Eagle Mine
a subsidiary of lundin mining

2022 Annual Mining and Reclamation Report
Mine Permit MP 01 2007

March 15, 2023

Revised April 12th, 2023 – Section 5.1.1 and Section 5.4.1

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Appendices

Acronyms and Abbreviations

AEM	Advanced Ecological Management
ALS	Advanced Life Support
CMT	Crisis Management Team
COSA	Coarse Ore Storage Area
CRF	Cemented Rock Fill
CWB	Contact Water Basin
DO	dissolved oxygen
Eagle	Eagle Mine LLC
EGLE	Michigan Department of Environment, Great Lakes & Energy
ft	feet
gal	gallon
gpd	gallons per day
gpm	gallons per minute
GWDP	Groundwater Discharge Permit
ICMM	International Council on Mining & Metals
in	inches
KME	King and MacGregor Environmental
m	meter
m^3	cubic meters
MG	million gallons
MDNR	Michigan Department of Natural Resources
AMSL	Above mean sea level
µg/L	micrograms per liter
µS/cm	micro-Siemens per centimeter
mg/L	milligrams per liter
MNFI	Michigan Natural Features Inventory
MRR	Mining and Reclamation Report
NCWIB	Non-Contact Water Infiltration Basin
NJC	North Jackson Company
NLG	Narrow-Leaved Gentian
NREPA	Natural Resources & Environmental Protection Act
ORP	Oxidation Reduction Potential
Part 632	Part 632 Mining Permit
PIPP	Pollution Incident Prevention Plan
QAPP	Quality Assurance Project Plan
Q1	Quarter One
SESC	Soil Erosion and Sedimentation Control
SOP	Standard Operating Procedure
SU	standard units
t	metric ton (tonne)

TDRSA	Temporary Development Rock Storage Area
TDS	total dissolved solids
Trimedia	Trimedia Environmental & Engineering Services, LLC
TWIS	Treated Water Infiltration System
VOC	Volatile Organic Compound
WTP	Water Treatment Plant

1. Document Preparers and Qualifications

This Mining and Reclamation Report (MRR) was prepared by the Eagle Mine (Eagle) Environmental Department and incorporates information prepared by other qualified professionals. Table 1.1 provides a listing of the individuals and organizations who were responsible for the preparation of this MRR as well as those who contributed information for inclusion in the report.

Table 1.1 – Document Preparation – List of Contributors

Organization	Name	Title
Individuals Responsible for the Preparation of the Report		
Eagle Mine LLC	Jennifer Nutini	Environmental Superintendent
Eagle Mine LLC	David Bertucci	Environmental Compliance Supervisor
Eagle Mine LLC	Alexxa Young	Environmental Advisor
Report Contributors		
Eagle Mine LLC	Cody Gobbs	Project Engineer
Eagle Mine LLC	Dale Thomas	Senior Underground Geologist
Eagle Mine LLC	Kathryn Dorfschmidt	Geotechnical Engineer Lead
Eagle Mine LLC	Todd Macco	Water Treatment Plant Facilities Engineer
Eagle Mine LLC	Jeff Murray	Operations Manager
Eagle Mine LLC	Karen Carlson	HSE Administrative Assistant
Eagle Mine LLC	Matthew Taylor	Owners Surface Specialist
Eagle Mine LLC	Christine Bekkala	Controller
Pace Analytical	Jennifer Rice	Client Services Supervisor
Cementation USA	Ken Groves	Safety, Health & Mine Rescue Coordinator
Barr Engineering	Matt MacGregor	Wetland Scientist/Biologist
Advanced Ecological Management, LLC.	Doug Workman	Aquatic Scientist
North Jackson Company	Dan Wiitala	Professional Geologist

2. Introduction

Surface construction of Eagle Mine, an underground nickel and copper mine in Michigamme Township, began in May 2010, followed by the start of underground development in September 2011. Upon commencement of underground operations, per Michigan's Nonferrous Metallic Mining Regulations and the Eagle Mine Part 632 Mining Permit (MP 01 2007), Eagle Mine is required to submit an annual Mining and Reclamation Report (MRR). A copy of the current site map is provided in Appendix A.

The MRR is required to provide a description of mining and reclamation activities, an updated contingency plan, monitoring results, tonnage of material mined, and a list of incident reports that created, or may create a threat to the environment, natural resources, or public health and safety at the Eagle Mine Site. In addition, this update will serve to memorialize all that has been completed and the decisions and/or modifications that have been approved throughout the process.

3. Site Modifications and Amendments

Table 3.1 below lists the notifications and required submittals and approvals that were provided to the Department in 2022 as required under the Part 632 Mining Permit. Table 3.2 lists non-routine submittals and approvals under other required permits.

Table 3.1 – Routine Submittals and Approvals Required Under Part 632

Date	Description	Approval
01/14/22	Q4 2021 Groundwater and Surface Water Monitoring Data	N/A
03/15/22	2021 Annual Mining and Reclamation Report	N/A
05/03/22	Q1 2022 Groundwater and Surface Water Monitoring Data	N/A
07/22/22	Q2 2022 Groundwater and Surface Water Monitoring Data	N/A
10/20/22	Q3 2022 Groundwater and Surface Water Monitoring Data	N/A
01/19/23	Q4 2022 Groundwater and Surface Water Monitoring Data	N/A

Table 3.2 – Non-Routine Submittals and Approvals Under Part 632

Date	Description	Approval
05/13/22	CWB Silt Removal Dewatering Approval	N/A
06/16/22	2021 Annual Mining and Reclamation Report – Map Updates	06/17/22
08/18/22	Notification of Planned Septic System Upgrades	08/29/22
09/07/22	Notification of Survey Monument Installation & Replacement	N/A
11/22/22	Notification of Ramp Development to the Eagle East Keel Zone	N/A
12/15/22	Notification of Pollution Incident Prevent Plan (PIPP) Updates	N/A

Four permit-required notifications were submitted and approved by the Michigan Department of Environment, Great Lakes & Energy (EGLE):

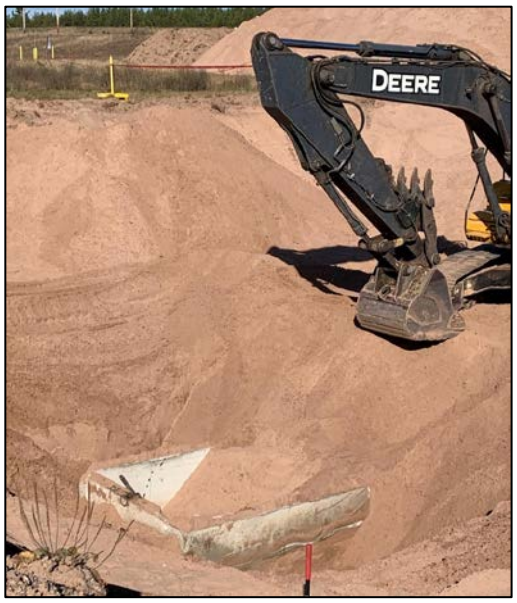
- In May 2022, due to the continued underground accumulation of sediment in the CWBs, the site requested to transfer water from the underground directly to on-site dumpsters for dewatering. This trial project lasted one week (7 days) and was then discontinued because the rate of dewatering was not compatible with the long-term use of the dumpsters.

- EGLE requested that Eagle update the annual report to show three maps: 1) Eagle Mine buildings, features, and surveyed property lines; 2) an aerial map with a surface projection of underground workings, and; 3) an underground mine development map detailing the depth to the workings from the surface shown in meters.

- In August 2022, a notification letter was sent about our planned septic system upgrades. Further discussion on the septic upgrades are below.

Septic System Upgrades

In 2021, Eagle conducted an internal assessment of the septic system and drain field. The system was undersized for the number of employees who are on-site when compared to the design criteria for the original system. An engineering company was contracted in February 2022 to perform an evaluation and to re-design necessary upgrades to the system. The permitting for the upgrades occurred during the first half of 2022, and construction of a new septic system was completed in Q4 of 2022. The upgrades included additional retention capacity of the system, which is expected to improve the nitrate-reducing capacity.



Excavation exposing existing tanks

Preparation for the new tanks to be placed

Placement of the top half of one tank

New connections between the tanks and forcemain

- In early September 2022, a notification was submitted to install six new survey monuments above the crown pillar. The existing monuments were not of sufficient depth to prevent changes due to frost. After the installation of the new monuments, the five previously installed ones will be removed.
- In November 2022, a notification was sent to EGLE with the intent to begin the decline development of the Keel. A mine permit amendment will be required for production mining in the Keel zone.
- In December 2022, a letter was sent to EGLE regarding fuel and diesel quantity updates on site made in our Pollution Incident Prevention Plan (PIPP).

Table 3.3 – Non-Routine Submittals and Approvals Under Other Permits

Date	Description	Approval
07/06/22	Septic System Groundwater Discharge Permit	10/04/22
08/03/22	Wetland Permit Approval for Survey Monument Installation & Replacement	09/26/22

- Eagle Mine received an updated septic system permit from EGLE (GWDP 1110907) in October 2022.
- A Joint Permit Application (JPA) was submitted to EGLE to install six new survey monuments above the crown pillar. The wetland permit was issued on September 26th.

4. Mining Activities and Data Report

Underground activities began in September 2011, with drilling operations in preparation for blasting. On September 22, 2011, blasting at the Eagle Mine constituted the commencement of mining activities and Eagle initiated all monitoring programs per the Part 632 Mining Permit. A description of the monitoring activities can be found in Section 5 of this MRR.

4.1 Underground Operations

2022 marked the eighth year of production mining, currently being conducted by Cementation USA. Two mining methods are being utilized at Eagle Mine; longhole open stoping, and cut and fill mining. Longhole open stoping is utilized in the Eagle orebody while Eagle East uses both longhole stoping and cut and fill mining methods. The cut and fill mining method was also utilized in Eagle in 2022 for recovering some remnant ore in the 145 Level. When utilizing the longhole stoping method, the stopes are mined in an alternating sequence of primary and secondary stopes. Cemented rock fill (CRF) is used in the primary stopes, while uncemented rock fill is used in the secondary stopes below the 327.5 meter (m) above mean sea level (AMSL) levels. Both primary and secondary stopes were mined and backfilled in Eagle in 2022.

Cut and fill mining areas in Eagle East are being mined in lifts from the bottom up and jam filled with CRF as they are completed. Cut and fill is utilized in Eagle East as it is a more efficient mining method for higher-grade irregularly shaped orebodies. All CRF is made onsite at the batch plant and is transported underground using underground haul trucks. The CRF is currently composed of development rock or offsite aggregate, sand, cement, water, and a concrete admixture.

Cemented Rock Fill (CRF) Plant

Per special condition E-8 of the mining permit, an annual review of the rock stability was completed to ensure that the modeling provided in the permit application is still valid. A letter certifying the rock stability, signed by the Operations Manager, can be found in Appendix B.

Subsidence monitoring was also conducted throughout 2022 following Eagle's Subsidence Monitoring Plan and as required by permit condition L-17.

Deflection of the crown pillar bedrock is monitored via one multi-point borehole extensometer (MPBX) installed from the surface. The MPBX is grouted in a vertical hole and has six points of measurement, or anchors, at incremental depths along the hole. As the anchors move, fiberglass rods separating the anchors produce a change in resistance, which is converted to a voltage used to calculate displacement. Data for the surface MPBX is downloaded manually monthly using a handheld data logger.

Deflection at the surface is monitored via the monthly surveying of five monuments that are installed within the crown pillar footprint. The change in elevation of each monument is measured in reference to a backsight point fixed to exposed bedrock, and the accuracy of the measurements is within one millimeter or less. Eagle geotechnical engineers reviewing the existing surface monuments above the ore body determined that they were not of sufficient depth to prevent elevation changes due to frost heave. The engineers planned to install deeper survey monuments that are less likely to be impacted by frozen ground conditions and settling soil. Therefore, in 2022, Eagle Mine applied for a wetland permit for construction to install six new monuments. The stations were installed in the fall of 2022 and the remainder of the monuments will be installed in the spring of 2023. Once the new monuments are installed and the data representative of their accuracy is available, Eagle will provide the information to EGLE.

In addition to the subsidence monitoring required by permit condition L-17, additional extensometers are installed at various locations in Eagle and Eagle East, including in the back of each stope sill in Eagle's two uppermost levels. Data from these instruments are routinely monitored to better understand the ground conditions throughout the mine and identify early indicators of potential changing conditions. This information is used to guide mitigation measures to help ensure the safety of Eagle employees and contractors.

There were eight (8) twelve-person and four (4) four-person 36-hour self-contained Mine Arc refuge chambers stationed underground in 2022 to ensure the safety of miners in the event of an emergency.

4.1.1 Underground Development Progress

Development in 2022 consisted of the following:

- 5,174 m of total development occurred in Eagle and Eagle East.
    - 569 m of sill development and 519 m of general development in Eagle.
    - 2,920 m of sill development, 1,101 m of general development, and no vertical development in Eagle East.
- Vertical development for a new secondary escape raise in Eagle totaled 65 m.
- The definition drilling program completed 66 drill holes, totaling 10,455 m in Eagle East for geologic model optimization.
- 42 holes totaling 28,136m for exploration.

Table 4.1.1a below summarizes the total 2022 development meters by type completed in Eagle, and Table 4.1.1b breaks out the development completed in Eagle East in 2022. A map showing the 2022 Eagle East development progress can be found in Appendix C.

Table 4.1.1a – 2022 Eagle Underground Meters of Development

Eagle Mine Development	Meters
Sills	569
Vertical	65
General/Horizontal	519
Total	**1,153**

Source: Mine Engineering Department

Table 4.1.1b – 2022 Eagle East Decline Meters of Development

Eagle East Decline Development	Meters
Sills	2,920
Vertical	0
General/Horizontal	1,101
Total	**4,021**

Source: Mine Engineering Department

4.1.2 Underground Ore Production – Stoping & Backfilling

Primary stopes were backfilled with CRF that is produced at the onsite batch plant using underground haul trucks after the extraction of ore. In 2022, 397,322 tonnes (t) of CRF was produced. Backfill used in stopes accounted for approximately 47% of the CRF, while the remaining 53% was used for jamming lateral development. There were 11 secondary stopes mined in 2022, of which eight were backfilled with development rock. The remaining three secondary stopes were filled with CRF based on location in the upper elevations of Eagle Mine. Table 4.1.2a summarizes the number of stopes that were mined and backfilled in 2022. A bulk adjustment is applied to the total ore mass based on Coarse Ore Storage Area (COSA) surveys and over-the-road truck scale readings. Appendix C illustrates the current configuration of each mining level and production mining progress through 2022.

Haul truck loading material underground

Table 4.1.2a – Number of Stopes Fully Mined & Backfilled in 2022

Stope Type	Total (number)
Primary Stopes	9
Secondary Stopes	11

Source: Mine Engineering Department

Table 4.1.2b – Tonnes of Ore Mined in 2022

Ore Mined	Tonnage of ore mined (tonnes)
Eagle Sills	42,347
Eagle East Sills	330,242
Eagle Stopes	190,215
Eagle East Stopes	159,263
Survey Actual Adjustment	(3,942)
Total	**718,125**

Source: Mine Engineering Department

4.1.3 Dewatering Volume and Quality

Water is required underground to complete drilling, bolting, dust suppression activities, and to knock down loose material that remains suspended after a stope blast. In 2022, the mine services well supplied all the water needed to complete underground mining and development activities. The lines supplying and removing water from the underground are equipped with totalizer flow meters which report flows to a database that is reviewed by Environmental staff.

The average water use increased from approximately 49 gallons per minute (gpm) in 2021 to 76 gpm in 2022. The increased demand is attributed to the continued development, underground exploration occurring in Eagle East, and dust suppression in both Eagle and Eagle East. The amount of industrial well water supplied for underground operations in 2022 ranged from an average of 84,373 gallons per day (gpd)/(59 gpm) in June, to 126,276 gpd (88 gpm) in February.

The total amount of water pumped from the mine to the surface ranged from an average of 35,533 gpd (24.7 gpm) in April to 125,502 gpd (87.2 gpm) in September. This flow is composed of used service water and minor groundwater inflows.

The dewatering volume is calculated by subtracting the volume of water provided to the underground from the volume of water pumped back to the surface. The difference between the two numbers is indicative of the volume of groundwater that is naturally infiltrating the mine, less evaporation and moisture retained in ore and development rock.

Inspections of the underground found only a few areas in which groundwater infiltration is visible and is significantly less than was predicted during the permit application process. Some small but isolated pockets of water were periodically encountered during the drilling and blasting operations which temporarily resulted in a slight increase in water flow. Like previous years, the overall calculated dewatering volume for the mine was negative during the majority of 2022. Flooding of the -540 m level of Eagle East started in February and decanting of the level began in June 2022, therefore creating net positive dewatering in the months of June, August, and September. Table 4.1.3 below summarizes the average daily volume of water supplied and pumped to the surface for each month in 2022.

Table 4.1.3 – Average Monthly Water Volume Provided to Underground and Dewatering Volume

Month	Average Water Supplied Underground (gpd)	Average Water Pumped from Underground (gpd)	Average Dewatering Volume*(gpd)	Average Dewatering Volume* (gpm)
January	96,952	74,205	-22,746	-15.8
February	126,276	63,407	-62,869	-43.7
March	114,461	38,477	-75,984	-52.8
April	112,810	35,533	-77,277	-53.7
May	119,573	88,678	-30,895	-21.5
June	84,373	85,207	834	0.58
July	92,174	71,849	-20,325	-14.1
August	107,867	110,665	2,797	1.9
September	118,895	125,502	6,608	4.6
October	98,733	86,846	-11,887	-8.3
November	125,429	92,787	-32,643	-22.7
December	110,338	89,267	--21,071	-14.6

** Dewatering volume is calculated by subtracting the volume of water provided to the mine from the volume of water removed from the mine. Dewatering volume is broadly indicative of the amount of groundwater infiltration occurring.*

4.2 Temporary Development Rock Storage Area (TDRSA)

Crushing of development rock for use in cemented rock fill did not occur in 2022, instead offsite aggregate was utilized for CRF. Eagle has contracted A. Lindberg & Sons Inc. to crush and deliver three-inch minus rock to site for temporary storage before use as backfill. Approximately 378,169 t of offsite aggregate was delivered to the site in 2022.

4.2.1 Development Rock Storage Volume

In 2022, the total amount of development rock mined was 133,990 t (47,854 m^3)[A]. The amount of development rock placed on the TDRSA from underground was 92,708 t (51,504 m^3)[B]. The remaining 41,282 t (22,934 m^3)[B] of development rock was utilized as uncemented backfill in secondary stopes. Once development rock is mined, the density decreases to account for swell, or void space of the blasted rock. The table below shows the swell factors used to calculate tonnes/m^3 of material of development rock, mined development rock, and crushed development rock.

There was no development rock removed from the TDRSA for use in cemented rock fill as well as no development rock removed for GOB fill from the TDRSA. The total TDRSA rock volume accounts for material mined from 2011 through 2022.

Table 4.2.1 – Swell Factors

Reference	Density (tonnes/m^3)
A	2.8
B	1.8
C	1.91

No limestone was added to the TDRSA in 2022. Eagle verifies the continued effectiveness of limestone added in previous years through quarterly pH readings of the TDRSA contact water. Table 4.2.1 summarizes the surveyed volume of material stored in the TDRSA as well as the volumes of development rock and limestone added and/or removed for use in backfill in 2022.

Temporary Development Rock Storage Area

Table 4.2.2 – 2022 TDRSA Volume Totals

Month	Volume of Waste Rock Added to TDRSA (m^3)	Limestone Delivered (m^3)	Development Rock Removed from TDRSA for Backfill (m^3)	End of Year TDRSA Survey Volume (m^3)
2022 Total	51,504	0	0	166,504

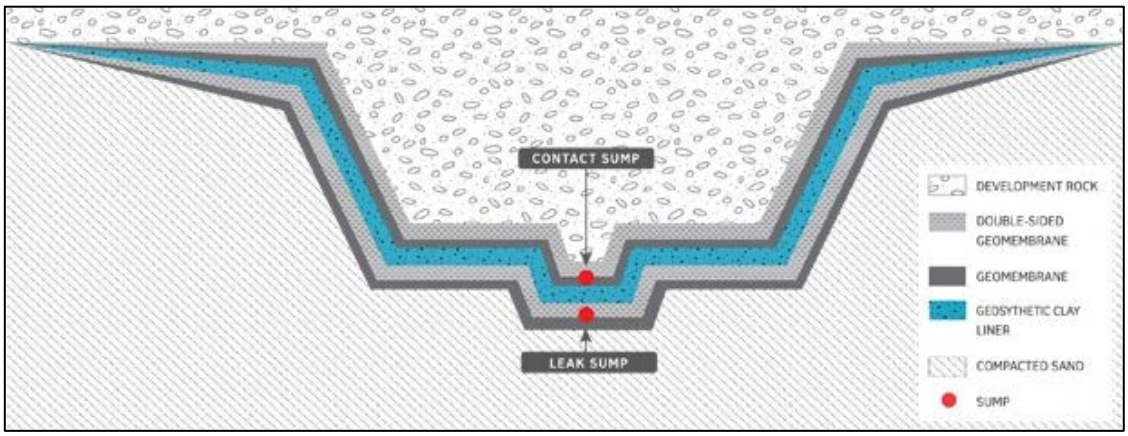
Note: Development rock volume added to the TDRSA was based on the difference between the amount of development rock mined and the amount of development rock remaining underground as GOB fill.

4.2.2 Mining Forecast

The 2023 mining forecast calls for the continued development of extraction drifts and stope accesses for a total of 7,402 m of lateral advance. Eagle East will make up approximately 83% of the planned development for a total of 6,146 m in 2023. A ramp system from the Eagle Mine decline to the Keel mine area is also planned to start in 2023. Keel development is planned for a total of 1,190 m of lateral advance. The total amount of ore that is planned to be produced for 2023 is forecasted to be about 755,000 t with approximately 92% of the ore being generated from Eagle East. Of the 695,000 t from Eagle East, around 41% will be from sills including the cut and fill mining zones, and the remaining 59% from stopes. All estimates are subject to change.

4.2.3 TDRSA Sump Dewatering Volume and Quality

The TDRSA has two collection sumps; the contact water sump and the leak detection sump. The contact water sump collects drainage from the primary TDRSA liner where the water is in contact with development rock. The purpose of the leak detection sump is to capture water within the secondary liner system in the event of a failure of the primary liner. The water currently in the leak detection sump is rainwater that has been encapsulated in the secondary lining system since construction. Both sumps are continuously monitored using pressure transducers.



Eagle Mine Rock Storage Area (TDRSA) Cross Section

The contact water pumping system is equipped with an automatic pump start and high-water alarm to indicate when the water level is approaching the one-foot maximum head level. The leak detection sump is manually pumped and sampled, as necessary. Eagle implemented operational controls including operator training and control panel lockout to ensure the systems operate as designed, and that the required sampling and volume collection occur when the pumps are operated.

Primary Contact Water Sump Monitoring

WTP operators conducted weekly inspections of the TDRSA primary sump, and the Environmental Department conducted an additional weekly inspection. The water level was recorded in a compliance logbook that is kept onsite and available upon request. Results of the weekly inspections indicate that water levels in the sump were maintained within the ranges specified by the Part 632 permit or returned to those ranges within seven days following a significant wet weather event (rain and/or snowmelt).

In 2022, approximately 11.1 million gallons (MG) of water was pumped from the TDRSA contact water sump to the contact water basins (CWBs) for eventual treatment in the WTP. The digitalized flow meter tracking the amount of water pumped from the TDRSA to the CWBs reset in March 2022 due to a power outage. Our maintenance team corrected the issue in early April 2022. During that time, the total flow transferred was not recorded. The readings were estimated based on weekly inspection records and WTP records. A new flow meter was later installed in September 2022.

Quarterly water quality monitoring of the contact water sump was conducted in February, June, August, and November. The chemistry analytical results from the TDRSA contact water sump fluctuated between sampling quarters which was expected because the material from both Eagle and Eagle East was added during the year and precipitation/snow melt events contributed fresh water to the system. The concentration-based results for several parameters continued to increase from 2021 to 2022, notably specific conductivity, sodium, and chloride. The aforementioned parameters are generally more indicative of water quality from Eagle East which is brinier in nature and therefore may account for the increasing concentrations. However, pH remained in the neutral to slightly basic range of 6.2 – 7.9 SU, indicating that the limestone present is still providing sufficient neutralizing capacity.

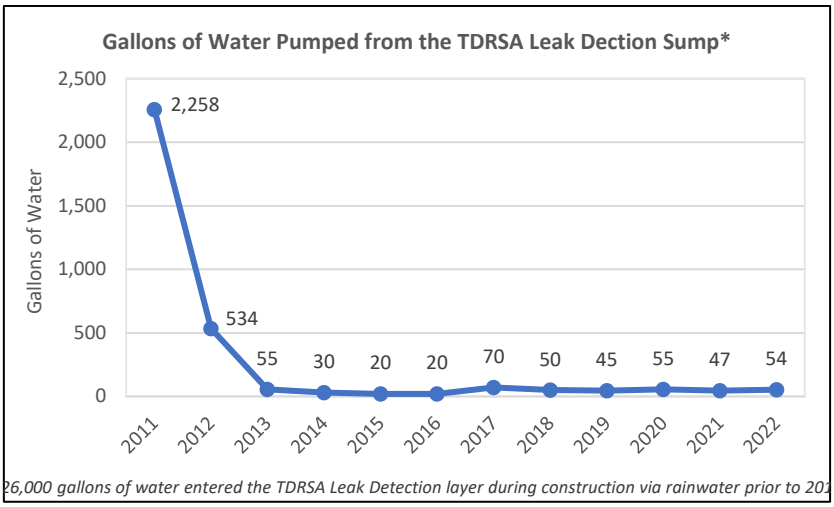
A summary of the 2022 monitoring results can be found in Appendix D.

Leak Detection Sump Monitoring

Permit conditions require that the leak detection sump be purged and sampled as accumulation occurs. “Accumulation” was determined to be a volume of water significant enough to allow for three minutes of purging before sample collection. In addition to water quality analysis, the volume pumped is used to calculate the average daily rate of accumulation into the sump.

In 2022, no water accumulations occurred based on weekly monitoring records of the level sensor readings for the leak detection sump. Inflows and sustained level changes would indicate an accumulation during weekly inspections. To test the sump pump and for sampling, a total of approximately 54 gallons of water were pumped from the leak detection sump and four samples were collected in 2022. The daily rate of accumulation was estimated throughout the year at approximately 0.02 gal/acre/day which is well below the 25 gal/acre/day threshold indicated in the permit. The water being pumped from the leak detection is rainwater that accumulated in the liner at the time of construction. Table 4.2.3 summarizes the estimated flow rate for sampling events from the TDRSA leak detection sump for 2022.

Values are typically calculated, but in 2022 per the approval of EGLE, the values are estimated because the flow did not consistently totalize on the flow meter. Water flows are tracked in five-gallon intervals to account for water pumped. Eagle determined that the flow meter could seize from infrequent use, or the flow rate may be too low to register on the meter. In October 2016 EGLE approved an increased frequency of pumping to prevent the pump from seizing to ensure that the water recovered from the leak detection sump can be accurately tracked. However, in the instances where the water level is too low to register, more frequent pumping may not be possible. Moving forward, the leak detection sump will be tested quarterly at a minimum, with increased pumping when possible. The total volume of water purged to date is only a fraction of the estimated 26,000 gallons of rainfall that entered the secondary collection system during construction.



Gallons of Water Pumped from TDRSA LD Sump

Samples were collected from the leak detection sump in February, June, August, and November 2022. Upon sample collection, the pH and specific conductance of the sample was immediately measured, and the remaining sample aliquot was sent to an offsite laboratory for analysis. Although only pH and sulfate analysis is required by the permit, additional parameters (i.e. magnesium, sodium, chloride, nitrate, nitrite, and ammonia) were also analyzed. Once the sample was collected, the remaining water contained in the leak detection sump was purged to the contact water basins.

Table 4.2.3 summarizes the TDRSA leak detection sump analytical results for 2022. The pH results were consistent and ranged from a low of 7.3 SU to a high of 8.0 SU which is neutral to slightly basic in nature, similar to the 2021 results. Sulfate results fluctuated throughout the year, with levels ranging from a maximum of 2,030 milligrams per liter (mg/L) in February to a minimum of 920 mg/L in November. Though sulfate is the most prominent constituent no trend was observed. Increases in some parameters may be the result of the decreased volume of water present in the sump, leading to less dilution of constituents.

The decreased water level in the leak detection sump is a very good indication that the liner system of the contact water sump is intact and not leaking. However, in addition to the water level, results from the leak detection sump are compared to the contact water sump to determine if a correlation exists. The water from the contact water sump is indicative of the water quality found in Eagle East while the concentrations in the leak sump are significantly lower and do not share the same signatures.

As required, EGLE was notified of the elevated sulfate results in the quarterly benchmark summary letters. A comparison of the data from the TDRSA primary contact water and leak sumps identified clear differences in the concentrations of sulfate, magnesium, chloride, and nitrate between the two sumps. This indicates that the water in the leak detection sump is likely not from the primary contact sump and the integrity of the liner is intact. The source of sulfate was likely introduced during the construction of the lining system. A summary of the 2022 monitoring results and graphs comparing results from the TDRSA leak detection and contact water sump can be found in Appendix D.

Table 4.2.3 – TDRSA Leak Detection Sump Results for 2022

Parameter	02/07/22	06/14/22	08/16/22	11/15/22
Magnesium (mg/L)	21.0	22.5	24.8	24.0
Sodium (mg/L)	705	739	738	720
Chloride (mg/L)	60.5	61.3	60.4	60.1
Sulfate (mg/L)	2,030	1,770	1,870	920
Nitrate (mg/L)	65.9	66.4	71.8	69.6
Nitrite (mg/L)	<0.50	<0.50	<1.0	<0.50
Ammonia (mg/L)	<0.10	<0.10	<0.10	<0.10
Average Daily Flow Rate (gal/acre/day)*	0.02	0.02	0.02	0.02
Purged Volume (gal)*	5.0	5.0	5.0	5.0
pH	7.3	8.0	6.8	7.8
Specific Conductivity (µS/cm)	3,333	3,482	3,602	3,553

**estimated volume; flow rate was too low to register on the flow meter.*

4.3 Site Water Usage, Treatment, and Discharge

Site-wide water consumption includes three features: supply water to surface activities, supply to underground mining activities, and the management of process water in the CWBs for eventual treatment in the water treatment plant. The WTP treats the water and provides a portion for recycling within the WTP and for discharge to the Treated Water Infiltration System (TWIS).

4.3.1 Supply Water Sources and Usage

Three separate sources supply water to the mine site to support various operational activities. These sources include the potable well, mine services well, and treated utility water from the WTP. Eagle used site logs to compile the following summary of average water use from each source.

The domestic well (QALPSW001) is used to supply potable water to the surface facilities, final rinse for the truck wash, and fire water tank if necessary. During 2022, the approximate water use was 7,491 gpd (5.2 gpm) which was less than the average of 8,595 gpd (6.0 gpm) utilized in 2021.

Domestic Well at the Mine Site

In 2022, the mine services well (QAL011D) was primarily used to supply water for the truck wash recycled water bay, underground operations, dust suppression, and the fire water tank which supplies water to the network of fire hydrants onsite. Approximately 127,421 gpd (88 gpm) of water was utilized in 2022 which is an increase from an average of 89,342 gpd (62 gpm) supplied in 2021. The increase is due to additional demand for underground operations, specifically the use of core drills for exploration and stoping in Eagle East.

The third source of water on the mine site is the treated utility water which is supplied and used by the WTP. Utility water is produced by the treatment of water that was collected in the CWBs through filtration and is subsequently recycled within the WTP rather than being discharged to the TWIS. Utility water can be used for dilution, backwash, and in various cleaning processes. In 2021, the WTP instituted a pre-softening process loop that uses the utility water tank as a holding point for water that has been softened before the water is returned to the CWBs rather than immediately being processed through the reverse osmosis (RO) process equipment. Due to the location of the existing recycled water flowmeter, the WTP is unable to separate internally recycled water volume from pre-softening volumes. Pre-softening continued into 2022 with the total volume of water characterized as 'recycled water within the WTP' being approximately 170,180 gpd (118 gpm) which is a decrease from 184 gpm reported in 2021.

4.3.2 Storm Water Control

The mine site storm water is either defined as non-contact storm water or contact storm water. The non-contact storm water is collected in non-contact water infiltration basins (NCWIBs) where it then infiltrates into the ground. This water does not require treatment because it is from areas of the site that have no contact with operations. Contact stormwater is defined as water that was in contact with material from the mine, and it is collected in two lined basins where it is held before treatment through the water treatment facility.

4.3.3 CWB Water Management and Water Quality

Three primary sources of site water were discharged to the CWBs before treatment in the WTP. These included dewatering from the underground mine, the TDRSA, and precipitation and storm water that falls on the contact area. Additional intermittent sources include dewatering from the sumps located in the COSA, truck wash, fuel area, batch plant, boot wash, and truck shop.

CWB levels are continuously recorded and saved to a database maintained by WTP operators. The average water level for 2022 in CWB #1 was 110.9 inches and 93.6 inches in CWB #2. This log with

daily readings is in Appendix D. All rainfall and snow melt that occurred in 2022 was collected and managed within the capacity of the CWBs.

As a best practice, samples were collected from the sampling point in the CWB# 2 pumphouse in February, June, August, and November 2022 to provide the WTP operators with valuable data that may affect process control and provides information to identify any parameter trending in water quality as mining progresses. Additionally, results can be compared to downgradient water quality to confirm the liners are intact and functioning as designed. A summary of the results can be found in Appendix D.

Like previous years, the CWB monitoring results fluctuate from quarter to quarter and are dependent on the areas being mined underground, TDRSA sump inputs, and the amount of dilution from precipitation. pH results ranged from 9.1 SU in Q4 (November) to 10.3 in Q3 (August). The elevated concentrations in CWB #2 are due to the pre-softening of the water. Water in CWB #1 can be transferred into CWB #2 and vice versa, to optimize WTP operations.

View looking southeast at CWB #1

4.3.4 Non-Contact Water Infiltration Basins (NCWIB)

There are three NCWIBs located in the main surface facility area and one NCWIB near the ventilation air raise. Inspections of the NCWIBs following wet weather events continue to indicate the basins are operating as expected with storm water readily infiltrating back into the ground. The only exception is following spring melt or excessive rain events in which water ponds in the NCWIBs briefly before infiltrating. The basins are monitored for excess silt that would prevent infiltration and ideal operation as designed.

Per the mining permit, monitoring wells are required to be located downgradient of each NCWIB and must be sampled in the event of a surface discharge from the basin. Eagle Mine has chosen to sample these wells at least annually as surface discharge is not expected to occur. Monitoring wells QAL070A and QAL073A, located down gradient of NCWIBs #2 and #3, are monitored annually. Monitoring wells QAL071A and QAL024A are located downgradient of NCWIB #1 and #4 and are monitored quarterly as part of the overall mine monitoring well network.

The analytical results from QAL070A and QAL073A were compared to the established benchmarks calculated for each. Sampling results from QAL070A detected chromium and iron above benchmark values in 2022. Chromium was detected at the benchmark value in 2022, while Iron was at or above benchmark in 2021 and 2022. Cations and anions were also detected including alkalinity bicarbonate, sodium, chloride, nitrate, sulfate, potassium, calcium, magnesium, and hardness, that were outside of

calculated benchmarks. Although this location only requires sampling following a surface discharge from the NCWIB, Eagle will continue to monitor annually to identify trends. This well is located adjacent to the site's main access road which is graded to direct run-off from the roadway toward the monitoring well location. Several of the elevated levels at location QAL070A are likely due to a sand/salt mixture that is applied to the roadway during winter conditions. Results at QAL073A were outside of benchmarks for calcium, magnesium, sodium, and hardness, but have continued to trend down since 2018. Groundwater monitoring results from QAL071A and QAL073A are further discussed in Section 5.1 and all results are summarized in Appendix F.

Non-Contact Water Infiltration Basin (NCWIB) #1 near the WTP

4.3.5 Water Treatment Plant Operations and Discharge

The WTP discharged over 57 MG of water in 2022. A summary of the monthly discharge rates can be found in Table 4.3.5 below.

Effluent discharges to the TWIS are regulated under Groundwater Discharge Permit (GWDP) GW1810162, and the discharge volume and analytical results are reported to the EGLE monthly through MiEnviro. In October 2017, Eagle applied for approval to continue discharge under the current permit per the renewal requirements of the GWDP. This is a routine application that is required to be completed every five years. The permit is still under review by the Department.

Table 4.3.5 – Volume of Water Discharged in 2022

Month	Volume of Water Discharged (gallons)
January	1,507,146
February	1,733,940
March	4,739,232
April	7,448,957
May	8,191,333
June	3,882,881
July	3,906,451
August	5,075,437
September	6,257,838
October	6,179,577
November	5,344,045
December	3,658,424
Total	**57,925,261**

Source: Eagle Mine WTP

The water treatment process generates two waste streams; filter press waste and crystallizer waste. The filter press waste stream is composed of dewatered solids from the clarification treatment process and is primarily comprised of calcium and magnesium, while the crystallizer waste is mainly sodium chloride. Samples of the waste streams were sent to the laboratory for waste characterization as required by the landfill. The wastes are non-hazardous. In 2022, 1,219 tons of crystallizer waste and approximately 569 tons of filter press wastes were disposed at a landfill.

4.4 Materials Handling

4.4.1 Chemical Handling, Storage, and Reporting

Eagle Mine's goal is to create a culture of environmental awareness throughout the workforce. Therefore, all employees and subcontractors are trained to immediately respond and report any spills that occur.

The Michigan SARA Title III Program requires reporting of onsite chemicals being stored above threshold quantities. Due to the volume of chemicals stored/used at the site, primarily in the WTP, a Tier II Report was submitted in February 2023 via the online Tier II Reporting System to the State Emergency Response Commission (SERC). Copies of the report were also mailed to the Marquette County Local Emergency Planning Committee (LEPC) and Powell Township Fire Department.

5. Monitoring Activities

5.1 Water Quality Monitoring

A significant amount of surface water and groundwater quality monitoring is required both on and surrounding the mine site. Following is a summary of the water quality monitoring activities.

5.1.1 Quarterly Groundwater Quality Monitoring

Groundwater quality is monitored through a network of monitoring wells located both inside and outside the mine site perimeter fence. A map of the well locations can be found in Appendix E.

Four rounds of quarterly sampling were completed in February, June, August, and October 2022. The Eagle Mine permit prescribes a parameter list for annual monitoring events (conducted in Q2 2022) and an abbreviated list to be used quarterly (Q1, Q3, Q4 2022). In addition to the permit-required sampling lists, locations QAL061A, QAL062A, and QAL067A are analyzed for volatile organic compounds (VOCs) annually in response to comments provided during the permit application process. VOC samples were collected in Q2 2022 at these three locations and all results were found to be non-detect (i.e. below the laboratory reporting limit). Samples are collected following the Eagle Project Quality Assurance Project Plan (QAPP) and Standard Operating Procedures (SOP) (North Jackson, 2004a and 2004b) and the results are summarized and compared to benchmarks, where applicable, in the tables found in Appendix F.

Two sets of benchmarks were calculated for all mine permit groundwater monitoring locations based on the guidance provided by the Mine Permit and Part 632, with the lower of the two being used for comparison. In late 2015, the results were reviewed and statistically analyzed. The consultant calculated an updated benchmark value for those results that were not trending. These updated benchmarks were used for comparison in 2022.

Monitoring Results

Twenty-three monitoring well samples were collected during each of the four quarterly sampling events. Samples collected from two additional monitoring wells were collected once in 2022 and the results are summarized in Section 4.3.4. Samples were collected using low-flow sampling techniques, and field parameters (dissolved oxygen (DO), oxidation reduction potential (ORP), pH, specific conductivity, temperature, and turbidity) are collected and analyzed using a flow-through cell and YSI probe. All samples were shipped overnight to Pace Analytical in Grand Rapids, Michigan, for analysis.

Groundwater Monitoring Location QAL008A

Most of the parameters that were analyzed had reported values below the analytical reporting limit and the calculated benchmark and are therefore non-detect. The greatest number of detections were reported for anion and cation parameters. In certain wells, the measured value for bicarbonate alkalinity has increased over the previous several quarters to years. Bicarbonate levels in background A-zone wells are typically from 20-60 mg/L, but in some wells the bicarbonate concentrations are over 100 mg/L. These wells generally have trends that increase from the baseline followed by a period of stabilization or new equilibrium. The most likely explanation for this is related to changes in recharge patterns compared to baseline. By concentrating recharge in specific areas (i.e. non-contact water basins, snow piles) in places differently than how this existed before the mine facilities were built, the fundamental recharge distribution has changed. As such, there is increased recharge available in certain locations to drive this normal environmental phenomenon. There is also a potential for there to be a relationship between higher chloride concentrations and bicarbonate concentrations in that the bicarbonate formation could be enhanced by increased chloride in the water. A summary of wells that have had one or more parameters exceed a benchmark value can be found in Appendix F.

Per Part 632, R426.406 (6) when a result was greater than a benchmark for two consecutive sampling events at a compliance monitoring location, Eagle notified EGLE and determined the potential source or cause resulting in the deviation from the benchmark.

The following is a summary of the events that occurred in 2022:

- Location QAL024A (near the vent raise) had benchmark deviations in bicarbonate alkalinity, chloride, nitrate, and sodium. Elevated levels of sodium chloride were first reported at this location in 2013 which resulted from the use of a sand/salt mixture to minimize ice build-up and subsequent storage of stockpiled snow near the monitoring well location. Results for chloride and sodium have both decreased overall since 2013 and are approximately three times less than the peak concentrations reported in Q2 2013. Nitrates were lower in 2022

compared to results reported in 2021. A pattern was observed in 2016, 2019 and 2021 where nitrate results trended up, followed by periods of downward trending back toward baseline values. Alkalinity results remained elevated from baseline but were consistent with results reported since 2016.

- Nitrates were detected above the benchmark during all four sampling quarters in 2022 at monitoring wells QAL060A and QAL061A located downgradient of the TDRSA and CWBs. The nitrate results at these locations fluctuated slightly in the quarterly monitoring events, but remained fairly consistent throughout the year just above baseline levels. Fluctuating nitrate results may be a function of the historic use of salt at the mine site, as described in other monitoring locations on site. Road salts have the potential to affect general nutrient cycling (such as for nitrogen/ammonia) and cation exchange reactions within the affected soil profiles. Changes in these parameters in groundwater are characteristic of the sand/salt applications due to the ion exchange processes occurring in shallow groundwater. In addition, bicarbonate alkalinity, calcium, magnesium, and hardness were greater than benchmarks at QAL061A, with alkalinity bicarbonate being above benchmark at QAL060A in Q3 and Q4 2022. Alkalinity began to level off over the course of 2021 but has increased in 2022. Similar to other wells in that vicinity (e.g. QAL062A and QAL063A), the elevated bicarbonate may be due to the chloride plume moving across the site. This plume is the result of historical salt use on the contact area.

- Calcium and magnesium results share a similar pattern of an upward trend from previously reported results that are only slightly greater than their established benchmarks at QAL061A. Hardness at QAL061A continued to increase in 2022 as it has since 2017. Results from QAL060A and QAL061A were compared to the TDRSA contact water sump and CWB results to determine if they were a potential source of the elevated values. Elevated levels of chloride, sulfate, and metals were reported in the TDRSA sump and CWB but were non-detect in the monitoring wells indicating that the elevated results are likely not related to the immediately upgradient facilities.

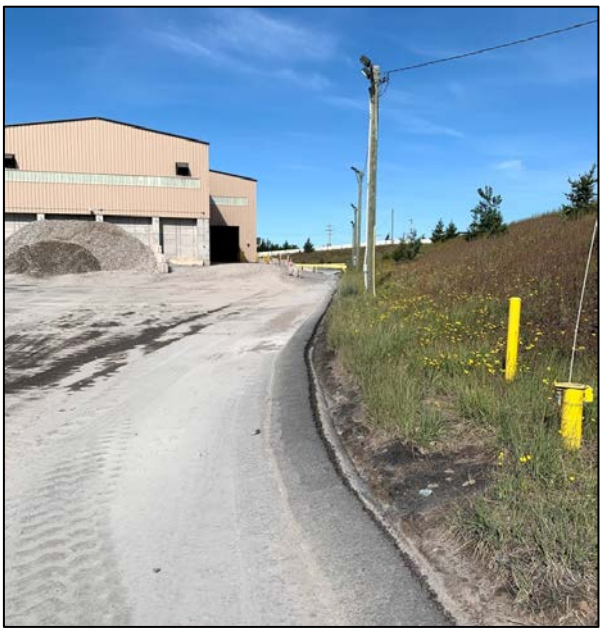
- QAL062A (located on the east berm of the TDRSA) had results for pH, alkalinity bicarbonate, chloride, nitrate, and sodium that were outside calculated benchmarks for each sampling event in 2022. Calcium, magnesium, potassium, and hardness were also above benchmark levels for five consecutive Q2 sampling events (2018 – 2022). Although the monitoring well is located next to the TDRSA it is unlikely the source of the elevated results because the results from the TDRSA and monitoring well do not correlate. For example, metals are present in the TDRSA contact water sump but are not above the benchmark in QAL062A (except for an anomalous value for iron in Q2). The constituents that are above benchmark levels are most likely the result of the chloride plume that is slowly moving across the site through the area of QAL062A.

- The pH results at QAL062A continued to be below the calculated benchmark range by at least 0.5 SU for more than two consecutive sampling quarters. The pH results have consistently been between 7.5 – 7.8 SU for the past fourteen sampling quarters indicating a period of stabilization and equilibrium. Results for pH at surrounding locations downgradient of QAL062A (i.e. QAL060A and QAL061A) are within benchmark values. Upgradient location QAL067A was at the calculated benchmark for Q1 2022 but returned within the benchmark for the remainder of the year. The site-wide trend of decreasing pH values is not indicated by the data.

- Bicarbonate alkalinity, chloride, nitrate, and sodium were above benchmark levels at QAL063A (located east of the CWBs near the WTP) and pH levels were below the benchmark for all sampling events in 2022. Calcium, magnesium, potassium, and hardness were also above

benchmark levels for four consecutive Q2 sampling events (2019 – 2022). Constituents of this well which are outside of the established benchmark are consistent with those reported in QAL062A which is located upgradient of this monitoring location. This indicates that the elevated results are also likely attributed to the chloride plume. Constituents above benchmark levels at QAL062A and QAL063A trended up in 2022 which suggests migration of the chloride plume across the site. pH results were below the benchmark ranging from 7.3 to 7.6 SU. No correlation was found between QAL063A and the CWBs; and concentrations of nickel, copper, and iron are present in the CWB water whereas the same are not detected at QAL063A.

- Magnesium and hardness increased from 2021 to 2022 at QAL064D.
- Calcium and hardness decreased from 2021 to 2022 at QAL065D.
- QAL066D had results for iron, bicarbonate alkalinity, and sodium that were above benchmark levels for all the sampling events in 2022. The elevated iron is likely the result of iron oxides or iron hydroxides in the soils (clay) within the formation in which this well is located. In Q4, before quarterly sampling, purging of this well was completed to remove sediment present in the well. The Q4 2022 sample result for iron was decreased in concentration from previous quarters. Arsenic was elevated above the benchmark in Q1 – Q3 2022 and also fell below the benchmark in Q4. This location has historically had groundwater results for metals including arsenic and iron which were attributed to fine-grained sediment present in the well from improper grouting during well installation. Sodium fluctuated slightly but stayed consistent with 2021 results except for Q4 2022 when it dropped closer to the benchmark than it has since 2018. All metals and anions/cations at this location followed this downward trend after redevelopment was completed.
- Location QAL067A (located on the southeast corner of the TDRSA) had benchmark deviations for chloride, sodium, bicarbonate alkalinity, sulfate, and nitrate for all 2022 sampling events. Calcium, magnesium, potassium, and hardness were also above established benchmarks for at least two consecutive Q2 annual sampling events. Sodium and chloride results continued to trend down while nitrate and sulfate stayed relatively consistent with the previous year's trends. Bicarbonate alkalinity stayed consistent between 2021 and 2022. The elevated results at this location are still suspected to be associated with the historic use of salt on the contact area as no additional changes have occurred in the area. Jersey barriers were placed at this location in December 2020 to assist with preventing snow from being pushed into the vicinity of well QAL067A and curbing was enhanced along the berm in 2021 to further reduce the risk of exposure to the well. The purpose of the jersey barriers is to observe whether adjusting snow management in this area will have any effect on the sodium or chloride levels at this well. The 2022 data shows that chloride and sodium levels have been continuing to decrease over time since the placement of the jersey barriers. Eagle will continue to monitor this location to understand if the enhanced curbing and jersey barriers placed near this well with further reduce chloride and sodium at this location. The chloride results are expected to continue to trend toward baseline levels as the chloride plume moves away from the area.



Curbing located near QAL067A

- QAL071A (located near the northwest corner of the septic drain field) had pH, bicarbonate alkalinity, chloride, nitrate, sulfate and sodium outside of the calculated benchmarks in 2022. The results for these parameters trended up overall in comparison to 2021 results (except for bicarbonate). The results for calcium, hardness, and magnesium have been above benchmarks since 2013 and have overall trended upwards up until 2021 when these parameters started to decrease. Results for pH remained consistent from 2021 through 2022. As noted in previous annual reports, the elevated values at this location are still suspected to be due to the well's location near the septic drain field. In Q3 2014, the action level for nitrate was met at QAL071A requiring Eagle to conduct supplementary sampling at location QAL074A located downgradient of the septic system and investigate the source of the elevated results. Results continue to meet the action level for nitrate and as such the investigation continued in 2022. Results from the investigation are summarized below.
    - At the time of installation, QAL071A and QAL074A were installed to monitor groundwater flowing from the vicinity of the CWBs and TDRSA. The groundwater flow direction at the time they were installed was primarily northeastern. However, the groundwater flow direction in this area is currently to the east, therefore the wells are not directly downgradient and are not suspected to be influenced by these facilities. The monitoring locations do not have obvious sources of nitrates further upgradient as well.
    - Snow storage activities that are occurring near NCWIB #1 which could have potentially influenced QAL071A began after the elevated nitrate results were initially reported, thus eliminating them as the potential source.
    - Chloride, sodium, and nitrates are all present in human wastes and are good indicators of septic system waters. All three constituents are present in the groundwater at QAL071A and QAL074A.
    - A review of monitoring results from locations downgradient of QAL071A and QAL074A near the TWIS (e.g. QAL056A) do not show any signs of elevated nitrate levels. Currently there is no threat of elevated nitrate levels migrating offsite.

Based on the review of data collected in 2022, the septic tank effluent still cannot be excluded as a source of the elevated nitrate levels reported at QAL071A.

- QAL074A is located directly downgradient of the septic system and has been sampled quarterly since 2014 when the action level for nitrate was met at QAL071A. Like at location QAL071A, the results for pH, bicarbonate alkalinity, chloride, nitrate, hardness, and sodium were greater than benchmarks for at least two consecutive sampling events. Although the concentrations differ between locations, the septic can also not be excluded as the source of the elevated values reported at this monitoring location. The upgrades documented in Section 3 are expected to improve nitrate conditions in the groundwater.

As required by MP 01 2007 special condition N2, a statistical trend analysis has been conducted for all monitoring locations/parameters. Possible trends were identified for one or more parameters at fifteen compliance locations and nine background monitoring locations using data collected from baseline sampling events (2011) through October 2022. Bicarbonate alkalinity and nitrate were the most frequently noted as possibly trending. Changes in these parameters are indicative of the overall change in site storm water infiltration changes and ion exchange processes occurring from the use of de-icing products. A table summarizing the potential groundwater trends can be found in Appendix G. For compliance monitoring locations in which results were outside of established benchmarks for at least two consecutive quarters and a potential trend was identified, the trend charts are also provided in Appendix G. A full report outlining groundwater trending results for all the parameters and the locations, including graphs is available upon request.

Piper diagrams were also used for the trend analysis review to classify the water types and determine if any changes in water chemistry have occurred over time. Piper Diagrams were created for select monitoring locations that have exhibited possible trends in one or more chemical parameters. Monitoring locations QAL025A, QAL026A, QAL044B, QAL060A, QAL061A, QAL064D, QAL068A, QAL071A, and QAL073A are all classified as having a calcium bicarbonate water chemistry and have shown no signs of a change in water chemistry over time apart from QAL026A in that water volumes at this area were insufficient and 2022 data wasn't collected.

The following monitoring locations exhibited a change in water chemistry evidenced by plotting data between the years 2012 and 2022, further explained below:

- QAL024A – The water type was originally classified as calcium bicarbonate in 2012 but changed to a sodium chloride classification in 2013. From 2014 through 2022 the water chemistry was classified as mixed-cation chloride but has started to revert to the classification of calcium bicarbonate. The change in chemistry from 2013 to the present may have been associated with the previous construction of the vent raise as well as salt use and snow storage practices near monitoring well QAL024A.

- QAL029A & QAL029D – Water chemistry data from these locations were originally classified as calcium bicarbonate from 2008 to 2012 but shifted to sodium chloride up until recent years which correlates with the chloride plume moving through the site. Sulfate ion increases that are observed in the A-locations were additionally reviewed. The hydrogeologist reviewing the data used the Piper water quality diagrams do not show sulfate becoming a dominant ion, therefore the likely source of sulfate is due to mineral dissolution due to road deicer salts. There is no evidence of sulfide mineral reactivity indicated in the data. Both QAL029A and QAL029D appear to be trending toward calcium bicarbonate.

- QAL062A & QAL063A – Water chemistry data from these locations were originally classified as calcium bicarbonate in 2011 and continue to be in 2022, but there has been a slight shift towards sodium chloride chemistry within the last five years. This shift is indicative of historic road salt use that occurred on the contact area and the corresponding chloride plume that is slowly moving across the site.

- QAL066D – Samples before 2016 were classified as calcium bicarbonate and then alternated between sodium and calcium bicarbonate several times between 2016 into 2022. This is attributed to fine-grained sediment that is present in the well resulting from improper grouting during installation. This well requires aggressive purging on a routine basis to remove the accumulating sediment to achieve an accurate assessment of water quality.

- QAL067A – All samples before May 2014 were classified as having a water type of calcium bicarbonate. In 2014, the water chemistry began to change and was classified as mixed-cation chloride and then continued to shift to the classification of sodium chloride waters from 2015 – 2022. This change in water chemistry is indicative of an external source of contamination and is likely due to contact area salt.

- QAL069A – Water chemistry from this location was classified as calcium bicarbonate until 2018 when it shifted towards a mixed-cation chloride classification. Water chemistry then shifted back towards the historical classification of calcium bicarbonate in 2019 where it remained in 2022. This well is located near the security building and site access road where salt is used as a deicer.

- QAL070A – All samples collected before May 2015 were classified as having a water type of calcium bicarbonate which is indicative of shallow fresh groundwater. From May 2015 through 2022, a shift in water chemistry occurred in which the water was classified as a mixed type, however, the water does not display a dominant cation type though it does correspond with a chloride type chemistry. This monitoring location is also found near the site access road where salt is used as a deicer and drainage from the roadway is routed near this well.

Piper diagrams for each of the monitoring locations referenced above can be found in Appendix H.

5.1.2 Quarterly Surface Water Quality Monitoring

Surface water sampling was conducted quarterly in 2022 at 11 locations; nine on the Salmon-Trout River and one each on the Yellow Dog River and Cedar Creek. The samples represent winter base flow, spring snowmelt/run-off, summer base flow, and the fall rainy season. A map of the surface water sampling locations is found in Appendix I. Samples are collected following the Eagle Project QAPP and SOP and the results are summarized and compared to benchmarks in Appendix J. In 2015, all surface water benchmarks were reviewed and updated using results that were not determined to be trending based on statistical analysis. These updated benchmarks were used for comparison in 2022.

Monitoring Results

Grab samples were collected from each location during the quarterly sampling events completed in March, May, August, and October 2022. The Eagle Mine Permit prescribes a parameter list for annual monitoring events (completed in Q2 2022) and a shorter list to be used quarterly (Q1, Q3, and Q4 2022). In addition to the grab samples, field measurements (DO, pH, specific conductivity, and temperature) were collected and determined using a YSI probe. The stream stage and flow measurements were obtained using a wading rod and current meter. All water quality samples were shipped overnight to Pace Analytical in Grand Rapids, Michigan for analysis. Following is a summary of the 2022 events that occurred.

- At compliance monitoring location STRM005, the results for iron were above the benchmark for at least two consecutive third quarter sampling events. This location is the most northern surface water monitoring point and is well outside of the direct influence of the mine site. pH was also above the benchmark for two consecutive third quarter sampling events. pH results in Q1 and Q4 2022 were within benchmarks indicating the change may have been the result of seasonal variation.

- Compliance location STRE001 had iron above the established benchmark for seven consecutive third quarter sampling events. The results for iron at nearby upstream monitoring locations STRE009 and STRE010 were within established benchmarks. The elevated iron may be associated with iron oxides or iron hydroxides found in the soils (clay) within the waterbody and may fluctuate based on precipitation rates and flow rates of the river.
- Compliance locations STRE005 and STRE010 had results for calcium, magnesium and hardness that were just above the established benchmark for two consecutive Q2 sampling events. In addition, the result for manganese at location STRE005 was above the benchmark for Q3 2021 and 2022 sampling events.
- STRE009 was above the benchmark for two consecutive second quarter sampling events for calcium and hardness, as well as iron in Q4.

A trend analysis was also conducted for the surface water monitoring locations. The same statistical analysis as groundwater was utilized with the exception that each parameter was also analyzed for each quarter, rather than just parameter and location, to take into account seasonal variations.

Possible trends were identified for one or more parameters at all of the eleven monitoring locations using data collected from baseline sampling events (2011) through October 2022. Sulfate was most frequently noted as possibly trending. The largest number of the trends identified occurred in Q2. The elevated results and associated trends return to baseline levels in subsequent quarters indicating that the results are likely due to seasonal variation.

A table summarizing the potential surface water trends can be found in Appendix K. For compliance monitoring locations in which results were outside of established benchmarks for at least two consecutive seasonal quarters and a potential trend was identified, the trend charts are also provided in Appendix K. A full report outlining surface water trending results for all parameters and locations including graphs is available upon request.

5.2 Regional Hydrologic Monitoring

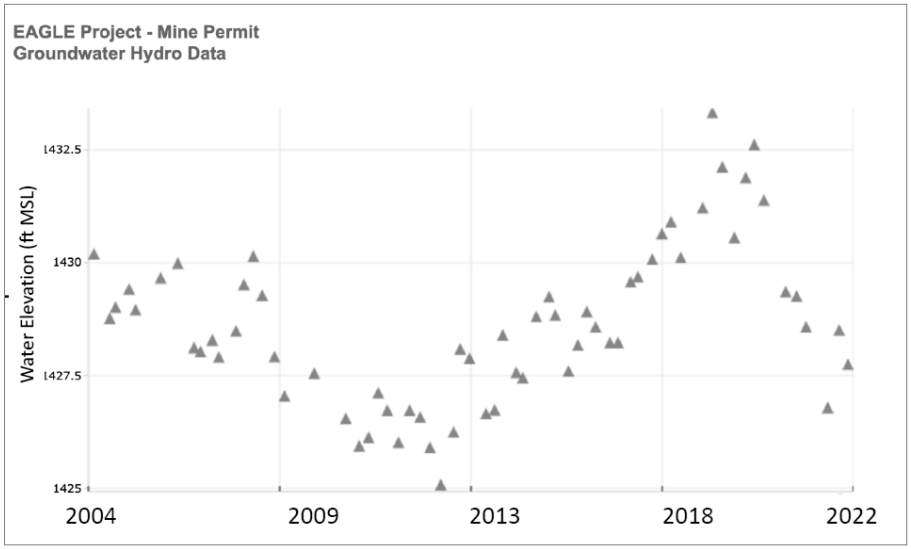
5.2.1 Continuous, Daily and Monthly Groundwater Elevations

Water levels are monitored in two distinct hydrologic zones near the mine site: in the shallow, unconfined unit (QAL024A, and wetland locations WLD022, WLD023, WLD025, WLD026, WLD027, WLD028), and a clay layer-confined aquifer located beneath the A-zone (QAL023B, QAL044B, QAL064D, QAL065D, QAL066D). The B- and D-zone wells are located in the same confining unit as Eagle's industrial supply well, and are affected by limited recharge that occurs only seasonally during spring melt or significant precipitation. All of the locations are instrumented with continuous water level meters. Water level meters were connected to a telemetry network in 2020 which allows for real-time data review and analysis rather than monthly downloads as was previously the practice. A map of these locations can be found in Appendix L.

The Eagle Mine is found within a regional groundwater basin that has experienced drought conditions since the 2019-2020 timeframe. Water levels in the background reference location for the groundwater basin (QAL007A) are several feet lower than the long-term average. This has a more significant effect on the resultant water levels in the confined B- and D-zones due to the decreased availability of aquifer recharge water. In 2022, precipitation rates were slightly above average based on the Palmer Hydrological Drought Data Index. As historically observed, precipitation rates influence the shallower zone wells. During winter months, water levels may decrease as little recharge from precipitation and infiltration occurs and during spring melt or heavy rain, water levels may increase as recharge occurs within the proximity of the monitoring location.

In addition, some of the short-lived fluctuations in deeper D-zone groundwater levels below the confining layer may be attributed to blasting events. In a confined aquifer, the impacts of blasting may be observed due to increased pressure or changes in pressure. These changes are short-lived as blasting causes an instantaneous pulse in groundwater levels and water levels return to pre-blast levels typically within the hour after the blasting cycle is complete.

QAL007A – Reference GW Basin Hydrograph (2004-2022)



Reference location QAL007A represents the regional decline in water levels due to long-term drought.

Continuous groundwater monitoring locations are reported by water year (October 1 – September 30). Calculated background water levels and monthly water level results are based on mean daily values and summarized in Appendix N. The following is a summary of the findings:

- QAL024A – The mean water level readings were less than the minimum background baseline levels in October 2021 – May 2022 and July 2022 – September 2022. The lowest reading was recorded in March and April 2022 and was 1.4 ft below the minimum baseline level.
- QAL023B – Due to the confined nature of the zone being monitored, water levels at this location (and other similar B and D locations) respond to general climatic and hydrologic seasonally-driven changes and industrial supply well pumping. The water level could not be measured at this location from October 2021 through September 2022 because the water levels fell below the equipment elevation. In addition, the instrumentation stopped operating at an unknown time before September 2022 (when lower water levels could not indicate the malfunction) and was not operational until October 5, 2022, when new equipment was installed. Water levels rebounded in October due to increased seasonal precipitation.
- QAL044B – The mean water level reading from October 2021 – September 2022 was a maximum of 2.0 ft below the minimum baseline level calculated for this location. The lowest reading was recorded in March 2022.
- QAL064D – The mean water level reading from October 2021 – September 2022 was a maximum of 1.2 ft below the minimum baseline level calculated for this location.
- QAL065D – The mean water level reading from October 2021 – August 2022 was a maximum of 1.7 ft below the minimum baseline level calculated for this location. The lowest water level was recorded in February and March 2022.

- QAL066D – The mean water level reading from October 2020 – September 2021 was a maximum of 2.8 ft below the minimum baseline level calculated for this location. The lowest reading was reported in March 2022.

Piezometer with a level troll located at QAL008A

In addition to continuous monitoring, Eagle Mine implemented a regional hydrologic monitoring program to assess potential groundwater elevation changes due to mine dewatering. The regional monitoring wells cover an area of approximately 14 square miles. Discrete water elevations are measured every quarter at 120 locations. Several wetland locations were unable to be monitored due to frozen or unsafe conditions throughout the quarters.

A map of the hydrologic monitoring locations can be found in Appendix L and a map of the A and D-zone groundwater contour maps for each sampling quarter can be found in Appendix M. A review of the results determined the following:

- No significant changes or shifts in calculated groundwater contours were reported for calendar year 2022.
- Regionally, the overall water levels were higher than in 2021. The exception is in the D-zone water levels in monitoring wells located above the ore body near the mine services well QAL011D and QAL004D, located within direct influence of the mine services well.
- QAL004D is located within the direct influence of the mine services well and water levels fluctuate based on the use of the well. As stated in section 4.3.1 above, the mine services well (QAL011D) is used to supply water for underground operations, dust suppression, fire water, etc. A study completed in May 2016 found that when the mine services well is operating, this monitoring location QAL004D shows drawdown of the water level which rebounds when the well is not in use. Based on a review of hydrographs from area monitoring locations, it appears that there is some degree of influence from the use of the mine service well on water levels in the confined aquifer (B and D-zones) that extends to the area above the orebody. The change in water levels is not reflected in either the A-zone water table aquifer hydrographs or the wetland hydrographs. In addition, wetlands lying above the deeper aquifer and orebody have not shown any hydrological response to the mine service well or potable water supply well pumping.

- Changes in water level in the monitoring wells located within the vicinity of the orebody (i.e. QAL023B, QAL044B, QAL064D, QAL065D, and QAL066D), are mostly likely attributed to precipitation rates, water withdrawal from the mine services well and/or infiltration of water encountered during mining activities.

Wetland Water Levels

Wetland water levels above the orebody (e.g. reflected in wetland wells WLD025-4.5, WLD027-4.5, and WLD028-4.5) did not fall more than six inches below pre-mining baseline levels but in some instances, the water levels in 2022 did fall below the minimum baseline levels. The wetlands are heavily influenced by precipitation levels as seen in the hydrographs. Water levels in 2021 had lower than average precipitation rates for the region. However, 2022 saw increased precipitation rates after a very dry year. Water levels can be cyclical depending on precipitation and regional climate conditions.

- WLD022-4.5 had a mean water level below the baseline minimum in October 2021 – April 2022, and June – September 2022. The lowest reading was 0.4 ft below the baseline minimum.
- The WLD025-9.5 mean water level was below the minimum baseline in October 2021 and December 2021 – April 2022. The largest deviation was 0.5 feet below the baseline minimum in March 2022.
- Mean water levels at WLD026-9.5 were outside of background range in May 2022, with water levels 0.2 ft above baseline maximum.
- The WLD028-9.5 mean water level was 0.1 and 0.2 ft below the baseline minimum in October 2021 and February 2022.

The mean water levels remained below baseline minimums at locations WLD022-4.5. Hydrographs of each groundwater and wetland monitoring location can be found in Appendix O. A summary of discrete water elevation results from Q1 – Q4 2022 is included in Appendix P.

Groundwater Infiltration

In 2022, seven stopes were mined between the 352 and 381 levels, and one 381L sill heading was developed. The Crown Pillar Management Plan established a series of triggers in which actions would be initiated if discrete inflows that occur in the Eagle ore body are greater than 5 gpm. No discrete inflows of greater than 5 gpm were identified during mining in 2022. The wireless radio telemetry network provided continuous, real-time monitoring of water levels from bedrock piezometers, quaternary wells, and wetland piezometers. Monitoring data is reviewed regularly for potential impacts from mining on water levels. In a discrete inflow event, this data could also be used to identify any response in water levels and aid in the selection and initiation of appropriate response actions. In the event of a discrete inflow greater than 5 gpm, additional information would be collected by the mining crews including the elevation at which water is intercepted, flow rates, and water quality samples would be collected.

5.2.2 Continuous Surface Water Monitoring

Locations STRE002, STRM004, STRM005, and YDRM002 are each instrumented with meters that continuously monitor for temperature, conductivity, and flow rate. The meters were originally installed in 2004 and are downloaded quarterly by North Jackson Company field technicians.

The results for surface water locations are also being reported by water year (October 1 – September 30). Continuous readings during the water year were averaged over each month of operation from October 1st, 2021 through September 30th, 2022, and are based on mean daily values.

Background levels are based on data collected from September 2004 through August 2011 for all locations. The monthly temperature, flow, and specific conductivity are summarized in Appendix Q. The following is a summary of the findings:

- Continuous flow readings were not collected from locations STRE002 and STRM004 from December 2021 – February 2022, STRM005 from December 2021 – March 2022, and YDRM from October 2021 – March 2022 due to ice build-up.
- Specific conductance measurements were not reported in December 2021 – September 2022 at location STRE002. STRM004 was not reported in February 2022. STRM005 and YDRM002 were not recorded in October and November 2021. This is due to missing values or data that failed to meet quality control requirements.
- Location STRM005 mean specific conductivity was below the background minimum level by 8.8 uS/cm in December 2021, 13.8 uS/cm in January, and 2.2 uS/cm in February 2022. Results returned to normal in the following months. At location STRM004 the mean specific conductivity was higher than the background maximum by 28 uS/cm and 5.6 uS/cm in November and December 2021 respectively. Specific conductivity returned to normal at STRM004 in the following months.
- Overall results were consistent with previous years. The pattern of flow and hydraulics of the watershed have not changed. However, changes in stream discharge rates were observed throughout the watershed which is strongly influenced by precipitation and snowmelt events. The changes are the result of the above-average precipitation rates for the region in 2022.
- As expected, temperature changes correlate with changes in specific conductivity because temperature affects conductivity by increasing ionic mobility as well as the solubility of many salts and minerals. In addition, higher flow rates, as observed during spring melt, result in lower specific conductivity due to dilution.

Hydrographs for each location are found in Appendix R.

5.3 Biological Monitoring

Biological monitoring events conducted in 2022 included flora and fauna surveys, wetland monitoring, fish and macroinvertebrate surveys, and a Narrow-Leaved Gentian (NLG) survey. Results from each survey have been compiled into annual reports which are available upon request. A summary of each survey is provided below.

5.3.1 Flora and Fauna/Wetland Monitoring Report

The 2022 flora, fauna, and wetland vegetation surveys were conducted by Barr Engineering. Table 5.3.1 below summarizes the type and duration of the surveys that were completed in 2022. A map of the survey locations is available in Appendix S.

Table 5.3.1 – Type and Duration of 2022 Flora, Fauna, and Wetland Surveying Events

Survey Type	Survey Date
Bird	June 15 – 16; September 19 & 20
Small Mammals	September 20 – 22
Large Mammals	May 4, June 2 and 13 – 16, July 7, August 15 – 17, September 19 – 22
Toads/Frogs	May 4, June 2, and July 7
Wetland Vegetative Monitoring	June 14 and 15
Upland Vegetative Monitoring	June 13 – 15; August 15 –17
Narrow-leaved Gentian	August 17, 2022

The wildlife and plant species identified during the 2022 surveys within the Study Area are like those identified during previous KME surveys. Following is a summary of the survey results:

- A combined total of 768 birds representing 43 species, none of which are threatened or endangered, were observed during the bird surveys conducted in June and September 2022. The number of birds decreased from the 2021 survey when 960 birds were observed. Consistent with previous studies, the Nashville warbler was the most abundant bird observed during the June survey and the blue jay (*Cyanocitta cristata*) was the most abundant recorded during the September survey. Overall, the bird species identified during the 2022 bird surveys are like those bird species identified in previous surveys conducted within the Study Area and are consistent with the bird species expected to be found in the habitats present.

- Forty-eight small mammals representing nine species were collected during the September survey period. The most common small mammal identified in the 2022 survey was the least chipmunk, while red squirrels and chipmunk species were also observed, like in 2021. No threatened, endangered, or special concern small mammals were observed during any of the surveys. Red squirrels appeared to be relatively common throughout the Study Area and are usually highly adept at trap avoidance. The small mammals encountered within the Study Area during the 2022 surveys are typical of those expected in the habitats present and are generally consistent with previous survey results. Other regionally common species possibly present or previously observed within the Study Area but not noted during the 2022 surveys include meadow jumping mouse (*Zapus hudsonius*), American water shrew (*Sorex palustris*), beaver (*Castor canadensis*), fisher (*Martes pennant*), muskrat (*Ondatra zibethicus*), long-tailed weasel (*Mustela frenata*), masked shrew (*Sorex cinereus*), raccoon (*Procyon lotor*), river otter (*Lutra canadensis*), and the snowshoe hare (*Lepus americanus*). Small mammals appear to be distributed throughout wooded and open areas, in both upland and wetland habitats.

- Evidence of white-tailed deer (*Odocoileus virginianus*), American black bear (*Ursus americanus*), and moose (*Alces alces*) were observed during the 2022 surveys. Like in previous years, fresh scat and tracks of coyote (*Canis latrans*) were observed occasionally throughout the Study Area.

- Four frog species American Toad (*Bufo americanus*), Green Frog (*Rana clamitans*), Northern Spring Peeper (*Pseudacris crucifer*) and Western Chorus Frog (*Pseudacris triseriata*) were heard during the survey; none of which are threatened or endangered. All three of the sampling points exhibited are used by frogs for breeding. The Northern Spring Peeper exhibited the highest Call Index Values. The frog species identified are typical of those expected in the habitats present in the Study Area and results are consistent with observations made during previous surveys. Operations noise from the vent raise area fan was again noted in all three surveys. At Survey Points 2 and 3, the fan sounds may be enough to diminish the ability for observers to hear and/or distinguish calls.

- Vegetative sampling plots in both wetland and upland communities identified plant species common to this region. The overall richness and distribution of wetland and upland vegetation in 2022 was found to be very similar to previous years. No threatened or endangered plant species were encountered within the vegetative survey plots. The population of NLG observed within the Study Area remains robust. All the wildlife and plant species identified within the Study Area are typically associated with vegetative communities that are relatively common within the region.

Plot 6W, South View

Plot 8W, Quadrat View

5.3.2 Threatened and Endangered Species

The Michigan Natural Features Inventory (MNFI) maintains a database of rare plants and animals in Michigan. Barr requested a Rare Species Review to determine if any protected species had been found in or near the Study Area. MNFI lists the NLG as a threatened species in Michigan. Per Michigan Department of Natural Resources (MDNR) guidelines (MDNR 2001), Barr surveyed any MNFI-listed species and their habitats during the appropriate season.

Similar to previous years, Kirtland's warbler was not detected at any time during any of the 2022 ecological surveys. Spruce grouse is a state-special concern species; this species was again occasionally observed during the 2022 ecological surveys near the Salmon-Trout River. Scat and moose tracks (state special concern) were observed, and no observations of the yellow-banded bumble bee or gray wolf were recorded.

5.3.3 Narrow-Leaved Gentian (NLG)

The methods used to conduct the 2022 NLG field investigation were consistent with the previous NLG studies. Photographic and Global Positioning System documentation were collected on August 17, 2022. In addition, the local climate changes and overall health of the NLG colonies were assessed relative to previous years.

According to the National Oceanic and Atmospheric Administration data, mean precipitation totals were above average for the area. However, flow in the Salmon-Trout River and Yellow Dog River appeared normal in August at the time of observation. Mean monthly temperatures were below average in January, February, and April, near average for March, and above average for in May through December. The NLG colonies continued to appear healthy in 2022. Signs of herbivory (animal browsing) were observed again in 2022, appearing to be reduced from previous observations. As in previous years, flowering NLG were found in abundance (hundreds of individual plants) both along the Salmon-Trout River and in the area north of the Yellow Dog River.

Large Colony of NLG North of Yellow Dog River, August 2022

5.3.4 Fisheries and Macro Invertebrate Report

The 2022 fisheries and macro-invertebrate annual surveys were conducted by Advanced Ecological Management (AEM). A total of ten stations were surveyed in June 2022, including one station in the Yellow Dog River, one station in Cedar Creek, five stations in the Main Branch of the Salmon-Trout River, and three stations in tributaries of the East Branch of the Salmon-Trout River. A map of the aquatic sampling locations is available in Appendix T.

A total of 262 fish were collected from all stations in 2022, with 49% of the total being captured at Station 6 located on the main branch of the Salmon-Trout River. In total, there were 143 fewer fish collected in 2022 than in 2021. A total of 5 species of fish were observed during the 2022 aquatic survey, which was five fewer species than were observed in the 2021 aquatic survey. Northern redbelly dace (*Chrosomus eos*) and brook trout (*Salvelinus fontinalis),* were the most frequently collected species. No MNFI listed threatened or endangered fish species were identified in the stations investigated in 2022. A total of 128 fish were collected from Station 6 in 2022, which was 143 fewer fish than collected in 2021, but higher than any other station location in 2022. The total number of fish collected from Station 6 has fluctuated annually because of nearby beaver dams, which influence water levels within the station.

Using the State of Michigan P-51 survey protocol, a total of 2,711 macroinvertebrates were collected from all ten stations that were investigated in 2022, which was 195 fewer specimens than the total number collected in 2021 (i.e. 2,516). Due to beaver dams in the vicinity of Stations 6 and 7, the P-51 measurement protocols could not be applied to those areas. The macro-invertebrate communities within the Salmon-Trout River have been scored by AEM as “Excellent” or “Acceptable”.

The aquatic and stream habitat at stations sampled during 2022 was rated as “Good” or “Excellent” habitat quality. The 2022 P-51 habitat ratings for all other stations have remained consistent with previous surveys. A copy of the full report is available upon request.

Station 3 – Downstream Extent View South, June 2022

Station 2 – Upstream Extent View Northwest, June 2022

Station 10 – Upstream Extent View Northeast, June 2022

Station 6 – Upstream Extent View Southwest, June 2022

5.3.5 Fish Tissue Survey

No fish tissue survey was conducted in 2022. Surveys are required once every three years; the next survey is tentatively planned for 2023.

5.4 Miscellaneous Monitoring

5.4.1 Soil Erosion Control Measures (SESC)

There were no temporary SESC measures in place on site in 2022. If areas are identified that need temporary SESC measures in the future, the measures will be installed and maintained in compliance with the requirements of Part 91 (NREPA, 1994 PA 451, as amended). Permanent SESC measures are in place and continue to be effective, monitored, and improved as necessary.

5.4.2 Berms, Embankments and Basins

All containment berms and embankments of the TDRSA, CWB, NCWIBs, and facility perimeter are inspected monthly, or after a 0.5" rain event, to ensure cracking, settlement, or erosion is not affecting the integrity of the berms. Inspections were completed as required in 2022 with observations and/or repair recommendations recorded in the surface inspection log stored in the compliance binder at the mine site. Issues identified are immediately reported and corrected by onsite staff. A follow-up inspection is completed to ensure that repairs have been made.

In 2022, there was some vegetation removed near and in the NCWIBs, mainly the basin near the WTP (NCWIB #1), as well as the CWBs. Follow-up inspection (and repairs if needed) will be continue in the spring of 2023.

Repairs were made to one NCWIB in 2022. NCWIB #3, located near the mine site entrance, required repair due to erosion along the storm water conveyance to the non-contact water basin. Riprap was added to the northwest corner to eliminate erosion where stormwater flows to the basin. The riprap was also eroded near the bottom of the basin and a small area of erosion was exposing the soil below near the top of the storm water conveyance.

NCWIB #3 – Before riprap repairs

NCWIB #3 – After riprap repairs

5.4.3 Impermeable Surface Inspections

The impermeable surface monitoring plan outlines the requirements of integrity monitoring of surfaces exposed to contact storm water. Areas inspected in 2022 include the WTP, truck wash, truck shop floors, sumps, trench drains, the contact area, and travel ways comprised of concrete or asphalt.

The WTP, truck wash and truck shop floors, sumps, and drains were inspected monthly from January through December 2022. Inspections of the contact area and travel ways were completed during the months of May through November. Per the monitoring plan, inspections of the contact area and travel ways are suspended during the months when snow covers much of the surface and winter weather prevents effective patching efforts.

All inspection results are recorded on the impermeable surface inspection form and stored in the compliance binder at the Eagle Mine Site. Any issues identified during the inspections are immediately reported and fixed by onsite staff. Follow-up inspections are completed to ensure the repairs were made. Asphalt was removed and replaced with concrete to the south of the aggregate storage building because the asphalt in this area was compromised. Below are photos from the location in which repairs were made in 2022.

Before Repairs – old asphalt being removed.

During Repairs – grading and repaving.

After Repairs – concrete was placed in strips.

5.4.4 Geochemistry Program

Previously, the geochemistry program was comprised of two parts; the water quality of the underground as it is representative of ore, and sampling of development rock from either Eagle or Eagle East decline development. Since the decline development was currently completed in Eagle and Eagle East in 2022, the program focused on underground water quality. However, sampling of development rock from the keel development will start in 2023.

Four underground water quality samples were collected in February, June, August, and November 2022 from Jump Tank 1 located in the main decline underground. Water from the lower levels of the mine is pumped to Jump Tank 1 which then pumps the water to the CWBs. Samples were analyzed for the annual parameter list in the second quarter and the full parameter list in Q1, Q3, and Q4. A summary table and graph of the results are available in Appendix D.

5.4.5 NCWIB & CWB Sediment Accumulation Measurements

Sediment accumulation is monitored and measured at both the non-contact and contact water basins. This requirement is in place as sediment accumulation in the NCWIBs could result in diminished infiltration capacities and decreased water storage capacity in the CWBs.

Non-Contact Water Infiltration Basins

As required by the mining permit, sediment accumulation measurements are conducted annually for the NCWIBs. Each of the four NCWIBs was inspected in 2022. No visible changes were observed. Minimal vegetation was observed and removed and will continue to be monitored. Visible sand

accumulation was observed at NCWIB #2, located near the cold storage warehouse. Sand continues to accumulate in the northwest corner of NCWIB #2 due to snow that is stored there during the winter months; when the snow melts the sand is left behind. The accumulating sand has not impacted infiltration but will continue to be monitored and removed if necessary.

Contact Water Basins

Two sediment thickness measurements were completed in CWB #1 and #2 utilizing a boat and sludge judge to measure the accumulation. The first inspection was conducted in May 2022, and the second was completed in September 2022. The sediment accumulation in CWB #1 was over 50 inches near the south end where the underground water is pumped into the basin, but on average, was approximately 20 inches throughout the rest of CWB #1.

The average sediment accumulation in CWB #2 was approximately 11 inches, but in some locations the sediment was over one foot in thickness. The highest sediment accumulations (ranging from 20 to 48 inches) were in the north end of the basin near the CWB #2 pump house. The WTP outlet is located in the northwest corner of CWB #2 and is likely the cause of sediment accumulation. This outfall is the point at which recycled, softened water or off-spec water (waste) from the WTP is deposited back into the basins before re-treatment.

Layout of the CWB's

A leak location survey was performed by Leak Location Services, Inc. (LSSI) in CWB #1 in September 2022. A towed probe survey method was used, which is completed by personnel systematically pulling a probe back and forth across the bottom of the pond along temporary survey lines. The probe works by detecting electrical paths from the probe inside the basin to an electrode connected to the earth ground. This process can detect a leak that is 0.001 square inches or greater in size.

One signal was detected during the survey of CWB #1. The signal in CWB #1 was detected on the north end of the basin, similar to 2021. In 2021 the location of the signal could not be inspected further, but after the 2022 survey, an inspection was completed and no indications of a leak or a cause for a leak could be located. The signal location is expected to be interference from the intake pumps and associated piping and ground connections. There is unlikely to be any damage to the liner in this area because there was no previous dredging work in this location and approximately one foot of

sediment is present on the liner. In addition, a review of the results from monitoring wells located downgradient of the CWBs does not show a correlation in water quality. Eagle has also reviewed operational activities within or near the CWBs and no activities were completed that could have caused inadvertent to the containment system liners.

The next inspection will be performed by LSSI in 2023 of CWB #2.

6. Reclamation Activities

No reclamation activities occurred in 2022 and there are currently no plans to conduct any reclamation activities in 2023. Eagle is planning to establish trial jack pine and select native species vegetation plots to begin to monitor the growth and development that can be expected when the site is fully revegetated in the future. The Department will be notified, in advance, if any more significant activities commence in 2023.

Closure Planning

Closure planning continued in 2022 with the assistance of Ramboll US Consulting of Denver, Colorado. Work in 2022 primarily consisted of preparing a detailed temporary closure plan in alignment with both Lundin's Corporate Standards and Guidance from the International Council on Mining & Metals Integrated Mine (ICMM) Closure Good Practice Guide. The temporary closure plan describes the governance and activities undertaken to care for the asset, protect the environment, and maintain compliance with regulatory licenses in the event of both short-term or long-term temporary cessation of mining activities.

Additionally, two main technical works were completed to support the continued preparation of the closure plan: a site visit by an experienced underground engineer to design the underground mine plugs and to review Eagle's plan for underground mine closure; and integration of the future Keel Zone into the plan for flooding the mine. Eagle also retained a demolition company to begin producing detailed demolition and recycling plans for each structure on the property.

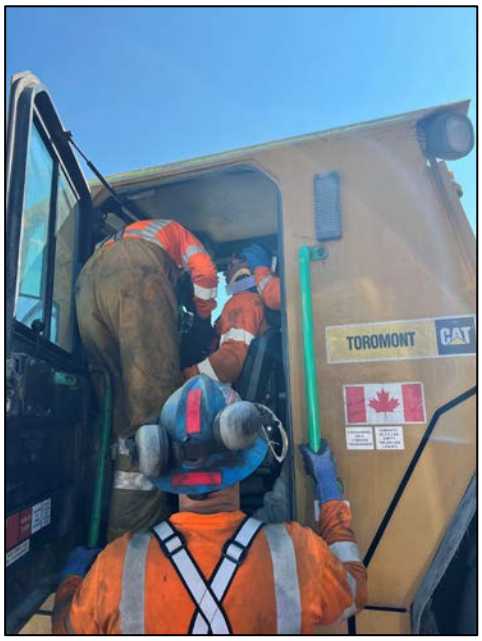
Throughout 2023, Eagle will advance the detailed planning for mine closure in all areas that were outlined in the 2021 revision of the plan, while remaining flexible to support change or growth within the business.

7. Contingency Plan Update

One element of the contingency plan is to test the effectiveness of the plan on an annual basis. Testing is comprised of two components. The first component is participation in adequate training programs for individuals involved in responding to emergencies and the second component is a mock field test.

Under Mine Safety Health Administration (MSHA) regulations, Eagle Mine is required to have a Mine Rescue team that is routinely and adequately trained to respond to underground emergencies. The Mine Rescue team maintained an average of 15 team members (two teams) over the course of 2022 with 1,092 training hours accumulated among all team members. Teams are staffed by volunteers from Cementation and Lundin.

In 2022, training included exploration in smoke (theatrical), basic first aid & CPR, firefighting, rope rescue hoisting, and operation and maintenance of both the BG4 closed-circuit breathing apparatus (CCBA) and MX6 gas instruments. In addition, the team assessed ventilation with the use of anemometers and smoke tubes. Four underground and one surface employee evacuation drill occurred in 2022 in which the Mine Rescue Team assisted to ensure proper evacuation procedures were followed.



Mine rescue mock exercise - extraction of an 'injured' miner

Security personnel are EMTs and paramedics who are trained in accordance with state and federal regulations. Eagle Mine also maintains a state-licensed Advanced Life Support (ALS) ambulance onsite for immediate response to emergencies.

A mock field test in the form of a desktop exercise was conducted in October 2022. The exercise tested the emergency response measures of the contingency plan and crisis management plan in place at Eagle. With the assistance of Eagle Mine employees, a third-party consultant developed an emergency scenario. The scenario generally involves a situation in which both safety and environmental risks are considered and in 2022 the emergency involved a fall of ground on the ramp in the mine. In the mock scenario, material fell onto the decline and trapped several employees in the mine. The crisis management team was aware that a test would occur but was unaware of the nature of the emergency. During the crisis management exercise, the team worked through the incident identifying the strategic objectives, key priorities, critical decisions and triggers, and communications that would need to be made to stakeholders. The third-party consultant observed the activity to identify strengths, weaknesses, and opportunities for improvement. Once the exercise was complete, the consultant and crisis management team held a debrief session to capture feedback. A summary report was produced with recommended actions for improvement.

An updated contingency plan can be found in Appendix U. This plan will also be submitted to the Local Emergency Management Coordinator.

8. Financial Assurance Update

Updated reclamation costs were submitted to the Department for review March 6, 2023. Eagle Mine understands that if these costs require updating of the current bond for financial assurance EGLE will notify Eagle Mine.

9. Organizational Information

An updated organization report can be found in Appendix V.

