

PE:7008 QUARTER 4 REPORT 2023

January through March 2023

Kathleen Russell, Environmental Coordinator

Cassandre Cyr, Environmental Technician

1.0 Non-Compliance Events	3
1.1 Permit Limit Exceedance	3
1.2 Compliance with Permit.....	3
2.0 Water Management Systems	3
2.1 North Water Management – Settling Pond 4 (WD / SP4)	4
2.2 South Water Management - Settling Pond 1 (SPD / SP1)	4
2.3 7-South (7SSD) Water Management	4
3.0 Water Quantities & Flow Rates	5
4.0 Passive Treatment System (PTS).....	5
5.0 Groundwater Quality	8
6.0 Quality Assurance Quality Control.....	10
7.0 Conclusion.....	10

List of Tables within Report:

Table 1: PTS and 2-South Dissolved Sulphate Concentrations and Reduction Rates	6
--	---

List of Figures within Report:

Figure 1: 2-South Mine Pool at INF Flow versus Level.....	6
Figure 2: Average Sulphate Concentrations in 2-South Area.....	7
Figure 3: Sulphate Reduction through the Water Management System.	7

Appendix I

Tables 1- 35

Summary of Events for the Fourth Quarter

During the 4th Quarter (Q4) January 1st through March 31st, Quinsam Coal Corporation (QCC) maintained the environmental obligations of permits C-172 and PE:7008 including amendments from November 1, 2019. The Mines Act permit (C-172) is held with the Ministry of Energy, Mines, and Low Carbon Innovation (EMLI) with PE:7008 held with the Ministry of Environment and Climate Change Strategy (ENV). The mine continues to be operated in a “care and maintenance” mode with MNP Ltd. (formerly The Bowra Group Inc.) as the Receiver.

The Environmental Technical Review Committee (ETRC) Agency meeting was held on December 13th, 2022. This meeting reviews the findings of the Annual Water Quality Monitoring Report from the previous year and discusses the results. The Agency meeting was comprised of representatives from ENV, EMLI, Department of Fisheries and Oceans (DFO) and City of Campbell River (CoCR) as attendees.

The Stakeholder’s meeting was held on January 10, 2023, with representatives from the above listed agencies, and Campbell River Environmental Committee (CREC).

The meeting outcomes consisted of the following:

- Requests for Public Notice (published in the Campbell River Mirror on February 8th & 15th 2023)
- Website for Report- <http://www.quinsamcoalenvironmentalreports.com>
- Electronic Version of Presentation (sent out on January 10, 2023)

The 2022 Annual Reclamation Report for the Mines Act Permit (C-172) was submitted on March 31, 2023.

In addition to surface monitoring, groundwater monitoring consisted of 18 ex-situ groundwater wells, 10 in-situ groundwater (mine pool) areas and 2 mine sumps were monitored this quarter. Routine inspections were conducted, and any required maintenance of the water management structures was completed.

Two areas of possible seepage into the Quinsam River from mine influenced water have been observed (S and S2 (A and B)). These areas are located near monitoring wells QU1109 and QU1105. Both areas capture upward vertical seepage from the River Barrier Pillar with QU1105 also capturing seepage from 2-North Mine.

Seepage from flooded mine pools into the Quinsam River was predicted and presented in the Mine Permit (C-172) Amendment 7-South Development by Lorax Environmental Services Ltd (Lorax). Quinsam is currently characterizing water quality and quantity to compare water quality to predicted geochemical source terms, seepage rates and predicted concentrations on the Quinsam River. Lorax has been contracted to initiate a Phase 1 study in support of developing geochemical source terms and a sitewide water balance / water quality model (WB/WQM).

The overall objective of the study is to construct a WB/WQM that predicts post-closure water quality at mine discharge locations to the receiving environment and in the Quinsam River. The Phase 1 Gap analysis was submitted on March 7th, 2023. The outcomes of the Gap analysis included a list of areas where flows are required. A site visit was performed by Lorax Hydrologist in March, where discharge outflows were surveyed and flow rates on rivers and discharge outlets channels were verified. Quinsam performed a site wide groundwater level survey and collection of water chemistry from upstream and downstream nodes on the No Name Lake connector stream, tributary and downstream of the confluence with the Quinsam and Iron Rivers. The results will be input into the WQM with all other historical to present data that Quinsam Environmental Department is compiling for this project.

1.0 NON-COMPLIANCE EVENTS

1.1 PERMIT LIMIT EXCEEDANCE

No parameters were above specified permit limits this quarter.

1.2 COMPLIANCE WITH PERMIT

The following represents a summary of permit non-compliance(s) (PNC) specific to unauthorized discharges. This information is also summarized in Appendix I, Table 2.

Long Lake Seeps (EMS ID E292131) – continues to be an unauthorized discharge. The mine pool water elevation is above the seepage areas during most seasons except late summer to fall. This year the seep did not start flowing until January.

2.0 WATER MANAGEMENT SYSTEMS

Settling Pond 4 (WD / SP4) (EMS ID: E207409) is the authorized discharge location for the North area where permit limits are applied to water quality and quantity. SP4 receives all 2 and 3 North Mine surface and underground mine contact water. SP4 discharge waters flow through a series of wetlands and biomass areas before entering Middle Quinsam lake, near the inlet. All permitted parameters for water quality remained within permit limits this quarter.

Settling Pond 1 (SPD / SP1) (EMS ID: E218582) is the authorized discharge location for the South mine area where permit limits are applied to water quality and quantity. SP1 receives mine contact water from the South side. SP1 discharge waters flow through a series of wetlands and biomass areas before entering Long Lake, near the outlet. All permitted parameters for water quality remained within permit limits this quarter.

2.1 NORTH WATER MANAGEMENT – SETTLING POND 4 (WD / SP4)

Discharge at Settling Pond 4 (SP4) occurred for all 90 out of 90 days during this quarter with an average daily flow rate of 0.1093 m³/s and a quarterly maximum flow rate of 0.1780 m³/s. Appendix I, Table 25 display the results for flow at SP4.

Dewatering of the underground 2-North mine continued throughout this quarter with pumping to surface from 5M#2 and 1M2N dewatering wells and 3M2N underground pumping system. Brinco Brook mixes with water pumped from 2-North Portal Sump and flows into SP4 where it is released to the receiving environment and used to maintain cover over the 2N PAG-CCR (WP).

Results for water chemistry are displayed in Appendix I, Table 5. Dissolved sulphate (SO₄-D) averaged 417 mg/L, total suspended solids (TSS) averaged 1.65 mg/L, dissolved arsenic (As-D) averaged 0.00112 mg/L, dissolved iron (Fe-D) averaged 0.0173 mg/L and pH remained neutral averaging 7.67.

2.2 SOUTH WATER MANAGEMENT - SETTLING POND 1 (SPD / SP1)

Discharge at Settling Pond 1 (SP1) occurred for 90 days during this quarter with an average daily flow rate of 0.040 m³/s and quarterly maximum of 0.328 m³/s. Appendix I, Table 26 display the results for flow at SP1.

Water from 3S PAG-CCR storage facility was routinely pumped into SP1 throughout the quarter. Dewatering of the 2S mine pool at QU11-11 (INF) continued with all water directed through the Passive Treatment System (PTS) at cells Biochemical Reactor (BCREFF) and Sulphide Polishing Cell (SPCEFF). The discharge from the PTS is directed into the 2-South pit where it either overflows into the 3-South pit or is pumped and ties into the 3-South pipeline discharging at SP1.

All permitted parameters applied to SP1 discharge were found to follow permit limits. Dissolved sulphate (SO₄-D) averaged 223 mg/L, total suspended solids (TSS) averaged 1.11 mg/L, dissolved arsenic (As-D) averaged 0.00264 mg/L, dissolved iron (Fe-D) averaged 0.067 mg/L and pH remained neutral averaging 7.42. Complete results for Setting Pond 4 are displayed in Appendix I, Table 10.

2.3 7-SOUTH (7SSD) WATER MANAGEMENT

No discharge occurred from the 7-South Surface Decant Pond (7SSD). All water is directed into the 7-South portal sump (7SPS) where it is pumped into the 5-South Mine Pool where it remains. The supernatant from 7SSD was sampled on January 3rd and February 2nd this quarter. Appendix 1, Table 22.

Water quality at 7S Stream 1 remained within water quality guidelines during monthly sampling events, Appendix 1, Table 24.

3.0 WATER QUANTITIES & FLOW RATES

Flow and precipitation data are presented tabularly in Appendix I, Tables 28 and 30.

Appendix I, Table 28 display flow requirements for E292127 (2S) inflow and outflow. Appendix I, Table 29 (pages 1 through 3) display weekly flow for E292130 (LLE), E292130 (LLSM / LLS) and E292109 (Stream 1, 7S) and continuous flow and water levels are displayed for 126402 (WA), 900504 (WB) and E219412 (LLO), respectively.

The Quinsam environmental department develops flow curves for all sites required under the effluent permit. Some sites get washed away and must be reestablished and verified with salt dilution trails. Flows were observed to increase during January through February in the rivers with peaks observed during the first two weeks of January correlating with heavy rains.

Precipitation data for the site during this reporting period is included in Appendix I, Table 30. This quarter the Weather station provided inaccurate results for precipitation from February 1st to March 13th, 2023. As a result, the precipitation data was collected from the Campbell River Airport weather station. This may have been a result of snow and ice causing the tipping bucket to freeze. Total precipitation was 255.80 mm during Q4 with the greatest accumulation observed in January (150.90mm). Isolated events of heavy rain contributed significantly to that amount (i.e., on January 6th the site experienced 26.30mm of precipitation).

4.0 PASSIVE TREATMENT SYSTEM (PTS)

The PTS was operational for the quarter with some minor interruptions due to power failure. The PTS was operating at an average of 7.19 L/s. The mine pool water level was measured at 8.4 meters above the pump in early January and increased to 14.2 meters by January 16th with increased precipitation. Levels declined to 10.8 meters by the end of March. Flows at the Long Lake Seep Middle (LLSM) did not start until early January this year. This may be a result of increased pumping efforts from 4.5 L/s to approximately 8.5 L/s. Approximately 4.5 L/s to 5.0 L/s is directed into the PTS and about 3 L/s bypasses the system and is directed into 2-South pit. Continued efforts and observations are being made with respect to seep flow rates, water elevations and pumping rates. Refer to Figure 1, below.

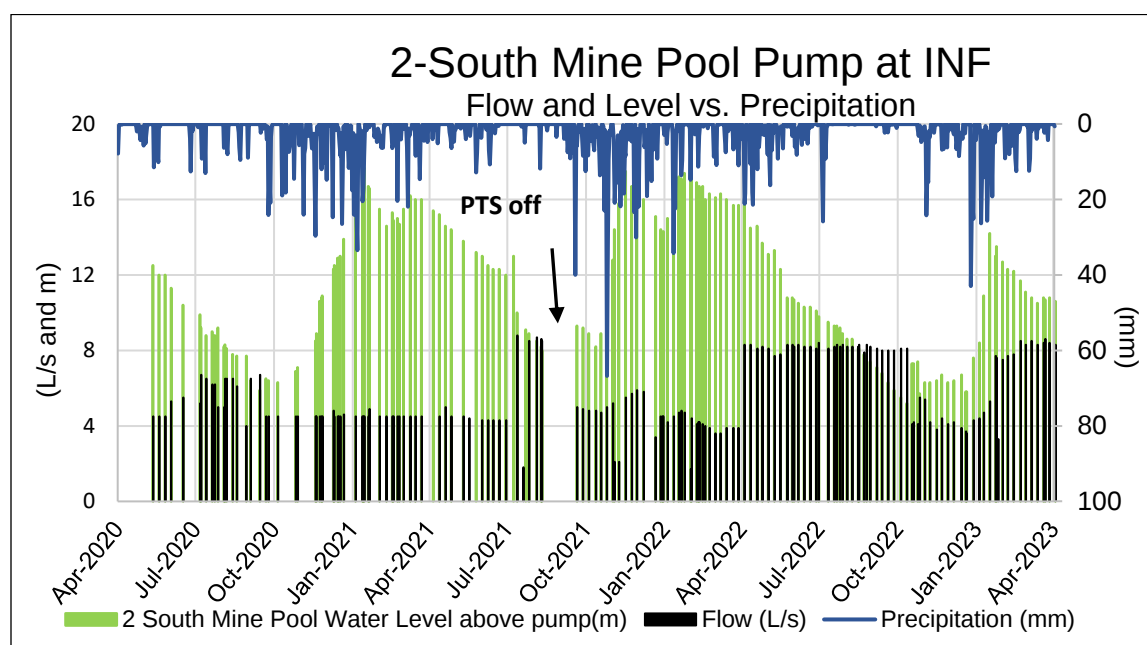


Figure 1: 2-South Mine Pool at INF Flow versus Level.

Average concentrations of dissolved sulphate have been entering the system from the 2-South mine pool measured at INF resulting in 606 mg/L and leaving the system at the Sulphide Polishing Cell (SPCEFF) resulting in 404 mg/L. Refer to Table 1 and Figures 2 and 3, below.

Table 1: PTS and 2-South Dissolved Sulphate Concentrations and Reduction Rates

Q4	INF	BCREFF	SPCEFF	2SI	2S	3S	SPD
Average	606	508	404	362	200	553	223
Count	13	13	13	13	3	3	13
Min	500	400	270	220	50	490	120
Max	690	640	570	480	300	610	360
Sulphate Reduction	INF to BCR	BCR to SPCEFF	INF to SPCEFF	INF to 2SI	INF to 2S	INF to 3S	INF to SPD
	98	105	202	245	406	53	383

This has led to a reduction in average sulphate concentrations of 202 mg/L, through the PTS. Sulphate reduction between INF and Biochemical Reactor (BCR) averaged 108 mg/L. The station, 2-South Inflow (2SI), receives discharge from the PTS, had an average sulphate reduction of 245 mg/L, with reduction at SPD averaging 383 mg/L for Q4.

Overall, the greatest weekly (count of 13) averaged sulphate reduction normally exists between INF to SPD. This Quarter there was a low sulphate result collected from one of three monthly samples in 2-South Pit (50 mg/L). The sample was collected during frozen conditions on the pond

and as result sulphate was low. This produced a high sulphate reduction of 406 mg/L. Freezing ambient temperatures decreases microbial metabolic activity within the BCR and SPCEFF during winter. The low average reduction rate between INF and BCR could be a decrease in microbial activities. Overall, the original reduction goal to reduce sulphate concentrations to 300 mg/L was achieved for the South side Water Management System.

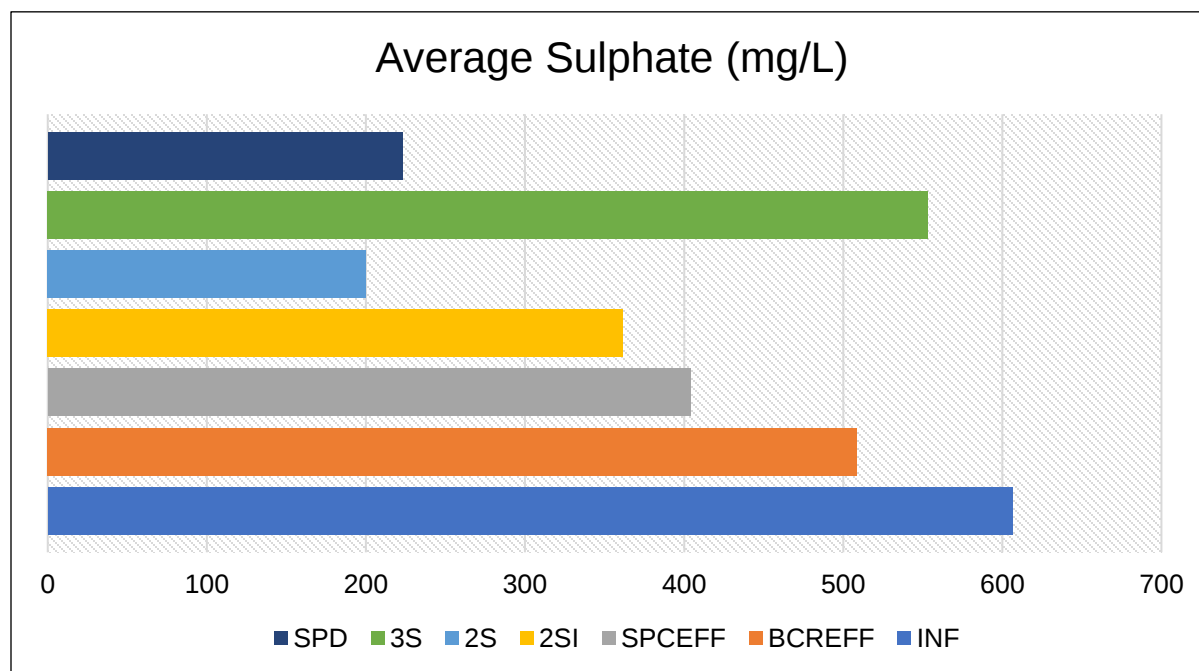


Figure 2: Average Sulphate Concentrations in 2-South Area

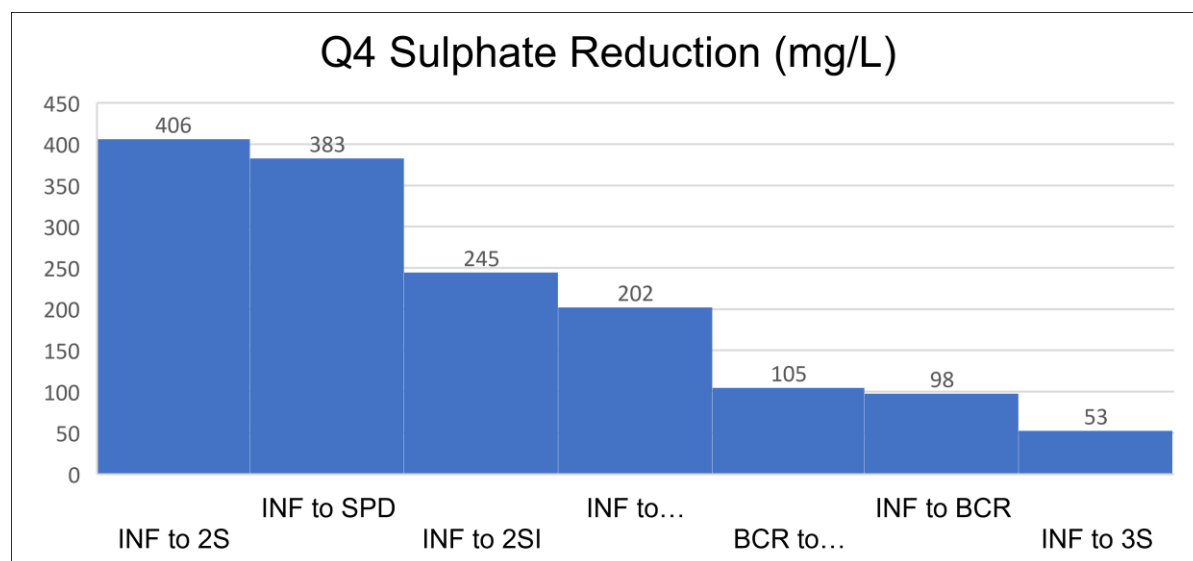


Figure 3: Sulphate Reduction through the Water Management System.

The PTS is effective at maintaining water cover over the PAG-CCR in the 2-South pit and reducing discharge at the Seep into Long Lake during low flow periods. This is accomplished by decreasing the elevation of the mine pool below the elevation of the Seeps. The period of “no flow” at the Middle Seep into Long Lake (LLSM) has been observed to be extended by pumping down the mine pool.

Further monitoring of the PTS continues and includes the 2-South and 3-South systems and groundwater well MW004. A relationship between MW004, Seep flow and the elevation of the mine pool at the INF location continues to be developed with observations noted every quarter.

5.0 GROUNDWATER QUALITY

Quinsam Environmental Department conducts a comprehensive groundwater monitoring program to characterize water quality associated with mining development.

Hydrogeology at the site has been defined through studies performed by Quinsam Coal, Lorax Environmental Services and Golder Associates for those respective mining areas. Past studies and evaluations define monitoring locations, methods, and frequencies with consideration to mining and hydrogeological flow paths. Refer to Appendix 1, Table 4 for a list of sites and parameters that are found trending above the BC Contaminated Sites Regulations - Schedule 6, Aquatic Life Standards (CSR AW). Appendix 1, Table 31 lists the groundwater wells, screened interval, and mining areas. Appendix 1, Tables 32 through 35 display the water chemistry for potential mine related seepage areas, groundwater outside the mine footprint, flooded mine voids, flooded underground PAG-CCR and Tailings storage areas and underground sumps.

Groundwater wells have been categorized as either ‘in-situ’ or ‘ex-situ; the definition for each is as follows:

- In-situ: groundwater wells located within the mine workings (disturbance footprint) and therefore represent water accumulated within the mining void. In the absence of groundwater well samples, underground sump samples are used for comparison.
- Ex-situ: groundwater wells located outside the mine workings (disturbance footprint) which reflect water quality flowing from the mine void towards the receiving environment (e.g., Quinsam River).

The groundwater wells that are outside of the mine footprint (ex-situ) are compared to the British Columbia Contaminated Site Regulation (CSR) (BC reg.37/96. O.C. 1480/96), including the amendments (343/2008 January 1, 2009), water quality standards for Freshwater Aquatic Life (AW). The aquatic life standard assumes that a minimum 1:10 dilution is available for groundwater discharged to a freshwater system. This regulation is referred to as CSR-AW for reporting purposes.

The parameters of interest captured under the CSR-AW and applied to Quinsam include arsenic (As), cobalt (Co), copper (Cu), chloride (Cl) fluoride (F), iron (Fe), sulphate (SO₄), sulphide (S₂-)

(as H₂S), selenium (Se) and zinc (Zn). These guidelines have been applied to both the ex-situ and in-situ groundwater as all areas have the potential to reach a freshwater system.

Appendix 1, Table 4 compares the results of sampling performed in Q4 to the CSR-AW guidelines (by development area). Those parameters found in excess of the CSR-AW include As, Cl, H₂S and SO₄-D.

Arsenic was found elevated above 0.05 mg/L in almost all ex-situ groundwater, related to the geology of the host rock formation. Most in-situ flooded mine voids did not display elevated As-D. Groundwater that was not elevated in arsenic includes the following:

- Deep and shallow groundwater at QU1105 (D and S) that monitors water quality and vertical gradients downstream of the River Barrier Pillar, 88 panel and 2-North mine pool. QU1109 M monitors water quality above the flooded PAG-CCR in the River Barrier Pillar and 2-North mine.
- 3-North area deep and shallow groundwater at QU1010 (D) and QU1011 (D and S). Both deep groundwater wells are situated down gradient of underground tailings disposal, measuring water quality and hydraulic head downgradient of 2 North workings.
- Shallow monitoring well outside of the 7-South Mine (QU0810)
- Monitoring wells in the 2-North area below the coal wash plant both shallow and deep (MW001, MW006) monitor seepage to Middle Quinsam lake.
- Flooded mine voids (2-North, 3-North, 2-South, 3-South, and RBP)
- Shallow groundwater beside the 3-South Pit (MW002)

Chloride was only elevated above 1500 mg/L in the deep groundwater of the 3 North area QU1010 D.

