

Quinsam Coal Corporations Quarterly Report (April-June 2021)

For Effluent Permit PE: 7008
Environmental Department

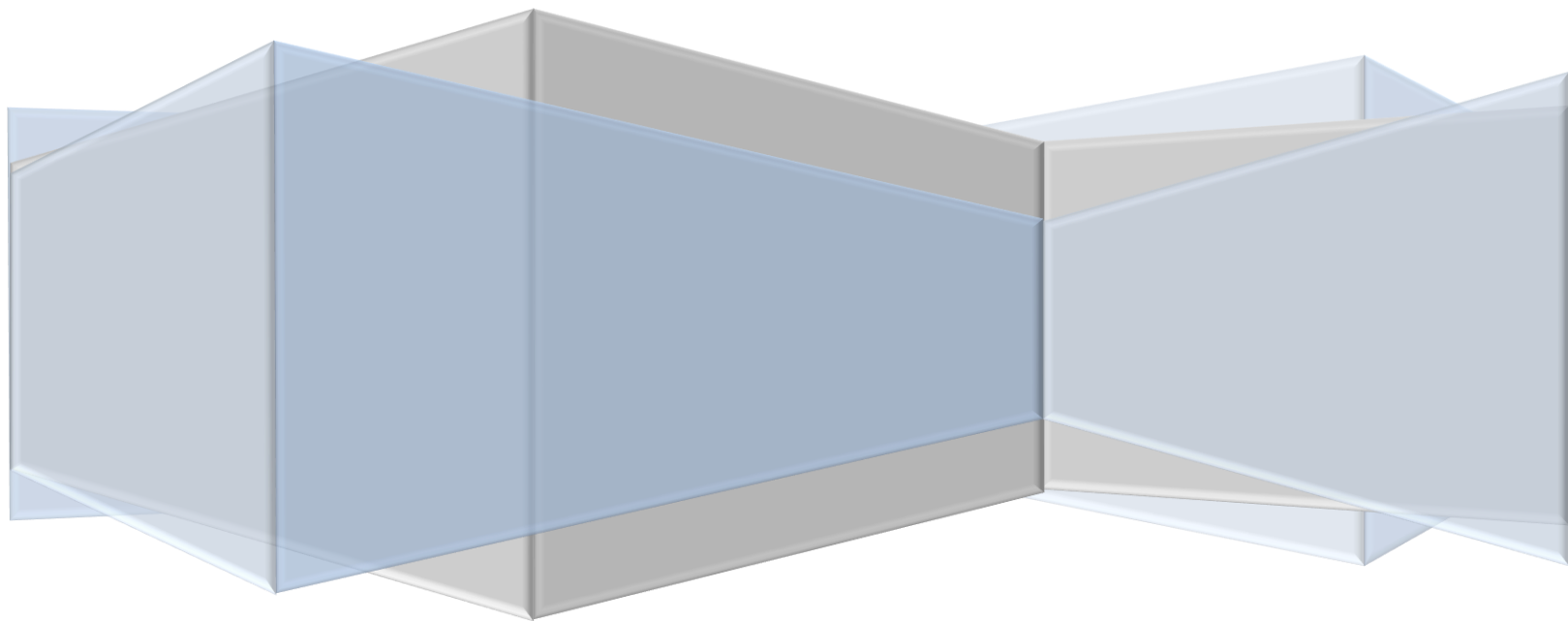


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INTRODUCTION

During Q1 (April 1st through June 30th, 2021) Quinsam Mine maintained the environmental obligations for permits PE: 7008 held with the Ministry of Environment and Climate Change Strategy and the Mines Act permit C-172. The mine continues to be operated in a “*care and maintenance*” mode with The Bowra Group Inc. as the receiver.

For Quarter 1 (Q1), all environmental monitoring was completed as per stipulations in the effluent permit PE:7008. The *Annual Water Quality Monitoring Report* was submitted on June 30th.

NORTH END WATER MANAGEMENT SYSTEM:

Stage pumping / dewatering continued from 7-South Area 5 (7SA5) into 1-Mains 7-South (1M7S) sump, where it then pumps into the 5-South Mine (5SMW). The 5SMW did not pump into 3-Mains, 2-North Mine Pool (3M2N) this quarter. All water pumped from 7-South mine has remained in the 5-South Mine pool since late March.

The 3M2N pump was operating to dewater the 2-North mine pool with discharge into Brinco brook. The 2-North Portal Sump (2NPS) collects seepage water from the tailings dam and underground 2-North mine. This water combined with 3M2N discharges into Brinco brook.

The other two major dewatering wells located in the 2-North mine pool include, 1-Mains, 2-North (1M2N) and 5-Mains 2-North (5M#2). In February 2020, the 5M#2 dewatering pump failed and on November 30, 2020, the 1M2N dewatering pump failed as reported previously. The 3M2N pumping network was used as the backup system for dewatering the mine pool until the pumps could be replaced. Consequently, the 2-North mine pool water elevation water level rose to 243.7 meters above sea level (MASL) by March 22, 2021. The water was being managed through the 3M2N pumping system.

The well pumps 5M#2 and 1M2N were replaced on March 25 and April 6, 2021, respectively. When operating these pumps discharge into either Brinco Brook or by opening gate valves located at the end of the lines, water can be directed into WP.

During Q1 the gate valves were opened directing all water from 1M2N into the 2-North Pond (WP) to supply sufficient water cover over the Potentially Acid Generating, Course Coal Refuse (PAG-CCR). This

Settling Pond 4 (WD / SP4) is the authorized discharge location for the North water management system, where permit limits are applied to water quality and quantity. This quarter all water quality remained within permit limits. Discharge occurred 91 out of 91 days. Water quantity for Q1 discharged at SP4 was calculated as 1,141,517 m³ compared to 2020 Q1 where 697,334 m³ was discharged. All water quality remained below effluent permit limits at Settling Pond #4.

SOUTH END WATER MANAGEMENT SYSTEM:

Water in the south end is managed by directing all water from the Passive Treatment System (PTS) into the 2-South and 3-South pits to maintain a water cover over the PAG-CCR during the dry season and maintain the water within the authorized works. The 2-South pump discharges the mine water into the treatment system. Water has been pumped at 4.5 L/s from the 2-South mine pool (INF) into the treatment system cells, Biochemical reactor (BCREFF) where it flows passively, to the Sulphide Polishing Cell (SPCEFF). PTS discharge water passively flows through each cell (BCREFF into SPCEFF) and is gravity feed to the 2S pit, entering at 2-South Inflow (2SI). At this location there is a V-notch weir coupled with a pressure transducer and a staff gauge (hydrometric station), where continuous inflow is monitored.

The 3-South pit maintains a water cover over the contained PAG-CCR via seepage from the 2-South pit, overflow from the water cover at 2-South pit and precipitation. This water flows down a channel from 2-South to 3-South. Continuous discharge is measured at location 2-South Culvert (2SC) into 3-South Pit. Here there is an H-flume and a flow meter measuring continuous outflow from 2-South pit and inflow to 3-South pit. Water pumped from the 3-South pit is pumped to Settling Pond #1 during spring, fall and winter. During summer, a gate valve is opened at a junction on the 3S pipeline located on the 2-South highwall. From here the 3-South water can be directed either into the 2S pit or to Settling Pond #1 (SPD). When water pumped from 3S is directed into 2S this maintains a closed loop circuit and aids in maintaining a water cover over the 2-South Pit. As a result, SPD will stop discharging (normally during mid-May) reducing the load from mine contact water on the receiving environment. The valve directing water from 3S to 2S was not opened this quarter and all water has been directed to Settling Pond #1 (SP1/SPD).

SP1 is the authorized discharge location for the South water management system where permit limits are applied to water quality and quantity. This quarter all water quality remained within permit limits. Discharge occurred for 88 out of 91 days. With a cumulative quarterly total of 59,452 m³ compared to last year Q1 where 119,698 m³ was discharged. All water quality remained below effluent permit limits at Settling Pond #1.

7-SOUTH (7SSD) WATER MANAGEMENT:

Discharge did not occur during Q1 at 7SSD. Sedimentation pond outflow is controlled by pumping water accumulated in the pre-settling pond to the 7-South Portal Sump. This procedure reduces discharge, decreasing the overall parameter loading and the potential for adverse aquatic impact in the receiving environment; as the biological availability for parameters of concern is much lower than under constant discharge conditions.

A quarterly sample was obtained from the ponded water (7SSD) and the results are available in Appendix I.

This quarter, parameters of interest remained within the specified limits of the Water Quality Guidelines (WQG) during all sampling events at 7S. The water quality results corresponding to Stream 1, 7S are available in Appendix I.

QUARTERLY MONITORING:

During the 1st Quarter (Q1) (Spring 2021), the receiving environment monitoring program for both lakes and river/stream stations was completed. Quarterly monitoring was performed for groundwater quality, effluent and with-in (in-situ) mine releases. All environmental sampling and obligations pertaining to permit PE-7008 were completed and results are available in Appendix I.

The reader should note that concentrations for most parameters of interest were not elevated above water quality guideline (WQG) levels in the receiving environment throughout the 5 in 30 sampling period, apart from pH, dissolved copper, iron, and sulphate. Most of the exceedances of WQG were observed with dissolved copper. Quinsam is using a conservative approach for copper. Only those sites outside of the Middle Quinsam lake sub basin are compared to dissolved copper. Those sites include, No Name and Lower Quinsam lake's No Name lake Outlet, Quinsam river downstream of 7-South mine (7SQR and IRQR) and Iron river.

In addition to the aforementioned monitoring, the Quinsam Environmental Department sampled groundwater wells, underground sumps and dewatering wells throughout the 2-3 North, 2-3 South 4-South, 5-South and 7-South mine areas. Ex-situ groundwater is compared to the British Columbia Contaminated Site Regulation (CSR) (BC reg.375/96. O.C. 1480/96), Schedule 6, Aquatic life (CSR-AW). There are certain parameters that continually result above the CSR-AW. These include arsenic, chloride and sulphide as H₂S. Selenium is also observed periodically in the ex-situ deep groundwater of QU1105D in the River Barrier Pillar of the 5-South mine.

The environmental department also conducted routine inspections and completed any required maintenance of the water management structures.

NON-COMPLIANCE EVENTS:

There were no new non-compliance events to report this quarter. An unauthorized discharge occurred from the 2-North mine pool during Q4 2021 and continued to seep until May 13, 2021. Seepage from shallow groundwater flowing on surface in the area continued throughout the quarter. The shallow groundwater was elevated in conductivity, arsenic, boron, copper and sulphate. Appendix I, Tables 4 and 42 present the data from the seepage water. Water quality and quantity was measured periodically from (March 19 through July 5) Table 1, below. The flow rate was measured at the entrance where the seepage flows into the Quinsam River.

Table 1: Water Quantity from Seepage into Quinsam River

Date	Flow rate (L/s)	Date	Flow rate (L/s)
March 19	1	May 20	0.50
March 30	0.16	May 25	0.37
April 7	0.08	May 31	0.30
April 21	0.013	Jun 7	0.20
March 19	1.00	Jun 10	0.18
March 30	0.16	Jun 14	0.14
April 7	0.08	Jun 21	0.11
Apr 21	1.11	Jul 5	0.07

In order to capture any impacts on the Quinsam River as a result of the seepage in this area the spring receiving environment monitoring included weekly sampling upstream at Middle Quinsam lake outlet (WB) and downstream of the seepage area on two locations on the Quinsam river (QRDS and QRDS1). Results are available in Appendix I, Table 37 pages 58 and 60. All parameters remained in low concentrations (below WQG's) on the Quinsam river at QRDS and QRDS1. Indicating limited impact on water quality in the Quinsam river as a result of the seepage area.

RECEIVING ENVIRONMENT WATER QUALITY:

The receiving environment monitoring program followed the 5 samples in 30 days schedule with sampling events spanning April 6th through May 3rd. This monitoring period is meant to capture the "*spring freshet*".

Preamble – Water Hardness

For the purposes of this report, the water quality guideline(s) (WQG) for hardness dependent parameters has been derived using site appropriate background values (i.e. monitoring location WA hardness ~30mg/L). Quinsam Coal has adopted this approach for the Iron River to provide a conservative comparison of receiving environment water quality.

PRECIPITATION

The amount of precipitation accumulated this quarter was 105 mm, higher than Q1 last year (90 mm). Precipitation in Q1 occurred mostly in May (41.40 mm). This is displayed in Appendix I, Table 31.

LAKES

The spring lake monitoring program included No Name Lake (NNL), Long Lake (LLM), Middle Quinsam Lake (MQL) and Lower Quinsam Lake (LQL). Appendix I, Tables 32 through 35 displays the depth profiling and field results with Appendix I, Table 37 (pages 39 through 55) displaying the water quality results compared to guidelines. Table 2 below, provides a summary of those parameters that were observed to be above the WQG's and WQO's for Spring monitoring in the lakes.

Table 2: Summary of Water Quality Guideline Observation for Lakes

SUMMARY OF WATER QUALITY GUIDELINE OBSERVATIONS AT RECEIVING MONITORING LOCATIONS 2020-2021						
EMS ID & Site Name	Parameter (mg/L or pH Units)	Guideline Limit	Result	Date	Guideline	Sampling Events Exceeding Guideline
E217018 - No Name Lake (NNL) 2-13 metres	pH	6.5	6.13 - 6.49	Spring 5 in 30	Min	(21/65) depths profiled during spring (2 out of 5 weeks)
NNL- 1m, 4m and 9m and 1 metre from Bottom (1MB)	Cu-D	0.0003	0.00034 (1M), 0.00034 (4M), 0.00044 (9M), 0.00034 (1MB)	Spring 5 in 30	A	Average of spring, 5 in 30 results for depths 1M, 4M, 9M and 1MB
E292118- Lower Quinsam Lake (LQL) 1M, 4M, 9M and 1MB	Cu-D	0.0003	0.00048 (1M), 0.00049 (4M), 0.00046 (9M) and 0.00047 (1MB)	Spring 5 in 30	A	Average of spring, 5 in 30 results for depths 1M, 4M, 9M and 1MB
E206619 - Long Lake Middle (LLM) (20m-21m depths)	pH	<6.5	6.45 to 6.46	Spring 5 in 30	Min	(2/105) depths profiled during spring (1 out of 5 weeks)
Min = Minimum Water Quality Guideline (WQG) M = Maximum WQG /WQO, A = Average WQG /WQO For all Middle Quinsam Lake Sub-basin and Iron River results background hardness of 30 mg/L was used to calculate those parameters that are hardness dependent.						

Noteworthy observations resulting from the lake monitoring program include:

- Average sulphate concentrations were measured at or below the water quality guideline (130 mg/L) in all lakes.
- Average sulphate concentrations resulted in 97 mg/L at 9 m and 102 mg/L from the 1 metre from bottom (1MB), on Long Lake during spring sampling.
- Sulphate in Middle Quinsam lake remained well below average guideline levels throughout the lake, averaging 36 mg/L on surface (1m and 4m) to 28 mg/L at depth (9m and 1MB).
- No Name lake experience acidic conditions where pH fell below the minimum guideline of 6.5 and Long lake experienced lower pH at 2 depths on bottom.
- Dissolved copper was just above the chronic guideline of 0.003 mg/L in No Name and Lower Quinsam Lakes at all depths during spring. These guidelines provide a conservative comparison.

STREAMS AND RIVERS

The 5 samples in 30 days receiving environment program at river and stream sites commenced April 6th and concluded May 3rd. Appendix I, Table 37 (pages 56 through 63) display water quality results from this program compared to water quality guidelines and objectives for the Middle Quinsam Lake Sub-basin and Iron River.

Monitoring stations captured within the Middle Quinsam Lake sub-basin and Quinsam river include:

- Middle Quinsam Lake Inlet (WA),
- Middle Quinsam Lake Outlet (WB),
- Quinsam River Downstream (QRDS)
- Quinsam River Downstream Site 1 (QRDS1)
- No Name Lake Outlet (NNO),
- Long Lake Outlet (LLO),
- 7-South Quinsam River (7SQR),
- Quinsam River downstream of the confluence with Iron River (IRQR).

Monitoring stations on the Iron River include:

- Iron River Upstream of future 7-South Area 5 development (IR6), and
- Iron River above the confluence with Quinsam River (IR8).

While monitoring location LLE is considered the initial dilution zone (for water quality evaluation purposes) it is important to note that this location is a wetland and represents the uppermost extent of an initial dilution zone for the South water management system discharge into Long Lake.

The Long Lake Seeps are not considered receiving environment sites but are provided in this table for comparison purposes only.

Table 3: Summary of Guideline Observations for Rivers / Streams, Seeps (LLS, LLSM) and wetland (LLE)

SUMMARY OF WATER QUALITY GUIDELINE OBSERVATIONS AT RECEIVING MONITORING LOCATIONS 2020-2021						
EMS ID & Site Name	Parameter (mg/L or pH Units)	Guideline Limit	Result	Date	Guideline	Sampling Events Exceeding Guideline
E217017 - No Name Lake Outlet (NNO)	Cu-D	0.0003	0.00037	Spring 5 in 30	A	5 in 30 Average
E292113 -7 South Quinsam River (7SQR)	Cu-D	0.0003	0.00043	Spring 5 in 30	A	5 in 30 Average
E299256 - Downstream of the confluence of the Iron River and Quinsam River (IRQR)	Cu-D	0.0003	0.00051	Spring 5 in 30	A	5 in 30 Average
E292130 - South end water entering Long Lake (LLE)	Fe-D	0.35	0.402 and 0.641	May and June	M	(2/3) Monthly sampling events
	Fe-T	1.00	1.04	June	M	(1/3) Monthly sampling events
	SO4	128	152 to 318	Rolling averages	A	(11/14) rolling averages < 128mg/L
E292131- Smaller seep into Long Lake (LLS)	Fe-T	1.00	2.09, 1.66 and 1.72	April though June	M	(3/3) Monthly sampling events
	Fe-D	0.35	2.06, 1.60 and 1.78	April though June	M	(3/3) Monthly sampling events
E292131- Long Lake Seep Middle (LLSM)	Fe-D	0.35	0.481, 0.562 and 0.706	April though June	M	(3/3) Monthly sampling events
Seepage from shallow groundwater	As-T	0.005	0.0245 to 0.0519	April though June	M	(9/9) Weekly samples
	Cu-D	0.0003	0.000376	Spring 5 in 30	A	Average of 9 weeks
	SO4	128	228 to 302	April though June	A	(5/9) rolling averages < 128mg/L
	B-D	1.2	1.79	April though June	A	Average of 9 weeks
*SO4 at LLE was calculated using a rolling average.						
Min = Minimum Water Quality Guideline (WQG) M = Maximum WQG /WQO, A = Average WQG /WQO						
For all Middle Quinsam Lake Sub-basin and Iron River results background hardness of 30 mg/L was used to calculate those parameters that are hardness dependent.						

Noteworthy observations resulting from the river/stream monitoring program include:

- Dissolved copper was above the chronic -WQG (0.003 mg/L) for the averaged results at river / stream sites (NNO, 7SQR and IRQR). These guidelines provide a conservative comparison.
- All other parameters were below the chronic and acute WQG's for rivers and streams during the spring monitoring.

Noteworthy observations resulting from the Seeps and LLE wetland monitoring locations:

- Long Lake Seeps (LLS and LLSM) display elevated iron with the smaller seep having a higher frequency of elevated results.
- LLE displays elevated concentrations of the iron.

- Rolling averages for weekly sulphate samples were above chronic-WQG of 130 mg/L for 11 out of 14 weeks using a rolling average.
- Peak sulphate concentrations at LLE are observed with decreased flow rates.

GROUNDWATER

Groundwater wells are 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. This also includes baseline and background (up-gradient of workings) groundwater wells.

The groundwater wells outside the mine footprint (ex-situ) are compared to the British Columbia Contaminated Site Regulation (CSR) (BC reg.37/96. O.C. 1480/96), describing water quality standards for freshwater Aquatic Life (AL). The aquatic life standard assumes that a minimum 1:10 dilution is available for groundwater discharged to a freshwater system; together, they are referred to as CSR-AW.

Through Q1, 19 ex-situ groundwater wells, 13 in-situ sites were monitored. Appendix 1, Tables 39 through 41 (pages 65 through 62) provide a description of wells and results of the mine pool / groundwater chemistry.

Exceedances of the CSR-AL in ex-situ groundwater were observed for dissolved concentrations of arsenic, chloride, fluoride and sulphide as H₂S as displayed in Table 4 below. Arsenic is naturally elevated in the groundwater and is associated with perched water tables interacting with the Dunsmuir sandstone. This has been observed in baseline groundwater monitoring.

Table 4: Summary of Parameters above CSR-AL in Ex-Situ Groundwater

Parameter	Sites above the CSR-AL	CSR-AL	Results
As-D	QU08-13 (A and B), QU08-21G (S and D), QU10-09 (S and D), QU10-10 (S), QU11-05 (S), QU11-09 (S), QU10-08 (D) and QU10-09 (S and D)	0.05	0.0832 to 0.458
Sulphide as H ₂ S	QU08-13 (A and B), QU08-21G (D), QU11-05 (S & D), QU11-09 (S), QU10-09 (D), QU10-08 (D), QU10-10 (S), QU10-11 (D)	0.02	0.0489 to 24.2
Cl-D	QU10-10 (D)	1500	3200 to 3400
F-D	QU10-08 (D)	2 to 3	2.3

PASSIVE TREATMENT SYSTEM (PTS)

The PTS was operating throughout the quarter with some power failure interruptions experienced. The treatment system was operating at approximately 4.5 L/s, which equates to 388,800 L/day for 91 days in Q1 totaling 35,380,800 L of pumped mine water. The mine pool water level was measured at 15.4 m above the pump in April and decreased to 12 m at the end of June. The seep stops flowing when the water level reaches around 8 m above the pump an elevation level of about 301.5 meters above sea level (mASL) for LLS and 303.5 mASL for LLSM measured at QU11-11.

Average concentrations of dissolved sulphate have been entering the system from the 2-South mine pool measured at INF resulting in 666 mg/L and leaving the system at SPCEFF resulting in 465 mg/L. This has led to a reduction in average sulphate concentrations of 201 mg/L. The station 2-South Inflow (2SI), receives discharge from the PTS, had an average sulphate concentration of 454 mg/L and SP1 averaged 358 mg/L during Q1.

Overall, a quarterly average sulphate reduction of 308 mg/L was attained between INF and SPD. The original reduction goal has been achieved for the PTS, which was to reduce sulphate concentrations to 300 mg/L. This is a result of warmer ambient temperatures increasing microbial metabolic activity within the BCR.

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 seep. 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 will continue and includes the 2-South and 3-South systems and groundwater wells QU11-11 (INF) and MW004. Relationships between mine pool water elevations and seep flow rates continue to be developed with observations noted every quarter.

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.

CONCLUSION:

Quinsam Coal is dedicated to reducing the environmental impacts as a result of mining on the environment. Overall, there were no permit limit exceedances and few provincial water quality guideline observations on site and in the receiving environment this quarter. This exemplifies that the environmental management practices employed by the environmental department are effective in reducing impacts to the surrounding environment. 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 - 2021 Annual Water Quality Report

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Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 2 Summary of Permit Limit Exceedances Permit Non-Compliances 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
E292126	South Dyke Sump	SDS	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)
E292128	1977 Bulk Sample Pit	3S77	MW & FW
E292129	Culvert Downstream of 4 South Access Road	4S-Lo	MW & FW
7-South Mining Operation			
E292069	7-South Surface Decant	7SSD	Discharge (MW & FW)
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
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)	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 Road	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	7SOR	FW
E292112	Lower Wetland Outlet at the confluence of the Quinsam River	LWO	FW
E292118	Lower Quinsam Lake Centre	LQL (1, 4, 9 & 1m from Bottom)	FW
7-South (Proposed) 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
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	Bio Cell Reactor	BCR-EFF	MW
N/A	Sulphide Polishing Cell	SPC-EFF	MW
N/A	2-South Inflow	2SI	MW
N/A	Aeration Lagoon	AL-EFF	Not in use
N/A	Settling Pond Effluent	SP-EFF	Not in use
* MW= Mine Water, FW= Freshwater, GW =Groundwater NIDZ = Near Initial Dilution Zone			

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 3 Exceedance Summary Table for EMS ID: E207409 Settling Pond #4 1 Page(s)

SUMMARY OF PERMIT LIMIT EXCEEDANCES & PERMIT NON-COMPLIANCES						
EMS ID & Site Name	Non-Compliance (PNC)	Result (mg/L)	Requirement	Date	Non-Compliance Reason	Number of events or period for PNC, P or spill event.
Unauthorized discharge at groundwater well QU11-09	Unauthorized discharge - DGIR 204584. All mine impacted discharge must pass through authorized works.	Elevated arsenic, iron and sulphate.	All mine impacted discharge must pass through authorized works.	Estimated based on groundwater elevations from February to May 13 from the groundwater well (QU11-09) with seepage from shallow mine impacted groundwater continuing to occur in the area.	The water table in 2-North Mine (aquifer recharge zone) increased to a higher elevation (243.7 MASL*) than groundwater well QU11-09 (226.3 MASL) causing the well to become artesian and discharge mine water into the Quinsam river. Spill Report DGIR 204584 submitted report March 19 and additional follow up in Q4 report with further investigation continuing.	Estimated based on groundwater elevation that this occurred from February to May 13, 2021.
*DGIR = Dangerous Goods Information Reference Number * MASL = meters above sea level						

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Table 4 Summary Of Water Quality Guideline Observations At Receiving Monitoring Locations 1 Page(s)

SUMMARY OF WATER QUALITY PARAMETER OBSERVATIONS AT RECEIVING MONITORING LOCATIONS 2020-2021						
EMS ID & Site Name	Parameter (mg/L or pH Units)	Guideline Limit	Result	Date	Guideline	Sampling Events Exceeding Guideline
E217018 - No Name Lake (NNL) 2-13 metres	pH	6.5	6.13 - 6.49	Spring 5 in 30	Min	(21/65) depths profiled during spring (2 out of 5 weeks)
NNL- 1m, 4m and 9m and 1 metre from Bottom (1MB)	Cu-D	0.0003	0.00034 (1M), 0.00034 (4M), 0.00044 (9M), 0.00034 (1MB)	Spring 5 in 30	A	Average of spring, 5 in 30 results for depths 1M, 4M, 9M and 1MB
E292118- Lower Quinsam Lake (LQL) 1M, 4M, 9M and 1MB	Cu-D	0.0003	0.00048 (1M), 0.00049 (4M), 0.00046 (9M) and 0.00047 (1MB)	Spring 5 in 30	A	Average of spring, 5 in 30 results for depths 1M, 4M, 9M and 1MB
E206619 - Long Lake Middle (LLM) (20m-21m depths)	pH	<6.5	6.45 to 6.46	Spring 5 in 30	Min	(2/105) depths profiled during spring (1 out of 5 weeks)
E217017 - No Name Lake Outlet (NNO)	Cu-D	0.0003	0.00037	Spring 5 in 30	A	5 in 30 Average
E292113 -7 South Quinsam River (7SQR)	Cu-D	0.0003	0.00043	Spring 5 in 30	A	5 in 30 Average
E299256 - Downstream of the confluence of the Iron River and Quinsam River (IRQR)	Cu-D	0.0003	0.00051	Spring 5 in 30	A	5 in 30 Average
E292130 - South end water entering Long Lake (LLE)	Fe-D	0.35	0.402 and 0.641	May and June	M	(2/3) Monthly sampling events
	Fe-T	1.00	1.04	June	M	(1/3) Monthly sampling events
	SO4	128	152 to 318	Rolling averages	A	(11/14) rolling averages < 128mg/L
E292131- Smaller seep into Long Lake (LLS)	Fe-T	1.00	2.09, 1.66 and 1.72	April though June	M	(3/3) Monthly sampling events
	Fe-D	0.35	2.06, 1.60 and 1.78	April though June	M	(3/3) Monthly sampling events
E292131- Long Lake Seep Middle (LLSM)	Fe-D	0.35	0.481, 0.562 and 0.706	April though June	M	(3/3) Monthly sampling events
Seepage from shallow groundwater	As-T	0.005	0.0245 to 0.0519	April though June	M	(9/9) Weekly samples
	Cu-D	0.0003	0.000376	Spring 5 in 30	A	Average of 9 weeks
	SO4	128	228 to 302	April though June	A	(5/9) rolling averages < 128mg/L
	B-D	1.2	1.79	April though June	A	Average of 9 weeks

*SO4 at LLE was calculated using a rolling average.

Min = Minimum Water Quality Guideline (WQG) M = Maximum WQG /WQO, A = Average WQG /WQO

For all Middle Quinsam Lake Sub-basin and Iron River results background hardness of 30 mg/L was used to calculate those parameters that are hardness dependent.

Table 5 Contaminated Sites Regulations - Aquatic Life Standards 1 Page(s)

Parameter	Sites above the CSR-AL	CSR-AL	Results
As-D	QU08-13 (A and B), QU08-21G (S and D), QU10-09 (S and D), QU10-10 (S), QU11-05 (S), QU11-09 (S), QU10-08 (D) and QU10-09 (S and D)	0.05	0.0832 to 0.458
Sulphide as H ₂ S	QU08-13 (A and B), QU08-21G (D), QU11-05 (S & D), QU11-09 (S), QU10-09 (D), QU10-08 (D), QU10-10 (S), QU10-11 (D)	0.02	0.0489 to 24.2
Cl-D	QU10-10 (D)	1500	3200 to 3400
F-D	QU10-08 (D)	2 to 3	2.3

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Table 6 Settling Pond # 4 - Authorized Discharge Location for North Mine Water 2 Page(s)

EMS ID	E207409		Stn Std	PL-N				
Site Description		Settling Pond # 4 - Authorized Discharge Location for North Mine Water						
Site Name	WD	Std Val	WD-6APR21-P	WD-12APR21-P	WD-19APR21-P	WD-26APR21-P	WD-3MAY21-P	WD-10MAY21-P
Date		Max	4/6/2021	4/12/2021	4/19/2021	4/26/2021	5/3/2021	5/10/2021
pH-F	pH Units		7.58	8.05	8.02	8.02	7.48	7.48
Cond-F	uS/cm		2040	2620	2910	2830	2890	2980
SO4-D	mg/L		630	920	910	960	1000	1000
TSS	mg/L	25	2.4	2.8	<1.0	6.0	6.4	1.6
Alk-T	mg/L		480	440	440	490	470	500
Acidity83	mg/L		3.9	4.7	9.3	10.9	4.8	11.1
Al-T	mg/L		0.0043	0.0067	<0.0060	<0.0060	<0.0060	<0.0060
As-T	mg/L		0.00178	0.00193	0.00186	0.00193	0.00165	0.00174
Ba-T	mg/L		0.0246	0.0306	0.0289	0.0271	0.0262	0.0254
B-T	mg/L		0.857	1.03	1.01	1.03	1.03	1.07
Cd-T	mg/L		0.000013	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Ca-T	mg/L		140	205	206	206	203	200
Cr-T	mg/L		<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	0.0138
Co-T	mg/L		0.00061	0.00060	0.00042	0.00049	0.00045	0.00053
Cu-T	mg/L		0.00129	0.0013	0.0018	0.0015	0.0016	0.0012
Hard-T	mg/L		409	593	601	601	592	581
Fe-T	mg/L		0.187	1.95	1.95	1.93	1.95	2.00
Pb-T	mg/L		<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Mg-T	mg/L		14.1	19.8	21.2	21.1	20.6	19.9
Mn-T	mg/L		0.137	0.440	0.468	0.520	0.510	0.519
Hg-T	mg/L		<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Mo-T	mg/L		<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	0.0171
Ni-T	mg/L		0.0036	0.0033	<0.0020	<0.0020	<0.0020	0.0587
K-T	mg/L		3.23	4.82	5.02	4.97	4.98	4.79
S-T	mg/L		198	322	338	329	328	331
Se-T	mg/L		<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Si-T	mg/L		2.89	3.54	3.56	3.46	3.35	3.26
Ag-T	mg/L		<0.000020	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
Na-T	mg/L		280	378	387	389	392	381
Sr-T	mg/L		1.25	2.02	2.08	2.05	2.10	2.15
Zn-T	mg/L		0.0118	0.066	0.044	0.028	0.023	0.017
Al-D	mg/L	0.5	0.0037	0.0180	<0.0060	<0.0030	<0.0060	<0.0060
As-D	mg/L		0.00144	0.00084	0.00085	0.00081	0.00077	0.00066
Ba-D	mg/L		0.0265	0.0281	0.0268	0.0256	0.0249	0.0226
B-D	mg/L		0.929	1.03	1.03	0.906	0.96	1.01
Be-D	mg/L		<0.00010	<0.00020	<0.00020	<0.00010	<0.00020	<0.00020
Cd-D	mg/L		<0.000010	<0.000020	<0.000020	<0.000010	<0.000020	<0.000020
Ca-D	mg/L		141	203	200	198	199	193
Cr-D	mg/L		<0.0010	<0.0020	<0.0020	<0.0010	<0.0020	<0.0020
Co-D	mg/L		0.00058	0.00059	0.00042	0.00051	0.00046	0.00048
Cu-D	mg/L	0.02	0.00047	<0.00040	<0.00040	<0.00020	<0.00040	0.00095
Hard-D	mg/L		417	588	586	575	577	565
Fe-D	mg/L	0.3	0.0169	<0.010	0.010	0.0084	0.019	0.010
Pb-D	mg/L	0.05	<0.00020	<0.00040	<0.00040	<0.00020	<0.00040	<0.00040
Mg-D	mg/L		15.8	19.6	20.9	19.7	19.4	20.2
Mn-D	mg/L		0.140	0.440	0.461	0.507	0.518	0.541
Hg-D	mg/L		<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Mo-D	mg/L		<0.0010	<0.0020	<0.0020	<0.0010	<0.0020	<0.0020
Ni-D	mg/L		0.0035	0.0033	<0.0020	0.0017	<0.0020	<0.0020
K-D	mg/L		3.44	4.86	4.94	4.80	4.89	4.74
S-D	mg/L		216	326	336	336	318	325
Se-D	mg/L		<0.00010	<0.00020	<0.00020	<0.00010	<0.00020	<0.00020
Si-D	mg/L		2.91	3.50	3.38	3.12	3.31	3.20
Na-D	mg/L		308	368	388	382	376	382
Sr-D	mg/L		1.31	2.00	2.00	2.04	2.02	2.00
Zn-D	mg/L	0.1	0.0114	0.033	0.031	0.0209	0.020	0.012
O&G	mg/L	10	<1.0					

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Table 6 Settling Pond # 4 - Authorized Discharge Location for North Mine Water 2 Page(s)