Appendix A

Eagle Mine

Site Map

Eagle Mine LLC Mine Monitoring Map

Legend

- 1 - Main Ventilation Air Raise
- 2 - Air Intake / Alimak Emergency Egress
- 3 - Non-Contact Water Basin #4
- 4 - Treated Water Infiltration System
- 5 - Water Treatment Plant
- 6 - Contact Water Basins
- 7 - Temporary Development Rock Storage Area
- 8 - Coarse Ore Storage Area
- 9 - Aggregate Storage and Batch Plant
- 10 - Truck Wash
- 11 - Truck Shop
- 12 - Administration Building and Mine Drys
- 13 - Non-Contact Water Basin #1
- 14 - Non-Contact Water Basin #2
- 15 - Non-Contact Water Basin #3
- 16 - Warehouse
- 17 - Powerhouse
- 18 - Guardhouse
- 19 - Ambulance Garage
- 20 - Explosives Magazine
- 21 - Fuel Storage Area
- 22 - Portal
- 23 - Compressor Building

- Ground Water Discharge Permit Wells
- Part 632 Mining Permit Wells
- Mine Septic Field
- Contact Area

Date: 4/17/2015

0 0.0375 0.075 0.15 0.225 0.3 0.375 Miles

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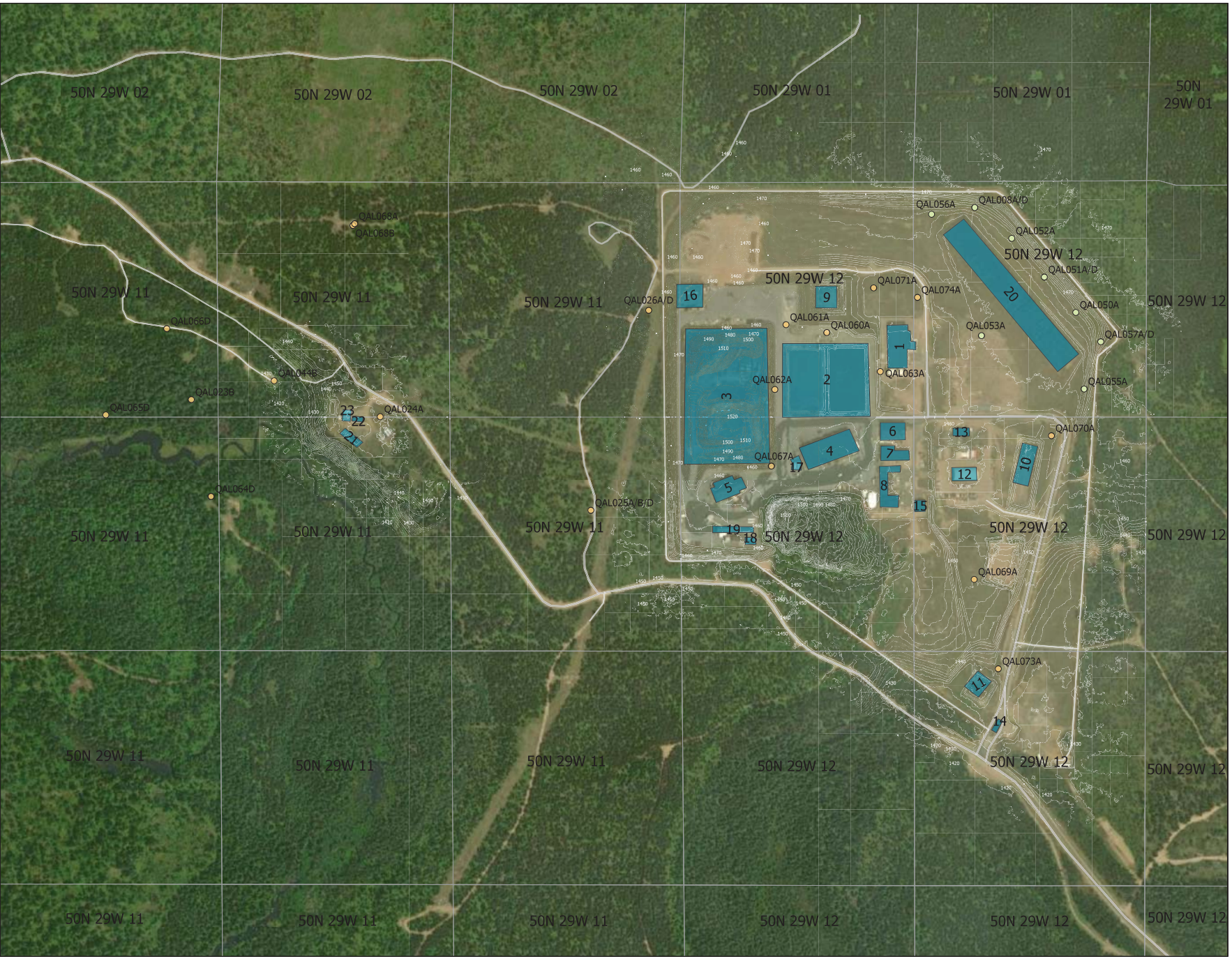
Eagle Mine
Buildings and Features
N
Public Land Survey Sections
Eagle Mine Buildings and Features
Roads
Topographic Contours
Monitoring Well Locations
Part 632 Mining Permit Wells
1 - Water Treatment Plant
2 - Contact Water Basins
3 - Temporary Development Rock Storage Area
4 - Coarse Ore Storage Area
5 - Aggregate Storage and Batch Plant
6 - Truck Wash
7 - Truck Shop
8- Admin Building and Mine Drys
9 - Non-Contact Water Basin #1
10 - Non-Contact Water Basin #2
11 - Non-Contact Water Basin #3
12 -Warehouse
13 - Powerhouse
14 - Guardhouse
15 - Ambulance Garage
16 - Previous Explosives Storage
17 - Fuel Storage Area
18 - Compressor Building
19 - Portal
20 - Treated Water Infiltration System
21 - Main Ventilation Air Raise
22 - Air Intake / Alimak Egress
23 - Vent Raise Electrical Building
0 0.05 0.1 0.2 Miles
50N 29W 01
50N 29W 02
50N 29W 11
50N 29W 12
QAL008A/D
QAL023D
QAL024A
QAL025A/B/D
QAL026A/D
QAL050A
QAL051A/D
QAL052A
QAL053A
QAL055A
QAL056A
QAL057A/D
QAL060A
QAL061A
QAL062A
QAL063A
QAL064D
QAL065D
QAL066D
QAL067A
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QAL068B
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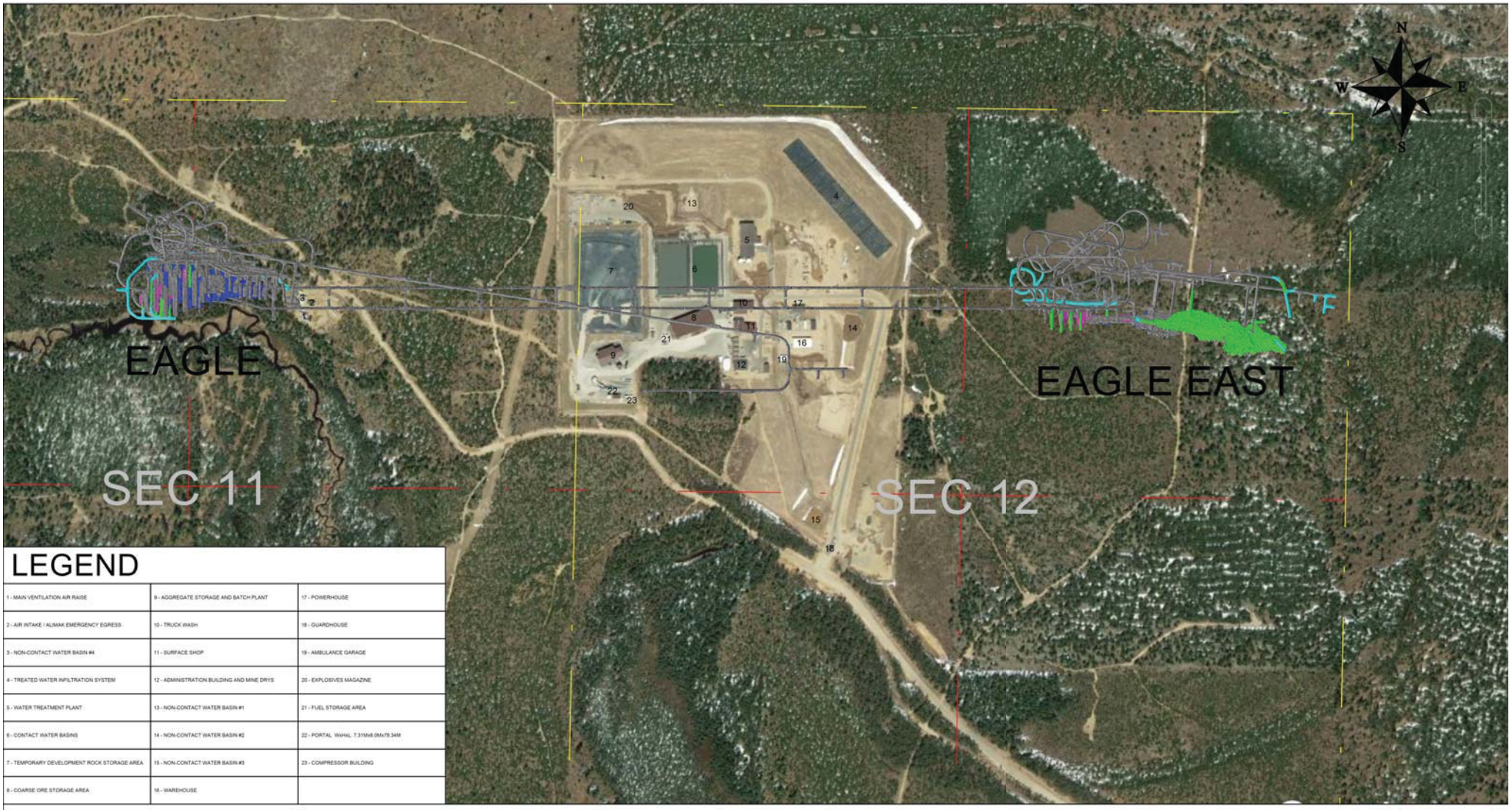
QAL070A
QAL071A
QAL073A
QAL074A

EAGLE MINE LLC AERIAL MAP



LEGEND

1 - MAIN VENTILATION AIR RAISE	9 - AGGREGATE STORAGE AND BATCH PLANT	17 - POWERHOUSE
2 - AIR INTAKE / ALIMAK EMERGENCY EGRESS	10 - TRUCK WASH	18 - GUARDHOUSE
3 - NON-CONTACT WATER BASIN #4	11 - SURFACE SHOP	19 - AMBULANCE GARAGE
4 - TREATED WATER INFILTRATION SYSTEM	12 - ADMINISTRATION BUILDING AND MINE DRYS	20 - EXPLOSIVES MAGAZINE
5 - WATER TREATMENT PLANT	13 - NON-CONTACT WATER BASIN #1	21 - FUEL STORAGE AREA
6 - CONTACT WATER BASINS	14 - NON-CONTACT WATER BASIN #2	22 - PORTAL WeHxL: 7.31Mx6.0Mx78.34M
7 - TEMPORARY DEVELOPMENT ROCK STORAGE AREA	15 - NON-CONTACT WATER BASIN #3	23 - COMPRESSOR BUILDING
8 - COARSE ORE STORAGE AREA	16 - WAREHOUSE	

DATE: 1/6/2023

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SCALE IN METERS

Appendix B

Eagle Mine

Rock Stability Certification

Eagle Mine
a subsidiary of lundin mining

Eagle Mine
4547 County Road 601
Champion, MI 49814, USA
Phone: (906) 339-7000
Fax: (906) 339-7005
www.eaglemine.com

Monday, January 16, 2023

Ms. Melanie Humphrey
Michigan Department of Environment, Great Lakes, and Energy
1504 W. Washington Street
Marquette, Michigan 49855

Subject: Rock Stability Certification – Eagle Mine, Marquette County Michigan
Mining Permit (MP 01 2007)

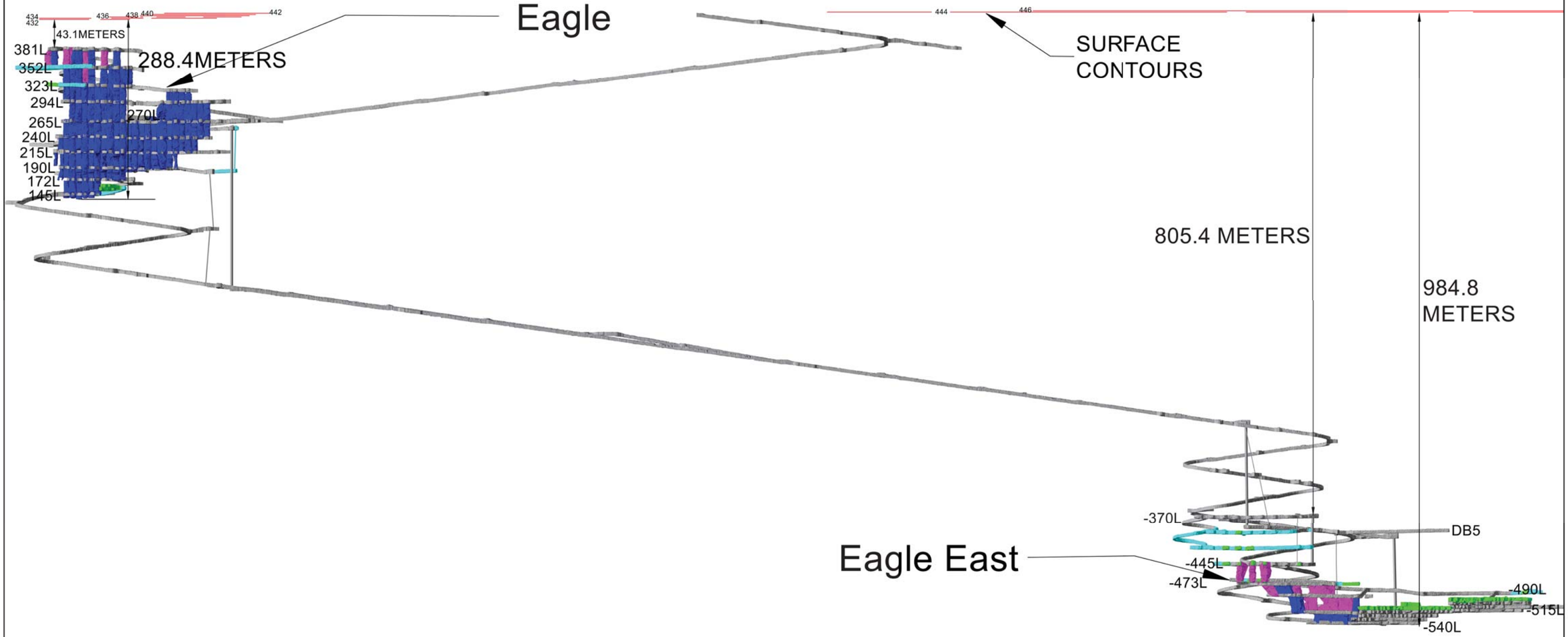
In accordance with condition E-8 of mining permit MP 01 2007, I certify that the rock stability modelling provided in the mine permit application is still valid. Geologic, geotechnical, and hydrogeologic data collected in 2022 do not indicate any changes in rock mass conditions from those used in the soft-coupled 3D geologic/hydrogeologic model. In addition, daily visual inspections are also conducted by Eagle Mine representatives and/or contractor mining personnel to verify ground stability.

Sincerely,

Jeff Murray
Operations Manager
Eagle Mine, LLC.

Appendix C

Eagle Mine
Maps of Eagle East Development
and
Eagle Production Mining Progress



	2022 STOPES
	2022 PRODUCTION SILLS
	2022 DEVELOPMENT
	PRE 2022 STOPES
	PRE 2022 DEVELOPMENT

NOTE: ALL ELEVATIONS IN METERS. IN THE LEVEL LABELS
THE NUMBER REFERS TO HEIGHT ABOVE/BELOW MEAN SEA LEVEL (-540L HAS
A SILL ELEVATION OF 540 METERS BELOW MSL)

1:4250
0 106 213 319 425

Drawing Title:

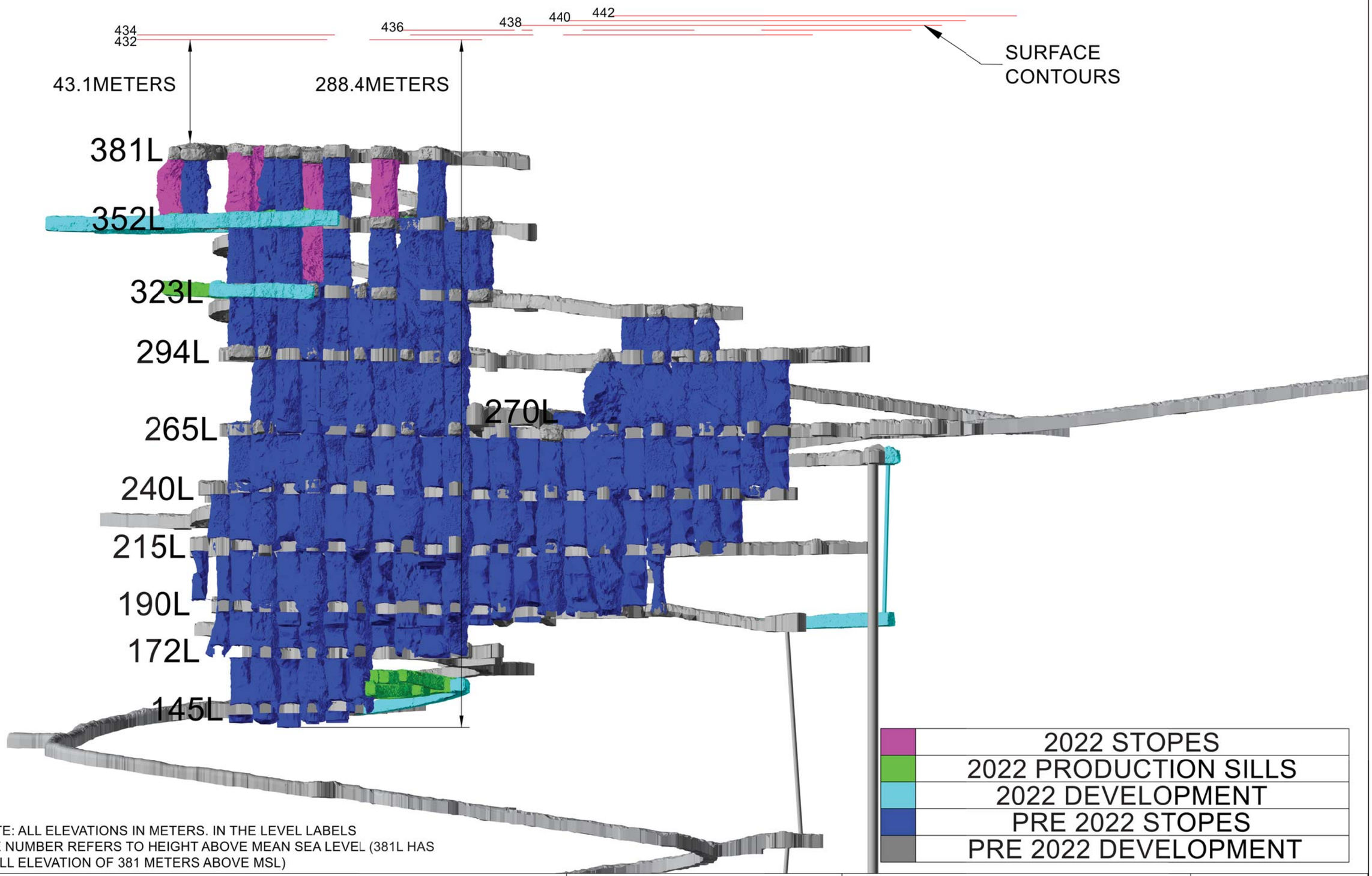
2022 Mining

Author: Cody.Gobbs

Date: 1/6/2023

Scale: 1:4250

Eagle Mine



NOTE: ALL ELEVATIONS IN METERS. IN THE LEVEL LABELS THE NUMBER REFERS TO HEIGHT ABOVE MEAN SEA LEVEL (381L HAS A SILL ELEVATION OF 381 METERS ABOVE MSL)

1:1000

0 100

SCALE IN METERS

Drawing Title:

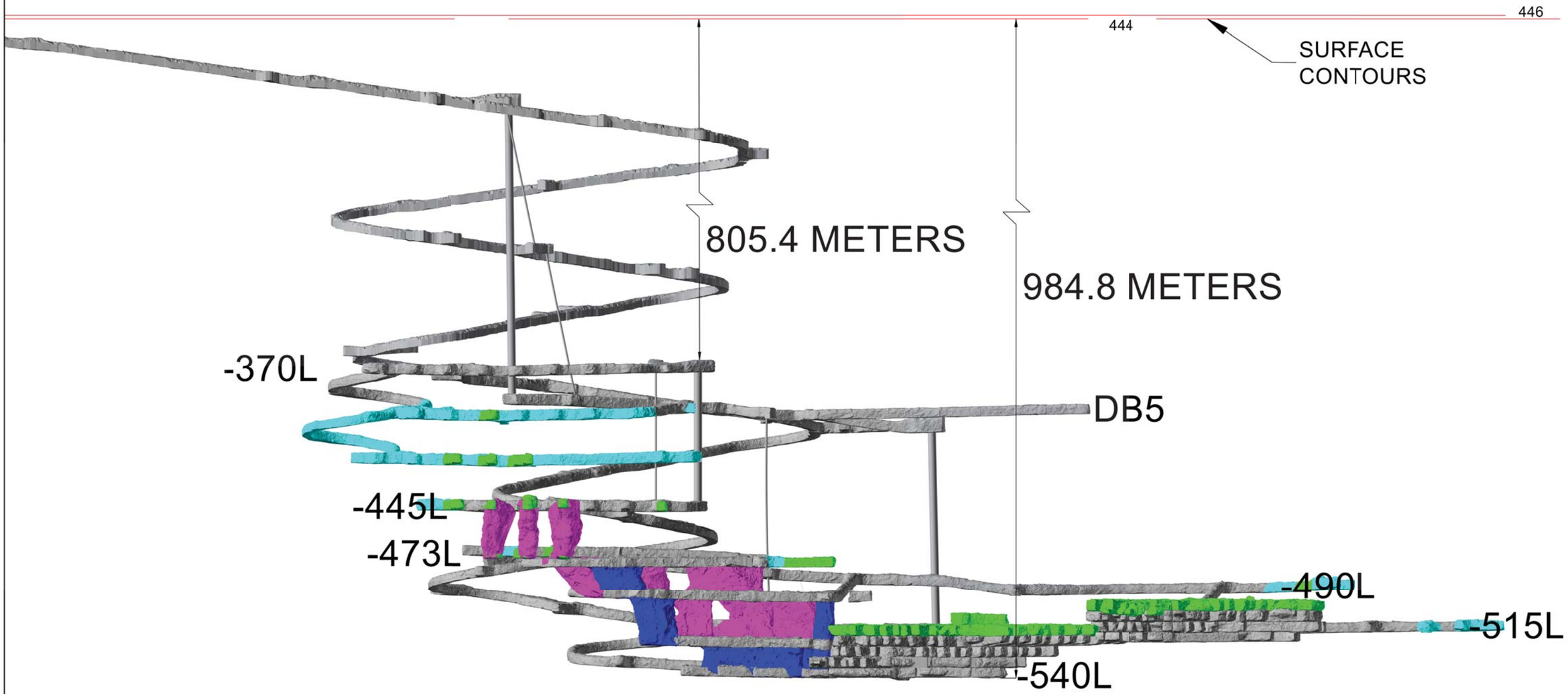
2022 Eagle

Author: Cody.Gobbs

Date: 1/6/2023

Scale: 1:1000

Eagle Mine



	2022 STOPES
	2022 PRODUCTION SILLS
	2022 DEVELOPMENT
	PRE 2022 STOPES
	PRE 2022 DEVELOPMENT

NOTE: ALL ELEVATIONS IN METERS. IN THE LEVEL LABELS THE NUMBER REFERS TO HEIGHT ABOVE/BELOW MEAN SEA LEVEL (-540L HAS A SILL ELEVATION OF 540 METERS BELOW MSL)

1:1500
0 75 150
SCALE IN METERS

Drawing Title:

2022 EE

Author: Cody.Gobbs

Date: 1/6/2023

Scale: 1:1500

Eagle Mine

Appendix D

Eagle Mine

Facilities Water Quality Monitoring Results

2022
Mine Permit Water Quality Monitoring Data
TDRSA Contact Water Sump
Eagle Mine

		Q1 2022	Q2 2022	Q3 2022	Q4 2022
Parameter	**Unit**	**2/7/2022**	**6/14/2022**	**8/16/2022**	**11/15/2022**
Field					
pH	SU	**7.9**	**7.2**	**6.2**	**6.7**
Specific Conductivity	µS/cm	**8167**	**8057**	**7762**	**6662**
Metals					
Aluminum, Total	µg/L	—	<50.0	—	—
Antimony, Total	µg/L	—	<1.0	—	—
Arsenic, Total	µg/L	<1.0	<1.0	<1.0	<1.0
Barium, Total	µg/L	—	**73**	—	—
Beryllium, Total	µg/L	—	<1.0	—	—
Boron, Total	µg/L	**1160**	**888**	**1030**	**1020**
Cadmium, Total	µg/L	—	**6.1**	—	—
Chromium, Total	µg/L	—	**4.8**	—	—
Cobalt, Total	µg/L	—	**180**	—	—
Copper, Total	µg/L	**6.7**	**6.7**	**6.3**	**28**
Iron, Total	µg/L	**104**	<50.0	<100	<100
Lead, Total	µg/L	—	<1.0	—	—
Lithium, Total	µg/L	—	—	—	—
Manganese, Total	µg/L	**2240**	**1270**	**1210**	**1650**
Mercury, Total	µg/L	**0.002**	**0.001**	**0.001**	**0.001**
Molybdenum, Total	µg/L	—	**24**	—	—
Nickel, Total	µg/L	**7160**	**4410**	**3890**	**6580**
Selenium, Total	µg/L	**16**	**17**	**15**	**12**
Silver, Total	µg/L	—	<0.20	—	—
Strontium, Total	µg/L	—	**5160**	—	—
Thallium, Total	µg/L	—	<2.0	—	—
Vanadium, Total	µg/L	—	<1.0	—	—
Zinc, Total	µg/L	**853**	**606**	**803**	**1330**
Major Anions					
Alkalinity, Bicarbonate	mg/L	**70**	**55**	**56**	**42**
Alkalinity, Carbonate	mg/L	<2.0	<2.0	<10.0	<10.0
Chloride	mg/L	**869**	**956**	**833**	**605**
Fluoride	mg/L	—	<0.10	—	—
Nitrogen, Ammonia	mg/L	<0.10	<0.10	**0.14**	**6.2**
Nitrogen, Nitrate	mg/L	**394**	**411**	**87**	**371**
Nitrogen, Nitrite	mg/L	<2.0	<0.50	<1.0	**0.55**
Sulfate	mg/L	**4170**	**2850**	**2970**	**941**
Major Cations					
Calcium, Total	mg/L	—	**618**	—	—
Magnesium, Total	mg/L	**405**	**290**	**257**	**238**
Potassium, Total	µg/L	—	**88700**	—	—
Sodium, Total	mg/L	**700**	**797**	**766**	**612**

— Analyte not included in the quarterly parameter list.

2022
Mine Permit Water Quality Monitoring Data
TDRSA Leak Detection Sump
Eagle Mine

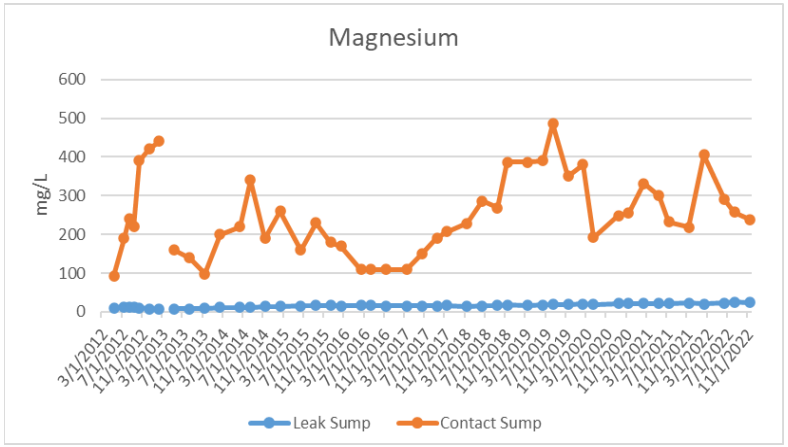
		Q1 2022	Q2 2022	Q3 2022	Q4 2022
Parameter	**Unit**	**2/7/2022**	**6/14/2022**	**8/16/2022**	**11/15/2022**
Field					
pH	SU	**7.3**	**8.0**	**6.8**	**7.8**
Specific Conductivity	µS/cm	**3333**	**3482**	**3602**	**3553**
Major Anions					
Chloride	mg/L	**61**	**61**	**60**	**60**
Nitrogen, Ammonia	mg/L	<0.10	<0.10	<0.10	<0.10
Nitrogen, Nitrate	mg/L	**66**	**66**	**72**	**70**
Nitrogen, Nitrite	mg/L	<0.50	<0.50	<1.0	<0.50
Sulfate	mg/L	**2030**	**1770**	**1870**	**920**
Major Cations					
Magnesium, Total	mg/L	**21**	**23**	**25**	**24**
Sodium, Total	mg/L	**705**	**739**	**738**	**720**

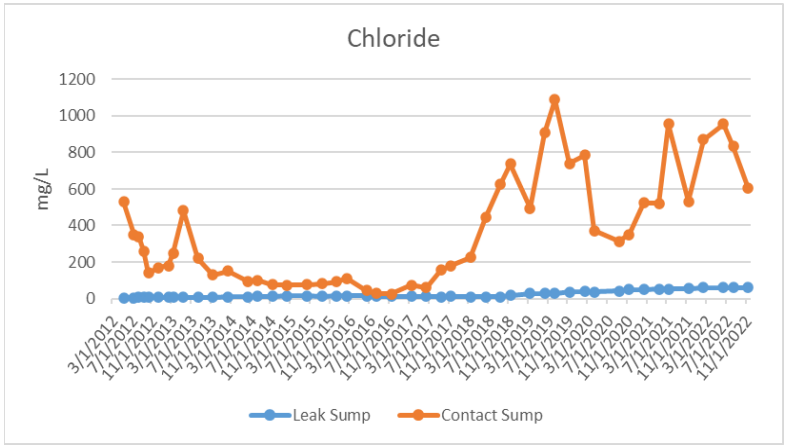
2022

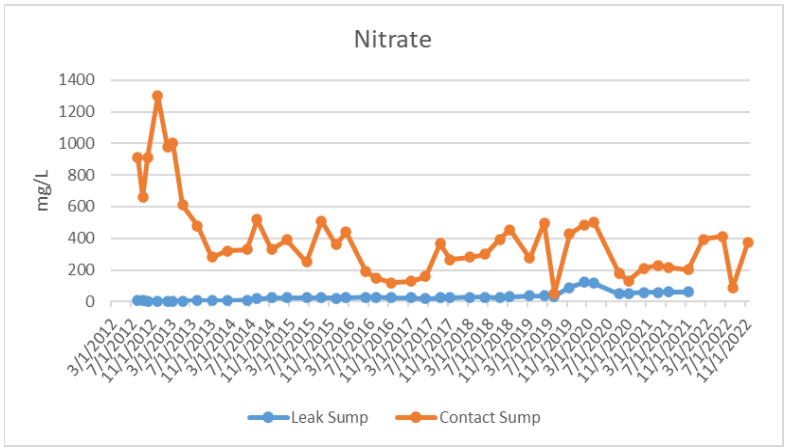
Mine Permit Water Quality Monitoring Data

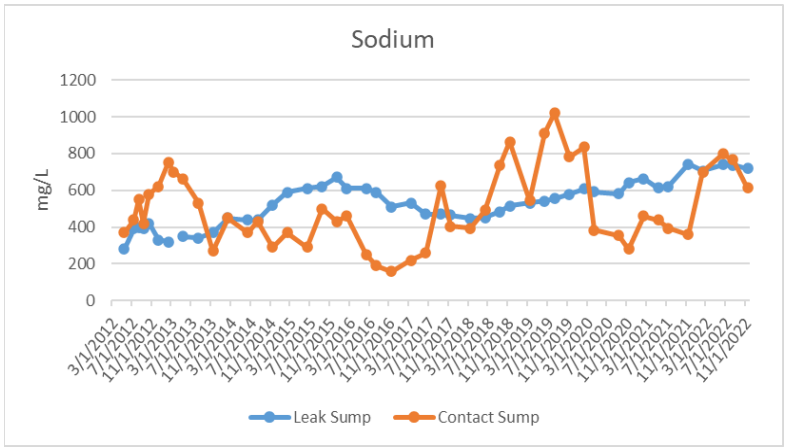
TDRSA Contact Water & Leak Sump

Eagle Mine







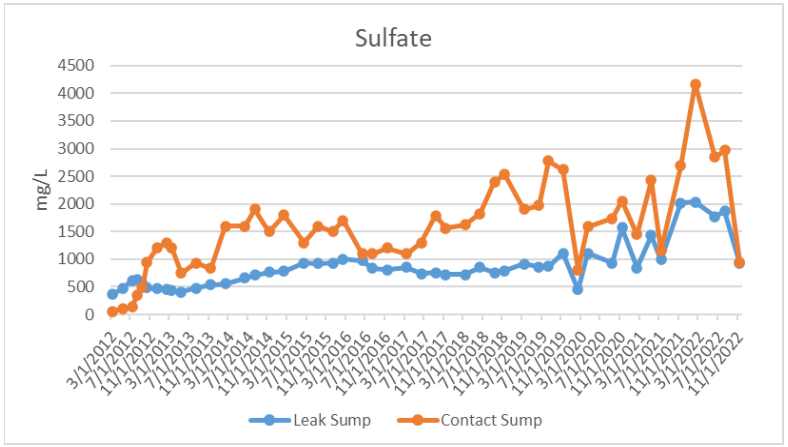


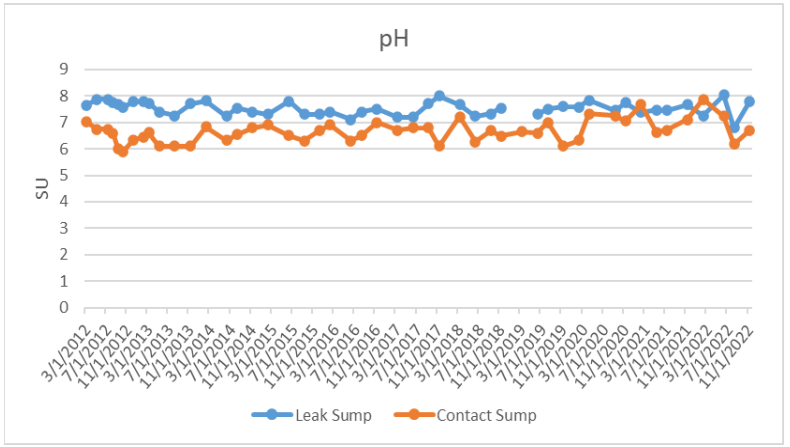
2022

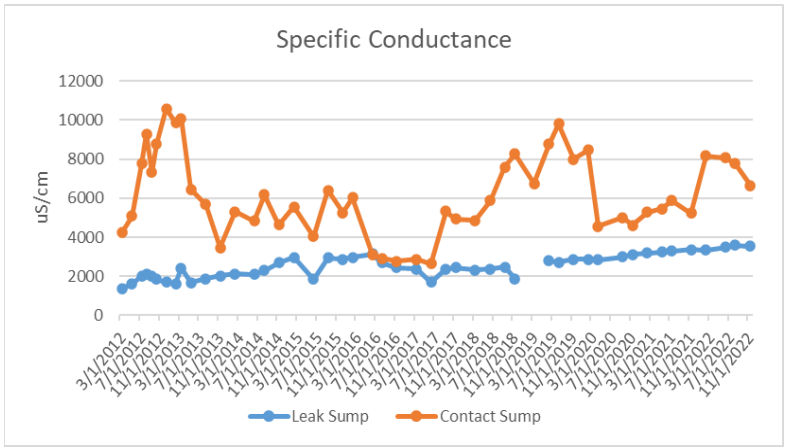
Mine Permit Water Quality Monitoring Data

TDRSA Contact Water & Leak Sump

Eagle Mine







2022
Mine Permit Water Quality Monitoring Data
Underground Influent
Eagle Mine

		Q1 2022	Q2 2022	Q3 2022	Q4 2022
Parameter	**Unit**	**2/7/2022**	**6/14/2022**	**8/16/2022**	**11/15/2022**
Field					
pH	SU	**7.6**	**9.0**	**10.4**	**7.7**
Specific Conductivity	µS/cm	**4268**	**20350**	**2694**	**16040**
Metals					
Aluminum, Total	µg/L	—	**2480**	—	—
Antimony, Total	µg/L	—	**4.4**	—	—
Arsenic, Total	µg/L	**2.2**	**5.9**	**63**	**20**
Barium, Total	µg/L	—	**692**	—	—
Beryllium, Total	µg/L	—	<1.0	—	—
Boron, Total	µg/L	**326**	**350**	**626**	**443**
Cadmium, Total	µg/L	—	**0.84**	—	—
Chromium, Total	µg/L	—	**14.4**	—	—
Cobalt, Total	µg/L	—	<15.0	—	—
Copper, Total	µg/L	**96**	**201**	**59000**	**8720**
Iron, Total	µg/L	**5920**	**6230**	**481000**	**151000**
Lead, Total	µg/L	—	**3.6**	—	—
Lithium, Total	µg/L	—	**383**	—	—
Manganese, Total	µg/L	**75**	**96**	**3350**	**1410**
Mercury, Total	µg/L	**0.016**	**0.010**	**0.441**	**0.025**
Molybdenum, Total	µg/L	—	**60**	—	—
Nickel, Total	µg/L	**460**	**286**	**52100**	**9720**
Selenium, Total	µg/L	**13**	**6.1**	**32**	**12**
Silver, Total	µg/L	—	<0.20	—	—
Strontium, Total	µg/L	—	**56700**	—	—
Thallium, Total	µg/L	—	<4.0	—	—
Vanadium, Total	µg/L	—	**7.5**	—	—
Zinc, Total	µg/L	**33**	**32**	**1650**	**486**
Major Anions					
Alkalinity, Bicarbonate	mg/L	**40**	**25**	<10.0	**33**
Alkalinity, Carbonate	mg/L	**5.6**	**33**	**106**	<10.0
Chloride	mg/L	**610**	**7630**	**240**	**5820**
Fluoride	mg/L	—	**0.12**	—	—
Nitrogen, Nitrate	mg/L	**56**	**21**	**81**	**15**
Nitrogen, Nitrite	mg/L	—	—	—	—
Sulfate	mg/L	**2140**	**431**	**872**	**472**
Major Cations					
Calcium, Total	mg/L	—	**1690**	—	—
Magnesium, Total	mg/L	—	**201**	—	—
Potassium, Total	µg/L	—	**168000**	—	—
Sodium, Total	mg/L	—	**2290**	—	—

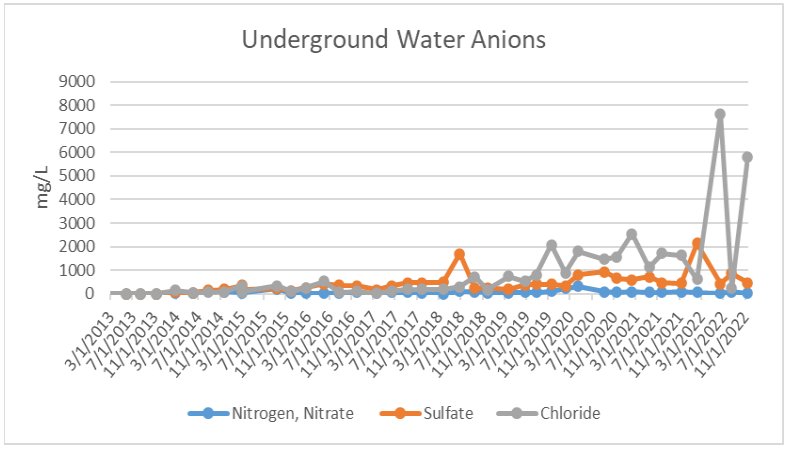
— Analyte not included in the quarterly parameter list.

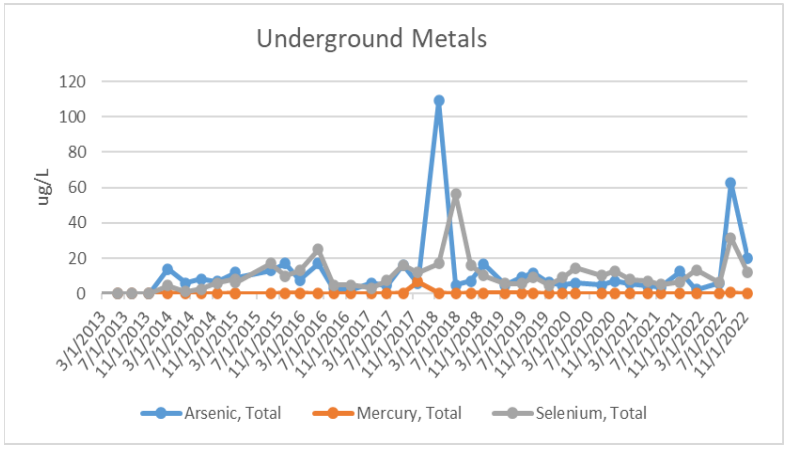
2022

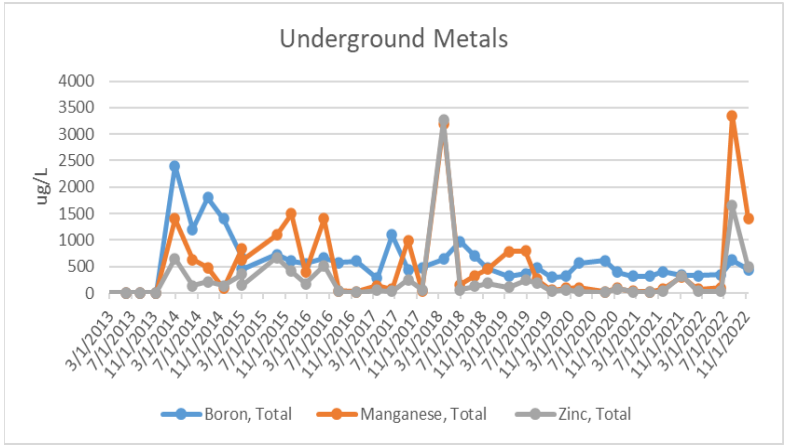
Mine Permit Water Quality Monitoring Data

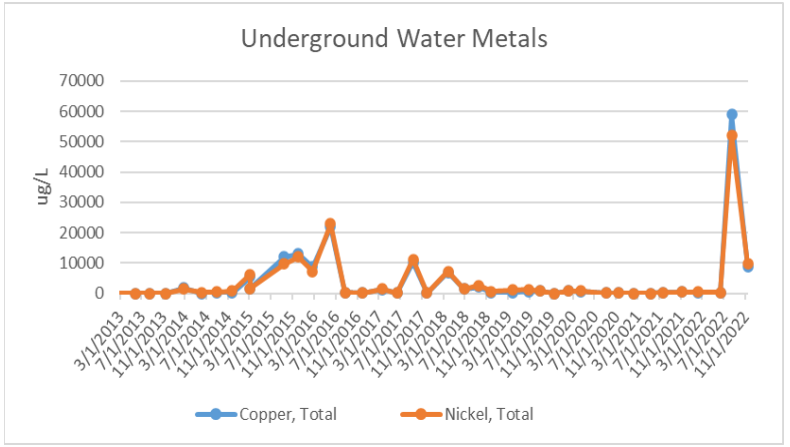
Underground Influent

Eagle Mine









2022
Mine Permit Water Quality Monitoring Data
Contact Water Basin #2
Eagle Mine

		Q1 2022	Q2 2022	Q3 2022	Q4 2022
Parameter	**Unit**	**2/7/2022**	**6/14/2022**	**8/16/2022**	**11/15/2022**
Field					
pH	SU	**10.0**	**9.6**	**10.3**	**9.1**
Specific Conductivity	µS/cm	**9307**	**8153**	**8248**	**8612**
Metals					
Aluminum, Total	µg/L	<50.0	<50.0	<50.0	<50.0
Antimony, Total	µg/L	**8.0**	**3.4**	**4.0**	**2.8**
Arsenic, Total	µg/L	**2.8**	**1.8**	**1.9**	**2.5**
Barium, Total	µg/L	**18**	**90**	**146**	**138**
Beryllium, Total	µg/L	<1.0	<1.0	<1.0	<1.0
Boron, Total	µg/L	**633**	**559**	**609**	**392**
Cadmium, Total	µg/L	<0.20	<0.20	<0.20	**0.41**
Chromium, Total	µg/L	**3.8**	**2.0**	**2.0**	**1.8**
Cobalt, Total	µg/L	<15.0	<15.0	<15.0	<15.0
Copper, Total	µg/L	**3.9**	**4.4**	**3.6**	**5.2**
Iron, Total	µg/L	**100**	**77**	<100	**122**
Lead, Total	µg/L	<1.0	<1.0	<1.0	<1.0
Lithium, Total	µg/L	**72**	**114**	**100**	**103**
Manganese, Total	µg/L	<5.0	**5.1**	<5.0	**35**
Mercury, Total	µg/L	**0.001**	**0.001**	<0.0005	**0.001**
Molybdenum, Total	µg/L	**76**	**43**	**53**	**43**
Nickel, Total	µg/L	**56**	**39**	**22**	**214**
Selenium, Total	µg/L	**9.3**	**5.2**	**5.4**	**4.3**
Silver, Total	µg/L	<20.0	<0.20	<0.20	<0.20
Strontium, Total	µg/L	**1590**	**8260**	**7550**	**8800**
Thallium, Total	µg/L	<2.0	<2.0	<2.0	<2.0
Vanadium, Total	µg/L	**3.6**	**3.5**	**4.5**	**4.5**
Zinc, Total	µg/L	<10.0	<10.0	<10.0	**24**
Major Anions					
Alkalinity, Bicarbonate	mg/L	**25**	**5.6**	<10.0	**37**
Alkalinity, Carbonate	mg/L	**112**	**43**	**32**	**28**
Chloride	mg/L	**2520**	**2300**	**2520**	**2570**
Fluoride	mg/L	**0.12**	<0.10	<0.10	<0.10
Nitrogen, Nitrate	mg/L	**92**	**60**	**62**	**70**
Sulfate	mg/L	**1840**	**766**	**649**	**539**
Major Cations					
Calcium, Total	mg/L	**33**	**258**	**240**	**319**
Magnesium, Total	mg/L	**18**	**47**	**18**	**53**
Potassium, Total	µg/L	**127000**	**98000**	**107000**	**95700**
Sodium, Total	mg/L	**1830**	**1430**	**1440**	**1380**

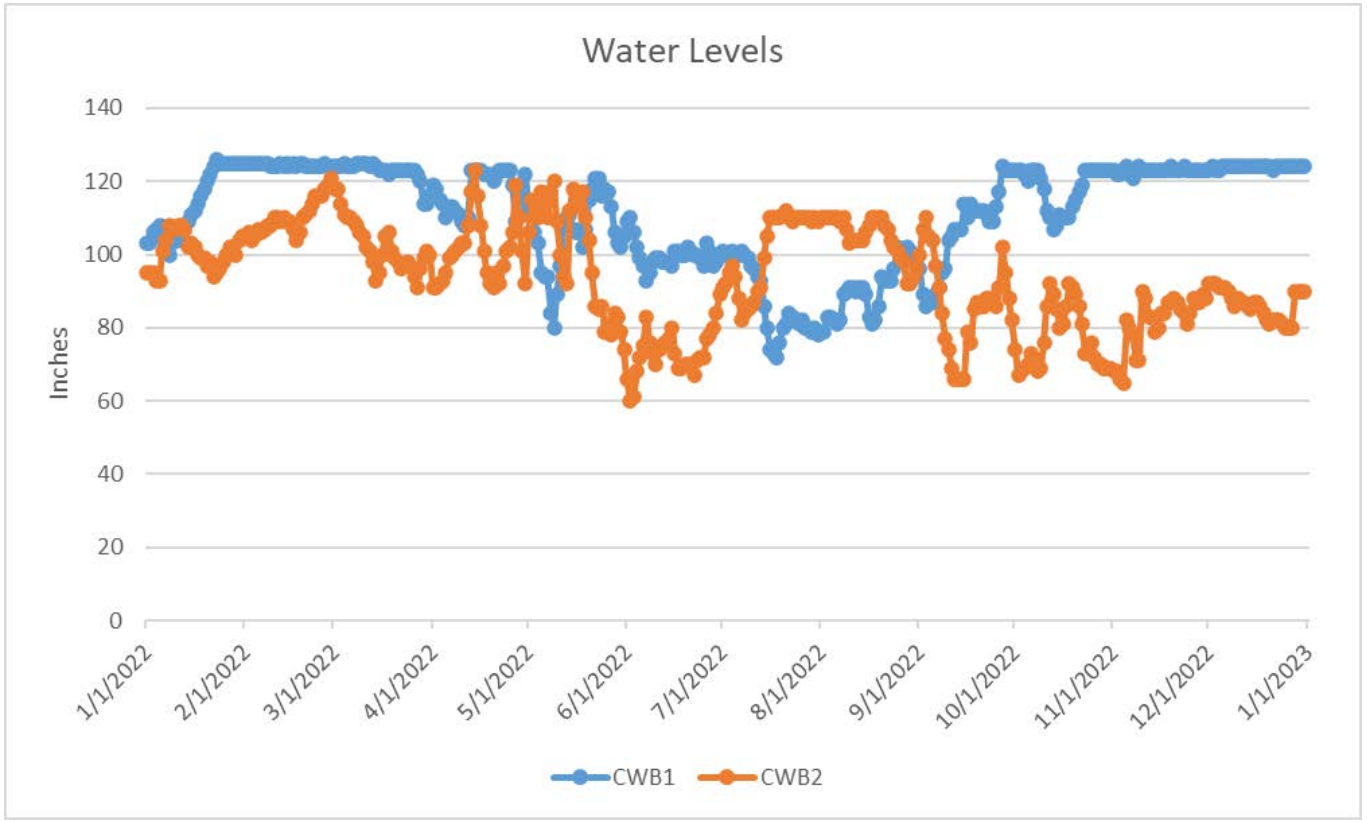
— Analyte not included in the quarterly parameter list.

2022

Mine Permit Water Level Monitoring Data

Contact Water Basins

Eagle Mine

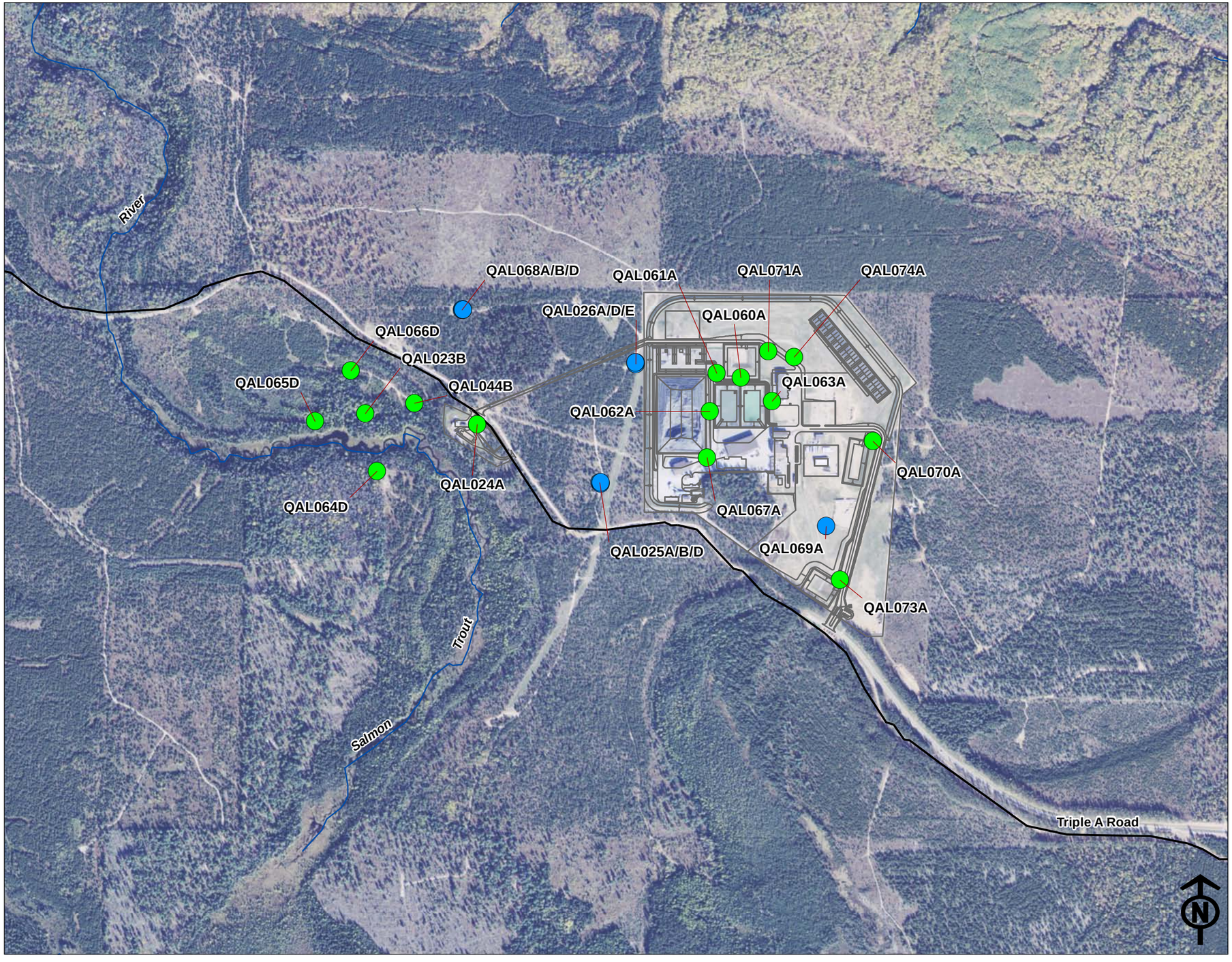


Appendix E

Eagle Mine

Groundwater Monitoring Well Location Map

MINE PERMIT GROUNDWATER QUALITY MONITORING LOCATIONS Project View



- COMPLIANCE WATER QUALITY
- BACKGROUND WATER QUALITY
- ROAD
- HYDROGRAPHY
- MINE FACILITY

Reference

Data provided by: Eagle Mine and North Jackson Company

Projection & Datum: UTM NAD 83 Zone 16N

0 — 2,000 Feet

Scale: 1:12,000

Eagle Mine
a subsidiary of hudbay mining

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Appendix F

Eagle Mine

Groundwater Monitoring Well Results

and

Benchmark Summary Table

Eagle Mine
2022 Mine Permit Groundwater Monitoring
Benchmark Comparison Summary

Location	Location Classification	Q1	Q2	Q3	Q4
QAL023B	Compliance		calcium, **magnesium, hardness**	alkalinity bicarbonate	
QAL024A	Compliance	**alkalinity bicarbonate, chloride, nitrate, sodium**	**alkalinity bicarbonate, chloride, nitrate, sodium**	**alkalinity bicarbonate, chloride, nitrate, sodium**	**alkalinity bicarbonate, chloride, nitrate, sodium**
QAL025A	Background	pH**, alkalinity bicarbonate**	pH, silver, **alkalinity bicarbonate**	pH, **alkalinity bicarbonate**	**pH**, **alkalinity bicarbonate**
QAL025B	Background		alkalinity bicarbonate	**alkalinity bicarbonate**	
QAL025D	Background	pH, vanadium	**vanadium, calcium, magnesium, hardness**	**vanadium,** chloride	**chloride**
QAL026A	Background				
QAL026D	Background	**alkalinity bicarbonate**		alkalinity bicarbonate	pH, **alkalinity bicarbonate**
QAL026E	Background	arsenic	**arsenic**	**arsenic**	pH, arsenic
QAL044B	Compliance	**pH**, **sodium**	calcium		
QAL060A	Compliance	**nitrate**	**nitrate**	alkalinity bicarbonate, **nitrate**	**alkalinity bicarbonate, nitrate**
QAL061A	Compliance	**alkalinity bicarbonate, nitrate**	**alkalinity bicarbonate, nitrate, calcium, magnesium, hardness**	**alkalinity bicarbonate, nitrate**	**alkalinity bicarbonate, nitrate**
QAL062A	Compliance	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**	**pH,** iron, **alkalinity bicarbonate, chloride, nitrate, calcium, magnesium, potassium, sodium, hardness**	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**
QAL063A	Compliance	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**	**pH, alkalinity bicarbonate, chloride, nitrate, calcium, magnesium, potassium, sodium, hardness**	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**
QAL064D	Compliance		**magnesium, hardness**		
QAL065D	Compliance		**calcium, hardness**		
QAL066D	Compliance	**arsenic,** iron, **alkalinity bicarbonate, sodium**	aluminum, **arsenic,** iron, mercury, **alkalinity bicarbonate, sodium**	**arsenic, iron, alkalinity bicarbonate, sodium**	**iron, alkalinity bicarbonate, sodium**
QAL067A	Compliance	pH, **alkalinity bicarbonate, chloride, nitrate, sulfate, sodium**	**alkalinity bicarbonate, chloride, nitrate, sulfate, calcium, magnesium, potassium, sodium, hardness**	**alkalinity bicarbonate, chloride, nitrate, sulfate, sodium**	**alkalinity bicarbonate, chloride, nitrate, sulfate, sodium**
QAL068A	Background				
QAL068B	Background		alkalinity bicarbonate	pH, **alkalinity bicarbonate**	**alkalinity bicarbonate**
QAL068D	Background				nitrate
QAL069A	Background	**pH, chloride, sodium**	**pH, sodium**	**pH,** alkalinity bicarbonate, chloride, nitrate, **sodium**	**pH, alkalinity bicarbonate, chloride, nitrate**, **sodium**
QAL070A*	Compliance		pH, chromium, iron, **alkalinity bicarbonate, chloride, nitrate, sulfate, calcium, magnesium, potassium, sodium, hardness**		
QAL071A	Compliance	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**	**pH, alkalinity bicarbonate, chloride, nitrate,** sulfate, **calcium, magnesium, sodium, hardness**	**pH, alkalinity bicarbonate, chloride, nitrate, sulfate, sodium**	**pH, alkalinity bicarbonate, chloride, nitrate, sulfate, sodium**
QAL073A*	Compliance		pH, alkalinity bicarbonate, **calcium, magnesium, sodium, hardness**		
QAL074A	Compliance	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**	**pH**, **alkalinity bicarbonate**, **chloride**, **nitrate, calcium, magnesium, sodium, hardness**	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**	**pH, alkalinity bicarbonate, chloride, nitrate, sodium**

Parameters listed in this table had values reported that were equal to or greater than a site-specific benchmark. Parameters in **BOLD** are instances in which the Department was notified because benchmark deviations were identified at compliance monitoring locations for two consecutive sampling quarters. If the location is classified as background, Department notification is not required for an exceedance.

*Monitoring locations is only sampled on an annual basis in Q2

2022
Mine Permit Groundwater Quality Monitoring Data
QAL023B (UMB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/09/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/23/22[T]	Q4 2022 10/26/22[T]
Field						
D.O.[1]	ppm	--	**0.30**	**0.50**	**0.60**	**0.40**
ORP	mV	--	**-230**	**-168**	**-139**	**-124**
pH	SU	7.8-8.8	**8.7**	**8.0**	**7.9**	**8.0**
Specific Conductance	µS/cm @ 25°C	--	**126**	**123**	**121**	**120**
Temperature	°C	--	**6.5**	**7.7**	**7.9**	**7.2**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1412.48**	**1412.98**	**1412.77**	**1413.11**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.5	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	159	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	**0.52**	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	67	**57**	**61**	**67**	**63**
Alkalinity, Carbonate	mg/L	8.0	**2.6**	<2.0	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	<0.050	<0.050	<0.050	<0.050
Sulfate	mg/L	8.0	**5.1**	**5.1**	**5.5**	**5.5** e
Major Cations						
Calcium	mg/L	16	--	**16**	--	--
Magnesium	mg/L	3.7	--	**3.8**	--	--
Potassium	mg/L	2.0	--	<0.50	--	--
Sodium	mg/L	11	**4.6** e	**4.5**	**4.9**	**5.0** e
General						
Hardness	mg/L	55	--	**56**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL024A (UMB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**10**	**10**	**10**	**10**
ORP	mV	--	**171**	**147**	**113**	**89**
pH	SU	6.1-7.1	**6.5**	**6.5**	**6.6**	**6.6**
Specific Conductance	µS/cm @ 25°C	--	**363**	**160**	**139**	**150**
Temperature	°C	--	**7.8**	**8.6**	**8.5**	**7.8**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1416.21**	**1417.52**	**1417.02**	**1416.73**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	86	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	**12.3**	<5.0	<5.0	<5.0
Iron	ug/L	105	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	**0.56**	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	24	**39**	**45**	**45**	**41**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	<2.0 e	<2.0
Chloride	mg/L	4.0	**77** e	**17** e	**15** e	**17** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	**2.8**	**1.0**	**0.93**	**0.99**
Sulfate	mg/L	8.0	**6.3**	**4.7**	**3.8**	**3.6** e
Major Cations						
Calcium	mg/L	48	--	**8.6**	--	--
Magnesium	mg/L	8.1	--	**1.4**	--	--
Potassium	mg/L	3.7	--	**1.3**	--	--
Sodium	mg/L	2.0	**40** e	**21**	**16**	**16** e
General						
Hardness	mg/L	153	--	**27**	--	--

Explanations of abbreviations are included on the final page of this table.

2022
Mine Permit Groundwater Quality Monitoring Data
QAL025A (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/07/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**11**	**11**	**11**	**11**
ORP	mV	--	**127**	**126**	**84**	**85**
pH	SU	6.4-7.4	**7.7**	**7.4**	**7.4**	**7.6**
Specific Conductance	µS/cm @ 25°C	--	**85**	**61**	**68**	**76**
Temperature	°C	--	**7.5**	**7.5**	**7.4**	**7.0**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1412.98**	**1415.29**	**1412.92**	**1415.39**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	126	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	**1.1**	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	25	**42**	**37**	**39**	**41**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	1.1	**0.14**	**0.34**	**0.21**	**0.16**
Sulfate	mg/L	8.0	<2.0	<2.0	<2.0	<2.0 e
Major Cations						
Calcium	mg/L	8.5	**--**	**8.2**	--	--
Magnesium	mg/L	2.0	**--**	**1.6**	--	--
Potassium	mg/L	2.0	**--**	**0.79**	--	--
Sodium	mg/L	2.0	<1.0 e	<1.0	<1.0	<1.0 e
General						
Hardness	mg/L	28	**--**	**27**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL025B (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/07/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**11**	**11**	**11**	**11**
ORP	mV	--	**71**	**87**	**64**	**64**
pH	SU	8.5-9.5	**9.4**	**9.2**	**9.2**	**9.2**
Specific Conductance	µS/cm @ 25°C	--	**68**	**64**	**63**	**62**
Temperature	°C	--	**6.7**	**7.3**	**7.6**	**6.9**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1414.71**	**1414.21**	**1414.75**	**1415.38**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	56	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	**1.1**	**1.2**	**1.1**	**1.0**
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	36	**28**	**38**	**36**	**32**
Alkalinity, Carbonate	mg/L	12	**5.6**	**3.2**	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	**0.19**	**0.08**	**0.07**	**0.07**
Sulfate	mg/L	8.0	<2.0	<2.0	<2.0	<2.0 e
Major Cations						
Calcium	mg/L	10	**--**	**9.0**	**--**	**--**
Magnesium	mg/L	2.0	**--**	**1.5**	**--**	**--**
Potassium	mg/L	2.0	**--**	<0.50	--	--
Sodium	mg/L	4.5	**1.0** e	**1.1**	**1.2**	**1.3** e
General						
Hardness	mg/L	33	**--**	**29**	**--**	**--**

2022
Mine Permit Groundwater Quality Monitoring Data
QAL025D (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/07/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**5.0**	**5.1**	**5.2**	**5.0**
ORP	mV	--	**85**	**100**	**51**	**73**
pH	SU	8.2-9.2	**9.2**	**8.7**	**8.7**	**8.6**
Specific Conductance	µS/cm @ 25°C	--	**111**	**109**	**109**	**108**
Temperature	°C	--	**6.6**	**7.3**	**7.6**	**7.1**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1410.97**	**1410.99**	**1411.58**	**1411.46**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.5	**2.9**	**2.8**	**2.9**	**2.7**
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	137	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	**4.1**	**4.1**	**4.1**	**3.8**
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	52	**40**	**50**	**50**	**47**
Alkalinity, Carbonate	mg/L	14	**4.4**	**3.0**	<2.0 e	<2.0
Chloride	mg/L	4.0	**2.9** e	**3.9** e	**4.0** e	**4.2** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	**0.09**	**0.10**	**0.09**	**0.09**
Sulfate	mg/L	8.0	**5.3**	**5.3**	**5.5**	**5.4** e
Major Cations						
Calcium	mg/L	12	--	**14**	--	--
Magnesium	mg/L	2.7	--	**3.1**	--	--
Potassium	mg/L	2.0	--	**0.69**	--	--
Sodium	mg/L	12	**2.8** e	**2.6**	**2.7**	**2.8** e
General						
Hardness	mg/L	42	**--**	**48**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL026A (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 Not Sampled	Q2 2022 Not Sampled	Q3 2022 Not Sampled	Q4 2022 Not Sampled
Field						
D.O.[1]	ppm	--	i	i	i	i
ORP	mV	--	i	i	i	i
pH	SU	6.2-7.2	i	i	i	i
Specific Conductance	µS/cm @ 25°C	--	i	i	i	i
Temperature	°C	--	i	i	i	i
Turbidity	NTU	--	i	i	i	i
Water Elevation	ft MSL	--	<1415.4 BP	<1415.4 BP	<1415.4 BP	<1415.4 BP
Metals						
Aluminum	ug/L	236	--	i	--	--
Antimony	ug/L	5.5	--	i	--	--
Arsenic	ug/L	6.0	i	i	i	i
Barium	ug/L	80	--	i	--	--
Beryllium	ug/L	2.5	--	i	--	--
Boron	ug/L	400	i	i	i	i
Cadmium	ug/L	2.0	--	i	--	--
Chromium	ug/L	20	--	i	--	--
Cobalt	ug/L	40	--	i	--	--
Copper	ug/L	20	i	i	i	i
Iron	ug/L	368	i	i	i	i
Lead	ug/L	4.0	--	i	--	--
Lithium	ug/L	32	--	i	--	--
Manganese	ug/L	80	i	i	i	i
Mercury	ng/L	2.0	i	i	i	i
Molybdenum	ug/L	40	--	i	--	--
Nickel	ug/L	100	i	i	i	i
Selenium	ug/L	4.0	i	i	i	i
Silver	ug/L	0.80	--	i	--	--
Strontium	ug/L	200	--	i	--	--
Thallium	ug/L	2.0	--	i	--	--
Vanadium	ug/L	4.0	i	i	i	i
Zinc	ug/L	40	i	i	i	i
Major Anions						
Alkalinity, Bicarbonate	mg/L	114	i	i	i	i
Alkalinity, Carbonate	mg/L	8.0	i	i	i	i
Chloride	mg/L	4.0	i	i	i	i
Fluoride	mg/L	0.40	--	i	--	--
Nitrogen, Nitrate	mg/L	0.73	i	i	i	i
Sulfate	mg/L	8.0	i	i	i	i
Major Cations						
Calcium	mg/L	40.0	--	i	--	--
Magnesium	mg/L	5.9	--	i	--	--
Potassium	mg/L	2.0	--	i	--	--
Sodium	mg/L	2.4	i	i	i	i
General						
Hardness	mg/L	124	--	i	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL026D (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/07/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**10**	**10**	**11**	**12**
ORP	mV	--	**167**	**179**	**239**	**192**
pH	SU	8.4-9.4	**9.1**	**9.1**	**9.1**	**9.8**
Specific Conductance	µS/cm @ 25°C	--	**57**	**62**	**63**	**63**
Temperature	°C	--	**6.8**	**7.2**	**7.8**	**7.2**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1407.77**	**1407.63**	**1408.26**	**1408.22**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	31	**31**	**30**	**41**	**36**
Alkalinity, Carbonate	mg/L	8.0	**4.2**	**5.6**	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	**1.0** e	**1.2** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	**0.12**	**0.10**	**0.10**	**0.11**
Sulfate	mg/L	8.0	<2.0	<2.0	<2.0	<2.0 e
Major Cations						
Calcium	mg/L	13	--	**11**	--	--
Magnesium	mg/L	2.4	--	**1.5**	--	--
Potassium	mg/L	2.0	--	<0.50	--	--
Sodium	mg/L	2.0	<1.0 e	<1.0	<1.0	<1.0 e
General						
Hardness	mg/L	43	--	**34**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL026E (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/07/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**0.2**	**0.2**	**0.2**	**0.2**
ORP	mV	--	**-86**	**69**	**47**	**152**
pH	SU	8.1-9.1	**8.7**	**8.7**	**8.9**	**9.2**
Specific Conductance	µS/cm @ 25°C	--	**102**	**106**	**106**	**104**
Temperature	°C	--	**6.9**	**7.1**	**7.4**	**7.1**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1407.68**	**1407.56**	**1408.14**	**1408.19**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	7.8	**8.1**	**7.9**	**8.0**	**8.0**
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	**62**	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	91	**56**	**56**	**64**	**59**
Alkalinity, Carbonate	mg/L	8.0	<2.0	**3.6**	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	<0.050	<0.050	<0.050	<0.050
Sulfate	mg/L	8.6	**7.8**	**7.9**	**8.1**	**7.9** e
Major Cations						
Calcium	mg/L	17	--	**16**	--	--
Magnesium	mg/L	4.3	--	**4.0**	--	--
Potassium	mg/L	2.0	--	**1.7**	--	--
Sodium	mg/L	2.0	**1.5 e**	**1.7**	**1.8**	**1.8 e**
General						
Hardness	mg/L	60	--	**57**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL044B (UMB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/23/22[T]	Q4 2022 10/20/22[T]
Field						
D.O.[1]	ppm	--	**0.7**	**1.7**	**0.2**	**4.8**
ORP	mV	--	**-139**	**-100**	**-54**	**-71**
pH	SU	8.3-9.3	**9.3**	**9.1**	**9.0**	**9.2**
Specific Conductance	µS/cm @ 25°C	--	**87**	**103**	**97**	**117**
Temperature	°C	--	**6.5**	**8.0**	**9.0**	**7.5**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1413.09**	**1413.53**	**1413.65**	**1413.83**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	**26**	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	64	**49**	**56**	**57**	**56**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	<0.050	<0.050	<0.050	<0.050
Sulfate	mg/L	24	**6.5**	**7.0**	**7.3**	**6.4** e
Major Cations						
Calcium	mg/L	17	**--**	**19**	--	--
Magnesium	mg/L	4.0	--	**1.7**	--	--
Potassium	mg/L	2.0	**--**	**1.8**	--	--
Sodium	mg/L	2.6	**2.7** e	**2.4**	**2.4**	**2.3** e
General						
Hardness	mg/L	58	--	**55**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL060A (TDRSA-CWB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/23/22[T]	Q4 2022 10/20/22[T]
Field						
D.O.[1]	ppm	--	**11**	**8.9**	**10**	**9.7**
ORP	mV	--	**93**	**217**	**233**	**68**
pH	SU	8.1-9.1	**9.0**	**8.9**	**8.9**	**8.7**
Specific Conductance	µS/cm @ 25°C	--	**101**	**84**	**102**	**119**
Temperature	°C	--	**7.8**	**8.5**	**8.5**	**8.3**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1403.77**	**1403.28**	**1403.87**	**1404.07**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	7.2	**3.0**	**3.1**	**2.9**	**2.8**
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	**1.0**	**1.1**	**1.1**	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	62	**50**	**52**	**66**	**63**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	**1.3** e	**1.2** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	**0.27**	**0.39**	**0.29**	**0.30**
Sulfate	mg/L	8.0	**2.1**	**2.8**	**2.6**	**2.5** e
Major Cations						
Calcium	mg/L	17	--	**15**	--	--
Magnesium	mg/L	4.2	--	**3.1**	--	--
Potassium	mg/L	2.0	--	**0.87**	--	--
Sodium	mg/L	2.1	**1.0** e	<1.0	<1.0	**1.0** e
General						
Hardness	mg/L	61	--	**49**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL061A (TDRSA-CWB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/23/22[T]	Q4 2022 10/20/22[T]
Field						
D.O.[1]	ppm	--	**11**	**9.9**	**10**	**10**
ORP	mV	--	**86**	**225**	**147**	**70**
pH	SU	8.1-9.1	**8.7**	**8.7**	**8.5**	**8.5**
Specific Conductance	µS/cm @ 25°C	--	**170**	**153**	**195**	**183**
Temperature	°C	--	**7.6**	**8.5**	**8.0**	**8.2**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1405.02**	**1404.59**	**1405.76**	**1405.27**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	40	**83**	**92**	**110**	**98**
Alkalinity, Carbonate	mg/L	8.0	<2.0	**3.4**	**2.5** e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.27	**0.32**	**0.32**	**0.30**	**0.29**
Sulfate	mg/L	8.0	<2.0	**2.0**	**2.1**	<2.0 e
Major Cations						
Calcium	mg/L	15	**--**	**29**	--	--
Magnesium	mg/L	2.2	**--**	**5.3**	--	--
Potassium	mg/L	2.0	**--**	**0.87**	--	--
Sodium	mg/L	2.0	**1.3** e	**1.1**	**1.1**	**1.1** e
General						
Hardness	mg/L	37	**--**	**95**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL062A (TDRSA-CWB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/23/22[T]	Q4 2022 10/20/22[T]
Field						
D.O.[1]	ppm	--	**7.6**	**7.4**	**7.5**	**7.3**
ORP	mV	--	**106**	**119**	**143**	**83**
pH	SU	8.3-9.3	**7.5**	**7.4**	**7.4**	**7.5**
Specific Conductance	µS/cm @ 25°C	--	**703**	**672**	**650**	**649**
Temperature	°C	--	**7.3**	**8.0**	**8.9**	**7.8**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1406.35**	**1405.92**	**1406.58**	**1406.66**
Metals						
Aluminum	ug/L	200	--	**149**	**--**	**--**
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	**51**	**--**	**--**
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	**7.6**	**--**	**--**
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	**328**	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	**0.73**	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	**--**	**123**	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	48	**241**	**253**	**290**	**280**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	**5.5** e	**2.2**
Chloride	mg/L	4.0	**72** e	**64** e	**58** e	**52** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.41	**1.8**	**1.6**	**1.8**	**2.0**
Sulfate	mg/L	8.0	**4.3**	**4.9**	**4.9**	**4.6** e
Major Cations						
Calcium	mg/L	12	**--**	**82**	--	--
Magnesium	mg/L	2.2	**--**	**18**	--	--
Potassium	mg/L	2.0	**--**	**2.8**	--	--
Sodium	mg/L	2.0	**29** e	**32**	**33**	**32** e
General						
Hardness	mg/L	40	**--**	**276**	**--**	**--**

2022
Mine Permit Groundwater Quality Monitoring Data
QAL063A (TDRSA-CWB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/24/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**7.7**	**7.6**	**8.6**	**7.5**
ORP	mV	--	**137**	**91**	**265**	**60**
pH	SU	8.1-9.1	**7.6**	**7.5**	**7.4**	**7.3**
Specific Conductance	µS/cm @ 25°C	--	**638**	**655**	**665**	**776**
Temperature	°C	--	**7.8**	**8.5**	**8.9**	**8.1**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1400.59**	**1399.97**	**1401.47**	**1400.65**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	**--**	**56.8**	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	**--**	**122**	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	42	**240**	**262**	**290**	**290**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	**6.8** e	<2.0
Chloride	mg/L	4.0	**117** e	**100** e	**90** e	**90** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.29	**1.6**	**1.7**	**1.9**	**1.7**
Sulfate	mg/L	8.0	**4.6**	**5.8**	**6.5**	**6.6** e
Major Cations						
Calcium	mg/L	12	**--**	**85**	--	--
Magnesium	mg/L	2.0	**--**	**17**	--	--
Potassium	mg/L	2.0	**--**	**3.1**	--	--
Sodium	mg/L	2.0	**52** e	**51**	**51**	**47** e
General						
Hardness	mg/L	40	**--**	**281**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL064D (UMB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/09/22[T]	Q2 2022 06/07/22[T]	Q3 2022 08/23/22[T]	Q4 2022 10/20/22[T]
Field						
D.O.[1]	ppm	--	**0.1**	**0.1**	**0.3**	**4.0**
ORP	mV	--	**-194**	**-197**	**-166**	**-154**
pH	SU	8.0-9.0	**8.7**	**8.7**	**8.8**	**8.8**
Specific Conductance	µS/cm @ 25°C	--	**117**	**128**	**125**	**144**
Temperature	°C	--	**6.7**	**7.1**	**7.3**	**7.0**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1414.66**	**1415.51**	**1415.20**	**1415.71**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	**2.1**	<2.0	**2.1**
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	**0.53**	<0.50	**0.79** s	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	**--**	**104**	**--**	**--**
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	82	**72**	**77**	**65**	**76**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	<2.0 e	<2.0
Chloride	mg/L	4.2	**2.8** e	**2.4** e	**2.6** e	**2.2** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	<0.050	<0.050	<0.050	<0.050
Sulfate	mg/L	8.0	<2.0	<2.0	<2.0	<2.0 e
Major Cations						
Calcium	mg/L	22	**--**	**20**	--	--
Magnesium	mg/L	3.3	**--**	**4.1**	--	--
Potassium	mg/L	2.0	**--**	**1.2**	--	--
Sodium	mg/L	6.9	**4.4** e	**4.4**	**4.2**	**4.2** e
General						
Hardness	mg/L	51	**--**	**68**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL065D (UMB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/09/22[T]	Q2 2022 06/07/22[T]	Q3 2022 08/23/22[T]	Q4 2022 10/26/22[T]
Field						
D.O.[1]	ppm	--	**0.2**	**0.2**	**0.3**	**0.3**
ORP	mV	--	**-242**	**-177**	**-101**	**-51**
pH	SU	7.9-8.9	**8.8**	**8.6**	**8.3**	**8.3**
Specific Conductance	µS/cm @ 25°C	--	**158**	**150**	**146**	**145**
Temperature	°C	--	**6.2**	**7.8**	**8.2**	**6.9**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1414.60**	**1415.47**	**1415.00**	**1415.37**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.6	**4.3**	**4.6**	**4.5**	**4.7**
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	**53** a	**60**	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	**180**	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	86	**80**	**73**	**75**	**80**
Alkalinity, Carbonate	mg/L	8.7	<2.0	**5.4**	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	**0.11**	--	--
Nitrogen, Nitrate	mg/L	0.20	<0.050	<0.050	<0.050	<0.050
Sulfate	mg/L	8.0	<2.0	<2.0	<2.0	<2.0 e
Major Cations						
Calcium	mg/L	14	--	**14**	--	--
Magnesium	mg/L	4.8	--	**4.5**	--	--
Potassium	mg/L	3.0	--	**2.6**	--	--
Sodium	mg/L	12	**9.6** e	**9.1**	**8.9**	**8.4** e
General						
Hardness	mg/L	53	--	**54**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL066D (UMB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/23/22[T]	Q4 2022 10/20/22[T]
Field						
D.O.[1]	ppm	--	**1.1**	**7.4**	**0.2**	**2.9**
ORP	mV	--	**125**	**169**	**107**	**247**
pH	SU	8.7-9.7	**9.1**	**9.1**	**9.1**	**9.0**
Specific Conductance	µS/cm @ 25°C	--	**123**	**128**	**128**	**137**
Temperature	°C	--	**6.6**	**8.3**	**8.8**	**7.5**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1413.59**	**1414.16**	**1414.14**	**1414.35**
Metals						
Aluminum	ug/L	557	--	**1,510**	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	8.9	**10**	**10**	**11**	**8.7**
Barium	ug/L	80	--	**21**	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	288	**1,060** a	**1,740**	**1,410**	**603**
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	**1.9**	**3.1**	**1.1** s	**0.65**
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	367	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	**2.0**	**3.1**	**2.6**	**1.1**
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	61	**69**	**69**	**84**	**66**
Alkalinity, Carbonate	mg/L	52	**2.4**	**7.6**	**2.3** e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	**0.08**	**0.11**	**0.13**	<0.050
Sulfate	mg/L	11	**7.9**	**7.9**	**8.2**	**7.3** e
Major Cations						
Calcium	mg/L	58	--	**13**	--	--
Magnesium	mg/L	2.9	--	**2.5**	--	--
Potassium	mg/L	2.6	--	**1.4**	--	--
Sodium	mg/L	8.0	**22** e	**19**	**20**	**11** e
General						
Hardness	mg/L	146	--	**42**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL067A (TDRSA-CWB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/08/22[T]	Q3 2022 08/23/22[T]	Q4 2022 10/20/22[T]
Field						
D.O.[1]	ppm	--	**8.7**	**8.2**	**8.3**	**8.2**
ORP	mV	--	**144**	**157**	**78**	**96**
pH	SU	5.6-6.6	**6.6**	**6.5**	**6.5**	**6.5**
Specific Conductance	µS/cm @ 25°C	--	**441**	**454**	**452**	**409**
Temperature	°C	--	**8.4**	**9.1**	**9.2**	**8.3**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<10
Water Elevation	ft MSL	--	**1413.13**	**1412.92**	**1413.66**	**1413.43**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	**49**	**--**	**--**
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	**0.97**	**0.92**	**0.76** s	**1.0**
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	**134**	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	51	**91**	**95**	**110**	**98**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	<2.0 e	<2.0
Chloride	mg/L	4.0	**72** e	**67** e	**71** e	**56** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.25	**1.6**	**1.9**	**2.3**	**2.2**
Sulfate	mg/L	8.4	**12**	**18**	**22**	**21** e
Major Cations						
Calcium	mg/L	8.2	--	**30**	--	--
Magnesium	mg/L	2.0	--	**9.0**	--	--
Potassium	mg/L	2.0	--	**2.4**	--	--
Sodium	mg/L	2.0	**44** e	**46**	**48**	**48** e
General						
Hardness	mg/L	26	--	**111**	**--**	**--**

2022
Mine Permit Groundwater Quality Monitoring Data
QAL068A (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/07/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**11**	**10**	**12**	**10**
ORP	mV	--	**245**	**237**	**325**	**359**
pH	SU	6.2-7.2	**6.7**	**6.7**	**6.8**	**6.8**
Specific Conductance	µS/cm @ 25°C	--	**29**	**28**	**29**	**34**
Temperature	°C	--	**7.3**	**7.9**	**7.6**	**7.0**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1420.31**	**1419.34**	**1420.82**	**1420.35**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	**60** a	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	35	**15**	**16**	**20**	**18**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	<0.050	<0.050	<0.050	<0.050
Sulfate	mg/L	8.0	<2.0	<2.0	<2.0	<2.0 e
Major Cations						
Calcium	mg/L	6.7	--	**4.0**	--	--
Magnesium	mg/L	2.0	--	<1.0	--	--
Potassium	mg/L	2.0	--	**0.85**	--	--
Sodium	mg/L	2.0	<1.0 e	<1.0	<1.0	<1.0 e
General						
Hardness	mg/L	21	--	<3.0	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL068B (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/07/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**11**	**11**	**12**	**11**
ORP	mV	--	**173**	**191**	**201**	**231**
pH	SU	8.4-9.4	**9.2**	**9.3**	**9.4**	**9.3**
Specific Conductance	µS/cm @ 25°C	--	**52**	**54**	**53**	**64**
Temperature	°C	--	**7.4**	**7.2**	**7.9**	**7.5**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1412.09**	**1411.83**	**1412.57**	**1412.70**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	184	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	**1.2**	**1.2**	**1.2**	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	30	**28**	**33**	**36**	**32**
Alkalinity, Carbonate	mg/L	9.9	**5.4**	**5.4**	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.20	**0.06**	**0.06**	<0.050	0.056
Sulfate	mg/L	8.0	**2.0**	**2.1**	**2.0**	<2.0 e
Major Cations						
Calcium	mg/L	9.4	--	**8.8**	--	--
Magnesium	mg/L	2.0	--	**1.6**	--	--
Potassium	mg/L	2.0	--	**0.61**	--	--
Sodium	mg/L	2.0	<1.0 e	<1.0	<1.0	<1.0 e
General						
Hardness	mg/L	31	--	**29**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL068D (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/07/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/19/22[T]
Field						
D.O.[1]	ppm	--	**2.8**	**8.9**	**4.5**	**2.2**
ORP	mV	--	**141**	**196**	**231**	**215**
pH	SU	8.0-9.0	**8.7**	**8.7**	**8.7**	**8.8**
Specific Conductance	µS/cm @ 25°C	--	**97**	**101**	**101**	**118**
Temperature	°C	--	**6.1**	**8.0**	**8.9**	**7.4**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1412.21**	**1412.81**	**1411.77**	**1412.78**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	7.2	**6.5**	**6.9**	**7.0**	**6.7**
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	119	**118** a	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.1	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	**3.8**	**3.8**	**3.3**	**3.6**
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	67	**55**	**59**	**66**	**60**
Alkalinity, Carbonate	mg/L	8.0	**3.2**	<2.0	<2.0 e	<2.0
Chloride	mg/L	4.0	<1.0 e	<1.0 e	<1.0 e	<1.0 e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.21	<0.050	<0.050	**0.05**	**0.42**
Sulfate	mg/L	10	**4.8**	**4.9**	**5.0**	**4.7** e
Major Cations						
Calcium	mg/L	16	--	**14**	--	--
Magnesium	mg/L	3.9	--	**3.7**	--	--
Potassium	mg/L	2.0	--	**1.4**	--	--
Sodium	mg/L	6.1	**3.1** e	**3.6**	**3.6**	**3.7** e
General						
Hardness	mg/L	52	--	**51**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL069A (Background)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/07/22[T]	Q2 2022 06/06/22[T]	Q3 2022 08/22/22[T]	Q4 2022 10/26/22[T]
Field						
D.O.[1]	ppm	--	**10**	**9.7**	**6.9**	**7.3**
ORP	mV	--	**132**	**155**	**92**	**76**
pH	SU	7.8-8.8	**7.5**	**7.5**	**7.0**	**7.1**
Specific Conductance	µS/cm @ 25°C	--	**221**	**184**	**361**	**336**
Temperature	°C	--	**7.6**	**8.3**	**8.5**	**8.0**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1381.73**	**1382.20**	**1382.60**	**1382.00**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	<20.0	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	**0.50**	**0.63**	<0.50	**0.56**
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	<50.0	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	138	**93**	**90**	**170**	**140**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	**3.4** e	<2.0
Chloride	mg/L	4.0	**8.6** e	**3.4** e	**23** e	**26** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.57	**0.23**	**0.21**	**0.90**	**0.88**
Sulfate	mg/L	8.0	**4.9**	**3.8**	**4.8**	**5.2** e
Major Cations						
Calcium	mg/L	35	**--**	**23**	--	--
Magnesium	mg/L	18	**--**	**7.7**	--	--
Potassium	mg/L	2.0	**--**	**1.2**	--	--
Sodium	mg/L	2.0	**3.9** e	**2.3**	**8.8**	**10** e
General						
Hardness	mg/L	162	**--**	**90**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL070A (NCWIB)
Eagle Mine

Parameter	Unit	Benchmark	Q2 2019 05/07/19[T]	Q2 2020 05/06/20[T]	Q2 2021 05/10/21[T]	Q2 2022 06/07/22[T]
Field						
D.O.[1]	ppm	--	**11**	**11**	**10**	**10**
ORP	mV	--	**185**	**248**	**257**	**60**
pH	SU	8.3-9.3	**8.3**	**8.0**	**8.4**	**8.2**
Specific Conductance	µS/cm @ 25°C	--	**479**	**393**	**403**	**547**
Temperature	°C	--	**9.0**	**10**	**8.0**	**13**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1371.85**	**1372.70**	**1371.95**	**1369.06**
Metals						
Aluminum	ug/L	200	<50.0	<50	<50.0	**52**
Antimony	ug/L	5.5	<5.0	<5.0	<5.0	<5.0
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	**27**	**30**	**28**	**30**
Beryllium	ug/L	2.5	<1.0	<1.0	<1.0	<1.0
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	<0.50	<0.50	<0.50	<0.50
Chromium	ug/L	20	<5.0	<5.0	<5.0	**20**
Cobalt	ug/L	40	<10.0	<10	<10.0	<10.0
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	80	<50.0	<50	**80**	**184**
Lead	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Lithium	ug/L	32	<8.0	<8.0	<8.0	<8.0
Manganese	ug/L	80	<20.0	<20	<20.0	<20.0
Mercury	ng/L	2.0	**0.62**	<0.50	**0.52**	**1.8**
Molybdenum	ug/L	40	<10.0	<10	<10.0	<10.0
Nickel	ug/L	100	<25.0	<25	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Silver	ug/L	0.80	<0.20	<0.20	<0.20	<0.20
Strontium	ug/L	200	**73**	**92**	**89**	**69**
Thallium	ug/L	2.0	<1.0	<1.0	<1.0	<1.0
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	42	**75**	**81**	**88**	**105**
Alkalinity, Carbonate	mg/L	8.0	<2.0 e	<2.0	<2.0	<2.0
Chloride	mg/L	4.0	**107** e	**102** e	**93** e	**102** e
Fluoride	mg/L	0.40	<0.10 e	<0.10	<0.10	<0.10
Nitrogen, Nitrate	mg/L	0.22	**1.4** e	**1.3** e	**1.0** e	**1.1**
Sulfate	mg/L	8.0	**10** e	**8.9**	**9.1**	**12**
Major Cations						
Calcium	mg/L	11	**39** e	**52**	**48**	**39**
Magnesium	mg/L	3.0	**7.0**	**9.8**	**8.4**	**8.0**
Potassium	mg/L	2.0	**1.9**	**2.2**	**2.0**	**2.0**
Sodium	mg/L	2.0	**48** e	**28**	**35**	**57**
General						
Hardness	mg/L	40	**125**	**170**	**153**	**130**

2022
Mine Permit Groundwater Quality Monitoring Data
QAL071A (TDRSA-CWB)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/07/22[T]	Q3 2022 08/24/22[T]	Q4 2022 10/20/22[T]
Field						
D.O.[1]	ppm	--	**9.7**	**10**	**11**	**10**
ORP	mV	--	**129**	**181**	**302**	**306**
pH	SU	8.1-9.1	**8.0**	**8.0**	**8.0**	**8.1**
Specific Conductance	µS/cm @ 25°C	--	**252**	**340**	**340**	**463**
Temperature	°C	--	**7.5**	**8.7**	**9.0**	**8.3**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1402.92**	**1405.28**	**1405.28**	**1405.31**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	**--**	**23**	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	<5.0	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	**5.4**	**11**	**13**	**17**
Iron	ug/L	178	<50.0	<50.0	<100	<100
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	**57**	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	44	**127**	**119**	**130**	**120**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	**2.8** e	<2.0
Chloride	mg/L	4.0	**5.9** e	**13** e	**13** e	**16** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.31	**1.5**	**16**	**19**	**22**
Sulfate	mg/L	8.0	**5.9**	**8.1**	**9.6**	**11** e
Major Cations						
Calcium	mg/L	12	--	**52**	--	--
Magnesium	mg/L	2.0	--	**7.4**	--	--
Potassium	mg/L	2.0	--	**1.5**	--	--
Sodium	mg/L	2.0	**8.7** e	**15**	**13**	**16** e
General						
Hardness	mg/L	38	--	**161**	--	--

2022
Mine Permit Groundwater Quality Monitoring Data
QAL073A (NCWIB)
Eagle Mine

Parameter	Unit	Benchmark	Q2 2019 05/07/19[T]	Q2 2020 05/06/20[T]	Q2 2021 05/10/21[T]	Q2 2022 06/07/22[T]
Field						
D.O.[1]	ppm	--	**11**	**11**	**11**	**10**
ORP	mV	--	**220**	**265**	**267**	**111**
pH	SU	6.1-7.1	**6.8**	**6.5**	**6.9**	**7.1**
Specific Conductance	µS/cm @ 25°C	--	**178**	**116**	**110**	**126**
Temperature	°C	--	**9.0**	**8.4**	**7.4**	**11**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1383.74**	**1384.72**	**1384.83**	**1382.39**
Metals						
Aluminum	ug/L	200	<50.0	**73**	**58**	**67**
Antimony	ug/L	5.5	<5.0	<5.0	<5.0	<5.0
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	<20.0	<20	<20.0	<20.0
Beryllium	ug/L	2.5	<1.0	<1.0	<1.0	<1.0
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	<0.50	<0.50	<0.50	<0.50
Chromium	ug/L	20	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/L	40	<10.0	<10	<10.0	<10.0
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	132	**95**	**79**	**100**	**103**
Lead	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Lithium	ug/L	32	<8.0	<8.0	<8.0	<8.0
Manganese	ug/L	80	<20.0	<20	<20.0	<20.0
Mercury	ng/L	2.0	**0.82**	<0.50	**0.55**	<0.50
Molybdenum	ug/L	40	<10.0	<10	<10.0	<10.0
Nickel	ug/L	100	<25	<25	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Silver	ug/L	0.80	<0.20	<0.20	<0.20	<0.20
Strontium	ug/L	200	**93**	**69**	**55**	**54**
Thallium	ug/L	2.0	<1.0	<1.0	<1.0	<1.0
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10	<10	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	44	**79**	**53**	**42**	**50**
Alkalinity, Carbonate	mg/L	8.0	<2.0 e	<2.0	<2.0	<2.0
Chloride	mg/L	20	**3.4** e	**3.0** e	**8.7** e	**8.5** e
Fluoride	mg/L	0.40	<0.10 e	<0.10	<0.10	<0.10
Nitrogen, Nitrate	mg/L	0.60	**1.1** e	**0.84** e	**0.57** e	**0.50**
Sulfate	mg/L	8.0	**7.5** e	**7.0**	**4.9**	**4.5**
Major Cations						
Calcium	mg/L	9.2	**28** e	**20**	**18**	**17**
Magnesium	mg/L	2.5	**5.2**	**4.0**	**3.4**	**3.4**
Potassium	mg/L	2.0	**1.3**	**1.1**	**1.2**	**1.0**
Sodium	mg/L	2.0	**2.4** e	**2.6**	**2.3**	**2.3**
General						
Hardness	mg/L	33	**91**	**66**	**59**	**56**

2022
Mine Permit Groundwater Quality Monitoring Data
QAL074A (Septic & WWTP)
Eagle Mine

Parameter	Unit	Benchmark	Q1 2022 02/08/22[T]	Q2 2022 06/07/22[T]	Q3 2022 08/23/22[T]	Q4 2022 11/29/22[T]
Field						
D.O.[1]	ppm	--	**9.2**	**8.2**	**11**	**11**
ORP	mV	--	**-40**	**8**	**179**	**120**
pH	SU	8.4-9.4	**8.3**	**8.3**	**8.3**	**8.4**
Specific Conductance	µS/cm @ 25°C	--	**345**	**310**	**346**	**262**
Temperature	°C	--	**7.0**	**9.0**	**10**	**8.9**
Turbidity	NTU	--	<1.0	<1.0	<1.0	<1.0
Water Elevation	ft MSL	--	**1401.44**	**1404.46**	**1403.88**	**1404.26**
Metals						
Aluminum	ug/L	200	--	<50.0	--	--
Antimony	ug/L	5.5	--	<5.0	--	--
Arsenic	ug/L	6.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	80	--	**22**	--	--
Beryllium	ug/L	2.5	--	<1.0	--	--
Boron	ug/L	400	<100	<100	<100	<100
Cadmium	ug/L	2.0	--	<0.50	--	--
Chromium	ug/L	20	--	**15**	--	--
Cobalt	ug/L	40	--	<10.0	--	--
Copper	ug/L	20	<5.0	<5.0	<5.0	<5.0
Iron	ug/L	212	**101** a	**69**	<100	**143**
Lead	ug/L	4.0	--	<1.0	--	--
Lithium	ug/L	32	--	<8.0	--	--
Manganese	ug/L	80	<20.0	<20.0	<20.0	<20.0
Mercury	ng/L	2.0	<0.50	<0.50	<0.50	<0.50
Molybdenum	ug/L	40	--	<10.0	--	--
Nickel	ug/L	100	<25.0	<25.0	<25.0	<25.0
Selenium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0 e
Silver	ug/L	0.80	--	<0.20	--	--
Strontium	ug/L	200	--	**61**	--	--
Thallium	ug/L	2.0	--	<1.0	--	--
Vanadium	ug/L	4.0	<1.0	<1.0	<1.0	<1.0
Zinc	ug/L	40	<10.0	<10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	39	**103**	**102**	**110**	**91**
Alkalinity, Carbonate	mg/L	8.0	<2.0	<2.0	**2.1** e	<2.0
Chloride	mg/L	4.0	**65** e	**56** e	**66** e	**45** e
Fluoride	mg/L	0.40	--	<0.10	--	--
Nitrogen, Nitrate	mg/L	0.43	**1.9**	**1.5**	**1.7**	**1.4**
Sulfate	mg/L	8.0	**7.3**	**7.2**	**7.7**	**5.6** e
Major Cations						
Calcium	mg/L	31	--	**38**	--	--
Magnesium	mg/L	5.9	--	**7.5**	--	--
Potassium	mg/L	2.0	--	**1.5**	--	--
Sodium	mg/L	3.5	**28** e	**25**	**26**	**20** e
General						
Hardness	mg/L	103	--	**125**	--	--

Mine Permit Groundwater Quality Monitoring Data
Supplemental Volatile Organic Compounds Monitoring Results
QAL061A (TDRSA-CWB)
Eagle Mine

Parameter	Unit	Q2 2019 05/07/19[T]	Q2 2020 05/07/20[T]	Q2 2021 05/10/21[T]	Q2 2022 06/08/22[T]
Volatile Organic Compounds					
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
2-Butanone (MEK)	ug/L	<5.0	<5.0	<5.0	<5.0
2-Hexanone	ug/L	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone (MIBK)	ug/L	<5.0	<5.0	<5.0	<5.0
Acetone	ug/L	<10	<10	<10	<10
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0
Bromomethane	ug/L	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	ug/L	<5.0 e	<5.0	<5.0	<5.0
Carbon Tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
Chloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	<1.0 e	<1.0	<1.0	<1.0
Chloromethane	ug/L	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	<1.0 e	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0
Cyclohexane	ug/L	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	ug/L	<1.0	<1.0	<1.0 e	<1.0
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Acetate	ug/L	<5.0 e	<5.0 e	<5.0	<5.0
Methyl tert-Butyl Ether	ug/L	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	ug/L	<5.0	<5.0 e	<5.0	<5.0
Methylene Chloride	ug/L	<1.0 e	<1.0	<1.0	<1.0
Styrene	ug/L	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	<1.0 e	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0
Trichloroethene	ug/L	<1.0 e	<1.0	<1.0	<1.0
Trichlorofluoromethane	ug/L	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	ug/L	<1.0	<1.0	<1.0	<1.0
Xylene (Total)	ug/L	<3.0	<3.0	<3.0	<3.0

Mine Permit Groundwater Quality Monitoring Data
Supplemental Volatile Organic Compounds Monitoring Results
QAL062A (TDRSA-CWB)
Eagle Mine

Parameter	Unit	Q2 2019 05/07/19[T]	Q2 2020 05/07/20[T]	Q2 2021 05/11/21[T]	Q2 2022 06/08/22[T]
Volatile Organic Compounds					
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
2-Butanone (MEK)	ug/L	<5.0	<5.0	<5.0	<5.0
2-Hexanone	ug/L	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone (MIBK)	ug/L	<5.0	<5.0	<5.0	<5.0
Acetone	ug/L	<10	<10	<10	<10
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0
Bromomethane	ug/L	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	ug/L	<5.0 e	<5.0	<5.0	<5.0
Carbon Tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
Chloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	<1.0 e	<1.0	<1.0	<1.0
Chloromethane	ug/L	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	<1.0 e	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0
Cyclohexane	ug/L	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	ug/L	<1.0	<1.0	<1.0 e	<1.0
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Acetate	ug/L	<5.0 e	<5.0 e	<5.0	<5.0
Methyl tert-Butyl Ether	ug/L	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	ug/L	<5.0	<5.0 e	<5.0	<5.0
Methylene Chloride	ug/L	<1.0 e	<1.0	<1.0	<1.0
Styrene	ug/L	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	<1.0 e	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0
Trichloroethene	ug/L	<1.0 e	<1.0	<1.0	<1.0
Trichlorofluoromethane	ug/L	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	ug/L	<1.0	<1.0	<1.0	<1.0
Xylene (Total)	ug/L	<3.0	<3.0	<3.0	<3.0

Mine Permit Groundwater Quality Monitoring Data
Supplemental Volatile Organic Compounds Monitoring Results
QAL067A (TDRSA-CWB)
Eagle Mine

Parameter	Unit	Q2 2019 05/07/19[T]	Q2 2020 05/07/20[T]	Q2 2021 05/11/21[T]	Q2 2022 06/08/22[T]
Volatile Organic Compounds					
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
2-Butanone (MEK)	ug/L	<5.0	<5.0	<5.0	<5.0
2-Hexanone	ug/L	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone (MIBK)	ug/L	<5.0	<5.0	<5.0	<5.0
Acetone	ug/L	<10	<10	<10	<10
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0
Bromomethane	ug/L	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	ug/L	<5.0 e	<5.0	<5.0	<5.0
Carbon Tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
Chloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	<1.0 e	<1.0	<1.0	<1.0
Chloromethane	ug/L	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	<1.0 e	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0
Cyclohexane	ug/L	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	ug/L	<1.0	<1.0	<1.0 e	<1.0
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Acetate	ug/L	<5.0 e	<5.0 e	<5.0	<5.0
Methyl tert-Butyl Ether	ug/L	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	ug/L	<5.0	<5.0 e	<5.0	<5.0
Methylene Chloride	ug/L	<1.0 e	<1.0	<1.0	<1.0
Styrene	ug/L	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	<1.0 e	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0
Trichloroethene	ug/L	<1.0 e	<1.0	<1.0	<1.0
Trichlorofluoromethane	ug/L	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	ug/L	<1.0	<1.0	<1.0	<1.0
Xylene (Total)	ug/L	<3.0	<3.0	<3.0	<3.0

2022
Groundwater Quality Data
Mine Permit Monitoring
Explanation of Abbreviations and Data Qualifiers
Eagle Project

Abbreviation or Data Qualifier	Explanation
[1]	Many D.O. values are elevated due to well screen configuration and aquifer characteristics and the low-flow sampling method. Super-saturated DO values are rejected (see R data qualifier) as not being representative of true conditions.
a	Estimated value. Duplicate precision for this parameter exceeded quality control limit.
b	Estimated value. Sample received after EPA established hold time expired.
BP	Below pump. Maximum water elevation is shown.
CWB	Contact Water Basin
D	Sample for metal and major cation parameters was filtered and values are dissolved concentrations.
e	Estimated value. The laboratory statement of data qualifications indicates that a quality control limit for this parameter was exceeded.
f	Value should be considered an estimate because field stabilization was not achieved of at least one parameter.
i	Insufficient water for collection of field parameters and/or sample.
J	Estimated value. Reported concentration is between the method detection limit and reporting limit.
NM	Not measured.
p	Pending. Some parameters/locations require additional baseline data to calculate a benchmark.
Q	Quarter.
R	Measured value was rejected based on quality control procedures.
RL	Laboratory reporting limit.
s	Potential false positive value. Compound present in blank sample.
t	Trending. Benchmarks are not proposed for baseline datasets that appear to be trending (using samples collected through Q4 2012) because the data do not represent a random distribution about the baseline mean. Trend analysis is recommended in place of benchmark screening for parameters that appear to be trending.
T	Sample was not filtered and all values are total concentrations.
TDRSA	Temporary Development Rock Storage Area
UMB	Underground Mine Boundary
	Value is equal to or above site-specific benchmark at a compliance monitoring location. An exceedance occurs if there are 2 consecutive sampling events with a value equal to or greater than the benchmark. Color also indicates compliance monitoring location when applied to column headers.