Hydrogen sulphide was elevated above 0.02 mg/L in almost all groundwater except:

- 2-North monitoring shallow and deep wells below the Coal wash plant (MW001 and MW006)
- Shallow monitoring well outside of the 7-South Mine (QU0810) and below the 7-South 2-Mains PAG -CCR storage area in QU0813B
- 3-North monitoring shallow and deep wells (QU1011 S and QU1010 D)
- 7-South Area 5 and 242 area ex-situ deep groundwater at QU1136 D
- Flooded mine voids (2-South, 3-South, 242 and 7-South (QU1410)
- Underground sumps in 7S mine (1M7SA5 and 7SA5)

Dissolved sulphate was elevated above 1280 mg/L in limited groundwater areas, those areas include:

- Shallow groundwater beside the 3-South Pit (MW002)
- 2 / 3-South flooded depillared mine void (MW005)
- 7-South Flooded PAG-CCR (QU1410)

Source terms have been developed for parameters of interest within the various development areas. This includes geochemical characterization of the 4-South mine pool and laboratory kinetic testing conducted on the 7-South coarse coal reject, 7-South formation water, 2-North, 3-North and 5-South mine water and formation water samples collected from underground mine dewatering areas. It is therefore important to consider water captured and stored within the mine workings (in-situ) to ascertain potential discharge (through existing sedimentation structures) and seepage water quality. Accordingly, groundwater wells that are located within a mine void are sampled as part of the monitoring program with results being compared to source terms developed for each respective area. Overall, the water chemistry relates closely to the predicted source terms. This information is discussed in the Annual Reclamation Report Section 3.3.

6.0 QUALITY ASSURANCE QUALITY CONTROL

All replicate sampling was performed in compliance with the *British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air Emission, Water, Wastewater, Soil, Sediment, and Biological Samples, 2013 Edition*.

As per these guidelines and in accordance with the Quinsam Coal Quality Assurance/Quality Control (QA/QC) program, one field replicate sample was collected per sampling event. Relative Percent Difference, RPD values were calculated in accordance with the B.C. field sampling manual.

7.0 CONCLUSION

The surface water chemistry at the mine remains of good quality, meeting permit limits. The groundwater quality is displaying elevated arsenic concentrations in areas that were previously observed (through baseline monitoring), to have elevated arsenic in the lithology and coal seams. There are certain parameters that tend to continually trend above the CSR-AW in groundwater (As, Cl, H₂S and SO₄) related to mining and the host rock formation. The surface monitoring program at Quinsam Coal has been established to capture the effects of mine-related surface and underground disturbance areas (contact water) on the receiving environment. The comprehensive nature of this program allows Quinsam to generate water quality predictions, strategically manage surplus water generated as a result of mining activities and create management plans with a focus on mitigating potential receiving environment impacts.

Quinsam is committed to limiting impacts placed on the environment through operational procedures, striving to prevent adverse environmental impacts and is dedicated to internally investigating those parameters displaying an increasing trend. The updated WB/WQM will provide water quality predictions, seepage rates and Closure options for the mine site.

In closing, we trust the information presented in this report satisfies the conditions under Effluent Permit PE-7008. Please contact the Quinsam Coal Environmental Department if you have any questions or comments.

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table of Contents

Page	
1	Table 1 Description of Effluent, In-Mine Releases & Receiving Environment Monitoring Sites 1 Page(s)
2	Table 2 Summary of Permit Limit Exceedances, Permit Non-Compliances and Unauthorised Discharges 1 Page(s)
3	Table 3 Summary of Water Quality Guideline Observations At Monitoring Locations 1 Page(s)
4	Table 4 Contaminated Sites Regulations - Aquatic Life Standards 1 Page(s)
5	Table 5 Settling Pond # 4 - Authorized Discharge Location for North Mine Water 1 Page(s)
6	Table 6 2 North Pit Sump CCR Water Cover 1 Page(s)
7	Table 7 2-North Portal Sump Effluent 1 Page(s)
8	Table 8 Road Side Ditch Draining into MQL 1 Page(s)
9	Table 9 Culvert at Middle Quinsam Lake Road 1 Page(s)
10	Table 10 Settling Pond #1 - Authorized Discharge Location for South Mine Water 1 Page(s)
11	Table 11 Passive Treatment System (PTS) Influent for Biocell 1 Page(s)
12	Table 12 PTS Biochemical Reactor Cell 1 Page(s)
13	Table 13 PTS Sulphide Polishing Cell 1 Page(s)
14	Table 14 2 South Pit Inflow 1 Page(s)
15	Table 15 2-South Pit in Pit Water Cover Over PAG-CCR 1 Page(s)
16	Table 16 2-South Outflow Culvert into 3-South Pit 1 Page(s)
17	Table 17 3-South Pit Water Cover Over PAG-CCR 1 Page(s)
18	Table 18 Culvert Downstream End at Access Road 1 Page(s)
19	Table 19 South End Mine Water Entering Long Lake Near the Outlet 1 Page(s)
20	Table 20 Seep into Long Lake 1 Page(s)
21	Table 21 Long Lake Middle Seep 1 Page(s)
22	Table 22 Authorised Discharge Location for 7S South Mine Water 1 Page(s)
23	Table 23 7 South Portal Sump 1 Page(s)
24	Table 24 Road Side Crossing Bridge on Stream 1 above the Lower Wetland 1 Page(s)
25	Table 25 Continuous Discharge at Settling Pond # 4 1 Page(s)
26	Table 26 Continuous Discharge at Settling Pond # 1 1 Page(s)
27	Table 27 Continuous Discharge at 7-South 1 Page(s)
28	Table 28 2S Inflow Outflow 1 Page(s)
29	Table 29 Flow Tables LLE, LLS, LLSM, 7S, WA, WB and LLO 3 Page(s)
30	Table 30 Precipitation 1 Page(s)
31	Table 31 Groundwater Description 1 Page(s)
32	Table 32 Potential Seepage Near QU1109 (S) 1 Page(s)
33	Table 33 Potential Seepage on QR by QU1105 (S2) 1 Page(s)
34	Table 34 Potential Seepage on QR by QU1105 (S2A) 1 Page(s)
35	Table 35 Groundwater 7 Page(s)

Table 1 Description of Effluent, In-Mine Releases Receiving Environment Monitoring Sites 1 Page(s)

Description of Effluent, In-Mine Releases & Receiving Environment Monitoring Sites			
EMS ID #	Monitoring Sites	Abbreviation (Station Code)	*Type of Water (MW, FW or GW)
North Coal Mining Operation			
E207409	Settling Pond #4 Decant	WD	Discharge (MW)
E207411	Culvert, at Middle Quinsam Lake Road	WC	MW & FW
E283433	2-North Portal Sump (Adit Sump)	2NPS	MW
E207412	2-North Pit Sump CCR Cover	WP	PAG-CCR Water Cover - MW
South Coal Mine			
E218582	Settling Pond #1 Decant	SPD	Discharge (MW)
E217014	Culvert, Downstream End at Access Road	SPC	MW & FW
E217015	South Pit Main Sump Water	3S	PAG-CCR Water Cover (MW & FW)
E292127	2-South Pit In Pit Water Cover (2-South Standpipe)	2S	PAG-CCR Water Cover (MW & FW)
7-South Mining Operation			
E292069	7-South Surface Decant	7SSD	Discharge (SW)
E292110	7-South Adit Sump	7SPS	MW
Seep Monitoring Sites			
E292131	Long Lake Seeps	LLS & LLSM	GW / MW
	Culvert that collects groundwater and Coal Main logging road water entering MQL (PDSR)	PDSR	GW / SW
	Possible Seepage Area by QU1109	S	GW/SW
	Possible Seepage Area by QU1105	S2	GW/SW
Receiving Environment Monitoring Sites - Near Initial Zone of Dilution (NIDZ)			
Near Initial Dilution Zone (NIDZ) Monitoring Sites			
E292130	Long Lake Entrance (South end water entering Long Lake near the outlet)	LLE	NIDZ
E292109	Road Crossing Bridge on Stream 1 above the Lower Wetland (Downstream of 7SSD).The site name is Stream 1, 7S.	7S	NIDZ
Receiving Water (Rivers & Lakes Monitoring Sites) 5 in 30 Monitoring Locations			
North Coal Mining Operation			
E0126402	Quinsam River at Argonaut Bridge	WA	FW
E206618	Middle Quinsam Lake Centre	MQL (1, 4, 9 & 1m from Bottom)	FW
E0900504	Outflow from Middle Quinsam Lake	WB	FW
South Coal Mine			
E217018	No Name Lake	NNL (1, 4, 9 & 1m from Bottom)	FW
E217017	No Name Lake Outlet	NNO	FW
E206619	Long Lake at Centre	LLM (1, 4, 9 & 1m from Bottom)	FW
E219412	Long Lake Outlet	LLO	FW
7-South Mining Operation (Areas 1 to 4)			
E286930	Quinsam River Upstream of 7-South Mining Operation	QRDS1	FW
E292113	Quinsam River Downstream of 7-South Mining Operation	7SQR	FW
E292118	Lower Quinsam Lake Centre	LQL (1, 4, 9 & 1m from Bottom)	FW
7-South Area 5 Mining Operation			
E297231	Iron River upstream of 7SA5	IR6	FW
E297232	Iron River downstream of 7SA5 and 242 inputs	IR8	FW
E299256	Quinsam River downstream of confluence with Iron River	IRQR	FW
E292118	Lower Quinsam Lake Centre	LQL (1, 4, 9 & 1m from Bottom)	FW
Block 242 Mining Operation (Reclaimed / Not Monitored)			
E225798	Iron River upstream of the 242 influence	Not Monitored	FW
E225808	Iron River downstream of the 242 influence	Not Monitored	FW
N/A	Old portal sump used for collection of water from underground	Reclaimed	FW / GW
Long Lake Seep Passive Treatment System			
N/A	Groundwater well (2-South Mine Pool) influent to the treatment system	QU11-11 (INF-EFF)	MW
N/A	Biochemical Reactor	BCR-EFF	MW
N/A	Sulphide Polishing Cell	SPC-EFF	MW
N/A	2-South Inflow (From Passive Treatment System)	2SI	MW
N/A	2-South Culvert into 3-South Pit (Seepage under liner and overflow from 2S-pit)	2SC	MW
* MW= Mine Water, FW= Freshwater, GW =Groundwater NIDZ = Near Initial Dilution Zone			

Table 2 Summary of Permit Limit Exceedances, Permit Non-Compliances and Unauthorised Discharges 1 Page(s)

Appendix 1 - Q4 (January - March 2023) Water Quality Report					
Table 2 Summary of Permit Limit Exceedances, Permit Non-Compliances and Unauthorised Discharges 1 Page(s)					
`					
EMS ID & Site Name	Non-Compliance (PNC)	Result (mg/L)	Date	Non-Compliance Reason	Number of events or period for PNC, P or spill event.
E292131 - Long Lake Seeps	Unauthorised discharge	PNC	Q4	Seepage from mine pool into Long lake. No authorization to discharge.	Q4 - 86 out of 90 Days

Table 3 Summary of Water Quality Guideline Observations At Monitoring Locations 1 Page(s)

SUMMARY OF WATER QUALITY GUIDELINE OBSERVATIONS AT MONITORING LOCATIONS WINTER 2022						
EMS ID & Site Name	Parameter (mg/L or pH Units)	Guideline Limit	Result	Date	Guideline	Events Above Guideline
E292131 - Smaller seep into Long Lake (LLS)	Fe-T (mg/L)	1.00	1.12	Monthly	Acute	(1/3) Monthly sampling events
	Fe-D (mg/L)	0.35	0.804 and 0.408	Monthly	Acute	(2/3) Monthly sampling events
Potentail Seepage from shallow groundwater near QU1109 (S)	As-T (mg/L)	0.005	0.205 to 0.0712	January to March	Acute	(7/7) samples
Potentail Seepage from shallow groundwater near QU1105 (S2 and S2A)	As-T (mg/L)	0.005	0.0132 to 0.0287	January to March	Acute	(7/7) samples
Min = Minimum Water Quality Guideline (WQG) Acute = Maximum WQG, Chronic = Average WQG						

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 4 Contaminated Sites Regulations - Aquatic Life Standards 1 Page(s)

Appendix 1 - Q4 (January - March 2023) Water Quality Report																			
Description Well ID Station Type Top Elev. Bottom Elev. CSR-AW (C)				Ex-situ 2 - 3 North						Ex-situ RBP and 2N			Ex-situ RBP shallow		In-situ RBP PAG UG				
				QU0821GS	QU0821GS	QU0821GD	QU1010S	QU1010D	QU1010D	QU1011D	QU1105S	QU1105D	QU1105D	QU1109S	QU1109S	QU1109M			
				GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW			
				215.4279556	215.4279556	215.4279556	245.3979556	245.3979556	245.3979556	249.1979556	228.95	228.95	228.95	226.897	226.897	226.897			
				135.1279556	135.1279556	39.6279556	181.1979556	72.6979556	72.6979556	86.0979556	195.383	98.65	98.65	202.097	202.097	143.032			
Date				17-Jan-23	17-Jan-23	17-Jan-23	15-Mar-23	15-Mar-23	15-Mar-23	21-Mar-23	22-Feb-23	22-Feb-23	22-Feb-23	30-Mar-23	30-Mar-23	30-Mar-23			
	Sample Class			M	R	M	M	M	R	M	M	M	R	M	R	M			
H2SEquiv	mg/L	H2S	0.02	0.0521	0.0553	0.0266	0.234			0.0989	0.0574	28.7	25.5	2.02	2.23	0.0234			
Cl-D	mg/L		1500					3400	3500										
As-D	mg/L		0.05	0.579	0.589	0.179	0.105							0.0997	0.103				
Description Well ID Station Type Top Elev. Bottom Elev. CSR-AW (C)				Ex-situ 7-South		Ex-situ 7-South Area 5		In-situ 2-North UG Flooded Mine Void				In-situ 3S Pit		In-situ 3-South UG		In-situ 7S PAG UG		In-situ 242 UG Flooded Mine Void	
				QU0813A	QU0813B	QU1136S	QU1136D	5M#2	1M2N	1M2N	1M2N	QU1013D	MW002	MW005	QU1410	242MW			
				GW	GW	GW	GW	MW	MW	MW	MW	GW	GW	GW	MW	MW			
				221.0979556	221.0979556	285.891189	285.891189	268.22	262.43	262.43	262.43	270.68	325	342.8	240.832	290			
				168.9979556	194.6979556	243.691189	218.691189	138.68	110.03	110.03	110.03	127.68	318.2	297.1	209.432	256.5			
Date				23-Feb-23	23-Feb-23	22-Mar-23	21-Mar-23	14-Mar-23	9-Jan-23	8-Feb-23	14-Mar-23	21-Feb-23	27-Feb-23	28-Feb-23	14-Mar-23	14-Mar-23			
	Sample Class			M	M	M	M	M	M	M	M	M	M	M	M	M			
SO4-D	mg/L		1280										1300	1800	1800				
H2SEquiv	mg/L	H2S	0.02	0.202		0.0202		0.0244	0.0733	0.0787	0.0819	0.0787							
As-D	mg/L		0.05	0.361	0.512		0.847								0.109	0.106			
Description Well ID Station Type Bottom Elev. CSR-AW (C)				In-situ UG 7S Sumps						Notes: Groundwater (GW) and Mine water (MW). Potentially Acid Generating (PAG) Course Coal Reject (CCR) is flooded in underground workings of the River Barrier Pillar (RBP) of QU1109M and 2-Mains 7-South (QU1410) In-situ relates to mine water within the mine workings. Ex-situ relates to groundwater outside the mine workings.									
				1M7SA5	1M7SA5	1M7SA5	7SA5	7SA5	7SA5										
				MW	MW	MW	MW	MW	MW										
Date				12-Jan-23	6-Feb-23	14-Mar-23	12-Jan-23	6-Feb-23	14-Mar-23										
	Sample Class			M	M	M	M	R	M										
As-D	mg/L		0.05		0.0987	0.0773	0.223	0.230	0.232										

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 5 Settling Pond # 4 - Authorized Discharge Location for North Mine Water 1 Page(s)

EMS ID	E207409	Stn Std PL-N																		
Site Description		Settling Pond # 4 - Authorized Discharge Location for North Mine Water																		
20																				
Site Name	WD	Std Val																		
Date		Max	Min	03-01-2023	03-01-2023	09-01-2023	16-01-2023	16-01-2023	23-01-2023	31-01-2023	06-02-2023	13-02-2023	21-02-2023	27-02-2023	06-03-2023	13-03-2023	13-03-2023	20-03-2023	27-03-2023	
pH-F	pH Units	8.5	6.0	7.7	7.7	7.66	7.33	7.33	7.63	7.66	7.52	7.74	8.02	7.73	8.04	7.64	7.64	7.63	7.85	
Cond-F	uS/cm			1755	1755	1634	1573	1573	1447	1675	1679	1442	1397	1499	1321	1700	1700	1750	1746	
SO4-D	mg/L			570	550	480	410	420	400	390	420	410	380	370	310	390	390	400	380	
TSS	mg/L	25	0	<1.0	1.2	2.0	<1.0	1.6	3.6	2.0	<1.0	2.4	1.2	2.0	<1.0	<1.0	<1.0	2.8	1.6	
Alk-T	mg/L			370	360						440				460					
Acidity83	mg/L			9.2	8.0						3.0				7.3					
Al-T	mg/L			0.0464	0.0489										0.0042					
As-T	mg/L			0.00134	0.00131										0.00137					
Ba-T	mg/L			0.0171	0.0176										0.0183					
B-T	mg/L			0.764	0.730										0.752					
Cd-T	mg/L			<0.000010	<0.000010										<0.000010					
Ca-T	mg/L			141	137										81.5					
Cr-T	mg/L			<0.0010	<0.0010										0.0017					
Co-T	mg/L			0.00045	0.00046										<0.00020					
Cu-T	mg/L			0.00081	0.00080										<0.00050					
Hard-T	mg/L			419	409										241					
Fe-T	mg/L			0.249	0.257										0.129					
Pb-T	mg/L			<0.00020	<0.00020										<0.00020					
Mg-T	mg/L			16.5	16.4										9.01					
Mn-T	mg/L			0.130	0.129										0.0676					
Mo-T	mg/L			<0.0010	<0.0010										0.0020					
Ni-T	mg/L			0.0024	0.0023										0.0076					
K-T	mg/L			3.26	3.14										2.52					
S-T	mg/L			194	190										101					
Se-T	mg/L			<0.00010	<0.00010										<0.00010					
Si-T	mg/L			3.37	3.34										2.78					
Ag-T	mg/L			<0.000020	<0.000020										<0.000020					
Na-T	mg/L			258	257										210					
Sr-T	mg/L			1.22	1.20										0.763					
Zn-T	mg/L			<0.0050	<0.0050										<0.0050					
Al-D	mg/L	0.5	0	0.0164	0.0214						0.0046				<0.0030					
As-D	mg/L			0.00088	0.00083						0.00155				0.00122					
Ba-D	mg/L			0.0174	0.0175						0.0216				0.0195					
B-D	mg/L			0.759	0.775						0.789				0.697					
Be-D	mg/L			<0.00010	<0.00010						<0.00010				<0.00010					
Cd-D	mg/L			0.000018	<0.000010						<0.000010				<0.000010					
Ca-D	mg/L			137	137						119				85.8					
Cr-D	mg/L			<0.0010	<0.0010						<0.0010				<0.0010					
Co-D	mg/L			0.00052	0.00051						0.00021				<0.00020					
Cu-D	mg/L	0.02	0	0.00056	0.00054						0.00022				0.00020					
Hard-D	mg/L			417	416						347				255					
Fe-D	mg/L	0.3	0	0.0148	0.0169						0.0119				0.0257					
Pb-D	mg/L	0.05	0	<0.00020	<0.00020						<0.00020				<0.00020					
Mg-D	mg/L			18.3	18.2						12.2				9.89					
Mn-D	mg/L			0.128	0.127						0.158				0.0805					
Mo-D	mg/L			<0.0010	<0.0010						<0.0010				<0.0010					
Ni-D	mg/L			0.0025	0.0024						<0.0010				<0.0010					
K-D	mg/L			3.44	3.40						3.31				2.78					
S-D	mg/L			201	192						167				104					
Se-D	mg/L			0.00012	<0.00010						<0.00010				<0.00010					
Si-D	mg/L			3.25	3.26						3.35				2.76					
Na-D	mg/L			278	274						247				240					
Sr-D	mg/L			1.19	1.18						1.14				0.751					
Zn-D	mg/L	0.1	0	<0.0050	<0.0050						<0.0050				<0.0050					
O&G	mg/L	10	0								<1.0									

Table 6 2 North Pit Sump CCR Water Cover 1 Page(s)

EMS ID		E207412		
Site Description		2 North Pit Sump CCR Water Cover		
Site Name		WP		
Date		03-01-2023	07-02-2023	06-03-2023
pH-F	pH Units	7.57	7.8	7.86
Cond-F	uS/cm	941	1053	1611
SO4-D	mg/L	350	380	470
TSS	mg/L	<1.0	4.0	2.4
Alk-T	mg/L	110	130	350
Acidity83	mg/L	4.8	1.4	9.3
Al-T	mg/L	0.0379	0.0201	0.0162
As-T	mg/L	0.00061	0.00026	0.00247
Ba-T	mg/L	0.0112	0.0101	0.0147
B-T	mg/L	0.320	0.322	0.781
Cd-T	mg/L	0.000050	0.000021	<0.000010
Ca-T	mg/L	125	140	123
Cr-T	mg/L	<0.0010	<0.0010	<0.0010
Co-T	mg/L	0.00632	0.00174	0.00076
Cu-T	mg/L	0.00207	0.00092	0.00064
Hard-T	mg/L	371	420	371
Fe-T	mg/L	0.224	0.099	1.02
Pb-T	mg/L	<0.00020	<0.00020	<0.00020
Mg-T	mg/L	14.2	16.9	15.8
Mn-T	mg/L	0.224	0.0867	0.152
Mo-T	mg/L	<0.0010	<0.0010	<0.0010
Ni-T	mg/L	0.0119	0.0059	0.0026
K-T	mg/L	1.60	1.46	3.31
S-T	mg/L	121	145	170
Se-T	mg/L	0.00038	0.00027	0.00011
Si-T	mg/L	1.88	1.68	2.78
Ag-T	mg/L	<0.000020	<0.000020	<0.000020
Na-T	mg/L	62.4	63.2	206
Sr-T	mg/L	0.666	0.869	0.997
Zn-T	mg/L	0.0136	<0.0050	0.0073
Al-D	mg/L	0.0067	0.0134	<0.0030
As-D	mg/L	0.00032	0.00019	0.00077
Ba-D	mg/L	0.0104	0.0099	0.0136
B-D	mg/L	0.289	0.297	0.685
Be-D	mg/L	<0.00010	<0.00010	<0.00010
Cd-D	mg/L	0.000061	0.000021	<0.000010
Ca-D	mg/L	113	141	127
Cr-D	mg/L	<0.0010	<0.0010	<0.0010
Co-D	mg/L	0.00687	0.00179	0.00073
Cu-D	mg/L	0.00148	0.00080	0.00032
Hard-D	mg/L	344	423	388
Fe-D	mg/L	0.0063	0.0059	0.0231
Pb-D	mg/L	<0.00020	<0.00020	<0.00020
Mg-D	mg/L	15.3	17.0	17.1
Mn-D	mg/L	0.222	0.0909	0.148
Mo-D	mg/L	<0.0010	<0.0010	<0.0010
Ni-D	mg/L	0.0122	0.0057	0.0025
K-D	mg/L	1.58	1.50	3.36
S-D	mg/L	117	145	174
Se-D	mg/L	0.00039	0.00027	0.00011
Si-D	mg/L	1.68	1.71	2.56
Na-D	mg/L	67.5	63.3	221
Sr-D	mg/L	0.616	0.890	0.949
Zn-D	mg/L	0.0130	<0.0050	0.0063