EMS ID		E207409							
Site Description		Water							
Site Name	WD	Std Val	WD-17MAY21-P	WD-25MAY21-P	WD-1Jun21-P	WD-8Jun21-P	WD-14Jun21-P	WD-21Jun21-P	WD-29Jun21-P
Date	Max		5/17/2021	5/25/2021	6/1/2021	6/8/2021	6/14/2021	6/21/2021	6/29/2021
pH-F	pH Units		7.67	7.56	7.46	7.46	7.49	7.22	7.74
Cond-F	uS/cm		3040	2570	2880	2960	2850	2880	2860
SO4-D	mg/L		1000	600	1000	1000	940	960	1000
TSS	mg/L	25	9.6	2.8	4.4	8.0	3.2	4.0	1.6
Alk-T	mg/L		490	460	470	480	490	510	500
Acidity83	mg/L		8.6	3.7	8.2	10.1	9.9	18.0	12.1
Al-T	mg/L		0.0071	<0.0060	<0.0060	<0.0060	<0.0060	0.0066	0.0037
As-T	mg/L		0.00174	0.00145	0.00121	0.00137	0.00157	0.00162	0.00125
Ba-T	mg/L		0.0269	0.0256	0.0241	0.0232	0.0221	0.0233	0.0231
B-T	mg/L		1.05	1.03	1.12	1.07	1.08	1.09	1.22
Cd-T	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010
Ca-T	mg/L		222	148	199	194	188	181	182
Cr-T	mg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010
Co-T	mg/L		0.00056	0.00040	0.00055	0.00047	0.00049	0.00050	0.00045
Cu-T	mg/L		0.0013	0.0018	0.0010	0.0012	0.0012	0.0012	0.00137
Hard-T	mg/L		647	432	583	570	554	535	541
Fe-T	mg/L		2.13	0.262	1.51	1.82	1.96	2.12	1.48
Pb-T	mg/L		<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00020
Mg-T	mg/L		22.8	15.1	21.0	21.0	20.4	20.3	21.1
Mn-T	mg/L		0.595	0.196	0.543	0.495	0.553	0.563	0.434
Hg-T	mg/L		<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Mo-T	mg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010
Ni-T	mg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0013
K-T	mg/L		5.29	3.71	5.04	4.95	4.87	5.05	4.98
S-T	mg/L		371	229	336	330	312	321	317
Se-T	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010
Si-T	mg/L		3.58	2.99	3.15	3.29	3.48	3.31	3.06
Ag-T	mg/L		<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000020
Na-T	mg/L		426	347	401	399	384	396	410
Sr-T	mg/L		2.25	1.35	2.08	2.03	1.91	1.92	1.85
Zn-T	mg/L		0.013	<0.010	<0.010	<0.010	<0.010	<0.010	0.0054
Al-D	mg/L	0.5	<0.0060	<0.0030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0030
As-D	mg/L		0.00072	0.00122	0.00059	0.00094	0.00060	0.00061	0.00056
Ba-D	mg/L		0.0237	0.0235	0.0224	0.0221	0.0211	0.0221	0.0214
B-D	mg/L		1.11	0.992	1.05	1.00	0.96	1.16	1.10
Be-D	mg/L		<0.00020	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010
Cd-D	mg/L		<0.000020	<0.000010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010
Ca-D	mg/L		203	141	203	189	180	197	179
Cr-D	mg/L		<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010
Co-D	mg/L		0.00056	0.00036	0.00058	0.00047	0.00044	0.00050	0.00035
Cu-D	mg/L	0.02	<0.00040	0.00069	<0.00040	<0.00040	<0.00040	<0.00040	0.00069
Hard-D	mg/L		597	412	594	556	525	582	528
Fe-D	mg/L	0.3	0.011	0.0322	0.011	<0.010	<0.010	<0.010	0.0148
Pb-D	mg/L	0.05	<0.00040	<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	<0.00020
Mg-D	mg/L		21.8	14.2	21.3	20.6	18.6	22.0	19.8
Mn-D	mg/L		0.591	0.179	0.512	0.492	0.510	0.581	0.385
Hg-D	mg/L		<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Mo-D	mg/L		<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010
Ni-D	mg/L		<0.0020	0.0012	<0.0020	<0.0020	<0.0020	<0.0020	0.0012
K-D	mg/L		5.10	3.66	4.89	5.06	4.56	4.85	4.80
S-D	mg/L		344	233	337	321	304	338	309
Se-D	mg/L		<0.00020	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010
Si-D	mg/L		3.42	3.02	3.33	3.11	3.16	3.26	2.91
Na-D	mg/L		398	323	393	401	368	431	382
Sr-D	mg/L		2.00	1.41	1.99	1.96	1.91	1.96	1.85
Zn-D	mg/L	0.1	<0.010	0.0073	<0.010	<0.010	<0.010	<0.010	<0.0050
O&G	mg/L	10			<1.0				

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Table 7 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	WP-6APR21-M	WP-6MAY21-M
Date		4/6/2021	5/6/2021	6/1/2021
pH-F	pH Units	8	8.07	7.95
Cond-F	uS/cm	1981	2100	2750
SO4-D	mg/L	700	690	1100
TSS	mg/L	<1.0	1.2	4.4
Alk-T	mg/L	320	230	340
Acidity83	mg/L	<1.0	3.3	2.2
Al-T	mg/L	0.0247	0.0157	0.0074
As-T	mg/L	0.00052	0.00037	0.00053
Ba-T	mg/L	0.0140	0.0135	0.0166
B-T	mg/L	0.735	0.781	0.97
Cd-T	mg/L	<0.000010	<0.000010	<0.000020
Ca-T	mg/L	150	138	191
Cr-T	mg/L	<0.0010	<0.0010	<0.0020
Co-T	mg/L	0.00959	0.00262	0.00084
Cu-T	mg/L	0.00066	0.00055	<0.0010
Hard-T	mg/L	458	437	580
Fe-T	mg/L	0.360	0.134	1.04
Pb-T	mg/L	<0.00020	<0.00020	<0.00040
Mg-T	mg/L	20.3	22.4	25.0
Mn-T	mg/L	0.256	0.0613	0.343
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019
Mo-T	mg/L	<0.0010	0.0011	<0.0020
Ni-T	mg/L	0.0200	0.0143	0.0063
K-T	mg/L	3.10	3.33	4.67
S-T	mg/L	233	257	344
Se-T	mg/L	<0.00010	<0.00010	<0.00020
Si-T	mg/L	2.57	2.25	2.40
Ag-T	mg/L	<0.000020	<0.000020	<0.000040
Na-T	mg/L	258	269	350
Sr-T	mg/L	1.26	1.37	1.94
Zn-T	mg/L	<0.0050	<0.0050	<0.010
Al-D	mg/L	0.0043	0.0033	<0.0060
As-D	mg/L	0.00036	0.00027	0.00033
Ba-D	mg/L	0.0139	0.0118	0.0149
B-D	mg/L	0.743	0.731	0.94
Be-D	mg/L	<0.00010	<0.00010	<0.00020
Cd-D	mg/L	<0.000010	<0.000010	<0.000020
Ca-D	mg/L	145	130	185
Cr-D	mg/L	<0.0010	<0.0010	<0.0020
Co-D	mg/L	0.00849	0.00102	0.00065
Cu-D	mg/L	0.00032	0.00031	0.00050
Hard-D	mg/L	448	407	566
Fe-D	mg/L	0.0060	<0.0050	<0.010
Pb-D	mg/L	<0.00020	<0.00020	<0.00040
Mg-D	mg/L	21.3	20.3	25.3
Mn-D	mg/L	0.213	0.0182	0.290
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019
Mo-D	mg/L	<0.0010	<0.0010	<0.0020
Ni-D	mg/L	0.0181	0.0099	0.0055
K-D	mg/L	3.17	3.00	4.59
S-D	mg/L	250	235	352
Se-D	mg/L	<0.00010	<0.00010	<0.00020
Si-D	mg/L	2.45	2.08	2.51
Na-D	mg/L	269	247	342
Sr-D	mg/L	1.27	1.24	1.87
Zn-D	mg/L	<0.0050	<0.0050	<0.010

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Table 8 2-North Portal Sump Effluent 1 Page(s)

EMS ID		E283433		
Site Description		2-North Portal Sump Effluent		
Site Name		2NPS	2NPS-6APR21-M	2NPS-6MAY21-M
Date		4/6/2021	5/6/2021	6/1/2021
pH-F	pH Units	7.29	7.47	7.47
Cond-F	uS/cm	2230	2450	2450
SO4-D	mg/L	950	950	980
Alk-T	mg/L	320	250	280
Acidity83	mg/L	11.0	13.1	9.9
Al-T	mg/L	0.0187	0.0113	0.0177
As-T	mg/L	0.00060	0.00088	0.00076
Ba-T	mg/L	0.0111	0.0112	0.0105
B-T	mg/L	0.70	0.81	0.79
Cd-T	mg/L	<0.000020	<0.000020	<0.000020
Ca-T	mg/L	244	255	246
Cr-T	mg/L	<0.0020	0.0061	<0.0020
Co-T	mg/L	0.00138	0.00112	0.00097
Cu-T	mg/L	<0.0010	<0.0010	<0.0010
Hard-T	mg/L	718	757	723
Fe-T	mg/L	0.233	0.230	0.236
Pb-T	mg/L	<0.00040	<0.00040	<0.00040
Mg-T	mg/L	26.3	29.6	26.6
Mn-T	mg/L	0.191	0.260	0.218
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019
Mo-T	mg/L	<0.0020	0.0070	<0.0020
Ni-T	mg/L	0.0025	0.0278	0.0025
K-T	mg/L	3.51	3.95	3.72
S-T	mg/L	299	345	317
Se-T	mg/L	<0.00020	<0.00020	<0.00020
Si-T	mg/L	2.93	3.06	2.69
Ag-T	mg/L	<0.000040	<0.000040	<0.000040
Na-T	mg/L	223	243	229
Sr-T	mg/L	1.77	1.96	1.90
Zn-T	mg/L	<0.010	<0.010	<0.010
Al-D	mg/L	<0.0060	<0.0060	0.0094
As-D	mg/L	0.00054	0.00060	0.00064
Ba-D	mg/L	0.0114	0.0102	0.0104
B-D	mg/L	0.74	0.75	0.78
Be-D	mg/L	<0.00020	<0.00020	<0.00020
Cd-D	mg/L	<0.000020	<0.000020	<0.000020
Ca-D	mg/L	243	233	255
Cr-D	mg/L	<0.0020	<0.0020	<0.0020
Co-D	mg/L	0.00135	0.00099	0.00093
Cu-D	mg/L	<0.00040	<0.00040	<0.00040
Hard-D	mg/L	726	694	748
Fe-D	mg/L	0.141	0.024	0.021
Pb-D	mg/L	<0.00040	<0.00040	<0.00040
Mg-D	mg/L	28.6	27.0	27.2
Mn-D	mg/L	0.193	0.233	0.219
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019
Mo-D	mg/L	<0.0020	<0.0020	<0.0020
Ni-D	mg/L	0.0025	0.0020	<0.0020
K-D	mg/L	3.55	3.59	3.73
S-D	mg/L	305	315	332
Se-D	mg/L	<0.00020	<0.00020	<0.00020
Si-D	mg/L	2.78	2.74	2.96
Na-D	mg/L	231	226	226
Sr-D	mg/L	1.71	1.77	1.89
Zn-D	mg/L	<0.010	<0.010	<0.010

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Table 9 Road Side Ditch Draining into MQL 1 Page(s)

EMS ID				
Site Description				
Road Side Ditch Draining into MQL				
Site Name	PDSR	PDSR-6APR21-M	PDSR-10MAY21-M	PDSR-1Jun21-M
Date		4/6/2021	5/10/2021	6/1/2021
pH-F	pH Units	7.53	7.65	7.69
Cond-F	uS/cm	1528	2100	2230
SO4-D	mg/L	750	930	990
TSS	mg/L		9.2	8.0
Al-T	mg/L	0.0110	0.106	0.0706
As-T	mg/L	0.00011	0.00022	<0.00020
Ba-T	mg/L	0.0206	0.0271	0.0337
B-T	mg/L	0.239	0.375	0.50
Cd-T	mg/L	<0.000010	0.000020	<0.000020
Ca-T	mg/L	227	299	338
Cr-T	mg/L	<0.0010	0.0032	<0.0020
Co-T	mg/L	<0.00020	<0.00020	<0.00040
Cu-T	mg/L	<0.00050	0.00060	<0.0010
Hard-T	mg/L	721	938	1060
Fe-T	mg/L	<0.010	0.109	0.033
Pb-T	mg/L	<0.00020	<0.00020	<0.00040
Mg-T	mg/L	37.7	46.1	53.3
Mn-T	mg/L	<0.0010	0.0070	0.0065
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019
Mo-T	mg/L	<0.0010	0.0040	<0.0020
Ni-T	mg/L	<0.0010	0.0130	<0.0020
K-T	mg/L	1.48	2.28	2.22
S-T	mg/L	224	290	328
Se-T	mg/L	<0.00010	<0.00010	<0.00020
Si-T	mg/L	3.39	3.93	4.06
Ag-T	mg/L	<0.000020	<0.000020	<0.000040
Na-T	mg/L	50.9	63.2	68.0
Sr-T	mg/L	1.44	2.12	2.29
Zn-T	mg/L	<0.0050	<0.0050	<0.010
Al-D	mg/L	0.0070	0.0086	0.0092
As-D	mg/L	<0.00010	<0.00020	<0.00020
Ba-D	mg/L	0.0215	0.0245	0.0312
B-D	mg/L	0.234	0.38	0.47
Be-D	mg/L	<0.00010	<0.00020	<0.00020
Cd-D	mg/L	<0.000010	<0.000020	<0.000020
Ca-D	mg/L	232	294	337
Cr-D	mg/L	<0.0010	<0.0020	<0.0020
Co-D	mg/L	<0.00020	<0.00040	<0.00040
Cu-D	mg/L	0.00032	0.00114	0.00045
Hard-D	mg/L	741	926	1070
Fe-D	mg/L	<0.0050	<0.010	<0.010
Pb-D	mg/L	<0.00020	<0.00040	<0.00040
Mg-D	mg/L	39.6	46.9	54.9
Mn-D	mg/L	<0.0010	<0.0020	<0.0020
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019
Mo-D	mg/L	<0.0010	<0.0020	<0.0020
Ni-D	mg/L	<0.0010	<0.0020	<0.0020
K-D	mg/L	1.50	1.95	2.38
S-D	mg/L	240	285	329
Se-D	mg/L	<0.00010	<0.00020	<0.00020
Si-D	mg/L	3.22	3.66	4.09
Na-D	mg/L	54.1	62.8	72.3
Sr-D	mg/L	1.42	1.90	2.19
Zn-D	mg/L	<0.0050	<0.010	<0.010

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Table 10 Culvert at Middle Quinsam Lake Road 1 Page(s)

EMS ID		E207411			
Site Description		Culvert at Middle Quinsam Lake Road			
Site Name	WC	WC-6APR21-M	WC-6APR21-R	WC-10MAY21-M	WC-1Jun21-M
Date		4/6/2021	4/6/2021	5/10/2021	6/1/2021
pH-F	pH Units	7.99	7.99	8.26	8.14
Cond-F	uS/cm	1883	1883	2940	2820
SO4-D	mg/L	590	550	1000	930
TSS	mg/L	1.2	<1.0	1.2	2.4
Al-T	mg/L	0.0034	0.0042	<0.0060	0.0075
As-T	mg/L	0.00038	0.00037	0.00032	0.00039
Ba-T	mg/L	0.0139	0.0136	0.0209	0.0217
B-T	mg/L	0.821	0.826	1.05	1.12
Cd-T	mg/L	<0.000010	<0.000010	<0.000020	<0.000020
Ca-T	mg/L	116	115	175	173
Cr-T	mg/L	<0.0010	<0.0010	0.0065	<0.0020
Co-T	mg/L	<0.00020	<0.00020	<0.00040	<0.00040
Cu-T	mg/L	<0.00050	0.00052	<0.0010	<0.0010
Hard-T	mg/L	346	345	520	517
Fe-T	mg/L	0.061	0.060	0.108	0.133
Pb-T	mg/L	<0.00020	<0.00020	<0.00040	<0.00040
Mg-T	mg/L	13.9	14.1	19.9	20.3
Mn-T	mg/L	0.0102	0.0102	0.0375	0.0218
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Mo-T	mg/L	<0.0010	<0.0010	0.0078	<0.0020
Ni-T	mg/L	0.0032	0.0033	0.0273	<0.0020
K-T	mg/L	3.10	3.07	4.78	4.89
S-T	mg/L	189	184	331	329
Se-T	mg/L	<0.00010	<0.00010	<0.00020	<0.00020
Si-T	mg/L	2.51	2.60	2.96	3.08
Ag-T	mg/L	<0.000020	<0.000020	<0.000040	<0.000040
Na-T	mg/L	264	268	380	388
Sr-T	mg/L	1.13	1.11	1.98	1.99
Zn-T	mg/L	<0.0050	<0.0050	<0.010	<0.010
Al-D	mg/L	0.0036	<0.0030	<0.0060	<0.0060
As-D	mg/L	0.00031	0.00031	0.00027	0.00036
Ba-D	mg/L	0.0146	0.0145	0.0204	0.0204
B-D	mg/L	0.875	0.888	0.99	1.04
Be-D	mg/L	<0.00010	<0.00010	<0.00020	<0.00020
Cd-D	mg/L	<0.000010	<0.000010	<0.000020	<0.000020
Ca-D	mg/L	121	120	185	167
Cr-D	mg/L	<0.0010	<0.0010	<0.0020	<0.0020
Co-D	mg/L	<0.00020	<0.00020	<0.00040	<0.00040
Cu-D	mg/L	0.00029	0.00031	<0.00040	<0.00040
Hard-D	mg/L	366	363	545	505
Fe-D	mg/L	0.0153	0.0136	<0.010	0.011
Pb-D	mg/L	<0.00020	<0.00020	<0.00040	<0.00040
Mg-D	mg/L	15.7	15.5	20.4	21.1
Mn-D	mg/L	0.0097	0.0095	0.0379	0.0184
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Mo-D	mg/L	<0.0010	<0.0010	<0.0020	<0.0020
Ni-D	mg/L	0.0031	0.0031	<0.0020	<0.0020
K-D	mg/L	3.31	3.25	4.95	4.84
S-D	mg/L	209	202	337	331
Se-D	mg/L	<0.00010	<0.00010	<0.00020	<0.00020
Si-D	mg/L	2.67	2.58	3.15	3.04
Na-D	mg/L	291	287	390	396
Sr-D	mg/L	1.16	1.16	1.93	1.88
Zn-D	mg/L	<0.0050	<0.0050	<0.010	<0.010

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Table 11 Settling Pond #1 - Authorized Discharge Location for South Mine Water 1 Page(s)

EMS ID	F218582																		
	Std Std PL-S																		
Site Description	Settling Pond #1 - Authorized Discharge Location for South Mine Water																		
Site Name	SPD	Std Val		SPD-1APR21-P	SPD-6APR21-P	SPD-12APR21-R	SPD-12APR21-P	SPD-19APR21-P	SPD-26APR21-P	SPD-3MAY21-P	SPD-10MAY21-P	SPD-17MAY21-P	SPD-25MAY21-P	SPD-1Jun21-P	SPD-8Jun21-P	SPD-14Jun21-P	SPD-21Jun21-R	SPD-21Jun21-P	SPD-29Jun21-P
Date		Max	Min	4/1/2021	4/6/2021	4/12/2021	4/12/2021	4/19/2021	4/26/2021	5/3/2021	5/10/2021	5/17/2021	5/25/2021	6/1/2021	6/8/2021	6/14/2021	6/21/2021	6/21/2021	6/29/2021
pH-F	pH Units			8.05	7.88	8.17	8.17	8.25	8.15	7.74	7.96	7.7	7.7	7.73	7.99	7.86	7.59	7.59	7.74
Cond-F	uS/cm			840	882	911	911	963	950	1038	1124	1192	1192	1020	1220	1214	1196	1196	972
pH-L	pH Units	8.5	6.0	8.05	7.99	8.13	8.14	8.09	7.97	7.81	7.99	8.03	8.01	8.07	7.93	7.84	7.96	7.95	7.82
Cond-L	uS/cm			840	850	880	870	920	900	900	920	940	920	950	1000	920	930	930	940
SO4-D	mg/L			270	340	330	310	240	350	370	340	380	370	440	410	390	430	410	400
TSS	mg/L	25	0	1.2	1.2	3.2	<1.0	2.0	<1.0	1.6	2.0	<1.0	<1.0	<1.0	2.8	1.2	<1.0	1.2	<1.0
Alk-T	mg/L				110						110			110					
Acidity83	mg/L				<1.0						1.9			1.2					
Al-T	mg/L				0.0165									0.0083					
As-T	mg/L				0.00102									0.00080					
Ba-T	mg/L				0.0109									0.0155					
B-T	mg/L				0.180									0.226					
Cd-T	mg/L				<0.000010									0.000021					
Ca-T	mg/L				129									145					
Cr-T	mg/L				<0.0010									<0.0010					
Co-T	mg/L				<0.00020									<0.00020					
Cu-T	mg/L				<0.00050									0.00075					
Hard-T	mg/L				392									442					
Fe-T	mg/L				0.106									0.156					
Pb-T	mg/L				<0.00020									<0.00020					
Mg-T	mg/L				16.6									19.4					
Mn-T	mg/L				0.0209									0.0230					
Hg-T	mg/L				<0.0000019									<0.0000019					
Mo-T	mg/L				<0.0010									<0.0010					
Ni-T	mg/L				<0.0010									0.0012					
K-T	mg/L				1.25									1.52					
S-T	mg/L				112									136					
Se-T	mg/L				<0.00010									0.00013					
Si-T	mg/L				2.16									0.95					
Ag-T	mg/L				<0.000020									<0.000020					
Na-T	mg/L				22.2									25.4					
Sr-T	mg/L				0.793									0.968					
Zn-T	mg/L				0.0189									0.0092					
Al-D	mg/L	0.5	0		0.0050						<0.0030			<0.0030					
As-D	mg/L				0.00067						0.00066			0.00075					
Ba-D	mg/L				0.0112						0.0145			0.0151					
B-D	mg/L				0.175						0.205			0.221					
Be-D	mg/L				<0.00010						<0.00010			<0.00010					
Cd-D	mg/L				<0.000010						<0.000010			<0.000010					
Ca-D	mg/L				128						145			143					
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		0.00024						0.00031			0.00028					
Hard-D	mg/L				390						442			437					
Fe-D	mg/L	0.5	0		0.0241						0.0866			0.101					
Pb-D	mg/L	0.05	0		<0.00020						<0.00020			<0.00020					
Mg-D	mg/L				16.9						19.2			19.7					
Mn-D	mg/L				0.0110						0.0159			0.0204					
Hg-D	mg/L				<0.0000019						<0.0000019			<0.0000019					
Mo-D	mg/L				<0.0010						<0.0010			<0.0010					
Ni-D	mg/L				<0.0010						<0.0010			<0.0010					
K-D	mg/L				1.29						1.53			1.58					
S-D	mg/L				114						133			141					
Se-D	mg/L				<0.00010						<0.00010			<0.00010					
Si-D	mg/L				2.02						1.27			0.99					
Na-D	mg/L				23.2						24.6			26.1					
Sr-D	mg/L				0.794						0.942			0.945					
Zn-D	mg/L	0.2	0		0.0121						0.0137			0.0069					
O&G	mg/L	10	0		<1.0									<1.0					

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Table 12 Passage Treatment System (PTS) Influent for Biocell 1 Page(s)

EMS ID																	
Site Description Passive Treatment System (PTS) Influent from 2-S Mine Pool																	
Site Name	INF	INF-6APR21-M	INF-12APR21-M	INF-19APR21-M	INF-26APR21-M	INF-3MAY21-M	INF-10MAY21-M	INF-17MAY21-R	INF-17MAY21-M	INF-25MAY21-M	INF-1Jun21-R	INF-1Jun21-M	INF-8Jun21-M	INF-14Jun21-R	INF-14Jun21-M	INF-21Jun21-M	INF-29Jun21-M
Date		4/6/2021	4/12/2021	4/19/2021	4/26/2021	5/3/2021	5/10/2021	5/17/2021	5/17/2021	5/25/2021	6/1/2021	6/1/2021	6/8/2021	6/14/2021	6/14/2021	6/21/2021	6/29/2021
pH-F	pH Units	7.04	7.58	7.51	7.59	6.88	7.11	7.26	7.26	7.1	7.06	7.06	7.16	7.06	7.07	7.06	7.48
Cond-F	uS/cm	1637	1658	1739	1756	1833	2000	2050	2050	2160	1884	1884	2080	2210	2220	2210	1717
SO4-D	mg/L	640	580	680	700	690	670	680	700	760	740	740	630	670	660	670	540
TSS	mg/L	7.2					8.4										
Alk-T	mg/L	270					270				270	260					
Acidity83	mg/L	11.4					15.3				16.1	17.3					
Al-T	mg/L	<0.0030					<0.0030				0.0090	0.0127					
As-T	mg/L	0.00330					0.00398				0.00403	0.00403					
Ba-T	mg/L	0.0217					0.0217				0.0217	0.0214					
B-T	mg/L	0.640					0.668				0.77	0.76					
Cd-T	mg/L	<0.000010					<0.000010				0.000091	0.000164					
Ca-T	mg/L	225					246				250	247					
Cr-T	mg/L	<0.0010					0.0015				<0.0020	<0.0020					
Co-T	mg/L	0.00049					0.00053				0.00050	0.00057					
Cu-T	mg/L	<0.00050					<0.00050				0.0010	0.0016					
Hard-T	mg/L	624					680				694	687					
Fe-T	mg/L	3.28					3.66				3.73	3.71					
Pb-T	mg/L	<0.00020					<0.00020				<0.00040	<0.00040					
Mg-T	mg/L	14.8					16.0				17.1	17.0					
Mn-T	mg/L	0.373					0.395				0.407	0.415					
Hg-T	mg/L	<0.0000019					<0.0000019				<0.0000019	<0.0000019					
Mo-T	mg/L	<0.0010					0.0021				<0.0020	<0.0020					
Ni-T	mg/L	<0.0010					0.0070				<0.0020	<0.0020					
K-T	mg/L	1.86					1.86				1.93	1.95					
S-T	mg/L	210					225				232	233					
Se-T	mg/L	<0.00010					<0.00010				<0.00020	<0.00020					
Si-T	mg/L	3.08					3.20				3.07	3.10					
Ag-T	mg/L	<0.000020					<0.000020				<0.000040	<0.000040					
Na-T	mg/L	107					106				114	114					
Sr-T	mg/L	2.15					2.46				2.35	2.36					
Zn-T	mg/L	<0.0050					<0.0050				<0.010	<0.010					
Al-D	mg/L	<0.0030					<0.0060				<0.0060	<0.0060					
As-D	mg/L	0.00323					0.00368				0.00379	0.00370					
Ba-D	mg/L	0.0232					0.0215				0.0221	0.0211					
B-D	mg/L	0.654					0.68				0.70	0.70					
Be-D	mg/L	<0.00010					<0.00020				<0.00020	<0.00020					
Cd-D	mg/L	<0.000010					<0.000020				<0.000020	<0.000020					
Ca-D	mg/L	231					253				258	245					
Cr-D	mg/L	<0.0010					<0.0020				<0.0020	<0.0020					
Co-D	mg/L	0.00048					0.00051				0.00042	<0.00040					
Cu-D	mg/L	<0.00020					<0.00040				<0.00040	<0.00040					
Hard-D	mg/L	641					703				719	683					
Fe-D	mg/L	3.34					3.71				3.83	3.70					
Pb-D	mg/L	<0.00020					<0.00040				<0.00040	<0.00040					
Mg-D	mg/L	15.8					17.3				18.0	17.1					
Mn-D	mg/L	0.369					0.414				0.403	0.384					
Hg-D	mg/L	<0.0000019					<0.0000019				<0.0000019	<0.0000019					
Mo-D	mg/L	<0.0010					<0.0020				<0.0020	<0.0020					
Ni-D	mg/L	<0.0010					<0.0020				<0.0020	<0.0020					
K-D	mg/L	1.92					1.94				2.12	2.00					
S-D	mg/L	219					239				248	233					
Se-D	mg/L	0.00015					<0.00020				<0.00020	<0.00020					
Si-D	mg/L	3.10					3.34				3.35	3.18					
Na-D	mg/L	112					114				117	112					
Sr-D	mg/L	2.18					2.37				2.42	2.29					
Zn-D	mg/L	<0.0050					<0.010				<0.010	<0.010					

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Table 13 PTS Biochemical Reactor Cell 1 Page(s)

EMS ID														
Site Description		Passive Treatment System Biochemical Reactor Cell												
Site Name	BCR	BCR-6APR21-M	BCREFF-12APR21-MBCREFF-19APR21-MBCREFF-26APR21-MBCREFF-3MAY21-M	BCR-10MAY21-M	3CREFF-17MAY21-M3CREFF-25MAY21-M	BCREFF-1Jun21-M	BCREFF-8Jun21-M	BCREFF-14Jun21-M	BCREFF-21Jun21-M	BCREFF-29Jun21-M				
Date		4/6/2021	4/12/2021	4/19/2021	4/26/2021	5/3/2021	5/10/2021	5/17/2021	5/25/2021	6/1/2021	6/8/2021	6/14/2021	6/21/2021	6/29/2021
pH-L	pH Units	7.78	8.00	8.33	7.83	7.82	7.88	7.91	8.14	8.00	7.90	7.76	7.68	7.91
Cond-L	uS/cm	1500	1500	1500	1500	1600	1600	1600	1600	1600	1700	1600	1600	1600
SO4-D	mg/L	500	570	530	560	610	600	580	560	470	500	570	570	560
TSS	mg/L	<1.0					<1.0							
Alk-T	mg/L	280					340			400				
Acidity83	mg/L	13.2					18.6			20.2				
Al-T	mg/L	0.0054					0.0065			0.0131				
As-T	mg/L	0.00011					0.00019			0.00052				
Ba-T	mg/L	0.0277					0.0336			0.0335				
B-T	mg/L	0.627					0.751			0.87				
Cd-T	mg/L	<0.000010					<0.000010			0.000062				
Ca-T	mg/L	205					234			242				
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	565					642			669				
Fe-T	mg/L	<0.010					<0.010			<0.020				
Pb-T	mg/L	<0.00020					<0.00020			<0.00040				
Mg-T	mg/L	13.0					14.2			15.8				
Mn-T	mg/L	0.254					0.252			0.253				
Hg-T	mg/L	<0.0000019					<0.0000019			<0.000038				
Mo-T	mg/L	<0.0010					<0.0010			<0.0020				
Ni-T	mg/L	<0.0010					0.0030			<0.0020				
K-T	mg/L	1.81					1.95			2.11				
S-T	mg/L	176					186			172				
Se-T	mg/L	<0.00010					<0.00010			<0.00020				
Si-T	mg/L	3.20					3.93			4.55				
Ag-T	mg/L	<0.000020					<0.000020			<0.000040				
Na-T	mg/L	104					104			113				
Sr-T	mg/L	1.94					2.42			2.29				
Zn-T	mg/L	<0.0050					<0.0050			<0.010				
Al-D	mg/L	0.0051					0.0058			0.0068				
As-D	mg/L	0.00013					0.00013			0.00047				
Ba-D	mg/L	0.0285					0.0327			0.0320				
B-D	mg/L	0.624					0.698			0.76				
Be-D	mg/L	<0.00010					<0.00010			<0.00020				
Cd-D	mg/L	<0.000010					<0.000010			<0.000020				
Ca-D	mg/L	207					241			233				
Cr-D	mg/L	<0.0010					<0.0010			<0.0020				
Co-D	mg/L	<0.00020					<0.00020			<0.00040				
Cu-D	mg/L	<0.00020					<0.00020			<0.00040				
Hard-D	mg/L	574					666			645				
Fe-D	mg/L	<0.0050					0.0060			<0.010				
Pb-D	mg/L	<0.00020					<0.00020			<0.00040				
Mg-D	mg/L	13.6					15.6			15.4				
Mn-D	mg/L	0.246					0.271			0.245				
Hg-D	mg/L	<0.0000019					<0.0000019			<0.000038				
Mo-D	mg/L	<0.0010					<0.0010			<0.0020				
Ni-D	mg/L	<0.0010					<0.0010			<0.0020				
K-D	mg/L	1.85					2.14			2.17				
S-D	mg/L	227					333			242				
Se-D	mg/L	0.00508					0.00446			0.0216				
Si-D	mg/L	3.13					3.95			4.28				
Na-D	mg/L	108					111			108				
Sr-D	mg/L	1.98					2.41			2.27				
Zn-D	mg/L	<0.0050					<0.0050			<0.010				

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Table 14 PTS Sulphide Polishing Cell 1 Page(s)

EMS ID														
Site Description Passive Treatment System Sulphide Polishing Cell														
Site Name	SPCEFF	SPCEFF-6APR21-M	SPCEFF-12APR21-M	SPCEFF-18APR21-M	SPCEFF-26APR21-M	SPCEFF-3MAY21-M	SPCEFF-10MAY21-M	SPCEFF-17MAY21-M	SPCEFF-25MAY21-M	SPCEFF-1Jun21-M	SPCEFF-8Jun21-M	SPCEFF-14Jun21-M	SPCEFF-21Jun21-M	SPCEFF-29Jun21-M
Date		4/6/2021	4/12/2021	4/19/2021	4/26/2021	5/3/2021	5/10/2021	5/17/2021	5/25/2021	6/1/2021	6/8/2021	6/14/2021	6/21/2021	6/29/2021
pH-F	pH Units	7.11	8.25	8.16	8.15	7.73	7.88	7.57	7.7	7.57	7.72	7.84	7.48	7.75
Cond-F	uS/cm	1539	1330	1414	1416	1486	1512	1754	1691	1636	5200	2010	1905	1611
SO4-D	mg/L	550	480	480	350	420	430	440	430	530	500	550	470	420
TSS	mg/L	1.2					2.0							
Alk-T	mg/L	280					330			370				
Acidity83	mg/L	13.4					4.7			13.9				
Al-T	mg/L	0.0056					0.0067			0.0113				
As-T	mg/L	0.00016					0.00168			0.00641				
Ba-T	mg/L	0.0280					0.0341			0.0457				
B-T	mg/L	0.630					0.650			0.756				
Cd-T	mg/L	<0.000010					<0.000010			<0.000010				
Ca-T	mg/L	204					180			222				
Cr-T	mg/L	<0.0010					<0.0010			<0.0010				
Co-T	mg/L	<0.00020					0.00030			0.00073				
Cu-T	mg/L	<0.00050					0.00944			0.00287				
Hard-T	mg/L	562					502			614				
Fe-T	mg/L	0.017					0.333			0.830				
Pb-T	mg/L	<0.00020					<0.00020			<0.00020				
Mg-T	mg/L	13.0					12.8			14.7				
Mn-T	mg/L	0.247					0.0223			0.395				
Hg-T	mg/L	<0.0000019					<0.0000019			<0.000038				
Mo-T	mg/L	<0.0010					<0.0010			<0.0010				
Ni-T	mg/L	<0.0010					0.0020			<0.0010				
K-T	mg/L	1.81					1.65			2.29				
S-T	mg/L	178					144			171				
Se-T	mg/L	<0.00010					<0.00010			<0.00010				
Si-T	mg/L	3.16					2.01			4.26				
Ag-T	mg/L	<0.000020					<0.000020			<0.000020				
Na-T	mg/L	103					104			110				
Sr-T	mg/L	1.95					2.03			2.26				
Zn-T	mg/L	<0.0050					<0.0050			<0.0050				
Al-D	mg/L	0.0072					0.0039			0.0080				
As-D	mg/L	0.00015					0.00117			0.00607				
Ba-D	mg/L	0.0284					0.0328			0.0446				
B-D	mg/L	0.628					0.623			0.704				
Be-D	mg/L	<0.00010					<0.00010			<0.00010				
Cd-D	mg/L	<0.000010					<0.000010			<0.000010				
Ca-D	mg/L	210					182			222				
Cr-D	mg/L	<0.0010					<0.0010			<0.0010				
Co-D	mg/L	<0.00020					0.00029			0.00037				
Cu-D	mg/L	<0.00020					0.00578			<0.00020				
Hard-D	mg/L	581					510			615				
Fe-D	mg/L	0.0128					0.0924			0.376				
Pb-D	mg/L	<0.00020					<0.00020			<0.00020				
Mg-D	mg/L	13.5					13.4			14.9				
Mn-D	mg/L	0.230					0.0215			0.380				
Hg-D	mg/L	0.0000021					<0.0000019			<0.000038				
Mo-D	mg/L	<0.0010					<0.0010			<0.0010				
Ni-D	mg/L	<0.0010					<0.0010			<0.0010				
K-D	mg/L	1.81					1.76			2.26				
S-D	mg/L	220					147			174				
Se-D	mg/L	0.00367					<0.00010			<0.00010				
Si-D	mg/L	3.19					2.06			4.17				
Na-D	mg/L	107					106			110				
Sr-D	mg/L	1.95					1.96			2.23				
Zn-D	mg/L	<0.0050					<0.0050			<0.0050				

