the above table, the majority of the statistically significant trends at a 99% confidence level ($\alpha=0.01$) were found to be decreasing. The increasing trend registered for total extractable hydrocarbons (TEH) in monitoring well MW-9 appears to be attributed to an increase in the method detection limit over the last eight samples; TEH has not been detected above the method detection limit in monitoring well MW-9 since 2015.

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6.0 RECOMMENDATIONS

6.1 SITE IMPACT ON GROUNDWATER

Elevated arsenic concentrations measured in multiple site monitoring wells have been documented and the source investigated. The DNR has concluded that since these elevated concentrations are stable, no drinking water wells exist near the site, and the City of Council Bluffs has enacted a water well ordinance that prohibits the construction of drinking water wells within the city limits, the human health risk posed by groundwater exposure at the site is low (Doc #98623).

Routine groundwater sampling and gas monitoring in accordance with the permit and DNR correspondence will continue at the site until scheduled permit expiration in 2029 due to the persistence of multiple contaminants and its current usage as communicated by DNR (Doc # 101984).

6.2 PROPOSED MONITORING

The groundwater monitoring program is summarized in **Tables 1** through **3**. No changes to the HMSP monitoring program are recommended at this time.

6.3 PROPOSED MONITORING WELL CHANGES

Monitoring well performance is summarized in **Table 4**. No proposed changes to the monitoring wells are recommended at this time.

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- 2 Monitoring Program Implementation Schedule
- 3 Monitoring Well Maintenance and Performance Re-Evaluation Schedule
- 4 Monitoring Well Performance and Maintenance Summary
- 5 Background and GWPS Summary
- 6 Summary of Well/Detected Constituent Pairs with No Immediately Preceding Control Limit Exceedances
- 7 Summary Table of Ongoing and Newly Identified Control Limit Exceedances
- 8 Summary of Groundwater Chemistry (The Summary of Groundwater Chemistry is Located in Appendix C)
- 9 Historical Control and Action Level Exceedances
- 10 Groundwater Quality Assessment Plan Trend Analysis

Table 1
Monitoring Program Summary
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Monitoring Well	Formation	Current Monitoring Program	Change for Next Sampling Event	Prediction Limit Exceedances	Total Number of Samples in Each Monitoring Program Since January 1, 2018		
					Routine	Supplemental	Remedial Action
Shallow Flow							
MW-5 (u)	Alluvium	Background	None	None	5	0	0
EPA-1AR	Alluvium	Detection	None	None	6	0	0
MW-2	Alluvium	Detection	None	Ammonia as N, Arsenic, COD	6	0	0
EPA-2A	Alluvium	Detection	None	None	6	0	0
MW-3	Alluvium	Detection	None	Ammonia as N, Arsenic, Iron	6	0	0
MW-9	Alluvium	Detection	None	COD	6	0	0
MW-11	Alluvium	Detection	None	None	6	0	0
MW-12	Alluvium	Detection	None	None	6	0	0
MW-13	Alluvium	Detection	None	Arsenic	6	0	0
MW-14R	Alluvium	Detection	None	Ammonia as N, Barium, Nickel, Zinc	5	0	0
MW-15R	Alluvium	Detection	None	Barium	5	0	0
Deep Flow							
MW-4 (u)	Alluvium	Background	None	None	5	0	0
MW-1	Alluvium	Detection	None	Ammonia as N	6	0	0
MW-8	Alluvium	Detection	None	COD	6	0	0
MW-10	Alluvium	Detection	None	Arsenic	6	0	0

Table 2
Monitoring Program Implementation Schedule
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Monitoring Well	Recent Sampling Dates and Constituents	Upcoming Sampling Dates and Constituents
	6/28-29/2023	2024 Annual Event
Shallow Flow		
MW-5 (u)	Not Sampled	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, Barium, Lead, Nickel, Zinc, TEH
EPA-1AR	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH
MW-2	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, TEH, TSS	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, TEH, TSS
EPA-2A	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, TEH, TSS	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, TEH, TSS
MW-3	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, TEH, TSS	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, TEH, TSS
MW-9	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH
MW-11	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH
MW-12	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Lead, TEH, TSS	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Lead, TEH, TSS
MW-13	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, Lead, TEH, TSS	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, Lead, TEH, TSS
MW-14R	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, Barium, Lead, Nickel, Zinc, TEH, TSS	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, Barium, Lead, Nickel, Zinc, TEH, TSS
MW-15R	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, Barium, Lead, Nickel, TEH, TSS	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, Barium, Lead, Nickel, TEH, TSS
Deep Flow		
MW-4 (u)	Not Sampled	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, Barium, Lead, Nickel, Zinc, TEH, TSS
MW-1	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH
MW-8	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, TEH
MW-10	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, TEH, TSS	Ammonia-Nitrogen, COD, Chloride, pH, Specific Conductance, Iron, Arsenic, TEH, TSS

Notes: (u) denotes upgradient monitoring point
Metals listed are for total concentrations
COD – Chemical Oxygen Demand
TSS – Total Suspended Solids
TEH – Total Extractable Hydrocarbons (Iowa Method OA-2)

Table 3
Monitoring Well Maintenance and Performance Re-Evaluation Schedule
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Compliance with:	2021	2022	2023	2024
567 IAC 114.21(2)"a" high and low water levels (annually)	Completed	Completed	Included	Scheduled
567 IAC 114.21(2)"b" changes in the hydrologic setting and flow paths	Completed	Completed	Included	Scheduled
567 IAC 114.21(2)"c" well depths	Completed	Completed	Included	Scheduled
567 IAC 114.21(2)"d" well recharge rates ⁽¹⁾	Completed		Included	

Notes:

⁽¹⁾ In-situ permeability testing was replaced with biennial well recharge rate evaluation in DNR correspondence dated May 30, 2013 (Doc #77045).

Table 4
Monitoring Well Maintenance and Performance Summary
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Well	Top of Casing	Top of Screen	Total Depth	Measurement Description	Date of Measurements	Maximum Depth Discrepancy ¹ (ft)	Initial Flow Rate ² (L/min)	Recent Flow Rate (L/min)	
					6/28-29/2023		3/7/2017	6/28-29/2023	% Change
Shallow Flow									
MW-5	977.52	NA	25.0	Groundwater Level (ft)	NM	NM	0.275	Not Sampled	NA
				Groundwater Elevation (Ft MSL)	NM				
				Measured Well Depth (ft)	NM				
				Submerged screen	NA				
EPA-1AR	978.13	968.13	20.0	Groundwater Level (ft)	13.53	2.5	0.145	0.127	-12%
				Groundwater Elevation (Ft MSL)	964.60				
				Measured Well Depth (ft)	22.5				
				Submerged screen	N				
MW-2	982.26	NA	35.0	Groundwater Level (ft)	17.48	1.5	0.225	0.140	-38%
				Groundwater Elevation (Ft MSL)	964.78				
				Measured Well Depth (ft)	36.5				
				Submerged screen	NA				
EPA-2A	980.92	NA	NA	Groundwater Level (ft)	16.30	NA	0.125	0.120	-4%
				Groundwater Elevation (Ft MSL)	964.62				
				Measured Well Depth (ft)	25.3				
				Submerged screen	NA				
MW-3	978.82	967.90	25.0	Groundwater Level (ft)	14.02	-8.4	0.285	0.158	-45%
				Groundwater Elevation (Ft MSL)	964.80				
				Measured Well Depth (ft)	16.6				
				Submerged screen	N				
MW-9	976.77	961.77	25.0	Groundwater Level (ft)	12.20	-0.2	0.194	0.133	-31%
				Groundwater Elevation (Ft MSL)	964.57				
				Measured Well Depth (ft)	24.8				
				Submerged screen	Y				
MW-11	982.53	NA	30.0	Groundwater Level (ft)	17.71	-4.7	0.156	0.150	-4%
				Groundwater Elevation (Ft MSL)	964.82				
				Measured Well Depth (ft)	25.3				
				Submerged screen	NA				
MW-12	982.28	972.28	20.0	Groundwater Level (ft)	17.41	2.5	0.255	0.150	-41%
				Groundwater Elevation (Ft MSL)	964.87				
				Measured Well Depth (ft)	22.5				
				Submerged screen	N				
MW-13	976.69	971.69	15.0	Groundwater Level (ft)	11.96	2.3	0.275	0.167	-39%
				Groundwater Elevation (Ft MSL)	964.73				
				Measured Well Depth (ft)	17.3				
				Submerged screen	N				
MW-14R	972.58	965.38	17.2	Groundwater Level (ft)	7.90	-2.7	0.295	0.120	-59%
				Groundwater Elevation (Ft MSL)	964.68				
				Measured Well Depth (ft)	14.5				
				Submerged screen	N				
MW-15R	972.50	964.80	17.7	Groundwater Level (ft)	8.88	-2.0	0.285	0.133	-53%
				Groundwater Elevation (Ft MSL)	963.62				
				Measured Well Depth (ft)	15.7				
				Submerged screen	N				
Deep Flow									
MW-4	976.03	NA	80.0	Groundwater Level (ft)	NM	NM	0.245	Not Sampled	NA
				Groundwater Elevation (Ft MSL)	NM				
				Measured Well Depth (ft)	NM				
				Submerged screen	NA				
MW-1	981.04	NA	80.0	Groundwater Level (ft)	16.27	1.2	0.235	0.150	-36%
				Groundwater Elevation (Ft MSL)	964.77				
				Measured Well Depth (ft)	81.2				
				Submerged screen	NA				
MW-8	976.53	905.70	80.0	Groundwater Level (ft)	11.84	1.0	0.235	0.120	-49%
				Groundwater Elevation (Ft MSL)	964.69				
				Measured Well Depth (ft)	81.0				
				Submerged screen	Y				
MW-10	980.58	NA	70.0	Groundwater Level (ft)	15.81	-0.7	0.240	0.106	-56%
				Groundwater Elevation (Ft MSL)	964.77				
				Measured Well Depth (ft)	69.3				
				Submerged screen	NA				

NA - Not Available.
NM - Not Measured

Comments:

- Monitoring wells MW-4 and MW-5 were not accessible during the 2023 sampling event due to localized flooding.
- Measured well depths were within 3.0 feet of the installed depths where measured with the following exceptions:
MW-3 and MW-11: These monitoring wells have consistently measured shallower than the installed depth; however, since the monitoring wells produce sufficient groundwater for sampling it is likely that the wells are functioning adequately.
- It should be noted that baseline recharge rates were calculated from the first semi-annual sampling event utilizing low-flow sampling apparatuses and should not be considered necessarily representative of a monitoring well's recharge rate under all water level conditions.

Table 5
Background Summary
2023 Annual Water Quality Report
Alter Trading Company Monofill
Permit No. 78-SDP-19-98C

Interwell Background/Control Limit (MW-4 & MW-5)

Constituent	Units	Samples	Detections	Background Level	Statistical Test	Action Level	Source
Ammonia as N	mg/L	56	28	1.209	M+2SD	30 mg/L	HAL
Arsenic	mg/L	24	22	0.005463	M+2SD	0.01 mg/L	MCL
Barium	mg/L	24	24	0.4139	M+2SD	2 mg/L	MCL
Chemical Oxygen Demand	mg/L	56	56	37.84	M+2SD	-	-
Chloride	mg/L	56	56	371.7	M+2SD	-	-
Iron	mg/L	12	11	17.77	M+2SD	-	-
Lead	mg/L	24	14	0.008554	M+2SD	0.015 mg/L	MCL
Nickel	mg/L	24	20	0.03	M+2SD	0.1 mg/L	HAL
pH	S.U.	52	52	6.51 - 8.23	M+/-2SD	-	-
Specific Conductance	µS/cm	54	54	2415	M+2SD	-	-
Total Extractable Hydrocarbons	µg/L	30	11	514	M+2SD	-	-
Zinc	mg/L	24	8	0.0323	M+2SD	2 mg/L	HAL

Notes:

- 1) Background levels based on calculated control limits or reporting limit, as applicable.

Acronyms/Abbreviations:

RL = Reporting Limit

GWPS = Groundwater Protection Standard

SSS = Site-Specific GWPS

SWS = Statewide Standard

SD = Standard Deviation

MCL = EPA Maximum Contaminant Level

HAL = Health Advisory Level

DWA = Drinking Water Advisory

Comments:

- 1) **Water quality results and effectiveness of the statistical data evaluation criteria:** Statistical evaluations consist of control limits.
- 2) **Changes to the previous statistical method during reporting period:** None.

Table 6
Summary of Well/Detected Constituent Pairs With No Immediately Preceding Control Limit Exceedances
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Well	Constituent	Units	Most recent result	Background Standard
Shallow Flow				
MW-3	Iron	mg/L	19	17.77
MW-13	Arsenic	mg/L	0.00856	0.005463
Deep Flow				
MW-1	Ammonia as N	mg/L	1.27	1.209
MW-10	Arsenic	mg/L	0.00931	0.005463

Notes: Table includes control limit exceedances identified during the 2023 sampling event that were not identified as control limit exceedances in the previous year.

Table 7
Summary Table of Ongoing and Newly Identified Control Limit Exceedances
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No.78-SDP-19-98C

Key

	Denotes ongoing control limit exceedances that were identified as control limit exceedances during this reporting period and the previous reporting period at least once during each reporting period.
	Denotes newly identified control limit exceedances in the current reporting period. Newly identified is defined as occurring at least once in the current reporting period but not in the immediately preceding reporting period.

Well	Constituent	Units	Most recent result	Background Standard	Action Level/ Statewide Standard
Shallow Flow					
MW-2	Ammonia as N	mg/L	7.21	1.24	30
	Arsenic	mg/L	0.112	0.00897	0.01
	Chemical Oxygen Demand	mg/L	69.7	52	-
MW-3	Ammonia as N	mg/L	1.3	1.24	30
	Arsenic	mg/L	0.139	0.00897	0.01
	Iron	mg/L	19	13.5	-
MW-9	Chemical Oxygen Demand	mg/L	61.1	52.0	-
MW-13	Arsenic	mg/L	0.00931	0.00689	0.01
MW-14R	Ammonia as N	mg/L	3.66	1.24	30
	Barium	mg/L	0.703	0.472	2
	Nickel	mg/L	0.109	0.0661	0.1
	Zinc	mg/L	1.98	0.0402	2
MW-15	Barium	mg/L	0.498	0.472	2
Deep Flow					
MW-1	Ammonia as N	mg/L	1.27	1.24	30
MW-8	Chemical Oxygen Demand	mg/L	92.5	52	-
MW-10	Arsenic	mg/L	0.00931	0.00689	0.01

Comments:

- 1) **Problems with the current HMSP network:** None.
- 2) **Proposed remedies:** None.
- 3) **Alternative constituent or sample frequency changes:** None.
- 4) **Plume delineation strategies:** Not Applicable.
- 5) **Property owner notifications:** Not applicable.

Table 8
Summary of Groundwater Chemistry
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

The Summary of Groundwater Chemistry is located in Appendix C.

Table 9
Historical Control Limit & MCL Exceedances
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Key

	Control Limit Exceedance
X	Action Level Exceedance

Well	Constituent	2020	2021	2022	2023
Shallow Flow					
MW-2	Ammonia as N				
	Arsenic	X	X	X	X
	Chemical Oxygen Demand				
	Total Extractable Hydrocarbons				
	Iron				
MW-3	Ammonia as N				
	Arsenic	X	X	X	X
	Chemical Oxygen Demand				
	Iron				
MW-9	Chemical Oxygen Demand				
MW-13	Arsenic				
MW-14R	Ammonia as N				
	Arsenic		X	X	
	Barium				
	Chemical Oxygen Demand				
	Iron				
	Nickel	X	X	X	X
	Zinc	X	X	X	
MW-15R	Arsenic	X		X	
	Barium				
Deep Flow					
MW-1	Ammonia as N				
MW-8	Chemical Oxygen Demand				
MW-10	Arsenic	X			

Table 10
Groundwater Quality Assessment Plan Trend Analysis
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Monitoring Well	Constituent Name	Calculated Statistic		
		Decreasing Trend	Stable Trend	Increasing Trend
EPA-1AR	Ammonia as N		-7	
	Chemical Oxygen Demand		1	
	Chloride		4	
	Iron		-6	
	pH		-6	
	Specific Conductance		-12	
	Total Extractable Hydrocarbons		-2	
EPA-2A	Ammonia as N		-6	
	Arsenic		-10	
	Chemical Oxygen Demand		3	
	Chloride		3	
	Iron		-8	
	pH	-14		
	Specific Conductance	-18		
	Total Extractable Hydrocarbons			13
MW-1	Ammonia as N		-8	
	Chemical Oxygen Demand		1	
	Chloride	-16		
	Iron		1	
	pH	-13		
	Specific Conductance		-10	
	Total Extractable Hydrocarbons		2	
MW-2	Ammonia as N		-6	
	Arsenic		-8	
	Chemical Oxygen Demand		-4	
	Chloride		-4	
	Iron		5	
	pH		-6	
	Specific Conductance		0	
	Total Extractable Hydrocarbons		5	
MW-3	Ammonia as N		4	
	Arsenic		-2	
	Chemical Oxygen Demand		-12	
	Chloride	-13		
	Iron		1	
	pH		-2	
	Specific Conductance		-4	
	Total Extractable Hydrocarbons		-3	

Table 10
Groundwater Quality Assessment Plan Trend Analysis
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Monitoring Well	Constituent Name	Calculated Statistic		
		Decreasing Trend	Stable Trend	Increasing Trend
MW-8	Ammonia as N		-12	
	Chemical Oxygen Demand		-10	
	Chloride	-26		
	Iron	-13		
	pH		-10	
	Specific Conductance	-22		
	Total Extractable Hydrocarbons		-12	
MW-9	Chemical Oxygen Demand		4	
	Chloride	-18		
	Iron		5	
	pH		8	
	Specific Conductance		-10	
	Total Extractable Hydrocarbons			22
MW-10	Ammonia as N		0	
	Arsenic		5	
	Chemical Oxygen Demand		4	
	Chloride		-2	
	Iron		-7	
	pH	-16		
	Specific Conductance		-8	
	Total Extractable Hydrocarbons		5	
MW-11	Chemical Oxygen Demand		1	
	Chloride			18
	Iron		-1	
	pH	-16		
	Specific Conductance			14
	Total Extractable Hydrocarbons		-1	
MW-12	Chemical Oxygen Demand		-3	
	Chloride		12	
	Iron		-5	
	Lead	-18		
	pH	-16		
	Specific Conductance		-2	
	Total Extractable Hydrocarbons		0	

Table 10
Groundwater Quality Assessment Plan Trend Analysis
2023 Annual Water Quality Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Monitoring Well	Constituent Name	Calculated Statistic		
		Decreasing Trend	Stable Trend	Increasing Trend
MW-13	Arsenic		-6	
	Chemical Oxygen Demand		-4	
	Chloride			16
	Iron		-3	
	Lead		-11	
	pH	-17		
	Specific Conductance		4	
	Total Extractable Hydrocarbons		9	
MW-14R	Ammonia as N		8	
	Arsenic	-16		
	Barium		10	
	Chemical Oxygen Demand		-6	
	Chloride		0	
	Iron		-5	
	Lead	-17		
	Nickel		-8	
	pH	-16		
	Specific Conductance		4	
	Total Extractable Hydrocarbons		-3	
	Zinc		-12	
MW-15R	Ammonia as N		-3	
	Arsenic	-18		
	Barium		-10	
	Chemical Oxygen Demand		2	
	Chloride			20
	Iron		-9	
	Lead	-21		
	Nickel	-26		
	pH		-10	
	Specific Conductance		6	
	Total Extractable Hydrocarbons		-8	

Notes:

Trending was evaluated using Mann-Kendall analysis at 80% confidence ($\alpha = 0.2$) for the entire historical dataset.

Figures

- 1 Approved Monitoring Network
- 2 Groundwater Contours – Aquifer 1
- 3 Groundwater Contours – Aquifer 2

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User: hmadison
Date Saved: 9/21/2023 4:46 PM



Shallow Flow	
MW-5	MW-11
EPA-1AR	MW-12
MW-2	MW-13
EPA-2A	MW-14R
MW-3	MW-15R
MW-9	
Deep Flow	
MW-4	MW-8
MW-1	MW-10



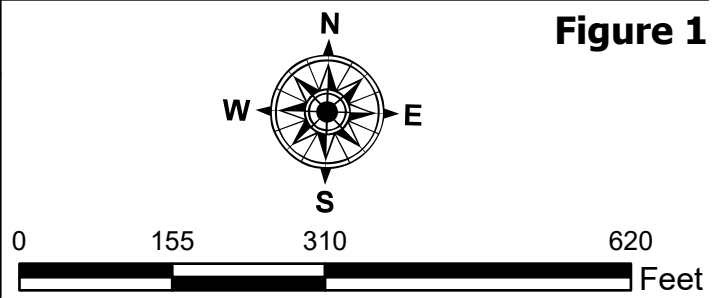
Approved Monitoring Network

Legend

- Deep Flow
- Shallow Flow
- Approximate Monitoring Well Location

- Delineated Wetland Area
- Approximate Property Line

Alter Trading Corporation Monofill
Council Bluffs, Iowa
Project No: 27223186.00
Drawing Date: September 2023



Path: C:\Users\hmadson\OneDrive - SCS Engineers\Desktop\GIS\Mapa\Site Maps\CTYCB\2023\AWQCB\CTYCB-2023\AWQCB.aprx
User: hmadson
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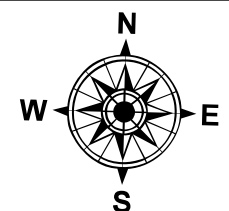


Legend

- Approximate Monitoring Well Location
- Approximate Deep Groundwater Contours Based on Field Measurements Taken August 30, 2023
- Delineated Wetland Area
- Approximate Property Line

Groundwater Contours (Deep)

Alter Trading
Corporation Monofill
Council Bluffs, Iowa
Project No: 27223186.00
Drawing Date: September
2023



0 155 310 620
Feet

Figure 3



Appendix A

Field Sampling Forms

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	EPA-1AR	Date:	6/29/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	22.5
Initial Static Water Level (feet):	13.53
Initial Groundwater Elevation (ft-amsl):	964.60
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
10:59 AM	Purging start time.						
11:02 AM	17.3	2.7	556.4	7.45	149.5	12.8	
11:05 AM	16.8	2.1	559.7	7.31	144.7	10.4	
11:08 AM	16.7	1.8	558.6	7.27	140.0	14.8	
11:11 AM	16.5	1.6	561.2	7.24	136.0	21.5	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	126.67

D. WELL MAINTENANCE

Does the well require any future maintenance?		No
If yes, explain:		
Additional Comments:		

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	EPA-2A	Date:	6/29/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	25.3
Initial Static Water Level (feet):	16.30
Initial Groundwater Elevation (ft-amsl):	964.62
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
10:25 AM	Purging start time.						
10:28 AM	17.7	2.1	536.0	7.43	99.0	5.6	
10:31 AM	17.6	0.9	500.5	7.36	94.7	4.8	
10:34 AM	17.5	0.7	503.2	7.33	91.6	5.0	
10:37 AM	17.6	0.6	507.1	7.31	89.2	5.1	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	120.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-1	Date:	6/28/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	81.2
Initial Static Water Level (feet):	16.27
Initial Groundwater Elevation (ft-amsl):	964.77
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
4:45 PM	Purging start time.						
4:48 PM	22.3	1.0	1222.3	7.21	-64.0	12.3	
4:51 PM	22.1	0.6	1227.7	7.02	-78.1	26.8	
4:54 PM	23.5	0.5	1228.0	6.93	-85.9	60.5	
4:57 PM	23.5	0.4	1233.5	6.93	-89.2	73.0	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	150.00

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-2	Date:	6/28/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	36.5
Initial Static Water Level (feet):	17.48
Initial Groundwater Elevation (ft-amsl):	964.78
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
4:10 PM	Purging start time.						
4:13 PM	22.0	0.8	1355.6	7.20	-88.9	15.4	
4:16 PM	21.4	0.5	1341.4	7.07	-104.5	98.8	
4:19 PM	20.5	0.4	1312.6	7.15	-112.2	155.1	
4:22 PM	20.9	0.4	1305.9	7.18	-118.0	190.1	
4:25 PM	20.5	0.4	1303.7	7.22	-120.5	225.0	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.1
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	140.00

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-3	Date:	6/28/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	16.6
Initial Static Water Level (feet):	14.02
Initial Groundwater Elevation (ft-amsl):	964.80
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
2:36 PM	Purging start time.						
2:39 PM	19.3	1.1	966.3	6.96	-72.9	8.7	
2:42 PM	19.0	0.6	973.7	6.96	-94.4	11.3	
2:45 PM	18.5	0.5	979.5	7.00	-103.7	19.6	
2:48 PM	18.5	0.5	977.3	7.03	-108.5	23.4	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	158.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-4	Date:	6/29/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	
Litter/Standing Water?	

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	
Initial Static Water Level (feet):	
Initial Groundwater Elevation (ft-amsl):	
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
	Purging start time.						
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):
Was well pumped/bailed dry?
Total Amount of Time Purged (minutes:seconds):
Average Purge Rate (mL/min):

D. WELL MAINTENANCE	
Does the well require any future maintenance?	
If yes, explain:	
Additional Comments:	Monitoring well inaccessible due to nearby flooding.

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-5	Date:	6/29/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	
Litter/Standing Water?	

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	
Initial Static Water Level (feet):	
Initial Groundwater Elevation (ft-amsl):	
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
	Purging start time.						
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):
Was well pumped/bailed dry?
Total Amount of Time Purged (minutes:seconds):
Average Purge Rate (mL/min):

D. WELL MAINTENANCE	
Does the well require any future maintenance?	
If yes, explain:	
Additional Comments:	Monitoring well inaccessible due to nearby flooding.

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-8	Date:	6/29/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	81.0
Initial Static Water Level (feet):	11.84
Initial Groundwater Elevation (ft-amsl):	964.69
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
9:33 AM	Purging start time.						
9:36 AM	16.8	1.3	1036.3	7.64	-11.9	5.8	
9:39 AM	16.7	0.8	1039.6	7.60	-46.7	5.8	
9:42 AM	16.6	0.7	1038.3	7.62	-63.9	5.9	
9:45 AM	16.8	0.6	1040.6	7.61	-73.5	6.0	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	120.00

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-9	Date:	6/29/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	24.8
Initial Static Water Level (feet):	12.20
Initial Groundwater Elevation (ft-amsl):	964.57
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
9:56 AM	Purging start time.						
9:59 AM	17.8	1.6	1199.6	7.13	24.5	16.6	
10:02 AM	18.1	0.8	1201.7	7.08	30.0	6.6	
10:05 AM	17.9	0.6	1204.2	7.08	33.9	6.0	
10:08 AM	18.0	0.5	1201.5	7.09	37.4	6.6	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	133.33

D. WELL MAINTENANCE

Does the well require any future maintenance?		No
If yes, explain:		
Additional Comments:		

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-10	Date:	6/28/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	69.3
Initial Static Water Level (feet):	15.81
Initial Groundwater Elevation (ft-amsl):	964.77
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
7:26 PM	Purging start time.						
7:29 PM	21.3	3.9	512.2	8.20	-4.6	8.7	
7:32 PM	20.6	1.1	546.6	7.62	-75.7	8.4	
7:35 PM	20.4	0.8	549.0	7.48	-84.4	8.9	
7:38 PM	20.4	0.6	548.7	7.43	-90.1	10.5	
7:41 PM	20.2	0.6	546.3	7.42	-94.7	12.5	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	18:00
Average Purge Rate (mL/min):	105.56

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-11	Date:	6/28/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	25.3
Initial Static Water Level (feet):	17.71
Initial Groundwater Elevation (ft-amsl):	964.82
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
6:35 PM	Purging start time.						
6:38 PM	21.6	2.6	794.1	7.20	170.3	9.2	
6:41 PM	21.7	2.3	791.9	7.13	163.9	9.8	
6:44 PM	21.5	2.2	793.9	7.11	159.4	10.7	
6:47 PM	21.7	2.1	794.7	7.10	156.2	12.5	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	150.00

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-12	Date:	6/28/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	22.5
Initial Static Water Level (feet):	17.41
Initial Groundwater Elevation (ft-amsl):	964.87
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
6:00 PM	Purging start time.						
6:03 PM	19.5	1.6	823.1	6.94	168.0	15.0	
6:06 PM	18.9	1.1	839.1	6.71	152.5	13.0	
6:09 PM	18.8	0.8	850.8	6.71	145.4	10.8	
6:12 PM	18.8	0.7	857.5	6.72	141.4	9.8	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	150.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-13	Date:	6/28/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	17.3
Initial Static Water Level (feet):	11.96
Initial Groundwater Elevation (ft-amsl):	964.73
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
3:07 PM	Purging start time.						
3:10 PM	20.1	3.0	757.6	7.05	82.2	7.2	
3:13 PM	20.2	2.1	759.9	6.93	86.9	6.1	
3:16 PM	20.4	1.8	759.1	6.91	90.1	5.3	
3:19 PM	19.9	1.5	761.3	6.92	92.3	4.7	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	166.67

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-14R	Date:	6/29/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	14.5
Initial Static Water Level (feet):	7.90
Initial Groundwater Elevation (ft-amsl):	964.68
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
12:15 PM	Purging start time.						
12:18 PM	17.0	1.4	1059.9	7.15	-5.7	12.3	
12:21 PM	17.3	0.8	1063.0	7.04	-14.6	49.3	
12:24 PM	17.3	0.6	1069.9	7.02	-19.4	18.6	
12:27 PM	17.7	0.5	1070.8	6.98	-23.9	11.9	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	120.00

D. WELL MAINTENANCE

Does the well require any future maintenance?		No
If yes, explain:		
Additional Comments:		

FORM FOR GROUNDWATER SAMPLING

Project:	CTYCB		
Monitoring Well/Piezometer ID:	MW-15R	Date:	6/29/2023
Gradient:	Down	Sampler:	Scott Stoller

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	15.7
Initial Static Water Level (feet):	8.88
Initial Groundwater Elevation (ft-amsl):	963.62
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
11:35 AM	Purging start time.						
11:38 AM	15.1	1.3	770.3	7.30	159.9	51.2	
11:41 AM	15.1	0.8	768.8	7.09	136.7	39.8	
11:44 AM	15.1	0.6	771.3	7.03	115.8	26.9	
11:47 AM	15.1	0.5	773.0	7.03	92.9	25.4	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	133.33

D. WELL MAINTENANCE

Does the well require any future maintenance?		No
If yes, explain:		
Additional Comments:		



Appendix B1

Laboratory Analytical Data Sheets

ANALYTICAL REPORT

PREPARED FOR

Attn: Kevin Jensen
SCS Engineers
1690 All State Court
Suite 100
West Des Moines, Iowa 50265

Generated 7/18/2023 4:34:57 PM

JOB DESCRIPTION

Council Bluffs ASR Monofill Annual GW Sampling

JOB NUMBER

310-259399-1

Eurofins Cedar Falls

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



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Case Narrative

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Job ID: 310-259399-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-259399-1

Receipt

The samples were received on 6/30/2023 4:20 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.1°C, 0.9°C and 1.1°C

Diesel Range Organics

Method OA2: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 310-392498. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.

Method OA2: The method blank for preparation batch 310-392498 and analytical batch 310-392986 contained Total Extractable Hydrocarbons above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Sample Summary

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-259399-1	MW-1	Ground Water	06/28/23 16:57	06/30/23 16:20
310-259399-2	EPA-1AR	Ground Water	06/29/23 11:11	06/30/23 16:20
310-259399-3	MW-2	Ground Water	06/28/23 16:25	06/30/23 16:20
310-259399-4	EPA-2A	Ground Water	06/29/23 10:37	06/30/23 16:20
310-259399-5	MW-3	Ground Water	06/28/23 14:48	06/30/23 16:20
310-259399-6	MW-8	Ground Water	06/29/23 09:45	06/30/23 16:20
310-259399-7	MW-9	Ground Water	06/29/23 10:09	06/30/23 16:20
310-259399-8	MW-10	Ground Water	06/28/23 19:41	06/30/23 16:20
310-259399-9	MW-11	Ground Water	06/28/23 18:47	06/30/23 16:20
310-259399-10	MW-12	Ground Water	06/28/23 18:12	06/30/23 16:20
310-259399-11	MW-13	Ground Water	06/28/23 15:19	06/30/23 16:20
310-259399-12	MW-14R	Ground Water	06/29/23 12:27	06/30/23 16:20
310-259399-13	MW-15R	Ground Water	06/29/23 11:47	06/30/23 16:20
310-259399-14	MW-D	Ground Water	06/28/23 18:47	06/30/23 16:20

Detection Summary

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-1

Lab Sample ID: 310-259399-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Extractable Hydrocarbons	104	J B Z	500	76.1	ug/L	1		OA-2	Total/NA
Chloride	49.2		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	15.5		0.500	0.0930	mg/L	1		6010D	Total/NA
Ammonia	1.27	F1	0.200	0.100	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	22.8		5.00	4.80	mg/L	1		5220D LL	Total/NA

Client Sample ID: EPA-1AR

Lab Sample ID: 310-259399-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Extractable Hydrocarbons	113	J B Z	500	76.1	ug/L	1		OA-2	Total/NA
Chloride	5.76		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	0.147	J	0.500	0.0930	mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	6.90		5.00	4.80	mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-2

Lab Sample ID: 310-259399-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Motor Oil	846		300	80.3	ug/L	1		OA-2	Total/NA
Chloride	13.6		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	10.9		0.500	0.0930	mg/L	1		6010D	Total/NA
Arsenic	0.112		0.00200	0.000530	mg/L	1		6020B	Total/NA
Ammonia	7.21		0.200	0.100	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	69.7		5.00	4.80	mg/L	1		5220D LL	Total/NA
Total Suspended Solids	41.0		15.0	5.10	mg/L	1		I-3765-85	Total/NA

Client Sample ID: EPA-2A

Lab Sample ID: 310-259399-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	10.4		5.00	2.25	mg/L	5		9056A	Total/NA
Arsenic	0.00186	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Ammonia	0.257		0.200	0.100	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	6.90		5.00	4.80	mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-3

Lab Sample ID: 310-259399-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Extractable Hydrocarbons	81.7	J B Z	500	76.1	ug/L	1		OA-2	Total/NA
Chloride	13.3		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	19.0		0.500	0.0930	mg/L	1		6010D	Total/NA
Arsenic	0.139		0.00200	0.000530	mg/L	1		6020B	Total/NA
Ammonia	1.30		0.200	0.100	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	21.4		5.00	4.80	mg/L	1		5220D LL	Total/NA
Total Suspended Solids	42.0		15.0	5.10	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 310-259399-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Extractable Hydrocarbons	181	J B Z	500	76.1	ug/L	1		OA-2	Total/NA
Chloride	30.9		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	1.90		0.500	0.0930	mg/L	1		6010D	Total/NA
Ammonia	0.537		0.200	0.100	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	92.5		5.00	4.80	mg/L	1		5220D LL	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Client Sample ID: MW-9

Lab Sample ID: 310-259399-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Motor Oil	862		333	89.2	ug/L	1		OA-2	Total/NA
Chloride	23.7		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	0.258	J	0.500	0.0930	mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	61.1		5.00	4.80	mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-10

Lab Sample ID: 310-259399-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Motor Oil	491		300	80.3	ug/L	1		OA-2	Total/NA
Chloride	26.2		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	4.08		0.500	0.0930	mg/L	1		6010D	Total/NA
Arsenic	0.00931		0.00200	0.000530	mg/L	1		6020B	Total/NA
Ammonia	0.666		0.200	0.100	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	23.1		5.00	4.80	mg/L	1		5220D LL	Total/NA
Total Suspended Solids	24.3		5.00	1.70	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-11

Lab Sample ID: 310-259399-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Extractable Hydrocarbons	82.0	J B Z	481	73.2	ug/L	1		OA-2	Total/NA
Chloride	41.4		5.00	2.25	mg/L	5		9056A	Total/NA
Chemical Oxygen Demand	5.86		5.00	4.80	mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-12

Lab Sample ID: 310-259399-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	33.0		5.00	2.25	mg/L	5		9056A	Total/NA
Lead	0.00304		0.000500	0.000240	mg/L	1		6020B	Total/NA
Chemical Oxygen Demand	8.97		5.00	4.80	mg/L	1		5220D LL	Total/NA
Total Suspended Solids	1.50	J	1.88	0.638	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-13

Lab Sample ID: 310-259399-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	22.2		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	7.18		0.500	0.0930	mg/L	1		6010D	Total/NA
Arsenic	0.00856		0.00200	0.000530	mg/L	1		6020B	Total/NA
Lead	0.00169		0.000500	0.000240	mg/L	1		6020B	Total/NA
Chemical Oxygen Demand	10.0		5.00	4.80	mg/L	1		5220D LL	Total/NA
Total Suspended Solids	213		7.50	2.55	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-14R

Lab Sample ID: 310-259399-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Motor Oil	374		319	85.4	ug/L	1		OA-2	Total/NA
Chloride	27.9		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	4.96		0.500	0.0930	mg/L	1		6010D	Total/NA
Arsenic	0.00451		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.703		0.00200	0.000640	mg/L	1		6020B	Total/NA
Nickel	0.109		0.00500	0.00190	mg/L	1		6020B	Total/NA
Zinc	1.98	B	0.0800	0.0256	mg/L	4		6020B	Total/NA
Ammonia	3.66		0.200	0.100	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	25.9		5.00	4.80	mg/L	1		5220D LL	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Client Sample ID: MW-14R (Continued)

Lab Sample ID: 310-259399-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	15.0		15.0	5.10	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-15R

Lab Sample ID: 310-259399-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Extractable Hydrocarbons	103	J B Z	481	73.2	ug/L	1		OA-2	Total/NA
Chloride	43.4		5.00	2.25	mg/L	5		9056A	Total/NA
Iron	3.14		0.500	0.0930	mg/L	1		6010D	Total/NA
Arsenic	0.00511		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.498		0.00200	0.000640	mg/L	1		6020B	Total/NA
Nickel	0.00680		0.00500	0.00190	mg/L	1		6020B	Total/NA
Chemical Oxygen Demand	21.4		5.00	4.80	mg/L	1		5220D LL	Total/NA
Total Suspended Solids	6.00		5.00	1.70	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-D

Lab Sample ID: 310-259399-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	38.3		5.00	2.25	mg/L	5		9056A	Total/NA
Chemical Oxygen Demand	7.24		5.00	4.80	mg/L	1		5220D LL	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-1

Lab Sample ID: 310-259399-1

Date Collected: 06/28/23 16:57

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 10:46	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 10:46	1
Motor Oil	<300		300	80.3	ug/L		07/03/23 10:36	07/10/23 10:46	1
Total Extractable Hydrocarbons	104	J B Z	500	76.1	ug/L		07/03/23 10:36	07/10/23 10:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	86		17 - 120	07/03/23 10:36	07/10/23 10:46	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49.2		5.00	2.25	mg/L			07/07/23 22:45	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	15.5		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	1.27	F1	0.200	0.100	mg/L			07/03/23 18:39	1
Chemical Oxygen Demand (SM 5220D LL)	22.8		5.00	4.80	mg/L			07/05/23 10:44	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: EPA-1AR

Lab Sample ID: 310-259399-2

Date Collected: 06/29/23 11:11

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 11:01	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 11:01	1
Motor Oil	<300		300	80.3	ug/L		07/03/23 10:36	07/10/23 11:01	1
Total Extractable Hydrocarbons	113	J B Z	500	76.1	ug/L		07/03/23 10:36	07/10/23 11:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	86		17 - 120	07/03/23 10:36	07/10/23 11:01	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.76		5.00	2.25	mg/L			07/07/23 23:01	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.147	J	0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.200		0.200	0.100	mg/L			07/03/23 18:42	1
Chemical Oxygen Demand (SM 5220D LL)	6.90		5.00	4.80	mg/L			07/05/23 10:44	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-2

Lab Sample ID: 310-259399-3

Date Collected: 06/28/23 16:25

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 11:16	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 11:16	1
Motor Oil	846		300	80.3	ug/L		07/03/23 10:36	07/10/23 11:16	1
Total Extractable Hydrocarbons	<500		500	76.1	ug/L		07/03/23 10:36	07/10/23 11:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	92		17 - 120	07/03/23 10:36	07/10/23 11:16	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13.6		5.00	2.25	mg/L			07/07/23 23:16	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	10.9		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:14	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.112		0.00200	0.000530	mg/L		07/05/23 09:35	07/10/23 01:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	7.21		0.200	0.100	mg/L			07/03/23 18:44	1
Chemical Oxygen Demand (SM 5220D LL)	69.7		5.00	4.80	mg/L			07/05/23 10:44	1
Total Suspended Solids (USGS I-3765-85)	41.0		15.0	5.10	mg/L			07/03/23 13:18	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: EPA-2A

Lab Sample ID: 310-259399-4

Date Collected: 06/29/23 10:37

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 11:31	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 11:31	1
Motor Oil	<300		300	80.3	ug/L		07/03/23 10:36	07/10/23 11:31	1
Total Extractable Hydrocarbons	<500		500	76.1	ug/L		07/03/23 10:36	07/10/23 11:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	80		17 - 120	07/03/23 10:36	07/10/23 11:31	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	10.4		5.00	2.25	mg/L			07/07/23 23:32	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.500		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:16	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00186	J	0.00200	0.000530	mg/L		07/05/23 09:35	07/10/23 01:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	0.257		0.200	0.100	mg/L			07/03/23 18:45	1
Chemical Oxygen Demand (SM 5220D LL)	6.90		5.00	4.80	mg/L			07/05/23 10:44	1
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			07/05/23 10:25	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-3

Lab Sample ID: 310-259399-5

Date Collected: 06/28/23 14:48

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 11:46	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 11:46	1
Motor Oil	<300		300	80.3	ug/L		07/03/23 10:36	07/10/23 11:46	1
Total Extractable Hydrocarbons	81.7	J B Z	500	76.1	ug/L		07/03/23 10:36	07/10/23 11:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	74		17 - 120	07/03/23 10:36	07/10/23 11:46	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13.3		5.00	2.25	mg/L			07/07/23 23:47	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	19.0		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:22	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.139		0.00200	0.000530	mg/L		07/05/23 09:35	07/10/23 01:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	1.30		0.200	0.100	mg/L			07/03/23 18:46	1
Chemical Oxygen Demand (SM 5220D LL)	21.4		5.00	4.80	mg/L			07/05/23 10:44	1
Total Suspended Solids (USGS I-3765-85)	42.0		15.0	5.10	mg/L			07/03/23 13:18	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-8

Lab Sample ID: 310-259399-6

Date Collected: 06/29/23 09:45

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 12:01	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 12:01	1
Motor Oil	<300		300	80.3	ug/L		07/03/23 10:36	07/10/23 12:01	1
Total Extractable Hydrocarbons	181	J B Z	500	76.1	ug/L		07/03/23 10:36	07/10/23 12:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	94		17 - 120	07/03/23 10:36	07/10/23 12:01	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	30.9		5.00	2.25	mg/L			07/08/23 00:34	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1.90		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	0.537		0.200	0.100	mg/L			07/03/23 18:47	1
Chemical Oxygen Demand (SM 5220D LL)	92.5		5.00	4.80	mg/L			07/05/23 10:44	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-9

Lab Sample ID: 310-259399-7

Date Collected: 06/29/23 10:09

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<333		333	191	ug/L		07/03/23 10:36	07/10/23 12:16	1
Diesel	<333		333	84.6	ug/L		07/03/23 10:36	07/10/23 12:16	1
Motor Oil	862		333	89.2	ug/L		07/03/23 10:36	07/10/23 12:16	1
Total Extractable Hydrocarbons	<556		556	84.6	ug/L		07/03/23 10:36	07/10/23 12:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	81		17 - 120	07/03/23 10:36	07/10/23 12:16	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	23.7		5.00	2.25	mg/L			07/08/23 00:50	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.258	J	0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.200		0.200	0.100	mg/L			07/03/23 18:47	1
Chemical Oxygen Demand (SM 5220D LL)	61.1		5.00	4.80	mg/L			07/05/23 10:44	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-10

Lab Sample ID: 310-259399-8

Date Collected: 06/28/23 19:41

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 12:31	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 12:31	1
Motor Oil	491		300	80.3	ug/L		07/03/23 10:36	07/10/23 12:31	1
Total Extractable Hydrocarbons	<500		500	76.1	ug/L		07/03/23 10:36	07/10/23 12:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	90		17 - 120	07/03/23 10:36	07/10/23 12:31	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	26.2		5.00	2.25	mg/L			07/08/23 01:05	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	4.08		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:28	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00931		0.00200	0.000530	mg/L		07/05/23 09:35	07/10/23 01:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	0.666		0.200	0.100	mg/L			07/03/23 18:49	1
Chemical Oxygen Demand (SM 5220D LL)	23.1		5.00	4.80	mg/L			07/05/23 10:44	1
Total Suspended Solids (USGS I-3765-85)	24.3		5.00	1.70	mg/L			07/03/23 14:13	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-11

Lab Sample ID: 310-259399-9

Date Collected: 06/28/23 18:47

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<288		288	165	ug/L		07/03/23 10:36	07/10/23 12:47	1
Diesel	<288		288	73.2	ug/L		07/03/23 10:36	07/10/23 12:47	1
Motor Oil	<288		288	77.2	ug/L		07/03/23 10:36	07/10/23 12:47	1
Total Extractable Hydrocarbons	82.0	J B Z	481	73.2	ug/L		07/03/23 10:36	07/10/23 12:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	79		17 - 120	07/03/23 10:36	07/10/23 12:47	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	41.4		5.00	2.25	mg/L			07/08/23 01:21	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.500		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.200		0.200	0.100	mg/L			07/03/23 18:49	1
Chemical Oxygen Demand (SM 5220D LL)	5.86		5.00	4.80	mg/L			07/05/23 10:44	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-12

Lab Sample ID: 310-259399-10

Date Collected: 06/28/23 18:12

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 13:02	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 13:02	1
Motor Oil	<300		300	80.3	ug/L		07/03/23 10:36	07/10/23 13:02	1
Total Extractable Hydrocarbons	<500		500	76.1	ug/L		07/03/23 10:36	07/10/23 13:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	108		17 - 120	07/03/23 10:36	07/10/23 13:02	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	33.0		5.00	2.25	mg/L			07/08/23 01:36	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.500		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 12:32	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.00304		0.000500	0.000240	mg/L		07/05/23 09:35	07/10/23 01:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.200		0.200	0.100	mg/L			07/03/23 18:49	1
Chemical Oxygen Demand (SM 5220D LL)	8.97		5.00	4.80	mg/L			07/05/23 10:44	1
Total Suspended Solids (USGS I-3765-85)	1.50 J		1.88	0.638	mg/L			07/03/23 14:13	1

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Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-13