Table 7 2-North Portal Sump Effluent 1 Page(s)

EMS ID		E283433		
Site Description		2-North Portal Sump Effluent		
Site Name		2NPS		
Date		03-01-2023	07-02-2023	06-03-2023
pH-F	pH Units	7.45	7.45	7.78
Cond-F	uS/cm	2160	2260	2110
SO4-D	mg/L	980	990	1000
Alk-T	mg/L	320	310	320
Acidity83	mg/L	22.5	9.8	13.4
Al-T	mg/L	0.0205	0.0571	0.0514
As-T	mg/L	0.00033	0.00069	0.00090
Ba-T	mg/L	0.0134	0.0126	0.0120
B-T	mg/L	0.91	0.79	0.88
Cd-T	mg/L	<0.000020	<0.000020	<0.000020
Ca-T	mg/L	264	274	278
Cr-T	mg/L	<0.0020	<0.0020	<0.0020
Co-T	mg/L	0.00134	0.00139	0.00144
Cu-T	mg/L	<0.0010	<0.0010	<0.0010
Hard-T	mg/L	782	799	825
Fe-T	mg/L	0.187	0.268	0.263
Pb-T	mg/L	<0.00040	<0.00040	<0.00040
Mg-T	mg/L	29.6	27.8	31.8
Mn-T	mg/L	0.169	0.225	0.202
Mo-T	mg/L	<0.0020	<0.0020	<0.0020
Ni-T	mg/L	0.0035	0.0045	0.0036
K-T	mg/L	3.96	3.69	3.95
S-T	mg/L	297	331	351
Se-T	mg/L	<0.00020	<0.00020	<0.00020
Si-T	mg/L	3.56	3.30	3.40
Ag-T	mg/L	<0.000040	<0.000040	<0.000040
Na-T	mg/L	237	215	235
Sr-T	mg/L	1.91	2.06	1.93
Zn-T	mg/L	<0.010	<0.010	<0.010
Al-D	mg/L	0.0060	0.0116	0.0111
As-D	mg/L	0.00027	0.00043	0.00036
Ba-D	mg/L	0.0135	0.0130	0.0111
B-D	mg/L	0.842	0.88	0.78
Be-D	mg/L	<0.00010	<0.00020	<0.00020
Cd-D	mg/L	<0.000010	<0.000020	<0.000020
Ca-D	mg/L	266	291	267
Cr-D	mg/L	<0.0010	<0.0020	<0.0020
Co-D	mg/L	0.00150	0.00140	0.00145
Cu-D	mg/L	0.00027	<0.00040	0.00044
Hard-D	mg/L	799	846	801
Fe-D	mg/L	0.118	0.019	0.020
Pb-D	mg/L	<0.00020	<0.00040	<0.00040
Mg-D	mg/L	32.6	29.1	32.4
Mn-D	mg/L	0.163	0.233	0.196
Mo-D	mg/L	<0.0010	<0.0020	<0.0020
Ni-D	mg/L	0.0036	0.0043	0.0036
K-D	mg/L	4.15	3.92	3.85
S-D	mg/L	304	342	335
Se-D	mg/L	<0.00010	<0.00020	<0.00020
Si-D	mg/L	3.51	3.60	3.09
Na-D	mg/L	254	226	242
Sr-D	mg/L	1.85	2.16	1.77
Zn-D	mg/L	<0.0050	<0.010	<0.010

Table 8 Road Side Ditch Draining into MQL 1 Page(s)

EMS ID				
Site Description		Road Side Ditch Draining into MQL		
Site Name		PDSR		
Date		03-01-2023	07-02-2023	06-03-2023
pH-F	pH Units	7.9	7.6	7.99
Cond-F	uS/cm	1114	1200	1271
SO4-D	mg/L	430	440	530
TSS	mg/L	<1.0	<1.0	<1.0
Al-T	mg/L	0.0085	0.0332	0.0091
As-T	mg/L	<0.00010	<0.00010	<0.00020
Ba-T	mg/L	0.0133	0.0140	0.0162
B-T	mg/L	0.164	0.192	0.20
Cd-T	mg/L	<0.000010	<0.000010	<0.000020
Ca-T	mg/L	159	166	204
Cr-T	mg/L	<0.0010	<0.0010	<0.0020
Co-T	mg/L	<0.00020	<0.00020	<0.00040
Cu-T	mg/L	<0.00050	<0.00050	<0.0010
Hard-T	mg/L	505	522	656
Fe-T	mg/L	<0.010	<0.010	<0.020
Pb-T	mg/L	<0.00020	<0.00020	<0.00040
Mg-T	mg/L	25.9	26.1	35.7
Mn-T	mg/L	<0.0010	0.0011	<0.0020
Mo-T	mg/L	<0.0010	<0.0010	<0.0020
Ni-T	mg/L	<0.0010	<0.0010	<0.0020
K-T	mg/L	1.06	0.994	1.18
S-T	mg/L	141	157	200
Se-T	mg/L	<0.00010	<0.00010	<0.00020
Si-T	mg/L	3.20	3.46	3.07
Ag-T	mg/L	<0.000020	<0.000020	<0.000040
Na-T	mg/L	37.6	35.3	44.0
Sr-T	mg/L	0.887	1.02	1.15
Zn-T	mg/L	<0.0050	<0.0050	<0.010
Al-D	mg/L	0.0068	0.0079	0.0060
As-D	mg/L	<0.00010	<0.00010	<0.00010
Ba-D	mg/L	0.0137	0.0148	0.0160
B-D	mg/L	0.170	0.193	0.187
Be-D	mg/L	<0.00010	<0.00010	<0.00010
Cd-D	mg/L	<0.000010	<0.000010	<0.000010
Ca-D	mg/L	153	179	204
Cr-D	mg/L	<0.0010	<0.0010	<0.0010
Co-D	mg/L	<0.00020	<0.00020	<0.00020
Cu-D	mg/L	0.00053	0.00034	0.00039
Hard-D	mg/L	503	561	658
Fe-D	mg/L	<0.0050	<0.0050	<0.0050
Pb-D	mg/L	<0.00020	<0.00020	<0.00020
Mg-D	mg/L	29.1	27.5	36.1
Mn-D	mg/L	<0.0010	<0.0010	<0.0010
Mo-D	mg/L	<0.0010	<0.0010	<0.0010
Ni-D	mg/L	<0.0010	<0.0010	<0.0010
K-D	mg/L	1.13	1.14	1.26
S-D	mg/L	145	165	201
Se-D	mg/L	<0.00010	<0.00010	<0.00010
Si-D	mg/L	2.77	3.52	2.92
Na-D	mg/L	42.2	36.8	44.8
Sr-D	mg/L	0.897	1.10	1.11
Zn-D	mg/L	<0.0050	<0.0050	<0.0050

Table 9 Culvert at Middle Quinsam Lake Road 1 Page(s)

EMS ID		E207411			
Site Description		Culvert at Middle Quinsam Lake Road			
Site Name		WC			
Date		03-01-2023	07-02-2023	07-02-2023	06-03-2023
pH-F	pH Units	8.05	8.21	8.21	8.45
Cond-F	uS/cm	1357	1500	1500	1313
SO4-D	mg/L	390	350	360	310
TSS	mg/L	<1.0	<1.0	2.8	<1.0
Al-T	mg/L	0.0176			0.0049
As-T	mg/L	0.00046			0.00050
Ba-T	mg/L	0.0107			0.0121
B-T	mg/L	0.603			0.692
Cd-T	mg/L	<0.000010			<0.000010
Ca-T	mg/L	95.5			73.9
Cr-T	mg/L	<0.0010			<0.0010
Co-T	mg/L	<0.00020			<0.00020
Cu-T	mg/L	0.00051			<0.00050
Hard-T	mg/L	286			223
Fe-T	mg/L	0.040			0.032
Pb-T	mg/L	<0.00020			<0.00020
Mg-T	mg/L	11.4			9.27
Mn-T	mg/L	0.0061			0.0035
Mo-T	mg/L	<0.0010			<0.0010
Ni-T	mg/L	<0.0010			0.0011
K-T	mg/L	2.43			2.42
S-T	mg/L	129			105
Se-T	mg/L	<0.00010			<0.00010
Si-T	mg/L	3.33			2.59
Ag-T	mg/L	<0.000020			<0.000020
Na-T	mg/L	194			193
Sr-T	mg/L	0.829			0.721
Zn-T	mg/L	<0.0050			<0.0050
Al-D	mg/L	0.0146			0.0035
As-D	mg/L	0.00041			0.00042
Ba-D	mg/L	0.0109			0.0133
B-D	mg/L	0.600			0.673
Be-D	mg/L	<0.00010			<0.00010
Cd-D	mg/L	<0.000010			<0.000010
Ca-D	mg/L	90.6			80.3
Cr-D	mg/L	<0.0010			<0.0010
Co-D	mg/L	<0.00020			<0.00020
Cu-D	mg/L	0.00041			0.00021
Hard-D	mg/L	279			244
Fe-D	mg/L	0.0128			0.0124
Pb-D	mg/L	<0.00020			<0.00020
Mg-D	mg/L	12.8			10.6
Mn-D	mg/L	0.0059			0.0034
Mo-D	mg/L	<0.0010			<0.0010
Ni-D	mg/L	<0.0010			<0.0010
K-D	mg/L	2.59			2.60
S-D	mg/L	129			113
Se-D	mg/L	<0.00010			<0.00010
Si-D	mg/L	3.18			2.58
Na-D	mg/L	206			225
Sr-D	mg/L	0.808			0.748
Zn-D	mg/L	<0.0050			<0.0050

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 10 Settling Pond #1 - Authorized Discharge Location for South Mine Water 1 Page(s)

EMS ID	E218582	Stn Std PL-S														
Site Description	Settling Pond #1 - Authorized Discharge Location for South Mine Water															
Date		Max	Min	04-01-2023	09-01-2023	16-01-2023	23-01-2023	31-01-2023	06-02-2023	13-02-2023	21-02-2023	27-02-2023	06-03-2023	13-03-2023	20-03-2023	27-03-2023
pH-F	pH Units	8.5	6.0	7.34	7.05	7.12	7.18	7.62	6.51	7.37	8.12	7.67	7.19	7.54	7.62	8.19
Cond-F	uS/cm			786	370	573	517	726	270	335	673	803	701.4	410	870	824
SO4-D	mg/L			360	120	180	160	210	170	170	300	320	320	120	280	190
TSS	mg/L	25	0	1.2	<1.0	<1.0	2.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
Alk-T	mg/L			130					66				120			
Acidity83	mg/L			2.6					2.0				4.1			
Al-T	mg/L			0.0404									0.0155			
As-T	mg/L			0.00347									0.00171			
Ba-T	mg/L			0.0109									0.0123			
B-T	mg/L			0.268									0.188			
Cd-T	mg/L			<0.000010									<0.000010			
Ca-T	mg/L			140									110			
Cr-T	mg/L			<0.0010									<0.0010			
Co-T	mg/L			<0.00020									0.00023			
Cu-T	mg/L			<0.00050									<0.00050			
Hard-T	mg/L			411									333			
Fe-T	mg/L			0.147									0.231			
Pb-T	mg/L			<0.00020									<0.00020			
Mg-T	mg/L			14.8									13.9			
Mn-T	mg/L			0.0392									0.0426			
Mo-T	mg/L			<0.0010									<0.0010			
Ni-T	mg/L			<0.0010									<0.0010			
K-T	mg/L			1.51									1.13			
S-T	mg/L			122									103			
Se-T	mg/L			<0.00010									<0.00010			
Si-T	mg/L			3.12									2.95			
Ag-T	mg/L			<0.000020									<0.000020			
Na-T	mg/L			49.5									32.4			
Sr-T	mg/L			0.916									0.715			
Zn-T	mg/L			<0.0050									<0.0050			
Al-D	mg/L	0.5	0	0.0238					0.0314				0.0059			
As-D	mg/L			0.00352					0.00087				0.00353			
Ba-D	mg/L			0.0112					0.0063				0.0108			
B-D	mg/L			0.276					0.104				0.259			
Be-D	mg/L			<0.00010					<0.00010				<0.00010			
Cd-D	mg/L			<0.000010					<0.000010				<0.000010			
Ca-D	mg/L			143					66.1				127			
Cr-D	mg/L			<0.0010					<0.0010				<0.0010			
Co-D	mg/L			<0.00020					<0.00020				<0.00020			
Cu-D	mg/L	0.02	0	0.00028					0.00046				<0.00020			
Hard-D	mg/L			417					197				377			
Fe-D	mg/L	0.5	0	0.0550					0.127				0.0201			
Pb-D	mg/L	0.05	0	<0.00020					<0.00020				<0.00020			
Mg-D	mg/L			14.6					7.75				14.6			
Mn-D	mg/L			0.0359					0.0288				0.0489			
Mo-D	mg/L			<0.0010					<0.0010				<0.0010			
Ni-D	mg/L			<0.0010					<0.0010				<0.0010			
K-D	mg/L			1.56					0.609				1.43			
S-D	mg/L			126					54.2				121			
Se-D	mg/L			<0.00010					<0.00010				<0.00010			
Si-D	mg/L			2.87					3.39				2.22			
Na-D	mg/L			52.8					12.7				47.7			
Sr-D	mg/L			0.964					0.411				0.832			
Zn-D	mg/L	0.2	0	<0.0050					<0.0050				<0.0050			
O&G	mg/L	10	0						<1.0							

Table 11 Passive Treatment System (PTS) Influent for Biocell 1 Page(s)

Site Description		Passive Treatment System (PTS) Influent from 2-S Mine Pool													
Site Name		INF													
Date		04-01-2023	09-01-2023	16-01-2023	23-01-2023	31-01-2023	06-02-2023	13-02-2023	21-02-2023	27-02-2023	06-03-2023	13-03-2023	20-03-2023	27-03-2023	27-03-2023
pH-F	pH Units	7.16	7.22	7.27	7.13	7.12	6.93	7.28	7.38	6.94	7.06	6.89	6.67	7.38	7.38
Cond-F	uS/cm	1435	1350	1290	1324	1346	1402	1331	1369	1522	1490.2	1740	1640	1544	1544
H2S	mg/L	<0.0020	<0.0020	<0.0020	0.019	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020		
SO4-D	mg/L	580	570	540	500	520	590	610	610	660	680	690	650	680	680
TSS	mg/L	6.8					7.2				8.0				
Alk-T	mg/L	250					240				240				
Acidity83	mg/L	8.1					7.7				17.9				
Al-T	mg/L	0.0512					0.0219				0.0061				
As-T	mg/L	0.00481					0.00383				0.00300				
Ba-T	mg/L	0.0196					0.0238				0.0211				
B-T	mg/L	0.630					0.70				0.68				
Cd-T	mg/L	<0.000010					<0.000020				<0.000020				
Ca-T	mg/L	230					241				237				
Cr-T	mg/L	<0.0010					<0.0020				<0.0020				
Co-T	mg/L	0.00109					0.00152				0.00106				
Cu-T	mg/L	0.00167					<0.0010				<0.0010				
Hard-T	mg/L	635					666				662				
Fe-T	mg/L	3.54					3.55				2.68				
Pb-T	mg/L	<0.00020					<0.00040				<0.00040				
Mg-T	mg/L	15.0					15.7				17.2				
Mn-T	mg/L	0.356					0.425				0.347				
Mo-T	mg/L	<0.0010					<0.0020				<0.0020				
Ni-T	mg/L	0.0022					0.0029				<0.0020				
K-T	mg/L	1.94					1.80				1.84				
S-T	mg/L	194					219				226				
Se-T	mg/L	<0.00010					<0.00020				<0.00020				
Si-T	mg/L	3.71					3.60				3.07				
Ag-T	mg/L	<0.000020					<0.000040				<0.000040				
Na-T	mg/L	98.2					107				104				
Sr-T	mg/L	2.05					2.31				2.10				
Zn-T	mg/L	<0.0050					<0.010				<0.010				
Al-D	mg/L	0.0102					0.0100				<0.0060				
As-D	mg/L	0.00428					0.00349				0.00273				
Ba-D	mg/L	0.0193					0.0225				0.0215				
B-D	mg/L	0.615					0.641				0.62				
Be-D	mg/L	<0.00010					<0.00010				<0.00020				
Cd-D	mg/L	<0.000010					<0.000010				<0.000020				
Ca-D	mg/L	223					236				235				
Cr-D	mg/L	<0.0010					<0.0010				<0.0020				
Co-D	mg/L	0.00109					0.00143				0.00116				
Cu-D	mg/L	<0.00020					<0.00020				<0.00040				
Hard-D	mg/L	618					646				664				
Fe-D	mg/L	3.39					3.25				2.73				
Pb-D	mg/L	<0.00020					<0.00020				<0.00040				
Mg-D	mg/L	14.6					14.2				18.7				
Mn-D	mg/L	0.351					0.398				0.363				
Mo-D	mg/L	<0.0010					<0.0010				<0.0020				
Ni-D	mg/L	0.0022					0.0024				<0.0020				
K-D	mg/L	1.87					1.83				1.90				
S-D	mg/L	188					207				230				
Se-D	mg/L	0.00044					<0.00010				<0.00020				
Si-D	mg/L	3.65					3.57				2.86				
Na-D	mg/L	96.7					99.0				115				
Sr-D	mg/L	1.99					2.23				1.98				
Zn-D	mg/L	<0.0050					<0.0050				<0.010				

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 12 PTS Biochemical Reactor Cell 1 Page(s)

Site Description		Passive Treatment System Biochemical Reactor Cell													
Site Name		BCR													
Date		04-01-2023	09-01-2023	16-01-2023	23-01-2023	31-01-2023	06-02-2023	13-02-2023	21-02-2023	27-02-2023	27-02-2023	06-03-2023	13-03-2023	20-03-2023	27-03-2023
pH-F	pH Units	7.23	7.38	7.21	7.15	7.3	7.03	7.31	7.41	7.14	7.14	7.03	6.99	7.14	7.42
Cond-F	uS/cm	1468	1482	1380	1319	1228	1275	1217	1248	1389	1389	878.1	1640	1610	1499
H2S	mg/L	19	18	26	18	17	9.5	9.4	12	10	10	8.4	8.2		
SO4-D	mg/L	500	490	460	410	400	470	490	490	540	530	540	640	590	600
TSS	mg/L	1.2					<1.0					<1.0			
Alk-T	mg/L	330					260					240			
Acidity83	mg/L	8.4					4.9					14.1			
Al-T	mg/L	0.0049					0.0050					<0.0060			
As-T	mg/L	0.00014					<0.00010					<0.00020			
Ba-T	mg/L	0.0240					0.0224					0.0256			
B-T	mg/L	0.558					0.569					0.61			
Cd-T	mg/L	<0.000010					<0.000010					<0.000020			
Ca-T	mg/L	229					211					231			
Cr-T	mg/L	<0.0010					<0.0010					<0.0020			
Co-T	mg/L	<0.00020					<0.00020					<0.00040			
Cu-T	mg/L	<0.00050					<0.00050					<0.0010			
Hard-T	mg/L	636					583					644			
Fe-T	mg/L	<0.010					0.013					0.022			
Pb-T	mg/L	<0.00020					<0.00020					<0.00040			
Mg-T	mg/L	15.4					13.5					16.4			
Mn-T	mg/L	0.327					0.455					0.457			
Mo-T	mg/L	<0.0010					<0.0010					<0.0020			
Ni-T	mg/L	<0.0010					<0.0010					<0.0020			
K-T	mg/L	1.76					1.71					1.72			
S-T	mg/L	168					172					208			
Se-T	mg/L	<0.00010					<0.00010					<0.00020			
Si-T	mg/L	4.03					3.86					3.29			
Ag-T	mg/L	<0.000020					<0.000020					<0.000040			
Na-T	mg/L	100					89.9					105			
Sr-T	mg/L	2.02					2.05					2.07			
Zn-T	mg/L	<0.0050					<0.0050					<0.010			
Al-D	mg/L	<0.0060					<0.0060					<0.0060			
As-D	mg/L	<0.00020					<0.00020					<0.00020			
Ba-D	mg/L	0.0236					0.0215					0.0243			
B-D	mg/L	0.59					0.58					0.54			
Be-D	mg/L	<0.00020					<0.00020					<0.00020			
Cd-D	mg/L	<0.000020					<0.000020					<0.000020			
Ca-D	mg/L	235					201					218			
Cr-D	mg/L	<0.0020					<0.0020					<0.0020			
Co-D	mg/L	<0.00040					<0.00040					<0.00040			
Cu-D	mg/L	<0.00040					<0.00040					<0.00040			
Hard-D	mg/L	661					590					616			
Fe-D	mg/L	<0.010					0.014					0.023			
Pb-D	mg/L	<0.00040					<0.00040					<0.00040			
Mg-D	mg/L	18.3					13.3					17.1			
Mn-D	mg/L	0.340					0.440					0.445			
Mo-D	mg/L	<0.0020					<0.0020					<0.0020			
Ni-D	mg/L	<0.0020					<0.0020					<0.0020			
K-D	mg/L	1.96					1.55					1.71			
S-D	mg/L	288					237					213			
Se-D	mg/L	0.00545					0.0130					0.00074			
Si-D	mg/L	4.09					3.77					2.92			
Na-D	mg/L	111					85.6					110			
Sr-D	mg/L	1.94					1.90					1.84			
Zn-D	mg/L	<0.010					<0.010					<0.010			

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 13 PTS Sulphide Polishing Cell 1 Page(s)