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Table 15 2 South Pit Inflow 1 Page(s)

EMS ID															
Site Description		2 South Pit Inflow													
Site Name	2SI	2SI-6APR21-M	2SI-12APR21-M	2SI-19APR21-M	2SI-26APR21-M	2SI-3MAY21-M	2SI-10MAY21-M	2SI-17MAY21-M	2SI-25MAY21-R	2SI-25MAY21-M	2SI-1Jun21-M	2SI-8Jun21-M	2SI-14Jun21-M	2SI-21Jun21-M	2SI-29Jun21-M
Date		4/6/2021	4/12/2021	4/19/2021	4/26/2021	5/3/2021	5/10/2021	5/17/2021	5/25/2021	5/25/2021	6/1/2021	6/8/2021	6/14/2021	6/21/2021	6/29/2021
pH-F	pH Units	7.43	8.13	8.1	8.18	7.68	7.85	7.99	7.67	7.67	7.49	7.61	7.73	7.67	7.98
Cond-F	uS/cm	1026	1202	1373	1394	1537	1578	1745	1397	1397	839	741	1956	2000	1558
SO4-D	mg/L	440	440	480	510	480	490	540	400	390	270	130	540	570	630
TSS	mg/L	1.2					1.6								
Alk-T	mg/L	190					280				140				
Acidity83	mg/L	2.9					4.5				3.2				
Al-T	mg/L	0.0073					0.0041				0.0040				
As-T	mg/L	0.00021					0.00059				0.00025				
Ba-T	mg/L	0.0217					0.0343				0.0246				
B-T	mg/L	0.404					0.630				0.318				
Cd-T	mg/L	<0.000010					<0.000010				<0.000010				
Ca-T	mg/L	144					200				105				
Cr-T	mg/L	<0.0010					<0.0010				<0.0010				
Co-T	mg/L	<0.00020					0.00040				0.00055				
Cu-T	mg/L	<0.00050					<0.00050				<0.00050				
Hard-T	mg/L	402					554				302				
Fe-T	mg/L	0.144					0.332				0.248				
Pb-T	mg/L	<0.00020					<0.00020				<0.00020				
Mg-T	mg/L	10.3					13.6				9.49				
Mn-T	mg/L	0.146					0.316				0.721				
Hg-T	mg/L	<0.0000019					<0.0000019				<0.0000019				
Mo-T	mg/L	<0.0010					<0.0010				<0.0010				
Ni-T	mg/L	<0.0010					0.0010				<0.0010				
K-T	mg/L	1.19					1.64				0.826				
S-T	mg/L	125					172				79.9				
Se-T	mg/L	<0.00010					<0.00010				<0.00010				
Si-T	mg/L	2.99					3.84				4.64				
Ag-T	mg/L	<0.000020					<0.000020				<0.000020				
Na-T	mg/L	65.2					91.2				37.6				
Sr-T	mg/L	1.23					1.98				0.899				
Zn-T	mg/L	<0.0050					<0.0050				0.0128				
Al-D	mg/L	0.0047					<0.0030				<0.0030				
As-D	mg/L	0.00021					0.00045				0.00024				
Ba-D	mg/L	0.0234					0.0337				0.0227				
B-D	mg/L	0.415					0.588				0.282				
Be-D	mg/L	<0.00010					<0.00010				<0.00010				
Cd-D	mg/L	<0.000010					<0.000010				<0.000010				
Ca-D	mg/L	150					209				101				
Cr-D	mg/L	<0.0010					<0.0010				<0.0010				
Co-D	mg/L	<0.00020					0.00040				0.00052				
Cu-D	mg/L	0.00021					<0.00020				0.00027				
Hard-D	mg/L	422					583				290				
Fe-D	mg/L	0.0662					0.0417				0.0816				
Pb-D	mg/L	<0.00020					<0.00020				<0.00020				
Mg-D	mg/L	11.4					14.6				9.19				
Mn-D	mg/L	0.151					0.337				0.660				
Hg-D	mg/L	<0.0000019					<0.0000019				<0.0000019				
Mo-D	mg/L	<0.0010					<0.0010				<0.0010				
Ni-D	mg/L	<0.0010					<0.0010				<0.0010				
K-D	mg/L	1.28					1.82				0.852				
S-D	mg/L	131					181				76.6				
Se-D	mg/L	<0.00010					<0.00010				<0.00010				
Si-D	mg/L	2.89					3.83				4.51				
Na-D	mg/L	71.7					96.3				35.7				
Sr-D	mg/L	1.27					1.99				0.840				
Zn-D	mg/L	<0.0050					<0.0050				<0.0050				

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Table 16 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	2S-6APR21-M	2S-10MAY21-M	2S-1Jun21-M
Date		4/6/2021	5/10/2021	6/1/2021	
pH-F	pH Units	7.94	8.19	8.12	
Cond-F	uS/cm	955	1217	1187	
SO4-D	mg/L	340	440	470	
Alk-T	mg/L	140	150	130	
Acidity83	mg/L	<1.0	1.5	<1.0	
Al-T	mg/L	0.0147	0.0104	0.0035	
As-T	mg/L	0.00016	0.00031	0.00038	
Ba-T	mg/L	0.0185	0.0231	0.0230	
B-T	mg/L	0.345	0.470	0.518	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	
Ca-T	mg/L	119	142	132	
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	<0.00050	<0.00050	
Hard-T	mg/L	339	403	382	
Fe-T	mg/L	0.056	0.038	<0.010	
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	
Mg-T	mg/L	10.1	11.9	12.5	
Mn-T	mg/L	0.0153	0.0147	0.0071	
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	
K-T	mg/L	1.03	1.34	1.51	
S-T	mg/L	114	144	151	
Se-T	mg/L	<0.00010	<0.00010	<0.00010	
Si-T	mg/L	2.38	2.23	2.21	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	
Na-T	mg/L	56.7	72.4	78.2	
Sr-T	mg/L	1.04	1.46	1.49	
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	
Al-D	mg/L	<0.0030	<0.0030	0.0034	
As-D	mg/L	0.00014	0.00025	0.00042	
Ba-D	mg/L	0.0195	0.0228	0.0224	
B-D	mg/L	0.348	0.463	0.499	
Be-D	mg/L	<0.00010	<0.00010	<0.00010	
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	
Ca-D	mg/L	122	143	138	
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	
Co-D	mg/L	<0.00020	<0.00020	<0.00020	
Cu-D	mg/L	0.00036	0.00036	0.00044	
Hard-D	mg/L	350	407	398	
Fe-D	mg/L	0.0126	<0.0050	0.0158	
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	
Mg-D	mg/L	10.7	12.1	12.7	
Mn-D	mg/L	0.0114	0.0028	0.0106	
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	
K-D	mg/L	1.06	1.41	1.53	
S-D	mg/L	115	146	157	
Se-D	mg/L	<0.00010	<0.00010	<0.00010	
Si-D	mg/L	2.29	2.33	2.28	
Na-D	mg/L	59.9	75.1	78.5	
Sr-D	mg/L	1.07	1.44	1.47	
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	

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Table 17 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	2SC-6APR21-M	2SC-10MAY21-M	2SC-1Jun21-M
Date		4/6/2021	5/10/2021	6/1/2021
pH-F	pH Units	7.78	8.03	8.12
Cond-F	uS/cm	1473	1581	1187
SO4-D	mg/L	640	610	560
Alk-T	mg/L	210	210	200
Acidity83	mg/L	2.4	4.2	3.0
Al-T	mg/L	<0.0030	<0.0030	<0.0030
As-T	mg/L	0.00036	0.00046	0.00035
Ba-T	mg/L	0.0126	0.0145	0.0143
B-T	mg/L	0.281	0.334	0.356
Cd-T	mg/L	<0.000010	<0.000010	<0.000010
Ca-T	mg/L	236	241	218
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	<0.00050	<0.00050
Hard-T	mg/L	706	715	649
Fe-T	mg/L	0.023	0.018	0.011
Pb-T	mg/L	<0.00020	<0.00020	<0.00020
Mg-T	mg/L	28.7	27.9	25.5
Mn-T	mg/L	0.0078	0.0057	0.0038
Hg-T	mg/L	<0.0000019		
Mo-T	mg/L	<0.0010	<0.0010	<0.0010
Ni-T	mg/L	<0.0010	<0.0010	<0.0010
K-T	mg/L	2.03	2.29	2.30
S-T	mg/L	199	204	193
Se-T	mg/L	0.00018	0.00015	0.00013
Si-T	mg/L	2.20	2.44	2.53
Ag-T	mg/L	<0.000020	<0.000020	<0.000020
Na-T	mg/L	31.5	40.5	43.0
Sr-T	mg/L	1.40	1.53	1.39
Zn-T	mg/L	<0.0050	<0.0050	<0.0050
Al-D	mg/L	<0.0030	<0.0030	<0.0060
As-D	mg/L	0.00035	0.00034	0.00042
Ba-D	mg/L	0.0134	0.0142	0.0144
B-D	mg/L	0.284	0.316	0.34
Be-D	mg/L	<0.00010	<0.00010	<0.00020
Cd-D	mg/L	<0.000010	<0.000010	<0.000020
Ca-D	mg/L	249	242	225
Cr-D	mg/L	<0.0010	<0.0010	<0.0020
Co-D	mg/L	<0.00020	<0.00020	<0.00040
Cu-D	mg/L	<0.00020	<0.00020	<0.00040
Hard-D	mg/L	747	722	671
Fe-D	mg/L	0.0059	0.0058	<0.010
Pb-D	mg/L	<0.00020	<0.00020	<0.00040
Mg-D	mg/L	30.3	28.9	26.8
Mn-D	mg/L	0.0059	0.0053	0.0036
Hg-D	mg/L	<0.0000019		
Mo-D	mg/L	<0.0010	<0.0010	<0.0020
Ni-D	mg/L	<0.0010	<0.0010	<0.0020
K-D	mg/L	2.11	2.34	2.38
S-D	mg/L	209	213	193
Se-D	mg/L	0.00023	0.00018	<0.00020
Si-D	mg/L	2.29	2.55	2.58
Na-D	mg/L	33.9	41.8	44.9
Sr-D	mg/L	1.44	1.51	1.37
Zn-D	mg/L	<0.0050	<0.0050	<0.010

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Table 18 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	3S-6APR21-M	3S-10MAY21-M
Date			4/6/2021	5/10/2021
pH-F	pH Units		7.74	8
Cond-F	uS/cm		1398	1502
SO4-D	mg/L		590	590
Alk-T	mg/L		170	150
Acidity83	mg/L		2.7	3.0
Al-T	mg/L		0.0236	
As-T	mg/L		0.00037	
Ba-T	mg/L		0.0121	
B-T	mg/L		0.275	
Cd-T	mg/L		<0.000010	
Ca-T	mg/L		226	
Cr-T	mg/L		<0.0010	
Co-T	mg/L		<0.00020	
Cu-T	mg/L		<0.00050	
Hard-T	mg/L		681	
Fe-T	mg/L		0.052	
Pb-T	mg/L		<0.00020	
Mg-T	mg/L		28.2	
Mn-T	mg/L		0.0040	
Hg-T	mg/L		<0.0000019	
Mo-T	mg/L		<0.0010	
Ni-T	mg/L		<0.0010	
K-T	mg/L		2.02	
S-T	mg/L		197	
Se-T	mg/L		0.00015	
Si-T	mg/L		2.16	
Ag-T	mg/L		<0.000020	
Na-T	mg/L		31.0	
Sr-T	mg/L		1.36	
Zn-T	mg/L		<0.0050	
Al-D	mg/L		<0.0030	
As-D	mg/L		0.00036	
Ba-D	mg/L		0.0127	
B-D	mg/L		0.276	
Be-D	mg/L		<0.00010	
Cd-D	mg/L		<0.000010	
Ca-D	mg/L		231	
Cr-D	mg/L		<0.0010	
Co-D	mg/L		<0.00020	
Cu-D	mg/L		<0.00020	
Hard-D	mg/L		698	
Fe-D	mg/L		0.0057	
Pb-D	mg/L		<0.00020	
Mg-D	mg/L		29.7	
Mn-D	mg/L		0.0025	
Hg-D	mg/L		<0.0000019	
Mo-D	mg/L		<0.0010	
Ni-D	mg/L		<0.0010	
K-D	mg/L		2.08	
S-D	mg/L		203	
Se-D	mg/L		0.00019	
Si-D	mg/L		2.08	
Na-D	mg/L		33.0	
Sr-D	mg/L		1.40	
Zn-D	mg/L		<0.0050	

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Table 19 Culvert Downstream End at Access Road 1 Page(s)

EMS ID E217014				
Site Description Culvert Downstream End at Access Road				
Site Name	SPC	SPC-6APR21-M	SPC-10MAY21-M	SPC-1Jun21-M
Date		06/Apr/21	10/May/21	01/Jun/21
pH-F	pH Units	7.57	7.48	7.67
Cond-F	uS/cm	348	415	399
SO4-D	mg/L	110	130	130
TSS	mg/L	4.4	2.0	2.0
Alk-T	mg/L	39	46	56
Acidity83	mg/L	<1.0	1.2	<1.0
Al-T	mg/L	0.0655		0.103
As-T	mg/L	0.00036		0.00076
Ba-T	mg/L	0.0077		0.0127
B-T	mg/L	0.067		0.095
Cd-T	mg/L	<0.000010		<0.000010
Ca-T	mg/L	37.0		48.2
Cr-T	mg/L	<0.0010		<0.0010
Co-T	mg/L	<0.00020		<0.00020
Cu-T	mg/L	<0.00050		0.00063
Hard-T	mg/L	113		147
Fe-T	mg/L	0.103		0.283
Pb-T	mg/L	<0.00020		<0.00020
Mg-T	mg/L	5.09		6.54
Mn-T	mg/L	0.0040		0.0185
Hg-T	mg/L	0.0000023		<0.000038
Mo-T	mg/L	<0.0010		<0.0010
Ni-T	mg/L	<0.0010		<0.0010
K-T	mg/L	0.439		0.518
S-T	mg/L	31.0		39.1
Se-T	mg/L	<0.00010		<0.00010
Si-T	mg/L	2.10		2.11
Ag-T	mg/L	<0.000020		<0.000020
Na-T	mg/L	8.59		10.8
Sr-T	mg/L	0.222		0.308
Zn-T	mg/L	<0.0050		<0.0050
Al-D	mg/L	0.0336		0.0229
As-D	mg/L	0.00027		0.00051
Ba-D	mg/L	0.0076		0.0118
B-D	mg/L	0.068		0.088
Be-D	mg/L	<0.00010		<0.00010
Cd-D	mg/L	<0.000010		<0.000010
Ca-D	mg/L	36.6		47.7
Cr-D	mg/L	<0.0010		<0.0010
Co-D	mg/L	<0.00020		<0.00020
Cu-D	mg/L	0.00030		0.00044
Hard-D	mg/L	112		147
Fe-D	mg/L	0.0412		0.0559
Pb-D	mg/L	<0.00020		<0.00020
Mg-D	mg/L	4.94		6.67
Mn-D	mg/L	<0.0010		<0.0010
Hg-D	mg/L	0.0000022		<0.000038
Mo-D	mg/L	<0.0010		<0.0010
Ni-D	mg/L	<0.0010		<0.0010
K-D	mg/L	0.451		0.544
S-D	mg/L	30.7		38.4
Se-D	mg/L	<0.00010		<0.00010
Si-D	mg/L	1.97		2.05
Na-D	mg/L	8.76		11.1
Sr-D	mg/L	0.218		0.297
Zn-D	mg/L	<0.0050		<0.0050

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Table 20 South End Mine Water Entering Long Lake Near the Outlet 1 Page(s)

EMS ID	E292130	Std	WQG-Max																
Site Description	South End Mine Water Entering Long Lake Near the Outlet																		
Site Name	LLE	Std Val	LLE-1APR21-R	LLE-1APR21-M	LLE-6APR21-M	LLE-12APR21-M	LLE-19APR21-M	LLE-26APR21-M	LLE-3MAY21-M	LLE-10MAY21-M	LLE-17MAY21-M	LLE-25MAY21-M	LLE-1Jun21-M	LLE-8Jun21-M	LLE-8Jun21-R	LLE-14Jun21-M	LLE-21Jun21-M	LLE-29Jun21-M	LLE-29Jun21-R
Date		Max	4/1/2021	4/1/2021	4/6/2021	4/12/2021	4/19/2021	4/26/2021	5/3/2021	5/10/2021	5/17/2021	5/25/2021	6/1/2021	6/8/2021	6/8/2021	6/14/2021	6/21/2021	6/29/2021	6/29/2021
pH-F	pH Units		7.74	7.74	7.22	8.05	7.6	7.68	7.12	6.75	8.05	7.11	7.07	7.19	7.19	7.29	6.93	7.14	7.14
Cond-F	uS/cm		370	370	383	2620	472	486	429	530	2620	904	702	1141	1141	580	858	1288	1288
SO4-D	mg/L		130	140	140	150	170	160	140	180	180	220	270	350	320	110	240	620	620
TSS	mg/L	25			<1.0					<1.0			1.2						
Alk-T	mg/L				45					53			67						
Acidity83	mg/L				<1.0					3.2			3.1						
N-NH3	mg/L	12.9			<0.015					<0.015			<0.015						
N-NO23	mg/L				<0.020					<0.020			<0.020						
P-T	mg/L				<0.0030					<0.0030			0.0044						
Al-T	mg/L				0.0466					0.0172			0.0340						
As-T	mg/L	0.005			0.00063					0.00054			0.00073						
Ba-T	mg/L				0.0131					0.0194			0.0185						
B-T	mg/L				0.083					0.117			0.176						
Cd-T	mg/L				<0.000010					<0.000010			0.000028						
Ca-T	mg/L				46.9					58.0			78.0						
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			0.00062						
Hard-T	mg/L				145					179			241						
Fe-T	mg/L	1.0			0.297					0.590			1.04						
Pb-T	mg/L	0.01763			<0.00020					<0.00020			<0.00020						
Mg-T	mg/L				6.75					8.35			11.4						
Mn-T	mg/L	0.8706			0.0366					0.0638			0.141						
Hg-T	mg/L				<0.0000019					<0.0000019			<0.000038						
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				0.521					0.625			0.799						
S-T	mg/L				42.1					53.7			77.3						
Se-T	mg/L				<0.00010					<0.00010			0.00016						
Si-T	mg/L				2.46					2.09			2.57						
Ag-T	mg/L	0.0001			<0.000020					<0.000020			<0.000020						
Na-T	mg/L				11.4					14.6			20.2						
Sr-T	mg/L				0.291					0.372			0.508						
Zn-T	mg/L	0.033			<0.0050					<0.0050			<0.0050						
Al-D	mg/L	0.1			0.0189					0.0104			0.0074						
As-D	mg/L				0.00047					0.00045			0.00059						
Ba-D	mg/L				0.0136					0.0190			0.0185						
B-D	mg/L				0.084					0.115			0.169						
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				47.6					59.1			80.0						
Cr-D	mg/L				<0.0010					<0.0010			<0.0010						
Co-D	mg/L				<0.00020					<0.00020			<0.00020						
Cu-D	mg/L	0.002			0.00026					0.00025			0.00032						
Hard-D	mg/L				147					183			248						
Fe-D	mg/L	0.35			0.219					0.402			0.641						
Pb-D	mg/L				<0.00020					<0.00020			<0.00020						
Mg-D	mg/L				6.77					8.61			11.7						
Mn-D	mg/L				0.0363					0.0630			0.145						
Hg-D	mg/L				<0.0000019					<0.0000019			<0.000038						
Mo-D	mg/L				<0.0010					<0.0010			<0.0010						
Ni-D	mg/L				<0.0010					<0.0010			<0.0010						
K-D	mg/L				0.568					0.652			0.880						
S-D	mg/L				42.0					56.1			80.4						
Se-D	mg/L				<0.00010					0.00013			<0.00010						
Si-D	mg/L				2.33					2.22			2.58						
Na-D	mg/L				11.6					15.4			21.2						
Sr-D	mg/L				0.284					0.382			0.491						
Zn-D	mg/L				<0.0050					<0.0050			<0.0050						

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Table 21 Seep into Long Lake 1 Page(s)

EMS ID	E292131	Stn Std	WQG-Max
Site Description			
Seep into Long Lake			
Site Name	LLS	Std Val	LLS-6APR21-M
Date	Max	4/6/2021	5/10/2021
pH-F	pH Units	6.8	7.05
Cond-F	uS/cm	1660	1733
SO4-D	mg/L	650	620
TSS	mg/L	25	5.2
Alk-T	mg/L	240	240
Acidity83	mg/L	12.9	17.5
Al-T	mg/L	<0.0030	0.0039
As-T	mg/L	0.005	0.00376
Ba-T	mg/L	0.0174	0.0177
B-T	mg/L	0.560	0.553
Cd-T	mg/L	<0.000010	<0.000010
Ca-T	mg/L	228	221
Cr-T	mg/L	<0.0010	<0.0010
Co-T	mg/L	0.11	0.00173
Cu-T	mg/L	<0.00050	<0.00050
Hard-T	mg/L	651	629
Fe-T	mg/L	1.0	2.09
Pb-T	mg/L	0.01763	<0.00020
Mg-T	mg/L	19.9	18.4
Mn-T	mg/L	0.8706	0.439
Hg-T	mg/L	<0.0000019	<0.0000019
Mo-T	mg/L	2.0	<0.0010
Ni-T	mg/L	0.0038	0.0026
K-T	mg/L	2.30	2.34
S-T	mg/L	214	200
Se-T	mg/L	<0.00010	<0.00010
Si-T	mg/L	2.91	2.70
Ag-T	mg/L	0.0001	<0.000020
Na-T	mg/L	89.7	85.7
Sr-T	mg/L	2.06	2.20
Zn-T	mg/L	0.033	<0.0050
Al-D	mg/L	0.1	<0.0030
As-D	mg/L	0.00348	0.00352
Ba-D	mg/L	0.0181	0.0174
B-D	mg/L	0.559	0.535
Be-D	mg/L	<0.00010	<0.00010
Cd-D	mg/L	0.00017	<0.000010
Ca-D	mg/L	235	226
Cr-D	mg/L	<0.0010	<0.0010
Co-D	mg/L	0.00184	0.00128
Cu-D	mg/L	0.002	<0.00020
Hard-D	mg/L	674	646
Fe-D	mg/L	0.35	2.06
Pb-D	mg/L	<0.00020	<0.00020
Mg-D	mg/L	21.2	19.5
Mn-D	mg/L	0.463	0.445
Hg-D	mg/L	<0.0000019	<0.0000019
Mo-D	mg/L	<0.0010	<0.0010
Ni-D	mg/L	0.0038	0.0025
K-D	mg/L	2.43	2.43
S-D	mg/L	227	214
Se-D	mg/L	<0.00010	0.00011
Si-D	mg/L	2.84	2.85
Na-D	mg/L	96.1	91.2
Sr-D	mg/L	2.17	2.18
Zn-D	mg/L	<0.0050	<0.0050

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Table 22 Long Lake Middle Seep 1 Page(s)

EMS ID	E292131	WQG-Max			
Site Description		Long Lake Middle Seep			
Site Name	LLSM	Std Val	LLSM-6APR21-M	LLSM-10MAY21-M	LLSM-1Jun21-M
Date	Max	4/6/2021	5/10/2021	6/1/2021	
pH-F	pH Units		7.12	8.19	7.36
Cond-F	uS/cm		1443	1217	1487
SO4-D	mg/L		440	440	450
TSS	mg/L	25	2.0	1.2	<1.0
Alk-T	mg/L		210	200	220
Acidity83	mg/L		5.5	9.4	7.1
Al-T	mg/L		0.0056	0.0038	0.0104
As-T	mg/L	0.005	0.00100	0.00112	0.00153
Ba-T	mg/L		0.0169	0.0170	0.0173
B-T	mg/L		0.456	0.438	0.463
Cd-T	mg/L		<0.000010	<0.000010	0.000135
Ca-T	mg/L		184	175	185
Cr-T	mg/L		<0.0010	<0.0010	<0.0010
Co-T	mg/L	0.11	0.00090	0.00091	0.00099
Cu-T	mg/L		<0.00050	<0.00050	0.00136
Hard-T	mg/L		531	501	527
Fe-T	mg/L	1.0	0.512	0.617	0.733
Pb-T	mg/L	0.01763	<0.00020	<0.00020	<0.00020
Mg-T	mg/L		17.2	15.5	15.8
Mn-T	mg/L	0.8706	0.211	0.232	0.295
Hg-T	mg/L		<0.0000019	<0.0000019	<0.0000019
Mo-T	mg/L	2.0	<0.0010	<0.0010	<0.0010
Ni-T	mg/L		0.0027	0.0022	0.0022
K-T	mg/L		2.06	1.92	2.07
S-T	mg/L		171	156	157
Se-T	mg/L		<0.00010	<0.00010	<0.00010
Si-T	mg/L		2.57	2.35	2.52
Ag-T	mg/L	0.0001	<0.000020	<0.000020	<0.000020
Na-T	mg/L		72.9	65.2	69.1
Sr-T	mg/L		1.71	1.67	1.67
Zn-T	mg/L	0.033	<0.0050	<0.0050	<0.0050
Al-D	mg/L	0.1	0.0041	<0.0030	0.0030
As-D	mg/L		0.00100	0.00104	0.00133
Ba-D	mg/L		0.0174	0.0173	0.0172
B-D	mg/L		0.432	0.431	0.458
Be-D	mg/L		<0.00010	<0.00010	<0.00010
Cd-D	mg/L	0.00017	0.000018	<0.000010	<0.000010
Ca-D	mg/L		188	179	191
Cr-D	mg/L		<0.0010	<0.0010	<0.0010
Co-D	mg/L		0.00092	0.00093	0.00090
Cu-D	mg/L	0.002	0.00042	0.00024	0.00021
Hard-D	mg/L		543	514	548
Fe-D	mg/L	0.35	0.481	0.562	0.706
Pb-D	mg/L		<0.00020	<0.00020	<0.00020
Mg-D	mg/L		17.9	16.5	17.2
Mn-D	mg/L		0.215	0.249	0.286
Hg-D	mg/L		<0.0000019	<0.0000019	<0.0000019
Mo-D	mg/L		<0.0010	<0.0010	<0.0010
Ni-D	mg/L		0.0028	0.0021	0.0019
K-D	mg/L		2.10	2.13	2.16
S-D	mg/L		176	164	169
Se-D	mg/L		<0.00010	0.00011	<0.00010
Si-D	mg/L		2.51	2.47	2.55
Na-D	mg/L		75.6	69.8	72.2
Sr-D	mg/L		1.70	1.69	1.73
Zn-D	mg/L		<0.0050	<0.0050	<0.0050

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Table 23 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	7SSD-6APR21-P
pH-F	pH Units	7.75
Cond-F	uS/cm	272
SO4-D	mg/L	500
TSS	mg/L	25
Alk-T	mg/L	
Acidity83	mg/L	
DOC	mg/L	
Al-T	mg/L	
As-T	mg/L	
Ba-T	mg/L	
B-T	mg/L	
Cd-T	mg/L	
Ca-T	mg/L	
Cr-T	mg/L	
Co-T	mg/L	
Cu-T	mg/L	
Hard-T	mg/L	
Fe-T	mg/L	
Pb-T	mg/L	
Mg-T	mg/L	
Mn-T	mg/L	
Hg-T	mg/L	
Mo-T	mg/L	
Ni-T	mg/L	
K-T	mg/L	
S-T	mg/L	
Se-T	mg/L	
Si-T	mg/L	
Ag-T	mg/L	
Na-T	mg/L	
Sr-T	mg/L	
Zn-T	mg/L	
Al-D	mg/L	0.1
As-D	mg/L	
Ba-D	mg/L	
B-D	mg/L	
Be-D	mg/L	
Cd-D	mg/L	0.000045
Ca-D	mg/L	
Cr-D	mg/L	
Co-D	mg/L	
Cu-D	mg/L	0.014
Hard-D	mg/L	
Fe-D	mg/L	0.35
Pb-D	mg/L	
Mg-D	mg/L	
Mn-D	mg/L	
Hg-D	mg/L	
Mo-D	mg/L	
Ni-D	mg/L	
K-D	mg/L	
S-D	mg/L	
Se-D	mg/L	0.016
Si-D	mg/L	
Na-D	mg/L	
Sr-D	mg/L	
Zn-D	mg/L	

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

EMS ID	E292109	WQG-Max				
Site Description	Road Side Crossing Bridge on Stream 1 above the Lower Wetland					
Site Name	7S	Std Val	7S-6APR21-M	7S-6MAY21-M	7S-6MAY21-R	7S-1Jun21-M
Date	Max		4/6/2021	5/6/2021	5/6/2021	6/1/2021
pH-F	pH Units		7.11	6.79	6.79	6.9
Cond-F	uS/cm		55.5	88	88	108.2
SO4-D	mg/L		3.4	3.7	4.9	3.3
TSS	mg/L	25	1.6	<1.0	<1.0	<1.0
Alk-T	mg/L		17	23	21	28
Acidity83	mg/L		<1.0	2.1	2.7	<1.0
DOC	mg/L		1.2	1.1	1.3	<0.50
Al-T	mg/L		0.0184	0.174	0.0934	0.0579
As-T	mg/L	0.005	<0.00010	0.00015	0.00010	0.00010
Ba-T	mg/L		0.0014	0.0027	0.0022	0.0026
B-T	mg/L		<0.050	<0.050	<0.050	<0.050
Cd-T	mg/L		<0.000010	<0.000010	<0.000010	<0.000010
Ca-T	mg/L		5.04	6.01	5.73	7.19
Cr-T	mg/L		<0.0010	0.0046	0.0023	<0.0010
Co-T	mg/L	0.11	<0.00020	<0.00020	<0.00020	<0.00020
Cu-T	mg/L		<0.00050	<0.00050	<0.00050	<0.00050
Hard-T	mg/L		17.4	20.9	20.2	24.9
Fe-T	mg/L	1.0	<0.010	0.133	0.069	0.040
Pb-T	mg/L	0.01763	<0.00020	<0.00020	<0.00020	<0.00020
Mg-T	mg/L		1.17	1.43	1.43	1.67
Mn-T	mg/L	0.8706	<0.0010	0.0051	0.0026	0.0016
Hg-T	mg/L		<0.0000019	<0.0000019	<0.0000019	<0.0000019
Mo-T	mg/L	2.0	<0.0010	0.0045	0.0022	<0.0010
Ni-T	mg/L		<0.0010	0.0196	0.0095	<0.0010
K-T	mg/L		0.087	0.102	0.101	0.123
S-T	mg/L		<3.0	<3.0	<3.0	<3.0
Se-T	mg/L		<0.00010	<0.00010	<0.00010	<0.00010
Si-T	mg/L		4.33	5.06	4.75	5.19
Ag-T	mg/L	0.0001	<0.000020	<0.000020	<0.000020	<0.000020
Na-T	mg/L		1.60	1.89	1.87	2.05
Sr-T	mg/L		0.0191	0.0249	0.0249	0.0320
Zn-T	mg/L	0.033	<0.0050	<0.0050	<0.0050	<0.0050
Al-D	mg/L	0.1	0.0180	0.0145	0.0140	0.0134
As-D	mg/L		<0.00010	<0.00010	<0.00010	<0.00010
Ba-D	mg/L		0.0014	0.0017	0.0017	0.0021
B-D	mg/L		<0.050	<0.050	<0.050	<0.050
Be-D	mg/L		<0.00010	<0.00010	<0.00010	<0.00010
Cd-D	mg/L	0.00017	<0.000010	<0.000010	<0.000010	<0.000010
Ca-D	mg/L		4.65	5.48	5.40	6.93
Cr-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010
Co-D	mg/L		<0.00020	<0.00020	<0.00020	<0.00020
Cu-D	mg/L	0.002	0.00020	<0.00020	<0.00020	<0.00020
Hard-D	mg/L		16.5	19.2	18.9	24.1
Fe-D	mg/L	0.35	<0.0050	<0.0050	<0.0050	<0.0050
Pb-D	mg/L		<0.00020	<0.00020	<0.00020	<0.00020
Mg-D	mg/L		1.18	1.34	1.31	1.64
Mn-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010
Hg-D	mg/L		<0.0000019	<0.0000019	<0.0000019	<0.0000019
Mo-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010
Ni-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0010
K-D	mg/L		0.081	0.098	0.094	0.098
S-D	mg/L		<3.0	<3.0	<3.0	<3.0
Se-D	mg/L		<0.00010	<0.00010	<0.00010	<0.00010
Si-D	mg/L		4.03	4.42	4.38	5.01
Na-D	mg/L		1.61	1.79	1.75	2.00
Sr-D	mg/L		0.0192	0.0232	0.0232	0.0288
Zn-D	mg/L		<0.0050	<0.0050	<0.0050	<0.0050

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Table 25 7 South Portal Sump 1 Page(s)

EMS ID		E292110		
Site Description		7 South Portal Sump		
Site Name	7SPS	7SPS-6APR21-M	7SPS-6MAY21-M	7SPS-1Jun21-M
Date		4/6/2021	5/6/2021	6/1/2021
pH-F	pH Units	6.9	7.4	7.56
Cond-F	uS/cm	670	852	890
SO4-D	mg/L	200	230	270
TSS	mg/L	8.8	3.2	6.0
Alk-T	mg/L	120	130	140
Acidity83	mg/L	3.4	4.6	2.0
Al-T	mg/L	0.0723	0.0631	0.0416
As-T	mg/L	0.00186	0.00095	0.00105
Ba-T	mg/L	0.0144	0.0209	0.0214
B-T	mg/L	0.052	0.077	0.085
Cd-T	mg/L	0.000016	0.000010	0.000015
Ca-T	mg/L	86.8	102	116
Cr-T	mg/L	<0.0010	0.0012	<0.0010
Co-T	mg/L	0.00247	0.00147	0.00138
Cu-T	mg/L	0.00100	0.00117	0.00107
Hard-T	mg/L	304	352	399
Fe-T	mg/L	3.53	2.24	3.48
Pb-T	mg/L	<0.00020	<0.00020	<0.00020
Mg-T	mg/L	21.1	23.8	26.5
Mn-T	mg/L	0.189	0.124	0.117
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019
Mo-T	mg/L	<0.0010	0.0012	<0.0010
Ni-T	mg/L	0.0049	0.0078	0.0043
K-T	mg/L	0.752	1.24	1.22
S-T	mg/L	71.2	84.8	96.8
Se-T	mg/L	<0.00010	0.00011	<0.00010
Si-T	mg/L	5.09	5.31	4.89
Ag-T	mg/L	<0.000020	<0.000020	<0.000020
Na-T	mg/L	9.29	11.6	14.0
Sr-T	mg/L	0.344	0.401	0.472
Zn-T	mg/L	0.0088	0.0059	0.0066
Al-D	mg/L	0.0033	0.0058	0.0438
As-D	mg/L	0.00060	0.00032	0.00033
Ba-D	mg/L	0.0138	0.0180	0.0190
B-D	mg/L	<0.050	0.068	0.070
Be-D	mg/L	<0.00010	<0.00010	<0.00010
Cd-D	mg/L	<0.000010	<0.000010	<0.000010
Ca-D	mg/L	90.4	89.5	112
Cr-D	mg/L	<0.0010	<0.0010	<0.0010
Co-D	mg/L	0.00262	0.00123	0.00116
Cu-D	mg/L	0.00053	0.00060	0.00078
Hard-D	mg/L	318	309	390
Fe-D	mg/L	0.526	0.102	0.247
Pb-D	mg/L	<0.00020	<0.00020	<0.00020
Mg-D	mg/L	22.5	20.9	26.8
Mn-D	mg/L	0.193	0.111	0.100
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019
Mo-D	mg/L	<0.0010	<0.0010	<0.0010
Ni-D	mg/L	0.0052	0.0031	0.0037
K-D	mg/L	0.788	1.10	1.22
S-D	mg/L	75.3	74.6	94.5
Se-D	mg/L	<0.00010	<0.00010	<0.00010
Si-D	mg/L	4.90	4.47	4.49
Na-D	mg/L	10.1	10.4	13.9
Sr-D	mg/L	0.321	0.360	0.441
Zn-D	mg/L	0.0066	<0.0050	<0.0050