Appendix G

Eagle Mine

Groundwater Monitoring

Trend Analysis Summary & Trending Charts

Mine Permit Groundwater Trend Analysis
Identified Trends for 2022
Eagle Mine

Location	Classification	Parameter	Unit	# Samples	# NDs	Non-detects handling	# used in Runs Test	Min	Max	Mean	St. Dev.	# Above Mean	# Below Mean	# Equal Mean	# Runs	Criti-cal value	Sig level	Trend?	Remarks
QAL023B	Compliance	Sodium	mg/L	24	0	No NDs	24	4.1	9.9	6.1	1.50	11	13	0	6	8	0.05	Y	Non-unique RL in data
QAL023B	Compliance	Sulfate	mg/L	24	0	No NDs	24	2.6	5.5	4.5	0.78	14	10	0	4	8	0.05	Y	
QAL024A	Compliance	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	26.1	58.6	40.5	7.26	14	10	0	7	8	0.05	Y*	
QAL024A	Compliance	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.28	3.9	1.4	1.06	7	17	0	5	7	0.05	Y*	Non-unique RL in data
QAL025A	Background	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	16.9	41.8	30.3	6.45	11	13	0	8	8	0.05	Y*	
QAL025B	Background	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.068	0.40	0.19	0.10	10	14	0	5	8	0.05	Y	
QAL025B	Background	Vanadium	ug/L	24	4	Included as RL	24	1.0	1.4	1.1	0.10	6	8	10	4	4	0.05	Y	Non-unique RL in data (NDs included as RL)
QAL025D	Background	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	37.7	50.4	43.3	3.15	12	12	0	8	8	0.05	Y	
QAL025D	Background	Chloride	mg/L	24	9	Included as RL	24	1.0	4.2	1.8	1.10	9	15	0	2	8	0.05	Y*	
QAL025D	Background	Magnesium	mg/L	12	0	No NDs	12	2.4	3.1	2.7	0.20	5	5	2	2	3	0.05	Y*	Non-unique RL in data
QAL025D	Background	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.087	0.16	0.11	0.02	7	17	0	4	7	0.05	Y	
QAL025D	Background	pH	SU	23	0	No NDs	23	7.7	9.2	8.6	0.32	14	9	0	7	7	0.05	Y	
QAL025D	Background	Sodium	mg/L	24	0	No NDs	24	2.6	3.8	3.2	0.34	13	11	0	8	8	0.05	Y	Non-unique RL in data
QAL025D	Background	Sulfate	mg/L	24	0	No NDs	24	4.5	7.0	5.2	0.48	10	14	0	8	8	0.05	Y	
QAL026A	Background	Nitrogen, Nitrate	mg/L	18	0	No NDs	18	0.35	1.1	0.63	0.23	8	9	1	3	5	0.05	Y	Non-unique RL in data
QAL026D	Background	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	2.0	130	35.7	22.35	4	20	0	4	4	0.05	Y*	
QAL026E	Background	Sulfate	mg/L	24	0	No NDs	24	7.2	8.2	7.7	0.26	10	14	0	8	8	0.05	Y	Non-unique RL in data
QAL044B	Compliance	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	3.0	57.0	28.8	15.60	11	13	0	4	8	0.05	Y	
QAL044B	Compliance	Alkalinity, Carbonate	mg/L	24	10	Included as RL	24	2.0	38.0	8.6	9.27	9	15	0	4	8	0.05	Y	
QAL044B	Compliance	Magnesium	mg/L	11	2	Included as RL	11	0.79	3.5	1.8	0.85	5	6	0	2	3	0.05	Y	Non-unique RL in data (NDs included as RL)
QAL044B	Compliance	pH	SU	24	0	No NDs	24	8.8	10.9	9.4	0.43	9	15	0	6	8	0.05	Y*	
QAL044B	Compliance	Potassium	mg/L	11	3	Included as RL	11	0.50	1.8	1.0	0.50	6	5	0	2	3	0.05	Y	
QAL044B	Compliance	Sodium	mg/L	24	0	No NDs	24	2.1	3.7	2.7	0.41	13	11	0	3	8	0.05	Y*	Non-unique RL in data
QAL060A	Compliance	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	29.6	66.0	46.1	8.28	11	13	0	6	8	0.05	Y*	
QAL060A	Compliance	Arsenic	ug/L	24	0	No NDs	24	2.8	5.3	3.7	0.72	11	13	0	2	8	0.05	Y	
QAL060A	Compliance	Calcium	mg/L	13	0	No NDs	13	10.0	16.6	13.0	2.21	8	5	0	3	3	0.05	Y	Non-unique RL in data
QAL060A	Compliance	Magnesium	mg/L	13	0	No NDs	13	2.4	3.7	3.0	0.46	7	6	0	3	4	0.05	Y	Non-unique RL in data
QAL060A	Compliance	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.18	0.39	0.29	0.05	15	9	0	4	8	0.05	Y*	
QAL060A	Compliance	Sulfate	mg/L	24	13	Included as RL	24	2.0	3.4	2.1	0.34	4	20	0	4	4	0.05	Y	
QAL060A	Compliance	Vanadium	ug/L	24	7	Included as RL	24	1.0	1.4	1.1	0.12	7	17	0	6	7	0.05	Y	Non-unique RL in data (NDs included as RL)
QAL061A	Compliance	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	41.0	119	65.1	20.50	8	16	0	4	7	0.05	Y*	
QAL061A	Compliance	Calcium	mg/L	13	0	No NDs	13	11.0	29.4	15.3	5.84	5	8	0	2	3	0.05	Y*	Non-unique RL in data
QAL061A	Compliance	Magnesium	mg/L	13	0	No NDs	13	1.9	5.3	2.7	1.00	6	7	0	2	4	0.05	Y*	Non-unique RL in data
QAL061A	Compliance	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.28	0.44	0.34	0.04	12	12	0	5	8	0.05	Y*	
QAL061A	Compliance	Potassium	mg/L	13	1	Included as RL	13	0.50	0.87	0.65	0.13	7	6	0	4	4	0.05	Y	
QAL061A	Compliance	Sodium	mg/L	24	11	Included as RL	24	0.73	1.3	0.96	0.13	16	8	0	2	7	0.05	Y	Non-unique RL in data (NDs included as RL)
QAL062A	Compliance	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	120	290	192	42.40	11	13	0	6	8	0.05	Y*	
QAL062A	Compliance	Barium	ug/L	13	6	Included as RL	13	20.0	51.3	28.0	11.50	5	8	0	2	3	0.05	Y	
QAL062A	Compliance	Calcium	mg/L	13	0	No NDs	13	11.0	81.6	41.3	27.40	7	6	0	2	4	0.05	Y*	Non-unique RL in data
QAL062A	Compliance	Chloride	mg/L	24	0	No NDs	24	45.5	78.8	62.6	9.72	12	12	0	5	8	0.05	Y*	Non-unique RL in data
QAL062A	Compliance	Magnesium	mg/L	13	0	No NDs	13	2.0	17.6	8.4	5.88	7	6	0	2	4	0.05	Y*	Non-unique RL in data
QAL062A	Compliance	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.52	2.0	1.1	0.41	10	14	0	6	8	0.05	Y*	Non-unique RL in data
QAL062A	Compliance	Potassium	mg/L	13	0	No NDs	13	0.70	2.8	1.7	0.85	6	7	0	2	4	0.05	Y*	
QAL062A	Compliance	Sodium	mg/L	24	0	No NDs	24	14.0	36.6	26.5	5.97	15	9	0	4	8	0.05	Y*	Non-unique RL in data
QAL062A	Compliance	Strontium	ug/L	13	6	Included as RL	13	50.0	123	71.8	27.16	5	8	0	2	3	0.05	Y	
QAL062A	Compliance	Sulfate	mg/L	24	0	No NDs	24	2.1	4.9	3.1	0.87	9	15	0	6	8	0.05	Y	Non-unique RL in data
QAL063A	Compliance	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	130	290	198	42.40	9	15	0	4	8	0.05	Y*	
QAL063A	Compliance	Barium	ug/L	13	8	Included as RL	13	20.0	56.8	29.6	14.00	4	9	0	2	3	0.05	Y	
QAL063A	Compliance	Calcium	mg/L	13	0	No NDs	13	11.0	85.2	41.9	31.60	6	7	0	2	4	0.05	Y*	Non-unique RL in data
QAL063A	Compliance	Chloride	mg/L	24	0	No NDs	24	30.0	117	82.9	29.87	15	9	0	2	8	0.05	Y*	Non-unique RL in data
QAL063A	Compliance	Magnesium	mg/L	13	0	No NDs	13	1.9	16.8	8.0	6.39	6	7	0	2	4	0.05	Y*	Non-unique RL in data
QAL063A	Compliance	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.55	1.9	1.1	0.38	12	12	0	4	8	0.05	Y*	Non-unique RL in data
QAL063A	Compliance	Potassium	mg/L	13	0	No NDs	13	0.62	3.1	1.6	1.00	6	7	0	2	4	0.05	Y*	
QAL063A	Compliance	Sodium	mg/L	24	0	No NDs	24	1.9	53.9	29.9	18.10	12	12	0	2	8	0.05	Y*	Non-unique RL in data
QAL063A	Compliance	Strontium	ug/L	13	7	Included as RL	13	50.0	122	73.5	29.70	5	8	0	2	3	0.05	Y	
QAL063A	Compliance	Sulfate	mg/L	24	0	No NDs	24	2.1	6.6	3.3	1.30	9	15	0	2	8	0.05	Y	Non-unique RL in data
QAL064D	Compliance	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	64.8	78.0	71.1	4.93	12	12	0	7	8	0.05	Y	
QAL064D	Compliance	Sodium	mg/L	24	0	No NDs	24	3.7	4.5	4.1	0.23	11	8	5	6	6	0.05	Y	Non-unique RL in data
QAL065D	Compliance	Calcium	mg/L	12	0	No NDs	12	12.0	15.6	13.2	1.13	4	8	0	2	3	0.05	Y*	Non-unique RL in data
QAL066D	Compliance	Calcium	mg/L	12	0	No NDs	12	10.0	54.0	17.6	11.90	3	9	0	2	2	0.05	Y	Non-unique RL in data
QAL066D	Compliance	Chloride	mg/L	24	17	Included as RL	24	1.0	1.3	1.1	0.10	7	17	0	4	7	0.05	Y	
QAL066D	Compliance	Iron	ug/L	24	3	Included as RL	24	20.0	1740	561	440.20	9	15	0	8	8	0.05	Y*	Non-unique RL in data (NDs included as RL)
QAL066D	Compliance	Mercury	ng/L	24	1	Included as RL	24	0.34	3.1	1.3	0.67	11	13	0	8	8	0.05	Y	Non-unique RL in data (NDs included as RL)
QAL066D	Compliance	Nitrogen, Nitrate	mg/L	24	14	Included as RL	24	0.05	0.50	0.081	0.09	6	18	0	3	6	0.05	Y	
QAL066D	Compliance	Sodium	mg/L	24	0	No NDs	24	9.6	23.5	18.4	4.04	14	10	0	5	8	0.05	Y*	Non-unique RL in data
QAL066D	Compliance	Sulfate	mg/L	24	0	No NDs	24	7.3	14.3	8.9	1.69	6	18	0	4	6	0.05	Y	Non-unique RL in data
QAL066D	Compliance	Vanadium	ug/L	24	6	Included as RL	24	1.0	3.1	1.5	0.58	6	18	0	5	6	0.05	Y	Non-unique RL in data (NDs included as RL)
QAL067A	Compliance	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	50.0	110	74.4	18.34	10	14	0	2	8	0.05	Y*	
QAL067A	Compliance	Calcium	mg/L	14	0	No NDs	14	4.1	110	25.1	28.48	6	8	0	4	4	0.05	Y*	Non-unique RL in data
QAL067A	Compliance	Chloride	mg/L	24	0	No NDs	24	41.8	410	141	94.42	8	16	0	4	7	0.05	Y*	Non-unique RL in data
QAL067A	Compliance	Mercury	ng/L	24	0	No NDs	24	0.76	2.2	1.4	0.44	9	15	0	8	8	0.05	Y	
QAL067A	Compliance	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.24	2.3	1.5	0.66	16	8	0	5	7	0.05	Y*	Non-unique RL in data
QAL067A	Compliance	pH	SU	24	0	No NDs	24	6.0	6.7	6.4	0.23	13	11	0	8	8	0.05	Y*	
QAL067A	Compliance	Potassium	mg/L	14	0	No NDs	14	0.75	9.2	2.9	2.47	4	10	0	3	3	0.05	Y*	
QAL067A	Compliance	Sodium	mg/L	24	0	No NDs	24	43.6	270	89.1	60.60	7	17	0	2	7	0.05	Y*	Non-unique RL in data
QAL067A	Compliance	Sulfate	mg/L	24	0	No NDs	24	2.7	22.3	12.1	5.65	9	15	0	3	8	0.05	Y*	Non-unique RL in data
QAL068B	Background	Nitrogen, Nitrate	mg/L	24	3	Included as RL	24	0.05	0.072	0.059	0.01	11	13	0	7	8	0.05	Y	
QAL068B	Background	Sulfate	mg/L	24	2	Included as RL	24	2.0	2.5	2.2	0.14	10	14	0	8	8	0.05	Y	
QAL068D	Background	Arsenic	ug/L	24	0	No NDs	24	4.4	7.0	6.0	0.75	13	11	0	4	8	0.05	Y	

Mine Permit Groundwater Trend Analysis
Identified Trends for 2022
Eagle Mine

Location	Classification	Parameter	Unit	# Samples	# NDs	Non-detects handling	# used in Runs Test	Min	Max	Mean	St. Dev.	# Above Mean	# Below Mean	# Equal Mean	# Runs	Criti-cal value	Sig level	Trend?	Remarks
QAL068D	Background	Magnesium	mg/L	12	0	No NDs	12	3.3	4.1	3.7	0.21	7	5	0	3	3	0.05	Y	Non-unique RL in data
QAL068D	Background	Potassium	mg/L	12	0	No NDs	12	1.2	1.7	1.4	0.16	5	7	0	3	3	0.05	Y	
QAL068D	Background	Sodium	mg/L	24	0	No NDs	24	3.1	4.7	4.0	0.44	13	11	0	8	8	0.05	Y	Non-unique RL in data
QAL068D	Background	Sulfate	mg/L	24	0	No NDs	24	4.7	5.6	5.2	0.23	14	10	0	5	8	0.05	Y	Non-unique RL in data
QAL069A	Background	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	90.2	190	145	28.70	13	10	1	6	8	0.05	Y*	
QAL069A	Background	Calcium	mg/L	12	0	No NDs	12	9.5	55.0	37.2	14.00	7	5	0	3	3	0.05	Y	Non-unique RL in data
QAL069A	Background	Magnesium	mg/L	12	0	No NDs	12	5.4	24.0	14.4	6.17	5	7	0	3	3	0.05	Y	Non-unique RL in data
QAL069A	Background	Mercury	ng/L	24	4	Included as RL	24	0.50	14.2	3.0	3.53	8	16	0	6	7	0.05	Y	Non-unique RL in data (NDs included as RL)
QAL069A	Background	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.21	1.0	0.68	0.25	14	10	0	5	8	0.05	Y*	Non-unique RL in data
QAL069A	Background	pH	SU	24	0	No NDs	24	6.4	7.6	7.0	0.27	10	14	0	8	8	0.05	Y*	
QAL069A	Background	Potassium	mg/L	12	0	No NDs	12	0.55	2.1	1.5	0.47	7	5	0	3	3	0.05	Y	
QAL069A	Background	Sodium	mg/L	24	0	No NDs	24	2.3	99.3	29.3	24.13	8	16	0	5	7	0.05	Y*	Non-unique RL in data
QAL069A	Background	Sulfate	mg/L	24	1	Included as RL	24	2.0	10.8	7.4	2.24	16	8	0	6	7	0.05	Y	Non-unique RL in data (NDs included as RL)
QAL070A	Compliance	Alkalinity, Bicarbonate	mg/L	6	0	No NDs	6	56.0	105	77.9	17.59	3	3	0	2	2	0.10	Y*	
QAL070A	Compliance	Barium	ug/L	12	5	Included as RL	12	20.0	30.2	24.5	4.23	6	6	0	2	3	0.05	Y	
QAL070A	Compliance	Calcium	mg/L	12	0	No NDs	12	8.5	51.9	32.2	17.00	7	5	0	2	3	0.05	Y*	Non-unique RL in data
QAL070A	Compliance	Chloride	mg/L	6	0	No NDs	6	93.1	120	106	9.06	3	3	0	2	2	0.10	Y*	Non-unique RL in data
QAL070A	Compliance	Iron	ug/L	6	4	Included as RL	6	20.0	184	67.3	61.40	2	4	0	2	2	0.25	Y	Non-unique RL in data (NDs included as RL)
QAL070A	Compliance	Magnesium	mg/L	12	0	No NDs	12	2.1	9.9	6.4	3.02	7	4	1	2	3	0.05	Y*	Non-unique RL in data
QAL070A	Compliance	Potassium	mg/L	12	0	No NDs	12	0.54	2.2	1.5	0.66	7	5	0	2	3	0.05	Y*	
QAL070A	Compliance	Strontium	ug/L	12	4	Included as RL	12	50.0	92.2	67.2	15.30	7	5	0	2	3	0.05	Y	
QAL071A	Compliance	Barium	ug/L	13	5	Included as RL	13	20.0	39.0	26.6	7.78	5	8	0	3	3	0.05	Y	
QAL071A	Compliance	Calcium	mg/L	14	0	No NDs	14	11.0	94.9	52.4	29.50	8	6	0	3	4	0.05	Y*	Non-unique RL in data
QAL071A	Compliance	Chloride	mg/L	24	0	No NDs	24	5.9	27.0	17.1	6.21	13	11	0	4	8	0.05	Y*	Non-unique RL in data
QAL071A	Compliance	Copper	ug/L	24	8	Included as RL	24	5.0	28.6	10.3	6.21	10	14	0	4	8	0.05	Y	
QAL071A	Compliance	Magnesium	mg/L	14	0	No NDs	14	1.4	15.0	7.7	4.58	8	6	0	3	4	0.05	Y*	Non-unique RL in data
QAL071A	Compliance	Nitrogen, Nitrate	mg/L	24	1	Included as RL	24	0.05	38.0	20.9	10.02	14	10	0	5	8	0.05	Y*	Non-unique RL in data (NDs included as RL)
QAL071A	Compliance	Potassium	mg/L	14	0	No NDs	14	0.70	1.8	1.3	0.43	8	6	0	4	4	0.05	Y	
QAL071A	Compliance	Sodium	mg/L	24	0	No NDs	24	8.7	19.9	14.6	3.10	13	11	0	7	8	0.05	Y*	Non-unique RL in data
QAL071A	Compliance	Strontium	ug/L	12	4	Included as RL	12	50.0	105	71.6	21.31	6	6	0	3	3	0.05	Y	
QAL071A	Compliance	Sulfate	mg/L	24	0	No NDs	24	5.7	12.6	8.2	1.93	10	14	0	8	8	0.05	Y*	Non-unique RL in data
QAL073A	Compliance	Alkalinity, Bicarbonate	mg/L	6	0	No NDs	6	42.4	100	68.6	23.55	3	3	0	2	2	0.10	Y	
QAL073A	Compliance	Calcium	mg/L	12	0	No NDs	12	5.6	34.0	23.2	9.34	7	5	0	3	3	0.05	Y*	Non-unique RL in data
QAL073A	Compliance	Chloride	mg/L	6	0	No NDs	6	2.1	8.7	4.9	2.90	2	4	0	2	2	0.25	Y	
QAL073A	Compliance	Iron	ug/L	6	1	Included as RL	6	20.0	103	73.0	34.58	4	2	0	2	2	0.25	Y	Non-unique RL in data (NDs included as RL)
QAL073A	Compliance	Magnesium	mg/L	12	0	No NDs	12	1.1	7.5	4.9	2.10	7	5	0	3	3	0.05	Y*	Non-unique RL in data
QAL073A	Compliance	Nitrogen, Nitrate	mg/L	6	0	No NDs	6	0.50	1.5	0.95	0.39	3	3	0	2	2	0.10	Y	Non-unique RL in data
QAL073A	Compliance	Sulfate	mg/L	6	0	No NDs	6	4.5	9.2	7.0	1.99	3	3	0	2	2	0.10	Y	
QAL074A	Compliance	Alkalinity, Bicarbonate	mg/L	24	0	No NDs	24	53.0	110	86.4	16.75	13	11	0	4	8	0.05	Y	
QAL074A	Compliance	Calcium	mg/L	11	0	No NDs	11	9.1	43.3	28.6	11.40	7	4	0	2	3	0.05	Y	Non-unique RL in data
QAL074A	Compliance	Chloride	mg/L	24	0	No NDs	24	28.4	66.4	49.1	9.32	10	14	0	7	8	0.05	Y	Non-unique RL in data
QAL074A	Compliance	Magnesium	mg/L	11	0	No NDs	11	1.7	8.3	5.6	2.30	7	4	0	2	3	0.05	Y	Non-unique RL in data
QAL074A	Compliance	Nitrogen, Nitrate	mg/L	24	0	No NDs	24	0.80	1.9	1.1	0.32	7	17	0	6	7	0.05	Y	Non-unique RL in data
QAL074A	Compliance	pH	SU	24	0	No NDs	24	7.7	8.7	8.3	0.20	13	11	0	3	8	0.05	Y	
QAL074A	Compliance	Potassium	mg/L	11	0	No NDs	11	0.59	1.7	1.2	0.40	6	5	0	2	3	0.05	Y	
QAL074A	Compliance	Sodium	mg/L	24	0	No NDs	24	9.7	27.8	21.4	5.36	14	10	0	3	8	0.05	Y*	Non-unique RL in data

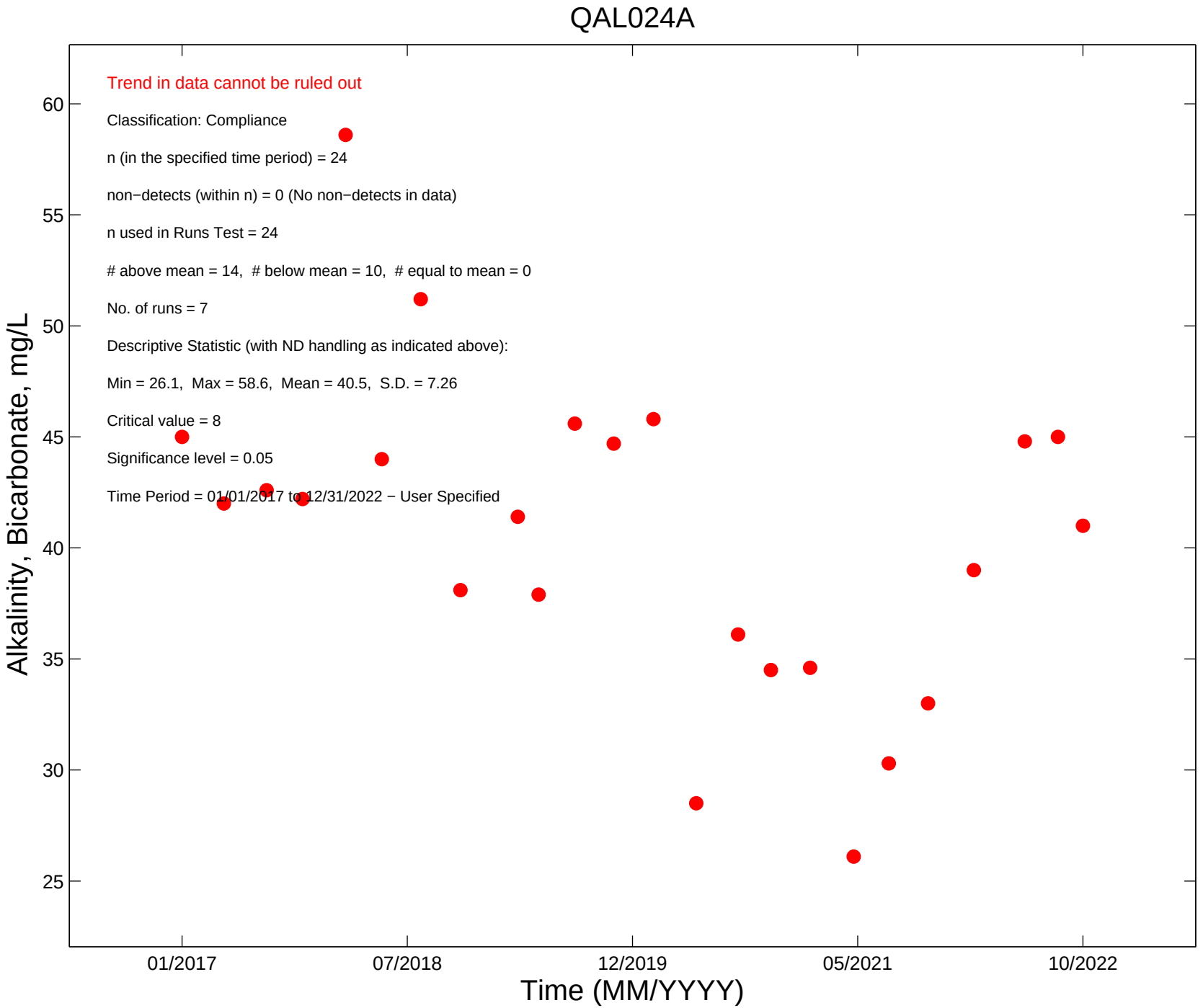
Mine Permit Groundwater Trend Analysis
Notes and Abbreviations Used in Statistical Summary Tables
Eagle Mine

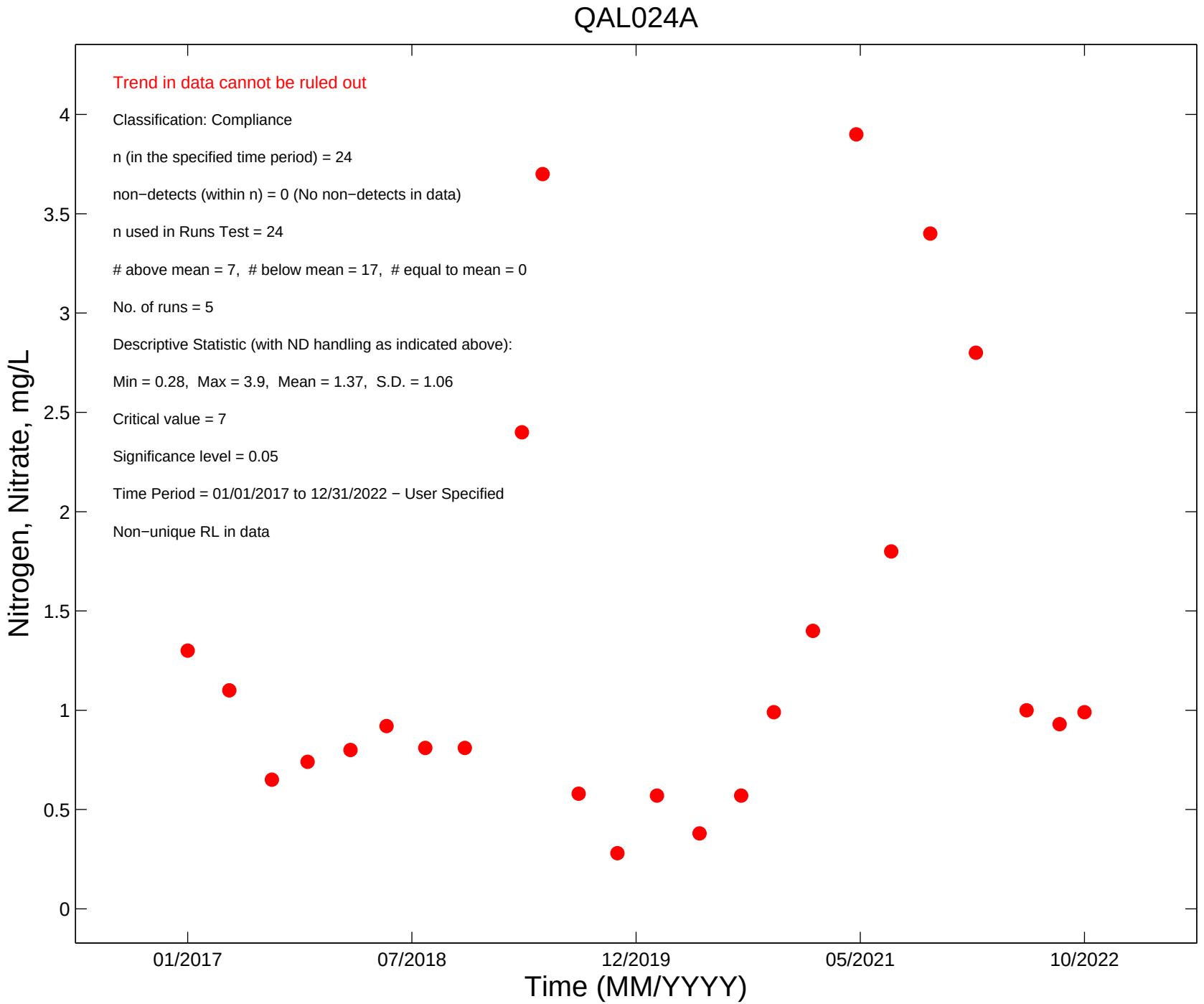
Abbreviation	Explanation
N	Null Hypothesis that the sequence was produced in a random manner cannot be rejected at the indicated significance level (i.e. a trend in data not indicated).
Y	Null Hypothesis that the sequence was produced in a random manner cannot be accepted at the indicated significance level (i.e. a trend in data cannot be ruled out).
Y*	In addition to a trend being identified, the parameter exceeded the limit at least two times in a row.
ND	Non detect (reported concentration was below the analytical reporting limit).
RL	Reporting limit.
TF	Too few observations to run the test.
TFA	Too few observations remaining after exclusion of values=mean.
TFPN	Too few + or - values in the logic series (n1 or n2 = 1).

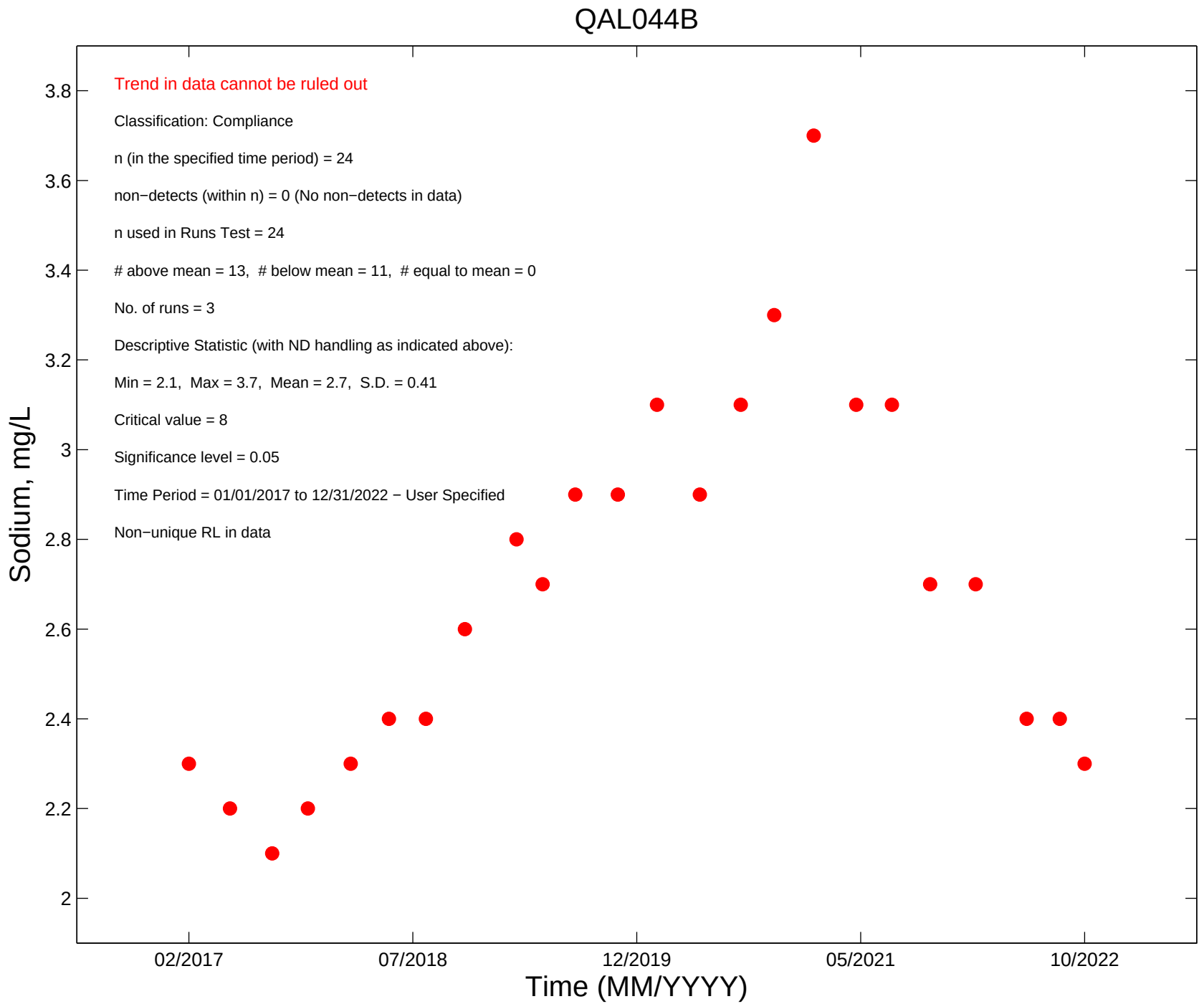
Notes:

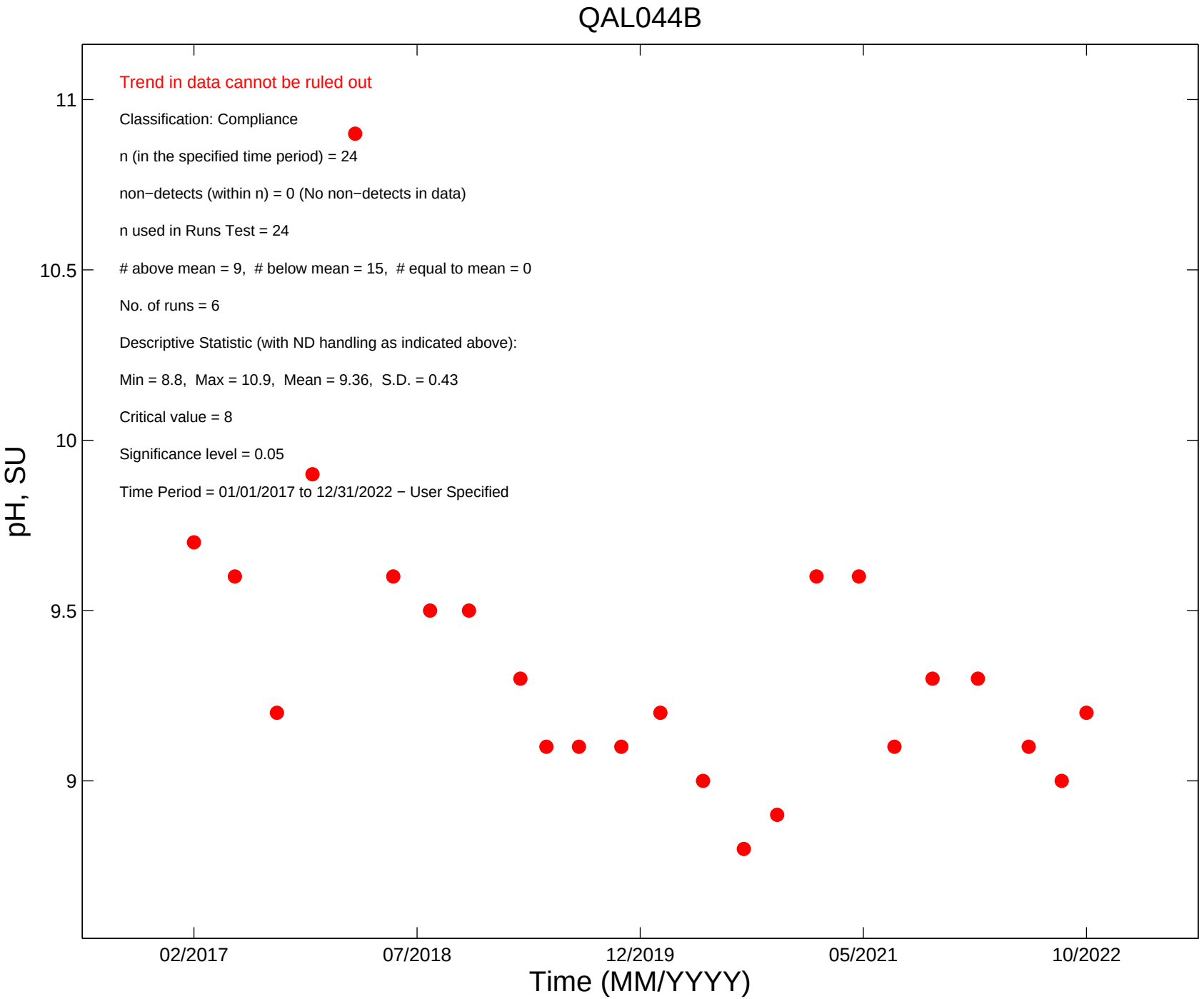
Trend analysis period is baseline (March 2011) through Q4 2022 for parameters sampled annually and Q1 2017 through Q4 2022 for parameters sampled quarterly.
Charts are included for compliance locations with trends that also had two exceedances in a row in 2022.

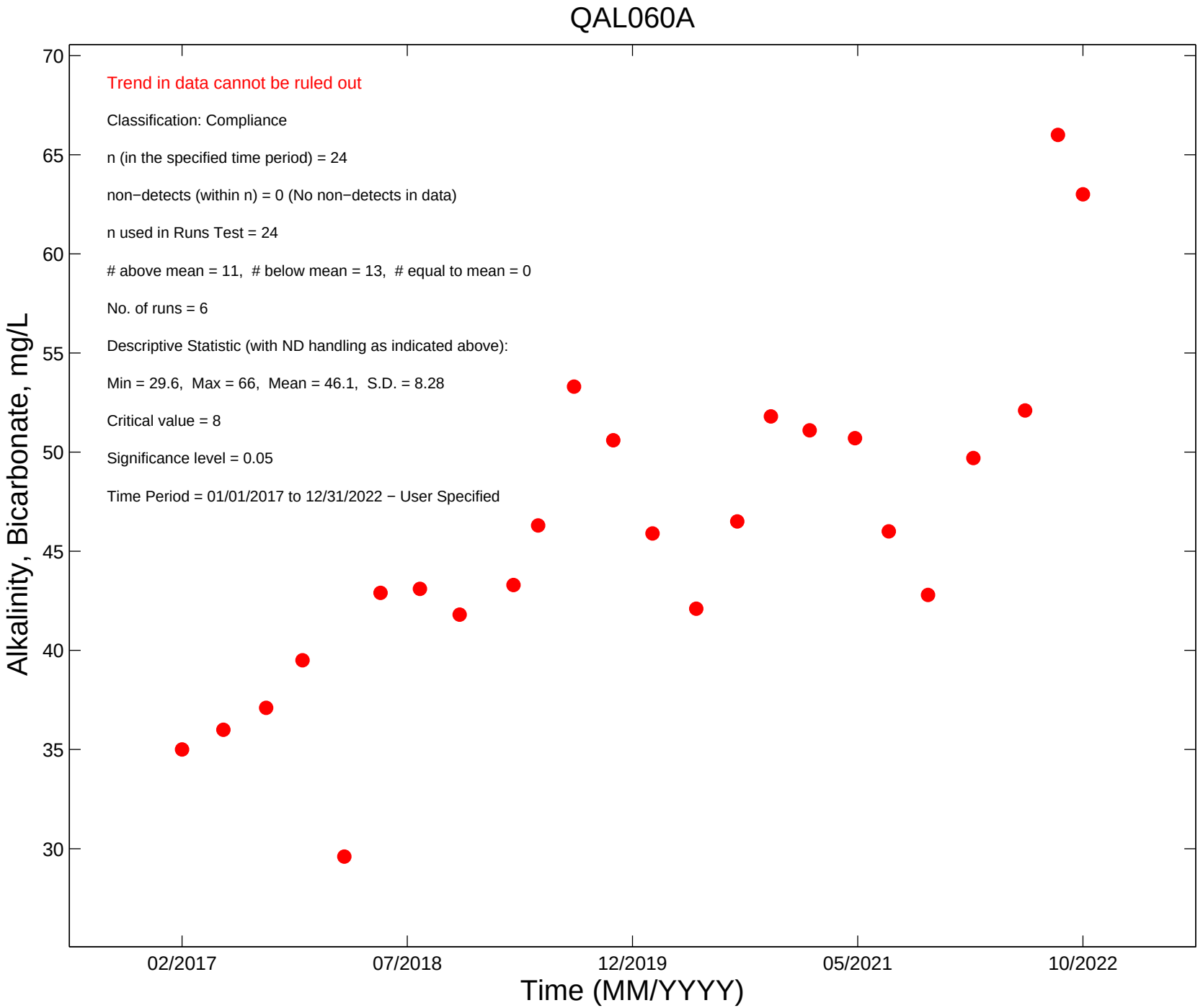
Trends rejected if they appear to be an artifact of non-detect values and/or inconsistent RLs.

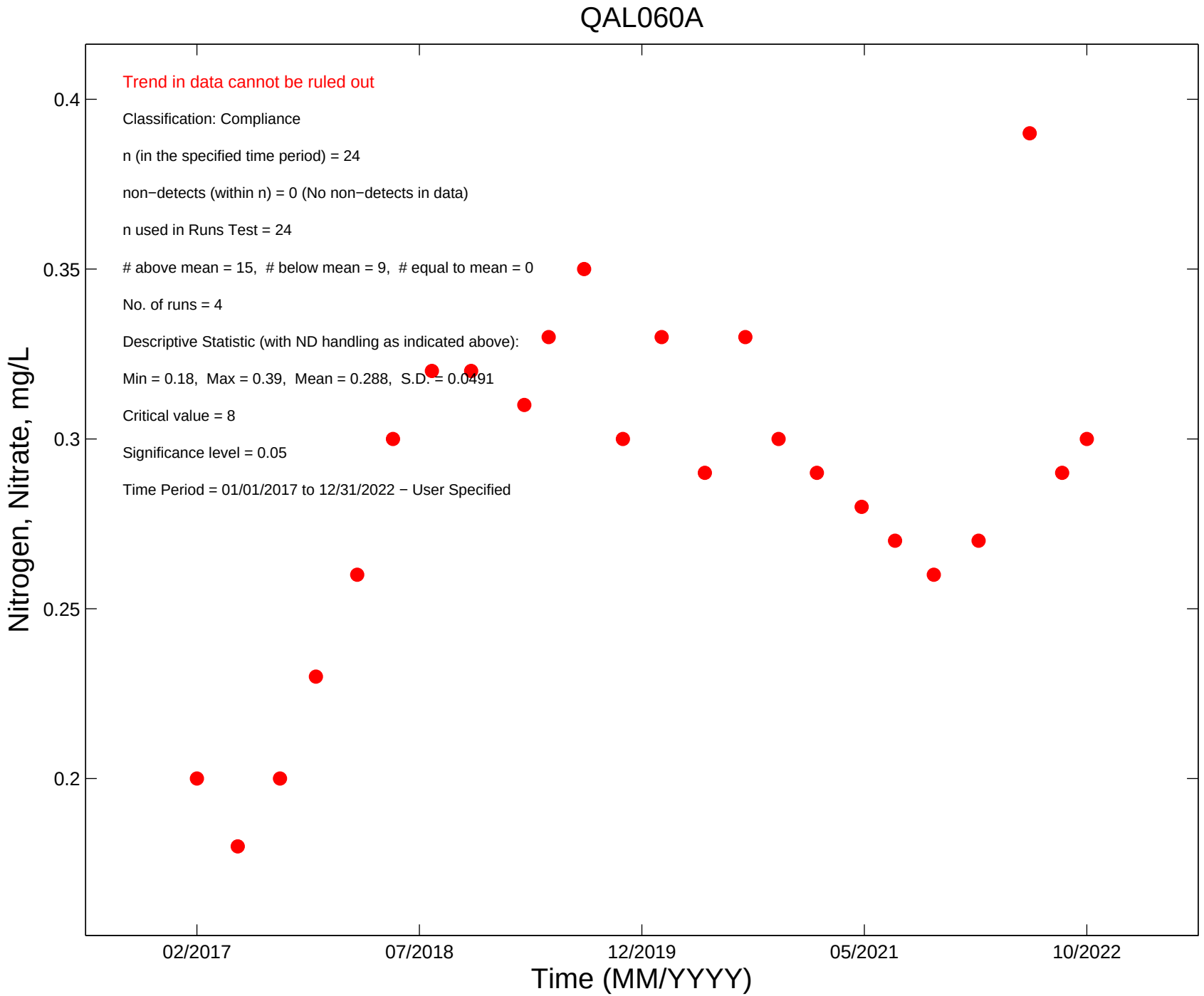

QAL024A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 14, # below mean = 10, # equal to mean = 0
No. of runs = 7
Descriptive Statistic (with ND handling as indicated above):
Min = 26.1, Max = 58.6, Mean = 40.5, S.D. = 7.26
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Alkalinity, Bicarbonate, mg/L
60
55
50
45
40
35
30
25
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

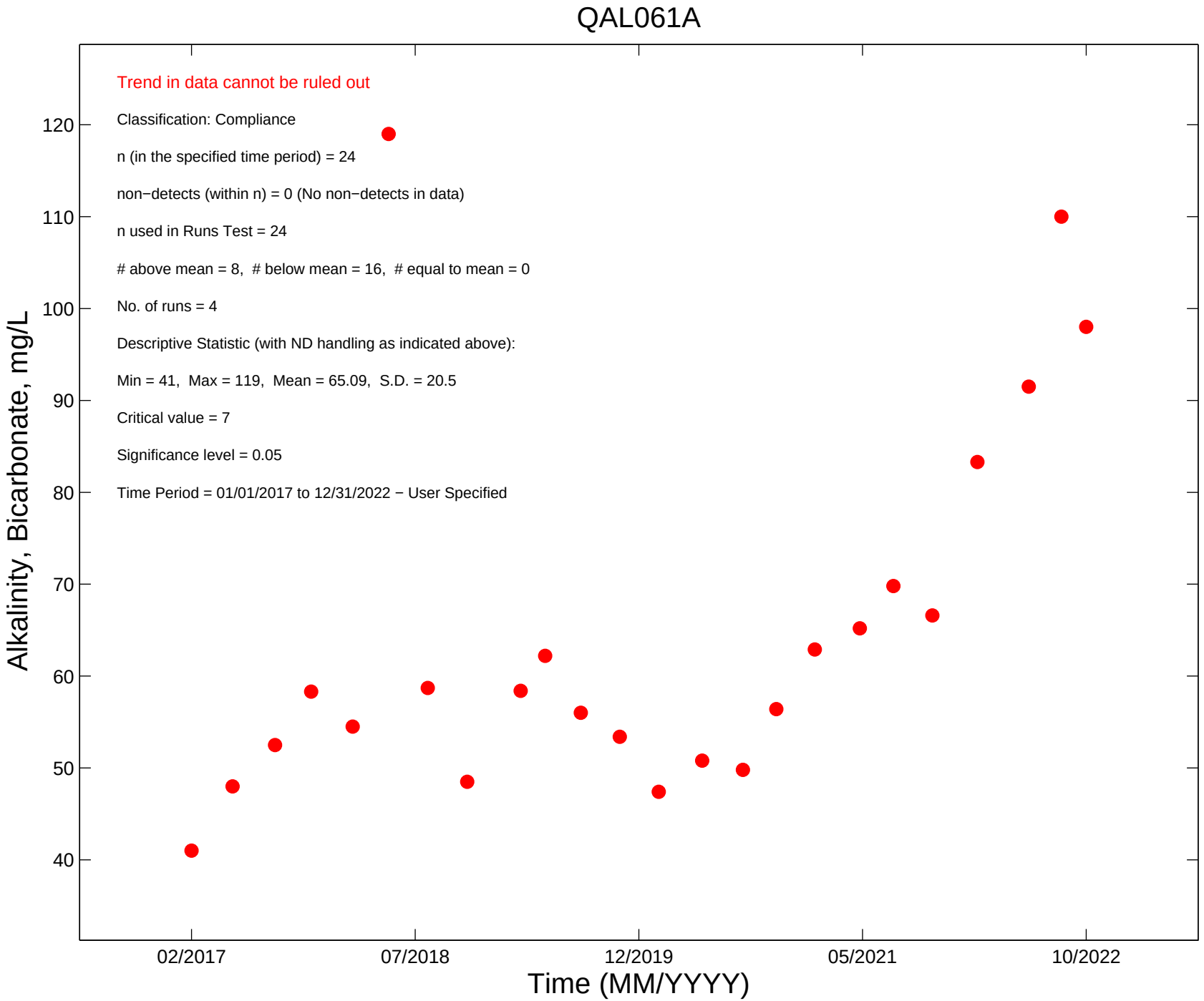

QAL024A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 7, # below mean = 17, # equal to mean = 0
No. of runs = 5
Descriptive Statistic (with ND handling as indicated above):
Min = 0.28, Max = 3.9, Mean = 1.37, S.D. = 1.06
Critical value = 7
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Nitrogen, Nitrate, mg/L
0
0.5
1
1.5
2
2.5
3
3.5
4
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

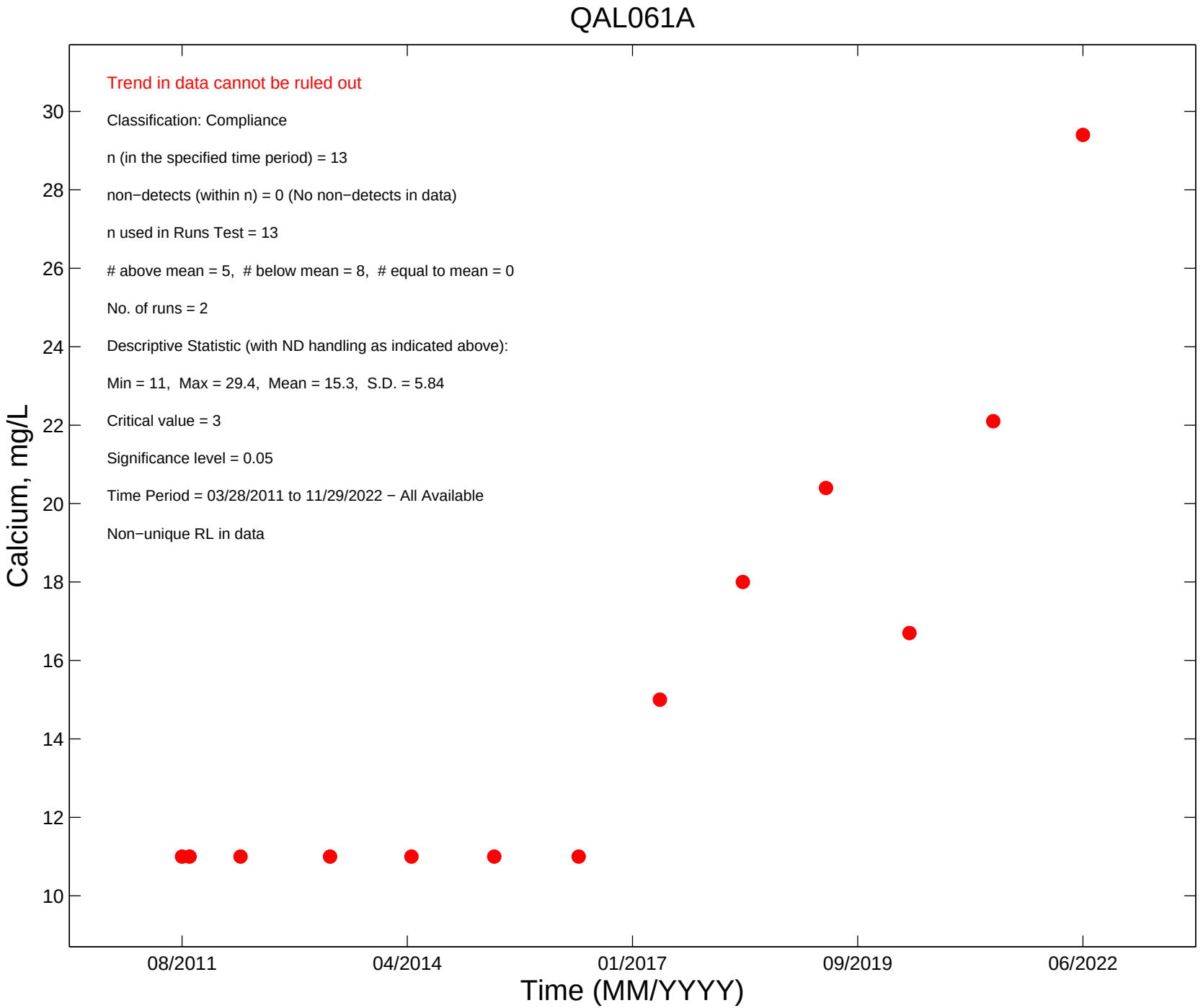

QAL044B
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 13, # below mean = 11, # equal to mean = 0
No. of runs = 3
Descriptive Statistic (with ND handling as indicated above):
Min = 2.1, Max = 3.7, Mean = 2.7, S.D. = 0.41
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Sodium, mg/L
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

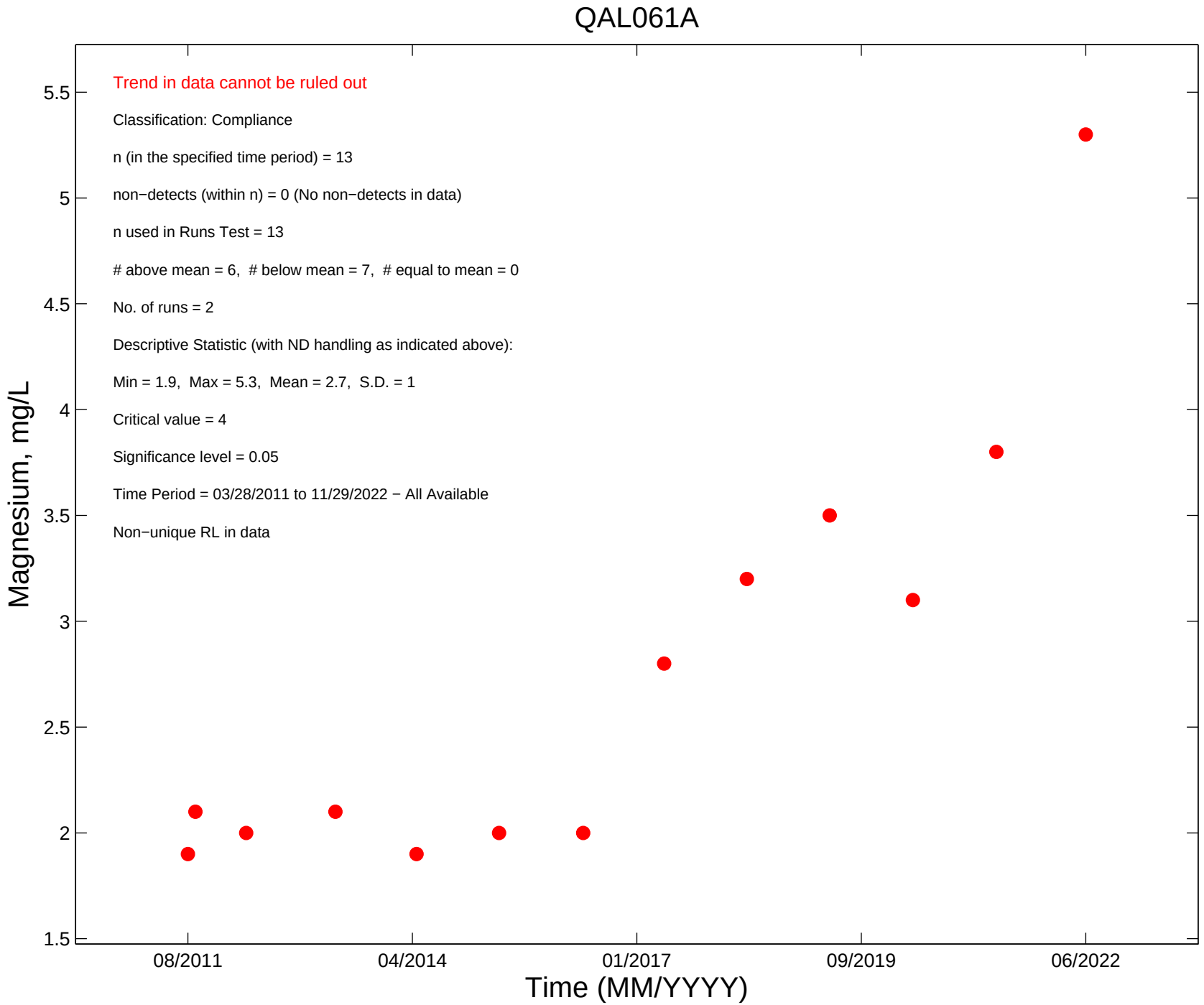

QAL044B
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 9, # below mean = 15, # equal to mean = 0
No. of runs = 6
Descriptive Statistic (with ND handling as indicated above):
Min = 8.8, Max = 10.9, Mean = 9.36, S.D. = 0.43
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
11
10.5
10
9.5
9
pH, SU
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

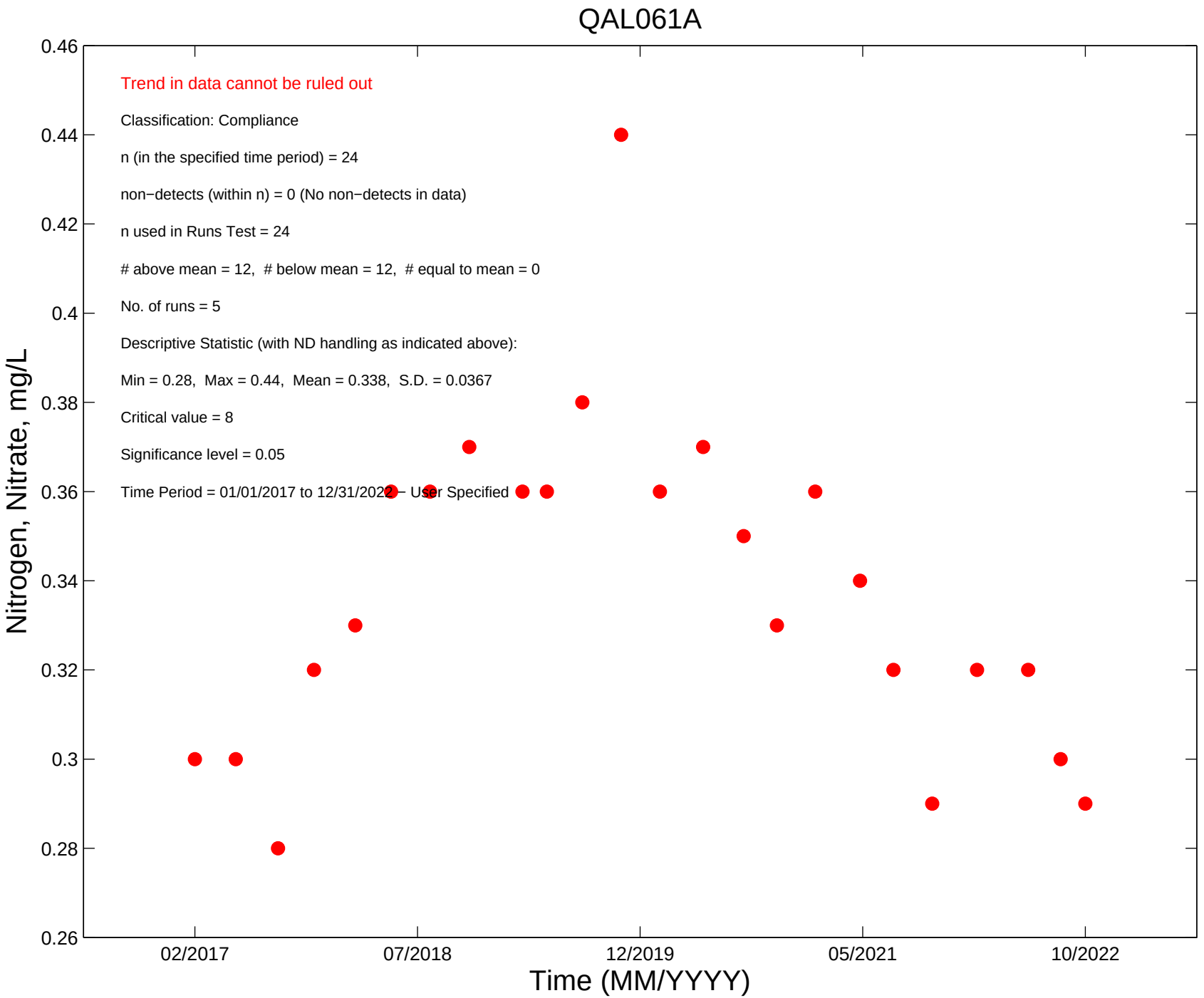

QAL060A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 11, # below mean = 13, # equal to mean = 0
No. of runs = 6
Descriptive Statistic (with ND handling as indicated above):
Min = 29.6, Max = 66, Mean = 46.1, S.D. = 8.28
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Alkalinity, Bicarbonate, mg/L
70
65
60
55
50
45
40
35
30
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

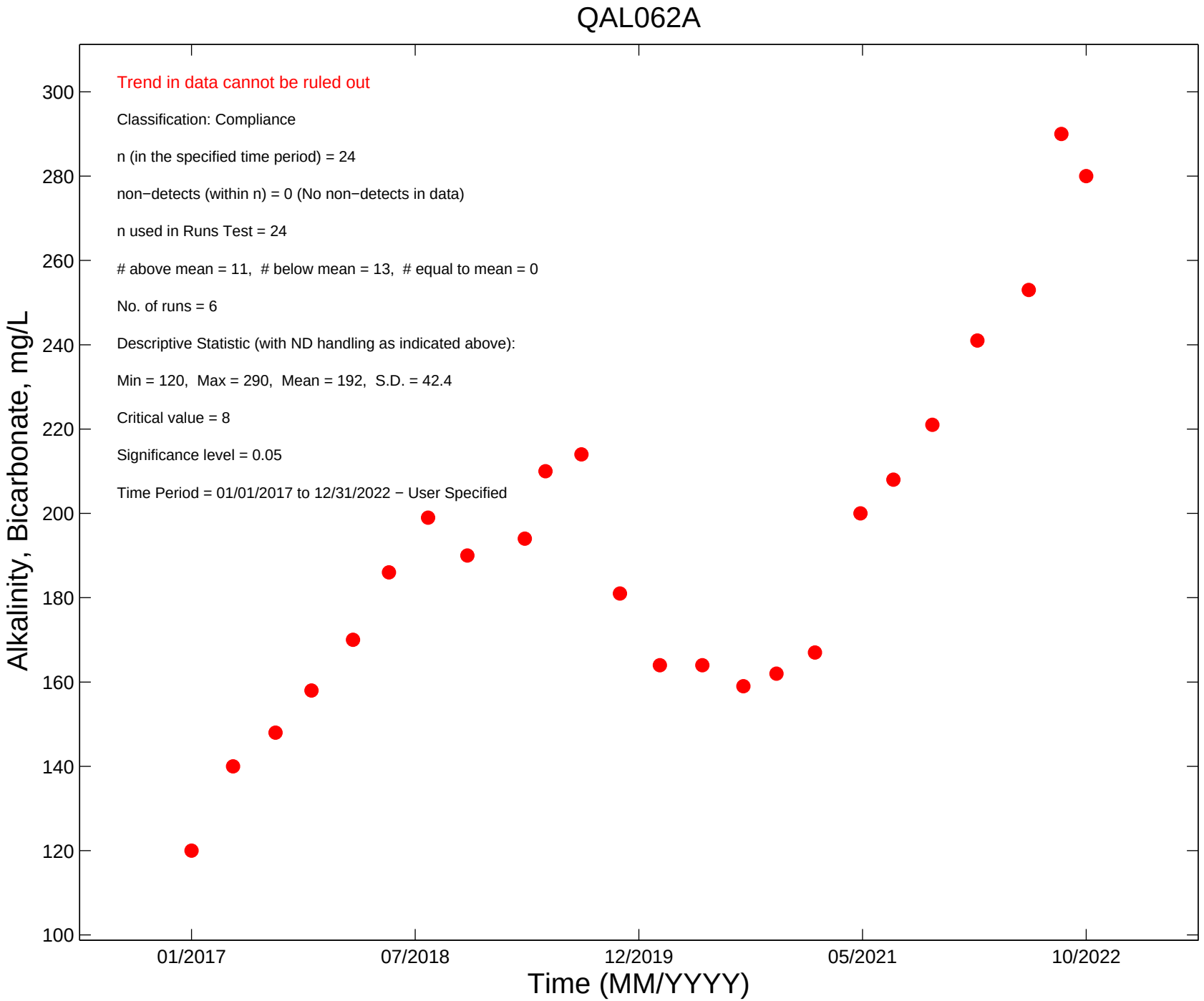

QAL060A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 15, # below mean = 9, # equal to mean = 0
No. of runs = 4
Descriptive Statistic (with ND handling as indicated above):
Min = 0.18, Max = 0.39, Mean = 0.288, S.D. = 0.0491
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Nitrogen, Nitrate, mg/L
0.4
0.35
0.3
0.25
0.2
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

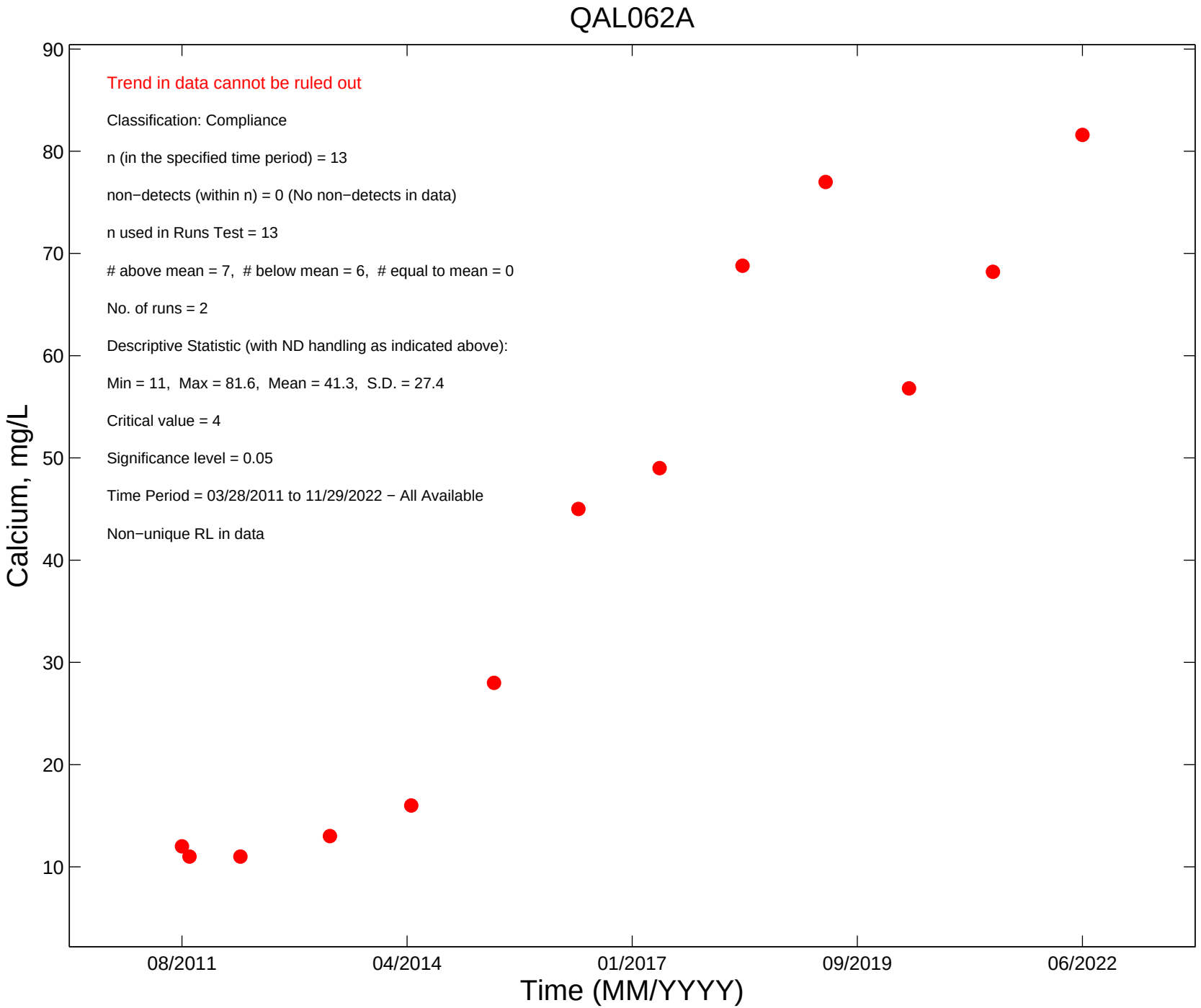

QAL061A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 8, # below mean = 16, # equal to mean = 0
No. of runs = 4
Descriptive Statistic (with ND handling as indicated above):
Min = 41, Max = 119, Mean = 65.09, S.D. = 20.5
Critical value = 7
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Alkalinity, Bicarbonate, mg/L
120
110
100
90
80
70
60
50
40
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

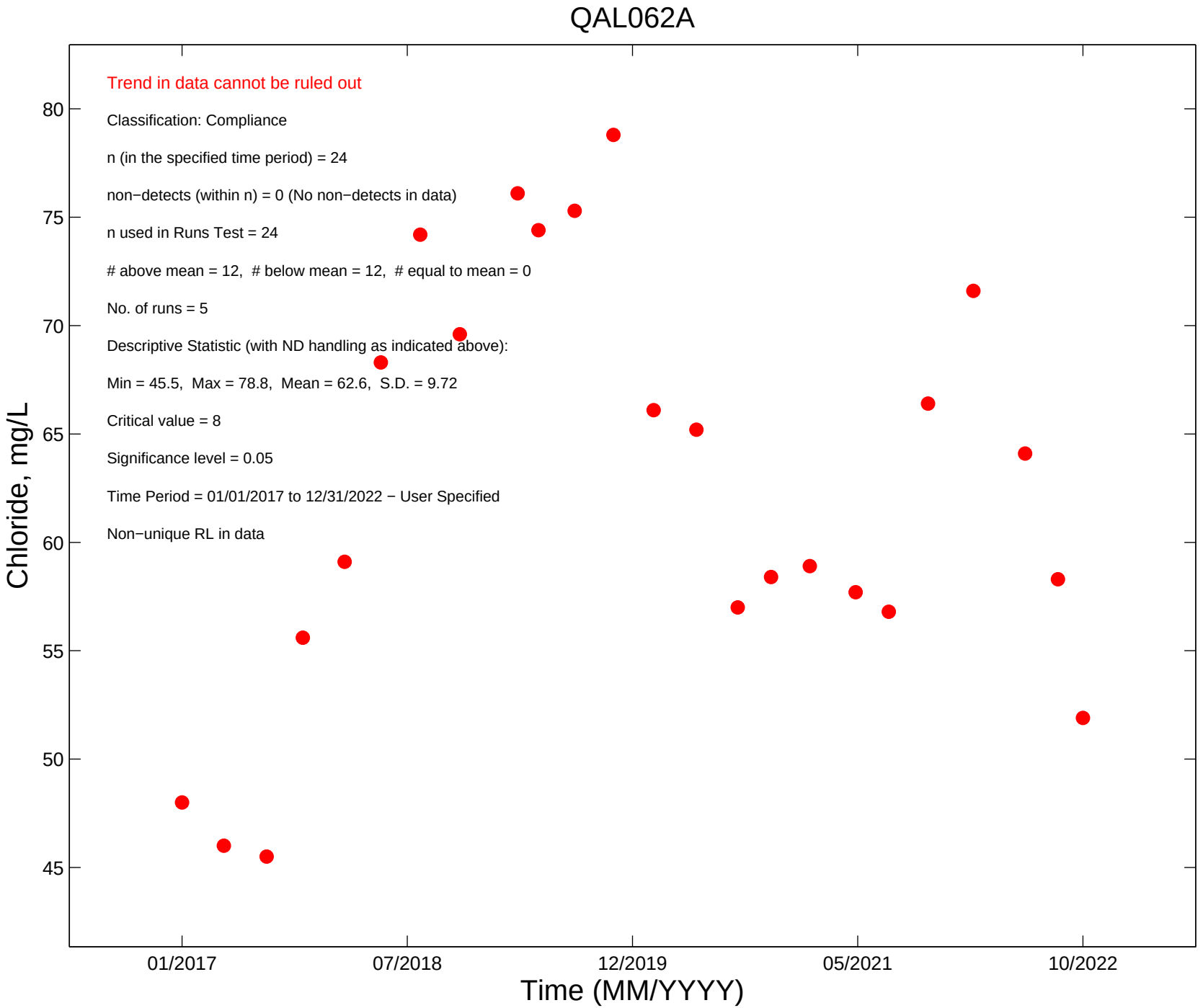

QAL061A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 13
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 13
above mean = 5, # below mean = 8, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 11, Max = 29.4, Mean = 15.3, S.D. = 5.84
Critical value = 3
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Calcium, mg/L
30
28
26
24
22
20
18
16
14
12
10
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

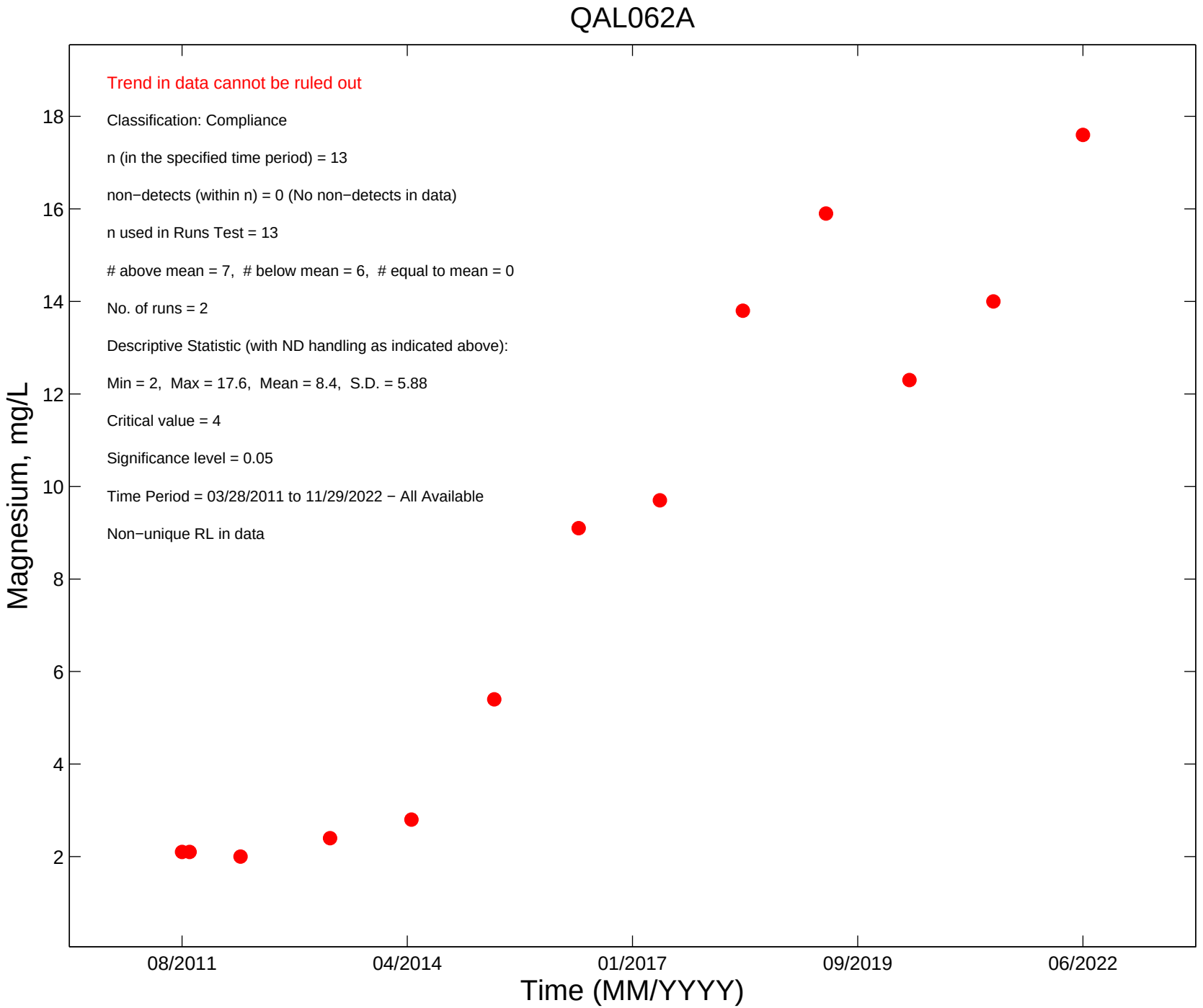

QAL061A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 13
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 13
above mean = 6, # below mean = 7, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 1.9, Max = 5.3, Mean = 2.7, S.D. = 1
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Magnesium, mg/L
5.5
5
4.5
4
3.5
3
2.5
2
1.5
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

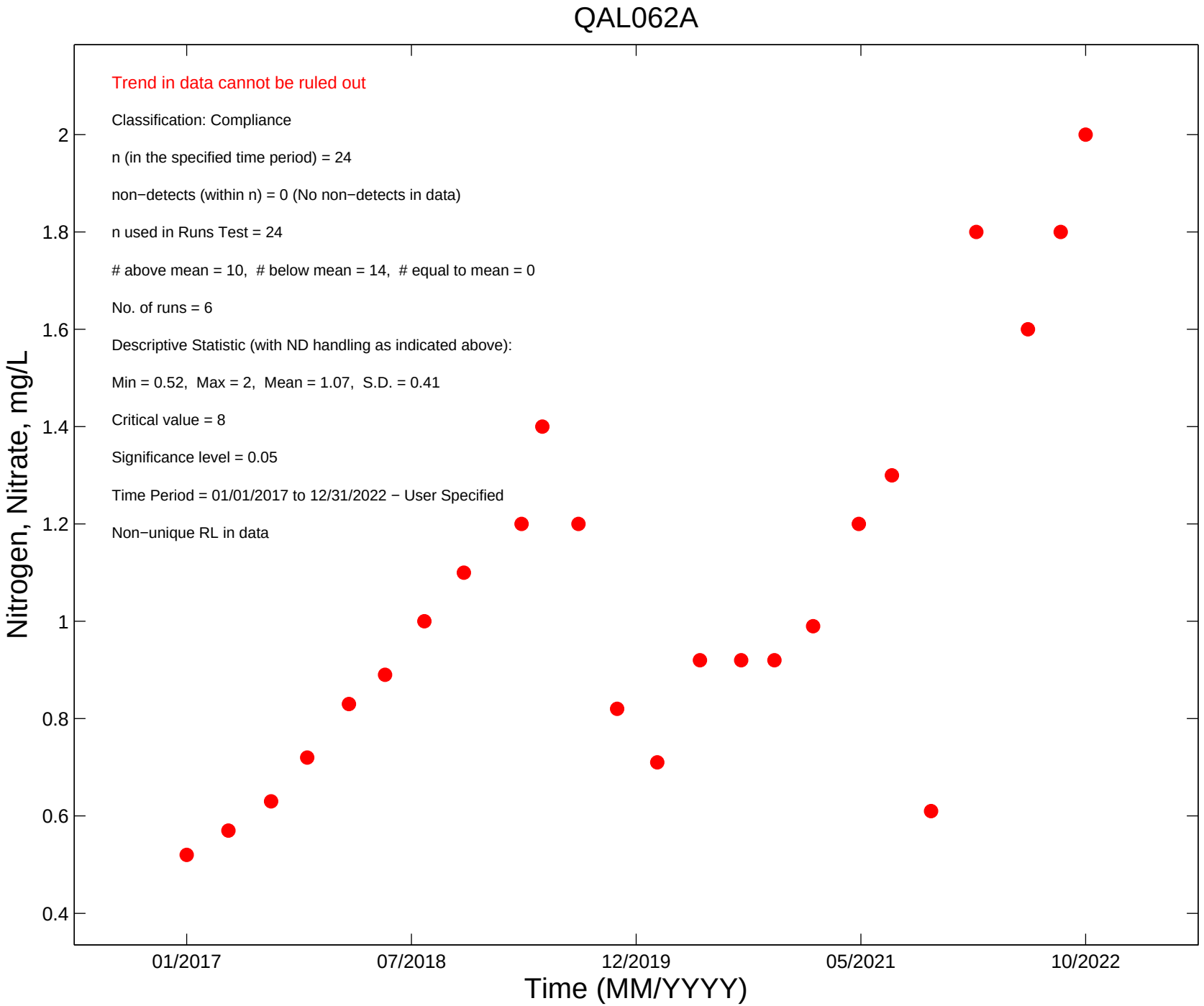

QAL061A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 12, # below mean = 12, # equal to mean = 0
No. of runs = 5
Descriptive Statistic (with ND handling as indicated above):
Min = 0.28, Max = 0.44, Mean = 0.338, S.D. = 0.0367
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022− User Specified
Nitrogen, Nitrate, mg/L
0.46
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
0.26
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