Site Description		Passive Treatment System Sulphide Polishing Cell													
Site Name		SPCEFF													
Date		04-01-2023	09-01-2023	09-01-2023	16-01-2023	23-01-2023	31-01-2023	06-02-2023	13-02-2023	21-02-2023	27-02-2023	06-03-2023	13-03-2023	20-03-2023	27-03-2023
pH-F	pH Units	7.5	7.76	7.76	8.29	7.71	7.38	7.35	7.99	7.98	7.47	7.16	7.2	6.98	7.8
Cond-F	uS/cm	1169	1284	1284	937	1150	1233	1314	1125	1154	1316	792.8	1610	1580	1589
H2S	mg/L		0.92	1.1	0.0045	0.0034	9.5	0.12	0.031	0.0023	0.022	0.57			
SO4-D	mg/L	270	350	340	280	280	410	390	380	380	430	430	540	550	570
TSS	mg/L	1.6						<1.0				<1.0			
Alk-T	mg/L	400						310				240			
Acidity83	mg/L	13.6						2.9				12.8			
Al-T	mg/L	0.0087						0.0074				0.0117			
As-T	mg/L	0.00120						0.00060				0.00055			
Ba-T	mg/L	0.0258						0.0233				0.0257			
B-T	mg/L	0.442						0.507				0.57			
Cd-T	mg/L	<0.000010						<0.000010				<0.000020			
Ca-T	mg/L	185						192				209			
Cr-T	mg/L	<0.0010						<0.0010				<0.0020			
Co-T	mg/L	<0.00020						<0.00020				<0.00040			
Cu-T	mg/L	<0.00050						0.00060				0.0027			
Hard-T	mg/L	517						534				585			
Fe-T	mg/L	0.167						0.415				0.389			
Pb-T	mg/L	<0.00020						<0.00020				<0.00040			
Mg-T	mg/L	13.1						13.0				15.5			
Mn-T	mg/L	0.0673						0.221				0.288			
Mo-T	mg/L	<0.0010						<0.0010				<0.0020			
Ni-T	mg/L	<0.0010						<0.0010				<0.0020			
K-T	mg/L	1.48						1.53				1.58			
S-T	mg/L	93.4						140				177			
Se-T	mg/L	<0.00010						<0.00010				<0.00020			
Si-T	mg/L	4.00						3.84				3.37			
Ag-T	mg/L	<0.000020						<0.000020				<0.000040			
Na-T	mg/L	86.7						84.2				97.3			
Sr-T	mg/L	1.66						1.83				1.87			
Zn-T	mg/L	<0.0050						<0.0050				0.154			
Al-D	mg/L	0.0049						0.0042				0.0047			
As-D	mg/L	0.00099						0.00049				0.00036			
Ba-D	mg/L	0.0249						0.0236				0.0251			
B-D	mg/L	0.398						0.515				0.477			
Be-D	mg/L	<0.00010						<0.00010				<0.00010			
Cd-D	mg/L	<0.000010						<0.000010				<0.000010			
Ca-D	mg/L	181						197				206			
Cr-D	mg/L	<0.0010						<0.0010				<0.0010			
Co-D	mg/L	<0.00020						<0.00020				<0.00020			
Cu-D	mg/L	<0.00020						<0.00020				<0.00020			
Hard-D	mg/L	509						545				580			
Fe-D	mg/L	0.0269						0.0481				0.234			
Pb-D	mg/L	<0.00020						<0.00020				<0.00020			
Mg-D	mg/L	14.0						13.1				16.1			
Mn-D	mg/L	0.0654						0.225				0.292			
Mo-D	mg/L	<0.0010						<0.0010				<0.0010			
Ni-D	mg/L	<0.0010						<0.0010				<0.0010			
K-D	mg/L	1.45						1.56				1.67			
S-D	mg/L	124						144				182			
Se-D	mg/L	0.00375						0.00039				0.00013			
Si-D	mg/L	3.89						3.96				3.12			
Na-D	mg/L	88.1						84.3				101			
Sr-D	mg/L	1.57						1.89				1.74			
Zn-D	mg/L	<0.0050						<0.0050				<0.0050			

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 14 2 South Pit Inflow 1 Page(s)

Site Description		2 South Pit Inflow														
Site Name		2SI														
Date		04-01-2023	09-01-2023	16-01-2023	23-01-2023	31-01-2023	31-01-2023	06-02-2023	13-02-2023	21-02-2023	27-02-2023	06-03-2023	13-03-2023	20-03-2023	20-03-2023	27-03-2023
pH-F	pH Units	7.26	7.43	7.67	7.33	7.59	7.59	7.52	7.73	7.83	7.63	7.64	7.39	7.19	7.19	7.8
Cond-F	uS/cm	683	673	901		969	969	1104	953	1025	1196	1152.7	1190	1100	1100	1361
H2S	mg/L	0.019	0.0093	0.029	0.0040			0.018		0.015	0.014	0.0064	0.0069	<0.0020	<0.0020	0.019
SO4-D	mg/L	320	220	300	220	350	350	340	370	410	450	460	390	390	390	480
TSS	mg/L	<1.0						<1.0				<1.0				
Alk-T	mg/L	150						170				170				
Acidity83	mg/L	1.7						2.9				4.6				
Al-T	mg/L	0.0178						0.0083				0.0056				
As-T	mg/L	0.00016						0.00020				0.00020				
Ba-T	mg/L	0.0159						0.0167				0.0196				
B-T	mg/L	0.296						0.397				0.449				
Cd-T	mg/L	<0.000010						<0.000010				<0.000010				
Ca-T	mg/L	134						143				180				
Cr-T	mg/L	<0.0010						<0.0010				<0.0010				
Co-T	mg/L	0.00026						<0.00020				<0.00020				
Cu-T	mg/L	<0.00050						<0.00050				<0.00050				
Hard-T	mg/L	380						402				508				
Fe-T	mg/L	0.104						0.064				0.104				
Pb-T	mg/L	<0.00020						<0.00020				<0.00020				
Mg-T	mg/L	11.4						10.8				14.1				
Mn-T	mg/L	0.0418						0.0560				0.0915				
Mo-T	mg/L	<0.0010						<0.0010				<0.0010				
Ni-T	mg/L	0.0014						<0.0010				<0.0010				
K-T	mg/L	0.944						1.04				1.38				
S-T	mg/L	105						123				170				
Se-T	mg/L	<0.00010						<0.00010				<0.00010				
Si-T	mg/L	4.19						3.52				3.52				
Ag-T	mg/L	<0.000020						<0.000020				<0.000020				
Na-T	mg/L	46.7						58.0				75.8				
Sr-T	mg/L	0.959						1.28				1.50				
Zn-T	mg/L	<0.0050						<0.0050				<0.0050				
Al-D	mg/L	0.0089						0.0064				0.0037				
As-D	mg/L	0.00017						0.00019				<0.00010				
Ba-D	mg/L	0.0162						0.0181				0.0189				
B-D	mg/L	0.304						0.376				0.377				
Be-D	mg/L	<0.00010						<0.00010				<0.00010				
Cd-D	mg/L	<0.000010						<0.000010				<0.000010				
Ca-D	mg/L	136						154				171				
Cr-D	mg/L	<0.0010						<0.0010				<0.0010				
Co-D	mg/L	<0.00020						<0.00020				<0.00020				
Cu-D	mg/L	0.00034						0.00094				0.00024				
Hard-D	mg/L	388						430				486				
Fe-D	mg/L	0.0533						0.0442				0.0707				
Pb-D	mg/L	<0.00020						<0.00020				<0.00020				
Mg-D	mg/L	11.6						11.1				14.2				
Mn-D	mg/L	0.0361						0.0597				0.0866				
Mo-D	mg/L	<0.0010						<0.0010				<0.0010				
Ni-D	mg/L	<0.0010						<0.0010				<0.0010				
K-D	mg/L	0.988						1.18				1.33				
S-D	mg/L	106						131				164				
Se-D	mg/L	<0.00010						<0.00010				<0.00010				
Si-D	mg/L	3.98						3.86				3.16				
Na-D	mg/L	49.4						60.2				75.4				
Sr-D	mg/L	1.02						1.36				1.37				
Zn-D	mg/L	<0.0050						<0.0050				<0.0050				

Table 15 2-South Pit in Pit Water Cover Over PAG-CCR 1 Page(s)

EMS ID		E292127		
Site Description		2-South Pit in Pit Water Cover Over PAG-CCR		
Site Name		2S		
Date		09-01-2023	06-02-2023	13-03-2023
pH-F	pH Units	8.08	7.83	7.89
Cond-F	uS/cm	132.3	920	480
SO4-D	mg/L	50	300	250
TSS	mg/L		4.0	<1.0
Alk-T	mg/L	30	140	96
Acidity83	mg/L	<1.0	1.2	1.1
Al-T	mg/L	0.0139	0.0375	0.0052
As-T	mg/L	<0.00010	0.00022	0.00014
Ba-T	mg/L	0.0045	0.0143	0.0125
B-T	mg/L	0.056	0.297	0.287
Cd-T	mg/L	<0.000010	<0.000010	<0.000010
Ca-T	mg/L	29.7	118	105
Cr-T	mg/L	<0.0010	<0.0010	<0.0010
Co-T	mg/L	<0.00020	<0.00020	<0.00020
Cu-T	mg/L	<0.00050	0.00058	<0.00050
Hard-T	mg/L	83.5	333	297
Fe-T	mg/L	0.017	0.120	0.023
Pb-T	mg/L	<0.00020	<0.00020	<0.00020
Mg-T	mg/L	2.27	9.45	8.80
Mn-T	mg/L	0.0068	0.0147	0.0122
Mo-T	mg/L	<0.0010	<0.0010	<0.0010
Ni-T	mg/L	<0.0010	<0.0010	<0.0010
K-T	mg/L	0.253	0.861	0.834
S-T	mg/L	20.8	99.0	97.9
Se-T	mg/L	<0.00010	<0.00010	<0.00010
Si-T	mg/L	0.68	3.12	2.17
Ag-T	mg/L	<0.000020	<0.000020	<0.000020
Na-T	mg/L	10.2	44.7	46.5
Sr-T	mg/L	0.232	0.974	0.906
Zn-T	mg/L	<0.0050	<0.0050	<0.0050
Al-D	mg/L	0.0039	0.0045	<0.0030
As-D	mg/L	<0.00010	0.00016	0.00013
Ba-D	mg/L	0.0048	0.0156	0.0090
B-D	mg/L	0.060	0.311	0.212
Be-D	mg/L	<0.00010	<0.00010	<0.00010
Cd-D	mg/L	<0.000010	<0.000010	<0.000010
Ca-D	mg/L	34.8	130	76.9
Cr-D	mg/L	<0.0010	<0.0010	<0.0010
Co-D	mg/L	<0.00020	<0.00020	<0.00020
Cu-D	mg/L	0.00047	0.00034	<0.00020
Hard-D	mg/L	96.6	369	218
Fe-D	mg/L	0.0057	0.0098	0.0052
Pb-D	mg/L	<0.00020	<0.00020	<0.00020
Mg-D	mg/L	2.35	10.6	6.32
Mn-D	mg/L	0.0041	0.0119	0.0082
Mo-D	mg/L	<0.0010	<0.0010	<0.0010
Ni-D	mg/L	<0.0010	<0.0010	<0.0010
K-D	mg/L	0.338	0.967	0.645
S-D	mg/L	23.4	112	71.4
Se-D	mg/L	<0.00010	<0.00010	<0.00010
Si-D	mg/L	0.76	3.40	1.64
Na-D	mg/L	10.4	49.6	34.2
Sr-D	mg/L	0.239	1.09	0.668
Zn-D	mg/L	<0.0050	<0.0050	<0.0050

Table 16 2-South Outflow Culvert into 3-South Pit 1 Page(s)

EMS ID				
Site Description 2-South Outflow Culvert into 3-South Pit				
Site Name 2SC				
Date		04-01-2023	06-02-2023	06-03-2023
pH-F	pH Units	7.96	7.86	7.96
Cond-F	uS/cm	1481	1413	1351
SO4-D	mg/L	720	650	610
Alk-T	mg/L	200	190	190
Acidity83	mg/L	2.4	1.5	3.9
Al-T	mg/L	<0.0060	<0.0060	0.0108
As-T	mg/L	0.00023	0.00020	0.00026
Ba-T	mg/L	0.0142	0.0124	0.0119
B-T	mg/L	0.33	0.30	0.30
Cd-T	mg/L	<0.000020	<0.000020	<0.000020
Ca-T	mg/L	298	262	240
Cr-T	mg/L	<0.0020	<0.0020	<0.0020
Co-T	mg/L	<0.00040	<0.00040	<0.00040
Cu-T	mg/L	<0.0010	<0.0010	<0.0010
Hard-T	mg/L	880	774	721
Fe-T	mg/L	<0.020	<0.020	0.024
Pb-T	mg/L	<0.00040	<0.00040	<0.00040
Mg-T	mg/L	32.8	29.2	29.4
Mn-T	mg/L	0.0077	0.0047	0.0048
Mo-T	mg/L	<0.0020	<0.0020	<0.0020
Ni-T	mg/L	<0.0020	<0.0020	<0.0020
K-T	mg/L	2.12	1.84	1.94
S-T	mg/L	228	218	210
Se-T	mg/L	0.00042	0.00021	0.00022
Si-T	mg/L	2.31	2.07	2.28
Ag-T	mg/L	<0.000040	<0.000040	<0.000040
Na-T	mg/L	34.0	31.6	36.0
Sr-T	mg/L	1.53	1.49	1.32
Zn-T	mg/L	<0.010	<0.010	<0.010
Al-D	mg/L	<0.0060	<0.0030	<0.0060
As-D	mg/L	0.00023	0.00021	<0.00020
Ba-D	mg/L	0.0138	0.0129	0.0118
B-D	mg/L	0.30	0.285	0.28
Be-D	mg/L	<0.00020	<0.00010	<0.00020
Cd-D	mg/L	<0.000020	<0.000010	<0.000020
Ca-D	mg/L	290	272	247
Cr-D	mg/L	<0.0020	<0.0010	<0.0020
Co-D	mg/L	<0.00040	<0.00020	<0.00040
Cu-D	mg/L	<0.00040	<0.00020	<0.00040
Hard-D	mg/L	853	795	753
Fe-D	mg/L	<0.010	<0.0050	<0.010
Pb-D	mg/L	<0.00040	<0.00020	<0.00040
Mg-D	mg/L	31.3	28.2	32.7
Mn-D	mg/L	0.0070	0.0041	0.0047
Mo-D	mg/L	<0.0020	<0.0010	<0.0020
Ni-D	mg/L	<0.0020	<0.0010	<0.0020
K-D	mg/L	2.04	2.03	2.02
S-D	mg/L	219	223	220
Se-D	mg/L	0.00096	0.00030	0.00025
Si-D	mg/L	2.35	2.66	2.19
Na-D	mg/L	32.5	31.5	40.1
Sr-D	mg/L	1.50	1.59	1.27
Zn-D	mg/L	<0.010	<0.0050	<0.010

Table 17 3-South Pit Water Cover Over PAG-CCR 1 Page(s)

EMS ID		E217015		
Site Description		3-South Pit Water Cover Over PAG-CCR		
Site Name		3S		
Date		04-01-2023	06-02-2023	06-03-2023
pH-F	pH Units	7.88	7.86	7.63
Cond-F	uS/cm	1349	1301	1040.1
SO4-D	mg/L	560	610	490
Alk-T	mg/L	180	170	170
Acidity83	mg/L	1.9	2.2	4.5
Al-T	mg/L	0.0092		0.0032
As-T	mg/L	0.00027		0.00071
Ba-T	mg/L	0.0137		0.0108
B-T	mg/L	0.289		0.246
Cd-T	mg/L	<0.000010		<0.000010
Ca-T	mg/L	254		191
Cr-T	mg/L	<0.0010		<0.0010
Co-T	mg/L	<0.00020		<0.00020
Cu-T	mg/L	<0.00050		<0.00050
Hard-T	mg/L	744		575
Fe-T	mg/L	0.020		0.038
Pb-T	mg/L	<0.00020		<0.00020
Mg-T	mg/L	26.4		24.0
Mn-T	mg/L	0.0122		0.0411
Mo-T	mg/L	<0.0010		0.0016
Ni-T	mg/L	<0.0010		<0.0010
K-T	mg/L	2.10		1.64
S-T	mg/L	202		163
Se-T	mg/L	0.00029		0.00014
Si-T	mg/L	2.73		2.32
Ag-T	mg/L	<0.000020		<0.000020
Na-T	mg/L	37.7		28.5
Sr-T	mg/L	1.41		1.08
Zn-T	mg/L	<0.0050		<0.0050
Al-D	mg/L	0.0032		<0.0030
As-D	mg/L	0.00024		0.00056
Ba-D	mg/L	0.0130		0.0103
B-D	mg/L	0.271		0.209
Be-D	mg/L	<0.00010		<0.00010
Cd-D	mg/L	<0.000010		<0.000010
Ca-D	mg/L	237		185
Cr-D	mg/L	<0.0010		<0.0010
Co-D	mg/L	<0.00020		0.00021
Cu-D	mg/L	0.00023		0.00021
Hard-D	mg/L	694		564
Fe-D	mg/L	<0.0050		0.0175
Pb-D	mg/L	<0.00020		<0.00020
Mg-D	mg/L	24.6		24.6
Mn-D	mg/L	0.0133		0.0407
Mo-D	mg/L	<0.0010		0.0013
Ni-D	mg/L	<0.0010		<0.0010
K-D	mg/L	1.99		1.63
S-D	mg/L	185		162
Se-D	mg/L	0.00064		0.00018
Si-D	mg/L	2.58		2.12
Na-D	mg/L	35.6		30.1
Sr-D	mg/L	1.33		0.996
Zn-D	mg/L	<0.0050		<0.0050

Table 18 Culvert Downstream End at Access Road 1 Page(s)

EMS ID		E217014			
Site Description		Culvert Downstream End at Access Road			
Site Name		SPC			
Date		04-Jan-23	06-Feb-23	06-Mar-23	06-03-2023
pH-F	pH Units	7.48	7.35	7.79	7.79
Cond-F	uS/cm	521	416	525	525
SO4-D	mg/L	190	150	190	190
TSS	mg/L	<1.0	<1.0	<1.0	<1.0
Alk-T	mg/L	54	49	63	64
Acidity83	mg/L	1.6	<1.0	1.2	<1.0
Al-T	mg/L	0.0602		0.0364	0.0380
As-T	mg/L	0.00029		0.00031	0.00030
Ba-T	mg/L	0.0110		0.0111	0.0113
B-T	mg/L	0.103		0.096	0.097
Cd-T	mg/L	<0.000010		<0.000010	<0.000010
Ca-T	mg/L	70.4		68.1	71.4
Cr-T	mg/L	<0.0010		<0.0010	0.0012
Co-T	mg/L	<0.00020		<0.00020	<0.00020
Cu-T	mg/L	<0.00050		<0.00050	<0.00050
Hard-T	mg/L	211		206	216
Fe-T	mg/L	0.065		0.046	0.053
Pb-T	mg/L	<0.00020		<0.00020	<0.00020
Mg-T	mg/L	8.50		8.80	9.04
Mn-T	mg/L	0.0016		0.0015	0.0016
Mo-T	mg/L	<0.0010		<0.0010	<0.0010
Ni-T	mg/L	<0.0010		<0.0010	0.0011
K-T	mg/L	0.812		0.679	0.700
S-T	mg/L	60.5		61.5	64.3
Se-T	mg/L	<0.00010		<0.00010	<0.00010
Si-T	mg/L	3.33		2.86	2.96
Ag-T	mg/L	<0.000020		<0.000020	<0.000020
Na-T	mg/L	20.7		19.1	19.7
Sr-T	mg/L	0.409		0.431	0.430
Zn-T	mg/L	<0.0050		<0.0050	<0.0050
Al-D	mg/L	0.0468		0.0344	0.0342
As-D	mg/L	0.00029		0.00020	0.00021
Ba-D	mg/L	0.0111		0.0108	0.0110
B-D	mg/L	0.105		0.094	0.091
Be-D	mg/L	<0.00010		<0.00010	<0.00010
Cd-D	mg/L	<0.000010		<0.000010	<0.000010
Ca-D	mg/L	69.0		69.4	69.2
Cr-D	mg/L	<0.0010		<0.0010	<0.0010
Co-D	mg/L	<0.00020		<0.00020	<0.00020
Cu-D	mg/L	0.00041		0.00034	0.00037
Hard-D	mg/L	207		212	211
Fe-D	mg/L	0.0532		0.0397	0.0403
Pb-D	mg/L	<0.00020		<0.00020	<0.00020
Mg-D	mg/L	8.48		9.28	9.41
Mn-D	mg/L	0.0015		0.0013	0.0013
Mo-D	mg/L	<0.0010		<0.0010	<0.0010
Ni-D	mg/L	<0.0010		<0.0010	<0.0010
K-D	mg/L	0.834		0.694	0.696
S-D	mg/L	60.0		63.3	64.4
Se-D	mg/L	<0.00010		<0.00010	<0.00010
Si-D	mg/L	3.22		2.78	2.77
Na-D	mg/L	20.5		20.2	20.5
Sr-D	mg/L	0.404		0.400	0.400
Zn-D	mg/L	<0.0050		<0.0050	<0.0050

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 19 South End Mine Water Entering Long Lake Near the Outlet 1 Page(s)