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Table 26 Discharge From Settling Pond #4 (WD) 1 Page(s)

EMS ID E207409						
Discharge From Settling Pond #4 (SP4/WD)						
Date	April Max. (m ³ /s)	April Daily (m ³ /s)	May Max. (m ³ /s)	May Daily (m ³ /s)	June Max. (m ³ /s)	June Daily (m ³ /s)
1	0.1470	0.1370	0.1520	0.1420	0.1520	0.1450
2	0.1470	0.1380	0.1420	0.1340	0.1810	0.1640
3	0.1290	0.1090	0.1460	0.1360	0.1730	0.1590
4	0.1300	0.1110	0.1600	0.1450	0.1700	0.1530
5	0.0990	0.0800	0.1360	0.1270	0.1470	0.1380
6	0.1240	0.0930	0.1520	0.1410	0.1540	0.1390
7	0.1380	0.1230	0.1570	0.1450	0.1500	0.1350
8	0.1520	0.1270	0.1350	0.1200	0.1430	0.1350
9	0.1030	0.0820	0.1350	0.1280	0.1600	0.1440
10	0.1510	0.1280	0.1370	0.1280	0.1580	0.1450
11	0.1470	0.1390	0.1640	0.1400	0.1870	0.1650
12	0.1470	0.1360	0.1680	0.1520	0.1930	0.1880
13	0.1480	0.1360	0.1760	0.1630	0.1710	0.1150
14	0.1610	0.1430	0.1600	0.1420	0.1670	0.1540
15	0.1680	0.1510	0.1710	0.1580	0.1690	0.1630
16	0.1690	0.1530	0.1620	0.1520	0.1790	0.1670
17	0.1630	0.1460	0.1740	0.1630	0.1990	0.1840
18	0.1720	0.1540	0.1840	0.1560	0.2100	0.2040
19	0.1570	0.1420	0.1310	0.1010	0.2100	0.2070
20	0.1660	0.1480	0.1440	0.1350	0.2100	0.2080
21	0.1680	0.1520	0.1310	0.0880	0.2100	0.2060
22	0.1680	0.1440	0.0970	0.0810	0.2100	0.2020
23	0.1590	0.1280	0.0870	0.0780	0.2030	0.1960
24	0.1670	0.1470	0.0850	0.0810	0.2030	0.1960
25	0.1530	0.1430	0.0970	0.0870	0.1850	0.1720
26	0.1410	0.1330	0.1550	0.1130	0.1840	0.1550
27	0.1550	0.1380	0.1910	0.1730	0.2040	0.1970
28	0.1550	0.1400	0.1490	0.1440	0.2040	0.2020
29	0.1540	0.1450	0.1510	0.1380	0.2050	0.2020
30	0.1370	0.1320	0.1700	0.1510	0.2050	0.1940
31			0.1790	0.1580		
Monthly Max	0.1720		0.1910		0.2100	
Monthly Avg		0.1326		0.1323		0.1711
TSS is required weekly when max daily flow > 0.054 m ³ /s						
NF= No Flow All flow data is subject to review						

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Table 27 Discharge From Settling Pond # 1 (SPD) 1 Page(s)

EMS ID E218582						
Discharge From Settling Pond #1 (SP1/SPD)						
Date	April	April	May	May	June	June
	Max. (m ³ /s)	Daily (m ³ /s)	Max. (m ³ /s)	Daily (m ³ /s)	Max. (m ³ /s)	Daily (m ³ /s)
1	0.0250	0.0123	0.0250	0.0109	0.0091	0.0025
2	0.0250	0.0081	0.0250	0.0109	0.0160	0.0073
3	0.0250	0.0135	0.0091	0.0071	0.0160	0.0061
4	0.0250	0.0080	0.0250	0.0071	0.0091	0.0037
5	0.0250	0.0097	0.0250	0.0142	0.0032	0.0023
6	0.0250	0.0060	0.0091	0.0071	0.0032	0.0015
7	0.0250	0.0136	0.0091	0.0041	0.0160	0.0100
8	0.0091	0.0047	0.0250	0.0157	0.0091	0.0061
9	0.0250	0.0164	0.0160	0.0078	0.0160	0.0093
10	0.0160	0.0062	0.0091	0.0041	0.0341	0.0137
11	0.0250	0.0099	0.0091	0.0030	0.0341	0.0160
12	0.0160	0.0099	0.0341	0.0158	0.0091	0.0073
13	0.0160	0.0077	0.0091	0.0061	0.0091	0.0070
14	0.0341	0.0193	0.0091	0.0035	0.0250	0.0118
15	0.0160	0.0099	0.0250	0.0057	0.0250	0.0131
16	0.0341	0.0120	0.0250	0.0129	0.0091	0.0074
17	0.0341	0.0152	0.0091	0.0059	0.0091	0.0050
18	0.0160	0.0084	0.0091	0.0037	0.0091	0.0032
19	0.0250	0.0136	0.0250	0.0077	0.0091	0.0060
20	0.0160	0.0063	0.0250	0.0096	0.0091	0.0059
21	0.0091	0.0034	0.0091	0.0033	0.0091	0.0039
22	0.0091	0.0030	0.0032	0.0024	0.0160	0.0097
23	0.0032	0.0022	0.0032	0.0013	0.0160	0.0075
24	0.0091	0.0040	0.0160	0.0128	0.0091	0.0040
25	0.0091	0.0067	0.0250	0.0150	0.0032	0.0032
26	0.0091	0.0052	0.0160	0.0081	0.0032	0.0020
27	0.0091	0.0051	0.0091	0.0043	0.0032	0.0010
28	0.0341	0.0183	0.0091	0.0025	0.0000	0.0001
29	0.0160	0.0105	0.0250	0.0064	NF	NF
30	0.0091	0.0069	0.0250	0.0125	NF	NF
31			0.0091	0.0040		
Monthly Max	0.0341		0.0341		0.0341	
Monthly Avg		0.0092		0.0076		0.0063
TSS is required weekly when max daily flow > 0.046m ³ /s						
NF= No Flow All flow data is subject to review						

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Table 28 Discharge From 7 South Surface Decant Pond (7SSD) 1 Page(s)

EMS ID E292069			
Discharge From 7 South Surface Decant Pond (7SSD)			
Date	April	May	June
	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	NF
30	NF	NF	NF
31	NF	NF	NF
Monthly Avg	0.000	0.000	0.000
Annual Avg			
Cummulative Daily Totalizer Value			
For Maximum Decant Flow (5.00 L/s)			

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Table 29 2S Inflow Outflow 1 Page(s)

EMS ID: E292127 2-South Pit Continous Inflow and Outflow				EMS ID: E292127 2-South Pit Continous Inflow and Outflow			
2S Inflow				2S Outflow Culvert into 3S Pit			
Date	April	May	June	Date	April	May	June
	Q (L/s)	Q (L/s)	Q (L/s)		Q (L/s)	Q (L/s)	Q (L/s)
1	4.302	4.062	0.08	1	6.421	4.660	3.553
2	4.267	3.762	0.07	2	6.410	4.709	3.718
3	4.505	3.884	0.07	3	6.418	4.989	3.456
4	4.264	3.800	0.07	4	5.846	4.418	3.855
5	4.131	3.386	0.08	5	5.616	4.995	3.704
6	4.035	3.811	0.05	6	5.861	4.936	3.843
7	4.403	3.684	0.05	7	5.718	4.458	3.715
8	4.388	3.443	0.07	8	5.531	4.787	3.811
9	4.524	3.594	0.12	9	5.856	4.510	3.965
10	5.076	3.490	5.62	10	5.480	4.254	3.884
11	4.739	3.097	5.66	11	5.180	4.249	4.154
12	4.510	3.322	3.79	12	5.056	4.271	4.178
13	4.580	2.914	3.87	13	4.933	3.912	3.875
14	4.333	2.854	3.65	14	4.837	3.944	3.788
15	4.086	2.782	3.97	15	4.835	3.941	3.826
16	4.397	2.727	3.71	16	4.775	4.061	3.567
17	4.184	3.499	3.38	17	4.736	4.320	3.559
18	4.118	4.320	3.31	18	4.684	4.182	3.441
19	3.918	3.394	3.66	19	5.386	3.983	3.832
20	3.510	1.758	3.61	20	4.603	3.900	3.349
21	3.387	0.484	1.62	21	4.664	3.783	3.297
22	3.672	0.206	0.16	22	4.486	3.737	3.255
23	3.606	0.136	0.09	23	4.991	3.861	3.271
24	3.776	0.290	0.08	24	5.182	4.437	3.241
25	4.397	0.771	0.31	25	5.289	4.285	3.048
26	3.864	0.195	0.34	26	4.797	4.350	3.038
27	3.465	0.399	0.32	27	5.092	4.245	3.048
28	3.855	0.239	0.30	28	5.208	3.764	3.071
29	4.061	0.136	2.11	29	4.981	3.544	3.086
30	4.295	0.229	5.09	30	4.687	4.212	3.258
31		0.16		31		3.799	

Table 30 Flow Tables LLE, LLS LLSM 3 Page(s)

Weekly Flow Requirements (L/s)			
EMS ID: E292130			
Site LLE			
Flow (L/S)			
Date	April	May	June
1	18	11	5
2	18	11	3
3	16	11	3
4	16	9	3
5	9	9	3
6	10	9	3
7	10	7	3
8	9	7	3
9	9	6	6
10	12	12	23
11	10	22	40
12	12	26	14
13	18	23	12
14	16	22	11
15	16	21	10
16	16	21	6
17	16	15	7
18	14	4	7
19	12	4	7
20	12	4	5
21	12	4	7
22	11	3	6
23	12	3	4
24	14	3	3
25	17	5	3
26	14	7	3
27	11	7	2
28	11	6	2
29	14	2	2
30	13	1	2
31		6	

Table 30 Flow Tables LLE, LLS LLSM 3 Page(s)

Weekly Flow Requirements (L/s)			
EMS ID: E292131			
Site			
Flow (L/S)	LLSM		
Date	April	May	June
1	5.81	2.62	2.11
2	4.78	2.62	2.29
3	4.83	2.62	2.29
4	4.32	2.62	2.29
5	4.32	2.62	2.32
6		2.62	2.26
7			2.33
8	3.84	2.62	2.25
9	3.87		2.29
10	3.87	2.29	2.29
11	3.87		2.29
12	3.87		2.31
13	3.87	2.29	2.29
14	3.87	2.29	2.29
15	3.58	2.29	2.29
16	3.02	2.29	2.29
17	3.02	2.29	2.29
18	3.02		2.29
19	3.02	2.29	2.29
20	2.99	2.29	2.29
21	3.02	2.29	2.29
22	3.02	2.29	2.26
23	3.02	2.29	2.29
24			2.29
25		2.29	2.31
26		2.29	2.23
27		2.29	2.29
28		2.29	2.29
29		2.29	2.29
30	2.62	2.29	0.89
31		2.26	

Table 30 Flow Tables LLE, LLS LLSM 3 Page(s)

Weekly Flow Requirements (L/s)		
EMS ID: E292131		
Site		
Flow (L/S)	LLS	Estimated Flow
Weeks	Level	L/s
06/Apr/21	0.010	0.0175
13/Apr/21	0.010	0.018
20/Apr/21	0.010	0.018
27/Apr/21	0.010	0.018
04/May/21	0.010	0.018
11/May/21	0.010	0.018
18/May/21	0.010	0.018
25/May/21	0.010	0.018
01/Jun/21	0.010	0.018
08/Jun/21	0.010	0.018
15/Jun/21	0.010	0.018
22/Jun/21	0.010	0.018
29/Jun/21	0.010	0.018

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Table 31 Precipitation 1 Page(s)

Daily Precipitation (mm)			
DATE	APRIL	MAY	JUNE
1	0	1.5	0
2	0	0	0
3	0	0	0
4	4	0.8	0
5	0	0	0.3
6	0	0	1.5
7	0	1.2	0.2
8	1.4	0	0
9	0	0	7
10	5.1	0.2	10.7
11	0.1	0	3.9
12	0	1.4	0
13	0	4	1.8
14	0	0	1.3
15	0	0	0.8
16	0	0	2.5
17	0	0	0
18	0	3.2	0
19	0	0.3	0
20	0	0.1	0.5
21	0	0	0
22	0	0	0
23	0	0	0
24	2.1	0	0
25	3.7	12.8	0
26	6.4	7.6	0
27	0.2	1.8	0
28	4.1	2.8	0
29	4.7	0	0
30	1.2	0	0
31		3.7	
Monthly Total (mm)	33.00	41.40	30.50
Annual Total (mm)	104.90		

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Table 32 No Name Lake Depth Profiling 1 Page(s)

EMS ID: E217018																														
Site NAME: NO NAME LAKE (NNL)																														
NO NAME LAKE DEPTH PROFILING SPRING																														
Sample Date Parameter Sample Depth (m)	7-Apr						14-Apr						20-Apr						27-Apr						4-May					
	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV
1	7.20	7.38	27.80	92.90	11.21	222.80	8.80	6.70	28.50	85.20	9.85	187.00	13.60	6.52	31.00	100.60	10.98	148.30	12.90	6.98	31.80	85.80	9.11	183.10	12.80	7.49	32.00	81.10	8.58	215.40
2	7.10	7.30	27.90	95.00	11.42	237.60	8.20	6.63	28.40	87.20	10.15	190.90	12.50	6.40	31.00	98.80	10.63	153.70	12.80	6.96	31.70	85.30	9.02	183.50	12.70	7.40	31.90	81.20	8.69	215.80
3	7.10	7.32	27.80	106.20	12.25	223.10	7.70	6.59	28.50	85.10	10.11	193.00	9.10	6.33	29.90	103.30	11.87	158.90	10.60	6.91	30.70	93.90	10.38	186.80	11.80	7.31	31.90	82.90	8.95	218.20
4	7.10	7.32	28.00	95.60	11.36	222.72	7.00	6.55	28.70	81.70	9.72	194.50	8.00	6.28	29.90	100.90	11.92	162.40	8.70	6.86	30.20	95.20	11.09	190.30	9.40	7.29	30.20	87.80	10.14	220.50
5	6.50	7.18	28.30	101.00	11.46	228.10	6.60	6.49	29.00	76.20	9.40	196.80	6.70	6.22	30.40	97.00	11.93	166.10	7.40	6.81	30.40	92.20	11.03	193.80	7.10	7.18	30.60	82.30	9.77	225.10
6	6.30	7.15	28.70	121.50	12.55	226.30	6.20	6.44	29.20	81.00	9.92	199.40	6.00	6.18	31.10	93.00	11.49	169.10	6.20	6.77	31.40	87.40	10.71	195.70	6.10	7.12	31.40	77.90	9.69	226.60
7	5.60	7.18	29.00	115.20	11.02	217.10	6.00	6.39	29.40	80.00	9.57	199.80	5.70	6.16	31.50	88.80	11.13	169.10	6.00	6.75	31.60	84.10	10.46	197.20	5.80	7.10	31.80	74.80	9.38	227.70
8	5.40	7.02	29.40	96.20	11.51	228.00	5.80	6.39	29.70	77.60	9.54	201.80	5.60	6.15	31.80	86.10	10.86	169.70	5.80	6.74	31.90	82.80	10.44	197.20	5.70	7.08	31.90	74.80	9.23	226.40
9	5.20	7.07	29.60	86.20	10.84	231.20	5.60	6.34	29.90	77.80	9.33	202.10	5.50	6.14	32.20	86.40	10.86	170.60	5.50	6.72	32.20	80.70	10.34	197.60	5.70	7.07	31.90	74.50	9.20	225.60
10	5.10	7.07	30.30	82.80	10.58	225.20	5.50	6.31	30.10	77.30	9.62	203.20	5.40	6.16	32.40	84.40	10.60	168.20	5.40	6.70	32.60	78.80	9.90	197.60	5.60	7.05	32.10	72.30	9.05	223.20
11	5.00	6.98	31.30	80.80	10.07	222.80	5.50	6.31	30.10	73.60	9.13	202.40	5.40	6.15	32.50	84.40	10.63	167.00	5.40	6.69	32.90	77.10	9.83	197.30	5.60	7.04	32.10	71.60	8.97	223.20
12	4.90	6.93	32.80	78.70	10.01	220.40	5.40	6.29	30.50	72.70	9.22	202.70	5.30	6.16	32.70	83.60	10.58	168.80	5.20	6.67	34.40	74.80	9.52	197.80	5.50	7.04	32.60	62.90	8.28	169.00
13	4.90	6.93	34.00	80.50	10.94	226.30	5.30	6.26	31.10	67.7	8.54	202.30	5.30	6.13	34.10	64.90	8.24	96.00	5.20	6.63	34.40	70.50	8.91	195.20	5.50	6.99	33.50	60.30	7.93	153.20
1m from Bottom (BS)	13.00						13.00						13.00						13.00						13.00					

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 33 Long Lake Depth Profiling 1 Page(s)

EMS ID: E206619																														
Site NAME: LONG LAKE (LLM)																														
LONG LAKE DEPTH PROFILING SPRING																														
Sample Date Parameter Sample Depth (m)	8-Apr						14-Apr						20-Apr						27-Apr						4-May					
	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV
1	7.30	7.46	141.00	95.00	11.55	182.00	8.90	6.70	142.70	88.00	10.09	192.20	12.90	6.85	146.30	96.80	10.38	124.40	12.80	7.02	151.10	87.70	9.26	180.80	12.70	7.38	157.80	83.90	8.86	151.50
2	7.30	7.38	141.20	94.00	11.63	175.50	8.70	6.67	141.30	84.50	9.66	195.10	12.70	6.85	147.00	96.60	10.26	128.50	12.70	7.03	150.40	86.70	9.34	179.30	12.60	7.40	155.20	80.60	8.48	153.30
3	7.30	7.39	141.30	93.30	11.25	173.70	8.20	6.68	144.10	86.90	9.90	193.90	9.30	6.84	158.90	98.90	11.27	131.80	10.90	7.00	177.60	93.50	10.17	181.40	12.60	7.41	155.50	83.50	8.44	154.40
4	7.30	7.38	142.00	92.30	11.15	174.50	7.20	6.64	191.20	83.30	10.02	195.10	8.20	6.79	181.00	97.20	11.53	136.00	8.50	6.99	186.20	94.90	10.99	181.90	9.30	7.38	199.50	86.70	10.01	160.70
5	7.30	7.27	195.00	88.10	10.86	178.00	5.80	6.61	241.10	65.30	7.94	195.00	6.80	6.74	232.60	87.10	10.73	141.70	7.10	6.94	232.90	84.50	10.15	185.70	7.30	7.32	248.60	78.30	9.51	164.90
6	5.50	7.22	240.50	72.60	9.09	179.10	5.40	6.58	262.70	55.60	7.04	195.70	5.70	6.69	274.30	73.10	9.19	144.10	5.90	6.89	273.80	73.60	8.84	189.10	5.90	7.27	275.90	62.10	7.72	170.10
7	5.00	7.17	265.30	65.70	8.54	180.60	5.10	6.56	269.60	53.80	6.80	196.00	5.10	6.66	283.80	66.90	8.51	146.10	5.30	6.86	285.90	61.30	7.77	191.00	5.40	7.25	285.90	59.20	7.14	172.60
8	4.70	7.13	277.10	56.40	7.21	181.00	4.80	6.56	272.50	55.20	6.93	193.10	4.90	6.65	291.30	56.70	7.25	146.10	5.00	6.84	290.90	55.30	7.15	192.40	5.10	7.24	291.30	50.40	6.42	173.50
9	4.70	7.11	281.50	51.20	6.54	181.30	4.80	6.54	278.30	48.10	5.85	193.80	4.80	6.64	295.50	54.20	6.95	146.60	4.90	6.82	294.40	53.60	6.74	193.70	5.00	7.24	294.20	45.70	5.88	174.20
10	4.70	7.09	285.20	47.60	6.19	181.00	4.80	6.53	281.30	46.20	5.49	193.40	4.80	6.63	297.20	53.10	6.82	146.80	4.80	6.81	296.20	52.20	6.53	194.20	4.90	7.25	295.60	43.30	5.88	173.90
11	4.70	7.08	285.80	47.00	6.00	180.80	4.70	6.53	283.70	42.10	5.40	193.40	4.80	6.63	298.80	51.10	6.54	147.00	4.80	6.79	297.30	49.10	6.22	194.20	4.90	7.25	296.50	41.80	5.38	174.50
12	4.70	7.07	288.60	44.30	5.70	180.80	4.70	6.52	285.30	39.80	5.17	192.60	4.80	6.64	299.60	49.40	6.35	145.50	4.80	6.78	299.30	47.60	5.97	194.60	4.80	7.26	297.30	40.60	5.21	173.70
13	4.70	7.06	289.70	42.30	5.50	180.70	4.70	6.52	286.20	39.60	5.06	191.70	4.70	6.63	301.50	47.30	6.15	146.50	4.80	6.77	301.40	43.90	5.64	194.40	4.80	7.26	300.10	38.10	4.91	172.60
14	4.70	7.06	290.70	40.50	5.24	180.30	4.70	6.52	287.80	36.20	4.63	191.80	4.70	6.64	302.40	45.20	5.80	146.20	4.80	6.77	301.90	43.20	5.57	194.10	4.80	7.25	306.00	37.20	4.78	172.60
15	4.70	7.05	291.90	38.10	4.86	179.90	4.70	6.51	288.30	36.00	4.55	190.60	4.70	6.65	302.80	46.20	5.95	145.20	4.80	6.77	302.60	42.10	5.37	194.00	4.80	7.25	314.80	34.90	4.53	171.80
16	4.70	7.04	292.10	37.10	4.77	179.10	4.70	6.51	289.10	35.00	4.47	189.60	4.70	6.65	302.90	45.50	5.83	144.70	4.80	6.76	302.90	41.30	5.30	193.80	4.80	7.25	320.10	33.30	4.25	171.80
17	4.70	7.02	292.50	37.00	4.73	178.10	4.70	6.51	289.20	36.00	4.57	189.30	4.70	6.66	303.10	45.40	5.77	144.70	4.80	6.76	303.10	40.60	5.24	193.30	4.80	7.26	309.10	32.40	4.12	169.70
18	4.70	7.02	293.40	35.20	4.53	177.30	4.70	6.51	289.70	34.20	4.36	189.10	4.70	6.67	303.40	43.70	5.61	143.50	4.80	6.76	303.30	39.80	4.98	192.50	4.80	7.26	304.60	31.40	4.04	169.60
19	4.70	7.00	294.00	34.50	4.39	176.90	4.70	6.51	289.90	32.60	4.19	187.40	4.70	6.66	303.60	43.70	5.62	144.60	4.80	6.76	303.20	39.80	5.10	192.60	4.80	7.27	301.80	31.90	4.09	167.50
20	4.70	7.00	294.20	34.50	4.42	176.30	4.70	6.46	291.40	29.30	3.74	165.10	4.70	6.65	304.00	35.50	4.55	64.40	4.80	6.71	304.10	34.50	4.37	193.80	4.80	7.27	300.70	30.30	3.84	163.90
1m from Bottom (BS)	4.80	7.05	304.10	28.80	3.56	108.40	4.70	6.45	291.50	25.90	3.30	142.30	4.70	6.65	312.00	22.60	3.05	62.00	4.80	6.70	330.10	30.00	4.00	121.80	4.80	7.28	320.21	20.30	3.40	141.61
	BS=21.0m						BS=21.0m						BS=21.0m						BS=21.0m						BS=21.0m					
WQG-Max / Min pH: 6.5 - 9.0																														

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 34 Middle Quinsam Lake Depth Profiling 1 Page(s)

EMS ID E206618																														
Site NAME: MIDDLE QUINSAM LAKE (MQL)																														
MIDDLE QUINSAM LAKE DEPTH PROFILING SPRING																														
Sample Date Parameter Sample Depth (m)	7-Apr						14-Apr						20-Apr						27-Apr						4-May					
	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV
1	8.00	7.58	113.80	108.20	12.64	138.30	9.40	7.04	117.60	98.60	11.40	122.7	13.90	7.37	164.80	98.70	10.05	103.20	12.90	7.31	184.40	88.80	9.43	168.60	13.00	7.93	185.00	84.90	8.93	185.40
2	7.90	7.55	112.70	105.00	12.43	140.00	8.90	7.02	115.40	98.30	11.28	125	13.60	7.36	163.30	98.50	10.16	107.90	12.80	7.30	184.60	88.50	9.19	169.80	12.90	7.94	184.20	78.80	8.34	184.20
3	7.90	7.51	112.10	103.80	12.57	143.00	8.50	7.00	115.80	93.60	10.97	129.5	10.80	7.35	160.80	104.20	11.52	109.70	12.10	7.30	190.30	85.40	9.63	170.40	12.80	7.94	183.60	80.10	8.40	188.30
4	7.90	7.50	112.40	104.70	12.29	143.80	8.40	7.00	117.60	94.30	11.00	129.1	9.90	7.33	149.50	104.80	11.78	112.00	11.10	7.30	166.50	93.50	10.27	170.60	12.40	7.92	182.90	81.00	8.71	185.60
5	7.90	7.50	112.40	101.50	12.00	143.50	7.90	7.00	116.70	94.40	11.05	131.3	9.00	7.33	137.00	105.90	12.19	113.50	10.00	7.30	142.30	98.50	11.18	170.70	11.50	7.94	172.00	83.10	9.06	185.80
6	7.90	7.48	111.90	99.90	11.89	145.70	7.70	6.99	117.30	91.70	10.86	133.2	8.50	7.30	132.10	106.60	12.36	116.90	9.20	7.28	134.60	100.90	11.51	172.70	10.60	8.20	147.70	87.60	9.77	186.00
7	7.80	7.47	111.90	101.10	11.99	147.40	7.70	6.98	117.90	93.7.	11.22	134.8	8.20	7.28	128.40	102.50	12.13	119.50	8.60	7.27	129.80	100.10	11.60	173.90	9.20	7.93	129.80	91.70	10.61	187.10
8	7.40	7.45	112.00	102.90	11.88	147.60	7.40	6.97	117.20	92.60	11.16	136.7	7.70	7.25	123.70	100.90	11.97	123.10	8.10	7.25	125.10	98.60	11.66	174.80	8.50	7.62	124.00	88.80	89.70	189.30
9	6.70	7.41	112.20	98.00	11.92	149.70	7.30	6.96	115.80	89.00	10.73	138	7.60	7.22	123.20	101.70	12.12	126.40	7.70	7.23	123.30	94.70	11.28	176.50	8.00	7.32	121.40	85.00	10.05	190.90
10	6.70	7.38	112.10	99.20	12.19	152.20	7.20	6.96	114.20	90.30	10.83	138.7	7.30	7.20	121.70	97.60	11.76	127.90	7.50	7.17	122.50	94.70	11.21	180.30	7.70	7.21	122.10	81.30	9.88	192.90
11	6.70	7.37	112.20	98.20	12.34	152.80	69.00	6.97	113.40	88.30	10.43	139	7.30	7.20	121.40	97.70	11.96	128.50	7.40	7.17	122.30	91.30	11.12	179.20	7.60	7.46	121.80	81.30	9.73	194.20
12	6.70	7.37	112.20	97.40	11.78	152.90	6.90	6.94	112.70	88.60	10.57	142.9	7.20	7.19	121.00	98.20	11.97	129.30	7.30	7.16	122.30	91.80	10.91	180.10	7.60	7.76	122.00	80.10	9.57	194.70
13	6.60	7.35	112.20	97.40	12.12	153.40	6.80	6.94	113.30	85.50	10.38	141.4	7.10	7.17	121.70	95.30	11.50	130.40	7.30	7.11	127.80	63.10	9.81	179.10	7.50	7.79	121.90	76.50	9.44	195.80
14	6.60	7.35	112.30	87.50	10.67	153.10	6.80	6.66	144.00	40.10	4.06	43.7	7.00	7.02	171.60	60.20	7.28	76.80	7.20	6.97	148.30	59.70	6.61	131.50	7.50	8.26	124.90	78.90	9.47	187.30
1m from Bottom (BS)	BS=14.00m						BS=14.00m						BS=14.00m						BS=14.00m						BS=14.00m					
WQG-Max / Min pH 6.5 -9.0																														

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 35 Lower Quinsam Lake Depth Profiling 1 Page(s)

EMS ID E292118		LOWER QUINSAM LAKE DEPTH PROFILING SPRING																													
Site NAME: LOWER QUINSAM LAKE (LQL)																															
Sample Date	Parameter	8-Apr						14-Apr						20-Apr						28-Apr						4-May					
Sample Depth (m)		TEMP. °C	pH	C μS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	C μS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	C μS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	C μS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	C μS/cm	% Sat.	D.O. mg/L	ORP mV
1		6.80	7.42	103.50	97.40	11.69	239.50	8.80	7.01	105.70	106.80	12.38	154.60	11.20	7.30	113.20	104.70	11.51	151.10	11.00	7.35	117.30	88.70	9.96	180.60	11.00	7.05	120.30	82.90	9.15	192.30
2		6.80	7.41	103.40	97.20	11.70	229.60	8.70	6.99	106.30	99.70	11.71	156.00	9.20	7.25	112.20	103.30	11.75	154.00	10.10	7.31	116.60	90.70	10.27	184.80	10.00	7.05	120.60	82.30	9.26	192.60
3		6.80	7.40	103.50	97.40	11.78	225.70	7.70	6.96	107.00	99.60	11.80	157.80	8.70	7.22	112.70	100.60	11.69	155.60	9.30	7.29	120.40	87.90	10.15	186.50	9.90	7.00	118.90	81.60	9.35	193.20
4		6.80	7.39	103.50	97.20	11.68	224.40	7.60	6.95	106.20	95.60	11.40	159.20	8.60	7.21	113.00	99.40	11.62	156.80	9.10	7.27	119.30	86.90	10.80	187.80	9.70	7.02	116.40	80.90	9.26	193.10
5		6.80	7.38	103.50	95.10	11.49	221.10	7.40	6.93	107.00	96.30	11.50	161.00	8.30	7.19	113.20	102.80	12.19	158.40	8.90	7.25	118.50	87.70	10.13	188.70	9.40	7.03	113.70	80.10	9.22	192.70
6		6.80	7.38	103.50	94.90	11.59	218.20	7.20	6.92	105.60	93.70	11.19	161.80	8.00	7.19	112.80	100.10	11.93	158.00	8.70	7.23	116.10	87.20	10.26	189.90	8.90	7.04	112.10	81.30	9.37	193.70
7		6.80	7.37	103.50	96.30	11.50	215.00	7.00	6.91	106.30	89.00	11.35	162.90	7.60	7.17	112.00	98.50	11.75	159.20	8.10	7.22	112.30	86.30	10.62	190.70	7.90	7.07	109.10	79.70	9.39	194.20
8		6.80	7.36	103.50	94.00	11.66	212.70	6.90	6.90	105.50	90.20	10.94	163.70	7.10	7.16	112.30	99.50	12.12	159.60	7.50	7.20	111.80	90.20	10.82	191.80	7.80	7.07	108.30	79.30	9.48	195.00
9		6.80	7.34	103.40	94.00	11.51	211.70	6.70	6.90	106.30	90.20	10.92	163.70	6.70	7.14	113.60	99.20	12.21	160.30	7.30	7.16	111.90	88.60	10.73	193.50	7.50	7.08	107.90	79.90	9.46	195.10
10		6.70	7.33	103.50	95.40	11.71	211.40	6.60	6.88	108.50	88.90	10.94	165.50	6.60	7.14	114.30	97.80	12.02	160.20	7.10	7.14	112.50	89.20	10.85	194.40	7.30	7.08	107.90	78.40	9.46	196.90
11		6.30	7.34	103.60	93.00	11.60	207.60	6.50	6.89	109.00	85.00	10.41	163.90	6.50	7.14	114.70	97.20	11.88	160.20	6.90	7.12	113.10	88.20	10.73	194.90	7.20	7.11	107.90	78.30	9.52	195.90
12		6.10	7.32	104.10	94.40	11.60	205.80	6.40	6.88	109.10	83.50	10.17	165.20	6.50	7.15	115.10	95.20	11.66	159.90	6.80	7.12	113.80	85.90	10.48	195.30	6.90	7.13	108.50	77.80	9.43	196.20
13		6.00	7.30	104.70	92.70	11.25	205.00	6.40	6.89	109.20	84.20	10.32	164.30	6.40	7.15	115.40	94.30	11.63	159.60	6.60	7.10	114.70	83.20	10.27	195.60	6.70	7.15	109.50	73.40	8.95	196.30
14		5.90	7.28	104.60	95.20	11.31	204.20	6.30	6.88	109.20	86.50	10.50	164.60	6.40	7.14	115.40	92.70	11.42	159.60	6.50	7.08	115.00	82.00	10.04	195.70	6.60	7.15	109.70	70.10	8.57	197.40
15		5.80	7.28	105.60	95.00	11.43	203.70	6.30	6.88	109.40	84.50	10.46	164.50	6.40	7.14	115.60	90.60	11.26	159.40	6.50	7.07	115.00	81.70	10.03	196.00	6.60	7.19	109.70	70.8	8.73	196.70
16		5.70	7.26	105.80	87.80	10.97	202.00	6.30	6.89	109.60	85.20	10.30	163.40	6.30	7.13	115.70	90.10	11.12	159.60	6.50	7.06	115.00	80.60	9.87	195.80	6.50	7.20	110.00	65.30	8.12	196.60
17		5.70	7.26	105.80	91.60	10.82	200.00	6.30	6.89	109.80	84.30	10.20	161.80	6.30	7.13	115.90	87.70	10.74	159.20	6.50	7.03	115.20	76.30	9.32	192.20	6.50	7.22	110.10	63.30	7.83	196.10
18		5.70	7.26	105.70	81.90	10.10	198.00	6.30	6.90	109.80	74.10	9.08	159.30	6.30	7.13	115.90	78.70	9.59	157.40	6.50	6.98	115.10	77.20	9.40	175.00	6.50	7.23	110.10	59.10	7.33	192.70
1m from Bottom		BS=18.0m						BS=18.0m						BS=18.0m						BS=18.0m						BS=18.0m					
WQG-Max		pH Max. 6.5 - 9.0																													