Lab Sample ID: 310-259399-11

Date Collected: 06/28/23 15:19

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 13:17	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 13:17	1
Motor Oil	<300		300	80.3	ug/L		07/03/23 10:36	07/10/23 13:17	1
Total Extractable Hydrocarbons	<500		500	76.1	ug/L		07/03/23 10:36	07/10/23 13:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	92		17 - 120	07/03/23 10:36	07/10/23 13:17	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	22.2		5.00	2.25	mg/L			07/08/23 01:52	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	7.18		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 15:37	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00856		0.00200	0.000530	mg/L		07/05/23 09:35	07/10/23 01:27	1
Lead	0.00169		0.000500	0.000240	mg/L		07/05/23 09:35	07/10/23 01:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.200		0.200	0.100	mg/L			07/03/23 18:51	1
Chemical Oxygen Demand (SM 5220D LL)	10.0		5.00	4.80	mg/L			07/05/23 10:44	1
Total Suspended Solids (USGS I-3765-85)	213		7.50	2.55	mg/L			07/03/23 14:13	1

Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-14R

Lab Sample ID: 310-259399-12

Date Collected: 06/29/23 12:27

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<319		319	183	ug/L		07/03/23 10:36	07/10/23 13:32	1
Diesel	<319		319	81.0	ug/L		07/03/23 10:36	07/10/23 13:32	1
Motor Oil	374		319	85.4	ug/L		07/03/23 10:36	07/10/23 13:32	1
Total Extractable Hydrocarbons	<532		532	81.0	ug/L		07/03/23 10:36	07/10/23 13:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	83		17 - 120	07/03/23 10:36	07/10/23 13:32	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27.9		5.00	2.25	mg/L			07/08/23 02:08	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	4.96		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 15:39	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00451		0.00200	0.000530	mg/L		07/05/23 09:35	07/10/23 01:29	1
Barium	0.703		0.00200	0.000640	mg/L		07/05/23 09:35	07/10/23 01:29	1
Lead	<0.000500		0.000500	0.000240	mg/L		07/05/23 09:35	07/10/23 01:29	1
Nickel	0.109		0.00500	0.00190	mg/L		07/05/23 09:35	07/10/23 01:29	1
Zinc	1.98	B	0.0800	0.0256	mg/L		07/05/23 09:35	07/10/23 19:45	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	3.66		0.200	0.100	mg/L			07/03/23 18:51	1
Chemical Oxygen Demand (SM 5220D LL)	25.9		5.00	4.80	mg/L			07/05/23 10:44	1
Total Suspended Solids (USGS I-3765-85)	15.0		15.0	5.10	mg/L			07/05/23 10:25	1

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Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-15R

Lab Sample ID: 310-259399-13

Date Collected: 06/29/23 11:47

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<288		288	165	ug/L		07/03/23 10:36	07/10/23 14:14	1
Diesel	<288		288	73.2	ug/L		07/03/23 10:36	07/10/23 14:14	1
Motor Oil	<288		288	77.2	ug/L		07/03/23 10:36	07/10/23 14:14	1
Total Extractable Hydrocarbons	103	J B Z	481	73.2	ug/L		07/03/23 10:36	07/10/23 14:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	82		17 - 120	07/03/23 10:36	07/10/23 14:14	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	43.4		5.00	2.25	mg/L			07/08/23 02:23	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	3.14		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 15:41	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00511		0.00200	0.000530	mg/L		07/05/23 09:35	07/10/23 01:32	1
Barium	0.498		0.00200	0.000640	mg/L		07/05/23 09:35	07/10/23 01:32	1
Lead	<0.000500		0.000500	0.000240	mg/L		07/05/23 09:35	07/10/23 01:32	1
Nickel	0.00680		0.00500	0.00190	mg/L		07/05/23 09:35	07/10/23 01:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.200		0.200	0.100	mg/L			07/03/23 18:54	1
Chemical Oxygen Demand (SM 5220D LL)	21.4		5.00	4.80	mg/L			07/05/23 10:44	1
Total Suspended Solids (USGS I-3765-85)	6.00		5.00	1.70	mg/L			07/05/23 10:25	1

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Client Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-D

Lab Sample ID: 310-259399-14

Date Collected: 06/28/23 18:47

Matrix: Ground Water

Date Received: 06/30/23 16:20

Method: Iowa DNR OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<319		319	183	ug/L		07/03/23 10:36	07/10/23 14:29	1
Diesel	<319		319	81.0	ug/L		07/03/23 10:36	07/10/23 14:29	1
Motor Oil	<319		319	85.4	ug/L		07/03/23 10:36	07/10/23 14:29	1
Total Extractable Hydrocarbons	<532		532	81.0	ug/L		07/03/23 10:36	07/10/23 14:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	89		17 - 120	07/03/23 10:36	07/10/23 14:29	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	38.3		5.00	2.25	mg/L			07/08/23 02:39	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.500		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 15:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.200		0.200	0.100	mg/L			07/03/23 18:54	1
Chemical Oxygen Demand (SM 5220D LL)	7.24		5.00	4.80	mg/L			07/05/23 10:44	1

Definitions/Glossary

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
Z	The chromatographic response does not resemble a typical fuel pattern.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Surrogate Summary

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Method: OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Matrix: Ground Water

Prep Type: Total/NA

			Percent Surrogate Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	OTCN (17-120)						
310-259399-1	MW-1	86						
310-259399-2	EPA-1AR	86						
310-259399-3	MW-2	92						
310-259399-4	EPA-2A	80						
310-259399-5	MW-3	74						
310-259399-6	MW-8	94						
310-259399-7	MW-9	81						
310-259399-8	MW-10	90						
310-259399-9	MW-11	79						
310-259399-10	MW-12	108						
310-259399-11	MW-13	92						
310-259399-12	MW-14R	83						
310-259399-13	MW-15R	82						
310-259399-14	MW-D	89						
Surrogate Legend								
OTCN = n-Octacosane								

Method: OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Matrix: Water

Prep Type: Total/NA

			Percent Surrogate Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	OTCN (17-120)						
LCS 310-392498/2-A	Lab Control Sample	75						
LCSD 310-392498/3-A	Lab Control Sample Dup	85						
MB 310-392498/1-A	Method Blank	83						
Surrogate Legend								
OTCN = n-Octacosane								

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QC Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Method: OA-2 - Iowa - Extractable Petroleum Hydrocarbons (GC)

Lab Sample ID: MB 310-392498/1-A

Matrix: Water

Analysis Batch: 392986

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 392498

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	<300		300	172	ug/L		07/03/23 10:36	07/10/23 10:00	1
Diesel	<300		300	76.1	ug/L		07/03/23 10:36	07/10/23 10:00	1
Motor Oil	<300		300	80.3	ug/L		07/03/23 10:36	07/10/23 10:00	1
Total Extractable Hydrocarbons	106.1	J	500	76.1	ug/L		07/03/23 10:36	07/10/23 10:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	83		17 - 120	07/03/23 10:36	07/10/23 10:00	1

Lab Sample ID: LCS 310-392498/2-A

Matrix: Water

Analysis Batch: 392986

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 392498

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Diesel	4000	2779		ug/L		69	22 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
n-Octacosane	75		17 - 120

Lab Sample ID: LCSD 310-392498/3-A

Matrix: Water

Analysis Batch: 392986

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 392498

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel	4000	3179		ug/L		79	22 - 120	13	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
n-Octacosane	85		17 - 120

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-393059/3

Matrix: Water

Analysis Batch: 393059

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00	0.450	mg/L			07/07/23 19:53	1

Lab Sample ID: LCS 310-393059/4

Matrix: Water

Analysis Batch: 393059

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.788		mg/L		98	90 - 110

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QC Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 310-392549/1-A
Matrix: Water
Analysis Batch: 392788

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392549

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.500		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 11:35	1

Lab Sample ID: LCS 310-392549/2-A
Matrix: Water
Analysis Batch: 392788

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392549

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	2.00	1.950		mg/L		98	80 - 120

Lab Sample ID: 310-259399-2 DU
Matrix: Ground Water
Analysis Batch: 392788

Client Sample ID: EPA-1AR
Prep Type: Total/NA
Prep Batch: 392549

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Iron	0.147	J	0.1481	J	mg/L		0.5	20

Lab Sample ID: MB 310-392550/1-A
Matrix: Water
Analysis Batch: 392788

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392550

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.500		0.500	0.0930	mg/L		07/05/23 09:35	07/06/23 14:49	1

Lab Sample ID: LCS 310-392550/2-A
Matrix: Water
Analysis Batch: 392788

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	2.00	2.086		mg/L		104	80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-392551/1-A
Matrix: Water
Analysis Batch: 393067

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392551

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		07/05/23 09:35	07/09/23 23:39	1
Barium	<0.00200		0.00200	0.000640	mg/L		07/05/23 09:35	07/09/23 23:39	1
Lead	<0.000500		0.000500	0.000240	mg/L		07/05/23 09:35	07/09/23 23:39	1
Nickel	<0.00500		0.00500	0.00190	mg/L		07/05/23 09:35	07/09/23 23:39	1
Zinc	<0.0200		0.0200	0.00640	mg/L		07/05/23 09:35	07/09/23 23:39	1

Lab Sample ID: LCS 310-392551/2-A
Matrix: Water
Analysis Batch: 393067

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392551

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.400	0.4151		mg/L		104	80 - 120
Barium	0.200	0.2120		mg/L		106	80 - 120

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QC Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-392551/2-A

Matrix: Water

Analysis Batch: 393067

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 392551

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	0.400	0.4565		mg/L		114	80 - 120
Nickel	0.400	0.4352		mg/L		109	80 - 120
Zinc	0.400	0.4145		mg/L		104	80 - 120

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 310-392554/107

Matrix: Water

Analysis Batch: 392554

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	<0.200		0.200	0.100	mg/L			07/03/23 18:37	1

Lab Sample ID: LCS 310-392554/108

Matrix: Water

Analysis Batch: 392554

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia	8.55	8.441		mg/L		99	90 - 110

Lab Sample ID: 310-259399-1 MS

Matrix: Ground Water

Analysis Batch: 392554

Client Sample ID: MW-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia	1.27	F1	1.00	2.028	F1	mg/L		76	90 - 110

Lab Sample ID: 310-259399-1 MSD

Matrix: Ground Water

Analysis Batch: 392554

Client Sample ID: MW-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Ammonia	1.27	F1	1.00	1.985	F1	mg/L		72	90 - 110	2	10

Method: 5220D LL - COD

Lab Sample ID: MB 310-392618/32

Matrix: Water

Analysis Batch: 392618

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<5.00		5.00	4.80	mg/L			07/05/23 10:44	1

Lab Sample ID: MB 310-392618/5

Matrix: Water

Analysis Batch: 392618

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<5.00		5.00	4.80	mg/L			07/05/23 10:44	1

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QC Sample Results

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Method: 5220D LL - COD (Continued)

Lab Sample ID: LCS 310-392618/3

Matrix: Water

Analysis Batch: 392618

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	125	123.9		mg/L		99	85 - 115

Lab Sample ID: LCS 310-392618/33

Matrix: Water

Analysis Batch: 392618

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	125	127.0		mg/L		101	85 - 115

Lab Sample ID: 310-259399-3 MS

Matrix: Ground Water

Analysis Batch: 392618

Client Sample ID: MW-2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	69.7		50.0	120.5		mg/L		102	80 - 148

Lab Sample ID: 310-259399-3 MSD

Matrix: Ground Water

Analysis Batch: 392618

Client Sample ID: MW-2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Chemical Oxygen Demand	69.7		50.0	118.8		mg/L		98	80 - 148	1	10

Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-392535/1

Matrix: Water

Analysis Batch: 392535

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	1.70	mg/L			07/03/23 13:18	1

Lab Sample ID: LCS 310-392535/2

Matrix: Water

Analysis Batch: 392535

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	109.0		mg/L		109	75 - 116

Lab Sample ID: MB 310-392542/1

Matrix: Water

Analysis Batch: 392542

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	1.70	mg/L			07/03/23 14:13	1

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QC Sample Results

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Method: I-3765-85 - Residue, Non-filterable (TSS) (Continued)

Lab Sample ID: LCS 310-392542/2

Matrix: Water

Analysis Batch: 392542

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	105.0		mg/L		105	75 - 116

Lab Sample ID: 310-259399-8 DU

Matrix: Ground Water

Analysis Batch: 392542

Client Sample ID: MW-10

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	24.3		29.67		mg/L		20	35

Lab Sample ID: MB 310-392615/1

Matrix: Water

Analysis Batch: 392615

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	1.70	mg/L			07/05/23 10:25	1

Lab Sample ID: LCS 310-392615/2

Matrix: Water

Analysis Batch: 392615

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	95.00		mg/L		95	75 - 116

QC Association Summary

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

GC Semi VOA

Prep Batch: 392498

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-1	MW-1	Total/NA	Ground Water	3510C	
310-259399-2	EPA-1AR	Total/NA	Ground Water	3510C	
310-259399-3	MW-2	Total/NA	Ground Water	3510C	
310-259399-4	EPA-2A	Total/NA	Ground Water	3510C	
310-259399-5	MW-3	Total/NA	Ground Water	3510C	
310-259399-6	MW-8	Total/NA	Ground Water	3510C	
310-259399-7	MW-9	Total/NA	Ground Water	3510C	
310-259399-8	MW-10	Total/NA	Ground Water	3510C	
310-259399-9	MW-11	Total/NA	Ground Water	3510C	
310-259399-10	MW-12	Total/NA	Ground Water	3510C	
310-259399-11	MW-13	Total/NA	Ground Water	3510C	
310-259399-12	MW-14R	Total/NA	Ground Water	3510C	
310-259399-13	MW-15R	Total/NA	Ground Water	3510C	
310-259399-14	MW-D	Total/NA	Ground Water	3510C	
MB 310-392498/1-A	Method Blank	Total/NA	Water	3510C	
LCS 310-392498/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 310-392498/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 392986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-1	MW-1	Total/NA	Ground Water	OA-2	392498
310-259399-2	EPA-1AR	Total/NA	Ground Water	OA-2	392498
310-259399-3	MW-2	Total/NA	Ground Water	OA-2	392498
310-259399-4	EPA-2A	Total/NA	Ground Water	OA-2	392498
310-259399-5	MW-3	Total/NA	Ground Water	OA-2	392498
310-259399-6	MW-8	Total/NA	Ground Water	OA-2	392498
310-259399-7	MW-9	Total/NA	Ground Water	OA-2	392498
310-259399-8	MW-10	Total/NA	Ground Water	OA-2	392498
310-259399-9	MW-11	Total/NA	Ground Water	OA-2	392498
310-259399-10	MW-12	Total/NA	Ground Water	OA-2	392498
310-259399-11	MW-13	Total/NA	Ground Water	OA-2	392498
310-259399-12	MW-14R	Total/NA	Ground Water	OA-2	392498
310-259399-13	MW-15R	Total/NA	Ground Water	OA-2	392498
310-259399-14	MW-D	Total/NA	Ground Water	OA-2	392498
MB 310-392498/1-A	Method Blank	Total/NA	Water	OA-2	392498
LCS 310-392498/2-A	Lab Control Sample	Total/NA	Water	OA-2	392498
LCSD 310-392498/3-A	Lab Control Sample Dup	Total/NA	Water	OA-2	392498

HPLC/IC

Analysis Batch: 393059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-1	MW-1	Total/NA	Ground Water	9056A	
310-259399-2	EPA-1AR	Total/NA	Ground Water	9056A	
310-259399-3	MW-2	Total/NA	Ground Water	9056A	
310-259399-4	EPA-2A	Total/NA	Ground Water	9056A	
310-259399-5	MW-3	Total/NA	Ground Water	9056A	
310-259399-6	MW-8	Total/NA	Ground Water	9056A	
310-259399-7	MW-9	Total/NA	Ground Water	9056A	
310-259399-8	MW-10	Total/NA	Ground Water	9056A	
310-259399-9	MW-11	Total/NA	Ground Water	9056A	

Eurofins Cedar Falls

QC Association Summary

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

HPLC/IC (Continued)

Analysis Batch: 393059 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-10	MW-12	Total/NA	Ground Water	9056A	
310-259399-11	MW-13	Total/NA	Ground Water	9056A	
310-259399-12	MW-14R	Total/NA	Ground Water	9056A	
310-259399-13	MW-15R	Total/NA	Ground Water	9056A	
310-259399-14	MW-D	Total/NA	Ground Water	9056A	
MB 310-393059/3	Method Blank	Total/NA	Water	9056A	
LCS 310-393059/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 392549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-1	MW-1	Total/NA	Ground Water	3005A	
310-259399-2	EPA-1AR	Total/NA	Ground Water	3005A	
310-259399-3	MW-2	Total/NA	Ground Water	3005A	
310-259399-4	EPA-2A	Total/NA	Ground Water	3005A	
310-259399-5	MW-3	Total/NA	Ground Water	3005A	
310-259399-6	MW-8	Total/NA	Ground Water	3005A	
310-259399-7	MW-9	Total/NA	Ground Water	3005A	
310-259399-8	MW-10	Total/NA	Ground Water	3005A	
310-259399-9	MW-11	Total/NA	Ground Water	3005A	
310-259399-10	MW-12	Total/NA	Ground Water	3005A	
MB 310-392549/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-392549/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-259399-2 DU	EPA-1AR	Total/NA	Ground Water	3005A	

Prep Batch: 392550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-11	MW-13	Total/NA	Ground Water	3005A	
310-259399-12	MW-14R	Total/NA	Ground Water	3005A	
310-259399-13	MW-15R	Total/NA	Ground Water	3005A	
310-259399-14	MW-D	Total/NA	Ground Water	3005A	
MB 310-392550/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-392550/2-A	Lab Control Sample	Total/NA	Water	3005A	

Prep Batch: 392551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-3	MW-2	Total/NA	Ground Water	3005A	
310-259399-4	EPA-2A	Total/NA	Ground Water	3005A	
310-259399-5	MW-3	Total/NA	Ground Water	3005A	
310-259399-8	MW-10	Total/NA	Ground Water	3005A	
310-259399-10	MW-12	Total/NA	Ground Water	3005A	
310-259399-11	MW-13	Total/NA	Ground Water	3005A	
310-259399-12	MW-14R	Total/NA	Ground Water	3005A	
310-259399-13	MW-15R	Total/NA	Ground Water	3005A	
MB 310-392551/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-392551/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 392788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-1	MW-1	Total/NA	Ground Water	6010D	392549

Eurofins Cedar Falls

QC Association Summary

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Metals (Continued)

Analysis Batch: 392788 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-2	EPA-1AR	Total/NA	Ground Water	6010D	392549
310-259399-3	MW-2	Total/NA	Ground Water	6010D	392549
310-259399-4	EPA-2A	Total/NA	Ground Water	6010D	392549
310-259399-5	MW-3	Total/NA	Ground Water	6010D	392549
310-259399-6	MW-8	Total/NA	Ground Water	6010D	392549
310-259399-7	MW-9	Total/NA	Ground Water	6010D	392549
310-259399-8	MW-10	Total/NA	Ground Water	6010D	392549
310-259399-9	MW-11	Total/NA	Ground Water	6010D	392549
310-259399-10	MW-12	Total/NA	Ground Water	6010D	392549
310-259399-11	MW-13	Total/NA	Ground Water	6010D	392550
310-259399-12	MW-14R	Total/NA	Ground Water	6010D	392550
310-259399-13	MW-15R	Total/NA	Ground Water	6010D	392550
310-259399-14	MW-D	Total/NA	Ground Water	6010D	392550
MB 310-392549/1-A	Method Blank	Total/NA	Water	6010D	392549
MB 310-392550/1-A	Method Blank	Total/NA	Water	6010D	392550
LCS 310-392549/2-A	Lab Control Sample	Total/NA	Water	6010D	392549
LCS 310-392550/2-A	Lab Control Sample	Total/NA	Water	6010D	392550
310-259399-2 DU	EPA-1AR	Total/NA	Ground Water	6010D	392549

Analysis Batch: 393067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-3	MW-2	Total/NA	Ground Water	6020B	392551
310-259399-4	EPA-2A	Total/NA	Ground Water	6020B	392551
310-259399-5	MW-3	Total/NA	Ground Water	6020B	392551
310-259399-8	MW-10	Total/NA	Ground Water	6020B	392551
310-259399-10	MW-12	Total/NA	Ground Water	6020B	392551
310-259399-11	MW-13	Total/NA	Ground Water	6020B	392551
310-259399-12	MW-14R	Total/NA	Ground Water	6020B	392551
310-259399-13	MW-15R	Total/NA	Ground Water	6020B	392551
MB 310-392551/1-A	Method Blank	Total/NA	Water	6020B	392551
LCS 310-392551/2-A	Lab Control Sample	Total/NA	Water	6020B	392551

Analysis Batch: 393169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-12	MW-14R	Total/NA	Ground Water	6020B	392551

General Chemistry

Analysis Batch: 392535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-3	MW-2	Total/NA	Ground Water	I-3765-85	
310-259399-5	MW-3	Total/NA	Ground Water	I-3765-85	
MB 310-392535/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-392535/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 392542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-8	MW-10	Total/NA	Ground Water	I-3765-85	
310-259399-10	MW-12	Total/NA	Ground Water	I-3765-85	
310-259399-11	MW-13	Total/NA	Ground Water	I-3765-85	
MB 310-392542/1	Method Blank	Total/NA	Water	I-3765-85	

Eurofins Cedar Falls

QC Association Summary

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

General Chemistry (Continued)

Analysis Batch: 392542 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-392542/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-259399-8 DU	MW-10	Total/NA	Ground Water	I-3765-85	

Analysis Batch: 392554

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-1	MW-1	Total/NA	Ground Water	350.1	
310-259399-2	EPA-1AR	Total/NA	Ground Water	350.1	
310-259399-3	MW-2	Total/NA	Ground Water	350.1	
310-259399-4	EPA-2A	Total/NA	Ground Water	350.1	
310-259399-5	MW-3	Total/NA	Ground Water	350.1	
310-259399-6	MW-8	Total/NA	Ground Water	350.1	
310-259399-7	MW-9	Total/NA	Ground Water	350.1	
310-259399-8	MW-10	Total/NA	Ground Water	350.1	
310-259399-9	MW-11	Total/NA	Ground Water	350.1	
310-259399-10	MW-12	Total/NA	Ground Water	350.1	
310-259399-11	MW-13	Total/NA	Ground Water	350.1	
310-259399-12	MW-14R	Total/NA	Ground Water	350.1	
310-259399-13	MW-15R	Total/NA	Ground Water	350.1	
310-259399-14	MW-D	Total/NA	Ground Water	350.1	
MB 310-392554/107	Method Blank	Total/NA	Water	350.1	
LCS 310-392554/108	Lab Control Sample	Total/NA	Water	350.1	
310-259399-1 MS	MW-1	Total/NA	Ground Water	350.1	
310-259399-1 MSD	MW-1	Total/NA	Ground Water	350.1	

Analysis Batch: 392615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-4	EPA-2A	Total/NA	Ground Water	I-3765-85	
310-259399-12	MW-14R	Total/NA	Ground Water	I-3765-85	
310-259399-13	MW-15R	Total/NA	Ground Water	I-3765-85	
MB 310-392615/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-392615/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 392618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-259399-1	MW-1	Total/NA	Ground Water	5220D LL	
310-259399-2	EPA-1AR	Total/NA	Ground Water	5220D LL	
310-259399-3	MW-2	Total/NA	Ground Water	5220D LL	
310-259399-4	EPA-2A	Total/NA	Ground Water	5220D LL	
310-259399-5	MW-3	Total/NA	Ground Water	5220D LL	
310-259399-6	MW-8	Total/NA	Ground Water	5220D LL	
310-259399-7	MW-9	Total/NA	Ground Water	5220D LL	
310-259399-8	MW-10	Total/NA	Ground Water	5220D LL	
310-259399-9	MW-11	Total/NA	Ground Water	5220D LL	
310-259399-10	MW-12	Total/NA	Ground Water	5220D LL	
310-259399-11	MW-13	Total/NA	Ground Water	5220D LL	
310-259399-12	MW-14R	Total/NA	Ground Water	5220D LL	
310-259399-13	MW-15R	Total/NA	Ground Water	5220D LL	
310-259399-14	MW-D	Total/NA	Ground Water	5220D LL	
MB 310-392618/32	Method Blank	Total/NA	Water	5220D LL	
MB 310-392618/5	Method Blank	Total/NA	Water	5220D LL	
LCS 310-392618/3	Lab Control Sample	Total/NA	Water	5220D LL	

Eurofins Cedar Falls

QC Association Summary

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

General Chemistry (Continued)

Analysis Batch: 392618 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-392618/33	Lab Control Sample	Total/NA	Water	5220D LL	
310-259399-3 MS	MW-2	Total/NA	Ground Water	5220D LL	
310-259399-3 MSD	MW-2	Total/NA	Ground Water	5220D LL	

Lab Chronicle

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-1

Date Collected: 06/28/23 16:57

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 10:46
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/07/23 22:45
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:08
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:39
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44

Client Sample ID: EPA-1AR

Date Collected: 06/29/23 11:11

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 11:01
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/07/23 23:01
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:10
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:42
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44

Client Sample ID: MW-2

Date Collected: 06/28/23 16:25

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 11:16
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/07/23 23:16
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:14
Total/NA	Prep	3005A			392551	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6020B		1	393067	DHM5	EET CF	07/10/23 01:15
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:44
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44
Total/NA	Analysis	I-3765-85		1	392535	DGU1	EET CF	07/03/23 13:18

Client Sample ID: EPA-2A

Date Collected: 06/29/23 10:37

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 11:31

Eurofins Cedar Falls

Lab Chronicle

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: EPA-2A

Lab Sample ID: 310-259399-4

Date Collected: 06/29/23 10:37

Matrix: Ground Water

Date Received: 06/30/23 16:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/07/23 23:32
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:16
Total/NA	Prep	3005A			392551	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6020B		1	393067	DHM5	EET CF	07/10/23 01:17
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:45
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44
Total/NA	Analysis	I-3765-85		1	392615	T8GC	EET CF	07/05/23 10:25

Client Sample ID: MW-3

Lab Sample ID: 310-259399-5

Date Collected: 06/28/23 14:48

Matrix: Ground Water

Date Received: 06/30/23 16:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 11:46
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/07/23 23:47
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:22
Total/NA	Prep	3005A			392551	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6020B		1	393067	DHM5	EET CF	07/10/23 01:20
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:46
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44
Total/NA	Analysis	I-3765-85		1	392535	DGU1	EET CF	07/03/23 13:18

Client Sample ID: MW-8

Lab Sample ID: 310-259399-6

Date Collected: 06/29/23 09:45

Matrix: Ground Water

Date Received: 06/30/23 16:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 12:01
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/08/23 00:34
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:24
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:47
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44

Lab Chronicle

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-9

Date Collected: 06/29/23 10:09

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-7

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 12:16
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/08/23 00:50
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:26
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:47
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44

Client Sample ID: MW-10

Date Collected: 06/28/23 19:41

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-8

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 12:31
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/08/23 01:05
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:28
Total/NA	Prep	3005A			392551	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6020B		1	393067	DHM5	EET CF	07/10/23 01:22
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:49
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44
Total/NA	Analysis	I-3765-85		1	392542	DGU1	EET CF	07/03/23 14:13

Client Sample ID: MW-11

Date Collected: 06/28/23 18:47

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-9

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 12:47
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/08/23 01:21
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:30
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:49
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44

Client Sample ID: MW-12

Date Collected: 06/28/23 18:12

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-10

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 13:02

Eurofins Cedar Falls

Lab Chronicle

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-12

Date Collected: 06/28/23 18:12

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-10

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/08/23 01:36
Total/NA	Prep	3005A			392549	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 12:32
Total/NA	Prep	3005A			392551	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6020B		1	393067	DHM5	EET CF	07/10/23 01:24
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:49
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44
Total/NA	Analysis	I-3765-85		1	392542	DGU1	EET CF	07/03/23 14:13

Client Sample ID: MW-13

Date Collected: 06/28/23 15:19

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-11

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 13:17
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/08/23 01:52
Total/NA	Prep	3005A			392550	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 15:37
Total/NA	Prep	3005A			392551	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6020B		1	393067	DHM5	EET CF	07/10/23 01:27
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:51
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44
Total/NA	Analysis	I-3765-85		1	392542	DGU1	EET CF	07/03/23 14:13

Client Sample ID: MW-14R

Date Collected: 06/29/23 12:27

Date Received: 06/30/23 16:20

Lab Sample ID: 310-259399-12

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 13:32
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/08/23 02:08
Total/NA	Prep	3005A			392550	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 15:39
Total/NA	Prep	3005A			392551	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6020B		1	393067	DHM5	EET CF	07/10/23 01:29
Total/NA	Prep	3005A			392551	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6020B		4	393169	DHM5	EET CF	07/10/23 19:45
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:51
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44
Total/NA	Analysis	I-3765-85		1	392615	T8GC	EET CF	07/05/23 10:25

Eurofins Cedar Falls

Lab Chronicle

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Client Sample ID: MW-15R

Lab Sample ID: 310-259399-13

Date Collected: 06/29/23 11:47

Matrix: Ground Water

Date Received: 06/30/23 16:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 14:14
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/08/23 02:23
Total/NA	Prep	3005A			392550	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 15:41
Total/NA	Prep	3005A			392551	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6020B		1	393067	DHM5	EET CF	07/10/23 01:32
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:54
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44
Total/NA	Analysis	I-3765-85		1	392615	T8GC	EET CF	07/05/23 10:25

Client Sample ID: MW-D

Lab Sample ID: 310-259399-14

Date Collected: 06/28/23 18:47

Matrix: Ground Water

Date Received: 06/30/23 16:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			392498	Y6AF	EET CF	07/03/23 10:36
Total/NA	Analysis	OA-2		1	392986	C3AA	EET CF	07/10/23 14:29
Total/NA	Analysis	9056A		5	393059	QTZ5	EET CF	07/08/23 02:39
Total/NA	Prep	3005A			392550	KCK5	EET CF	07/05/23 09:35
Total/NA	Analysis	6010D		1	392788	ZRI4	EET CF	07/06/23 15:43
Total/NA	Analysis	350.1		1	392554	ZJX4	EET CF	07/03/23 18:54
Total/NA	Analysis	5220D LL		1	392618	ENB7	EET CF	07/05/23 10:44

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Job ID: 310-259399-1

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-23

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Method Summary

Client: SCS Engineers

Job ID: 310-259399-1

Project/Site: Council Bluffs ASR Monofill Annual GW Sampling

Method	Method Description	Protocol	Laboratory
OA-2	Iowa - Extractable Petroleum Hydrocarbons (GC)	Iowa DNR	EET CF
9056A	Anions, Ion Chromatography	SW846	EET CF
6010D	Metals (ICP)	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
350.1	Nitrogen, Ammonia	EPA	EET CF
5220D LL	COD	SM	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET CF

Protocol References:

EPA = US Environmental Protection Agency

Iowa DNR = Iowa Department of Natural Resources

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

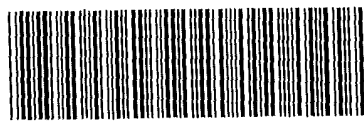
USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401



Environment Testing
America



310-259399 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>SCS</u>			
City/State:	CITY <u>DSM</u>	STATE <u>IA</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>6-30-23</u>	TIME <u>1620</u>	Received By: <u>CC</u>
Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID:
Multiple Coolers?		☒ Yes ☐ No	If yes: Cooler # <u>1</u> of <u>3</u>
Cooler Custody Seals Present?		☐ Yes ☒ No	If yes: Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>W</u>		Correction Factor (°C): <u>0.0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.9</u>		Corrected Temp (°C): <u>0.9</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>SCS</u>			
City/State:	CITY <u>DSM</u>	STATE <u>IA</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>6-30-23</u>	TIME <u>1620</u>	Received By: <u>CC</u>
Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID:
Multiple Coolers?		☒ Yes ☐ No	If yes: Cooler # <u>2</u> of <u>3</u>
Cooler Custody Seals Present?		☐ Yes ☒ No	If yes: Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>W</u>		Correction Factor (°C): <u>0.0</u>	
* Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.1</u>		Corrected Temp (°C): <u>0.1</u>	
* Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE. If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>SCS</u>			
City/State:	CITY <u>DSM</u>	STATE <u>IA</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>6-30-23</u>	TIME <u>1620</u>	Received By: <u>CC</u>
Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	☒ Yes ☐ No	If yes: Cooler ID: _____	
Multiple Coolers?	☒ Yes ☐ No	If yes: Cooler # <u>3</u> of <u>3</u>	
Cooler Custody Seals Present?	☐ Yes ☒ No	If yes: Cooler custody seals intact? ☐ Yes ☐ No	
Sample Custody Seals Present?	☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No	
Trip Blank Present?	☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant:	☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____	☐ NONE	
Thermometer ID: <u>W</u>	Correction Factor (°C): <u>0.0</u>		
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>1.1</u>	Corrected Temp (°C): <u>1.1</u>		
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE. If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

TestAmerica Omaha SC
268

Direct: 319-595-2013

REPORT TO:	Kevin Jensen (kjensen@scsengineers.com)
COMPANY NAME:	SCS Engineers
PROJECT NAME:	Council Bluffs ASR Monofill Annual Groundwater
PROJECT NUMBER:	Council Bluffs Monofill 27232186
ADDRESS:	1690 All-State Court, Suite 100
CITY/STATE/ZIP:	West Des Moines, IA 50265

Sample ID	Date Sampled	Time Sampled	# of Containers Shipped	Grab	Composite	Field Filtered	Preservative								Matrix					Analyze For											
							HNO ₃ (Red & White Label)	HCl (Blue & White Label)	NaOH (Orange & White Label)	H ₂ SO ₄ Plastic (Yellow & White Label)	H ₂ SO ₄ Glass (Yellow & White Label)	None (Black & White Label)	Other (Specify)	Groundwater	Wastewater	Drinking Water	Sediment	Soil	Surface Water	Total Arsenic	Total Barium	Total Lead	Total Nickel	Total Zinc	Total Suspended Solids	Total Iron	Total Extractable Hydrocarbons (TEH)	Chloride	Ammonia Nitrogen	Chemical Oxygen Demand	
MW-1	8/2/9	7:51:31	1	1			✓							X								X	X	X	X	X					
EPA-1AR	8/2/9	11:11	1	1			✓							X								X	X	X	X	X					
MW-2	8/2/9	5:22:01	1	1			✓							X						X		X	X	X	X	X					
EPA-2A	8/2/9	7:30:01	1	1			✓							X						X		X	X	X	X	X					
MW 3	8/2/9	8:41:01	1	1			✓							X						X		X	X	X	X	X					
MW-4														X								X	X	X	X	X					
MW-5														X						X		X	X	X	X	X					
MW-8	6/2/9	5:41:06	1	1			✓							X						X		X	X	X	X	X					
MW-9	6/2/9	6:01:09	1	1			✓							X								X	X	X	X	X					
MW 10	8/2/9	14:16:17	1	1			✓							X						X		X	X	X	X	X					
MW 11	8/2/9	7:41:41	1	1			✓							X										X	X	X					
MW-12	8/2/9	8:11:57	1	1			✓							X								X	X	X	X	X					
MW 13	8/2/9	7:21:21	1	1			✓							X						X		X	X	X	X	X					
MW 14R	6/2/9	6:21:29	1	1			✓							X						X		X	X	X	X	X					
MW-15R	8/2/9	7:41:11	1	1			✓							X								X	X	X	X	X					
MW-D	8/2/9	7:41:81	1	1			✓							X								X	X	X	X	X					

SHIPPED VIA

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2/25

Eurofins Environment Testing North Central, LLC

3019 Venture Way, Cedar Falls, Iowa 50613

Phone 319-277-2401

Direct: 319-595-2013

TestAmerica Omaha SC
268

TestAmerica Omaha SC
268

SAMPLER: _____
SITE NAME: Alter Trading Corp Waste Monofill (Closed) (City of Council Bluffs)
ADDRESS: _____
CITY/STATE/ZIP: _____
TELEPHONE NUMBER: _____
SIGNATURE OF SAMPLER: _____
REPORT TO: Kevin Jensen (kjensen@scsengineers.com)
COMPANY NAME: SCS Engineers
PROJECT NAME: Council Bluffs ASR Monofill Annual Groundwater Sampling 2023
PROJECT NUMBER: Council Bluffs Monofill - 27223186
ADDRESS: 1690 All-State Court, Suite 100
CITY/STATE/ZIP: West Des Moines, IA 50265

Sample ID	Date Sampled	Time Sampled	# of Containers Shipped	Grab	Composite	Field filtered	Preservative								Matrix						Analyze For									
							Ice	HNO ₃ (Red & White Label)	HCl (Blue & White Label)	NaOH (Orange & White Label)	H ₂ SO ₄ Plastic (Yellow & White Label)	H ₂ SO ₄ Glass (Yellow & White Label)	None (Yellow & White Label)	Other (Black & White Label)	Specify:	Groundwater	Wastewater	Drinking Water	Sludge	Soil	Surface Water	Total Arsenic	Total Barium	Total Lead	Total Nickel	Total Zinc	Total Suspended Solids	Total Iron	Total Extractable Hydrocarbons (TEH)	Chloride
MW-1																	X							X	X	X	X	X		
EPA-1AR																	X						X	X	X	X	X			
MW-2																	X					X	X	X	X	X	X			
EPA-2A																	X					X	X	X	X	X	X			
MW-3																	X					X	X	X	X	X	X			
MW-4																	X			X	X	X	X	X	X	X	X			
MW-5																	X			X	X	X	X	X	X	X	X			
MW-8																	X			X	X	X	X	X	X	X	X			
MW-9																	X			X	X	X	X	X	X	X	X			
MW-10																	X			X	X	X	X	X	X	X	X			
MW-11																	X			X	X	X	X	X	X	X	X			
MW-12																	X			X	X	X	X	X	X	X	X			
MW-13																	X			X	X	X	X	X	X	X	X			
MW-14R																	X			X	X	X	X	X	X	X	X			
MW-15R																	X			X	X	X	X	X	X	X	X			
MW-D																	X			X	X	X	X	X	X	X	X			

SAMPLING COMMENTS: _____
SHIPPED VIA: _____
Relinquished by: _____ Date: 6-29-15 Time: 11:15
Relinquished by: _____ Date: 6-30-15 Time: 08:00
Received for lab by: _____ Date: _____ Time: _____
Temperature Upon Receipt: _____

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-259399-1

Login Number: 259399

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Tucker, Sarah L

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Appendix B2

Data Validation

Completed by: Kevin Jensen

Lab Report Date: 7/18/2023

Site Name: Council Bluffs-Alter ASR Monofill

Lab Report Number: 310-259399-1

OK NO N/A NOTES

Sample Collection and Sample Handling

Chain of Custody

Temperature

Preservation

Condition

Reporting Limits

Case Narrative

Holding Times

X			
X			
X			
X			
X			
X			
X			

Analytical Sensitivity and Blanks

Method Blank Detections

Trip Blank Detections

X			Method OA2: The method blank for preparation batch 310-392498 and analytical batch 310-392986 contained Total Extractable Hydrocarbons above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of sample was not performed.
		X	

Accuracy

ICV/CCV

LCS/LCSD

MS/MSD

Surrogates (organics only)

X			
X			
X			Method OA2: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 310-392498. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.
		X	

Precision

QA/QC Sample RPDs

Field Duplicates

X			
X			The duplicate sample was collected from MW-11 during the 2023 sampling event. All parameters had <50% relative difference. Constituents with J flag concentrations were not considered for the duplicate sample comparisons.



Appendix C

Summary of Groundwater Chemistry

SCS ENGINEERS

Summary of Groundwater Chemistry

Alter Trading Corporation Waste Monofill Site (Closed) - 78-SDP-19-98C

	Sample Date	MW-4 UPG	MW-5 UPG	EPA-1AR DNG	EPA-2A DNG	MW-1 DNG	MW-2 DNG	MW-3 DNG	MW-8 DNG	MW-9 DNG	MW-10 DNG	MW-11 DNG	MW-12 DNG	MW-13 DNG	MW-14R DNG	MW-15R DNG
Total Metals Constituents																
Arsenic, mg/L (CAS NO - 7440-38-2)																
	4/19/2012	< 0.004	0.0061	N/A	N/A	N/A	0.159	N/A	N/A	N/A	0.0077	N/A	N/A	0.0484	0.0719	0.0965
	9/12/2012	N/A	N/A	N/A	0.0284	N/A	0.383	0.177	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/19/2013	N/A	N/A	N/A	0.0211	N/A	0.178	N/A	N/A	N/A	0.00879	N/A	N/A	0.0159	0.0258	0.0292
	9/18/2013	N/A	N/A	N/A	0.0206	N/A	0.194	0.153	N/A	N/A	0.00775	N/A	N/A	0.0078	0.024	0.0385
	3/18/2014	N/A	N/A	N/A	0.0246	N/A	0.139	0.261	N/A	N/A	0.00703	N/A	N/A	0.00691	0.0177	0.0205
	9/9/2014	< 0.001	0.00275	N/A	0.0159	N/A	0.215	0.155	N/A	N/A	< 0.001	N/A	N/A	0.0101	N/A	N/A
	3/16/2015	0.00136	0.00396	N/A	0.012	N/A	0.162	0.154	N/A	N/A	0.00773	N/A	N/A	0.00898	0.0168	0.027
	9/1/2015	0.00159	0.00442	N/A	0.0111	N/A	0.171	0.218	N/A	N/A	0.00875	N/A	N/A	0.0121	0.017	0.0348
	4/14/2016	0.00201	0.00689	N/A	0.0103	N/A	0.149	0.207	N/A	N/A	0.00889	N/A	N/A	0.0216	0.0191	0.0401
	9/1/2016	0.00084*	0.00344	N/A	0.0104	N/A	0.152	0.155	N/A	N/A	0.00743	N/A	N/A	0.00954	0.0206	0.0415
	3/7/2017	0.00127*	0.00155*	N/A	0.0117	N/A	0.142	0.162	N/A	N/A	0.00837	N/A	N/A	0.00384	0.0182	0.119
	4/3/2018	0.000836*	0.00123*	N/A	0.00502	N/A	0.19	0.136	N/A	N/A	0.0096	N/A	N/A	0.0028	0.00977	0.0168
	6/20/2019	0.0015*	0.0012*	N/A	0.00185*	N/A	0.188	0.172	N/A	N/A	N/A	N/A	N/A	0.00675	N/A	N/A
	10/8/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0127	N/A	N/A	N/A	N/A	N/A
	4/1/2020	0.00132*	0.00124*	N/A	0.00195*	N/A	0.159	0.11	N/A	N/A	0.0133	N/A	N/A	0.004	0.00653	0.0194
	6/16/2021	0.000892*	0.000878*	N/A	0.00344	N/A	0.141	0.176	N/A	N/A	0.00942	N/A	N/A	0.00174*	0.019	0.00778
	8/30/2022	0.00134*	0.0013*	N/A	0.00528	N/A	0.168	0.15	N/A	N/A	0.00837	N/A	N/A	0.00258	0.0121	0.0115
	6/28/2023	N/A	N/A	N/A	0.00186*	N/A	0.112	0.139	N/A	N/A	0.00931	N/A	N/A	0.00856	0.00451	0.00511
Barium, mg/L (CAS NO - 7440-39-3)																
	4/19/2012	0.254	0.353	N/A	N/A	N/A	0.845	N/A	N/A	N/A	0.226	N/A	N/A	0.665	2.96	2.93
	9/12/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.699	0.618
	3/19/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.765	0.902
	9/18/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.17	0.867
	3/18/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.831	0.864
	9/9/2014	0.275	0.151	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/16/2015	0.296	0.149	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.551	0.904
	9/1/2015	0.338	0.154	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.524	0.598
	4/14/2016	0.357	0.122	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.565	0.891
	9/1/2016	0.298	0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.773	0.913
	3/7/2017	0.276	0.0966	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.628	1.48
	4/3/2018	0.279	0.0557	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.49	0.99
	6/20/2019	0.294	0.0499	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2020	0.256	0.0444	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.69	0.385
	6/16/2021	0.245	0.0798	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.986	0.689
	8/30/2022	0.277	0.0755	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.913	0.741
	6/28/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.703	0.498
Lead, mg/L (CAS NO - 7439-92-1)																
	4/19/2012	< 0.004	0.0059	N/A	N/A	N/A	0.0052	N/A	N/A	N/A	< 0.004	N/A	N/A	0.0523	0.203	0.179
	9/12/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.102	0.00563	0.121	0.0221
	3/19/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.381	< 0.004	0.0325	0.0129
	9/18/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.125	0.0129	0.136	0.0538
	3/18/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0237	< 0.004	0.0329	0.0372
	9/9/2014	< 0.004	< 0.004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.78	0.0398	N/A	N/A
	3/16/2015	0.00221	0.00672	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.116	0.0118	0.0537	0.0462
	9/1/2015	0.00158	0.00834	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.553	0.0304	0.0133	0.0108
	4/14/2016	0.00202	0.0114	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.18	0.0103	0.0241	0.029
	9/1/2016	0.000296*	0.00689	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.649	0.013	0.0246	0.019
	3/7/2017	< 0.0005	0.000876	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0416	0.000829	0.00394	0.00324
	4/3/2018	< 0.0005	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00294	0.00314	0.000297*	< 0.0005
	6/20/2019	0.000433*	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00527	0.000346*	N/A	N/A
	4/1/2020	< 0.0005	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00389	< 0.0005	< 0.0005	0.00219
	6/16/2021	< 0.0005	0.000219*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00381	< 0.0005	0.00162	0.000359*
	8/30/2022	0.000333*	0.000524	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00174	0.000269*	0.00119	< 0.0005
	6/28/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00304	0.00169	< 0.0005	< 0.0005

SCS ENGINEERS

Summary of Groundwater Chemistry

Alter Trading Corporation Waste Monofill Site (Closed) - 78-SDP-19-98C

	Sample Date	MW-4 UPG	MW-5 UPG	EPA-1AR DNG	EPA-2A DNG	MW-1 DNG	MW-2 DNG	MW-3 DNG	MW-8 DNG	MW-9 DNG	MW-10 DNG	MW-11 DNG	MW-12 DNG	MW-13 DNG	MW-14R DNG	MW-15R DNG	
Total Metals Constituents																	
Nickel, mg/L (CAS NO - 7440-02-0)	4/19/2012	< 0.05	< 0.05	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	< 0.05	N/A	N/A	< 0.05	0.659	0.134	
	9/12/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.153	0.0126	
	3/19/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0924	< 0.05	
	9/18/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.321	0.0371	
	3/18/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.147	0.0255	
	9/9/2014	0.0127	0.0264	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3/16/2015	0.00159	0.0221	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.394	0.0245	
	9/1/2015	0.00146	0.0169	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.168	0.0175	
	4/14/2016	0.00185*	0.0283	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.376	0.0276	
	9/1/2016	< 0.005	0.015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.114	0.0184	
	3/7/2017	0.00118*	0.00976	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.539	0.018	
	4/3/2018	0.00131*	0.00538	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.116	0.0118	
	6/20/2019	0.00448*	0.00734	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	4/1/2020	< 0.005	0.00199*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.391	0.0084	
	6/16/2021	0.00375*	0.00474*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.244	0.0104	
	8/30/2022	0.00323*	0.00517	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.172	0.00748	
	6/28/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.109	0.0068	
	Zinc, mg/L (CAS NO - 7440-66-6)	4/19/2012	< 0.02	0.0306	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	< 0.02	N/A	N/A	0.112	10.5	0.677
		9/12/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.93	N/A
		3/19/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.86	N/A
		9/18/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.36	N/A
		3/18/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.2	N/A
		9/9/2014	< 0.02	0.0208	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		3/16/2015	0.00941	0.0402	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.71	N/A
		9/1/2015	< 0.01	0.0245	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.89	N/A
		4/14/2016	0.00695*	0.0333	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.35	N/A
		9/1/2016	< 0.01	0.0169	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.24	N/A
		3/7/2017	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.44	N/A
4/3/2018		< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.7	N/A	
6/20/2019		< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
4/1/2020		< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.68	N/A	
6/16/2021		< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.8	N/A	
8/30/2022		< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.54	N/A	
6/28/2023		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.98	N/A	
Total Suspended Solids, mg/L (CAS NO - TSS)		3/18/2014	N/A	N/A	N/A	95	N/A	57	224	N/A	N/A	24	N/A	237	162	860	1280
		9/9/2014	43.3	636	N/A	107	N/A	73.5	864	N/A	N/A	26.4	N/A	473	714	N/A	N/A
		3/16/2015	109	1420	N/A	72	N/A	59.3	720	N/A	N/A	27.3	N/A	305	724	1040	1550
		9/1/2015	63.3	510	N/A	36.3	N/A	70.4	415	N/A	N/A	31.4	N/A	347	549	215	288
		4/14/2016	91.2	943	N/A	29.8	N/A	77.4	597	N/A	N/A	20.5	N/A	828	265	402	803
		9/1/2016	38	327	N/A	32.6	N/A	56	591	N/A	N/A	13.5	N/A	498	371	590	537
		3/7/2017	26.3	71.4	N/A	17.6	N/A	6.5	54.5	N/A	N/A	12.9	N/A	39.5	46.9	82.4	138
		4/3/2018	7.13	1*	N/A	3.87	N/A	18.5	34.6	N/A	N/A	13.3	N/A	3.38	22.3	29.8	36.8
		6/20/2019	29.1	1.75*	N/A	1.38*	N/A	45.2	42.9	N/A	N/A	N/A	N/A	3.5	12.8	N/A	N/A
		10/8/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.3	N/A	N/A	N/A	N/A	N/A
		4/1/2020	32.5	7	N/A	< 1.88	N/A	2.5	35	N/A	N/A	2.33*	N/A	1*	4.13	14	20
	6/16/2021	29.6	3.75	N/A	2.63	N/A	48.7	48.1	N/A	N/A	6.38	N/A	3	4.25	41.7	13.5	
	8/30/2022	36.5	91.6	N/A	2.63	N/A	48	43	N/A	N/A	45.4	N/A	19	14.9	32	28	
	6/28/2023	N/A	N/A	N/A	< 5	N/A	41	42	N/A	N/A	24.3	N/A	1.5*	213	15	6	

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.

Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

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Summary of Groundwater Chemistry

Alter Trading Corporation Waste Monofill Site (Closed) - 78-SDP-19-98C

Other Constituents	Sample Date	MW-4 UPG	MW-5 UPG	EPA-1AR DNG	EPA-2A DNG	MW-1 DNG	MW-2 DNG	MW-3 DNG	MW-8 DNG	MW-9 DNG	MW-10 DNG	MW-11 DNG	MW-12 DNG	MW-13 DNG	MW-14R DNG	MW-15R DNG
Ammonia as N, mg/L (CAS NO - 7664-41-7)	1/18/1991	N/A	N/A	N/A	0.5	1.5	20	1.3	0.5	< 0.2	N/A	N/A	N/A	N/A	N/A	N/A
	5/23/1991	N/A	N/A	0.5	0.94	1.1	84	1.6	1.4	0.5	N/A	N/A	N/A	N/A	N/A	N/A
	9/27/1991	N/A	N/A	0.5	N/A	1.2	1.9	2.3	0.5	0.5	N/A	N/A	N/A	N/A	N/A	N/A
	12/19/1991	N/A	N/A	0.5	0.8	1.2	110	1.8	1.3	0.5	1	0.5	N/A	N/A	N/A	N/A
	10/14/1992	N/A	N/A	< 0.2	0.5	1.2	110	2.2	1.2	< 0.2	1.1	< 0.2	N/A	N/A	N/A	N/A
	1/15/1993	N/A	N/A	< 0.2	N/A	N/A	N/A	N/A	N/A	N/A	0.98	< 0.2	N/A	N/A	N/A	N/A
	4/27/1993	N/A	N/A	< 0.2	0.68	1.1	120	13	1.1	0.54	1.7	0.41	N/A	N/A	N/A	N/A
	10/20/1993	N/A	N/A	< 0.2	0.74	1.5	94	1.8	1.2	< 0.2	1.4	< 0.2	N/A	N/A	N/A	N/A
	4/12/1994	N/A	N/A	< 0.2	0.91	< 0.2	130	2	0.36	< 0.2	0.75	< 0.2	N/A	N/A	N/A	N/A
	10/21/1994	N/A	N/A	< 0.2	0.72	0.61	140	1.8	1.2	< 0.2	0.92	< 0.2	N/A	N/A	N/A	N/A
	5/28/1995	N/A	N/A	< 0.2	0.37	1.1	90	1.4	1.2	< 0.2	1.3	< 0.2	N/A	N/A	N/A	N/A
	9/18/1995	N/A	N/A	0.23	0.9	2.2	90	3.3	1.8	0.46	1.5	0.43	N/A	N/A	N/A	N/A
	10/22/2002	N/A	N/A	N/A	6.6	< 1	15.6	N/A	< 1	< 1	< 1	< 1	N/A	1.1	N/A	N/A
	2/12/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.42	1.37	N/A	N/A
	3/25/2003	N/A	N/A	N/A	3.97	1.27	20.2	N/A	0.34	< 0.2	0.34	< 0.2	< 0.2	1.4	N/A	N/A
	8/19/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.2	0.82	N/A	N/A
	12/30/2003	N/A	N/A	N/A	5.28	< 0.2	57.6	1.84	0.94	< 0.2	0.49	< 0.2	< 0.2	2.17	N/A	N/A
	3/11/2004	N/A	N/A	< 0.2	0.43	0.53	58.9	N/A	< 0.2	1.04	0.39	< 0.2	< 0.2	2.05	N/A	N/A
	3/28/2005	N/A	N/A	< 0.2	4.98	1.1	37.5	1.58	0.94	< 0.2	0.58	< 0.2	< 0.2	1.85	N/A	N/A
	6/21/2005	N/A	N/A	< 0.2	10	1.14	16.7	1.32	0.88	< 0.2	0.58	< 0.2	N/A	N/A	N/A	N/A
	9/14/2005	N/A	N/A	< 0.2	< 0.2	1.09	1.6	1.57	1.03	< 0.2	0.81	< 0.2	< 0.2	2.3	5.94	0.6
	12/12/2005	N/A	N/A	< 0.2	0.713	0.871	61.5	1.57	0.834	< 0.2	0.5	< 0.2	< 0.2	2.16	6.84	0.633
	3/13/2006	N/A	N/A	< 0.059	1.49	1.12	53.4	1.72	0.0993	0.123	0.691	0.139	0.103	< 0.059	6.66	0.643
	6/27/2006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.91	1.12
	9/21/2006	N/A	N/A	0.103	4.21	0.117	8.27	1.43	0.756	0.0666	0.542	0.168	0.0716	0.279	5.81	1.52
	3/28/2007	0.0412	0.0412	0.0412	0.0737	0.0689	64	0.103	0.0412	0.0412	0.3	0.0412	0.0412	0.177	1.74	0.394
	6/22/2007	0.131	0.331	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2007	0.0355	0.114	0.0355	2.62	0.206	92.9	1.36	0.0355	0.0355	0.664	0.0355	0.0355	0.156	2.16	1.16
	12/13/2007	0.246	< 0.021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/26/2008	< 0.037	< 0.037	0.0582	2.34	0.122	78.5	2.29	< 0.037	0.0435	< 0.037	< 0.037	< 0.037	< 0.037	0.282	0.148
	9/16/2008	< 0.2	< 0.2	< 0.2	4.96	0.515	96.1	1.16	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.241	1.69
	3/10/2009	< 0.037	< 0.037	< 0.037	0.0632	< 0.037	155	1.38	< 0.037	< 0.037	< 0.037	< 0.037	< 0.037	< 0.037	0.561	0.35
	9/10/2009	< 0.037	0.167	< 0.037	1.12	1.15	22.2	1.26	0.919	< 0.037	0.649	< 0.037	< 0.037	< 0.037	1.9	1.36
	3/25/2010	1.1	< 0.016	< 0.016	0.913	0.891	35.3	1.49	0.293	< 0.016	0.634	< 0.016	< 0.016	< 0.016	0.581	0.497
	9/29/2010	0.446	< 0.016	N/A	0.0722	7.62	13.6	1.07	0.814	< 0.016	0.0865	< 0.016	< 0.016	< 0.016	0.18	0.0471
	3/22/2011	< 0.016	< 0.016	< 0.016	< 0.016	1.2	23.2	1.52	0.223	< 0.016	0.602	< 0.016	< 0.016	< 0.016	0.793	0.0986
	9/27/2011	0.0343	< 0.016	< 0.016	0.0285	1.56	7.75	0.55	0.417	< 0.016	0.134	< 0.016	0.0596	N/A	N/A	N/A
	4/19/2012	< 1	< 1	< 1	< 1	12.6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	9/12/2012	0.216	0.127	< 0.0219	0.0257	0.545	76.8	1.32	0.137	< 0.0219	0.478	< 0.0219	< 0.0219	< 0.0219	5.2	0.86
	3/19/2013	1.06	< 0.2	< 0.2	0.72	1.13	30.5	N/A	0.735	< 0.2	0.606	< 0.2	< 0.2	< 0.2	3.2	0.519
	9/18/2013	0.128	0.072	< 0.2	0.105	0.203	29.1	1.1	0.472	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	5.17	0.815
	3/18/2014	< 0.2	< 0.2	< 0.2	< 0.2	0.598	61.4	0.951	0.185	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	2.35	0.321
	9/9/2014	0.902	0.19	< 0.2	< 0.2	1.17	1.76	0.979	0.772	< 0.2	0.623	< 0.2	< 0.2	< 0.2	N/A	N/A
	3/16/2015	1.09	< 0.2	< 0.2	< 0.2	1.13	22.6	0.991	0.842	< 0.2	0.593	< 0.2	< 0.2	< 0.2	1.11	0.163
	9/1/2015	1.12	< 0.2	< 0.2	0.159	1.22	11.1	0.952	0.768	< 0.2	0.601	< 0.2	< 0.2	< 0.2	3.5	0.747
	4/14/2016	1.12	< 0.2	< 0.2	0.147*	1.15	20.5	0.855	0.777	< 0.2	0.469	< 0.2	< 0.2	< 0.2	2.06	< 0.2
	9/1/2016	1.24	< 0.2	1.36	1.22	1.23	15.6	1.07	0.783	< 0.2	0.611	< 0.2	< 0.2	< 0.2	6.94	0.136*
	3/7/2017	1.21	< 0.2	< 0.2	0.166*	1.18	23.6	1.23	0.742	< 0.2	0.616	< 0.2	< 0.2	< 0.2	1.43	0.0989*
	4/3/2018	0.626	< 0.2	< 0.2	0.682	1.11	24	1.13	0.622	< 0.2	0.573	< 0.2	< 0.2	< 0.2	1.45	0.0957*
	6/20/2019	1.12	< 0.2	< 0.2	0.644	1.16	3.5	1.19	< 0.2	< 0.2	N/A	N/A	< 0.2	< 0.2	N/A	N/A
	10/8/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.477	< 0.2	N/A	N/A	N/A	N/A
	4/1/2020	1.18	< 0.2	< 0.2	< 0.2	0.8	27.2	0.864	0.418	< 0.2	0.507	< 0.2	< 0.2	< 0.2	2.54	0.0795*
	4/1/2020	1.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/16/2021	1.15	< 0.2	< 0.2	0.703	0.711	10.8	0.76	0.523	< 0.2	0.521	< 0.2	< 0.2	< 0.2	3.68	0.133*
	6/16/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.52	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/30/2022	1.22	< 0.2	< 0.2	0.191*	0.816	6.08	1.22	0.377	< 0.2	0.563	< 0.2	< 0.2	< 0.2	4.97	0.11*
	8/30/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A	N/A	N/A	N/A
	6/28/2023	N/A	N/A	< 0.2	0.257	1.27	7.21	1.3	0.537	< 0.2	0.666	< 0.2	< 0.2	< 0.2	3.66	< 0.2
	6/28/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A	N/A

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Summary of Groundwater Chemistry

Alter Trading Corporation Waste Monofill Site (Closed) - 78-SDP-19-98C

Other Constituents	Sample Date	MW-4 UPG	MW-5 UPG	EPA-1AR DNG	EPA-2A DNG	MW-1 DNG	MW-2 DNG	MW-3 DNG	MW-8 DNG	MW-9 DNG	MW-10 DNG	MW-11 DNG	MW-12 DNG	MW-13 DNG	MW-14R DNG	MW-15R DNG
Chemical Oxygen Demand, mg/L (CAS NO - COD)	1/18/1991	N/A	N/A	N/A	120	34	420	47	68	120	N/A	N/A	N/A	N/A	N/A	N/A
	5/23/1991	N/A	N/A	21	130	21	640	44	84	120	N/A	N/A	N/A	N/A	N/A	N/A
	9/27/1991	N/A	N/A	16	N/A	22	550	16	85	76	N/A	N/A	N/A	N/A	N/A	N/A
	12/19/1991	N/A	N/A	20	170	18	480	8	76	68	30	170	N/A	N/A	N/A	N/A
	10/14/1992	N/A	N/A	22	270	16	520	70	87	57	38	53	N/A	N/A	N/A	N/A
	1/15/1993	N/A	N/A	24	N/A	N/A	N/A	N/A	N/A	N/A	38	35	N/A	N/A	N/A	N/A
	4/27/1993	N/A	N/A	21	250	11	680	70	59	< 5	19	27	N/A	N/A	N/A	N/A
	10/20/1993	N/A	N/A	11	350	24	550	42	87	24	26	45	N/A	N/A	N/A	N/A
	4/12/1994	N/A	N/A	18	240	26	910	54	58	28	40	53	N/A	N/A	N/A	N/A
	10/21/1994	N/A	N/A	22	450	23	1800	38	99	27	46	47	N/A	N/A	N/A	N/A
	5/28/1995	N/A	N/A	13	470	31	170	61	96	24	82	50	N/A	N/A	N/A	N/A
	9/18/1995	N/A	N/A	6.7	270	27	460	61	71	14	73	26	N/A	N/A	N/A	N/A
	10/22/2002	N/A	N/A	N/A	127	30	54	N/A	145	< 10	44	26	14	48	N/A	N/A
	2/12/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13	53	N/A	N/A	N/A
	3/25/2003	N/A	N/A	N/A	78	32	140	N/A	140	7.2	33	15	15	52	N/A	N/A
	8/19/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16	28	N/A	N/A	N/A
	12/30/2003	N/A	N/A	N/A	81	25	100	38	200	11	43	24	17	60	N/A	N/A
	3/11/2004	N/A	N/A	11	8.7	22	97	N/A	< 5	170	33	22	8.1	65	N/A	N/A
	3/28/2005	N/A	N/A	10	39	24	41	65	160	15	45	28	13	44	N/A	N/A
	6/21/2005	N/A	N/A	10	79	26	52	76	160	11	56	29	N/A	N/A	N/A	N/A
	9/14/2005	N/A	N/A	5.9	9.7	28	30	63	160	5.2	50	19	12	42	63	45
	12/12/2005	N/A	N/A	12.6	12.2	31	78.7	38.2	152	15	42.4	21.2	21.5	46	68.1	33.3
	3/13/2006	N/A	N/A	8.2	21.4	34.4	59	35.8	147	13.7	43.5	23.2	24.8	31.6	65.7	43.2
	6/27/2006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	66.3	62.1
	9/21/2006	N/A	N/A	12.7	38.8	26.5	56.4	29.5	109	10.1	55.2	24	19.5	18.1	18.9	55.6
	3/28/2007	17.3	28	15.9	14.8	30.1	51.4	38	88.3	15.1	57.1	26.2	20.3	39.6	13.6	55.6
	6/22/2007	27.9	25.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2007	14.5	20.7	11	11.7	23.5	44.7	45.1	89.9	10.9	49.1	19.1	14.2	27.1	38.8	42.7
	12/13/2007	17.8	25.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/26/2008	17.6	9.5	10.4	< 1.2	5.9	45.2	52.2	78	12.3	24.7	24.9	< 1.2	< 1.2	23.2	< 1.2
	9/16/2008	15.5	23.4	20	13	30.2	44.2	66.2	79.4	11.9	33.4	18	8.4	26	22.8	33.7
	3/10/2009	18.3	26	5.9	3.3	24.2	52.6	47.9	72.8	13	30	15.5	14.8	39.3	16.2	15.8
	9/10/2009	2.4	12.8	< 2.4	147	31.2	40.8	47.1	173	5.1	30.5	< 2.4	6.4	252	< 2.4	< 2.4
	3/25/2010	14.6	14.3	14.6	< 25	24.2	35.1	32.7	117	7.8	29.3	15.7	11.2	12.2	15.7	18.4
	9/29/2010	11.1	26.7	N/A	7.9	34.5	44.8	44.4	126	19.6	33.4	43.9	< 2.13	19.9	24.9	32.7
	3/22/2011	6.1	17.3	4.7	3.4	21.9	32.8	37.4	93.9	12	11.7	< 2.13	6.1	28.5	27.8	23.2
	9/27/2011	10.8	14.1	2.3	< 2.13	25.3	31	22.2	95.2	11.8	23.6	10.8	14.8	N/A	N/A	N/A
	4/19/2012	47	52	33	25	41	60	65	105	45	39	20	48	95	358	58
	9/12/2012	4.5	7.5	< 3.25	< 3.25	20.8	102	16.6	65.1	< 3.25	22.5	< 3.25	< 3.25	36.8	44.6	16.6
	3/19/2013	15.9	25.4	< 5	5	18.1	58.3	N/A	122	11.7	27.3	13.3	10.4	40.1	35.6	19.1
	9/18/2013	18.7	16	5.8	< 5	21.6	84.2	24.6	116	< 5	17.7	< 5	20.3	23.6	60.5	69
	3/18/2014	19.4	21.4	9.3	6.4	19.4	193	24.6	105	15.5	23	16.5	15.5	17.8	33.1	20.3
	9/9/2014	12.6	34.6	65.9	4.3	31.6	44.2	80.2	127	17.9	24.6	11.9	45.6	42.9	N/A	N/A
	3/16/2015	18.9	17.5	5.63	6.65	45.8	107	43.4	172	16.9	31.2	9.38	10.1	16.2	23.3	17.5
	9/1/2015	19.1	16	8.7	< 5	23.1	< 5	38.8	124	23.1	29.7	6.31	< 5	9.04	25.5	17.6
	4/14/2016	14.6	39.4	17.8	10.4	38.1	61.7	25.3	144	12.3	31.3	2.82*	12.9	18.8	35.7	22.9
	9/1/2016	17.6	21.7	14.1	< 5	39.8	67.6	51.1	114	17.2*	24.8	9.49	15.3	14.7	49.9	11.9
	3/7/2017	7.03	17.3	< 5	< 5	14.3	95.1	22.9	108	10	15.9	< 5	< 5	9.01	26.2	28.8
	4/3/2018	14	16.9	5.96	10.1	21.7	86.2	32.3	128	70.8	22	9.81	10.1	11.7	32.6	24.9
	6/20/2019	25.2	19.9	13.2	14.6	24.9	45.1	29.5	116	97.9	N/A	N/A	15.3	15	N/A	N/A
	10/8/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.2	< 5	N/A	N/A	N/A	N/A
	4/1/2020	17.6	13.4	< 5	< 5	15	105	25.6	76.6	107	17.9	< 5	16.3	28.5	22.7	20.4
	4/1/2020	16.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/16/2021	27.2	31.1	21.9	9.23	25.6	60.9	46.6	84.8	74.9	20.4	6.04	12.9	13.9	48.7	29.6
	6/16/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	87.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/30/2022	20.7	8.82	5.47	7.9	22.8	56.3	21.3	94.3	64.5	21.6	5.47	6.69	10.3	36.2	23.4
	8/30/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	59.1	N/A	N/A	N/A	N/A	N/A	N/A
	6/28/2023	N/A	N/A	6.9	6.9	22.8	69.7	21.4	92.5	61.1	23.1	7.24	8.97	10	25.9	21.4
	6/28/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.86	N/A	N/A	N/A	N/A

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Summary of Groundwater Chemistry

Alter Trading Corporation Waste Monofill Site (Closed) - 78-SDP-19-98C

Other Constituents	Sample Date	MW-4 UPG	MW-5 UPG	EPA-1AR DNG	EPA-2A DNG	MW-1 DNG	MW-2 DNG	MW-3 DNG	MW-8 DNG	MW-9 DNG	MW-10 DNG	MW-11 DNG	MW-12 DNG	MW-13 DNG	MW-14R DNG	MW-15R DNG
Chloride, mg/L (CAS NO - 16887-00-6)	1/18/1991	N/A	N/A	N/A	300	61	200	51	500	310	N/A	N/A	N/A	N/A	N/A	N/A
	5/23/1991	N/A	N/A	30	320	59	220	43	510	240	N/A	N/A	N/A	N/A	N/A	N/A
	9/27/1991	N/A	N/A	34	N/A	50	180	51	500	170	N/A	N/A	N/A	N/A	N/A	N/A
	12/19/1991	N/A	N/A	29	310	51	190	29	550	220	240	28	N/A	N/A	N/A	N/A
	10/14/1992	N/A	N/A	27	350	49	180	110	500	170	210	32	N/A	N/A	N/A	N/A
	1/15/1993	N/A	N/A	20	N/A	N/A	N/A	N/A	N/A	N/A	210	28	N/A	N/A	N/A	N/A
	4/27/1993	N/A	N/A	25	410	48	120	61	560	64	110	35	N/A	N/A	N/A	N/A
	10/20/1993	N/A	N/A	19	430	53	120	110	480	22	180	34	N/A	N/A	N/A	N/A
	4/12/1994	N/A	N/A	16	450	51	210	150	510	14	190	35	N/A	N/A	N/A	N/A
	10/21/1994	N/A	N/A	17	460	57	220	98	540	26	180	39	N/A	N/A	N/A	N/A
	5/28/1995	N/A	N/A	29	440	55	60	230	550	35	190	30	N/A	N/A	N/A	N/A
	9/18/1995	N/A	N/A	13	430	63	82	160	550	28	110	32	N/A	N/A	N/A	N/A
	10/22/2002	N/A	N/A	N/A	50	53	10	N/A	240	33	49	18	13	12	N/A	N/A
	2/12/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.3	13.7	N/A	N/A
	3/25/2003	N/A	N/A	N/A	24.3	58.6	11.8	N/A	256	53.4	51.8	18.1	11.4	16.6	N/A	N/A
	8/19/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.7	10.3	N/A	N/A
	12/30/2003	N/A	N/A	N/A	34	57.2	25.4	107	233	101	34.3	19.3	18.3	20.1	N/A	N/A
	3/11/2004	N/A	N/A	26.3	21.8	55.6	23.2	N/A	104	220	34.7	12.4	13.4	38.7	N/A	N/A
	3/28/2005	N/A	N/A	11.1	50.9	63.9	10.9	165	194	122	42.9	23.3	14	100	N/A	N/A
	6/21/2005	N/A	N/A	11.3	42.3	57.1	10	170	182	99.1	36.4	36.5	N/A	N/A	N/A	N/A
	9/14/2005	N/A	N/A	6.1	5.5	60.9	21.4	178	193	122	25.9	37.2	19	80.9	36.2	48.6
	12/12/2005	N/A	N/A	6.28	18.2	59.3	21.3	125	187	238	31.5	30.4	17.6	67.5	38.3	28.4
	3/13/2006	N/A	N/A	5.72	27.3	54.8	17.1	93.1	182	97.9	37.3	27.5	28.5	20	36.3	32.5
	6/27/2006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	34.1	40.7
	9/21/2006	N/A	N/A	7.62	42.7	52.6	10.7	88.1	126	111	26.9	30.1	19.4	16.4	10.7	53
	3/28/2007	204	518	7.16	14.6	54.7	8.59	89.4	123	302	25.5	29.3	6.41	40	7.14	24.7
	6/22/2007	307	199	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2007	200	393	9.24	25.7	56	9.49	126	125	198	28.1	15.7	11.7	13.6	11.5	37
	12/13/2007	200	384	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/26/2008	196	349	8.62	12.3	55	8.77	97	126	114	28.1	23.5	6.82	31.4	6.3	10.1
	9/16/2008	232	334	13.8	< 5	49.1	7.83	116	121	107	28.7	15.7	5.67	12	12.7	30.8
	3/10/2009	249	265	3.38	9.91	55.5	13.8	71.4	127	145	32	12.6	13.2	23.8	10.4	10.8
	9/10/2009	220	316	9.57	12.5	73.5	9.79	122	160	140	34.9	18.4	12	15.4	12.1	26.9
	3/25/2010	176	251	17.4	9.5	55.5	8.95	43.3	162	164	31.6	41.3	9.57	9.83	10.3	12.8
	9/29/2010	178	298	N/A	3.91	52.2	9.1	46.3	161	118	27.5	22.4	15.9	13.8	44.1	44.7
	3/22/2011	146	300	5.56	6.73	52.9	7.88	25.6	148	131	71.2	28.9	8.04	16.8	49.8	74.7
	9/27/2011	155	232	4.09	3.53	55	7.32	26.3	143	144	42.6	22.2	14	N/A	N/A	N/A
	4/19/2012	150	239	< 10	< 10	52	12	32	138	150	34	28	16	32	58	54
	9/12/2012	166	294	4.85	3.82	53.1	27.7	24.7	131	175	34.7	12.3	10.5	30.3	43.2	53.9
	3/19/2013	150	259	5.16	5.77	54.5	12.8	N/A	131	161	40.5	20.4	6.32	30.2	50.7	64.9
	9/18/2013	152	275	22.6	4.93	63.3	23.6	27.5	134	162	47.4	18.2	17.2	12.8	84.9	49.9
	3/18/2014	155	242	7.94	12.7	57.9	35.1	24.5	142	156	41.9	15.9	21.6	11.8	52.7	47.5
	9/9/2014	162	193	27	11.3	74.3	11.1	36.2	124	141	34.3	14	17.8	6	N/A	N/A
	3/16/2015	181	169	7.76	3.01	84.7	25.8	33.9	136	125	37	9.88	12.9	5.54	39.8	12.2
	9/1/2015	169	205	7.54	9.65	67	11.3	34.9	110	164	38.9	11.1	11.4	7.74	47.5	13.7
	4/14/2016	179	247	10.6	5.78	84.7	16.3	13.2	127	164	29.8	6.46	15.1	7.2	34.5	19.3
	9/1/2016	198	192	4.92*	7.36	76.9	15.8	21.8	97.1	233	27.7	7.04	8.7	5.84	36.1	19.2
	3/7/2017	172	167	3.86*	6.55	50.6	22.6	35.7	93.5	134	29.2	7.47	8.37	4.07*	17.6	17.8
	4/3/2018	179	166	11.1	6.55	55.5	49.8	26.4	74.6	47.7	29.3	22.2	11.8	13.8	14.5	20.9
	6/20/2019	153	171	39.7	10.9	46.2	11.4	13.3	55.7	48.6	N/A	N/A	26.6	8.52	N/A	N/A
	10/8/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.5	39.9	N/A	N/A	N/A	N/A
	4/1/2020	154	105	8.01	9.7	43.8	22.9	13.5	38.5	112	17.6	27	20.3	13.1	20.9	34.6
	4/1/2020	151	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/16/2021	118	143	33.5	7.62	44.3	11.6	24.5	36.4	51.5	19.8	26.3	6.71	11.8	36.7	25.1
	6/16/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/30/2022	174	123	8.73	4.76*	42.5	13	13.4	29.5	25.4	20.3	58.1	46.3	34.3	31.8	39.3
	8/30/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24.8	N/A	N/A	N/A	N/A	N/A	N/A
	6/28/2023	N/A	N/A	5.76	10.4	49.2	13.6	13.3	30.9	23.7	26.2	38.3	33	22.2	27.9	43.4
	6/28/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	41.4	N/A	N/A	N/A	N/A

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Summary of Groundwater Chemistry

Alter Trading Corporation Waste Monofill Site (Closed) - 78-SDP-19-98C

Other Constituents	Sample Date	MW-4 UPG	MW-5 UPG	EPA-1AR DNG	EPA-2A DNG	MW-1 DNG	MW-2 DNG	MW-3 DNG	MW-8 DNG	MW-9 DNG	MW-10 DNG	MW-11 DNG	MW-12 DNG	MW-13 DNG	MW-14R DNG	MW-15R DNG
Iron, Total, mg/L (CAS NO - 7439-89-6)	3/7/2017	10.7	1.02	3.86	1.92	11.7	2.54	20	3.53	0.326*	4.49	0.576	0.638	1.94	19.1	42
	4/3/2018	3.26	< 0.5	< 0.5	0.53	12.4	5.61	13.7	3.08	< 0.5	4.78	0.165*	< 0.5	1.86	11.5	14.7
	6/20/2019	12.7	0.145*	< 0.5	< 0.5	13.3	18.8	19.7	3.25	0.53	N/A	N/A	< 0.5	3.66	N/A	N/A
	10/8/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.68	< 0.5	N/A	N/A	N/A	N/A
	4/1/2020	13	0.15	1.67	< 0.5	12.5	2.76	15.6	1.51	0.742	3.4	< 0.5	< 0.5	1.48	4.32	6.67
	4/1/2020	12.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/16/2021	12.1	0.313*	0.824	0.725	11.3	15.2	25.8	2.42	1.65	3.18	< 0.5	0.321*	0.691	22.2	7.31
	6/16/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/30/2022	13.5	0.248*	1.11	0.375*	10.2	13.8	17.9	1.32	0.459*	3.61	< 0.5	< 0.5	0.906	9.58	10.1
	8/30/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.869	N/A	N/A	N/A	N/A	N/A	N/A
	6/28/2023	N/A	N/A	0.147*	< 0.5	15.5	10.9	19	1.9	0.258*	4.08	< 0.5	< 0.5	7.18	4.96	3.14
	6/28/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A

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Summary of Groundwater Chemistry

Alter Trading Corporation Waste Monofill Site (Closed) - 78-SDP-19-98C

Other Constituents	Sample Date	MW-4 UPG	MW-5 UPG	EPA-1AR DNG	EPA-2A DNG	MW-1 DNG	MW-2 DNG	MW-3 DNG	MW-8 DNG	MW-9 DNG	MW-10 DNG	MW-11 DNG	MW-12 DNG	MW-13 DNG	MW-14R DNG	MW-15R DNG
pH, S.U. (CAS NO - PH)	1/18/1991	N/A	N/A	N/A	7.1	7.3	7.8	7.2	7.3	7.1	N/A	N/A	N/A	N/A	N/A	N/A
	5/23/1991	N/A	N/A	7.3	7.1	7.5	8.9	7	7.3	7.2	N/A	N/A	N/A	N/A	N/A	N/A
	9/27/1991	N/A	N/A	7.5	N/A	7.5	9.1	7.5	7.4	7.6	N/A	N/A	N/A	N/A	N/A	N/A
	12/19/1991	N/A	N/A	7.5	N/A	7.5	9.1	7.5	7.4	7.6	7.6	7.6	N/A	N/A	N/A	N/A
	10/14/1992	N/A	N/A	8.6	7.6	8.1	8.7	8.3	8	8.3	7.6	7.6	N/A	N/A	N/A	N/A
	1/15/1993	N/A	N/A	7.4	N/A	N/A	N/A	N/A	N/A	8.2	7.6	7.6	N/A	N/A	N/A	N/A
	4/27/1993	N/A	N/A	7.6	7.5	7.6	8.8	8.1	7.5	7.7	8.2	7.6	N/A	N/A	N/A	N/A
	10/20/1993	N/A	N/A	N/A	N/A	8.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/12/1994	N/A	N/A	7.8	7.4	9.6	9.8	7.3	7.8	7.8	7.6	7.6	N/A	N/A	N/A	N/A
	10/21/1994	N/A	N/A	7.5	7.1	8.7	9	7.3	7.3	7.4	7.6	7.4	N/A	N/A	N/A	N/A
	5/28/1995	N/A	N/A	8.2	7.9	8.7	8.5	7.3	7.6	8.3	8.4	7.9	N/A	N/A	N/A	N/A
	9/18/1995	N/A	N/A	7.1	7.2	7.7	8.2	7.7	7.5	7.5	7.3	7.5	N/A	N/A	N/A	N/A
	10/22/2002	N/A	N/A	N/A	6.8	7.28	6.93	N/A	7.28	7.22	7.61	7.37	7.12	6.63	N/A	N/A
	2/12/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.65	6.72	N/A	N/A
	3/25/2003	N/A	N/A	N/A	7.32	7.03	7.05	N/A	7.56	7.05	7.44	6.88	6.71	6.87	N/A	N/A
	8/19/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.68	6.84	N/A	N/A
	12/30/2003	N/A	N/A	N/A	7.75	7.38	8.81	7.1	7.55	7.34	8.06	7.32	7.18	6.92	N/A	N/A
	3/11/2004	N/A	N/A	7.41	7.44	8.17	8.1	N/A	6.97	7.5	7.86	7.35	8.33	7.05	N/A	N/A
	3/28/2005	N/A	N/A	7.48	7.61	7.22	7.57	7	7.56	7.45	7.45	7.24	6.9	7.34	N/A	N/A
	6/21/2005	N/A	N/A	7.36	7.86	7.4	7.43	7.14	7.67	7.41	7.71	7.27	N/A	N/A	N/A	N/A
	9/14/2005	N/A	N/A	7.18	7.17	7.3	7.5	7.31	7.55	7.14	7.34	7.16	6.69	7	7.59	7.18
	12/12/2005	N/A	N/A	7.6	7.55	7.67	7.48	6.62	7.89	7.35	7.35	7.6	7	7.1	8.16	7.6
	3/13/2006	N/A	N/A	7.56	7.35	7.12	8.82	7.07	7.8	7.56	7.66	7.26	7.08	7.21	7.5	7.32
	6/27/2006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.42	7.3
	9/21/2006	N/A	N/A	7.24	7.37	7.55	7.56	6.64	7.63	7.18	7.56	7.15	7.56	7.42	7.01	7.05
	3/28/2007	7.52	7.25	7.42	7.4	7.77	7.58	7.11	7.7	7.43	7.75	7	7.13	7.2	7.44	7.3
	6/22/2007	7.5	7.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2007	7.84	7.32	7.37	7.68	7.61	8.25	7.24	7.83	7.15	7.83	7.33	7.05	7.18	7.51	7.55
	3/26/2008	7.8	7.85	7.5	7.39	7.72	8.15	7.17	7.8	7.66	8.25	7.56	7.06	7.35	7.69	7.68
	9/16/2008	7.11	6.51	8.8	7.67	5.16	8.83	4.92	6.52	5.88	7.29	6.07	7.92	4.65	5.32	6.19
	3/10/2009	8.03	7.65	7.29	7.55	8.06	8.32	7.25	8.28	7.29	8.13	7.28	6.99	7.15	7.32	7.4
	9/10/2009	7.55	7.33	7.29	7.41	7.14	7.16	6.96	7.55	7.37	7.36	7.18	6.81	6.96	7.06	7.32
	9/29/2010	7.32	6.91	N/A	7.42	7.36	6.74	7.36	7.04	6.84	7.14	7.54	7.17	6.96	7.13	7.02
	3/22/2011	6.53	6.66	7.37	7.15	7.01	7.29	7.18	7.1	7.2	7.55	7.41	8.77	6.52	7.1	7.13
	9/27/2011	6.67	7.1	7.43	7.2	7.6	7.35	7.16	7.6	7.3	7.65	7.35	6.9	N/A	N/A	N/A
	4/19/2012	8.2	6.5	6.65	7.4	6.7	7.35	7	8.41	8.2	8	8.7	7.59	8.55	6.73	6.31
	9/12/2012	7.15	6.75	7.33	7.25	7.3	7.35	6.39	6.57	7.05	7.5	7.55	7	6.95	6.95	7
	3/19/2013	7.34	7.65	7.71	7.97	7.16	7.35	N/A	7.4	7.64	7.62	8.04	7.2	7.42	7.84	7.68
	9/18/2013	7.77	7.4	7.6	7.37	7.43	7.05	7.25	7.3	7.1	7.5	7.65	6.75	7.3	7.15	7
	3/18/2014	7.72	7.53	7.55	7.8	7.62	8.15	7.24	7.57	7.55	7.62	7.49	7.42	7.49	7.44	7.52
	9/9/2014	7.47	7.9	7.45	7.9	7.75	8.26	7.5	7.37	8	7.85	7.73	7.65	7.6	N/A	N/A
	3/16/2015	7.77	8.27	7.92	8.27	7.7	8.18	7.65	7.98	7.96	8.32	8.04	8.03	7.97	7.81	8.06
	9/1/2015	7.11	8.18	7.49	8.05	7.28	7.24	7.36	7.86	7.53	7.98	8.38	7.37	7.57	7.49	7.57
	4/14/2016	7.7	7.89	7.59	7.77	7.55	7.9	7.66	7.89	7.68	8.1	8.01	7.28	7.71	7.37	7.47
	9/1/2016	7.16	7.32	7.33	7.74	7.16	7.47	6.85	8.01	6.65	7.47	7.47	6.98	7.08	7.01	6.98
	3/7/2017	7.28	7.46	7.29	7.49	7.23	8.25	7.23	7.68	7.22	7.92	7.57	6.8	7.24	6.93	7.02
	4/3/2018	7.35	7.6	7.46	7.57	7.36	8.26	7.36	7.79	7.28	7.71	7.82	7.25	7.36	7.08	7.18
	6/20/2019	6.89	7.23	6.87	7.21	6.94	7.02	6.98	7.5	6.79	N/A	N/A	6.75	7.08	N/A	N/A
	10/8/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.44	7.35	N/A	N/A	N/A	N/A
	4/1/2020	7.09	7.45	7.03	7.44	7.1	7.93	6.95	7.63	6.87	7.53	7.36	6.84	6.94	6.92	6.9
	6/16/2021	7.01	7.26	7.15	7.25	7.08	7.12	6.83	7.55	6.88	7.43	7.38	6.61	7.03	6.83	6.71
	8/30/2022	7	7.25	7.11	7.36	7.1	7.18	7.09	7.7	6.96	7.45	7.23	6.57	6.87	6.81	6.81
	6/28/2023	N/A	N/A	7.24	7.31	6.93	7.22	7.03	7.61	7.09	7.42	7.1	6.72	6.92	6.98	7.03

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Summary of Groundwater Chemistry

Alter Trading Corporation Waste Monofill Site (Closed) - 78-SDP-19-98C

Other Constituents	Sample Date	MW-4 UPG	MW-5 UPG	EPA-1AR DNG	EPA-2A DNG	MW-1 DNG	MW-2 DNG	MW-3 DNG	MW-8 DNG	MW-9 DNG	MW-10 DNG	MW-11 DNG	MW-12 DNG	MW-13 DNG	MW-14R DNG	MW-15R DNG
Specific Conductance, uS/cm (CAS NO - SPECCON)	1/18/1991	N/A	N/A	N/A	1800	1400	2000	1200	1160	2000	N/A	N/A	N/A	N/A	N/A	N/A
	5/23/1991	N/A	N/A	952	1914	1265	2632	990	2166	1972	N/A	N/A	N/A	N/A	N/A	N/A
	9/27/1991	N/A	N/A	800	N/A	1300	3600	1000	3050	1900	N/A	N/A	N/A	N/A	N/A	N/A
	12/19/1991	N/A	N/A	800	1914	1300	3600	1000	3050	1900	1900	1900	N/A	N/A	N/A	N/A
	10/14/1992	N/A	N/A	1200	2600	1600	3700	1700	2900	1800	2200	1700	N/A	N/A	N/A	N/A
	1/15/1993	N/A	N/A	900	N/A	N/A	N/A	N/A	N/A	N/A	2200	1700	N/A	N/A	N/A	N/A
	4/27/1993	N/A	N/A	900	2500	1400	3500	1600	3000	1800	2200	1700	N/A	N/A	N/A	N/A
	4/12/1994	N/A	N/A	800	2400	2500	4000	1400	2300	2300	1400	1500	N/A	N/A	N/A	N/A
	10/21/1994	N/A	N/A	700	2200	1100	2300	1200	1900	800	1200	1000	N/A	N/A	N/A	N/A
	5/28/1995	N/A	N/A	800	2200	1300	2000	1900	1700	600	110	1100	N/A	N/A	N/A	N/A
	9/18/1995	N/A	N/A	440	1060	660	960	750	940	510	680	500	N/A	N/A	N/A	N/A
	10/22/2002	N/A	N/A	N/A	756	749	744	N/A	1169	585	452	537	692	723	N/A	N/A
	2/12/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	667	809	N/A	N/A
	3/25/2003	N/A	N/A	N/A	934	1331	1353	N/A	1928	942	769	772	763	1206	N/A	N/A
	8/19/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	492	648	N/A	N/A
	12/30/2003	N/A	N/A	N/A	1309	1414	1741	1553	2206	1105	699	690	651	780	N/A	N/A
	3/11/2004	N/A	N/A	666	568	945	1136	N/A	1747	1947	560	635	722	1017	N/A	N/A
	3/28/2005	N/A	N/A	687	848	1225	1282	1936	1778	1175	723	714	1020	1418	N/A	N/A
	6/21/2005	N/A	N/A	750	1162	1445	1398	1740	2040	1265	815	815	N/A	N/A	N/A	N/A
	9/14/2005	N/A	N/A	504	450	1280	1366	1900	1208	943	505	534	642	1400	700	600
	12/12/2005	N/A	N/A	686	677	1285	1541	1533	1783	1587	655	686	799	1293	767	700
	3/13/2006	N/A	N/A	675	785	1329	1530	1373	1805	1007	640	675	847	1488	727	758
	6/27/2006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	780	795
	9/21/2006	N/A	N/A	798	903	1358	1370	1570	1622	1188	692	681	906	1004	888	946
	3/28/2007	1653	1611	500	770	1300	1400	1447	1701	1019	700	875	386	1455	530	957
	6/22/2007	1605	1700	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2007	1675	2553	800	655	1300	1525	1681	1691	1495	583	1002	1135	1000	719	821
	9/13/2007	1650	2800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/26/2008	1003	985	700	728	1291	1422	1445	1307	1020	602	706	1116	1713	748	593
	9/16/2008	1435	1702	745	459	1016	1191	1278	1215	961	516	646	848	1128	625	566
	3/10/2009	2230	2350	793	611	1398	1627	1420	1635	1422	663	975	1090	1939	1047	800
	9/10/2009	1864	2330	751	628	1531	1309	1686	1957	1390	686	644	1072	1131	1010	868
	3/25/2010	1814	1899	768	588	1320	1298	1191	1757	1445	644	752	781	1054	981	768
	9/29/2010	1701	1930	N/A	678	1302	1141	1284	1967	1204	656	678	924	1002	1061	698
	3/22/2011	1400	1395	889	1249	1320	1309	1220	1420	1475	1049	790	1015	1215	1161	1065
	9/27/2011	1375	1445	690	1275	1225	1410	1231	1524	1290	685	783	995	N/A	N/A	N/A
	4/19/2012	970	1225	1125	515	1050	1120	1000	1135	1230	1050	970	1173	1200	1106	748
	9/12/2012	1025	1020	740	750	1265	1420	1124	1005	990	546	636	1000	1605	1020	980
	3/19/2013	1970	2430	823	516	1462	1396	N/A	1852	1630	680	643	1243	1676	1332	907
	9/18/2013	1745	1755	745	449	1345	1330	1124	1740	1542	754	620	1233	957	791	787
	3/18/2014	1792	1880	756	483	1383	1587	1102	1624	1804	618	859	795	1078	1241	848
	9/9/2014	1500	1310	838	465	1275	1230	1235	950	1000	605	649	1091	1010	N/A	N/A
	3/16/2015	1928	1640	870	523	1684	1406	1218	2106	1512	589	623	925	968	1145	734
	9/1/2015	1837	1668	749	432	1473	1211	1230	1672	1542	575	504	1058	828	1099	702
	4/14/2016	1599	1985	786	480	1354	1155	810	1578	1397	488	454	976	759	1040	626
	9/1/2016	1945	1744	748	584	1534	1325	1134	1624	1920	557	460	1004	721	1150	776
	3/7/2017	1498	1298	601	4251	1193	1164	987	1332	1410	3821	3802	802	617	920	795
	4/3/2018	2100	1660	798	708	1566	1676	1291	1715	2048	689	516	628	896	1264	1168
	6/20/2019	1793.4	1345.8	740.2	621.7	1327.3	1350.4	1179.6	1315.7	1766	N/A	N/A	920.3	585.7	N/A	N/A
	10/8/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	493.9	560.4	N/A	N/A	N/A	N/A
	4/1/2020	1853.2	1070.6	766	607.4	1279.8	1576.8	1221	1193.9	2112.7	474.3	557.3	1117.8	985.9	1299.8	631.9
	6/16/2021	1635.1	1219	667	524.2	1210.1	1249.8	1231.5	1102.5	1669.4	476.8	568.9	841	649.4	1083.3	760.6
	8/30/2022	1886.8	1213.9	613	465.9	1270.8	1363.9	1072.7	1115.3	1511.8	540.7	705.9	703.3	818	1184.2	887.7
	6/28/2023	N/A	N/A	561.2	507.1	1233.5	1303.7	977.3	1040.6	1201.5	546.3	794.7	857.5	761.3	1070.8	773

SCS ENGINEERS

Summary of Groundwater Chemistry

Alter Trading Corporation Waste Monofill Site (Closed) - 78-SDP-19-98C

Other Constituents	Sample Date	MW-4 UPG	MW-5 UPG	EPA-1AR DNG	EPA-2A DNG	MW-1 DNG	MW-2 DNG	MW-3 DNG	MW-8 DNG	MW-9 DNG	MW-10 DNG	MW-11 DNG	MW-12 DNG	MW-13 DNG	MW-14R DNG	MW-15R DNG
Total Extractable Hydrocarbons, ug/L (CAS NO - TEHH)	10/22/2002	N/A	N/A	N/A	1400	< 100	500	N/A	100	< 100	300	300	100	200	N/A	N/A
	12/30/2003	N/A	N/A	N/A	1600	< 380	1130	< 380	< 380	< 380	475	< 380	< 380	688	N/A	N/A
	9/21/2005	N/A	N/A	< 380	< 380	< 380	505	< 380	< 380	< 380	490	< 380	< 380	553	475	957
	9/21/2006	N/A	N/A	< 300	1020	< 300	774	< 300	< 300	< 300	544	< 300	< 300	< 300	< 300	835
	3/28/2007	N/A	N/A	N/A	< 300	N/A	1250	N/A	N/A	N/A	N/A	N/A	N/A	< 300	< 300	< 300
	6/22/2007	< 300	< 300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2007	< 345	< 300	333	< 300	< 300	1430	777	< 300	< 341	1280	< 300	343	381	405	923
	3/26/2008	N/A	N/A	N/A	< 300	N/A	960	307	N/A	N/A	< 361	N/A	N/A	< 300	< 300	< 300
	9/16/2008	< 300	< 300	< 300	< 300	< 300	891	810	< 300	< 300	468	381	< 300	399	459	480
	3/10/2009	N/A	N/A	N/A	< 300	N/A	760	N/A	N/A	N/A	N/A	N/A	N/A	315	< 300	< 300
	9/10/2009	< 300	< 300	< 300	< 300	< 300	670	736	< 300	< 300	554	< 300	342	302	679	455
	3/25/2010	N/A	N/A	N/A	< 300	N/A	818	N/A	N/A	N/A	N/A	N/A	N/A	< 300	< 300	< 300
	9/29/2010	< 349	< 300	N/A	< 300	< 300	742	< 300	< 300	< 300	N/A	< 300	< 300	< 300	< 300	< 300
	3/22/2011	< 300	< 300	< 300	< 300	< 300	746	< 300	< 300	< 300	1100	< 300	< 300	302	714	< 300
	9/27/2011	N/A	N/A	N/A	< 300	N/A	501	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/19/2012	N/A	N/A	N/A	< 100	N/A	200	N/A	N/A	N/A	N/A	N/A	N/A	100	100	< 100
	9/18/2013	281	294	298	477	282	2340	722	872	287	828	305	738	443	1120	702
	9/9/2014	420	290	268	231	394	926	478	515	277	< 463	< 463	< 463	439	N/A	N/A
	9/1/2015	310	849	182	216	142	685	1300	897	206	1140	1580	338	226	806	229
	9/1/2016	93.1*	< 391	< 379	< 368	< 379	< 379	177*	< 379	< 379	< 403	< 446	< 379	< 379	< 391	97.4*
	4/3/2018	< 481	< 481	< 481	< 481	100*	< 481	139*	< 463	< 481	< 481	76.3*	< 481	86.7*	< 481	116*
	6/20/2019	105*	139*	120*	170*	123*	< 500	176*	369*	< 481	N/A	N/A	146*	< 500	N/A	N/A
	10/8/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 500	167*	N/A	N/A	N/A	N/A
	4/1/2020	< 500	< 481	118*	< 500	139*	2430	< 500	160*	< 521	< 543	< 500	79*	106*	< 500	107*
	4/1/2020	< 481	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/16/2021	348*	331*	412*	353*	401*	< 500	< 500	315*	< 500	< 500	341*	360*	280*	< 500	294*
	6/16/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	388*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/30/2022	< 490	< 500	< 490	< 490	< 568	< 521	< 532	155*	< 521	< 556	< 500	< 521	< 481	< 490	122*
	8/30/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 521	N/A	N/A	N/A	N/A	N/A	N/A
	6/28/2023	N/A	N/A	113*	< 500	104*	< 500	81.7*	181*	< 556	< 500	< 532	< 500	< 500	< 532	103*
	6/28/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	82*	N/A	N/A	N/A	N/A

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.

Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.



Appendix D

Statistical Report

Attachment A

Trend Test ($\alpha=0.01$)

Trend Test

City of Council Bluffs - Alter Landfill

Client: SCS Engineers

Data: CTYCB 2023AWQR-AM

Printed 7/27/2023, 5:15 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Alpha</u>	<u>Method</u>
Ammonia as N (mg/L)	EPA-1AR	0	-7	-21	No	8	87.5	0.01	NP
Ammonia as N (mg/L)	EPA-2A	-0.08864	-6	-21	No	8	12.5	0.01	NP
Ammonia as N (mg/L)	MW-1	-0.06651	-8	-21	No	8	0	0.01	NP
Ammonia as N (mg/L)	MW-10	0.002827	0	21	No	8	0	0.01	NP
Ammonia as N (mg/L)	MW-14R	0.3293	8	21	No	8	0	0.01	NP
Ammonia as N (mg/L)	MW-15R	-0.000927	-3	-21	No	8	25	0.01	NP
Ammonia as N (mg/L)	MW-2	-1.677	-6	-21	No	8	0	0.01	NP
Ammonia as N (mg/L)	MW-3	0.01575	4	21	No	8	0	0.01	NP
Ammonia as N (mg/L)	MW-8	-0.05305	-12	-21	No	8	12.5	0.01	NP
Arsenic (mg/L)	EPA-2A	-0.001012	-10	-21	No	8	0	0.01	NP
Arsenic (mg/L)	MW-10	0.000201	5	21	No	8	0	0.01	NP
Arsenic (mg/L)	MW-13	-0.0002802	-6	-21	No	8	0	0.01	NP
Arsenic (mg/L)	MW-14R	-0.00152	-16	-21	No	8	0	0.01	NP
Arsenic (mg/L)	MW-15R	-0.00511	-18	-21	No	8	0	0.01	NP
Arsenic (mg/L)	MW-2	-0.00487	-8	-21	No	8	0	0.01	NP
Arsenic (mg/L)	MW-3	-0.001511	-2	-21	No	8	0	0.01	NP
Barium (mg/L)	MW-14R	0.02743	10	21	No	8	0	0.01	NP
Barium (mg/L)	MW-15R	-0.05549	-10	-21	No	8	0	0.01	NP
Chemical Oxygen Demand (mg/L)	EPA-1AR	0.08972	1	21	No	8	25	0.01	NP
Chemical Oxygen Demand (mg/L)	EPA-2A	0.3224	3	21	No	8	37.5	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-1	0.105	1	21	No	8	0	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-10	0.7698	4	21	No	8	0	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-11	0	1	21	No	8	37.5	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-12	-0.3583	-3	-21	No	8	12.5	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-13	-0.321	-4	-21	No	8	0	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-14R	-1.209	-6	-21	No	8	0	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-15R	0.1326	2	21	No	8	0	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-2	-2.517	-4	-21	No	8	0	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-3	-2.047	-12	-21	No	8	0	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-8	-4.189	-10	-21	No	8	0	0.01	NP
Chemical Oxygen Demand (mg/L)	MW-9	6.935	4	21	No	8	0	0.01	NP
Chloride (mg/L)	EPA-1AR	0.2996	4	21	No	8	0	0.01	NP
Chloride (mg/L)	EPA-2A	0.1351	3	21	No	8	0	0.01	NP
Chloride (mg/L)	MW-1	-1.708	-16	-21	No	8	0	0.01	NP
Chloride (mg/L)	MW-10	-0.3475	-2	-21	No	8	0	0.01	NP
Chloride (mg/L)	MW-11	5.35	18	21	No	8	0	0.01	NP
Chloride (mg/L)	MW-12	3.893	12	21	No	8	0	0.01	NP
Chloride (mg/L)	MW-13	2.602	16	21	No	8	0	0.01	NP
Chloride (mg/L)	MW-14R	-0.149	0	21	No	8	0	0.01	NP
Chloride (mg/L)	MW-15R	3.239	20	21	No	8	0	0.01	NP
Chloride (mg/L)	MW-2	-0.6717	-4	-21	No	8	0	0.01	NP
Chloride (mg/L)	MW-3	-1.858	-13	-21	No	8	0	0.01	NP
Chloride (mg/L)	MW-8	-10.75	-26	-21	Yes	8	0	0.01	NP
Chloride (mg/L)	MW-9	-19.57	-18	-21	No	8	0	0.01	NP
Iron (mg/L)	EPA-1AR	-0.232	-6	-18	No	7	28.57	0.01	NP
Iron (mg/L)	EPA-2A	-0.1402	-8	-18	No	7	42.86	0.01	NP
Iron (mg/L)	MW-1	0.05007	1	18	No	7	0	0.01	NP
Iron (mg/L)	MW-10	-0.1604	-7	-18	No	7	0	0.01	NP
Iron (mg/L)	MW-11	0	-1	-18	No	7	71.43	0.01	NP
Iron (mg/L)	MW-12	0	-5	-18	No	7	71.43	0.01	NP

Trend Test

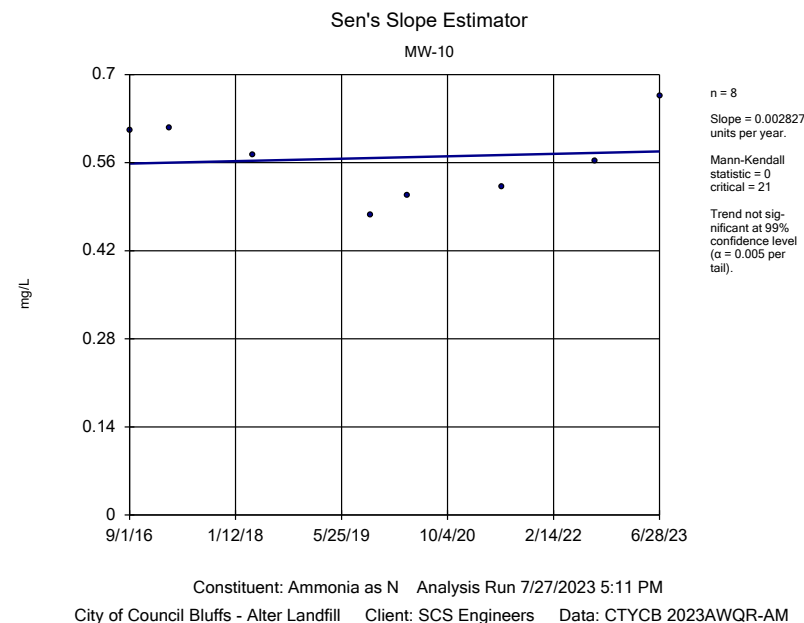
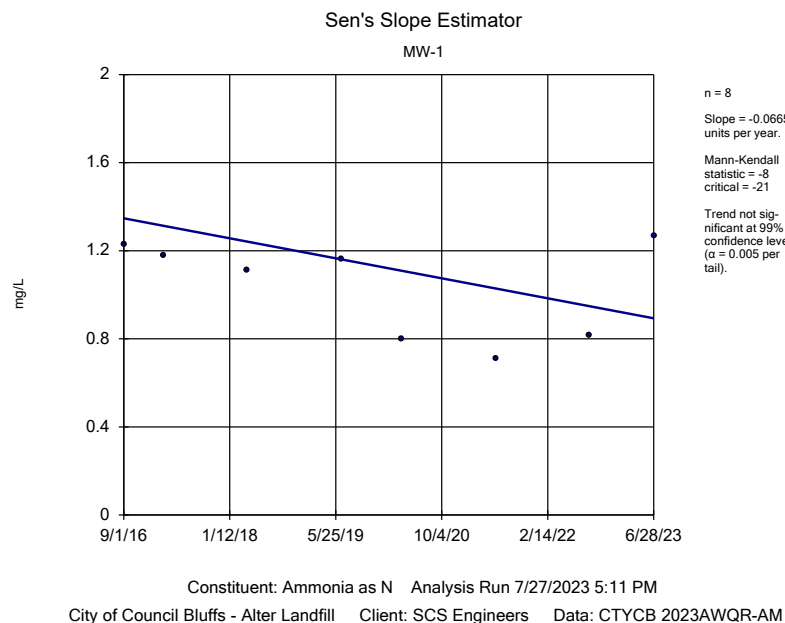
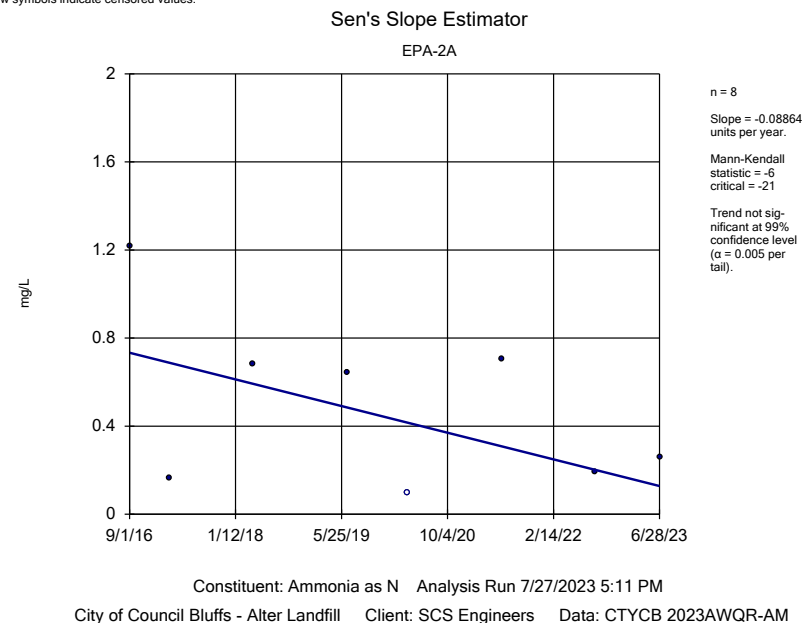
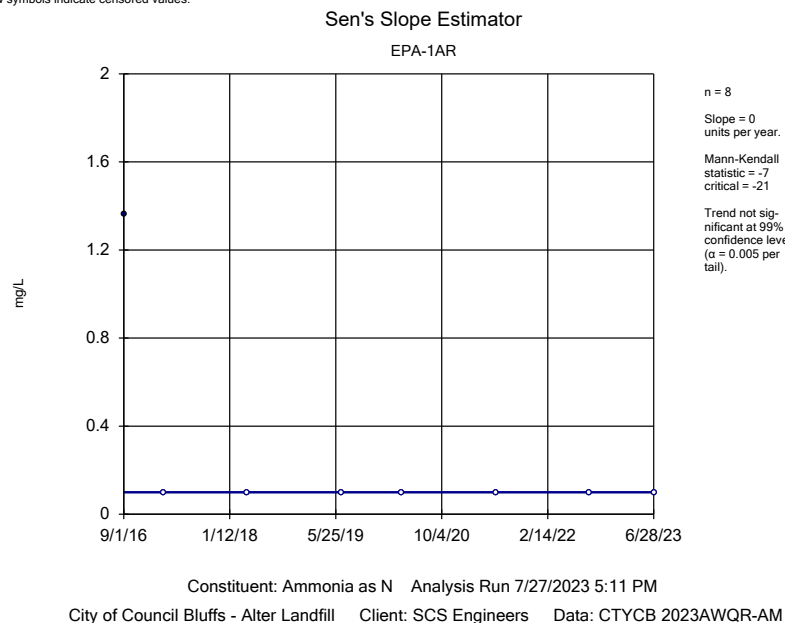
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM Printed 7/27/2023, 5:15 PM

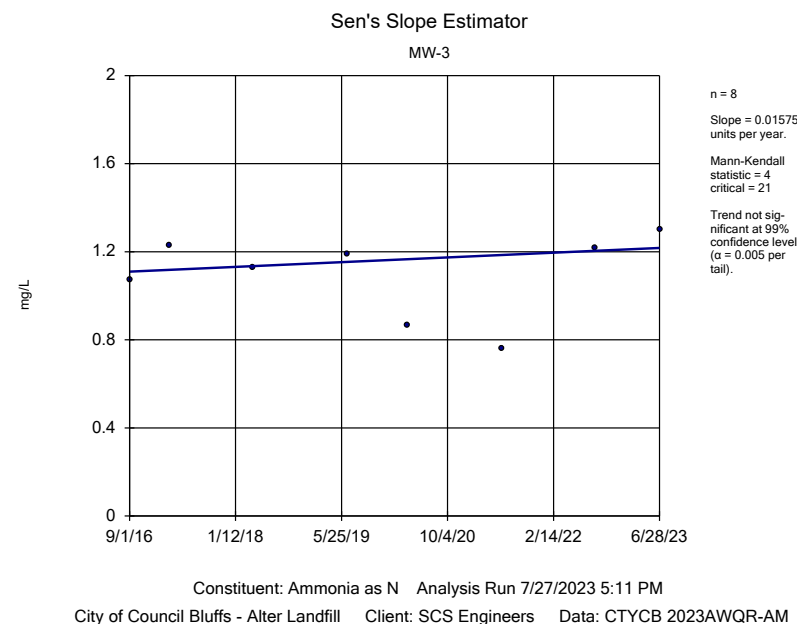
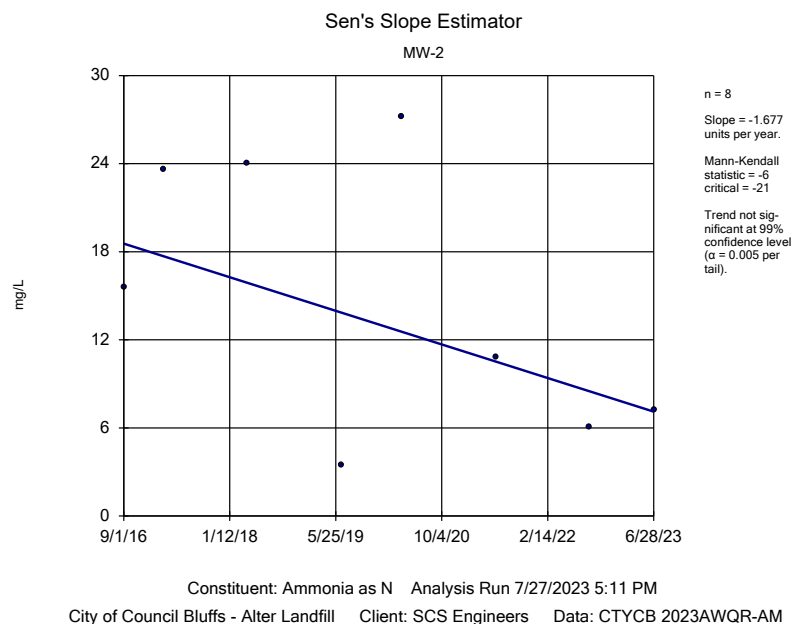
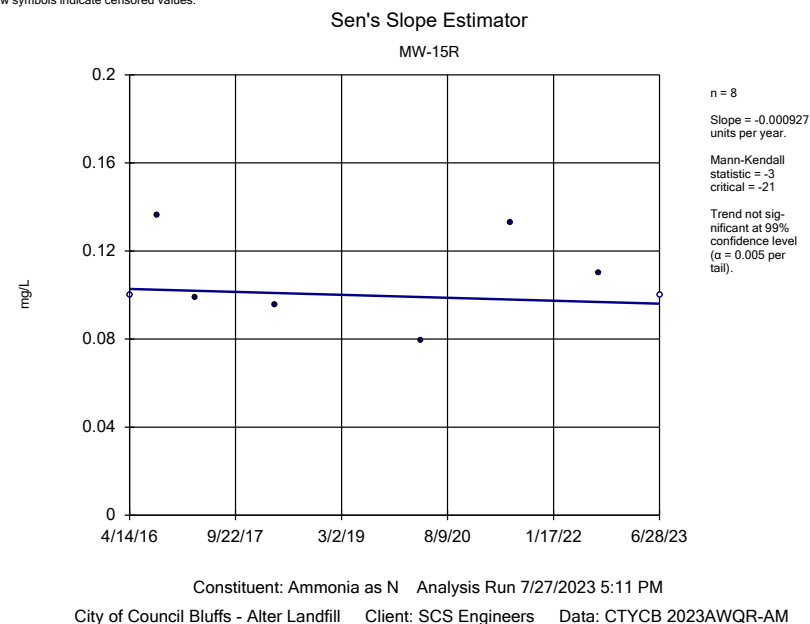
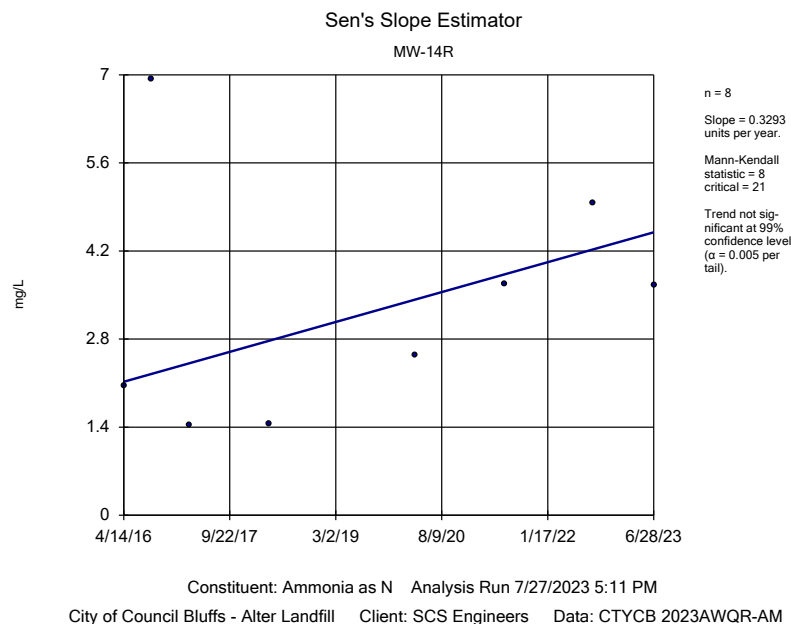
<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Alpha</u>	<u>Method</u>
Iron (mg/L)	MW-13	-0.1498	-3	-18	No	7	0	0.01	NP
Iron (mg/L)	MW-14R	-1.736	-5	-14	No	6	0	0.01	NP
Iron (mg/L)	MW-15R	-2.305	-9	-14	No	6	0	0.01	NP
Iron (mg/L)	MW-2	1.324	5	18	No	7	0	0.01	NP
Iron (mg/L)	MW-3	0.9513	1	18	No	7	0	0.01	NP
Iron (mg/L)	MW-8	-0.2632	-13	-18	No	7	0	0.01	NP
Iron (mg/L)	MW-9	0.06162	5	18	No	7	14.29	0.01	NP
Lead (mg/L)	MW-12	-0.001739	-18	-21	No	8	0	0.01	NP
Lead (mg/L)	MW-13	-0.0001619	-11	-21	No	8	25	0.01	NP
Lead (mg/L)	MW-14R	-0.001022	-17	-21	No	8	25	0.01	NP
Lead (mg/L)	MW-15R	-0.002131	-21	-21	No	8	37.5	0.01	NP
Nickel (mg/L)	MW-14R	-0.03451	-8	-21	No	8	0	0.01	NP
Nickel (mg/L)	MW-15R	-0.001798	-26	-21	Yes	8	0	0.01	NP
pH (S.U.)	EPA-1AR	-0.03277	-6	-21	No	8	0	0.01	NP
pH (S.U.)	EPA-2A	-0.05286	-14	-21	No	8	0	0.01	NP
pH (S.U.)	MW-1	-0.0287	-13	-21	No	8	0	0.01	NP
pH (S.U.)	MW-10	-0.03354	-16	-21	No	8	0	0.01	NP
pH (S.U.)	MW-11	-0.0581	-16	-21	No	8	0	0.01	NP
pH (S.U.)	MW-12	-0.04317	-16	-21	No	8	0	0.01	NP
pH (S.U.)	MW-13	-0.04441	-17	-21	No	8	0	0.01	NP
pH (S.U.)	MW-14R	-0.03546	-16	-21	No	8	0	0.01	NP
pH (S.U.)	MW-15R	-0.03868	-10	-21	No	8	0	0.01	NP
pH (S.U.)	MW-2	-0.08862	-6	-21	No	8	0	0.01	NP
pH (S.U.)	MW-3	-0.01485	-2	-21	No	8	0	0.01	NP
pH (S.U.)	MW-8	-0.03237	-10	-21	No	8	0	0.01	NP
pH (S.U.)	MW-9	0.049	8	21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	EPA-1AR	-32.06	-12	-21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	EPA-2A	-48.55	-18	-21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-1	-43.96	-10	-21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-10	-18.54	-8	-21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-11	30.84	14	21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-12	-16.8	-2	-21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-13	11.87	4	21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-14R	7.035	4	21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-15R	17.76	6	21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-2	0.5507	0	21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-3	-14.39	-4	-21	No	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-8	-80.24	-22	-21	Yes	8	0	0.01	NP
Specific Conductance (uS/cm)	MW-9	-73.78	-10	-21	No	8	0	0.01	NP
Total Extractable Hydrocarbons ...	EPA-1AR	-1.641	-2	-21	No	8	37.5	0.01	NP
Total Extractable Hydrocarbons ...	EPA-2A	6.728	13	21	No	8	62.5	0.01	NP
Total Extractable Hydrocarbons ...	MW-1	8.26	2	21	No	8	25	0.01	NP
Total Extractable Hydrocarbons ...	MW-10	2.253	5	21	No	8	87.5	0.01	NP
Total Extractable Hydrocarbons ...	MW-11	-3.59	-1	-21	No	8	37.5	0.01	NP
Total Extractable Hydrocarbons ...	MW-12	-4.629	0	21	No	8	50	0.01	NP
Total Extractable Hydrocarbons ...	MW-13	8.684	9	21	No	8	50	0.01	NP
Total Extractable Hydrocarbons ...	MW-14R	-3.11	-3	-21	No	8	75	0.01	NP
Total Extractable Hydrocarbons ...	MW-15R	-15.69	-8	-21	No	8	0	0.01	NP
Total Extractable Hydrocarbons ...	MW-2	2.389	5	21	No	8	75	0.01	NP
Total Extractable Hydrocarbons ...	MW-3	-5.648	-3	-21	No	8	37.5	0.01	NP

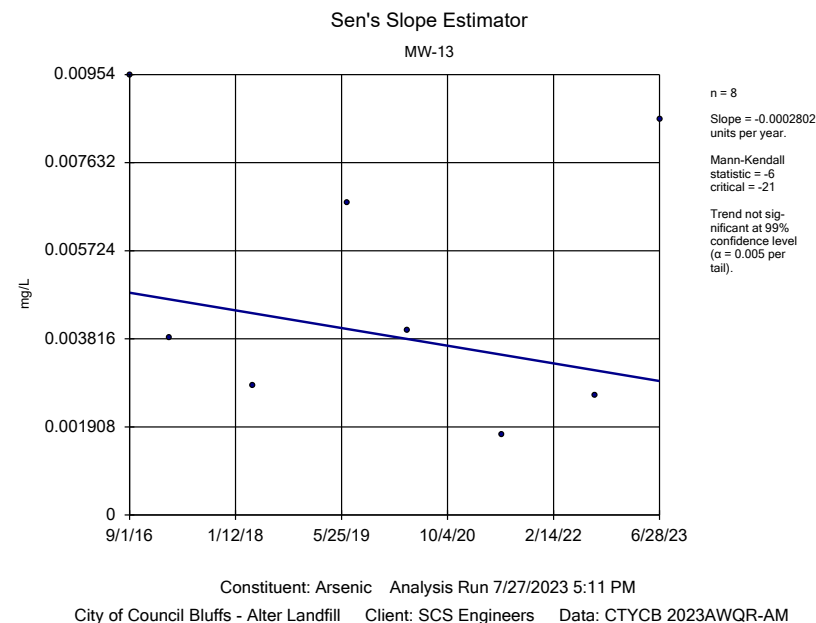
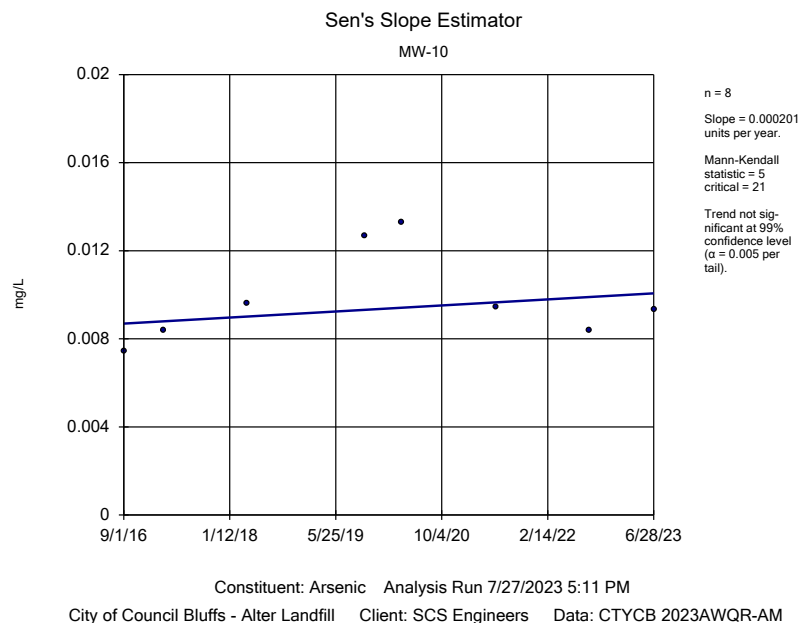
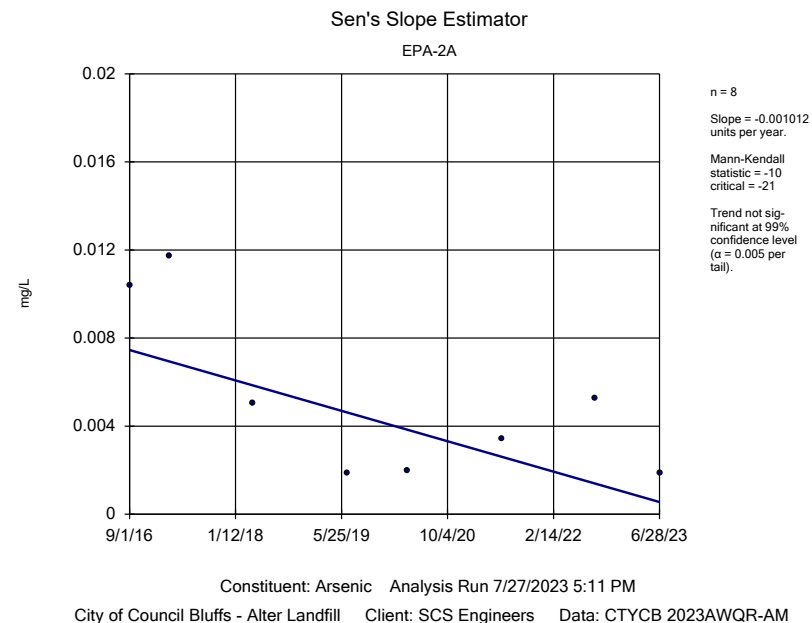
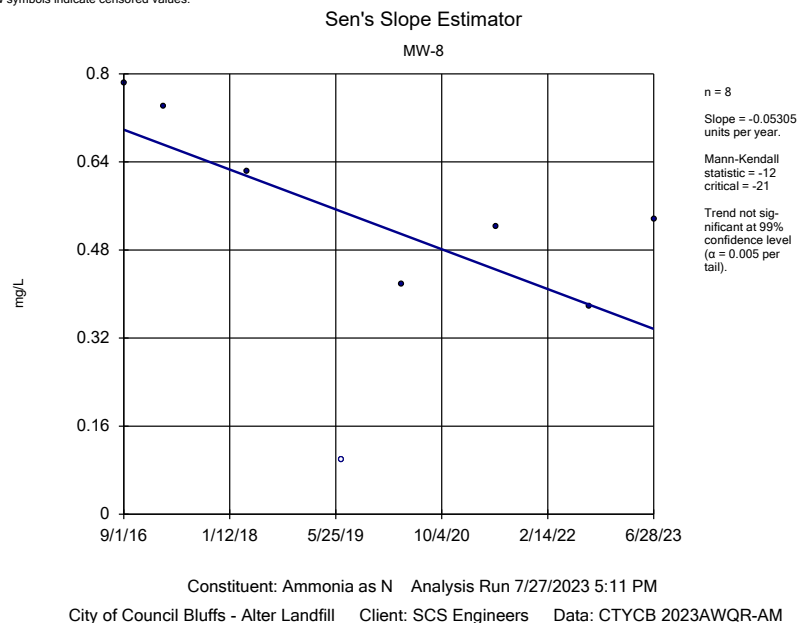
Trend Test

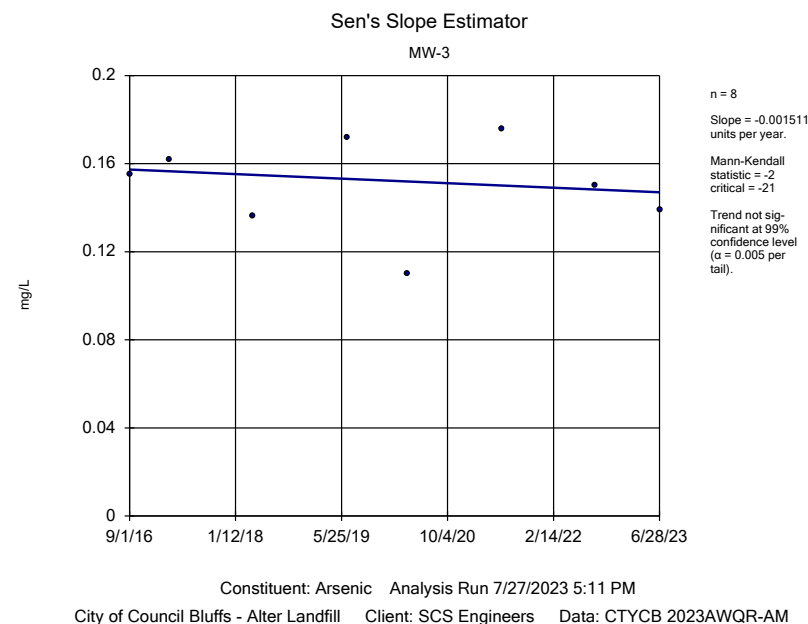
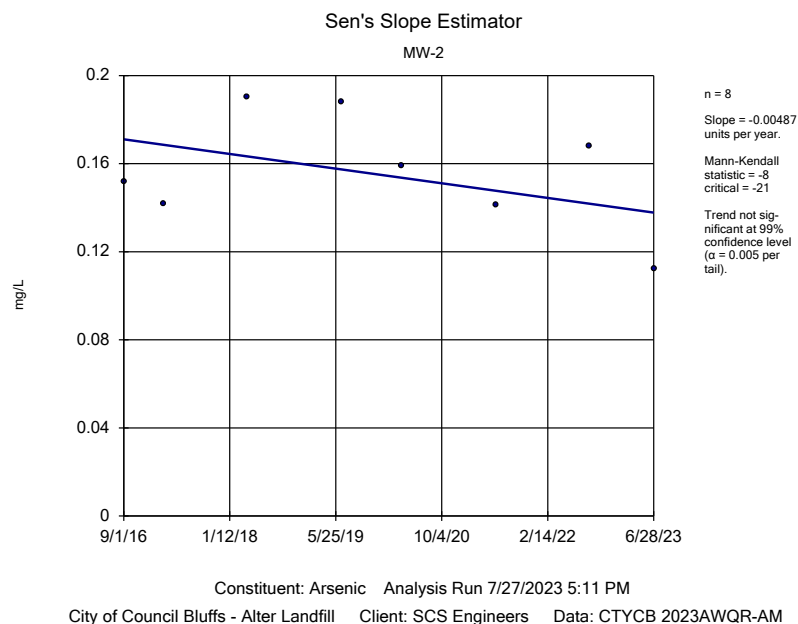
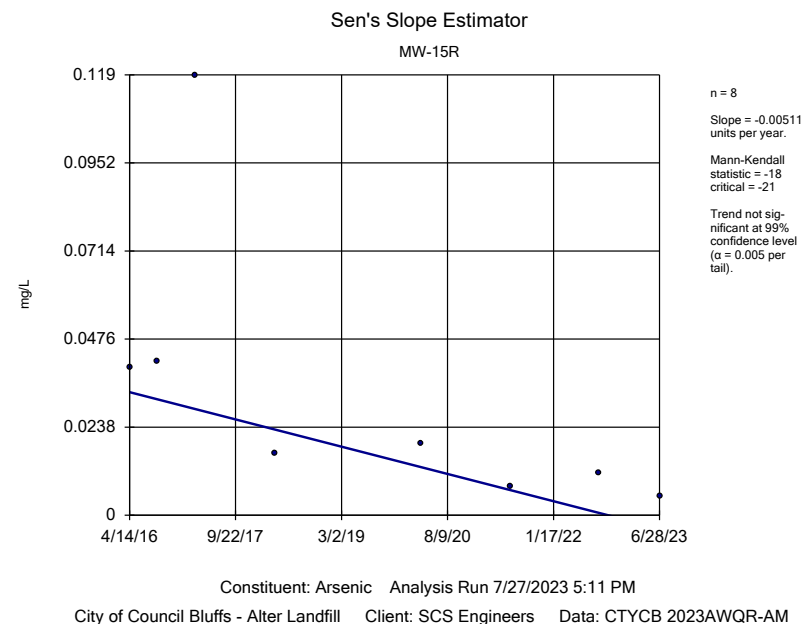
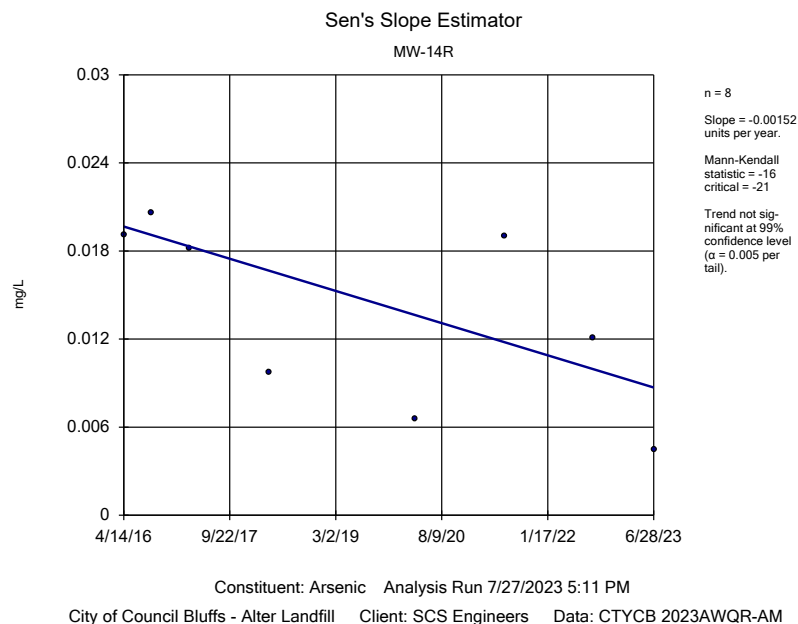
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM Printed 7/27/2023, 5:15 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Alpha</u>	<u>Method</u>
Total Extractable Hydrocarbons ...	MW-8	-13.49	-12	-21	No	8	25	0.01	NP
Total Extractable Hydrocarbons ...	MW-9	9.135	22	21	Yes	8	87.5	0.01	NP
Zinc (mg/L)	MW-14R	-0.6017	-12	-21	No	8	0	0.01	NP



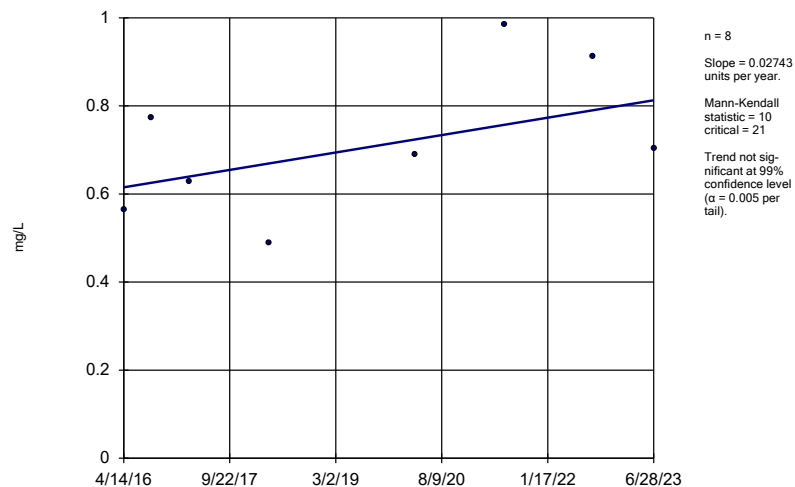






Sen's Slope Estimator

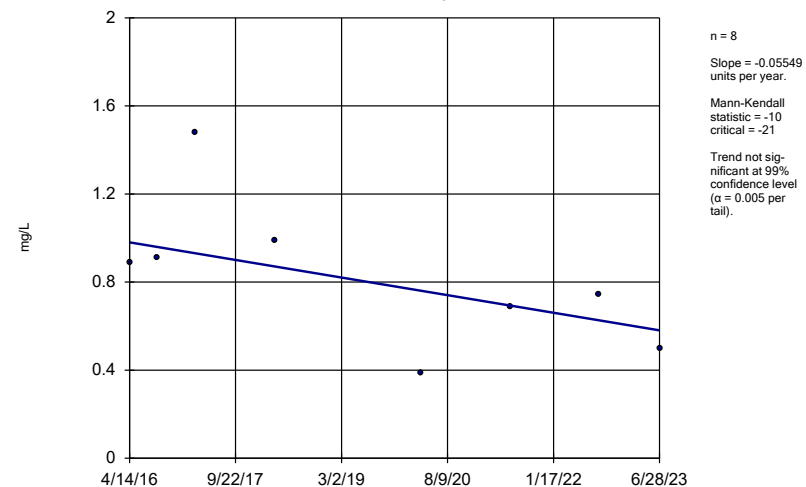
MW-14R



Constituent: Barium Analysis Run 7/27/2023 5:11 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

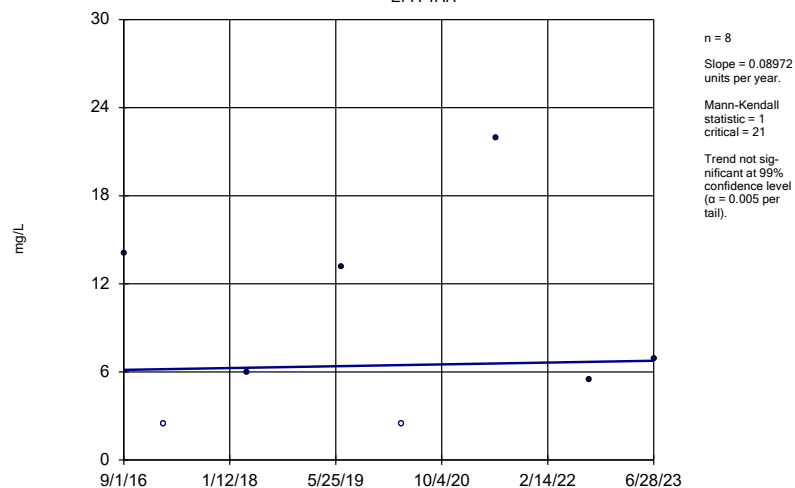
MW-15R



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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

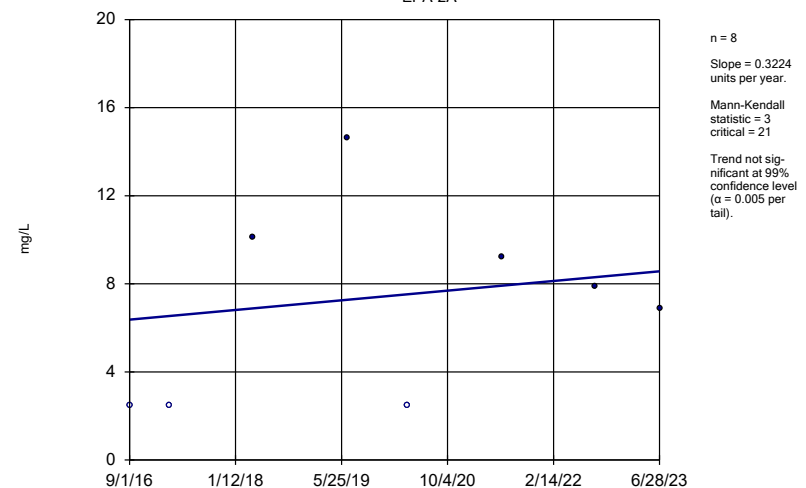
EPA-1AR



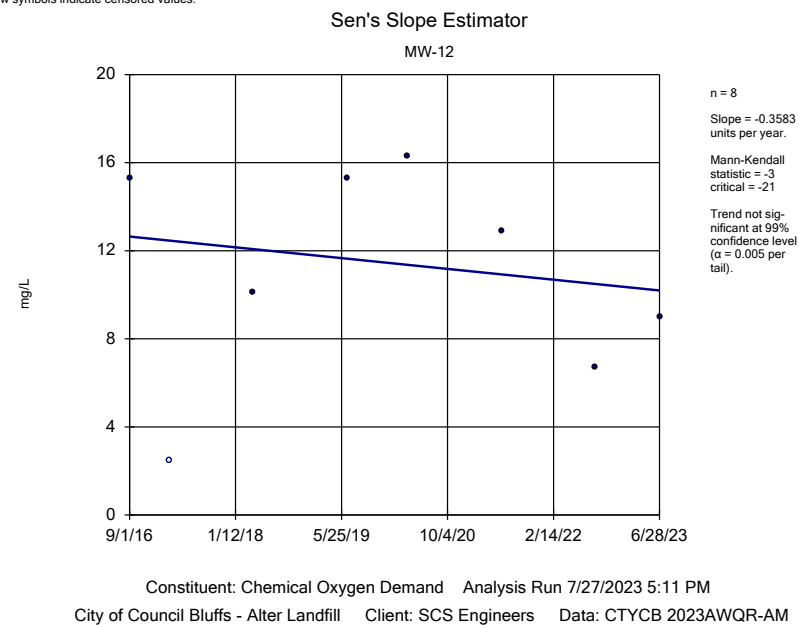
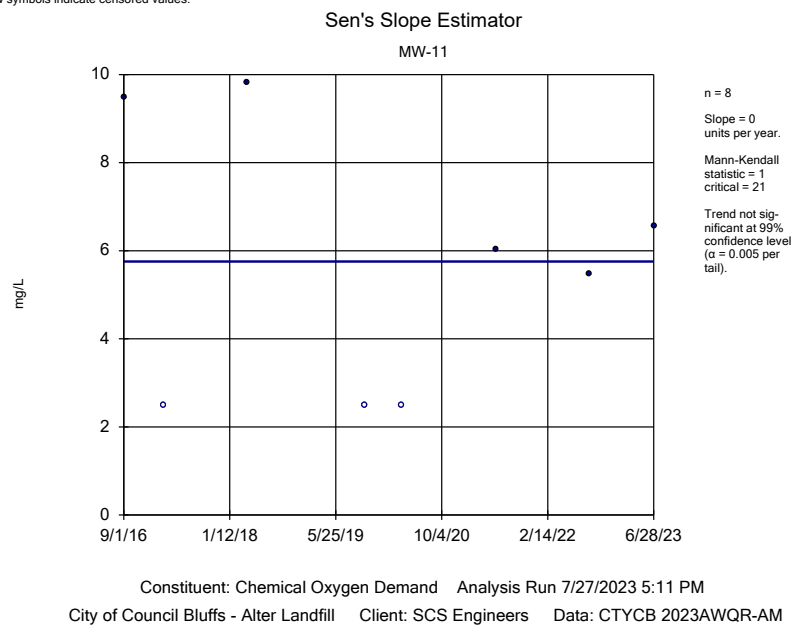
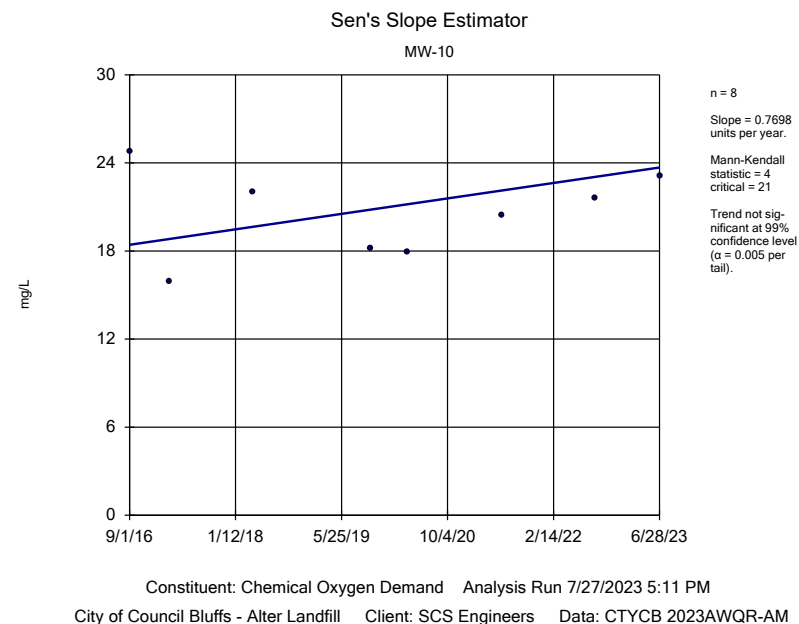
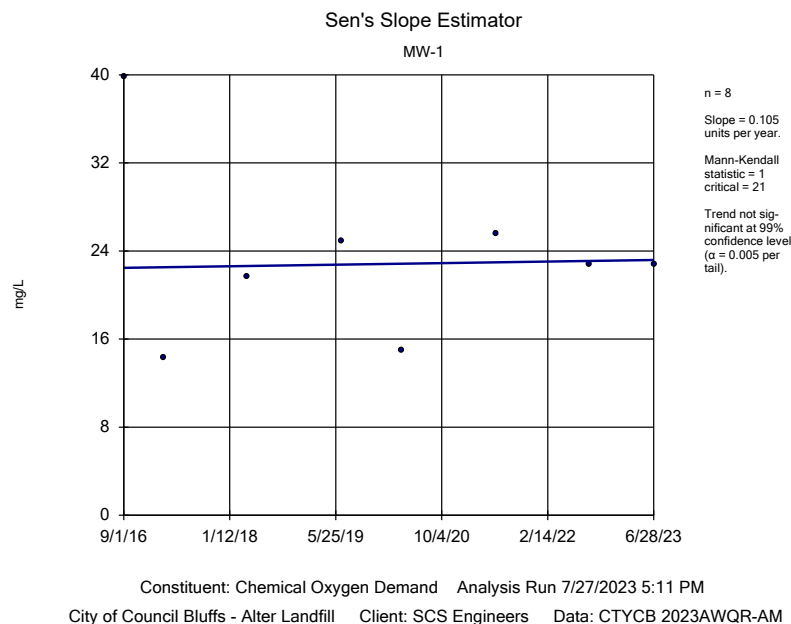
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

