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November 3, 2023

Submitted via electronic mail

Ms. Ann Bekta
Wisconsin Department of Natural Resources
2514 Morse Street
Janesville, WI 53545

**Subject: Plan of Operations Modification Request – Addendum #3
Initial Permitting of CCR Landfill
Wisconsin Power and Light Company
Dry Ash Disposal Facility (WDNR License #3025)
Columbia Energy Center
Portage, WI**

Dear Ms. Bekta,

On behalf of Wisconsin Power and Light Company (WPL), Alliant Energy is submitting this Addendum #3 to the Plan of Operations Modification intended to meet the requirements of NR 514.045 for Initial Permitting of a CCR Landfill. The additional information is in response to the Department's March 8, 2023 letter requesting more information in order to determine that the Plan of Operation is complete for the Dry Ash Disposal Facility located at the Columbia Energy Center (#3025).

Thank you very much for your consideration of this initial submittal. If you have any questions or comments regarding this information, please call me at (608) 458-3853.

Regards,

A handwritten signature in black ink, appearing to read "Jeff Maxted".

Jeff Maxted
Manager – Environmental Services
Alliant Energy

CC: Tyler Sullivan – Wisconsin DNR
Eric Sandvig, Director of Operations – Columbia Energy Center
Brian Clepper, Lead GENCO Environmental Specialist – Columbia Energy Center
Phil Gearing, Eric Nelson – SCS Engineers

November 3, 2023
File No. 25222260.00

Ms. Ann Bekta
Wisconsin Department of Natural Resources
2514 Morse Lane
Janesville, WI 53545

Subject: Addendum No. 3 to Plan of Operation Modification Request WDNR CCR Code Update
Dry Ash Disposal Facility, License #3025
Columbia Energy Center
Town of Pacific, Columbia County, Wisconsin

Dear Ms. Bekta:

On behalf of Wisconsin Power and Light Company (WPL), SCS Engineers (SCS) prepared this Addendum No. 3 to the Plan Modification Request/ Wisconsin Department of Natural Resources (WDNR) Coal Combustion Residuals (CCR) Code Update for the Dry Ash Disposal Facility, License No. 3025, at the Columbia Energy Center. The original Plan Modification Request/WDNR CCR Code Update was submitted on December 12, 2022, Addendum No. 1 was submitted on February 1, 2023, and Addendum No. 2 was submitted on September 1, 2023.

This addendum covers additional information for the WDNR CCR Code Update dated December 2022 to demonstrate compliance with NR 514.045 including the following:

- Calculated preventive action limits (PALs) and alternative concentration limits (ACLs) for monitoring wells downgradient of Modules 10 and 11.
- Calculated PALs for specific parameters at other site wells, for which sufficient data were not available prior to the September 1, 2023 submittal due to removal of outliers.

If you have any questions regarding this addendum, please contact Jeff Maxted with Alliant Energy at (608) 458-3853.

Sincerely,



Thomas Karwoski, PG
Senior Hydrogeologist
SCS Engineers



Phil Gearing, PE
Senior Project Manager
SCS Engineers

MDB/AJR/TK/PG

cc: Tyler Sullivan, WDNR
Jeff Maxted, Alliant Energy
Matt Bizjack, Alliant Energy
Brian Clepper, WPL



Ms. Ann Bekta
November 3, 2023
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Encl. Addendum No. 3

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No.3_Final.docx

Plan of Operation Modification Request WDNR CCR Code Update Addendum No. 3

Columbia Dry Ash Disposal Facility
Pardeeville, Wisconsin

Prepared for:

Wisconsin Power and Light Company
Columbia Energy Center
W8375 Murray Road
Pardeeville, Wisconsin 53954

SCS ENGINEERS

25222260.00 | November 3, 2023

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

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CERTIFICATIONS

"I, Phillip E. Gearing, hereby certify that I am a licensed professional engineer in the State of Wisconsin in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 500 to 538, Wis. Adm. Code."

 Senior Project Manager E-45115
Signature, title and P.E. number

11/3/2023
Date



"I, Thomas J. Karwoski, hereby certify that I am a licensed professional geologist in the State of Wisconsin in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code; that the preparation of this document has not involved any unprofessional conduct as detailed in ch. GHSS 5, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 500 to 538, Wis. Adm. Code."

 Senior Hydrogeologist
Signature, title

11/3/2023
Date



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1.0 INTRODUCTION

On behalf of Wisconsin Power and Light Company (WPL), SCS Engineers (SCS) prepared this Plan of Operation Modification (Plan Mod) Request – Addendum No. 3 for the Columbia Dry Ash Disposal (COL) Facility. This Addendum addresses additional information for the Wisconsin Department of Natural Resources (WDNR) Coal Combustion Residuals (CCR) Code Update dated December 2022 to demonstrate compliance with NR 514.045.

This Addendum includes the submittal of proposed preventive action limits (PALs) and alternative concentration limits (ACLs) for CCR monitoring wells where baseline sampling was not completed prior to the submittal of Addendum 2, or where the removal of outliers prevented submittal of proposed PALs in Addendum 2.

Baseline sampling at monitoring wells MW-313, MW-314, and MW-315, downgradient of Modules 10 and 11, is complete, and additional samples have been collected from wells requiring more data for PAL calculations due to the removal of outliers.

2.0 COMPLIANCE WITH NR 507.15 (3)(I)

NR 507.15 (3)(i)

“The owner or operator of the CCR landfill shall establish baseline groundwater quality in accordance with s. NR 507.18 for each CCR well and for each of the constituents required under ch. NR 507 Appendix I, Table 1A and in accordance with the approved sampling plan.”

Baseline groundwater quality will be established for each CCR well in accordance with NR 507.18 and for each constituent required under NR 507 Appendix I, Table 1A.

At the time Addendum 2 was submitted on September 1, 2023, an additional sampling round was needed to calculate PALs for lithium at MW-302, and alkalinity and hardness at MW-310 due to exclusion of outliers. In addition, baseline sampling of CCR wells associated with Modules 10 and 11 was ongoing. Additional samples have since been collected and analyzed. Updated tables of proposed PALs and ACLs are included in this submittal.

Proposed PALs and ACLs for CCR monitoring wells previously included in Addendum 2 have not been updated, but they are shown in **Tables 1** and **3** for completeness. This addendum does not include any new proposed PALs or ACLs for non-CCR wells.

Baseline groundwater quality calculations for CCR wells were calculated in accordance with NR 507.27 and WDNR’s guidance for calculating PALs and ACLs (PUB-WA-1105). **Table 1** summarizes proposed PALs for the CCR wells. Proposed PALs included in this submittal that were not previously proposed in Addendum 2 are indicated by bold outlining in **Table 1**. PAL calculations not previously submitted in Addendum 2 are included in **Appendix A**.

Table 2 summarizes PAL exceedances at wells associated with Modules 10 and 11, and **Table 3** summarizes calculated ACLs for wells and parameters with confirmed PAL exceedances. PAL exceedances and proposed ACLs for wells associated with Modules 1 through 6 were previously submitted in Addendum 2. Proposed ACLs included in this submittal that were not previously proposed in Addendum 2 are indicated by bold outlining in **Table 3**, and ACL calculations not previously submitted in Addendum 2 are included in **Appendix A**.

In addition to exemptions previously requested in Addendum 2 for wells and parameters associated with Modules 1 through 6, exemptions in accordance with NR 507.29 and NR 140.28 are requested for the following wells and parameters associated with Modules 10 and 11:

- Manganese at MW-313 and MW-315
- Nitrite + Nitrate as N at MW-313 and MW-314

Concentrations of nitrite + nitrate and manganese appear to reflect sources not related to the ash disposal facility (ADF), including agricultural activities and natural background. Nitrite + nitrate concentrations appear to be associated with agricultural land use. Nitrate concentrations in groundwater in Columbia County are variable, and PAL or Enforcement Standards (ES) exceedances in supply wells are fairly common. Manganese concentrations in groundwater in Columbia County are also variable, and the proposed ACLs for MW-313 and MW-315 are within the range of concentrations reported in UW Extension Geological and Natural History Survey Circular 37, Ground-Water Resources and Geology of Columbia County, Wisconsin.

Data from the eight baseline monitoring events appear to show a downward trend for manganese at MW-313 and an increasing trend for nitrite + nitrate at MW-314. However, all eight rounds of baseline data were included in the proposed ACL calculations because the baseline samples were collected over a short period of time and it is possible that the apparent trends are attributable to seasonal variation or temporary groundwater flow direction changes associated with dewatering activities at the site. Additional samples for these parameters may be analyzed during future events, and updated ACLs may be proposed if appropriate based on additional data.

Lines of evidence indicating that elevated concentrations of some constituents at CCR monitoring wells associated with Modules 1 through 6 were previously summarized in Addendum 2.

For the public health parameters other than nitrate, the requested exemptions are justified under NR 140.28(3)(b) and (4)(b) because:

- The proposed facility is designed to achieve the lowest possible concentrations that are technically and economically feasible for the substances with exemptions requested.
- For any parameters with baseline concentrations above the PAL but below the ES, the proposed facility will not cause the concentration of the substance to exceed the ES at a point of standards application.
- For any parameters with baseline concentrations above the ES:
 - The existing or anticipated increase in the concentration of the substance will not cause an increased threat to public health or welfare, and
 - The proposed facility will not cause an incremental increase in the concentration of the substance that exceeds the PAL.

For the public welfare parameters and nitrate, the requested exemptions are justified under NR 140.28(3)(a) and (4)(a) because:

- The proposed facility is designed to achieve the lowest possible concentrations that are technically and economically feasible for the substances with exemptions requested.
- The existing or anticipated increase in the concentration of the substance due to the proposed facility does not present a threat to public health or welfare.

Both public welfare and public health PAL and ES values have been established for manganese. The proposed manganese ACLs at MW-313 and MW-315 are above the public welfare ES, and are above the public health PAL but below the public health ES.

For purposes of this evaluation, the proposed facility is the Columbia ADF. The design of the existing Columbia ADF Modules 1 through 6 and 10 and 11, and proposed Modules 12 and 13, are part of the justification for the requested exemptions. The design features of the proposed and existing facility that justify the NR 140 exemptions include the liner system, leachate collection system, cover system, and the associated monitoring systems.

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Tables

- 1 Proposed Preventive Action Limits for Indicator Parameters, CCR Monitoring Wells
- 2 Groundwater Results Exceeding NR 140 Standards - CCR Monitoring Wells, Columbia Energy Center Ash Disposal Facility, Modules 10-11
- 3 Proposed Alternative Concentration Limits for Public Health and Welfare Parameters, CCR Monitoring Wells

**Table 1. Proposed Preventive Action Limits for Indicator Parameters, CCR Monitoring Wells
Columbia Energy Center Ash Disposal Facility / SCS Engineers Project #25222260.00**

Well Name	License #3018 DNR ID #	Alkalinity, Total (mg/L as CaCO3) (00410)	Calcium, Total (mg/L) (00916)	Hardness, Total (mg/L as CaCO3) (00900)	Lithium, Total (µg/L) (01132)	Total Dissolved Solids (mg/L) (00360)	Field Specific Conductance (umhos/cm at 25C) (00094)	Field pH, Lower and Upper PALS (Standard Units) (00400)
MW-33AR	063	310	150	390	3.0	850	1,400	6.6 / 8.7
MW-34A	020	310	91	410	1.0	540	820	6.6 / 8.7
MW-84A	038	460	100	490	1.0	550	830	6.3 / 8.4
MW-301	100	690	160	720	1.3	650	1,200	5.8 / 7.9
MW-302	102	420	120	450	5.3	610	900	6.3 / 8.4
MW-309	104	490	180	1,200	1.7	2,100	4,300	6.5 / 8.6
MW-310	106	400	80	690	1.7	990	2,000	6.7 / 8.8
MW-311	108	380	90	400	1.1	510	740	6.6 / 8.7
MW-313	110	400	93	450	1.3	540	770	6.3 / 8.4
MW-314	112	560	130	630	1.3	640	1,100	6.2 / 8.3
MW-315	114	630	140	660	1.5	680	1,100	6.1 / 8.2

Abbreviations:

mg/L = milligrams per liter

PALs = preventive action limits

µg/L = micrograms per liter

umhos/cm = micromhos per centimeter

CaCO3 = calcium carbonate

Thin outline denotes a value previously submitted with the 9/1/2023 Plan Modification Addendum 2

Thick outline denotes a value not included in the tables submitted with the 9/1/2023 Plan Modification Addendum 2

Created by: MDB

Date: 8/9/2023

Revised by: MDB

Date: 9/27/2023

Checked by: AJR

Date: 10/2/2023

Table 2.
Groundwater Results Exceeding NR 140 Standards - CCR Monitoring Wells
Columbia Energy Center Ash Disposal Facility, Modules 10-11

Parameter	PAL	ES	Well	Sample Date	Result	Exceedance Type
Antimony, Total (µg/L)	1.2	6	No Exceedances			
Arsenic, Total (µg/L)	1	10	No Exceedances			
Barium, Total (mg/L)	0.4	2	No Exceedances			
Beryllium, Total (µg/L)	0.4	4	No Exceedances			
Boron, Total (µg/L)	200	1000	No Exceedances			
Cadmium, Total (µg/L)	0.5	5	No Exceedances			
Chloride, Total (mg/L)	125	250	No Exceedances			
Chromium, Total (µg/L)	10	100	No Exceedances			
Cobalt, Total (µg/L)	8	40	No Exceedances			
Copper, Total (µg/L)	130	1,300	No Exceedances			
Fluoride, Total (mg/L)	0.8	4	No Exceedances			
Lead, Total (µg/L)	1.5	15	No Exceedances			
Manganese, Total (µg/L)	25	50	MW-313	1/24/2023	328	ES
				2/23/2023	151	ES
				3/27/2023	86.4	ES
				4/26/2023	65.2	ES
				5/30/2023	77.9	ES
				6/29/2023	82.3	ES
				7/31/2023	47.1	PAL
				8/31/2023	28.7	PAL
			MW-314	1/24/2023	77.8	ES
				2/23/2023	52.1	ES
			MW-315	1/24/2023	165	ES
				2/23/2023	38.3	PAL
				5/30/2023	85.9	ES
				6/29/2023	103	ES
				7/31/2023	54.4	ES
8/31/2023	37.8	PAL				
Mercury, Total (µg/L)	0.2	2	No Exceedances			
Molybdenum, Total (µg/L)	8	40	No Exceedances			
Nitrogen (NO ₂ + NO ₃), Total (mg/L)	2	10	MW-313	1/24/2023	3.9	PAL
				2/23/2023	4.1	PAL
				3/27/2023	3.9	PAL
				4/26/2023	3.8	PAL
				5/30/2023	5.2	PAL
				6/29/2023	6.8	PAL
				7/31/2023	6.9	PAL
				8/31/2023	6.5	PAL
			MW-314	6/29/2023	3.1	PAL
				7/31/2023	6.7	PAL
8/31/2023	8.1	PAL				
Selenium, Total (µg/L)	10	50	No Exceedances			
Silver, Total (µg/L)	10	50	No Exceedances			