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

Q1 (April 1st to June 30th, 2021)											
EMS ID		E217018					Water Quality Guidelines				
StnName		No Name Lake 1 Metre									
StnCode		NNL1									
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Maximum
SO4-D	mg/L	1.6	2.0	2.5	1.6	1.8	5	2.5	1.9	128	
Turb	NTU	0.51	0.29	0.28	0.22	0.22	5	0.51	0.30		
Alk-T	mg/L	10	12	12	12	11	5	12	11.4		
P-T	mg/L	<0.0030	<0.0030	0.0049	<0.0030	0.0048	5	0.0049	0.00284	0.007	
Al-T	mg/L	0.0370	0.0355	0.0276	0.0273	0.0257	5	0.0370	0.0306		
As-T	mg/L	0.00021	0.00022	0.00020	0.00022	0.00023	5	0.00023	0.00022		0.005
Ba-T	mg/L	0.0011	0.0014	<0.0010	0.0011	0.0011	5	0.0014	0.00104	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	3.53	3.86	3.54	3.87	3.93	5	3.93	3.75		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	5	<0.00050	0.000250		
Hard-T	mg/L	12.2	13.2	12.1	13.2	13.4	5	13.4	12.8		
Fe-T	mg/L	0.072	0.063	0.050	0.057	0.062	5	0.072	0.061		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	0.831	0.873	0.786	0.864	0.876	5	0.876	0.846		
Mn-T	mg/L	0.0039	0.0037	0.0033	0.0043	0.0044	5	0.0044	0.0039	0.737	0.8706
Hg-T	mg/L	0.0000025	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000025	0.00000126	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.054	0.064	0.051	0.057	0.064	5	0.064	0.058		
S-T	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	1.06	1.08	1.03	1.09	1.14	5	1.14	1.08		
Sr-T	mg/L	0.0113	0.0122	0.0112	0.0127	0.0127	5	0.0127	0.0120		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0291	0.0250	0.0254	0.0230	0.0219	5	0.0291	0.0249	0.05	0.1
As-D	mg/L	0.00017	0.00020	0.00021	0.00020	0.00023	5	0.00023	0.00020		
Ba-D	mg/L	0.0010	0.0010	<0.0010	0.0011	0.0010	5	0.0011	0.00092		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	3.40	3.56	3.72	3.82	3.76	5	3.82	3.65		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00037	0.00036	0.00034	0.00035	0.00030	5	0.00037	0.00034	0.0003	0.002
Hard-D	mg/L	11.9	12.2	12.8	12.8	12.9	5	12.9	12.5		
Fe-D	mg/L	0.0376	0.0361	0.0388	0.0434	0.0505	5	0.0505	0.0413		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	0.825	0.811	0.855	0.797	0.853	5	0.855	0.828		
Mn-D	mg/L	0.0026	0.0022	0.0027	0.0040	0.0040	5	0.0040	0.0031		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.055	0.055	0.057	0.067	0.066	5	0.067	0.060		
S-D	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	1.02	1.01	1.07	1.06	1.11	5	1.11	1.05		
Sr-D	mg/L	0.0113	0.0114	0.0114	0.0120	0.0122	5	0.0122	0.0117		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Chlr-a	ug/L					<0.50					
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

E217018							Water Quality Guidelines				
No Name Lake 4 Metre											
NNL4											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	1.7	1.8	5.0	1.4	2.2	5	5.0	2.4	128	
Turb	NTU	0.40	0.32	0.63	0.28	0.29	5	0.63	0.38		
Alk-T	mg/L	10	11	9.2	13	11	5	13	10.8		
P-T	mg/L	0.0036	<0.0030	0.0039	<0.0030	0.0045	5	0.0045	0.00300	0.007	
Al-T	mg/L	0.0371	0.0339	0.0297	0.0306	0.0263	5	0.0371	0.0315		
As-T	mg/L	0.00021	0.00022	0.00020	0.00021	0.00022	5	0.00022	0.00021		0.005
Ba-T	mg/L	0.0011	0.0010	0.0010	0.0010	0.0010	5	0.0011	0.0010	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	3.67	3.76	3.45	3.80	3.76	5	3.80	3.69		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	0.00084	<0.00050	5	0.00084	0.000368		
Hard-T	mg/L	12.7	12.8	11.8	13.0	12.7	5	13.0	12.6		
Fe-T	mg/L	0.076	0.069	0.057	0.049	0.054	5	0.076	0.061		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	0.855	0.833	0.785	0.844	0.810	5	0.855	0.825		
Mn-T	mg/L	0.0041	0.0037	0.0029	0.0025	0.0031	5	0.0041	0.0033	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.053	0.061	0.053	0.059	0.058	5	0.061	0.057		
S-T	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	1.07	1.05	1.01	1.08	1.04	5	1.08	1.05		
Sr-T	mg/L	0.0116	0.0117	0.0111	0.0124	0.0119	5	0.0124	0.0117		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0301	0.0272	0.0255	0.0224	0.0228	5	0.0301	0.0256	0.05	0.1
As-D	mg/L	0.00015	0.00020	0.00018	0.00018	0.00022	5	0.00022	0.00019		
Ba-D	mg/L	<0.0010	0.0011	<0.0010	0.0010	0.0010	5	0.0011	0.00082		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	3.61	3.58	3.72	3.74	3.72	5	3.74	3.67		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00037	0.00040	0.00034	0.00034	0.00029	5	0.00040	0.00035	0.0003	0.002
Hard-D	mg/L	12.5	12.5	12.7	12.4	12.8	5	12.8	12.6		
Fe-D	mg/L	0.0394	0.0381	0.0339	0.0308	0.0414	5	0.0414	0.0367		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	0.850	0.852	0.834	0.753	0.846	5	0.852	0.827		
Mn-D	mg/L	0.0024	0.0020	0.0016	0.0019	0.0027	5	0.0027	0.0021		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.059	0.060	0.055	0.063	0.065	5	0.065	0.060		
S-D	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	1.08	1.06	1.06	1.02	1.06	5	1.08	1.06		
Sr-D	mg/L	0.0118	0.0117	0.0110	0.0119	0.0122	5	0.0122	0.0117		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		

Notes:

Factor applied to less-than results when calculating statistics: 0.5

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID	E217018						Water Quality Guidelines				
StnName	No Name Lake 9 Metre										
StnCode	NNL9										
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	2.7	2.8	3.6	2.6	2.1	5	3.6	2.8	128	
Turb	NTU	0.54	0.41	0.56	0.39	0.27	5	0.56	0.43		
Alk-T	mg/L	11	11	13	11	10	5	13	11.2		
P-T	mg/L	<0.0030	<0.0030	0.0037	<0.0030	0.0047	5	0.0047	0.00258	0.007	
Al-T	mg/L	0.0413	0.0379	0.0342	0.0350	0.0294	5	0.0413	0.0356		
As-T	mg/L	0.00022	0.00021	0.00021	0.00019	0.00021	5	0.00022	0.00021		0.005
Ba-T	mg/L	0.0012	0.0011	0.0011	0.0011	0.0011	5	0.0012	0.0011	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	3.81	4.08	3.72	3.95	3.87	5	4.08	3.89		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	5	<0.00050	0.000250		
Hard-T	mg/L	13.1	13.8	12.6	13.4	13.2	5	13.8	13.2		
Fe-T	mg/L	0.092	0.087	0.088	0.082	0.073	5	0.092	0.084		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	0.871	0.873	0.806	0.854	0.853	5	0.873	0.851		
Mn-T	mg/L	0.0060	0.0054	0.0054	0.0047	0.0043	5	0.0060	0.0052	0.737	0.8706
Hg-T	mg/L	0.0000023	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000023	0.00000122	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.054	0.065	0.055	0.059	0.063	5	0.065	0.059		
S-T	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	1.03	1.05	1.02	1.05	1.08	5	1.08	1.05		
Sr-T	mg/L	0.0129	0.0126	0.0122	0.0134	0.0129	5	0.0134	0.0128		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	0.0059	5	0.0059	0.00318	0.0075	0.033
Al-D	mg/L	0.0323	0.0276	0.0305	0.0272	0.0238	5	0.0323	0.0283	0.05	0.1
As-D	mg/L	0.00015	0.00020	0.00021	0.00017	0.00020	5	0.00021	0.00019		
Ba-D	mg/L	0.0011	0.0011	0.0012	0.0011	0.0010	5	0.0012	0.0011		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	3.86	3.79	3.96	3.94	3.71	5	3.96	3.85		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00035	0.00034	0.00088	0.00034	0.00029	5	0.00088	0.00044	0.0003	0.002
Hard-D	mg/L	13.2	12.9	13.4	13.1	12.6	5	13.4	13.0		
Fe-D	mg/L	0.0461	0.0457	0.0485	0.0374	0.0439	5	0.0485	0.0443		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	0.866	0.833	0.858	0.780	0.805	5	0.866	0.828		
Mn-D	mg/L	0.0031	0.0023	0.0025	0.0018	0.0027	5	0.0031	0.0025		
Hg-D	mg/L	0.0000020	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000020	0.00000116		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.060	0.061	0.073	0.071	0.063	5	0.073	0.066		
S-D	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	1.03	1.02	1.16	0.989	1.02	5	1.16	1.044		
Sr-D	mg/L	0.0137	0.0126	0.0125	0.0133	0.0123	5	0.0137	0.0129		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

E217018							Water Quality Guidelines				
StnName No Name Lake 1 Metre From Bottom											
NNLB											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	2.9	2.6	3.6	3.8	3.4	5	3.8	3.3	128	
Turb	NTU	0.34	0.35	0.57	0.78	0.36	5	0.78	0.48		
Alk-T	mg/L	10	10	9.1	9.4	11	5	11	9.9		
P-T	mg/L	<0.0030	<0.0030	0.0030	<0.0030	0.0040	5	0.0040	0.00230	0.007	
Al-T	mg/L	0.0413	0.0389	0.0382	0.0384	0.0348	5	0.0413	0.0383		
As-T	mg/L	0.00021	0.00021	0.00023	0.00028	0.00021	5	0.00028	0.00023		0.005
Ba-T	mg/L	0.0011	0.0012	0.0013	0.0012	0.0011	5	0.0013	0.0012	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	3.88	4.08	3.97	4.28	3.95	5	4.28	4.03		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	5	<0.00050	0.000250		
Hard-T	mg/L	13.3	13.9	13.5	14.4	13.3	5	14.4	13.7		
Fe-T	mg/L	0.091	0.094	0.107	0.182	0.096	5	0.182	0.114		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	0.883	0.887	0.859	0.892	0.832	5	0.892	0.871		
Mn-T	mg/L	0.0061	0.0058	0.0069	0.0092	0.0052	5	0.0092	0.0066	0.737	0.8706
Hg-T	mg/L	0.0000022	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000022	0.00000120	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.055	0.067	0.059	0.063	0.061	5	0.067	0.061		
S-T	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	1.06	1.06	1.06	1.05	1.04	5	1.06	1.05		
Sr-T	mg/L	0.0129	0.0132	0.0132	0.0151	0.0134	5	0.0151	0.0136		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0317	0.0291	0.0316	0.0283	0.0253	5	0.0317	0.0292	0.05	0.1
As-D	mg/L	0.00016	0.00020	0.00017	0.00021	0.00018	5	0.00021	0.00018		
Ba-D	mg/L	0.0011	0.0012	0.0012	0.0011	0.0011	5	0.0012	0.0011		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	3.91	3.80	4.06	4.06	3.90	5	4.06	3.95		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00035	0.00037	0.00035	0.00034	0.00028	5	0.00037	0.00034	0.0003	0.002
Hard-D	mg/L	13.3	12.9	13.8	13.6	13.0	5	13.8	13.3		
Fe-D	mg/L	0.0463	0.0450	0.0490	0.0783	0.0465	5	0.0783	0.0530		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	0.870	0.839	0.894	0.841	0.794	5	0.894	0.848		
Mn-D	mg/L	0.0031	0.0025	0.0032	0.0045	0.0021	5	0.0045	0.0031		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.057	0.063	0.063	0.067	0.064	5	0.067	0.063		
S-D	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	1.04	1.03	1.08	1.03	0.987	5	1.08	1.033		
Sr-D	mg/L	0.0132	0.0126	0.0130	0.0146	0.0130	5	0.0146	0.0133		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID	E206619						Water Quality Guidelines				
StnName	Long Lake Middle 1 Metre										
StnCode	LLM1										
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	45	50	42	42	41	5	50	44.0	128	
Turb	NTU	0.36	0.26	0.30	0.22	0.21	5	0.36	0.27		
Alk-T	mg/L	25	27	27	26	27	5	27	26.4		
P-T	mg/L	<0.0030	<0.0030		<0.0030	<0.0030	5	0.022	0.00560	0.007	
Al-T	mg/L	0.0292	0.0273	0.0248	0.0232	0.0201	5	0.0292	0.0249		
As-T	mg/L	0.00031	0.00029	0.00029	0.00031	0.00033	5	0.00033	0.00031		0.005
Ba-T	mg/L	0.0039	0.0038	0.0036	0.0039	0.0040	5	0.0040	0.0038	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	17.8	18.9	17.1	18.0	17.4	5	18.9	17.8		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0062	5	0.0062	0.00164		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00070	5	0.00070	0.000340	0.002	0.007
Hard-T	mg/L	54.4	57.1	51.9	54.9	53.7	5	57.1	54.4		
Fe-T	mg/L	0.074	0.072	0.061	0.051	0.049	5	0.074	0.061		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	2.40	2.40	2.24	2.40	2.47	5	2.47	2.38		
Mn-T	mg/L	0.0142	0.0139	0.0121	0.0112	0.0100	5	0.0142	0.0123	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0067	5	0.0067	0.00174	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010		5	0.0281	0.00602	0.025	0.025
K-T	mg/L	0.215	0.240	0.219	0.225	0.235	5	0.240	0.227		
S-T	mg/L	13.9	13.8	14.1	13.7	14.7	5	14.7	14.0		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	5.93	6.08	5.69	5.98	6.14	5	6.14	5.96		
Sr-T	mg/L	0.128	0.130	0.117	0.124	0.126	5	0.130	0.125		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0228	0.0201	0.0186	0.0171	0.0157	5	0.0228	0.0189	0.05	0.1
As-D	mg/L	0.00024	0.00028	0.00027	0.00028	0.00029	5	0.00029	0.00027		
Ba-D	mg/L	0.0035	0.0037	0.0036	0.0038	0.0037	5	0.0038	0.0037		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	18.2	18.0	17.6	18.0	17.8	5	18.2	17.9		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00032	0.00032	0.00034	0.00029	0.00027	5	0.00034	0.00031		
Hard-D	mg/L	55.4	54.6	53.4	54.5	54.1	5	55.4	54.4		
Fe-D	mg/L	0.0440	0.0432	0.0391	0.0366	0.0344	5	0.0440	0.0395		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	2.39	2.33	2.29	2.29	2.37	5	2.39	2.33		
Mn-D	mg/L	0.0110	0.0100	0.0079	0.0071	0.0060	5	0.0110	0.0084		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.218	0.227	0.216	0.218	0.230	5	0.230	0.222		
S-D	mg/L	14.0	13.5	13.6	13.6	13.8	5	14.0	13.7		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	5.83	6.05	5.73	5.78	5.94	5	6.05	5.87		
Sr-D	mg/L	0.118	0.124	0.115	0.126	0.126	5	0.126	0.122		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Chlr-a	ug/L					0.69					
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E206619							Water Quality Guidelines				
StnName Long Lake Middle 4 Metre											
StnCode LLM4											
Date	Unit	7/Apr/21					Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	42	59	60	51	53	5	60	53.0	128	
Turb	NTU	0.37	0.35	0.62	0.24	0.23	5	0.62	0.36		
Alk-T	mg/L	25	30	29	36	30	5	36	30.0		
P-T	mg/L	<0.0030	<0.0030	0.0032	<0.0030	<0.0030	5	0.0032	0.00184	0.007	
Al-T	mg/L	0.0306	0.0275	0.0261	0.0237	0.0192	5	0.0306	0.0254		
As-T	mg/L	0.00030	0.00030	0.00028	0.00031	0.00030	5	0.00031	0.00030		0.005
Ba-T	mg/L	0.0039	0.0044	0.0041	0.0043	0.0042	5	0.0044	0.0042	1	5
B-T	mg/L	<0.050	0.052	<0.050	0.051	0.052	5	0.052	0.0410	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	18.1	22.8	20.0	20.9	21.0	5	22.8	20.6		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0029	5	0.0029	0.00098		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	5	<0.00050	0.000250	0.002	0.007
Hard-T	mg/L	54.9	68.3	60.4	63.2	63.6	5	68.3	62.1		
Fe-T	mg/L	0.074	0.078	0.067	0.059	0.049	5	0.078	0.065		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	2.37	2.77	2.54	2.69	2.68	5	2.77	2.61		
Mn-T	mg/L	0.0144	0.0182	0.0150	0.0143	0.0119	5	0.0182	0.0148	0.737	0.8706
Hg-T	mg/L	0.0000021	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000021	0.00000118	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0032	5	0.0032	0.00104	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0129	5	0.0129	0.00298	0.025	0.025
K-T	mg/L	0.219	0.278	0.241	0.263	0.267	5	0.278	0.254		
S-T	mg/L	14.7	17.8	16.2	17.7	17.6	5	17.8	16.8		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	6.07	7.23	6.76	7.00	7.20	5	7.23	6.85		
Sr-T	mg/L	0.131	0.157	0.143	0.147	0.153	5	0.157	0.146		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0218	0.0194	0.0195	0.0168	0.0141	5	0.0218	0.0183	0.05	0.1
As-D	mg/L	0.00026	0.00028	0.00028	0.00030	0.00027	5	0.00030	0.00028		
Ba-D	mg/L	0.0036	0.0044	0.0040	0.0042	0.0042	5	0.0044	0.0041		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	0.052	5	0.052	0.0304		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	18.8	21.3	21.6	21.0	21.6	5	21.6	20.9		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00030	0.00032	0.00032	0.00029	0.00025	5	0.00032	0.00030		
Hard-D	mg/L	56.4	64.4	65.0	63.1	65.1	5	65.1	62.8		
Fe-D	mg/L	0.0446	0.0435	0.0401	0.0368	0.0312	5	0.0446	0.0392		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	2.31	2.73	2.68	2.57	2.73	5	2.73	2.60		
Mn-D	mg/L	0.0110	0.0134	0.0109	0.0076	0.0047	5	0.0134	0.0095		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.217	0.267	0.262	0.247	0.270	5	0.270	0.253		
S-D	mg/L	14.2	17.0	17.3	16.8	17.8	5	17.8	16.6		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	5.84	7.17	7.11	6.87	7.34	5	7.34	6.87		
Sr-D	mg/L	0.124	0.153	0.148	0.149	0.154	5	0.154	0.146		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

E206619							Water Quality Guidelines				
Long Lake Middle 9 Metre											
StnCode		LLM9	LLM9	LLM9	LLM9	LLM9					
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	94	99	97	97	99	5	99	97.2	128	
Turb	NTU	0.53	0.42	0.56	0.46	0.28	5	0.56	0.45		
Alk-T	mg/L	40	41	42	40	42	5	42	41.0		
P-T	mg/L	<0.0030	<0.0030	<0.0030	0.0031	<0.0030	5	0.0031	0.00182	0.007	
Al-T	mg/L	0.0250	0.0249	0.0241	0.0224	0.0195	5	0.0250	0.0232		
As-T	mg/L	0.00028	0.00028	0.00027	0.00029	0.00027	5	0.00029	0.00028		0.005
Ba-T	mg/L	0.0056	0.0052	0.0053	0.0054	0.0053	5	0.0056	0.0054	1	5
B-T	mg/L	0.084	0.082	0.087	0.086	0.087	5	0.087	0.085	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	37.5	35.8	35.7	36.3	34.3	5	37.5	35.9		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0016	5	0.0016	0.00072		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	5	<0.00050	0.000250	0.002	0.007
Hard-T	mg/L	111	105	106	108	102	5	111	106.4		
Fe-T	mg/L	0.082	0.077	0.071	0.064	0.059	5	0.082	0.071		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	4.14	3.89	4.06	4.21	4.01	5	4.21	4.06		
Mn-T	mg/L	0.0963	0.0666	0.104	0.0885	0.0875	5	0.104	0.0886	0.737	0.8706
Hg-T	mg/L	0.0000020	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000020	0.00000116	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0018	5	0.0018	0.00076	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0067	5	0.0067	0.00174	0.025	0.025
K-T	mg/L	0.433	0.435	0.432	0.446	0.439	5	0.446	0.437		
S-T	mg/L	32.2	30.2	32.4	32.4	30.9	5	32.4	31.6		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	13.1	12.2	13.1	12.9	12.6	5	13.1	12.8		
Sr-T	mg/L	0.287	0.262	0.276	0.283	0.267	5	0.287	0.275		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0182	0.0167	0.0152	0.0154	0.0134	5	0.0182	0.0158	0.05	0.1
As-D	mg/L	0.00023	0.00026	0.00024	0.00025	0.00023	5	0.00026	0.00024		
Ba-D	mg/L	0.0052	0.0054	0.0051	0.0053	0.0052	5	0.0054	0.0052		
B-D	mg/L	0.083	0.071	0.088	0.079	0.085	5	0.088	0.081		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	37.3	32.9	36.7	36.1	34.2	5	37.3	35.4		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00033	0.00033	0.00035	0.00030	0.00026	5	0.00035	0.00031		
Hard-D	mg/L	110	97.6	109	106	102	5	110	104.9		
Fe-D	mg/L	0.0388	0.0361	0.0323	0.0311	0.0271	5	0.0388	0.0331		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	4.19	3.77	4.22	3.94	3.99	5	4.22	4.02		
Mn-D	mg/L	0.0715	0.0452	0.0805	0.0609	0.0619	5	0.0805	0.0640		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.438	0.423	0.476	0.419	0.436	5	0.476	0.438		
S-D	mg/L	31.7	28.0	32.7	30.0	30.6	5	32.7	30.6		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	13.2	11.5	13.5	12.5	12.5	5	13.5	12.6		
Sr-D	mg/L	0.289	0.254	0.273	0.272	0.267	5	0.289	0.271		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		

Notes:

Factor applied to less-than results when calculating statistics: 0.5

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E206619							Water Quality Guidelines				
StnName Long Lake Middle 1 Metre from Bottom											
StnCode LLM 1MB											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	100	110	98	100	100	5	110	101.6	128	
Turb	NTU	0.89	0.71	0.80	0.61	0.41	5	0.89	0.68		
Alk-T	mg/L	43	45	44	41	43	5	45	43.2		
P-T	mg/L	<0.0030	<0.0030	<0.0030	0.0044	<0.0030	5	0.0044	0.00208	0.007	
Al-T	mg/L	0.0193	0.0231	0.0194	0.0200	0.0180	5	0.0231	0.0200		
As-T	mg/L	0.00030	0.00028	0.00028	0.00031	0.00027	5	0.00031	0.00029		0.005
Ba-T	mg/L	0.0060	0.0059	0.0054	0.0058	0.0058	5	0.0060	0.0058	1	5
B-T	mg/L	0.091	0.090	0.090	0.097	0.094	5	0.097	0.092	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	39.0	38.2	36.8	38.7	36.2	5	39.0	37.8		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	5	<0.00050	0.000250	0.002	0.007
Hard-T	mg/L	116	113	109	114	108	5	116	112.0		
Fe-T	mg/L	0.073	0.080	0.074	0.073	0.066	5	0.080	0.073		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	4.49	4.29	4.24	4.31	4.21	5	4.49	4.31		
Mn-T	mg/L	0.193	0.141	0.148	0.128	0.123	5	0.193	0.147	0.737	0.8706
Hg-T	mg/L	0.0000020	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000020	0.00000116	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5	0.0010	0.00060	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0037	5	0.0037	0.00114	0.025	0.025
K-T	mg/L	0.457	0.477	0.451	0.458	0.463	5	0.477	0.461		
S-T	mg/L	34.3	33.1	33.9	33.8	32.9	5	34.3	33.6		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	14.2	13.5	14.0	13.6	13.5	5	14.2	13.8		
Sr-T	mg/L	0.305	0.289	0.281	0.292	0.282	5	0.305	0.290		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0119	0.0130	0.0122	0.0130	0.0103	5	0.0130	0.0121	0.05	0.1
As-D	mg/L	0.00021	0.00025	0.00022	0.00023	0.00021	5	0.00025	0.00022		
Ba-D	mg/L	0.0049	0.0053	0.0051	0.0054	0.0054	5	0.0054	0.0052		
B-D	mg/L	0.092	0.082	0.091	0.082	0.091	5	0.092	0.088		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	39.1	37.8	38.1	37.6	35.6	5	39.1	37.6		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00028	0.00029	0.00031	0.00030	0.00024	5	0.00031	0.00028		
Hard-D	mg/L	116	112	113	111	106	5	116	111.6		
Fe-D	mg/L	0.0253	0.0276	0.0253	0.0255	0.0211	5	0.0276	0.0250		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	4.42	4.24	4.36	4.24	4.05	5	4.42	4.26		
Mn-D	mg/L	0.100	0.0927	0.0890	0.0801	0.0740	5	0.100	0.0872		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.462	0.488	0.490	0.442	0.449	5	0.490	0.466		
S-D	mg/L	34.4	32.6	34.5	32.2	32.8	5	34.5	33.3		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	13.9	13.5	14.1	13.5	12.9	5	14.1	13.6		
Sr-D	mg/L	0.303	0.284	0.277	0.284	0.279	5	0.303	0.285		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E206618							Water Quality Guidelines				
StnName Middle Quinsam Lake 1 Metre											
StnCode MQL1											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	28	28	34	43	48	5	48	36.2	128	
Turb	NTU	0.20	0.18	0.16	0.15	0.15	5	0.20	0.17		
Alk-T	mg/L	28	33	36	39	38	5	39	34.8		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0166	0.0151	0.0140	0.0154	0.0137	5	0.0166	0.0150		
As-T	mg/L	0.00010	0.00010	0.00011	0.00013	0.00012	5	0.00013	0.00011		0.005
Ba-T	mg/L	0.0015	0.0015	0.0018	0.0020	0.0018	5	0.0020	0.0017	1	5
B-T	mg/L	<0.050	<0.050	<0.050	0.057	0.057	5	0.057	0.0378	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	11.5	11.9	13.5	14.3	14.0	5	14.3	13.0		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00058	0.00051	<0.00050	0.00053	<0.00050	5	0.00058	0.000424	0.002	0.007
Hard-T	mg/L	34.9	35.8	40.6	43.3	42.0	5	43.3	39.3		
Fe-T	mg/L	0.029	0.030	0.027	0.030	0.030	5	0.030	0.029		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.51	1.48	1.70	1.84	1.69	5	1.84	1.64		
Mn-T	mg/L	0.0046	0.0045	0.0050	0.0065	0.0058	5	0.0065	0.0053	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.157	0.175	0.238	0.284	0.269	5	0.284	0.225		
S-T	mg/L	8.3	8.7	13.1	15.7	14.7	5	15.7	12.1		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	9.73	10.8	16.3	18.8	18.1	5	18.8	14.75		
Sr-T	mg/L	0.0505	0.0535	0.0734	0.0921	0.0907	5	0.0921	0.0720		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0151	0.0120	0.0125	0.0113	0.0105	5	0.0151	0.0123	0.05	0.1
As-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	5	0.00011	0.000062		
Ba-D	mg/L	0.0015	0.0015	0.0018	0.0018	0.0019	5	0.0019	0.0017		
B-D	mg/L	<0.050	<0.050	<0.050	0.053	0.055	5	0.055	0.0366		
Cd-D	mg/L	<0.000010	<0.000010	0.000065	<0.000010	<0.000010	5	0.000065	0.0000170	0.000087	0.00017
Ca-D	mg/L	11.5	11.6	13.6	14.2	13.3	5	14.2	12.8		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00050	0.00047	0.00047	0.00048	0.00041	5	0.00050	0.00047		
Hard-D	mg/L	34.9	35.2	41.0	42.3	40.2	5	42.3	38.7		
Fe-D	mg/L	0.0206	0.0191	0.0190	0.0198	0.0191	5	0.0206	0.0195		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.51	1.50	1.71	1.68	1.67	5	1.71	1.61		
Mn-D	mg/L	0.0026	0.0025	0.0038	0.0049	0.0049	5	0.0049	0.0037		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.151	0.173	0.238	0.279	0.272	5	0.279	0.223		
S-D	mg/L	8.2	8.6	13.0	14.8	14.4	5	14.8	11.8		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	9.47	10.5	16.3	17.9	18.0	5	18.0	14.43		
Sr-D	mg/L	0.0519	0.0522	0.0755	0.0868	0.0898	5	0.0898	0.0712		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Chlr-a	ug/L					<0.50					
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E206618							Water Quality Guidelines				
StnName Middle Quinsam Lake 4 Metre											
StnCode MQL4											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	27	28	33	44	48	5	48	36.0	128	
Turb	NTU	0.20	0.15	0.19	0.18	0.15	5	0.20	0.17		
Alk-T	mg/L	28	32	35	39	39	5	39	34.6		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0169	0.0155	0.0147	0.0147	0.0139	5	0.0169	0.0151		
As-T	mg/L	0.00011	<0.00010	0.00011	0.00011	0.00013	5	0.00013	0.000102		0.005
Ba-T	mg/L	0.0015	0.0015	0.0015	0.0019	0.0019	5	0.0019	0.0017	1	5
B-T	mg/L	<0.050	<0.050	<0.050	0.054	0.058	5	0.058	0.0374	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	11.2	12.1	12.2	14.9	14.4	5	14.9	13.0		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00055	0.00050	<0.00050	<0.00050	0.00055	5	0.00055	0.000420	0.002	0.007
Hard-T	mg/L	34.1	36.4	36.6	44.4	43.4	5	44.4	39.0		
Fe-T	mg/L	0.029	0.031	0.025	0.031	0.322	5	0.322	0.088		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.46	1.52	1.52	1.74	1.78	5	1.78	1.60		
Mn-T	mg/L	0.0046	0.0046	0.0041	0.0054	0.0076	5	0.0076	0.0053	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.155	0.182	0.196	0.261	0.284	5	0.284	0.216		
S-T	mg/L	8.9	8.6	10.8	14.3	15.1	5	15.1	11.5		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	9.52	11.1	13.4	17.5	18.9	5	18.9	14.08		
Sr-T	mg/L	0.0501	0.0561	0.0632	0.0859	0.0941	5	0.0941	0.0699		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0128	0.0120	0.0109	0.0118	0.0106	5	0.0128	0.0116	0.05	0.1
As-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	5	0.00013	0.000066		
Ba-D	mg/L	0.0015	0.0014	0.0015	0.0018	0.0019	5	0.0019	0.0016		
B-D	mg/L	<0.050	<0.050	<0.050	0.052	0.057	5	0.057	0.0368		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	11.5	11.3	12.5	14.0	14.0	5	14.0	12.7		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00048	0.00046	0.00044	0.00048	0.00042	5	0.00048	0.00046		
Hard-D	mg/L	35.2	34.1	37.8	41.7	42.2	5	42.2	38.2		
Fe-D	mg/L	0.0175	0.0189	0.0164	0.0186	0.0200	5	0.0200	0.0183		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.54	1.43	1.60	1.65	1.75	5	1.75	1.59		
Mn-D	mg/L	0.0026	0.0021	0.0016	0.0035	0.0051	5	0.0051	0.0030		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.156	0.172	0.205	0.257	0.278	5	0.278	0.214		
S-D	mg/L	8.5	9.1	11.5	14.0	15.5	5	15.5	11.7		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	9.62	10.6	14.0	17.0	18.4	5	18.4	13.92		
Sr-D	mg/L	0.0522	0.0520	0.0663	0.0836	0.0922	5	0.0922	0.0693		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E206618							Water Quality Guidelines				
StnName Middle Quinsam Lake 9 Metre											
StnCode MQL9											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	28	28	28	28	28	5	28	28.0	128	
Turb	NTU	0.20	0.19	0.42	0.20	0.20	5	0.42	0.24		
Alk-T	mg/L	28	32	32	31	31	5	32	30.8		
P-T	mg/L	<0.0030	<0.0030	<0.0030		<0.0030	5	0.0085	0.00290	0.007	
Al-T	mg/L	0.0178	0.0150	0.0135	0.0142	0.0119	5	0.0178	0.0145		
As-T	mg/L	0.00010	<0.00010	0.00010	0.00012	0.00012	5	0.00012	0.000098		0.005
Ba-T	mg/L	0.0016	0.0015	0.0015	0.0015	0.0014	5	0.0016	0.0015	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	12.0	11.7	11.5	11.4	10.8	5	12.0	11.5		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00052	<0.00050	0.00054	0.00051	<0.00050	5	0.00054	0.000414	0.002	0.007
Hard-T	mg/L	36.6	35.4	34.6	34.6	32.8	5	36.6	34.8		
Fe-T	mg/L	0.031	0.030	0.025	0.024	0.019	5	0.031	0.026		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.60	1.49	1.45	1.51	1.42	5	1.60	1.49		
Mn-T	mg/L	0.0053	0.0044	0.0034	0.0031	0.0023	5	0.0053	0.0037	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.167	0.172	0.169	0.175	0.165	5	0.175	0.170		
S-T	mg/L	9.7	8.8	9.7	9.3	8.3	5	9.7	9.2		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	10.1	10.5	11.2	11.0	10.3	5	11.2	10.6		
Sr-T	mg/L	0.0535	0.0536	0.0534	0.0581	0.0547	5	0.0581	0.0547		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0118	0.0113	0.0108	0.0108	0.0094	5	0.0118	0.0108	0.05	0.1
As-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	5	0.00010	0.000060		
Ba-D	mg/L	0.0015	0.0014	0.0014	0.0014	0.0014	5	0.0015	0.0014		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	11.7	11.5	11.4	11.4	10.7	5	11.7	11.3		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00047	0.00043	0.00043	0.00048	0.00040	5	0.00048	0.00044		
Hard-D	mg/L	35.7	34.6	34.6	34.2	32.8	5	35.7	34.4		
Fe-D	mg/L	0.0157	0.0169	0.0140	0.0134	0.0105	5	0.0169	0.0141		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.55	1.43	1.46	1.40	1.45	5	1.55	1.46		
Mn-D	mg/L	0.0014	0.0012	<0.0010	<0.0010	<0.0010	5	0.0014	0.00082		
Hg-D	mg/L	0.0000023	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000023	0.00000122		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.152	0.174	0.169	0.181	0.172	5	0.181	0.170		
S-D	mg/L	9.3	9.0	8.9	9.9	9.0	5	9.9	9.2		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	9.48	10.2	11.0	10.5	10.5	5	11.0	10.34		
Sr-D	mg/L	0.0528	0.0522	0.0543	0.0557	0.0557	5	0.0557	0.0541		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E206618							Water Quality Guidelines				
StnName Middle Quinsam Lake 1 Metre from Bottom											
StnCode MQL 1MB											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	28	28	28	28	28	5	28	28.0	128	
Turb	NTU	0.18	0.20	0.24	0.30	0.12	5	0.30	0.21		
Alk-T	mg/L	28	30	31	39	33	5	39	32.2		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0167	0.0147	0.0143	0.0137	0.0126	5	0.0167	0.0144		
As-T	mg/L	0.00011	0.00010	0.00011	<0.00010	0.00011	5	0.00011	0.000096		0.005
Ba-T	mg/L	0.0016	0.0016	0.0015	0.0016	0.0016	5	0.0016	0.0016	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	11.7	11.7	11.3	11.7	11.1	5	11.7	11.5		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00051	0.00054	<0.00050	<0.00050	0.00052	5	0.00054	0.000414	0.002	0.007
Hard-T	mg/L	35.4	35.3	34.2	35.3	33.7	5	35.4	34.8		
Fe-T	mg/L	0.030	0.029	0.025	0.025	0.021	5	0.030	0.026		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.50	1.47	1.46	1.51	1.47	5	1.51	1.48		
Mn-T	mg/L	0.0050	0.0044	0.0037	0.0029	0.0025	5	0.0050	0.0037	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.157	0.162	0.158	0.159	0.169	5	0.169	0.161		
S-T	mg/L	9.3	8.3	9.3	9.2	8.8	5	9.3	9.0		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	9.52	9.49	10.3	9.99	10.3	5	10.3	9.92		
Sr-T	mg/L	0.0534	0.0524	0.0515	0.0552	0.0549	5	0.0552	0.0535		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0117	0.0110	0.0106	0.0093	0.0081	5	0.0117	0.0101	0.05	0.1
As-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	5	0.00010	0.000060		
Ba-D	mg/L	0.0015	0.0015	0.0015	0.0015	0.0015	5	0.0015	0.0015		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	11.4	11.2	11.5	11.2	11.0	5	11.5	11.3		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00044	0.00043	0.00043	0.00044	0.00040	5	0.00044	0.00043		
Hard-D	mg/L	34.8	33.9	34.8	33.5	33.5	5	34.8	34.1		
Fe-D	mg/L	0.0150	0.0151	0.0132	0.0113	0.0103	5	0.0151	0.0130		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.53	1.47	1.47	1.36	1.44	5	1.53	1.45		
Mn-D	mg/L	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	5	0.0012	0.00064		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.149	0.162	0.164	0.162	0.168	5	0.168	0.161		
S-D	mg/L	8.9	8.5	9.0	8.5	8.5	5	9.0	8.7		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	9.46	9.23	10.4	9.49	10.0	5	10.4	9.72		
Sr-D	mg/L	0.0525	0.0508	0.0539	0.0527	0.0542	5	0.0542	0.0528		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		