EPA-2A

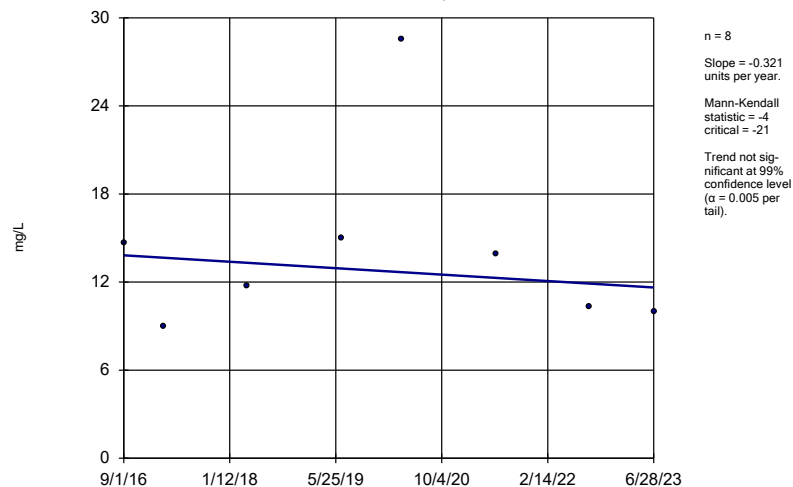


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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM



Sen's Slope Estimator

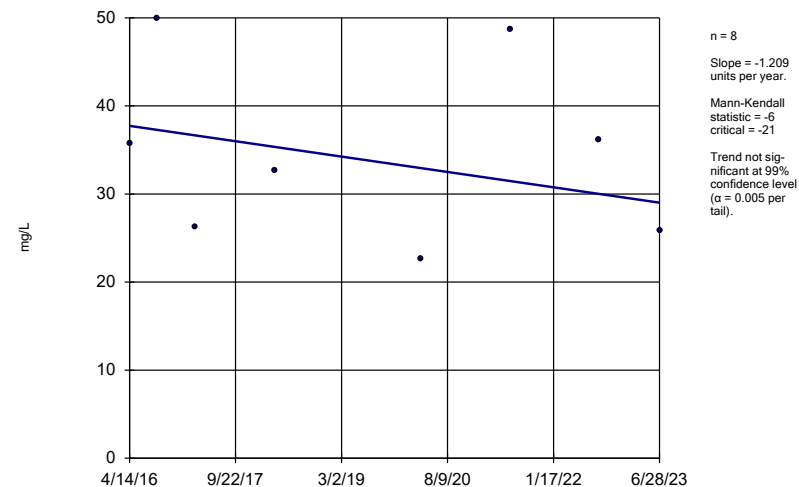
MW-13



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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

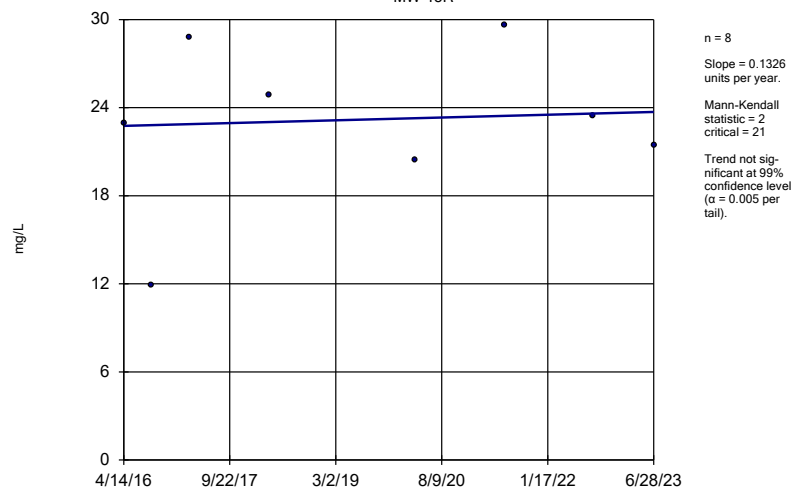
MW-14R



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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

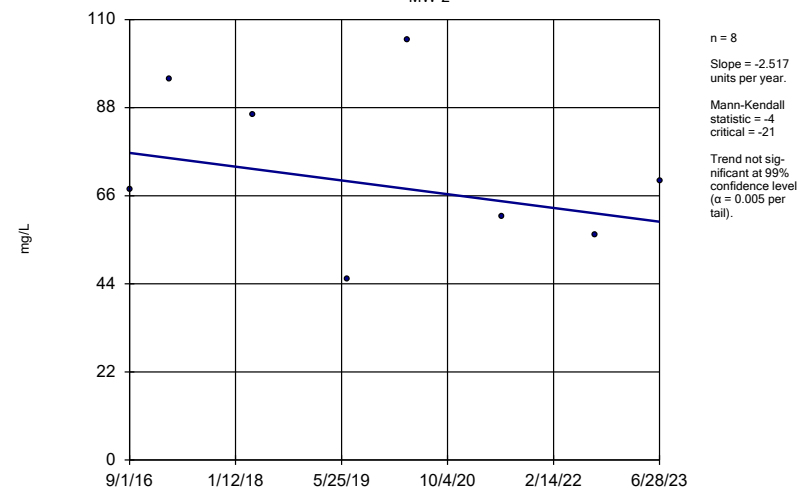
MW-15R



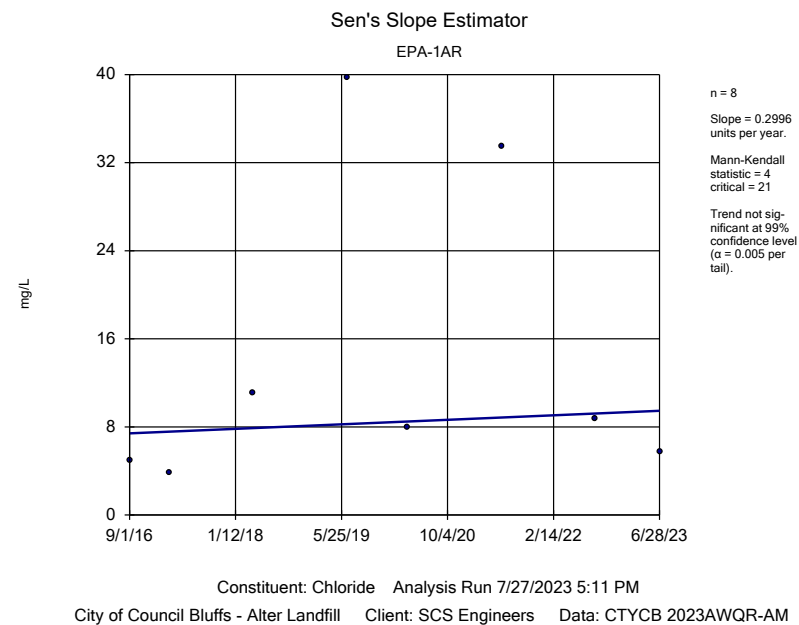
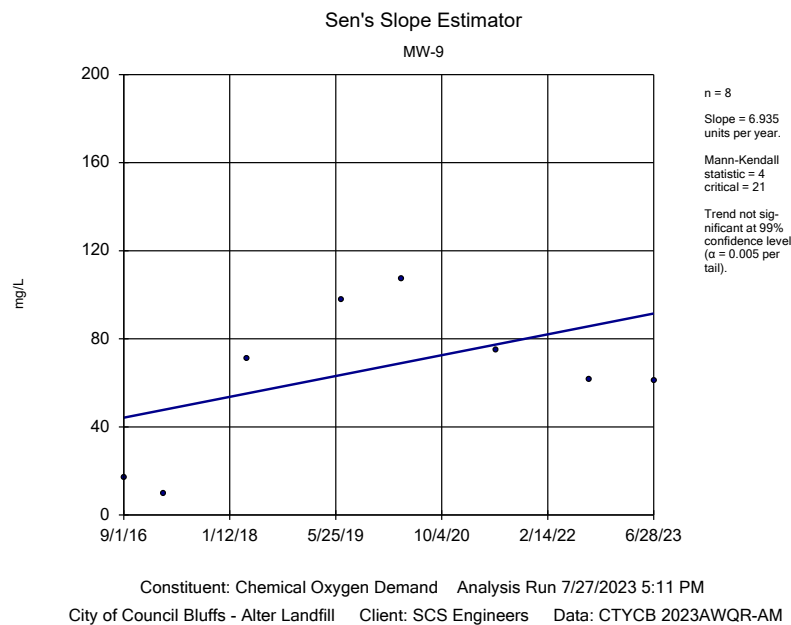
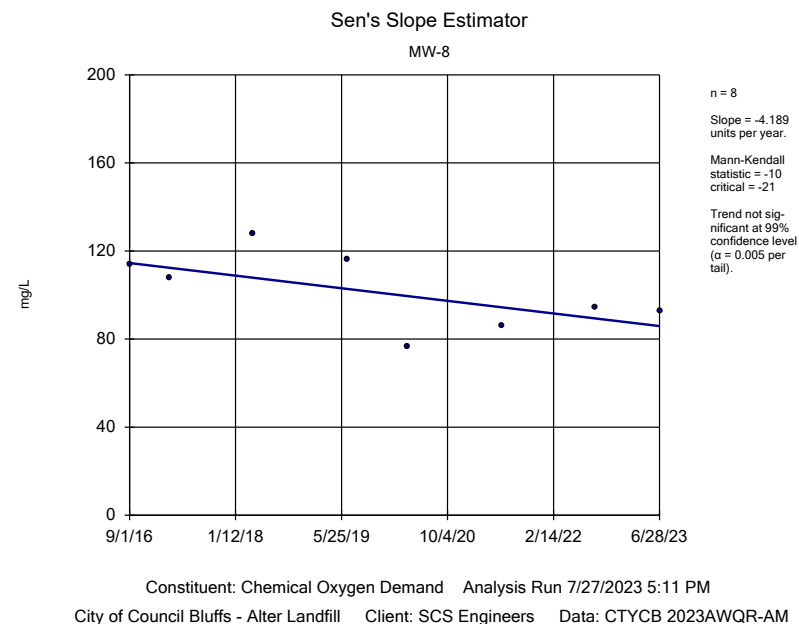
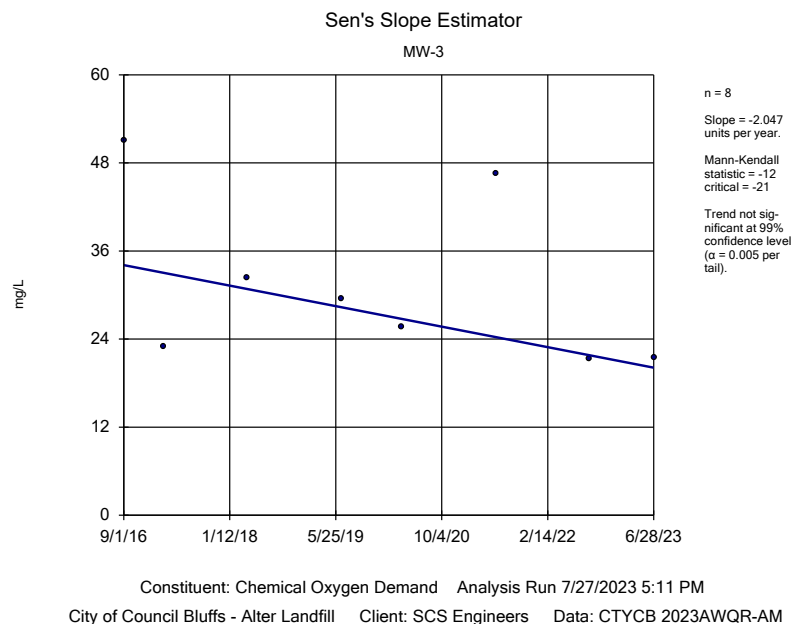
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

MW-2

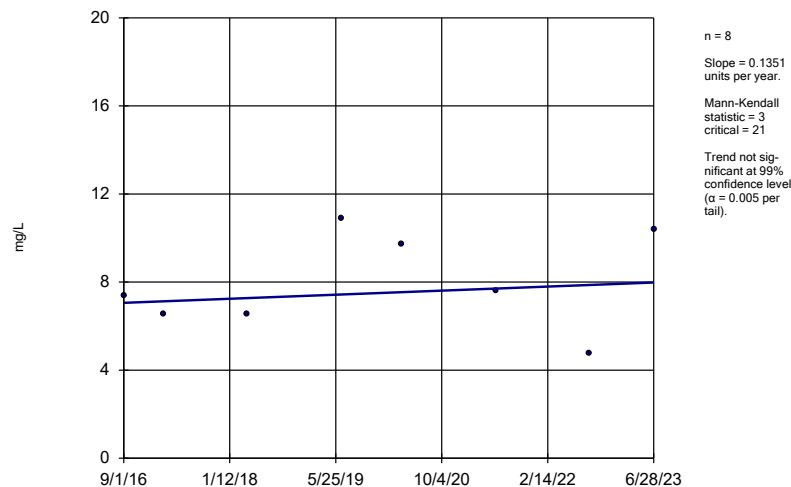


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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM



Sen's Slope Estimator

EPA-2A

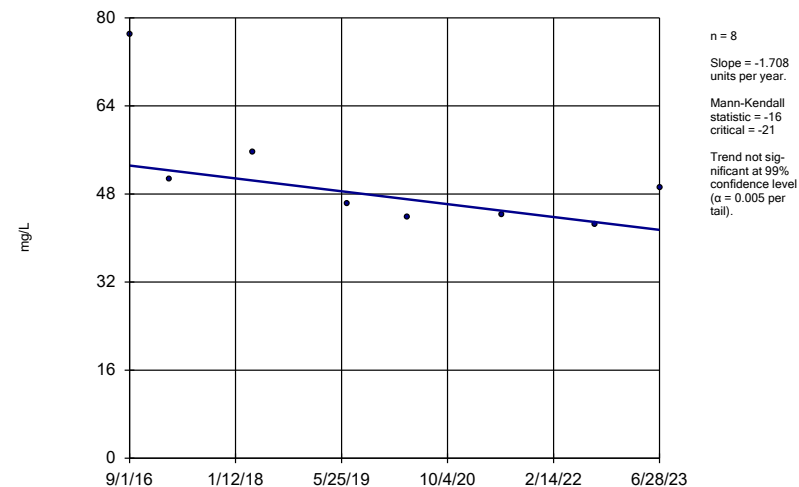


Constituent: Chloride Analysis Run 7/27/2023 5:11 PM

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

MW-1

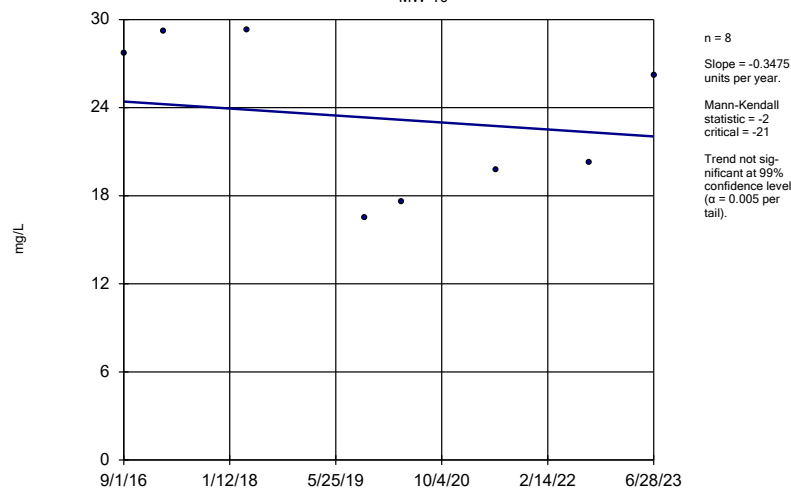


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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

MW-10

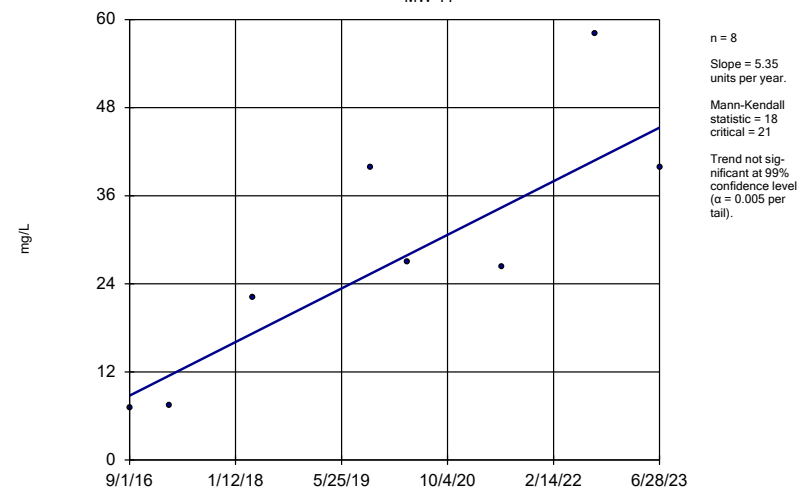


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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

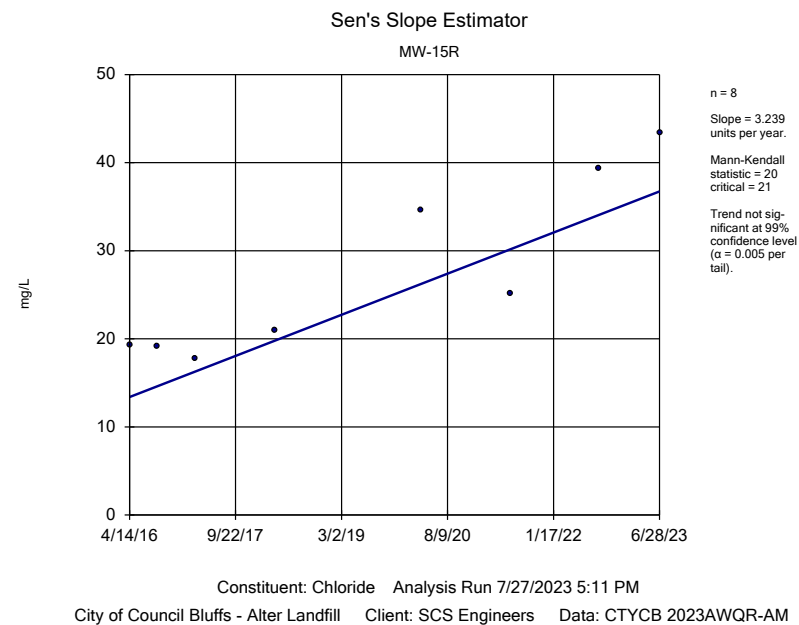
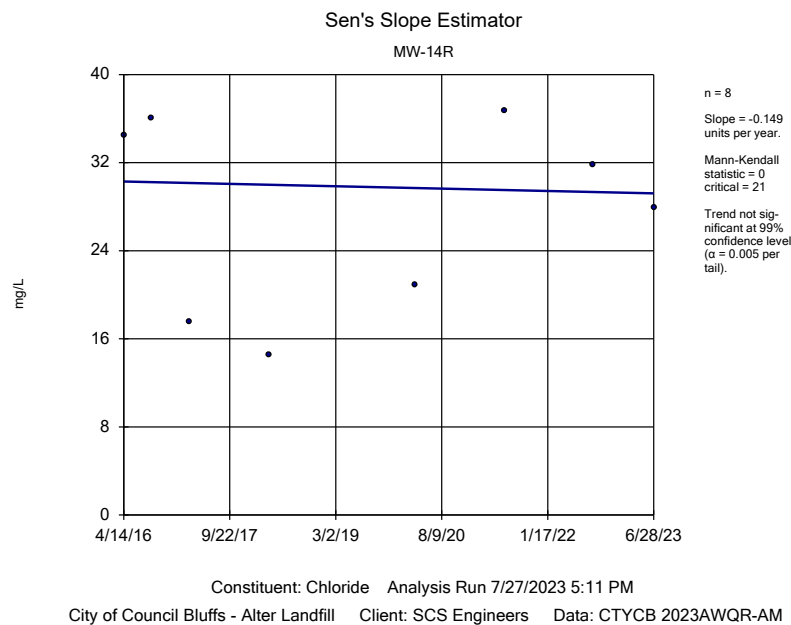
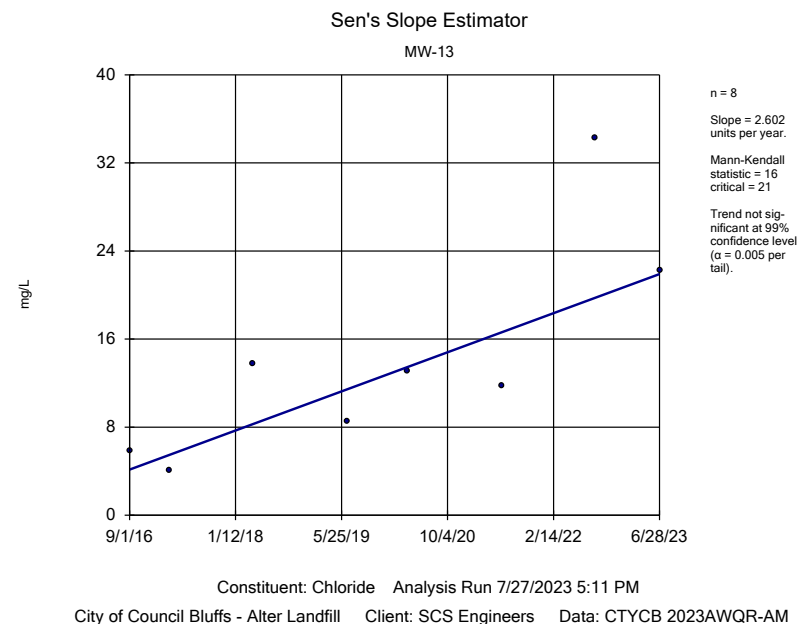
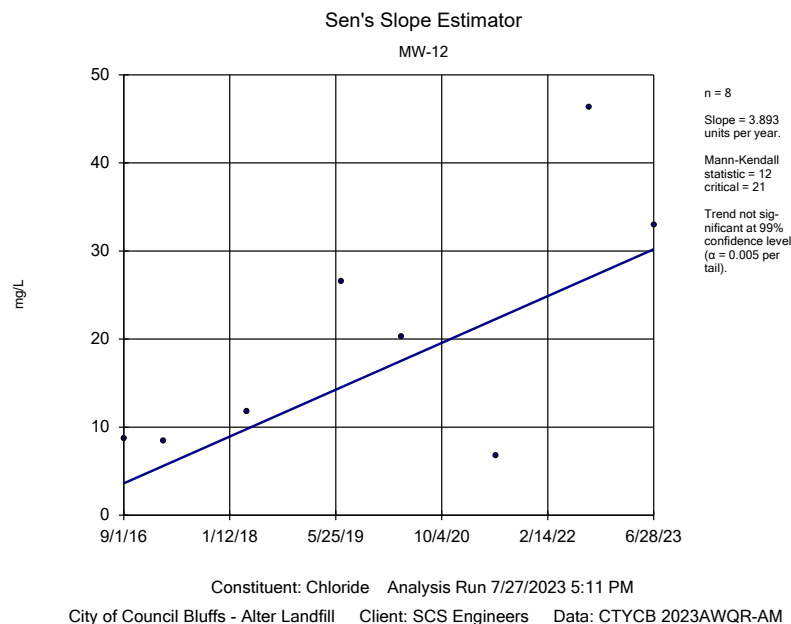
Sen's Slope Estimator

MW-11



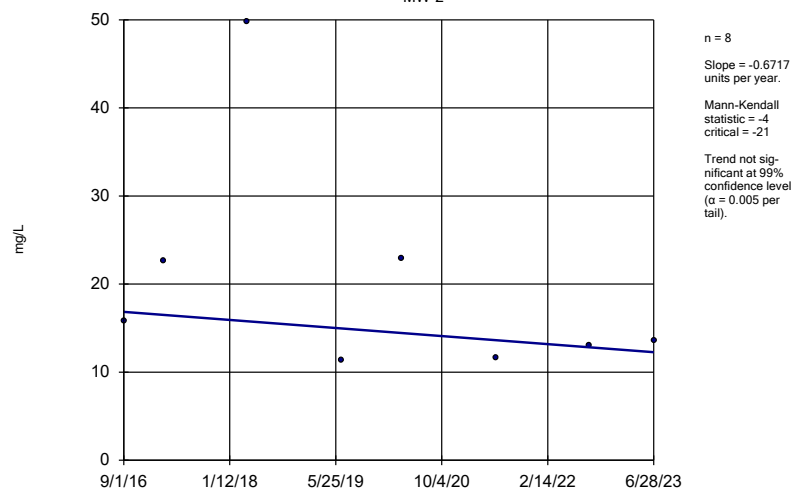
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM



Sen's Slope Estimator

MW-2

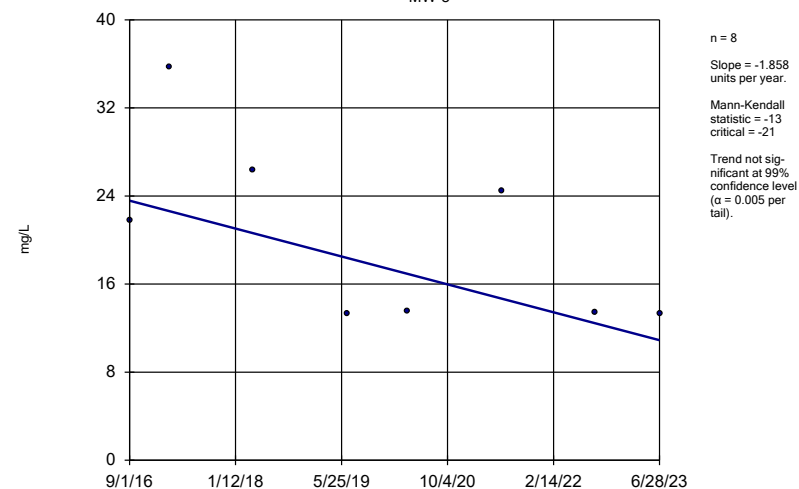


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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

MW-3

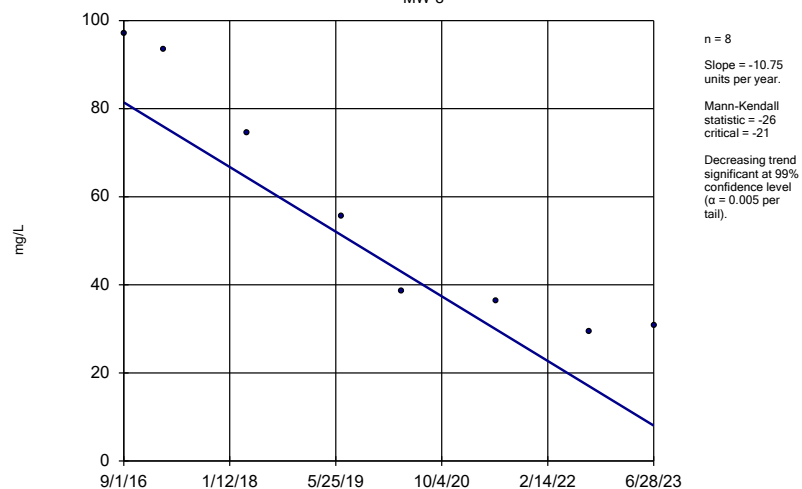


Constituent: Chloride Analysis Run 7/27/2023 5:11 PM

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

MW-8

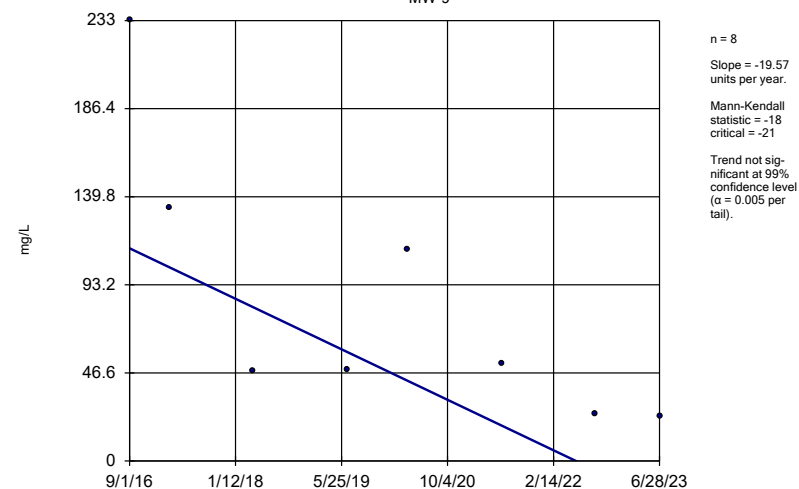


Constituent: Chloride Analysis Run 7/27/2023 5:11 PM

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

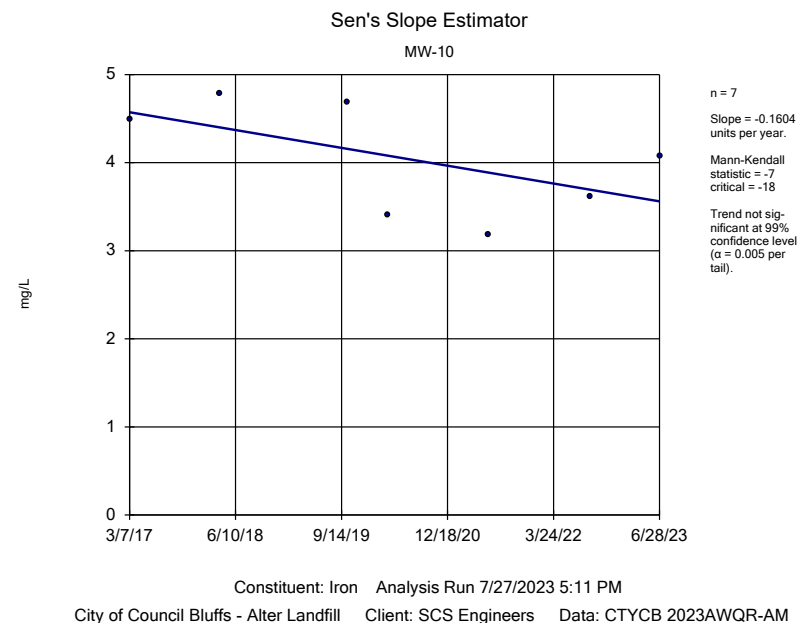
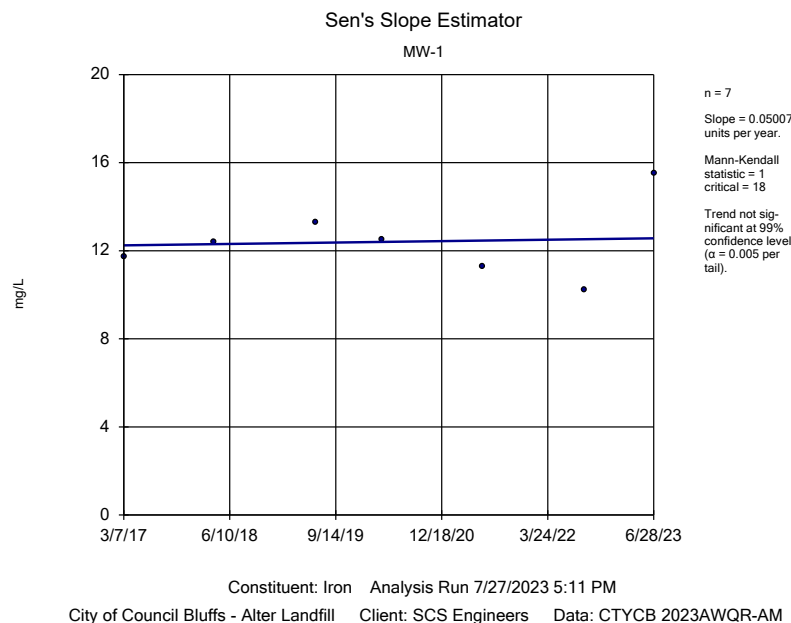
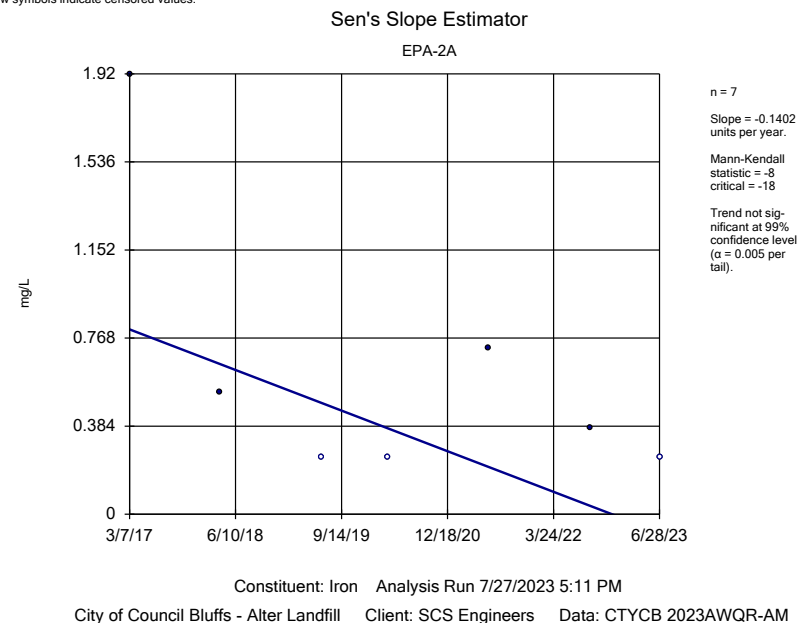
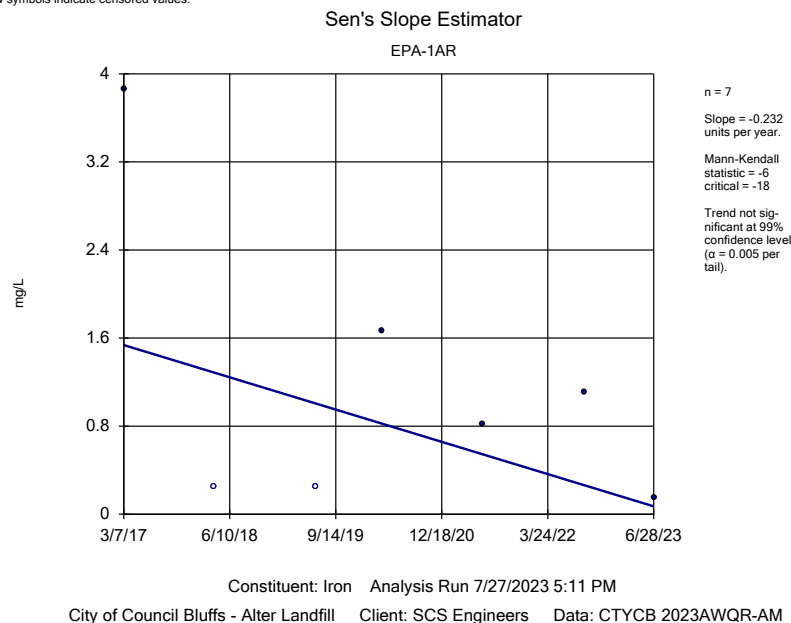
Sen's Slope Estimator

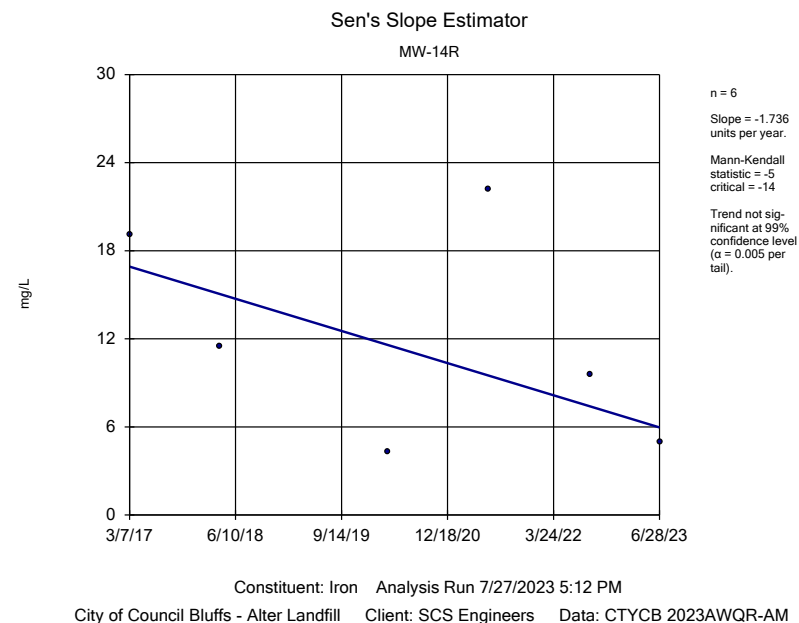
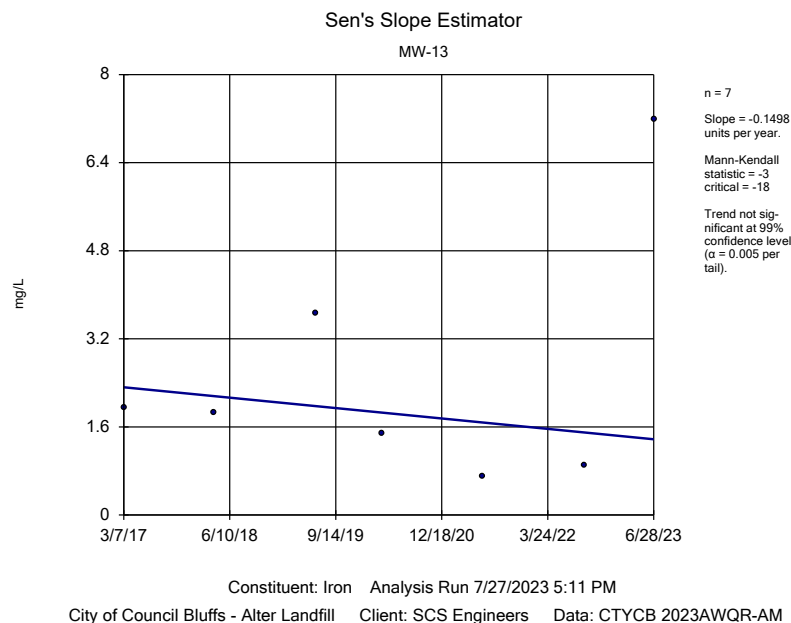
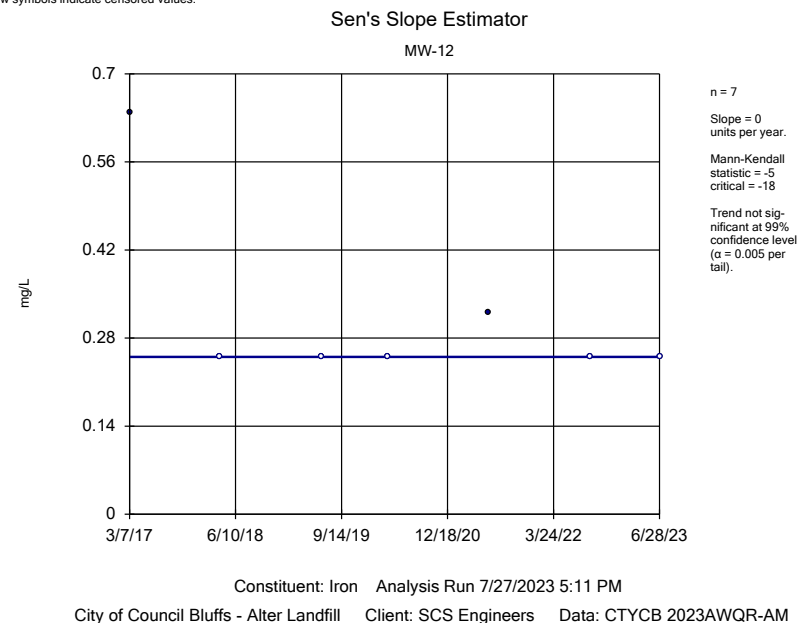
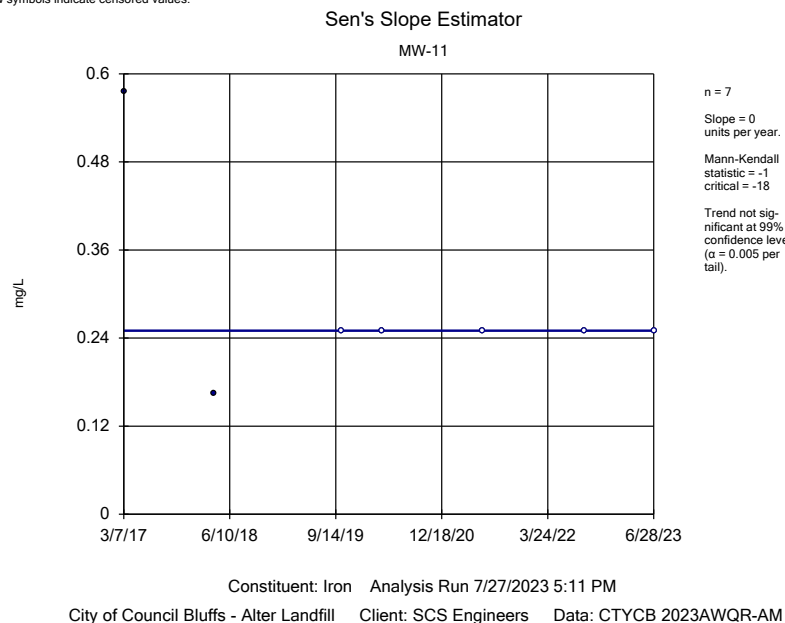
MW-9



Constituent: Chloride Analysis Run 7/27/2023 5:11 PM

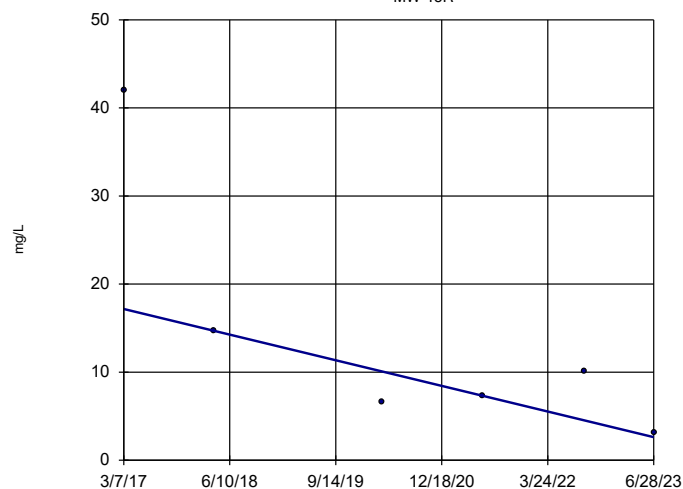
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM





Sen's Slope Estimator

MW-15R



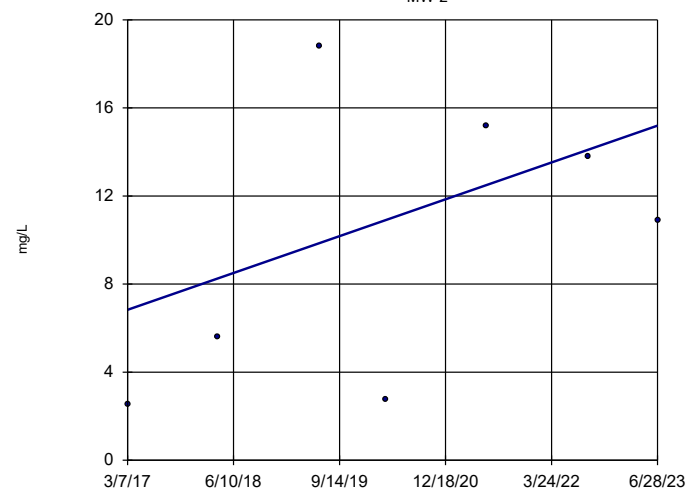
n = 6
Slope = -2.305
units per year.
Mann-Kendall
statistic = -9
critical = -14
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Iron Analysis Run 7/27/2023 5:12 PM