Table 2.
Groundwater Results Exceeding NR 140 Standards - CCR Monitoring Wells
Columbia Energy Center Ash Disposal Facility, Modules 10-11

Parameter	PAL	ES	Well	Sample Date	Result	Exceedance Type
Sulfate, Total (mg/L)	125	250			No Exceedances	
Thallium, Total (µg/L)	0.4	2			No Exceedances	
Zinc, Total (µg/L)	2,500	5,000			No Exceedances	

Notes:

PAL = NR 140 Preventive Action Limit µg/L = micrograms per liter dup = Duplicate Sample

Prepared by: NLB, 9/22/2023

Checked by: MDB 9/28/2023

**Table 3. Proposed Alternative Concentration Limits for Public Health and Welfare Parameters, CCR Monitoring Wells
Columbia Energy Center Ash Disposal Facility / SCS Engineers Project #25222260.00**

Well	License # 03025 DNR ID #	Beryllium, Total	Boron, Total	Chloride, Total	Manganese, Total	Nitrite + Nitrate as Nitrogen, Total	Sulfate, Total	Thallium, Total
		PAL = 0.4 ES = 4 µg/L	PAL = 0.2 ES = 1 mg/L	PAL = 125 ES = 250 (mg/L)	PAL = 25 ES = 50 (µg/L)	PAL = 2 ES = 10 (mg/L)	PAL = 125 ES = 250 (mg/L)	PAL = 0.4 ES = 2 (µg/L)
MW-33AR	063	--	0.92	180	--	3.4	200	--
MW-34A	020	--	0.25	--	--	12	160	--
MW-84A	038	--	--	--	--	--	--	--
MW-301	100	--	--	--	48	2.7	--	--
MW-302	102	--	1.3	--	--	--	--	--
MW-309	104	--	--	820	--	--	--	0.89
MW-310	106	0.78	--	330	--	--	--	1.3
MW-311	108	--	--	--	--	--	--	--
MW-313	110	--	--	--	160	7.8	--	--
MW-314	112	--	--	--	--	8.6	--	--
MW-315	114	--	--	--	120	--	--	--

Abbreviations:

PAL = NR 140 preventive action limit

ES = NR 140 enforcement standard

ACLs = Alternative concentration limits

mg/L = milligrams per liter

µg/L = micrograms per liter

NC = Not calculated due to increasing trend

Thin outline denotes a value previously submitted with the 9/1/2023 Plan Modification Addendum 2

Thick outline denotes a value not included in the tables submitted with the 9/1/2023 Plan Modification Addendum 2

Created by: MDB

Revised by: MDB


Checked by: AJR

Date: 8/9/2023

Date: 9/28/2023

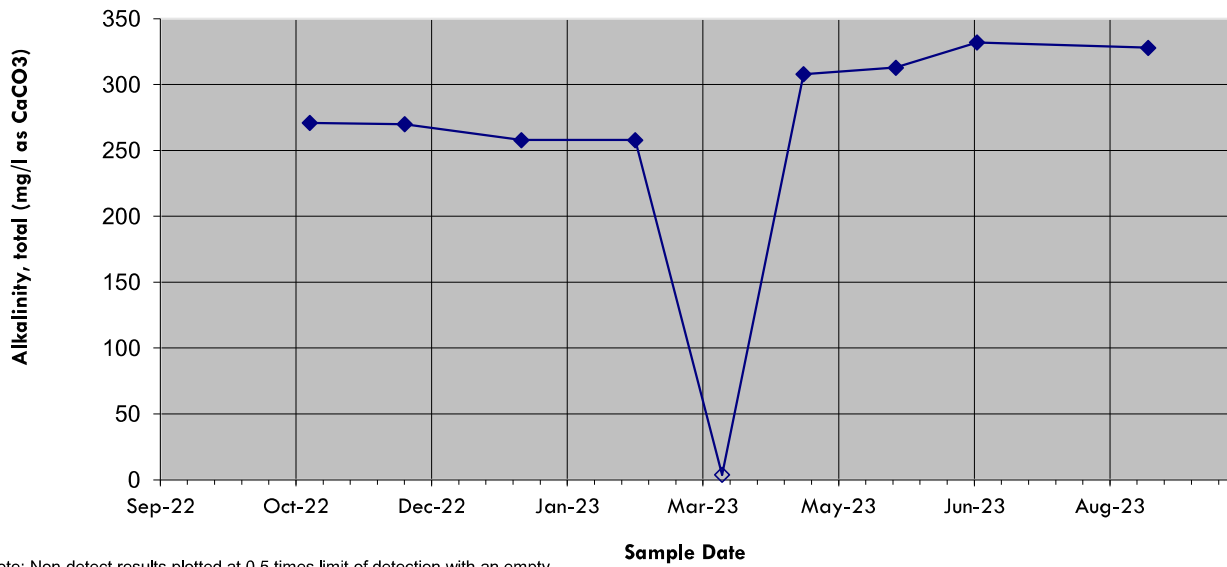
Date: 10/2/2023

I:\25222260.00\Data and Calculations\Groundwater PALs ACLs\Tables 1-3_PAL and ACL summaries_including Mod 10-11.xlsx]Table 3_CCR ACLs



Appendix A
PAL and ACL Calculations

MW-310: Alkalinity



Note: Non-detect results plotted at 0.5 times limit of detection with an empty symbol.

Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-310	ALKALINITY, TOTAL (MG/L AS CaCO3)	01	271	10/26/2022	271	271	
MW-310	ALKALINITY, TOTAL (MG/L AS CaCO3)	01	270	11/30/2022	270	270	
MW-310	ALKALINITY, TOTAL (MG/L AS CaCO3)	01	258	1/12/2023	258	258	
MW-310	ALKALINITY, TOTAL (MG/L AS CaCO3)	01	258	2/23/2023	258	258	
MW-310	ALKALINITY, TOTAL (MG/L AS CaCO3)	01	<7.4	3/27/2023	3.7		U, outlier
MW-310	ALKALINITY, TOTAL (MG/L AS CaCO3)	01	308	4/26/2023	308	308	
MW-310	ALKALINITY, TOTAL (MG/L AS CaCO3)	01	313	5/30/2023	313	313	
MW-310	ALKALINITY, TOTAL (MG/L AS CaCO3)	01	332	6/29/2023	332	332	
MW-310	ALKALINITY, TOTAL (MG/L AS CaCO3)	01	328	8/31/2023	328	328	

Calculations	
Count	8
Mean	292.25
Std Dev	31.24
3 X SD (PAL)	93.71
Min Increase (PAL)	100
PAL, Calculated	392.25
PAL, Rounded	400

Duplicate Data Not Used for Calculations							

Notes:

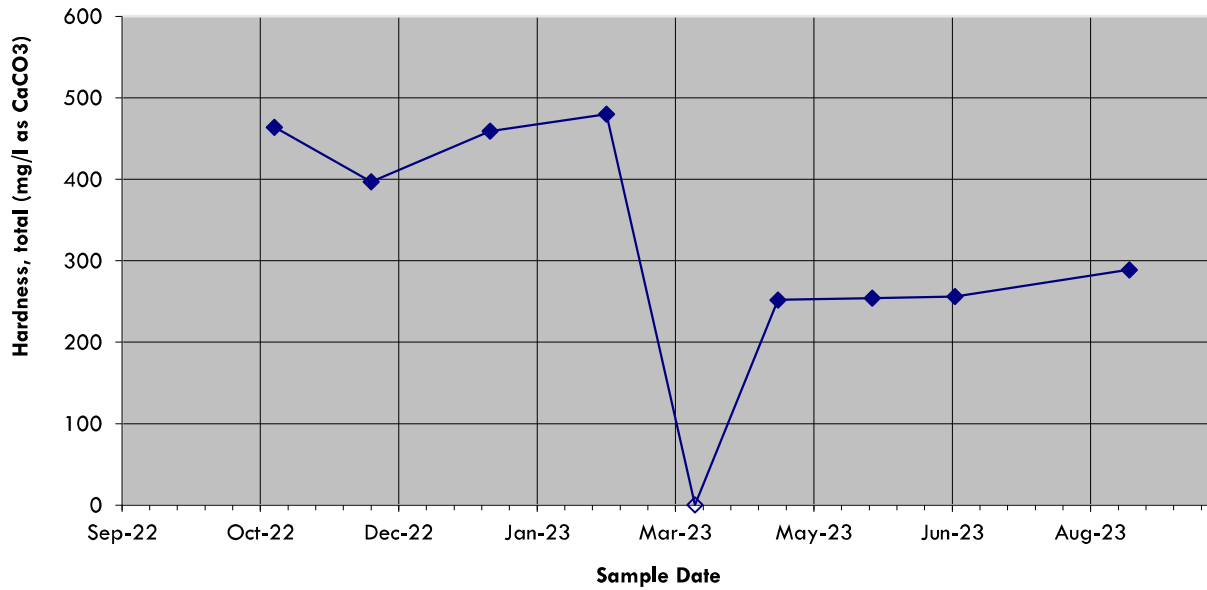
- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.
- U = Parameter not detected.

Calculated by: RM, 7/21/2023

Updated by: NLB, 9/21/2023

Checked by:

MW-310: Hardness



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-310	HARDNESS, TOTAL (MG/L AS CaCO3)	01	464	10/26/2022	464	464	
MW-310	HARDNESS, TOTAL (MG/L AS CaCO3)	01	397	11/30/2022	397	397	
MW-310	HARDNESS, TOTAL (MG/L AS CaCO3)	01	459	1/12/2023	459	459	
MW-310	HARDNESS, TOTAL (MG/L AS CaCO3)	01	480	2/23/2023	480	480	
MW-310	HARDNESS, TOTAL (MG/L AS CaCO3)	01	<1.0	3/27/2023	0.5		outlier
MW-310	HARDNESS, TOTAL (MG/L AS CaCO3)	01	252	4/26/2023	252	252	
MW-310	HARDNESS, TOTAL (MG/L AS CaCO3)	01	254	5/30/2023	254	254	
MW-310	HARDNESS, TOTAL (MG/L AS CaCO3)	01	256	6/29/2023	256	256	
MW-310	HARDNESS, TOTAL (MG/L AS CaCO3)	01	289	8/31/2023	289	289	

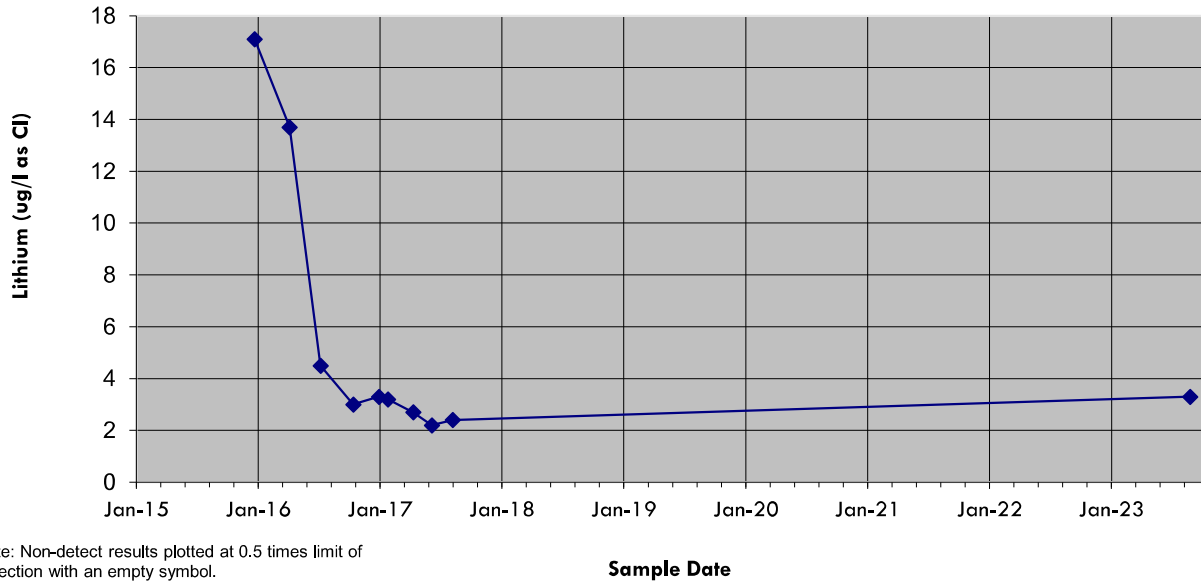
Calculations	
Count	8
Mean	356.38
Std Dev	107.90
3 X SD (PAL)	323.69
Min Increase (PAL)	100
PAL, Calculated	680.06
PAL, Rounded	690

Duplicate Data Not Used for Calculations							

Note:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-302: Lithium



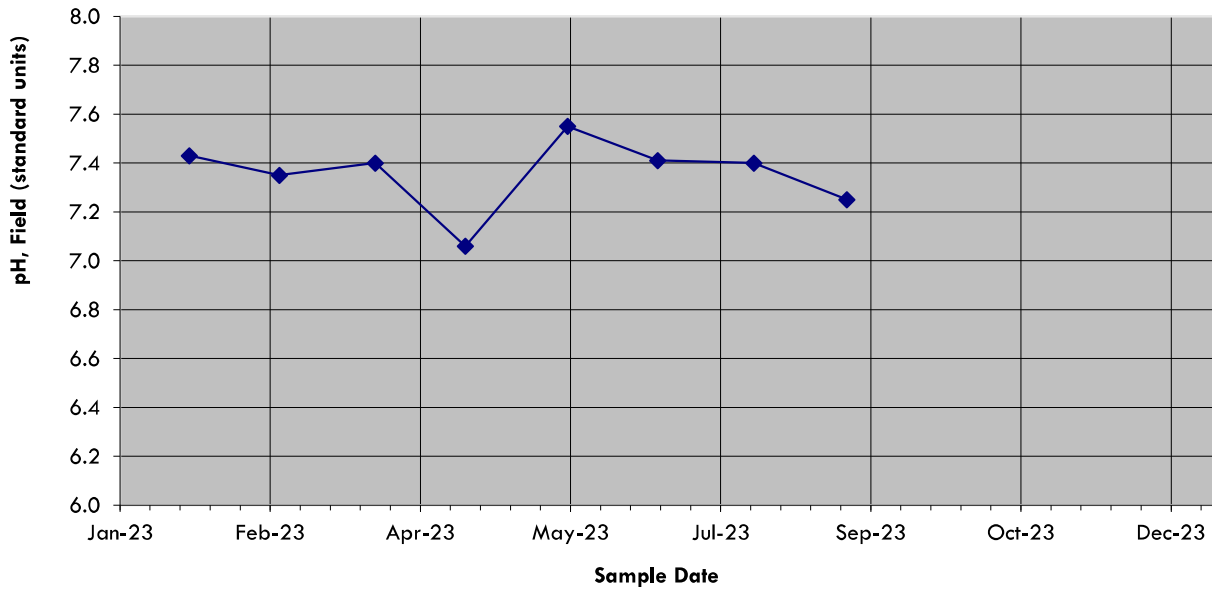
Note: Non-detect results plotted at 0.5 times limit of detection with an empty symbol.

Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes	
MW-302	Lithium, Total (ug/L)	01	17.1	12/22/2015	17.1		outlier	
MW-302	Lithium, Total (ug/L)	01	13.7	4/5/2016	13.7		outlier	
MW-302	Lithium, Total (ug/L)	01	4.5	7/7/2016	4.5	4.5		
MW-302	Lithium, Total (ug/L)	01	3	10/13/2016	3	3		
MW-302	Lithium, Total (ug/L)	01	3.3	12/29/2016	3.3	3.3		
MW-302	Lithium, Total (ug/L)	01	3.2	1/25/2017	3.2	3.2		
MW-302	Lithium, Total (ug/L)	01	2.7	4/11/2017	2.7	2.7		
MW-302	Lithium, Total (ug/L)	01	2.2	6/6/2017	2.2	2.2		
MW-302	Lithium, Total (ug/L)	01	2.4	8/8/2017	2.4	2.4		
MW-302	Lithium, Total (ug/L)	01	3.3	8/31/2023	3.3	3.3		
Calculations								
Count							8	
Mean							3.1	
Std Dev							0.71	
3 X SD (PAL)							2.13	
PAL, Calculated							5.20	
PAL, Rounded							5.3	

Duplicate Data Not Used for Calculations							

Note: Current PAL = 125 mg/l; ES = 250 mg/l; data downloaded from ChemPoint
 J = Result is an estimated value below the laboratory's limit of quantitation.
 P = Did not meet required preservation and/or hold time.
 B = Compound detected in blank.
 M = Failed method QC check.

MW-313: Field pH



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-313	PH, FIELD (STANDARD UNITS)	01	7.43	1/24/2023	7.43	7.43	
MW-313	PH, FIELD (STANDARD UNITS)	01	7.35	2/23/2023	7.35	7.35	
MW-313	PH, FIELD (STANDARD UNITS)	01	7.4	3/27/2023	7.4	7.4	
MW-313	PH, FIELD (STANDARD UNITS)	01	7.06	4/26/2023	7.06	7.06	
MW-313	PH, FIELD (STANDARD UNITS)	01	7.55	5/30/2023	7.55	7.55	
MW-313	PH, FIELD (STANDARD UNITS)	01	7.41	6/29/2023	7.41	7.41	
MW-313	PH, FIELD (STANDARD UNITS)	01	7.4	7/31/2023	7.4	7.4	
MW-313	PH, FIELD (STANDARD UNITS)	01	7.25	8/31/2023	7.25	7.25	

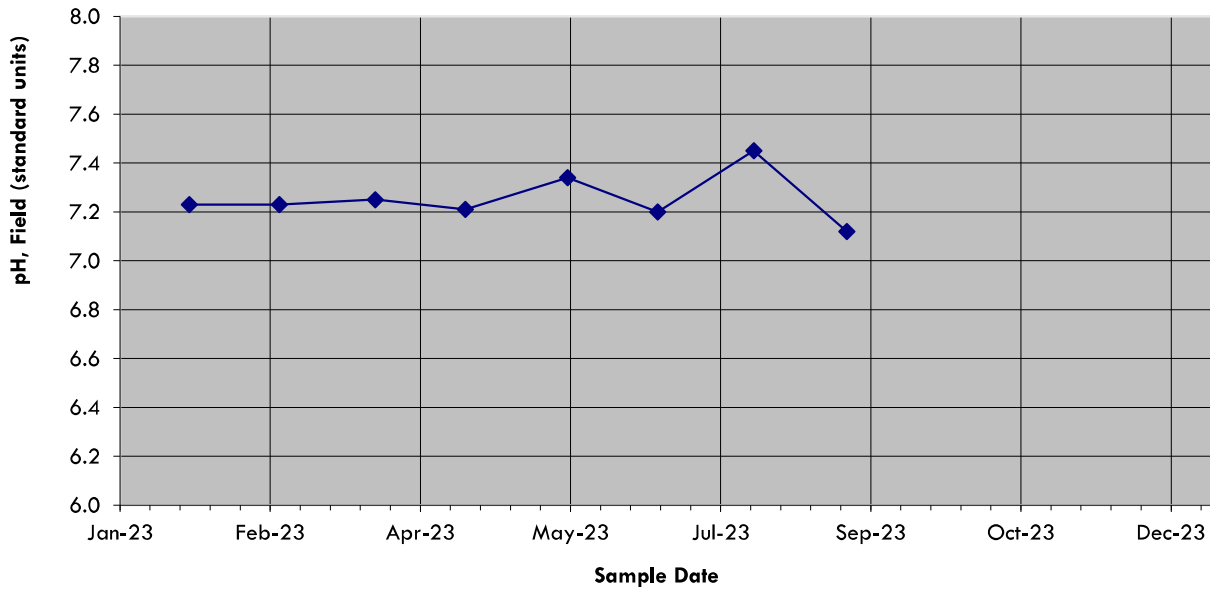
Calculations	
Count	8
Mean	7.36
PAL Limit (NR 140.20(2)(a))	+/- 1
Upper PAL, Calculated	8.36
Lower PAL, Calculated	6.36
Upper PAL, Rounded	8.4
Lower PAL, Rounded	6.3

Duplicate Data Not Used for Calculations							

Note:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-314: Field pH



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-314	Field pH	01	7.23	1/24/2023	7.23	7.23	
MW-314	Field pH	01	7.23	2/23/2023	7.23	7.23	
MW-314	Field pH	01	7.25	3/27/2023	7.25	7.25	
MW-314	Field pH	01	7.21	4/26/2023	7.21	7.21	
MW-314	Field pH	01	7.34	5/30/2023	7.34	7.34	
MW-314	Field pH	01	7.2	6/29/2023	7.2	7.2	
MW-314	Field pH	01	7.45	7/31/2023	7.45	7.45	
MW-314	Field pH	01	7.12	8/31/2023	7.12	7.12	

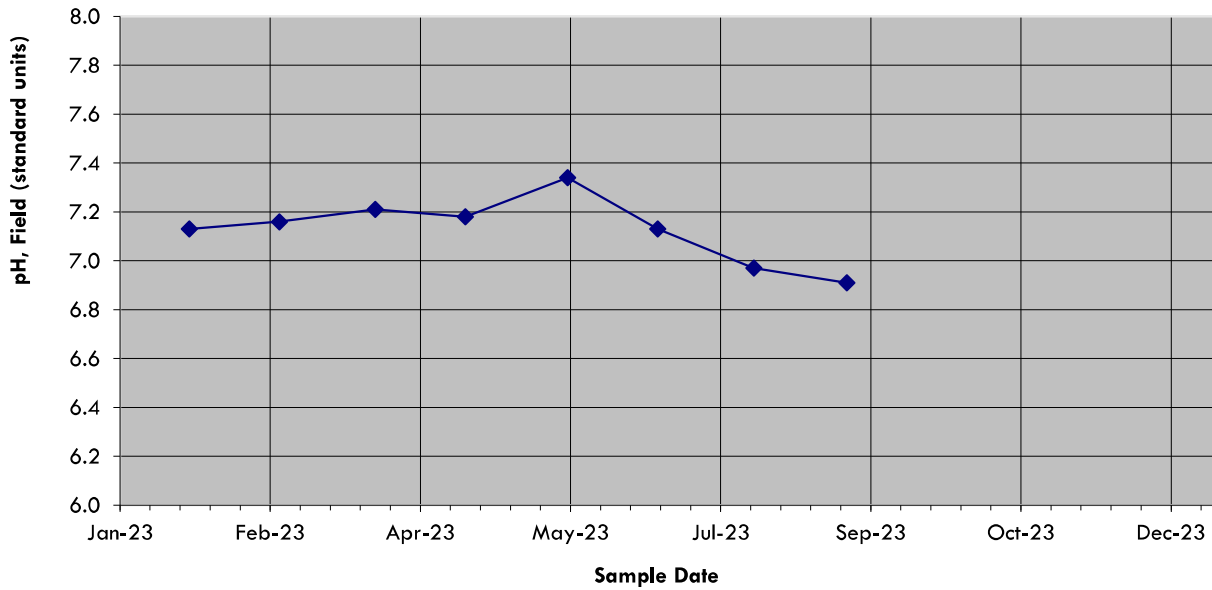
Calculations	
Count	8
Mean	7.25
PAL Limit (NR 140.20(2)(a))	+/- 1
Upper PAL, Calculated	8.25
Lower PAL, Calculated	6.25
Upper PAL, Rounded	8.3
Lower PAL, Rounded	6.2

Duplicate Data Not Used for Calculations							

Note:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-315: Field pH



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-315	Field pH	01	7.13	1/24/2023	7.13	7.13	
MW-315	Field pH	01	7.16	2/23/2023	7.16	7.16	
MW-315	Field pH	01	7.21	3/27/2023	7.21	7.21	
MW-315	Field pH	01	7.18	4/26/2023	7.18	7.18	
MW-315	Field pH	01	7.34	5/30/2023	7.34	7.34	
MW-315	Field pH	01	7.13	6/29/2023	7.13	7.13	
MW-315	Field pH	01	6.97	7/31/2023	6.97	6.97	
MW-315	Field pH	01	6.91	8/31/2023	6.91	6.91	

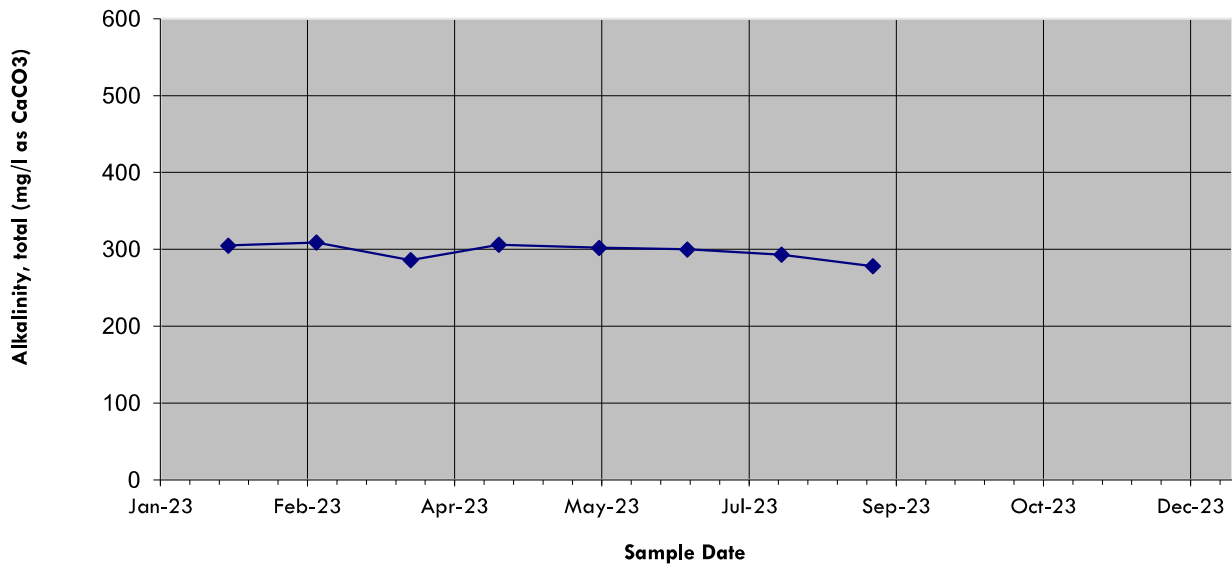
Calculations	
Count	8
Mean	7.13
PAL Limit (NR 140.20(2)(a))	+/- 1
Upper PAL, Calculated	8.13
Lower PAL, Calculated	6.13
Upper PAL, Rounded	8.2
Lower PAL, Rounded	6.1

Duplicate Data Not Used for Calculations							

Note:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-313: Alkalinity



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-313	Alkalinity, Total as CaCO3	01	309	1/24/2023	305	305	
MW-313	Alkalinity, Total as CaCO3	01	305	2/23/2023	309	309	
MW-313	Alkalinity, Total as CaCO3	01	286	3/27/2023	286	286	
MW-313	Alkalinity, Total as CaCO3	01	306	4/26/2023	306	306	
MW-313	Alkalinity, Total as CaCO3	01	302	5/30/2023	302	302	
MW-313	Alkalinity, Total as CaCO3	01	300	6/29/2023	300	300	
MW-313	Alkalinity, Total as CaCO3	01	293	7/31/2023	293	293	
MW-313	Alkalinity, Total as CaCO3	01	278	8/31/2023	278	278	