EMS ID	E292130	Stn Std	Max-WQG														
Site Description	South End Mine Water Entering Long Lake Near the Outlet																
Site Name	LLE	Std Val															
Date		Max	04-01-2023	09-01-2023	16-01-2023	23-01-2023	23-01-2023	31-01-2023	06-02-2023	13-02-2023	21-02-2023	21-02-2023	27-02-2023	06-03-2023	13-03-2023	20-03-2023	27-03-2023
pH-F	pH Units		6.83	7.45	7.44	7	7	7.4	7.02	7.2	7.5	7.5	6.68	7.47	7.83	7.65	7.63
Cond-F	uS/cm		454	294	329	443	443	447	359	232	340	340	353	455	530	590	447
SO4-D	mg/L		160	95	110	130	140	170	130	90	120	120	130	170	140	160	150
TSS	mg/L	25	1.6						<1.0					<1.0			
DOC	mg/L		4.9						4.3					3.9			
Alk-T	mg/L		47						41					53			
Acidity83	mg/L		<1.0						<1.0					2.5			
N-NH3	mg/L	12.9	<0.015						<0.015					<0.015			
N-NO23	mg/L		0.040						0.036					0.066			
P-T	mg/L		0.0046						0.0032					0.0041			
Al-T	mg/L		0.0828						0.0641					0.0409			
As-T	mg/L	0.005	0.00064						0.00058					0.00045			
Ba-T	mg/L		0.0143						0.0130					0.0146			
B-T	mg/L		0.106						0.078					0.098			
Cd-T	mg/L		<0.000010						<0.000010					<0.000010			
Ca-T	mg/L		59.5						48.8					60.8			
Cr-T	mg/L		<0.0010						<0.0010					<0.0010			
Co-T	mg/L	0.11	<0.00020						<0.00020					<0.00020			
Cu-T	mg/L		<0.00050						<0.00050					<0.00050			
Hard-T	mg/L		179						147					186			
Fe-T	mg/L	1.0	0.115						0.161					0.345			
Pb-T	mg/L	0.01763	<0.00020						<0.00020					<0.00020			
Mg-T	mg/L		7.30						6.00					8.24			
Mn-T	mg/L	0.8706	0.0089						0.0140					0.0295			
Mo-T	mg/L	2.0	<0.0010						<0.0010					<0.0010			
Ni-T	mg/L		<0.0010						0.0019					<0.0010			
K-T	mg/L		0.722						0.478					0.620			
S-T	mg/L		51.3						43.3					56.4			
Se-T	mg/L		<0.00010						<0.00010					<0.00010			
Si-T	mg/L		3.34						3.18					3.12			
Ag-T	mg/L	0.0001	<0.000020						<0.000020					<0.000020			
Na-T	mg/L		17.1						11.5					16.9			
Sr-T	mg/L		0.336						0.307					0.368			
Zn-T	mg/L	0.033	<0.0050						<0.0050					<0.0050			
Al-D	mg/L	0.1	0.0374						0.0333					0.0232			
As-D	mg/L		0.00055						0.00052					0.00032			
Ba-D	mg/L		0.0143						0.0132					0.0147			
B-D	mg/L		0.086						0.086					0.085			
Be-D	mg/L		<0.00010						<0.00010					<0.00010			
Cd-D	mg/L	0.00017	<0.000010						<0.000010					<0.000010			
Ca-D	mg/L		58.7						49.4					59.6			
Cr-D	mg/L		<0.0010						<0.0010					<0.0010			
Co-D	mg/L		<0.00020						<0.00020					<0.00020			
Cu-D	mg/L	0.0073	0.00043						0.00036					0.00038			
Hard-D	mg/L		177						149					184			
Fe-D	mg/L	0.35	0.0740						0.124					0.343			
Pb-D	mg/L		<0.00020						<0.00020					<0.00020			
Mg-D	mg/L		7.30						6.15					8.63			
Mn-D	mg/L		0.0086						0.0137					0.0305			
Mo-D	mg/L		<0.0010						<0.0010					<0.0010			
Ni-D	mg/L		<0.0010						<0.0010					<0.0010			
K-D	mg/L		0.716						0.500					0.636			
S-D	mg/L		51.0						44.9					56.7			
Se-D	mg/L		<0.00010						<0.00010					<0.00010			
Si-D	mg/L		3.22						3.19					2.79			
Na-D	mg/L		16.8						11.9					17.8			
Sr-D	mg/L		0.336						0.317					0.343			
Zn-D	mg/L	0.033	<0.0050						<0.0050					<0.0050			

Table 20 Seep into Long Lake 1 Page(s)

EMS ID	E292131	Max-WQG			
Site Description		Seep into Long Lake			
Site Name	LLS	Std Val			
Date		Max	12-01-2023	06-02-2023	06-03-2023
pH-F	pH Units		7.02	6.91	7.32
Cond-F	uS/cm		1209	1305	1302
SO4-D	mg/L		470	500	500
TSS	mg/L	25	6.0	3.2	2.4
Alk-T	mg/L		160	180	200
Acidity83	mg/L		14.2	9.6	13.2
Al-T	mg/L		0.0609	0.0049	0.0076
As-T	mg/L	0.005	0.00242	0.00115	0.00167
Ba-T	mg/L		0.0169	0.0182	0.0171
B-T	mg/L		0.443	0.413	0.46
Cd-T	mg/L		0.000010	<0.000010	<0.000020
Ca-T	mg/L		172	203	197
Cr-T	mg/L		<0.0010	<0.0010	<0.0020
Co-T	mg/L	0.11	0.00184	0.00047	0.00055
Cu-T	mg/L		0.00102	<0.00050	<0.0010
Hard-T	mg/L		494	578	569
Fe-T	mg/L	1.0	1.12	0.441	0.680
Pb-T	mg/L	0.01763	<0.00020	<0.00020	<0.00040
Mg-T	mg/L		15.7	17.2	18.8
Mn-T	mg/L	0.8706	0.272	0.146	0.196
Mo-T	mg/L	2.0	<0.0010	<0.0010	<0.0020
Ni-T	mg/L		0.0050	0.0019	<0.0020
K-T	mg/L		2.07	2.12	2.06
S-T	mg/L		149	179	177
Se-T	mg/L		<0.00010	<0.00010	<0.00020
Si-T	mg/L		3.00	2.78	2.43
Ag-T	mg/L	0.0001	<0.000020	<0.000020	<0.000040
Na-T	mg/L		66.2	65.7	67.7
Sr-T	mg/L		1.62	1.86	1.69
Zn-T	mg/L	0.033	<0.0050	<0.0050	<0.010
Al-D	mg/L	0.1	0.0075	<0.0030	<0.0030
As-D	mg/L		0.00181	0.00096	0.00118
Ba-D	mg/L		0.0168	0.0181	0.0175
B-D	mg/L		0.453	0.409	0.402
Be-D	mg/L		<0.00010	<0.00010	<0.00010
Cd-D	mg/L	0.00017	<0.000010	<0.000010	<0.000010
Ca-D	mg/L		175	201	194
Cr-D	mg/L		<0.0010	<0.0010	<0.0010
Co-D	mg/L		0.00190	0.00046	0.00054
Cu-D	mg/L	0.0073	0.00038	<0.00020	0.00074
Hard-D	mg/L		507	573	568
Fe-D	mg/L	0.35	0.804	0.319	0.408
Pb-D	mg/L		<0.00020	<0.00020	<0.00020
Mg-D	mg/L		16.8	17.1	20.3
Mn-D	mg/L		0.274	0.141	0.199
Mo-D	mg/L		<0.0010	<0.0010	<0.0010
Ni-D	mg/L		0.0052	0.0019	0.0016
K-D	mg/L		2.17	2.13	2.29
S-D	mg/L		155	178	190
Se-D	mg/L		<0.00010	<0.00010	<0.00010
Si-D	mg/L		3.24	2.80	2.26
Na-D	mg/L		71.9	64.5	74.5
Sr-D	mg/L		1.56	1.86	1.63
Zn-D	mg/L	0.033	<0.0050	<0.0050	<0.0050

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 21 Long Lake Middle Seep 1 Page(s)

EMS ID		E292131			
Site Description		Long Lake Middle Seep			
Site Name	LLSM	Std Val			
Date		Max	12-01-2023	06-02-2023	06-03-2023
pH-F	pH Units		7.25	6.98	7.58
Cond-F	uS/cm		616	1181	1198
SO4-D	mg/L		220	400	450
TSS	mg/L	25	2.8	<1.0	<1.0
Alk-T	mg/L		47	150	170
Acidity83	mg/L		1.8	1.0	7.9
Al-T	mg/L		0.182	0.0105	0.0065
As-T	mg/L	0.005	0.00045	0.00027	0.00049
Ba-T	mg/L		0.0101	0.0185	0.0167
B-T	mg/L		0.147	0.342	0.387
Cd-T	mg/L		<0.000010	<0.000010	<0.000010
Ca-T	mg/L		76.6	165	175
Cr-T	mg/L		<0.0010	<0.0010	<0.0010
Co-T	mg/L	0.11	0.00065	<0.00020	0.00038
Cu-T	mg/L		0.00202	<0.00050	<0.00050
Hard-T	mg/L		229	476	510
Fe-T	mg/L	1.0	0.503	0.096	0.235
Pb-T	mg/L	0.01763	<0.00020	<0.00020	<0.00020
Mg-T	mg/L		9.07	15.4	17.5
Mn-T	mg/L	0.8706	0.0365	0.0370	0.113
Mo-T	mg/L	2.0	<0.0010	<0.0010	<0.0010
Ni-T	mg/L		0.0019	0.0012	0.0017
K-T	mg/L		1.02	1.90	2.02
S-T	mg/L		64.3	147	164
Se-T	mg/L		<0.00010	<0.00010	<0.00010
Si-T	mg/L		2.75	2.70	2.44
Ag-T	mg/L	0.0001	<0.000020	<0.000020	<0.000020
Na-T	mg/L		18.2	50.8	58.6
Sr-T	mg/L		0.548	1.50	1.51
Zn-T	mg/L	0.033	<0.0050	<0.0050	<0.0050
Al-D	mg/L	0.1	0.0369	0.0056	0.0036
As-D	mg/L		0.00014	0.00025	0.00041
Ba-D	mg/L		0.0096	0.0187	0.0165
B-D	mg/L		0.147	0.326	0.360
Be-D	mg/L		<0.00010	<0.00010	<0.00010
Cd-D	mg/L	0.00017	<0.000010	<0.000010	<0.000010
Ca-D	mg/L		73.8	164	179
Cr-D	mg/L		<0.0010	<0.0010	<0.0010
Co-D	mg/L		0.00041	<0.00020	0.00041
Cu-D	mg/L	0.0073	0.00103	0.00038	0.00036
Hard-D	mg/L		223	474	524
Fe-D	mg/L	0.35	0.0700	0.0469	0.195
Pb-D	mg/L		<0.00020	<0.00020	<0.00020
Mg-D	mg/L		9.49	15.4	18.5
Mn-D	mg/L		0.0136	0.0370	0.112
Mo-D	mg/L		<0.0010	<0.0010	<0.0010
Ni-D	mg/L		0.0014	0.0011	0.0017
K-D	mg/L		0.990	1.92	2.02
S-D	mg/L		67.5	146	163
Se-D	mg/L		<0.00010	0.00013	<0.00010
Si-D	mg/L		2.99	2.71	2.33
Na-D	mg/L		18.7	50.7	62.2
Sr-D	mg/L		0.527	1.49	1.45
Zn-D	mg/L	0.033	<0.0050	<0.0050	<0.0050

Table 22 Authorised Discharge Location for 7S South Mine Water 1 Page(s)

EMS ID	E292069	PL-7S		
Site Description	Authorised Discharge Location for 7S South Mine Water			
Site Name	7SSD	Std Val		
Date	Max		03-01-2023	07-02-2023
pH-F	pH Units	6.00	7.38	7.22
Cond-F	uS/cm		303	254
SO4-D	mg/L	500	24	11
TSS	mg/L	25	<1.0	2.8
Alk-T	mg/L		130	120
Acidity83	mg/L		9.0	<1.0
DOC	mg/L		1.3	1.8
Al-T	mg/L		0.0073	0.0281
As-T	mg/L		0.00039	0.00111
Ba-T	mg/L		0.0056	0.0056
B-T	mg/L		<0.050	<0.050
Cd-T	mg/L		<0.000010	<0.000010
Ca-T	mg/L		37.3	35.8
Cr-T	mg/L		<0.0010	<0.0010
Co-T	mg/L		<0.00020	<0.00020
Cu-T	mg/L		<0.00050	0.00058
Hard-T	mg/L		123	125
Fe-T	mg/L		0.045	0.056
Pb-T	mg/L		<0.00020	<0.00020
Mg-T	mg/L		7.36	8.64
Mn-T	mg/L		0.294	0.0589
Mo-T	mg/L		<0.0010	<0.0010
Ni-T	mg/L		<0.0010	<0.0010
K-T	mg/L		0.266	0.277
S-T	mg/L		6.2	4.0
Se-T	mg/L		<0.00010	<0.00010
Si-T	mg/L		4.73	5.05
Ag-T	mg/L		<0.000020	<0.000020
Na-T	mg/L		4.95	3.76
Sr-T	mg/L		0.118	0.129
Zn-T	mg/L		<0.0050	<0.0050
Al-D	mg/L	0.1	<0.0030	<0.0030
As-D	mg/L		0.00033	0.00099
Ba-D	mg/L		0.0055	0.0042
B-D	mg/L		<0.050	<0.050
Be-D	mg/L		<0.00010	<0.00010
Cd-D	mg/L	0.000045	<0.000010	<0.000010
Ca-D	mg/L		37.0	35.1
Cr-D	mg/L		<0.0010	<0.0010
Co-D	mg/L		<0.00020	<0.00020
Cu-D	mg/L	0.014	0.00049	0.00047
Hard-D	mg/L		126	122
Fe-D	mg/L	0.35	0.0310	0.0101
Pb-D	mg/L		<0.00020	<0.00020
Mg-D	mg/L		8.25	8.35
Mn-D	mg/L		0.363	0.0387
Mo-D	mg/L		<0.0010	<0.0010
Ni-D	mg/L		<0.0010	<0.0010
K-D	mg/L		0.312	0.265
S-D	mg/L		6.6	3.9
Se-D	mg/L	0.016	<0.00010	<0.00010
Si-D	mg/L		4.54	4.97
Na-D	mg/L		6.21	3.59
Sr-D	mg/L		0.121	0.124
Zn-D	mg/L		<0.0050	<0.0050

Table 23 7 South Portal Sump 1 Page(s)

EMS ID		E292110		
Site Description		7 South Portal Sump		
Site Name		7SPS		
Date		03-01-2023	07-02-2023	06-03-2023
pH-F	pH Units	6.74	6.6	7.28
Cond-F	uS/cm	614	452	584
SO4-D	mg/L	310	180	190
TSS	mg/L	13	17	16
Alk-T	mg/L	6.0	59	82
Acidity83	mg/L	41.4	5.3	8.3
Al-T	mg/L	0.639	0.257	0.167
As-T	mg/L	0.00105	0.00092	0.00053
Ba-T	mg/L	0.0139	0.0140	0.0118
B-T	mg/L	0.073	0.084	0.051
Cd-T	mg/L	0.000136	0.000040	0.000022
Ca-T	mg/L	90.8	75.4	70.6
Cr-T	mg/L	0.0019	<0.0010	<0.0010
Co-T	mg/L	0.0190	0.00610	0.00346
Cu-T	mg/L	0.0344	0.00604	0.00223
Hard-T	mg/L	316	258	250
Fe-T	mg/L	20.7	6.31	4.27
Pb-T	mg/L	<0.00020	<0.00020	<0.00020
Mg-T	mg/L	21.7	16.9	17.8
Mn-T	mg/L	0.446	0.218	0.147
Mo-T	mg/L	<0.0010	<0.0010	<0.0010
Ni-T	mg/L	0.0338	0.0119	0.0067
K-T	mg/L	0.853	0.740	0.654
S-T	mg/L	98.1	68.9	62.5
Se-T	mg/L	0.00013	<0.00010	<0.00010
Si-T	mg/L	5.99	5.25	4.83
Ag-T	mg/L	<0.000020	<0.000020	<0.000020
Na-T	mg/L	4.07	4.55	6.28
Sr-T	mg/L	0.306	0.278	0.253
Zn-T	mg/L	0.0599	0.0225	0.0131
Al-D	mg/L	0.148	0.0050	<0.0030
As-D	mg/L	0.00029	0.00028	0.00016
Ba-D	mg/L	0.0141	0.0127	0.0136
B-D	mg/L	0.077	0.078	0.054
Be-D	mg/L	<0.00010	<0.00010	<0.00010
Cd-D	mg/L	0.000142	0.000039	0.000013
Ca-D	mg/L	87.6	76.1	68.5
Cr-D	mg/L	<0.0010	<0.0010	<0.0010
Co-D	mg/L	0.0210	0.00626	0.00269
Cu-D	mg/L	0.0292	0.00186	0.00106
Hard-D	mg/L	317	260	241
Fe-D	mg/L	17.5	3.93	1.65
Pb-D	mg/L	<0.00020	<0.00020	<0.00020
Mg-D	mg/L	23.8	17.1	17.0
Mn-D	mg/L	0.463	0.224	0.110
Mo-D	mg/L	<0.0010	<0.0010	<0.0010
Ni-D	mg/L	0.0359	0.0122	0.0053
K-D	mg/L	0.882	0.707	0.828
S-D	mg/L	102	71.0	55.6
Se-D	mg/L	0.00015	0.00024	<0.00010
Si-D	mg/L	5.47	5.16	4.10
Na-D	mg/L	4.59	4.64	5.94
Sr-D	mg/L	0.301	0.282	0.228
Zn-D	mg/L	0.0619	0.0223	0.0089

Table 24 Road Side Crossing Bridge on Stream 1 above the Lower Wetland 1 Page(s)

EMS ID	E292109	Max-WQG			
Site Description	Road Side Crossing Bridge on Stream 1 above the Lower Wetland				
Site Name	7S	Std Val			
Date		Max	09-01-2023	07-02-2023	13-03-2023
pH-F	pH Units		7.17	6.3	7.84
Cond-F	uS/cm		56.9	34.3	110
SO4-D	mg/L		2.5	2.6	4.0
TSS	mg/L	25	<1.0	<1.0	<1.0
Alk-T	mg/L		12	12	11
Acidity83	mg/L		<1.0	<1.0	<1.0
DOC	mg/L		3.2	2.5	2.0
Al-T	mg/L		0.0530	0.0294	0.0243
As-T	mg/L	0.005	0.00011	<0.00010	<0.00010
Ba-T	mg/L		0.0013	0.0013	0.0012
B-T	mg/L		<0.050	<0.050	<0.050
Cd-T	mg/L		<0.000010	<0.000010	<0.000010
Ca-T	mg/L		3.89	3.99	3.49
Cr-T	mg/L		<0.0010	<0.0010	<0.0010
Co-T	mg/L	0.11	<0.00020	<0.00020	<0.00020
Cu-T	mg/L		<0.00050	<0.00050	<0.00050
Hard-T	mg/L		13.3	13.8	12.2
Fe-T	mg/L	1.0	0.012	<0.010	<0.010
Pb-T	mg/L	0.01763	<0.00020	<0.00020	<0.00020
Mg-T	mg/L		0.869	0.925	0.844
Mn-T	mg/L	0.8706	<0.0010	<0.0010	<0.0010
Mo-T	mg/L	2.0	<0.0010	<0.0010	<0.0010
Ni-T	mg/L		<0.0010	<0.0010	<0.0010
K-T	mg/L		0.097	0.088	0.077
S-T	mg/L		<3.0	<3.0	<3.0
Se-T	mg/L		<0.00010	<0.00010	<0.00010
Si-T	mg/L		3.82	4.05	3.91
Ag-T	mg/L	0.0001	<0.000020	<0.000020	<0.000020
Na-T	mg/L		1.35	1.43	1.32
Sr-T	mg/L		0.0154	0.0165	0.0139
Zn-T	mg/L	0.033	<0.0050	<0.0050	<0.0050
Al-D	mg/L	0.1	0.0443	0.0279	0.0237
As-D	mg/L		<0.00010	<0.00010	<0.00010
Ba-D	mg/L		0.0012	0.0018	0.0011
B-D	mg/L		<0.050	<0.050	<0.050
Be-D	mg/L		<0.00010	<0.00010	<0.00010
Cd-D	mg/L	0.00017	<0.000010	<0.000010	<0.000010
Ca-D	mg/L		3.62	4.07	3.51
Cr-D	mg/L		<0.0010	<0.0010	<0.0010
Co-D	mg/L		<0.00020	<0.00020	<0.00020
Cu-D	mg/L	0.0073	0.00042	0.00029	0.00028
Hard-D	mg/L		12.3	13.9	12.3
Fe-D	mg/L	0.35	0.0103	<0.0050	<0.0050
Pb-D	mg/L		<0.00020	<0.00020	<0.00020
Mg-D	mg/L		0.790	0.894	0.859
Mn-D	mg/L		<0.0010	<0.0010	<0.0010
Mo-D	mg/L		<0.0010	<0.0010	<0.0010
Ni-D	mg/L		<0.0010	<0.0010	<0.0010
K-D	mg/L		0.093	0.083	0.075
S-D	mg/L		<3.0	<3.0	<3.0
Se-D	mg/L		<0.00010	<0.00010	<0.00010
Si-D	mg/L		3.50	4.13	3.93
Na-D	mg/L		1.24	1.39	1.35
Sr-D	mg/L		0.0133	0.0163	0.0143
Zn-D	mg/L	0.033	<0.0050	<0.0050	<0.0050

Table 25 Continuous Discharge at Settling Pond # 4 1 Page(s)

EMS ID						
Discharge From Settling Pond #4 (SP4/WD)						
Date	January	January	February	February	March	March
	Max. (m3/s)	Daily (m3/s)	Max. (m3/s)	Daily (m3/s)	Max. (m3/s)	Daily (m3/s)
1	0.139	0.11	0.1290	0.1000	0.0720	0.0630
2	0.081	0.076	0.1290	0.1120	0.0800	0.0720
3	0.109	0.081	0.1250	0.1110	0.0800	0.0730
4	0.129	0.116	0.1180	0.1120	0.0780	0.0700
5	0.162	0.14	0.1140	0.1060	0.0860	0.0690
6	0.173	0.168	0.1120	0.0970	0.1010	0.0850
7	0.178	0.176	0.0910	0.0830	0.1310	0.1000
8	0.177	0.172	0.0930	0.0850	0.1300	0.1130
9	0.174	0.17	0.0830	0.0790	0.1350	0.1120
10	0.169	0.165	0.1140	0.0760	0.1370	0.1230
11	0.159	0.155	0.1300	0.1070	0.1330	0.1200
12	0.165	0.158	0.1290	0.0930	0.1330	0.1290
13	0.17	0.167	0.1300	0.0960	0.1320	0.1180
14	0.17	0.168	0.0860	0.0700	0.1300	0.1140
15	0.165	0.16	0.0890	0.0830	0.1280	0.1050
16	0.156	0.15	0.0870	0.0820	0.1340	0.1060
17	0.144	0.14	0.0890	0.0840	0.1320	0.1200
18	0.148	0.142	0.0870	0.0820	0.1460	0.1220
19	0.143	0.118	0.0870	0.0820	0.1500	0.1430
20	0.145	0.136	0.0860	0.0830	0.1490	0.1380
21	0.139	0.136	0.0880	0.0760	0.1340	0.1130
22	0.169	0.144	0.0710	0.0630	0.1380	0.1200
23	0.169	0.148	0.0650	0.0580	0.1410	0.1180
24	0.133	0.13	0.0650	0.0560	0.1170	0.0970
25	0.13	0.126	0.0660	0.0620	0.1050	0.0960
26	0.128	0.12	0.0670	0.0560	0.1230	0.1040
27	0.136	0.108	0.0650	0.0590	0.1200	0.0920
28	0.136	0.124	0.0660	0.0510	0.1160	0.0840
29	0.127	0.11			0.1400	0.1050
30	0.121	0.109			0.1530	0.1420
31	0.117	0.108			0.1420	0.1380
Monthly Max	0.1780		0.1300		0.1530	
Monthly Avg		0.1365		0.0823		0.1066
TSS is required weekly when max daily flow > 0.054 m ³ /s						
NF= No Flow						

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 26 Continuous Discharge at Settling Pond # 1 1 Page(s)