Notes:

Factor applied to less-than results when calculating statistics: 0.5

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E292118							Water Quality Guidelines				
StnName Lower Quinsam Lake 1 Metre											
StnCode LQL1											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	28/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	22	23	21	23	25	5	25	22.8	128	
Turb	NTU	0.37	0.28	0.38	0.34	0.30	5	0.38	0.33		
Alk-T	mg/L	29	32	32	33	33	5	33	31.8		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0320	0.0256	0.0310	0.0323	0.0340	5	0.0340	0.0310		
As-T	mg/L	0.00078	0.00082	0.00076	0.00074	0.00076	5	0.00082	0.00077		0.005
Ba-T	mg/L	0.0039	0.0039	0.0037	0.0038	0.0038	5	0.0039	0.0038	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	11.1	11.5	11.4	11.7	11.7	5	11.7	11.5		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00052	<0.00050	0.00051	0.00056	0.00053	5	0.00056	0.000474		
Hard-T	mg/L	33.7	34.9	34.2	34.9	35.3	5	35.3	34.6		
Fe-T	mg/L	0.090	0.087	0.071	0.068	0.072	5	0.090	0.078		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.46	1.51	1.38	1.37	1.45	5	1.51	1.43		
Mn-T	mg/L	0.0058	0.0058	0.0045	0.0043	0.0044	5	0.0058	0.0050	0.737	0.8706
Hg-T	mg/L	0.0000020	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000020	0.00000116	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.202	0.220	0.203	0.218	0.237	5	0.237	0.216		
S-T	mg/L	7.0	7.3	7.4	7.3	8.0	5	8.0	7.4		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	5	0.00010	0.000060	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	8.35	8.78	8.43	9.20	10.5	5	10.5	9.05		
Sr-T	mg/L	0.0548	0.0580	0.0544	0.0592	0.0660	5	0.0660	0.0585		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0198	0.0171	0.0244	0.0247	0.0235	5	0.0247	0.0219	0.05	0.1
As-D	mg/L	0.00071	0.00073	0.00073	0.00074	0.00066	5	0.00074	0.00071		
Ba-D	mg/L	0.0037	0.0037	0.0037	0.0036	0.0036	5	0.0037	0.0037		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	11.1	10.9	11.8	11.8	11.8	5	11.8	11.5		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00046	0.00041	0.00054	0.00053	0.00046	5	0.00054	0.00048	0.0003	0.002
Hard-D	mg/L	33.9	33.2	35.1	34.9	35.3	5	35.3	34.5		
Fe-D	mg/L	0.0583	0.0529	0.0474	0.0458	0.0501	5	0.0583	0.0509		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.51	1.46	1.39	1.35	1.39	5	1.51	1.42		
Mn-D	mg/L	0.0029	0.0022	0.0023	0.0016	0.0022	5	0.0029	0.0022		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.201	0.209	0.209	0.207	0.231	5	0.231	0.211		
S-D	mg/L	6.8	6.9	6.9	7.9	8.0	5	8.0	7.3		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	5	0.00011	0.000062		
Na-D	mg/L	8.28	8.32	8.56	9.11	10.1	5	10.1	8.87		
Sr-D	mg/L	0.0555	0.0551	0.0574	0.0591	0.0654	5	0.0654	0.0585		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Chlr-a	ug/L					0.86					
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E292118							Water Quality Guidelines				
StnName Lower Quinsam Lake 4 Metre											
StnCode LQ14											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	28/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	22	22	21	24	25	5	25	22.8	128	
Turb	NTU	0.37	0.28	0.56	0.32	0.35	5	0.56	0.38		
Alk-T	mg/L	29	31	33	34	33	5	34	32.0		
P-T	mg/L	<0.0030	<0.0030	0.0031	<0.0030	<0.0030	5	0.0031	0.00182	0.007	
Al-T	mg/L	0.0307	0.0255	0.0349	0.0406	0.0334	5	0.0406	0.0330		
As-T	mg/L	0.00080	0.00080	0.00081	0.00078	0.00070	5	0.00081	0.00078		0.005
Ba-T	mg/L	0.0040	0.0038	0.0038	0.0039	0.0037	5	0.0040	0.0038	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	10.8	11.5	11.2	12.0	11.3	5	12.0	11.4		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00053	<0.00050	0.00053	0.00059	0.00052	5	0.00059	0.000484		
Hard-T	mg/L	33.1	34.9	33.8	35.5	33.8	5	35.5	34.2		
Fe-T	mg/L	0.091	0.084	0.079	0.071	0.068	5	0.091	0.079		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.50	1.51	1.42	1.38	1.37	5	1.51	1.44		
Mn-T	mg/L	0.0059	0.0053	0.0047	0.0045	0.0041	5	0.0059	0.0049	0.737	0.8706
Hg-T	mg/L	0.0000020	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000020	0.00000116	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.212	0.216	0.211	0.226	0.231	5	0.231	0.219		
S-T	mg/L	7.4	7.0	7.6	7.6	8.4	5	8.4	7.6		
Se-T	mg/L	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	5	0.00011	0.000062	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	8.74	8.59	8.73	9.59	10.1	5	10.1	9.15		
Sr-T	mg/L	0.0544	0.0563	0.0547	0.0616	0.0629	5	0.0629	0.0580		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0207	0.0177	0.0250	0.0270	0.0244	5	0.0270	0.0230	0.05	0.1
As-D	mg/L	0.00068	0.00071	0.00074	0.00071	0.00066	5	0.00074	0.00070		
Ba-D	mg/L	0.0037	0.0039	0.0037	0.0037	0.0037	5	0.0039	0.0037		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	10.7	10.8	11.7	11.6	10.8	5	11.7	11.1		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00046	0.00043	0.00055	0.00052	0.00047	5	0.00055	0.00049	0.0003	0.002
Hard-D	mg/L	33.0	32.8	35.1	34.7	32.5	5	35.1	33.6		
Fe-D	mg/L	0.0557	0.0518	0.0459	0.0433	0.0430	5	0.0557	0.0479		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.51	1.39	1.40	1.39	1.35	5	1.51	1.41		
Mn-D	mg/L	0.0029	0.0024	0.0014	0.0014	0.0013	5	0.0029	0.0019		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.199	0.208	0.210	0.215	0.231	5	0.231	0.213		
S-D	mg/L	7.1	6.1	6.9	7.7	8.4	5	8.4	7.2		
Se-D	mg/L	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	5	0.00010	0.000060		
Na-D	mg/L	8.22	8.17	8.67	9.43	9.69	5	9.69	8.84		
Sr-D	mg/L	0.0552	0.0547	0.0603	0.0596	0.0646	5	0.0646	0.0589		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E292118							Water Quality Guidelines				
StnName Lower Quinsam Lake 9 Metre											
StnCode LQ9											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	28/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	22	22	30	22	23	5	30	23.8	128	
Turb	NTU	0.35	0.31	0.40	0.26	0.27	5	0.40	0.32		
Alk-T	mg/L	28	31	24	32	31	5	32	29.2		
P-T	mg/L	<0.0030		0.0034	<0.0030	<0.0030	5	0.15	0.03158	0.007	
Al-T	mg/L	0.0319	0.0257	0.0290	0.0266	0.0280	5	0.0319	0.0282		
As-T	mg/L	0.00076	0.00081	0.00078	0.00080	0.00074	5	0.00081	0.00078		0.005
Ba-T	mg/L	0.0038	0.0041	0.0037	0.0038	0.0037	5	0.0041	0.0038	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	10.8	11.8	10.9	11.4	10.9	5	11.8	11.2		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00051	<0.00050	<0.00050	0.00052	<0.00050	5	0.00052	0.000356		
Hard-T	mg/L	33.0	35.9	33.0	34.3	32.7	5	35.9	33.8		
Fe-T	mg/L	0.090	0.092	0.081	0.072	0.069	5	0.092	0.081		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.49	1.57	1.44	1.43	1.33	5	1.57	1.45		
Mn-T	mg/L	0.0058	0.0062	0.0054	0.0046	0.0043	5	0.0062	0.0053	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.207	0.216	0.204	0.206	0.212	5	0.216	0.209		
S-T	mg/L	6.9	7.3	7.3	6.8	7.3	5	7.3	7.1		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	8.48	8.81	8.57	8.74	8.62	5	8.81	8.64		
Sr-T	mg/L	0.0547	0.0570	0.0538	0.0570	0.0603	5	0.0603	0.0566		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0221	0.0182	0.0208	0.0201	0.0209	5	0.0221	0.0204	0.05	0.1
As-D	mg/L	0.00073	0.00075	0.00070	0.00072	0.00067	5	0.00075	0.00071		
Ba-D	mg/L	0.0038	0.0038	0.0037	0.0036	0.0037	5	0.0038	0.0037		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	11.2	10.9	11.5	11.0	11.0	5	11.5	11.1		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00046	0.00042	0.00053	0.00047	0.00044	5	0.00053	0.00046	0.0003	0.002
Hard-D	mg/L	34.2	32.9	34.6	33.4	33.2	5	34.6	33.7		
Fe-D	mg/L	0.0578	0.0517	0.0477	0.0440	0.0449	5	0.0578	0.0492		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.52	1.40	1.43	1.45	1.37	5	1.52	1.43		
Mn-D	mg/L	0.0029	0.0019	0.0010	<0.0010	<0.0010	5	0.0029	0.00136		
Hg-D	mg/L	0.0000024	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000024	0.00000124		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.200	0.196	0.209	0.201	0.222	5	0.222	0.206		
S-D	mg/L	6.6	6.9	7.0	7.4	6.8	5	7.4	6.9		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	8.24	8.01	8.72	8.46	8.64	5	8.72	8.41		
Sr-D	mg/L	0.0562	0.0537	0.0589	0.0554	0.0597	5	0.0597	0.0568		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID E292118							Water Quality Guidelines				
StnName Lower Quinsam Lake 1 Metre From Bottom											
StnCode LQL 1MB											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	28/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	23	24	22	24	23	5	24	23.2	128	
Turb	NTU	0.43	0.43	0.42	0.42	0.43	5	0.43	0.43		
Alk-T	mg/L	29	33	33	33	39	5	39	33.4		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0313	0.0259	0.0237	0.0311	0.0246	5	0.0313	0.0273		
As-T	mg/L	0.00085	0.00090	0.00083	0.00083	0.00083	5	0.00090	0.00085		0.005
Ba-T	mg/L	0.0042	0.0042	0.0039	0.0039	0.0041	5	0.0042	0.0041	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	11.2	12.1	11.0	11.8	10.5	5	12.1	11.3		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00052	<0.00050	<0.00050	0.00056	<0.00050	5	0.00056	0.000366		
Hard-T	mg/L	34.3	36.7	33.5	35.5	32.2	5	36.7	34.4		
Fe-T	mg/L	0.112	0.107	0.104	0.090	0.136	5	0.136	0.110		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.54	1.57	1.46	1.43	1.45	5	1.57	1.49		
Mn-T	mg/L	0.0089	0.0082	0.0087	0.0079	0.0203	5	0.0203	0.0108	0.737	0.8706
Hg-T	mg/L	0.0000020	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000020	0.00000116	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.214	0.227	0.205	0.223	0.212	5	0.227	0.216		
S-T	mg/L	7.5	7.5	7.4	7.7	7.1	5	7.7	7.4		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	5	0.00011	0.000062	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	8.69	9.35	8.78	9.43	8.52	5	9.43	8.95		
Sr-T	mg/L	0.0568	0.0598	0.0557	0.0605	0.0586	5	0.0605	0.0583		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0198	0.0186	0.0173	0.0238	0.0133	5	0.0238	0.0186	0.05	0.1
As-D	mg/L	0.00074	0.00072	0.00072	0.00070	0.00067	5	0.00074	0.00071		
Ba-D	mg/L	0.0039	0.0039	0.0038	0.0039	0.0039	5	0.0039	0.0039		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	11.1	11.5	11.2	11.6	10.4	5	11.6	11.2		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00045	0.00049	0.00048	0.00052	0.00039	5	0.00052	0.00047	0.0003	0.002
Hard-D	mg/L	34.0	35.0	34.2	34.9	31.5	5	35.0	33.9		
Fe-D	mg/L	0.0671	0.0612	0.0548	0.0515	0.0740	5	0.0740	0.0617		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.52	1.54	1.48	1.45	1.36	5	1.54	1.47		
Mn-D	mg/L	0.0057	0.0046	0.0029	0.0035	0.0139	5	0.0139	0.0061		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.201	0.206	0.208	0.216	0.202	5	0.216	0.207		
S-D	mg/L	7.0	6.7	7.0	8.2	6.7	5	8.2	7.1		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	8.55	9.18	8.74	9.15	8.23	5	9.18	8.77		
Sr-D	mg/L	0.0566	0.0568	0.0579	0.0587	0.0567	5	0.0587	0.0573		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 36 Spring Q1- Lakes 17 Page(s)

EMS ID							Water Quality Guidelines				
StnName LLE Zone of Dilution 2											
StnCode LLEZ2											
Date	Unit	7/Apr/21	14/Apr/21	20/Apr/21	27/Apr/21	4/May/21	Count	Maximum	5 in 30 Ave	Average	Max
SO4-D	mg/L	46	43	46	44	42	5	46	44.2	128	
Turb	NTU	0.48	0.33	0.39	0.26	0.24	5	0.48	0.34	2.5	8.5
Alk-T	mg/L	25	26	26	26	27	5	27	26		
P-T	mg/L	<0.0030	<0.0030	<0.0030	0.0032	<0.0030	5	0.0032	0.00184	0.007	
Al-T	mg/L	0.0302	0.0288	0.0245	0.0228	0.0189	5	0.0302	0.025		
As-T	mg/L	0.00031	0.00030	0.00029	0.00032	0.00032	5	0.00032	0.00031		0.005
Ba-T	mg/L	0.0039	0.0038	0.0037	0.0040	0.0039	5	0.0040	0.0039	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	18.5	18.9	17.2	18.8	17.4	5	18.9	18.2		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	5	<0.00050	0.00025	0.002	0.007
Hard-T	mg/L	56.3	57.4	52.1	56.9	53.2	5	57.4	55.2		
Fe-T	mg/L	0.076	0.071	0.062	0.053	0.050	5	0.076	0.062		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	2.43	2.48	2.24	2.44	2.38	5	2.48	2.39		
Mn-T	mg/L	0.0143	0.0141	0.0124	0.0114	0.0099	5	0.0143	0.0124	0.737	0.8706
Hg-T	mg/L	0.0000024	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	0.0000024	0.00000124	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0020	5	0.0020	0.00080	0.025	0.025
K-T	mg/L	0.220	0.242	0.211	0.228	0.232	5	0.242	0.227		
S-T	mg/L	14.1	14.5	13.9	14.7	13.9	5	14.7	14.2		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.00005	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	6.06	6.16	5.70	6.08	5.92	5	6.16	5.98		
Sr-T	mg/L	0.130	0.130	0.119	0.126	0.123	5	0.130	0.126		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0243	0.0197	0.0196	0.0163	0.0131	5	0.0243	0.0186	0.05	0.1
As-D	mg/L	0.00025	0.00028	0.00027	0.00030	0.00030	5	0.00030	0.00028		
Ba-D	mg/L	0.0039	0.0037	0.0037	0.0038	0.0038	5	0.0039	0.0038		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	18.6	17.8	17.5	18.0	17.9	5	18.6	18		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00032	0.00030	0.00031	0.00031	0.00024	5	0.00032	0.0003		
Hard-D	mg/L	56.3	53.9	53.5	54.6	54.3	5	56.3	54.5		
Fe-D	mg/L	0.0452	0.0444	0.0400	0.0355	0.0353	5	0.0452	0.0401		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	2.39	2.29	2.37	2.35	2.35	5	2.39	2.35		
Mn-D	mg/L	0.0113	0.0098	0.0082	0.0073	0.0063	5	0.0113	0.0086		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	0.0000030	5	0.0000030	0.00000136		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.229	0.219	0.222	0.220	0.228	5	0.229	0.224		
S-D	mg/L	14.3	13.3	14.2	13.7	14.3	5	14.3	14		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	5.94	5.84	5.96	5.86	5.78	5	5.96	5.88		
Sr-D	mg/L	0.124	0.121	0.113	0.126	0.125	5	0.126	0.122		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 37 Spring Q1- Rivers 8 Page(s)

Q1 (April 1st to June 30th, 2021)							Water Quality Guidelines				
EMS ID	E217017										
StnName	No Name Lake Outlet										
StnCode	NNO										
Date	Unit	6/Apr/21	13/Apr/21	19/Apr/21	26/Apr/21	3/May/21	Count	Maximum	5 in 30 Ave	Average	Maximum
pH-F	pH Uni	7.21	8.31	7.69	7.82	7.47	5	8.31	7.70		6.5 - 9.0
Cond-F	uS/cm	32.3	1669	38.7	62.3	86.4	5	1669	377.7		
SO4-D	mg/L	2.7	2.2	1.2	2.3	2.2	5	2.7	2.1	128	
TSS	mg/L	1.2	<1.0	<1.0	<1.0	<1.0	5	1.2	0.64	5	25
Alk-T	mg/L	12	12	12	11	12	5	12	11.8		
P-T	mg/L	0.0032	<0.0030	<0.0030	<0.0030	<0.0030	5	0.0032	0.00184	0.007	
Al-T	mg/L	0.0471	0.0324	0.0288	0.0273	0.0259	5	0.0471	0.0323		
As-T	mg/L	0.00022	0.00020	0.00020	0.00022	0.00022	5	0.00022	0.00021		0.005
Ba-T	mg/L	0.0011	0.0011	0.0010	<0.0010	0.0011	5	0.0011	0.00096	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	3.68	3.58	3.76	4.13	3.77	5	4.13	3.78		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	5	<0.00050	0.000250		
Hard-T	mg/L	12.6	12.3	12.8	13.7	12.8	5	13.7	12.8		
Fe-T	mg/L	0.100	0.062	0.053	0.065	0.063	5	0.100	0.069		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	0.825	0.808	0.820	0.825	0.825	5	0.825	0.821		
Mn-T	mg/L	0.0066	0.0035	0.0033	0.0045	0.0045	5	0.0066	0.0045	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.104	0.057	0.057	0.052	0.056	5	0.104	0.065		
S-T	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-T	mg/L	0.00017	<0.00010	<0.00010	<0.00010	<0.00010	5	0.00017	0.000074	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	1.04	1.02	1.03	1.06	1.04	5	1.06	1.04		
Sr-T	mg/L	0.0113	0.0113	0.0118	0.0122	0.0122	5	0.0122	0.0118		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0283	0.0260	0.0262	0.0247	0.0201	5	0.0283	0.0251	0.05	0.1
As-D	mg/L	0.00019	0.00020	0.00018	0.00023	0.00023	5	0.00023	0.00021		
Ba-D	mg/L	0.0010	0.0011	0.0010	0.0010	0.0010	5	0.0011	0.0010		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	3.53	3.60	3.83	3.80	3.91	5	3.91	3.73		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00040	0.00042	0.00036	0.00033	0.00032	5	0.00042	0.00037	0.0003	0.002
Hard-D	mg/L	12.1	12.3	13.0	13.0	13.1	5	13.1	12.7		
DOC	mg/L	2.2	2.3	2.5	2.6	2.4	5	2.6	2.4		
Fe-D	mg/L	0.0392	0.0407	0.0401	0.0462	0.0471	5	0.0471	0.0427		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	0.791	0.797	0.842	0.850	0.814	5	0.850	0.819		
Mn-D	mg/L	0.0025	0.0023	0.0024	0.0032	0.0032	5	0.0032	0.0027		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.060	0.054	0.063	0.054	0.061	5	0.063	0.058		
S-D	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	1.04	1.01	1.07	1.05	1.05	5	1.07	1.04		
Sr-D	mg/L	0.0119	0.0114	0.0120	0.0122	0.0126	5	0.0126	0.0120		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 37 Spring Q1- Rivers 8 Page(s)

EMS ID	E219412						Water Quality Guidelines				
StnName	Long Lake Outlet										
StnCode	LLO										
Date	Unit	6/Apr/21	13/Apr/21	19/Apr/21	26/Apr/21	3/May/21	Count	Max	5 in 30 Ave	Average	Maximum
pH-F	pH Uni	7.4	7.69	8.02	8.03	7.46	5	8.03	7.72		6.5 - 9.0
Cond-F	uS/cm	168.3	15.9	161.8	169	180.4	5	180.4	139.1		
SO4-D	mg/L	49	48	44	46	43	5	49	46.0	128	
TSS	mg/L	2.8	1.6	<1.0	<1.0	<1.0	5	2.8	1.18	5	25
Alk-T	mg/L	26	27	26	32	26	5	32	27.4		
P-T	mg/L	<0.0030	<0.0030	0.0030	<0.0030	<0.0030	5	0.0030	0.00180	0.007	
Al-T	mg/L	0.0274	0.0253	0.0246	0.0235	0.0197	5	0.0274	0.0241		
As-T	mg/L	0.00028	0.00031	0.00029	0.00034	0.00030	5	0.00034	0.00030		0.005
Ba-T	mg/L	0.0035	0.0038	0.0037	0.0041	0.0038	5	0.0041	0.0038	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	18.1	19.3	17.4	18.6	17.0	5	19.3	18.1		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	5	<0.00050	0.000250	0.002	0.007
Hard-T	mg/L	54.8	57.9	52.8	56.5	51.7	5	57.9	54.7		
Fe-T	mg/L	0.068	0.070	0.062	0.063	0.056	5	0.070	0.064		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	2.33	2.35	2.28	2.43	2.24	5	2.43	2.33		
Mn-T	mg/L	0.0105	0.0105	0.0098	0.0115	0.0095	5	0.0115	0.0104	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	0.0014	<0.0010	5	0.0014	0.00068	0.025	0.025
K-T	mg/L	0.227	0.228	0.226	0.234	0.214	5	0.234	0.226		
S-T	mg/L	13.6	15.0	13.6	14.6	13.9	5	15.0	14.1		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	5.76	6.11	5.59	5.99	5.64	5	6.11	5.82		
Sr-T	mg/L	0.118	0.132	0.117	0.126	0.122	5	0.132	0.123		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0254	0.0191	0.0186	0.0162	0.0127	5	0.0254	0.0184	0.05	0.1
As-D	mg/L	0.00029	0.00028	0.00026	0.00030	0.00031	5	0.00031	0.00029		
Ba-D	mg/L	0.0037	0.0037	0.0036	0.0040	0.0040	5	0.0040	0.0038		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	18.1	18.4	17.4	18.9	19.1	5	19.1	18.4		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00032	0.00030	0.00046	0.00029	0.00028	5	0.00046	0.00033		
Hard-D	mg/L	54.8	55.4	52.6	57.0	56.8	5	57.0	55.3		
DOC	mg/L	2.7	2.5	2.6	2.5	2.2	5	2.7	2.5		
Fe-D	mg/L	0.0455	0.0449	0.0401	0.0355	0.0342	5	0.0455	0.0400		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	2.35	2.32	2.26	2.37	2.23	5	2.37	2.31		
Mn-D	mg/L	0.0082	0.0067	0.0050	0.0052	0.0042	5	0.0082	0.0059		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.223	0.227	0.260	0.228	0.224	5	0.260	0.232		
S-D	mg/L	13.8	14.3	13.6	14.3	13.6	5	14.3	13.9		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	5.89	6.05	5.67	5.98	5.68	5	6.05	5.85		
Sr-D	mg/L	0.123	0.126	0.115	0.132	0.128	5	0.132	0.125		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 37 Spring Q1- Rivers 8 Page(s)

EMS ID	E0126402						Water Quality Guidelines				
StnName	Quinsam River at Argonaut Road										
StnCode	WA	WA	WA	WA	WA						
Date	Unit	6/Apr/21	13/Apr/21	19/Apr/21	26/Apr/21	3/May/21	Count	Max	5 in 30 Ave	Average	Maximum
pH-F	pH Uni	6.73	7.02	7.92	8.21	7.51	5	8.21	7.48		6.5 - 9.0
Cond-F	uS/cm	51.7	64.3	75	51.9	56.7	5	75	59.9		
SO4-D	mg/L	1.4	1.7	<1.0	21	1.6	5	21	5.24	128	
TSS	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	5	<1.0	0.50	5	25
Alk-T	mg/L	22	22	22	21	21	5	22	21.6		
P-T	mg/L	0.0071	<0.0030	<0.0030	0.0061	<0.0030	5	0.0071	0.00354	0.007	
Al-T	mg/L	0.0157	0.0384	0.0233	0.0429	0.0479	5	0.0479	0.0336		
As-T	mg/L	<0.00010	0.00011	<0.00010	0.00011	<0.00010	5	0.00011	0.000074		0.005
Ba-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	6.84	7.08	6.87	7.26	6.89	5	7.26	6.99		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	0.0014	<0.0010	5	0.0014	0.00068		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00057	0.00066	0.00053	0.00067	0.00064	5	0.00067	0.00061	0.002	0.007
Hard-T	mg/L	20.2	21.0	20.3	21.4	20.4	5	21.4	20.7		
Fe-T	mg/L	0.011	0.038	0.015	0.039	0.052	5	0.052	0.031		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	0.757	0.802	0.769	0.807	0.774	5	0.807	0.782		
Mn-T	mg/L	<0.0010	0.0025	0.0013	0.0025	0.0030	5	0.0030	0.00196	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	0.0016	<0.0010	5	0.0016	0.00072	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	0.0059	<0.0010	5	0.0059	0.00158	0.025	0.025
K-T	mg/L	0.062	0.061	0.063	0.059	0.057	5	0.063	0.060		
S-T	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	0.639	0.701	0.643	0.675	0.636	5	0.701	0.659		
Sr-T	mg/L	0.0112	0.0118	0.0116	0.0120	0.0115	5	0.0120	0.0116		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0140	0.0132	0.0180	0.0182	0.0139	5	0.0182	0.0155	0.05	0.1
As-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Ba-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	6.77	6.87	7.02	6.93	6.90	5	7.02	6.90		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00050	0.00050	0.00048	0.00052	0.00052	5	0.00052	0.00050		
Hard-D	mg/L	20.1	20.3	20.7	20.5	20.4	5	20.7	20.4		
DOC	mg/L	1.5	1.5	1.9	1.5	1.6	5	1.9	1.6		
Fe-D	mg/L	0.0064	0.0060	0.0090	0.0078	0.0068	5	0.0090	0.0072		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	0.763	0.771	0.756	0.785	0.779	5	0.785	0.771		
Mn-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.058	0.056	0.064	0.056	0.061	5	0.064	0.059		
S-D	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	5	<3.0	1.50		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	0.678	0.659	0.668	0.656	0.643	5	0.678	0.661		
Sr-D	mg/L	0.0112	0.0114	0.0116	0.0118	0.0120	5	0.0120	0.0116		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 37 Spring Q1- Rivers 8 Page(s)

EMS ID	E0900504						Water Quality Guidelines				
StnName	Middle Quinsam Lake Outlet										
StnCode	WB										
Date	Unit	6/Apr/21	13/Apr/21	19/Apr/21	26/Apr/21	3/May/21	Count	Max	5 in 30 Ave	Average	Maximum
pH-F	pH Uni	7.72	7.89	8.09	8.18	7.86	5	8.18	7.95		6.5 - 9.0
Cond-F	uS/cm	197.1	131.2	160.9	195.3	248	5	248	186.5		
SO4-D	mg/L	30	29	38	43	48	5	48	37.6	128	
TSS	mg/L	2.8	<1.0	<1.0	<1.0	<1.0	5	2.8	0.96	5	25
Alk-T	mg/L	29	32	35	38	38	5	38	34.4		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0151	0.0151	0.0164	0.0174	0.0149	5	0.0174	0.0158		
As-T	mg/L	0.00010	0.00012	0.00011	0.00014	0.00012	5	0.00014	0.00012		0.005
Ba-T	mg/L	0.0016	0.0017	0.0017	0.0022	0.0021	5	0.0022	0.0019	1	5
B-T	mg/L	<0.050	<0.050	<0.050	0.055	0.051	5	0.055	0.0362	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	11.4	12.1	13.1	15.1	14.3	5	15.1	13.2		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	0.00051	0.00061	<0.00050	5	0.00061	0.000374	0.002	0.007
Hard-T	mg/L	34.6	36.4	39.5	45.8	43.2	5	45.8	39.9		
Fe-T	mg/L	0.032	0.030	0.031	0.034	0.034	5	0.034	0.032		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.46	1.52	1.65	1.98	1.82	5	1.98	1.69		
Mn-T	mg/L	0.0047	0.0047	0.0050	0.0075	0.0071	5	0.0075	0.0058	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	0.0028	<0.0010	5	0.0028	0.00096	0.025	0.025
K-T	mg/L	0.153	0.170	0.216	0.300	0.276	5	0.300	0.223		
S-T	mg/L	7.6	8.5	12.0	16.3	15.0	5	16.3	11.9		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	8.42	9.78	14.0	19.4	18.1	5	19.4	13.94		
Sr-T	mg/L	0.0535	0.0565	0.0733	0.0981	0.0969	5	0.0981	0.0757		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0134	0.0115	0.0145	0.0126	0.0111	5	0.0145	0.0126	0.05	0.1
As-D	mg/L	0.00011	0.00011	<0.00010	0.00014	0.00014	5	0.00014	0.000110		
Ba-D	mg/L	0.0017	0.0016	0.0017	0.0021	0.0022	5	0.0022	0.0019		
B-D	mg/L	<0.050	<0.050	<0.050	0.054	0.053	5	0.054	0.0364		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	12.5	11.5	12.9	14.7	15.4	5	15.4	13.4		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00053	0.00044	0.00047	0.00046	0.00047	5	0.00053	0.00047		
Hard-D	mg/L	37.6	34.7	39.0	44.3	45.8	5	45.8	40.3		
DOC	mg/L	1.6	1.6	1.6	1.6	1.7	5	1.7	1.6		
Fe-D	mg/L	0.0207	0.0178	0.0252	0.0205	0.0218	5	0.0252	0.0212		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.53	1.45	1.67	1.82	1.79	5	1.82	1.65		
Mn-D	mg/L	0.0030	0.0026	0.0041	0.0055	0.0059	5	0.0059	0.0042		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.157	0.159	0.216	0.264	0.287	5	0.287	0.217		
S-D	mg/L	8.6	8.7	12.2	15.4	15.3	5	15.4	12.0		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	8.73	9.78	13.8	18.2	17.8	5	18.2	13.66		
Sr-D	mg/L	0.0554	0.0541	0.0720	0.0954	0.101	5	0.101	0.0756		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 37 Spring Q1- Rivers 8 Page(s)

EMS ID	Quinsam River Downstream of Seepage Area and Groundwater Discharge Zone						Water Quality Guidelines				
StnName	QRDS										
StnCode											
Date	Unit	6/Apr/21	13/Apr/21	19/Apr/21	26/Apr/21	3/May/21	Count	Max	5 in 30 Ave	Average	Maximum
pH-F	pH Uni	7.6	7.54	7.88	7.53	8.07	5	8.07	7.72		6.5 - 9.0
Cond-F	uS/cm	195.8	159.4	146.7	170.3	205	5	205	175.4		
SO4-D	mg/L	35	33	42	54	50	5	54	42.8	128	
TSS	mg/L	<1.0	<1.0	<1.0	2.0	<1.0	5	2.0	0.80	5	25
Alk-T	mg/L	34	35	38	44	44	5	44	39.0		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0274	0.0197	0.0189	0.0199	0.0176	5	0.0274	0.0207		
As-T	mg/L	0.00053	0.00039	0.00034	0.00101	0.00032	5	0.00101	0.00052		0.005
Ba-T	mg/L	0.0024	0.0024	0.0023	0.0038	0.0024	5	0.0038	0.0027	1	5
B-T	mg/L	<0.050	<0.050	<0.050	0.085	0.059	5	0.085	0.0438	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	11.9	11.9	13.1	15.4	14.6	5	15.4	13.4		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00054	<0.00050	<0.00050	<0.00050	<0.00050	5	0.00054	0.000308	0.002	0.007
Hard-T	mg/L	36.3	36.1	39.8	46.8	43.9	5	46.8	40.6		
Fe-T	mg/L	0.104	0.060	0.041	0.066	0.047	5	0.104	0.064		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.59	1.54	1.70	2.04	1.81	5	2.04	1.74		
Mn-T	mg/L	0.0113	0.0084	0.0073	0.0122	0.0070	5	0.0122	0.0092	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.197	0.195	0.241	0.361	0.289	5	0.361	0.257		
S-T	mg/L	9.8	9.9	12.4	18.4	16.0	5	18.4	13.3		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	11.7	12.5	15.1	22.7	19.3	5	22.7	16.3		
Sr-T	mg/L	0.0603	0.0588	0.0769	0.110	0.0984	5	0.110	0.0809		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0121	0.0118	0.0137	0.0122	0.0105	5	0.0137	0.0121	0.05	0.1
As-D	mg/L	0.00037	0.00036	0.00031	0.00086	0.00031	5	0.00086	0.00044		
Ba-D	mg/L	0.0023	0.0023	0.0022	0.0035	0.0024	5	0.0035	0.0025		
B-D	mg/L	<0.050	<0.050	0.052	0.074	0.059	5	0.074	0.0470		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	12.3	11.9	13.4	15.5	15.1	5	15.5	13.6		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00043	0.00045	0.00047	0.00046	0.00042	5	0.00047	0.00045		
Hard-D	mg/L	37.4	36.1	40.6	47.2	45.2	5	47.2	41.3		
DOC	mg/L	1.8	1.9	1.9	1.8	1.6	5	1.9	1.8		
Fe-D	mg/L	0.0203	0.0210	0.0226	0.0356	0.0190	5	0.0356	0.0237		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.62	1.54	1.73	2.05	1.79	5	2.05	1.75		
Mn-D	mg/L	0.0035	0.0033	0.0035	0.0088	0.0026	5	0.0088	0.0043		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.194	0.190	0.239	0.360	0.296	5	0.360	0.256		
S-D	mg/L	9.5	9.5	12.8	18.0	15.3	5	18.0	13.0		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	11.9	12.3	15.4	22.1	19.5	5	22.1	16.2		
Sr-D	mg/L	0.0603	0.0595	0.0753	0.105	0.0972	5	0.105	0.0795		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 37 Spring Q1- Rivers 8 Page(s)