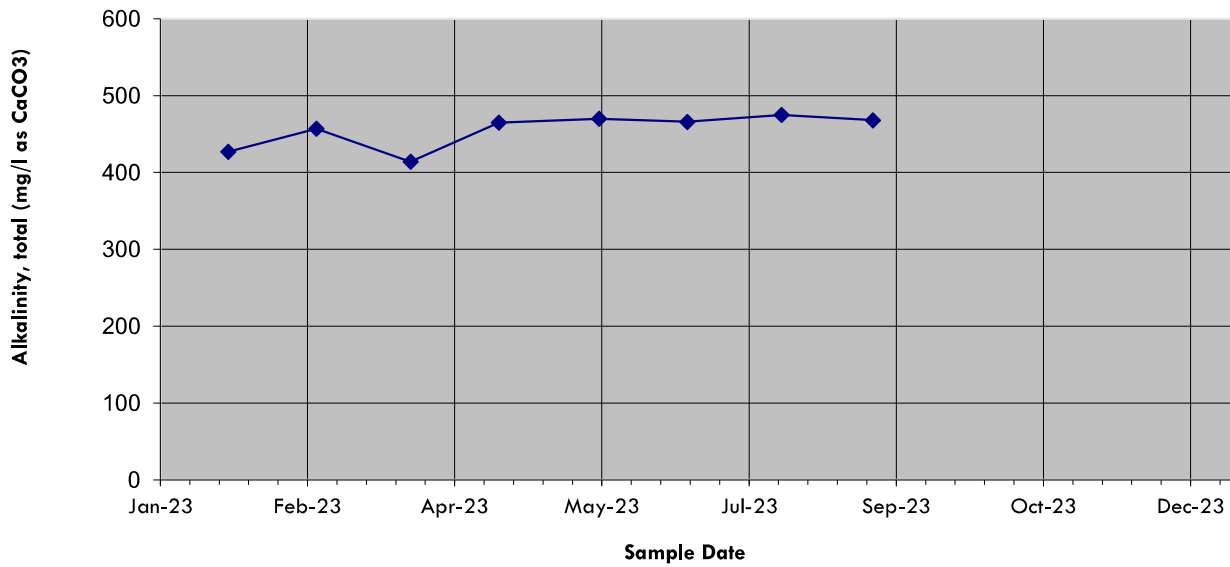
Calculations							
Count							8
Mean							297.38
Std Dev							10.82
3 X SD (PAL)							32.47
Min Increase (PAL)							100
PAL, Calculated							397.38
PAL, Rounded							400

Duplicate Data Not Used for Calculations							

Notes:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-314: Alkalinity



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-314	Alkalinity, Total as CaCO3	01	427	1/24/2023	427	427	
MW-314	Alkalinity, Total as CaCO3	01	457	2/23/2023	457	457	
MW-314	Alkalinity, Total as CaCO3	01	414	3/27/2023	414	414	
MW-314	Alkalinity, Total as CaCO3	01	465	4/26/2023	465	465	
MW-314	Alkalinity, Total as CaCO3	01	470	5/30/2023	470	470	
MW-314	Alkalinity, Total as CaCO3	01	466	6/29/2023	466	466	
MW-314	Alkalinity, Total as CaCO3	01	475	7/31/2023	475	475	
MW-314	Alkalinity, Total as CaCO3	01	468	8/31/2023	468	468	

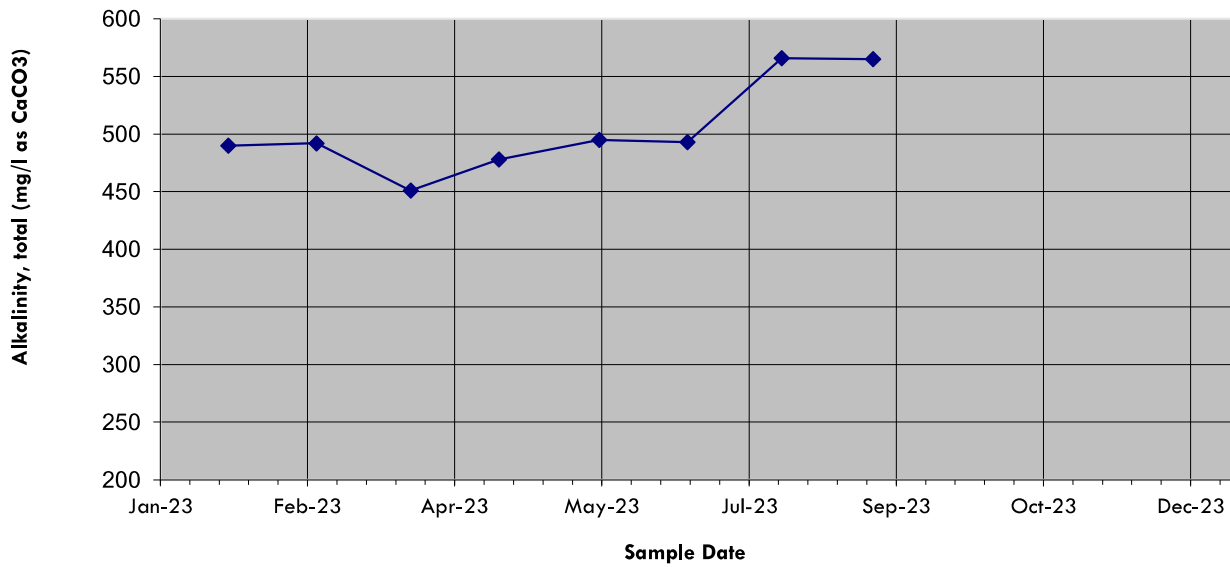
Calculations							
Count							8
Mean							455.25
Std Dev							22.31
3 X SD (PAL)							66.92
Min Increase (PAL)							100
PAL, Calculated							555.25
PAL, Rounded							560

Duplicate Data Not Used for Calculations							

Notes:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-315: Alkalinity



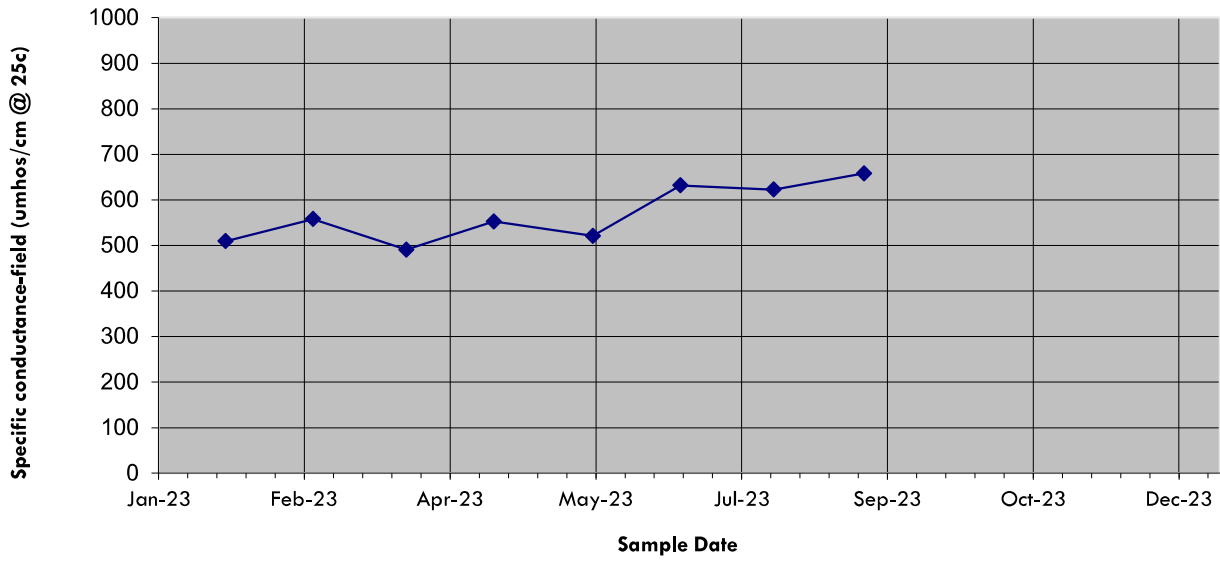
Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-315	Alkalinity, Total as CaCO3	01	490	1/24/2023	490	490	
MW-315	Alkalinity, Total as CaCO3	01	492	2/23/2023	492	492	
MW-315	Alkalinity, Total as CaCO3	01	451	3/27/2023	451	451	
MW-315	Alkalinity, Total as CaCO3	01	478	4/26/2023	478	478	
MW-315	Alkalinity, Total as CaCO3	01	495	5/30/2023	495	495	
MW-315	Alkalinity, Total as CaCO3	01	493	6/29/2023	493	493	
MW-315	Alkalinity, Total as CaCO3	01	566	7/31/2023	566	566	
MW-315	Alkalinity, Total as CaCO3	01	565	8/31/2023	565	565	
Calculations							
Count						8	
Mean						503.75	
Std Dev						40.69	
3 X SD (PAL)						122.08	
Min Increase (PAL)						100	
PAL, Calculated						625.83	
PAL, Rounded						630	

Duplicate Data Not Used for Calculations							

Notes:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

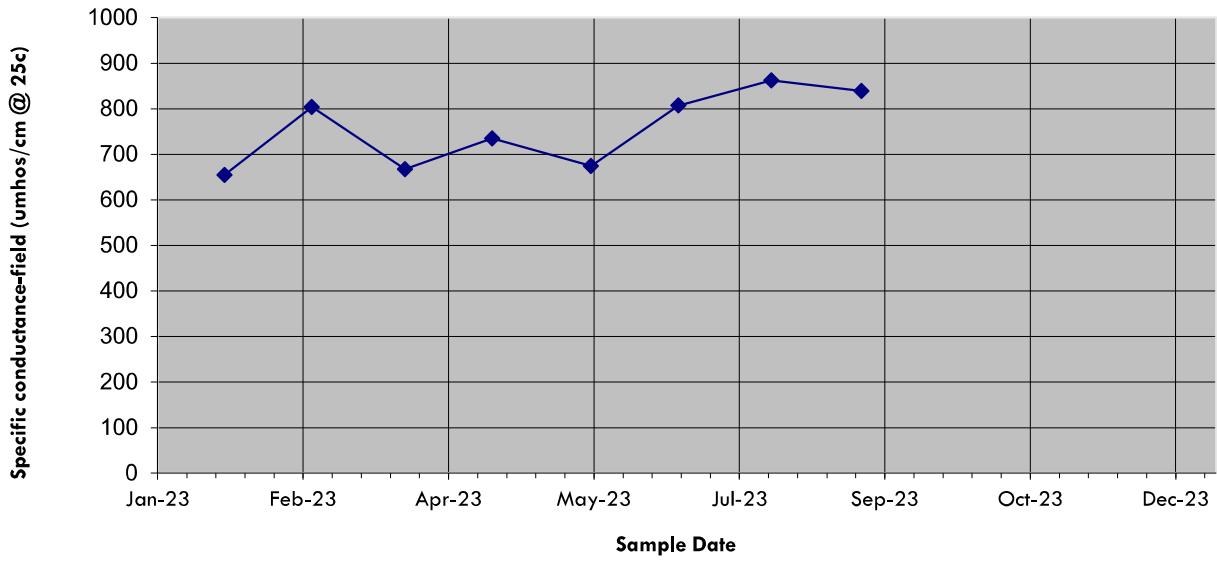
MW-313: Specific Conductivity



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-313	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	509.5	1/24/2023	509.5	509.5	
MW-313	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	557.9	2/23/2023	557.9	557.9	
MW-313	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	490.5	3/27/2023	490.5	490.5	
MW-313	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	552.6	4/26/2023	552.6	552.6	
MW-313	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	520.9	5/30/2023	520.9	520.9	
MW-313	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	632	6/29/2023	632	632	
MW-313	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	622.8	7/31/2023	622.8	622.8	
MW-313	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	657.8	8/31/2023	657.8	657.8	
Calculations							
Count						8	
Mean						568.00	
Std Dev						62.28	
3 X SD (PAL)						186.83	
Min Increase (PAL)						200	
PAL, Calculated						768.00	
PAL, Rounded						770	

Duplicate Data Not Used for Calculations							

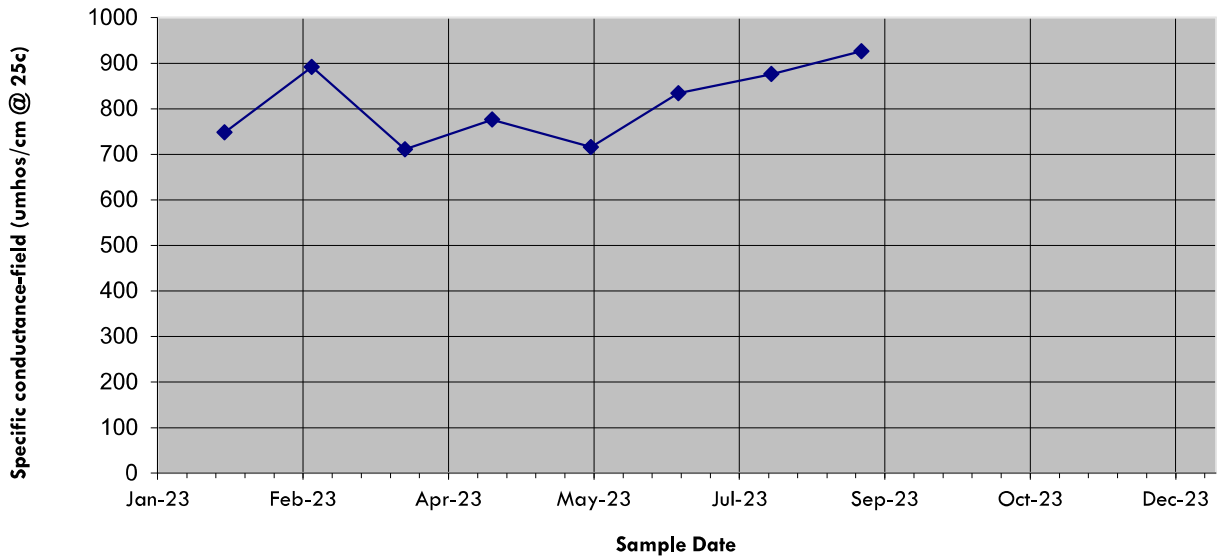
MW-314: Specific Conductivity



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-314	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	654.9	1/24/2023	654.9	654.9	
MW-314	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	804	2/23/2023	804	804	
MW-314	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	667.3	3/27/2023	667.3	667.3	
MW-314	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	735	4/26/2023	735	735	
MW-314	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	674.5	5/30/2023	674.5	674.5	
MW-314	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	807	6/29/2023	807	807	
MW-314	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	862	7/31/2023	862	862	
MW-314	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	839	8/31/2023	839	839	
Calculations							
Count						8	
Mean						755.46	
Std Dev						82.98	
3 X SD (PAL)						248.94	
Min Increase (PAL)						200	
PAL, Calculated						1004.40	
PAL, Rounded						1,100	