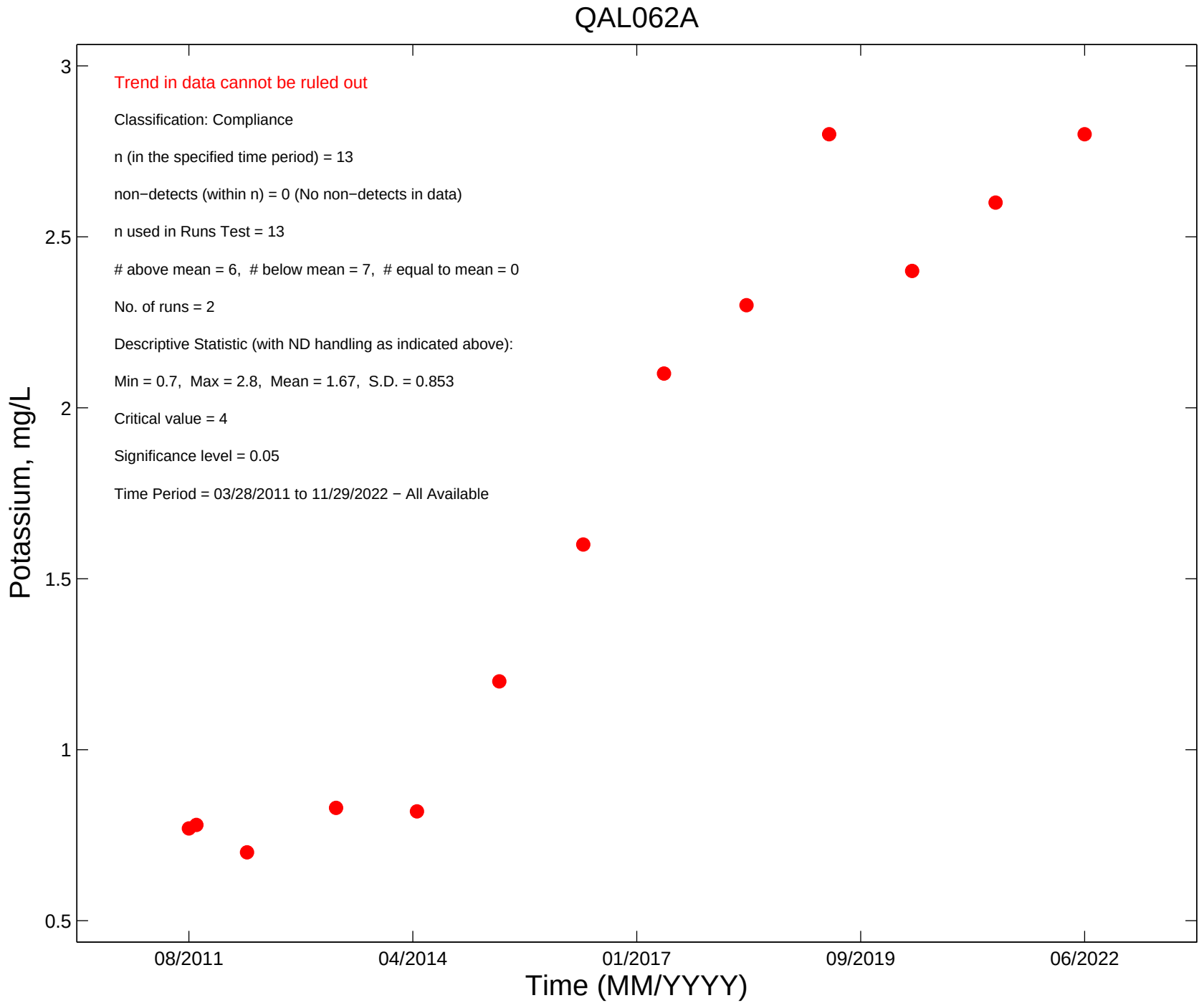

QAL062A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 11, # below mean = 13, # equal to mean = 0
No. of runs = 6
Descriptive Statistic (with ND handling as indicated above):
Min = 120, Max = 290, Mean = 192, S.D. = 42.4
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Alkalinity, Bicarbonate, mg/L
300
280
260
240
220
200
180
160
140
120
100
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

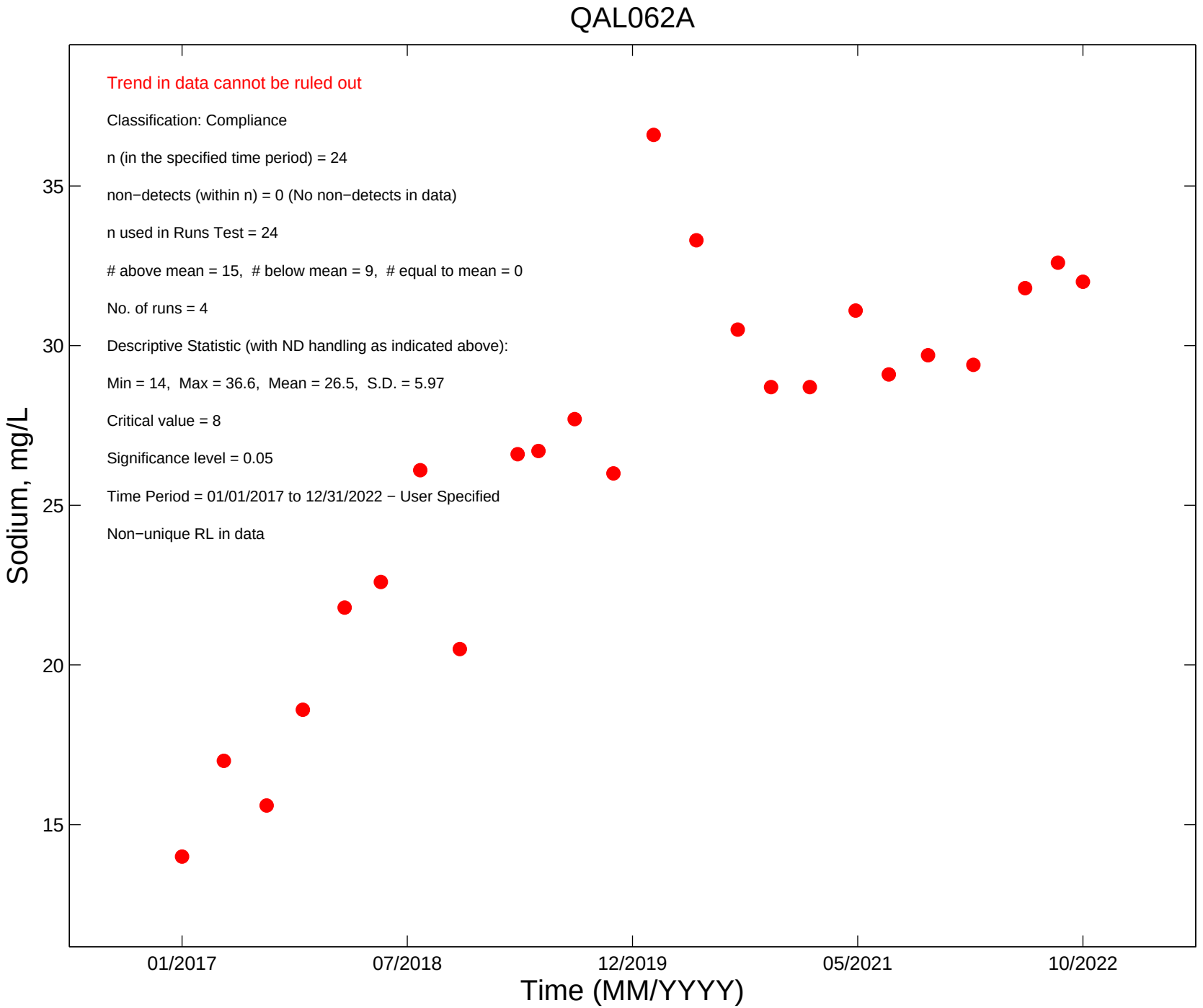

QAL062A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 13
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 13
above mean = 7, # below mean = 6, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 11, Max = 81.6, Mean = 41.3, S.D. = 27.4
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Calcium, mg/L
90
80
70
60
50
40
30
20
10
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

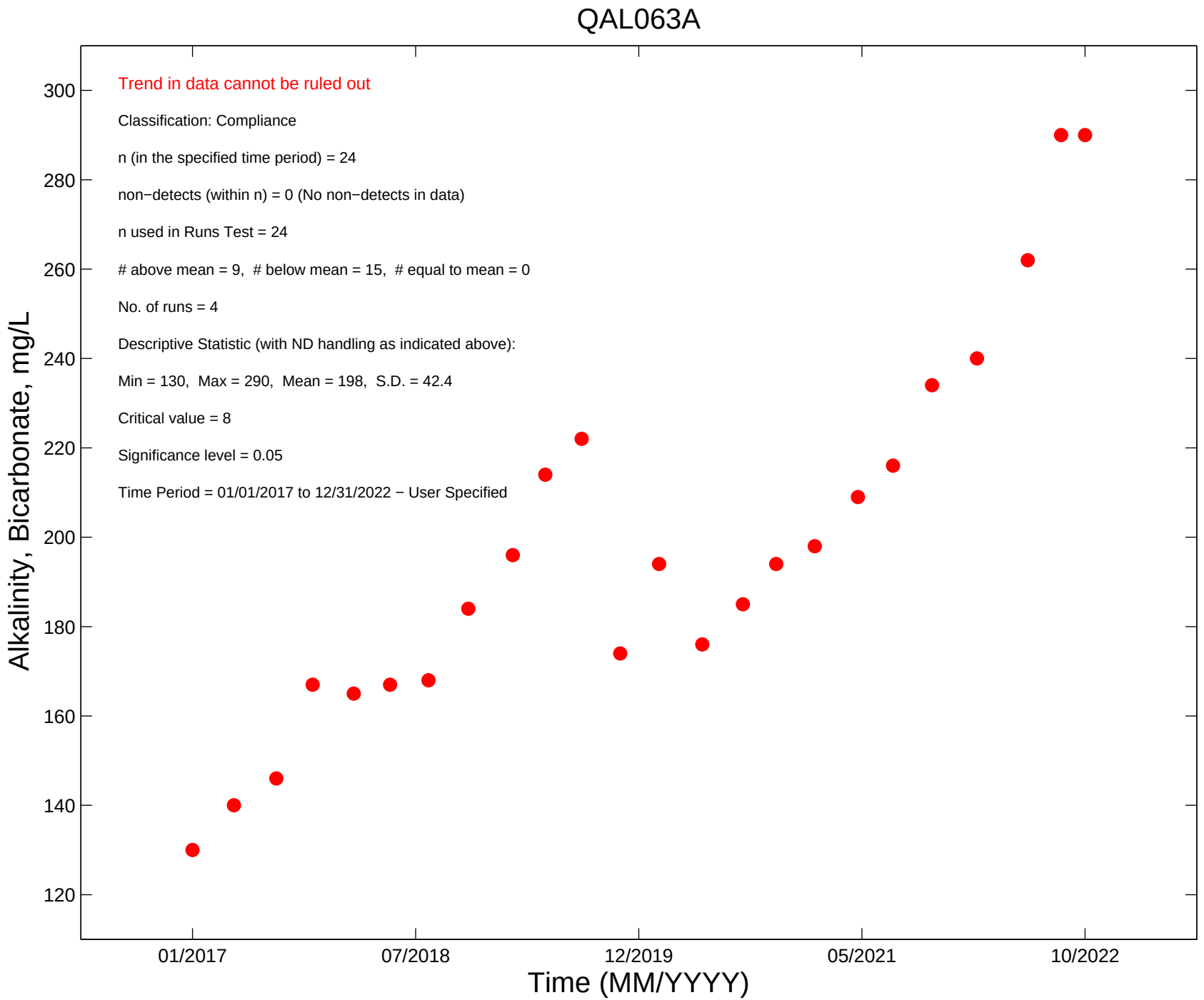

QAL062A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 12, # below mean = 12, # equal to mean = 0
No. of runs = 5
Descriptive Statistic (with ND handling as indicated above):
Min = 45.5, Max = 78.8, Mean = 62.6, S.D. = 9.72
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Chloride, mg/L
80
75
70
65
60
55
50
45
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

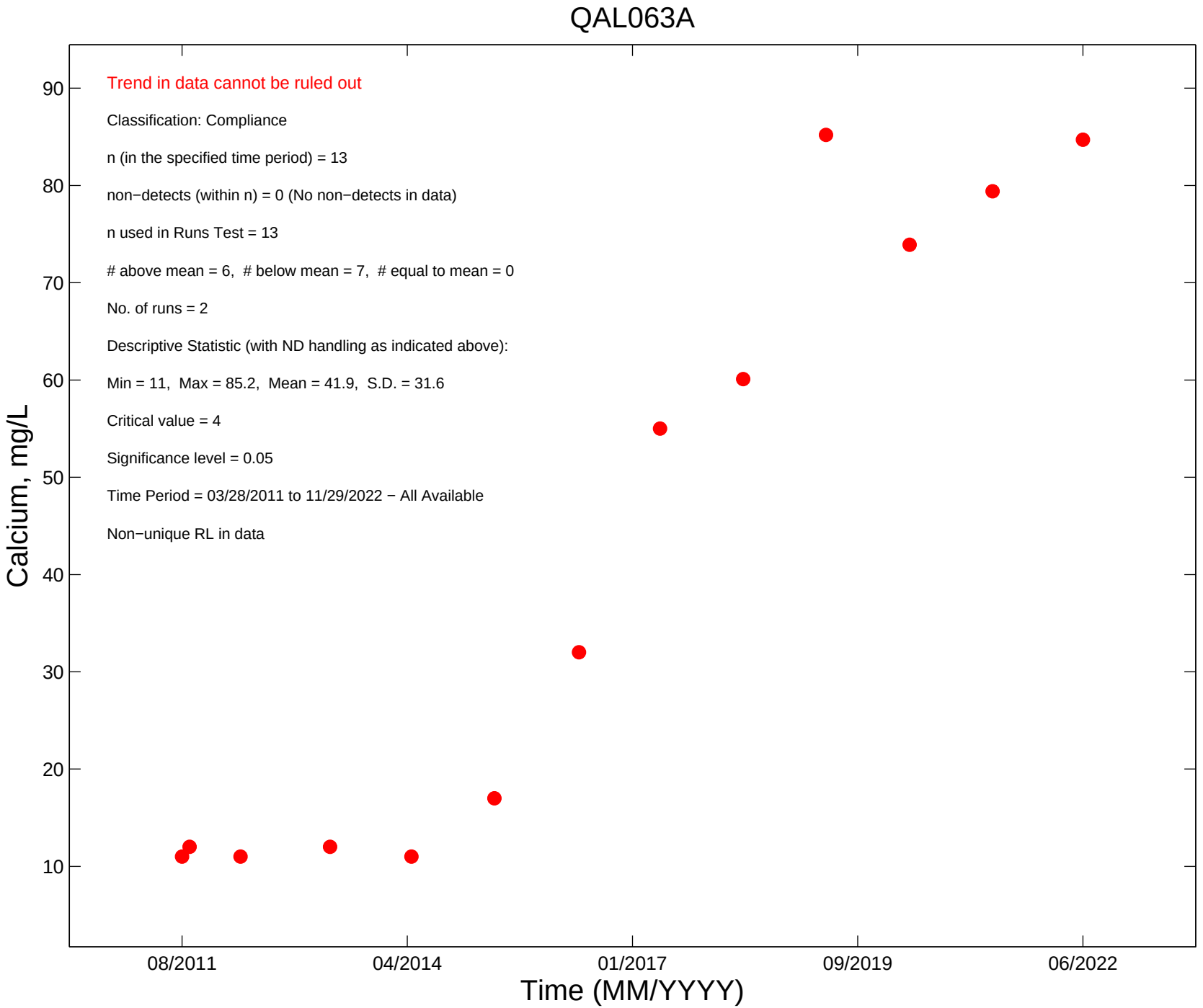

QAL062A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 13
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 13
above mean = 7, # below mean = 6, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 2, Max = 17.6, Mean = 8.4, S.D. = 5.88
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Magnesium, mg/L
18
16
14
12
10
8
6
4
2
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

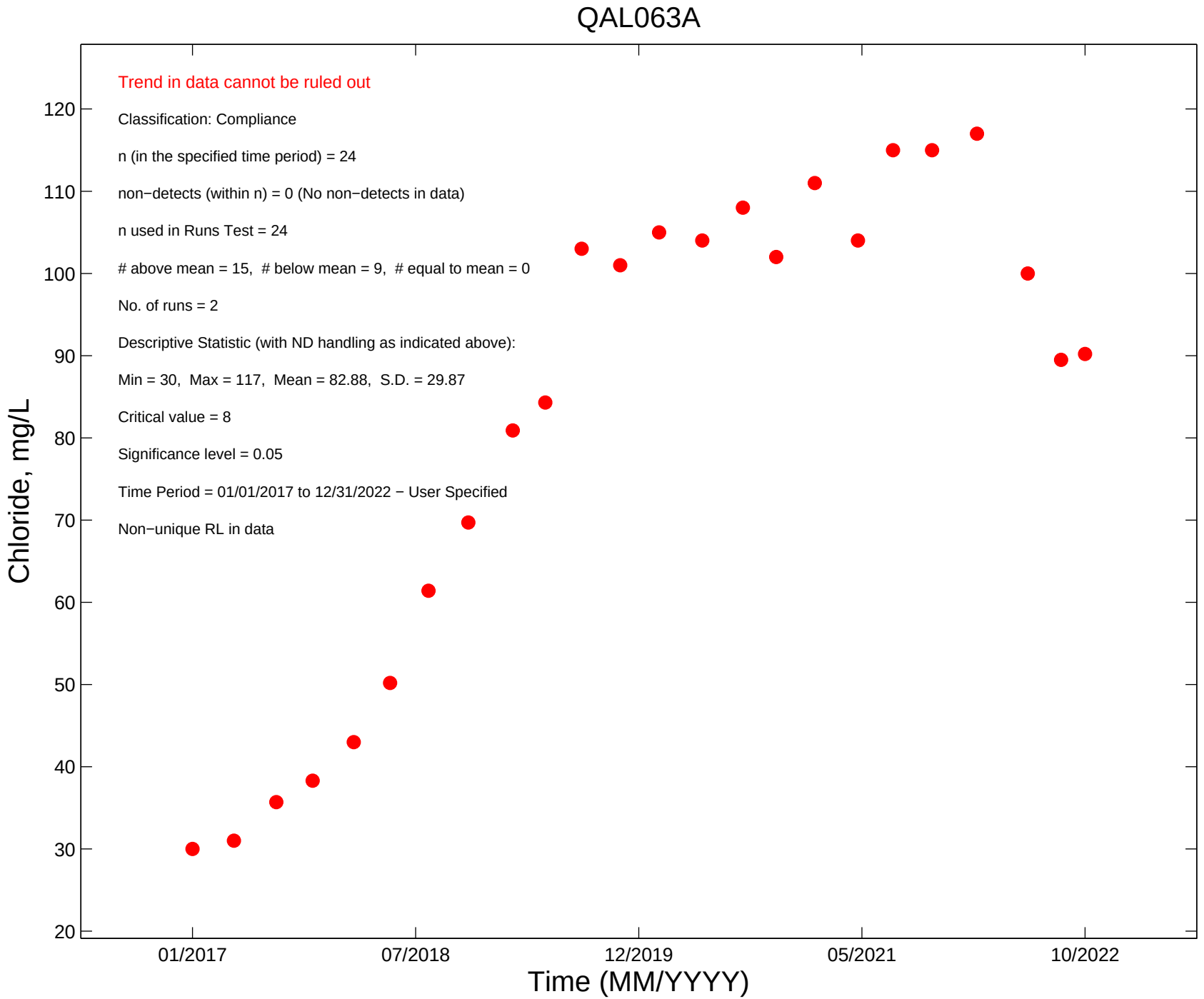

QAL062A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 10, # below mean = 14, # equal to mean = 0
No. of runs = 6
Descriptive Statistic (with ND handling as indicated above):
Min = 0.52, Max = 2, Mean = 1.07, S.D. = 0.41
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Nitrogen, Nitrate, mg/L
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

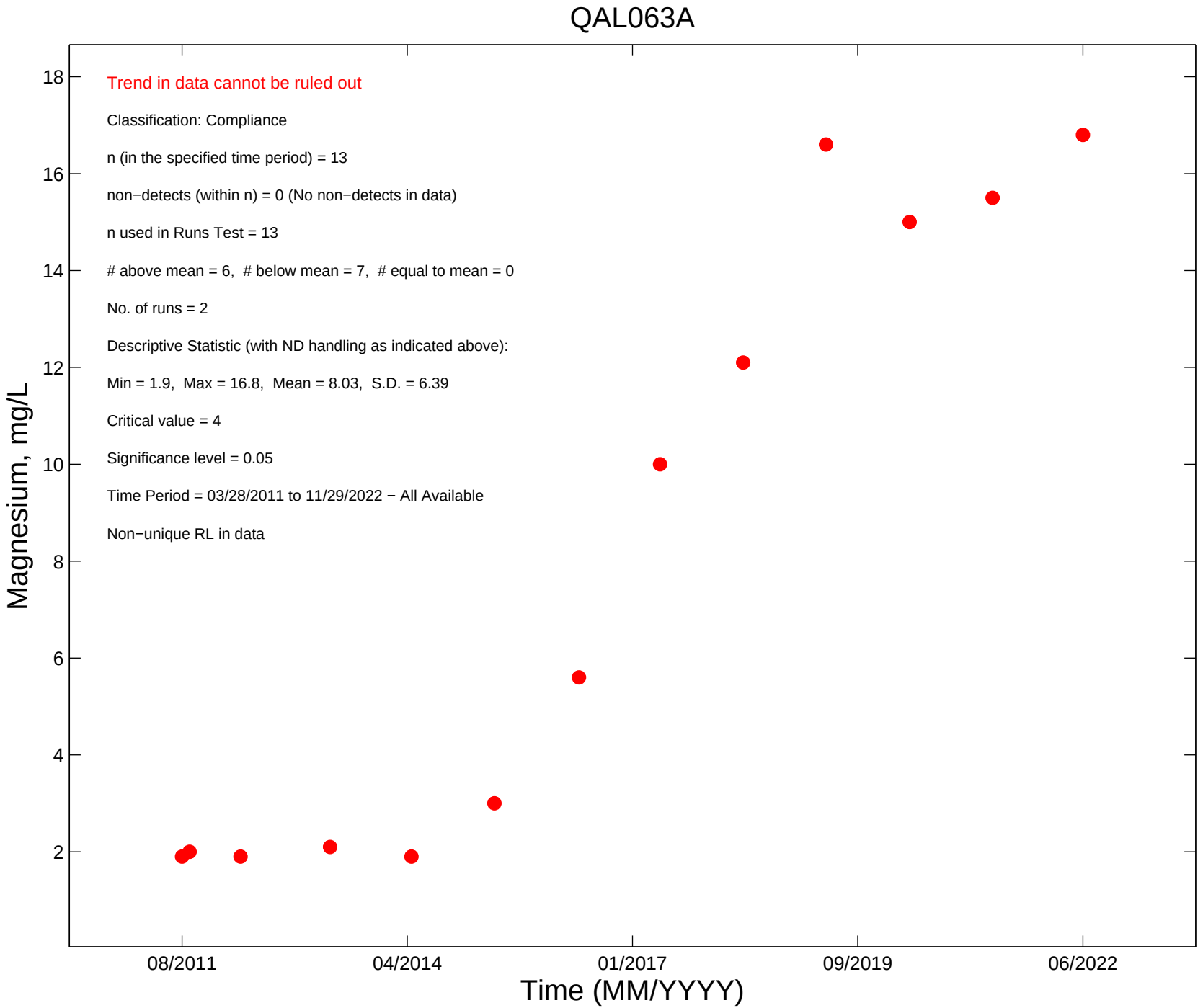

QAL062A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 13
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 13
above mean = 6, # below mean = 7, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 0.7, Max = 2.8, Mean = 1.67, S.D. = 0.853
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Potassium, mg/L
3
2.5
2
1.5
1
0.5
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

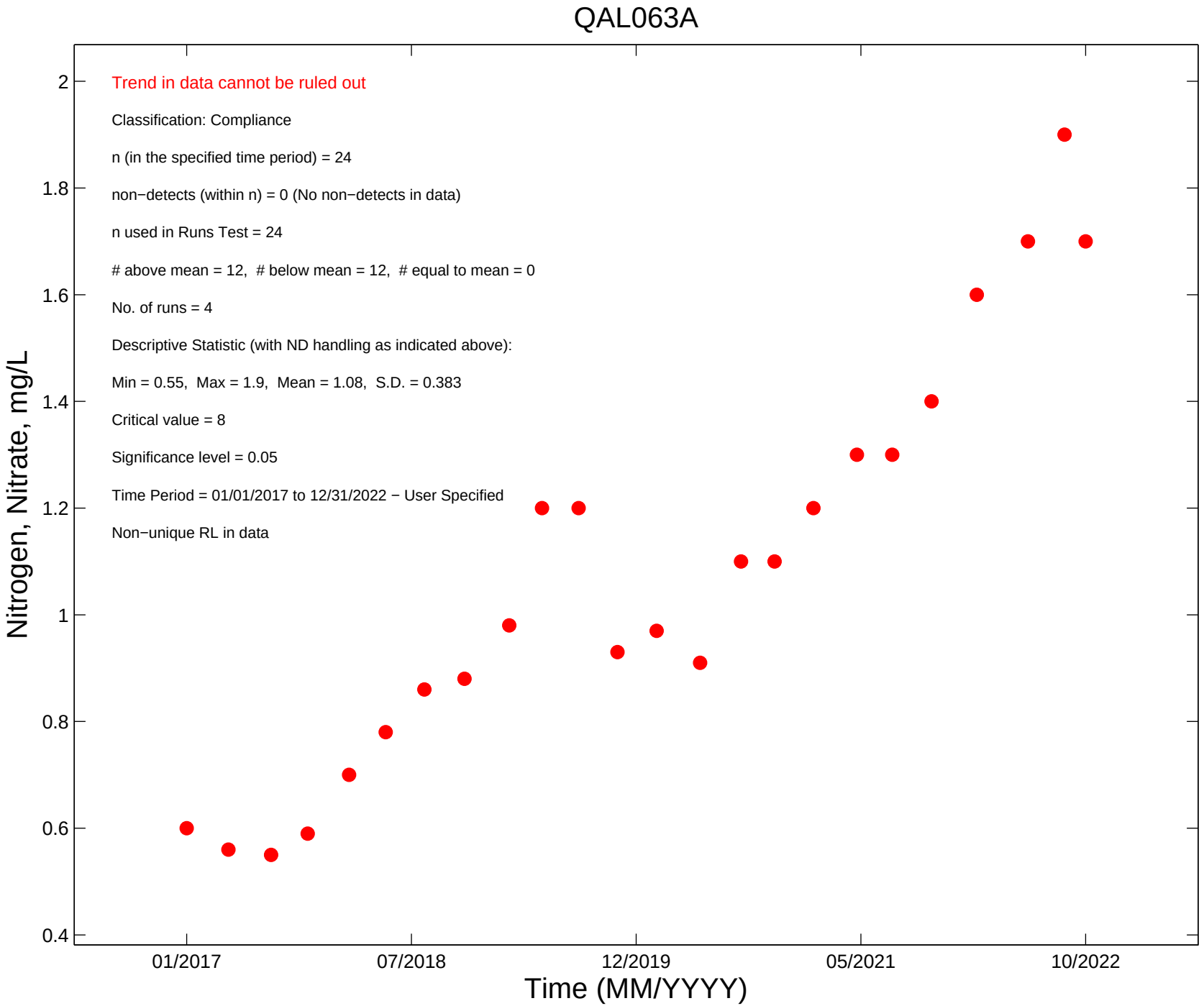

QAL062A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 15, # below mean = 9, # equal to mean = 0
No. of runs = 4
Descriptive Statistic (with ND handling as indicated above):
Min = 14, Max = 36.6, Mean = 26.5, S.D. = 5.97
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Sodium, mg/L
35
30
25
20
15
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

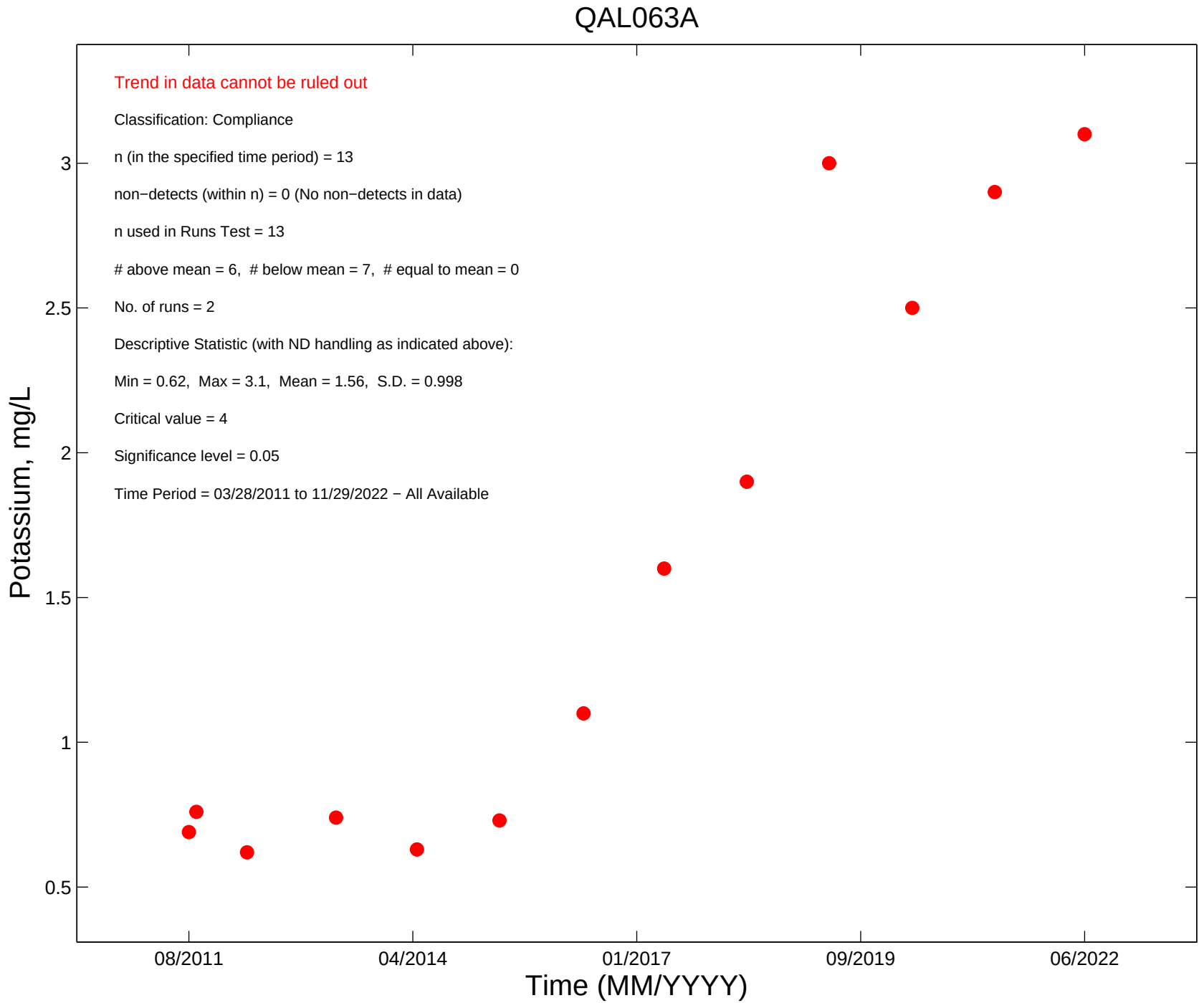

QAL063A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 9, # below mean = 15, # equal to mean = 0
No. of runs = 4
Descriptive Statistic (with ND handling as indicated above):
Min = 130, Max = 290, Mean = 198, S.D. = 42.4
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Alkalinity, Bicarbonate, mg/L
300
280
260
240
220
200
180
160
140
120
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

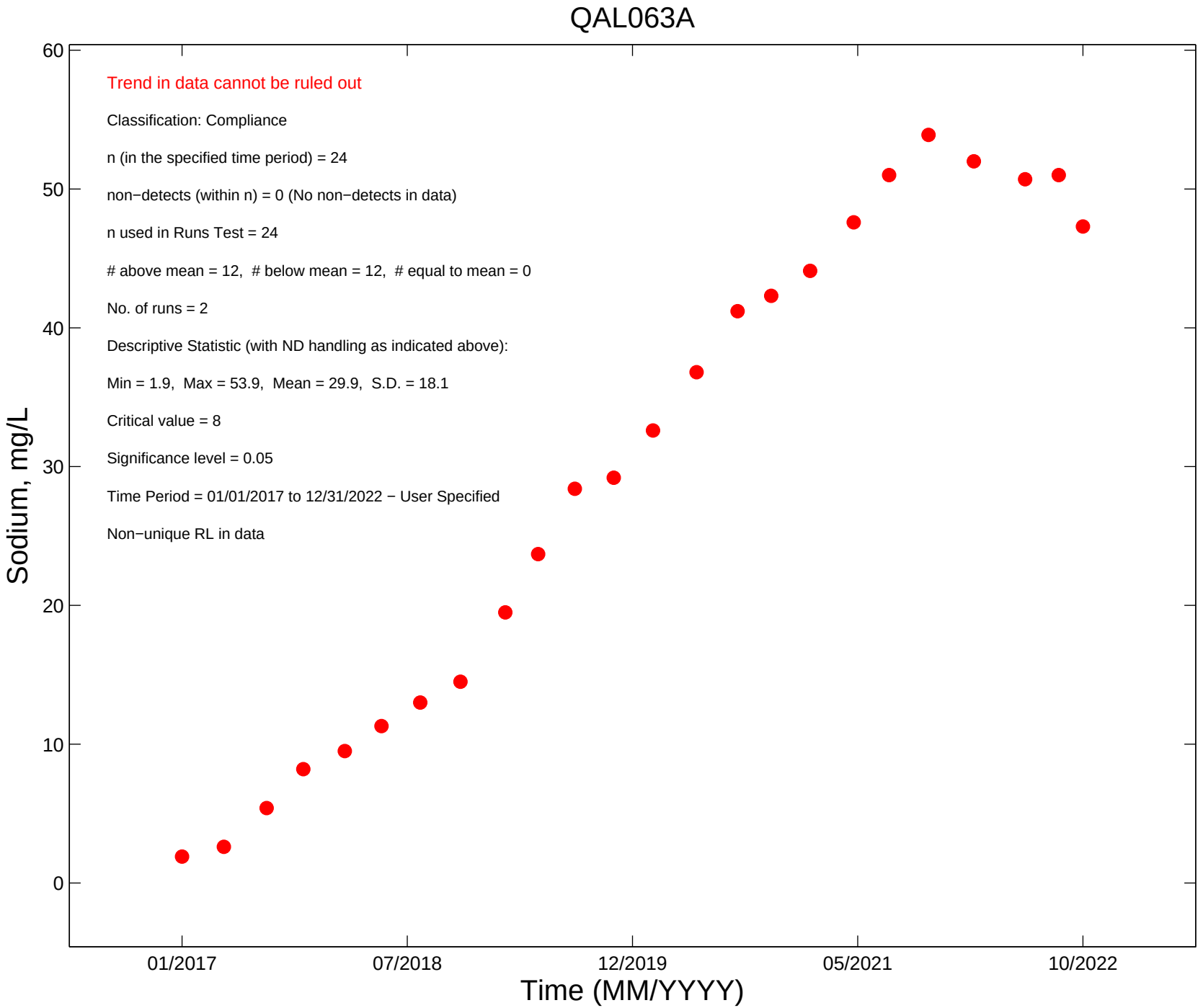

QAL063A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 13
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 13
above mean = 6, # below mean = 7, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 11, Max = 85.2, Mean = 41.9, S.D. = 31.6
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Calcium, mg/L
90
80
70
60
50
40
30
20
10
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

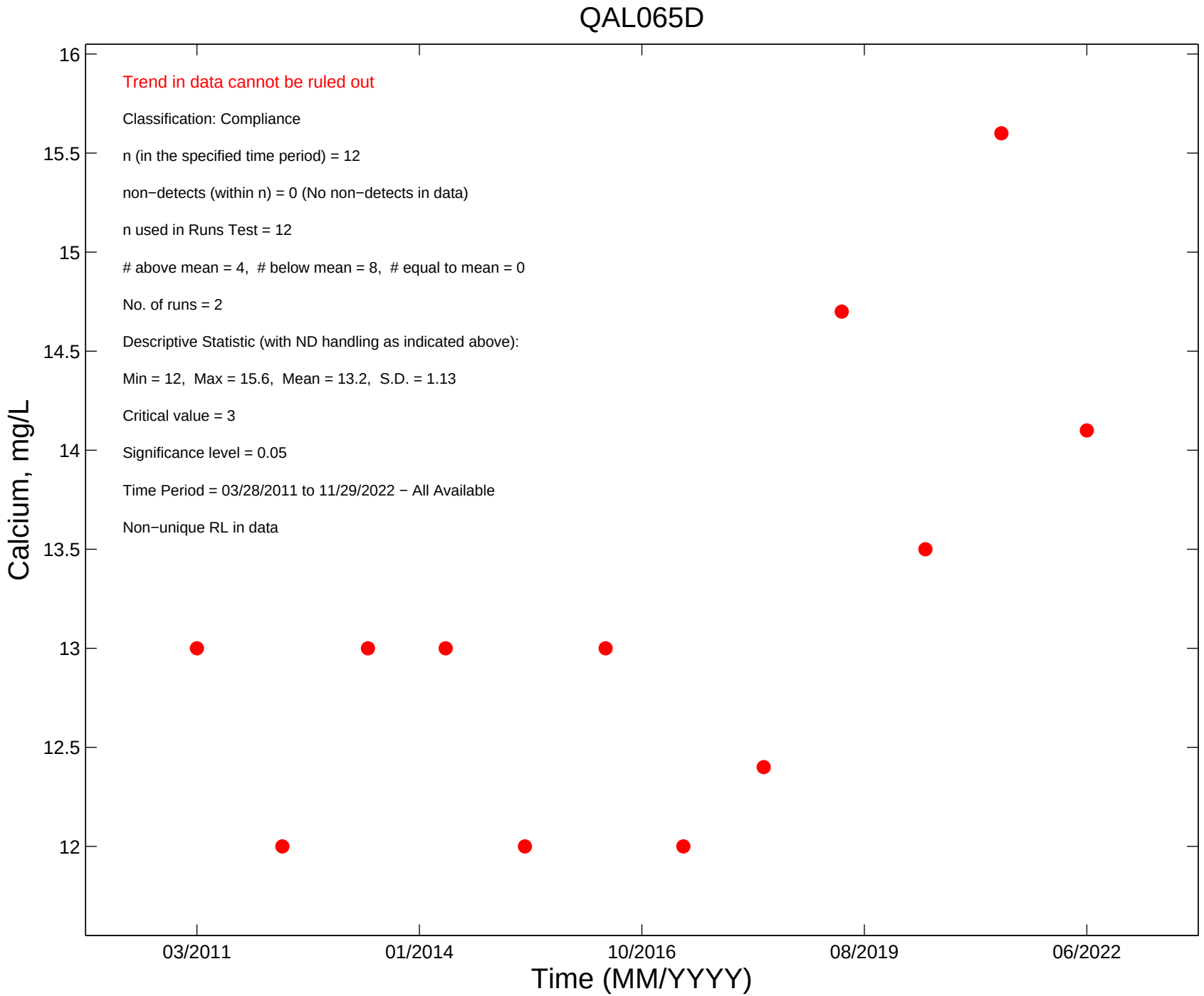

QAL063A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 15, # below mean = 9, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 30, Max = 117, Mean = 82.88, S.D. = 29.87
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Chloride, mg/L
120
110
100
90
80
70
60
50
40
30
20
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

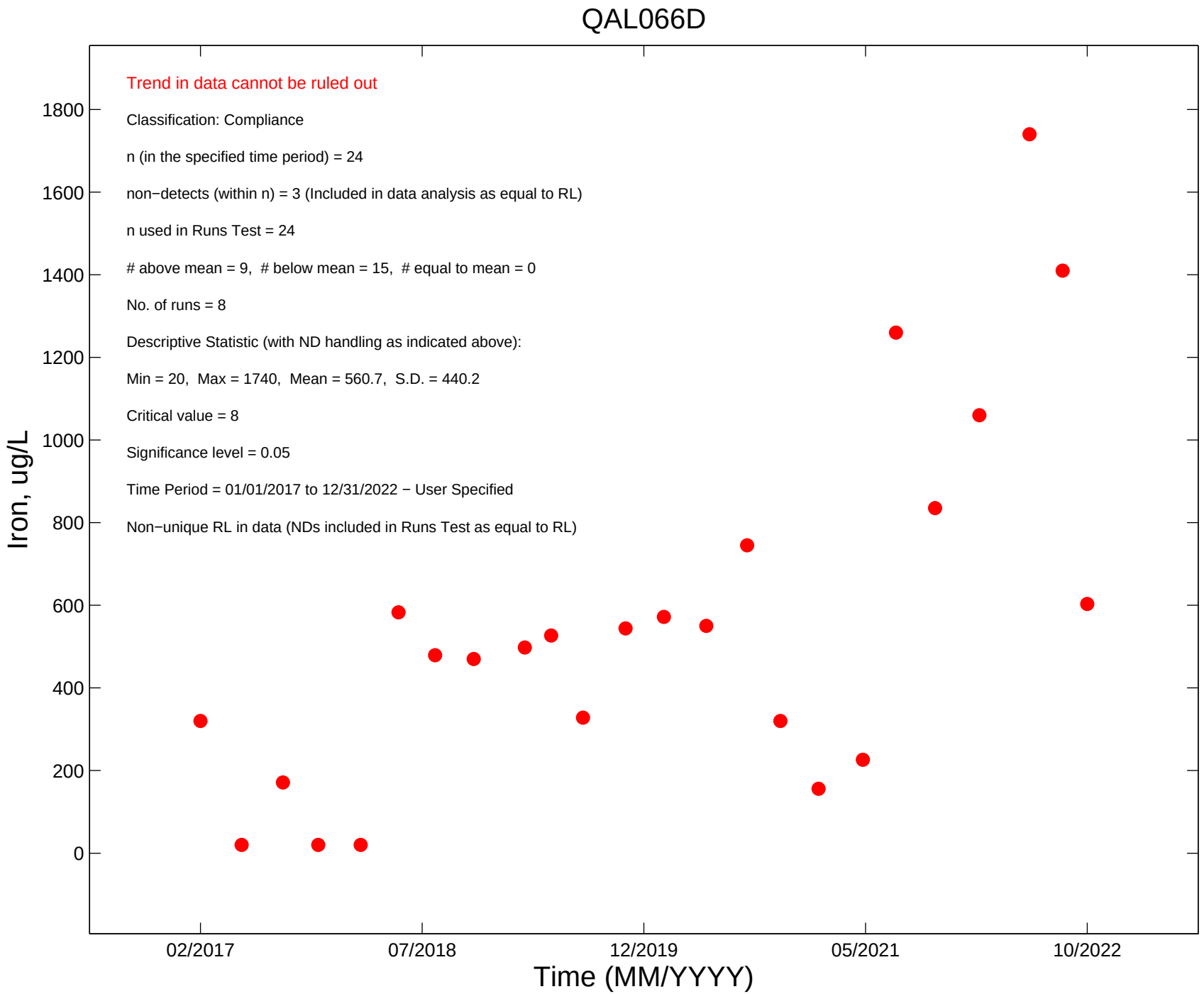

QAL063A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 13
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 13
above mean = 6, # below mean = 7, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 1.9, Max = 16.8, Mean = 8.03, S.D. = 6.39
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Magnesium, mg/L
18
16
14
12
10
8
6
4
2
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

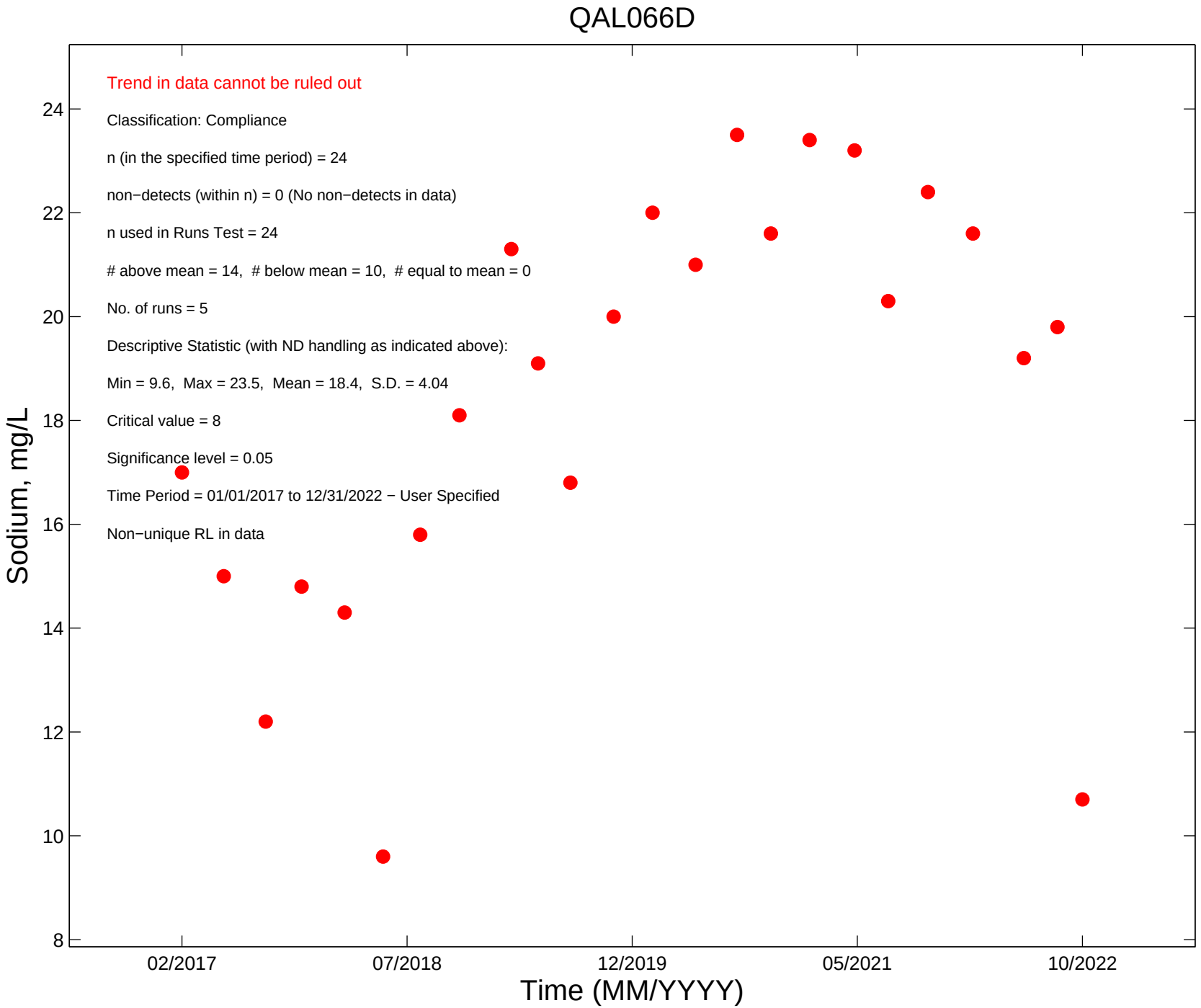

QAL063A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 12, # below mean = 12, # equal to mean = 0
No. of runs = 4
Descriptive Statistic (with ND handling as indicated above):
Min = 0.55, Max = 1.9, Mean = 1.08, S.D. = 0.383
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Nitrogen, Nitrate, mg/L
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

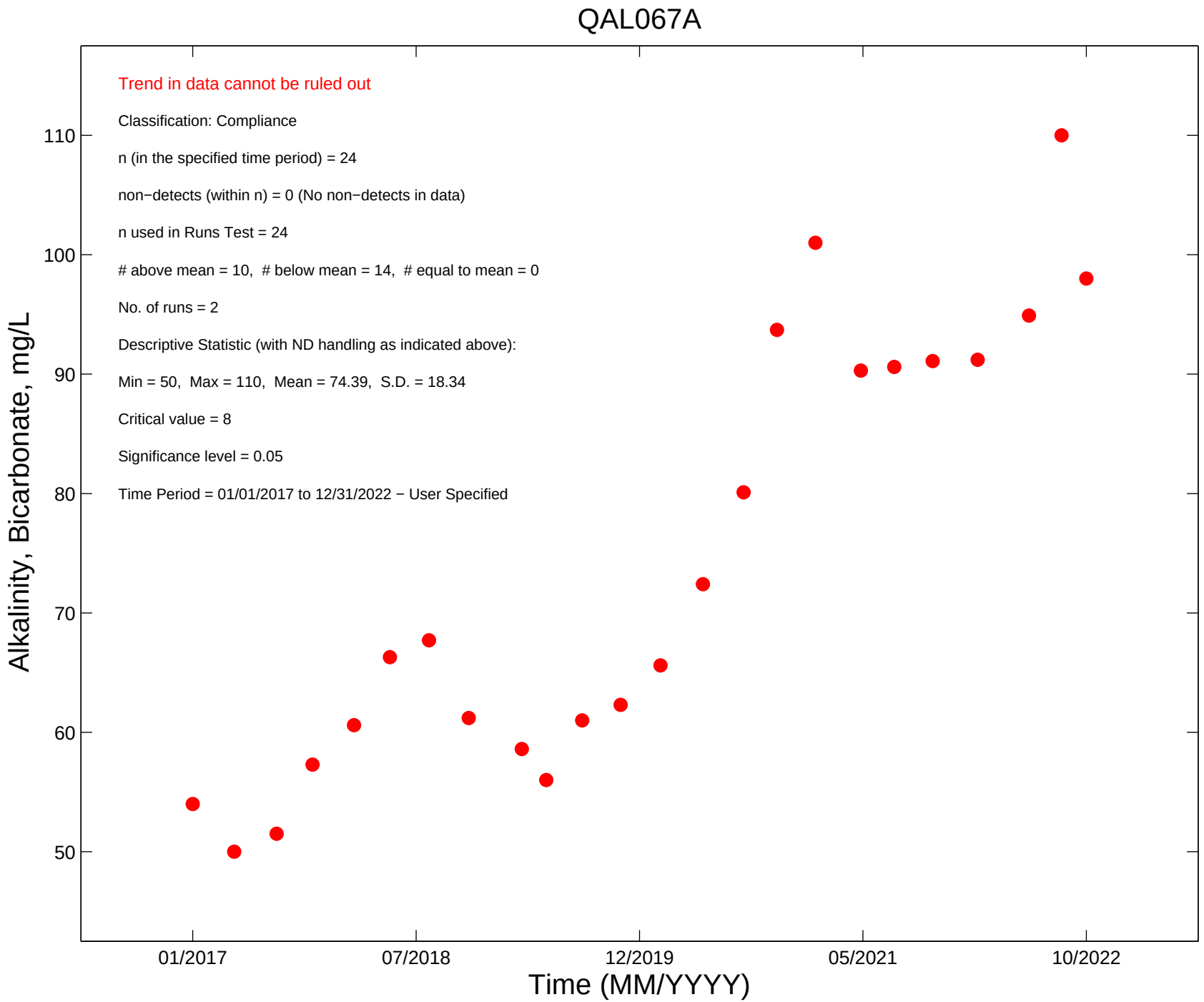

QAL063A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 13
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 13
above mean = 6, # below mean = 7, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 0.62, Max = 3.1, Mean = 1.56, S.D. = 0.998
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Potassium, mg/L
3
2.5
2
1.5
1
0.5
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

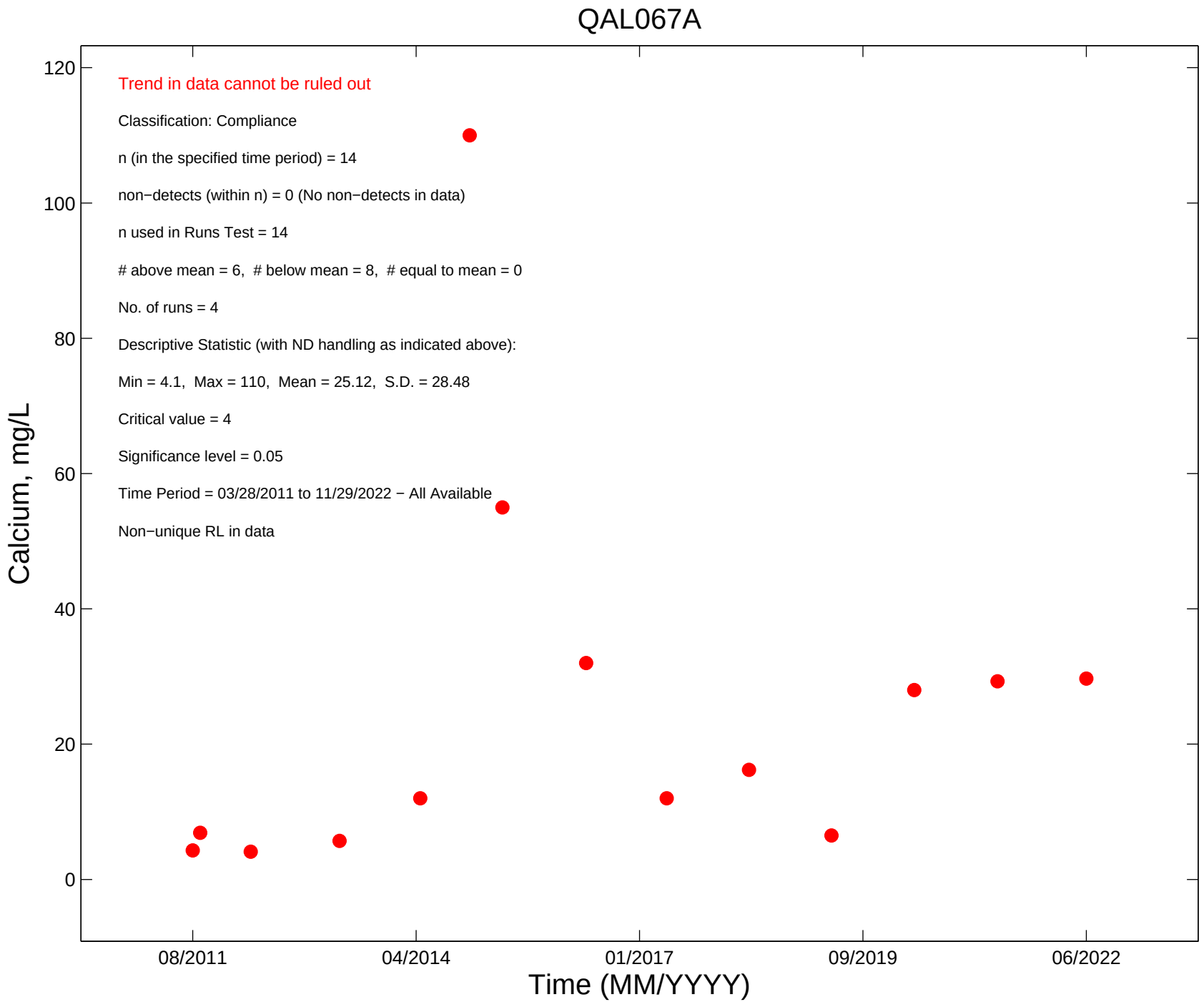

QAL063A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 12, # below mean = 12, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 1.9, Max = 53.9, Mean = 29.9, S.D. = 18.1
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Sodium, mg/L
60
50
40
30
20
10
0
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

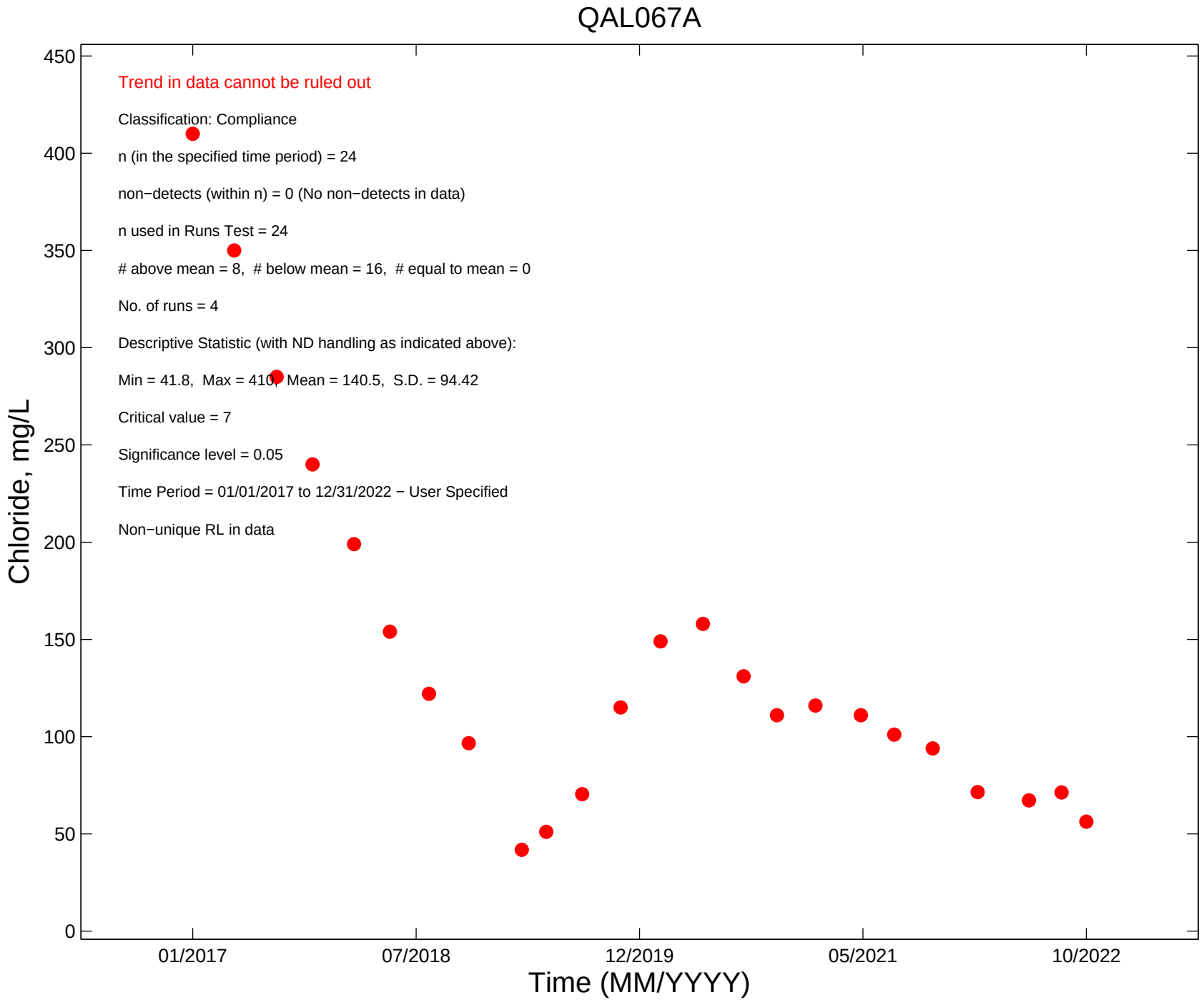

QAL065D
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 12
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 12
above mean = 4, # below mean = 8, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 12, Max = 15.6, Mean = 13.2, S.D. = 1.13
Critical value = 3
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Calcium, mg/L
16
15.5
15
14.5
14
13.5
13
12.5
12
03/2011
01/2014
10/2016
08/2019
06/2022
Time (MM/YYYY)

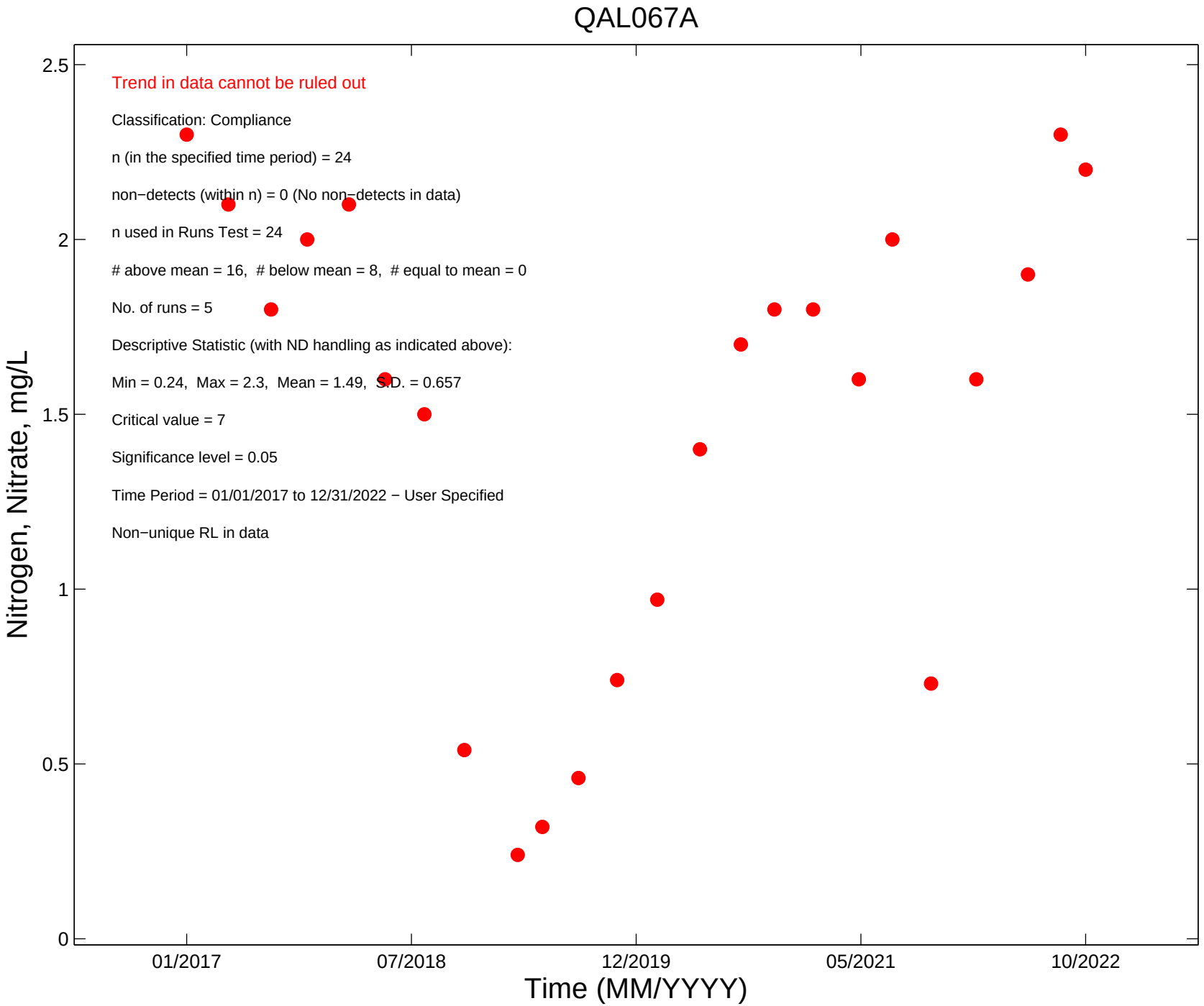

QAL066D
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 3 (Included in data analysis as equal to RL)
n used in Runs Test = 24
above mean = 9, # below mean = 15, # equal to mean = 0
No. of runs = 8
Descriptive Statistic (with ND handling as indicated above):
Min = 20, Max = 1740, Mean = 560.7, S.D. = 440.2
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data (NDs included in Runs Test as equal to RL)
Iron, ug/L
0
200
400
600
800
1000
1200
1400
1600
1800
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

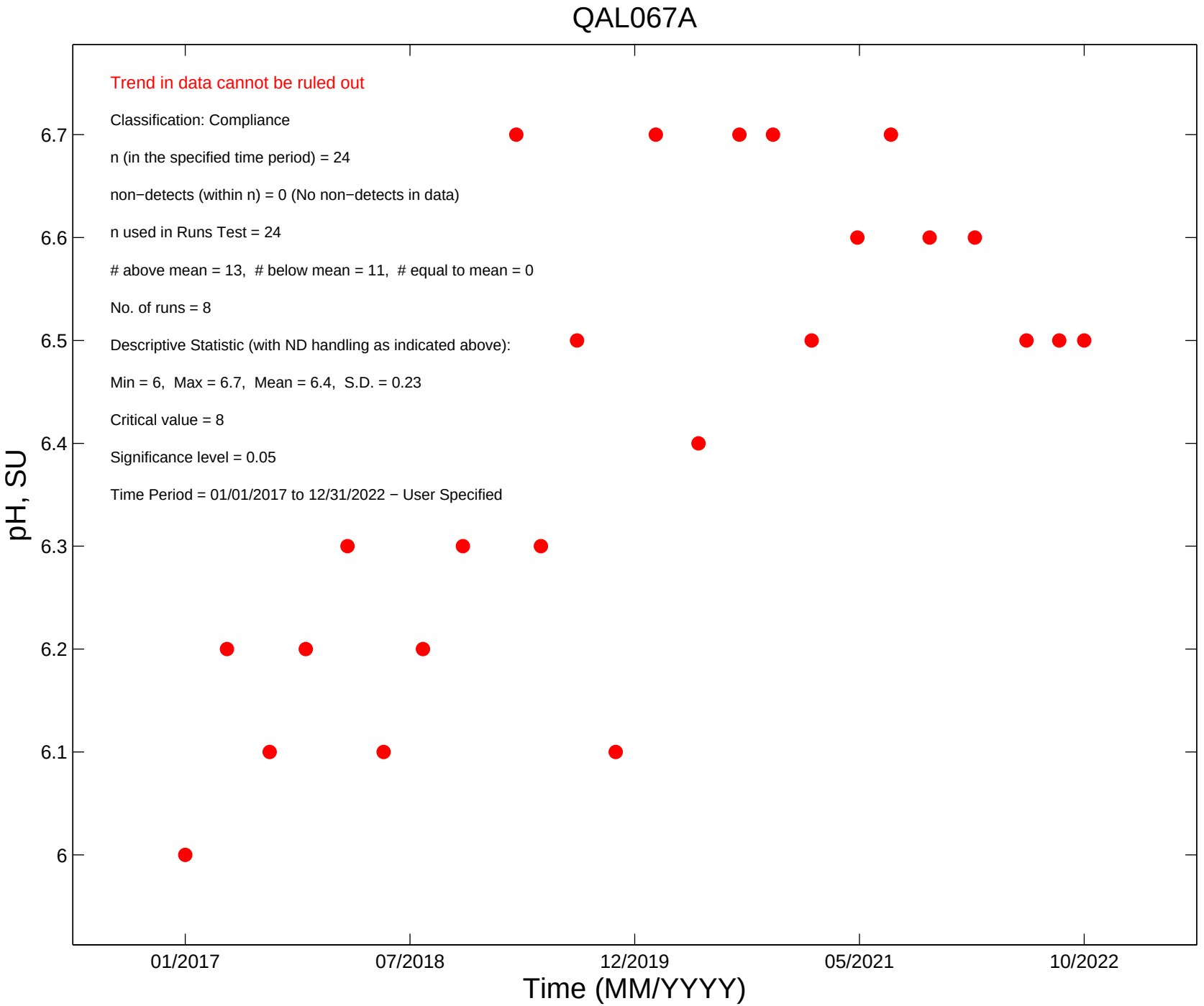

QAL066D
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 14, # below mean = 10, # equal to mean = 0
No. of runs = 5
Descriptive Statistic (with ND handling as indicated above):
Min = 9.6, Max = 23.5, Mean = 18.4, S.D. = 4.04
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Sodium, mg/L
24
22
20
18
16
14
12
10
8
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

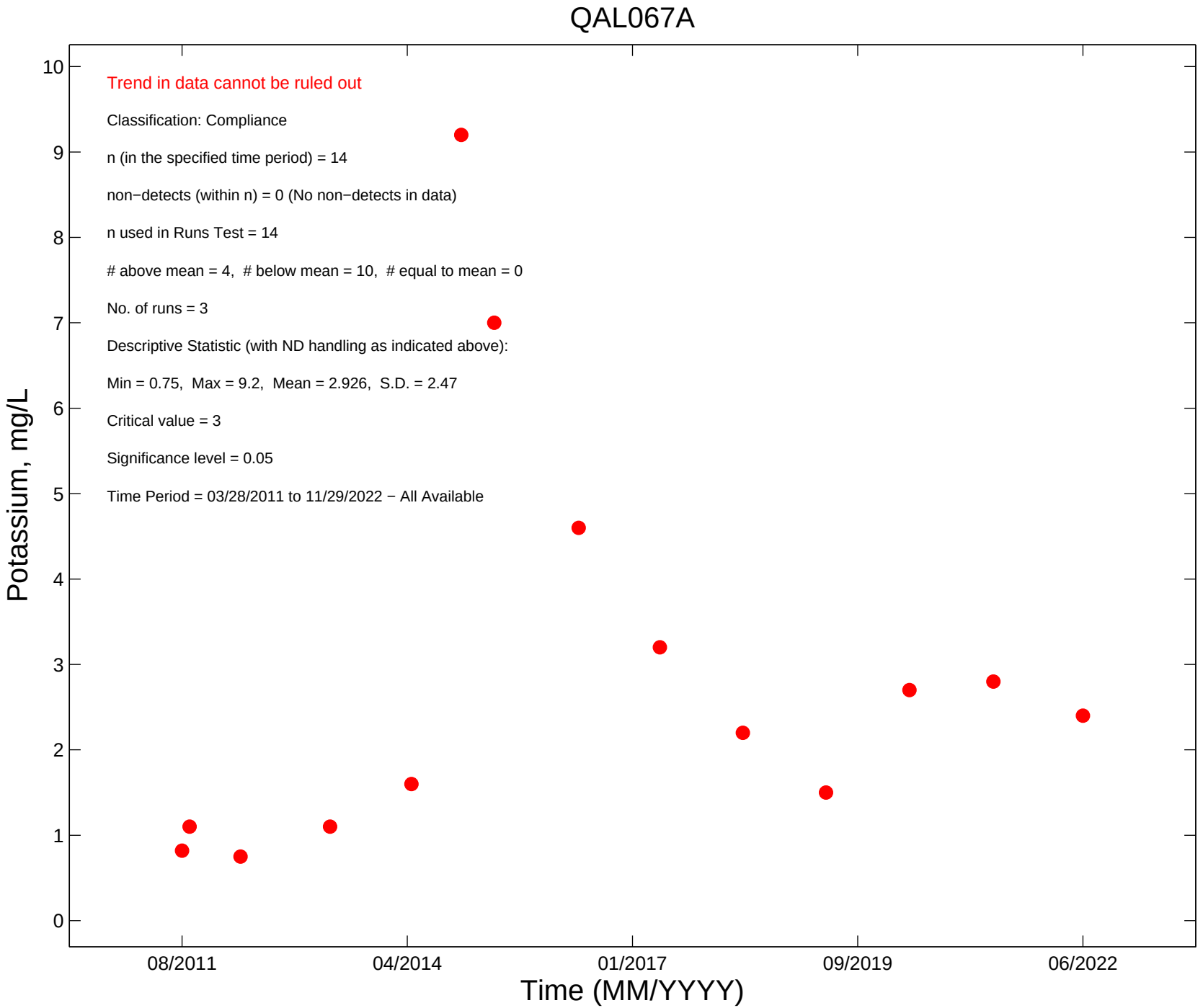

QAL067A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 10, # below mean = 14, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 50, Max = 110, Mean = 74.39, S.D. = 18.34
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Alkalinity, Bicarbonate, mg/L
110
100
90
80
70
60
50
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

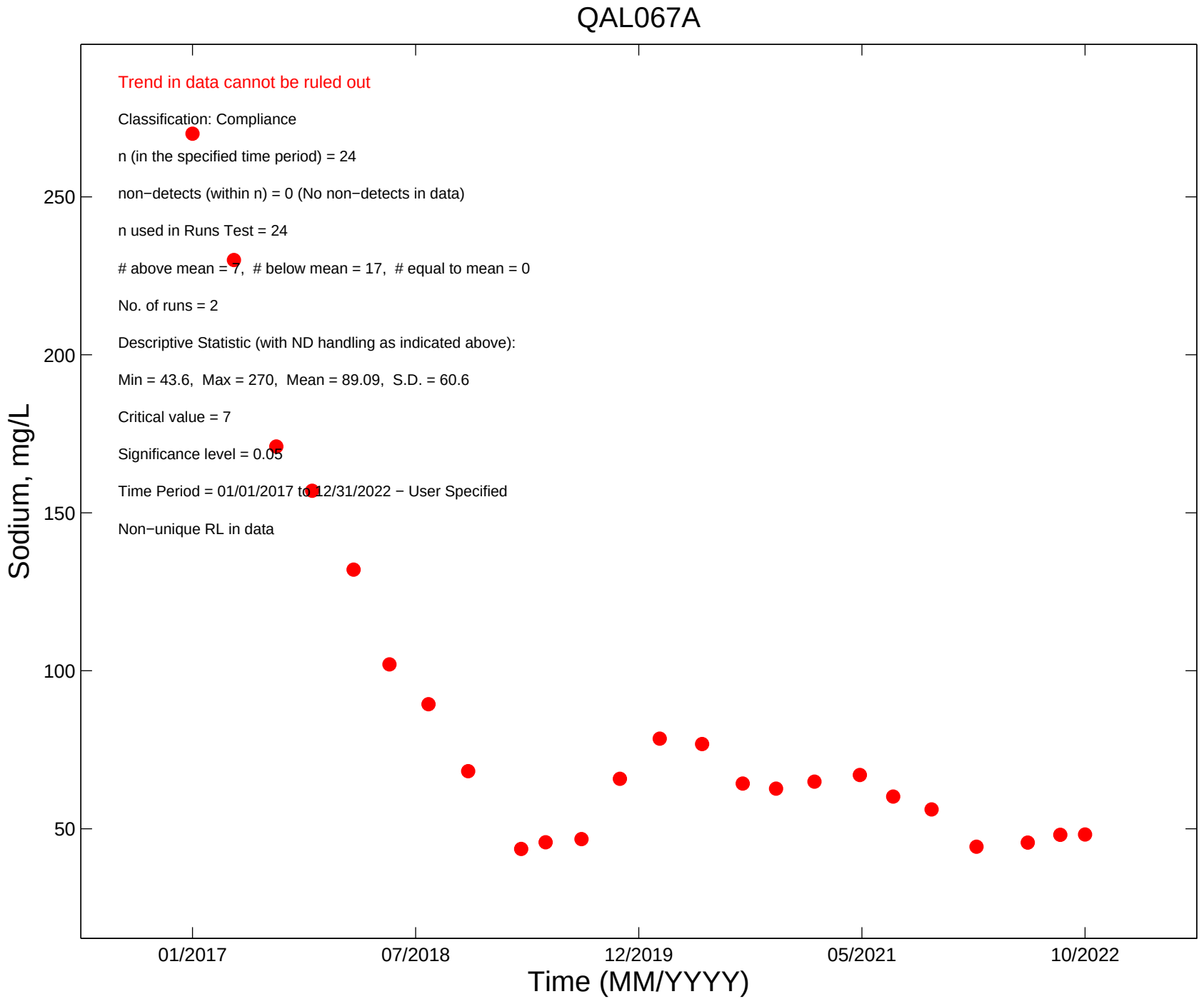

QAL067A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 14
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 14
above mean = 6, # below mean = 8, # equal to mean = 0
No. of runs = 4
Descriptive Statistic (with ND handling as indicated above):
Min = 4.1, Max = 110, Mean = 25.12, S.D. = 28.48
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Calcium, mg/L
120
100
80
60
40
20
0
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

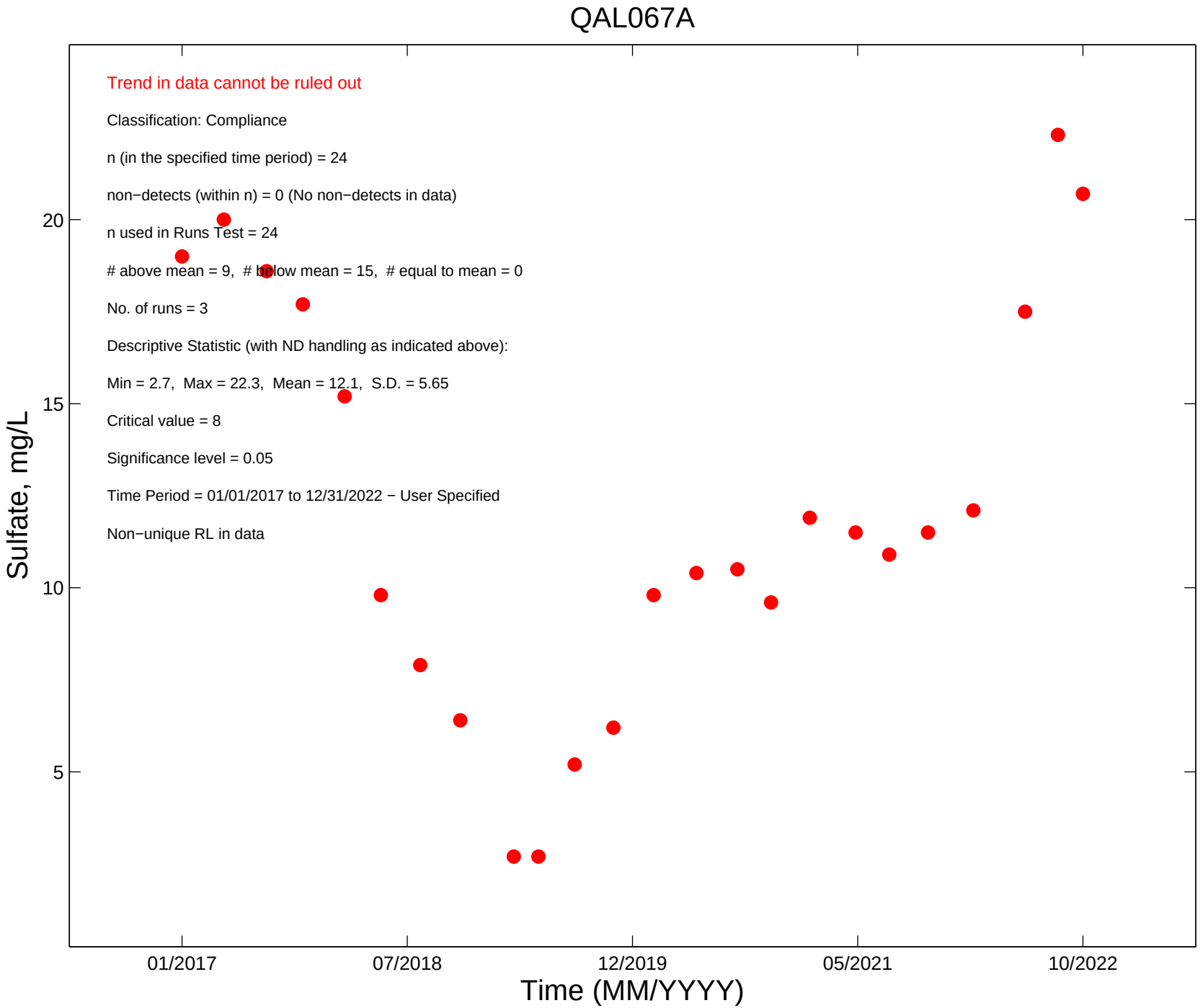

QAL067A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 8, # below mean = 16, # equal to mean = 0
No. of runs = 4
Descriptive Statistic (with ND handling as indicated above):
Min = 41.8, Max = 410, Mean = 140.5, S.D. = 94.42
Critical value = 7
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Chloride, mg/L
0
50
100
150
200
250
300
350
400
450
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

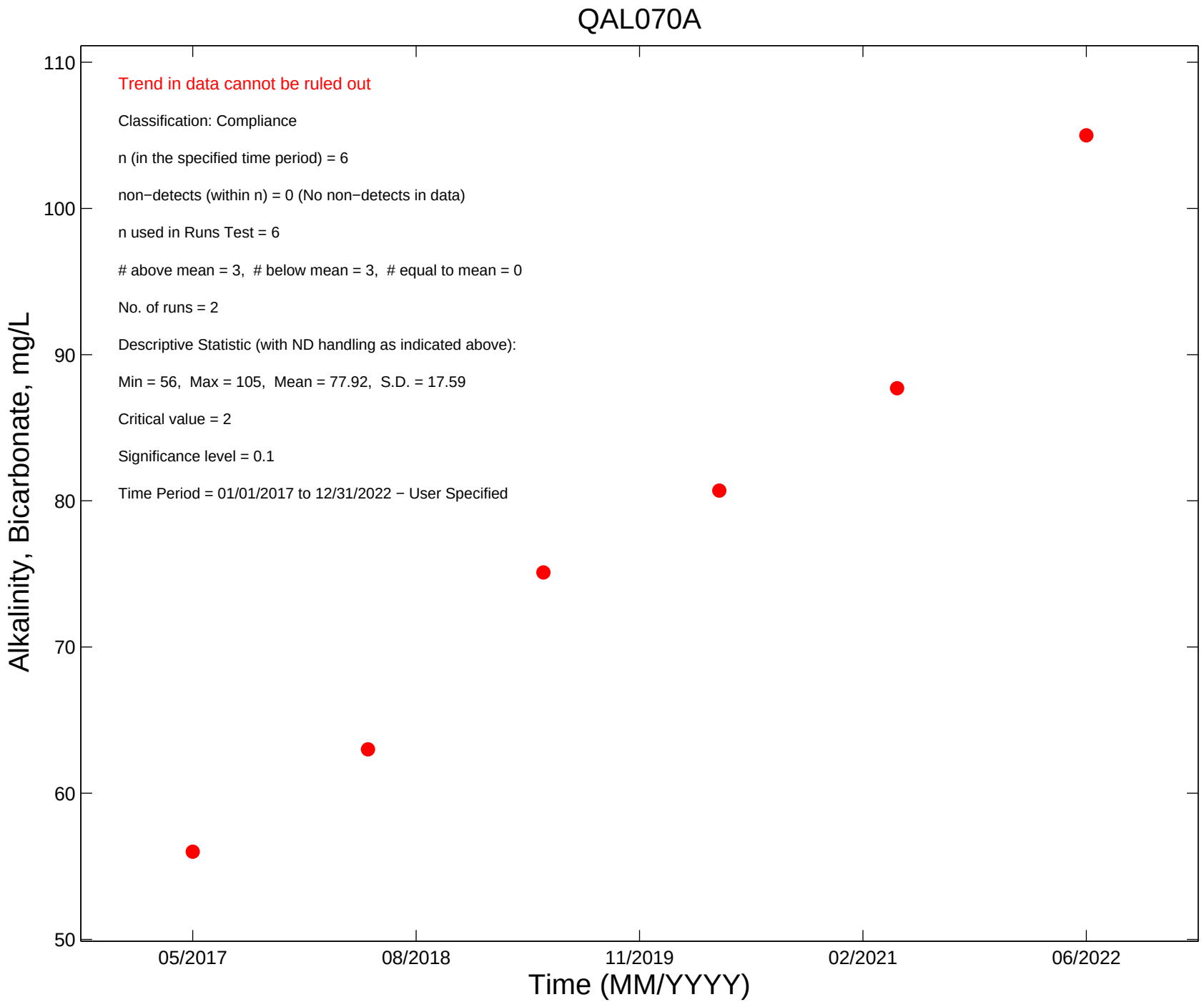

QAL067A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 16, # below mean = 8, # equal to mean = 0
No. of runs = 5
Descriptive Statistic (with ND handling as indicated above):
Min = 0.24, Max = 2.3, Mean = 1.49, S.D. = 0.657
Critical value = 7
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Nitrogen, Nitrate, mg/L
2.5
2
1.5
1
0.5
0
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

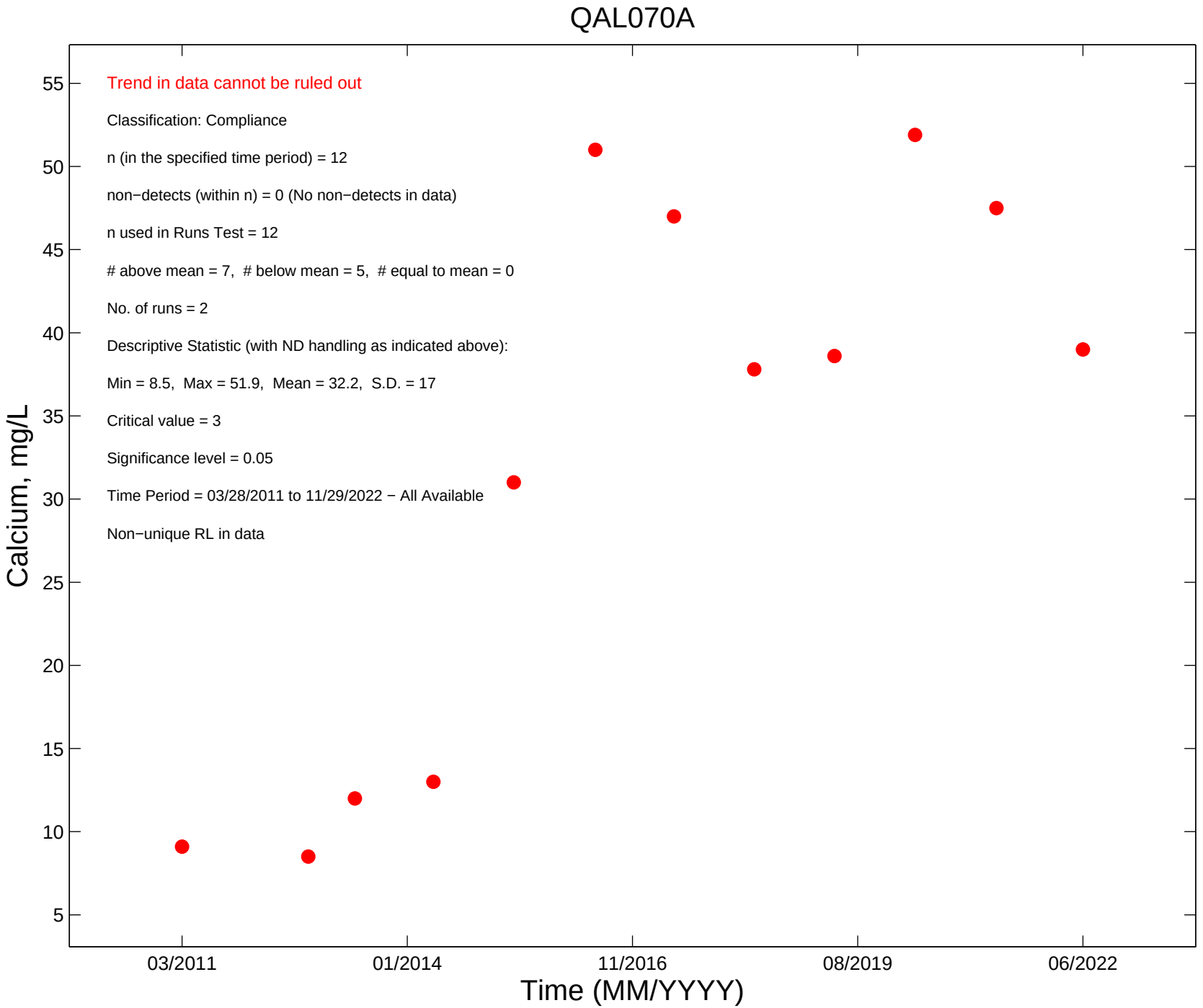

QAL067A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 13, # below mean = 11, # equal to mean = 0
No. of runs = 8
Descriptive Statistic (with ND handling as indicated above):
Min = 6, Max = 6.7, Mean = 6.4, S.D. = 0.23
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
pH, SU
6.7
6.6
6.5
6.4
6.3
6.2
6.1
6
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

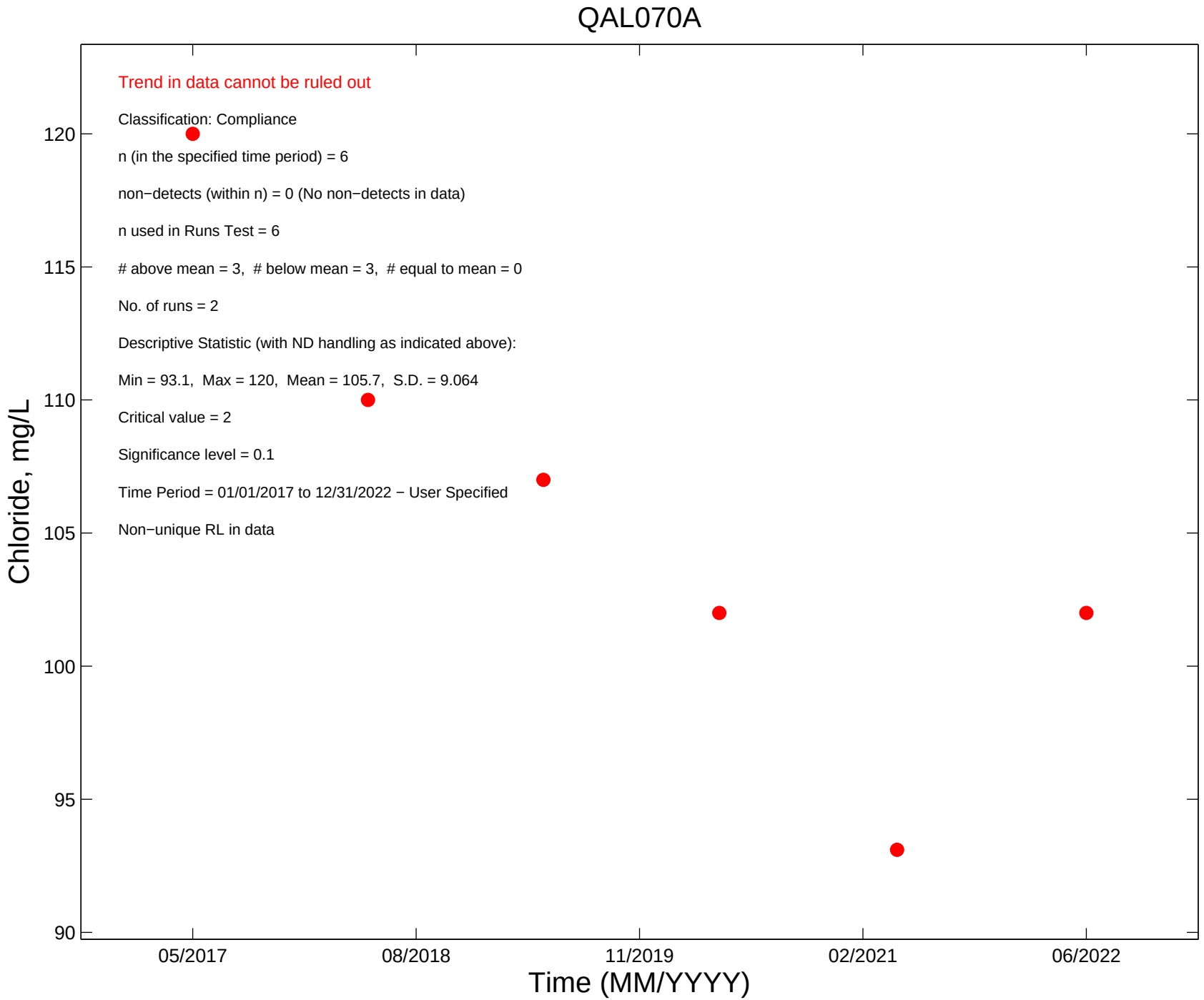

QAL067A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 14
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 14
above mean = 4, # below mean = 10, # equal to mean = 0
No. of runs = 3
Descriptive Statistic (with ND handling as indicated above):
Min = 0.75, Max = 9.2, Mean = 2.926, S.D. = 2.47
Critical value = 3
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Potassium, mg/L
0
1
2
3
4
5
6
7
8
9
10
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