E286930							Water Quality Guidelines				
Quinsam River Downstream Site 1											
QRDS1											
Date	Unit	6/Apr/21	13/Apr/21	19/Apr/21	26/Apr/21	3/May/21	Count	Max	5 in 30 Ave	Average	Maximum
pH-F	pH Uni	7.6	7.53	8.07	8.28	7.59	5	8.28	7.81		6.5 - 9.0
Cond-F	uS/cm	195.8	170.3	205	225	245	5	245	208.2		
SO4-D	mg/L	40	29	47	48	55	5	55	43.8	128	
TSS	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	5	<1.0	0.50	5	25
Alk-T	mg/L	37	37	43	40	43	5	43	40.0		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0159	0.0185	0.0189	0.0210	0.0181	5	0.0210	0.0185		
As-T	mg/L	0.00104	0.00110	0.00103	0.00037	0.00084	5	0.00110	0.00088		0.005
Ba-T	mg/L	0.0039	0.0039	0.0037	0.0025	0.0036	5	0.0039	0.0035	1	5
B-T	mg/L	0.052	0.058	0.061	0.060	0.071	5	0.071	0.060	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	13.4	13.7	14.1	15.1	15.8	5	15.8	14.4		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00059	0.00056	<0.00050	0.00050	<0.00050	5	0.00059	0.000430	0.002	0.007
Hard-T	mg/L	41.0	41.5	43.1	45.4	48.0	5	48.0	43.8		
Fe-T	mg/L	0.059	0.066	0.066	0.046	0.059	5	0.066	0.059		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.82	1.79	1.91	1.84	2.04	5	2.04	1.88		
Mn-T	mg/L	0.0108	0.0117	0.0122	0.0070	0.0106	5	0.0122	0.0105	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050	0.025	0.025
K-T	mg/L	0.263	0.273	0.305	0.292	0.354	5	0.354	0.297		
S-T	mg/L	11.6	12.0	14.5	16.2	18.3	5	18.3	14.5		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	14.6	15.5	18.1	19.3	22.7	5	22.7	18.0		
Sr-T	mg/L	0.0791	0.0837	0.0933	0.0929	0.116	5	0.116	0.0930		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0118	0.0109	0.0114	0.0134	0.0096	5	0.0134	0.0114	0.05	0.1
As-D	mg/L	0.00100	0.00099	0.00090	0.00033	0.00079	5	0.00100	0.00080		
Ba-D	mg/L	0.0039	0.0036	0.0036	0.0025	0.0036	5	0.0039	0.0034		
B-D	mg/L	0.053	0.056	0.064	0.060	0.075	5	0.075	0.062		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	13.0	13.1	14.2	14.7	16.2	5	16.2	14.2		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00043	0.00046	0.00041	0.00044	0.00042	5	0.00046	0.00043		
Hard-D	mg/L	40.1	40.0	43.5	44.4	48.7	5	48.7	43.3		
DOC	mg/L	1.7	1.9	2.2	1.8	1.6	5	2.2	1.8		
Fe-D	mg/L	0.0350	0.0408	0.0365	0.0198	0.0348	5	0.0408	0.0334		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.88	1.76	1.94	1.86	2.01	5	2.01	1.89		
Mn-D	mg/L	0.0090	0.0090	0.0091	0.0031	0.0079	5	0.0091	0.0076		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.255	0.257	0.302	0.281	0.349	5	0.349	0.289		
S-D	mg/L	11.7	12.2	14.9	15.4	17.2	5	17.2	14.3		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	15.1	15.3	18.8	19.3	21.7	5	21.7	18.0		
Sr-D	mg/L	0.0766	0.0812	0.0929	0.0956	0.117	5	0.117	0.0927		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 37 Spring Q1- Rivers 8 Page(s)

EMS ID	E292113						Water Quality Guidelines				
StnName	7 South Quinsam River										
StnCode	7SQR										
Date	Unit	6/Apr/21	13/Apr/21	19/Apr/21	26/Apr/21	3/May/21	Count	Max	5 in 30 Ave	Average	Maximum
pH-F	pH Uni	7.19	7.73	8.15	8.04	7.26	5	8.15	7.67		6.5 - 9.0
Cond-F	uS/cm	161.1	164.5	235	648	237	5	648	289.1		
SO4-D	mg/L	40	43	43	46	52	5	52	44.8	128	
TSS	mg/L	1.6	<1.0	<1.0	<1.0	<1.0	5	1.6	0.72	5	25
Alk-T	mg/L	37	38	40	43	44	5	44	40.4		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0205	0.0177	0.0261	0.0281	0.0241	5	0.0281	0.0233		
As-T	mg/L	0.00094	0.00098	0.00093	0.00092	0.00081	5	0.00098	0.00092		0.005
Ba-T	mg/L	0.0038	0.0038	0.0039	0.0041	0.0039	5	0.0041	0.0039	1	5
B-T	mg/L	0.052	0.057	0.062	0.068	0.068	5	0.068	0.061	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050		
Ca-T	mg/L	13.2	13.4	14.1	15.0	16.0	5	16.0	14.3		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	0.0022	<0.0010	5	0.0022	0.00084		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00051	<0.00050	<0.00050	0.00059	0.00058	5	0.00059	0.000436	0.002	0.007
Hard-T	mg/L	40.4	40.7	42.9	46.0	48.2	5	48.2	43.6		
Fe-T	mg/L	0.089	0.084	0.101	0.113	0.107	5	0.113	0.099		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.81	1.77	1.89	2.07	2.03	5	2.07	1.91		
Mn-T	mg/L	0.0090	0.0085	0.0086	0.0105	0.0094	5	0.0105	0.0092	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	0.0025	<0.0010	5	0.0025	0.00090	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	0.0099	0.0031	5	0.0099	0.00290	0.025	0.025
K-T	mg/L	0.249	0.251	0.293	0.354	0.348	5	0.354	0.299		
S-T	mg/L	10.8	11.6	14.2	17.3	17.2	5	17.3	14.2		
Se-T	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	14.1	15.2	17.7	21.8	22.1	5	22.1	18.2		
Sr-T	mg/L	0.0769	0.0819	0.0897	0.105	0.114	5	0.114	0.0935		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0125	0.0134	0.0111	0.0118	0.0094	5	0.0134	0.0116	0.05	0.1
As-D	mg/L	0.00090	0.00090	0.00087	0.00080	0.00075	5	0.00090	0.00084		
Ba-D	mg/L	0.0038	0.0037	0.0039	0.0040	0.0038	5	0.0040	0.0038		
B-D	mg/L	0.052	0.058	0.063	0.071	0.067	5	0.071	0.062		
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	5	<0.000010	0.0000050	0.000087	0.00017
Ca-D	mg/L	13.2	13.1	14.2	15.6	15.7	5	15.7	14.4		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00045	0.00045	0.00039	0.00045	0.00041	5	0.00045	0.00043	0.0003	0.002
Hard-D	mg/L	40.5	40.0	43.4	47.4	47.4	5	47.4	43.7		
DOC	mg/L	1.4	1.9	1.9	1.9	1.6	5	1.9	1.7		
Fe-D	mg/L	0.0599	0.0614	0.0562	0.0642	0.0592	5	0.0642	0.0602		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.86	1.76	1.92	2.08	1.96	5	2.08	1.92		
Mn-D	mg/L	0.0080	0.0076	0.0070	0.0075	0.0069	5	0.0080	0.0074		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.256	0.255	0.297	0.340	0.350	5	0.350	0.300		
S-D	mg/L	11.8	11.7	14.7	16.7	16.3	5	16.7	14.2		
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	5	<0.00010	0.000050		
Na-D	mg/L	14.4	15.1	18.1	21.7	21.2	5	21.7	18.1		
Sr-D	mg/L	0.0760	0.0809	0.0910	0.108	0.107	5	0.108	0.0926		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 37 Spring Q1- Rivers 8 Page(s)

EMS ID	E299256						Water Quality Guidelines				
StnName	Iron River & Quinsam River										
StnCode	IRQR										
Date	Unit	6/Apr/21	13/Apr/21	19/Apr/21	26/Apr/21	3/May/21	Count	Max	5 in 30 Ave	Average	Maximum
pH-F	pH Uni	7.26	8.03	8.05	8.06	7.43	5	8.06	7.77		6.5 - 9.0
Cond-F	uS/cm	134.4	143.5	118.9	167	167.4	5	167.4	146.2		
SO4-D	mg/L	29	41	19	26	29	5	41	28.8	128	
TSS	mg/L	1.2	<1.0	<1.0	<1.0	<1.0	5	1.2	0.64	5	25
Alk-T	mg/L	35	38	35	34	36	5	38	35.6		
P-T	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	5	<0.0030	0.00150	0.007	
Al-T	mg/L	0.0240	0.0218	0.0727	0.0519	0.0406	5	0.0727	0.0422		
As-T	mg/L	0.00100	0.00104	0.00076	0.00072	0.00076	5	0.00104	0.00086		0.005
Ba-T	mg/L	0.0040	0.0041	0.0036	0.0035	0.0036	5	0.0041	0.0038	1	5
B-T	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250	1.2	
Cd-T	mg/L	<0.000010	<0.000010	0.000010	0.000011	<0.000010	5	0.000011	0.0000072		
Ca-T	mg/L	12.6	13.0	11.8	11.9	12.8	5	13.0	12.4		
Cr-T	mg/L	<0.0010	<0.0010	<0.0010	0.0016	0.0017	5	0.0017	0.00096		
Co-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.004	0.11
Cu-T	mg/L	0.00050	<0.00050	0.00065	0.00065	0.00068	5	0.00068	0.000546	0.002	0.007
Hard-T	mg/L	37.9	39.0	34.5	35.3	37.7	5	39.0	36.9		
Fe-T	mg/L	0.070	0.069	0.084	0.077	0.076	5	0.084	0.075		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100	0.0039978	0.01763
Mg-T	mg/L	1.55	1.60	1.21	1.32	1.41	5	1.60	1.42		
Mn-T	mg/L	0.0064	0.0066	0.0048	0.0051	0.0054	5	0.0066	0.0057	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	5	<0.0000019	0.00000095	0.00002	0.00001
Mo-T	mg/L	<0.0010	<0.0010	<0.0010	0.0018	0.0018	5	0.0018	0.00102	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0010	0.0070	0.0068	5	0.0070	0.00306	0.025	0.025
K-T	mg/L	0.224	0.227	0.212	0.231	0.257	5	0.257	0.230		
S-T	mg/L	8.1	8.8	6.2	8.0	10.0	5	10.0	8.2		
Se-T	mg/L	0.00012	0.00011	0.00012	0.00012	<0.00010	5	0.00012	0.000104	0.002	
Ag-T	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	5	<0.000020	0.0000100	0.00005	0.0001
Na-T	mg/L	10.3	11.8	7.98	10.2	12.5	5	12.5	10.56		
Sr-T	mg/L	0.0656	0.0698	0.0575	0.0647	0.0768	5	0.0768	0.0669		
Zn-T	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250	0.0075	0.033
Al-D	mg/L	0.0179	0.0166	0.0459	0.0410	0.0262	5	0.0459	0.0295	0.05	0.1
As-D	mg/L	0.00097	0.00097	0.00067	0.00071	0.00077	5	0.00097	0.00082		
Ba-D	mg/L	0.0040	0.0040	0.0035	0.0036	0.0036	5	0.0040	0.0037		
B-D	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	5	<0.050	0.0250		
Cd-D	mg/L	0.000022	<0.000010	<0.000010	<0.000010	<0.000010	5	0.000022	0.0000084	0.000087	0.00017
Ca-D	mg/L	12.6	12.8	11.6	12.1	13.1	5	13.1	12.4		
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Co-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Cu-D	mg/L	0.00045	0.00043	0.00060	0.00056	0.00051	5	0.00060	0.00051	0.0003	0.002
Hard-D	mg/L	37.8	38.4	33.7	35.6	38.5	5	38.5	36.8		
DOC	mg/L	1.9	1.7	3.2	2.5	2.4	5	3.2	2.3		
Fe-D	mg/L	0.0440	0.0463	0.0406	0.0419	0.0410	5	0.0463	0.0428		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	5	<0.00020	0.000100		
Mg-D	mg/L	1.57	1.55	1.18	1.30	1.39	5	1.57	1.40		
Mn-D	mg/L	0.0056	0.0056	0.0033	0.0038	0.0041	5	0.0056	0.0045		
Hg-D	mg/L	<0.0000019	<0.0000019	0.0000024	<0.0000019	<0.0000019	5	0.0000024	0.00000124		
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
Ni-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	5	<0.0010	0.00050		
K-D	mg/L	0.226	0.226	0.206	0.230	0.255	5	0.255	0.229		
S-D	mg/L	8.2	9.0	5.8	8.4	9.3	5	9.3	8.1		
Se-D	mg/L	<0.00010	<0.00010	0.00012	0.00011	0.00011	5	0.00012	0.000088		
Na-D	mg/L	10.3	11.4	7.69	10.4	12.1	5	12.1	10.38		
Sr-D	mg/L	0.0641	0.0697	0.0576	0.0645	0.0733	5	0.0733	0.0658		
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5	<0.0050	0.00250		
Notes:											
Factor applied to less-than results when calculating statistics: 0.5											

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 38 Spring Q1- Zooplankton 1 Page(s)

Spring Taxa and Abundance of Zooplankton Samples						
level of id. : lowest/lowest						
Site Name		LLM	LLM- Replicate	MQL	LQL	NNL
FES Sample Number		210008	210009	210010	210011	210012
Sampling Date(s)		May 4, 2021	May 4, 2021	May 4, 2021	May 4, 2021	May 4, 2021
units = total organisms/sample						
	stage					
Sub-class : Copepoda						
Order : Cyclopoida						
<u>Acanthocyclops vernalis</u>	adult	25	9	3		
<u>Cryptocyclops bicolor</u>	adult		34	3		18
<u>Diacyclops thomasi</u>	adult	148	51	27	144	
<u>Microcyclops varicans</u>	adult	50	25			
UID	copepodid	101	25	19	189	54
Order : Calanoida						
Family : Diaptomidae						
<u>Hesperodiaptomus novemdecimus</u>	adult	3	10	19		87
<u>Skistodiaptomus oregonensis</u>	adult	25	13	2	65	44
UID	copepodid	38	38	15	30	116
UID Calanoida / Cyclopoida	nauplii	1,627	846	566	1,347	314
Order : Cladocera						
<u>Bosmina longirostris</u>	adult	40	28	30	99	13
<u>Bosmina longirostris</u>	juvenile				43	
<u>Daphnia longiremis</u>	adult	89	64	6	2	36
<u>Daphnia rosea</u>	adult	101	76	337	45	126
<u>Daphnia sp.</u>	juvenile	18	23	66	15	13
<u>Diaphanosoma brachyurum</u>	adult	5	3			
<u>Holopedium gibberum</u>	adult			11		262
<u>Holopedium gibberum</u>	juvenile					28
<u>Polyphemus pediculus</u>	adult			2		
<u>Sida crystallina</u>	adult	3	5			
Phylum : Rotifera						
<u>Asplanchna sp.</u>		81	30	2		
<u>Conochilus sp.</u>	solitary					112
<u>Kellicottia longispina</u>		106	79	19	4	77
<u>Keratella cochlearis</u>		3,976	1,979	135	88	5
<u>Keratella quadrata</u>		56	41	6	2	3
<u>Polvarthra sp.</u>		187	206	4	46	28
UID		3			6	
TOTAL		6,682	3,585	1,272	2,125	1,336
UID = unidentified due to lack of size and/or missing morphological characters.						

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 39 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 Dewatering well
	5 Mains#2 (5M#2)	In-situ	No. 1 Seam	Flooded Underground Workings Dewatering well
	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, measure water quality and hydraulic head downstream 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, measure water quality and hydraulic head downstream of 2 North workings
	QU10-13D	In-situ	Caved Zone	Down gradient of u/g tailings disposal, measure water quality and hydraulic head downstream of 2 North workings
5-South Mine Pool	5SMW	In-situ	Mine Pool (1 Seam)	Down gradient of u/g tailings disposal, measure water quality and hydraulic head downstream of 2 North workings
River Barrier Pillar (RBP)	QU11-05S	Ex-situ	Sandstone	Down gradient of u/g tailings disposal, measure water quality and hydraulic head downstream 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 & gradients downstream 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 & gradients downstream of the RBP and 2-North workings. Mine pool – CCR backfill in River Barrier Pillar.
2-North Plant Site	MW-00-1S	Ex-situ	Till	Seepage to MQL
	MW-00-1D	Ex-situ	1-Seam	Seepage to MQL
	MW-00-6D	Ex-situ	Till	Seepage to MQL
	MW-00-6S	Ex-situ	Till	Seepage to MQL
4-South	QU10-08D	Ex-situ	No. 3 Seam	4 South (just outside mine pool) up gradient of existing workings
	QU11-01		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
	MW1223	Ex-situ	Silt Stone	2-South seepage to No Name Lake
	MW1224	Ex-situ	Silt Stone	2-South seepage to No Name Lake
	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 Storage Mine Void
7- South Area 5	7SA5	In-Situ	Mine Void	Groundwater draining into mine void
	QU1128	Ex-situ	NO. 4 Seam and 4L	Upgradient of 7SA5. Background 7 South Area 5
	QU1118S	Ex-situ	Till	Down Gradient of 7SA5 - Background info for 7S A5 Subcrop
	QU1118D	Ex-situ	Sandstone	Down Gradient of 7SA5 - Background info for 7S A5 Subcrop
	QU1206S	Ex-situ	Faulted sandstone near No. 4 Seam	Upgradient of 7SA5 along margine with proposed 4S expansion
	QU11-35	Ex-situ	Sandstone above No. 4 Seam	South end of 7SA5 footprint at 100280m N (mine grid)
242 AREA	QU11-36S	Ex-situ	Sandstone below No. 5 seam	Downgradient of 7SA5. Background (Between 242 and IR).
	QU11-36D	Ex-situ	Sandstone below No. 5 seam	Downgradient of 7SA5. Background (Between 242 and IR).
	242MW	In-situ	No. 4 Seam	Mine pool
	242PS	Ex-situ	Shallow groundwater/ rain water	Old Portal Sump

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Table 40 In-Situ Groundwater Wells 4 Page(s)

Water Level Date	Area Well ID. Replicates m	5-Mains 2-North		1-Mains 2-North				3-Mains 2-North	
		5M#2	5M#2	1M2N	1M2N	1M2N	QU1013D	3M2N	3M2N
		6/May/21	2/Jun/21	13/Apr/21	6/May/21	2/Jun/21	49.04 20/May/21	6/Apr/21	2/Jun/21
SO4-D	mg/L	530	440	1500	1500	1600	1400	720	720
Turb	NTU			130			37		
Alk-T	mg/L	470	560	520	360	520	510	410	420
Acidity83	mg/L	8.5	15.0	23.8	21.4	50.6	20.2	8.8	13.5
N-D	mg/L	0.203	0.222	0.419	0.415	0.405	0.458		0.193
DOC	mg/L	0.76	0.60	1.2	0.71	<0.50	1.3		0.87
Hydrox	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bicarb	mg/L	570	680	630	440	640	620	490	510
Carb	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cl-D	mg/L	11	12	12	12	13	15		4.0
F-D	mg/L	0.080	0.074	0.070	0.064	0.065	0.083		0.13
Br-D	mg/L	0.073	0.065	0.16	0.19	0.15	0.18		0.083
P-D	mg/L	<0.0010	<0.0030	<0.030	0.0015	<0.0030	<0.0030		<0.0030
Al-D	mg/L	<0.0060	<0.0030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0030	<0.0030
Ag-D	mg/L	<0.000040	<0.000020	<0.000040	<0.000040	<0.000040	<0.000040	<0.000020	<0.000020
As-D	mg/L	0.0109	0.00961	0.00459	0.00389	0.00436	0.00119	0.00117	0.00020
Ba-D	mg/L	0.0377	0.0300	0.0298	0.0270	0.0246	0.0570	0.0140	0.0130
B-D	mg/L	1.11	1.02	1.11	1.18	1.22	1.25	0.765	0.794
Be-D	mg/L	<0.00020	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
Bi-D	mg/L	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010
Cd-D	mg/L	<0.000020	<0.000010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010
Ca-D	mg/L	111	95.0	284	277	278	270	128	123
Cr-D	mg/L	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010
Co-D	mg/L	0.00058	0.00050	<0.00040	<0.00040	0.00078	<0.00040	0.00049	0.00069
Cu-D	mg/L	0.00073	0.00052	0.00103	0.00068	0.00040	<0.00040	<0.00020	<0.00020
Fe-D	mg/L	0.904	0.945	12.1	13.3	15.4	7.87	0.0072	0.248
Hard-D	mg/L	319	272	821	817	823	778	395	384
Pb-D	mg/L	<0.00040	0.00072	<0.00040	<0.00040	<0.00040	<0.00040	0.00036	<0.00020
Mg-D	mg/L	10.2	8.54	27.3	30.6	31.1	25.0	18.2	18.3
Mn-D	mg/L	0.310	0.276	1.15	1.32	1.41	1.27	0.192	0.221
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Na-D	mg/L	366	325	453	501	495	524	314	319
Mo-D	mg/L	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010
Ni-D	mg/L	<0.0020	0.0012	<0.0020	<0.0020	0.0028	<0.0020	0.0020	0.0011
K-D	mg/L	3.67	3.22	6.83	7.11	6.98	6.70	3.52	3.61
S-D	mg/L	191	163	466	490	502	476	238	248
Sb-D	mg/L	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050
Se-D	mg/L	<0.00020	<0.00010	<0.00020	<0.00020	0.00043	<0.00020	<0.00010	<0.00010
Si-D	mg/L	3.50	3.17	4.45	4.30	4.29	5.25	3.17	2.96
Sr-D	mg/L	1.24	1.09	2.99	3.11	2.96	2.70	1.29	1.40
Tl-D	mg/L	<0.000020	<0.000010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010
Ti-D	mg/L	<0.010	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050
U-D	mg/L	<0.00020	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
V-D	mg/L	<0.010	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050
Zn-D	mg/L	0.024	0.0370	0.336	0.042	0.038	<0.010	<0.0050	<0.0050
H2SEquiv	mg/L	0.000957	0.0117	0.00489	0.0330	0.0648	0.191		
Temp-F	C	10.5	16.2	13	12.4	15.1	8.6		
pH-F	pH Units	6.91	7.33	7.3	6.65	6.73	6.92	7.06	7.24
Cond-F	uS/cm	2360	2250	3370	4060	3860	3540	1882	2760
DO-F	mg/L						3.29		
ORP-F	mV						-157.4		

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Table 40 In-Situ Groundwater Wells 4 Page(s)

Water Level Date	Area Well ID. Replicates m	1Mains 7S and Area 5		7 South Area 5		242 Mine Pool Water 242MW
		1M7SA5	1M7SA5	7SA5	7SA5	
		7/Apr/21	2/Jun/21	7/Apr/21	2/Jun/21	22.893 27/May/21
SO4-D	mg/L	64	84	24	44	41
Turb	NTU					150
Alk-T	mg/L	160	150	170	160	91
Acidity83	mg/L	<1.0	<1.0	<1.0	<1.0	8.2
N-D	mg/L		0.226		0.167	0.118
DOC	mg/L		<0.50		0.99	1.3
Hydrox	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Bicarb	mg/L	200	190	210	190	110
Carb	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Cl-D	mg/L		1.2		1.5	<1.0
F-D	mg/L		0.51		0.61	0.064
Br-D	mg/L		<0.010		<0.010	<0.010
P-D	mg/L		<0.0030		<0.0030	<0.0030
Al-D	mg/L	<0.0030	0.0080	<0.0030	<0.0030	<0.0030
Ag-D	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
As-D	mg/L	0.165	0.0465	0.233	0.223	0.0763
Ba-D	mg/L	0.266	0.251	0.367	0.164	0.0677
B-D	mg/L	0.486	0.515	0.476	0.556	0.054
Be-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bi-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cd-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Ca-D	mg/L	49.4	51.5	42.7	41.4	40.5
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Co-D	mg/L	<0.00020	0.00047	<0.00020	0.00032	0.00173
Cu-D	mg/L	0.00048	0.00049	0.00074	0.00027	<0.00020
Fe-D	mg/L	<0.0050	0.138	<0.0050	0.0177	12.6
Hard-D	mg/L	167	175	142	141	114
Pb-D	mg/L	<0.00020	<0.00020	0.00054	<0.00020	<0.00020
Mg-D	mg/L	10.7	11.3	8.61	9.09	3.20
Mn-D	mg/L	0.0055	0.0244	0.0140	0.0116	0.613
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Na-D	mg/L	23.2	20.0	23.0	23.4	2.15
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	0.0012	<0.0010
Ni-D	mg/L	0.0011	0.0017	0.162	<0.0010	0.0011
K-D	mg/L	2.19	2.18	2.18	2.07	0.471
S-D	mg/L	17.8	24.7	7.2	14.7	11.9
Sb-D	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Si-D	mg/L	4.54	4.20	4.84	4.79	3.48
Sr-D	mg/L	0.520	0.566	0.500	0.533	0.0669
Tl-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000015
Ti-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
U-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
V-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
H2SEquiv	mg/L					0.000957
Temp-F	C					8.5
pH-F	pH Units	8.19	7.84	7.98	7.98	7.4
Cond-F	uS/cm	430	542	432	448	351
DO-F	mg/L					1.95
ORP-F	mV					

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Table 40 In-Situ Groundwater Wells 4 Page(s)

Water Level Date	Area Well ID, Replicates m	GW next to 3-South Pit		2-3 South Mine Pool		2 South Mine Pool Well Pump			
		MW002	MW002	MW004	MW004	INF	INF	INF	INF
		MW002-11MAY21-R 3.46 11/May/21	3.46 11/May/21	MW004-13MAY21-R 43.28 13/May/21	43.28 13/May/21	6/Apr/21	10/May/21	INF-1Jun21-R 13 1/Jun/21	13 1/Jun/21
SO4-D	mg/L	1400	1300	410	430	640	670	740	740
Turb	NTU	23	31	0.46	0.49				
Alk-T	mg/L	300	280	130	130	270	270	260	270
Acidity83	mg/L	21.7	26.4	9.5	9.8	11.4	15.3	17.3	16.1
N-D	mg/L	0.727	0.408	0.197	0.229				
DOC	mg/L	1.0	0.87				1.0		
Hydrox	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bicarb	mg/L	360	350	160	160	320	330	320	330
Carb	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cl-D	mg/L	1.3	1.3	<1.0	<1.0				
F-D	mg/L	0.13	0.12	0.081	0.080				
Br-D	mg/L	0.12	0.12	0.046	0.053				
P-D	mg/L	0.0068	0.0048	<0.0030	<0.0030				
Al-D	mg/L	<0.0060	<0.015	0.0049	0.0044	<0.0030	<0.0060	<0.0060	<0.0060
Ag-D	mg/L	<0.000040	<0.00010	<0.000020	<0.000020	<0.000020	<0.000040	<0.000040	<0.000040
As-D	mg/L	0.00198	0.00172	0.00025	0.00023	0.00323	0.00368	0.00370	0.00379
Ba-D	mg/L	0.0136	0.0128	0.0268	0.0274	0.0232	0.0215	0.0211	0.0221
B-D	mg/L	0.69	0.72	0.204	0.209	0.654	0.68	0.70	0.70
Be-D	mg/L	<0.00020	<0.00050	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020
Bi-D	mg/L	<0.0020	<0.0050	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020
Cd-D	mg/L	<0.000020	<0.000050	0.000025	<0.000010	<0.000010	<0.000020	<0.000020	<0.000020
Ca-D	mg/L	437	412	149	146	231	253	245	258
Cr-D	mg/L	<0.0020	<0.0050	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020
Co-D	mg/L	0.00323	0.0032	<0.00020	<0.00020	0.00048	0.00051	<0.00040	0.00042
Cu-D	mg/L	<0.00040	<0.0010	0.00134	0.00117	<0.00020	<0.00040	<0.00040	<0.00040
Fe-D	mg/L	4.19	3.99	<0.0050	<0.0050	3.34	3.71	3.70	3.83
Hard-D	mg/L	1270	1210	442	435	641	703	683	719
Pb-D	mg/L	<0.00040	<0.0010	<0.00020	<0.00020	<0.00020	<0.00040	<0.00040	<0.00040
Mg-D	mg/L	43.7	42.7	17.1	17.4	15.8	17.3	17.1	18.0
Mn-D	mg/L	1.57	1.45	0.0128	0.0119	0.369	0.414	0.384	0.403
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Na-D	mg/L	52.2	51.4	33.1	33.7	112	114	112	117
Mo-D	mg/L	<0.0020	<0.0050	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020
Ni-D	mg/L	0.0021	<0.0050	<0.0010	0.0010	<0.0010	<0.0020	<0.0020	<0.0020
K-D	mg/L	4.46	4.23	1.58	1.57	1.92	1.94	2.00	2.12
S-D	mg/L	390	373	125	131	219	239	233	248
Sb-D	mg/L	<0.0010	<0.0025	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010	<0.0010
Se-D	mg/L	<0.00020	<0.00050	<0.00010	<0.00010	0.00015	<0.00020	<0.00020	<0.00020
Si-D	mg/L	3.42	3.24	3.06	2.97	3.10	3.34	3.18	3.35
Sr-D	mg/L	4.07	3.76	1.18	1.19	2.18	2.37	2.29	2.42
Tl-D	mg/L	<0.000020	<0.000050	<0.000010	<0.000010	<0.000010	<0.000020	<0.000020	<0.000020
Ti-D	mg/L	<0.010	<0.025	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
U-D	mg/L	0.00042	<0.00050	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020
V-D	mg/L	<0.010	<0.025	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
Zn-D	mg/L	<0.010	<0.025	0.0100	0.0120	<0.0050	<0.010	<0.010	<0.010
H2SEquiv	mg/L	0.000957	0.000957	0.000957	0.000957	0.00351	0.000957	0.000957	0.000957
Temp-F	C	10.9	10.9	10.1	10.1	9.8	12.5	13.9	13.9
pH-F	pH Units	7.28	7.28	7.22	7.22	7.04	7.11	7.06	7.06
Cond-F	uS/cm	1873	1873	1029	1029	1637	2000	1884	1884
DO-F	mg/L	1.83	1.83	1.18	1.18				
ORP-F	mV	-31.2	-31.2	142.4	142.4				

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 40 In-Situ Groundwater Wells 4 Page(s)

Water Level Date	Area Well ID. Replicates m	River Barrier Pillar Water Cover Over PAG-CCR		7S Water Cover Over PAG-CCR	4-South Flooded Mine Pool	
		QU1109M	QU1109M	QU1410	QU1101	QU1101
		13/Apr/21	16.25 15/Jun/21	10.87 12/May/21	QU1101-22Jun21-R 27.601 22/Jun/21	27.601 22/Jun/21
SO4-D	mg/L	1300	1300	1900	1500	1500
Turb	NTU		240	8.0	300	160
Alk-T	mg/L	500	470	300	100	64
Acidity83	mg/L	22.2	63.3	29.6	208	164
N-D	mg/L	0.321	0.406	0.251	0.437	0.424
DOC	mg/L	0.85	1.1	1.2	2.2	2.1
Hydrox	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Bicarb	mg/L	600	570	370	130	78
Carb	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Cl-D	mg/L	26	26	5.9	5.2	4.2
F-D	mg/L	0.13	0.089	0.17	0.490	0.440
Br-D	mg/L	0.17	0.18	0.19	0.17	0.27
P-D	mg/L	<0.0030	<0.0030	0.0047	0.0098	0.018
Al-D	mg/L	<0.0060	<0.0060	<0.0060	<0.015	<0.015
Ag-D	mg/L	<0.000040	<0.000040	<0.000040	<0.00010	<0.00010
As-D	mg/L	0.0106	0.00365	0.111	0.107	0.107
Ba-D	mg/L	0.0214	0.0172	0.0149	0.0119	0.0118
B-D	mg/L	1.17	1.10	1.04	1.10	1.06
Be-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00050	<0.00050
Bi-D	mg/L	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050
Cd-D	mg/L	<0.000020	<0.000020	<0.000020	<0.000050	<0.000050
Ca-D	mg/L	204	221	496	343	342
Cr-D	mg/L	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050
Co-D	mg/L	0.00385	0.00072	0.00049	<0.0010	<0.0010
Cu-D	mg/L	<0.00040	<0.00040	<0.00040	<0.0010	<0.0010
Fe-D	mg/L	29.3	30.9	1.91	153	153
Hard-D	mg/L	608	662	1830	1070	1060
Pb-D	mg/L	<0.00040	<0.00040	<0.00040	<0.0010	<0.0010
Mg-D	mg/L	24.0	26.9	144	51.8	51.0
Mn-D	mg/L	1.36	1.41	1.39	2.44	2.39
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Na-D	mg/L	462	470	50.6	129	131
Mo-D	mg/L	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050
Ni-D	mg/L	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050
K-D	mg/L	6.37	6.93	6.88	6.22	6.21
S-D	mg/L	405	414	578	478	477
Sb-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025
Se-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00050	<0.00050
Si-D	mg/L	4.09	4.08	3.04	5.49	5.46
Sr-D	mg/L	2.31	2.51	4.68	1.86	1.96
Tl-D	mg/L	<0.000020	<0.000020	<0.000020	<0.000050	<0.000050
Ti-D	mg/L	<0.010	<0.010	<0.010	<0.025	<0.025
U-D	mg/L	<0.00020	<0.00020	0.00088	<0.00050	<0.00050
V-D	mg/L	<0.010	<0.010	<0.010	<0.025	<0.025
Zn-D	mg/L	<0.010	<0.010	<0.010	<0.025	<0.025
H2SEquiv	mg/L	0.138	0.0308	0.000957	0.00957	0.00957
Temp-F	C	13.2	8.837	10.5	15.188	15.188
pH-F	pH Units	7.46	6.87	6.73	6.92	6.92
Cond-F	uS/cm	3400	2637.3	3785	2304.7	2304.7
DO-F	mg/L		0.76	3.38	0.53	0.53
ORP-F	mV		-79.7	7.4	-119.6	-119.6

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 41 Ex-Situ Groundwater Wells 3 Page(s)