EMS ID						
Discharge From Settling Pond #1 (SP1/SPD)						
Date	January	January	February	February	March	March
	Max. (m3/s)	Daily (m3/s)	Max. (m3/s)	Daily (m3/s)	Max. (m3/s)	Daily (m3/s)
1	0.081	0.068	0.031	0.020	0.050	0.044
2	0.075	0.063	0.040	0.024	0.048	0.042
3	0.075	0.062	0.028	0.022	0.023	0.015
4	0.057	0.050	0.023	0.021	0.027	0.019
5	0.122	0.074	0.054	0.030	0.036	0.019
6	0.141	0.124	0.054	0.032	0.044	0.025
7	0.145	0.123	0.328	0.070	0.065	0.048
8	0.112	0.104	0.036	0.027	0.060	0.044
9	0.118	0.111	0.014	0.007	0.023	0.015
10	0.111	0.105	0.036	0.015	0.018	0.013
11	0.097	0.090	0.039	0.020	0.020	0.016
12	0.108	0.101	0.007	0.006	0.057	0.041
13	0.118	0.112	0.047	0.017	0.043	0.030
14	0.112	0.103	0.046	0.018	0.056	0.036
15	0.096	0.087	0.046	0.027	0.064	0.056
16	0.075	0.063	0.031	0.020	0.056	0.048
17	0.080	0.075	0.046	0.026	0.033	0.021
18	0.081	0.075	0.070	0.052	0.021	0.015
19	0.085	0.069	0.070	0.045	0.054	0.031
20	0.066	0.054	0.023	0.017	0.047	0.026
21	0.065	0.041	0.047	0.022	0.012	0.008
22	0.073	0.064	0.040	0.023	0.011	0.007
23	0.056	0.050	0.037	0.023	0.042	0.018
24	0.047	0.031	0.026	0.017	0.046	0.023
25	0.019	0.017	0.016	0.013	0.013	0.007
26	0.049	0.036	0.027	0.012	0.032	0.018
27	0.047	0.026	0.060	0.036	0.026	0.014
28	0.041	0.025	0.065	0.053	0.025	0.018
29	0.050	0.018			0.023	0.018
30	0.062	0.045			0.023	0.018
31	0.048	0.034			0.067	0.041
Monthly Max	0.145		0.3276		0.067	
Monthly Avg		0.068		0.026		0.026
PNC = Permit Non-compliance						
TSS is required weekly when max daily flow > 0.046m ³ /s						
NF= No Flow						

Table 27 Continuous Discharge at 7-South 1 Page(s)

EMS ID E292069			
Discharge From 7 South Surface Decant Pond (7SSD)			
Date	January	February	March
	Daily Average L/S		
1	NF	NF	NF
2	NF	NF	NF
3	NF	NF	NF
4	NF	NF	NF
5	NF	NF	NF
6	NF	NF	NF
7	NF	NF	NF
8	NF	NF	NF
9	NF	NF	NF
10	NF	NF	NF
11	NF	NF	NF
12	NF	NF	NF
13	NF	NF	NF
14	NF	NF	NF
15	NF	NF	NF
16	NF	NF	NF
17	NF	NF	NF
18	NF	NF	NF
19	NF	NF	NF
20	NF	NF	NF
21	NF	NF	NF
22	NF	NF	NF
23	NF	NF	NF
24	NF	NF	NF
25	NF	NF	NF
26	NF	NF	NF
27	NF	NF	NF
28	NF	NF	NF
29	NF		NF
30	NF		NF
31	NF		NF
Monthly Avg	0.000	0.000	0.000
Annual Avg			
Cummulative Daily Totalizer Value			
For Maximum Decant Flow (5.00 L/s)			

Table 28 2S Inflow Outflow 1 Page(s)

EMS ID: E292127 2-South Pit Continous Inflow and Outflow 2S Inflow				EMS ID: E292127 2-South Pit Continous Inflow and Outflow 2S Outflow Culvert into 3S Pit			
Date	January Q (L/s)	February Q (L/s)	March Q (L/s)	Date	January Q (L/s)	February Q (L/s)	March Q (L/s)
1	16.904	19.300	13.701	1	12.559	6.463	5.392
2	15.954	18.824	11.239	2	11.382	6.345	5.123
3	16.139	21.785	13.149	3	10.415	6.838	5.136
4	15.964	21.602	14.170	4	9.927	6.834	5.357
5	32.584	21.971	15.302	5	13.497	6.652	5.056
6	41.785	20.414	14.596	6	22.945	6.945	5.102
7	35.013	22.837	14.813	7	26.163	7.221	5.090
8	31.755	20.986	15.780	8	23.579	7.592	5.136
9	38.766	19.943	15.395	9	25.662	7.792	5.196
10	34.547	22.641	17.110	10	24.885	8.012	5.265
11	27.516	20.352	17.279	11	21.005	7.986	5.840
12	39.435	20.309	17.148	12	21.890	8.298	6.388
13	40.522	20.713	17.847	13	24.751	8.242	6.846
14	31.889	18.689	12.900	14	24.198	7.617	7.032
15	26.401	16.738	16.864	15	20.866	7.844	7.055
16	22.249	17.074	15.443	16	17.578	7.732	6.781
17	17.947	17.403	15.587	17	14.958	7.352	6.909
18	28.611	17.773	15.058	18	15.254	6.877	6.565
19	21.106	17.324	14.935	19	14.775	6.888	6.704
20	17.336	16.923	17.590	20	13.921	6.855	6.796
21	16.458	17.003	18.609	21	13.021	6.606	6.082
22	14.535	11.193	18.064	22	11.716	6.317	6.030
23	11.758	16.763	17.500	23	10.635	5.584	6.243
24	13.629	16.038	18.142	24	9.930	5.901	6.050
25	17.642	15.325	17.710	25	9.269	5.930	5.726
26	10.944	16.972	17.205	26	8.906	5.441	5.679
27	13.819	14.851	18.545	27	8.309	5.536	5.235
28	14.106	14.774	20.949	28	7.994	5.048	5.091
29	13.359		19.482	29	7.350		5.042
30	13.099		20.723	30	7.253		4.987
31	15.030		19.292	31	6.994		5.334

Table 29 Flow Tables LLE, LLS, LLSM, 7S, WA, WB and LLO 3 Page(s)

Weekly Flow Requirements (L/s)				Weekly Flow Requirements (L/s)			Weekly Flow Requirements (L/s)			
EMS ID: E292130				EMS ID: E292131			EMS ID: E292131			
Site LLE				Site LLS			Site LLSM			
Flow (L/S)				Flow (L/S)		Estimated Flow	Flow (m³/S)			
Date	January	February	March	Weeks	Level	L/s	Date	January	February	March
1	191	28	56	04-Jan-22	0.010	0.600	1	0.00000	0.00432	0.00026
2	152	17	53	11-Jan-22	0.010	0.600	2	0.00000	0.00535	0.00008
3	144	25	38	18-Jan-22	0.010	0.600	3	0.00000	0.00432	0.00008
4	117	47	23	25-Jan-22	0.010	0.600	4	0.00000	0.00432	0.00008
5	224	43	27	01-Feb-22	0.010	0.600	5	0.00195	0.00432	0.00008
6	720	52	30	08-Feb-22	0.010	0.600	6	0.01430	0.00432	0.00008
7	744	78	46	15-Feb-22	0.010	0.600	7	0.01076	0.00341	0.00008
8	456	89	68	22-Feb-22	0.010	0.600	8	0.00341	0.00195	0.00008
9	493	68	55	01-Mar-22	0.010	0.600	9	0.00920	0.00262	0.00008
10	495	48	47	08-Mar-22	0.010	0.600	10	0.00262	0.00341	0.00008
11	330	58	49	15-Mar-22	0.010	0.600	11	0.00054	0.00195	0.00008
12	403	41	56	22-Mar-22	0.010	0.600	12	0.00650	0.00262	0.00008
199	506	40	75	29-Mar-22	0.010	0.600	13	0.01076	0.00138	0.00008
14	426	50	66				14	0.00778	0.00262	0.00008
15	297	37	88				15	0.00778	0.00262	0.00008
16	196	38	95				16	0.00778	0.00262	0.00008
17	169	32	61				17	0.00920	0.00262	0.00008
18	220	40	43				18	0.01076	0.00138	0.00008
19	235	59	34				19	0.01076	0.00138	0.00008
20	174	36	50				20	0.01246	0.00138	0.00008
21	118	22	40				21	0.01246	0.00091	0.00008
22	119	102	30				22	0.01246	0.00008	0.00008
23	120	1166	28				23	0.01246	0.00054	0.00008
24	109	1228	40				24	0.00778	0.00054	0.00008
25	67	839	33				25	0.00920	0.00054	0.00008
26	67	13	25				26	0.00920	0.00054	0.00008
27	70	22	26				27	0.00920	0.00054	0.00008
28	69	54	19				28	0.00778	0.00054	0.00008
29	1249		14				29	0.00650		0.00008
30	1308		11				30	0.00650		0.00008
31	158		12	Notes: NF= No flow. Previous estimates of flow 0.018 L/s based on a level on 0.01m were incorrect. At a level of 0.01m is equal to 0.6L/s.			31	0.00535		0.00008
Notes: NF= No flow							Notes: NF= No flow			

Table 29 Flow Tables LLE, LLS, LLSM, 7S, WA, WB and LLO 3 Page(s)

Continuous Flow Requirements (L/s)			
EMS ID:		E292109	
Site		7S	
Flow (L/S)			
Date	January	February	March
1	17.80	2.56	1.37
2	15.95	2.12	0.88
3	12.15	3.20	1.25
4	14.42	6.70	1.42
5	70.03	5.21	1.86
6	113.75	4.38	2.47
7	83.81	5.18	3.23
8	44.70	4.12	5.52
9	71.18	5.66	6.72
10	42.22	4.40	7.03
11	20.15	4.07	5.94
12	54.82	5.09	7.16
13	42.87	5.43	7.11
14	28.10	3.75	4.16
15	17.95	3.73	4.94
16	9.22	3.66	4.50
17	7.14	3.43	3.86
18	28.56	3.12	3.32
19	20.56	2.73	2.93
20	11.63	2.63	2.25
21	8.72	2.62	1.87
22	5.99	0.98	1.71
23	5.14	2.02	1.53
24	4.35	2.21	1.45
25	3.96	2.27	1.40
26	4.08	1.76	1.32
27	3.59	1.82	1.36
28	2.76	1.42	1.22
29	2.87		0.93
30	2.89		1.00
31	2.97		0.99
Notes: NF= No flow			

Table 29 Flow Tables LLE, LLS, LLSM, 7S, WA, WB and LLO 3 Page(s)

5 in 30 Flow Requirements (Level)				5 in 30 Flow Requirements (Level)				5 in 30 Flow Requirements (Level)			
EMS ID: 126402				EMS ID: 900504				EMS ID: E219412			
Site WA				Site WB				Site LLO			
Flow (m ³ /s)				Daily Average Level (m)				Daily Average Level (m)			
Date	January	February	March	Date	January	February	March	Date	January	February	March
1	2.32	2.21	2.23	1	0.6712	0.5923	0.5878	1	0.7552	0.6138	0.5887
2	2.31	2.19	2.24	2	0.6566	0.5915	0.5714	2	0.7322	0.6071	0.5700
3	2.30	2.22	2.23	3	0.6480	0.5918	0.5890	3	0.7061	0.6066	0.5866
4	2.29	2.24	2.25	4	0.6479	0.5995	0.5862	4	0.7042	0.6319	0.5780
5	2.23	2.24	2.30	5	0.6537	0.5918	0.5890	5	0.7153	0.6366	0.5823
6	2.16	2.24	2.26	6	0.6994	0.6030	0.5911	6	0.8359	0.6551	0.5877
7	2.16	2.24	2.27	7	0.7669	0.6050	0.5926	7	0.9508	0.6649	0.5934
8	2.14	2.25	2.23	8	0.7755	0.6111	0.5931	8	0.9290	0.6834	0.6019
9	2.18	2.24	2.23	9	0.7691	0.6220	0.5999	9	0.9234	0.7009	0.6131
10	2.18	2.26	2.22	10	0.7810	0.6133	0.5923	10	0.9462	0.6882	0.6023
11	2.12	2.27	2.22	11	0.7628	0.6204	0.5942	11	0.9053	0.7015	0.6041
12	2.18	2.28	2.22	12	0.7428	0.6282	0.6019	12	0.8790	0.7093	0.6174
13	2.24	2.28	2.22	13	0.7721	0.6233	0.5962	13	0.9480	0.7011	0.6237
14	2.25	2.26	2.22	14	0.8179	0.6166	0.5883	14	0.9890	0.6913	0.6247
15	2.26	2.26	2.20	15	0.7855	0.6200	0.5981	15	0.9174	0.6871	0.6394
16	2.25	2.26	2.17	16	0.7321	0.6148	0.6079	16	0.8494	0.6725	0.6559
17	2.21	2.27	2.17	17	0.6942	0.6155	0.6056	17	0.8059	0.6654	0.6515
18	2.24	2.26	2.15	18	0.6730	0.6099	0.6041	18	0.7823	0.6549	0.6434
19	2.23	2.25	2.15	19	0.6750	0.6079	0.6027	19	0.8146	0.6526	0.6396
20	2.21	2.25	2.16	20	0.6743	0.6123	0.5946	20	0.8069	0.6496	0.6400
21	2.20	2.26	2.13	21	0.6627	0.6013	0.5982	21	0.7748	0.6261	0.6586
22	2.17	2.26	2.13	22	0.6461	0.5756	0.6001	22	0.7477	0.5943	0.6670
23	2.15	2.26	2.13	23	0.6371	0.5917	0.5974	23	0.7325	0.6057	0.6601
24	2.13	2.26	2.13	24	0.6253	0.5951	0.5949	24	0.7122	0.6018	0.6525
25	2.13	2.25	2.13	25	0.6181	0.6014	0.5977	25	0.6939	0.6032	0.6496
26	2.16	2.24	2.13	26	0.6160	0.5876	0.5952	26	0.6825	0.5866	0.6368
27	2.21	2.23	2.13	27	0.6079	0.5914	0.5955	27	0.6664	0.5888	0.6281
28	2.20	2.23	2.13	28	0.6012	0.5809	0.5903	28	0.6499	0.5794	0.6144
29	2.20		2.13	29	0.6025		0.5840	29	0.6425		0.5991
30	2.19		2.13	30	0.5999		0.5864	30	0.6321		0.5938
31	2.19		2.13	31	0.5970		0.5869	31	0.6241		0.5872
				Notes: Flow curve is being developed as a result of high flows washing away hydrometric station				Notes: Flow curve is being redeveloped			

Table 30 Precipitation 1 Page(s)

Daily Precipitation (mm)			
DATE	JAN	FEB	MAR
1	0.10	0	0.7
2	0.10	0	0
3	0.00	9.1	12.4
4	0.10	2.4	9.2
5	2.90	0.1	0
6	26.30	2.7	1.8
7	13.70	3.4	0.8
8	1.70	8	0
9	13.80	3.6	0
10	14.10	0	0
11	0.50	5.8	0.6
12	1.90	2.1	3.9
13	25.60	0	0.1
14	14.40	0	1.2
15	2.20	9	0.4
16	2.80	12.5	0.1
17	1.00	3.1	0
18	0.00	0	0.7
19	19.20	2.1	0
20	0.70	1.5	0
21	0.00	0.1	2.3
22	4.90	0	0
23	0.00	0	0.1
24	1.30	0	0.7
25	1.70	0	4.3
26	0.20	0	0.1
27	1.30	0	0
28	0.30	0	0
29	0.10		0
30	0.00		0
31	0.00		0
Monthly Total (mm)	150.90	65.50	39.40
Quarterly Total (mm)	Quarterly Total (mm)		255.80
Precipitation data from Feb 1st to Mar 13th was taken from the Campell River Airport due to inaccurate results on site.			

Table 31 Groundwater Description 1 Page(s)

Groundwater Wells - Description				
Area	Groundwater ID	In-situ / Ex-situ	Screened Interval	Comment
2-North	1 Mains 2-North (1M2N)	In-situ	No. 1 Seam	Flooded Underground Workings in 1-Mains Area, Dewatering well
	5 Mains#2 (5M#2)	In-situ	No. 1 Seam	Flooded Underground Workings in 5-Mains Area, Dewatering well
	3 Mains 2-North (3M2N)	In-situ	No. 1 Seam	Flooded Underground Workings in 3-Mains Area, Underground Pump System
	QU08-21GD	Ex-situ	No. 1 Seam	Down gradient of u/g tailings disposal, measure water quality and hydraulic gradients downstream of forjan fault
	QU08-21GS	Ex-situ	No. 4 Coal Seam and	
	QU10-10D	Ex-situ	No. 1 Seam / mudstone	Down gradient of u/g tailings disposal, measures water quality and hydraulic head downgradient of 2 North workings
	QU10-10S	Ex-situ	No. 4 Seam /	
	QU10-11S	Ex-situ	Fractured Sandstone	Measure water quality and hydraulic gradient in Forjan Fault
	QU10-11D	Ex-situ	No.1 Seam	Down gradient of u/g tailings disposal, measures water quality and hydraulic head down gradient t of 2 North workings
	QU10-13D	In-situ	Caved Zone	Down gradient of u/g tailings disposal, measures water quality and hydraulic head down gradient t of 2 North workings
5-South Mine Pool	5SMW	In-situ	Mine Pool (1 Seam)	Water pumped from 5-South Flooded Mine Pool into 3-Mains of 2-North Mine
River Barrier Pillar (RBP)	QU11-05S	Ex-situ	Sandstone	Down gradient of u/g tailings disposal, measure water quality and hydraulic head down gradient of 2 North workings
	QU11-05D	Ex-situ	Sandstone	Monitoring water quality and vertical gradients downstream of the RBP and 2-North mine.
	QU11-09S	Ex-situ	Sandstone	Monitor water quality & upward vertical gradients of the RBP and 2-North workings. Mine pool – CCR backfill in River Barrier Pillar
	QU11-09M	In-situ	RBP Mine Pool	Monitor water quality in the RBP and 2-North workings. Mine pool – CCR backfill in River Barrier Pillar.
2-North Plant Site	MW-00-1S	Ex-situ	Till	Shallow Groundwater Below Plant Coal pad
	MW-00-1D	Ex-situ	1-Seam	Groundwater below the coal pad
	MW-00-6D	Ex-situ	Till	Groundwater below the coal pad
	MW-00-6S	Ex-situ	Till	Groundwater below the coal pad
4-South	QU10-08D	Ex-situ	No. 3 Seam	4 South (just outside mine pool) up gradient of existing workings
	QU11-01	In-Situ	Foot print area of 4 South GOB	Assess 4 South Mine Pool water quality
	QU10-09S	Ex-situ	Down gradient of existing workings	Access vertical gradients and water quality adjacent to Long Lake.
	QU10-09D	Ex-situ	Down gradient of existing workings	Access vertical gradients and water quality adjacent to Long Lake.
2-South & 3-South	MW002	Ex-situ	1 Seam	3S seepage to Long Lake
	MW004	In-Situ	Mine Pool (1 Seam)	2-South Mine Pool Gob depillared area
	QU11-11 (INF)	In-Situ	Mine Pool (1 Seam)	2-South mine pool dewatering well for Passive Treatment System
7-South	1M7S	In-Situ	No. 4 Coal Seam	Underground Sump
	QU08-10	Ex-situ	No. 4 Coal Seam	Downgradient of 7S -screened No. 3 Coal -Southern margin of workings
	QU08-13A	Ex-situ	No. 4 Coal Seam	Down Gradient of the CCR backfill towards QR
	QU08-13B	Ex-situ	Till & SST contact	Down Gradient of the CCR backfill towards QR
	QU14-10	In-Situ	Mine Void	PAG-CCR Water Cover in Mine Void
7- South Area 5	1M7SA5	In-Situ	Sump	Underground Sump
	QU11-35	Ex-situ	Sandstone above No. 4 Seam	South end of 7SA5 footprint at 100280m N (mine grid)
242 AREA	QU11-36D	Ex-situ	Sandstone below No. 5 seam	Downgradient of 7SA5
	242MW	In-situ	No. 4 Seam	Mine pool

Table 32 Potential Seepage Near QU1109 (S) 1 Page(s)

Site Description		Potential Seepage near QU1109									
Site Name	S	Std Val									
Date		Max	12-01-2023	18-01-2023	26-01-2023	02-02-2023	07-02-2023	14-02-2023	23-02-2023	16-03-2023	23-03-2023
Flow	m3/s			0.00188	0.00157	0.00055	0.00069	0.00633	0.000422	0.0004	0.000351
Cond-F	uS/cm		575	722	982	1088	1050	1013		1300	
SO4-D	mg/L		120	120	140	150	150	160		150	
Turb	NTU		1.7	1.4	0.62	0.36	0.63	0.41		0.66	
DOC	mg/L		4.0	3.7	2.0	1.9	2.4	1.9		1.9	
Alk-T	mg/L		150	220	360	390	360	380		380	
Acidity83	mg/L		1.4	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	
Al-T	mg/L		0.0769	0.0771	0.0093	0.0082	0.0161	0.0089		0.0086	
As-T	mg/L	0.005	0.0205	0.0323	0.0559	0.0712	0.0661	0.0646		0.0690	
Ba-T	mg/L		0.0342	0.0400	0.0455	0.0493	0.0478	0.0460		0.0495	
B-T	mg/L		0.658	1.00	1.27	1.44	1.34	1.30		1.41	
Cd-T	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000020	<0.000010		<0.000010	
Ca-T	mg/L		22.5	25.2	25.5	26.9	26.2	26.5		25.5	
Cr-T	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010		<0.0010	
Co-T	mg/L	0.11	<0.00020	<0.00020	<0.00020	<0.00020	<0.00040	<0.00020		<0.00020	
Cu-T	mg/L		0.00053	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050		<0.00050	
Hard-T	mg/L		81.6	90.8	93.0	96.4	92.8	93.2		92.2	
Fe-T	mg/L	1	0.136	0.126	0.076	0.098	0.108	0.114		0.123	
Pb-T	mg/L	0.01763	<0.00020	<0.00020	<0.00020	<0.00020	<0.00040	<0.00020		<0.00020	
Mg-T	mg/L		6.17	6.74	7.14	7.08	6.63	6.58		6.91	
Mn-T	mg/L	0.8706	0.0105	0.0115	0.0191	0.0219	0.0215	0.0214		0.0163	
Mo-T	mg/L	2	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010		<0.0010	
Ni-T	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010		<0.0010	
K-T	mg/L		1.81	2.39	3.13	3.57	3.36	3.33		3.56	
S-T	mg/L		33.8	40.7	45.8	54.4	53.3	51.9		55.4	
Se-T	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010		<0.00010	
Si-T	mg/L		4.11	4.83	4.30	4.97	4.91	4.67		4.60	
Ag-T	mg/L	0.0001	<0.000020	<0.000020	<0.000020	<0.000020	<0.000040	<0.000020		<0.000020	
Na-T	mg/L		88.4	134	204	229	211	208		220	
Sr-T	mg/L		0.258	0.325	0.379	0.422	0.404	0.399		0.408	
Zn-T	mg/L	0.033	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050		<0.0050	
Al-D	mg/L	0.1	0.0202	0.0183	0.0067	0.0056	0.0087	<0.015		0.0049	
As-D	mg/L		0.0195	0.0298	0.0556	0.0673	0.0673	0.0694		0.0729	
Ba-D	mg/L		0.0341	0.0376	0.0458	0.0479	0.0488	0.0540		0.0511	
B-D	mg/L		0.639	0.940	1.34	1.52	1.42	1.58		1.42	
Be-D	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00050		<0.00010	
Cd-D	mg/L	0.00017	<0.000010	<0.000010	0.000027	<0.000010	<0.000020	<0.000050		<0.000010	
Ca-D	mg/L		22.1	23.8	25.9	25.4	26.6	27.3		27.4	
Cr-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0050		<0.0010	
Co-D	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00040	<0.0010		<0.00020	
Cu-D	mg/L	≤ 0.0054	0.00046	0.00034	0.00035	0.00027	<0.00040	<0.0010		<0.00020	
Hard-D	mg/L		81.1	85.0	93.7	92.2	94.4	101		97.8	
Fe-D	mg/L	0.35	0.0427	0.0461	0.0447	0.0648	0.071	0.082		0.0993	
Pb-D	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00040	<0.0010		<0.00020	
Mg-D	mg/L		6.29	6.19	7.03	6.95	6.81	7.87		7.14	
Mn-D	mg/L		0.0056	0.0085	0.0171	0.0189	0.0194	0.0229		0.0156	
Mo-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0050		<0.0010	
Ni-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0050		<0.0010	
K-D	mg/L		1.86	2.19	3.16	3.51	3.40	3.52		3.53	
S-D	mg/L		34.5	37.9	46.3	49.1	55.4	58		56.5	
Se-D	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00050		<0.00010	
Si-D	mg/L		4.32	4.16	4.58	4.70	4.94	4.10		4.92	
Na-D	mg/L		88.0	125	198	220	212	234		230	
Sr-D	mg/L		0.263	0.293	0.379	0.390	0.412	0.384		0.420	
Zn-D	mg/L	0.033	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.025		<0.0050	