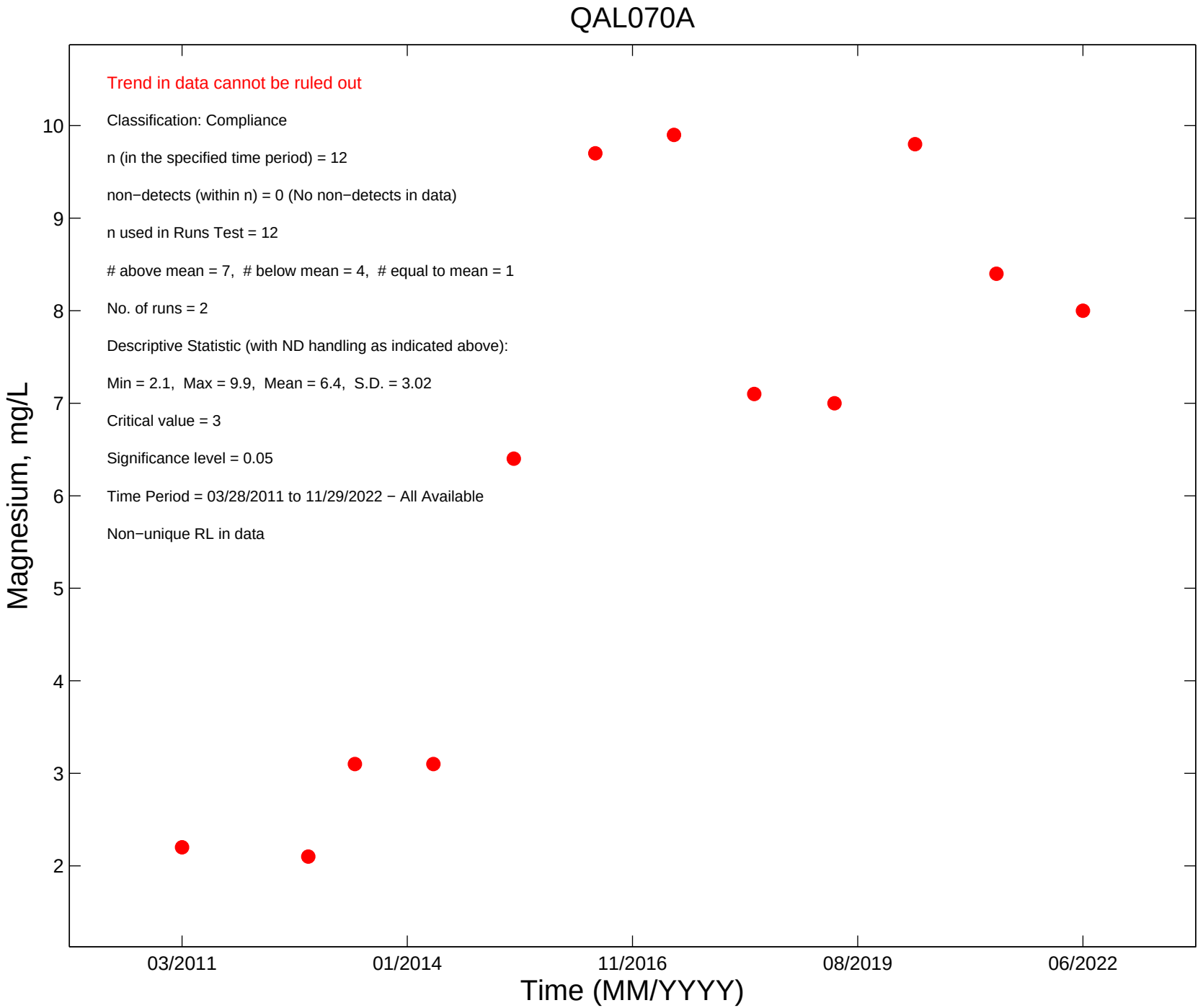

QAL067A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 7, # below mean = 17, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 43.6, Max = 270, Mean = 89.09, S.D. = 60.6
Critical value = 7
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Sodium, mg/L
250
200
150
100
50
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

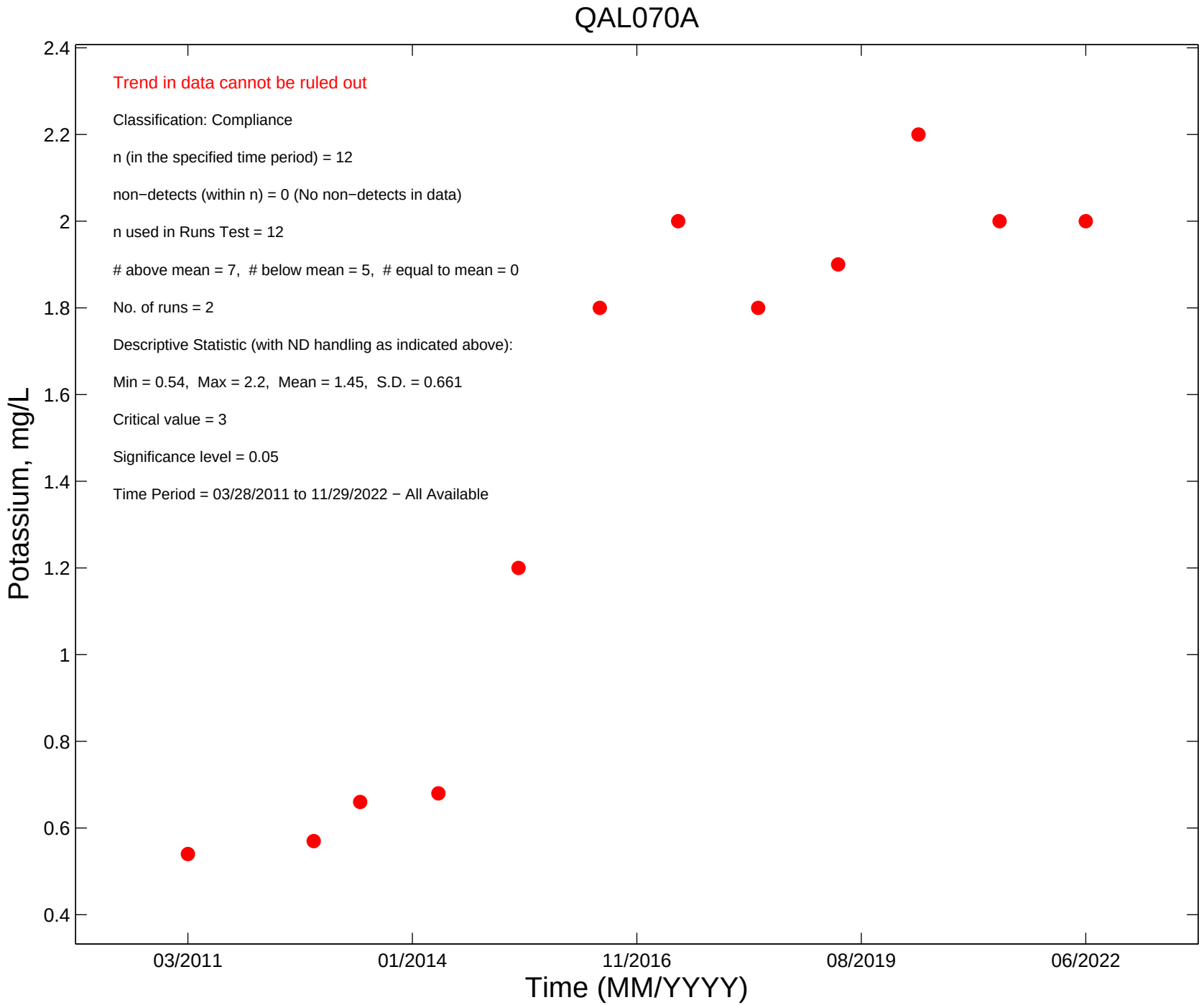

QAL067A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 9, # below mean = 15, # equal to mean = 0
No. of runs = 3
Descriptive Statistic (with ND handling as indicated above):
Min = 2.7, Max = 22.3, Mean = 12.1, S.D. = 5.65
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Sulfate, mg/L
20
15
10
5
01/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

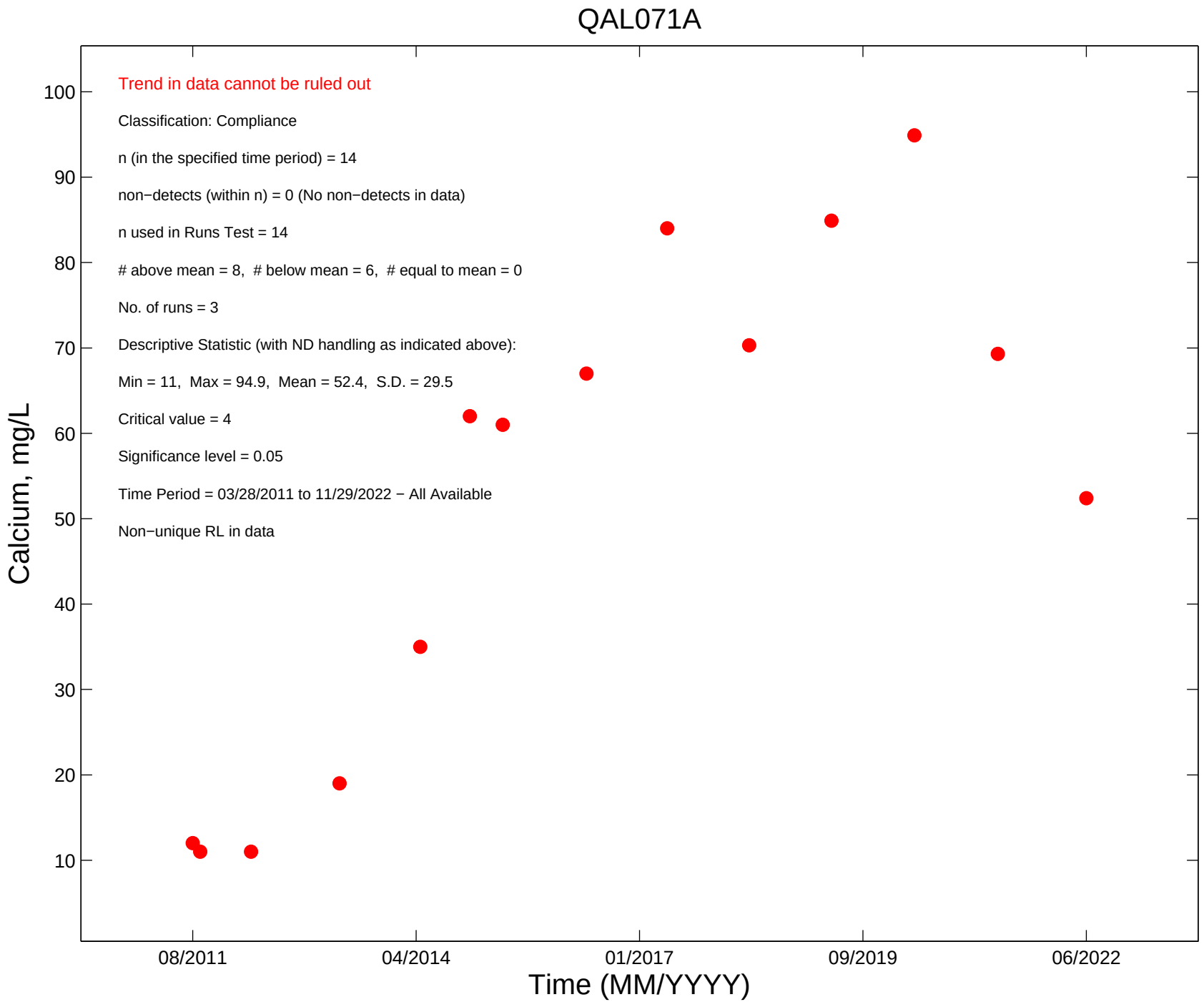

QAL070A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 6
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 6
above mean = 3, # below mean = 3, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 56, Max = 105, Mean = 77.92, S.D. = 17.59
Critical value = 2
Significance level = 0.1
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Alkalinity, Bicarbonate, mg/L
110
100
90
80
70
60
50
05/2017
08/2018
11/2019
02/2021
06/2022
Time (MM/YYYY)

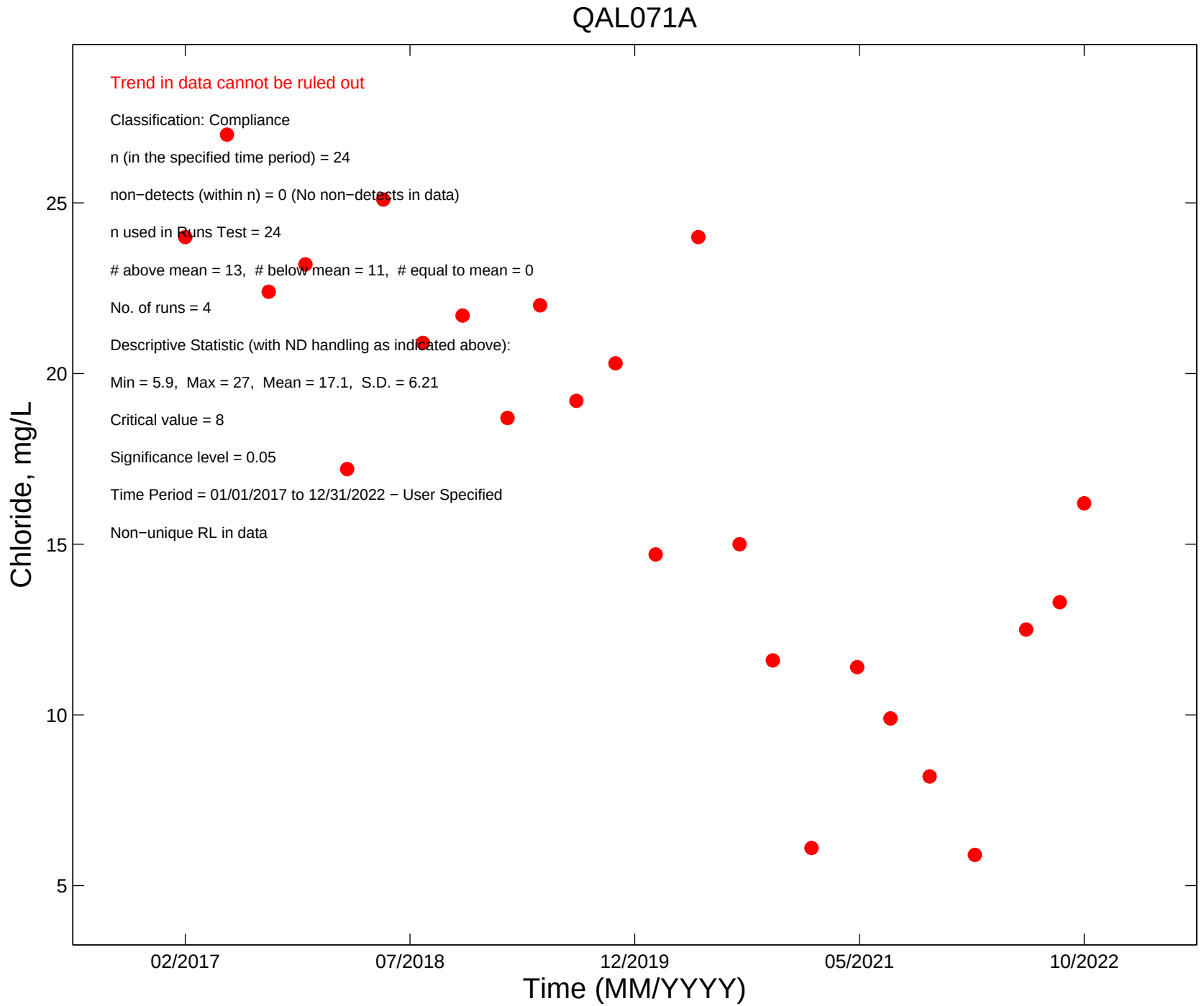

QAL070A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 12
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 12
above mean = 7, # below mean = 5, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 8.5, Max = 51.9, Mean = 32.2, S.D. = 17
Critical value = 3
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Calcium, mg/L
55
50
45
40
35
30
25
20
15
10
5
03/2011
01/2014
11/2016
08/2019
06/2022
Time (MM/YYYY)

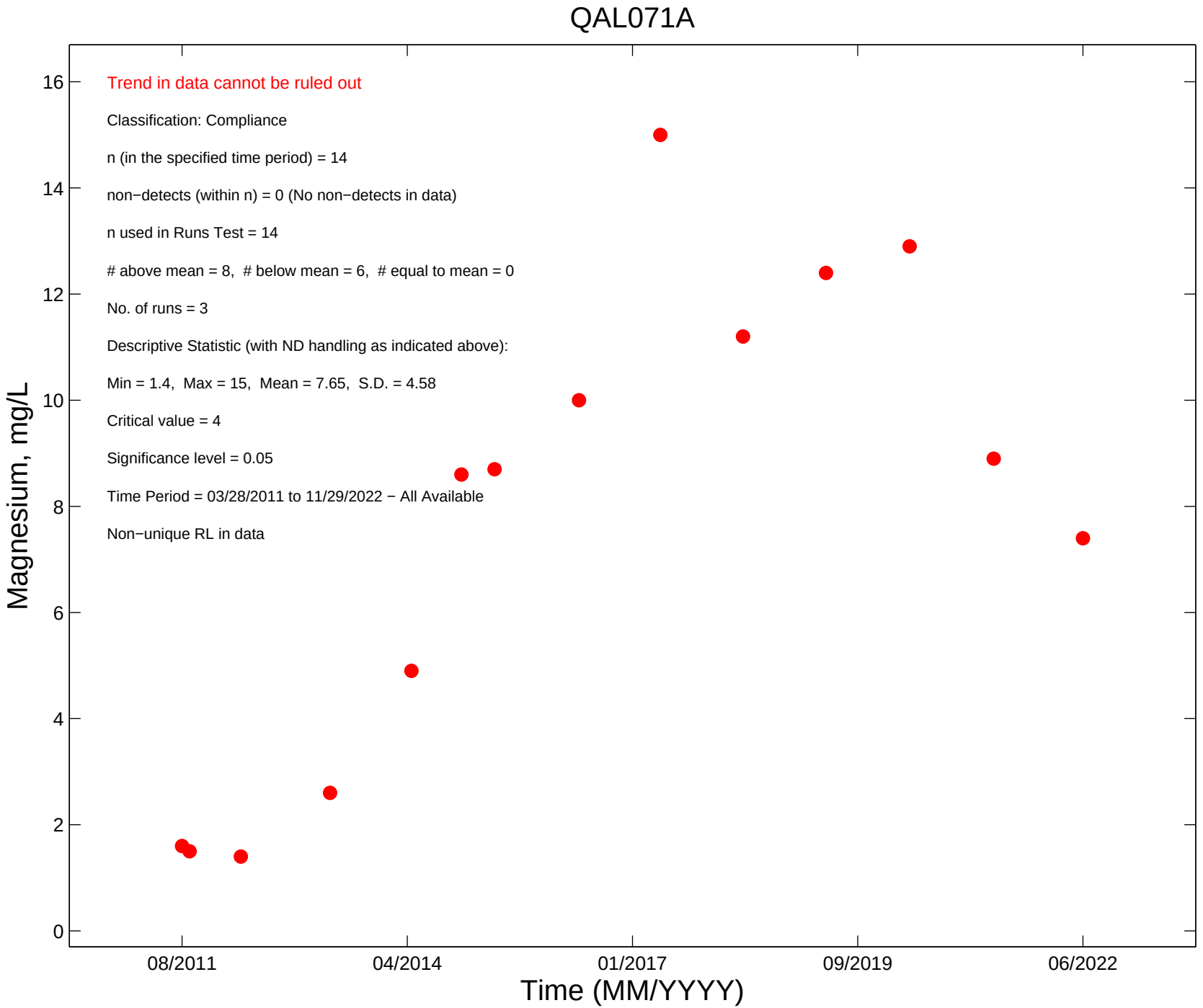

QAL070A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 6
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 6
above mean = 3, # below mean = 3, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 93.1, Max = 120, Mean = 105.7, S.D. = 9.064
Critical value = 2
Significance level = 0.1
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Chloride, mg/L
120
115
110
105
100
95
90
05/2017
08/2018
11/2019
02/2021
06/2022
Time (MM/YYYY)

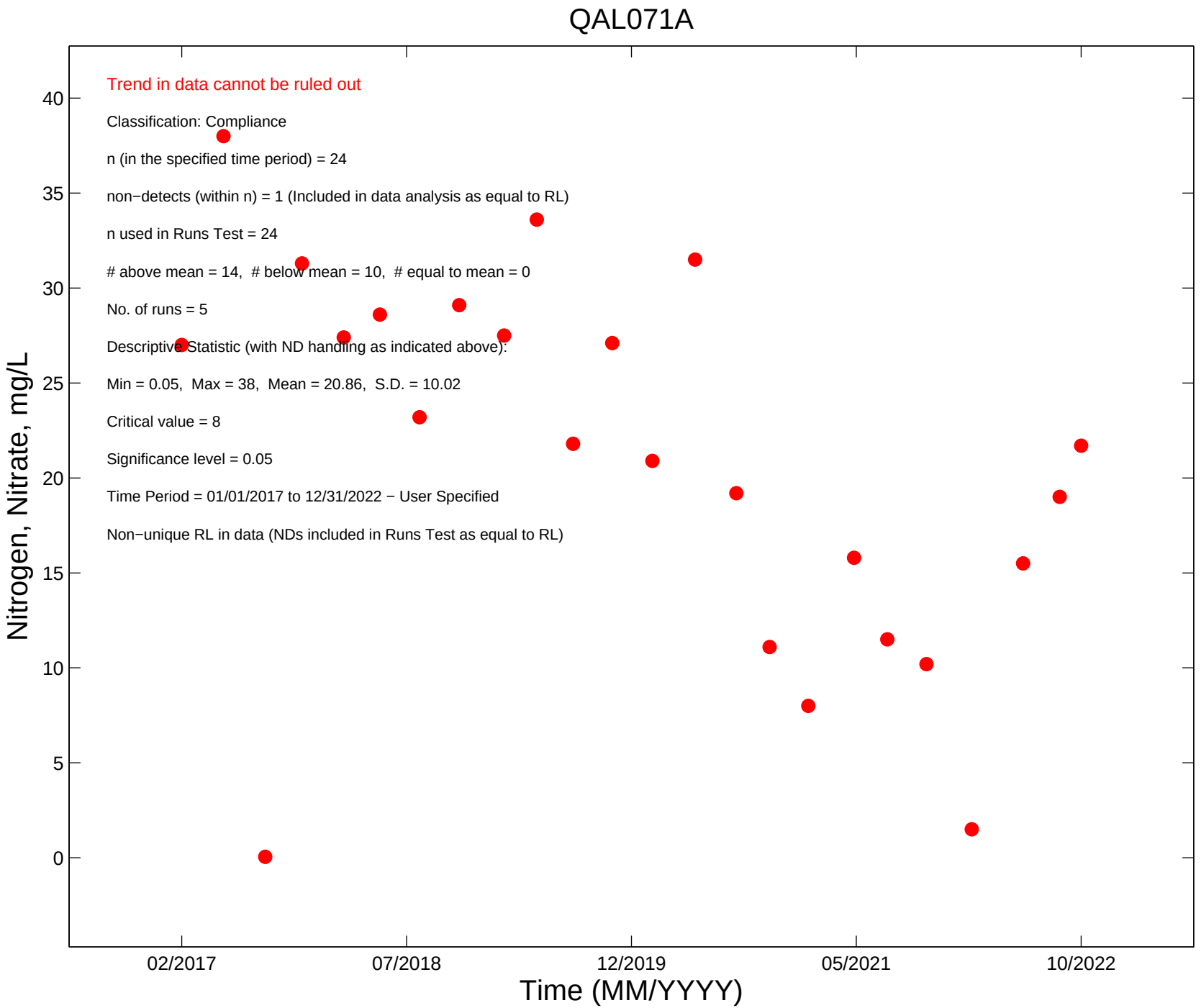

QAL070A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 12
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 12
above mean = 7, # below mean = 4, # equal to mean = 1
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 2.1, Max = 9.9, Mean = 6.4, S.D. = 3.02
Critical value = 3
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Magnesium, mg/L
10
9
8
7
6
5
4
3
2
03/2011
01/2014
11/2016
08/2019
06/2022
Time (MM/YYYY)

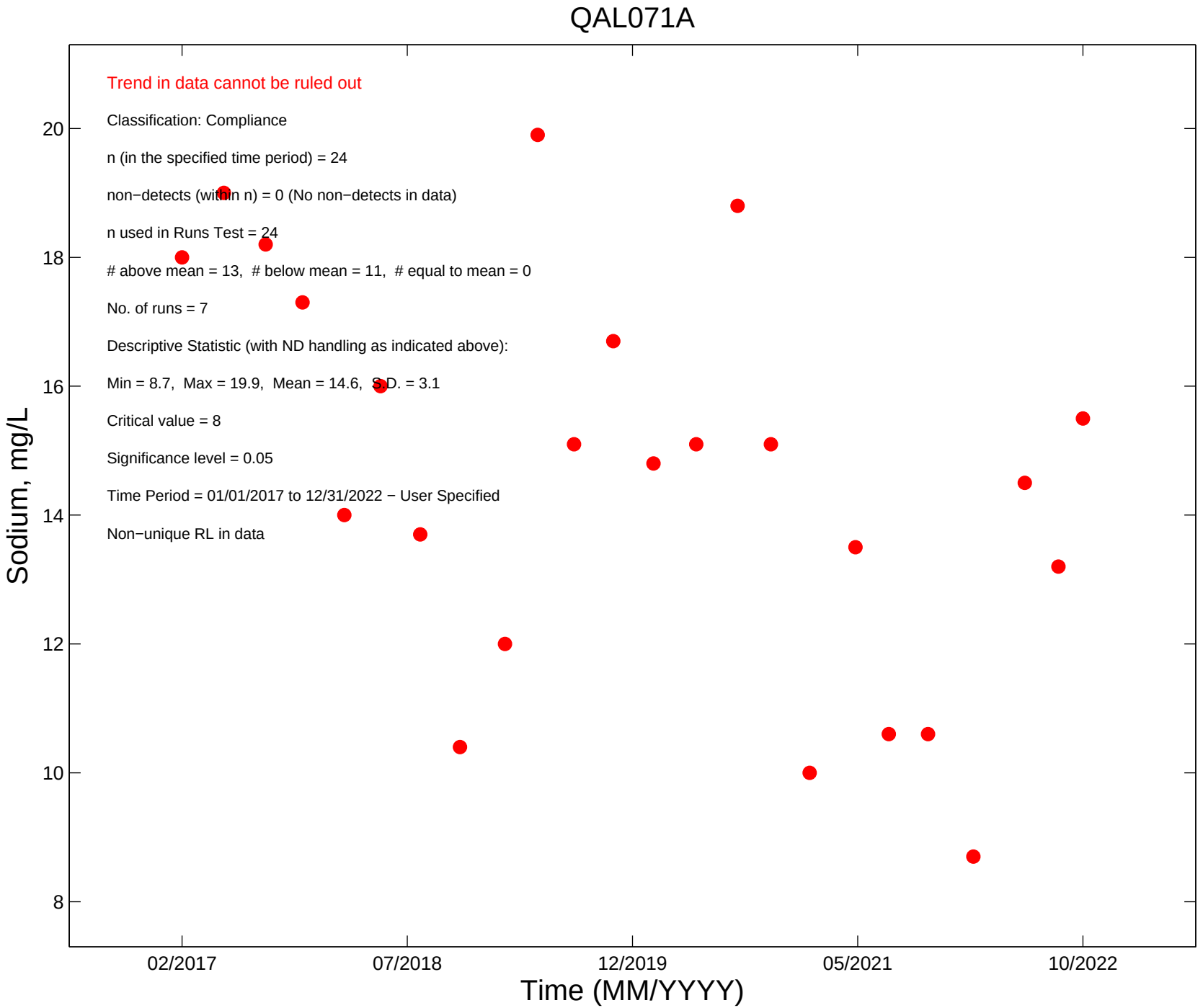

QAL070A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 12
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 12
above mean = 7, # below mean = 5, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 0.54, Max = 2.2, Mean = 1.45, S.D. = 0.661
Critical value = 3
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Potassium, mg/L
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
03/2011
01/2014
11/2016
08/2019
06/2022
Time (MM/YYYY)

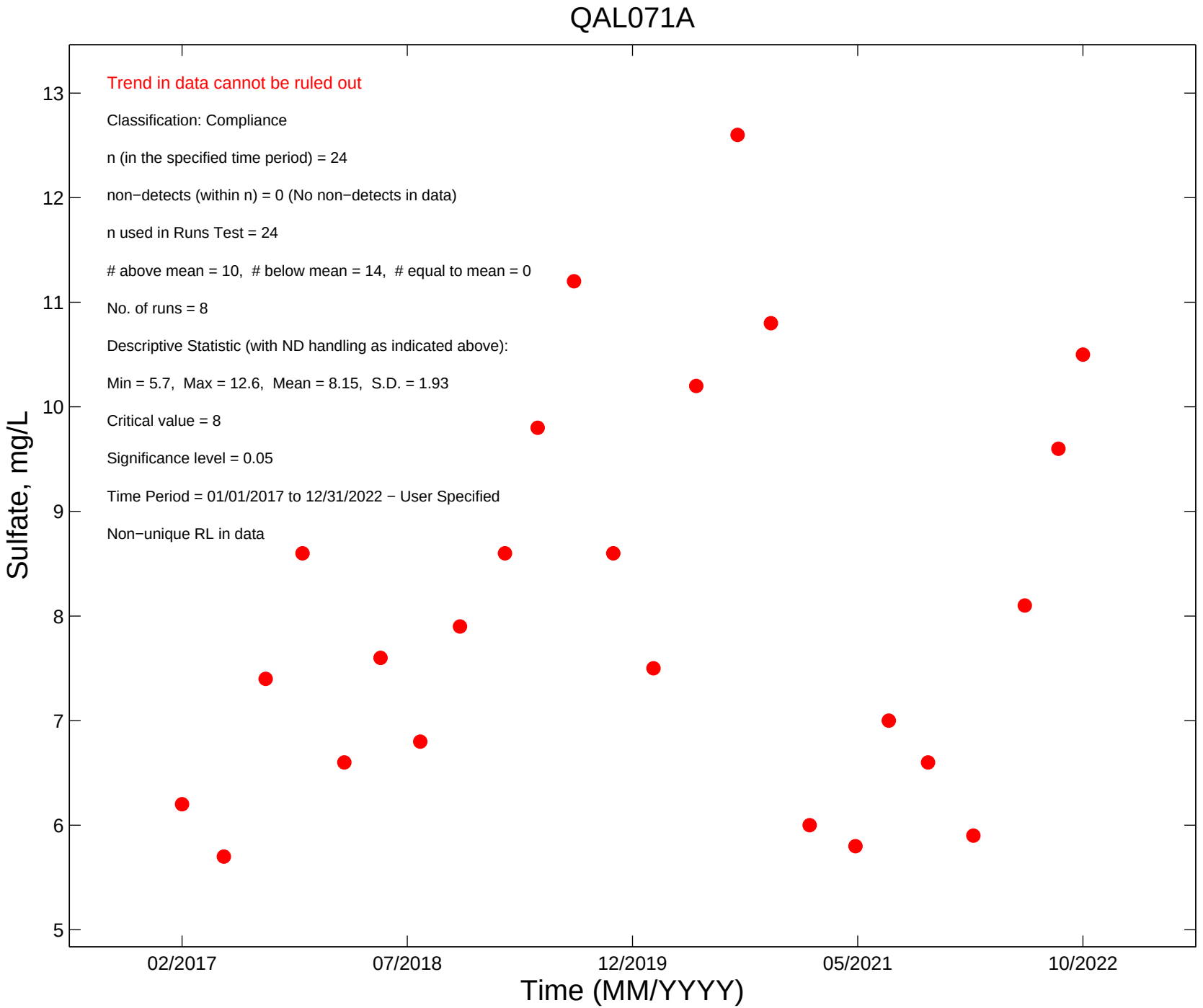

QAL071A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 14
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 14
above mean = 8, # below mean = 6, # equal to mean = 0
No. of runs = 3
Descriptive Statistic (with ND handling as indicated above):
Min = 11, Max = 94.9, Mean = 52.4, S.D. = 29.5
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Calcium, mg/L
100
90
80
70
60
50
40
30
20
10
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)

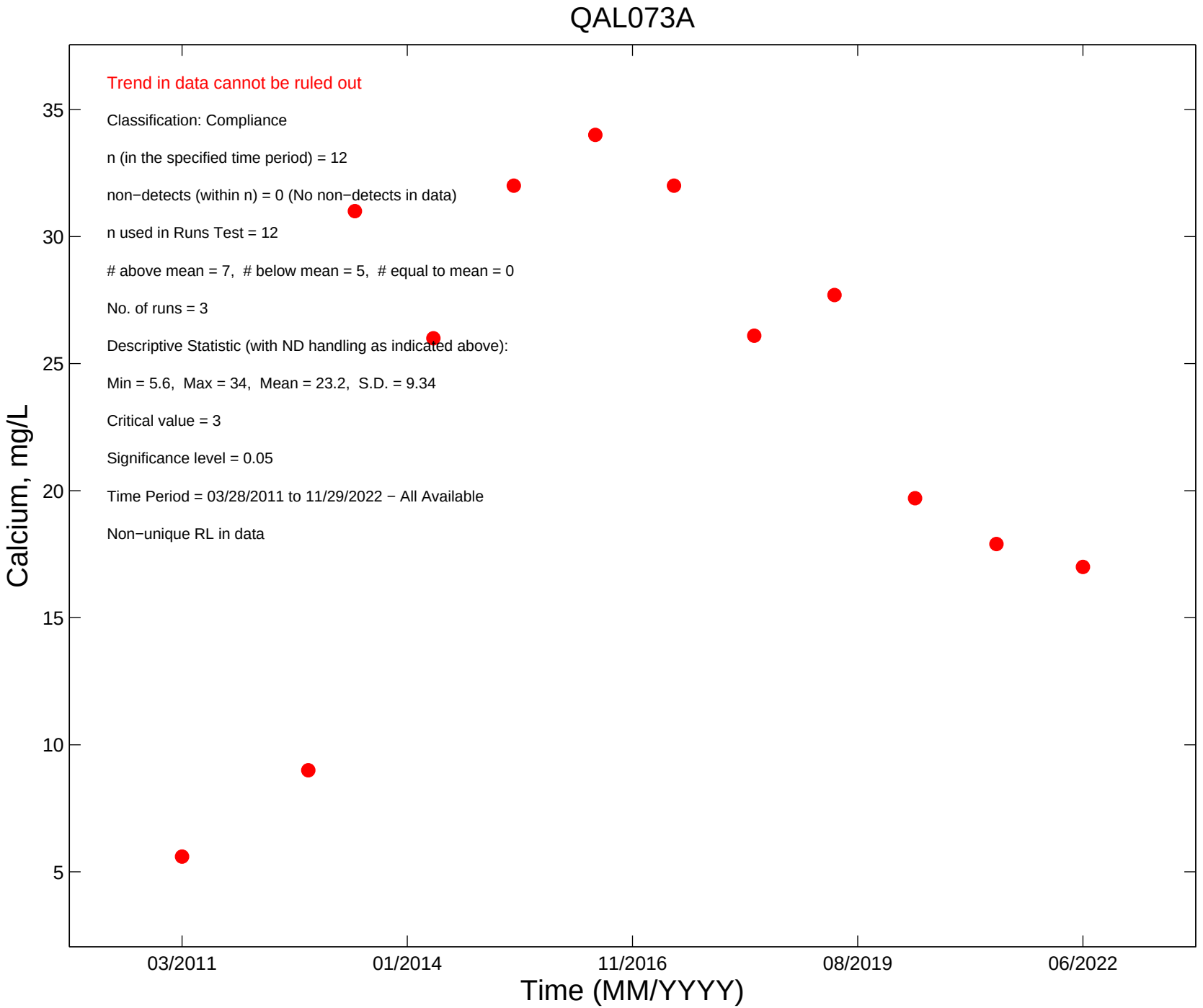

QAL071A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 13, # below mean = 11, # equal to mean = 0
No. of runs = 4
Descriptive Statistic (with ND handling as indicated above):
Min = 5.9, Max = 27, Mean = 17.1, S.D. = 6.21
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Chloride, mg/L
25
20
15
10
5
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)

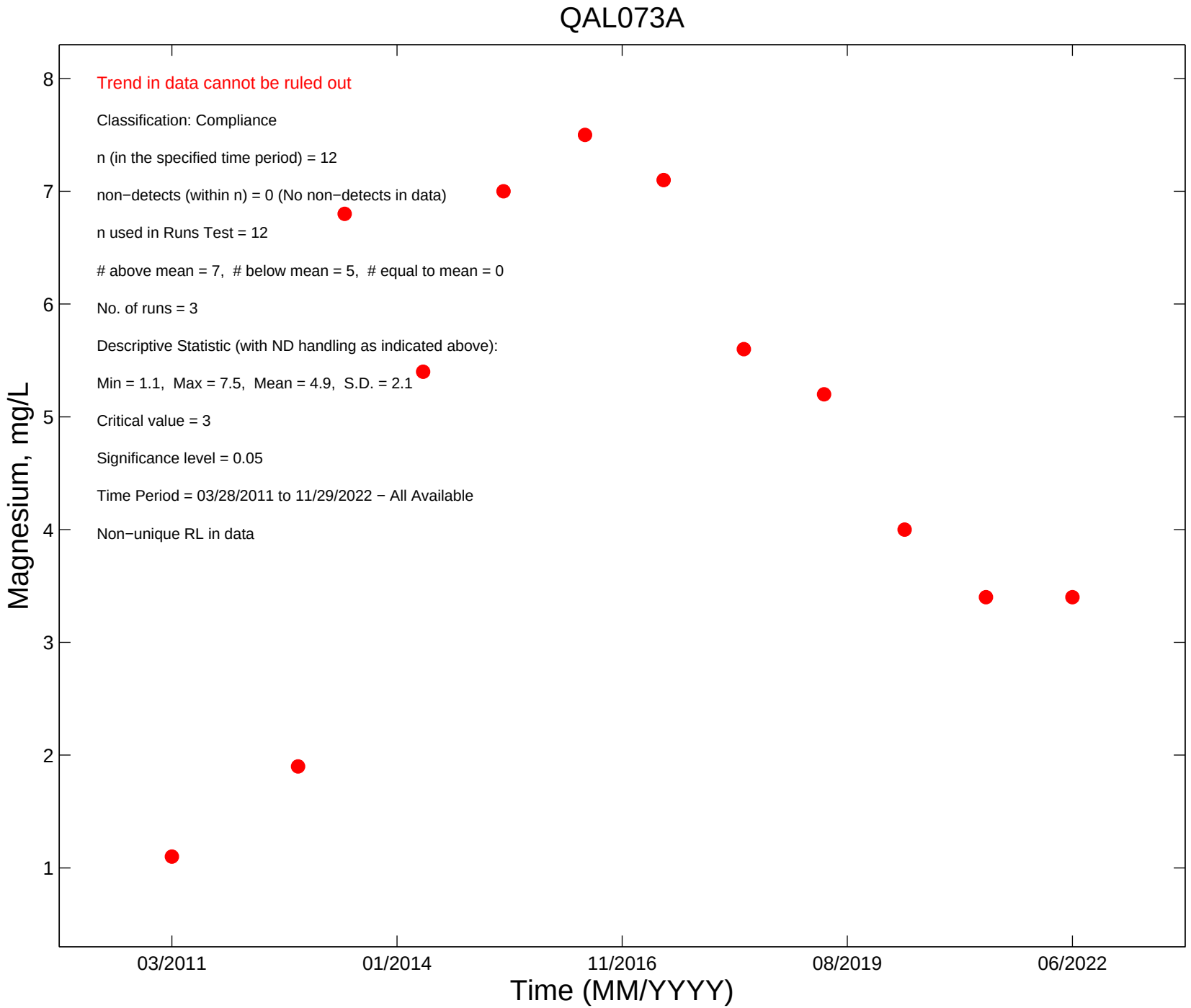

QAL071A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 14
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 14
above mean = 8, # below mean = 6, # equal to mean = 0
No. of runs = 3
Descriptive Statistic (with ND handling as indicated above):
Min = 1.4, Max = 15, Mean = 7.65, S.D. = 4.58
Critical value = 4
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Magnesium, mg/L
0
2
4
6
8
10
12
14
16
08/2011
04/2014
01/2017
09/2019
06/2022
Time (MM/YYYY)


QAL071A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 1 (Included in data analysis as equal to RL)
n used in Runs Test = 24
above mean = 14, # below mean = 10, # equal to mean = 0
No. of runs = 5
Descriptive Statistic (with ND handling as indicated above):
Min = 0.05, Max = 38, Mean = 20.86, S.D. = 10.02
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data (NDs included in Runs Test as equal to RL)
Nitrogen, Nitrate, mg/L
0
5
10
15
20
25
30
35
40
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)


QAL071A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 13, # below mean = 11, # equal to mean = 0
No. of runs = 7
Descriptive Statistic (with ND handling as indicated above):
Min = 8.7, Max = 19.9, Mean = 14.6, S.D. = 3.1
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Sodium, mg/L
20
18
16
14
12
10
8
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)


QAL071A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 24
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 24
above mean = 10, # below mean = 14, # equal to mean = 0
No. of runs = 8
Descriptive Statistic (with ND handling as indicated above):
Min = 5.7, Max = 12.6, Mean = 8.15, S.D. = 1.93
Critical value = 8
Significance level = 0.05
Time Period = 01/01/2017 to 12/31/2022 − User Specified
Non−unique RL in data
Sulfate, mg/L
13
12
11
10
9
8
7
6
5
02/2017
07/2018
12/2019
05/2021
10/2022
Time (MM/YYYY)


QAL073A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 12
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 12
above mean = 7, # below mean = 5, # equal to mean = 0
No. of runs = 3
Descriptive Statistic (with ND handling as indicated above):
Min = 5.6, Max = 34, Mean = 23.2, S.D. = 9.34
Critical value = 3
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Calcium, mg/L
35
30
25
20
15
10
5
03/2011
01/2014
11/2016
08/2019
06/2022
Time (MM/YYYY)


QAL073A
Trend in data cannot be ruled out
Classification: Compliance
n (in the specified time period) = 12
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 12
above mean = 7, # below mean = 5, # equal to mean = 0
No. of runs = 3
Descriptive Statistic (with ND handling as indicated above):
Min = 1.1, Max = 7.5, Mean = 4.9, S.D. = 2.1
Critical value = 3
Significance level = 0.05
Time Period = 03/28/2011 to 11/29/2022 − All Available
Non−unique RL in data
Magnesium, mg/L
8
7
6
5
4
3
2
1
03/2011
01/2014
11/2016
08/2019
06/2022
Time (MM/YYYY)

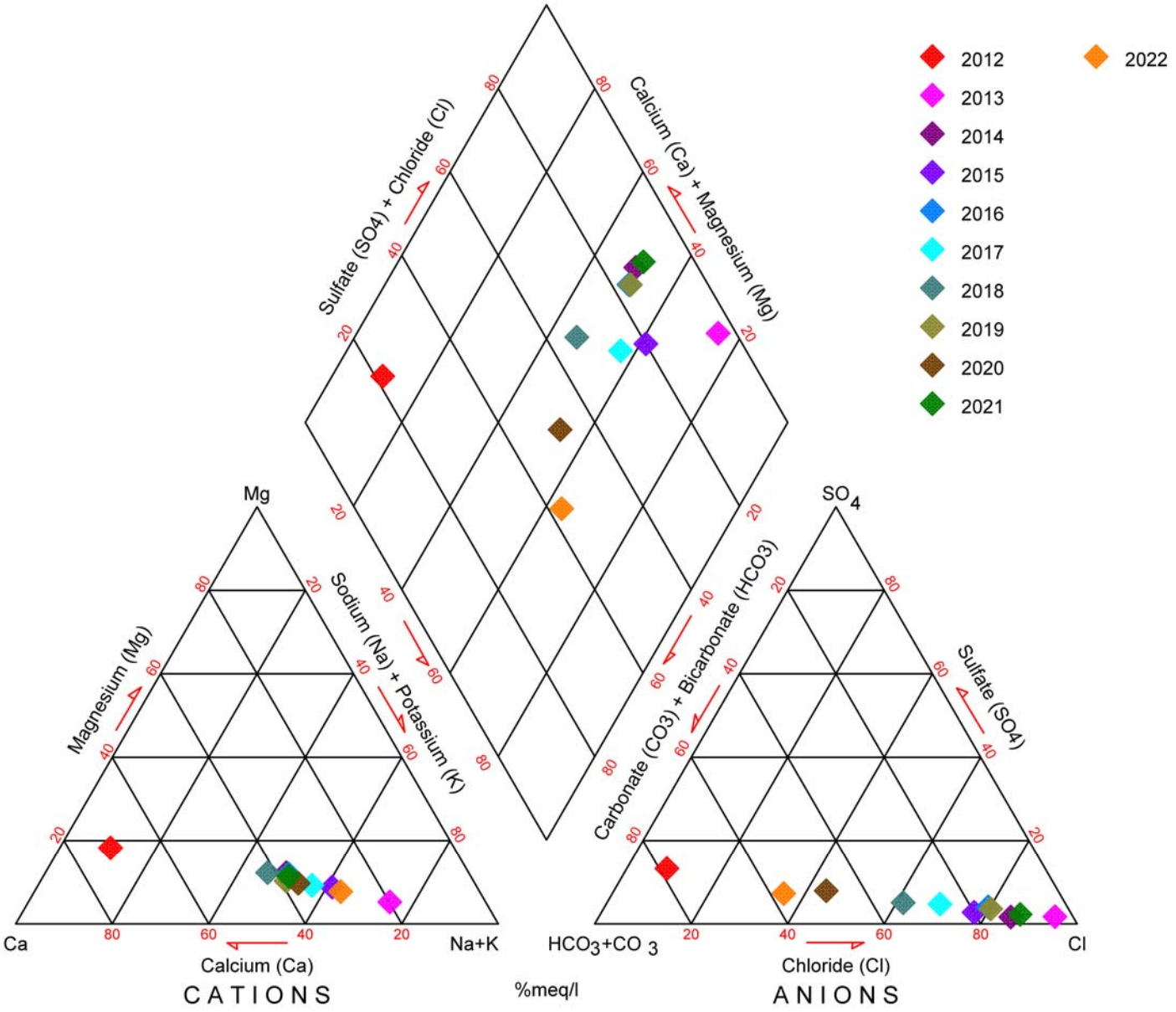
Appendix H

Eagle Mine

Groundwater Piper Diagrams

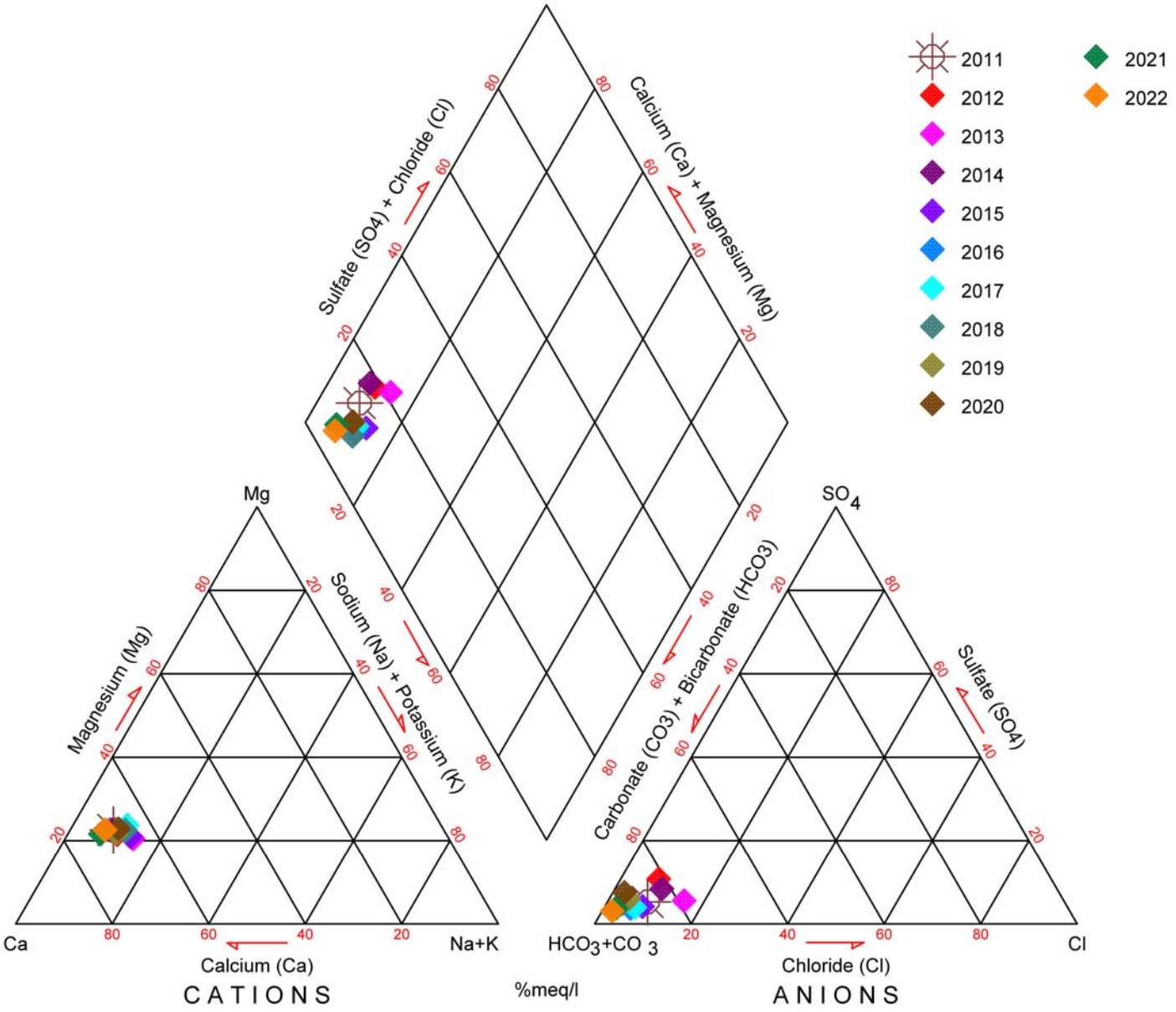
WELL QAL024A

2022 Piper Diagram



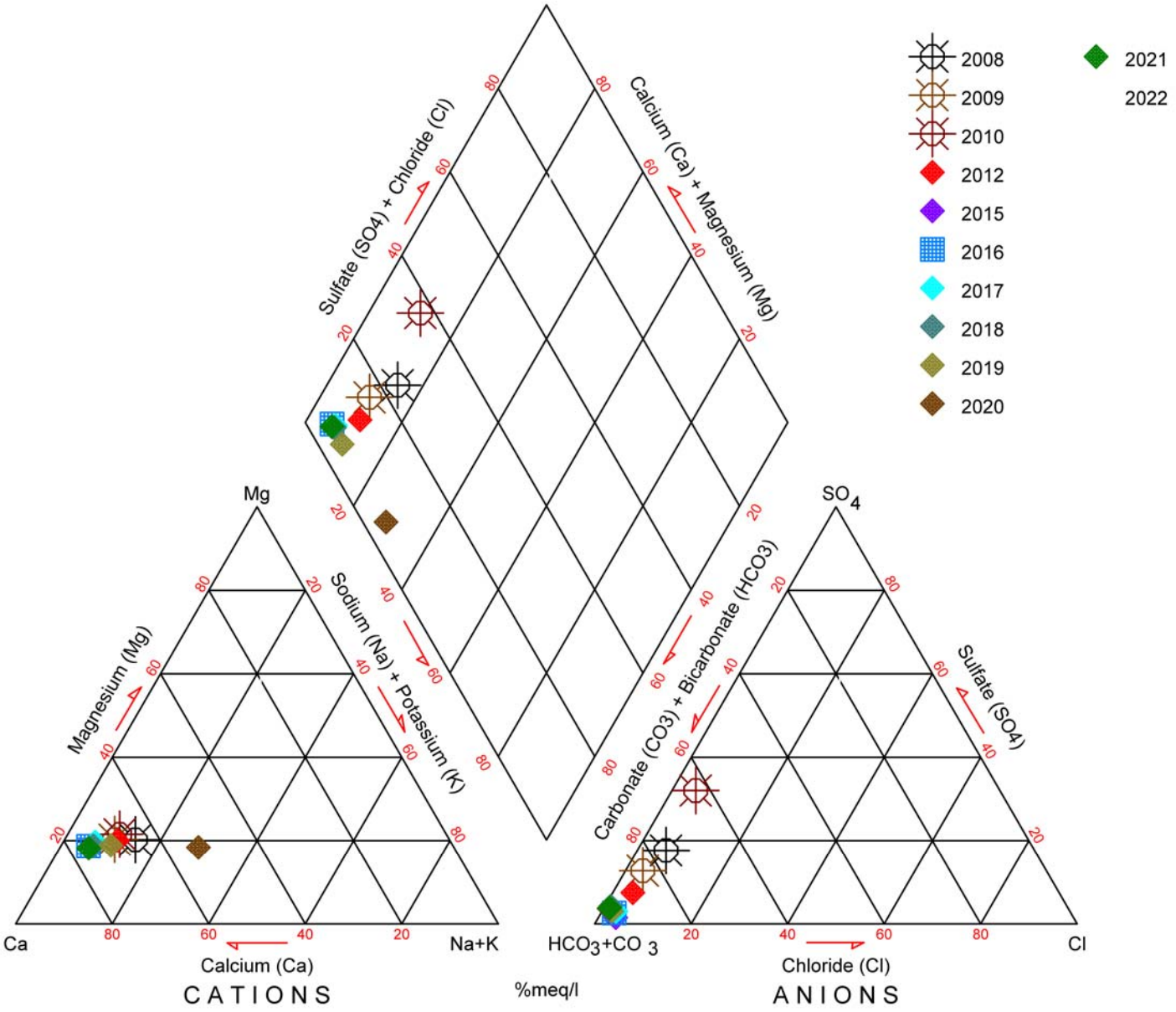
WELL QAL025A

2022 Piper Diagram



WELL QAL026A

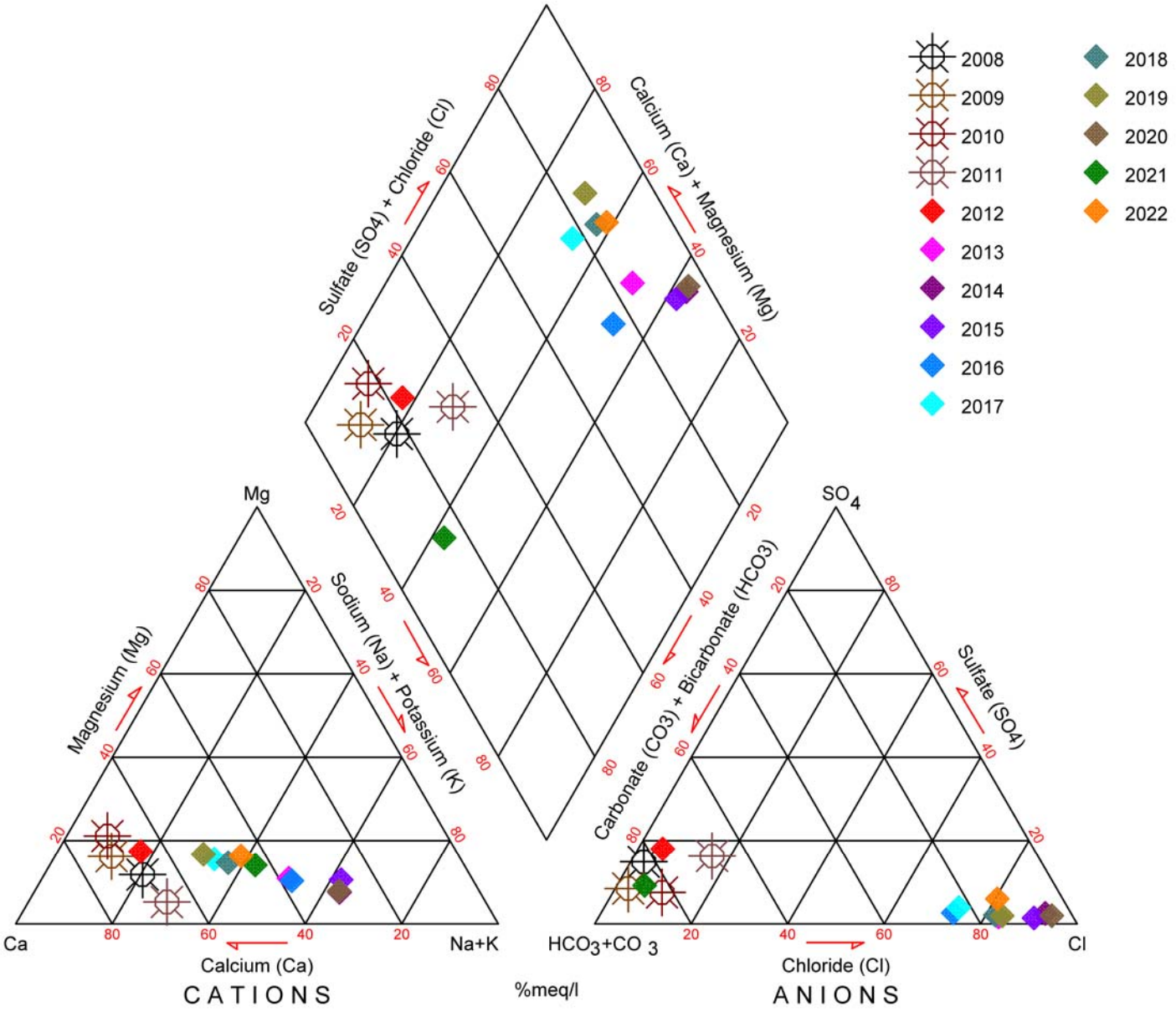
2022 Piper Diagram - No Data Available*



*No data collected in 2022 because of insufficient water volume.

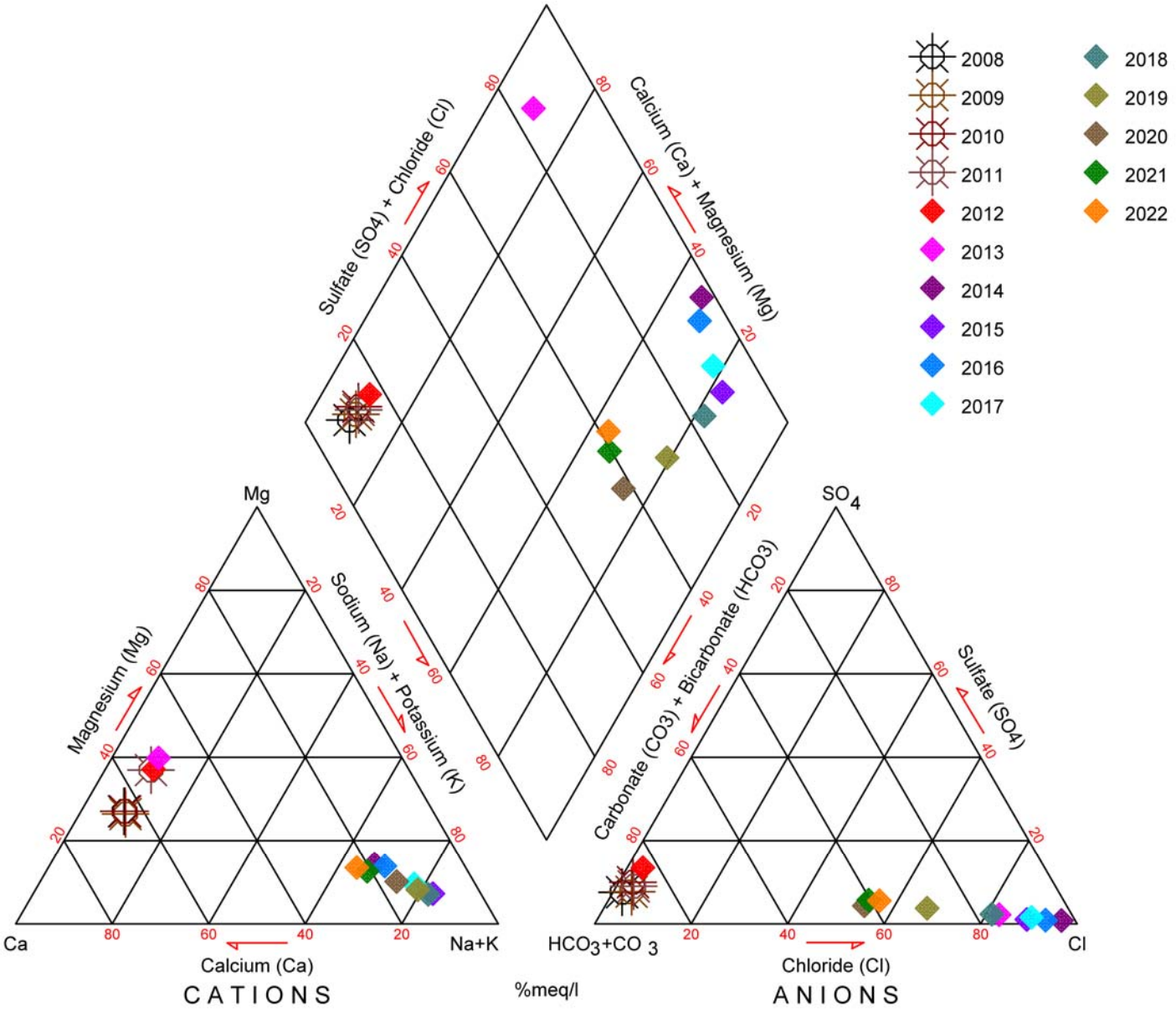
WELL QAL029A

2022 Piper Diagram



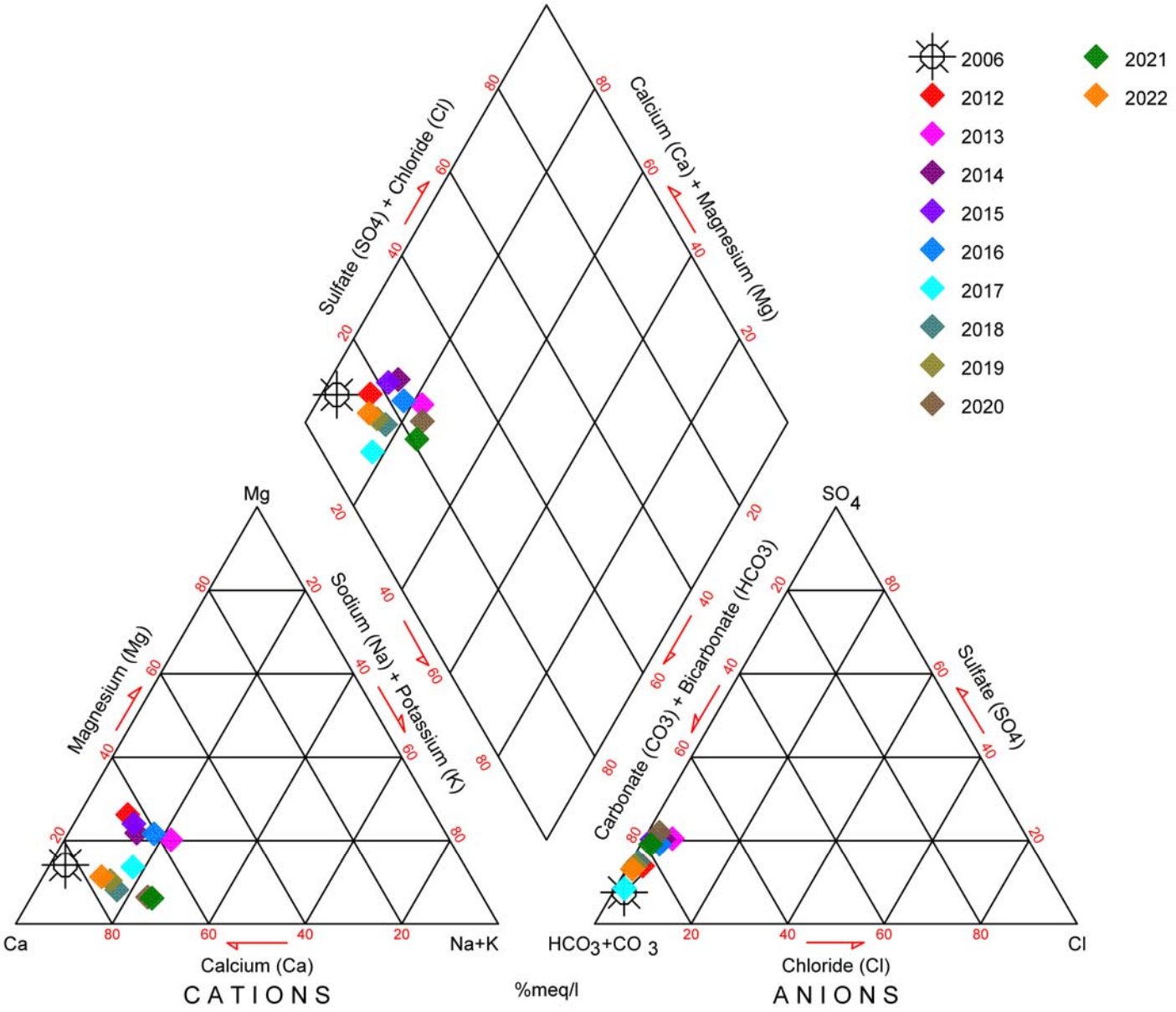
WELL QAL029D

2022 Piper Diagram



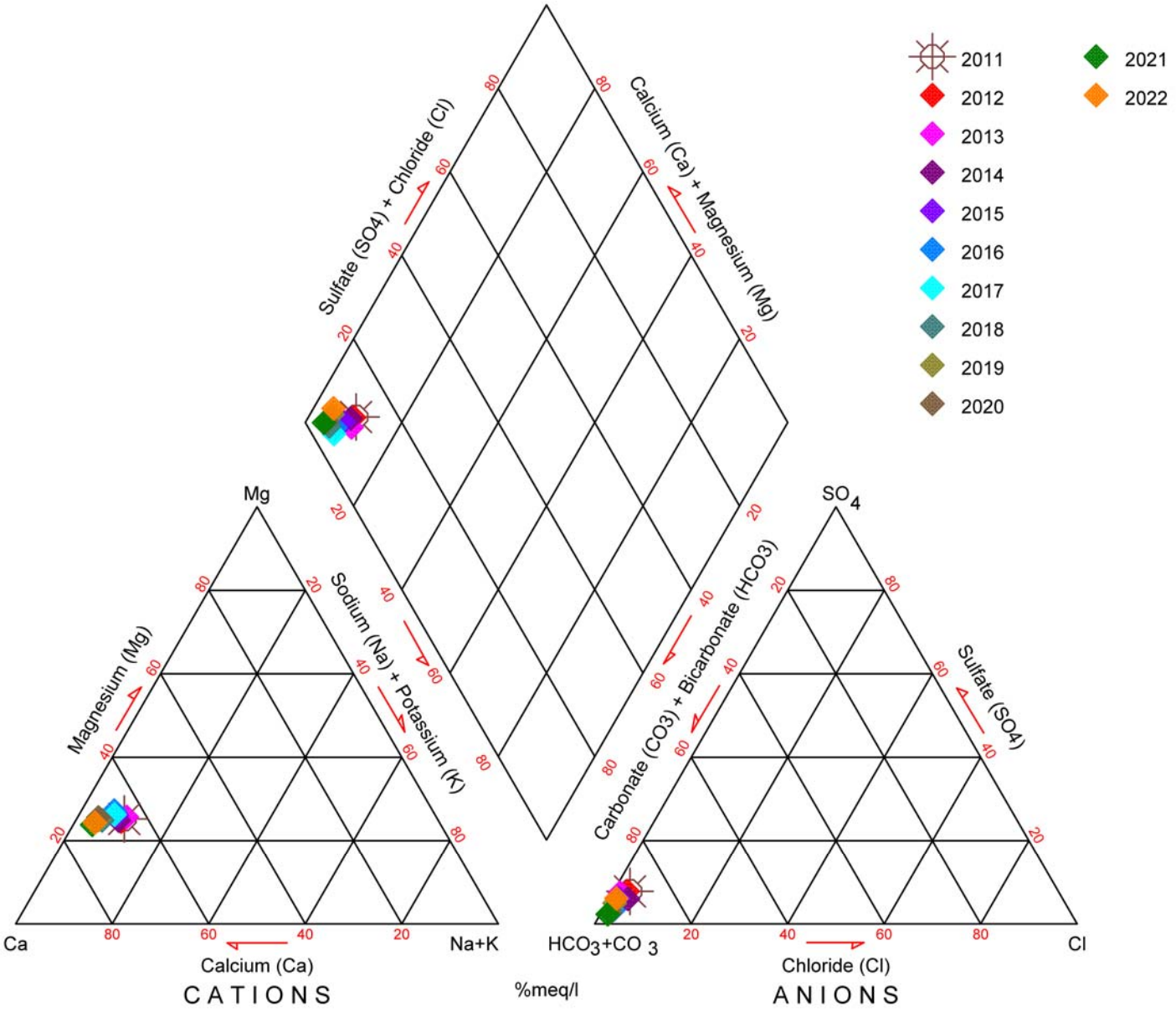
WELL QAL044B

2022 Piper Diagram



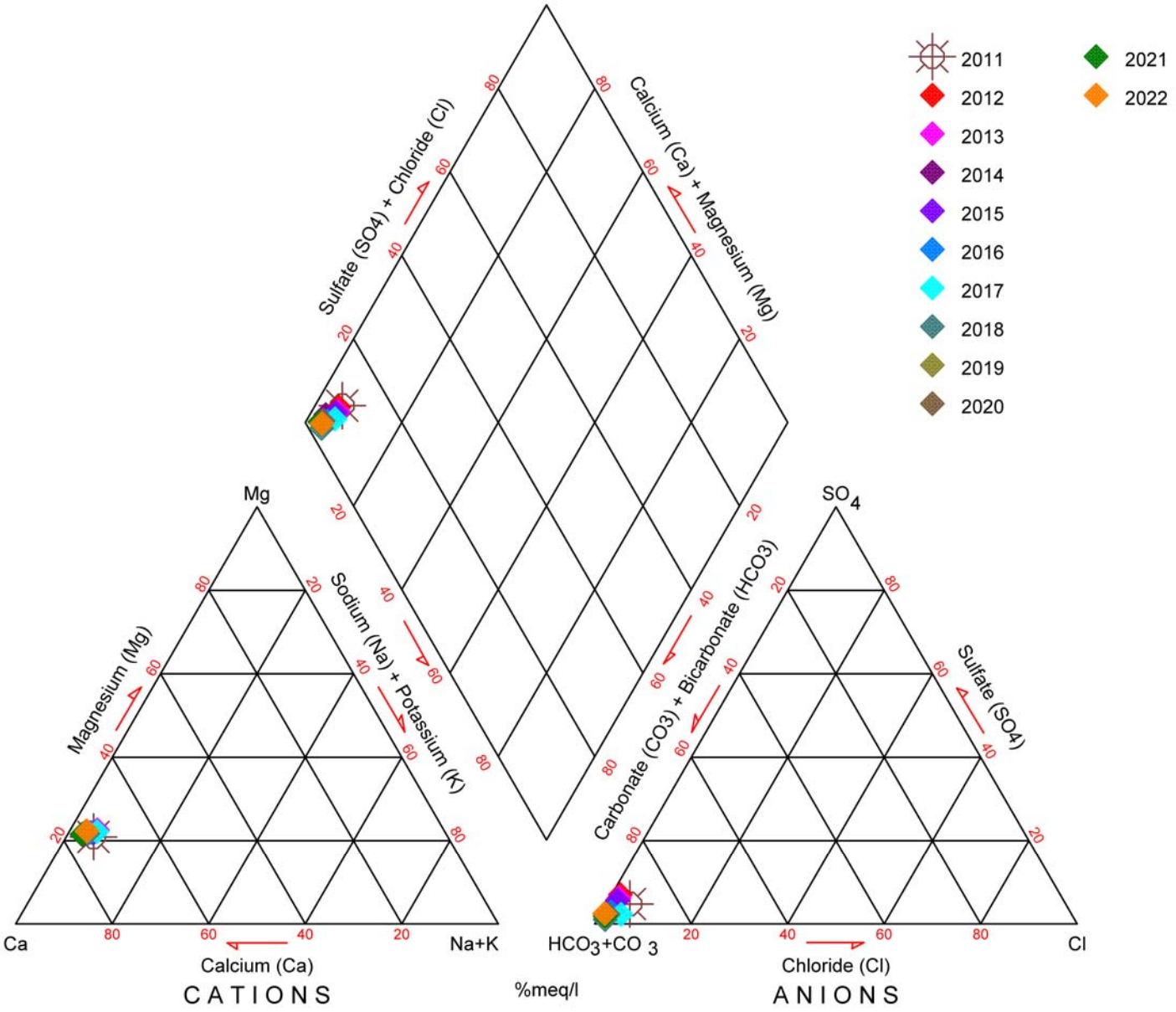
WELL QAL060A

2022 Piper Diagram



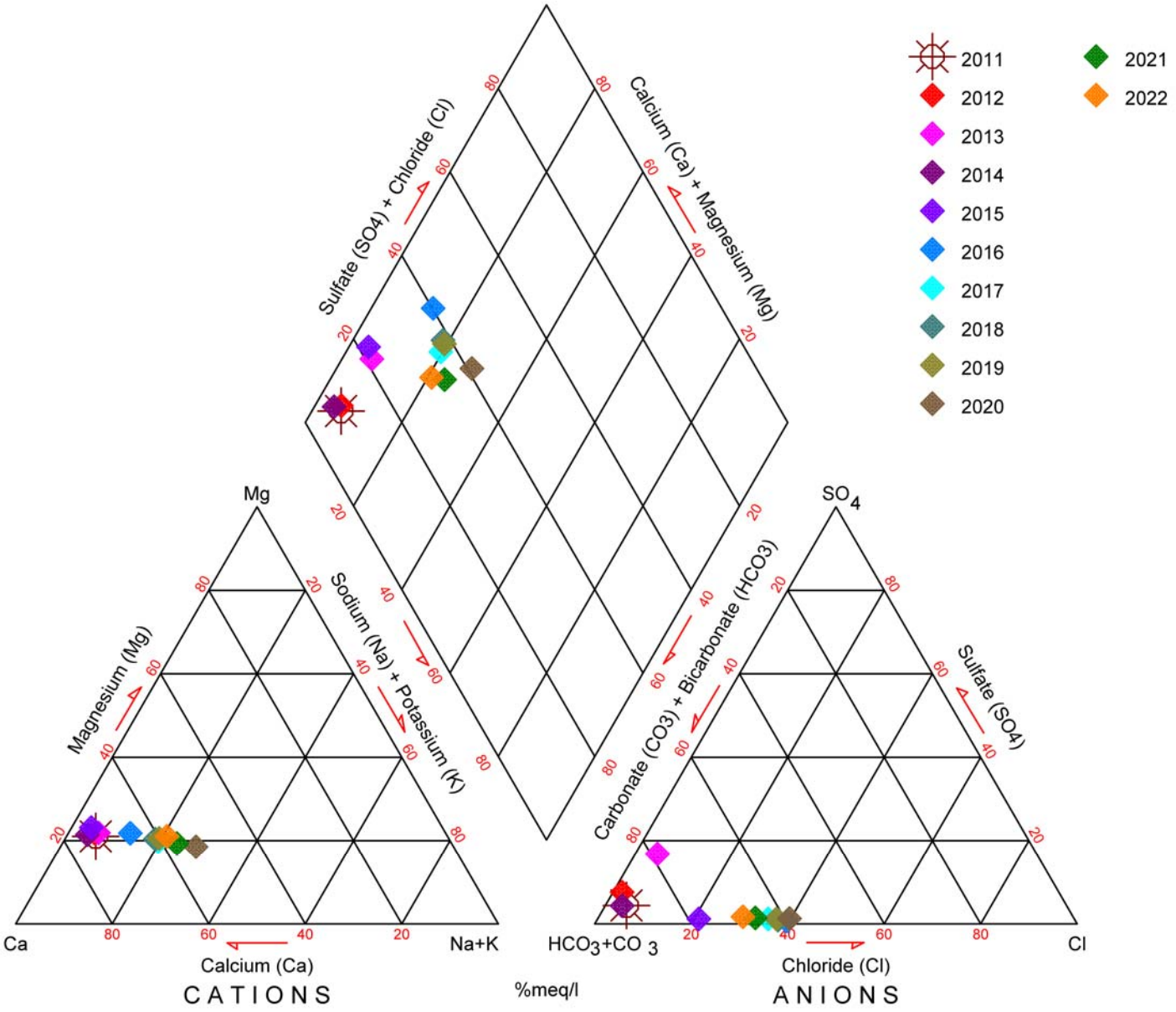
WELL QAL061A

2022 Piper Diagram



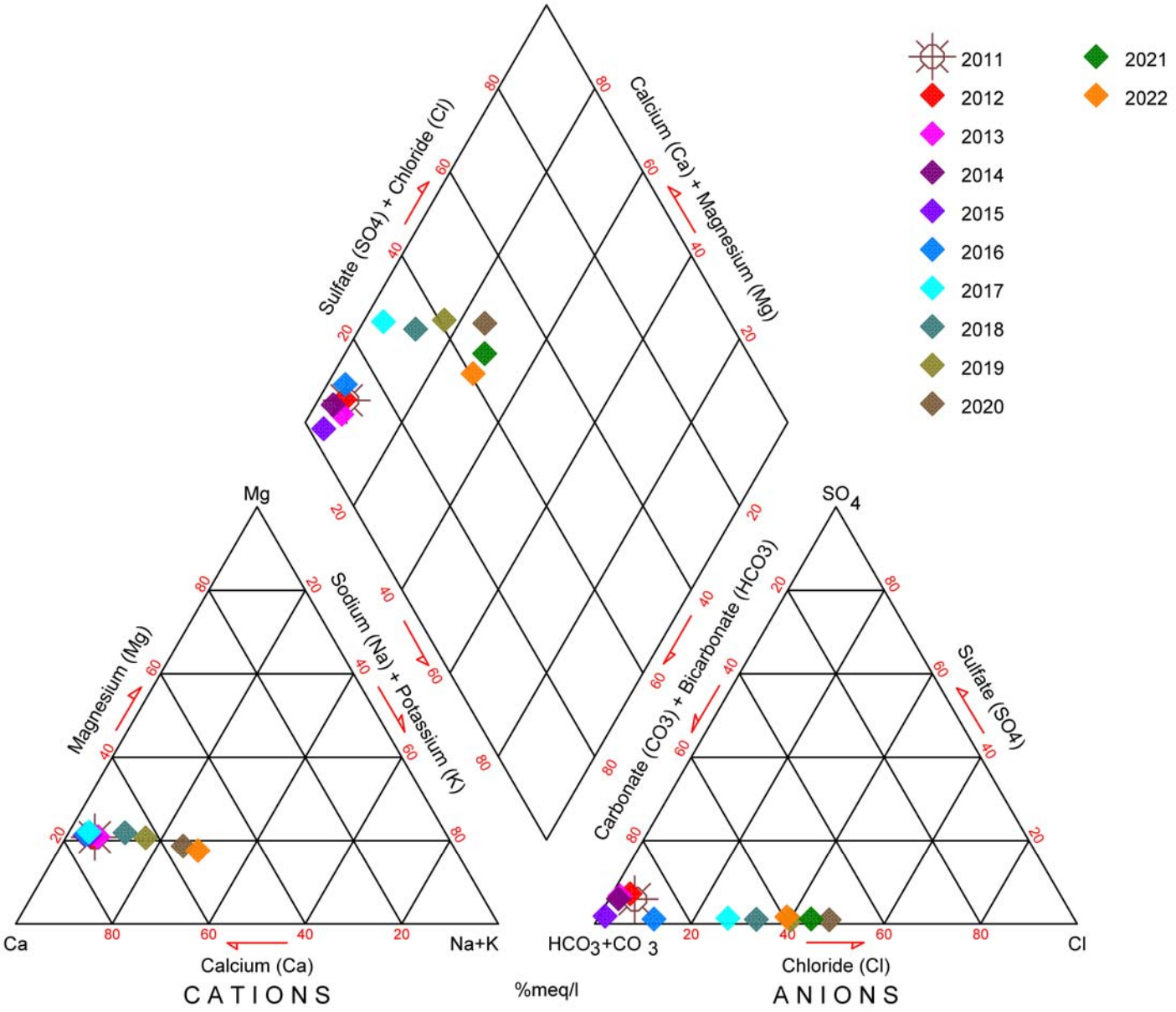
WELL QAL062A

2022 Piper Diagram



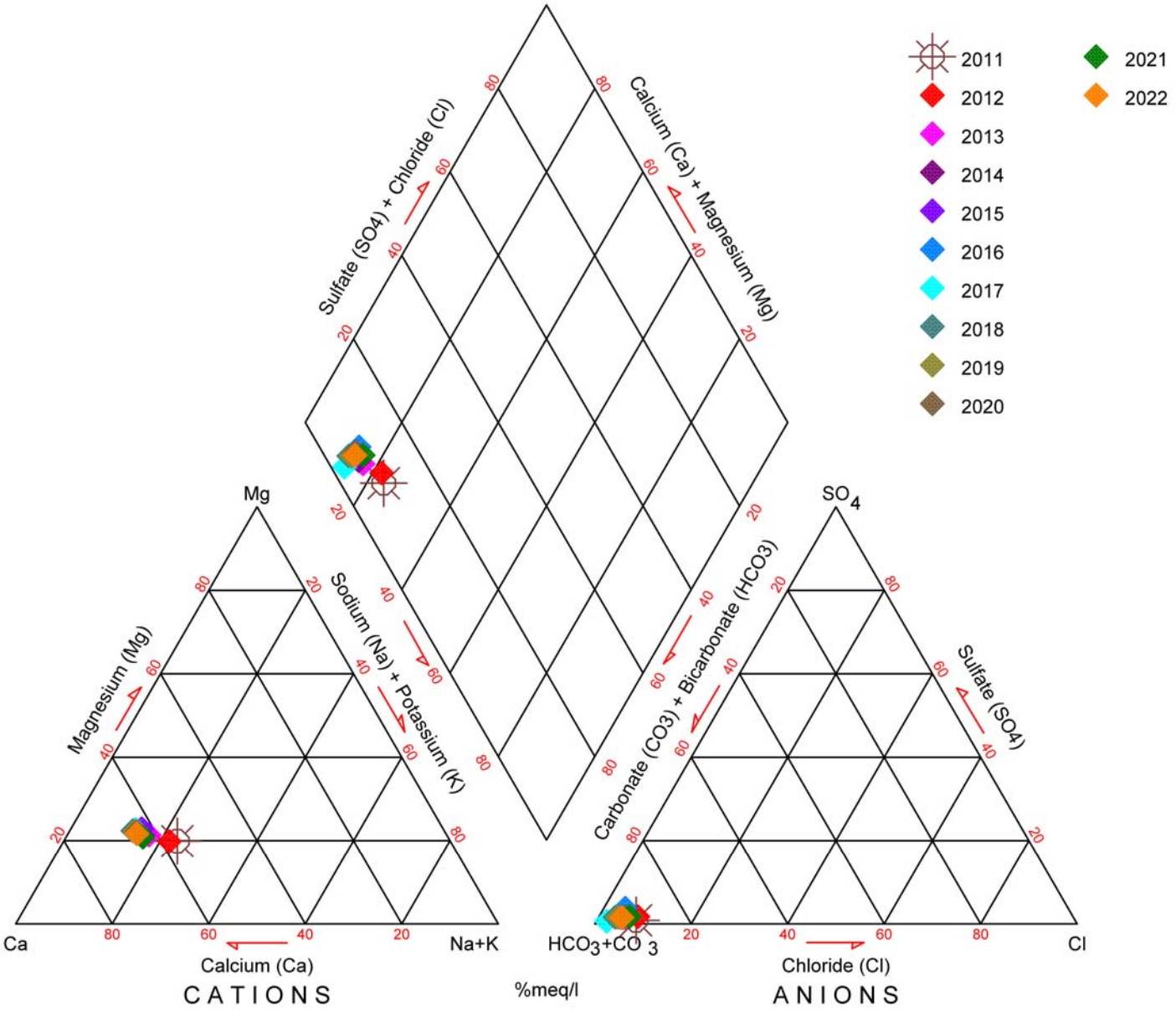
WELL QAL063A

2022 Piper Diagram



WELL QAL064D

2022 Piper Diagram



WELL QAL066D

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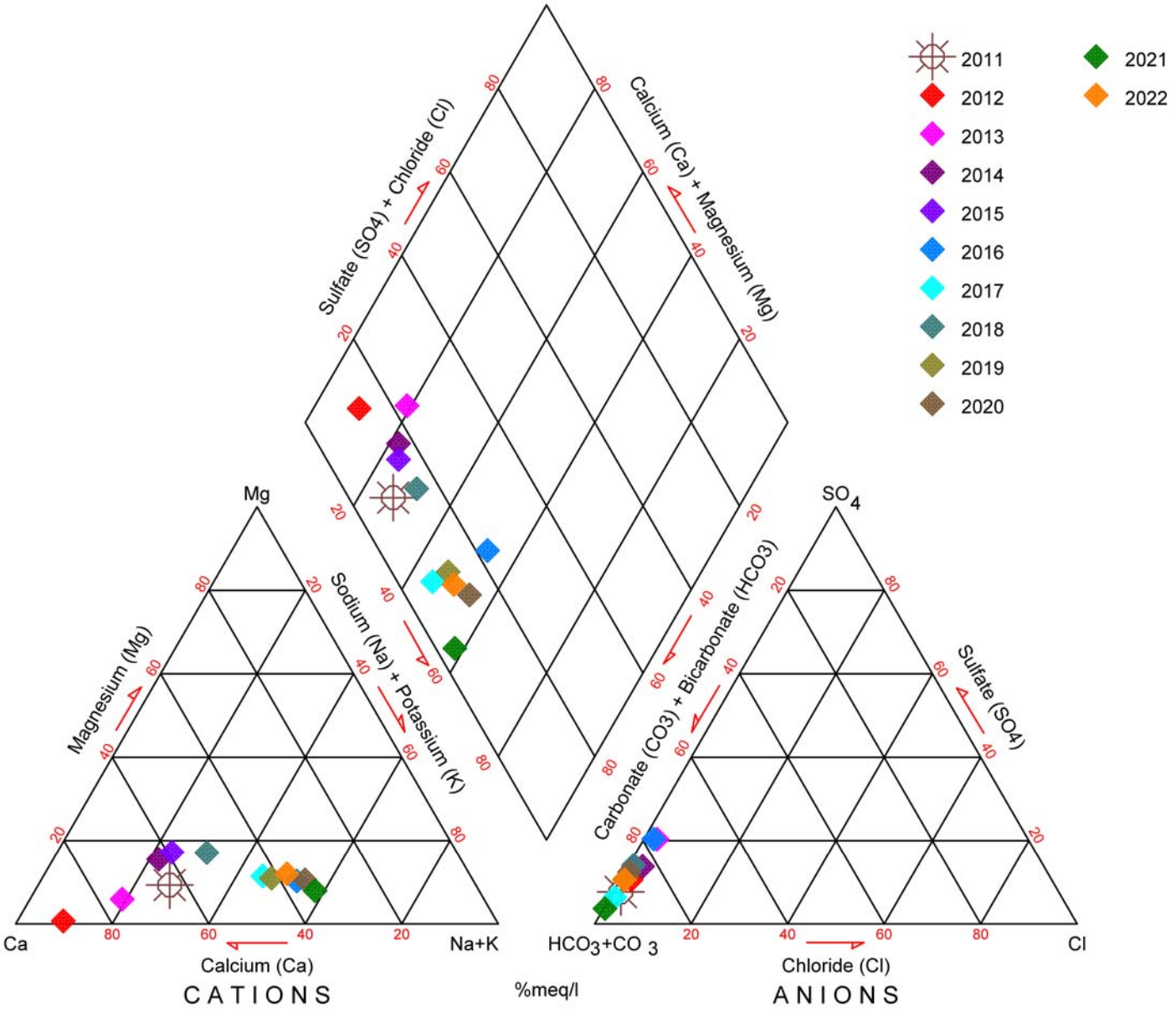

WELL QAL067A

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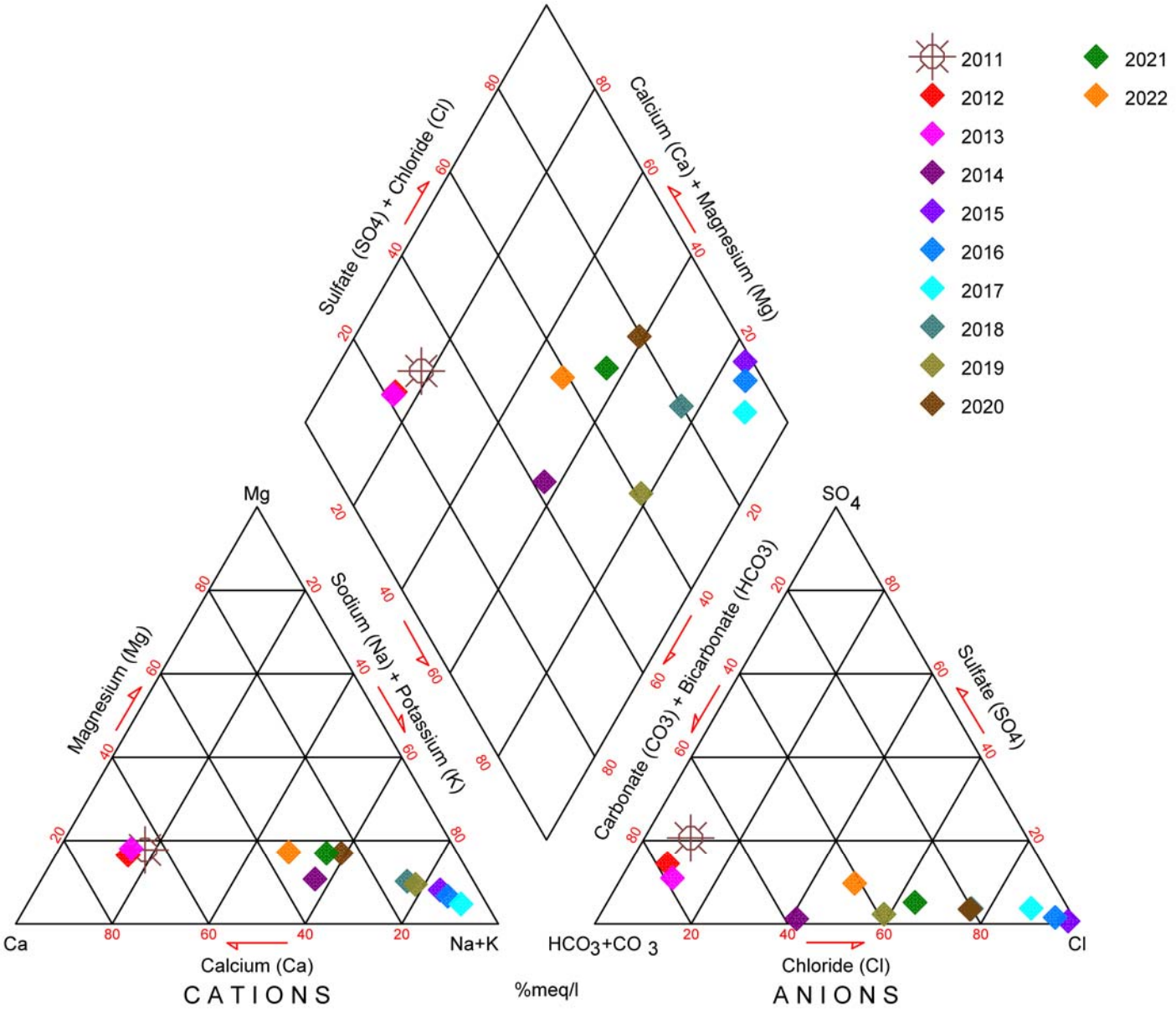