Duplicate Data Not Used for Calculations							

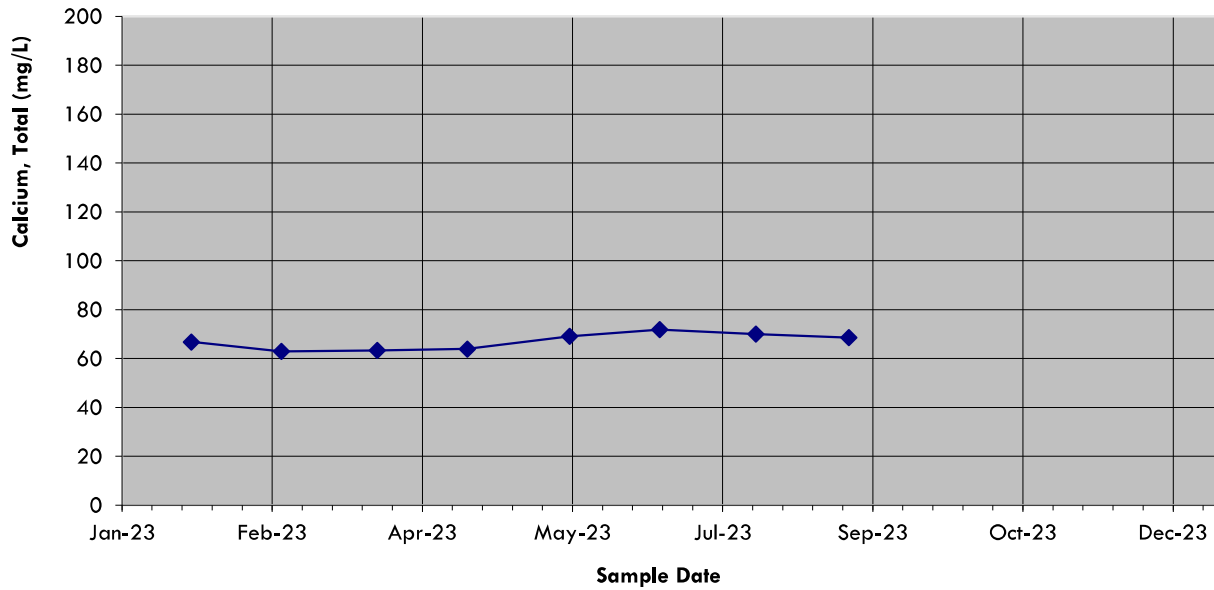
MW-315: Specific Conductivity



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-315	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	748	1/24/2023	748	748	
MW-315	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	892	2/23/2023	892	892	
MW-315	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	711	3/27/2023	711	711	
MW-315	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	776	4/26/2023	776	776	
MW-315	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	716	5/30/2023	716	716	
MW-315	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	834	6/29/2023	834	834	
MW-315	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	876	7/31/2023	876	876	
MW-315	SPECIFIC CONDUCTANCE, FIELD (UMHO/CM @ 25C)	01	926	8/31/2023	926	926	
Calculations							
Count						8	
Mean						809.88	
Std Dev						83.45	
3 X SD (PAL)						250.35	
Min Increase (PAL)						200	
PAL, Calculated						1060.23	
PAL, Rounded						1,100	

Duplicate Data Not Used for Calculations							

MW-313: Calcium



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-313	CALCIUM, TOTAL (MG/L CA)	01	66.8	1/24/2023	66.8	66.8	
MW-313	CALCIUM, TOTAL (MG/L CA)	01	62.9	2/23/2023	62.9	62.9	
MW-313	CALCIUM, TOTAL (MG/L CA)	01	63.3	3/27/2023	63.3	63.3	
MW-313	CALCIUM, TOTAL (MG/L CA)	01	63.9	4/26/2023	63.9	63.9	
MW-313	CALCIUM, TOTAL (MG/L CA)	01	69.1	5/30/2023	69.1	69.1	
MW-313	CALCIUM, TOTAL (MG/L CA)	01	71.9	6/29/2023	71.9	71.9	
MW-313	CALCIUM, TOTAL (MG/L CA)	01	70	7/31/2023	70	70	
MW-313	CALCIUM, TOTAL (MG/L CA)	01	68.6	8/31/2023	68.6	68.6	

Calculations	
Count	8
Mean	67.06
Std Dev	3.38
3 X SD (PAL)	10.15
Min Increase (PAL)	25
PAL, Calculated	92.06
PAL, Rounded	93

Duplicate Data Not Used for Calculations							

Note: Data downloaded from ChemPoint

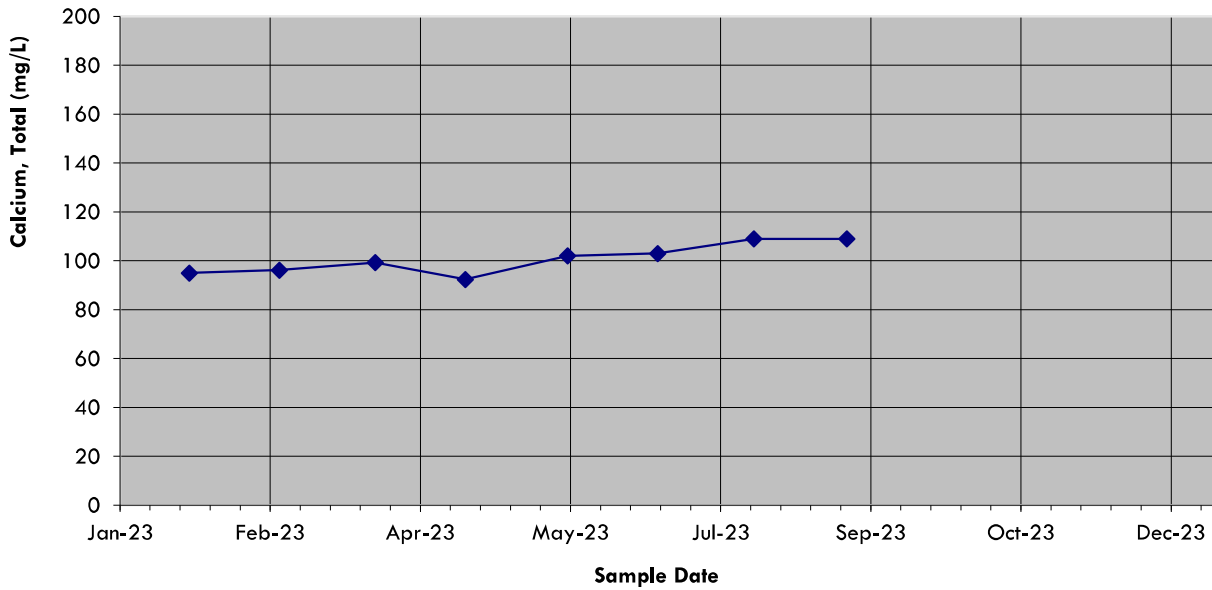
J = Result is an estimated value below the laboratory's limit of quantitation.

P = Did not meet required preservation and/or hold time.

B = Compound detected in blank.

M = Failed method QC check.

MW-314: Calcium



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-314	CALCIUM, TOTAL (MG/L CA)	01	95	1/24/2023	95	95	
MW-314	CALCIUM, TOTAL (MG/L CA)	01	96.2	2/23/2023	96.2	96.2	
MW-314	CALCIUM, TOTAL (MG/L CA)	01	99.3	3/27/2023	99.3	99.3	
MW-314	CALCIUM, TOTAL (MG/L CA)	01	92.4	4/26/2023	92.4	92.4	
MW-314	CALCIUM, TOTAL (MG/L CA)	01	102	5/30/2023	102	102	
MW-314	CALCIUM, TOTAL (MG/L CA)	01	103	6/29/2023	103	103	
MW-314	CALCIUM, TOTAL (MG/L CA)	01	109	7/31/2023	109	109	
MW-314	CALCIUM, TOTAL (MG/L CA)	01	109	8/31/2023	109	109	

Calculations						
Count						8
Mean						100.74
Std Dev						6.19
3 X SD (PAL)						18.57
Min Increase (PAL)						25
PAL, Calculated						125.74
PAL, Rounded						130

Duplicate Data Not Used for Calculations						

Note: Data downloaded from ChemPoint

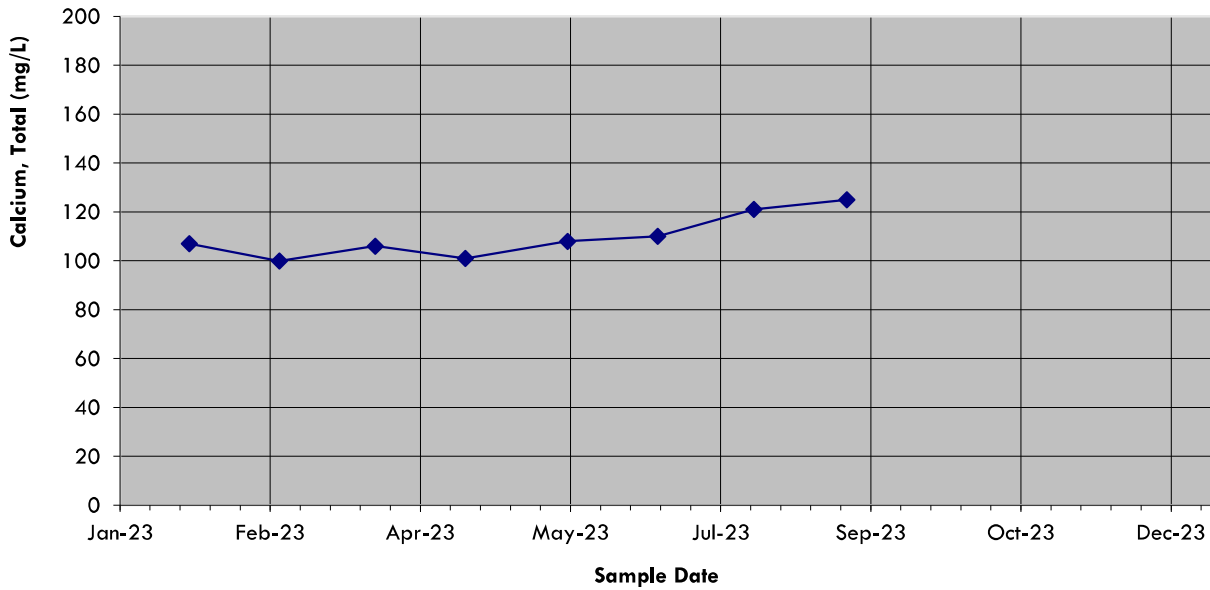
J = Result is an estimated value below the laboratory's limit of quantitation.

P = Did not meet required preservation and/or hold time.

B = Compound detected in blank.

M = Failed method QC check.

MW-315: Calcium



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-315	CALCIUM, TOTAL (MG/L CA)	01	107	1/24/2023	107	107	
MW-315	CALCIUM, TOTAL (MG/L CA)	01	100	2/23/2023	100	100	
MW-315	CALCIUM, TOTAL (MG/L CA)	01	106	3/27/2023	106	106	
MW-315	CALCIUM, TOTAL (MG/L CA)	01	101	4/26/2023	101	101	
MW-315	CALCIUM, TOTAL (MG/L CA)	01	108	5/30/2023	108	108	
MW-315	CALCIUM, TOTAL (MG/L CA)	01	110	6/29/2023	110	110	
MW-315	CALCIUM, TOTAL (MG/L CA)	01	121	7/31/2023	121	121	
MW-315	CALCIUM, TOTAL (MG/L CA)	01	125	8/31/2023	125	125	

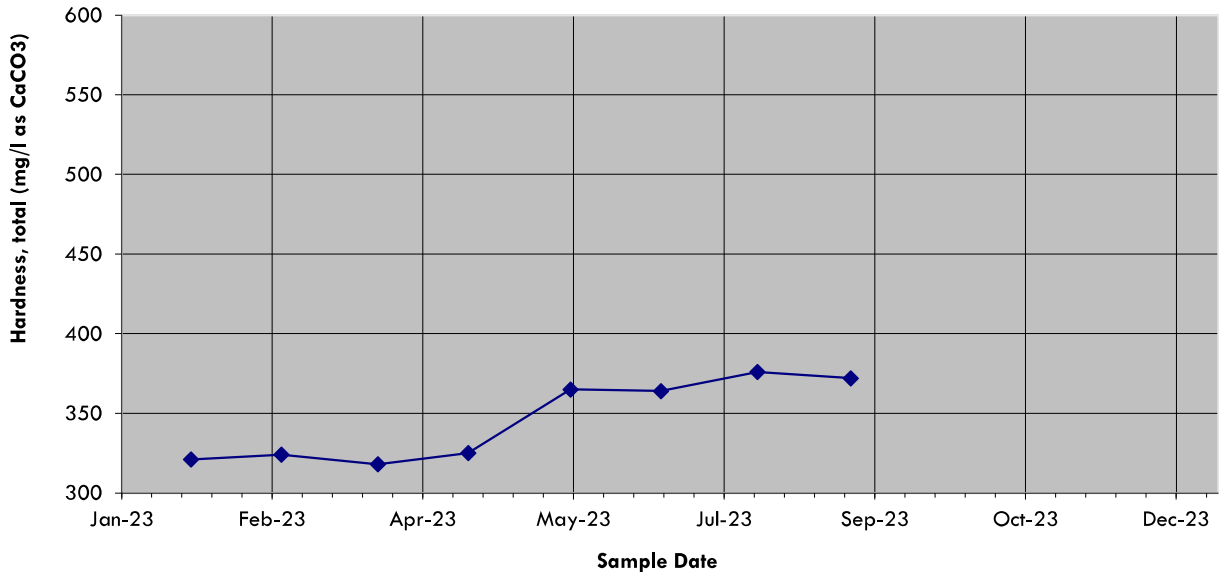
Calculations							
Count						8	
Mean						109.75	
Std Dev						8.91	
3 X SD (PAL)						26.72	
Min Increase (PAL)						25	
PAL, Calculated						136.47	
PAL, Rounded						140	