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 33 Potential Seepage on QR by QU1105 (S2) 1 Page(s)

EMS ID	0 Max-WQG						
Site Description	Potential Seepage near QU1105						
Site Name	S2	Std Val	S2B-12JAN23-M	S2B-18JAN23-M	S2B-8FEB23-M	S2B-14FEB23-M	S2B-22MAR23-M
Date	Max		12-01-2023	18-01-2023	08-02-2023	14-02-2023	22-03-2023
Flow	m3/s			0.002		0.000233	0.00023
pH-F	pH Units		7.25	7.2	7.45	7.82	7.5
Cond-F	uS/cm		500	500	793	708	950
Turb	NTU		1.4	0.82	0.55	0.33	0.56
SO4-D	mg/L		47	52	120	120	140
Alk-T	mg/L		180	200	270	280	290
Acidity83	mg/L		2.3	<1.0	2.0	<1.0	<1.0
DOC	mg/L		2.7	2.6	2.0	2.0	1.6
Al-T	mg/L		0.0699	0.0458	0.0061	0.0053	0.0074
As-T	mg/L	0.005	0.0207	0.0287	0.0221	0.0230	0.0228
Ba-T	mg/L		0.0379	0.0444	0.0552	0.0555	0.0563
B-T	mg/L		0.453	0.508	0.613	0.608	0.605
Cd-T	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Ca-T	mg/L		27.7	31.7	41.0	42.2	41.9
Cr-T	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Co-T	mg/L	0.11	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Cu-T	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Hard-T	mg/L		92.9	106	137	140	141
Fe-T	mg/L	1.0	0.146	0.315	0.100	0.138	0.105
Pb-T	mg/L	0.01763	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Mg-T	mg/L		5.72	6.55	8.50	8.48	8.94
Mn-T	mg/L	0.8706	0.0207	0.0622	0.0296	0.0340	0.0360
Mo-T	mg/L	2.0	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Ni-T	mg/L		<0.0010	<0.0010	<0.0010	0.0011	<0.0010
K-T	mg/L		2.46	2.78	3.30	3.33	3.40
S-T	mg/L		13.5	17.5	40.7	40.5	46.7
Se-T	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Si-T	mg/L		3.38	3.72	3.68	3.73	3.57
Ag-T	mg/L	0.0001	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Na-T	mg/L		61.7	72.7	119	118	133
Sr-T	mg/L		0.403	0.494	0.656	0.629	0.649
Zn-T	mg/L	0.033	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Al-D	mg/L	0.1	0.0093	0.0069	0.0031	<0.0030	<0.0030
As-D	mg/L		0.0198	0.0203	0.0211	0.0215	0.0230
Ba-D	mg/L		0.0375	0.0416	0.0552	0.0619	0.0604
B-D	mg/L		0.433	0.494	0.640	0.623	0.675
Be-D	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cd-D	mg/L	0.00017	0.000013	<0.000010	<0.000010	<0.000010	<0.000010
Ca-D	mg/L		26.6	30.9	41.6	44.2	44.2
Cr-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Co-D	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Cu-D	mg/L	≤ 0.0054	0.00029	0.00026	<0.00020	0.00025	<0.00020
Hard-D	mg/L		90.6	104	139	148	149
Fe-D	mg/L	0.35	0.0751	0.0792	0.0602	0.0708	0.0503
Pb-D	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Mg-D	mg/L		5.89	6.50	8.43	9.22	9.49
Mn-D	mg/L		0.0206	0.0263	0.0278	0.0345	0.0369
Mo-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Ni-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
K-D	mg/L		2.58	2.68	3.34	3.59	3.60
S-D	mg/L		14.4	16.6	41.3	44.6	52.2
Se-D	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Si-D	mg/L		3.49	3.33	3.77	3.89	3.90
Na-D	mg/L		62.8	68.9	119	128	142
Sr-D	mg/L		0.410	0.471	0.656	0.655	0.680
Zn-D	mg/L	0.033	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Table 34 Potential Seepage on QR by QU1105 (S2A) 1 Page(s)

Site Description		Seepage Entering River at S2A near QU1105									
Site Name	S2A	Std Val		S2A-12/JAN23-M	S2A-18/JAN23-M	S2A-25/JAN23-M	S2A-2/FEB23-M	S2A-8/FEB23-M	S2A-14/FEB23-M	S2A-22/MAR23-M	
Date		Max	Min	12-01-2023	18-01-2023	25-01-2023	02-02-2023	08-02-2023	14-02-2023	22-03-2023	
Flow	m3/s					0.002	0.00146	0.0018	0.002	0.0001	
pH-F	pH Units			7.06	6.99	7.2	7.14	7.13	7.4	6.93	
Cond-F	uS/cm			221	335	488	654	540	524	770	
Turb	NTU			4.7	3.1	0.61	0.29	1.2	0.62	0.41	
SO4-D	mg/L			21	35	63	88	79	80	110	
Alk-T	mg/L			82	120	180	220	190	190	240	
Acidity83	mg/L			2.1	1.1	4.2	<1.0	2.4	<1.0	2.4	
DOC	mg/L			6.5	4.9	2.4	2.0	2.4	2.2	1.9	
Al-T	mg/L			0.312	0.266	0.0241	0.0066	0.0402	0.0290	0.0057	
As-T	mg/L	0.005	0	0.0132	0.0167	0.0178	0.0171	0.0185	0.0166	0.0217	
Ba-T	mg/L			0.0197	0.0302	0.0419	0.0472	0.0443	0.0430	0.0489	
B-T	mg/L			0.196	0.295	0.405	0.452	0.463	0.426	0.550	
Cd-T	mg/L			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Ca-T	mg/L			14.0	21.7	31.6	34.9	32.8	32.5	34.2	
Cr-T	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0025	<0.0010	
Co-T	mg/L	0.11	0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Cu-T	mg/L			0.00094	0.00080	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Hard-T	mg/L			47.2	73.5	106	117	109	109	116	
Fe-T	mg/L	1.0	0	0.334	0.311	0.122	0.090	0.138	0.128	0.109	
Pb-T	mg/L	0.01763	0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Mg-T	mg/L			2.97	4.69	6.53	7.27	6.58	6.64	7.53	
Mn-T	mg/L	0.8706	0	0.0172	0.0194	0.0296	0.0484	0.0351	0.0368	0.0705	
Mo-T	mg/L	2.0	0	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0026	<0.0010	
Ni-T	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0100	<0.0010	
K-T	mg/L			1.20	1.91	2.56	2.69	2.60	2.54	2.84	
S-T	mg/L			5.7	11.6	20.9	32.7	29.8	28.6	38.1	
Se-T	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Si-T	mg/L			3.53	4.02	3.40	3.44	3.76	3.57	3.28	
Ag-T	mg/L	0.0001	0	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Na-T	mg/L			25.1	44.1	71.3	90.3	82.4	81.8	106	
Sr-T	mg/L			0.181	0.323	0.488	0.527	0.514	0.474	0.515	
Zn-T	mg/L	0.033	0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Al-D	mg/L	0.1	0	0.0832	0.0490	0.0072	0.0052	0.0079	0.0062	0.0066	
As-D	mg/L			0.0110	0.0133	0.0157	0.0165	0.0162	0.0160	0.0212	
Ba-D	mg/L			0.0172	0.0268	0.0420	0.0477	0.0425	0.0483	0.0510	
B-D	mg/L			0.176	0.297	0.427	0.502	0.443	0.435	0.494	
Be-D	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Cd-D	mg/L	0.00017	0	<0.000010	<0.000010	0.000014	<0.000010	<0.000010	<0.000010	<0.000010	
Ca-D	mg/L			13.0	20.2	30.6	34.8	31.3	33.8	35.2	
Cr-D	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Co-D	mg/L			<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Cu-D	mg/L	≤ 0.0054	0	0.00073	0.00052	0.00039	0.00025	0.00027	0.00039	<0.00020	
Hard-D	mg/L			44.5	68.4	102	118	104	113	120	
Fe-D	mg/L	0.35	0	0.118	0.116	0.0719	0.0678	0.0852	0.0874	0.100	
Pb-D	mg/L			<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Mg-D	mg/L			2.92	4.39	6.31	7.49	6.20	6.92	7.71	
Mn-D	mg/L			0.0103	0.0164	0.0289	0.0445	0.0346	0.0377	0.0701	
Mo-D	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Ni-D	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
K-D	mg/L			1.16	1.67	2.46	2.75	2.49	2.68	2.92	
S-D	mg/L			6.0	9.8	21.0	29.7	28.0	31.9	39.3	
Se-D	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Si-D	mg/L			3.37	3.14	3.36	3.49	3.68	3.66	3.33	
Na-D	mg/L			25.0	40.9	67.5	90.5	77.1	87.4	107	
Sr-D	mg/L			0.182	0.303	0.485	0.524	0.477	0.490	0.526	
Zn-D	mg/L	0.033	0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 35 Groundwater 7 Page(s)

Groundwater Q4														
Date	Parameter	Units	Description Well ID	Station Type Top Elev. Bottom Elev. Water level (m)	QU0821GS	QU0821GS	QU0821GD	QU1010S	2 - 3 North	QU1010D	QU1010D	QU1011S	QU1011S	QU1011D
					GW	GW	GW	GW	GW	GW	GW	GW	GW	
					215.4279556	215.4279556	215.4279556	245.3979556	245.3979556	245.3979556	249.1979556	249.1979556	249.1979556	
					135.1279556	135.1279556	39.6279556	181.1979556	72.6979556	72.6979556	206.8979556	206.8979556	86.0979556	
					0	0	0	35.04	40.13	40.13	1.2	1.2		
					17-Jan-23	17-Jan-23	17-Jan-23	15-Mar-23	15-Mar-23	15-Mar-23	21-Mar-23	21-Mar-23	21-Mar-23	
					Rep	Rep			Rep		Rep			
SO4-D	mg/L	1280			<2.0	<2.0	1.8	<1.0	1.4	140	3.4	3.5	<1.0	
H2SEquiv	mg/L	0.02			0.0521	0.0553	0.0266	0.234	0.000957	0.000957	0.000957	0.000957	0.0989	
Cl-D	mg/L	1500			260	240	1200	16	3400	3500	<1.0	<1.0	310	
F-D	mg/L				1.6	1.4	0.72	0.81	<0.050	<0.050	0.053	0.052	0.28	
Flu-CSR	mg/L		Calculated-CSR		3.00	3.00	3.00	3.00	3.000	3.000	3.00	3.00	3.00	
Br-D	mg/L				0.38	0.35	1.64	0.033	5.00	5.29	<0.010	<0.010	0.64	
P-D	mg/L				0.24	0.16	0.10				<0.0030	<0.0030	0.053	
Al-D	mg/L				0.0061	<0.0060	<0.015	0.675	<0.015	<0.015	<0.0030	<0.0030	0.0216	
Ag-D	mg/L				<0.000040	<0.000040	<0.00010	<0.000040	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020	
Ag-CSR	mg/L		Calculated-CSR		0.0150	0.0150	0.0150	0.000500	0.01500	0.01500	0.000500	0.000500	0.0150	
As-D	mg/L	0.05			0.579	0.589	0.179	0.105	0.0141	0.0129	0.00106	0.00105	0.00795	
Ba-D	mg/L	10			0.731	0.755	2.06	0.338	1.43	1.33	0.116	0.114	0.351	
B-D	mg/L	50			2.09	2.09	2.79	0.84	0.34	0.35	0.054	0.052	0.766	
Be-D	mg/L	0.053			<0.00020	<0.00020	<0.00050	0.00028	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	
Bi-D	mg/L				<0.0020	<0.0020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	
Cd-D	mg/L				<0.000020	<0.000020	<0.000050	<0.000020	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	
Cd-CSR	mg/L		Calculated-CSR		0.000500	0.000500	0.000600	0.000300	0.0006000	0.0006000	0.000300	0.000300	0.000600	
Ca-D	mg/L				35.5	35.7	121	21.6	667	637	18.4	17.5	52.3	
Cr-D	mg/L	0.010			<0.0020	<0.0020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	
Co-D	mg/L	0.009			<0.00040	<0.00040	<0.0010	<0.00040	<0.0010	<0.0010	0.00022	0.00022	<0.00020	
Cu-D	mg/L				<0.00040	<0.00040	<0.0010	<0.00040	<0.0010	0.0017	<0.00020	<0.00020	<0.00020	
Cu-CSR	mg/L		Calculated-CSR		0.0500	0.0500	0.0900	0.0300	0.09000	0.09000	0.0300	0.0300	0.0700	
Fe-D	mg/L				3.04	3.10	0.822	0.567	7.87	7.42	0.179	0.175	2.36	
Hard-D	mg/L				115	115	356	73.3	1720	1640	62.3	59.5	154	
Pb-D	mg/L				<0.00040	<0.00040	<0.0010	0.00064	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	
Pb-CSR	mg/L		Calculated-CSR		0.0600	0.0600	0.160	0.0500	0.1600	0.1600	0.0500	0.0500	0.0600	
Mg-D	mg/L				6.45	6.27	13.3	4.74	12.7	11.8	3.97	3.83	5.74	
Mn-D	mg/L				0.0595	0.0583	0.112	0.0326	0.467	0.430	0.0384	0.0369	0.244	
Na-D	mg/L				206	202	626	52.7	1480	1380	2.62	2.56	255	
Mo-D	mg/L	10			<0.0020	<0.0020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	
Ni-D	mg/L				<0.0020	<0.0020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	
Ni-CSR	mg/L		Calculated-CSR		0.650	0.650	1.50	0.650	1.500	1.500	0.650	0.250	1.10	
K-D	mg/L				5.20	4.99	8.81	3.26	8.50	7.97	0.771	0.735	4.33	
S-D	mg/L				<6.0	<6.0	<15	<6.0	<15	<15	<3.0	<3.0	<3.0	
Sb-D	mg/L	0.2			<0.0010	<0.0010	<0.0025	<0.0010	<0.0025	<0.0025	<0.00050	<0.00050	<0.00050	
Se-D	mg/L	0.01			<0.00020	<0.00020	<0.00050	0.00029	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	
Si-D	mg/L				3.26	3.33	4.12	5.13	3.94	3.81	3.27	3.17	5.09	
Sr-D	mg/L				0.755	0.789	2.20	0.367	6.60	5.98	0.175	0.172	0.745	
Ti-D	mg/L	0.003			<0.000020	<0.000020	<0.000050	<0.000020	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	
Ti-D	mg/L	1.00			<0.010	<0.010	<0.025	0.011	<0.025	<0.025	<0.0050	<0.0050	<0.0050	
U-D	mg/L	3			<0.00020	<0.00020	<0.00050	0.00025	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	
V-D	mg/L				<0.010	<0.010	<0.025	<0.010	<0.025	<0.025	<0.0050	<0.0050	<0.0050	
Zn-D	mg/L				<0.010	<0.010	<0.025	<0.010	<0.025	<0.025	<0.0050	<0.0050	<0.0050	
Zn-CSR	mg/L		Calculated-CSR		0.900	0.900	2.400	0.075	2.400	2.400	0.075	0.075	0.900	
NH3-CSR	mg/L		Calculated-CSR		3.70	3.70	4	3.70	18.5	18.5	18.4		18.5	
N-NH3	mg/L													

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 35 Groundwater 7 Page(s)

Groundwater Q4								
Description	Well ID	Station Type	QU1105S	RBP and 2N	QU1105D	RBP Shallow GW	QU1109S	RBP Above PAG
			GW	GW	GW	GW	GW	GW
		Top Elev.	228.95	228.95	228.95	226.897	226.897	226.897
		Bottom Elev.	195.383	98.65	98.65	202.097	202.097	143.032
		Water level (m)	28.95	32.93	32.93	4.28	4.28	39.89
Date			22-Feb-23	22-Feb-23	22-Feb-23	30-Mar-23	30-Mar-23	30-Mar-23
Parameter	Units	CSR-AW (C)			Rep		Rep	
SO4-D	mg/L	1280	55	140	140	120	120	550
H2SEquiv	mg/L	0.02	0.0574	28.7	25.5	2.02	2.23	0.0234
Cl-D	mg/L	1500	<1.0	1300	1200	57	57	32
F-D	mg/L		0.33	0.38	0.34	0.61	0.61	0.11
Flu-CSR	mg/L	Calculated-CSR	3.00	3.00	3.00	3.00	3.00	3.00
Br-D	mg/L		<0.010	2.27	2.12	0.12	0.12	0.10
P-D	mg/L		0.0031	0.35	0.35	<0.0030	<0.0030	<0.0030
Al-D	mg/L		0.0034	<0.015	<0.015	<0.0060	<0.0060	<0.0060
Ag-D	mg/L		<0.000020	<0.00010	<0.00010	<0.000040	<0.000040	<0.000040
Ag-CSR	mg/L	Calculated-CSR	0.000500	0.0150	0.0150	0.000500	0.000500	0.0150
As-D	mg/L	0.05	0.00697	0.00298	0.00310	0.0997	0.103	0.00414
Ba-D	mg/L	10	0.0482	0.157	0.160	0.0560	0.0576	0.0126
B-D	mg/L	50	0.252	0.65	0.65	1.85	1.94	1.06
Be-D	mg/L	0.053	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	<0.00020
Bi-D	mg/L		<0.0010	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020
Cd-D	mg/L		<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	<0.000020
Cd-CSR	mg/L	Calculated-CSR	0.000300	0.000600	0.000600	0.000300	0.000300	0.000600
Ca-D	mg/L		23.2	111	111	18.2	18.4	110
Cr-D	mg/L	0.010	<0.0010	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020
Co-D	mg/L	0.009	<0.00020	<0.0010	<0.0010	<0.00040	<0.00040	<0.00040
Cu-D	mg/L		<0.00020	<0.0010	<0.0010	<0.00040	<0.00040	<0.00040
Cu-CSR	mg/L	Calculated-CSR	0.0400	0.0900	0.0900	0.0300	0.0300	0.0900
Fe-D	mg/L		0.0754	<0.025	<0.025	0.058	0.061	4.80
Hard-D	mg/L		76.1	294	296	62.1	63.0	320
Pb-D	mg/L		<0.00020	<0.0010	<0.0010	<0.00040	<0.00040	<0.00040
Pb-CSR	mg/L	Calculated-CSR	0.0500	0.110	0.110	0.0500	0.0500	0.160
Mg-D	mg/L		4.39	4.32	4.34	4.07	4.13	10.9
Mn-D	mg/L		0.0198	0.138	0.141	0.0242	0.0254	0.207
Na-D	mg/L		33.3	811	809	284	290	358
Mo-D	mg/L	10	<0.0010	<0.0050	<0.0050	<0.0020	<0.0020	0.0023
Ni-D	mg/L		<0.0010	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020
Ni-CSR	mg/L	Calculated-CSR	0.650	1.50	1.50	0.650	0.650	1.50
K-D	mg/L		1.38	4.66	4.68	3.67	3.98	5.18
S-D	mg/L		20.7	125	198	54.1	50.6	202
Sb-D	mg/L	0.2	<0.00050	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010
Se-D	mg/L	0.01	<0.00010	0.00240	0.00452	0.00566	0.00462	<0.00020
Si-D	mg/L		2.56	6.96	7.01	5.64	5.71	3.14
Sr-D	mg/L		0.245	1.49	1.48	0.366	0.389	1.38
Ti-D	mg/L	0.003	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	<0.000020
Tl-D	mg/L	1.00	<0.0050	<0.025	<0.025	<0.010	<0.010	<0.010
U-D	mg/L	3	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	<0.00020
V-D	mg/L		<0.0050	<0.025	<0.025	<0.010	<0.010	<0.010
Zn-D	mg/L		<0.0050	<0.025	<0.025	<0.010	<0.010	<0.010
Zn-CSR	mg/L	Calculated-CSR	0.075	1.650	1.650	0.075	0.075	2.400
NH3-CSR	mg/L	Calculated-CSR	18	11.3	11.3	11.3	11.3	18.5
N-NH3	mg/L							

Table 35 Groundwater 7 Page(s)