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

MW-2



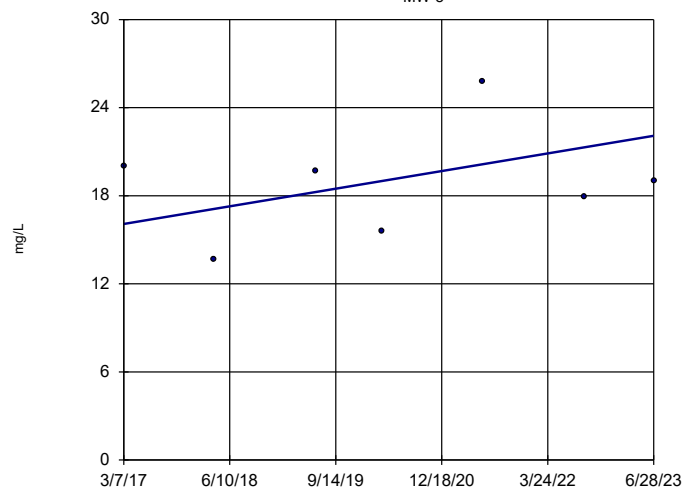
n = 7
Slope = 1.324
units per year.
Mann-Kendall
statistic = 5
critical = 18
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Iron Analysis Run 7/27/2023 5:12 PM

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

MW-3



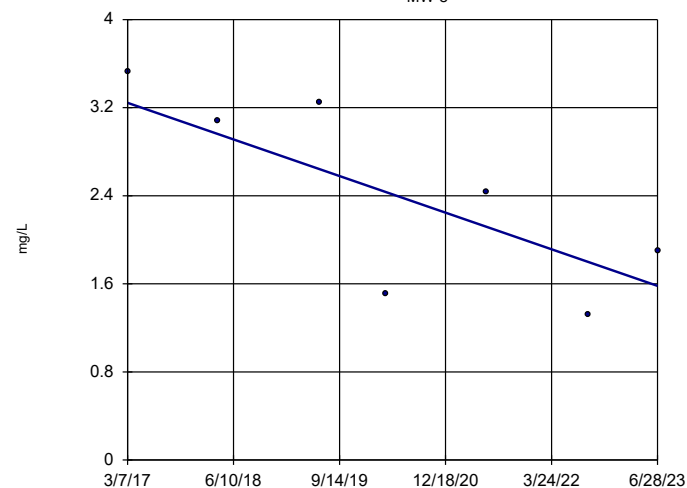
n = 7
Slope = 0.9513
units per year.
Mann-Kendall
statistic = 1
critical = 18
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Iron Analysis Run 7/27/2023 5:12 PM

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

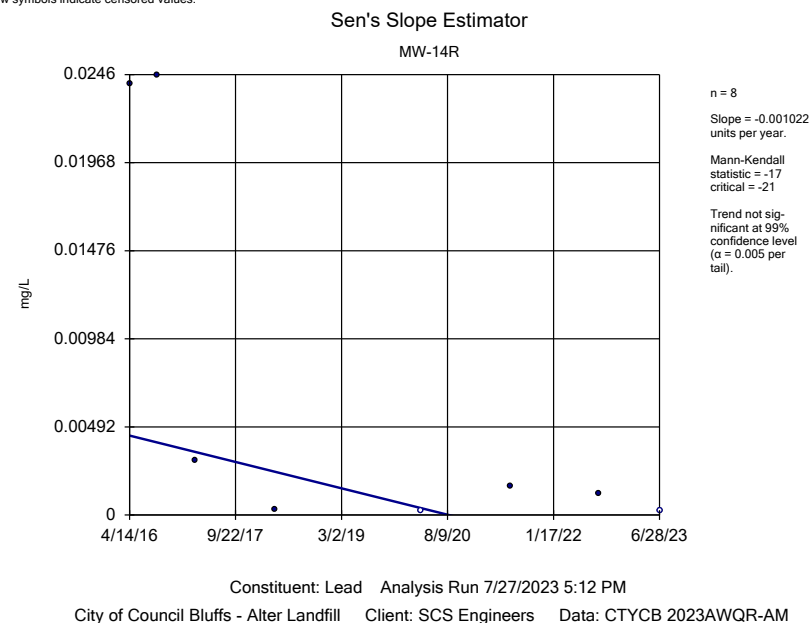
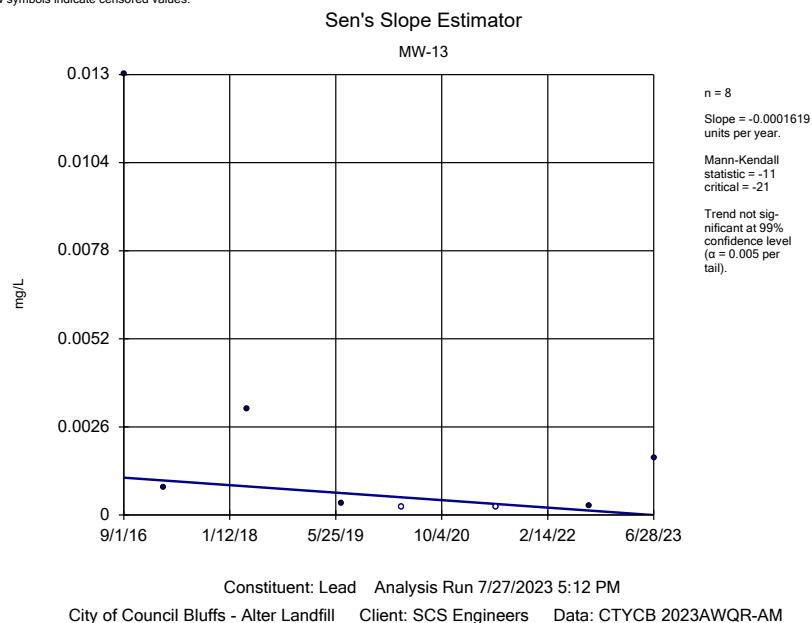
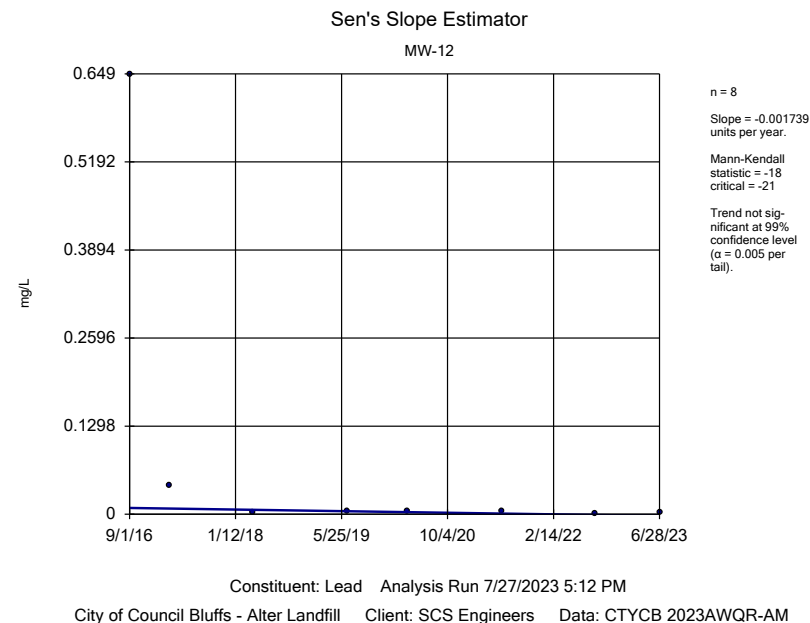
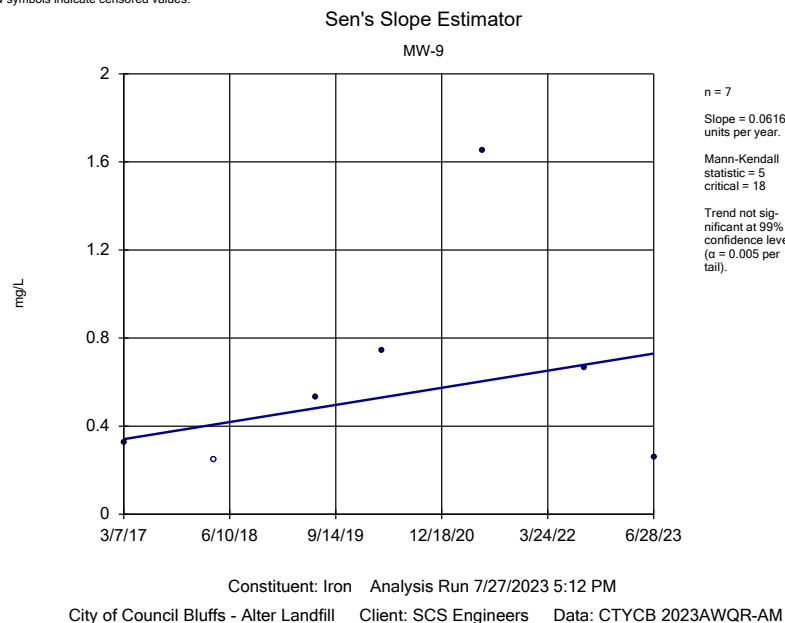
MW-8

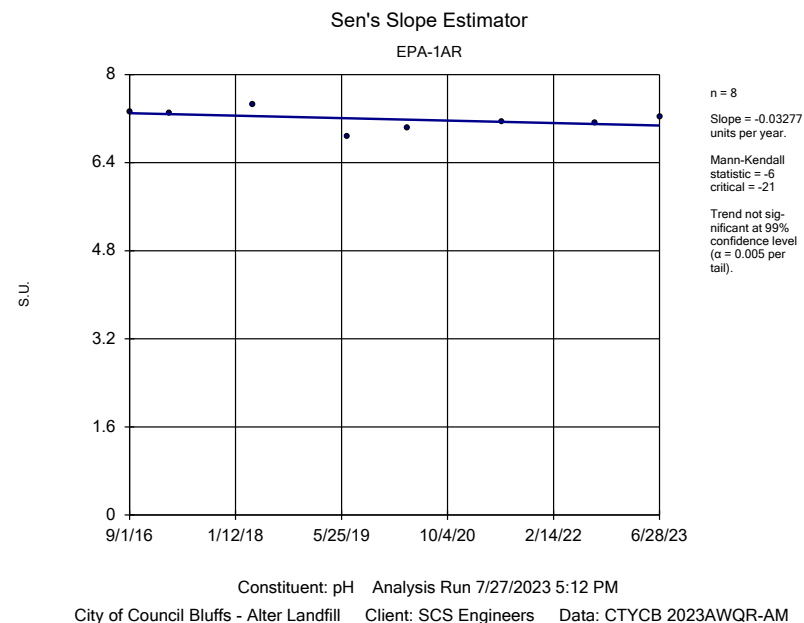
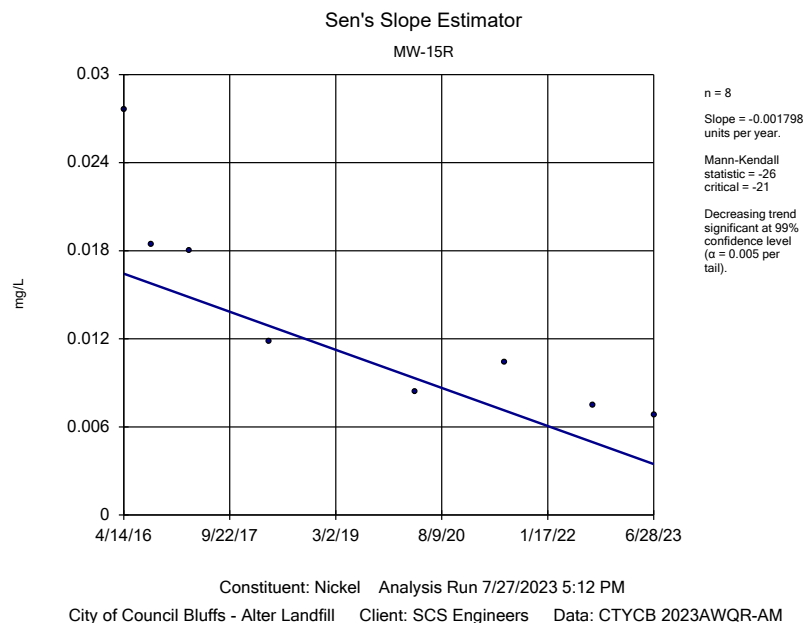
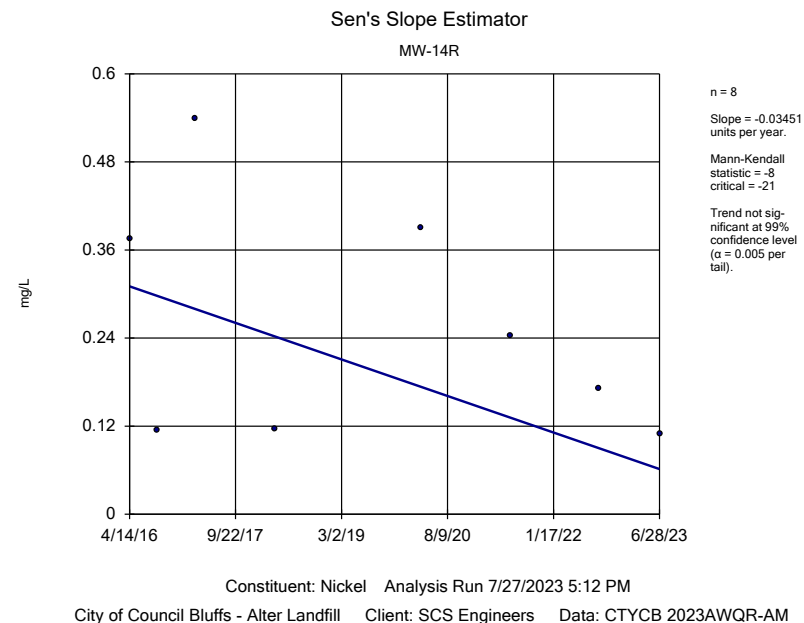
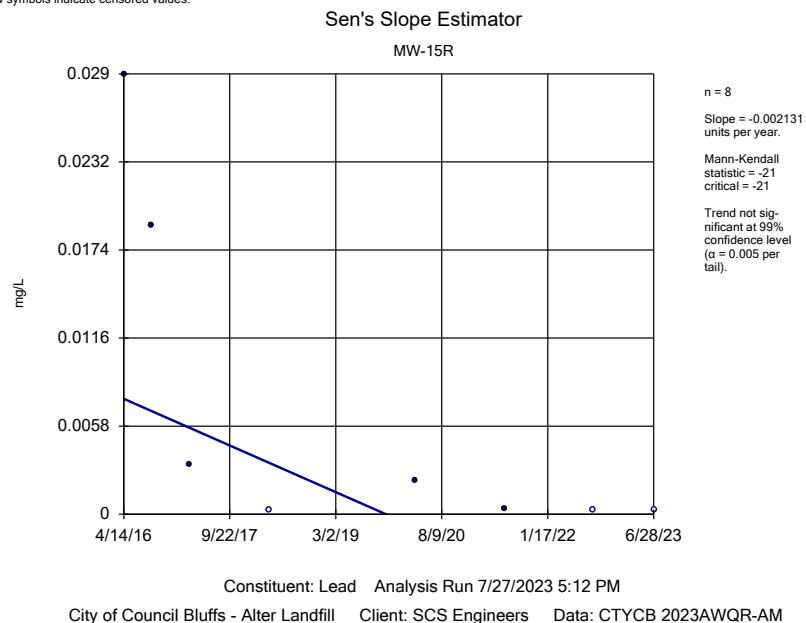


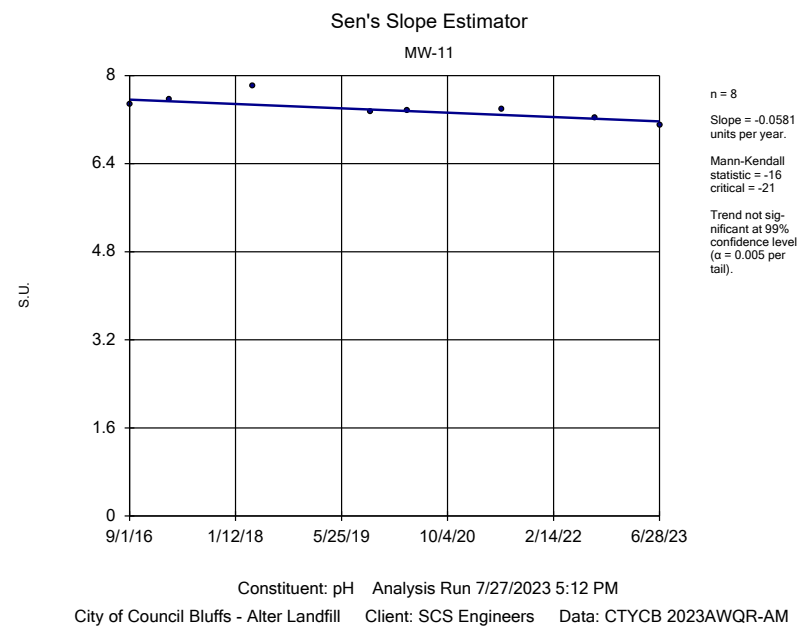
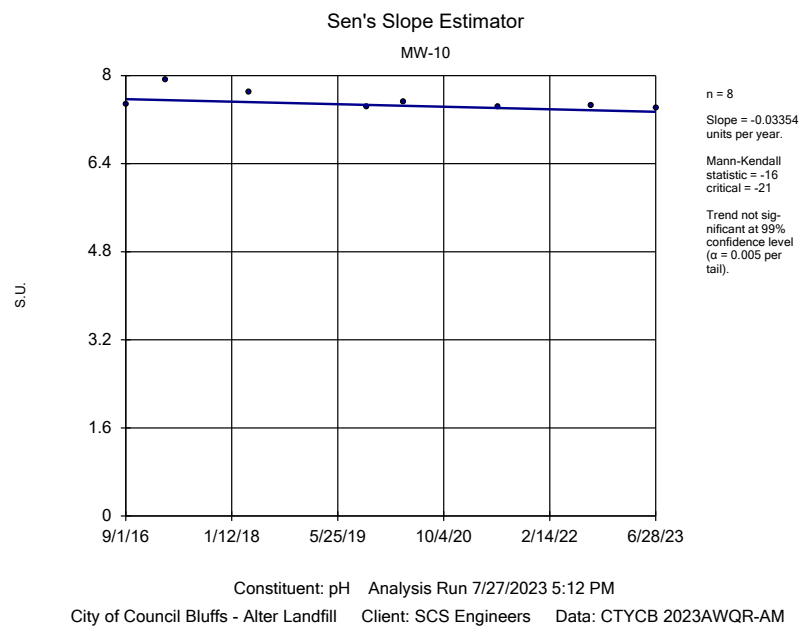
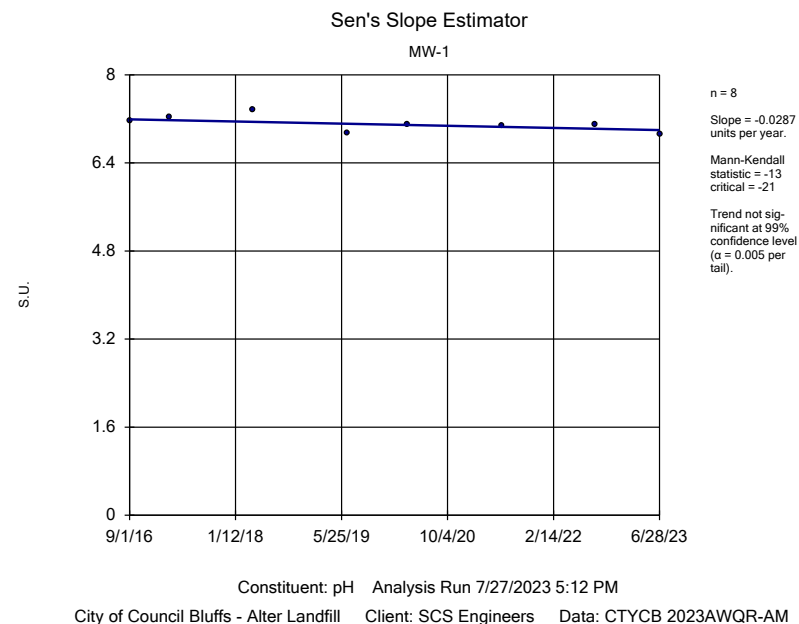
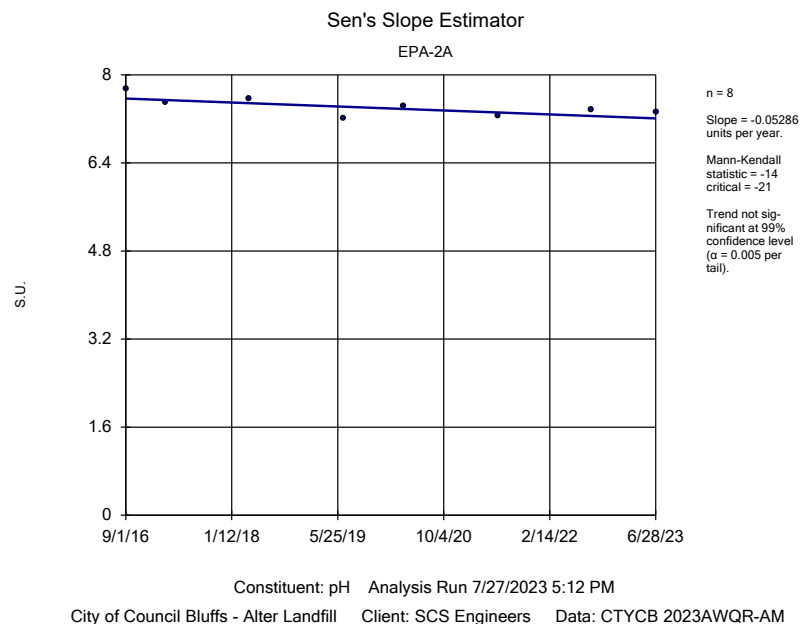
n = 7
Slope = -0.2632
units per year.
Mann-Kendall
statistic = -13
critical = -18
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

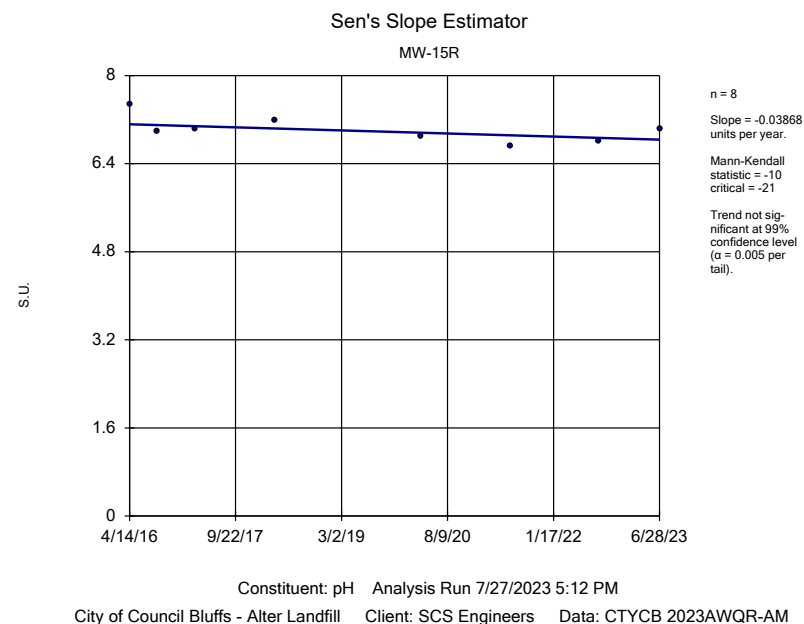
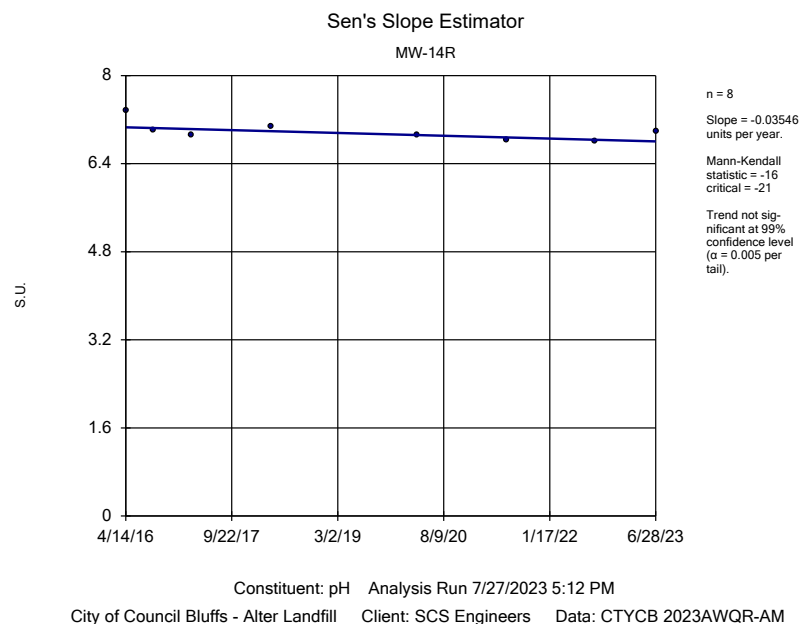
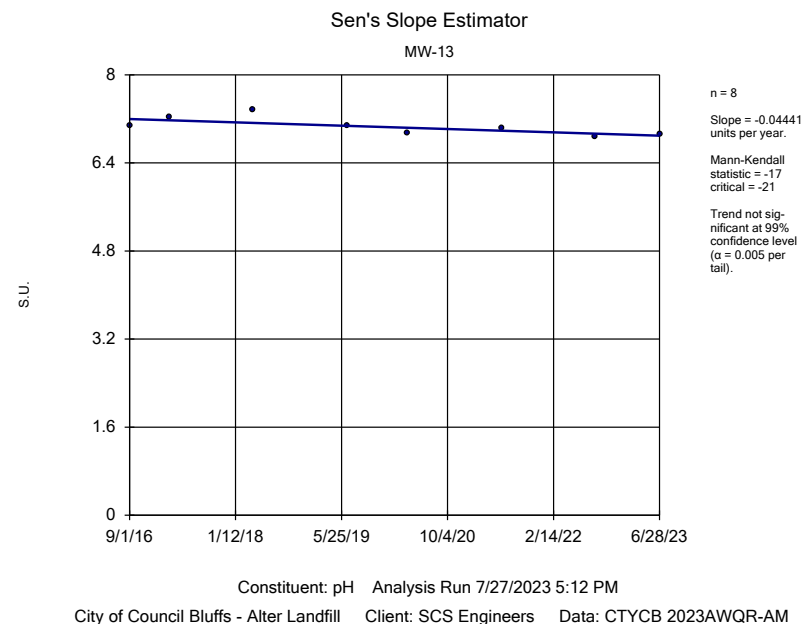
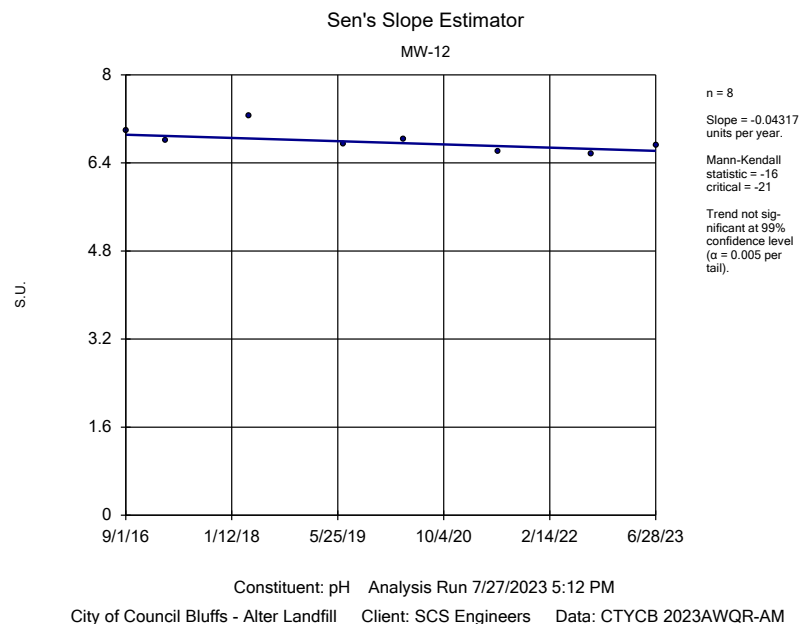
Constituent: Iron Analysis Run 7/27/2023 5:12 PM

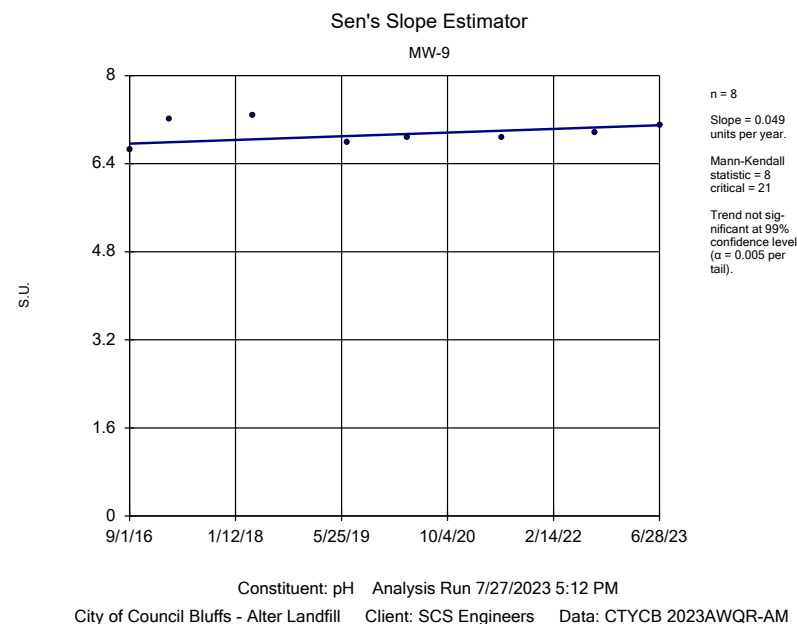
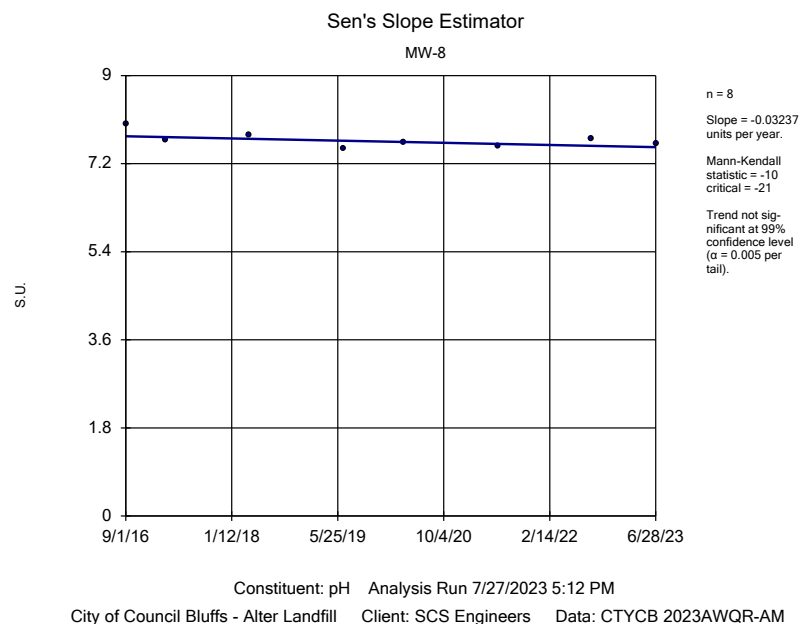
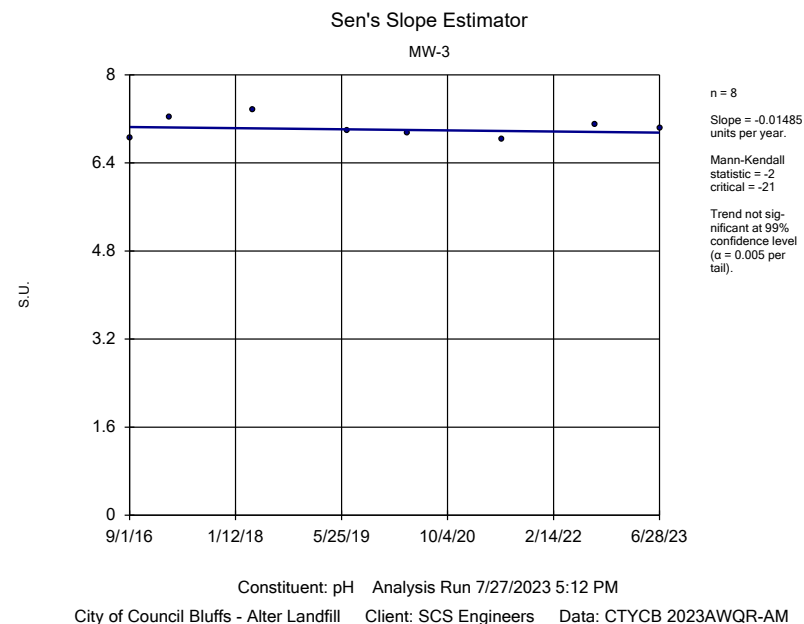
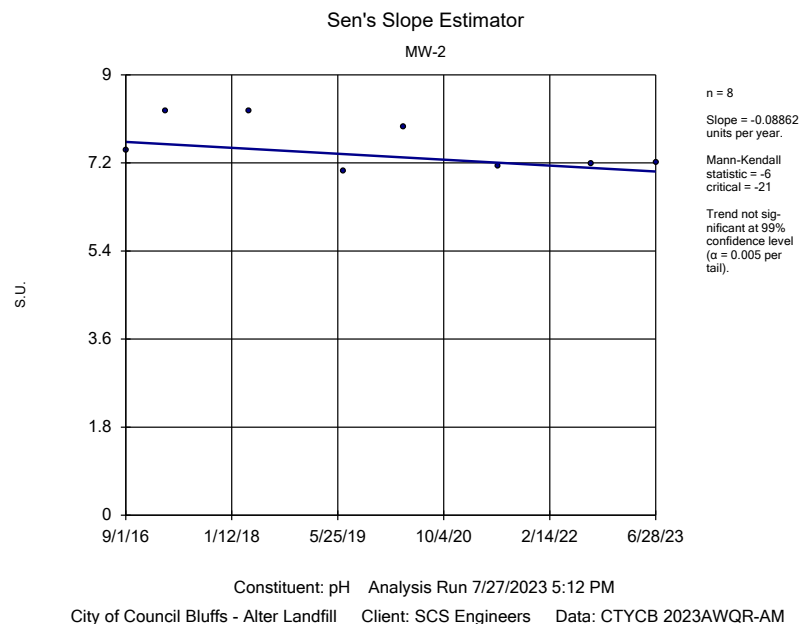
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

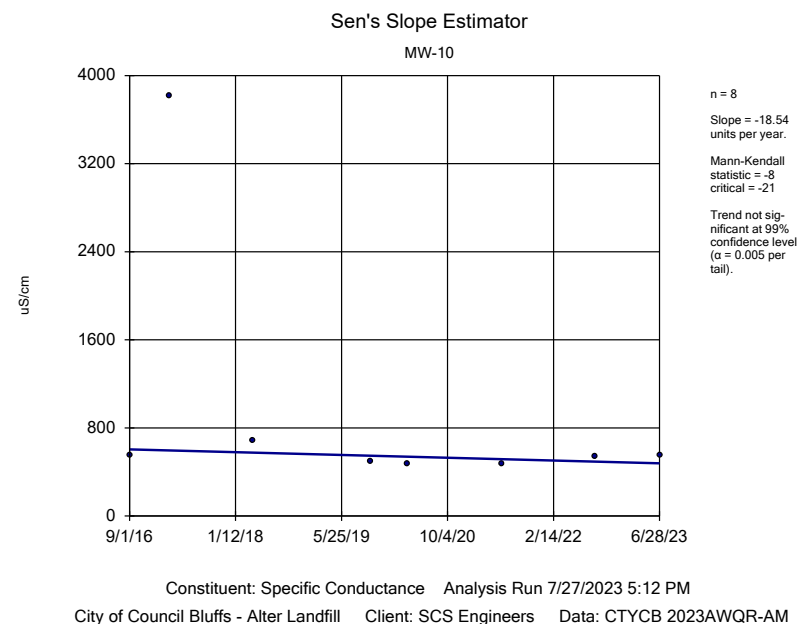
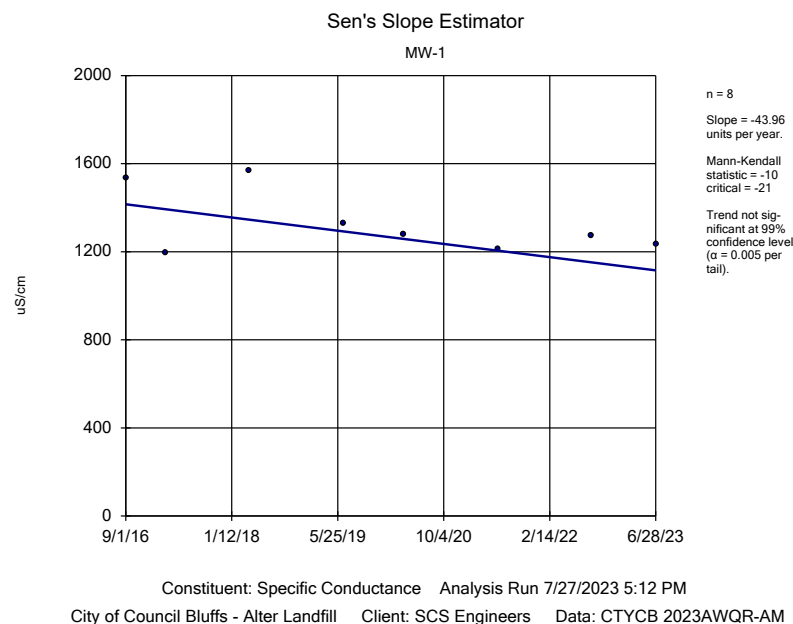
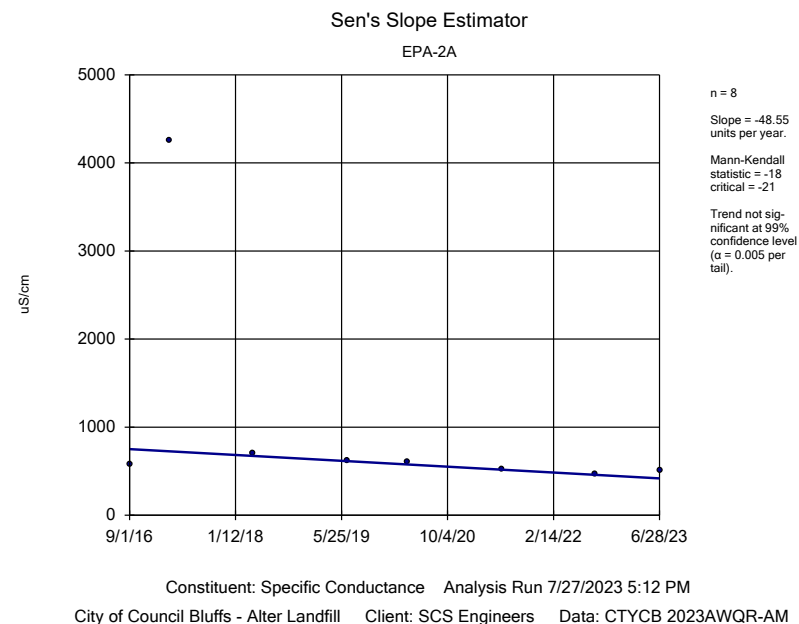
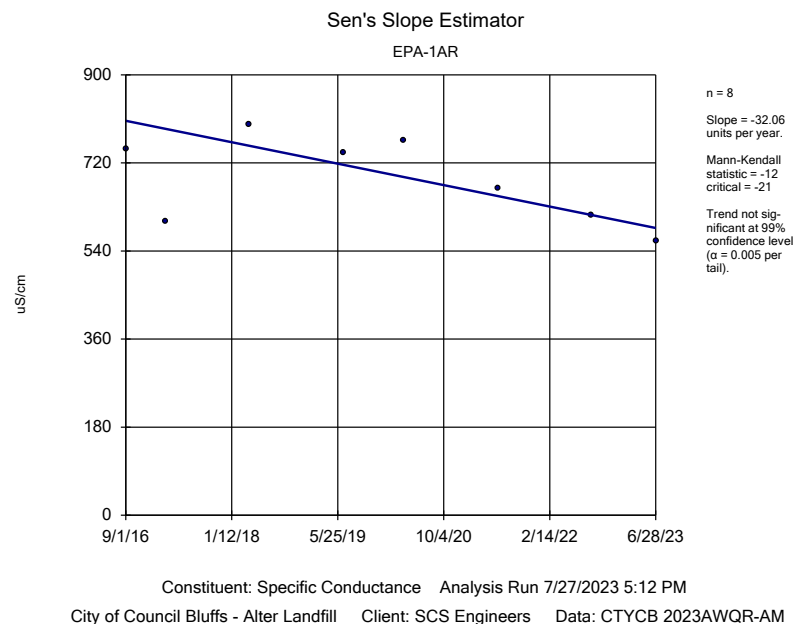


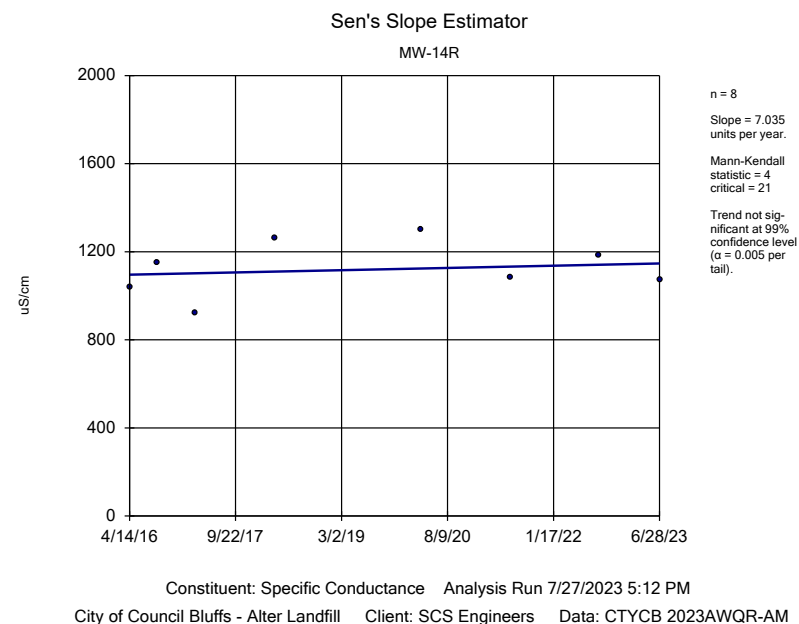
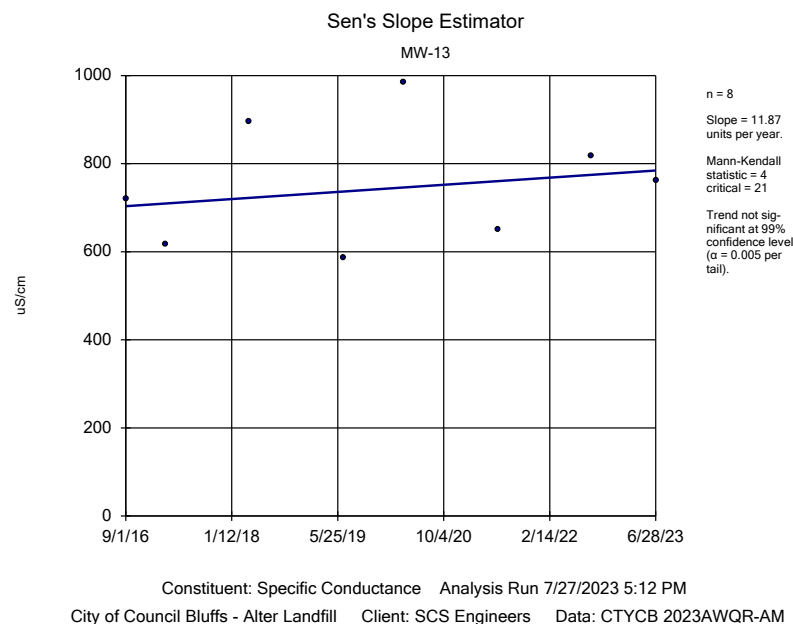
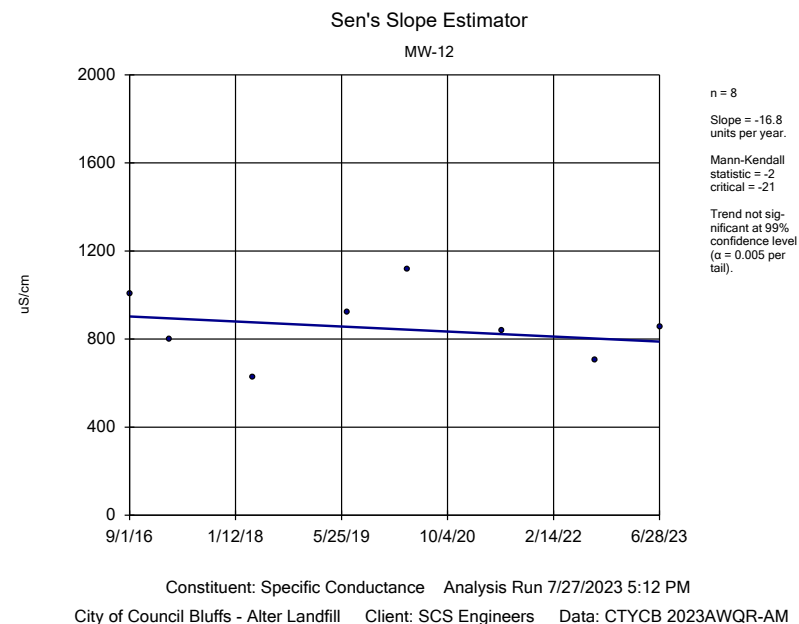
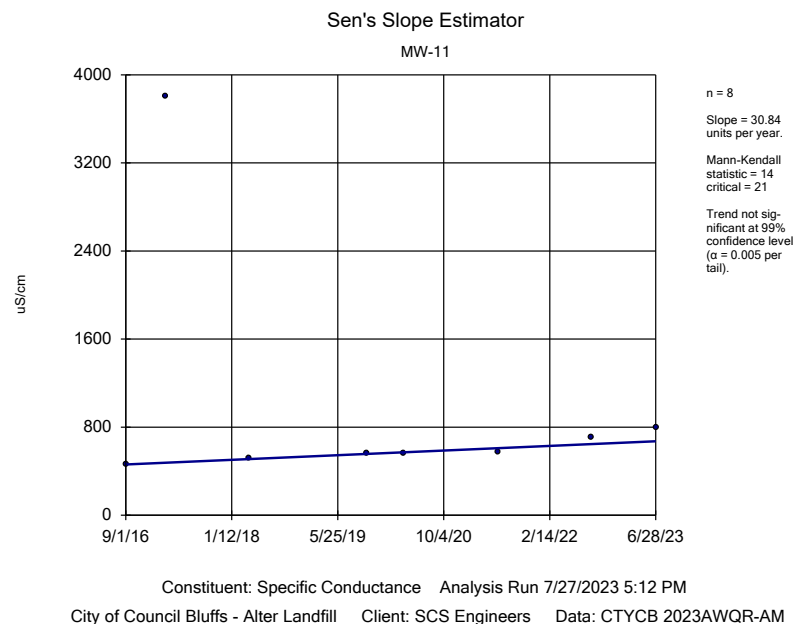