WELL QAL068A

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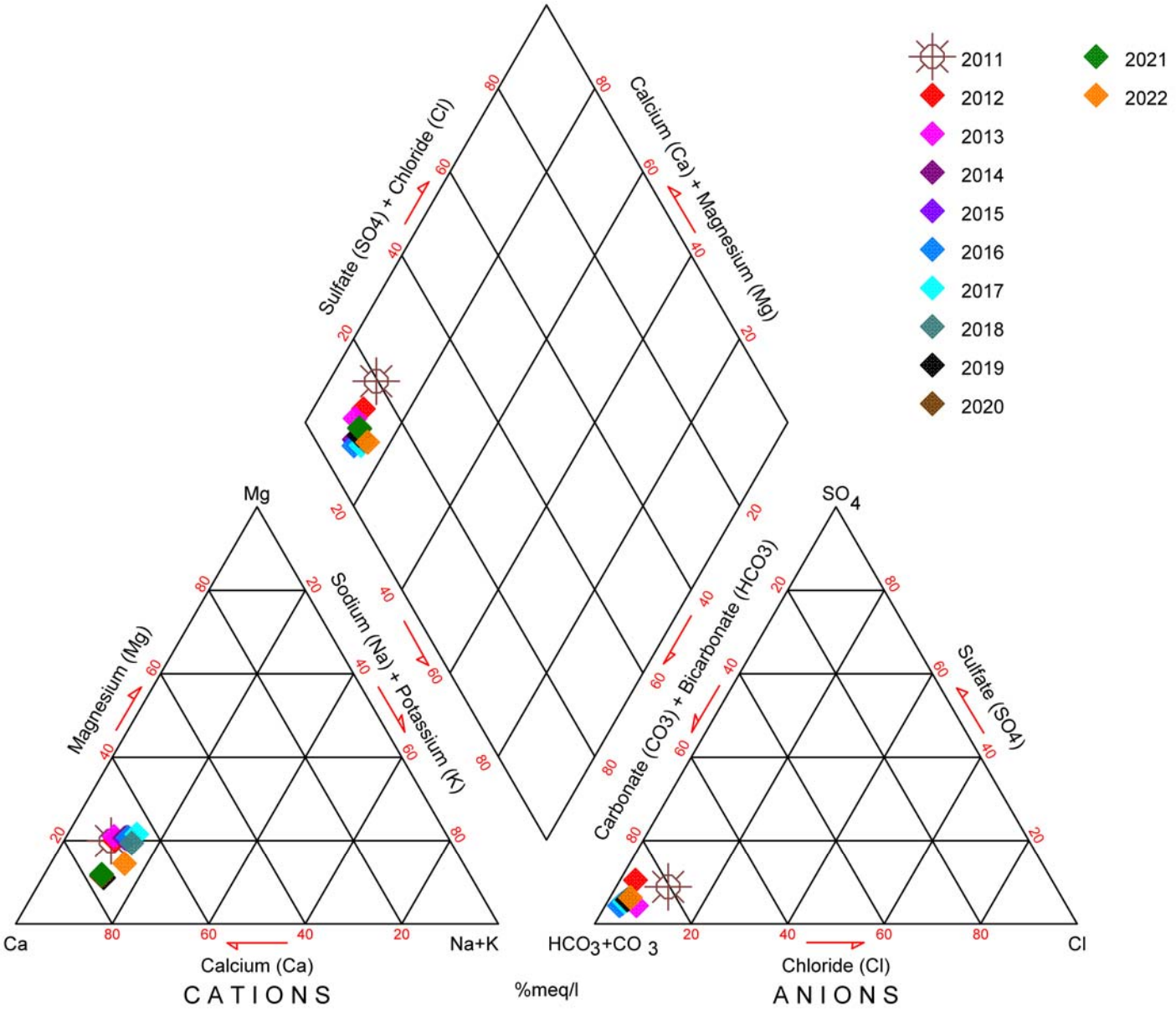
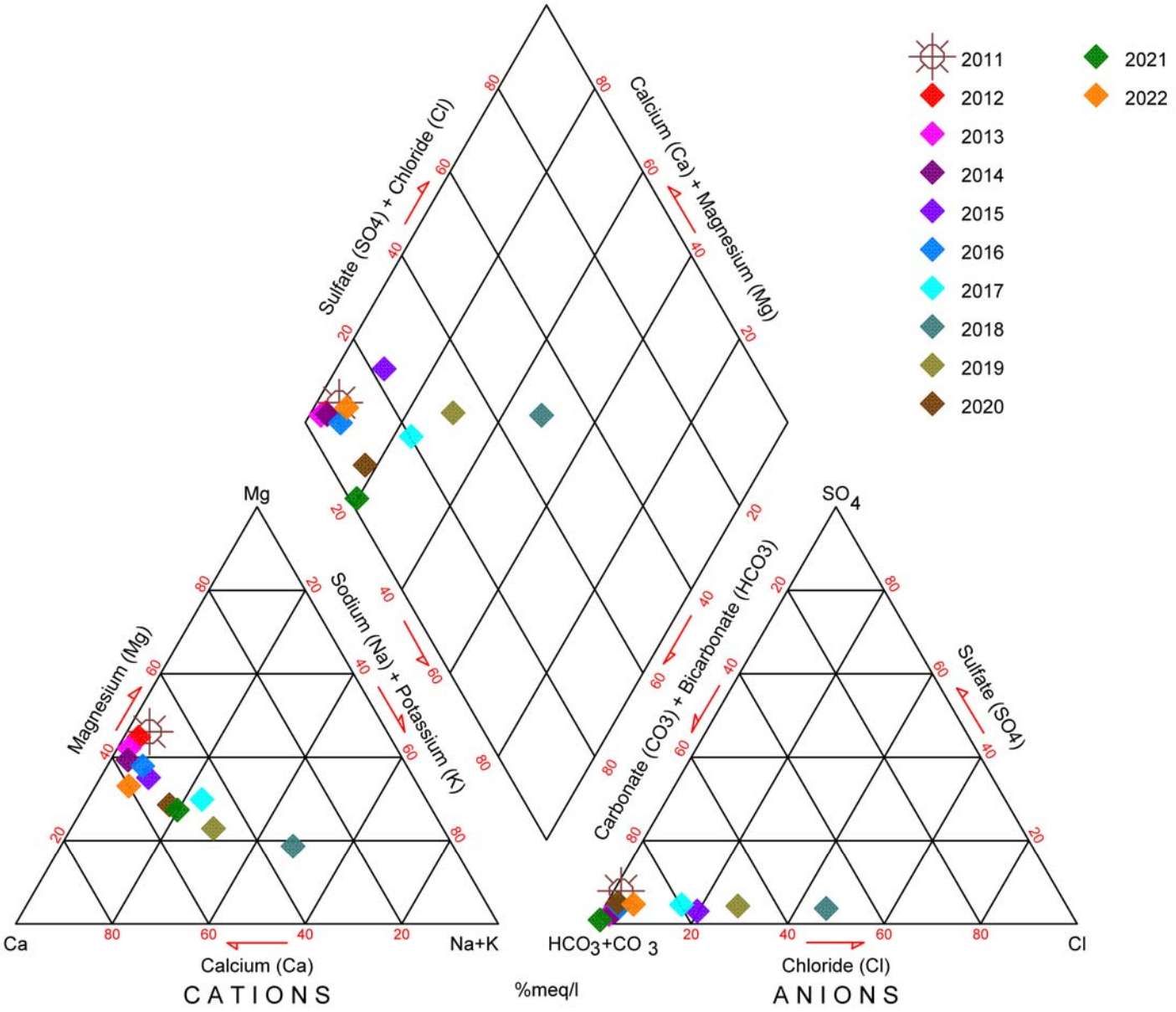


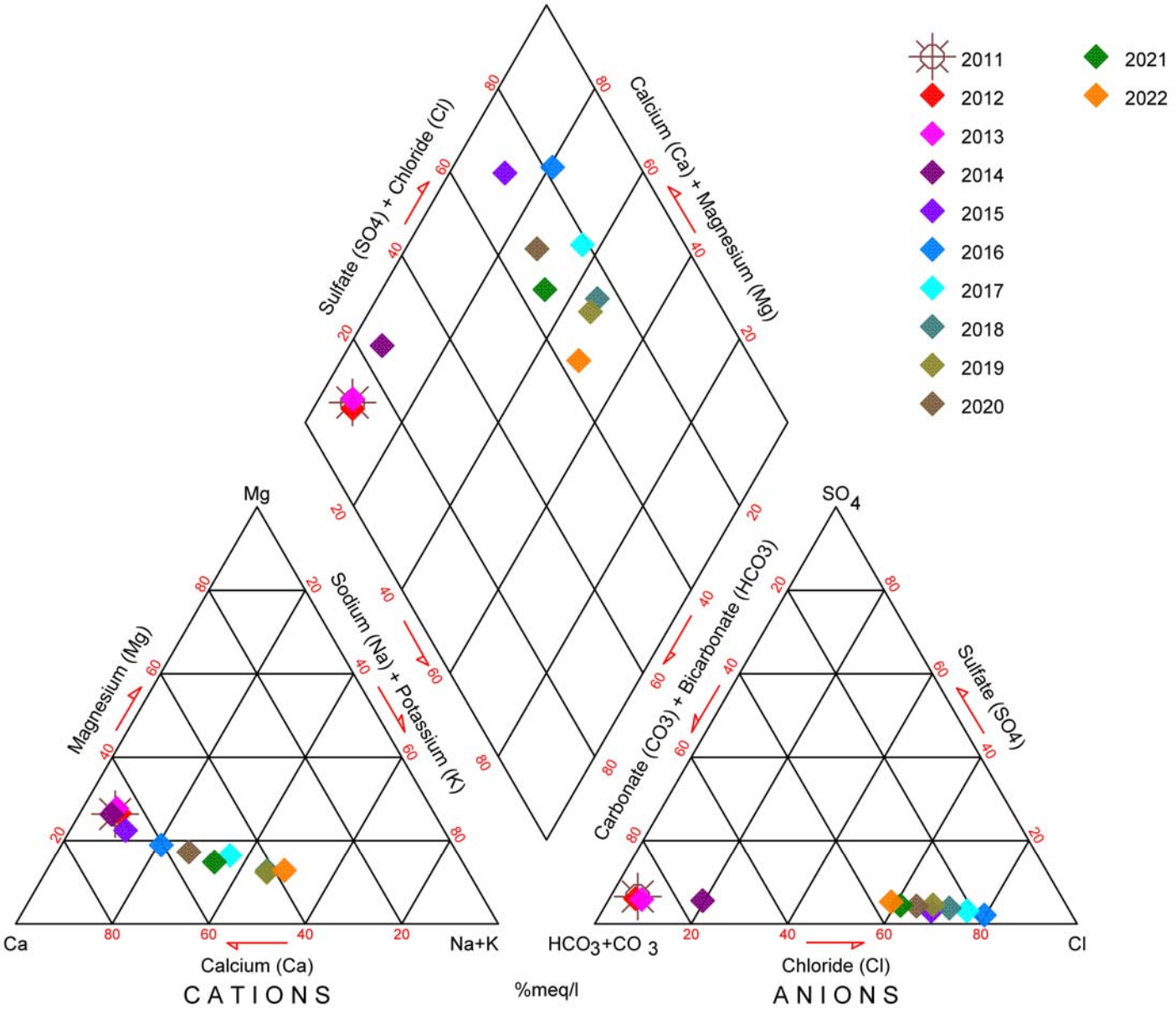
WELL QAL069A

2022 Piper Diagram



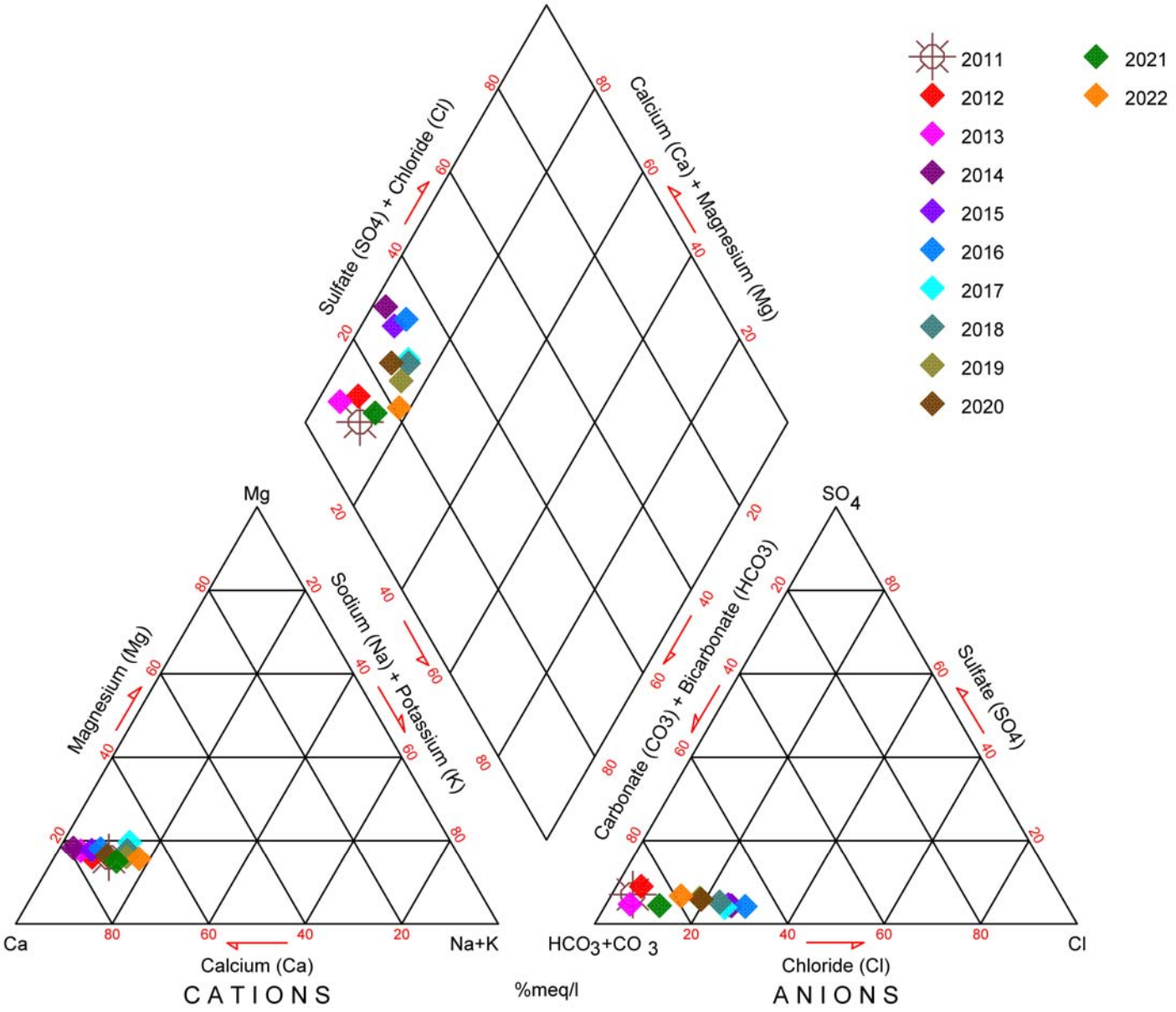
WELL QAL070A

2022 Piper Diagram



WELL QAL071A

2022 Piper Diagram



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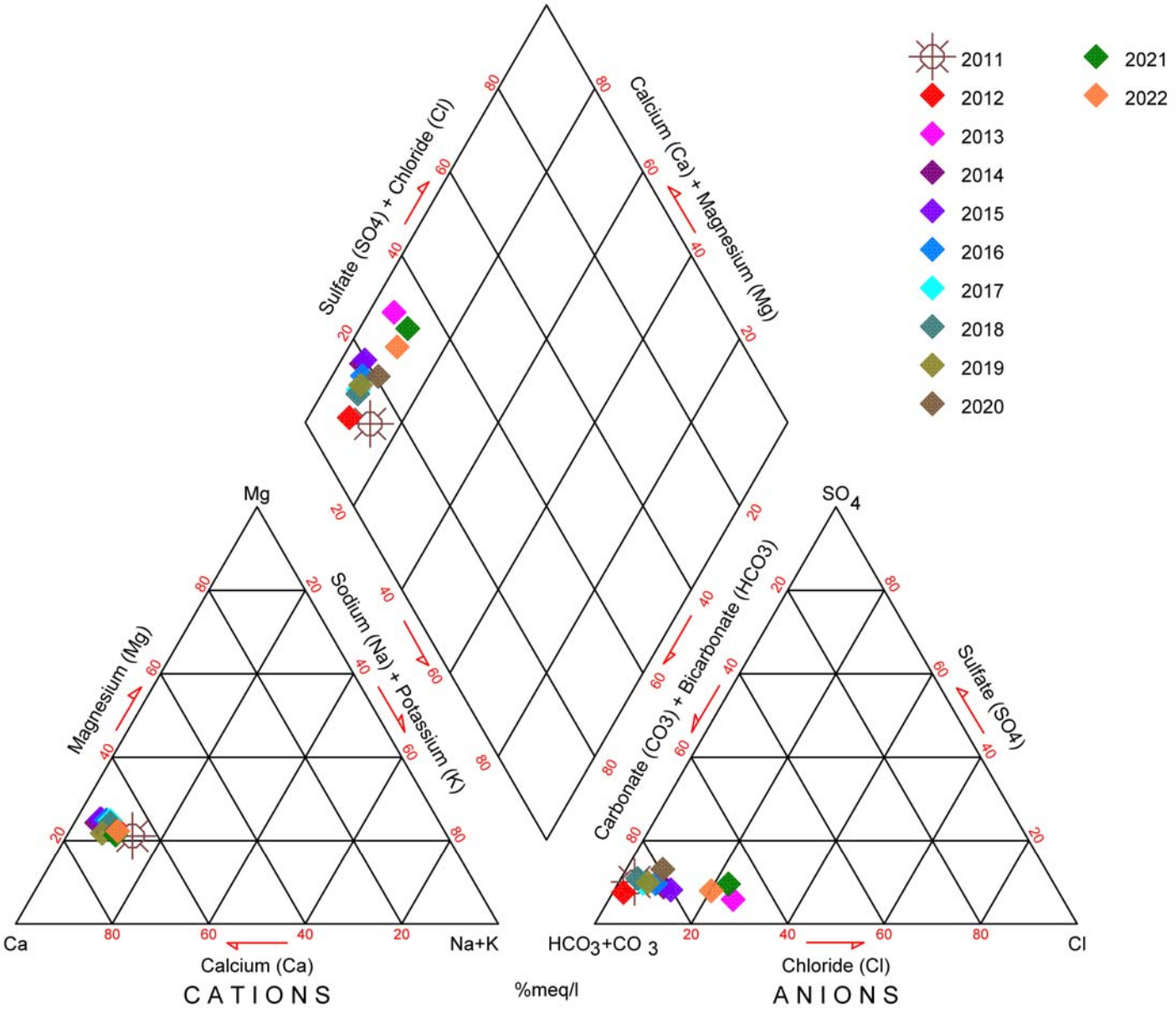
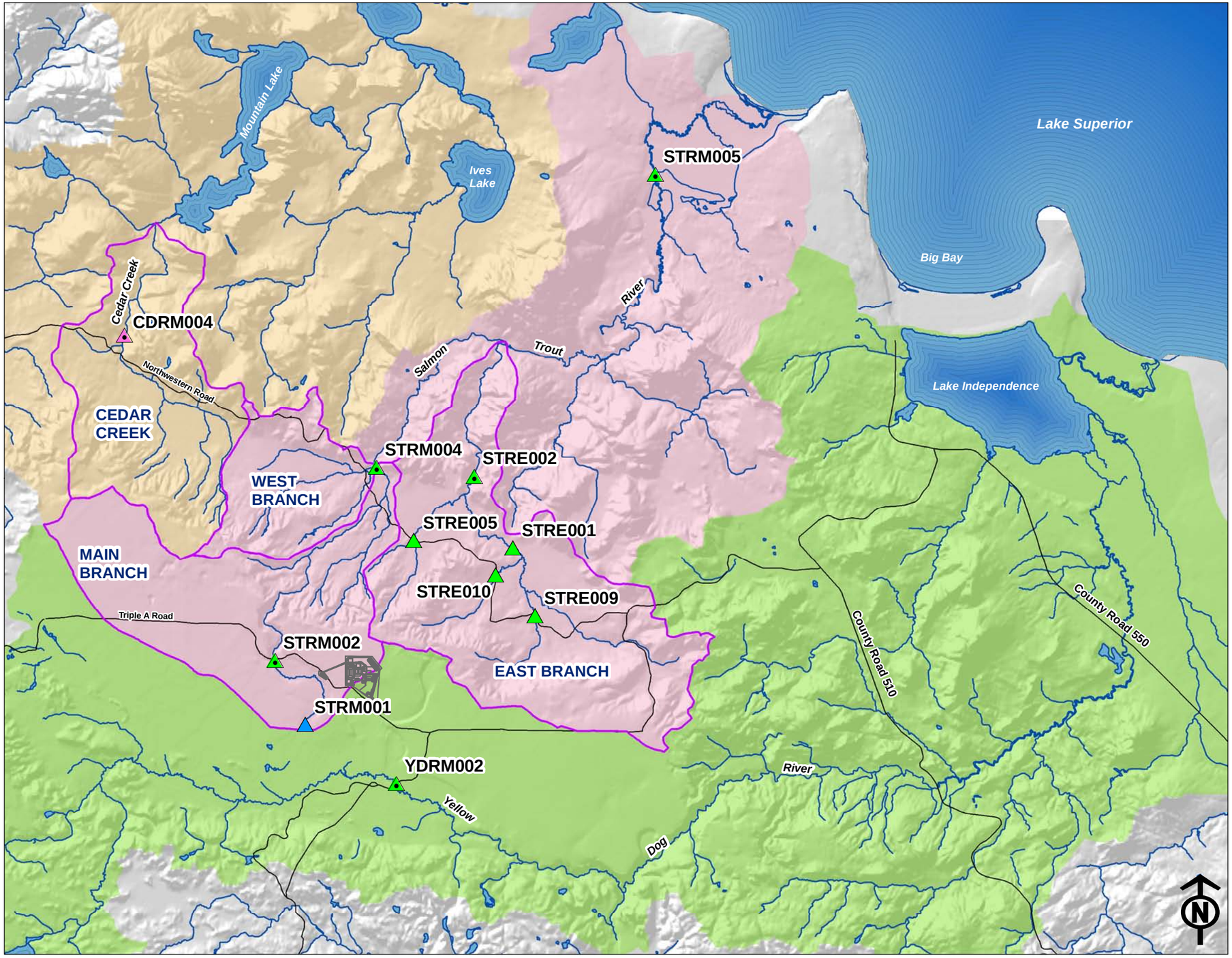
2022 Piper Diagram



Appendix I

Eagle Mine

Surface Water Location Map



MINE PERMIT SURFACE WATER MONITORING LOCATIONS

- COMPLIANCE WATER QUALITY
- BACKGROUND WATER QUALITY
- REFERENCE WATER QUALITY
- *Instrumented for continuous monitoring*
- PINE RIVER WATERSHED
- SALMON TROUT RIVER WATERSHED
- YELLOW DOG RIVER WATERSHED
- SUBWATERSHED
- ROAD
- HYDROGRAPHY
- MINE FACILITY

Reference

Data provided by: Eagle Mine and North Jackson Company

Projection & Datum: UTM NAD 83 Zone 16N

0 1 2 Miles

Scale: 1:90,000

Eagle Mine
a subsidiary of lundin mining

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Appendix J

Eagle Mine

Surface Water Results

and

Benchmark Summary Table

2022
Mine Permit Surface Water Quality Monitoring Data
Benchmark Summary Table

Location	Location Classifcation	Q1	Q2	Q3	Q4
STRM001	Background	**pH**			
STRM002	Compliance				Iron, Mercury
STRM004	Compliance	Iron			
STRM005	Compliance		pH	**pH**, **Iron**	
STRE001	Compliance	pH		**Iron**	Iron
STRE002	Compliance	Mercury			
STRE005	Compliance		Alkalinity Bicarbonate, **Calcium, Magnesium, Hardness**	**Manganese**	Mercury
STRE009	Compliance		**Calcium, Hardness**		**Iron**
STRE010	Compliance		Alkalinity Bicarbonate**, Calcium, Magnesium, Hardness**		**Iron**
YDRM002	Compliance	Iron	Aluminum, Manganese		
CDRM004	Compliance				

Parameters listed in this table had values reported that were equal to or greater than a site-specific benchmark. Parameters in BOLD are instances in which the Department was notified because benchmarks deviations were identified at compliance monitoring locations for two consecutive seasonal (e.g. Q1 2013 and Q1 2014) sampling events. If the location is classified as background or reference, Department notification is not required for an exceedance.

2022
Mine Permit Surface Water Quality Monitoring Data
STRM001 (Background)
Eagle Mine

Parameter	Unit	Permit RL	STRM001 Seasonal Benchmark				STRM001 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/9/22		5/23/22		8/29/22		10/1/22	
Field														
D.O.	ppm	--	--	--	--	--	**4.6**		**5.9**		**3.5**		**6.3**	
Flow	cfs	--	--	--	--	--	**--**		<0.1		**0.10**		**0.30**	
pH	SU	--	6.2-7.2	6.2-7.2	6.2-7.2	6.0-7.0	**7.4**		**6.4**		**6.8**		**6.7**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**35**		**57**		**51**		**32**	
Temperature	°C	--	--	--	--	--	**0.0**		**11**		**19**		**11**	
Metals														
Aluminum	ug/L	50	--	200	--	--	--		<50.0		--		--	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Barium	ug/L	10.0	--	40	--	--	--		**10.4**		--		--	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	875	1,616	6,195	675	**526**		**457**	e	**2,410**		**389**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	44	179	392	40	**28**		<10.0	e	**77**		<10.0	
Mercury	ng/L	0.50	2.0	3.6	2.9	2.0	**0.70**		**1.7**		**0.8**		**1.1**	
Molybdenum	ug/L	10	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	40	--	--	--		**21.8**		--		--	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	7.3	--	--	--		**1.0**	s	--		--	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		<0.050		--		--	
Sulfate	mg/L	1.0	4.0	10.0	4.0	4.0	**1.2**		<1.0		<1.0		<1.0	
Major Cations														
Calcium	mg/L	0.50	--	11	--	--	--		**4.9**	e	--		--	
Magnesium	mg/L	0.50	--	2.4	--	--	--		**1.2**	e	--		--	
Potassium	mg/L	0.50	--	2.0	--	--	--		<0.50		--		--	
Sodium	mg/L	0.50	--	2.0	--	--	--		<1.0	e	--		--	
General														
Hardness	mg/L	3.0	--	36	--	--	--		**17**		--		--	
TDS	mg/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	

2022
Mine Permit Surface Water Quality Monitoring Data
STRM002 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	STRM002 Seasonal Benchmark				STRM002 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/9/22		5/23/22		8/29/22		10/24/22	
Field														
D.O.	ppm	--	--	--	--	--	**12**		**10**		**6.3**		**8.8**	
Flow	cfs	--	--	--	--	--	**1.2**		**1.9**		**1.4**		**3.4**	
pH	SU	--	6.8-7.8	6.5-7.5	6.3-7.3	6.5-7.5	**7.3**		**7.0**		**7.3**		**6.8**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**68**		**76**		**66**		**42**	
Temperature	°C	--	--	--	--	--	**0.30**		**8.8**		**17**		**10**	
Metals														
Aluminum	ug/L	50	--	200	--	--	--		**68**		--		**--**	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Barium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	304	651	703	504	**186**		**346**	e	**431**		**533**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	40	58	40	40	<10.0		**10**	e	**17.8**		**10.6**	
Mercury	ng/L	0.50	2.0	5.8	2.4	2.8	**0.67**		**1.9**		**1.5**		**3.8**	
Molybdenum	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	**1.5**		<1.0		**1.2**		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	250	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	34	--	--	--		**29**		--		**--**	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		<0.050		--		--	
Sulfate	mg/L	1.0	4.0	6.2	4.0	4.0	**2.1**		**1.5**	s	**1.4**		**1.4**	
Major Cations														
Calcium	mg/L	0.50	--	10	--	--	--		**7.6**	e	--		**--**	
Magnesium	mg/L	0.50	--	2.0	--	--	--		**1.6**	e	--		**--**	
Potassium	mg/L	0.50	--	2.0	--	--	--		**0.57**		--		**--**	
Sodium	mg/L	0.50	--	2.0	--	--	--		<1.0	e	--		--	
General														
Hardness	mg/L	3.0	--	32	--	--	--		**26**		--		**--**	
TDS	mg/L	50	200	200	200	200	**51**	e	<50.0		**51**	s	**55**	

Explanations of abbreviations are included on the final page of this table.

2022
Mine Permit Surface Water Quality Monitoring Data
STRM004 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	STRM004 Seasonal Benchmark				STRM004 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/7/22		5/25/22		8/30/22		10/24/22	
Field														
D.O.	ppm	--	--	--	--	--	**14**		**10**		**8.7**		**9.8**	
Flow	cfs	--	--	--	--	--	**4.7**		**6.1**		**4.5**		**9.3**	
pH	SU	--	7.0-8.0	7.3-8.3	7.2-8.2	7.2-8.2	**8.0**		**7.6**		**7.7**		**7.5**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**105**		**148**		**107**		**79**	
Temperature	°C	--	--	--	--	--	**0.0**		**10**		**16**		**11**	
Metals														
Aluminum	ug/L	50	--	993	--	--	--		**66**		--		**--**	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	**1.1**		<1.0		**1.5**		<1.0	
Barium	ug/L	10.0	--	40	--	--	--		<10.0		--		**--**	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	312	984	500	406	**365**		**178**	e	**275**		**381**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	40	61	40	40	**28**		**14**	e	**23**		**13**	
Mercury	ng/L	0.50	2.5	14	3.5	2.9	**1.3**		**1.6**		**1.2**		**2.9**	
Molybdenum	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	52	--	--	--		**49**		--		**--**	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		<0.050		--		**--**	
Sulfate	mg/L	1.0	4.5	4.0	4.0	4.0	**2.9**		**2.1**	s	**1.9**		**2.0**	
Major Cations														
Calcium	mg/L	0.50	--	16	--	--	--		**14**	e	--		**--**	
Magnesium	mg/L	0.50	--	3.0	--	--	--		**2.8**	e	--		**--**	
Potassium	mg/L	0.50	--	2.0	--	--	--		**0.70**		--		**--**	
Sodium	mg/L	0.50	--	2.0	--	--	--		**1.0**	e	--		**--**	
General														
Hardness	mg/L	3.0	--	54	--	--	--		**47**		--		**--**	
TDS	mg/L	50	200	200	200	200	**52**	e	**53**		**55**	s	**63**	

2022
Mine Permit Surface Water Quality Monitoring Data
STRM005 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	STRM005 Seasonal Benchmark				STRM005 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/8/22		5/25/22		8/29/22		10/24/22	
Field														
D.O.	ppm	--	--	--	--	--	**14**		**10**		**9.0**		**10**	
Flow	cfs	--	--	--	--	--	**30**		**46**		**35**		**47**	
pH	SU	--	7.1-8.1	6.6-7.6	6.6-7.6	7.2-8.2	**7.9**		**8.0**		**7.8**		**7.8**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**73**		**177**		**144**		**113**	
Temperature	°C	--	--	--	--	--	**0.10**		**10**		**16**		**11**	
Metals														
Aluminum	ug/L	50	--	568	--	--	--		**71**		--		**--**	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		**1.1**		<1.0	
Barium	ug/L	10.0	--	40	--	--	--		**13**		--		--	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	166	470	201	309	**142**		**163**	e	**202**		**290**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	40	40	40	40	**11**		**17**	e	**15**		**14**	
Mercury	ng/L	0.50	2.0	11	2.0	2.5	**1.2**		**1.3**		**0.81**		**2.3**	
Molybdenum	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	40	89	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	66	--	--	--		**58**		--		**--**	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		<0.050		--		**--**	
Sulfate	mg/L	1.0	6.6	4.0	4.0	4.0	**3.6**		**2.8**		**3.1**		**2.9**	
Major Cations														
Calcium	mg/L	0.50	--	19	--	--	--		**17**	e	--		**--**	
Magnesium	mg/L	0.50	--	3.9	--	--	--		**3.4**	e	--		**--**	
Potassium	mg/L	0.50	--	2.0	--	--	--		**0.73**		--		**--**	
Sodium	mg/L	0.50	--	2.0	--	--	--		**1.3**	e	--		--	
General														
Hardness	mg/L	3.0	--	65	--	--	--		**57**		--		**--**	
TDS	mg/L	50	200	200	200	200	**73**	e	**51**		**81**	s	**77**	

2022
Mine Permit Surface Water Quality Monitoring Data
STRE001 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	STRE001 Seasonal Benchmark				STRE001 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/8/22		5/26/22		8/30/22		10/25/22	
Field														
D.O.	ppm	--	--	--	--	--	**13**		**11**		**9.7**		**9.3**	
Flow	cfs	--	--	--	--	--	**13**		**24**		**12**		**19**	
pH	SU	--	7.3-8.3	7.0-8.0	7.1-8.1	7.2-8.2	**8.5**		**7.6**		**7.8**		**7.6**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**139**		**190**		**144**		**126**	
Temperature	°C	--	--	--	--	--	**1.5**		**8.3**		**13**		**10**	
Metals														
Aluminum	ug/L	50	--	339	--	--	--		**101**		--		--	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		**1.0**		**1.4**		**1.0**	
Barium	ug/L	10.0	--	40	--	--	--		**11**		--		--	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	96	327	109	160	**76**		**175**	e	**129**		**172**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	40	40	40	94	**11**		**19**	e	**16**		**12**	
Mercury	ng/L	0.50	2.0	8.6	2.0	2.2	**0.82**		**2.5**		**0.71**		**1.6**	
Molybdenum	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	81	--	--	--		**61**		--		--	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		<0.050		--		--	
Sulfate	mg/L	1.0	6.1	4.0	4.0	4.0	**3.7**		**2.8**		**3.1**		**2.9**	
Major Cations														
Calcium	mg/L	0.50	--	24	--	--	--		**19**	e	--		--	
Magnesium	mg/L	0.50	--	4.6	--	--	--		**3.5**	e	--		--	
Potassium	mg/L	0.50	--	2.0	--	--	--		**0.55**		--		--	
Sodium	mg/L	0.50	--	2.0	--	--	--		**1.1**	e	--		--	
General														
Hardness	mg/L	3.0	--	78	--	--	--		**62**		--		--	
TDS	mg/L	50	200	200	200	200	**72**	e	**61**		**77**	s	**70**	

Explanations of abbreviations are included on the final page of this table.

2022
Mine Permit Surface Water Quality Monitoring Data
STRE002 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	STRE002 Seasonal Benchmark				STRE002 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/21/22		5/26/22		8/31/22		10/25/22	
Field														
D.O.	ppm	--	--	--	--	--	**13**		**11**		**10**		**10**	
Flow	cfs	--	--	--	--	--	**22**		**18**		**13**		**24**	
pH	SU	--	7.3-8.3	7.6-8.6	7.4-8.4	7.2-8.2	**8.2**		**7.9**		**8.0**		**7.6**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**122**		**197**		**147**		**124**	
Temperature	°C	--	--	--	--	--	**1.6**		**7.9**		**13**		**10**	
Metals														
Aluminum	ug/L	50	--	200	--	--	--		**76**		--		--	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		**1.1**		**1.5**		**1.0**	
Barium	ug/L	10.0	--	40	--	--	--		**12**		--		--	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	165	194	191	182	**122**		**141**	e	**100**		**167**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	40	40	40	40	**10**		**15**	e	**14**		<10.0	
Mercury	ng/L	0.50	2.0	4.8	2.0	2.0	**2.2**		**1.7**		**0.66**		**1.7**	
Molybdenum	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	81	--	--	--		**65**		--		--	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		<0.050		--		--	
Sulfate	mg/L	1.0	5.7	4.0	4.0	4.0	**3.8**		**3.0**		**3.3**		**2.9**	
Major Cations														
Calcium	mg/L	0.50	--	24	--	--	--		**19**	e	--		--	
Magnesium	mg/L	0.50	--	4.7	--	--	--		**3.6**	e	--		--	
Potassium	mg/L	0.50	--	2.0	--	--	--		**0.53**		--		--	
Sodium	mg/L	0.50	--	2.0	--	--	--		**1.1**	e	--		--	
General														
Hardness	mg/L	3.0	--	80	--	--	--		**63**		--		--	
TDS	mg/L	50	200	200	200	200	**69**	e	**75**		**75**	s	**67**	

Explanations of abbreviations are included on the final page of this table.

2022
Mine Permit Surface Water Quality Monitoring Data
STRE005 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	STRE005 Seasonal Benchmark				STRE005 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/7/22		5/26/22		8/29/22		10/25/22	
Field														
D.O.	ppm	--	--	--	--	--	**14**		**11**		**8.7**		**9.8**	
Flow	cfs	--	--	--	--	--	**1.1**		**2.4**		**0.80**		**2.2**	
pH	SU	--	7.1-8.1	6.8-7.8	7.3-8.3	7.0-8.0	**7.8**		**7.6**		**7.9**		**7.6**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**130**		**181**		**166**		**121**	
Temperature	°C	--	--	--	--	--	**0.0**		**8.8**		**18**		**10**	
Metals														
Aluminum	ug/L	50	--	1,722	--	--	--		**370**		--		**--**	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Barium	ug/L	10.0	--	40	--	--	--		**12.2**		--		**--**	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	489	1,218	501	259	**394**		**445**	e	**247**		**232**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	66	93	40	40	**53**		**55**	e	**41**		**20**	
Mercury	ng/L	0.50	2.0	17	2.0	2.0	**1.7**		**4.8**		**1.2**		**2.3**	
Molybdenum	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	60	--	--	--		**61**		--		**--**	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		<0.050		--		**--**	
Sulfate	mg/L	1.0	6.1	4.0	4.0	6.4	**3.2**		**1.7**	s	**1.8**		**2.5**	
Major Cations														
Calcium	mg/L	0.50	--	17	--	--	--		**18**	e	--		**--**	
Magnesium	mg/L	0.50	--	3.0	--	--	--		**3.2**	e	--		**--**	
Potassium	mg/L	0.50	--	2.0	--	--	--		**0.61**		--		**--**	
Sodium	mg/L	0.50	--	2.0	--	--	--		<1.0	e	--		--	
General														
Hardness	mg/L	3.0	--	55	--	--	--		**59**		--		**--**	
TDS	mg/L	50	200	200	200	200	**95**	e	**62**		**85**	s	**73**	

Explanations of abbreviations are included on the final page of this table.

2022
Mine Permit Surface Water Quality Monitoring Data
STRE009 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	STRE009 Seasonal Benchmark				STRE009 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/8/22		5/26/22		8/30/22		10/25/22	
Field														
D.O.	ppm	--	--	--	--	--	**13**		**12**		**8.9**		**8.8**	
Flow	cfs	--	--	--	--	--	**3.9**		**7.1**		**4.6**		**5.7**	
pH	SU	--	7.3-8.3	6.9-7.9	7.2-8.2	6.8-7.8	**8.0**		**7.9**		**7.9**		**7.5**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**111**		**173**		**127**		**116**	
Temperature	°C	--	--	--	--	--	**2.8**		**8.8**		**12**		**10**	
Metals														
Aluminum	ug/L	50	--	405	--	--	--		**60**		--		**--**	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		**1.1**		<1.0	
Barium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	165	400	224	114	**88**		**102**	e	<100		**136**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	40	40	36	40	**12**		<10.0	e	**13**		**13**	
Mercury	ng/L	0.50	2.0	6.6	2.9	2.0	**0.93**		**1.5**		**0.63**		**1.2**	
Molybdenum	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	57	--	--	--		**56**		--		**--**	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		<0.050		--		**--**	
Sulfate	mg/L	1.0	5.7	4.0	4.0	10	**3.3**		**2.7**		**2.8**		**2.8**	
Major Cations														
Calcium	mg/L	0.50	--	17	--	--	--		**18**	e	--		**--**	
Magnesium	mg/L	0.50	--	3.3	--	--	--		**3.1**	e	--		**--**	
Potassium	mg/L	0.50	--	2.0	--	--	--		<0.50		--		**--**	
Sodium	mg/L	0.50	--	2.0	--	--	--		<1.0	e	--		**--**	
General														
Hardness	mg/L	3.0	--	56	--	--	--		**57**		--		**--**	
TDS	mg/L	50	200	200	200	200	**54**	e	**67**		**56**	s	**64**	

Explanations of abbreviations are included on the final page of this table.

2022
Mine Permit Surface Water Quality Monitoring Data
STRE010 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	STRE010 Seasonal Benchmark				STRE010 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/7/22		5/26/22		8/30/22		10/25/22	
Field														
D.O.	ppm	--	--	--	--	--	**13**		**11**		**10**		**10**	
Flow	cfs	--	--	--	--	--	**2.7**		**5.0**		**2.8**		**4.3**	
pH	SU	--	7.3-8.3	6.9-7.9	7.2-8.2	7.0-8.0	**8.1**		**7.6**		**7.9**		**7.7**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**126**		**178**		**133**		**118**	
Temperature	°C	--	--	--	--	--	**2.8**		**8.1**		**11**		**9.0**	
Metals														
Aluminum	ug/L	50	--	431	--	--	--		**87**		--		**--**	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Barium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	165	514	135	97	**139**		**180**	e	**105**		**130**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	40	43	40	40	**17**		**17**	e	**11**		<10.0	
Mercury	ng/L	0.50	2.0	9.7	2.0	2.0	**0.88**		**2.4**		**0.69**		**1.5**	
Molybdenum	ug/L	10	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	55	--	--	--		**58**		--		**--**	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		**0.06**		--		**--**	
Sulfate	mg/L	1.0	5.7	4.0	4.0	4.0	**2.8**		**2.4**	s	**2.4**		**2.5**	
Major Cations														
Calcium	mg/L	0.50	--	16	--	--	--		**18**	e	--		**--**	
Magnesium	mg/L	0.50	--	3.0	--	--	--		**3.0**	e	--		**--**	
Potassium	mg/L	0.50	--	2.0	--	--	--		<0.50		--		**--**	
Sodium	mg/L	0.50	--	2.0	--	--	--		<1.0	e	--		**--**	
General														
Hardness	mg/L	3.0	--	52	--	--	--		**58**		--		**--**	
TDS	mg/L	50	200	200	200	200	**81**	e	**68**		**64**	s	**67**	

2022
Mine Permit Surface Water Quality Monitoring Data
YDRM002 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	YDRM002 Seasonal Benchmark				YDRM002 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/8/22		5/23/22		8/29/22		10/27/22	
Field														
D.O.	ppm	--	--	--	--	--	**11**		**9.5**		**7.5**		**10**	
Flow	cfs	--	--	--	--	--	**11**		**40**		**7.6**		**55**	
pH	SU	--	7.3-8.3	6.1-7.1	6.6-7.6	6.6-7.6	**7.3**		**6.5**		**7.3**		**6.6**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**62**		**54**		**95**		**30**	
Temperature	°C	--	--	--	--	--	**0.0**		**11**		**19**		**5.1**	
Metals														
Aluminum	ug/L	50	--	200	--	--	--		**236**		--		**--**	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Barium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	6.8	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	165	1,192	1,270	1,207	**491**		**1,020**	e	**934**		**629**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	40	50	40	40	**20**		**64**	e	**23**		**19**	
Mercury	ng/L	0.50	2.0	8.1	3.1	6.0	**1.4**		**5.4**		**2.2**		**4.4**	
Molybdenum	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		**1.1**		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	30	--	--	--		**21**		--		**--**	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		**--**	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		<0.050		--		**--**	
Sulfate	mg/L	1.0	5.7	10	4.0	24	**4.0**		**1.7**	s	**3.9**		**1.6**	
Major Cations														
Calcium	mg/L	0.50	--	10	--	--	--		**5.3**	e	--		**--**	
Magnesium	mg/L	0.50	--	2.1	--	--	--		**1.2**	e	--		**--**	
Potassium	mg/L	0.50	--	2.0	--	--	--		<0.50		--		--	
Sodium	mg/L	0.50	--	2.0	--	--	--		<1.0	e	--		--	
General														
Hardness	mg/L	3.0	--	32	--	--	--		**18**		--		**--**	
TDS	mg/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		**53**	

2022
Mine Permit Surface Water Quality Monitoring Data
CDRM004 (Compliance)
Eagle Mine

Parameter	Unit	Permit RL	CDRM004 Seasonal Benchmark				CDRM004 Data (Q1-Q4 2022)							
			Q1	Q2	Q3	Q4	Q1 2022		Q2 2022		Q3 2022		Q4 2022	
			Winter Baseflow	Spring Snowmelt & Runoff	Summer Baseflow	Fall Rain	Winter Baseflow		Spring Snowmelt & Runof		Summer Baseflow		Fall Rain	
							3/7/22		5/25/22		8/31/22		10/27/22	
Field														
D.O.	ppm	--	--	--	--	--	**14**		**11**		**10**		**12**	
Flow	cfs	--	--	--	--	--	**14**		**13**		**11**		**14**	
pH	SU	--	7.3-8.3	7.2-8.2	7.2-8.2	7.2-8.2	**8.1**		**7.9**		**8.0**		**8.1**	
Specific Conductance	µS/cm @ 25°C	--	--	--	--	--	**131**		**204**		**153**		**126**	
Temperature	°C	--	--	--	--	--	**1.0**		**9.4**		**13**		**4.4**	
Metals														
Aluminum	ug/L	50	--	258	--	--	--		<50.0		**--**		--	
Antimony	ug/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Arsenic	ug/L	1.0	4.0	4.0	4.0	4.0	**1.2**		**1.6**		**2.3**		**1.4**	
Barium	ug/L	10.0	--	40	--	--	--		**13**		--		--	
Beryllium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Boron	ug/L	50	200	200	200	200	<50.0	e	<50.0		<50.0		<50.0	
Cadmium	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Chromium	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Cobalt	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Copper	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Iron	ug/L	20	165	358	309	195	**94**		**135**	e	**160**		**129**	
Lead	ug/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Lithium	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Manganese	ug/L	10.0	40	57	44	96	**10**		**15**	e	**18**		<10.0	
Mercury	ng/L	0.50	2.0	8.1	2.0	2.0	**0.69**		**1.0**		**0.94**		**1.0**	
Molybdenum	ug/L	10.0	--	40	--	--	--		<10.0		--		--	
Nickel	ug/L	1.0	4.0	4.0	4.0	4.0	<1.0		<1.0		<1.0		<1.0	
Selenium	ug/L	2.0	8.0	8.0	8.0	8.0	<2.0		<2.0		<2.0		<2.0	
Silver	ug/L	0.20	--	0.80	--	--	--		<0.20		--		--	
Zinc	ug/L	10.0	40	40	40	40	<10.0		<10.0		<10.0		<10.0	
Major Anions														
Alkalinity, Bicarbonate	mg/L	2.0	--	85	--	--	--		**68**		--		--	
Alkalinity, Carbonate	mg/L	2.0	--	8.0	--	--	--		<2.0		--		--	
Chloride	mg/L	1.0	--	4.0	--	--	--		<1.0		--		--	
Fluoride	mg/L	0.10	--	0.40	--	--	--		<0.10	e	--		--	
Nitrogen, Nitrate	mg/L	0.05	--	0.20	--	--	--		**0.05**		--		--	
Sulfate	mg/L	1.0	5.7	4.0	4.0	4.0	**3.0**		**2.1**	s	**1.8**		**1.9**	
Major Cations														
Calcium	mg/L	0.50	--	25	--	--	--		**21**	e	--		--	
Magnesium	mg/L	0.50	--	4.0	--	--	--		**3.5**	e	--		--	
Potassium	mg/L	0.50	--	2.0	--	--	--		**0.60**		--		--	
Sodium	mg/L	0.50	--	2.0	--	--	--		**1.2**	e	--		--	
General														
Hardness	mg/L	3.0	--	80	--	--	--		**67**		--		--	
TDS	mg/L	50	200	200	200	200	**67**	e	69		**76**		**85**	

Explanations of abbreviations are included on the final page of this table.

2022
Mine Permit Surface Water Quality Monitoring Data
Abbreviations & Data Qualifiers
Eagle Mine

Abbreviation or Data Qualifier	Explanation
a	Estimated value. Duplicate precision for this parameter exceeded quality control limit.
b	Estimated value. Sample received after EPA established hold time expired.
e	Estimated value. The laboratory statement of data qualifications indicates that a quality control limit for this parameter was exceeded.
NM	Not measured.
p	Pending. Some parameters/locations require additional baseline data to calculate a benchmark.
Q	Quarter.
R	Measured value was rejected based on quality control procedures.
RL	Laboratory reporting limit.
s	Potential false positive value. Compound present in blank sample.
t	Trending. Benchmarks are not proposed for baseline datasets that appear to be trending (using samples collected through Q4 2012) because the data do not represent a random distribution about the baseline mean. Trend analysis is recommended in place of benchmark screening for parameters that appear to be trending.
	Value is equal to or above site-specific benchmark at a compliance monitoring.

Appendix K

Eagle Mine

Surface Water Monitoring

Trend Analysis Summary & Trending Charts

2022 Mine Permit Surface Water
Trend Analysis Summary
Eagle Mine

Location	Quarter	Classification	Parameter	Unit	# Samples	# NDs	Non-detects handling	# used in Runs Test	Min	Max	Mean	St. Dev.	# Above Mean	# Below Mean	# Equal Mean	# Runs	Criti-cal value	Sig Level	Trend Present	Remarks
STRE002	1	Compliance	Sulfate	mg/L	12	0	No NDs	12	2.9	5.2	4.2	0.67	6	6	0	3	3	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)
STRE005	1	Compliance	Sulfate	mg/L	11	2	Included as RL	11	1.0	5.5	2.9	1.40	6	5	0	3	3	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)
STRE009	1	Compliance	Sulfate	mg/L	11	0	No NDs	11	3.2	4.6	3.8	0.51	6	5	0	2	3	0.05	Y	
STRE010	1	Compliance	Sulfate	mg/L	11	0	No NDs	11	2.2	4.2	3.0	0.54	4	7	0	3	3	0.05	Y	
CDRM004	2	Reference	Sodium	mg/L	15	1	Included as RL	15	0.6	1.2	0.961	0.17	10	5	0	4	4	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)
CDRM004	2	Reference	Sulfate	mg/L	13	9	Included as RL	13	1.0	2.2	1.3	0.51	4	9	0	2	3	0.05	Y	
STRE001	2	Compliance	Sodium	mg/L	15	0	No NDs	15	0.6	1.4	0.971	0.23	9	6	0	4	4	0.05	Y	
STRE001	2	Compliance	Sulfate	mg/L	13	8	Included as RL	13	1.0	3.1	1.6	0.94	4	9	0	2	3	0.05	Y	
STRE002	2	Compliance	Sulfate	mg/L	13	8	Included as RL	13	1.0	3	1.6	0.91	4	9	0	2	3	0.05	Y	
STRE005	2	Compliance	Sodium	mg/L	11	4	Included as RL	11	0.5	1.2	0.873	0.21	5	6	0	2	3	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)
STRE005	2	Compliance	Sulfate	mg/L	11	7	Included as RL	11	1.0	2.2	1.3	0.47	4	7	0	2	3	0.05	Y	
STRE009	2	Compliance	Sulfate	mg/L	11	7	Included as RL	11	1.0	3.1	1.7	0.94	4	7	0	2	3	0.05	Y	
STRE010	2	Compliance	Calcium	mg/L	11	0	No NDs	11	8.6	18.4	14.1	3.33	5	6	0	2	3	0.05	Y*	
STRE010	2	Compliance	Sulfate	mg/L	11	7	Included as RL	11	1.0	2.6	1.5	0.76	4	7	0	2	3	0.05	Y	
STRM002	2	Compliance	Chloride	mg/L	17	8	Included as RL	17	1.0	1.7	1.2	0.25	9	8	0	5	5	0.05	Y	
STRM002	2	Compliance	Mercury	ng/L	17	0	No NDs	17	1.6	5.54	3.38	1.13	9	8	0	5	5	0.05	Y	
STRM002	2	Compliance	Potassium	mg/L	17	4	Included as RL	17	0.4	0.68	0.553	0.07	8	9	0	5	5	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)
STRM004	2	Compliance	Sulfate	mg/L	13	9	Included as RL	13	1.0	2.2	1.3	0.49	4	9	0	2	3	0.05	Y	
STRM004	2	Compliance	TDS	mg/L	14	4	Included as RL	14	48.0	124	64.4	22.60	4	10	0	3	3	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)
STRM005	2	Compliance	Barium	ug/L	13	3	Included as RL	13	10.0	13.1	11.2	1.30	6	7	0	4	4	0.05	Y	
STRM005	2	Compliance	Sodium	mg/L	13	3	Included as RL	13	0.5	1.3	0.951	0.22	6	7	0	4	4	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)
STRM005	2	Compliance	Sulfate	mg/L	13	9	Included as RL	13	1.0	2.8	1.5	0.78	4	9	0	2	3	0.05	Y	
YDRM002	2	Compliance	Chloride	mg/L	17	6	Included as RL	17	1.0	1.5	1.2	0.18	9	8	0	5	5	0.05	Y	
CDRM004	3	Reference	Sulfate	mg/L	11	7	Included as RL	11	1.0	1.8	1.3	0.36	4	7	0	2	3	0.05	Y	
STRE002	3	Compliance	Mercury	ng/L	12	1	Included as RL	12	0.5	2.09	0.9607	0.41	5	7	0	3	3	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)
STRE005	3	Compliance	TDS	mg/L	11	2	Included as RL	11	50.0	154	89.8	35.30	4	7	0	3	3	0.05	Y	
STRE010	3	Compliance	Sulfate	mg/L	11	6	Included as RL	11	1.0	2.8	1.6	0.75	5	6	0	2	3	0.05	Y	
STRM001	3	Background	Iron	ug/L	13	0	No NDs	13	651.0	5860	2185	1483.00	7	6	0	3	4	0.05	Y	
STRM002	3	Compliance	Manganese	ug/L	13	6	Included as RL	13	10.0	23	12.6	4.68	3	10	0	3	3	0.05	Y	
STRM002	3	Compliance	Sulfate	mg/L	11	7	Included as RL	11	1.0	1.4	1.1	0.20	4	7	0	2	3	0.05	Y	
STRM004	3	Compliance	Sulfate	mg/L	11	7	Included as RL	11	1.0	2.2	1.4	0.51	4	7	0	2	3	0.05	Y	
CDRM004	4	Reference	TDS	mg/L	16	2	Included as RL	16	50.0	100.0	81.3	16.60	10	6	0	5	5	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)
STRE001	4	Compliance	Mercury	ng/L	14	0	No NDs	14	0.5	6.0	1.604	1.38	4	10	0	3	3	0.05	Y	
STRE010	4	Compliance	Sulfate	mg/L	12	7	Included as RL	12	1.0	2.9	1.6	0.81	5	7	0	3	3	0.05	Y	Non-unique RL in data (NDs included in Runs Test as equal to RL)

Mine Permit Surface Water Trend Analysis
Notes and Abbreviations Used in Statistical Summary Tables
Eagle Mine

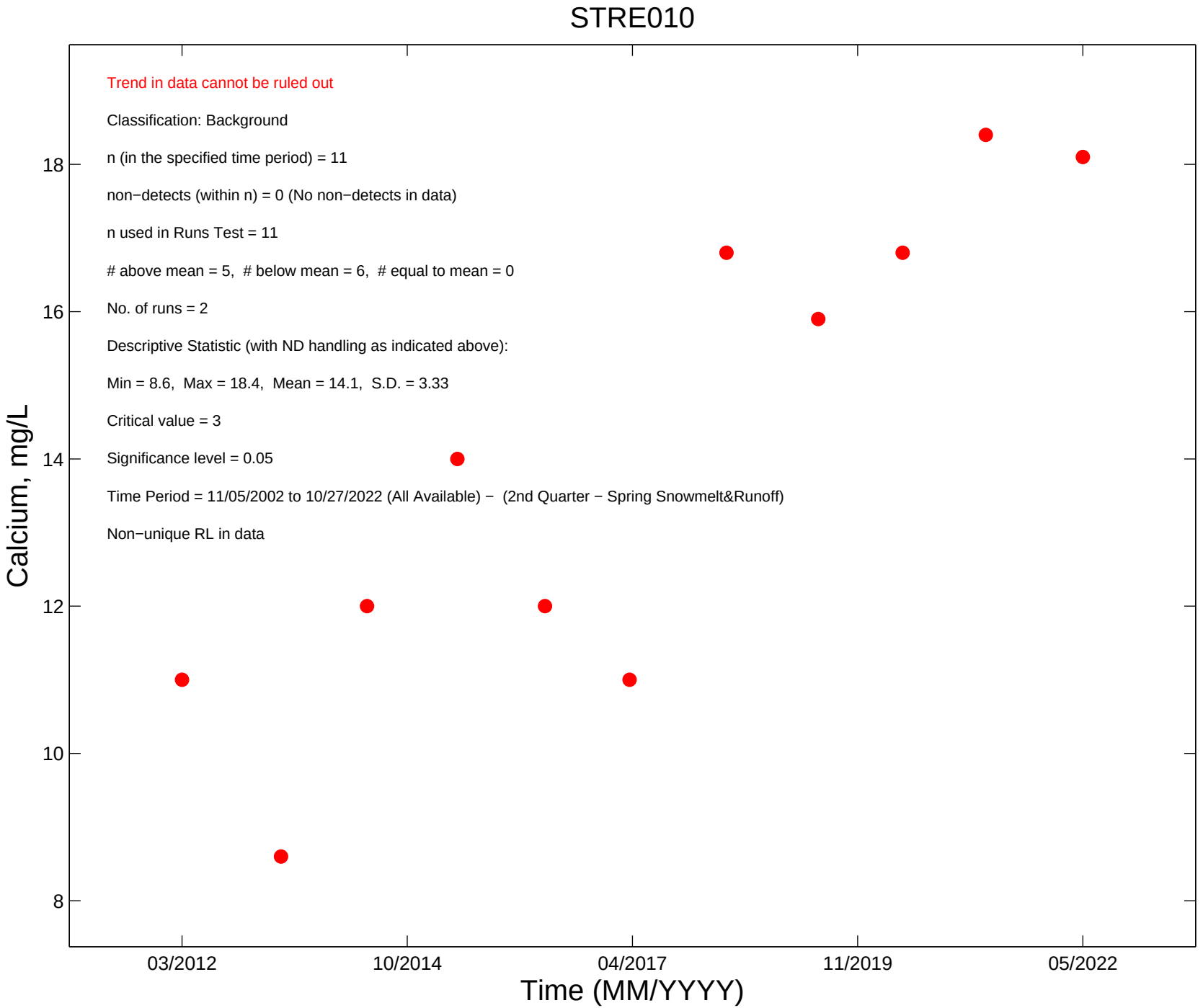
Abbreviation	Explanation
Y	Null Hypothesis that the sequence was produced in a random manner cannot be accepted at the indicated significance level (i.e., a trend in data cannot be ruled out).
Y*	In addition to a trend being identified, the parameter exceeded the limit at least two times in a row.
ND	Non detect (reported concentration was below the analytical reporting limit).
RL	Reporting limit.

Notes:

Charts are included for compliance locations with trends that also had two exceedances in a row in 2022. Only one case in 2022 (Q2 Ca at STRE010).

Sulfate trend analysis period is 2005-2021 to eliminate effect of high previous RL.

Trends rejected if they appear to be an artifact of non-detect values and/or inconsistent RLs.

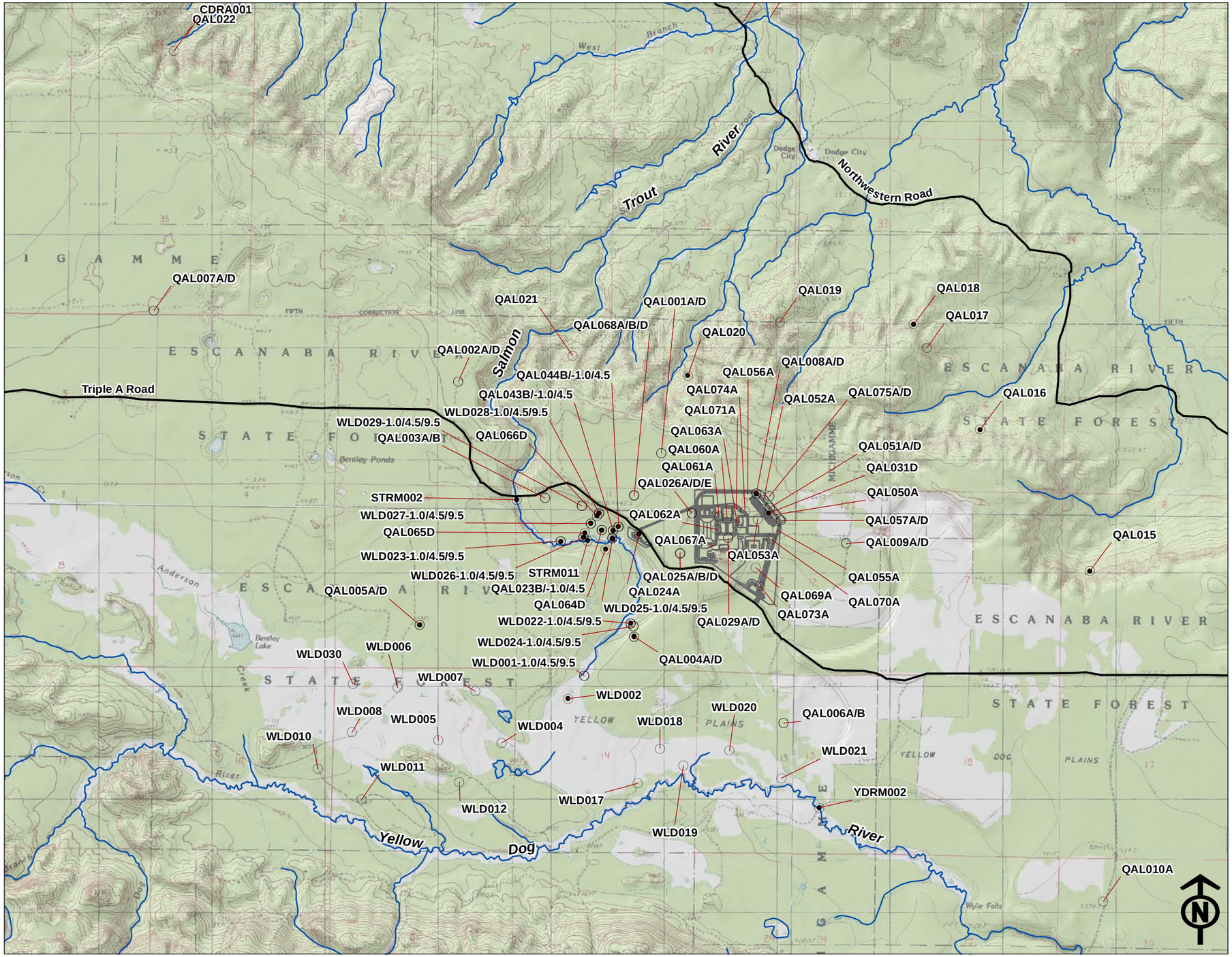

STRE010
Trend in data cannot be ruled out
Classification: Background
n (in the specified time period) = 11
non−detects (within n) = 0 (No non−detects in data)
n used in Runs Test = 11
above mean = 5, # below mean = 6, # equal to mean = 0
No. of runs = 2
Descriptive Statistic (with ND handling as indicated above):
Min = 8.6, Max = 18.4, Mean = 14.1, S.D. = 3.33
Critical value = 3
Significance level = 0.05
Time Period = 11/05/2002 to 10/27/2022 (All Available) − (2nd Quarter − Spring Snowmelt&Runoff)
Non−unique RL in data
Calcium, mg/L
18
16
14
12
10
8
03/2012
10/2014
04/2017
11/2019
05/2022
Time (MM/YYYY)

Appendix L

Eagle Mine

Water Level Monitoring Location Map

MINE PERMIT WATER LEVEL MONITORING LOCATION MAP



Reference

Data provided by: Eagle Mine and North Jackson Company

Projection & Datum: UTM NAD 83 Zone 16N

0 — 1 Miles

Scale: 1:36,000

Eagle Mine
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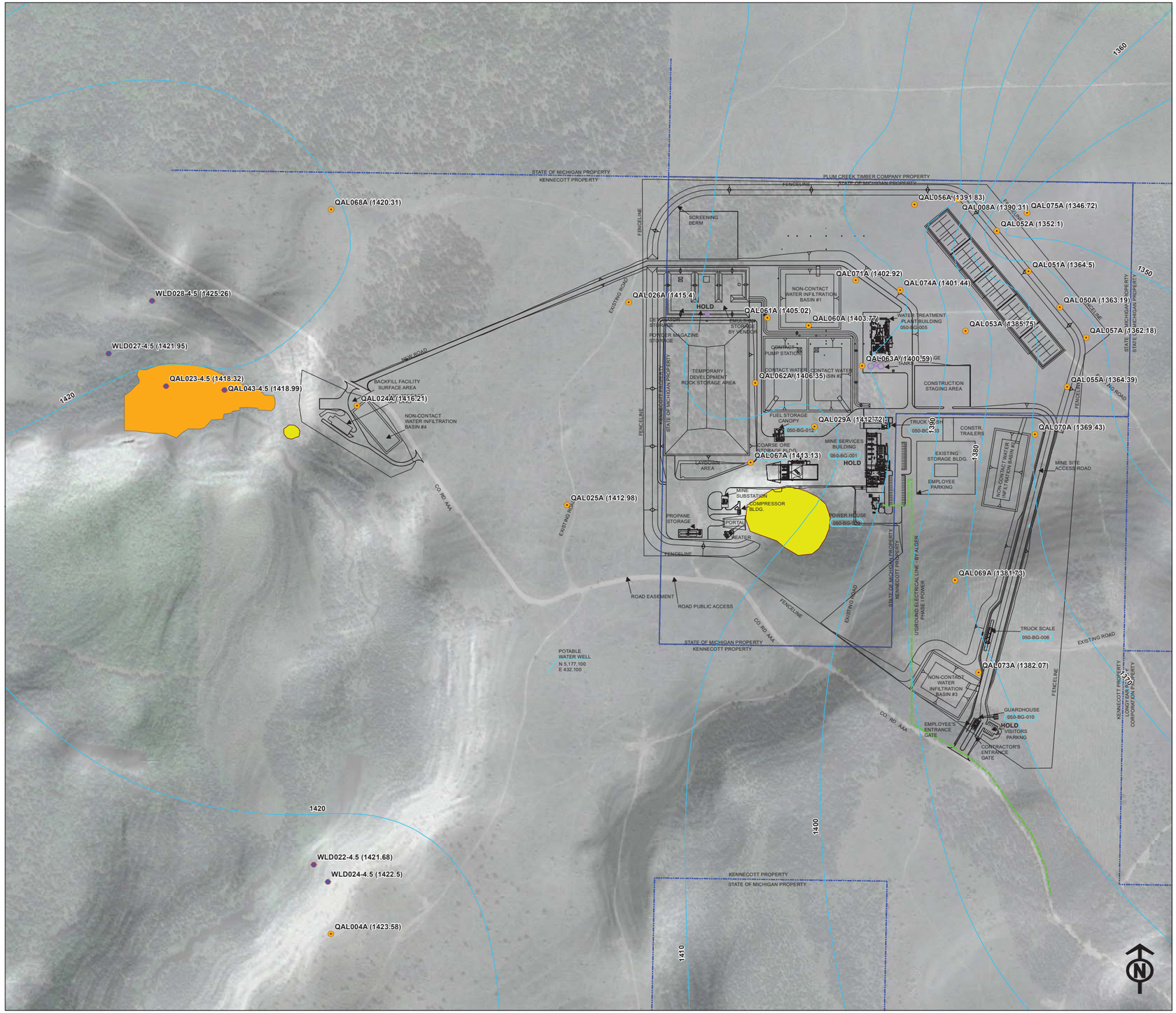
Appendix M

Eagle Mine

Groundwater Contour Maps

A-ZONE GROUNDWATER ELEVATION CONTOURS
WINTER BASEFLOW, FEBRUARY-MARCH 2022



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 500 1,000 Feet

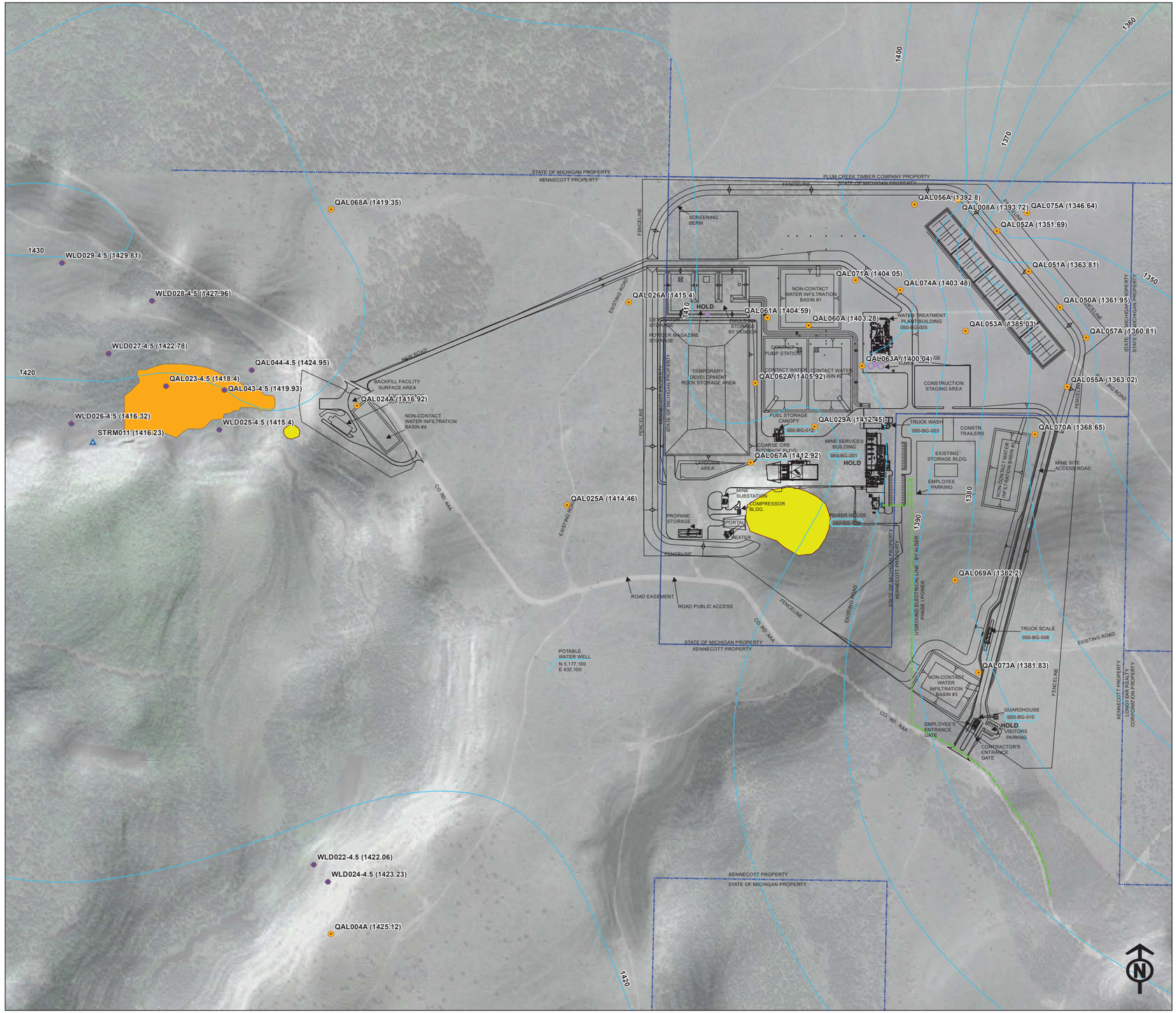
1:3,600

Eagle Mine
a subsidiary of hindalco mining

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1

A-ZONE GROUNDWATER ELEVATION CONTOURS
SPRING RUNOFF, MAY-JUNE 2022



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

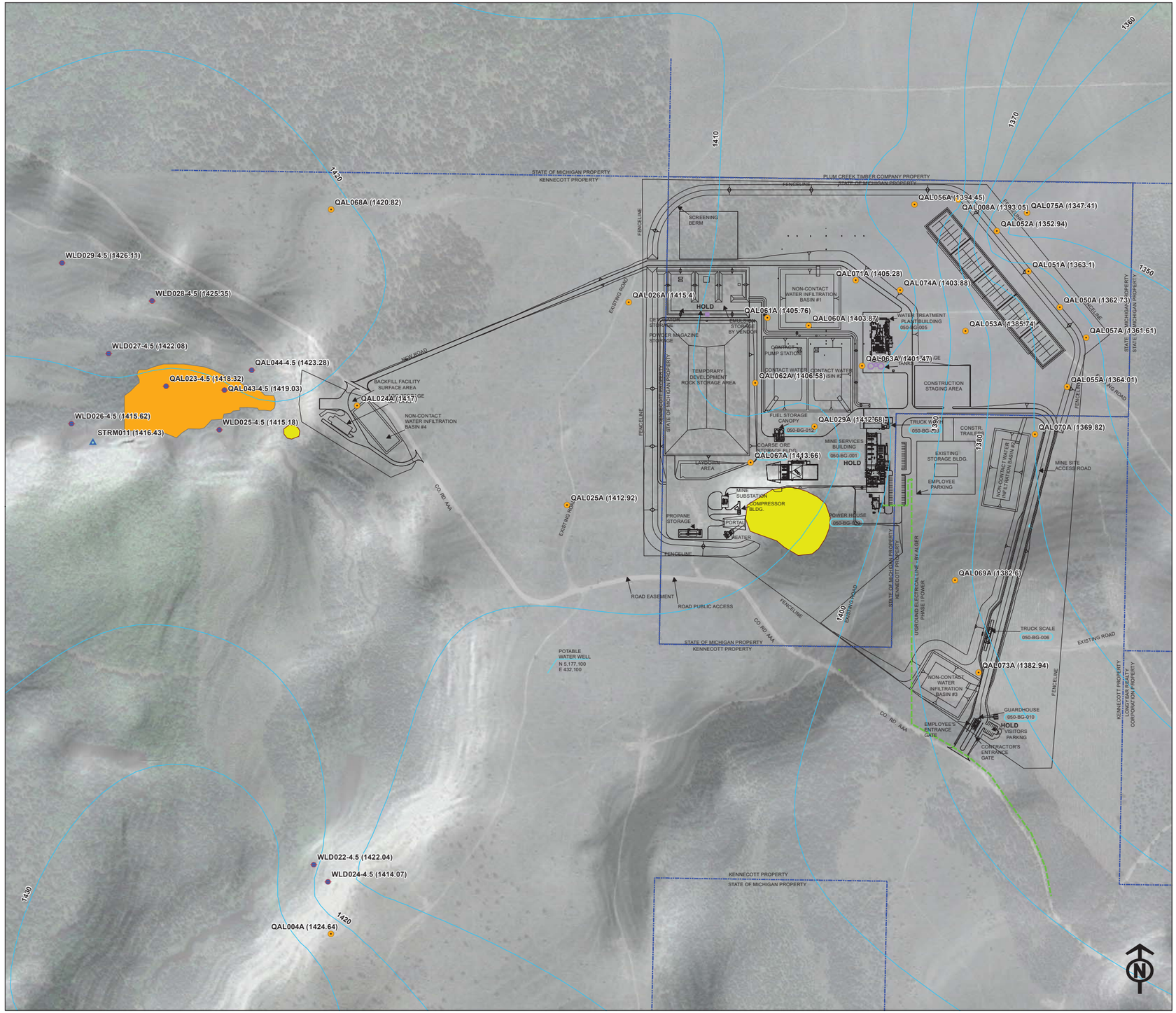
0 500 1,000 Feet

1:3,600

Eagle Mine
a subsidiary of hindalco mining

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1



A-ZONE GROUNDWATER ELEVATION CONTOURS SUMMER BASEFLOW, AUG-SEPT 2022

Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 500 1,000 Feet

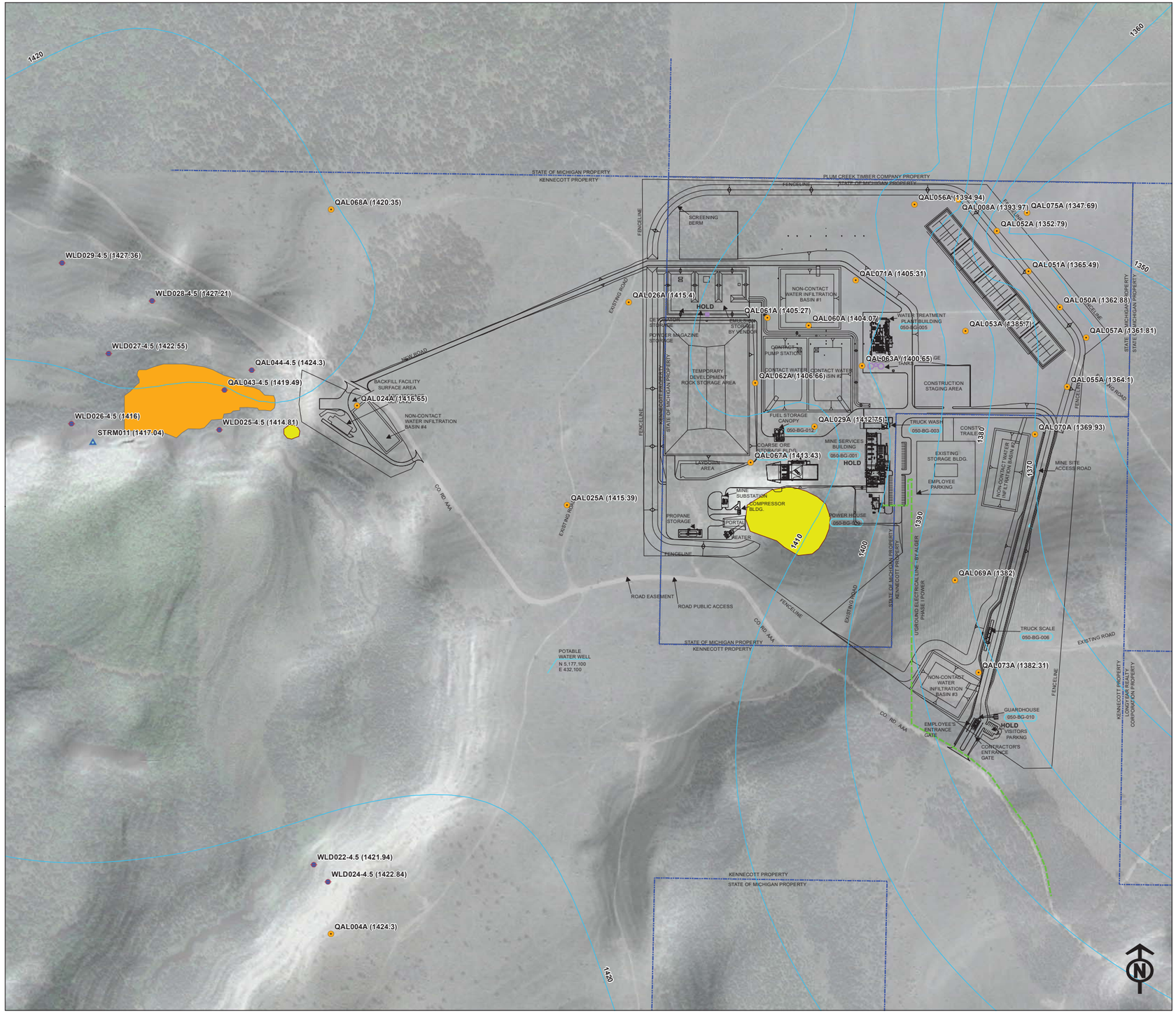
1:3,600

Eagle Mine
a subsidiary of hindalco mining

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1

A-ZONE GROUNDWATER ELEVATION CONTOURS
FALL RAIN RUNOFF, OCT-NOV 2022



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 500 1,000 Feet

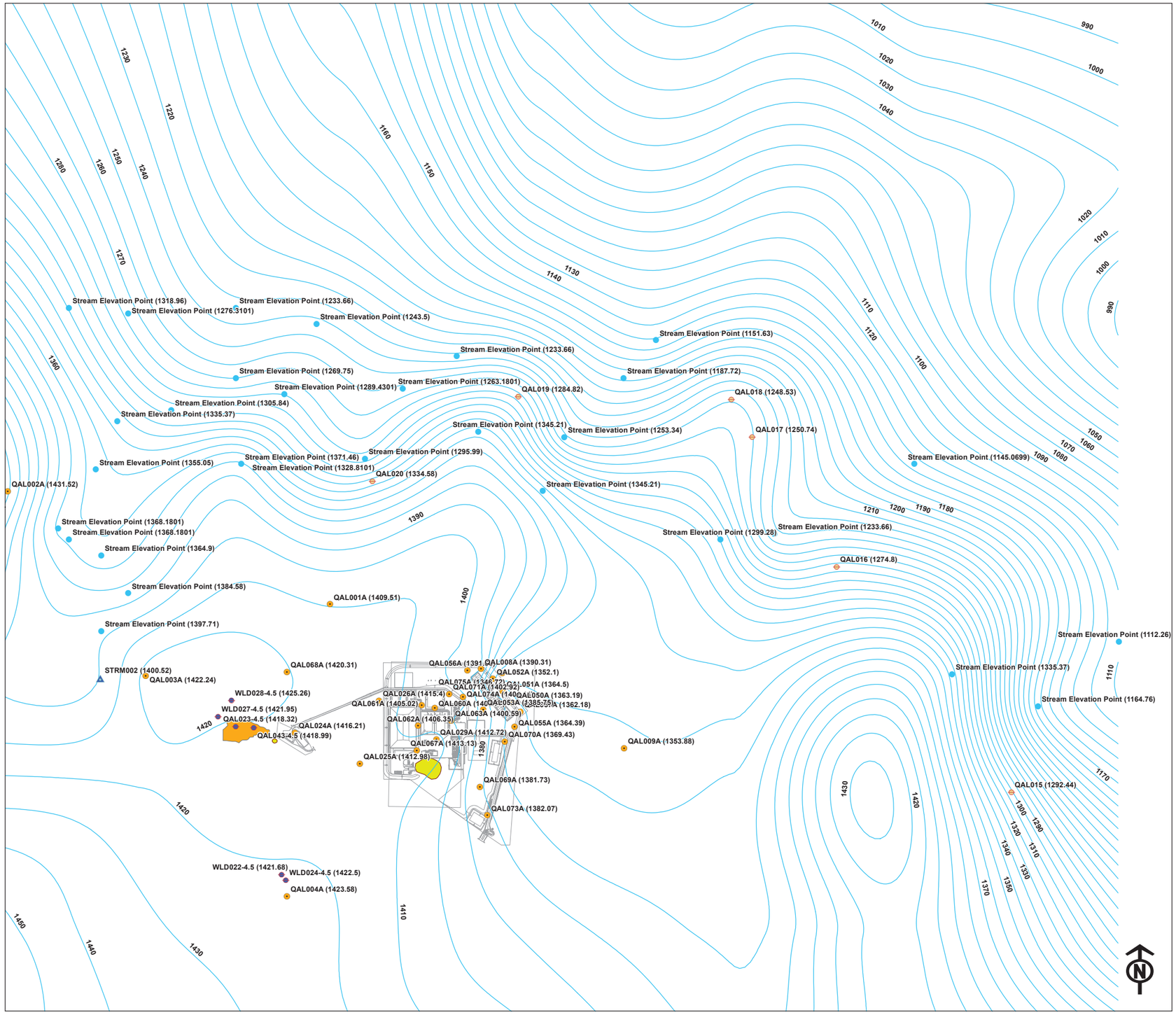
1:3,600

Eagle Mine
a subsidiary of hindalco mining

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1

A-ZONE GROUNDWATER ELEVATION CONTOURS
WINTER BASEFLOW, FEBRUARY-MARCH 2022



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 1,450 2,900 Feet

1:11,634

Eagle Mine
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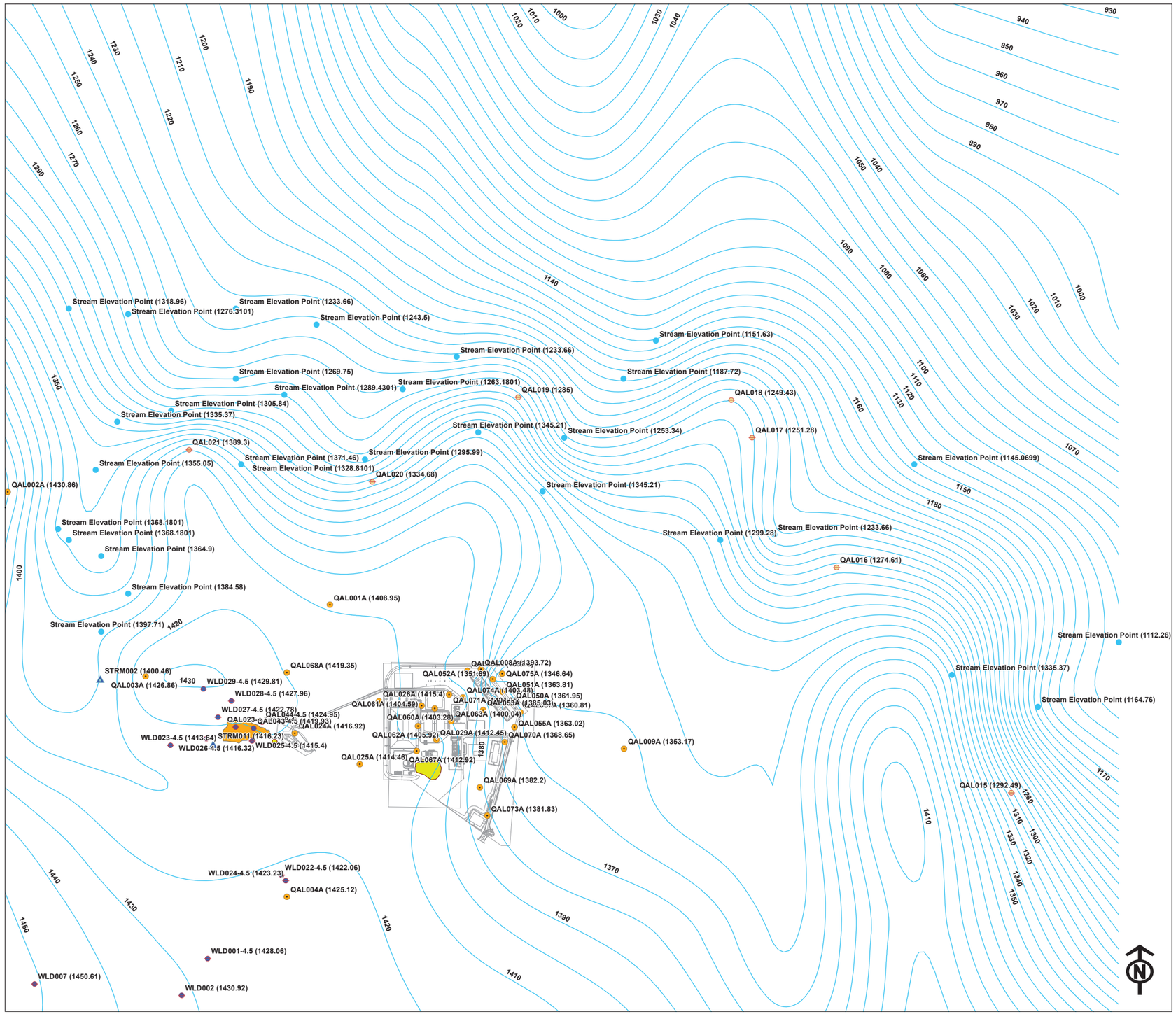
North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1



A-ZONE GROUNDWATER ELEVATION CONTOURS SPRING RUNOFF, MAY-JUNE 2022

Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 1,450 2,900 Feet

1:11,634

Eagle Mine
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North Jackson Company
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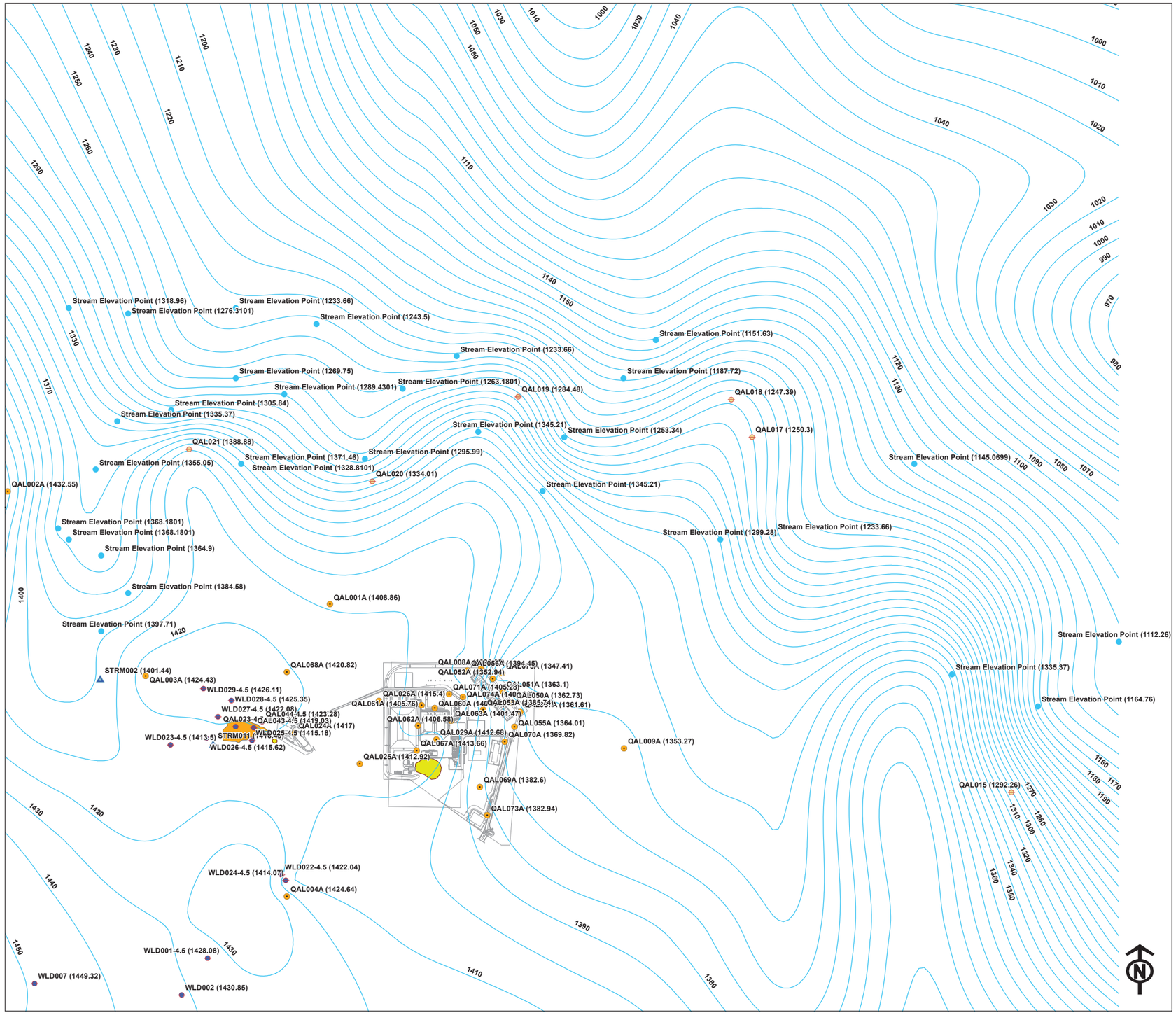
Figure: 1