Duplicate Data Not Used for Calculations							

Note:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-313: Hardness



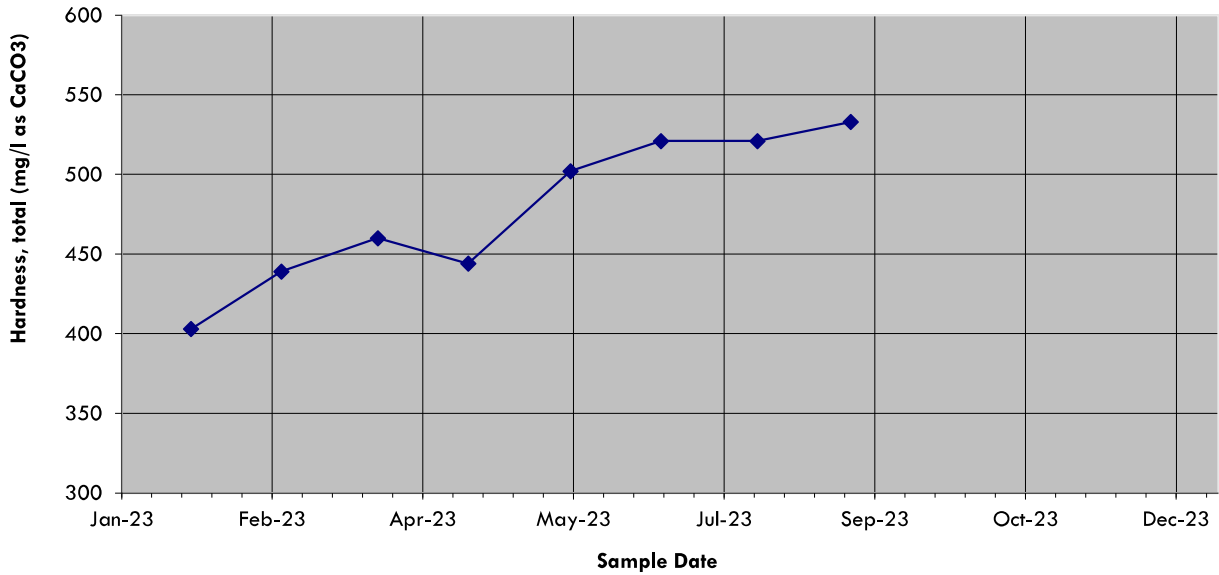
Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-313	HARDNESS, TOTAL (MG/L AS CaCO3)	01	321	1/24/2023	321	321	
MW-313	HARDNESS, TOTAL (MG/L AS CaCO3)	01	324	2/23/2023	324	324	
MW-313	HARDNESS, TOTAL (MG/L AS CaCO3)	01	318	3/27/2023	318	318	
MW-313	HARDNESS, TOTAL (MG/L AS CaCO3)	01	325	4/26/2023	325	325	
MW-313	HARDNESS, TOTAL (MG/L AS CaCO3)	01	365	5/30/2023	365	365	
MW-313	HARDNESS, TOTAL (MG/L AS CaCO3)	01	364	6/29/2023	364	364	
MW-313	HARDNESS, TOTAL (MG/L AS CaCO3)	01	376	7/31/2023	376	376	
MW-313	HARDNESS, TOTAL (MG/L AS CaCO3)	01	372	8/31/2023	372	372	
Calculations							
Count						8	
Mean						345.63	
Std Dev						25.62	
3 X SD (PAL)						76.85	
Min Increase (PAL)						100	
PAL, Calculated						445.63	
PAL, Rounded						450	

Duplicate Data Not Used for Calculations							

Note:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-314: Hardness



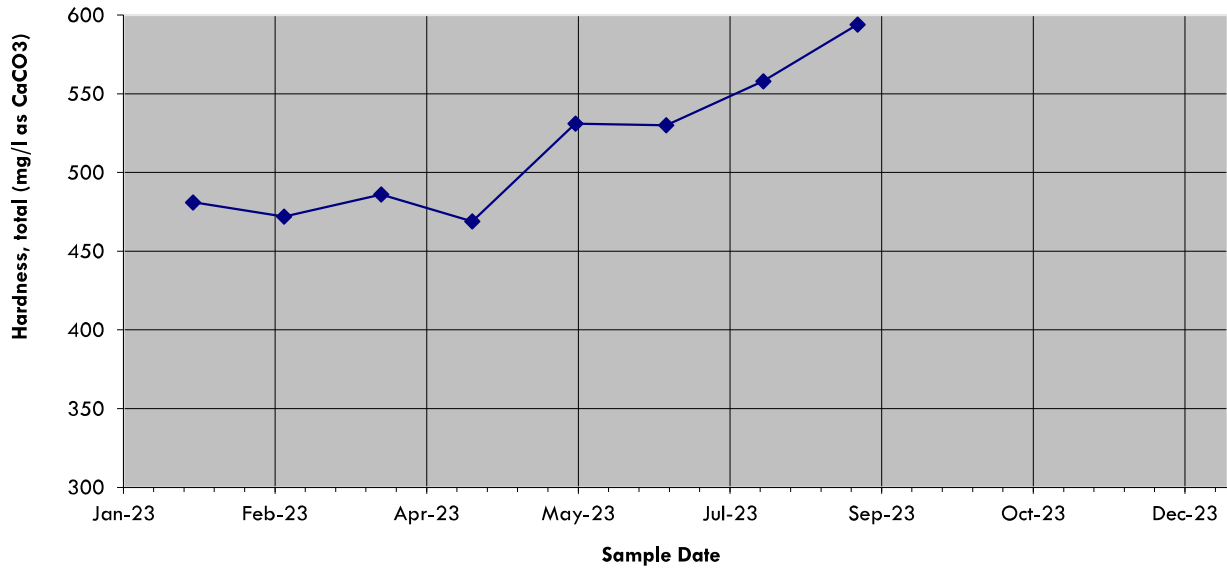
Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-314	HARDNESS, TOTAL (MG/L AS CaCO3)	01	403	1/24/2023	403	403	
MW-314	HARDNESS, TOTAL (MG/L AS CaCO3)	01	439	2/23/2023	439	439	
MW-314	HARDNESS, TOTAL (MG/L AS CaCO3)	01	460	3/27/2023	460	460	
MW-314	HARDNESS, TOTAL (MG/L AS CaCO3)	01	444	4/26/2023	444	444	
MW-314	HARDNESS, TOTAL (MG/L AS CaCO3)	01	502	5/30/2023	502	502	
MW-314	HARDNESS, TOTAL (MG/L AS CaCO3)	01	521	6/29/2023	521	521	
MW-314	HARDNESS, TOTAL (MG/L AS CaCO3)	01	521	7/31/2023	521	521	
MW-314	HARDNESS, TOTAL (MG/L AS CaCO3)	01	533	8/31/2023	533	533	
Calculations							
Count						8	
Mean						477.88	
Std Dev						47.70	
3 X SD (PAL)						143.09	
Min Increase (PAL)						100	
PAL, Calculated						620.97	
PAL, Rounded						630	

Duplicate Data Not Used for Calculations							

Note:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-315: Hardness



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-315	HARDNESS, TOTAL (MG/L AS CaCO3)	01	481	1/24/2023	481	481	
MW-315	HARDNESS, TOTAL (MG/L AS CaCO3)	01	472	2/23/2023	472	472	
MW-315	HARDNESS, TOTAL (MG/L AS CaCO3)	01	486	3/27/2023	486	486	
MW-315	HARDNESS, TOTAL (MG/L AS CaCO3)	01	469	4/26/2023	469	469	
MW-315	HARDNESS, TOTAL (MG/L AS CaCO3)	01	531	5/30/2023	531	531	
MW-315	HARDNESS, TOTAL (MG/L AS CaCO3)	01	530	6/29/2023	530	530	
MW-315	HARDNESS, TOTAL (MG/L AS CaCO3)	01	558	7/31/2023	558	558	
MW-315	HARDNESS, TOTAL (MG/L AS CaCO3)	01	594	8/31/2023	594	594	

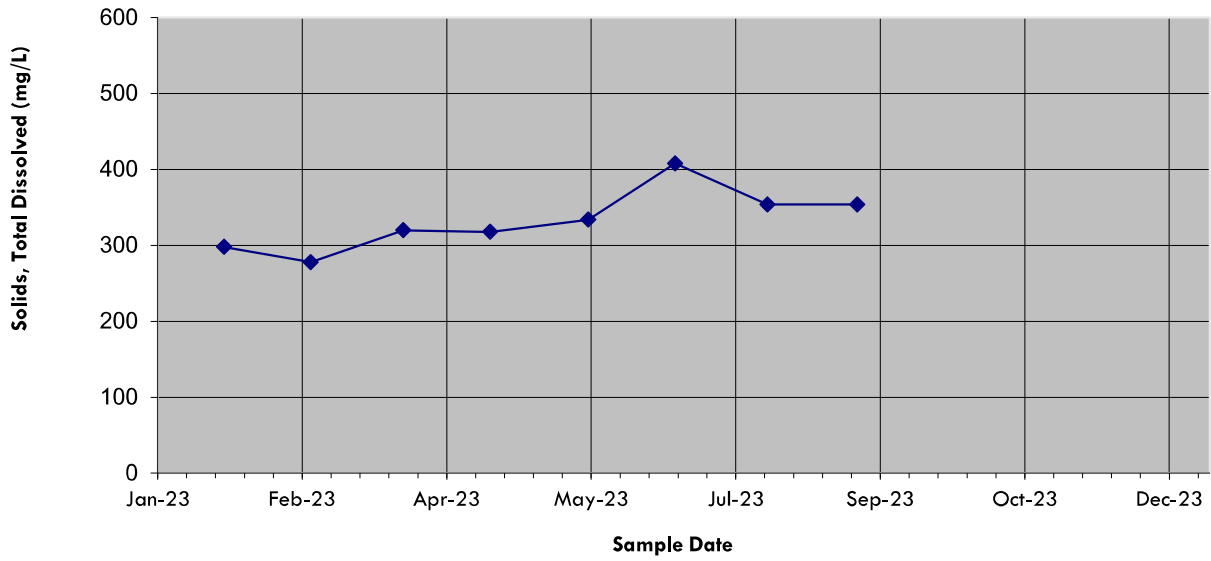
Calculations							
Count							8
Mean							515.13
Std Dev							45.56
3 X SD (PAL)							136.69
Min Increase (PAL)							100
PAL, Calculated							651.82
PAL, Rounded							660

Duplicate Data Not Used for Calculations							

Note:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-313: Total Dissolved Solids



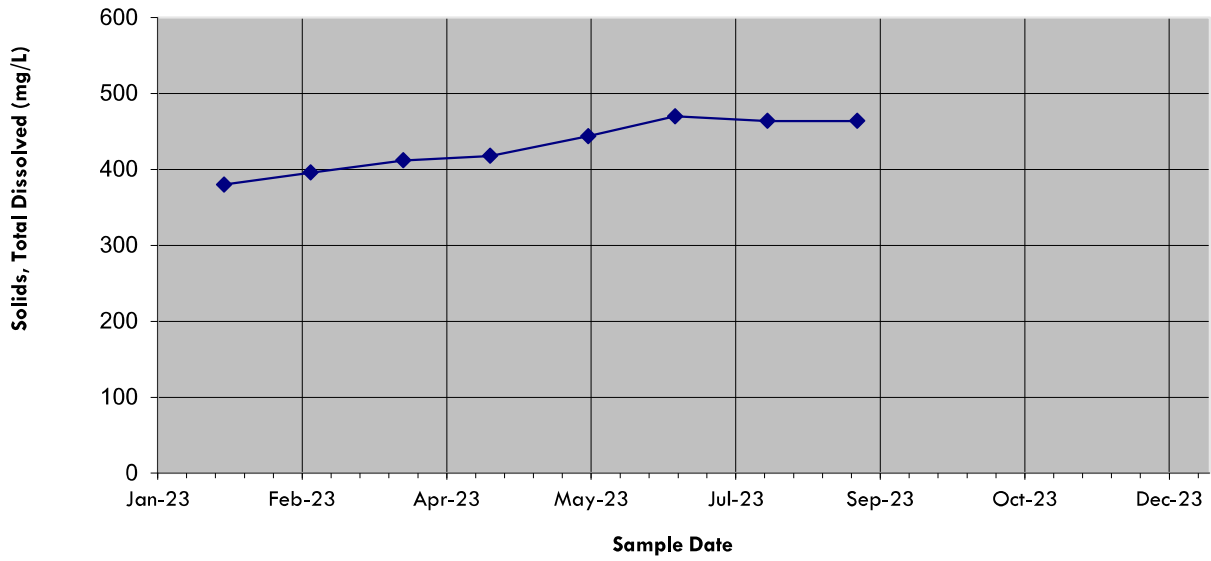
Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-313	SOLIDS, TOTAL DISSOLVED (MG/L)	01	298	1/24/2023	298	298	
MW-313	SOLIDS, TOTAL DISSOLVED (MG/L)	01	278	2/23/2023	278	278	
MW-313	SOLIDS, TOTAL DISSOLVED (MG/L)	01	320	3/27/2023	320	320	
MW-313	SOLIDS, TOTAL DISSOLVED (MG/L)	01	318	4/26/2023	318	318	
MW-313	SOLIDS, TOTAL DISSOLVED (MG/L)	01	334	5/30/2023	334	334	
MW-313	SOLIDS, TOTAL DISSOLVED (MG/L)	01	408	6/29/2023	408	408	
MW-313	SOLIDS, TOTAL DISSOLVED (MG/L)	01	354	7/31/2023	354	354	
MW-313	SOLIDS, TOTAL DISSOLVED (MG/L)	01	354	8/31/2023	354	354	
Calculations							
Count							8
Mean							333.00
Std Dev							39.91
3 X SD (PAL)							119.74
Min Increase (PAL)							200
PAL, Calculated							533.00
PAL, Rounded							540

Duplicate Data Not Used for Calculations							

Note:

I:\25222260.00\Data and Calculations\Groundwater PALs ACLs\[PAL Calculations_MOD 10-11.xls]MW-313_TDS_PAL

MW-314: Total Dissolved Solids



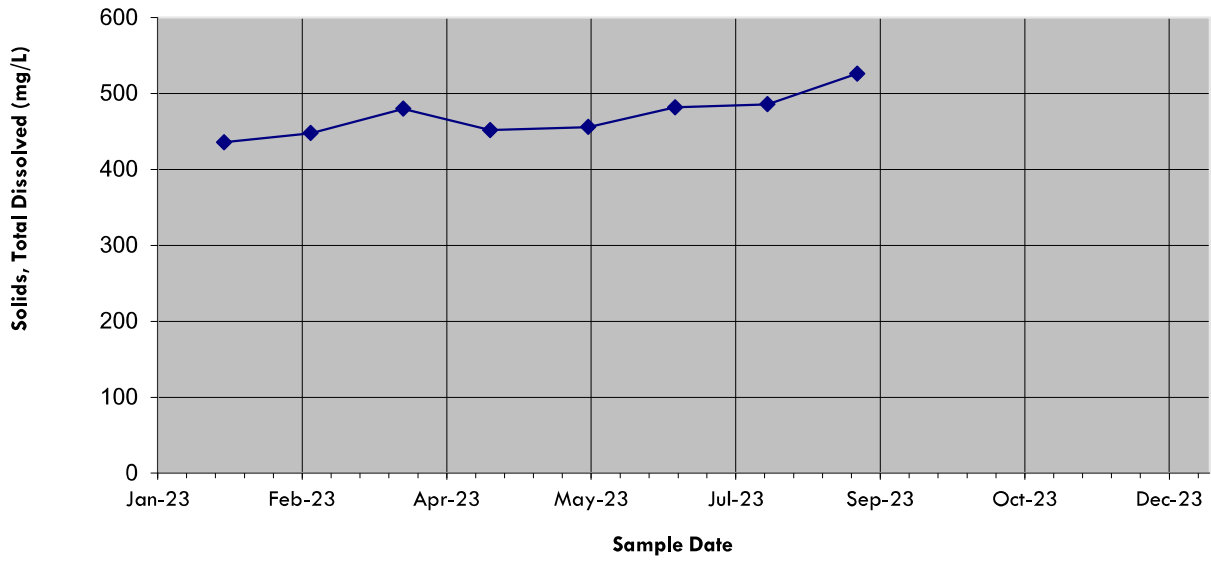
Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-314	SOLIDS, TOTAL DISSOLVED (MG/L)	01	380	1/24/2023	380	380	
MW-314	SOLIDS, TOTAL DISSOLVED (MG/L)	01	396	2/23/2023	396	396	
MW-314	SOLIDS, TOTAL DISSOLVED (MG/L)	01	412	3/27/2023	412	412	
MW-314	SOLIDS, TOTAL DISSOLVED (MG/L)	01	418	4/26/2023	418	418	
MW-314	SOLIDS, TOTAL DISSOLVED (MG/L)	01	444	5/30/2023	444	444	
MW-314	SOLIDS, TOTAL DISSOLVED (MG/L)	01	470	6/29/2023	470	470	
MW-314	SOLIDS, TOTAL DISSOLVED (MG/L)	01	464	7/31/2023	464	464	
MW-314	SOLIDS, TOTAL DISSOLVED (MG/L)	01	464	8/31/2023	464	464	
Calculations							
Count						8	
Mean						431.00	
Std Dev						34.28	
3 X SD (PAL)						102.83	
Min Increase (PAL)						200	
PAL, Calculated						631.00	
PAL, Rounded						640	