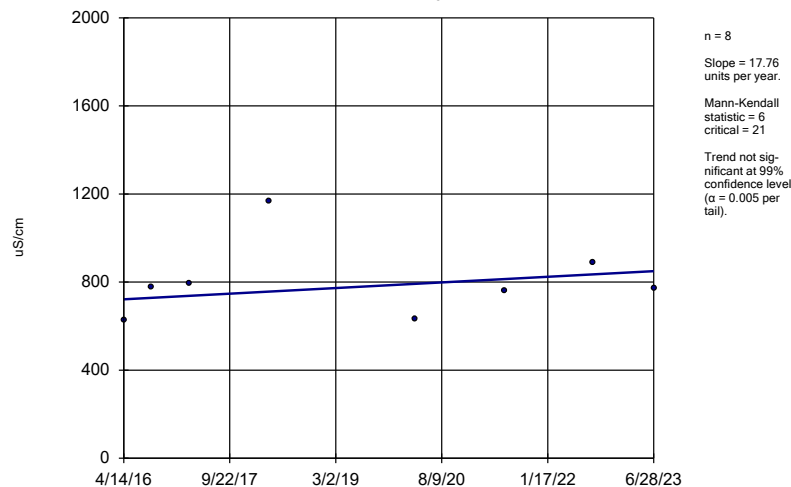






Sen's Slope Estimator

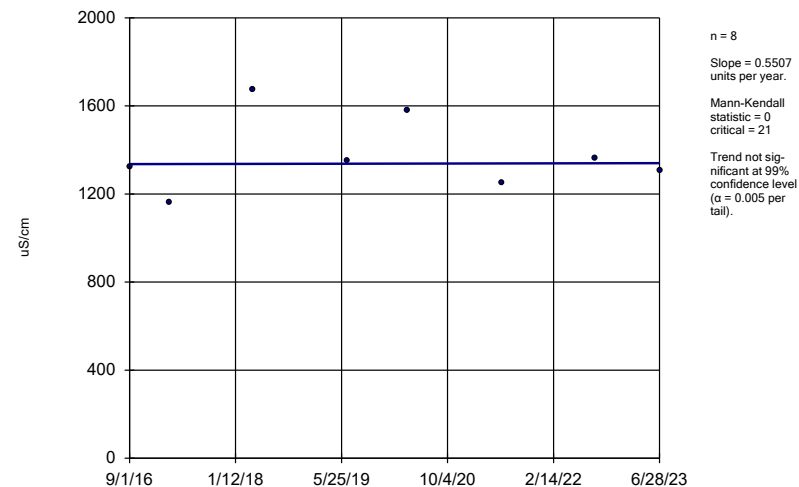
MW-15R



Constituent: Specific Conductance Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

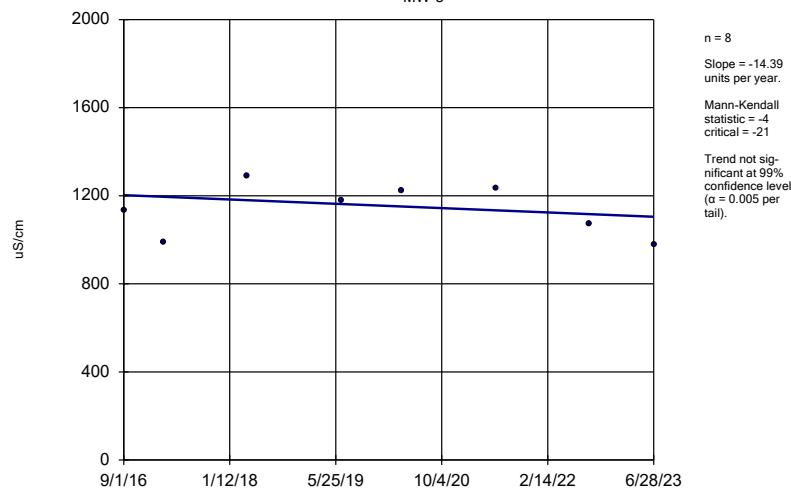
MW-2



Constituent: Specific Conductance Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

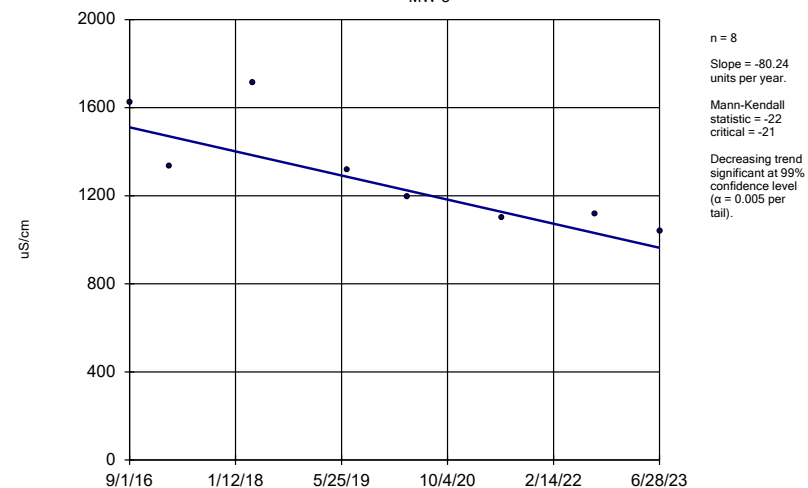
MW-3



Constituent: Specific Conductance Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

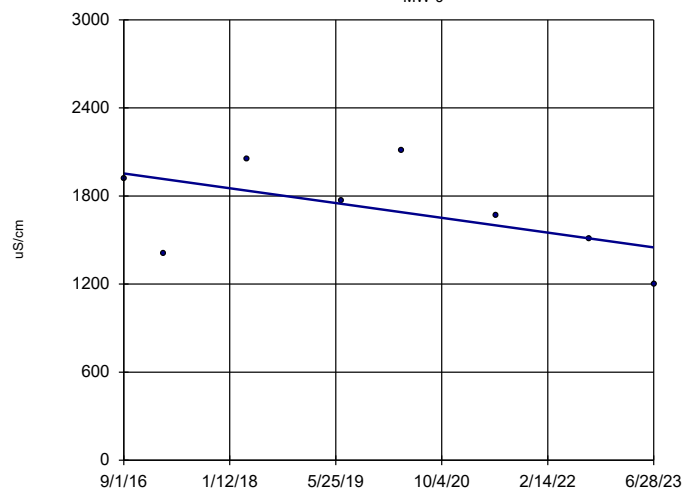
MW-8



Constituent: Specific Conductance Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

MW-9

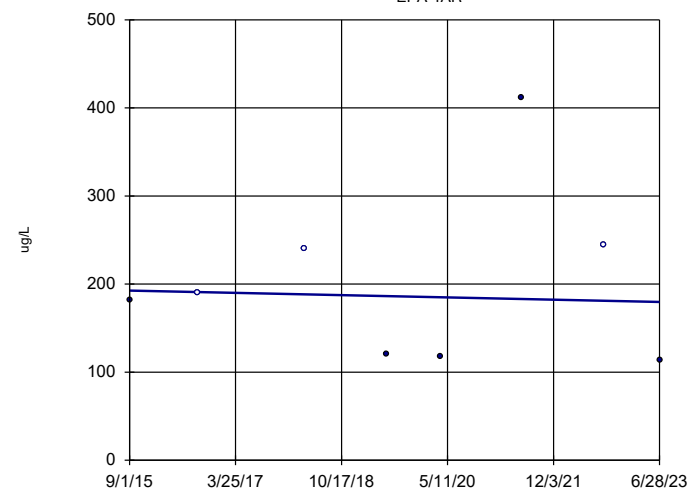


n = 8
Slope = -73.78
units per year.
Mann-Kendall
statistic = -10
critical = -21
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Specific Conductance Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

EPA-1AR

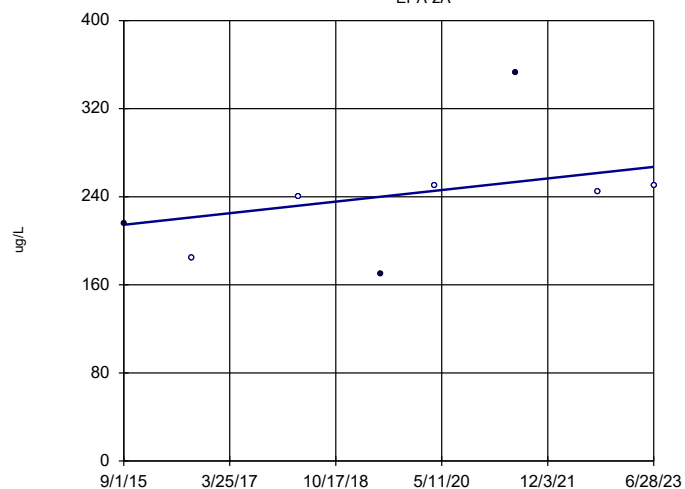


n = 8
Slope = -1.641
units per year.
Mann-Kendall
statistic = -2
critical = -21
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Total Extractable Hydrocarbons Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

EPA-2A

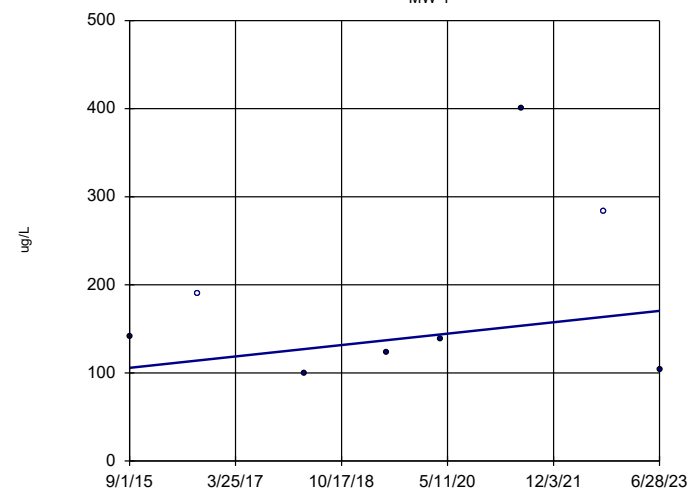


n = 8
Slope = 6.728
units per year.
Mann-Kendall
statistic = 13
critical = 21
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Total Extractable Hydrocarbons Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

MW-1

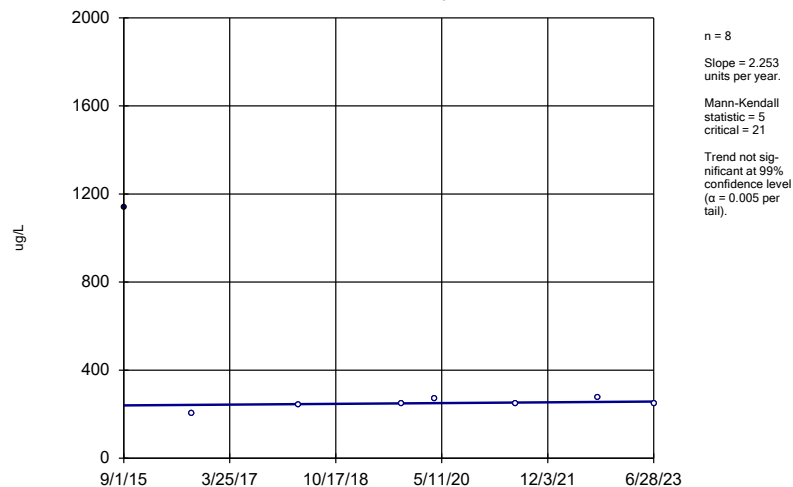


n = 8
Slope = 8.26
units per year.
Mann-Kendall
statistic = 2
critical = 21
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Total Extractable Hydrocarbons Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

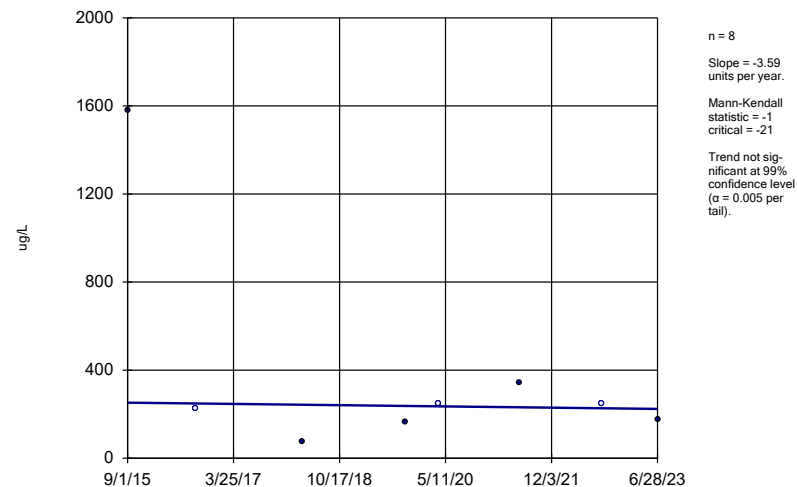
MW-10



Constituent: Total Extractable Hydrocarbons Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

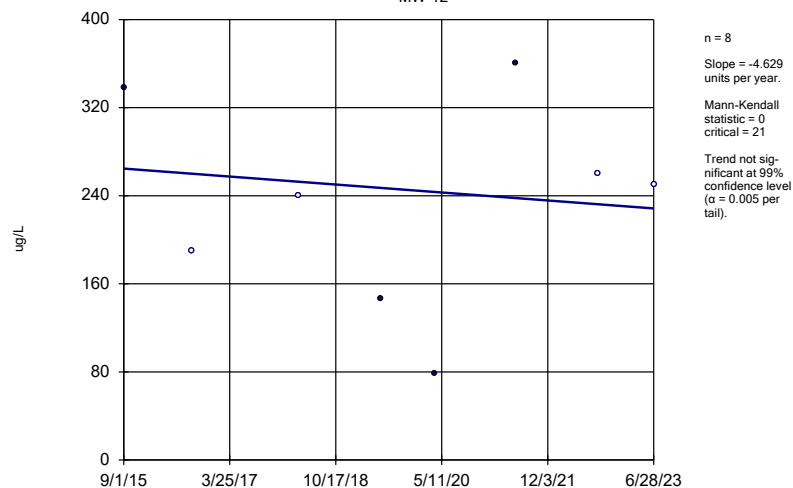
MW-11



Constituent: Total Extractable Hydrocarbons Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

Sen's Slope Estimator

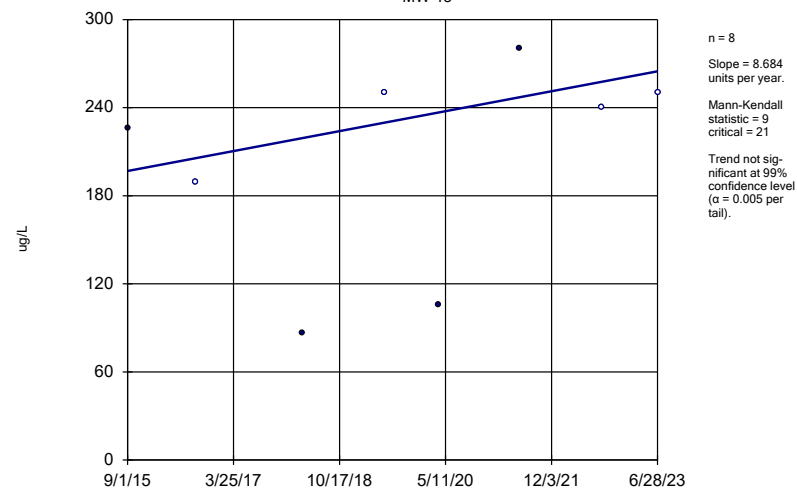
MW-12



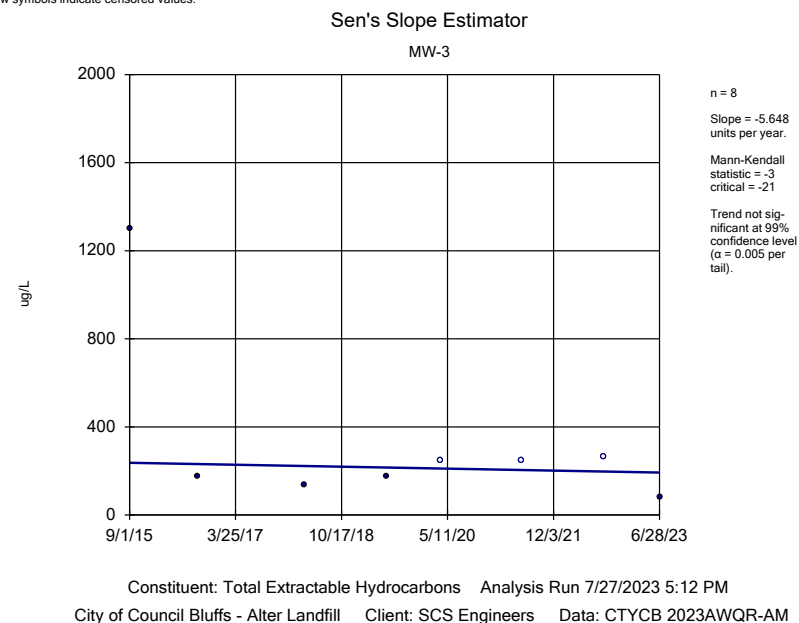
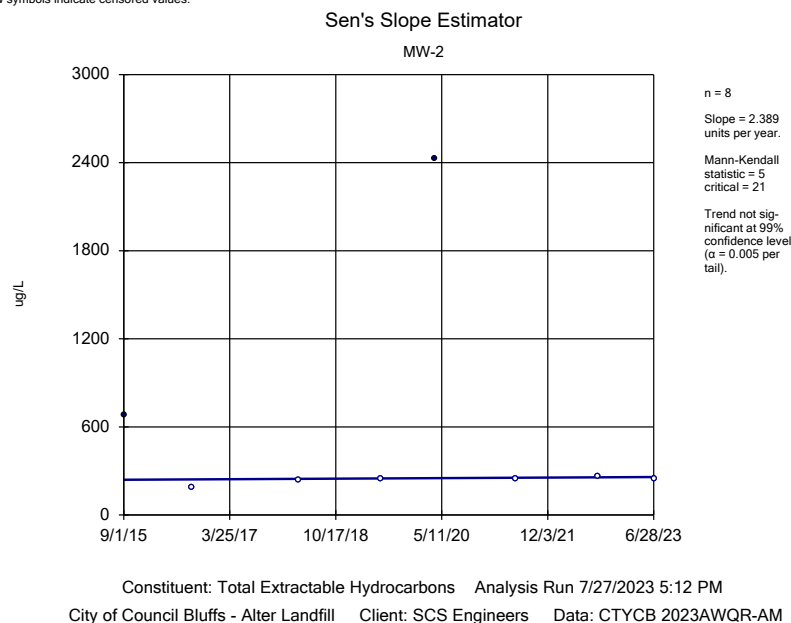
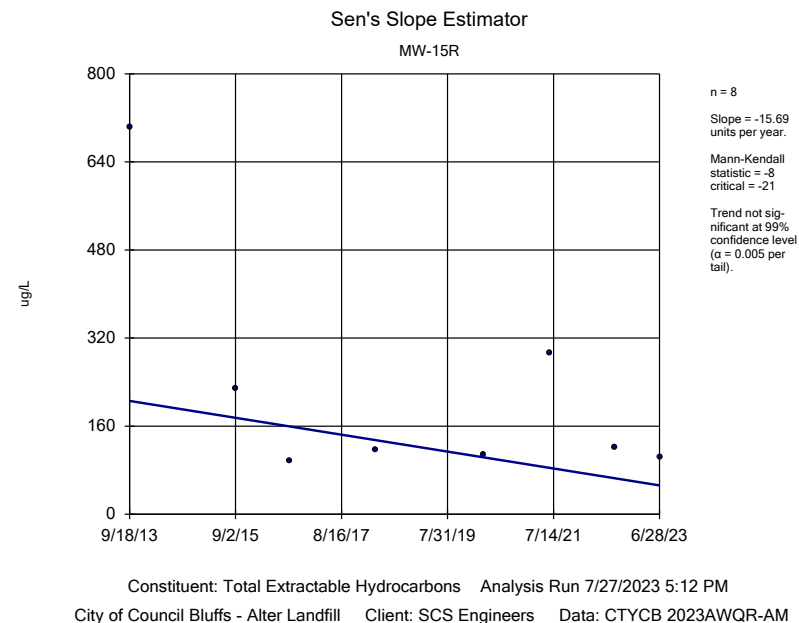
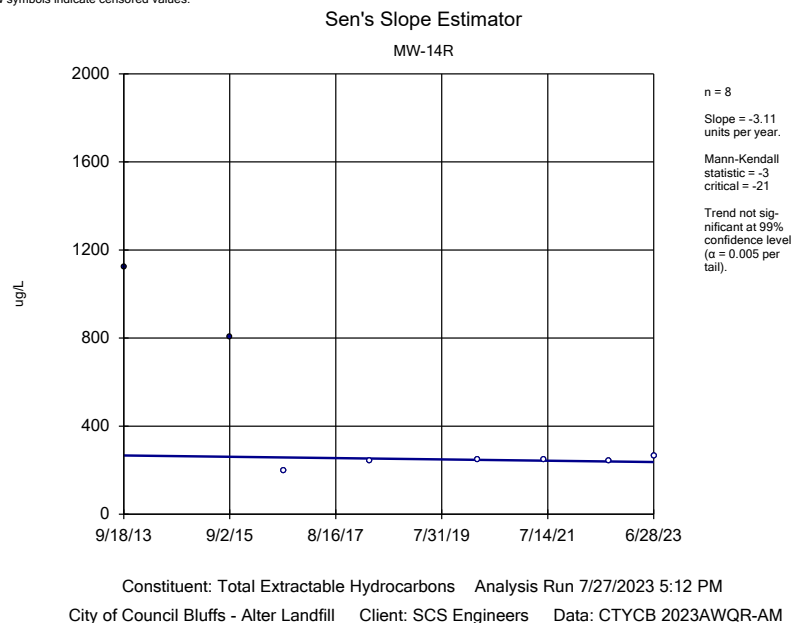
Constituent: Total Extractable Hydrocarbons Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM

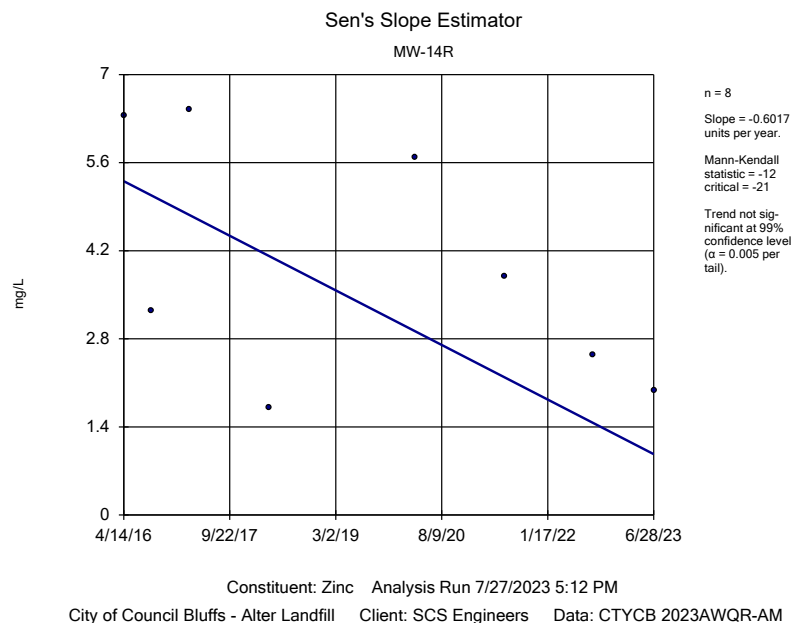
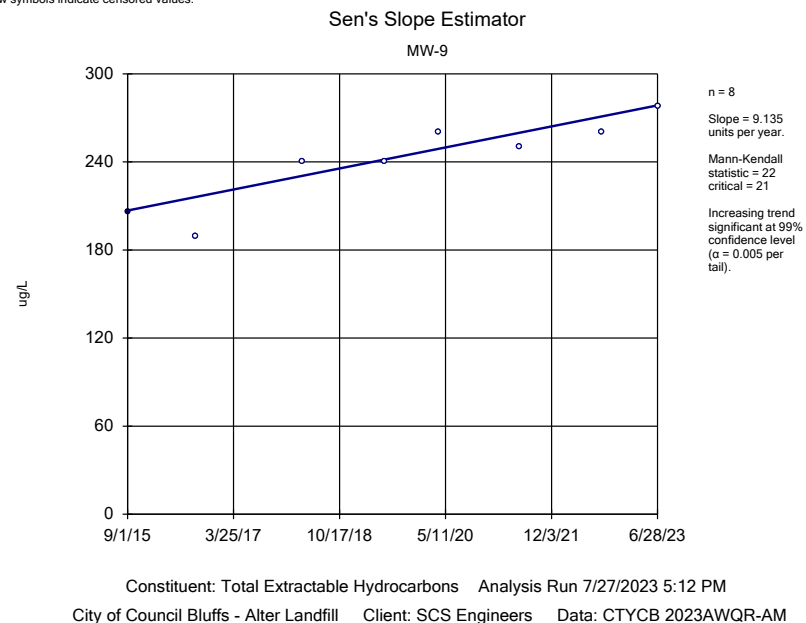
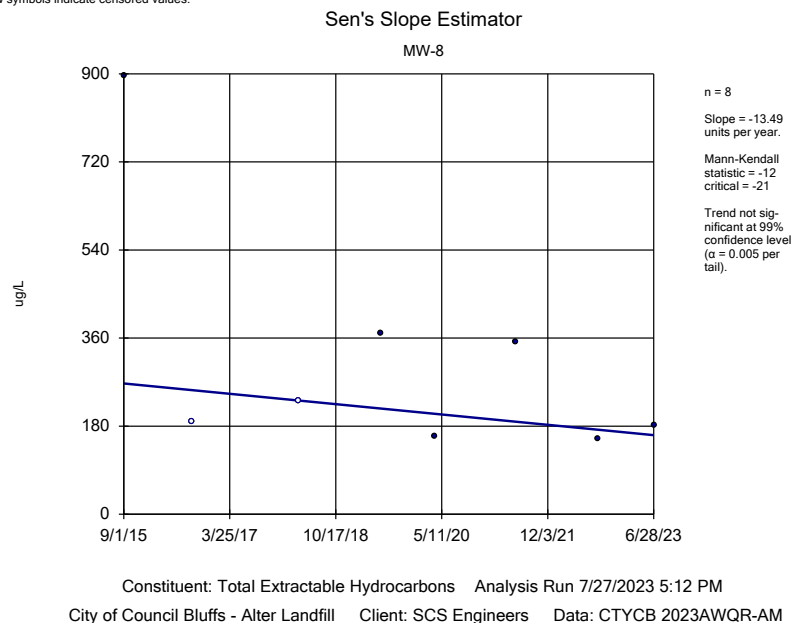
Sen's Slope Estimator

MW-13



Constituent: Total Extractable Hydrocarbons Analysis Run 7/27/2023 5:12 PM
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB 2023AWQR-AM





Attachment B

Control Limits

Control Limit

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master Printed 8/21/2023, 12:53 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>
Ammonia as N (mg/L)	EPA-2A	1.209	n/a	6/28/2023	0.257	No	56	50
Ammonia as N (mg/L)	MW-1	1.209	n/a	6/28/2023	1.27	Yes	56	50
Ammonia as N (mg/L)	MW-2	1.209	n/a	6/28/2023	7.21	Yes	56	50
Ammonia as N (mg/L)	MW-3	1.209	n/a	6/28/2023	1.3	Yes	56	50
Ammonia as N (mg/L)	MW-8	1.209	n/a	6/28/2023	0.537	No	56	50
Ammonia as N (mg/L)	MW-10	1.209	n/a	6/28/2023	0.666	No	56	50
Ammonia as N (mg/L)	MW-14R	1.209	n/a	6/28/2023	3.66	Yes	56	50
Arsenic (mg/L)	EPA-2A	0.005463	n/a	6/28/2023	0.00186J	No	24	8.333
Arsenic (mg/L)	MW-2	0.005463	n/a	6/28/2023	0.112	Yes	24	8.333
Arsenic (mg/L)	MW-3	0.005463	n/a	6/28/2023	0.139	Yes	24	8.333
Arsenic (mg/L)	MW-10	0.005463	n/a	6/28/2023	0.00931	Yes	24	8.333
Arsenic (mg/L)	MW-13	0.005463	n/a	6/28/2023	0.00856	Yes	24	8.333
Arsenic (mg/L)	MW-14R	0.005463	n/a	6/28/2023	0.00451	No	24	8.333
Arsenic (mg/L)	MW-15R	0.005463	n/a	6/28/2023	0.00511	No	24	8.333
Barium (mg/L)	MW-14R	0.4139	n/a	6/28/2023	0.703	Yes	24	0
Barium (mg/L)	MW-15R	0.4139	n/a	6/28/2023	0.498	Yes	24	0
Chemical Oxygen Demand (mg/L)	EPA-2A	37.84	n/a	6/28/2023	6.9	No	56	0
Chemical Oxygen Demand (mg/L)	MW-1	37.84	n/a	6/28/2023	22.8	No	56	0
Chemical Oxygen Demand (mg/L)	MW-2	37.84	n/a	6/28/2023	69.7	Yes	56	0
Chemical Oxygen Demand (mg/L)	MW-3	37.84	n/a	6/28/2023	21.4	No	56	0
Chemical Oxygen Demand (mg/L)	MW-8	37.84	n/a	6/28/2023	92.5	Yes	56	0
Chemical Oxygen Demand (mg/L)	MW-9	37.84	n/a	6/28/2023	61.1	Yes	56	0
Chemical Oxygen Demand (mg/L)	EPA-1AR	37.84	n/a	6/28/2023	6.9	No	56	0
Chemical Oxygen Demand (mg/L)	MW-10	37.84	n/a	6/28/2023	23.1	No	56	0
Chemical Oxygen Demand (mg/L)	MW-11	37.84	n/a	6/28/2023	6.55	No	56	0
Chemical Oxygen Demand (mg/L)	MW-12	37.84	n/a	6/28/2023	8.97	No	56	0
Chemical Oxygen Demand (mg/L)	MW-13	37.84	n/a	6/28/2023	10	No	56	0
Chemical Oxygen Demand (mg/L)	MW-14R	37.84	n/a	6/28/2023	25.9	No	56	0
Chemical Oxygen Demand (mg/L)	MW-15R	37.84	n/a	6/28/2023	21.4	No	56	0
Chloride (mg/L)	EPA-2A	371.7	n/a	6/28/2023	10.4	No	56	0
Chloride (mg/L)	MW-1	371.7	n/a	6/28/2023	49.2	No	56	0
Chloride (mg/L)	MW-2	371.7	n/a	6/28/2023	13.6	No	56	0
Chloride (mg/L)	MW-3	371.7	n/a	6/28/2023	13.3	No	56	0
Chloride (mg/L)	MW-8	371.7	n/a	6/28/2023	30.9	No	56	0
Chloride (mg/L)	MW-9	371.7	n/a	6/28/2023	23.7	No	56	0
Chloride (mg/L)	EPA-1AR	371.7	n/a	6/28/2023	5.76	No	56	0
Chloride (mg/L)	MW-10	371.7	n/a	6/28/2023	26.2	No	56	0
Chloride (mg/L)	MW-11	371.7	n/a	6/28/2023	39.85	No	56	0
Chloride (mg/L)	MW-12	371.7	n/a	6/28/2023	33	No	56	0
Chloride (mg/L)	MW-13	371.7	n/a	6/28/2023	22.2	No	56	0
Chloride (mg/L)	MW-14R	371.7	n/a	6/28/2023	27.9	No	56	0
Chloride (mg/L)	MW-15R	371.7	n/a	6/28/2023	43.4	No	56	0
Iron (mg/L)	MW-1	17.77	n/a	6/28/2023	15.5	No	12	8.333
Iron (mg/L)	MW-2	17.77	n/a	6/28/2023	10.9	No	12	8.333
Iron (mg/L)	MW-3	17.77	n/a	6/28/2023	19	Yes	12	8.333
Iron (mg/L)	MW-8	17.77	n/a	6/28/2023	1.9	No	12	8.333
Iron (mg/L)	MW-9	17.77	n/a	6/28/2023	0.258J	No	12	8.333
Iron (mg/L)	EPA-1AR	17.77	n/a	6/28/2023	0.147J	No	12	8.333
Iron (mg/L)	MW-10	17.77	n/a	6/28/2023	4.08	No	12	8.333
Iron (mg/L)	MW-13	17.77	n/a	6/28/2023	7.18	No	12	8.333

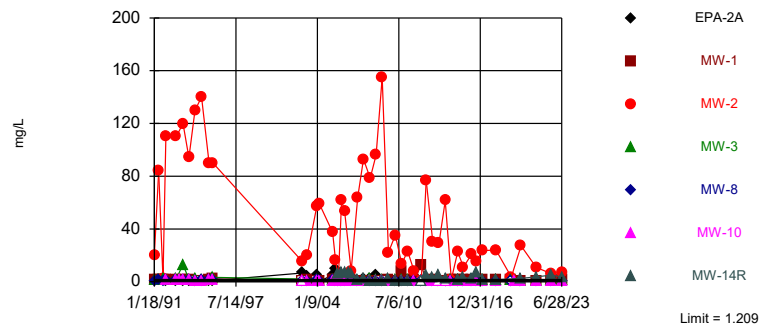
Control Limit

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master Printed 8/21/2023, 12:53 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>
Iron (mg/L)	MW-14R	17.77	n/a	6/28/2023	4.96	No	12	8.333
Iron (mg/L)	MW-15R	17.77	n/a	6/28/2023	3.14	No	12	8.333
Lead (mg/L)	MW-12	0.008554	n/a	6/28/2023	0.00304	No	24	41.67
Lead (mg/L)	MW-13	0.008554	n/a	6/28/2023	0.00169	No	24	41.67
Nickel (mg/L)	MW-14R	0.02827	n/a	6/28/2023	0.109	Yes	24	16.67
Nickel (mg/L)	MW-15R	0.02827	n/a	6/28/2023	0.0068	No	24	16.67
pH (S.U.)	EPA-2A	8.232	6.514	6/28/2023	7.31	No	52	0
pH (S.U.)	MW-1	8.232	6.514	6/28/2023	6.93	No	52	0
pH (S.U.)	MW-2	8.232	6.514	6/28/2023	7.22	No	52	0
pH (S.U.)	MW-3	8.232	6.514	6/28/2023	7.03	No	52	0
pH (S.U.)	MW-8	8.232	6.514	6/28/2023	7.61	No	52	0
pH (S.U.)	MW-9	8.232	6.514	6/28/2023	7.09	No	52	0
pH (S.U.)	EPA-1AR	8.232	6.514	6/28/2023	7.24	No	52	0
pH (S.U.)	MW-10	8.232	6.514	6/28/2023	7.42	No	52	0
pH (S.U.)	MW-11	8.232	6.514	6/28/2023	7.1	No	52	0
pH (S.U.)	MW-12	8.232	6.514	6/28/2023	6.72	No	52	0
pH (S.U.)	MW-13	8.232	6.514	6/28/2023	6.92	No	52	0
pH (S.U.)	MW-14R	8.232	6.514	6/28/2023	6.98	No	52	0
pH (S.U.)	MW-15R	8.232	6.514	6/28/2023	7.03	No	52	0
Specific Conductance (uS/cm)	EPA-2A	2415	n/a	6/28/2023	507.1	No	54	0
Specific Conductance (uS/cm)	MW-1	2415	n/a	6/28/2023	1234	No	54	0
Specific Conductance (uS/cm)	MW-2	2415	n/a	6/28/2023	1304	No	54	0
Specific Conductance (uS/cm)	MW-3	2415	n/a	6/28/2023	977.3	No	54	0
Specific Conductance (uS/cm)	MW-8	2415	n/a	6/28/2023	1041	No	54	0
Specific Conductance (uS/cm)	MW-9	2415	n/a	6/28/2023	1202	No	54	0
Specific Conductance (uS/cm)	EPA-1AR	2415	n/a	6/28/2023	561.2	No	54	0
Specific Conductance (uS/cm)	MW-10	2415	n/a	6/28/2023	546.3	No	54	0
Specific Conductance (uS/cm)	MW-11	2415	n/a	6/28/2023	794.7	No	54	0
Specific Conductance (uS/cm)	MW-12	2415	n/a	6/28/2023	857.5	No	54	0
Specific Conductance (uS/cm)	MW-13	2415	n/a	6/28/2023	761.3	No	54	0
Specific Conductance (uS/cm)	MW-14R	2415	n/a	6/28/2023	1071	No	54	0
Specific Conductance (uS/cm)	MW-15R	2415	n/a	6/28/2023	773	No	54	0
Total Extractable Hydrocarbons ...	MW-1	514	n/a	6/28/2023	104J	No	30	63.33
Total Extractable Hydrocarbons ...	MW-3	514	n/a	6/28/2023	81.7J	No	30	63.33
Total Extractable Hydrocarbons ...	MW-8	514	n/a	6/28/2023	181J	No	30	63.33
Total Extractable Hydrocarbons ...	EPA-1AR	514	n/a	6/28/2023	113J	No	30	63.33
Total Extractable Hydrocarbons ...	MW-11	514	n/a	6/28/2023	174J	No	30	63.33
Total Extractable Hydrocarbons ...	MW-15R	514	n/a	6/28/2023	103J	No	30	63.33
Zinc (mg/L)	MW-14R	0.0323	n/a	6/28/2023	1.98	Yes	24	66.67

Exceeds Limit: MW-1, MW-2, MW-3, MW-14R

Prediction Limit Interwell Parametric

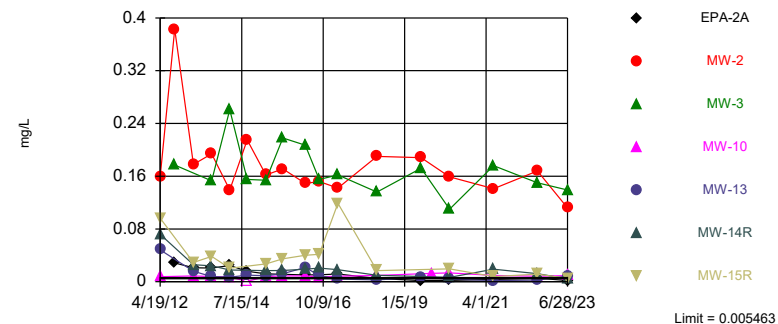


Background Data Summary: Mean=0.3409, Std. Dev.=0.4342, n=56, 50% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 7 points to limit. Assumes 6 future values. Kappa overridden to 2.

Constituent: Ammonia as N Analysis Run 8/21/2023 12:51 PM View: 2023AWQR - Control Limit
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Exceeds Limit: MW-2, MW-3, MW-10, MW-13

Prediction Limit Interwell Parametric

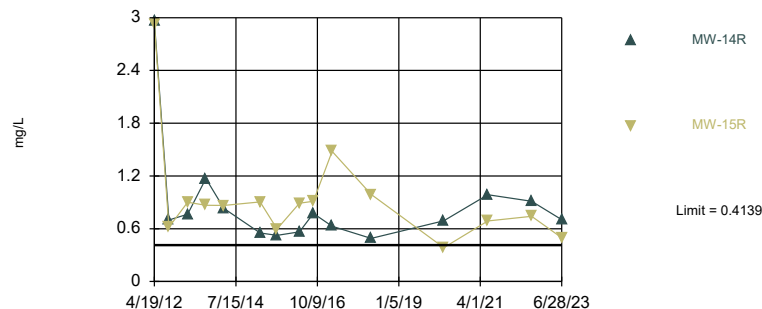


Background Data Summary: Mean=0.002101, Std. Dev.=0.001681, n=24, 8.333% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 7 points to limit. Assumes 6 future values. Kappa overridden to 2.

Constituent: Arsenic Analysis Run 8/21/2023 12:51 PM View: 2023AWQR - Control Limit
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Exceeds Limit: MW-14R, MW-15R

Prediction Limit Interwell Parametric

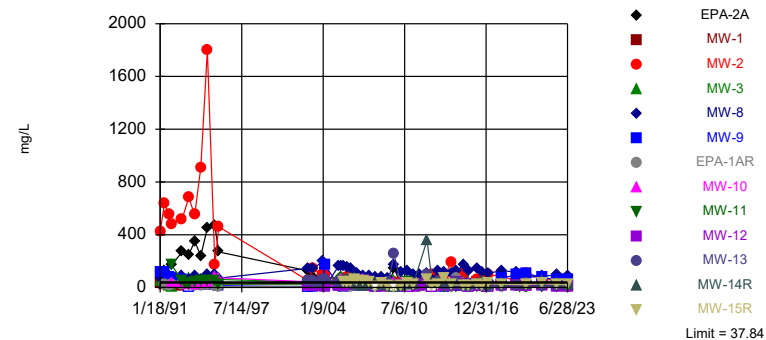


Background Data Summary: Mean=0.2044, Std. Dev.=0.1047, n=24. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 2 points to limit. Assumes 11 future values. Kappa overridden to 2.

Constituent: Barium Analysis Run 8/21/2023 12:51 PM View: 2023AWQR - Control Limit
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Exceeds Limit: MW-2, MW-8, MW-9

Prediction Limit Interwell Parametric



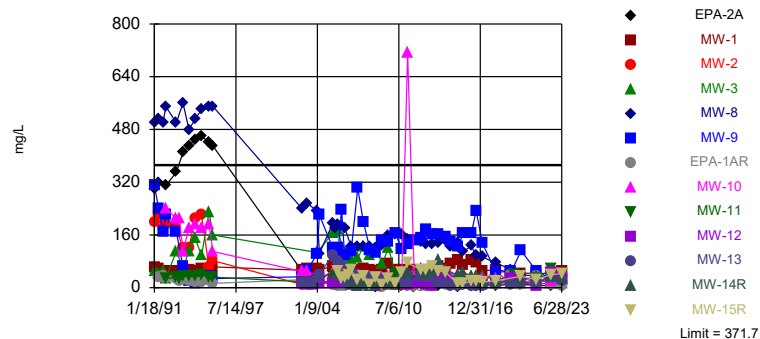
Background Data Summary: Mean=19.21, Std. Dev.=9.314, n=56. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 13 points to limit. Kappa overridden to 2.

Constituent: Chemical Oxygen Demand Analysis Run 8/21/2023 12:51 PM View: 2023AWQR - Control Li
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=216.1, Std. Dev.=77.77, n=56. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 13 points to limit. Kappa overridden to 2.

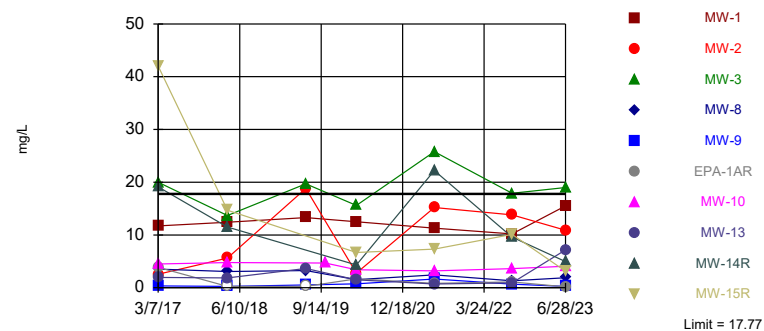
Constituent: Chloride Analysis Run 8/21/2023 12:51 PM View: 2023AWQR - Control Limit

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Exceeds Limit: MW-3

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=5.611, Std. Dev.=6.077, n=12, 8.333% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 10 points to limit. Assumes 3 future values. Kappa overridden to 2.

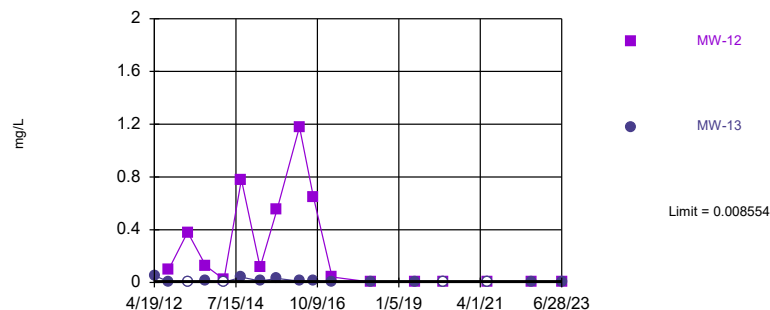
Constituent: Iron Analysis Run 8/21/2023 12:52 PM View: 2023AWQR - Control Limit

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.002312, Std. Dev.=0.003121, n=24, 41.67% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 2 points to limit. Assumes 11 future values. Kappa overridden to 2.

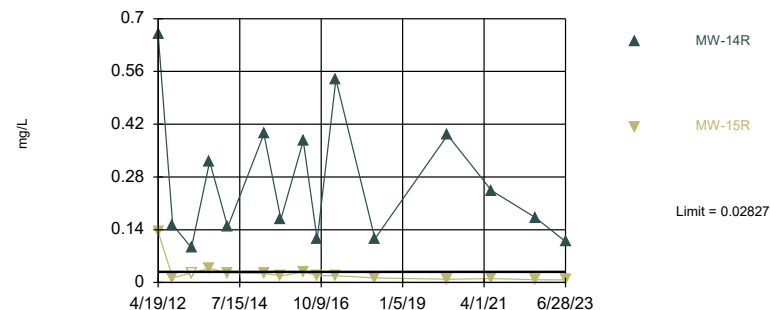
Constituent: Lead Analysis Run 8/21/2023 12:52 PM View: 2023AWQR - Control Limit

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Exceeds Limit: MW-14R

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.009568, Std. Dev.=0.00935, n=24, 16.67% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 2 points to limit. Assumes 11 future values. Kappa overridden to 2.

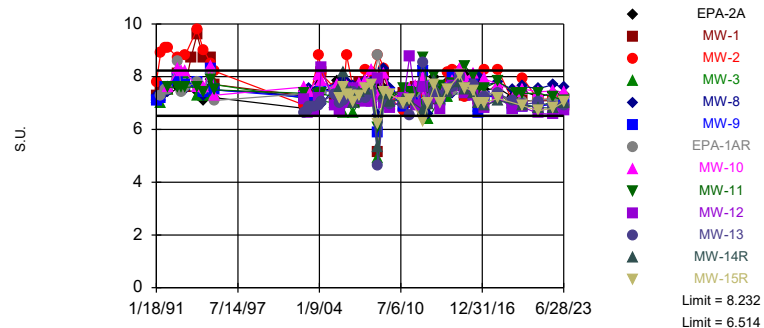
Constituent: Nickel Analysis Run 8/21/2023 12:52 PM View: 2023AWQR - Control Limit

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Within Limits

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=7.373, Std. Dev.=0.4296, n=52. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 13 points to limit. Kappa overridden to 2.