A-ZONE GROUNDWATER ELEVATION CONTOURS
SUMMER BASEFLOW, AUG-SEPT 2022

Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

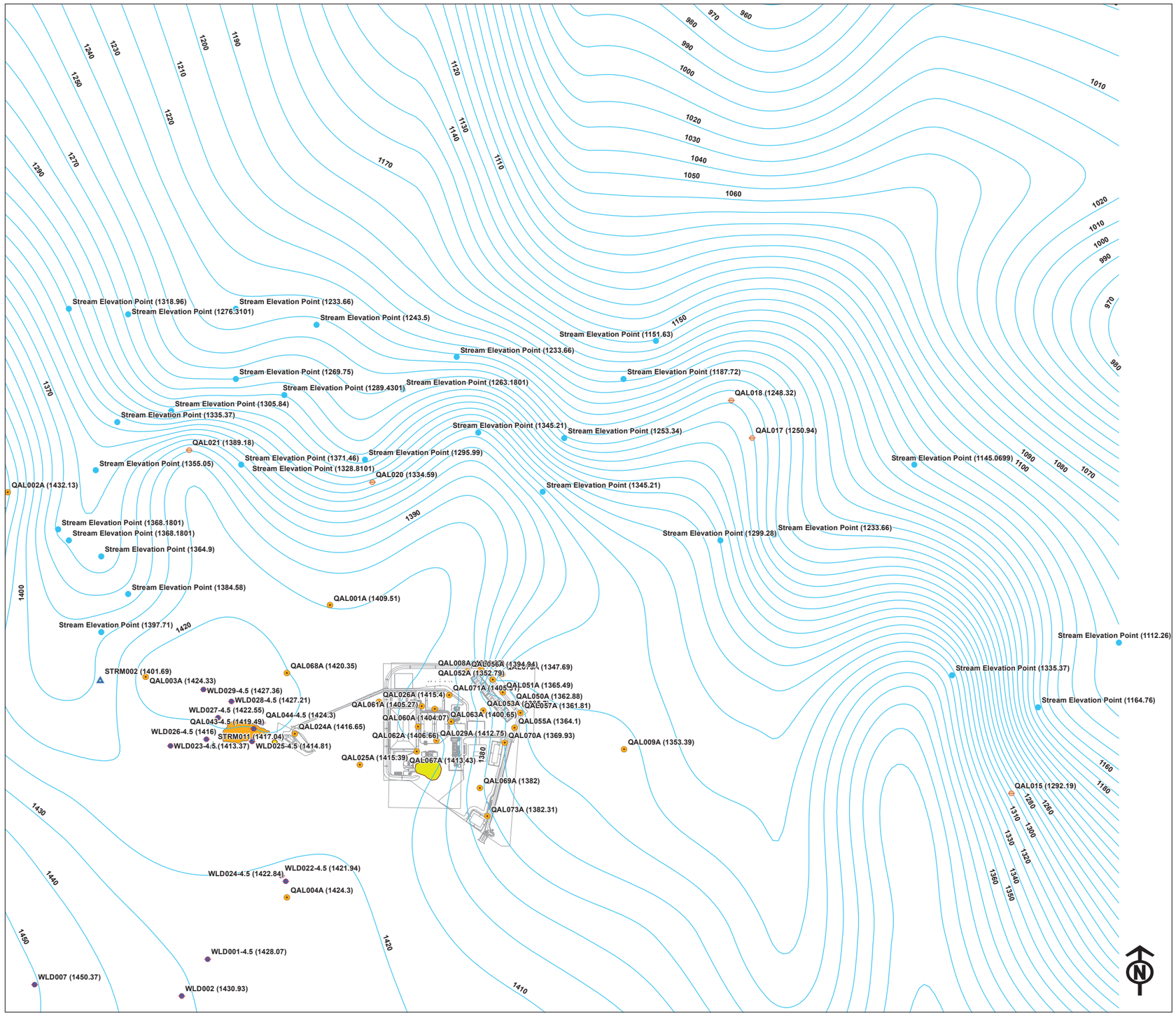
0 1,450 2,900 Feet

1:11,634

Eagle Mine
a subsidiary of kinross mining

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1



A-ZONE GROUNDWATER ELEVATION CONTOURS
FALL RAIN RUNOFF, OCT-NOV 2022

Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 1,400 2,800 Feet

1:11,634

Eagle Mine
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North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1

D-ZONE GROUNDWATER ELEVATION CONTOURS
WINTER BASEFLOW FEBRUARY-MARCH 2022
HS VIEW

Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 500 1,000 Feet

1:3,600

Eagle Mine
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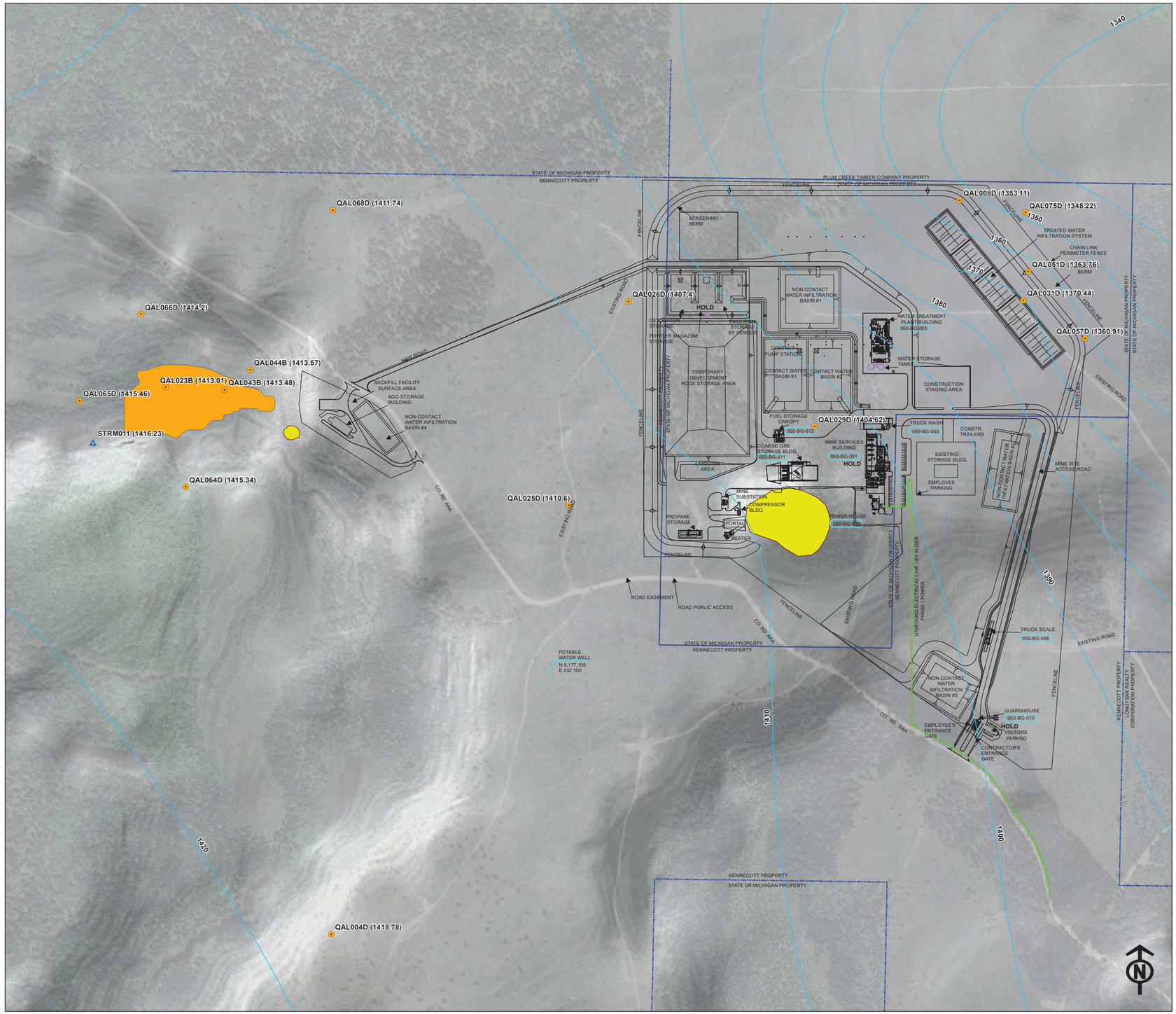
North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1

D-ZONE GROUNDWATER ELEVATION CONTOURS
SPRING RUNOFF, MAY-JUNE 2022
HS VIEW



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 500 1,000 Feet

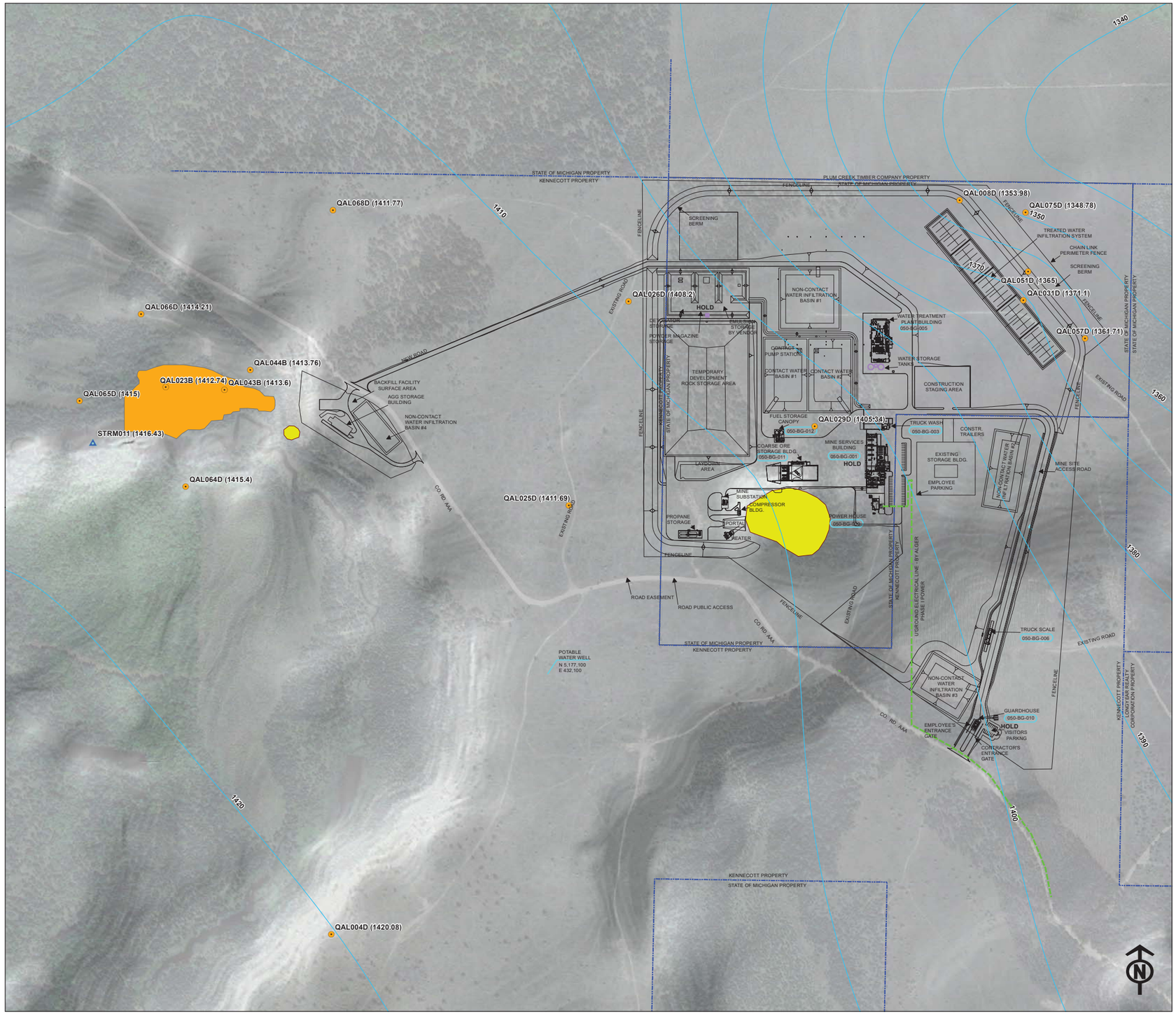
1:3,600

Eagle Mine
a subsidiary of kmdia mining

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1

D-ZONE GROUNDWATER ELEVATION CONTOURS
SUMMER BASEFLOW, AUG-SEPT 2022
HS VIEW



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 500 1,000 Feet

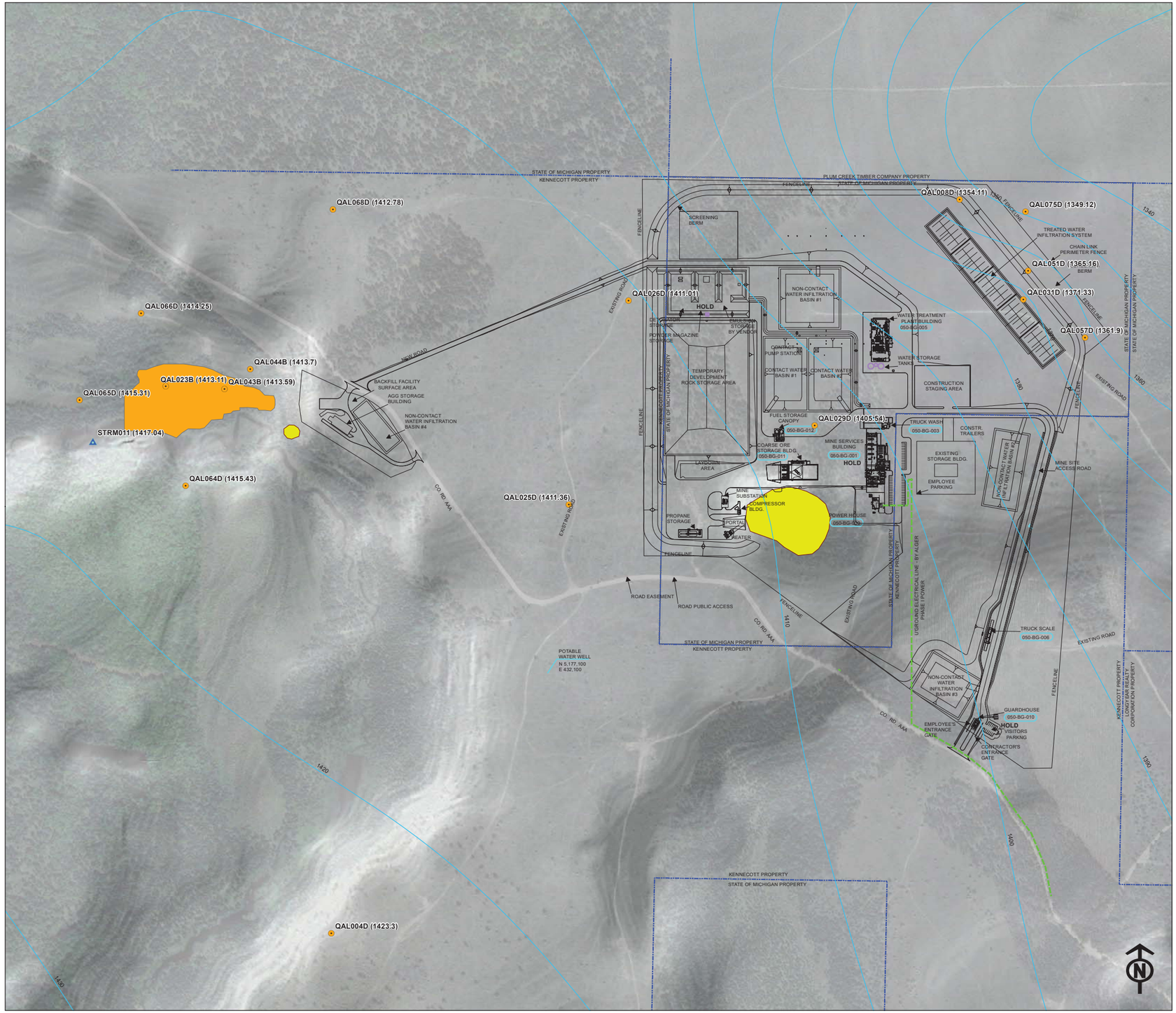
1:3,600

Eagle Mine
a subsidiary of hudbay mining

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1

D-ZONE GROUNDWATER ELEVATION CONTOURS
FALL RAIN RUNOFF 0CT-NOV 2022
HS VIEW



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 500 1,000 Feet

1:3,600

Eagle Mine
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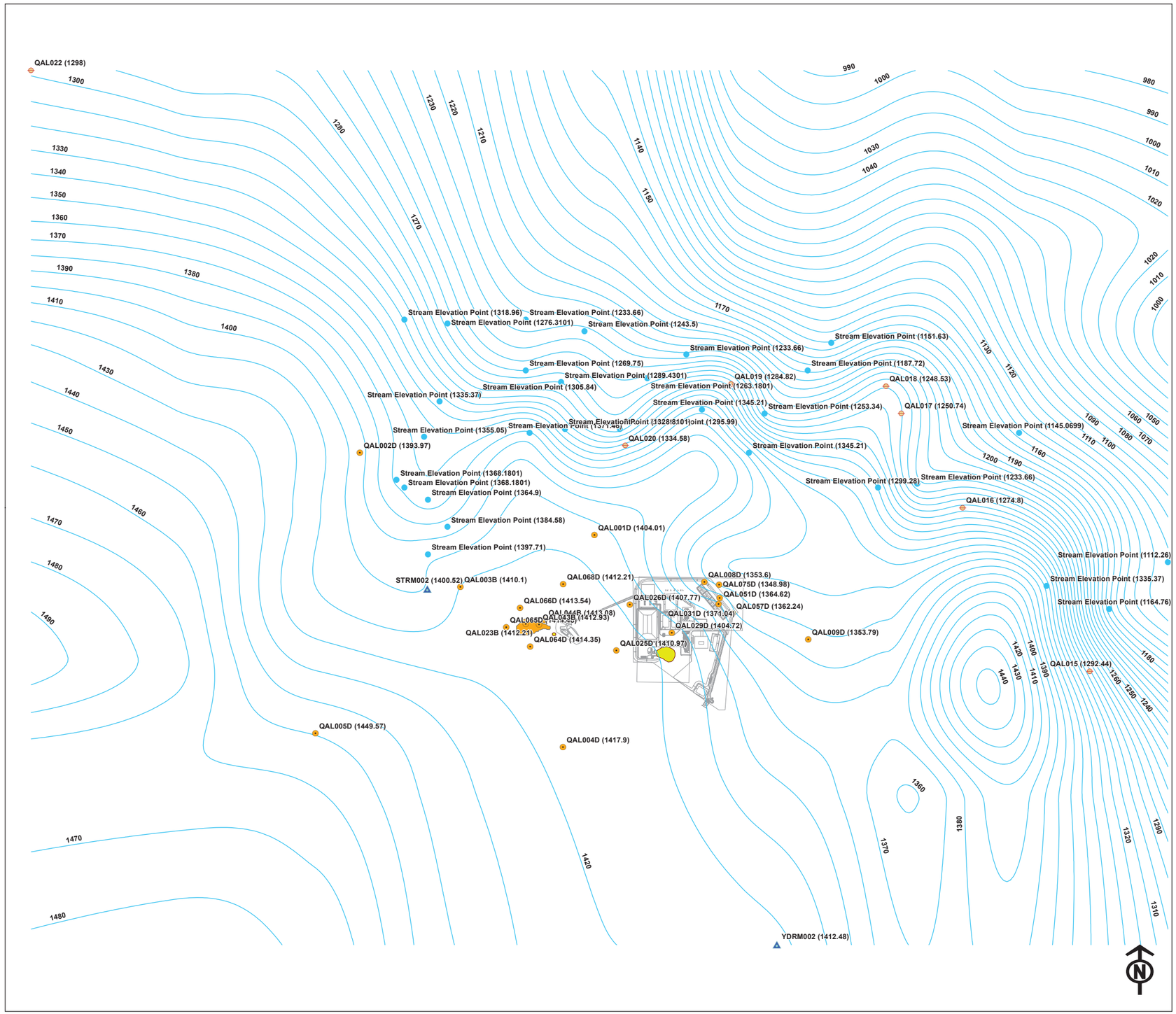
North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1

D-ZONE GROUNDWATER ELEVATION CONTOURS
WINTER BASEFLOW, FEBRUARY-MARCH 2022



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 2,000 4,000 Feet

1:16,000

Eagle Mine
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North Jackson Company
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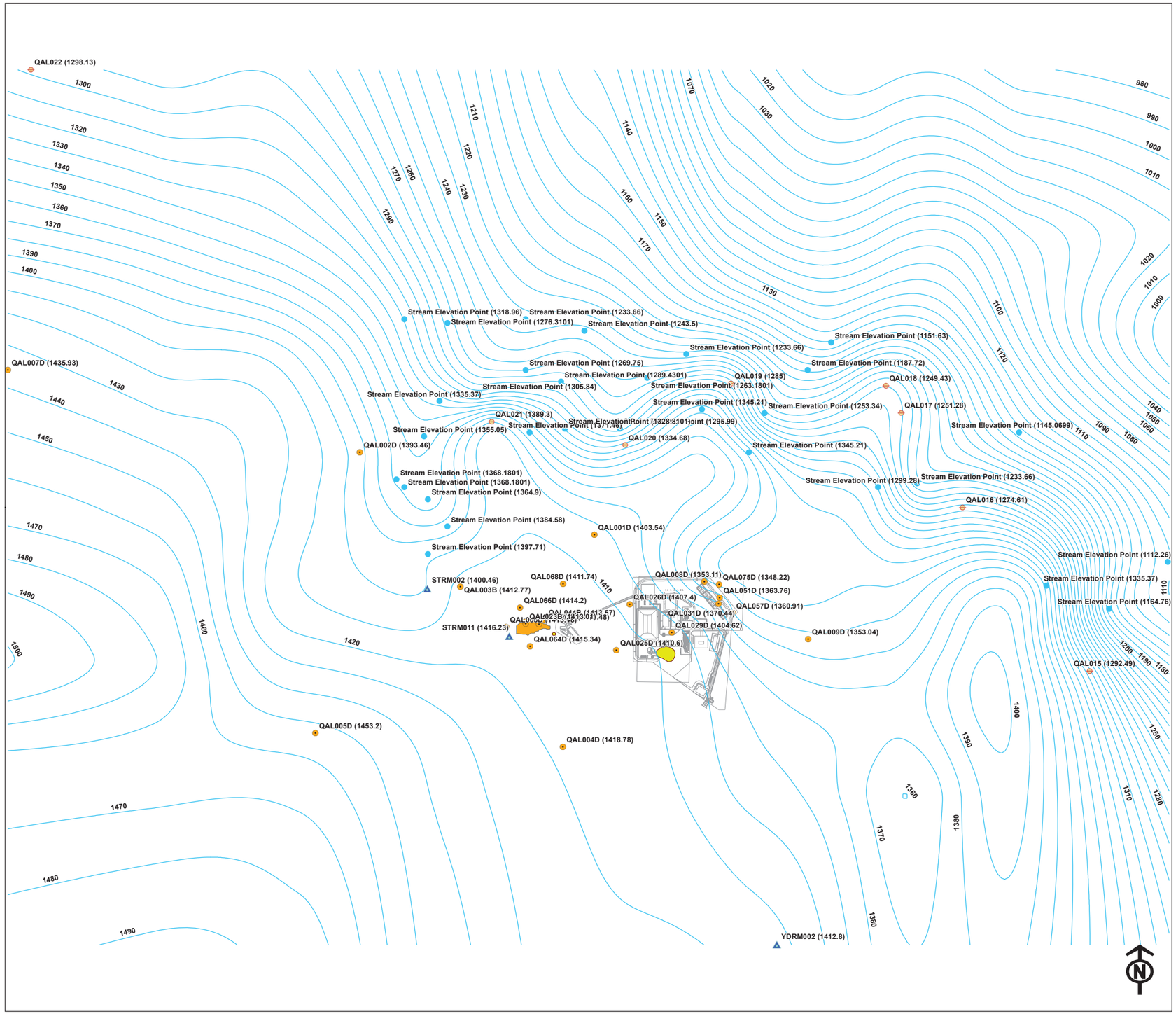
Figure: 1

D-ZONE GROUNDWATER ELEVATION CONTOURS
SPRING RUNOFF, MAY-JUNE 2022



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 2,000 4,000 Feet

1:16,000

Eagle Mine
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North Jackson Company
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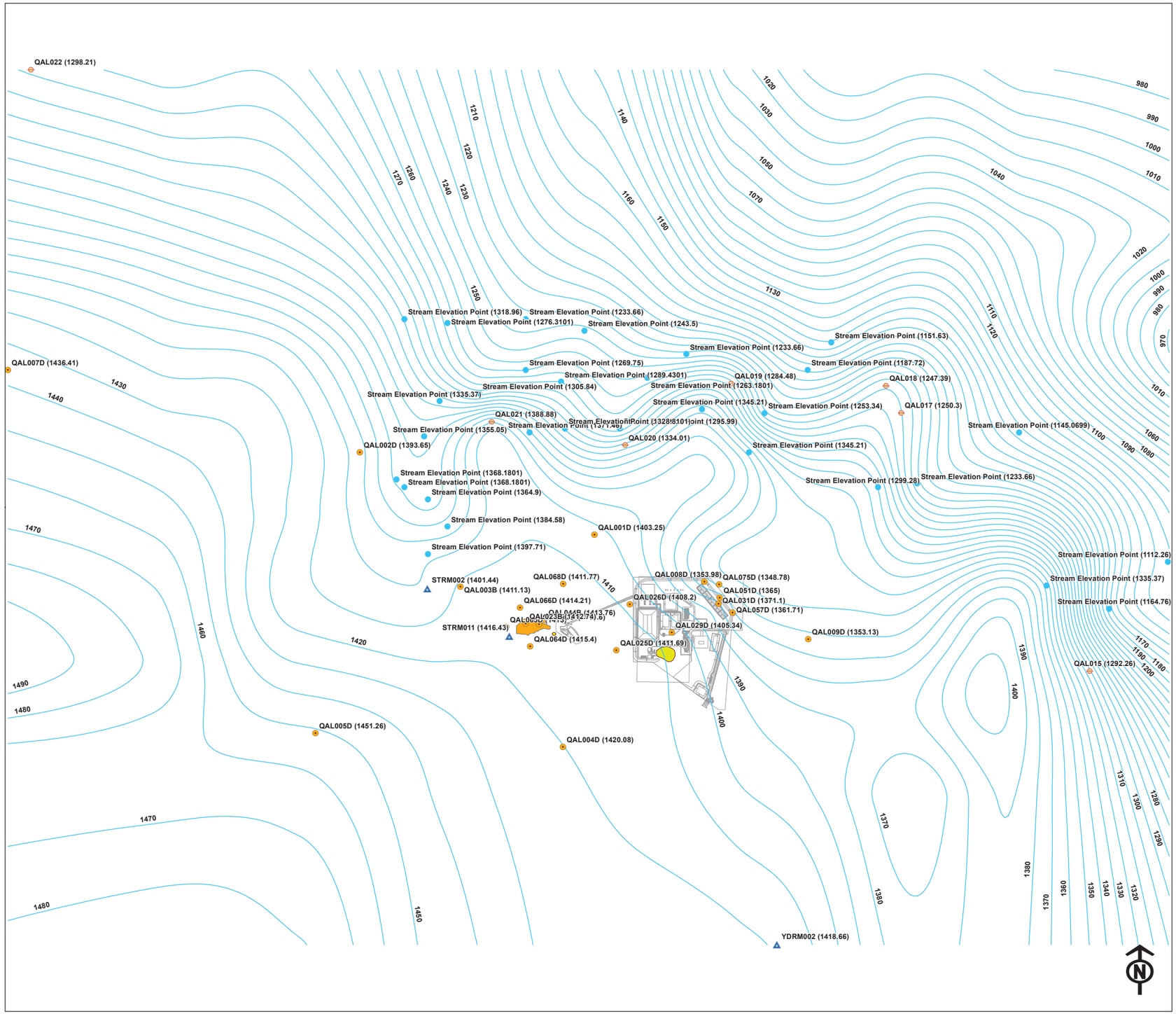
Figure: 1

D-ZONE GROUNDWATER ELEVATION CONTOURS
SUMMER BASEFLOW, AUG-SEPT 2022



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 2,000 4,000 Feet

1:16,000

Eagle Mine
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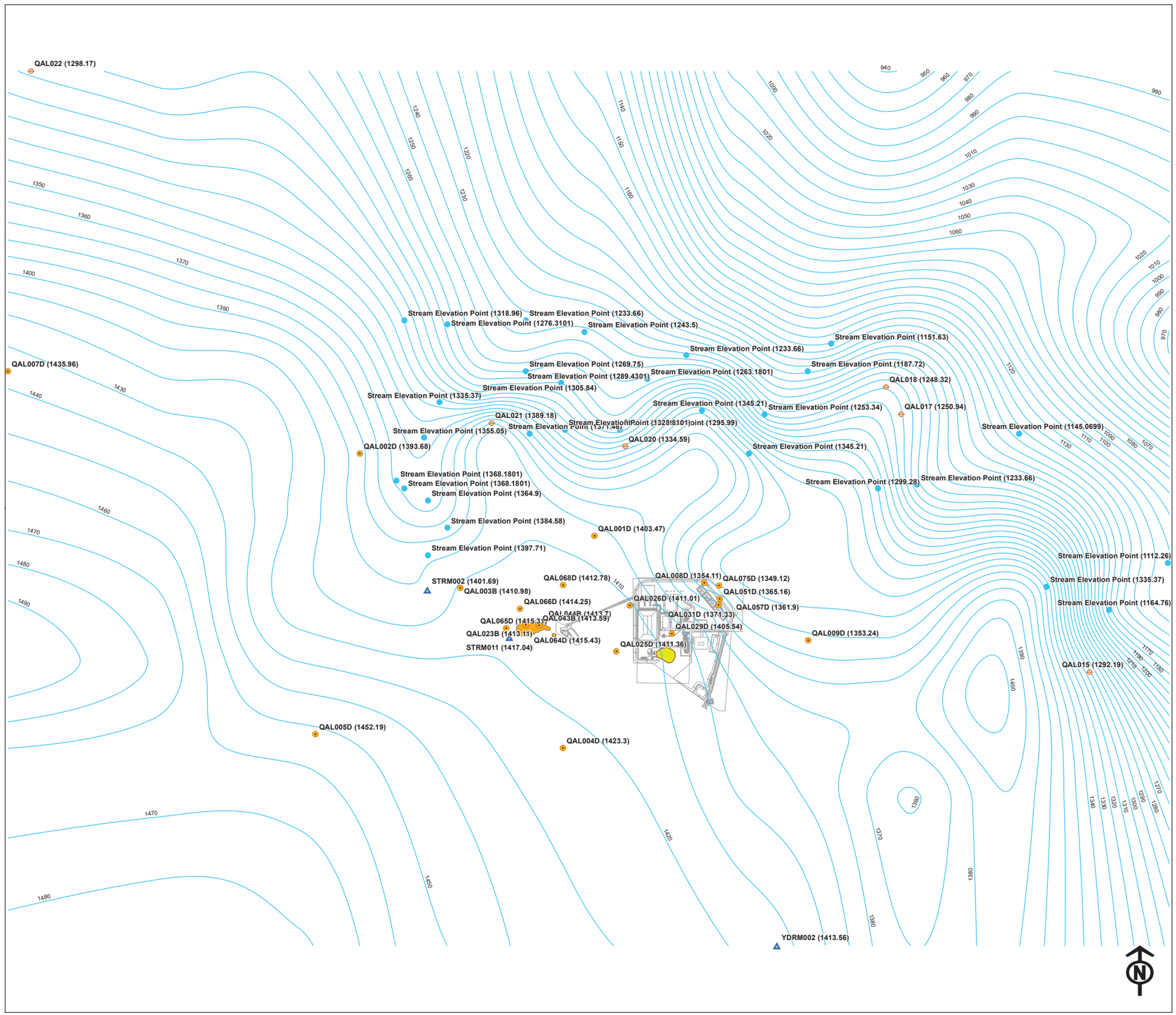
North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 1

D-ZONE GROUNDWATER ELEVATION CONTOURS
FALL RAIN RUNOFF, OCT-NOV 2022



Legend

- Monitoring Well
- Seep Piezometer
- Surface Water Monitoring Location
- Wetland Piezometer
- Stream Elevation Point
  (Source: Digital Elevation Model: 98 ft resolution)
- Groundwater Elevation Contour (10' interval)
- Mine Facilities
- Ore Body
- Outcrop

Reference

Data provided by: Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 2,000 4,000 Feet

1:16,000

Eagle Mine
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Figure: 1

Appendix N

Eagle Mine

Continuous Groundwater Level Results

2022 Water Year
Continuous Monitoring Results
Monitoring Well Locations
Eagle Mine

	QAL023B	QAL024A	QAL044B	QAL064D	QAL065D	QAL066D
Background						
Mean	1416.9	1417.8	1416.2	1418.7	1417.1	1416.9
Standard Dev.	0.4	0.4	0.4	0.7	0.4	0.3
Minimum	1415.7	1417.2	1414.9	1415.7	1416.1	1416.1
Maximum	1417.6	1418.5	1416.9	1419.6	1417.8	1417.5
Oct-21						
Mean	NM	1416.7	1413.6	1415.3	1414.9	1414.0
Minimum	NM	1416.7	1413.4	1414.9	1414.7	1413.9
Maximum	NM	1416.9	1413.8	1415.5	1415.0	1414.2
Nov-21						
Mean	NM	1416.5	1413.6	1415.2	1414.8	1413.9
Minimum	NM	1416.5	1413.5	1415.1	1414.8	1413.9
Maximum	NM	1416.7	1413.6	1415.3	1414.9	1414.0
Dec-21						
Mean	NM	1416.3	1413.5	1415.2	1414.9	1413.9
Minimum	NM	1416.3	1413.3	1414.8	1414.7	1413.7
Maximum	NM	1416.5	1413.6	1415.3	1415.0	1414.0
Jan-22						
Mean	NM	1416.1	1413.2	1414.9	1414.7	1413.6
Minimum	NM	1416.1	1413.1	1414.6	1414.5	1413.5
Maximum	NM	1416.3	1413.4	1415.2	1414.9	1413.8
Feb-22						
Mean	NM	1416.0	1413.0	1414.5	1414.4	1413.4
Minimum	NM	1415.9	1412.9	1414.3	1414.3	1413.3
Maximum	NM	1416.1	1413.2	1414.7	1414.6	1413.6
Mar-22						
Mean	NM	1415.8	1412.9	1414.5	1414.4	1413.3
Minimum	NM	1415.8	1412.8	1414.3	1414.3	1413.2
Maximum	NM	1415.9	1413.1	1414.7	1414.5	1413.4
Apr-22						
Mean	NM	1415.8	1413.0	1414.8	1414.8	1413.5
Minimum	NM	1415.7	1412.9	1414.5	1414.5	1413.3
Maximum	NM	1416.1	1413.2	1415.1	1415.1	1413.8
May-22						
Mean	NM	1416.7	1413.5	1415.3	1415.4	1414.1
Minimum	NM	1416.2	1413.3	1415.1	1415.3	1413.9
Maximum	NM	1417.3	1413.6	1415.5	1415.6	1414.3
Jun-22						
Mean	NM	1417.3	1413.5	1415.4	1415.3	1414.1
Minimum	NM	1417.2	1413.4	1415.1	1415.2	1414.0
Maximum	NM	1417.4	1413.6	1415.6	1415.4	1414.2

2022 Water Year
Continuous Monitoring Results
Monitoring Well Locations
Eagle Mine

	QAL023B	QAL024A	QAL044B	QAL064D	QAL065D	QAL066D
Background						
Mean	1416.9	1417.8	1416.2	1418.7	1417.1	1416.9
Standard Dev.	0.4	0.4	0.4	0.7	0.4	0.3
Minimum	1415.7	1417.2	1414.9	1415.7	1416.1	1416.1
Maximum	1417.6	1418.5	1416.9	1419.6	1417.8	1417.5
Jul-22						
Mean	NM	1417.1	1413.6	1415.3	1415.1	1414.1
Minimum	NM	1417.0	1413.4	1415.0	1414.9	1414.0
Maximum	NM	1417.2	1413.7	1415.5	1415.4	1414.2
Aug-22						
Mean	NM	1416.9	1413.6	1415.2	1414.9	1414.1
Minimum	NM	1416.8	1413.5	1415.0	1414.8	1414.0
Maximum	NM	1417.0	1413.8	1415.4	1415.1	1414.2
Sep-22						
Mean	NM	1416.7	1413.6	1415.1	NM	1414.0
Minimum	NM	1416.6	1413.5	1414.8	NM	1413.9
Maximum	NM	1416.8	1413.7	1415.3	NM	1414.1

Source: North Jackson Company, REACH System

* All results are calculated based on mean daily values from continuous monitoring.

NM = Not measured.

Results in red indicate values outside of the background range.

2022 Water Year
Continuous Monitoring Results
Wetland Monitoring Locations
Eagle Mine

	WLD022-4.5	WLD023-4.5	WLD025-4.5	WLD025-9.5	WLD026-4.5	WLD026-9.5	WLD027-4.5	WLD027-9.5	WLD028-4.5	WLD028-9.5
Background										
Mean	1422.6	1413.5	1415.5	1415.9	1416.3	1416.2	1422.1	1422.2	1427.2	1427.0
Standard Dev.	0.2	0.5	0.3	0.2	0.3	0.3	0.7	0.7	0.5	0.5
6" limit	1421.6	1411.4	1414.3	1414.6	1415.3	1415.3	1419.8	1419.8	1424.5	1424.7
Minimum	1422.1	1411.9	1414.8	1415.1	1415.8	1415.8	1420.3	1420.3	1425.0	1425.2
Maximum	1422.9	1414.7	1416.5	1416.7	1417.0	1416.7	1423.1	1423.1	1428.3	1428.3
Oct-21										
Mean	1421.8	1413.7	1415.3	1415.0	1415.8	1415.8	1421.3	1421.2	1425.2	1425.1
Minimum	1421.8	1413.6	1415.2	1414.9	1415.8	1415.8	1420.9	1420.9	1425.1	1425.1
Maximum	1421.9	1413.9	1415.6	1415.3	1416.0	1416.0	1421.6	1421.5	1425.3	1425.2
Nov-21										
Mean	1421.8	1413.9	1415.2	1415.1	1416.0	1416.0	1421.9	1421.8	1425.5	1425.3
Minimum	1421.8	1413.8	1415.2	1415.0	1415.9	1415.9	1421.6	1421.5	1425.2	1425.2
Maximum	1421.9	1413.9	1415.3	1415.4	1416.2	1416.1	1422.2	1422.1	1425.7	1425.5
Dec-21										
Mean	1421.8	1413.8	1415.2	1415.0	1416.2	1416.1	1422.2	1422.2	1425.9	1425.6
Minimum	1421.8	1413.8	1415.1	1414.9	1416.1	1416.1	1422.0	1421.9	1425.4	1425.3
Maximum	1422.0	1413.9	1415.4	1415.5	1416.5	1416.4	1422.5	1422.6	1426.6	1426.1
Jan-22										
Mean	1421.7	NM	1415.1	1414.8	1416.2	1416.0	1422.0	1422.1	1425.7	1425.4
Minimum	1421.7	NM	1415.1	1414.8	1416.2	1416.0	1421.9	1422.0	1425.5	1425.2
Maximum	1421.8	NM	1415.2	1414.9	1416.2	1416.2	1422.2	1422.2	1426.0	1425.6
Feb-22										
Mean	1421.7	NM	1415.0	1414.7	NM	1415.9	1421.8	1421.8	1425.3	1425.0
Minimum	1421.7	NM	1414.9	1414.6	NM	1415.8	1421.8	1421.8	1425.2	1424.9
Maximum	1421.7	NM	1415.2	1414.8	NM	1416.0	1421.9	1422.0	1425.5	1425.2
Mar-22										
Mean	1421.7	NM	1414.9	1414.6	1416.4	1415.9	1422.2	1422.2	1425.7	1425.2
Minimum	1421.7	NM	1414.7	1414.4	1416.3	1415.8	1421.8	1421.8	1425.2	1424.9
Maximum	1421.8	NM	1415.3	1415.2	1416.5	1416.1	1422.6	1422.6	1426.5	1425.7
Apr-22										
Mean	1421.9	1413.8	1414.9	1414.7	1416.7	1416.4	1422.7	1422.7	1427.6	1426.8
Minimum	1421.8	1413.7	1414.7	1414.5	1416.4	1416.0	1422.5	1422.5	1426.6	1425.7
Maximum	1422.2	1413.9	1415.4	1415.3	1417.0	1417.1	1423.0	1423.0	1428.2	1427.7
May-22										
Mean	1422.1	1413.7	1415.5	NM	1416.7	1416.9	1422.7	1422.7	1427.9	1427.4
Minimum	1422.0	1413.6	1415.4	NM	1416.5	1416.7	1422.6	1422.6	1427.8	1427.2
Maximum	1422.2	1413.9	1415.6	NM	1416.9	1417.1	1422.9	1422.9	1428.2	1427.7
Jun-22										
Mean	1422.0	1413.6	1415.4	NM	1416.3	1416.4	1422.2	1422.1	1427.0	1426.7
Minimum	1421.9	1413.5	1415.3	NM	1416.1	1416.2	1421.4	1421.4	1426.3	1426.1
Maximum	1422.1	1413.7	1415.5	NM	1416.5	1416.6	1422.5	1422.5	1427.7	1427.1

2022 Water Year
Continuous Monitoring Results
Wetland Monitoring Locations
Eagle Mine

	WLD022-4.5	WLD023-4.5	WLD025-4.5	WLD025-9.5	WLD026-4.5	WLD026-9.5	WLD027-4.5	WLD027-9.5	WLD028-4.5	WLD028-9.5
Background										
Mean	1422.6	1413.5	1415.5	1415.9	1416.3	1416.2	1422.1	1422.2	1427.2	1427.0
Standard Dev.	0.2	0.5	0.3	0.2	0.3	0.3	0.7	0.7	0.5	0.5
6" limit	1421.6	1411.4	1414.3	1414.6	1415.3	1415.3	1419.8	1419.8	1424.5	1424.7
Minimum	1422.1	1411.9	1414.8	1415.1	1415.8	1415.8	1420.3	1420.3	1425.0	1425.2
Maximum	1422.9	1414.7	1416.5	1416.7	1417.0	1416.7	1423.1	1423.1	1428.3	1428.3
Jul-22										
Mean	1421.9	1413.5	1415.3	NM	1416.1	1416.0	1421.6	1421.6	1426.0	1425.9
Minimum	1421.8	1413.3	1415.1	NM	1415.8	1415.8	1420.9	1420.9	1425.5	1425.5
Maximum	1422.1	1413.7	1415.5	NM	1416.4	1416.4	1422.4	1422.4	1427.1	1426.5
Aug-22										
Mean	1421.9	1413.3	1415.3	NM	1415.8	1415.9	1421.0	1421.0	1425.4	1425.3
Minimum	1421.8	1413.2	1415.1	NM	1415.7	1415.7	1420.6	1420.6	1425.1	1425.1
Maximum	1422.0	1413.4	1415.5	NM	1416.2	1416.1	1421.9	1421.8	1425.9	1425.7
Sep-22										
Mean	1421.8	1413.3	1415.4	NM	NM	1415.8	1421.1	1421.1	1425.3	1425.2
Minimum	1421.7	1413.1	1415.3	NM	NM	1415.7	1420.7	1420.6	1425.0	1425.0
Maximum	1422.1	1413.5	1415.5	NM	NM	1416.2	1422.5	1422.4	1426.9	1426.3

Source: North Jackson Company, REACH System

* All results are calculated based on mean daily values from continuous monitoring.

NM = Not measured.

Results in red indicate values outside of the background range.

Appendix O

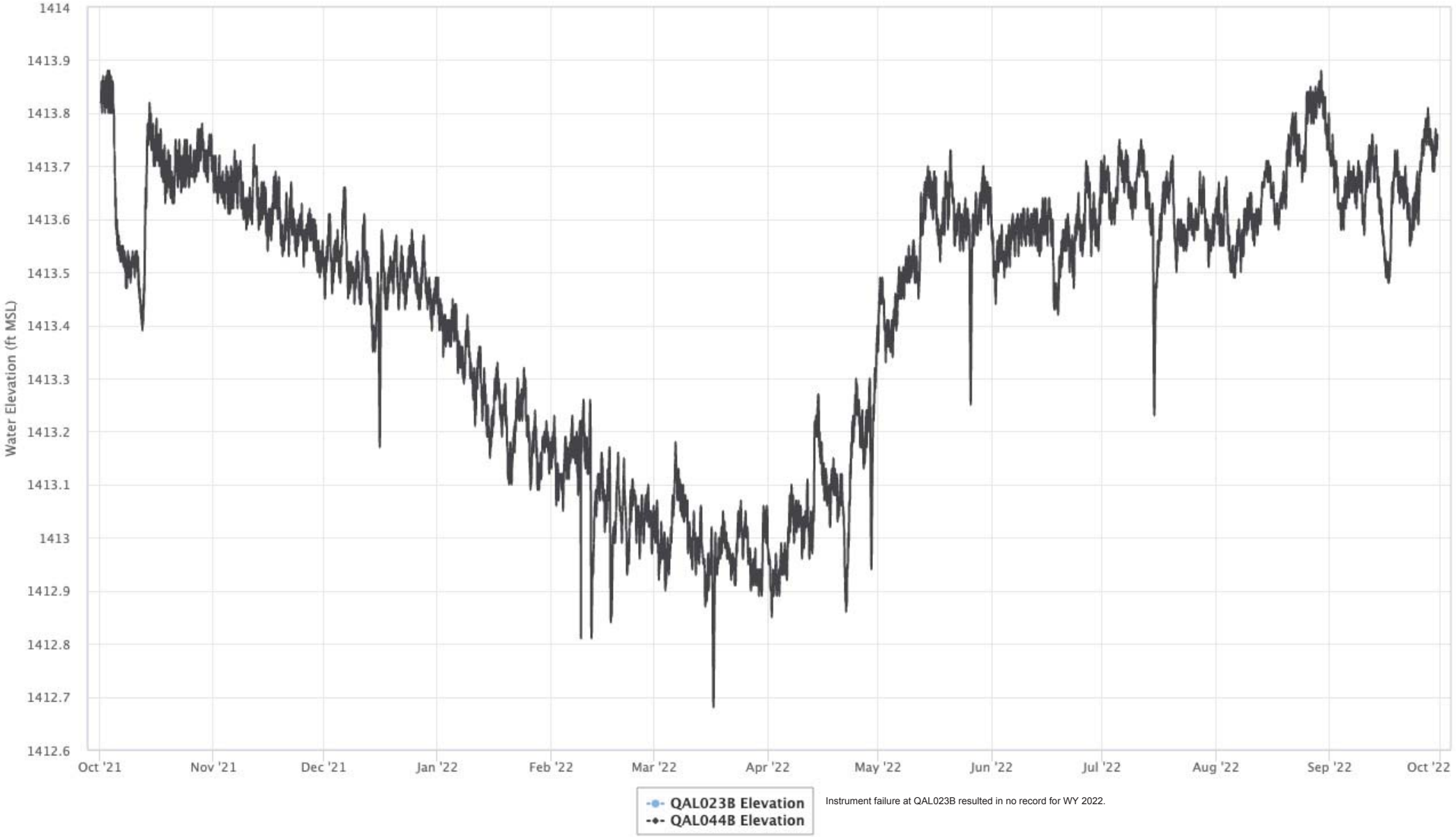
Eagle Mine

Groundwater and Wetland

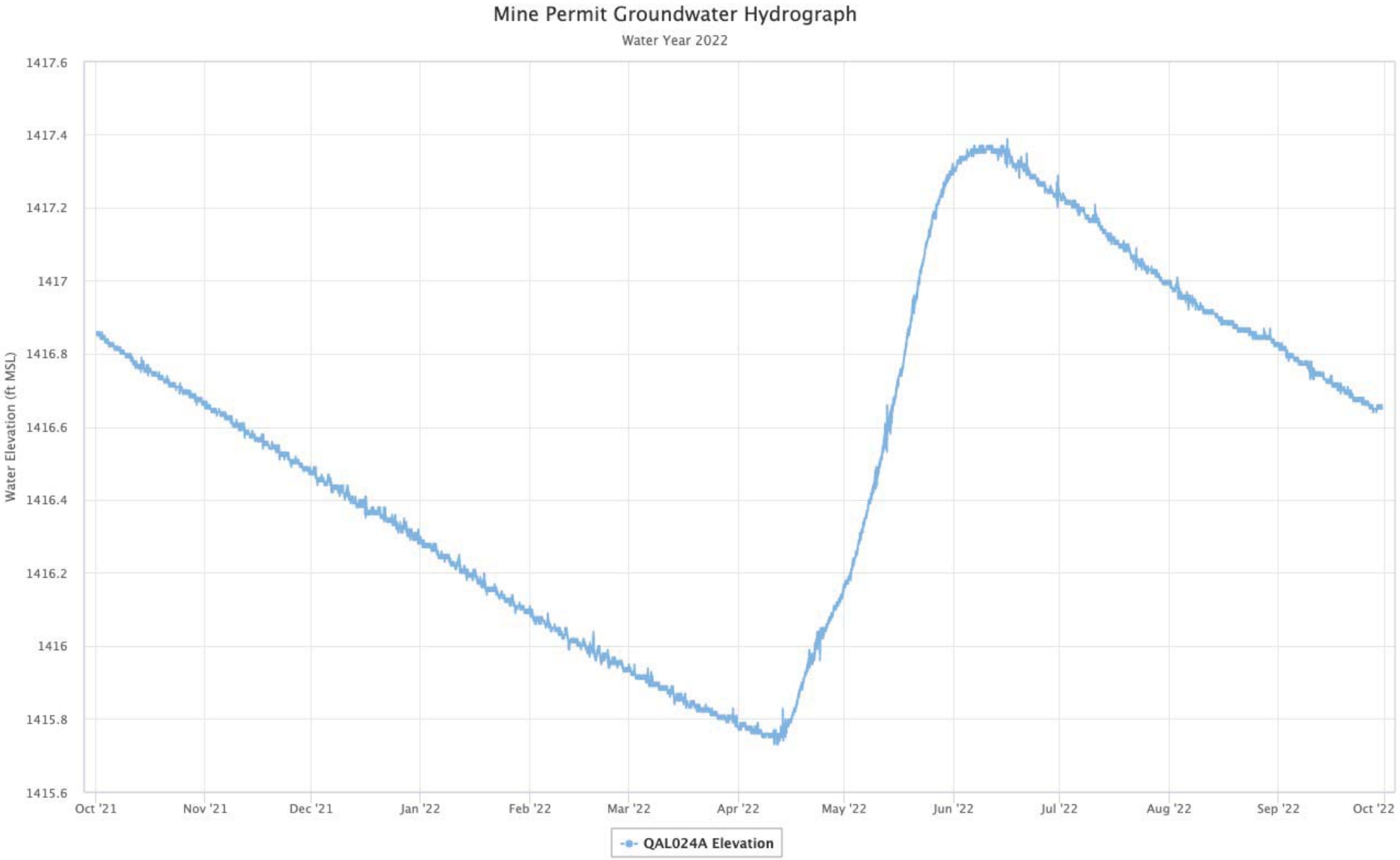
Hydrographs

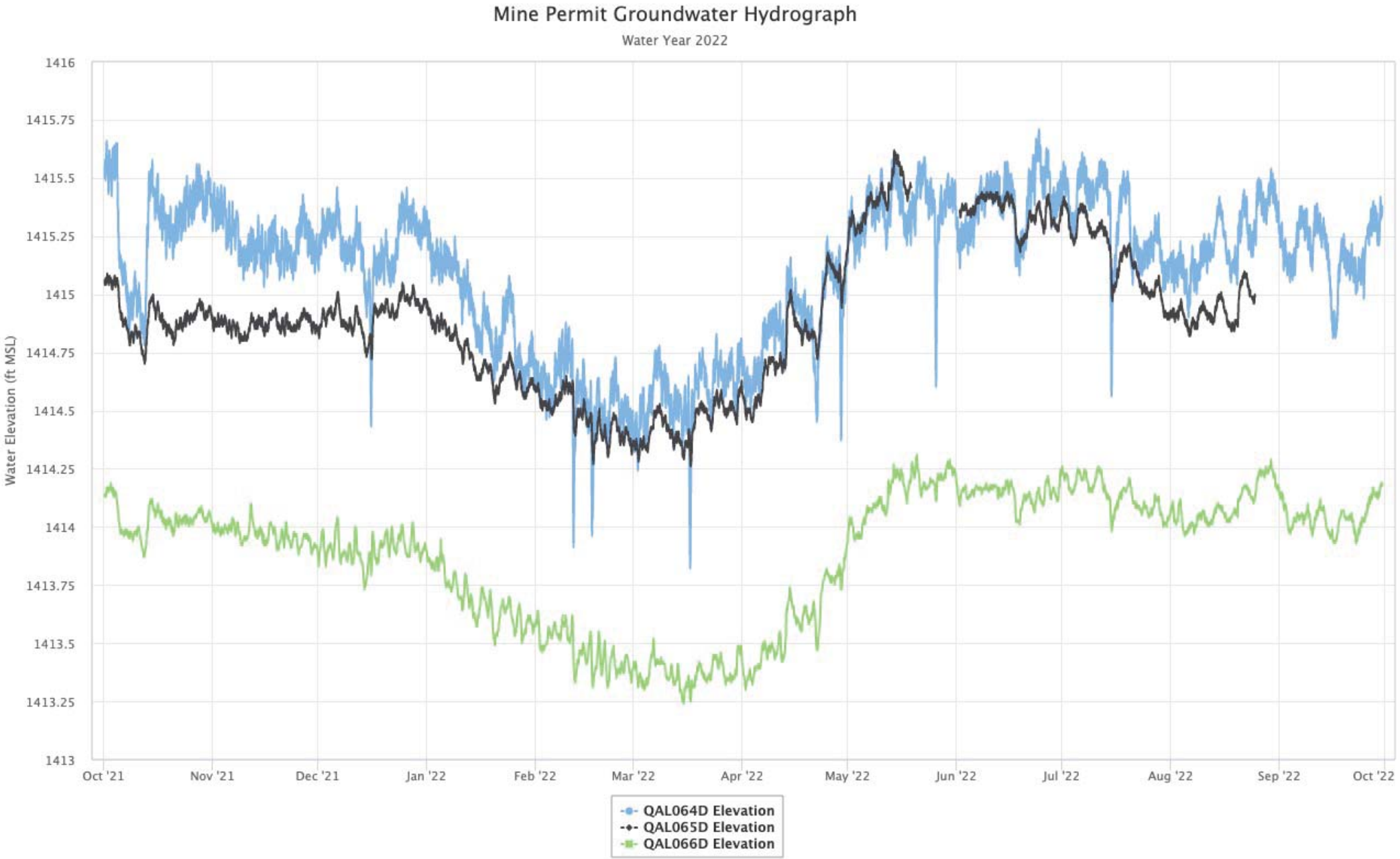
Mine Permit Groundwater Hydrograph

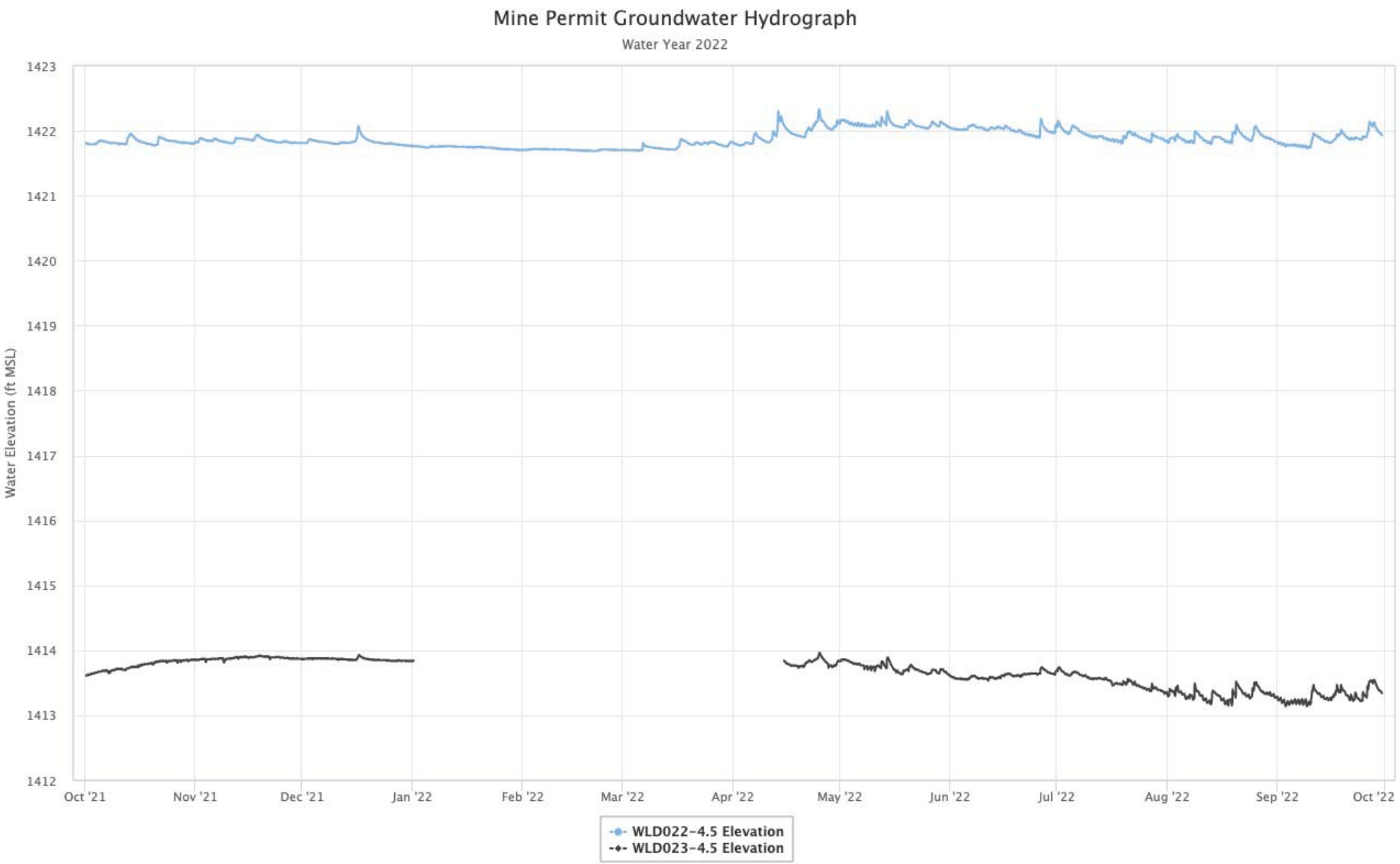
Water Year 2022

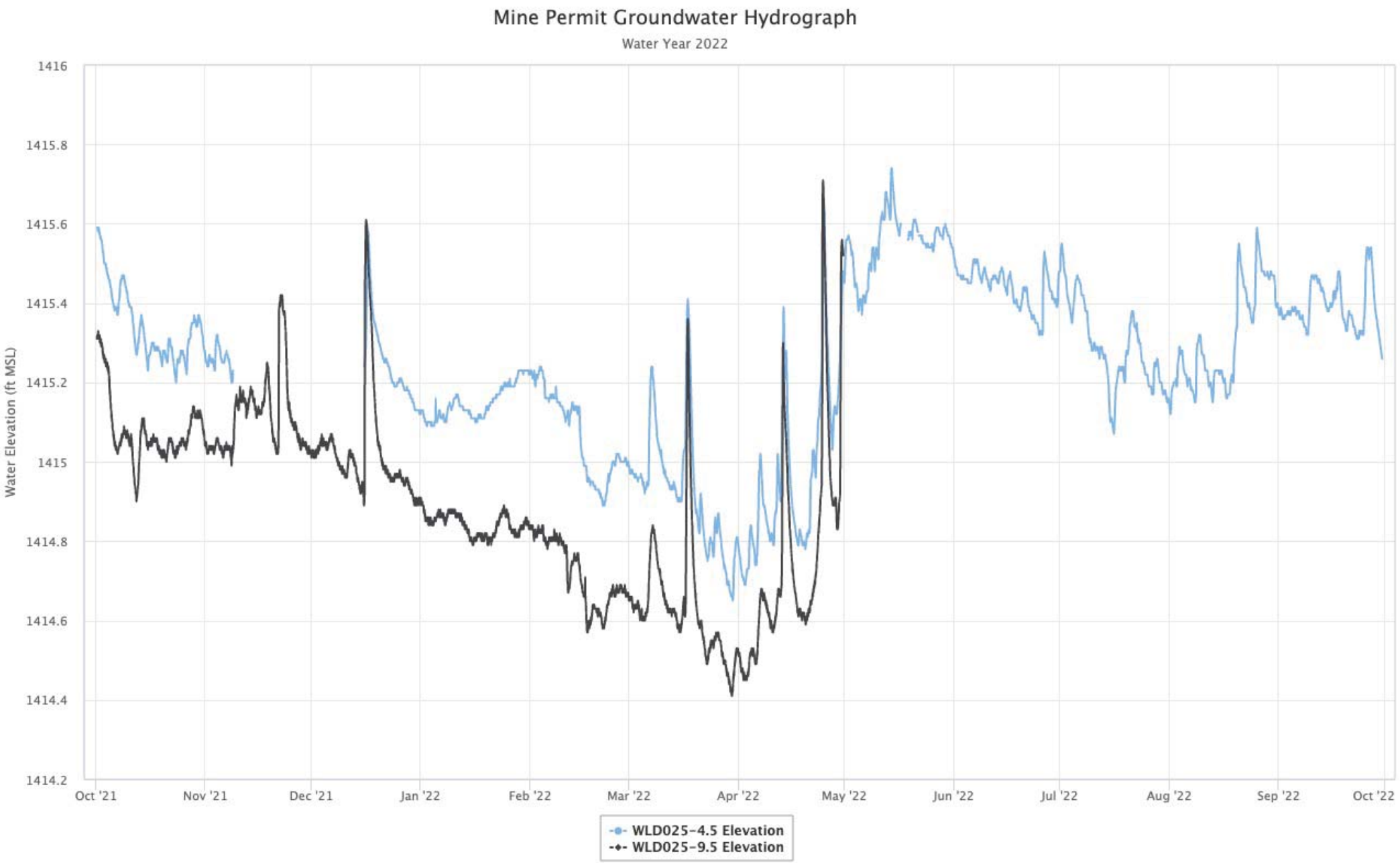


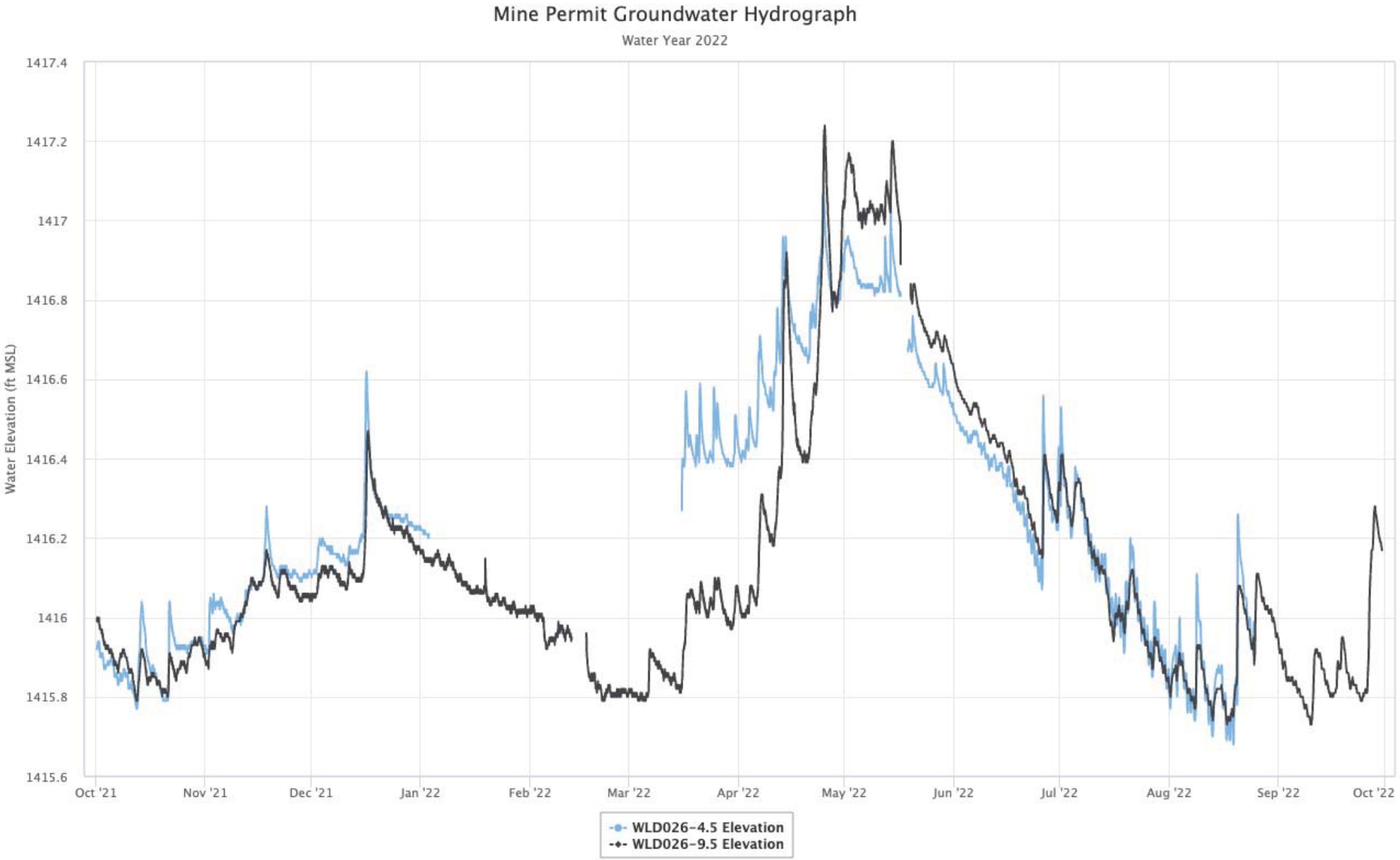
Instrument failure at QAL023B resulted in no record for WY 2022.

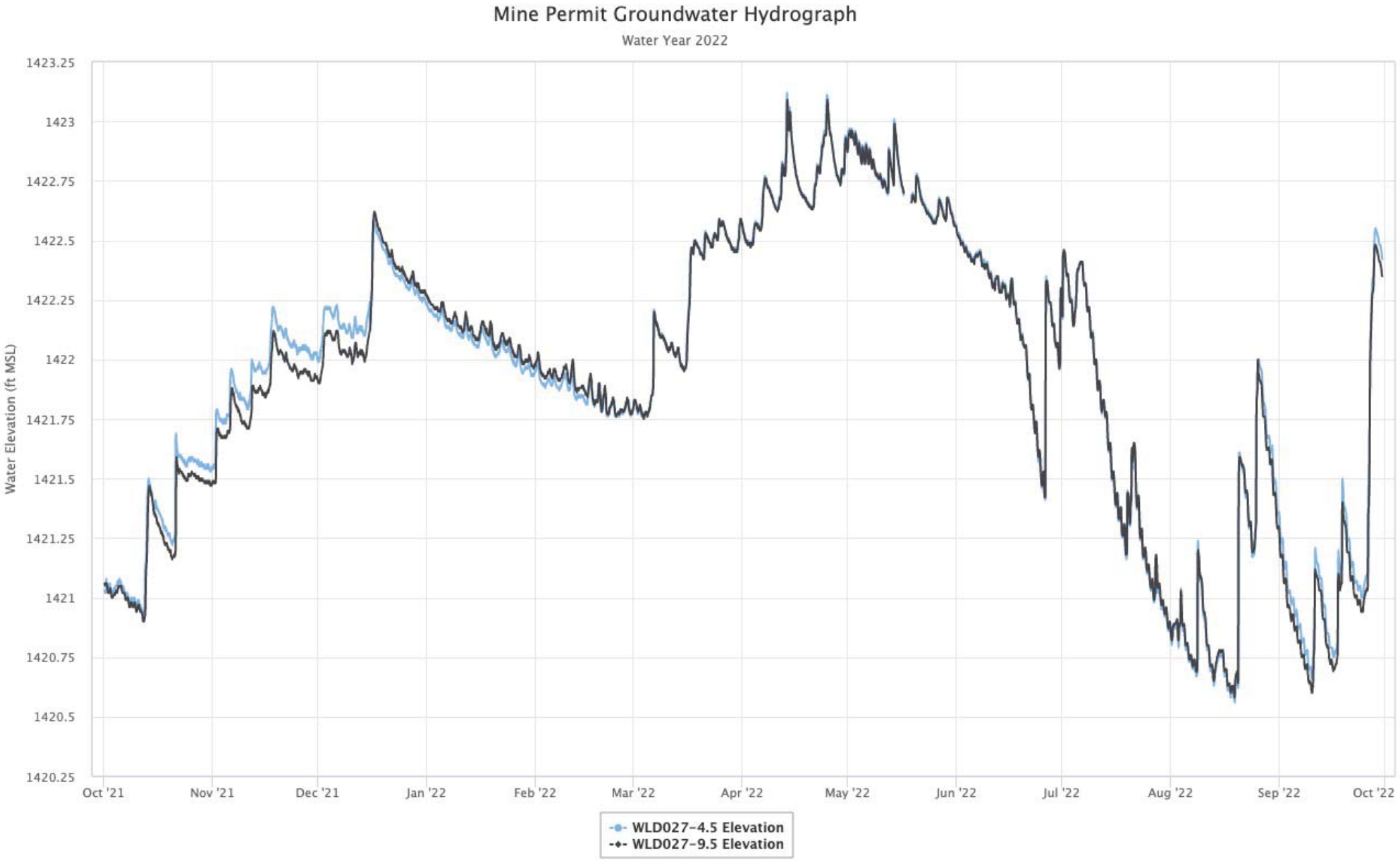

Mine Permit Groundwater Hydrograph
Water Year 2022
Water Elevation (ft MSL)
1417.6
1417.4
1417.2
1417
1416.8
1416.6
1416.4
1416.2
1416
1415.8
1415.6
Oct '21
Nov '21
Dec '21
Jan '22
Feb '22
Mar '22
Apr '22
May '22
Jun '22
Jul '22
Aug '22
Sep '22
Oct '22
QAL024A Elevation

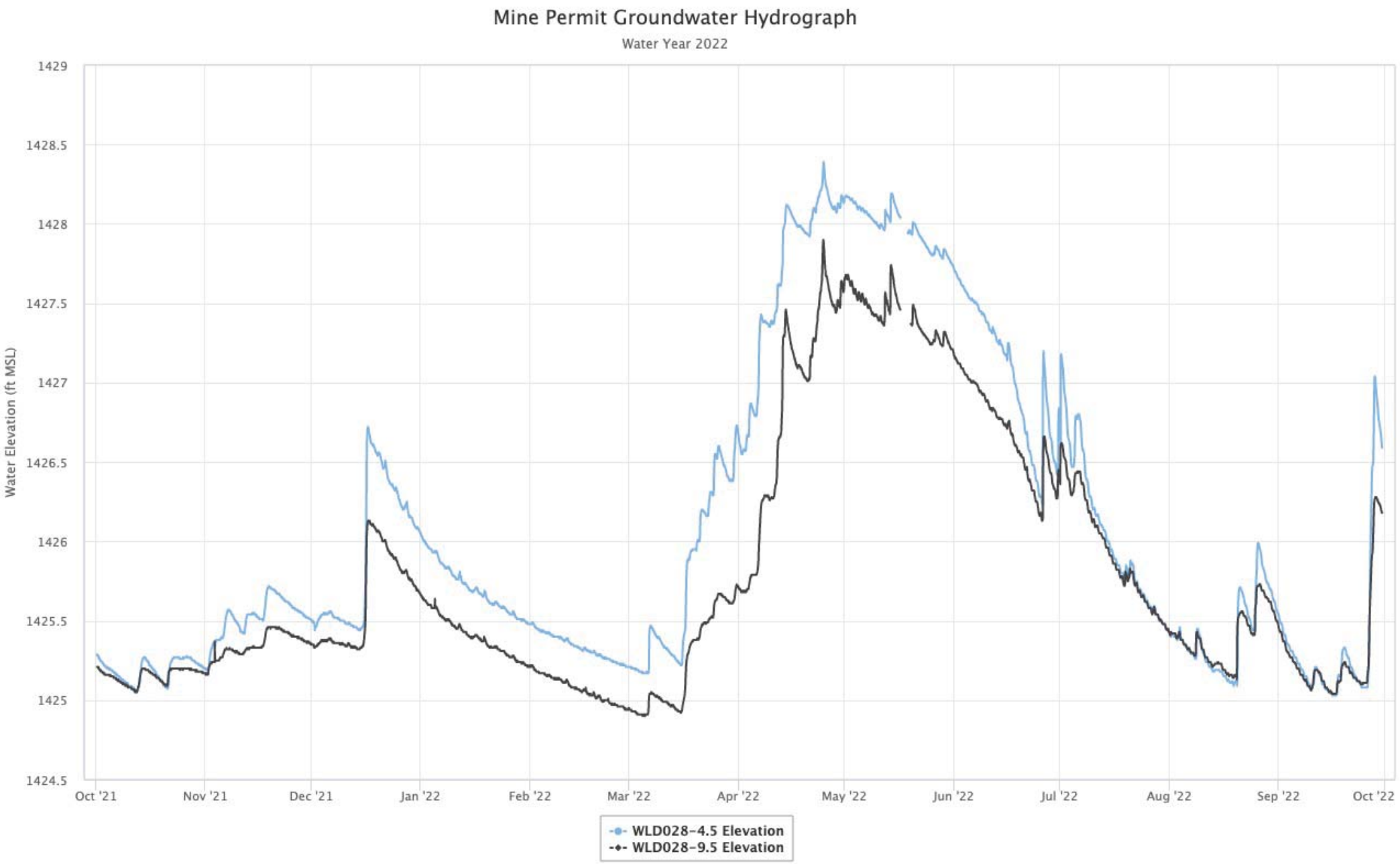

Mine Permit Groundwater Hydrograph
Water Year 2022
Water Elevation (ft MSL)
1416
1415.75
1415.5
1415.25
1415
1414.75
1414.5
1414.25
1414
1413.75
1413.5
1413.25
1413
Oct '21
Nov '21
Dec '21
Jan '22
Feb '22
Mar '22
Apr '22
May '22
Jun '22
Jul '22
Aug '22
Sep '22
Oct '22
QAL064D Elevation
QAL065D Elevation
QAL066D Elevation


Mine Permit Groundwater Hydrograph
Water Year 2022
Water Elevation (ft MSL)
1423
1422
1421
1420
1419
1418
1417
1416
1415
1414
1413
1412
Oct '21
Nov '21
Dec '21
Jan '22
Feb '22
Mar '22
Apr '22
May '22
Jun '22
Jul '22
Aug '22
Sep '22
Oct '22
WLD022-4.5 Elevation
WLD023-4.5 Elevation


Mine Permit Groundwater Hydrograph
Water Year 2022
Water Elevation (ft MSL)
1416
1415.8
1415.6
1415.4
1415.2
1415
1414.8
1414.6
1414.4
1414.2
Oct '21
Nov '21
Dec '21
Jan '22
Feb '22
Mar '22
Apr '22
May '22
Jun '22
Jul '22
Aug '22
Sep '22
Oct '22
WLD025-4.5 Elevation
WLD025-9.5 Elevation


Mine Permit Groundwater Hydrograph
Water Year 2022
Water Elevation (ft MSL)
1417.4
1417.2
1417
1416.8
1416.6
1416.4
1416.2
1416
1415.8
1415.6
Oct '21
Nov '21
Dec '21
Jan '22
Feb '22
Mar '22
Apr '22
May '22
Jun '22
Jul '22
Aug '22
Sep '22
Oct '22
WLD026-4.5 Elevation
WLD026-9.5 Elevation


Mine Permit Groundwater Hydrograph
Water Year 2022
Water Elevation (ft MSL)
1423.25
1423
1422.75
1422.5
1422.25
1422
1421.75
1421.5
1421.25
1421
1420.75
1420.5
1420.25
Oct '21
Nov '21
Dec '21
Jan '22
Feb '22
Mar '22
Apr '22
May '22
Jun '22
Jul '22
Aug '22
Sep '22
Oct '22
WLD027-4.5 Elevation
WLD027-9.5 Elevation


Mine Permit Groundwater Hydrograph
Water Year 2022
Water Elevation (ft MSL)
1429
1428.5
1428
1427.5
1427
1426.5
1426
1425.5
1425
1424.5
Oct '21
Nov '21
Dec '21
Jan '22
Feb '22
Mar '22
Apr '22
May '22
Jun '22
Jul '22
Aug '22
Sep '22
Oct '22
WLD028-4.5 Elevation
WLD028-9.5 Elevation

Appendix P

Eagle Mine

Discrete Groundwater Elevations

Mine Permit Water Elevation Data
2022 Full Network Quarterly Discrete Measurements
Eagle Project

Location	1st Qtr 2022		2nd Qtr 2022		3rd Qtr 2022		4th Qtr 2022	
	Elev. (ft MSL)	Meas. Date	Elev. (ft MSL)	Meas. Date	Elev. (ft MSL)	Meas. Date	Elev. (ft MSL)	Meas. Date
QAL001A	1409.51	02/16/22	1408.95	05/16/22	1408.86	09/28/22	1409.51	11/01/22
QAL001D	1404.01	02/16/22	1403.54	05/16/22	1403.25	09/28/22	1403.47	11/01/22
QAL002A	1431.52	02/16/22	1430.86	05/16/22	1432.55	08/24/22	1432.13	11/02/22
QAL002D	1393.97	02/16/22	1393.46	05/16/22	1393.65	08/24/22	1393.68	11/02/22
QAL003A	1422.24	02/16/22	1426.86	05/16/22	1424.43	08/24/22	1424.33	11/02/22
QAL003B	1410.10	02/16/22	1412.77	05/16/22	1411.13	08/24/22	1410.98	11/02/22
QAL004A	1423.58	02/16/22	1425.12	05/16/22	1424.64	08/25/22	1424.30	11/02/22
QAL004D	1417.90	02/16/22	1418.78	05/16/22	1420.08	08/25/22	1423.30	11/02/22
QAL005A	1450.89	02/16/22	1455.69	05/16/22	1452.41	08/24/22	1453.70	11/02/22
QAL005D	1449.57	02/16/22	1453.20	05/16/22	1451.26	08/24/22	1452.19	11/02/22
QAL006A	NM	02/18/22	1416.24	05/16/22	1413.58	08/24/22	1414.38	11/09/22
QAL006B	NM	02/18/22	1399.16	05/16/22	1399.58	08/24/22	1398.39	11/09/22
QAL007A	NM	02/18/22	1426.76	05/16/22	1428.48	08/24/22	1427.72	11/09/22
QAL007D	NM	02/18/22	1435.93	05/16/22	1436.41	08/24/22	1435.96	11/09/22
QAL008A	1390.31	02/16/22	1393.72	06/01/22	1393.05	08/24/22	1393.97	11/02/22
QAL008D	1353.60	02/16/22	1353.11	06/01/22	1353.98	08/24/22	1354.11	11/02/22
QAL009A	1353.88	02/16/22	1353.17	05/16/22	1353.27	08/24/22	1353.39	11/02/22
QAL009D	1353.79	02/16/22	1353.04	05/16/22	1353.13	08/24/22	1353.24	11/02/22
QAL010A	1418.64	02/16/22	1421.19	05/16/22	1422.07	08/24/22	1420.44	11/02/22
QAL015	1292.44	02/16/22	1292.49	05/19/22	1292.26	08/25/22	1292.19	11/03/22
QAL016	1274.80	02/16/22	1274.61	05/17/22	NM	09/28/22	NM	11/03/22
QAL017	1250.74	02/16/22	1251.28	05/17/22	1250.30	09/28/22	1250.94	11/07/22
QAL018	1248.53	02/16/22	1249.43	05/17/22	1247.39	09/28/22	1248.32	11/07/22
QAL019	1284.82	02/16/22	1285.00	05/17/22	1284.48	09/28/22	NM	11/07/22
QAL020	1334.58	02/16/22	1334.68	05/17/22	1334.01	09/28/22	1334.59	11/07/22
QAL021	NM	02/16/22	1389.30	05/17/22	1388.88	09/28/22	1389.18	11/07/22
QAL022	NM	02/18/22	1298.13	05/16/22	1298.21	08/24/22	1298.17	11/09/22
QAL023-1.0	F	02/16/22	1418.40	05/16/22	1418.16	08/25/22	NM	11/09/22
QAL023-4.5	1418.32	02/16/22	1418.40	05/16/22	1418.32	08/25/22	NM	11/09/22
QAL023B	1412.21	02/16/22	1413.01	05/16/22	1412.74	08/25/22	1413.11	10/26/22
QAL024A	1416.21	02/16/22	1416.92	05/16/22	1417.00	08/30/22	1416.65	11/07/22
QAL025A	1412.98	02/07/22	1414.46	05/16/22	1412.92	08/22/22	1415.39	10/19/22
QAL025B	1414.71	02/07/22	1414.59	05/16/22	1414.75	08/22/22	1415.38	10/19/22
QAL025D	1410.97	02/07/22	1410.60	05/16/22	1411.69	08/01/22	1411.36	11/02/22
QAL026A	<1415.4	02/07/22	<1415.4 BP	05/16/22	<1415.4 BP	08/01/22	<1415.4	11/03/22
QAL026D	1407.77	02/07/22	1407.40	05/16/22	1408.20	08/01/22	1411.01	11/03/22
QAL026E	1407.68	02/07/22	1407.31	05/16/22	1408.14	08/22/22	1408.19	10/19/22
QAL029A	1412.72	02/01/22	1412.45	05/03/22	1412.68	08/02/22	1412.75	11/03/22
QAL029D	1404.72	02/02/22	1404.62	05/02/22	1405.34	08/02/22	1405.54	11/03/22
QAL031D	1371.04	02/16/22	1370.44	06/01/22	1371.10	08/25/22	1371.33	11/01/22
QAL043-1.0	F	02/16/22	1419.94	05/16/22	D	08/25/22	1419.52	11/01/22
QAL043-4.5	1418.99	02/16/22	1419.93	05/16/22	1419.03	08/25/22	1419.49	11/01/22
QAL043B	1412.93	02/16/22	1413.48	05/16/22	1413.60	08/25/22	1413.59	11/01/22
QAL044-1.0	NM	02/18/22	1425.11	05/16/22	D	08/25/22	1424.41	11/01/22
QAL044-4.5	NM	02/18/22	1424.95	05/16/22	1423.28	08/25/22	1424.30	11/01/22
QAL044B	1413.08	02/16/22	1413.57	05/16/22	1413.76	08/25/22	1413.70	11/01/22
QAL050A	1363.19	02/01/22	1361.95	05/02/22	1362.73	08/01/22	1362.88	11/01/22
QAL051A	1364.50	02/01/22	1363.81	05/02/22	<1363.1 BP	08/01/22	1365.49	11/03/22
QAL051D	1364.62	02/01/22	1363.76	05/02/22	1365.00	08/01/22	1365.16	11/02/22
QAL052A	1352.10	02/01/22	1351.69	05/02/22	1352.94	08/01/22	1352.79	11/03/22
QAL053A	1385.75	02/01/22	1385.03	05/02/22	1385.74	08/01/22	1385.70	11/02/22
QAL055A	1364.39	02/01/22	1363.02	05/03/22	1364.01	08/01/22	1364.10	11/02/22
QAL056A	1391.83	02/01/22	1392.80	05/03/22	1394.45	08/01/22	1394.94	11/01/22
QAL057A	1362.18	02/01/22	1360.81	05/03/22	1361.61	08/01/22	1361.81	11/01/22
QAL057D	1362.24	02/01/22	1360.91	05/03/22	1361.71	08/01/22	1361.90	11/01/22
QAL060A	1403.77	02/08/22	1403.28	06/08/22	1403.87	08/23/22	1404.07	10/20/22
QAL061A	1405.02	02/08/22	1404.59	06/08/22	1405.76	08/23/22	1405.27	10/20/22
QAL062A	1406.35	02/08/22	1405.92	06/08/22	1406.58	08/23/22	1406.66	10/20/22
QAL063A	1400.59	02/08/22	1400.04	05/16/22	1401.47	08/24/22	1400.65	10/19/22
QAL064D	1414.35	02/16/22	1415.34	05/16/22	1415.40	08/25/22	1415.43	10/05/22
QAL065D	1414.48	02/16/22	1415.46	05/18/22	1415.00	08/23/22	1415.31	11/07/22
QAL066D	1413.54	02/16/22	1414.20	05/16/22	1414.21	08/25/22	1414.25	11/01/22
QAL067A	1413.13	02/08/22	1412.92	06/08/22	1413.66	08/23/22	1413.43	10/20/22
QAL068A	1420.31	02/07/22	1419.35	05/16/22	1420.82	08/22/22	1420.35	10/19/22
QAL068B	1412.09	02/07/22	1411.64	05/16/22	1412.57	08/22/22	1412.70	10/19/22
QAL068D	1412.21	02/07/22	1411.74	05/16/22	1411.77	08/22/22	1412.78	10/19/22
QAL069A	1381.73	02/07/22	1382.20	06/06/22	1382.60	08/22/22	1382.00	10/26/22
QAL070A	1369.43	02/16/22	1368.65	05/16/22	1369.82	08/24/22	1369.93	11/01/22
QAL071A	1402.92	02/08/22	1404.05	05/16/22	1405.28	08/24/22	1405.31	10/20/22
QAL073A	1382.07	02/16/22	1381.83	05/16/22	1382.94	08/24/22	1382.31	11/01/22
QAL074A	1401.44	02/08/22	1403.48	05/16/22	1403.88	08/23/22	1460.36	10/20/22
QAL075A	1346.72	02/02/22	1346.64	05/03/22	1347.41	08/02/22	1347.69	11/02/22
QAL075D	1348.98	02/09/22	1348.22	05/02/22	1348.78	08/02/22	1349.12	11/02/22
QAL076E	NM	02/18/22	1312.94	05/16/22	1312.44	08/30/22	1312.73	11/02/22
QAL077E	NM	02/18/22	1234.61	05/16/22	1234.95	08/30/22	1234.70	11/02/22
STRM002	1400.52	03/09/22	1400.46	05/23/22	1401.44	08/29/22	1401.69	10/24/22
STRM011	F	02/16/22	1416.23	05/16/22	1416.43	08/25/22	1417.04	11/03/22

Mine Permit Water Elevation Data
2022 Full Network Quarterly Discrete Measurements
Eagle Project

Location	1st Qtr 2022		2nd Qtr 2022		3rd Qtr 2022		4th Qtr 2022	
	Elev. (ft MSL)	Meas. Date	Elev. (ft MSL)	Meas. Date	Elev. (ft MSL)	Meas. Date	Elev. (ft MSL)	Meas. Date
WLD001-1.0	NM	02/18/22	1429.05	05/19/22	1428.99	08/25/22	1429.04	11/09/22
WLD001-4.5	NM	02/18/22	1428.06	05/19/22	1428.08	08/25/22	1428.07	11/09/22
WLD001-9.5	NM	02/18/22	1429.51	05/19/22	1429.31	08/25/22	1429.41	11/09/22
WLD002	NM	02/18/22	1430.92	05/19/22	1430.85	08/25/22	1430.93	11/09/22
WLD004	NM	02/18/22	1446.47	05/16/22	1445.57	08/24/22	1446.46	11/09/22
WLD005	NM	02/18/22	1450.94	05/16/22	1450.00	08/24/22	1450.91	11/09/22
WLD006	NM	02/18/22	1455.38	05/16/22	1453.74	08/24/22	1455.32	11/09/22
WLD007	NM	02/18/22	1450.61	05/16/22	1449.32	08/24/22	1450.37	11/09/22
WLD008	NM	02/18/22	1453.53	05/16/22	1452.56	08/24/22	1453.33	11/09/22
WLD010	NM	02/18/22	1447.47	05/16/22	1445.91	08/24/22	1447.46	11/09/22
WLD011	NM	02/18/22	1446.82	05/16/22	1445.07	08/24/22	1446.71	11/09/22
WLD012	NM	02/18/22	1446.18	05/16/22	1445.28	08/24/22	1446.30	11/09/22
WLD017	NM	02/18/22	1423.93	05/16/22	1422.51	08/24/22	1422.26	11/09/22
WLD018	NM	02/18/22	1423.31	05/16/22	1422.28	08/24/22	1422.56	11/09/22
WLD019	NM	02/18/22	1421.48	05/16/22	1418.76	08/24/22	1421.01	11/07/22
WLD020	NM	02/18/22	1420.09	05/16/22	1417.55	08/24/22	1419.69	11/09/22
WLD021	NM	02/18/22	1417.29	05/16/22	1415.41	08/24/22	1416.41	11/09/22
WLD022-1.0	1421.24	02/16/22	1422.00	05/16/22	1422.13	08/25/22	1421.91	11/02/22
WLD022-4.5	1421.68	02/16/22	1422.06	05/16/22	1422.04	08/25/22	1421.94	11/02/22
WLD022-9.5	1422.37	02/16/22	1422.38	05/16/22	1422.20	08/25/22	1422.12	11/02/22
WLD023-1.0	NM	02/18/22	1413.86	05/16/22	1413.73	08/25/22	1413.58	11/03/22
WLD023-4.5	NM	02/18/22	1413.64	05/16/22	1413.50	08/25/22	1413.37	11/03/22
WLD023-9.5	NM	02/18/22	1415.61	05/16/22	1414.93	08/25/22	1415.07	11/03/22
WLD024-1.0	1422.32	02/16/22	1422.95	05/16/22	1422.98	08/25/22	1422.71	11/02/22
WLD024-4.5	1422.50	02/16/22	1423.23	05/16/22	1414.07	08/25/22	1422.84	11/02/22
WLD024-9.5	1422.49	02/16/22	1423.39	05/16/22	1423.22	08/25/22	1423.15	11/02/22
WLD025-1.0	F	02/16/22	1414.98	05/16/22	1415.27	08/24/22	1414.86	11/03/22
WLD025-4.5	F	02/16/22	1415.40	05/16/22	1415.18	08/24/22	1414.81	11/03/22
WLD025-9.5	1414.52	02/16/22	1415.35	05/16/22	1415.06	08/24/22	1414.71	11/03/22
WLD026-1.0	F	02/16/22	1415.62	05/16/22	1415.36	08/24/22	1415.48	11/03/22
WLD026-4.5	D	02/16/22	1416.32	05/16/22	1415.62	08/24/22	1416.00	11/03/22
WLD026-9.5	F	02/16/22	1416.57	05/16/22	1415.63	08/24/22	1415.85	11/03/22
WLD027-1.0	1427.32	02/16/22	1423.27	05/16/22	D	08/25/22	1422.87	11/03/22
WLD027-4.5	1421.95	02/16/22	1422.78	05/16/22	1422.08	08/25/22	1422.55	11/03/22
WLD027-9.5	1426.67	02/16/22	1422.72	05/16/22	1422.04	08/25/22	1422.52	11/03/22
WLD028-1.0	F	02/16/22	1428.00	05/16/22	D	08/24/22	1427.30	11/03/22
WLD028-4.5	1425.26	02/16/22	1427.96	05/16/22	1425.35	08/24/22	1427.21	11/03/22
WLD028-9.5	1424.85	02/16/22	1427.26	05/16/22	1425.21	08/24/22	1426.40	11/03/22
WLD029-1.0	NM	02/18/22	1429.80	05/16/22	D	08/25/22	D	11/02/22
WLD029-4.5	NM	02/18/22	1429.81	05/16/22	1426.11	08/25/22	1427.36	11/02/22
WLD029-9.5	NM	02/18/22	1429.78	05/16/22	1426.42	08/25/22	1427.41	11/02/22
WLD030	NM	02/18/22	1455.04	05/16/22	1453.46	08/24/22	1454.87	11/09/22
YDRM002	1412.48	03/08/22	1412.80	05/23/22	1418.66	08/29/22	1413.56	10/27/22

2022 Mine Permit Water Elevation Data
Footnote Explanation
Eagle Project

Footnote	Explanation
BP	Below pump. Maximum water elevation is shown.
D	Dry.
F	Frozen.
NM	Not measured.
R	Measured value was rejected based on quality control procedures.