Duplicate Data Not Used for Calculations							

Note:

I:\25222260.00\Data and Calculations\Groundwater PALs ACLs\[PAL Calculations_MOD 10-11.xls]MW-314_TDS_PAL

MW-315: Total Dissolved Solids



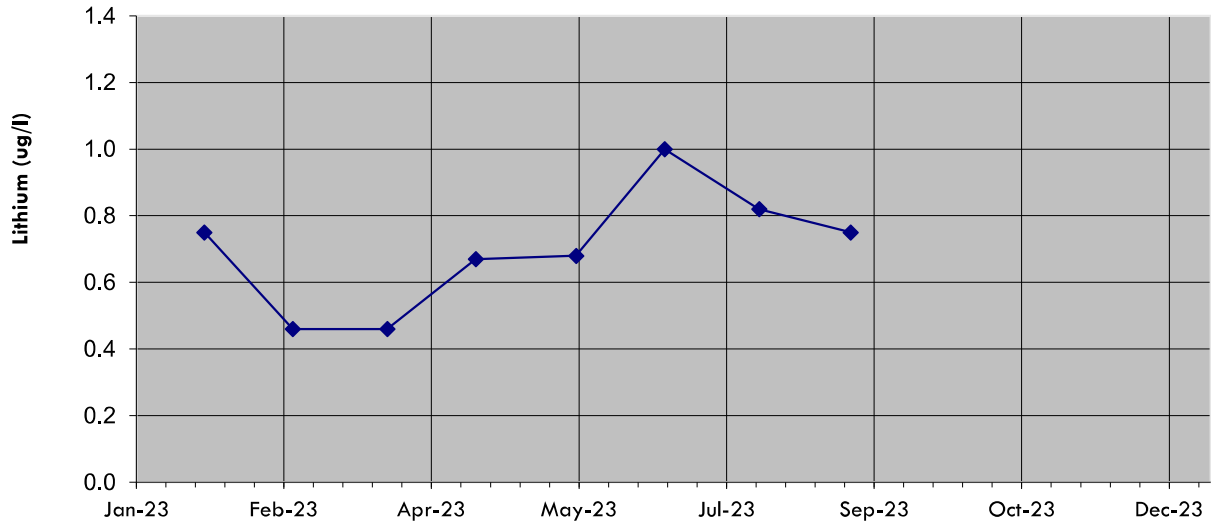
Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-315	SOLIDS, TOTAL DISSOLVED (MG/L)	01	436	1/24/2023	436	436	
MW-315	SOLIDS, TOTAL DISSOLVED (MG/L)	01	448	2/23/2023	448	448	
MW-315	SOLIDS, TOTAL DISSOLVED (MG/L)	01	480	3/27/2023	480	480	
MW-315	SOLIDS, TOTAL DISSOLVED (MG/L)	01	452	4/26/2023	452	452	
MW-315	SOLIDS, TOTAL DISSOLVED (MG/L)	01	456	5/30/2023	456	456	
MW-315	SOLIDS, TOTAL DISSOLVED (MG/L)	01	482	6/29/2023	482	482	
MW-315	SOLIDS, TOTAL DISSOLVED (MG/L)	01	486	7/31/2023	486	486	
MW-315	SOLIDS, TOTAL DISSOLVED (MG/L)	01	526	8/31/2023	526	526	
Calculations							
Count						8	
Mean						470.75	
Std Dev						28.76	
3 X SD (PAL)						86.29	
Min Increase (PAL)						200	
PAL, Calculated						670.75	
PAL, Rounded						680	

Duplicate Data Not Used for Calculations							

Note:

I:\25222260.00\Data and Calculations\Groundwater PALs ACLs\[PAL Calculations_MOD 10-11.xls]MW-315_TDS_PAL

MW-313: Lithium



Note: Non-detect results plotted at 0.5 times limit of detection with an empty symbol.

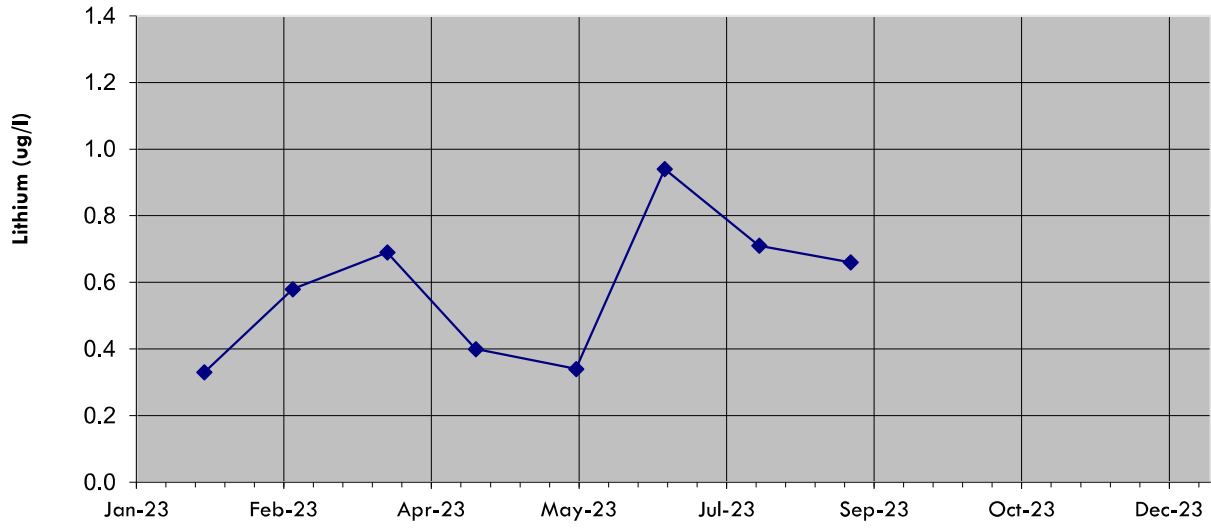
Sample Date

Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-313	LITHIUM, TOTAL (UG/L)	01	0.75	1/24/2023	0.75	0.75	J
MW-313	LITHIUM, TOTAL (UG/L)	01	0.46	2/23/2023	0.46	0.46	J
MW-313	LITHIUM, TOTAL (UG/L)	01	0.46	3/27/2023	0.46	0.46	J
MW-313	LITHIUM, TOTAL (UG/L)	01	0.67	4/26/2023	0.67	0.67	J
MW-313	LITHIUM, TOTAL (UG/L)	01	0.68	5/30/2023	0.68	0.68	J
MW-313	LITHIUM, TOTAL (UG/L)	01	1.0	6/29/2023	1.0	1.0	J
MW-313	LITHIUM, TOTAL (UG/L)	01	0.82	7/31/2023	0.82	0.82	J
MW-313	LITHIUM, TOTAL (UG/L)	01	0.75	8/31/2023	0.75	0.75	J
Calculations							
Count						8	
Mean						0.70	
Std Dev						0.18	
3 X SD (PAL)						0.54	
PAL, Calculated						1.24	
PAL, Rounded						1.3	

Duplicate Data Not Used for Calculations							

- Note:
- J = Result is an estimated value below the laboratory's limit of quantitation.
 - P = Did not meet required preservation and/or hold time.
 - B = Compound detected in blank.
 - M = Failed method QC check.

MW-314: Lithium



Note: Non-detect results plotted at 0.5 times limit of detection with an empty symbol.

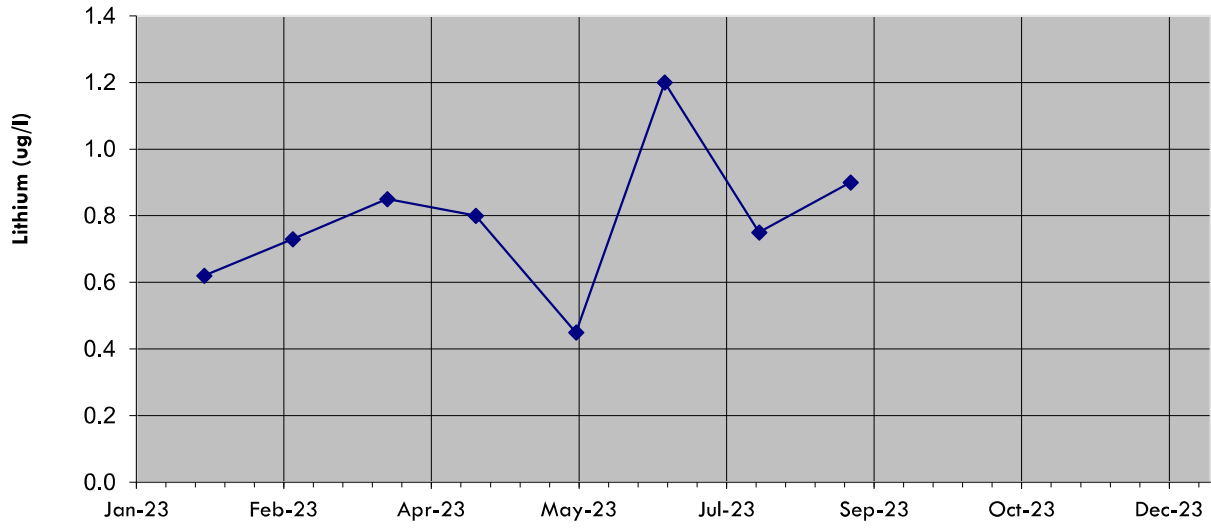
Sample Date

Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-314	LITHIUM, TOTAL (UG/L)	01	0.33	1/24/2023	0.33	0.33	J
MW-314	LITHIUM, TOTAL (UG/L)	01	0.58	2/23/2023	0.58	0.58	J
MW-314	LITHIUM, TOTAL (UG/L)	01	0.69	3/27/2023	0.69	0.69	J
MW-314	LITHIUM, TOTAL (UG/L)	01	0.4	4/26/2023	0.4	0.4	J
MW-314	LITHIUM, TOTAL (UG/L)	01	0.34	5/30/2023	0.34	0.34	J
MW-314	LITHIUM, TOTAL (UG/L)	01	0.94	6/29/2023	0.94	0.94	J
MW-314	LITHIUM, TOTAL (UG/L)	01	0.71	7/31/2023	0.71	0.71	J
MW-314	LITHIUM, TOTAL (UG/L)	01	0.66	8/31/2023	0.66	0.66	J
Calculations							
Count						8	
Mean						0.58	
Std Dev						0.21	
3 X SD (PAL)						0.64	
PAL, Calculated						1.22	
PAL, Rounded						1.3	

Duplicate Data Not Used for Calculations							

Note:
 J = Result is an estimated value below the laboratory's limit of quantitation.
 P = Did not meet required preservation and/or hold time.
 B = Compound detected in blank.
 M = Failed method QC check.

MW-315: Lithium



Note: Non-detect results plotted at 0.5 times limit of detection with an empty symbol.

Sample Date

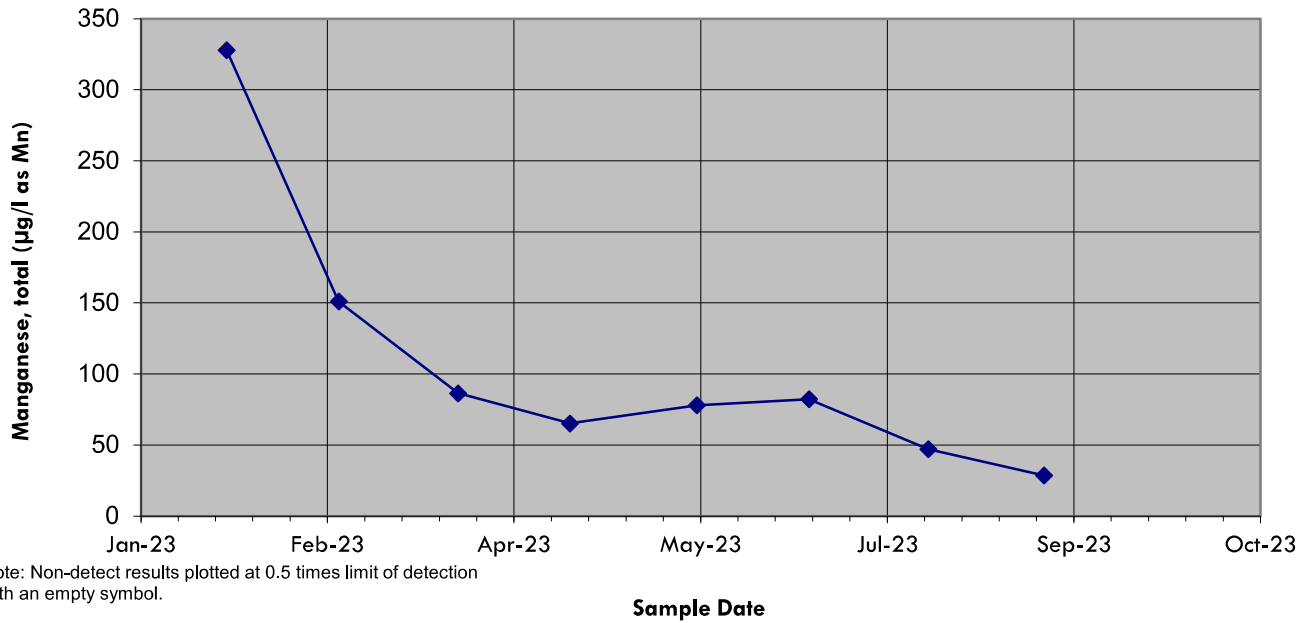
Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-315	LITHIUM, TOTAL (UG/L)	01	0.62	1/24/2023	0.62	0.62	J
MW-315	LITHIUM, TOTAL (UG/L)	01	0.73	2/23/2023	0.73	0.73	J
MW-315	LITHIUM, TOTAL (UG/L)	01	0.85	3/27/2023	0.85	0.85	J
MW-315	LITHIUM, TOTAL (UG/L)	01	0.8	4/26/2023	0.8	0.8	J
MW-315	LITHIUM, TOTAL (UG/L)	01	0.45	5/30/2023	0.45	0.45	J
MW-315	LITHIUM, TOTAL (UG/L)	01	1.2	6/29/2023	1.2	1.2	J
MW-315	LITHIUM, TOTAL (UG/L)	01	0.75	7/31/2023	0.75	0.75	J
MW-315	LITHIUM, TOTAL (UG/L)	01	0.9	8/31/2023	0.9	0.9	J
Calculations							
Count						8	
Mean						0.79	
Std Dev						0.22	
3 X SD (PAL)						0.65	
PAL, Calculated						1.44	
PAL, Rounded						1.5	

Duplicate Data Not Used for Calculations							

Note:

- J = Result is an estimated value below the laboratory's limit of quantitation.
- P = Did not meet required preservation and/or hold time.
- B = Compound detected in blank.
- M = Failed method QC check.