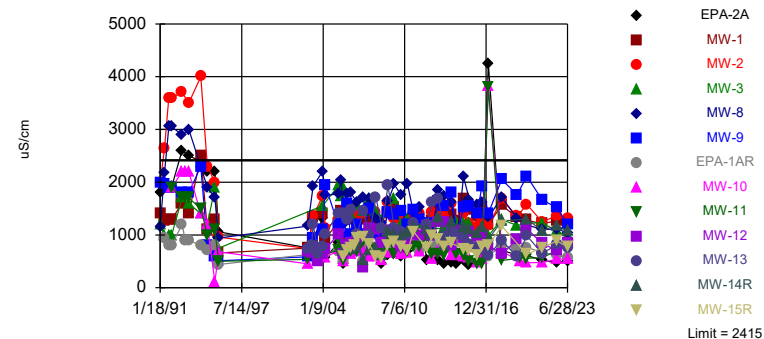
Constituent: pH Analysis Run 8/21/2023 12:52 PM View: 2023AWQR - Control Limit

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=1654, Std. Dev.=380.8, n=54. Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 13 points to limit. Kappa overridden to 2.

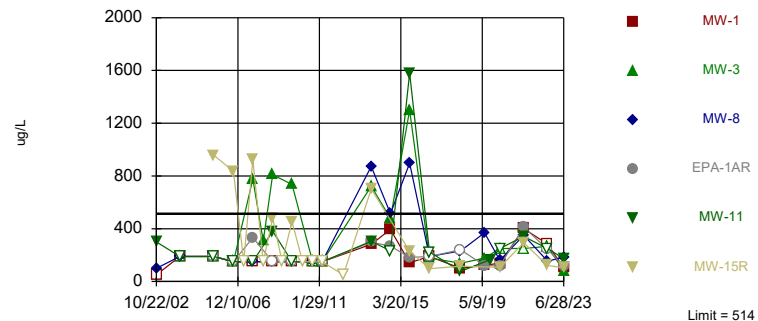
Constituent: Specific Conductance Analysis Run 8/21/2023 12:52 PM View: 2023AWQR - Control Limit

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=232.3, Std. Dev.=140.9, n=30, 63.33% NDs (user selected parametric test despite non-detects). Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Comparing 6 points to limit. Assumes 7 future values. Kappa overridden to 2.

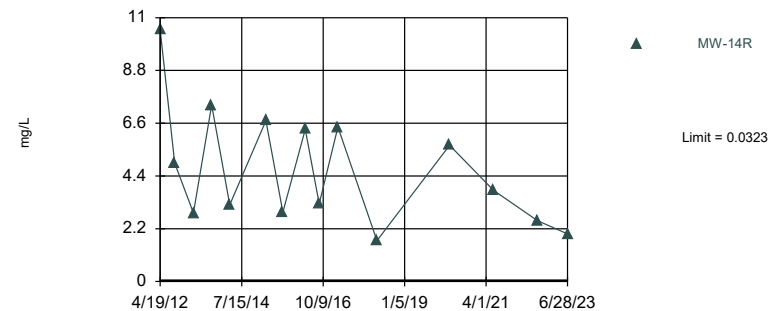
Constituent: Total Extractable Hydrocarbons Analysis Run 8/21/2023 12:52 PM View: 2023AWQR - Contr

City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Exceeds Limit: MW-14R

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.01386, Std. Dev.=0.009221, n=24, 66.67% NDs (user selected parametric test despite non-detects). Insufficient data to test for seasonality; not deseasonalized. Normality test was disabled. Assumes 12 future values. Kappa overridden to 2.

Constituent: Zinc Analysis Run 8/21/2023 12:52 PM View: 2023AWQR - Control Limit

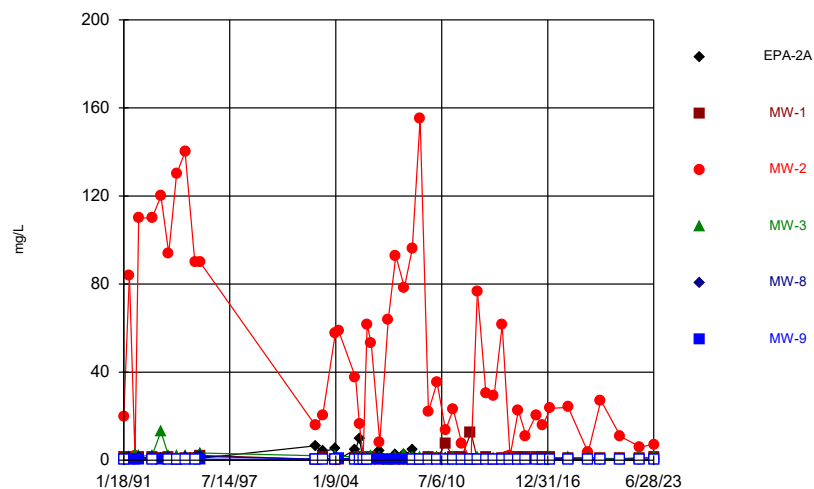
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master



Attachment C

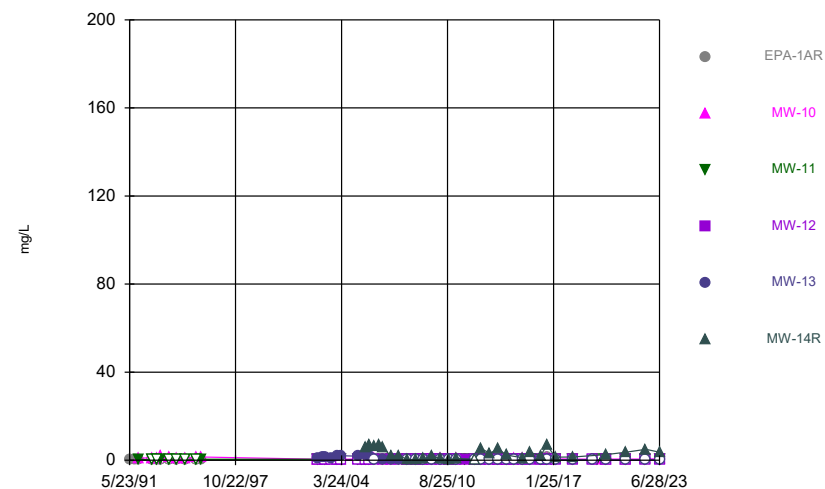
Time Series Graphs

Time Series



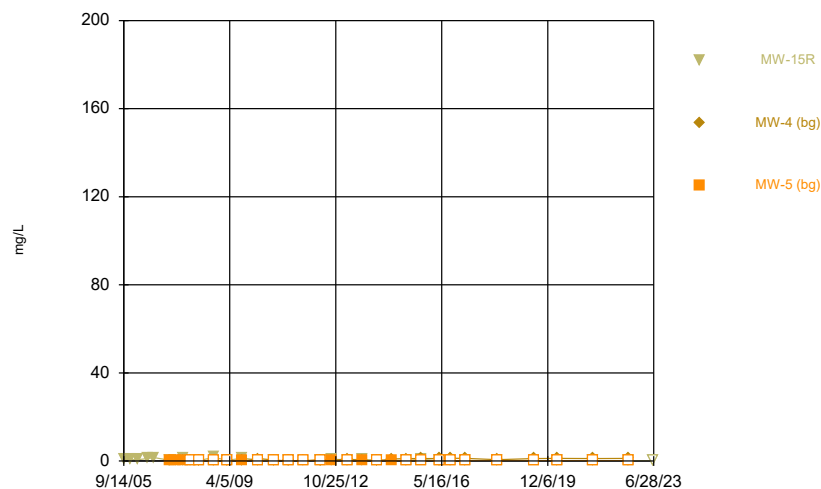
Constituent: Ammonia as N Analysis Run 7/27/2023 4:22 PM View: 2023AWQR - Time Series
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



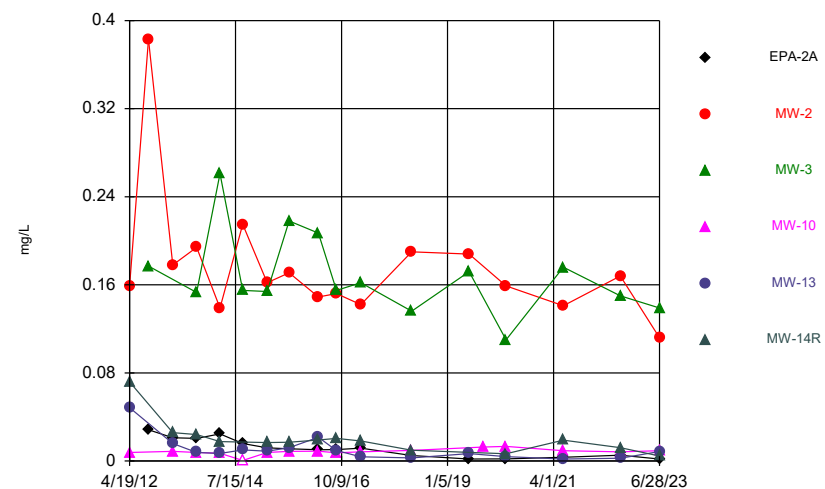
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



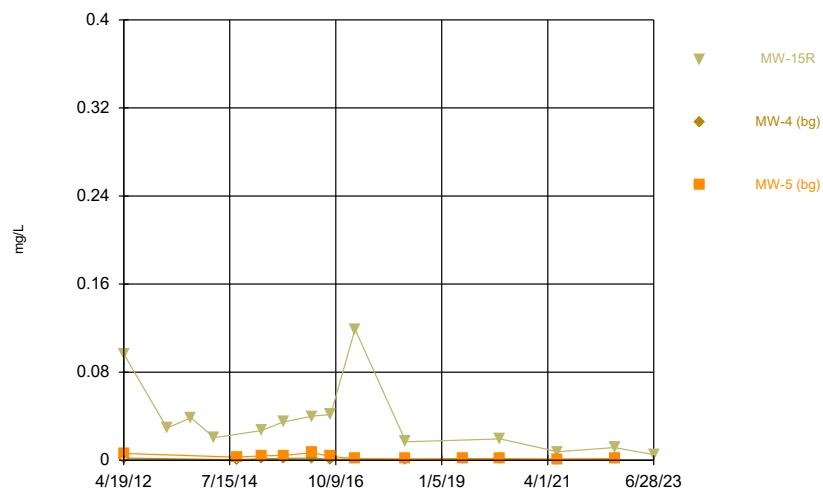
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



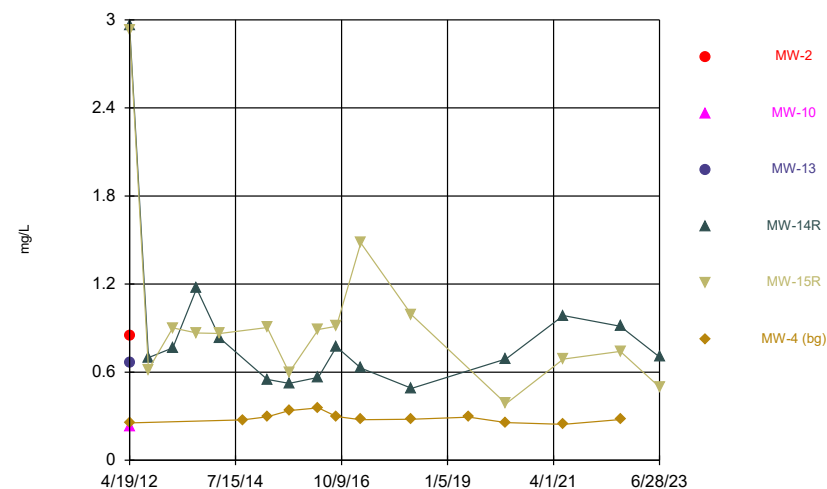
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



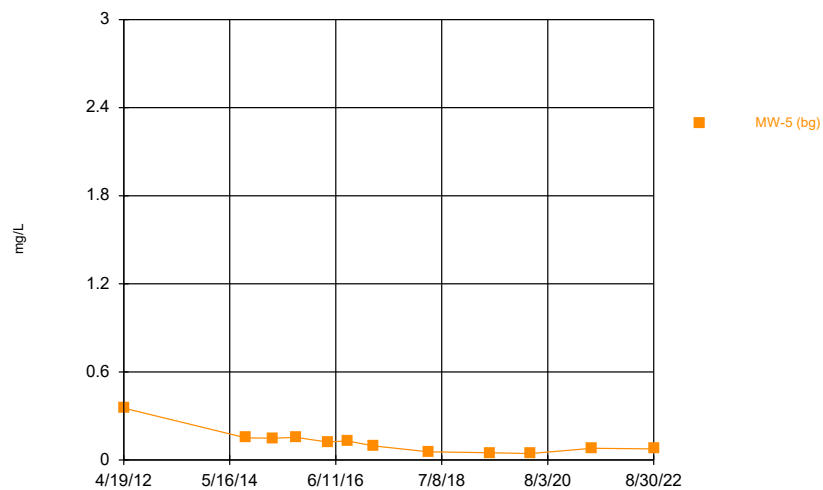
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



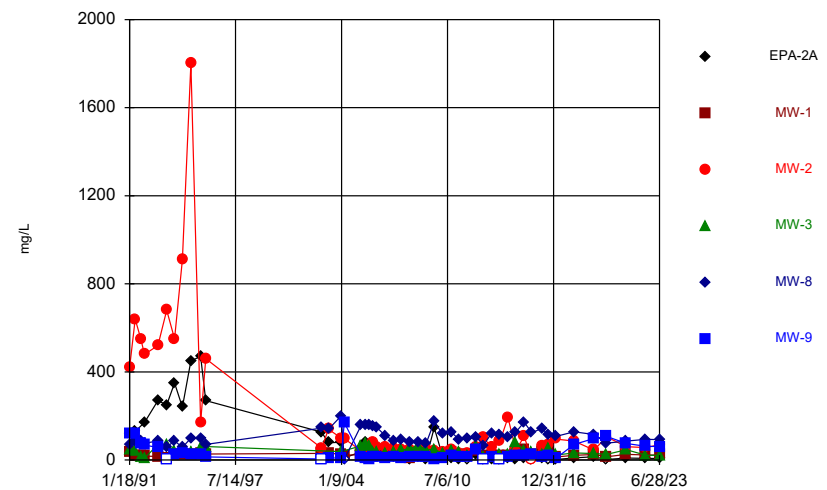
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



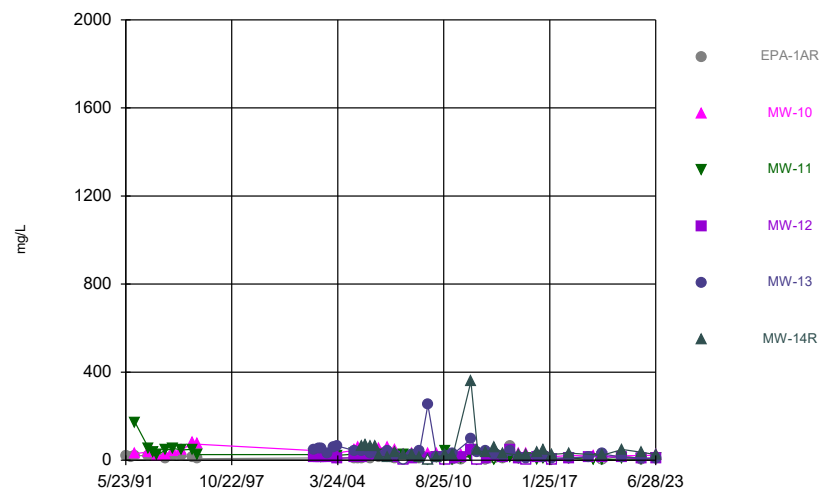
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



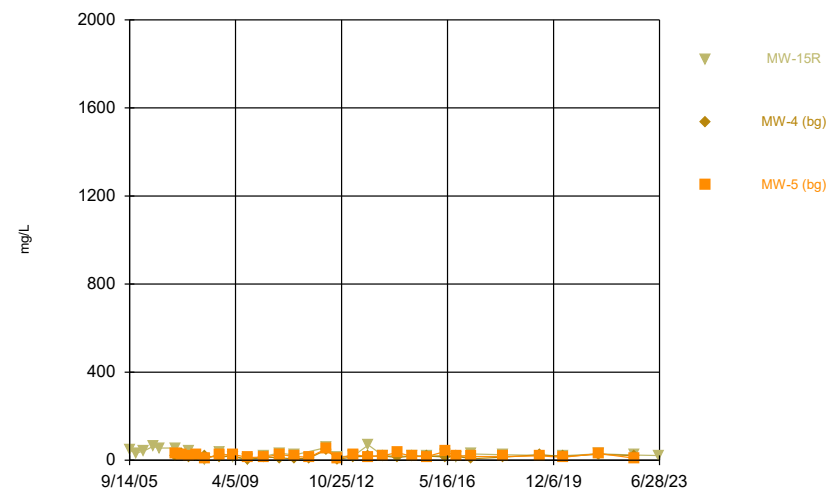
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



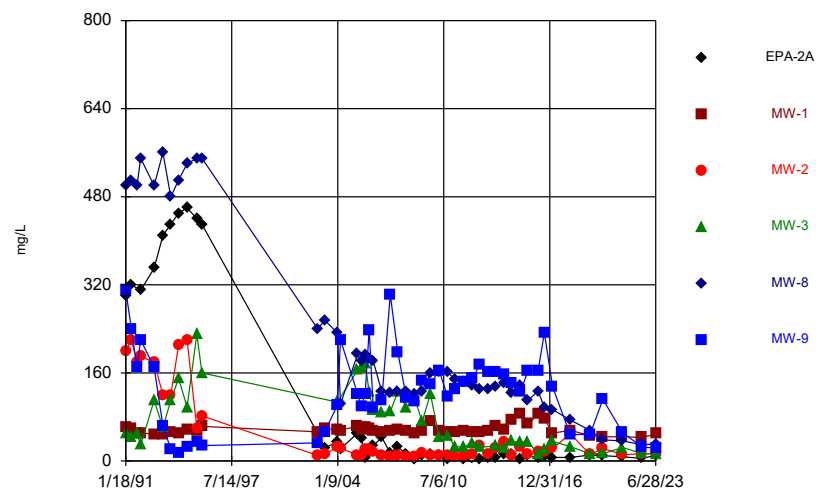
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



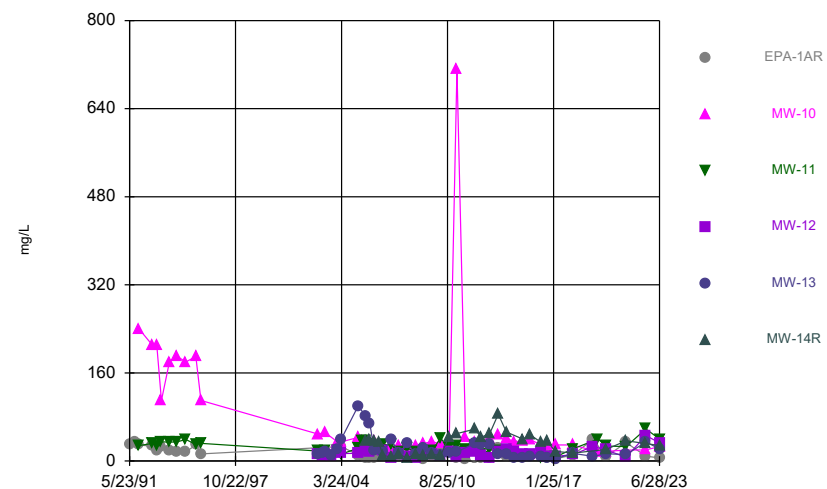
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



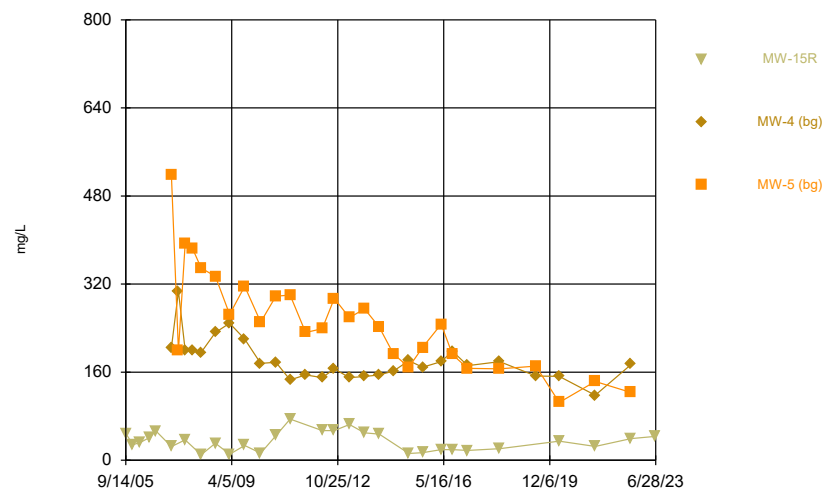
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



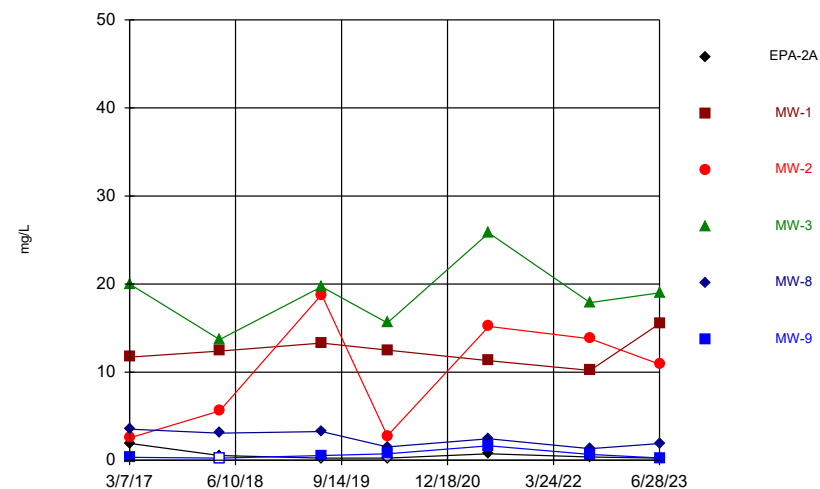
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



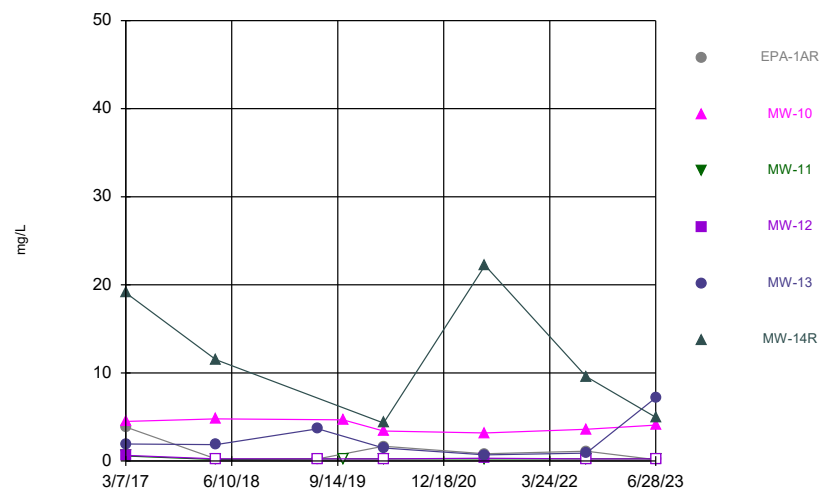
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



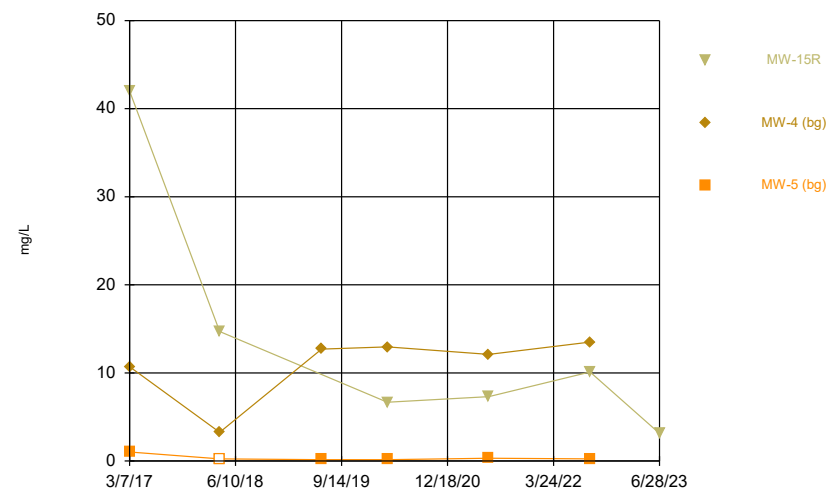
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



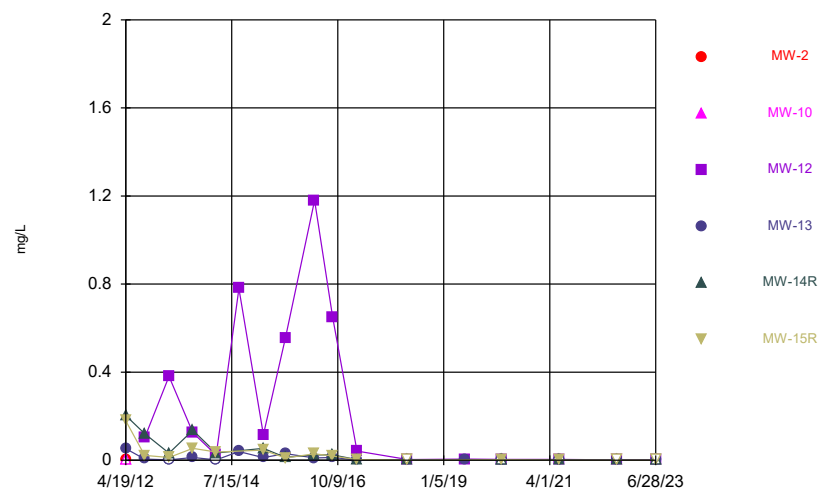
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



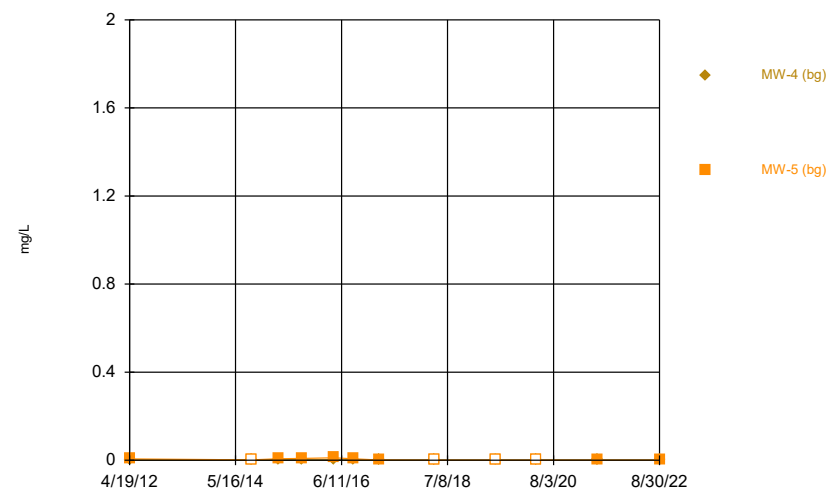
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



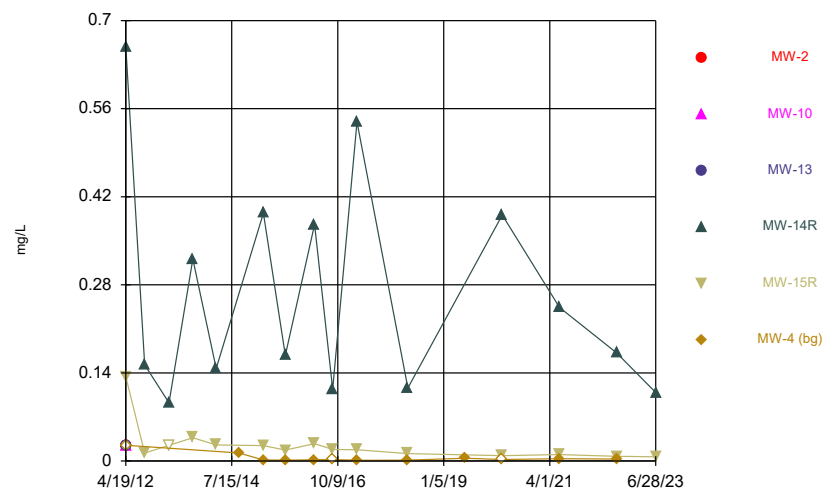
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



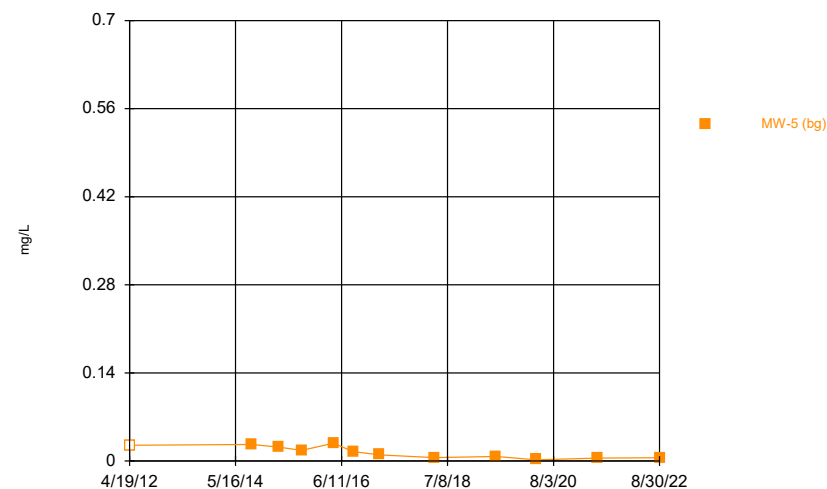
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



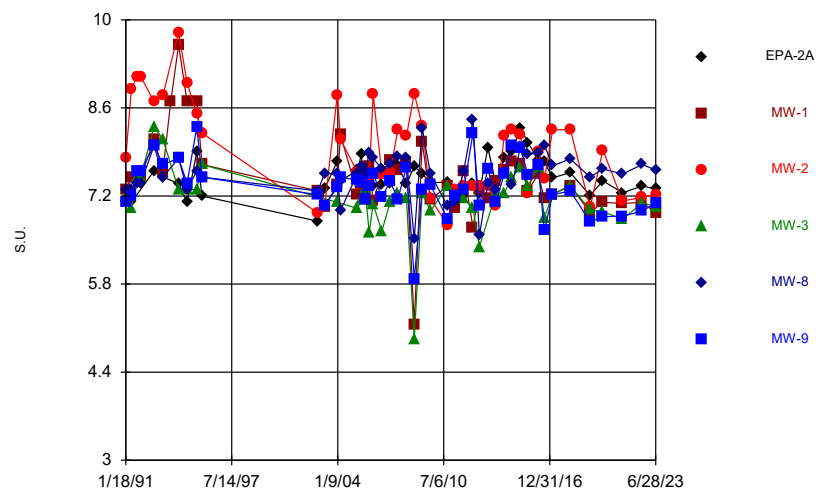
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



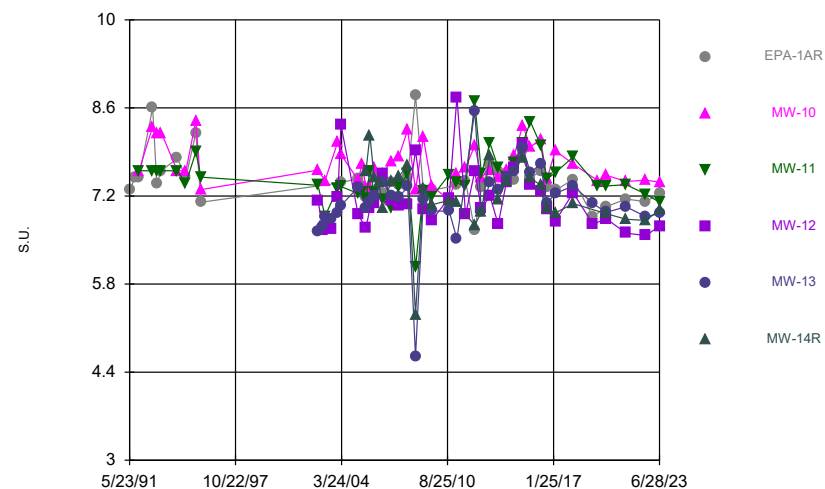
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



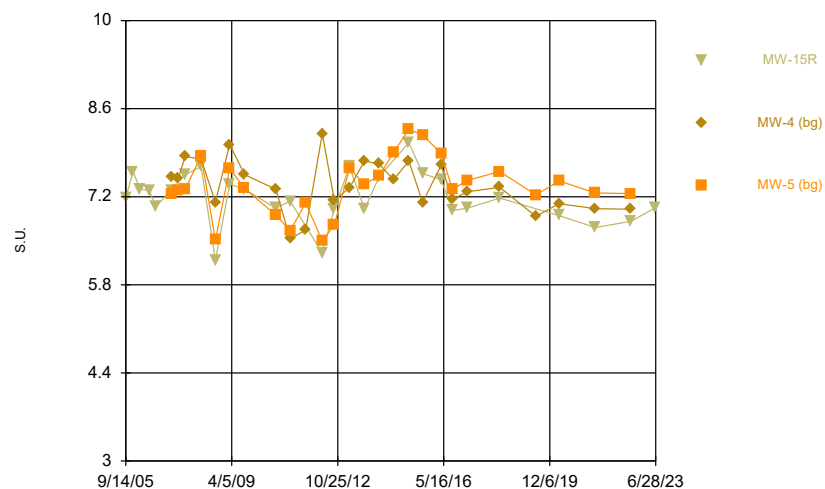
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



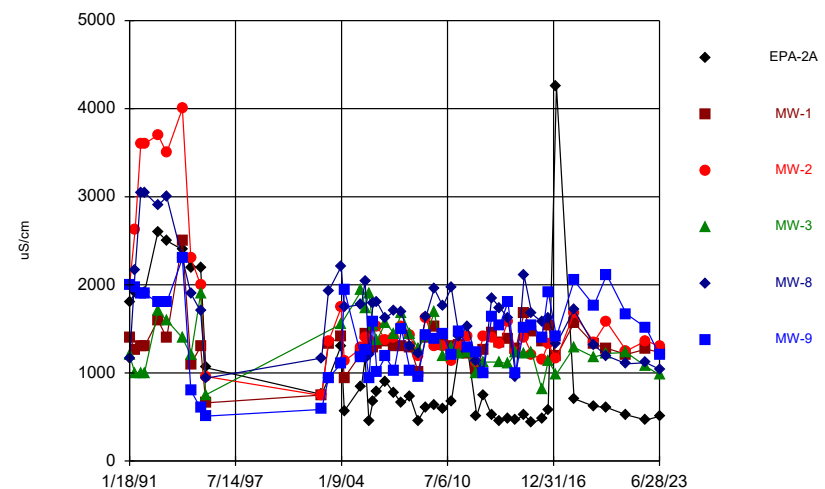
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



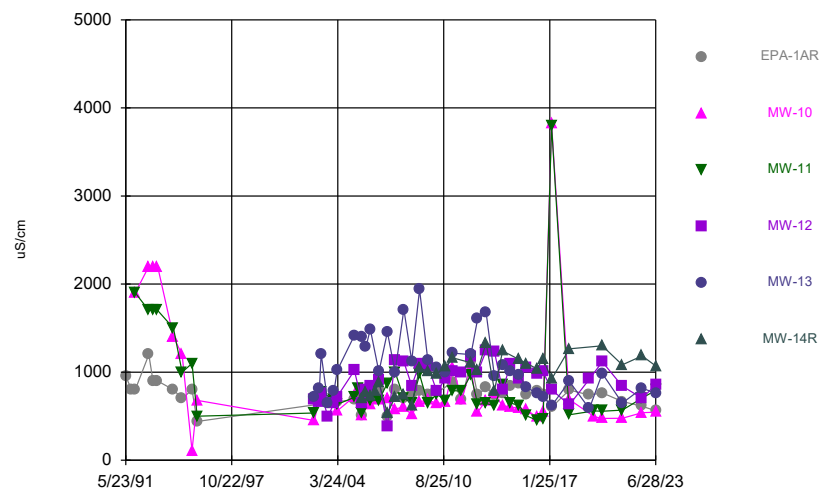
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series

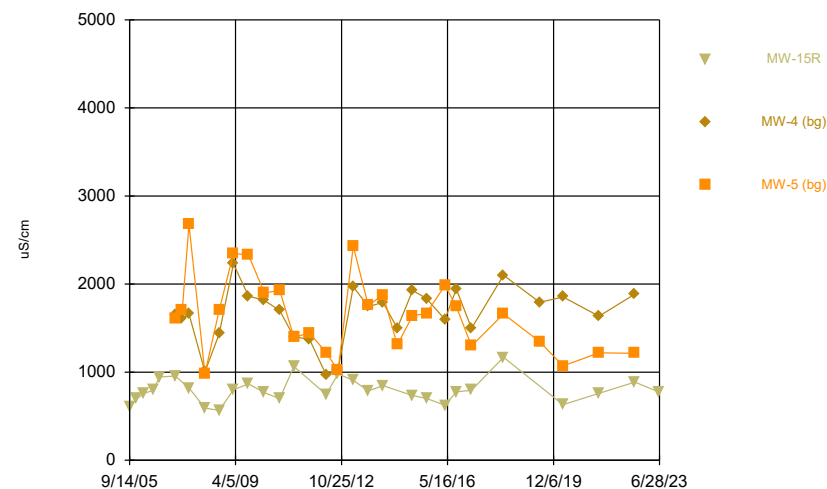


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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

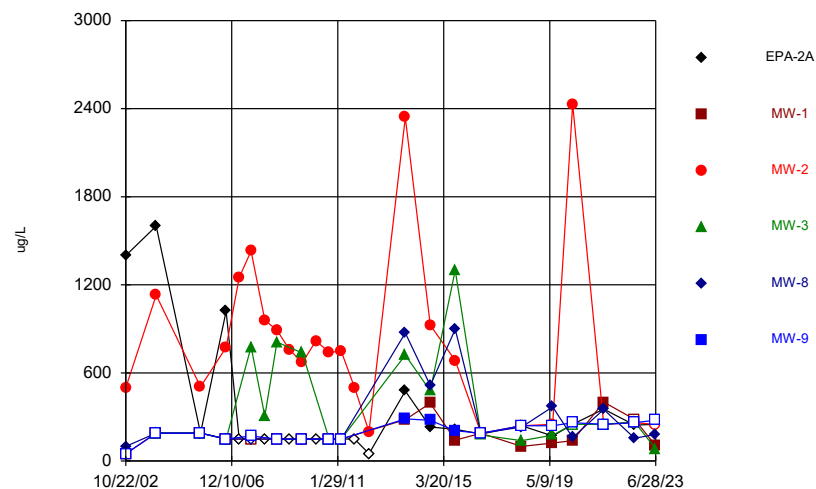
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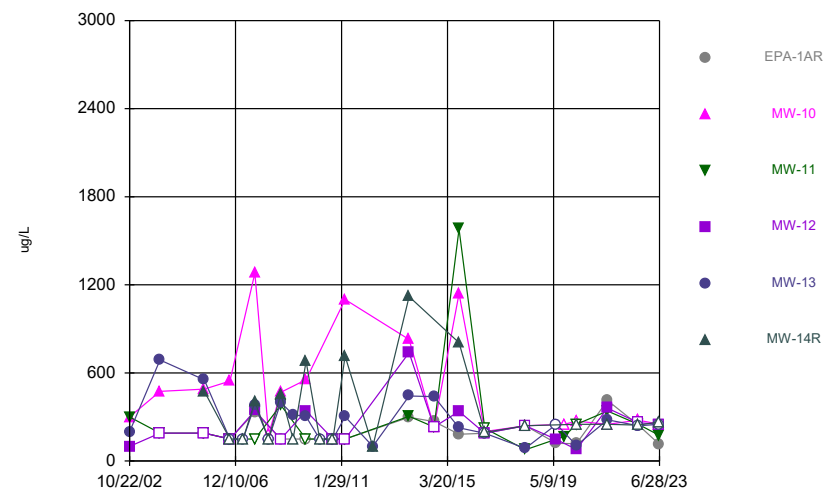
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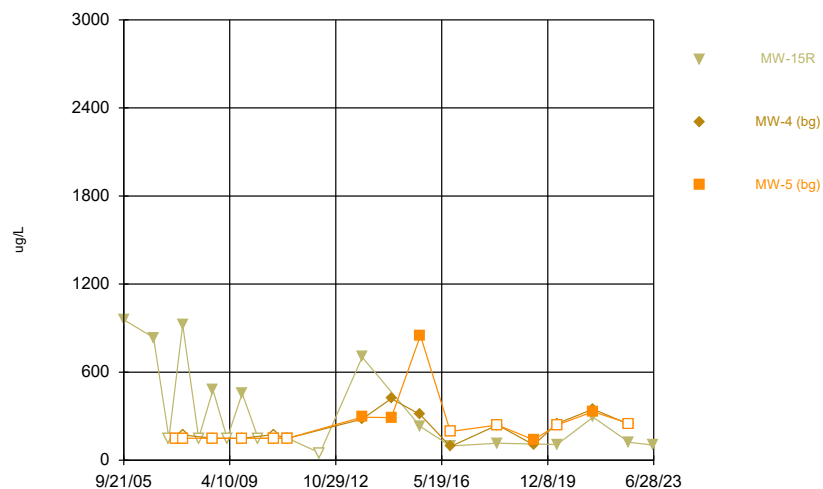
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Time Series

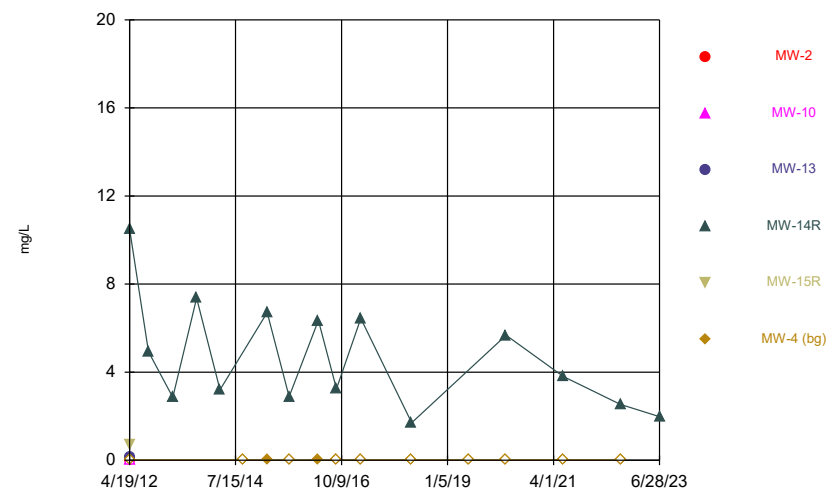


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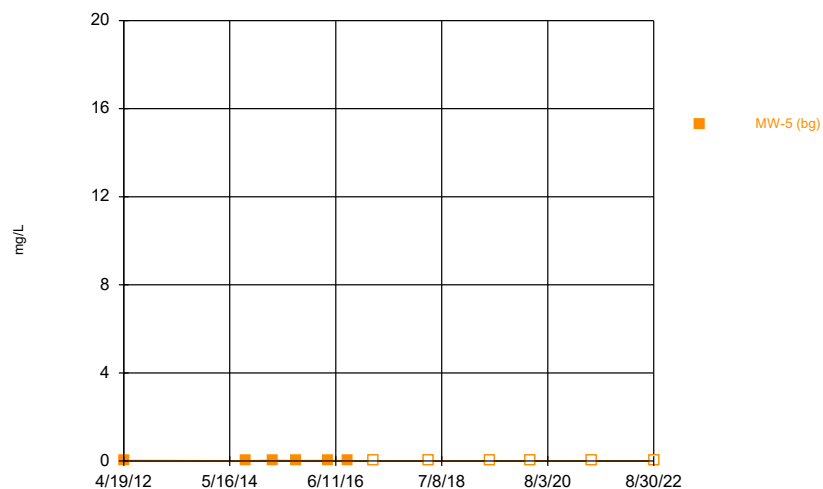
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City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



Constituent: Zinc Analysis Run 7/27/2023 4:22 PM View: 2023AWQR - Time Series
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master

Time Series



Constituent: Zinc Analysis Run 7/27/2023 4:22 PM View: 2023AWQR - Time Series
City of Council Bluffs - Alter Landfill Client: SCS Engineers Data: CTYCB Sanitas Master



Appendix E

Landfill Gas Annual Report

Path: C:\Users\hmadson\OneDrive - SCS Engineers\Desktop\GIS\Wetland\Site Maps\CTCYCB-2023\AWQCB-2023\AWQCB-2023.mxd
User: hmadson
Date Saved: 9/21/2023 5:12 PM



Point No.	Monitoring Point	Description
#1	NE Corner	Northeast corner of facility property
#2	SE Corner	Southeast corner of facility property
#3	SW Corner	Southwest corner of facility property
#4	NW Corener	Northwest corner of facility property
#5	Central	Approximate center of facility property
#6	Long Storage Building	Tan Conex Unit east of MW-14R
#7	SE Garage	SE of Parking lot
#8	SE Ticket Building	SE of Parking lot



Methane Monitoring Network

Legend

Methane Monitoring Location

Approximate Monitoring Well Location

Delineated Wetland Area

Approximate Property Line

Alter Trading Corporation Monofill
Council Bluffs, Iowa
Project No: 27223186.00
Drawing Date: September 2023

Figure 1

GEODATA, Esri, HERE, Garmin, FourSquare, FRC, MITI, NASA, USGS, Esri, COIAR, USGS

Table F1
Landfill Gas Monitoring Summary
2023 Landfill Gas Monitoring Report
Alter Trading Corporation Monofill
Permit No. 78-SDP-19-98C

Monitoring Points				Methane (% LEL)	
Point #	Name	Type	Description	6/28/2023	S (Y/N)
1	NE Corner	Ambient	NE corner of site	0	
2	SE Corner	Ambient	SE corner of site	0	
3	SW Corner	Ambient	SW corner of site	0	
4	NW Corner	Ambient	NW corner of site	0	
5	Center Location of Site	Ambient	Center of site	0	
6	Long Storage Building	Indoor	Inside building	Removed	
7	SE Garage	Indoor	Inside building	0	
8	SE Ticket Building	Indoor	Inside building	0	

S(Y/N) - Was screen submerged, yes or no.