Groundwater Q4						
Date	Description		2N below Plant			
	Well ID	Station Type	MW001S	MW001D	MW006S	MW006D
		Top Elev.	311.5	311.5	312.3	312.3
		Bottom Elev.	303.4	281.7	303.6	294.3
		Water level (m)	3.19	8.8	1.82	1.43
Parameter	Units	CSR-AW (C)	20-Mar-23	20-Mar-23	13-Mar-23	13-Mar-23
SO4-D	mg/L	1280	400	410	460	11
H2SEquiv	mg/L	0.02	0.000957	0.000957	0.000957	0.000957
Cl-D	mg/L	1500	<1.0	<1.0	2.3	<1.0
F-D	mg/L		<0.050	<0.050	0.061	0.11
Flu-CSR	mg/L	Calculated-CSR	3.00	3.00	3.00	2.00
Br-D	mg/L		0.024	0.023	<0.10	<0.010
P-D	mg/L		<0.0030	0.015	0.060	0.14
Al-D	mg/L		<0.0030	<0.0030	0.0047	0.0127
Ag-D	mg/L		<0.000020	<0.000020	<0.000020	<0.000020
Ag-CSR	mg/L	Calculated-CSR	0.0150	0.0150	0.0150	0.000500
As-D	mg/L	0.05	0.00221	0.00331	0.00177	0.0294
Ba-D	mg/L	10	0.0190	0.0332	0.0285	0.0100
B-D	mg/L	50	0.302	0.297	0.141	0.052
Be-D	mg/L	0.053	<0.00010	<0.00010	<0.00010	<0.00010
Bi-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010
Cd-D	mg/L		0.000049	0.000029	0.000021	<0.000010
Cd-CSR	mg/L	Calculated-CSR	0.000600	0.000600	0.000600	0.000300
Ca-D	mg/L		170	186	115	16.9
Cr-D	mg/L	0.010	<0.0010	<0.0010	<0.0010	<0.0010
Co-D	mg/L	0.009	0.00171	0.00200	<0.00020	<0.00020
Cu-D	mg/L		0.00032	0.00033	0.00061	0.00050
Cu-CSR	mg/L	Calculated-CSR	0.0900	0.0900	0.0900	0.0200
Fe-D	mg/L		1.10	2.91	0.0070	<0.0050
Hard-D	mg/L		553	592	332	44.2
Pb-D	mg/L		<0.00020	<0.00020	<0.00020	<0.00020
Pb-CSR	mg/L	Calculated-CSR	0.160	0.160	0.160	0.0400
Mg-D	mg/L		31.2	31.0	11.0	0.520
Mn-D	mg/L		1.40	1.55	0.0452	0.0044
Na-D	mg/L		61.9	65.4	137	19.5
Mo-D	mg/L	10	<0.0010	<0.0010	0.0288	0.0033
Ni-D	mg/L		<0.0010	0.0018	<0.0010	<0.0010
Ni-CSR	mg/L	Calculated-CSR	1.50	1.50	1.50	0.250
K-D	mg/L		1.46	1.68	2.10	0.863
S-D	mg/L		144	149	170	3.8
Sb-D	mg/L	0.2	<0.00050	<0.00050	<0.00050	<0.00050
Se-D	mg/L	0.01	<0.00010	<0.00010	0.00038	<0.00010
Si-D	mg/L		8.99	8.85	4.25	3.46
Sr-D	mg/L		1.01	1.04	0.703	0.0837
Tl-D	mg/L	0.003	<0.000010	0.000013	<0.000010	<0.000010
Ti-D	mg/L	1.00	<0.0050	<0.0050	<0.0050	<0.0050
U-D	mg/L	3	0.00122	0.00147	0.00664	0.00059
V-D	mg/L		<0.0050	<0.0050	<0.0050	<0.0050
Zn-D	mg/L		<0.0050	<0.0050	<0.0050	<0.0050
Zn-CSR	mg/L	Calculated-CSR	2.400	2.400	2.400	0.075
NH3-CSR	mg/L	Calculated-CSR	18.4	18.4	11.3	1.31
N-NH3	mg/L					

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 35 Groundwater 7 Page(s)

Groundwater Q4							
Date	Description	Station Type	QU0810	7-South	QU0813B	7-South Area 5	
	Well ID		GW	QU0813A	GW	QU11365	QU11360
			295.7179556	221.0979556	221.0979556	285.891189	285.891189
			268.1179556	168.9979556	194.6979556	243.691189	218.691189
		Bottom Elev.	25	13.535	17.17	18.46	24.94
		Water level (m)					
Parameter	Units	CSR-AW (C)	16-Mar-23	23-Feb-23	23-Feb-23	22-Mar-23	21-Mar-23
SO4-D	mg/L	1280	270	64	31	8.2	12
H2SEquiv	mg/L	0.02	0.00436	0.202	0.00840	0.0202	0.00436
Cl-D	mg/L	1500	<1.0	14	1.3	<1.0	<1.0
F-D	mg/L		0.41	0.69	0.39	<0.050	0.67
Flu-CSR	mg/L	Calculated-CSR	3.00	3.00	3.00	3.00	3.00
Br-D	mg/L		<0.010	0.027	<0.010	<0.010	<0.010
P-D	mg/L		0.010	0.070	0.18	<0.0030	0.30
Al-D	mg/L		0.0037	<0.0060	<0.0030	<0.0030	<0.0060
Ag-D	mg/L		<0.000020	<0.000040	<0.000020	<0.000020	<0.000040
Ag-CSR	mg/L	Calculated-CSR	0.0150	0.0150	0.0150	0.000500	0.0150
As-D	mg/L	0.05	0.00036	0.361	0.512	0.0130	0.847
Ba-D	mg/L	10	0.0408	0.178	0.0557	0.100	0.101
B-D	mg/L	50	0.225	0.93	0.312	<0.050	0.59
Be-D	mg/L	0.053	<0.00010	<0.00020	<0.00010	<0.00010	<0.00020
Bi-D	mg/L		<0.0010	<0.0020	<0.0010	<0.0010	<0.0020
Cd-D	mg/L		0.000026	<0.000020	<0.000010	0.000014	<0.000020
Cd-CSR	mg/L	Calculated-CSR	0.000600	0.000600	0.000500	0.000300	0.000500
Ca-D	mg/L		130	46.5	34.1	27.7	39.5
Cr-D	mg/L	0.010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0020
Co-D	mg/L	0.009	0.00026	<0.00040	<0.00020	0.00076	<0.00040
Cu-D	mg/L		0.00083	<0.00040	<0.00020	0.00077	<0.00040
Cu-CSR	mg/L	Calculated-CSR	0.0900	0.0700	0.0500	0.0400	0.0600
Fe-D	mg/L		0.0075	0.215	0.180	0.251	0.501
Hard-D	mg/L		439	162	107	82.2	132
Pb-D	mg/L		<0.00020	<0.00040	<0.00020	<0.00020	<0.00040
Pb-CSR	mg/L	Calculated-CSR	0.160	0.0600	0.0600	0.0500	0.0600
Mg-D	mg/L		27.5	11.2	5.35	3.14	8.19
Mn-D	mg/L		0.0216	0.0387	0.0807	0.116	0.0349
Na-D	mg/L		7.60	67.2	29.2	1.27	9.81
Mo-D	mg/L	10	<0.0010	<0.0020	0.0026	<0.0010	0.0025
Ni-D	mg/L		0.0028	<0.0020	<0.0010	<0.0010	<0.0020
Ni-CSR	mg/L	Calculated-CSR	1.50	1.10	0.650	0.650	1.10
K-D	mg/L		3.66	2.54	1.49	0.194	0.77
S-D	mg/L		96.5	26.6	11.6	3.1	<6.0
Sb-D	mg/L	0.2	<0.00050	<0.0010	<0.00050	0.00072	<0.0010
Se-D	mg/L	0.01	<0.00010	0.00114	<0.00010	<0.00010	<0.00020
Si-D	mg/L		3.44	4.26	5.00	2.94	4.67
Sr-D	mg/L		1.05	0.696	0.275	0.0331	0.382
Ti-D	mg/L	0.003	0.000027	<0.000020	<0.000010	<0.000010	<0.000020
Tl-D	mg/L	1.00	<0.0050	<0.010	<0.0050	<0.0050	<0.010
U-D	mg/L	3	0.00102	<0.00020	<0.00010	<0.00010	<0.00020
V-D	mg/L		<0.0050	<0.010	<0.0050	<0.0050	<0.010
Zn-D	mg/L		<0.0050	<0.010	<0.0050	<0.0050	<0.010
Zn-CSR	mg/L	Calculated-CSR	2.400	0.900	0.900	0.075	0.900
NH3-CSR	mg/L	Calculated-CSR	18.4	11.3	11.3	18.50	18.5
N-NH3	mg/L						

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 35 Groundwater 7 Page(s)

Groundwater Q4														
Date	Parameter	Units	Description Well ID	Station Type Top Elev. Bottom Elev. Water level (m)	2 North Flooded Mine Void									
					5M#2	5M#2	5M#2	1M2N	1M2N	1M2N	QU1013D	3M2N	3M2N	3M2N
					MW	MW	MW	MW	MW	MW	GW	MW	MW	MW
					268.22	268.22	268.22	262.43	262.43	262.43	270.68			
					138.68	138.68	138.68	110.03	110.03	110.03	127.68			
					69.3			74.43	82.19					
					9-Jan-23	8-Feb-23	14-Mar-23	9-Jan-23	8-Feb-23	14-Mar-23	21-Feb-23	12-Jan-23	6-Feb-23	14-Mar-23
				CSR-AW (C)										
	SO4-D	mg/L	1280		140	160	160	280	470	410	410	1000	720	730
	H2SEquiv	mg/L	0.02	0.00978	0.0128	0.0244	0.0733	0.0787	0.0819	0.0787			0.000957	
	Cl-D	mg/L	1500	20	8.8	8.1	22	14	13	23		6.5	2.4	2.4
	F-D	mg/L		0.063	0.070	0.070	0.20	0.13	0.14	0.11		0.10	0.14	0.14
	Flu-CSR	mg/L		Calculated-CSR	3.00	3.00	3.00	3.00	3.00	3.00		3.00	3.00	3.00
	Br-D	mg/L		<0.10	<0.10	0.017	<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10
	P-D	mg/L		<0.0030	<0.0030	<0.0030	0.0033	<0.0060	<0.015	0.018		<0.0030	<0.0030	<0.0030
	Al-D	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0060		0.0196	<0.0060	<0.0060
	Ag-D	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000040		<0.000040	<0.000040	<0.000040
	Ag-CSR	mg/L		Calculated-CSR	0.0150	0.0150	0.0150	0.0150	0.0150	0.0150		0.0150	0.0150	0.0150
	As-D	mg/L	0.05	0.00843	0.00628	0.00650	0.0151	0.00353	0.00748	0.00027		<0.00020	0.00035	0.00043
	Ba-D	mg/L	10	0.0314	0.0302	0.0312	0.0258	0.0225	0.0225	0.0293		0.0133	0.0142	0.0146
	B-D	mg/L	50	0.983	0.866	0.845	0.999	0.902	0.959	1.27		0.67	0.87	0.81
	Be-D	mg/L	0.053	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020		<0.00020	<0.00020	<0.00020
	Bi-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020		<0.0020	<0.0020	<0.0020
	Cd-D	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020		<0.000030	<0.000020	<0.000020
	Cd-CSR	mg/L		Calculated-CSR	0.000600	0.000600	0.000600	0.000600	0.000600	0.000600		0.000600	0.000600	0.000600
	Ca-D	mg/L		70.9	65.9	68.4	74.3	109	101	64.8		281	136	136
	Cr-D	mg/L	0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020		<0.0020	<0.0020	<0.0020
	Co-D	mg/L	0.009	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00040		0.00260	<0.00040	<0.00040
	Cu-D	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00040		0.00271	<0.00040	0.00056
	Cu-CSR	mg/L		Calculated-CSR	0.0900	0.0800	0.0800	0.0900	0.0900	0.0900		0.0800	0.0900	0.0900
	Fe-D	mg/L		0.680	0.620	0.621	1.33	0.0052	3.10	1.04		0.013	0.032	0.346
	Hard-D	mg/L		202	188	194	221	322	298	182		810	415	414
	Pb-D	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00040		<0.00040	<0.00040	<0.00040
	Pb-CSR	mg/L		Calculated-CSR	0.110	0.0600	0.0600	0.110	0.160	0.110		0.0600	0.160	0.160
	Mg-D	mg/L		6.12	5.60	5.69	8.55	11.9	11.2	4.86		25.9	18.4	17.9
	Mn-D	mg/L		0.169	0.165	0.153	0.226	0.394	0.365	0.225		0.0625	0.159	0.149
	Na-D	mg/L		264	235	238	246	284	276	403		200	324	322
	Mo-D	mg/L	10	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020		<0.0020	<0.0020	<0.0020
	Ni-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020		0.0104	<0.0020	<0.0020
	Ni-CSR	mg/L		Calculated-CSR	1.50	1.50	1.50	1.50	1.50	1.50		1.50	1.50	1.50
	K-D	mg/L		2.63	2.67	2.67	3.77	4.36	4.29	3.84		3.47	3.63	3.54
	S-D	mg/L		49.9	56.6	56.9	94.5	171	150	150		311	257	243
	Sb-D	mg/L	0.2	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010		<0.0010	<0.0010	<0.0010
	Se-D	mg/L	0.01	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020		0.00027	<0.00020	<0.00020
	Si-D	mg/L		3.75	3.55	3.36	3.57	3.63	3.54	5.17		3.14	3.46	3.21
	Sr-D	mg/L		0.715	0.742	0.703	0.762	1.17	1.03	0.713		1.66	1.47	1.29
	Tl-D	mg/L	0.003	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020		<0.000020	<0.000020	<0.000020
	Ti-D	mg/L	1.00	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010		<0.010	<0.010	<0.010
	U-D	mg/L	3	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020		<0.00020	<0.00020	<0.00020
	V-D	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010		<0.010	<0.010	<0.010
	Zn-D	mg/L		<0.0050	<0.0050	<0.0050	0.0111	<0.0050	0.0146	<0.010		0.027	<0.010	<0.010
	Zn-CSR	mg/L		Calculated-CSR	1.650	0.900	0.900	1.650	2.400	1.650		0.900	2.400	2.400
	NH3-CSR	mg/L		Calculated-CSR	18.5	18.5	18	11.3	18.5	11.3		11.3	3.70	18.4
	N-NH3	mg/L		0.08	0.084	0.081	0.18	0.21	0.19			<0.015	0.085	0.091

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 35 Groundwater 7 Page(s)

Groundwater Q4									
Description Well ID	Station Type Top Elev. Bottom Elev. Water lervel (m)	2-South Mine Pool (PTS)			3-South Pit		2-South Flooded Mine Void		242 Mine Pool
		INF	INF	INF	MW002	MW004	MW005	242MW	
		MW	MW	MW	GW	MW	GW	MW	
		353.5	353.5	353.5	325	347.8	342.8	290	
		291	291	291	318.2	298.1	297.1	256.5	
		8.4	12.3	10.8	3.4	41.93	36.16	21.52	
Date		4-Jan-23	6-Feb-23	6-Mar-23	27-Feb-23	28-Feb-23	28-Feb-23	14-Mar-23	
Parameter	Units	CSR-AW (C)							
SO4-D	mg/L	1280	580	590	680	1300	330	1800	29
H2SEquiv	mg/L	0.02	0.000957	0.000957	0.000957	0.00287	0.00787	0.000957	0.00287
Cl-D	mg/L	1500				1.2	<1.0	5.1	<1.0
F-D	mg/L					0.12	0.085	0.22	0.083
Flu-CSR	mg/L	Calculated-CSR	3.00	3.00	3.00	3.000	3.00	3.000	3.00
Br-D	mg/L					<0.10	<0.010	<0.10	<0.010
P-D	mg/L					0.0042	<0.0030	<0.0030	
Al-D	mg/L		0.0102	0.0100	<0.0060	<0.0060	0.0049	<0.0060	0.0039
Ag-D	mg/L		<0.000020	<0.000020	<0.000040	<0.000040	<0.000020	<0.000040	<0.000020
Ag-CSR	mg/L	Calculated-CSR	0.0150	0.0150	0.0150	0.01500	0.0150	0.01500	0.0150
As-D	mg/L	0.05	0.00428	0.00349	0.00273	0.00219	0.00047	0.00332	0.106
Ba-D	mg/L	10	0.0193	0.0225	0.0215	0.0144	0.0182	0.0150	0.0771
B-D	mg/L	50	0.615	0.641	0.62	0.77	0.192	1.94	0.053
Be-D	mg/L	0.053	<0.00010	<0.00010	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010
Bi-D	mg/L		<0.0010	<0.0010	<0.0020	<0.0020	<0.0010	<0.0020	<0.0010
Cd-D	mg/L		<0.000010	<0.000010	<0.000020	<0.000020	<0.000010	<0.000020	<0.000010
Cd-CSR	mg/L	Calculated-CSR	0.000600	0.000600	0.000600	0.0006000	0.000600	0.0006000	0.000500
Ca-D	mg/L		223	236	235	499	136	387	43.5
Cr-D	mg/L	0.010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0010	<0.0020	<0.0010
Co-D	mg/L	0.009	0.00109	0.00143	0.00116	0.00307	<0.00020	0.00174	0.00081
Cu-D	mg/L		<0.00020	<0.00020	<0.00040	<0.00040	0.00068	<0.00040	<0.00020
Cu-CSR	mg/L	Calculated-CSR	0.0900	0.0900	0.0900	0.09000	0.0900	0.09000	0.0500
Fe-D	mg/L		3.39	3.25	2.73	5.09	0.0181	3.54	13.6
Hard-D	mg/L		618	646	664	1460	404	1130	123
Pb-D	mg/L		<0.00020	<0.00020	<0.00040	<0.00040	<0.00020	<0.00040	<0.00020
Pb-CSR	mg/L	Calculated-CSR	0.160	0.160	0.160	0.1600	0.160	0.1600	0.0600
Mg-D	mg/L		14.6	14.2	18.7	52.1	15.8	38.4	3.36
Mn-D	mg/L		0.351	0.398	0.363	1.54	0.0226	0.254	0.543
Na-D	mg/L		96.7	99.0	115	55.3	30.8	514	2.07
Mo-D	mg/L	10	<0.0010	<0.0010	<0.0020	<0.0020	<0.0010	<0.0020	<0.0010
Ni-D	mg/L		0.0022	0.0024	<0.0020	0.0024	0.0010	0.0032	<0.0010
Ni-CSR	mg/L	Calculated-CSR	1.50	1.50	1.50	1.500	1.50	1.500	1.10
K-D	mg/L		1.87	1.83	1.90	6.05	1.40	4.80	0.451
S-D	mg/L		188	207	230	423	119	653	9.6
Sb-D	mg/L	0.2	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	<0.00050
Se-D	mg/L	0.01	0.00044	<0.00010	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010
Si-D	mg/L		3.65	3.57	2.86	4.00	3.05	3.37	3.49
Sr-D	mg/L		1.99	2.23	1.98	4.44	0.970	5.06	0.0623
Ti-D	mg/L	0.003	<0.000010	<0.000010	<0.000020	<0.000020	<0.000010	<0.000020	0.000017
Ti-D	mg/L	1.00	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.010	<0.0050
U-D	mg/L	3	<0.00010	<0.00010	<0.00020	0.00042	<0.00010	<0.00020	<0.00010
V-D	mg/L		<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.010	<0.0050
Zn-D	mg/L		<0.0050	<0.0050	<0.010	<0.010	0.0050	<0.010	<0.0050
Zn-CSR	mg/L	Calculated-CSR	2.400	2.400	2.400	2.400	2.400	2.400	0.900
NH3-CSR	mg/L	Calculated-CSR	18.5	18.4	18.5	18.4	18.4	18.4	18.4
N-NH3	mg/L		0.074	0.061	0.054				

Appendix 1 - Q4 (January - March 2023) Water Quality Report

Table 35 Groundwater 7 Page(s)

Groundwater Q4									
Date	Parameter	Units	Description Well ID Station Type Top Elev. Bottom Elev. Water level (m)	2-Mains 7S PAG QU1410 MW 240.832 209.432 10.78	1M7SA5 MW	1M7SA5 MW	UG 7S Sumps		
							1M7SA5 MW	7SA5 MW	7SA5 MW
			CSR-AW (C)	14-Mar-23	12-Jan-23	6-Feb-23	14-Mar-23	12-Jan-23	6-Feb-23
	SO4-D	mg/L	1280	1800	230	140	160	49	46
	H2SEquiv	mg/L	0.02	0.000957		0.000957		0.000957	
	Cl-D	mg/L	1500	5.3	1.0		<1.0	1.9	<1.0
	F-D	mg/L		0.16	0.21	0.41	0.36	0.56	0.57
	Flu-CSR	mg/L	Calculated-CSR	3.000	3.00	3.00	3.00	3.00	3.00
	Br-D	mg/L		<0.10	<0.010	<0.010	<0.010	<0.010	<0.010
	P-D	mg/L			<0.0030	0.0054	0.014	0.025	0.019
	Al-D	mg/L		<0.015	0.0105	0.0049	0.0065	<0.0030	<0.0030
	Ag-D	mg/L		<0.00010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Ag-CSR	mg/L	Calculated-CSR	0.01500	0.0150	0.0150	0.0150	0.0150	0.0150
	As-D	mg/L	0.05	0.109	0.00387	0.0987	0.0773	0.223	0.230
	Ba-D	mg/L	10	0.0158	0.0506	0.167	0.158	0.133	0.134
	B-D	mg/L	50	1.11	0.218	0.452	0.448	0.567	0.587
	Be-D	mg/L	0.053	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bi-D	mg/L		<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cd-D	mg/L		<0.000050	0.000012	<0.000010	<0.000010	<0.000010	<0.000010
	Cd-CSR	mg/L	Calculated-CSR	0.0006000	0.000600	0.000600	0.000600	0.000600	0.000600
	Ca-D	mg/L		539	83.3	73.3	70.2	43.9	45.5
	Cr-D	mg/L	0.010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Co-D	mg/L	0.009	<0.0010	0.00372	0.00090	0.00133	<0.00020	<0.00020
	Cu-D	mg/L		<0.0010	0.00050	0.00040	0.00072	0.00026	<0.00020
	Cu-CSR	mg/L	Calculated-CSR	0.09000	0.0900	0.0900	0.0900	0.0700	0.0700
	Fe-D	mg/L		2.57	0.0157	0.0516	0.0785	0.0111	<0.0050
	Hard-D	mg/L		2060	275	245	239	152	154
	Pb-D	mg/L		<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Pb-CSR	mg/L	Calculated-CSR	0.1600	0.110	0.110	0.110	0.0600	0.0600
	Mg-D	mg/L		174	16.3	15.0	15.6	10.3	9.91
	Mn-D	mg/L		1.51	0.164	0.0538	0.0554	0.0088	0.0094
	Na-D	mg/L		67.9	9.88	18.5	18.3	24.6	24.0
	Mo-D	mg/L	10	<0.0050	<0.0010	<0.0010	<0.0010	0.0011	0.0011
	Ni-D	mg/L		<0.0050	0.0066	0.0023	0.0030	<0.0010	<0.0010
	Ni-CSR	mg/L	Calculated-CSR	1.500	1.50	1.50	1.50	1.10	1.10
	K-D	mg/L		7.63	1.71	2.15	2.09	2.15	2.11
	S-D	mg/L		642	68.3	47.9	48.6	15.4	15.9
	Sb-D	mg/L	0.2	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Se-D	mg/L	0.01	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Si-D	mg/L		3.33	3.31	4.42	4.07	5.23	5.40
	Sr-D	mg/L		4.67	0.479	0.664	0.571	0.542	0.562
	Tl-D	mg/L	0.003	<0.000050	0.000024	<0.000010	<0.000010	<0.000010	<0.000010
	Ti-D	mg/L	1.00	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	U-D	mg/L	3	0.00086	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	V-D	mg/L		<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Zn-D	mg/L		<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Zn-CSR	mg/L	Calculated-CSR	2.400	1.650	1.650	1.650	0.900	0.900
	NH3-CSR	mg/L	Calculated-CSR	18.4	11.3	18.5	11.3	11.3	3.70
	N-NH3	mg/L			0.023	0.025	<0.015	0.023	0.024