Appendix Q

Eagle Mine

Continuous Surface Water Monitoring Results

2022 Water Year
Continuous Monitoring Results
Surface Water Location STRE002
Eagle Mine

STRE002								
Parameter	Month	Background MEAN	Background Min	Background MAX	Background SD	Water Year MEAN	Water Year MIN	Water Year MAX
Temperature	2021/10	7.5	3.2	14.6	1.5	9.5	5.2	13.2
	2021/11	3.4	-0.1	9.3	0.5	3.4	0.6	7.3
	2021/12	0.8	-0.2	3.2	0.4	1.0	-0.1	2.9
	2022/01	0.6	-0.2	0.8	0.5	0.0	-0.1	0.8
	2022/02	0.5	-0.2	2.4	0.2	0.2	-0.1	1.6
	2022/03	1.5	-0.2	4.7	0.3	1.4	-0.1	2.9
	2022/04	4.2	-0.1	10.8	1.6	2.2	0.1	4.7
	2022/05	9.7	1.3	17.8	1.0	10.2	4.9	16.0
	2022/06	13.0	8.1	17.0	0.7	13.2	10.0	17.8
	2022/07	14.1	10.6	18.2	1.0	14.1	12.5	15.9
	2022/08	13.5	10.0	17.6	0.7	13.6	11.9	15.5
	2022/09	11.4	7.0	16.6	0.8	11.5	7.8	15.0
Flow	2021/10	22.9	12.0	119.0	7.1	14.9	12.2	23.5
	2021/11	18.5	12.4	37.8	3.1	18.2	14.6	22.6
	2021/12	17.8	12.1	58.8	4.1	NA	NA	NA
	2022/01	18.1	12.0	45.0	3.5	NA	NA	NA
	2022/02	17.3	12.0	50.0	5.6	NA	NA	NA
	2022/03	23.3	12.0	110.9	5.7	21.3	16.7	25.2
	2022/04	37.0	12.0	131.5	10.3	48.1	18.8	121.6
	2022/05	22.2	11.8	160.6	6.3	29.6	15.9	76.1
	2022/06	18.0	12.0	90.1	3.5	13.0	11.8	23.0
	2022/07	14.0	11.8	33.0	1.5	12.6	11.8	18.3
	2022/08	14.5	11.8	74.4	2.3	14.1	11.7	30.3
	2022/09	16.9	11.7	69.8	3.2	16.2	11.7	47.0
Specific Conductivity	2021/10	127.8	70.0	146.0	14.4	127.4	119.0	131.5
	2021/11	130.2	80.0	148.0	9.2	115.4	112.0	119.0
	2021/12	132.9	89.0	153.0	6.7	NA	NA	NA
	2022/01	133.3	115.0	145.0	3.9	NA	NA	NA
	2022/02	133.2	111.0	144.0	3.1	NA	NA	NA
	2022/03	122.0	54.0	148.0	13.6	NA	NA	NA
	2022/04	95.6	50.0	146.0	18.2	NA	NA	NA
	2022/05	122.0	37.0	149.0	9.3	NA	NA	NA
	2022/06	129.1	94.0	169.0	6.4	NA	NA	NA
	2022/07	146.4	119.0	165.0	7.4	NA	NA	NA
	2022/08	146.1	107.0	163.0	6.5	NA	NA	NA
	2022/09	138.2	80.0	149.0	6.0	NA	NA	NA

2022 Water Year
Continuous Monitoring Results
Surface Water Location STRM004
Eagle Mine

STRM004								
Parameter	Month	Background MEAN	Background Min	Background MAX	Background SD	Water Year MEAN	Water Year MIN	Water Year MAX
Temperature	2021/10	7.5	2.3	15.2	1.6	10.0	5.4	13.7
	2021/11	3.0	0.0	9.6	0.5	3.2	0.9	7.0
	2021/12	0.3	-0.1	2.5	0.2	0.8	0.4	1.8
	2022/01	0.2	-0.1	1.9	0.3	0.3	0.2	0.3
	2022/02	0.1	0.0	1.3	0.1	0.1	-0.1	0.2
	2022/03	0.9	-0.1	5.0	0.4	0.3	-0.1	1.4
	2022/04	4.2	-0.1	11.3	1.9	1.9	0.2	4.9
	2022/05	10.1	1.9	18.2	1.0	9.9	5.1	15.3
	2022/06	13.8	7.9	18.6	1.2	13.5	10.2	17.5
	2022/07	14.8	11.0	19.0	1.3	15.0	13.2	16.9
	2022/08	14.2	10.4	18.1	0.7	14.8	13.1	16.7
	2022/09	11.8	7.3	17.3	4.5	12.3	8.1	16.0
Flow	2021/10	7.7	3.9	41.1	2.2	5.3	4.6	7.1
	2021/11	6.8	4.2	23.1	2.5	5.3	5.0	5.5
	2021/12	6.7	4.6	18.9	1.6	NA	NA	NA
	2022/01	5.6	3.5	13.2	1.8	NA	NA	NA
	2022/02	5.7	2.8	15.5	1.8	NA	NA	NA
	2022/03	8.2	3.1	56.7	3.0	6.9	5.9	8.6
	2022/04	14.9	5.2	44.5	2.5	14.2	5.7	56.6
	2022/05	8.3	4.4	59.9	2.5	7.7	4.1	18.3
	2022/06	5.7	3.0	27.4	1.1	3.7	3.1	6.0
	2022/07	4.6	2.8	9.9	0.4	4.0	3.2	5.8
	2022/08	4.8	2.8	28.0	1.1	3.8	3.1	6.9
	2022/09	5.2	2.8	24.0	2.2	4.5	3.1	12.1
Specific Conductivity	2021/10	87.3	56.0	140.0	9.2	119.0	116.0	130.1
	2021/11	87.1	59.0	96.0	4.2	124.0	113.0	133.0
	2021/12	84.7	61.0	95.0	11.6	100.6	78.0	129.5
	2022/01	91.3	67.0	97.0	1.6	78.0	77.6	78.3
	2022/02	94.5	58.0	103.0	3.5	NA	NA	NA
	2022/03	88.6	44.0	105.0	8.1	98.7	96.0	100.1
	2022/04	69.5	33.0	105.0	12.6	76.3	59.3	95.7
	2022/05	85.6	37.0	114.0	9.2	74.3	61.8	88.4
	2022/06	88.5	57.0	116.0	14.3	98.7	90.0	106.0
	2022/07	97.1	82.0	114.0	6.2	113.0	101.6	146.1
	2022/08	100.6	70.0	119.0	9.2	110.8	104.5	136.5
	2022/09	81.3	57.0	130.0	48.8	97.8	85.5	107.0

2022 Water Year
Continuous Monitoring Results
Surface Water Location STRM005
Eagle Mine

STRM005								
Parameter	Month	Background MEAN	Background Min	Background MAX	Background SD	Water Year MEAN	Water Year MIN	Water Year MAX
Temperature	2021/10	7.9	2.6	15.5	2.4	10.5	6.2	14.3
	2021/11	3.1	0.0	7.6	0.2	3.2	0.4	6.7
	2021/12	0.3	-0.1	2.2	0.2	0.4	0.1	2.1
	2022/01	0.3	-0.1	2.6	0.2	0.2	0.1	0.2
	2022/02	0.0	-0.1	1.4	0.1	0.1	0.0	0.1
	2022/03	0.5	-0.1	3.7	0.3	0.1	0.0	1.0
	2022/04	4.2	0.1	11.1	1.4	2.2	0.3	5.3
	2022/05	10.4	2.1	17.5	1.0	10.6	5.3	16.5
	2022/06	15.4	9.2	20.5	1.0	14.8	11.4	19.0
	2022/07	17.2	11.9	21.3	1.1	16.7	14.5	18.9
	2022/08	16.6	12.7	21.1	0.4	16.0	14.3	17.9
	2022/09	13.1	9.2	18.7	1.1	13.0	8.5	17.0
Flow	2021/10	64.2	29.2	346.6	29.2	45.7	40.9	55.0
	2021/11	52.8	29.2	188.7	24.1	50.8	45.8	57.7
	2021/12	55.7	33.6	131.3	17.6	NA	NA	NA
	2022/01	44.9	38.0	83.3	2.7	NA	NA	NA
	2022/02	59.6	40.7	119.3	0.0	NA	NA	NA
	2022/03	126.0	36.0	456.2	115.0	NA	NA	NA
	2022/04	126.8	41.7	459.4	21.5	188.0	67.3	484.1
	2022/05	67.2	32.5	781.5	28.7	78.1	46.0	220.9
	2022/06	40.5	26.3	164.1	9.9	34.8	29.8	41.7
	2022/07	29.8	24.0	52.0	22.0	31.5	29.0	38.9
	2022/08	28.8	23.2	82.0	4.0	31.7	27.5	51.1
	2022/09	38.6	21.8	155.5	14.2	34.3	26.6	84.8
Specific Conductivity	2021/10	112.0	29.0	147.0	26.8	NA	NA	NA
	2021/11	123.5	65.0	143.0	15.9	NA	NA	NA
	2021/12	126.6	79.0	145.0	8.4	70.2	52.2	94.0
	2022/01	129.3	99.0	145.0	4.7	85.2	70.0	93.0
	2022/02	128.1	91.0	143.0	5.3	88.8	75.3	93.8
	2022/03	119.1	55.0	141.0	9.4	78.6	74.0	83.6
	2022/04	77.5	36.0	121.0	11.3	67.5	39.1	84.6
	2022/05	112.5	30.0	141.0	8.1	81.3	55.0	102.2
	2022/06	130.9	78.0	149.0	4.2	114.2	100.4	119.4
	2022/07	142.9	111.0	161.0	8.4	124.4	118.5	133.6
	2022/08	145.0	101.0	163.0	11.4	138.3	102.7	149.3
	2022/09	133.3	90.0	150.0	15.7	140.0	79.9	153.0

2022 Water Year
Continuous Monitoring Results
Surface Water Location YDRM002
Eagle Mine

YDRM002								
Parameter	Month	Background MEAN	Background Min	Background MAX	Background SD	Water Year MEAN	Water Year MIN	Water Year MAX
Temperature	2021/10	8.5	2.7	17.2	1.9	NA	NA	NA
	2021/11	2.4	0.0	9.3	0.5	NA	NA	NA
	2021/12	0.1	0.0	1.4	0.0	0.0	-0.1	0.0
	2022/01	0.0	-0.1	1.0	0.1	-0.1	-0.1	0.0
	2022/02	0.0	0.0	0.2	0.0	-0.1	-0.1	-0.1
	2022/03	0.4	-0.1	4.9	0.3	-0.1	-0.1	0.0
	2022/04	4.3	0.0	11.4	2.1	1.1	-0.1	4.7
	2022/05	11.5	0.8	21.6	1.4	11.0	4.5	17.5
	2022/06	16.5	9.8	22.2	1.2	16.5	13.0	20.8
	2022/07	18.6	12.4	23.6	1.4	18.4	16.7	20.8
	2022/08	17.9	11.7	23.2	0.9	17.4	15.6	20.3
	2022/09	14.3	8.5	21.0	0.7	14.1	8.5	19.4
Flow	2021/10	34.6	7.1	214.9	25.4	NA	NA	NA
	2021/11	26.8	10.0	94.0	9.9	NA	NA	NA
	2021/12	21.1	10.6	74.0	6.9	NA	NA	NA
	2022/01	18.4	10.0	41.1	4.1	NA	NA	NA
	2022/02	16.8	12.2	29.7	2.9	NA	NA	NA
	2022/03	25.7	11.4	173.1	11.1	NA	NA	NA
	2022/04	91.8	14.9	306.2	29.0	145.7	49.9	228.3
	2022/05	47.2	8.1	204.3	22.2	101.9	28.0	200.5
	2022/06	21.2	8.0	61.2	8.6	22.5	13.4	31.8
	2022/07	11.6	6.2	32.6	1.9	16.6	10.8	29.3
	2022/08	9.0	4.3	45.6	2.7	14.4	9.9	26.5
	2022/09	13.1	5.5	68.5	5.9	15.3	7.6	54.2
Specific Conductivity	2021/10	61.3	30.0	102.0	18.8	NA	NA	NA
	2021/11	53.1	32.0	74.0	7.6	NA	NA	NA
	2021/12	62.0	32.0	91.0	9.0	50.7	46.0	64.6
	2022/01	64.6	52.0	76.0	5.8	57.6	51.0	60.1
	2022/02	69.6	55.0	79.0	5.6	63.6	59.5	66.0
	2022/03	57.0	28.0	75.0	12.4	57.0	47.4	65.0
	2022/04	35.2	19.0	72.0	7.1	34.6	21.7	48.0
	2022/05	45.9	20.0	92.0	11.7	29.9	22.9	40.8
	2022/06	67.1	44.0	94.0	4.6	53.4	42.4	70.8
	2022/07	81.6	53.0	105.0	7.7	70.1	62.3	79.7
	2022/08	87.4	47.0	107.0	10.2	77.2	66.0	86.8
	2022/09	80.3	42.0	103.0	11.0	57.5	36.0	68.7

Source: North Jackson Company, REACH System (mean daily values)

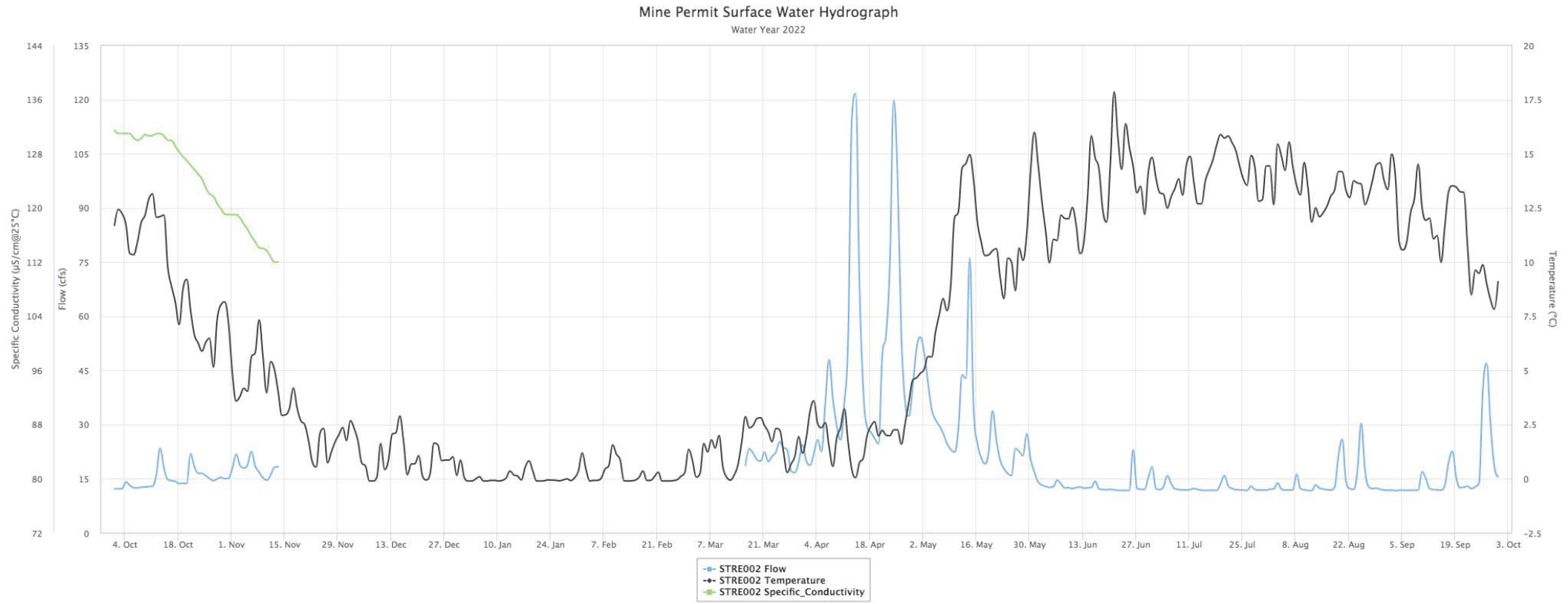
NA =Continuous record suppressed where >50% of values missing or data failed to meet quality control measures (e.g., due to ice or beaver activity).

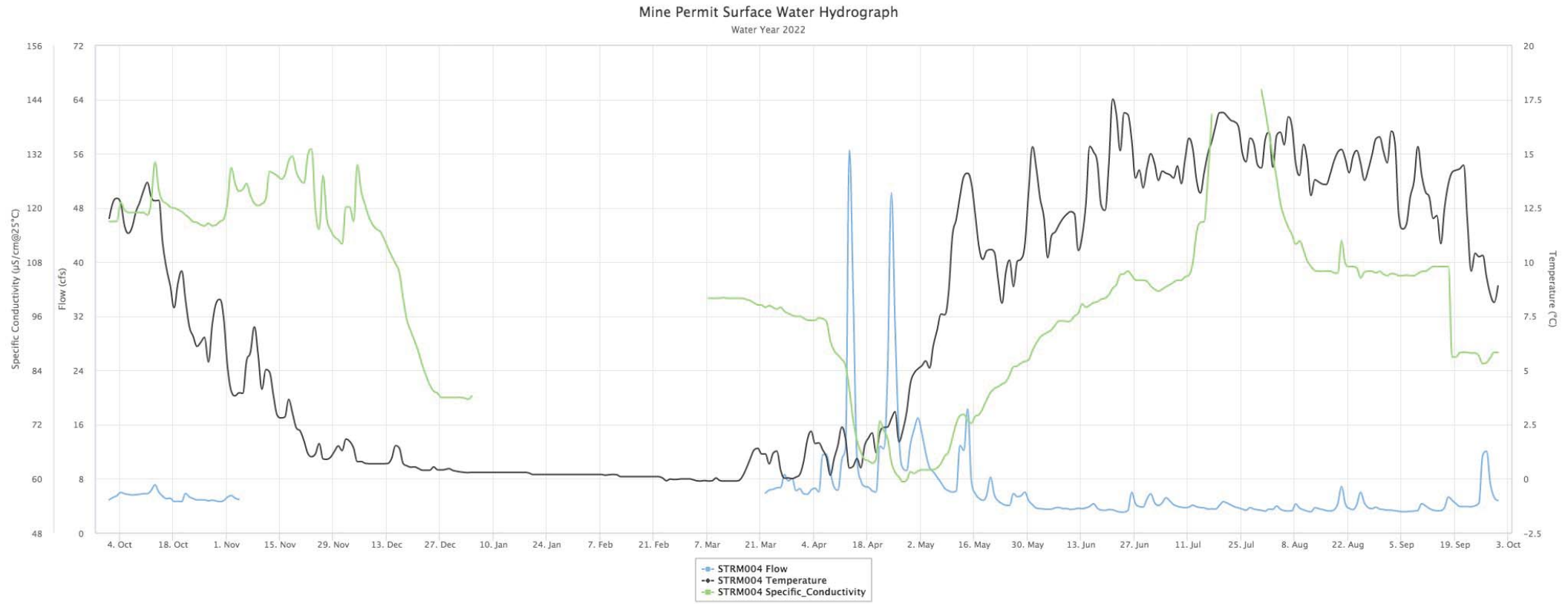
Results in red indicate mean monthly value is outside background range.

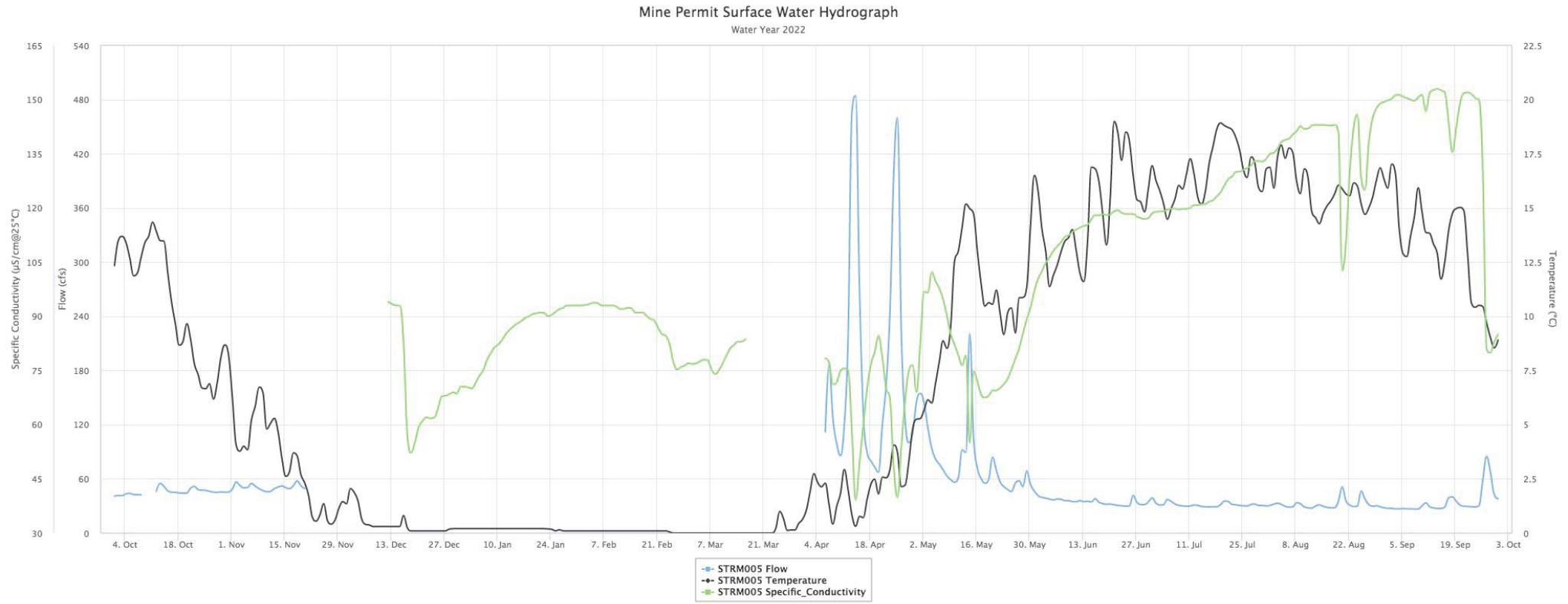
Appendix R

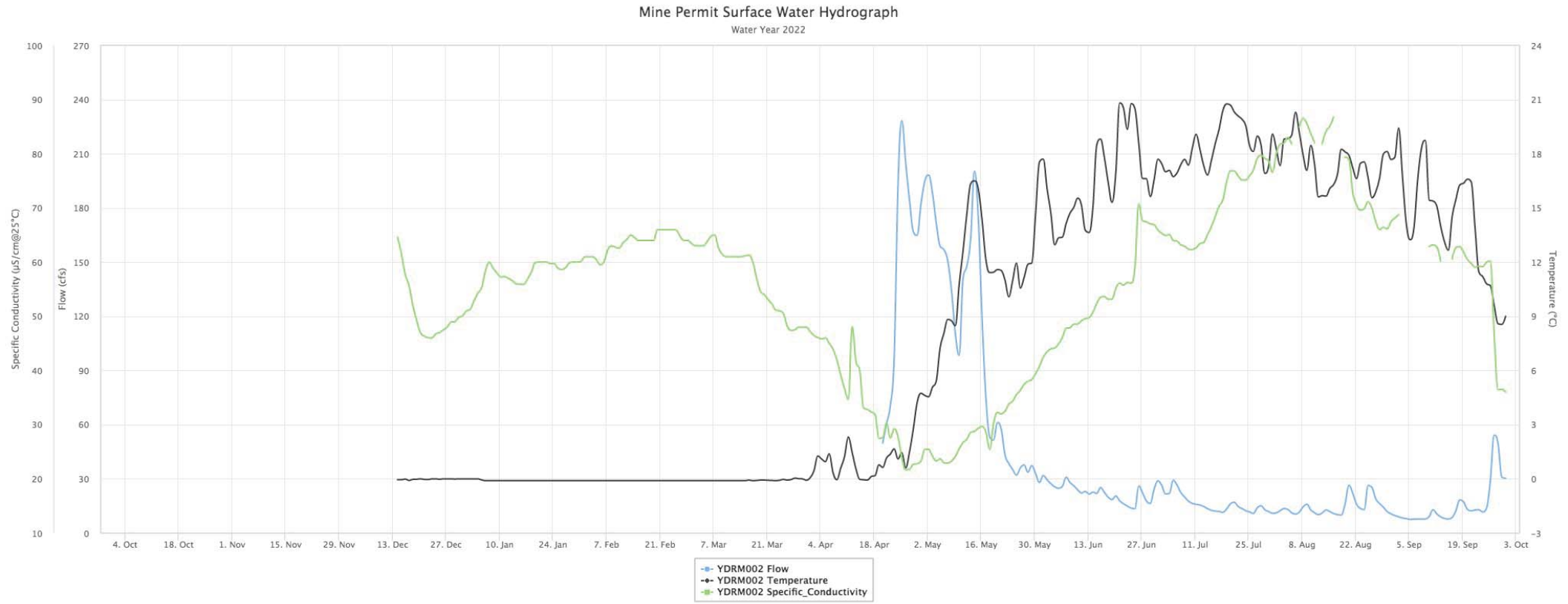
Eagle Mine

Surface Water Hydrographs


Mine Permit Surface Water Hydrograph
Water Year 2022
Specific Conductivity (µS/cm@25°C)
Flow (cfs)
Temperature (°C)
144
136
128
120
112
104
96
88
80
72
135
120
105
90
75
60
45
30
15
0
20
17.5
15
12.5
10
7.5
5
2.5
0
-2.5
4. Oct
18. Oct
1. Nov
15. Nov
29. Nov
13. Dec
27. Dec
10. Jan
24. Jan
7. Feb
21. Feb
7. Mar
21. Mar
4. Apr
18. Apr
2. May
16. May
30. May
13. Jun
27. Jun
11. Jul
25. Jul
8. Aug
22. Aug
5. Sep
19. Sep
3. Oct
STRE002 Flow
STRE002 Temperature
STRE002 Specific_Conductivity


Mine Permit Surface Water Hydrograph
Water Year 2022
Specific Conductivity (µS/cm@25°C)
Flow (cfs)
Temperature (°C)
156
144
132
120
108
96
84
72
60
48
72
64
56
48
40
32
24
16
8
0
20
17.5
15
12.5
10
7.5
5
2.5
0
-2.5
4. Oct
18. Oct
1. Nov
15. Nov
29. Nov
13. Dec
27. Dec
10. Jan
24. Jan
7. Feb
21. Feb
7. Mar
21. Mar
4. Apr
18. Apr
2. May
16. May
30. May
13. Jun
27. Jun
11. Jul
25. Jul
8. Aug
22. Aug
5. Sep
19. Sep
3. Oct
STRM004 Flow
STRM004 Temperature
STRM004 Specific_Conductivity


Mine Permit Surface Water Hydrograph
Water Year 2022
Specific Conductivity (µS/cm@25°C)
Flow (cfs)
Temperature (°C)
165
150
135
120
105
90
75
60
45
30
540
480
420
360
300
240
180
120
60
0
22.5
20
17.5
15
12.5
10
7.5
5
2.5
0
4. Oct
18. Oct
1. Nov
15. Nov
29. Nov
13. Dec
27. Dec
10. Jan
24. Jan
7. Feb
21. Feb
7. Mar
21. Mar
4. Apr
18. Apr
2. May
16. May
30. May
13. Jun
27. Jun
11. Jul
25. Jul
8. Aug
22. Aug
5. Sep
19. Sep
3. Oct
STRM005 Flow
STRM005 Temperature
STRM005 Specific_Conductivity


Mine Permit Surface Water Hydrograph
Water Year 2022
Specific Conductivity (µS/cm@25°C)
Flow (cfs)
Temperature (°C)
100
90
80
70
60
50
40
30
20
10
270
240
210
180
150
120
90
60
30
0
24
21
18
15
12
9
6
3
0
-3
4. Oct
18. Oct
1. Nov
15. Nov
29. Nov
13. Dec
27. Dec
10. Jan
24. Jan
7. Feb
21. Feb
7. Mar
21. Mar
4. Apr
18. Apr
2. May
16. May
30. May
13. Jun
27. Jun
11. Jul
25. Jul
8. Aug
22. Aug
5. Sep
19. Sep
3. Oct
YDRM002 Flow
YDRM002 Temperature
YDRM002 Specific_Conductivity

Appendix S

Eagle Mine

Flora & Fauna Survey Location Map

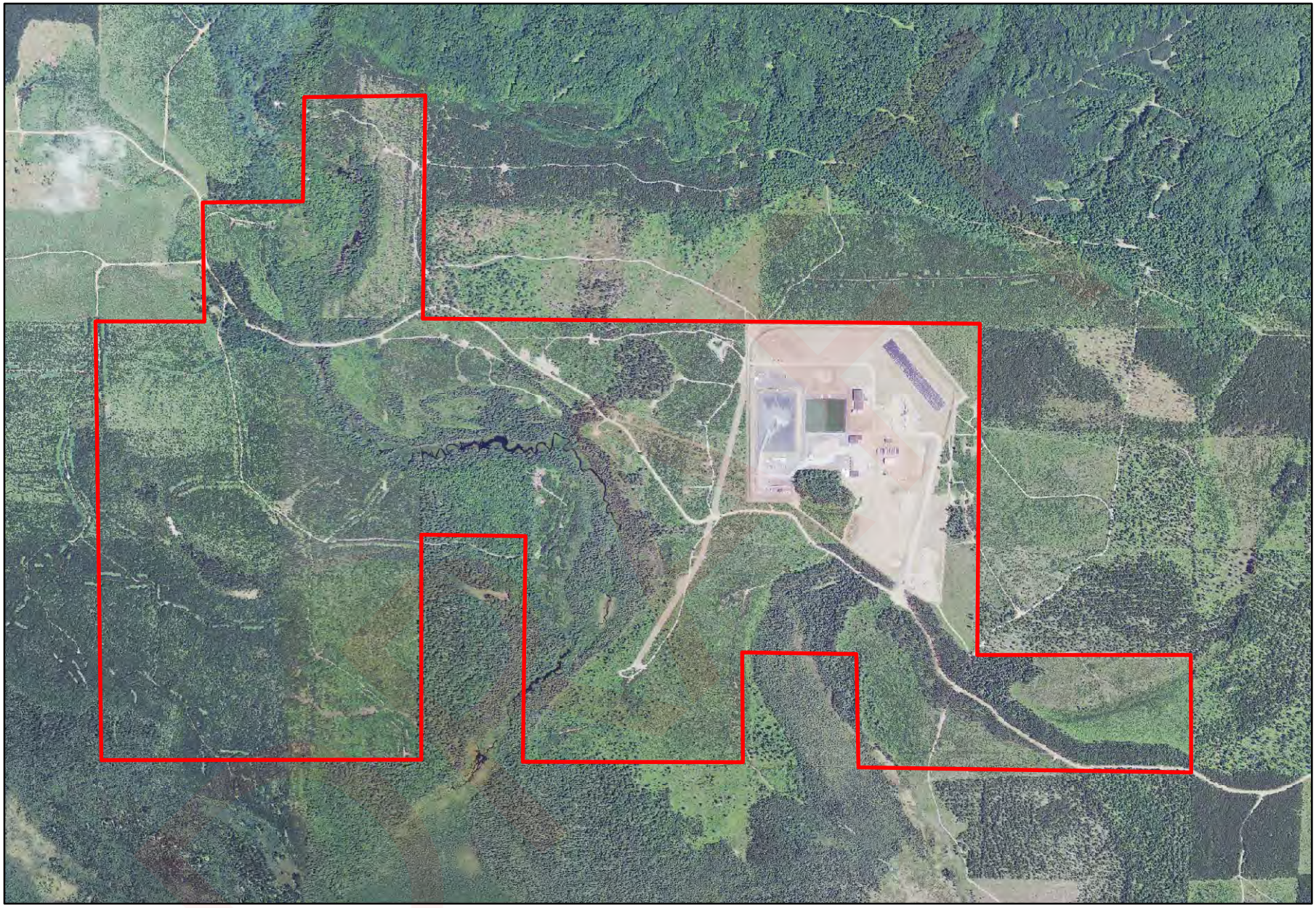


Figure 1-2. Study Area

BARR

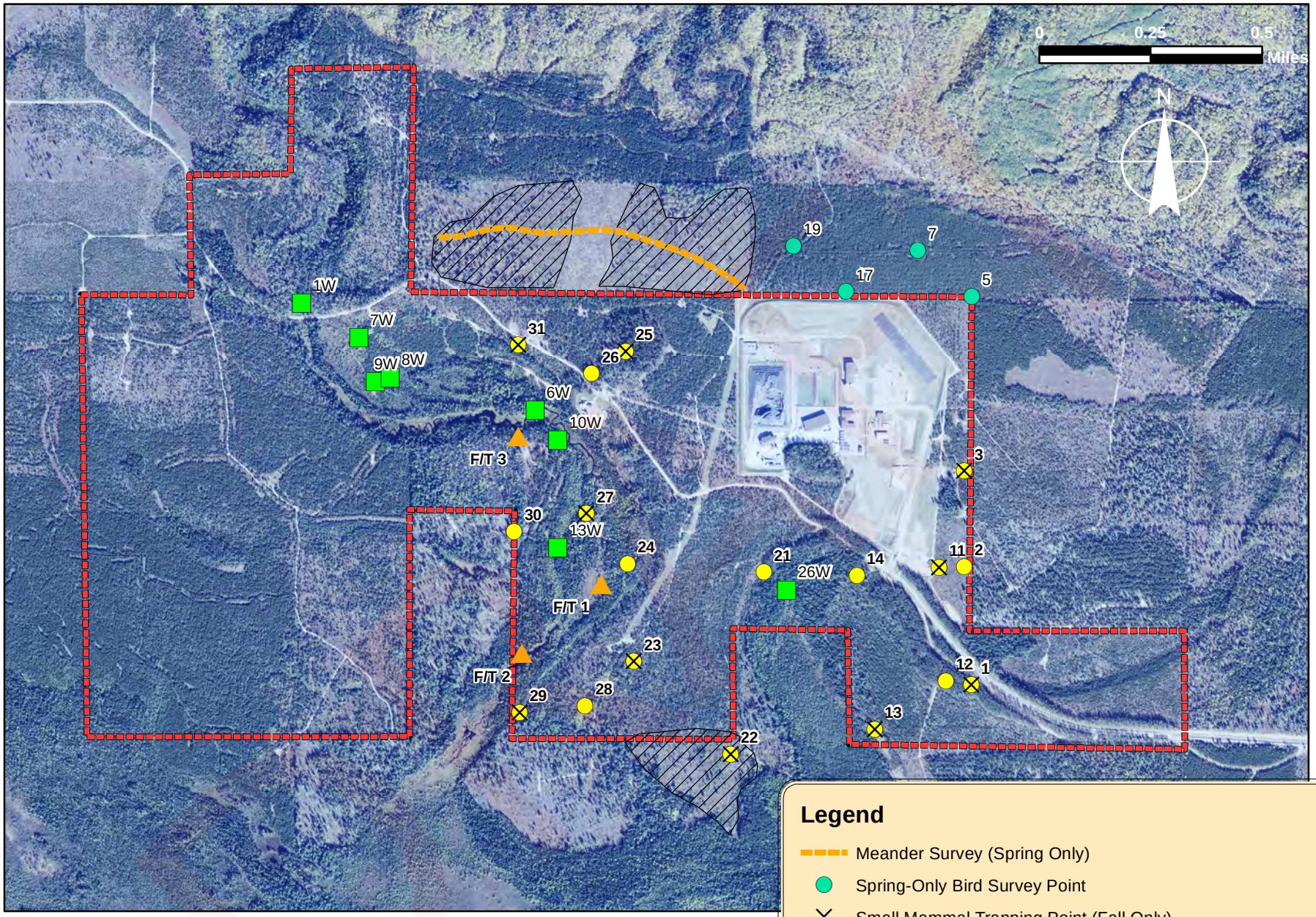


Figure 1-3. Biological and Wetland Survey Areas

BARR

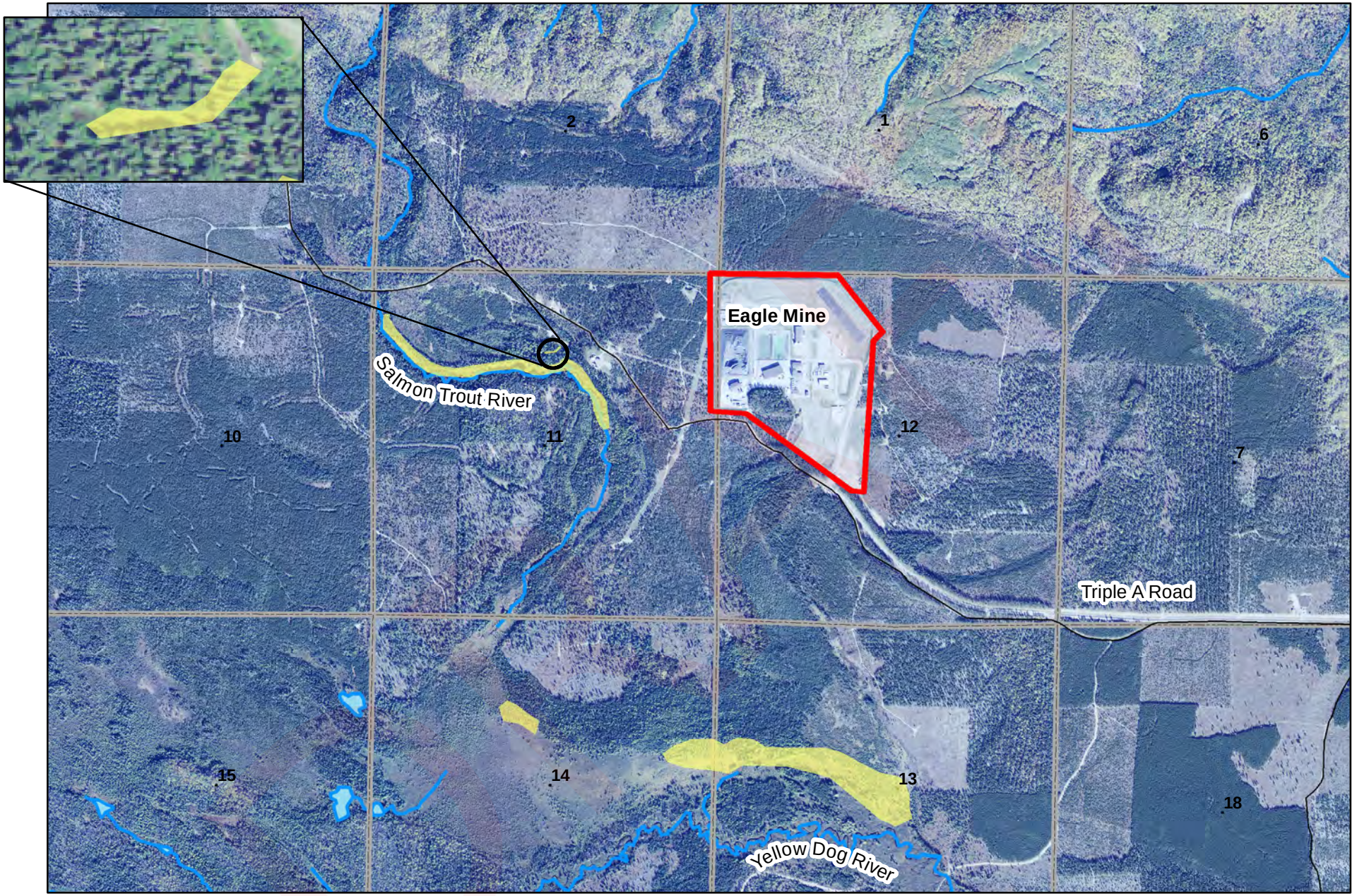


Figure 5-1. Narrow-leaved Gentian Survey (2018)

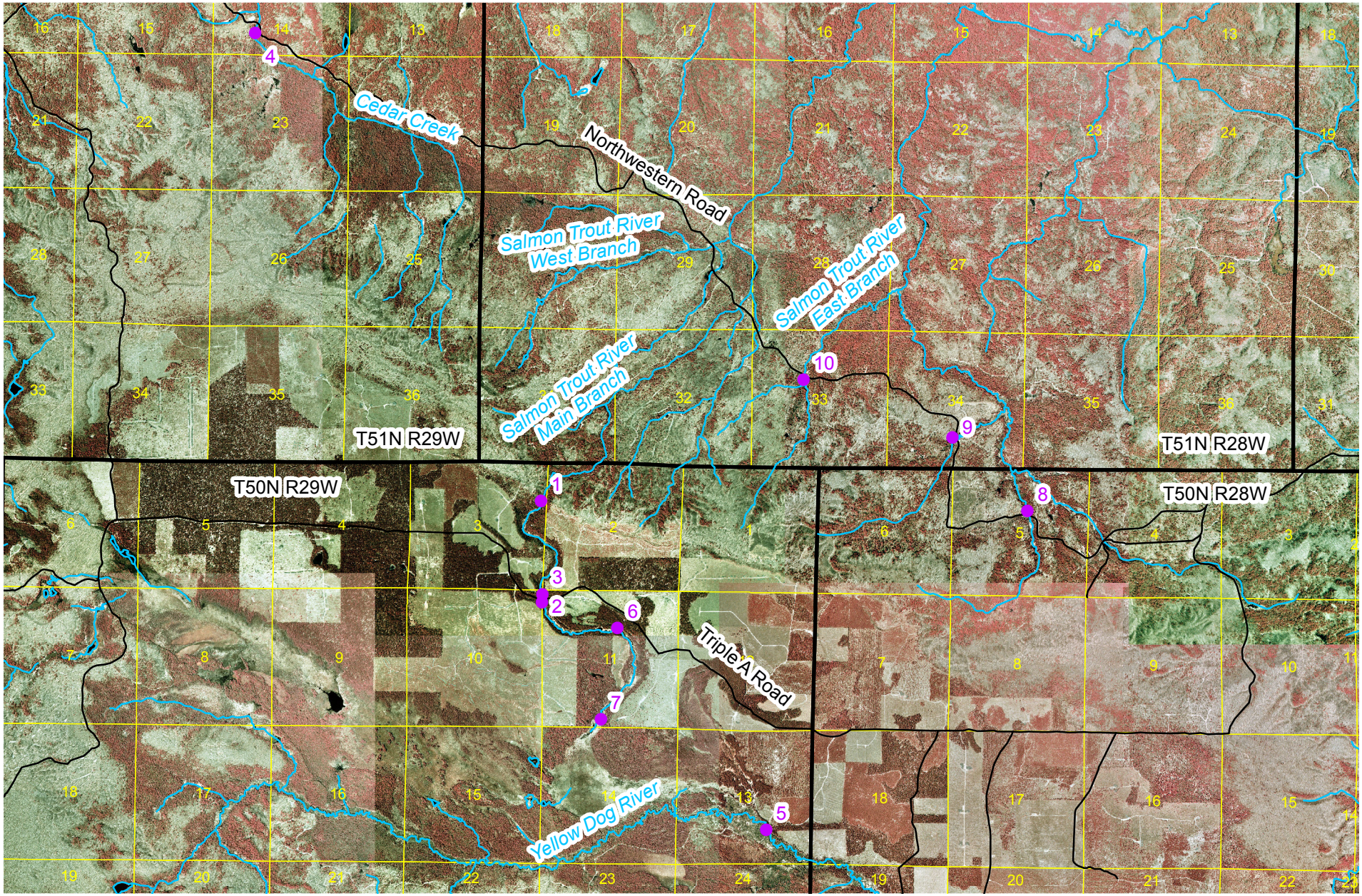
BARR

Figure 5-3. Kirtland's Warbler Habitat - US Fish & Wildlife Service

Appendix T

Eagle Mine

Aquatic Survey Location Map



Legend

- Survey Stations
- Rivers
- Township/Range
- Sections

N

0 0.375 0.75 1.5 2.25 3 Miles

AeM | ADVANCED ECOLOGICAL MANAGEMENT

PROJECT	Eagle Mine
TITLE	Aquatic Sampling Locations
FIGURE	1-2

Appendix U

Eagle Mine

Updated Contingency Plan

Eagle Mine
a subsidiary of lundin mining

1. Contingency Plan – Eagle Mine Site

This contingency plan addresses the requirements defined in R 425.205. This includes a qualitative assessment of the risk to public health and safety or the environment (HSE risks) associated with potential accidents or failures involving activities at the Eagle Mine. Engineering or operational controls to protect human health and the environment are discussed in Section 4 and Section 5 of this document. The focus of this contingency plan is on possible HSE risks and contingency measures. Possible HSE risks to on-site workers will be addressed by Eagle Mine through HSE procedures in accordance with Occupational Safety and Health Administration (OSHA) and Mine Safety and Health Administration (MSHA) requirements.

Processes undertaken at the Eagle Mine site include mining ore, as well as storing and treating by-products of that process. Eagle Mine's mining, storage, and treatment facilities have been designed, constructed, and operated in a manner that is protective of the environment using proven technologies and engineering practices.

1.1 Contingency Items

This contingency plan addresses the items listed below in this Section in accordance with R 425.205 (1)(a)(i) - (xii).

- Release or threat of release of toxic or acid-forming materials
- Storage, transportation, and handling of explosives
- Fuel storage and distribution
- Fires
- Wastewater collection and treatment system
- Basin berm failures
- Air emissions
- Spills of hazardous substances
- Other natural risks defined in the EIA
- Power disruption
- Unplanned subsidence
- Leaks from containment systems for stockpiles or disposal and storage facilities, and
- Emergency procedures.

For each contingency item, a description of the risk is provided, followed by a qualitative assessment of the risk(s) to the environment or public health and safety. Next, the response measures to be taken in the event of an accident or failure are described.

1.1.1 Release of Toxic or Acid-Forming Materials

Potentially reactive materials generated because of mining operations include the ore and development

rock. Both the development rock and ore have the potential to leach mining-related constituents when exposed to air and water. As described in the following sub-sections, handling, and temporary storage of both the ore and development rock have been carefully considered in the design of the Eagle Mine to prevent the uncontrolled release of acid rock drainage (ARD). Since secondary processing will occur at an off-site mill, the only chemical reagents used at the mine site are associated with the water treatment plant (WTP).

1.1.1.1 Coarse Ore Storage Area (COSA)

Coarse ore from the underground mine is trucked to the surface and placed in the COSA. The COSA is a steel-sided building with a full roof that is used for temporary storage of stockpiled coarse ore. The COSA has a concrete floor that is sloped to a floor drain that collects any contact water associated with the ore. This contact water is collected in an epoxy-lined sump in the COSA and pumped into the composite lined contact water basins (CWB) where it is stored until treatment at the water treatment plant. Contingency measures associated with the CWB liner systems are discussed in Section 1.1.12. Also, per Air Permit to Install (No. 50-06D) all overhead doors must be closed during ore loading or unloading and a fugitive dust management plan, which includes sweeping and watering, is in place to minimize the generation of dust.

1.1.1.2 Temporary Development Rock Storage Area (TDRSA)

Development of the mine began with the excavation of surrounding rock to provide access to the ore body through portals, raises, and ramps. This rock is known as “development rock” and upon excavation is transported to the surface and temporarily stored in the TDRSA. The development rock stored in the TDRSA is returned underground as backfill in areas where ore has been removed.

Development rock has the potential to oxidize when exposed to air and water over longer periods of time. Therefore, Eagle Mine handles the development rock in a way to minimize the potential formation of ARD, and if formed, prevents it from being released into the environment.

Accordingly, Eagle Mine has designed and constructed a state-of-the-art TDRSA to contain the development rock. The TDRSA is constructed of the following components to prevent releases to the environment:

- A composite liner system comprised of a geo-membrane liner underlain by a geosynthetic clay liner (GCL).
- A water collection system over the composite liner to collect precipitation that comes in contact with development rock. The collection system also helps protect the geo-membrane from damage by the development rock. The collection system consists of a geo-composite drainage fabric overlain by a 12-in thick granular drainage layer sloping towards the collection sump.
- A leak detection system for early detection and collection of potential percolation through the composite liner system. The leak detection system includes a collection sump and a sump pump for liquid removal.
- A geo-membrane cover system placed over the development rock if development stops for an extended period.

Per MP 01 2007, condition F4 and the Limestone Addition Plan (January 2017), when development rock is stored on the TDRSA for greater than one year, the rock pile will be amended with high-calcium

limestone or an approved alternative at a rate of two percent as an additional contingency measure to offset the formation of ARD. If a portion of the material will be crushed for cemented rock fill (CRF) or returned underground as gob fill in the year, the material will not be considered in the application volume calculation. Some of the limestone that Eagle Mine previously placed on the TDRSA has been removed to be used with development rock for backfill. Therefore, Eagle Mine monitors potential acid generation and previously applied limestone neutralization by measuring the pH of the TDRSA contact water collection system quarterly. Moreover, if development or mining is suspended for an extended period the development rock will be covered with a high-density polyethylene (HDPE) geo-membrane to further limit the generation of ARD by minimizing contact with precipitation. As an added measure, the time in which development rock will be stored on the TDRSA has been modified. Development rock was originally scheduled for storage on the TDRSA for approximately seven years before being returned underground. Eagle Mine has chosen to immediately return the rock underground as cemented rock fill or gob fill to further reduce the risk of ARD generation. The short-term nature of this project significantly reduces the potential for release of toxic and acid-forming materials.

If the water in contact with the development rock becomes acidic, it is captured in the TDRSA and transferred to the CWBs and treated at the WTP. The contingency actions that address potential failure of the liner contact water collection system are discussed in Section 1.1.12.

1.1.1.3 Ore Transportation

The ore will be loaded from the COSA building into tractor-trailer combinations using front end-loaders and transported to the Humboldt Mill. All loaded ore trucks will be covered and have the tires washed at the on-site truck wash prior to leaving the contact area at the Mine site.

The following sixty-six-mile route is being used for moving the ore from the Eagle Mine site to the Humboldt Mill on existing roadways:

- East on Triple A Road, 9.0 miles to CR 510.
- East on CR 510, 3.0 miles to CR 550
- South on CR 550 approximately 20 miles to Sugarloaf Avenue
- South on Sugarloaf to Wright Street
- Wright Street to US-41 West
- US-41 West to M-95
- M-95 South to CR 601
- CR 601 East to the Humboldt Mill entrance.

Eagle Mine, in cooperation with the Marquette County Road Commission (MCRC), upgraded the portions of the sixty-six-mile route that were not currently “all season” status. These upgrades included the widening of roadways and the addition of passing lanes all of which add a level of safety for all drivers on the road.

The trucks are covered side-dump units with a length limit of approximately 80 feet. They consist of a tractor, a trailer, and a second trailer (pup). The truck carries approximately 45 metric tons per load on average. All loads are weighed prior to departure from the COSA to ensure that they do not exceed roadway weight limits.

Safety is stressed with the ore truck drivers. Forward-facing cameras and tracking devices are mounted on the tractors to monitor and record speed, location and braking effort. Excessive speeds or erratic driving are not tolerated. In addition, Eagle Mine works with the MCRC to maintain a safe road surface for employees, vendors and ore shipment.

Truck accidents are possible while transporting ore from the Eagle Mine to the Humboldt Mill. In the event of a truck rollover, ore could be spilled onto the road and adjacent areas. Since the coarse ore is run of mine rock and not crushed, it will be easy to pick the material up with conventional earthmoving equipment and place the ore back into a truck. If such an event should occur, removal action would take place as soon as possible. Although geochemical testing of the ore has shown that ARD will not occur in this short time, it is important to respond appropriately to any spills. If an accident results in a spill to a waterway, temporary engineered cleanup designs and procedures may be required to remove the material. Eagle Mine has an emergency response contractor on call to immediately respond to environmental incidents, assist with clean-up efforts, and conduct environmental monitoring associated with any spills. In addition, a transportation spill response standard operating procedure has been developed.

The Humboldt Mill COSA is designed so that all unloading of ore will occur in an enclosed building with a concrete floor. These features will prevent the release of dust and prevent precipitation from contacting the ore. After the ore is unloaded into the COSA, it is crushed and transferred with loading and transfer points featuring dust control in accordance with the Air Permit to Install (No. 50-06D).

1.1.2 Storage, Transportation and Handling of Explosives

Blasting agents or explosives are required for blasting operations in the development and operation of the mine. The bulk explosives selected for use at the Eagle Mine are composed of ammonium nitrate and small percentages of sodium and calcium nitrate, and diesel fuel. Although uncommon, the accidental detonation of explosives could result from impact, shock, fire, or electrical discharge.

The entire surface operations are located within a fenced area. Vehicular access to Eagle Mine is controlled by a gatehouse and fence system. To further mitigate concerns related to explosives, except the bulk emulsion, all explosives components are stored in a locked explosives magazine located underground.

The storage, transportation, and use of explosives comply with applicable MSHA and/or (Bureau of Alcohol, Tobacco, Firearms and Explosives) ATF standards. Caps, primers, and detonating cord are stored in a locked magazine underground while the bulk emulsion is stored in locked storage tanks on the surface. Explosives are transported by a clearly marked truck.

The main impacts of an uncontrolled explosion on the surface would be in the immediate area of the explosion and would include direct injury from the blast zone, falling debris, fire, and the release of combustion products. Combustion products expected from the explosives are carbon monoxide and nitrogen oxides. Neither of these products is expected to be generated in high enough concentrations for significant above-ground or off-site exposures to occur. Dust could also be generated but would likely settle to the ground before migrating beyond the Eagle Mine site. Uncontrolled underground explosions have not been considered since the environmental effects would not be different from controlled explosions in normal mine operations. In the event of a surface explosion, Emergency Procedures will be followed, as discussed in Section 1.2.

1.1.3 Fuel Storage and Distribution

The fuel storage area is located within the contact area of the Eagle Mine site. The entire surface operations are located within a fenced area and controlled by a gatehouse and fence system.

The fuel storage area contains two diesel fuel storage tanks with the capacity of 20,000 gallons each and one 560-gallon on road diesel AST (aboveground storage tank). Additionally, there is a 1,700 gallon diesel generator day tank, a 500-gallon diesel generator refill tank and a 1,000 gallon mobile fuel tank used during crushing operations stored on the TDRSA. All fuel tanks are made of double-walled construction for added protection against leaks. In addition, the mine site currently has a propane storage capacity of approximately 51,500 gallons. All propane tanks currently on site are adjacent to the buildings requiring fuel for heating.

In general, fuel spills and leaks will be minimized by the following measures:

- A Spill Prevention Control and Countermeasures Plan (SPCC) has been written and implemented.
- Training of personnel responsible for handling fuel in proper procedures and emergency response;
- Regular equipment inspections and documentation of findings;
- Double-walled construction of all above ground tanks and/or additional secondary containment, and
- Staging of on-site emergency response equipment to quickly respond to unanticipated spills or leaks.

Specific procedures have been prepared as part of the project's SPCC Plan. In addition, a Pollution Incident Prevention Plan (PIPP) has been prepared which addresses the potential spillage of fuels and other polluting materials.

Diesel fuel and propane (fuels) are transported to the Eagle Mine by tanker truck from local petroleum distributors. The probability of an accidental release during transportation will be dependent on the location of the supplier(s) and the frequency of shipment. A fuel release resulting from a vehicular accident during transportation is a low-probability event. Transport of fuel in tanker trucks does not pose an unusual risk to the region since tanker trucks currently travel to the region on a regular basis to deliver fuels to gasoline stations located in the communities surrounding the Eagle Mine.

Three potential release events associated with the surface-stored fuels are a bulk tank failure, mishandling/leaking hoses, and a construction/reclamation phase release.

Bulk Tank Failure – A tank failure could potentially result from unusual thermal, mechanical, or chemical stresses. Chemical stresses are not anticipated as the storage tanks will be constructed of materials compatible with the fuels. Mechanical stress is also not anticipated since the tanks will be located within an area offering protection from vehicles. Contingency measures required to mitigate a fuel spill are included in the SPCC and PIPP. All fuel tanks are double-walled and visually inspected at regular frequencies to verify that the storage tanks are not leaking.

Mishandling/Leaking Hoses – A release might result from leaking hoses or valves, or from operator mishandling. This type of release is likely to be small in volume and is judged to be a low probability event

given that operators will be trained to manage these types of potential releases. These small spills will be cleaned up by using on-site spill response equipment such as absorbent materials and/or removing impacted soils.

Construction/Reclamation Phase Release – A major fuel spill during the construction or reclamation phases could occur from a mobile storage tank failure or mishandling of fuels. Such a release is a low probability event given that operators will be trained to manage these types of potential releases and all tanks are required to have secondary containment. As with mishandling or leaking hoses, these small spills will be cleaned up by using on-site spill response equipment such as absorbent materials and/or removing impacted soils.

Absorptive materials may be used initially to contain a potential spill. After the initial response, soil impacted with residual fuel would be addressed. Remedial efforts could include, if necessary, the removal of soil to preclude migration of fuel to groundwater or surface water. The project's PIPP and SPCC plans addresses fueling operations, fuel spill prevention measures, inspections, training, security, spill reporting, and equipment needs. In addition, standard operating procedures have been developed which cover fueling operations and spill response activities. All responses to a fuel spill, both large and small, will follow the guidelines dictated by the spill response plan and be reported internally. The tanks will be inspected regularly, and records of spills will be kept and reported to Environment, Great Lakes and Energy (EGLE) and other agencies as required.

In the event of a release in the contact area, fuels would be routed (due to site grading) to the CWBs where they would be cleaned with absorbent pads/booms or other fuel-absorbing products. Any fuel not absorbed would be routed to the WTP and treated before release to the environment. In the event of a release on the non-contact area, fuels would be absorbed by soil, retarding their migration. Exposures to contaminated groundwater are not expected because of regulatory requirements for timely and effective response actions which will dictate soil or source removal before migration to groundwater takes place. A transportation-related fuel spill resulting from a non-traffic accident is considered a low-probability event. Therefore, the risk of a fuel spill from a non-traffic accident is judged to be minor.

Contingency plans for responding to fuel spills from tanker trucks are required of all mobile transport owners as dictated by Department of Transportation (DOT) regulation 49 CFR 130. These response plans require appropriate personnel training and the development of procedures for timely response to spills. The plan must identify who will respond to the spill and describe the response actions to potential releases, including the complete loss of cargo. The plan must also list the names and addresses of regulatory contacts to be notified in case of a release.

1.1.4 Fires

This section discusses contingency measures to be taken in the event of either an underground mine fire or surface fires.

1.1.4.1 Mine Fire

One potential source of combustion could occur during the handling of combustible minerals in the Eagle Mine ore body. The ore body contains certain quantities of pyrrhotite, which is an iron sulfide mineral. Iron sulfide is a pyrophoric material that oxidizes exothermically when exposed to air. Due to the exothermic reaction, ignition can occur, especially if the surface area is increased with the occurrence of

finely divided material. This situation is often encountered in a petroleum refinery, where finely divided iron sulfide scales form in refinery units in oxygen-deficient atmospheres. When subsequently exposed to air, these crystals of iron sulfide oxidize rapidly back to iron oxide. While this condition can also occur in underground mines, this problem should be adequately controlled through proper mine ventilation.

If a mine fire develops it would be expected to be localized, short-lived, and would not pose a threat to the workers or the environment. Off-site populations would not be exposed to agents resulting in adverse effects. Events that do not result in exposure cannot result in health effects and do not pose a risk. Mine fires, therefore, pose a negligible risk to the environment.

Appropriate preventive and contingency measures will be exercised as required by MSHA. These measures include housekeeping, installation of fire suppression systems on mobile equipment, widespread distribution of fire extinguishers throughout the mine, employee safety training programs, and use of a mine rescue team trained in firefighting techniques. Mine evacuation procedures, as discussed in Section 1.2, may be invoked, depending on the nature and extent of an underground fire.

1.1.4.2 Surface Fire

Surface fires can be started by a variety of causes including vehicular accidents, accidental ignition of fuels or flammable chemical reagents, and lightning strikes. Smoking is only allowed in designated areas on the site. Contingency measures include having the required safety equipment, appropriate personnel training and standard operating procedures. Given these measures, uncontrolled or large surface fires are considered low probability events with negligible risk.

Because the Eagle Mine is situated in a forested region, forest fires started off-site could potentially impact the mine site. The cleared area in the vicinity of the surface facilities and excess soil berms will serve as a fire break to protect surface facilities. At Eagle Mine, a Wildfire Response Guideline has been developed in conjunction with Michigan Department of Natural Resources (DNR) Fire Division to ensure the best possible response. Contingency measures discussed below can be implemented in the event of an off-site forest fire.

In order to minimize the risk of a fire on-site, stringent safety standards are being followed during both the construction and operation phases of surface facilities. All vehicles/equipment are required to be equipped with fire extinguishers and all personnel trained in their use. In addition, all personnel are required to complete a “hot work” permit whenever work is being performed where an ignition source is present. Water pipelines and a network of fire hydrants have been installed throughout the site and additional fire extinguishers are also located in high-risk areas. On-site firefighting equipment includes:

- An above-ground water storage tank and distribution system for fire suppression.
- Stocked and maintained fire hose stations/cabinets.
- Multiple dry chemical fire extinguishers are located throughout the facility.
- An alarm system that automatically notifies security of any on-site alarm.

1.1.5 Wastewater Collection and Treatment

The major sources of water requiring treatment are groundwater inflow to the mine, water used for underground operations, contact water from the TDRSA, and precipitation and storm water runoff from the operations area. All water is routed to CWBs No.1 or No.2. These basins provide wastewater storage

and equalization capacity. Water from the basins is conveyed to the WTP which is composed of several unit processes, including metals precipitation, multi-media filtration, weak acid ion exchange, and double-pass reverse osmosis. The final product water is pH adjusted prior to subsurface discharge via a Treated Water Infiltration System (TWIS). This discharge is authorized by the State of Michigan under a Groundwater Discharge Permit.

The water treatment system is designed to handle various process upset conditions such as power disruption (Section 1.1.10) or maintenance of the various process units. The effluent is continually monitored for key indicator parameters to verify the proper operation. Effluent not meeting treatment requirements is pumped back to the CWBs for re-treatment. The CWBs are designed to hold approximately 14,000,000 gallons of water. This storage capacity allows sufficient time to correct the process upset condition. Potential hazards and chemical reagents associated with the WTP are discussed in Section 1.1.8.

1.1.5.1 Contact Water Basins

The CWBs were very conservatively designed to handle a combined 50-year peak snow melt and rain event. The CWBs have also been designed with the following contingencies which are further addressed in the Eagle Mine Water Management Plan:

- The CWBs are designed to hold approximately 14,000,000 gallons of water allowing sufficient time for maintenance of WTP equipment.
- In the unlikely event that a runoff event exceeds the capacity of the CWBs the following actions will be taken:
  - By-pass CWBs and divert underground mine water directly to the WTP.
  - Transfer water from CWBs to the TDRSA (during a true emergency, more than one foot of head can be stored on the TDRSA with consent from EGLE).
- Water can be pumped into vacant underground mine workings for additional temporary storage of water.

Potential release events associated with a breach of the composite liner and overtopping of the berms are discussed in Section 1.1.6 and the Eagle Mine Water Management Plan. Potential leakage of the liner system is discussed in Section 1.1.12.

1.1.5.2 Non-Contact Storm Water

Storm water runoff from the non-contact areas will be directed to one of four Non-Contact Water Infiltration Basins (NCWIBs). The NCWIBs allow runoff from non-contact areas to infiltrate through the on-site sandy soils. In general, the NCWIBs have been designed such that no runoff is expected to leave the disturbed areas of the site. The NCWIBs are very conservatively sized to accommodate the same runoff event as the CWBs.

As an additional conservative design measure, the NCWIBs have been sized assuming the ground is frozen six months out of the year with no infiltration during this time. If the infiltration capacity of the NCWIB soils is reduced over time by the presence of silt, the solids will be removed to restore the infiltration capacity.

1.1.5.3 Treated Water Infiltration System (TWIS)

Treated water is piped from the WTP to the TWIS in a buried pipeline. The treated water is discharged to the on-site sandy soils through the TWIS. The TWIS is located in highly permeable soil. The treated effluent is applied evenly within individual infiltration cells and discharged to groundwater. The treated effluent is applied to the TWIS through five separate infiltration cells. This design allows at least one cell to be out of service for resting and/or maintenance while the other cells are being used.

Potential failure mechanisms of the TWIS include reduced infiltration capacity, pipe breakage and frost damage. The infiltration capacity of the TWIS is designed with a capacity that is greater than the capacity of the WTP. In the unlikely event that the infiltration capacity becomes reduced over time, additional capacity could be constructed adjacent to the proposed footprint. If pipe breakage occurs, the damaged sections will be removed and replaced. Frost is not expected to be a problem. As a contingency against frost damage, styrofoam insulation was incorporated into the design, which keeps the natural temperature of the earth above 32 degrees. Furthermore, since the material below the TWIS is free-draining, water should not freeze in the interstitial space.

1.1.6 Berm Failures

This section discusses contingency actions to be taken in the event of berm failures at the CWBs and TDRSA. Liner failures are discussed in Section 1.1.12.

Embankment failure of the CWBs or the TDRSA is not likely due to the small height of the embankments, the flat slopes, and the stable nature of the on-site foundation soils at the site. All construction was under strict QA/QC procedures to verify the quality construction of the embankments. In addition, the berms are inspected monthly or after a rain event that exceeds 0.5 inches in a 24-hour period, as required by permit conditions L-31 & L-32 of the mining permit. These inspections identify preventive maintenance required to maintain the stability of the berms and embankments. All identified issues are immediately reported to on-site maintenance staff for repair.

A CWB overtopping event is also very unlikely due to the requirement to maintain two feet of freeboard above an already conservative design. In addition, in the event of a catastrophic flood event, the TDRSA and underground workings will be used for excess water storage.

Erosion on the external berm slopes could be caused by unusually high precipitation. Erosion control contingency measures will be to quickly repair potential rutting or other soil instability with conventional earth-moving equipment.

1.1.7 Air Emissions

The construction, operation, and reclamation phases of the project will be performed in a manner to minimize the potential for accidents or failures that could result in off-site air quality impacts. All phases of the project will incorporate a combination of operating and work practices, maintenance practices, emission controls, and engineering design to minimize potential accidents or failures. Below is a description of identified areas of risk and associated contingency measures that may be required. As part of a comprehensive environmental control plan, these contingency measures will assist in minimizing air impacts to the surrounding area.

1.1.7.1 Air Emissions during Operations

During the operation of the mine, potential emissions from the facility will be controlled as detailed in the project's current Michigan Air Use Permit (No. 50-06D). These controls include the paving of site access road and parking areas, implementation of an on-site roadway sweeping and watering program, the use of building enclosures, flexible membrane covers, or dust suppressants on storage areas, installation of dust collection systems where necessary, and following prescribed preventive maintenance procedures for the facility. Ore that is moved off-site will be transported in covered trucks to minimize dust emissions. Below is a more detailed discussion of potential airborne risks associated with proposed operations at the facility.

During facility operations, Eagle Mine will use certain pieces of mobile equipment to move ore about the site. Equipment includes ore production trucks, front-end loaders, product haul trucks, and miscellaneous delivery trucks. Although the movement of most vehicles across the site is on asphalt surfaces, a comprehensive on-site watering and sweeping program has been developed to control potential fugitive sources of dust. While the watering program is closely monitored, if excessive dust emissions should occur, the facility will take appropriate corrective action, which may include intensifying and/or adjusting the watering program to properly address the problem.

Materials will be moved to and from the TDRSA and COSA during operations, so dust will be minimized by enclosing the COSA and appropriately managing fugitive dust on the TDRSA. Given the relatively large size and moisture content of these materials, it is anticipated that the risk of excessive fugitive dust emissions from these activities is low. Any development rock that is crushed in preparation for use in backfill will be watered prior to crushing and conveyors will be equipped with water sprays to minimize dust emissions. The TDRSA will also be temporary in nature, in that development rock will be moved back underground to fill stopes that have been mined.

The COSA is designed as an enclosed structure to control fugitive emissions from ore transfer between underground production vehicles and offsite haul trucks. Though rock-breaking may occur to reduce the size of ore that is too large to load into a haul truck, no crushing will occur in the COSA, so fugitive emissions are estimated to be negligible. If necessary, water sprays are used to control dust within the building and best housekeeping practices will be applied to ensure the cleanliness of the building (i.e. sweeping and wetting floors). Although the risk of fugitive dust during the transportation of ore material off-site is low due to its large size, this risk is further reduced by covering the trailer beds. Trucks undergo a tire wash prior to exiting the facility to reduce the potential for ore dust migration from the property.

Portland cement is being incorporated as a binder for aggregate material used in backfilling primary stope areas underground. The cement is unloaded at the surface and stored in silos at the surface backfill facilities. Controls have been incorporated to minimize fugitive dust emissions during this process and include the use of a truck-mounted pneumatic conveying system, vent fabric collectors and enclosed screw conveyors. While the risk of accidental emissions from these operations is moderate, Eagle Mine will be prepared to take appropriate corrective action if an upset condition should occur. All cemented rock fill generating activities will occur under emissions control such as fabric filters and enclosures until the material is wet and transferred back to the underground.

1.1.7.2 Air Emissions During Reclamation

Once underground mining and ore transfer activities are completed at the site, reclamation will

commence following the requirements of R 425.204. Like construction activities, there is a moderate risk fugitive dust emissions could be released during certain demolition, restoration activities, and during temporary storage of materials in stockpiles. Like controls employed during the construction phase, areas that are reclaimed will be re-vegetated to stabilize soil and reduce dust emissions. If severe wind or an excessive rain event reduces the effectiveness of these protective measures, appropriate action will take place as soon as possible to restore vegetated areas to their previous effectiveness and replace covers as necessary.

To the extent necessary, areas being reclaimed will be kept in a wet state by continuing the watering program. It is anticipated this program should minimize the possibility of excessive dust associated with mobile equipment. In the event that fugitive dust is identified as an issue, the root cause will be determined and corrective actions will be taken.

1.1.8 Spills of Hazardous Substances

Since secondary mineral processing is not planned on-site, the primary chemical reagents used are associated with the WTP. Table 1-1 includes a list of reagents used at WTP along with the storage volumes and physical state of each chemical.

Table 1-1 – Chemical Reagents Used at the Water Treatment Plant

Item No.	Chemical Name	CAS No.	Storage Volume (Gallons)	Storage Volumes (pounds)	Delivery State
1	Sodium Hydroxide (50%)	1310-73-2	5,000 gallons	63,308 lbs.	Liquid
2	Sodium Hydroxide (Euco-Fill 25 & Eucon Retarder 100)	1310-73-2	2,250 gallons	20,992 lbs.	Liquid
3	Sodium Hypochlorite (12.5%)	7681-52-9	55 gallons	573 lbs.	Liquid
4	Sodium Carbonate (Soda Ash)	497-19-8	-	40,000 lbs.	Solid
5	Ferric Chloride (35%)	7705-08-0	900 gallons	10,496 lbs.	Liquid
6	Hydrochloric Acid (32%)	7647-01-0	5,000 gallons	49,147 lbs.	Liquid
7	Suppressor 1615 (Antifoam)	N/A	275 gallons	2,268 lbs.	Liquid
8	Nitric Acid (30%)	7697-37-2	600 gallons	5,898 lbs.	Liquid
9	Sulfuric Acid (93%)	7664-93-9	660 gallons	10,116 lbs.	Liquid
10	Sodium Metabisulfite	7681-57-4	-	50 lbs.	Solid
11	PC-191-T (Antiscalant)	20592-85-2	520 gallons	4,882 lbs.	Liquid
12	POL-EZ 83904 Polymer	64742-47-8	110 gallons	1,000 lbs.	Liquid
13	Nalco Enact 7880 Polymer	10043-52-4	550 gallons	6,070 lbs.	Liquid
14	Hydrex 6511 Polymer	64742-47-8	110 gallons	1,008 lbs.	Liquid
15	Citric Acid	77-92-9	-	2,000 lbs.	Liquid
16	Carbon Dioxide Gas	124-38-9	-	1,200 lbs.	Gas
17	Propane (on site)	74-98-6	4 cylinders at WTP; tanks	371,900 lbs.	Gas
18	High pH RO Cleaner	-	-	800 lbs.	Liquid
19	Sodium Aluminate	1302-42-7	900 gallons	10,871 lbs.	Liquid

Chemical storage and delivery systems follow current standards that are designed to prevent and to contain spills. Both outdoor and indoor working areas of the WTP were designed, constructed and/or protected to prevent run-on and run-off to surface or groundwater. This includes the development of

secondary containment areas for liquids and polluting materials. The secondary containment area is constructed of materials that are compatible with and impervious to the liquids that are being stored. In addition, the truck off-loading area for bulk chemicals is an enclosed facility curbed with a sloped pad so that any spills are directed and contained within the secondary containment area. A release in the WTP from the associated piping would be contained within the curbed and contained plant area and neutralized. Absorbent materials are available to contain acid or caustic spills. Eagle Mine has an emergency response contractor on call to immediately respond to environmental incidents, assist with clean-up efforts, and conduct environmental monitoring associated with any spills.

Spill containment measures for chemical storage and handling will reduce the risk of a spill impacting the environment. Due to the low volatility of these chemicals, fugitive emissions from the WTP to the atmosphere during a spill incident are likely to be negligible. Off-site exposures are not expected, so management and handling of WTP reagents will not pose a significant risk to human health or the environment.

1.1.9 Other Natural Risks

Earthquakes – The Upper Peninsula of Michigan is in a seismically stable area. The United States Geological Survey (USGS) seismic impact zone maps show the maximum horizontal acceleration to be less than 0.1 g in 250 years at 90% probability. Therefore, the mine site is not located in a seismic impact zone and the risk of an earthquake is minimal. Therefore, no contingency measures are discussed in this section.

Floods – High precipitation events have been discussed previously in sections that describe the CWBs, NCWIBs, and the TDRSA. High precipitation could also lead to the failure of erosion control structures. The impact of such an event would be localized erosion. Contingency measures to control erosion include sandbag sediment barriers and temporary diversion berms. Long-term or off-site impacts would not be expected. Failed erosion control structures would be repaired or rebuilt. Impacts from high precipitation are reversible and off-site impacts are not expected to occur. Given the considerable planning and engineering efforts to manage high precipitation events, the risk posed by high precipitation is considered negligible.

Severe Thunderstorms or Tornadoes – Severe thunderstorms or tornadoes are addressed in the emergency procedures developed for the mine site. Certain buildings are designated shelters in severe weather. Evacuation procedures are part of the on-site training of all employees.

Blizzard – The mine site is designed to accommodate the winter conditions anticipated for the Upper Peninsula. The Triple A Road has been upgraded to accommodate the increased vehicle traffic which allows access to the mine during the worst of winter weather. Eagle Mine and the MCRC have an arrangement for the maintenance of the County Roads during winter conditions. If road conditions deteriorate beyond the capability of the maintenance equipment, Eagle Mine will have arrangements to keep workers on-site for extended periods.

Forest Fires – Forest fires were discussed in Section 1.1.4.

1.1.10 Power Disruption

Facility electric power is provided by Alger-Delta Electric Cooperative, as well as a backup generator capable of delivering 2,000 kW of power. The electrical distribution system provides power to the main surface facilities, the backfill surface facilities, the potable well, and the underground facilities. In the

event of a power outage, the backup generator automatically starts and provides power to the surface facilities and underground ventilation system. A second portable generator can be utilized to power the potable water system, if necessary. During the outage, Eagle Mine would have to reduce operations to keep critical equipment in operation with the reduced power.

In the event the WTP would need to be temporarily shut down during power disruptions, the CWBs were designed with a significantly larger capacity than required in daily operations. The CWBs can hold approximately 14,000,000 gallons of mine inflow water which would be sufficient in size to store water for an extended period of time if necessary.

1.1.11 Unplanned Subsidence

The blast hole mining method being used at Eagle Mine consists of primary and secondary stopes. This method requires that prior to mining a secondary stope, the primary stopes on both sides and on the level above be backfilled with cemented rock fill. Mining will start with a small number of stopes near the middle elevation of the ore body and then proceed to the lower parts of the ore body and progress vertically to the top of the deposit over the life of the mine. This mining method and sequence will minimize the potential for surface subsidence to occur.

The primary stopes are backfilled using an engineered cemented development rock or aggregate fill. A Portland cement binder is used to prepare the backfill. The quantity of binder required is estimated at approximately four percent by weight. The secondary stopes are backfilled with development rock from the TDRSA or local uncemented fill material obtained from off-site sources. Backfilling the primary and secondary stopes as proposed above is designed to mitigate surface subsidence and the subsidence is predicted to be immeasurable at the ground surface.

A comprehensive evaluation of the stability of the crown pillar and surface subsidence was completed as part of the mine design. The conclusion of the stability assessment was that the pillar is predicted to be stable with the typical rock mass classification values obtained prior to the start of mining. The crown pillar assessment also predicted the vertical displacement of the crown pillar. The modeling results predicted vertical displacement at the top of bedrock less than 2 cm (<1 in). Given that the bedrock is covered by overburden, this displacement of the crown pillar and this subsidence will be imperceptible at the ground surface. As a contingency, a Crown Pillar Management Plan has been developed that includes subsidence monitoring measured both through surface and underground extensometers as well as five survey monuments that detect vertical subsidence and progressive ground movement. The surface extensometer is downloaded and a survey is completed on a monthly basis. The underground extensometers are continually monitored and tied into a telemetry system for on-demand data retrieval. In the event of unanticipated subsidence, the mining sequence and backfill methods as described above and in Section 4 will be evaluated and adjusted to reduce the subsidence. Adjustments to the stope sequence, backfill methods, crown pillar thickness, and backfill mix would be adjusted as needed to minimize subsidence. In addition, ground support inspections are completed daily by on-site staff to ensure safe working conditions for miners.

1.1.12 Containment System Leaks

Details of the containment systems for the CWBs and TDRSA were previously discussed. These containment facilities are both designed with composite liner systems to minimize the potential for release. In addition, QA/QC measures required by the mining permit assure proper construction of the

containment structures. As an additional preventive measure to minimize the potential for leaks from these facilities, leak location surveys were completed during the construction of the TDRSA and CWBs and will continue to be completed periodically for the CWBs to identify potential leaks that occur during operations. The TDRSA is equipped with a leak detection system, so a leak detection survey is not needed.

If a leak is detected in the TDRSA the following actions shall be considered. These steps are listed in an increasing level of effort and some steps may be omitted when a successful resolution is realized:

- If the leak was identified through groundwater sampling, perform confirmation sampling to ensure there is a leak in the primary containment system;
- Upon confirmation of a leak in the primary containment system notify EGLE;
- Review operational records for the location of recent equipment activity. Consider possible activities such as equipment traffic or excavation efforts within the TDRSA where liner may have been struck. Identify and uncover area(s) most likely to be damaged from such activities in order to perform a visual inspection of the composite liner system;
- Pump more frequently, set sump pump controls lower, maintain water on the primary containment system as low as reasonably possible;
- Consider increasing the frequency of monitoring well sampling;
- Expedite operations to remove loading from TDRSA, return development rock underground or set up a temporary containment with prior EGLE approval for a portion of the materials;
- Remove material above the collection system, either in a locally suspected area or a widespread location if necessary. Perform a leak location survey to identify the location of the breach in the primary containment system;
- A qualified geosynthetics contractor should be retained to perform the repair.

If damage compromising the composite liner system in the TDRSA was discovered visually, without any detection monitoring being triggered, the following actions would be taken:

- The immediate area of the damage should be tarped to hinder leakage through the composite liner system;
- EGLE should be notified;
- A qualified geosynthetics contractor should be contacted to perform the repair.

If a leak is detected in the CWBs the following steps shall be considered. These steps are listed in an increasing level of effort and some steps may be omitted when a successful resolution is realized:

- If the leak was identified through groundwater sampling, perform confirmation sampling;
- Inspect paved contact areas from which the CWBs receives runoff. Begin inspection with areas receiving the highest volume of truck traffic or locations of recent suspect activity.
- Construct a temporary barrier to prevent runoff from the contact area from entering the CWBs. Pump water captured by the barrier to a tanker for treatment at the WTP or other applicable location;
- Upon confirmation of a leak in the primary containment system notify EGLE;
- Divert underground mine water directly to the WTP;

- Transfer water from the CWBs to the TDRSA, obtain consent from EGLE prior to exceeding more than one foot of head on the TDRSA;
- Review operational records for recent activity within or near the CWBs. Consider possible activities where inadvertent damage to the primary containment system may have occurred. Identify the area(s) most likely to be damaged from such activities in order to perform a visual inspection of the composite liner system;
- Perform a leak location survey to identify the location of the breach in the primary containment system;
- A qualified geosynthetics contractor should be contacted to perform the repair.

1.2 Emergency Procedures

This section includes the emergency notification procedures and contacts for the Eagle Mine. Per R 425.205(2), a copy of this contingency plan will be provided to each emergency management coordinator having jurisdiction over the affected area at the time the application is submitted to the EGLE.

Emergency Notification Procedures – An emergency will be defined as any unusual event or circumstance that endangers life, health, property, or the environment. If an incident were to occur, all employees are instructed to contact Security via radio or phone. Security then makes the proper notifications to the facility managers and activates the Eagle Mine Emergency Response Guideline as needed. If personnel on site need to be notified of such an event an emergency toned broadcast via radio will be made with instructions.

Eagle Mine has adopted an emergency response structure that allows key individuals to take immediate responsibility and control of the situation and ensures appropriate public authorities, safety agencies and the general public are notified, depending on the nature of the emergency. A brief description of the key individuals is as follows:

- Health & Safety Officer: The facility H&S manager and H&S staff are responsible for monitoring activities in response to any emergencies. During an emergency, H&S representatives will manage special situations that expose responders to hazards, coordinate emergency response personnel, mine rescue teams, fire response, and ensure relevant emergency equipment is available for emergency service. This individual will also ensure appropriate personnel are made available to respond to the situation.
- Environmental Officer: The facility environmental manager will be responsible for managing any environmental aspects of an emergency. This individual will coordinate with personnel to ensure environmental impact is minimized, determine the type of response that is needed and act as a liaison between environmental agencies and mine site personnel.
- Public Relations Officer: The facility external relations manager will be responsible for managing all contacts with the public and will coordinate with the safety and environmental officers to provide appropriate information to the public.

In addition to the emergency response structure cited above, Eagle Mine has a Crisis Management Team (CMT) and Plan developed to manage situations that may result in multiple injuries, loss of life, environmental damage, property or asset loss, or business interruption. If a situation is deemed a “crisis”

the CMT immediately convenes to actively manage the situation. The CMT meets quarterly to review and practice the plan implementation; annually a third party develops a desktop exercise to challenge and ensure the preparedness of the CMT. The following is a description of the core members and their roles:

Table 1-2 – Crisis Management Team – Core Members and Roles

Core Members	Role
Team Leader	Responsible for strategy and decision-making by the CMT during a crisis and maintaining a strategic overview.
Coordinator	Ensures a plan is followed and all logistical/administrative support required is provided.
Administrator	Records key decisions and actions and provides appropriate administrative support to the CMT.
Information Lead	Gathers, shares, and updates facts on a regular basis.
Emergency Services and Security	Liaises with external response agencies and oversees requests for resources. Maintains a link between the Emergency Response Team (ERT) and CMT and oversees any necessary evacuations.
Communications Coordinator	Develops and implements the communications plan with support from an external resource.
Spokesperson	Conducts media interviews and stakeholder briefings.

Evacuation Procedures – While the immediate surrounding area is sparsely populated, if it is necessary to evacuate the public, this activity will be handled in conjunction with local emergency response agencies. The Public Relations Officer will be responsible for this notification and will work with other site personnel, including the safety and environmental officers.

If evacuation of mine personnel is required, Eagle Mine has developed emergency response procedures for underground facilities as well as surface facilities. All evacuation procedures were developed in compliance with MSHA regulations and practiced regularly. A surface muster point has been established and an Escape and Evacuation Plan developed and practiced for underground operations. The escape and evacuation plan details the locations of the eight (12-person) and four (4-person) Mine Arc refuge chambers as well as the locations of escapeway ladders and Alimak elevator all of which may be utilized during an emergency based on employee location and type of incident. Should a site evacuation become necessary, two escape routes have been identified per site.

In addition, in accordance with MSHA, Eagle Mine is required to have Mine Rescue teams that are routinely and adequately trained to respond to underground emergency situations. Monthly training is conducted to provide the opportunity for the team to practice their skills both in the classroom and field. Training may include exploration in smoke (theatrical), basic first aid & CPR, firefighting, rope rescue hoisting, and operation and maintenance of both the BG4 closed-circuit breathing apparatus (CCBA) and MX6 gas instruments. Both Mine Rescue teams are required to log two hours of CCBA use every other month to maintain proficiency.

Security personnel are Emergency Medical Technicians (EMTs) and paramedics trained according to state and federal regulations. Eagle Mine also maintains a state-licensed advanced life support (ALS) ambulance on-site for immediate response to emergency situations.

Emergency Equipment – Emergency equipment includes but is not limited to the following:

- ABC rechargeable fire extinguishers
- Fire suppression systems for mobile and stationary equipment
- Stench release system
- Telephone mine communication system
- Radios
- First aid kits, stretchers, backboards, and appropriate medical supplies with a licensed transporting advance life support ambulance on site properly staffed at all times.
- BG-4 self-contained breathing apparatus
- Gas detection monitors that detect five gases and lower explosive limit (LEL)
- Cap lamps
- Self-rescuers
- Underground refuge stations
- Mine elevator
- Spill kits (hydrocarbon and chemical)
- High expansion foam machines
- Portable drift seal.

This equipment is located both underground and at the surface facilities. Fire extinguishers are located at appropriate locations throughout the facility and on mobile equipment, per MSHA requirements. Mine and surface facility personnel are also equipped with radios for general communications and emergencies. The underground ventilation system is equipped with a stench release system at multiple points for emergency notification. Other emergency response equipment is located at appropriate and convenient locations for easy access for response personnel. In addition, the Eagle Mine has an ALS ambulance and state-licensed EMTs and paramedics on-site at all times to respond in the event of an emergency.

Emergency Telephone Numbers – Emergency telephone numbers are included for site and emergency response agencies, as required by R 425.205(1)(c). They are as follows:

- Mine Security: (906) 339-7018
- Local Ambulance Services: Mine ALS Ambulance Service provided by Allied Security - they can be contacted at Extension 7018, or on the radio system using the Security, Emergency, or Underground (UG) out channels.
- Hospitals: UP Health System Marquette – (906) 449-3000
  - Bell Hospital – (906) 486-4431
- Local Fire Departments: Powell Township – 911 or (906) 345-9345
- Local Police: Marquette County Central Dispatch – 911
  - Marquette County Sheriff's Department – (906) 225-8435
  - Michigan State Police – (906) 475-9922
- Trimedia 24-hr emergency spill response: 1-866-866-5125
- EGLE Marquette Office: (906) 228-4853

- Michigan Pollution Emergency Alerting System: 1 (800) 292-4706
- Federal Agencies: EPA Region 5 Environmental Hotline – (800) 621-8431
  - EPA National Response Center – (800) 424-8802
  - MSHA North Central District – (218) 720-5448
- MDNR Marquette Field Office: (906) 228-6561
- Michigamme Township Supervisor: Rhonda Boshears, (906) 323-6608
- MSHA: 1 (800) 746-1553

1.3 Testing of Contingency Plan

During each year, the facility will test the effectiveness of the Contingency Plan. Conducting an effective test will have two components. The first component will involve participation in adequate training programs on emergency response procedures for those individuals that will be involved in responding to emergencies and the second component is the completion of a mock field or desktop exercise.

Training will include the participation of the Safety Officer, Environmental Officer, Public Relations Officer, and other individuals designated to respond to emergencies including the Humboldt Mill ERT. Individuals will receive appropriate training and information concerning their specific roles, including emergency response procedures and the use of applicable emergency response equipment.

The second component of an effective Contingency Plan is to conduct desktop exercises or mock field tests. At least one desktop exercise or mock field test will be performed each year which will test the emergency response measures of the contingency plan and crisis management plan in place at Eagle Mine. The Safety Officer will work with the Environmental Officer and Emergency Response Coordinator to first define the situation that will be tested. The types of test situations may include responding to a release of a hazardous substance, fire, or natural disaster such as a tornado. A list of objectives will be developed for planning and evaluating each identified test situation at a pre-established date and time. Local emergency response officials may be involved, depending on the type of situation selected.

Once the test is completed, a third-party observer and members of the crisis management team and emergency response team will evaluate the effectiveness of the response and make recommendations to improve the system. These recommendations will then be incorporated into a revision of the facility Contingency Plan and Crisis Management Plan.

Appendix V

Eagle Mine

Organizational Information Update

Eagle Mine
4547 County Road 601
Champion, MI 49814, USA
Phone: (906) 339-7000
Fax: (906) 339-7005
www.eaglemine.com

Organizational Information

Eagle Mine LLC

January 05, 2023

Registered Address:	Eagle Mine, LLC 1209 Orange Street Wilmington, DE 19801	**Business Address:**	Eagle Mine, LLC 4547 County Road 601 Champion, MI 49814

Board of Directors

Darby Stacey	4547 County Road 601 Champion, MI 49814
Teitur Poulsen	4547 County Road 601 Champion, MI 49814
Scott Manninen, CFO	4547 County Road 601 Champion, MI 49814

Eagle Mine
4547 County Road 601
Champion, MI 49814, USA
Phone: (906) 339-7000
Fax: (906) 339-7005
www.eaglemine.com

Officers

Theresa Murakami	Treasurer	4547 County Road 601 Champion, MI 49814
Annie Laurenson	Secretary	4547 County Road 601 Champion, MI 49814
Darby Stacey	President/Managing Director	4547 County Road 601 Champion, MI 49814
Scott Manninen	CFO	4547 County Road 601 Champion, MI 49814