MW-313: Manganese

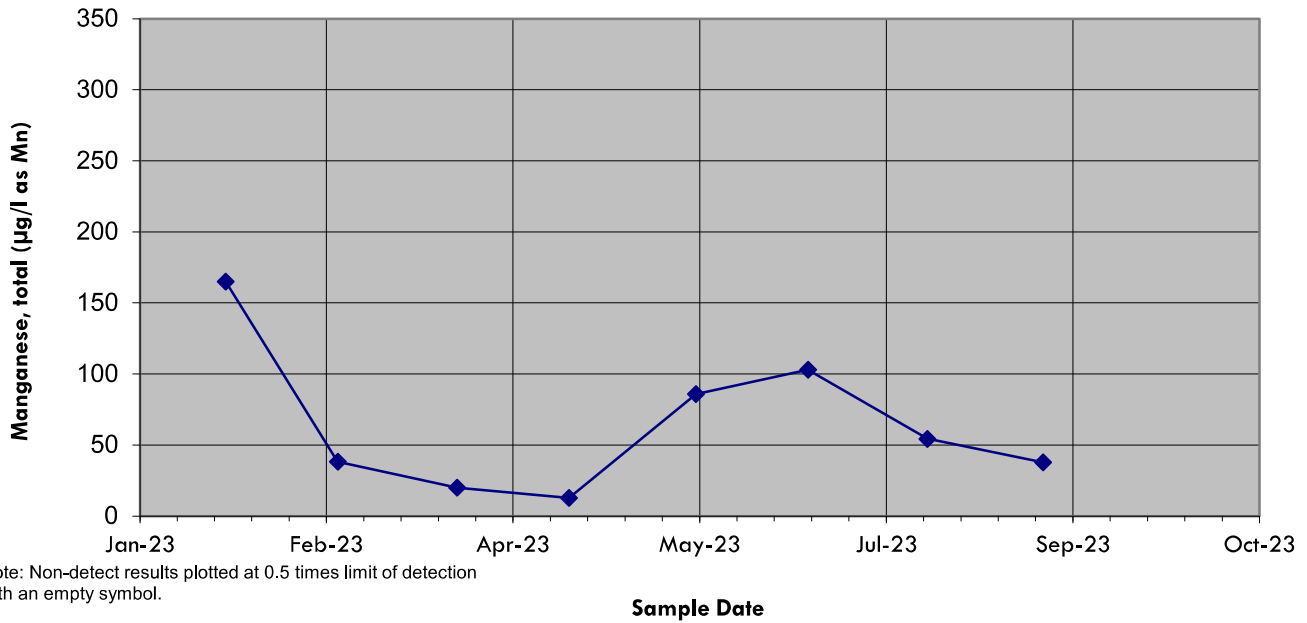


Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-313	MANGANESE, TOTAL (UG/L MN)	01	328	1/24/2023	328		outlier
MW-313	MANGANESE, TOTAL (UG/L MN)	01	151	2/23/2023	151	151	
MW-313	MANGANESE, TOTAL (UG/L MN)	01	86.4	3/27/2023	86.4	86.4	
MW-313	MANGANESE, TOTAL (UG/L MN)	01	65.2	4/26/2023	65.2	65.2	
MW-313	MANGANESE, TOTAL (UG/L MN)	01	77.9	5/30/2023	77.9	77.9	
MW-313	MANGANESE, TOTAL (UG/L MN)	01	82.3	6/29/2023	82.3	82.3	
MW-313	MANGANESE, TOTAL (UG/L MN)	01	47.1	7/31/2023	47.1	47.1	
MW-313	MANGANESE, TOTAL (UG/L MN)	01	28.7	8/31/2023	28.7	28.7	
Calculations							
Count						7	
Mean						76.94	
Std Dev						38.64	
2 X SD (ACL)						77.28	
ACL, Calculated						154.23	
ACL, Rounded						160	

Duplicate Data Not Used for Calculations							

Note: Current PAL = 25 ug/l; ES = 50 ug/l
 J = Result is an estimated value below the laboratory's limit of quantitation.
 P = Did not meet required preservation and/or hold time.
 B = Compound detected in blank.
 M = Failed method QC check.

MW-315: Manganese

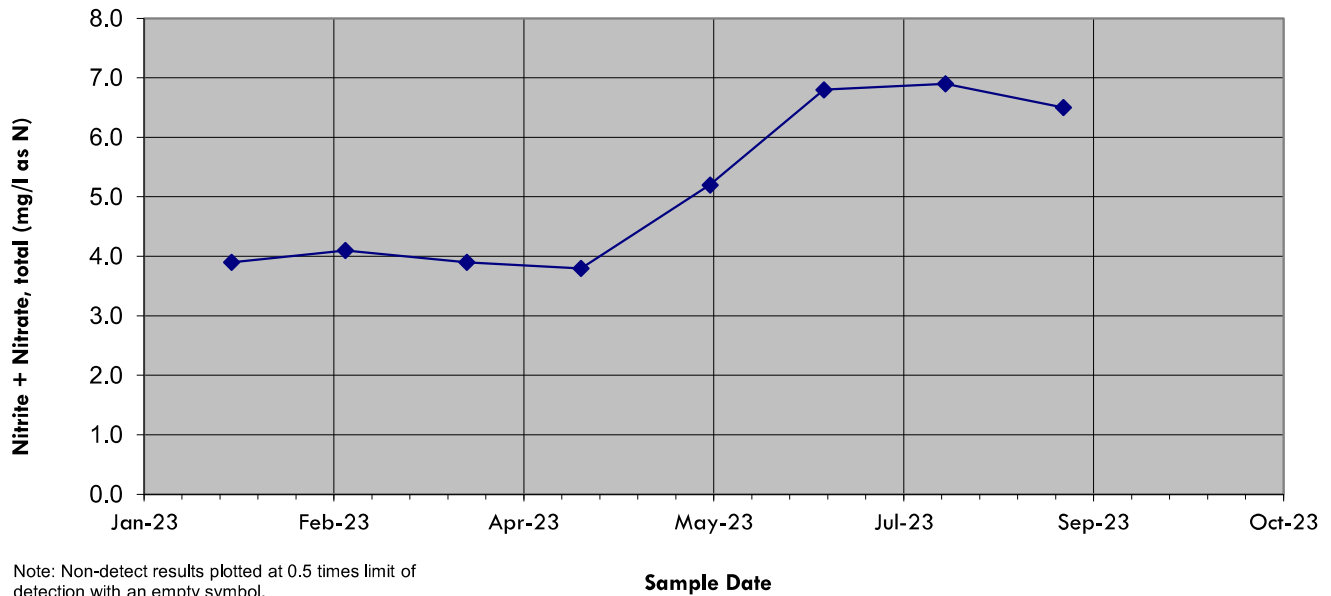


Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-315	MANGANESE, TOTAL (UG/L MN)	01	165	1/24/2023	165		outlier
MW-315	MANGANESE, TOTAL (UG/L MN)	01	38.3	2/23/2023	38.3	38.3	
MW-315	MANGANESE, TOTAL (UG/L MN)	01	20	3/27/2023	20	20	
MW-315	MANGANESE, TOTAL (UG/L MN)	01	12.9	4/26/2023	12.9	12.9	
MW-315	MANGANESE, TOTAL (UG/L MN)	01	85.9	5/30/2023	85.9	85.9	
MW-315	MANGANESE, TOTAL (UG/L MN)	01	103	6/29/2023	103	103	
MW-315	MANGANESE, TOTAL (UG/L MN)	01	54.4	7/31/2023	54.4	54.4	
MW-315	MANGANESE, TOTAL (UG/L MN)	01	37.8	8/31/2023	37.8	37.8	
Calculations							
Count						7	
Mean						50.33	
Std Dev						33.36	
2 X SD (ACL)						66.73	
ACL, Calculated						117.05	
ACL, Rounded						120	

Duplicate Data Not Used for Calculations							

Note: Current PAL = 25 ug/l; ES = 50 ug/l
 J = Result is an estimated value below the laboratory's limit of quantitation.
 P = Did not meet required preservation and/or hold time.
 B = Compound detected in blank.
 M = Failed method QC check.

MW-313: Nitrite + Nitrate - N



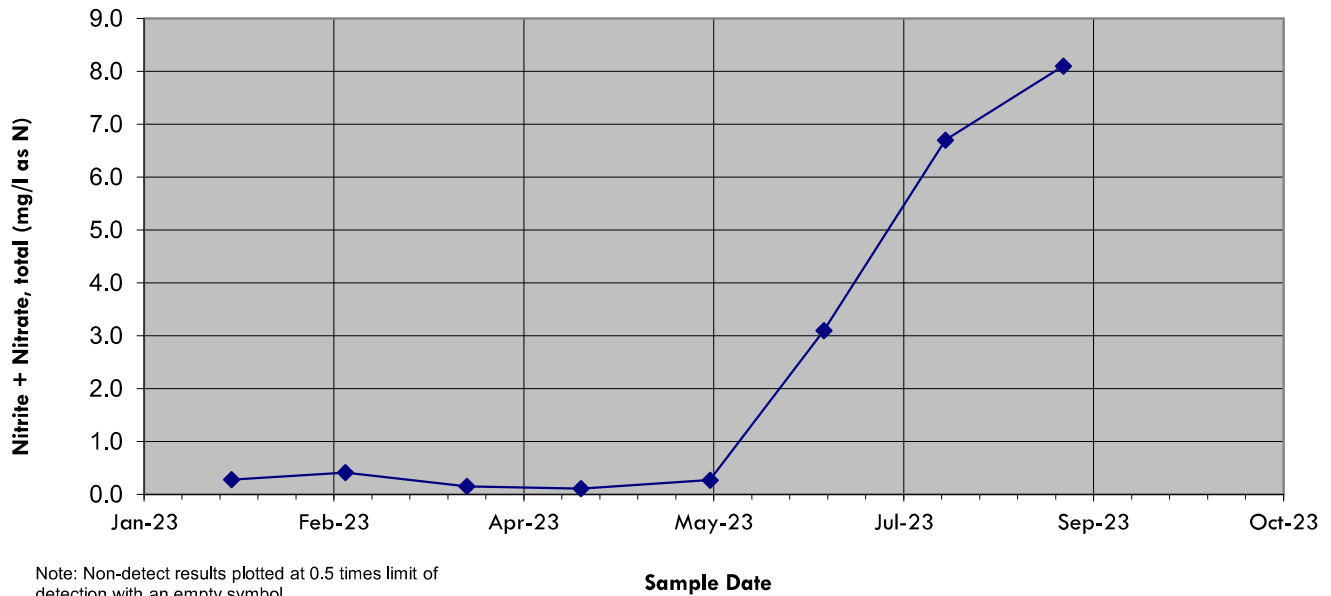
Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-313	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	3.9	1/24/2023	3.9	3.9	
MW-313	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	4.1	2/23/2023	4.1	4.1	
MW-313	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	3.9	3/27/2023	3.9	3.9	
MW-313	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	3.8	4/26/2023	3.8	3.8	
MW-313	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	5.2	5/30/2023	5.2	5.2	
MW-313	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	6.8	6/29/2023	6.8	6.8	
MW-313	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	6.9	7/31/2023	6.9	6.9	
MW-313	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	6.5	8/31/2023	6.5	6.5	

Calculations	
Count	8
Mean	5.14
Std Dev	1.31
2 X SD (ACL)	2.61
ACL, Calculated	7.75
ACL, Rounded	7.8

Duplicate Data Not Used for Calculations							

Note: Current PAL = 2 mg/l; ES = 10 mg/l
 J = Result is an estimated value below the laboratory's limit of quantitation.
 P = Did not meet required preservation and/or hold time.
 B = Compound detected in blank.
 M = Failed method QC check.

MW-314: Nitrite + Nitrate - N



Point Name	Parameter	Mult Sample ID	Report Value	Sample Date	Graph Value	Calculation Value	Notes
MW-314	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	0.28	1/24/2023	0.28	0.28	
MW-314	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	0.41	2/23/2023	0.41	0.41	
MW-314	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	0.15	3/27/2023	0.15	0.15	J
MW-314	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	0.11	4/26/2023	0.11	0.11	J
MW-314	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	0.27	5/30/2023	0.27	0.27	
MW-314	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	3.1	6/29/2023	3.1	3.1	
MW-314	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	6.7	7/31/2023	6.7	6.7	
MW-314	NITRITE PLUS NITRATE, TOTAL (MG/L AS N)	01	8.1	8/31/2023	8.1	8.1	
Calculations							
Count						8	
Mean						2.39	
Std Dev						3.06	
2 X SD (ACL)						6.11	
ACL, Calculated						8.50	
ACL, Rounded						8.6	

Duplicate Data Not Used for Calculations							

Note: Current PAL = 2 mg/l; ES = 10 mg/l
 J = Result is an estimated value below the laboratory's limit of quantitation.
 P = Did not meet required preservation and/or hold time.
 B = Compound detected in blank.
 M = Failed method QC check.