Ex-Situ Ground Water														
Water Level Parameter Date	Area Well ID. Replicates m Units	Freshwater Aquatic Life (CSR-AL)	QU0810 27.19	7-South QU0813A 8.97	QU0813B 6.3	QU0821GD QU0821GD-26MAY21-R At collar	QU0821GD At collar	QU0821GS At collar	QU1010D QU1010D-18MAY21-R 30.45	2 / 3-North QU1010D 30.45	QU1010S 31.88	QU1011D 26.26	QU1011S QU1011S-17MAY21-R 6.4	QU1011S 6.4
			17/May/21	12/May/21	12/May/21	26/May/21	26/May/21	26/May/21	18/May/21	18/May/21	19/May/21	17/May/21	17/May/21	17/May/21
SO4-D	mg/L	1280	79	130	170	<1.0	<1.0	<1.0	<1.0	<1.0	29	1.5	3.3	3.1
Turb	NTU		15	3.7	20	6.8	7.2	4.0	60	54	25	290	2.4	2.5
Alk-T	mg/L		160	200	270	210	210	210	91	90	310	340	150	150
Acidity83	mg/L		3.7	<1.0	<1.0	<1.0	<1.0	<1.0	13.4	13.0	2.5	5.1	4.3	3.3
N-D	mg/L		0.461	0.208	0.244	0.498	0.515	0.476	0.788	0.785	0.390	0.341	0.110	0.117
DOC	mg/L			1.3	0.81	<13	<13	<5.0	10	12	4.6	1.7	1.2	1.2
Hydrox	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bicarb	mg/L		190	240	330	260	250	250	110	110	380	420	180	180
Carb	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cl-D	mg/L	1500	<1.0	32	34	910	910	620	3200	3400	640	190	9.8	9.8
F-D	mg/L	2 to 3	0.52	0.66	0.62	1.2	1.2	1.3	<0.050	<0.050	0.85	0.67	0.15	0.15
Br-D	mg/L		<0.010	0.062	0.070	1.3	1.3	0.87	4.3	4.4	0.83	0.34	0.016	0.017
P-D	mg/L		0.010	0.028	0.037	0.027	0.026	0.0088	0.043	0.045	0.034	0.048	0.0098	0.0083
Al-D	mg/L		0.0039	<0.0030	0.0127	<0.015	<0.015	<0.015	<0.015	<0.015	0.0179	<0.0060	<0.0030	<0.0030
Ag-D	mg/L	0.0005 - 0.015	<0.000020	<0.000020	<0.000020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000040	<0.000040	<0.000020	<0.000020
As-D	mg/L	0.05	0.00055	0.446	0.458	0.167	0.165	0.111	0.0115	0.0112	0.105	0.0458	0.00424	0.00424
Ba-D	mg/L	10	0.0805	0.309	0.155	2.03	1.99	1.40	1.35	1.33	1.07	0.225	0.185	0.185
B-D	mg/L	50	0.203	0.801	1.29	2.69	2.66	2.32	0.35	0.34	3.11	2.23	0.378	0.380
Be-D	mg/L	0.053	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	<0.00010	<0.00010
Bi-D	mg/L		<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0010	<0.0010
Cd-D	mg/L	0.0005	0.000018	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000020	<0.000010	<0.000010
Ca-D	mg/L		61.2	51.7	57.6	89.3	90.7	62.6	576	568	76.9	32.0	25.8	25.9
Cr-D	mg/L	0.01	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0010	<0.0010
Co-D	mg/L	0.04	<0.00020	<0.00020	<0.00020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00040	<0.00040	0.00021	0.00022
Cu-D	mg/L	0.02	0.00310	<0.00020	<0.00020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00040	<0.00040	<0.00020	<0.00020
Fe-D	mg/L		0.0053	0.283	0.412	0.884	0.915	0.306	5.74	5.74	0.496	1.19	0.435	0.431
Hard-D	mg/L		206	180	192	278	281	196	1490	1470	243	94.8	89.1	89.3
Pb-D	mg/L	0.04	<0.00020	<0.00020	<0.00020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00040	<0.00040	<0.00020	<0.00020
Mg-D	mg/L		13.1	12.4	11.6	13.4	13.3	9.68	12.0	11.9	12.4	3.62	5.97	6.01
Mn-D	mg/L		0.0182	0.0519	0.102	0.0701	0.0693	0.0575	0.381	0.376	0.182	0.148	0.0749	0.0758
Hg-D	mg/L	0.00025	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Na-D	mg/L		5.00	75.5	115	464	463	332	1360	1330	447	215	27.8	28.4
Mo-D	mg/L	10	<0.0010	<0.0010	0.0011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0010	<0.0010
Ni-D	mg/L		0.0021	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0010	<0.0010
K-D	mg/L		2.78	2.57	2.84	8.59	8.31	6.75	8.24	8.13	7.80	3.81	1.70	1.73
S-D	mg/L		24.6	41.2	52.6	<15	<15	<15	<15	<15	9.1	<6.0	<3.0	<3.0
Sb-D	mg/L	0.09	<0.00050	<0.00050	<0.00050	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.00050	<0.00050
Se-D	mg/L	0.02	0.00016	0.00062	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	<0.00010	<0.00010
Si-D	mg/L		3.61	3.86	4.57	4.08	4.09	3.83	3.73	3.67	5.07	4.69	3.49	3.41
Sr-D	mg/L		0.584	0.805	0.762	1.97	1.93	1.36	6.05	6.01	1.54	0.483	0.302	0.307
Tl-D	mg/L	0.003	0.000021	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000020	<0.000010	<0.000010
Ti-D	mg/L	1	<0.0050	<0.0050	<0.0050	<0.025	<0.025	<0.025	<0.025	<0.025	<0.010	<0.010	<0.0050	<0.0050
U-D	mg/L	0.085	0.00080	<0.00010	0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00023	<0.00020	<0.00010	<0.00010
V-D	mg/L		<0.0050	<0.0050	<0.0050	<0.025	<0.025	<0.025	<0.025	<0.025	<0.010	<0.010	<0.0050	<0.0050
Zn-D	mg/L	0.075	<0.0050	<0.0050	<0.0050	<0.025	<0.025	<0.025	<0.025	<0.025	<0.010	<0.010	<0.0050	<0.0050
H2SEquiv	mg/L	0.02	0.00882	0.223	0.0627	0.0532	0.0489	0.0170	0.000957	0.000957	0.0850	0.170	0.000957	0.000957
Temp-F	C		11.2	10	9.3	9.9	9.9	9.9	9	9	5.8	8	8.8	8.8
pH-F	pH Units		7.26	7.93	8.09	8.02	8.02	8.09	7.42	7.42	7.95	7.29	7.02	7.02
Cond-F	uS/cm		516.2	747	959	3630	3630	2500	11278	11278	3058	1418	362.8	362.8
DO-F	mg/L		2.06	0.69	0.278	0.7	0.7	1.1	0.31	0.31	0.17	1.18	1.11	1.11
ORP-F	mV		190.4	-150.7	-179.1	-90.8	-90.8	-60.1	-87.6	-87.6	-173.1	-168.9	-99	-99

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Table 41 Ex-Situ Groundwater Wells 3 Page(s)

Ex-Situ Ground Water								
Water Level Parameter Date	Area Well ID, Replicates m Units	2-North / RBP				QU1008D	4-South QU1009S	QU1009D
		QU1105D	QU1105S	QU1109S	QU1109S			
		At collar	11.29	QU1109S-15Jun21-R 5.23	5.23			
		19/May/21	19/May/21	15/Jun/21	15/Jun/21	22/Jun/21	11/May/21	11/May/21
SO4-D	mg/L	420	570	440	430	1.0	120	75
Turb	NTU	3.0	17	23	25	190	30	5.1
Alk-T	mg/L	260	460	500	490	290	140	180
Acidity83	mg/L	5.4	3.1	9.6	9.3	<1.0	10.6	2.2
N-D	mg/L	0.397	0.372	0.489	0.543	0.180	0.180	0.164
DOC	mg/L	23	0.59	0.92	1.1	5.3	1.5	1.4
Hydrox	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bicarb	mg/L	310	560	600	590	350	170	220
Carb	mg/L	<1.0	<1.0	3.8	5.8	3.9	<1.0	<1.0
Cl-D	mg/L	1300	20	52	53	7.3	<1.0	1.4
F-D	mg/L	<0.050	0.48	0.43	0.44	2.30	0.055	0.25
Br-D	mg/L	2.2	0.097	0.13	0.12	0.018	0.031	0.020
P-D	mg/L	0.054	0.015	0.0090	0.0074	0.22	0.010	0.013
Al-D	mg/L	<0.015	<0.0060	<0.0060	<0.0060	0.223	<0.0030	<0.0030
Ag-D	mg/L	<0.00010	<0.000040	<0.000040	<0.000040	<0.000040	<0.000020	<0.000020
As-D	mg/L	0.00141	0.133	0.0873	0.0879	0.147	0.0832	0.110
Ba-D	mg/L	0.105	0.0496	0.0319	0.0325	0.0331	0.124	0.112
B-D	mg/L	0.46	1.79	2.00	2.06	2.05	0.053	0.493
Be-D	mg/L	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
Bi-D	mg/L	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
Cd-D	mg/L	<0.000050	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010
Ca-D	mg/L	164	105	39.7	39.3	2.87	71.7	51.4
Cr-D	mg/L	<0.0050	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010
Co-D	mg/L	<0.0010	<0.00040	<0.00040	<0.00040	<0.00040	<0.00020	<0.00020
Cu-D	mg/L	<0.0010	<0.00040	<0.00040	<0.00040	<0.00040	<0.00020	<0.00020
Fe-D	mg/L	<0.025	2.70	0.862	0.867	0.174	5.22	0.597
Hard-D	mg/L	430	329	135	134	8.38	221	170
Pb-D	mg/L	<0.0010	<0.00040	<0.00040	<0.00040	<0.00040	<0.00020	<0.00020
Mg-D	mg/L	5.35	16.1	8.80	8.77	0.30	10.2	10.0
Mn-D	mg/L	0.0603	0.252	0.0725	0.0727	0.173	0.381	0.0540
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Na-D	mg/L	928	348	387	382	128	8.71	31.8
Mo-D	mg/L	<0.0050	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010
Ni-D	mg/L	<0.0050	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010
K-D	mg/L	5.09	6.49	5.05	5.08	0.76	0.652	1.52
S-D	mg/L	142	204	150	149	<6.0	35.5	23.1
Sb-D	mg/L	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050
Se-D	mg/L	<0.00050	<0.00020	<0.00020	<0.00020	0.00117	<0.00010	<0.00010
Si-D	mg/L	4.40	5.05	5.62	5.58	5.45	8.79	9.63
Sr-D	mg/L	1.78	1.55	0.722	0.735	0.0798	0.274	0.910
Tl-D	mg/L	<0.000050	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010
Ti-D	mg/L	<0.025	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050
U-D	mg/L	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
V-D	mg/L	<0.025	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050
Zn-D	mg/L	<0.025	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050
H2SEquiv	mg/L	24.4	0.138	2.66	2.87	0.255	0.0117	0.0861
Temp-F	C	7.8	8.5	10.55	10.55	10.505	9.1	8.7
pH-F	pH Units	7.51	7.22	7.58	7.58	8.61	7.29	7.78
Cond-F	uS/cm	5520	2106	1702.8	1702.8	556.4	391.9	376.8
DO-F	mg/L	0.52	3.14	0.44	0.44	0.38	0.75	0.44
ORP-F	mV	-326.8	-159.1	-194.9	-194.9	-261.5	-155.5	-91.1

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 41 Ex-Situ Groundwater Wells 3 Page(s)

Ex-Situ Ground Water							
Water Level Parameter Date	Area Well ID. Replicates m Units	MW001D	MW001S	Below Plant Monitoring Wells		MW006S	MW006S
		3.98	MW001S-17Jun21-R 9.501	MW001S 9.501	MW006D 4.662	MW006S-21Jun21-R 5.841	MW006S 5.841
		17/Jun/21	17/Jun/21	17/Jun/21	21/Jun/21	21/Jun/21	21/Jun/21
SO4-D	mg/L	620	580	560	13	600	560
Turb	NTU	49	7.7	7.9	0.13	0.22	0.26
Alk-T	mg/L	340	300	280	80	160	150
Acidity83	mg/L	38.4	40.4	37.7	<1.0	4.0	2.7
N-D	mg/L	0.150	0.145	0.126	0.154	0.219	0.237
DOC	mg/L	2.7	2.2	2.3	<0.50	1.4	1.3
Hydrox	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bicarb	mg/L	420	360	350	98	190	180
Carb	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cl-D	mg/L	2.1	2.1	1.9	1.5	3.8	3.5
F-D	mg/L	<0.050	<0.050	<0.050	0.099	0.066	0.061
Br-D	mg/L	0.069	0.078	0.077	<0.010	0.076	0.10
P-D	mg/L	0.0064	<0.0030	<0.0030	0.15	0.046	0.048
Al-D	mg/L	<0.0030	<0.0030	<0.0030	0.0164	<0.0030	<0.0030
Ag-D	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
As-D	mg/L	0.00280	0.00100	0.00102	0.0293	0.00152	0.00155
Ba-D	mg/L	0.0503	0.0237	0.0233	0.0115	0.0313	0.0314
B-D	mg/L	0.333	0.347	0.349	0.054	0.160	0.161
Be-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bi-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cd-D	mg/L	0.000040	0.000072	0.000072	<0.000010	0.000018	0.000018
Ca-D	mg/L	229	231	234	16.4	134	133
Cr-D	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Co-D	mg/L	0.00216	0.00217	0.00218	0.00050	<0.00020	<0.00020
Cu-D	mg/L	<0.00020	<0.00020	<0.00020	0.00042	0.00073	0.00071
Fe-D	mg/L	3.60	0.769	0.770	0.0166	<0.0050	<0.0050
Hard-D	mg/L	719	741	747	43.0	388	385
Pb-D	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Mg-D	mg/L	35.6	40.1	39.6	0.512	12.9	12.7
Mn-D	mg/L	1.96	1.62	1.59	0.0906	0.0301	0.0259
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Na-D	mg/L	79.6	81.1	81.8	19.3	133	131
Mo-D	mg/L	<0.0010	<0.0010	<0.0010	0.0033	0.0293	0.0294
Ni-D	mg/L	0.0027	0.0012	0.0012	<0.0010	<0.0010	<0.0010
K-D	mg/L	1.91	1.84	1.84	0.784	2.13	2.09
S-D	mg/L	186	216	217	3.8	190	187
Sb-D	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Se-D	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00026	0.00027
Si-D	mg/L	8.25	8.49	8.43	3.22	4.41	4.54
Sr-D	mg/L	1.32	1.48	1.45	0.0835	0.799	0.790
Tl-D	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Ti-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
U-D	mg/L	0.00181	0.00194	0.00192	0.00068	0.00609	0.00600
V-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
H2SEquiv	mg/L	0.0170	0.00372	0.000957	0.000957	0.000957	0.000957
Temp-F	C	10.309	11.183	11.183	13.177	11.043	11.043
pH-F	pH Units	6.5	6.65	6.65	8.85	7.76	7.76
Cond-F	uS/cm	1663.1	1662.9	1662.9	173	1203.4	1203.4
DO-F	mg/L	1.41	0.83	0.83	0.8	2.13	2.13
ORP-F	mV	82.7	24.8	24.8	-62.9	107.3	107.3

Appendix 1 - Q1 (April-June 2021) Water Quality Report

Table 42 Shallow Groundwater Seepage 1 Page(s)

Station Description		Seepage From Shallow Groundwater above the River Barrier Pillar													
Date		13/Apr/2021	26/Apr/2021	03/May/2021	10/May/2021	02/Jun/2021	10/Jun/2021	15/Jun/2021	21/Jun/2021	29/Jun/2021	Count	Maximum	Average	Ave-WQG (A)	WQG-Max (M)
Parameter	Unit														
SO4-D	mg/L	300	310	310	360	230	230	210	270	200	9	360	268	128	
H2S	mg/L	0.012	0.0073	0.0040	0.0025	<0.0020	<0.0020	0.0022		<0.0020	8	0.012	0.00388		
TSS	mg/L	2.0	1.6	1.6	1.6	2.4	1.6		1.6	25	8	25	4.7	5	25
Alk-T	mg/L	460	430	430	480	490	470	460	460	480	9	490	462.2		
Acidity83	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9	<1.0	0.50		
Al-T	mg/L	0.0077	0.0079	0.0085	0.0065	0.0111	0.0072	0.0696	0.0109	0.0659	9	0.0696	0.0217		
As-T	mg/L	0.0486	0.0485	0.0474	0.0519	0.0390	0.0336	0.0310	0.0245	0.0453	9	0.0519	0.0411		0.005
Ba-T	mg/L	0.0713	0.0687	0.0670	0.0629	0.0525	0.0452	0.0455	0.0419	0.0541	9	0.0713	0.0566	1	
B-T	mg/L	1.65	1.76	1.71	1.72	1.72	1.65	1.78	1.97	2.17	9	2.17	1.79	1.2	
Cd-T	mg/L	<0.000010	<0.000010	<0.000020	<0.000010	<0.000020	<0.000010	<0.000020	<0.000010	<0.000020	9	<0.000020	0.0000072		
Ca-T	mg/L	39.1	38.8	37.7	35.7	31.7	30.1	29.6	30.7	29.5	9	39.1	33.7		
Cr-T	mg/L	<0.0010	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	9	<0.0020	0.00072		
Co-T	mg/L	0.00046	0.00061	0.00066	0.00065	0.00050	0.00033	0.00061	<0.00020	0.00097	9	0.00097	0.000543	0.004	0.11
Cu-T	mg/L	<0.00050	<0.00050	<0.0010	<0.00050	<0.0010	<0.00050	<0.0010	<0.00050	<0.0010	9	<0.0010	0.000361		
Hard-T	mg/L	135	135	131	123	110	104	103	107	102	9	135	116.7		
Fe-T	mg/L	0.256	0.365	0.358	0.368	0.400	0.298	0.607	0.211	1.71	9	1.71	0.508		1
Pb-T	mg/L	<0.00020	<0.00020	<0.00040	<0.00020	<0.00040	<0.00020	<0.00040	<0.00020	<0.00040	9	<0.00040	0.000144	0.0039978	0.01763
Mg-T	mg/L	9.19	9.12	8.93	8.21	7.54	6.91	6.97	7.42	7.90	9	9.19	7.90		
Mn-T	mg/L	0.267	0.326	0.326	0.323	0.251	0.153	0.174	0.0747	0.345	9	0.345	0.2489	0.737	0.8706
Hg-T	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	9	<0.0000019	0.00000095	0.00002	
Mo-T	mg/L	<0.0010	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	9	<0.0020	0.00072	1	2
Ni-T	mg/L	<0.0010	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	0.0039	<0.0010	<0.0020	9	0.0039	0.00104	0.025	
K-T	mg/L	4.51	4.46	4.55	4.43	4.64	4.22	4.32	4.55	4.59	9	4.64	4.47		
S-T	mg/L	112	112	106	105	81.4	79.1	78.2	79.7	69.4	9	112	91.4		
Se-T	mg/L	<0.00010	<0.00010	<0.00020	<0.00010	<0.00020	<0.00010	<0.00020	<0.00010	<0.00020	9	<0.00020	0.000072	0.002	
Si-T	mg/L	4.49	4.58	4.50	4.57	4.26	3.97	4.35	4.28	4.44	9	4.58	4.38		
Ag-T	mg/L	<0.000020	<0.000020	<0.000040	<0.000020	<0.000040	<0.000020	<0.000040	<0.000020	<0.000040	9	<0.000040	0.0000144	0.00005	0.0001
Na-T	mg/L	307	308	306	304	310	306	288	315	297	9	315	304.6		
Sr-T	mg/L	0.571	0.596	0.588	0.602	0.493	0.472	0.452	0.463	0.432	9	0.602	0.519		
Zn-T	mg/L	<0.0050	<0.0050		<0.0050		<0.0050		<0.0050		9	0.021	0.00539	0.0075	0.033
Al-D	mg/L	0.0046	0.0050	<0.0060	<0.0060	0.0062	<0.0060	0.0144	0.0071	0.0092	9	0.0144	0.00617	0.05	0.1
As-D	mg/L	0.0483	0.0442	0.0414	0.0458	0.0320	0.0281	0.0238	0.0212	0.0220	9	0.0483	0.0341		
Ba-D	mg/L	0.0711	0.0674	0.0648	0.0635	0.0481	0.0427	0.0422	0.0393	0.0403	9	0.0711	0.0533		
B-D	mg/L	1.65	1.64	1.60	1.82	1.83	1.67	1.76	1.91	1.96	9	1.96	1.76		
Cd-D	mg/L	<0.000010	<0.000010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000020	9	<0.000020	0.0000083	0.000087	0.00017
Ca-D	mg/L	39.8	37.8	37.5	36.6	29.1	28.5	29.0	29.7	28.3	9	39.8	32.9		
Cr-D	mg/L	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0020	9	<0.0020	0.00083		
Co-D	mg/L	0.00045	0.00061	0.00064	0.00065	0.00046	<0.00040	<0.00040	<0.00020	<0.00040	9	0.00065	0.000390		
Cu-D	mg/L	<0.00020	<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	0.00126	0.00041	0.00071	9	0.00126	0.000376	0.0003	0.002
DOC	mg/L	1.7	1.8	1.6	1.6	1.2	2.0	2.4	1.3	2.7	9	2.7	1.8		
Hard-D	mg/L	136	131	128	129	102	99.2	101	102	97.8	9	136	114.0		
Fe-D	mg/L	0.157	0.178	0.141	0.105	0.095	0.107	0.121	0.107	0.091	9	0.178	0.122		0.35
Pb-D	mg/L	<0.00020	<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00020	<0.00040	9	<0.00040	0.000167		
Mg-D	mg/L	8.96	8.98	8.35	9.04	7.11	6.82	6.92	6.72	6.56	9	9.04	7.72		
Mn-D	mg/L	0.247	0.316	0.324	0.339	0.245	0.152	0.119	0.0701	0.0192	9	0.339	0.2035		
Hg-D	mg/L	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	9	<0.0000019	0.00000095		
Mo-D	mg/L	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0020	9	<0.0020	0.00083		
Ni-D	mg/L	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0020	9	<0.0020	0.00083		
K-D	mg/L	4.36	4.39	4.42	4.81	4.33	4.29	4.27	4.06	4.52	9	4.81	4.38		
S-D	mg/L	115	113	106	111	79.2	73.6	72.9	78.4	68.4	9	115	90.8		
Se-D	mg/L	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00020	9	<0.00020	0.000083		
Si-D	mg/L	4.69	4.38	4.46	4.64	4.04	3.84	4.13	3.87	4.10	9	4.69	4.24		
Na-D	mg/L	297	307	293	331	291	292	286	302	287	9	331	298.4		
Sr-D	mg/L	0.584	0.580	0.563	0.585	0.464	0.447	0.436	0.417	0.430	9	0.585	0.501		
Zn-D	mg/L	<0.0050	<0.0050	0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	9	0.010	0.00472		
Cl-D	mg/L	39	41	40		65		63			5	65	49.6	150	600
F-D	mg/L	0.49				0.64		0.61			3	0.64	0.58	0.8501	
N-NH3	mg/L	0.15	0.18	0.18	0.18	0.17	0.15		0.063	0.037	8	0.18	0.139	1.87	12.9
N-NO2	mg/L		<0.0050	<0.0050	<0.0050		0.0060		0.0080	<0.0050	6	0.0080	0.00400	0.02	0.06
N-NO23	mg/L		<0.020	<0.020	<0.020		0.082		0.281	0.344	6	0.344	0.1228		
P-D	mg/L	<0.0030			0.0031	<0.0030	0.0044	<0.0030	0.0083	0.0043	7	0.0083	0.00351		
P-T	mg/L	0.0041	<0.0030	0.0030	<0.0030	<0.0030	0.0049		0.0034	0.010	8	0.010	0.00374	0.007	
pH-F	pH Units	8.29	8.31	8.01	8.01	8.34	7.89	7.87	8.23	8.11	9	8.31	8.12		
Cond-F	uS/cm	1769	1669	1815	1815	1700	2220	2210	1500	1581	9	2220	1808		

July 16, 2021
File: 123221643

Attention: Diana Fausto
Bureau Veritas Laboratory
4606 Canada Way
Burnaby, BC V5G 1K5

Dear Diana,

Reference: Quinsam Lakes Phytoplankton, May 2021 (Sample Reference ZS7968-11, ZS7969-02, ZS7940-11, ZS7906-11, and ZS7934-11; Job Numbers C129542, C129531, C129518, and C129528)

Introduction

Quinsam Coal Ltd. collects water samples from the Quinsam Lakes system during the growing season to meet long-term water quality monitoring requirements as per the effluent discharge permit issued by the Ministry of Environment and Climate Change Strategy. From 1994 through 2012, the permit required sampling at depths of 1, 4 and 9 m in April through September for Long Lake and Middle Quinsam Lake, with No Name Lake added to the program in June 2012 and Lower Quinsam Lake added in 2013. In 2014 the permit was revised to include surface water sampling (1.0 m depth) three times a year (spring, late summer, fall overturn). Attachment 1 contains the long-term dataset.

Samples are collected by Quinsam Coal and submitted to Stantec Consulting Ltd. for phytoplankton taxonomic analysis, as part of ongoing monitoring requirements. Some months, an additional sample is taken as a field replicate for quality assurance/quality control. This brief report provides information about samples collected in May 2021 from Long Lake (two samples), Middle Quinsam Lake, No Name Lake, and Lower Quinsam Lake.

Methods

Sub-samples (27 mL) of preserved lake water were settled and examined at 100 X, 400 X and 1,000 X magnifications using a Zeiss inverted microscope. Counting effort is defined as at least 100 organisms of the predominant species at 400 X, up to 200 fields at 1,000 X and a half or whole sub-sample at 100 X.

Reference: Quinsam Lakes Phytoplankton, May 2021 (Sample Reference ZS7968-11, ZS7969-02, ZS7940-11, ZS7906-11, and ZS7934-11; Job Numbers C129542, C129531, C129518, and C129528)

Results

Abundance

Abundance data for 1993 to 2020 are summarized in Attachment 1 and detailed taxonomic results for May 2021 are presented in Attachment 2.

Total abundance in the May samples is shown in Table 1. Total abundance for May was 1,000 and 1,200 cells/mL for the two Long Lake sample, 2,200 cells/mL for the Middle Quinsam Lake sample, 1,200 cells/mL for the No Name Lake sample, and 1,300 cells/mL for the Lower Quinsam Lake sample. These numbers are in the range reported historically.

Table 1 Phytoplankton Abundance (cells/mL) in the Quinsam Lake System, 2021

Lake	Date	Abundance (cells/mL) at 1 m depth			
		Total	<5 µm (1,000 X)	5 to 25 µm (400 X)	>25 µm (100 X)
Long	May 4	1,000	920	120	1.7
Long (replicate)		1,200	1,100	120	0.7
Middle Quinsam		2,200	2,100	120	0.1
No Name ¹		1,200	990	220	0.2
Lower Quinsam		1,300	1,100	180	1.8
NOTE:					
^{1.} <i>Dinobryon</i> spp. counted at 400X rather than 100X due to high abundance					

Species Composition

Species composition data for the May 2021 samples are contained in Attachment 2. The most abundant phytoplankton in Long, Middle Quinsam, No Name, and Lower Quinsam lakes were the very small (less than or equal to 5 µm) chrysophagellates (*Ochromonas* spp. and *Chromulina* spp.). Although these ultra-nanoplankton species were very abundant numerically, they usually contribute little to algal biomass.

The most abundant of the larger algae were as follows:

- In Long Lake (both samples), larger *Ochromonas* spp. were predominant, with the cryptophyte *Rhodomonas minuta* common. The large dinoflagellate *Ceratium hirudinella* was also present; this species more typically occurs during the summer.
- In Middle Quinsam Lake, larger *Ochromonas* spp. were predominant, with other taxa not present in sufficient numbers to be considered common.

Reference: Quinsam Lakes Phytoplankton, May 2021 (Sample Reference ZS7968-11, ZS7969-02, ZS7940-11, ZS7906-11, and ZS7934-11; Job Numbers C129542, C129531, C129518, and C129528)

- In No Name Lake, larger *Ochromonas* spp. were predominant, with the cryptophytes *Rhodomonas minuta* and *Cryptomonas* spp. common.
- In Lower Quinsam Lake, larger *Ochromonas* spp. were predominant, with the cryptophytes *Rhodomonas minuta* and *Cryptomonas* common.

The May 2021 samples were similar in composition and abundance to samples collected during the spring in recent years.

Comparison of Replicate Samples

Two replicates were collected from 1 m depth in Long Lake. Percent difference in the duplicate samples was calculated. A difference of up to 10% can be expected for a total cell count of 400 organisms, for repeat sampling from the same bottle; higher percent difference can be expected when separate grabs are used for the replicates, as was done here.

The replicate samples were similar in species composition and in abundance (1,000 cells/mL in one sample and 1,200 cells/mL in the other); this difference of $\pm 18\%$ indicates reasonable inter-sample reproducibility, given that samples were taken from different bottles.

Closure

We trust this information meets your present requirements. Should you have any questions or require additional information, please contact the undersigned.

Regards,

Stantec Consulting Ltd.

Karen Munro
Digitally signed by Karen
Munro
Date: 2021.07.16
11:35:34 -07'00'

Karen Munro M.Sc., R.P.Bio.
Senior Aquatic Scientist
Phone: 604-436-3014
Karen.Munro@stantec.com

**Webster,
Sandra**
Digitally signed by
Webster, Sandra
Date: 2021.07.16
14:33:18 -07'00'

Sandra Webster Ph.D., R.P.Bio.
Senior Principal
Phone: 604-412-2986
Sandra.Webster@stantec.com

Attachments: Attachment 1: Historical Abundance Data: Quinsam Lakes System, 1993–2020
Attachment 2: Species Composition Data: May, 2021

ATTACHMENT 1

**Historical Abundance Data:
Quinsam Lakes System, 1993–2020**

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-1 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1993 and 1994

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
1993 October	LLM1	2,300	1,800	530	
	LLM3	3,000	2,400	550	
	LLMB	610	420	190	
1994 May	LL1R	10,000	8,800	1,200	
	LL3R	5,000	3,800	1,200	
	LL9R	4,000	3,200	800	
1994 June	LL0	1,400	1,200	250	
	LL1	1,000	790	220	
	LL4	1,500	1,200	320	
	LL9	2,500	1,900	580	
	LLB	830	440	390	
1994 July	LL1	2,100	1,900	180	
	LL4	1900	1700	250	
	LL9	1,500	1,100	400	
1994 August	LL1	1,700	1,400	290	
	LL4	1,000	850	200	
	LL9	900	780	150	
1994 September	LL1	900	620	250	
	LL4	2,300	2,000	260	
	LL9	2,100	1,700	350	

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-2 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1995**

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	3,100	2,700	340	
	LL4	3,300	2,900	350	
	LL9	1,300	1,100	280	
May	LL1	5,400	4,900	570	
	LL4	4,800	4,100	700	
	LL9	1,500	1,000	500	
June	LL1	2,100	1,800	300	
	LL4	2,600	2,100	500	
	LL9	7,400	6,600	850	
July	LL1	2,000	1,700	300	
	LL4	1,900	1,650	350	
	LL9	1,500	1,200	300	
August	LL1	1,100	960	180	
	LL4	1,300	1,100	240	
	LL9	1,900	1,700	210	
September	LL1	2,900	2,800	170	
	LL4	3,400	3,100	330	
	LL9	1,900	1,600	280	

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-3 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1996

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	4,600	4,200	340	
	LL4	6,000	5,600	380	
	LL9	1,100	960	160	
May	LL1	2,200	1,600	600	31
	LL4	2,200	1,700	540	16
	LL9	1,700	1,400	290	26
June	LL1	2,100	1,600	440	4
	LL4	1,600	1,300	340	2
	LL9	1,600	1,100	500	9
July	LL1	2,400	2,300	140	1
	LL4	3,200	3,000	200	3
	LL9	No sample			
August	LL1	2,100	1,900	160	1
	LL4	2,200	1,800	390	37
	LL9	1,700	1,500	200	10
September	LL1	1,900	1,600	230	82
	LL4	2,200	1,800	300	145
	LL9	2,100	1,800	220	38
April	MQ1	No sample			
	MQ4	No sample			
	MQ9	No sample			
May	MQ1	2,000	1,700	230	11
	MQ4	1,100	930	180	7
	MQ9	2,200	1,800	430	1
June	MQ1	2,700	2,500	150	3
	MQ4	2,600	2,400	210	7
	MQ9	1,200	1,000	190	1
July	MQ1	2,400	2,100	335	24
	MQ4	1,900	1,400	380	130
	MQ9	1,200	860	320	29
August	MQ1	2,800	2,500	280	17
	MQ4	1,800	1,500	310	18
	MQ9	2,300	1,900	390	21
September	MQ1	1,700	1,300	270	5
	MQ4	900	560	350	0.6
	MQ9	1,200	1,100	190	0.7

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-4 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1997**

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
early May	LL1	3,200	2,800	340	12
	LL4	4,300	4,000	300	32
	LL9	1,700	1,600	140	5
late May ¹	LL1	3,000	2,600	370	61
	LL4	4,900	4,200	620	100
	LL9	4,700	4,000	730	44
June ²	LL1	1,500	1,100	340	2
	LL4	1,200	1,000	240	1
	LL9	3,900	2,700	1,200	50
July	LL1	2,400	2,300	110	0
	LL4	1,700	1,500	170	0.1
	LL9	480	390	80	2
August	LL1	1,900	1,700	230	0.2
	LL4	880	740	140	0.6
	LL9	1,000	870	93	1.4
September	LL1	1,000	870	140	0.6
	LL4	2,000	1,800	270	0.3
	LL9	700	490	210	0.8
early May	MQ1	1,700	1,400	270	2
	MQ4	1,600	1,400	240	2
	MQ9	2,500	2,300	240	2
late May	MQ1	1,200	1,000	150	0.4
	MQ4	1,600	1,300	280	1
	MQ9	1,200	1,000	190	0.2
June	MQ1	1,900	1,700	140	1
	MQ4	2,500	2,400	130	1
	MQ9	1,400	1,200	200	1
July	MQ1	2,400	2,300	130	0.3
	MQ4	1,500	1,400	110	0.1
	MQ9	890	640	260	0.6
August	MQ1	2,100	1,900	220	0.8
	MQ4	1,500	1,300	190	1.4
	MQ9	1,000	760	240	1.6
September	MQ1	800	640	170	1.3
	MQ4	900	620	280	6.4
	MQ9	650	370	280	1.5
NOTES: 1. Recalculated counting <i>Synedra radians</i> at 400X rather than 100X 2. Recalculated counting <i>Synedra radians</i> at 400X rather than 100X & <i>Cyclotella glomerata</i> at 1,000X rather than 400X					

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-5 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1998

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	2,800	2,600	210	12
	LL4	4,100	3,700	390	12
	LL9	1,600	1,100	500	10
May ¹	LL1	2,000	1,500	430	76
	LL4	1,600	1,100	480	85
	LL9	2,100	1,500	630	20
June	LL1	5,700	5,600	140	0.3
	LL4	7,100	6,900	210	0.3
	LL9	3,300	1,700	1,600	4
July	LL1	1,200	1,100	130	10
	LL4	740	560	170	8
	LL9	760	130	630	5
August	LL1	1,900	1,700	190	2
	LL4	2,200	2,000	230	2
	LL9	1,900	1,600	220	5
September	LL1	5,000	4,900	130	2
	LL4	3,500	3,300	150	2
	LL9	2,200	2,000	220	5
April	MQ1	2,200	1,900	250	3
	MQ4	1,900	1,600	260	3
	MQ9	3,100	2,700	460	2
May	MQ1	2,500	2,300	210	1
	MQ4	2,600	2,400	180	2
	MQ9	2,100	1,700	480	0.4
June	MQ1	1,900	1,700	180	1
	MQ4	1,600	1,400	200	1
	MQ9	1,300	1,000	310	0.4
July	MQ1	1,500	1,400	120	19
	MQ4	1,800	1,600	150	35
	MQ9	1,300	1,100	190	25
August	MQ1	1,900	1,700	250	12
	MQ4	1,300	950	350	10
	MQ9	1,400	890	490	12
September	MQ1	2,000	1,800	200	11
	MQ4	2,700	2,500	220	7
	MQ9	2,100	1,900	230	10
NOTE:					
1. Recalculated for counting <i>Synedra radians</i> at 400X rather than 100X					

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-6 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1999

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	3,800	3,500	310	9
	LL4	6,800	6,200	560	17
	LL9	3,000	2,600	410	10
May	LL1	No sample			
	LL4	No sample			
	LL9	No sample			
early July	LL1	1,100	910	150	2
	LL4	1,400	1,200	150	1
	LL9	1,300	1,200	100	1
late July	LL1	1,100	870	200	1
	LL4	2,000	1,800	280	1
	LL9	1,000	860	130	1
August	LL1	2,700	2,500	180	2
	LL4	2,800	2,600	170	6
	LL9	3,000	2,800	170	4
September	LL1	3,700	3,500	230	12
	LL4	5,000	4,700	290	17
	LL9	4,000	3,700	290	3
April	MQ1	2,300	1,600	220	430
	MQ4	2,200	1,800	200	230
	MQ9	2,700	1,900	600	190
May	MQ1	No sample			
	MQ4	No sample			
	MQ9	No sample			
early July	MQ1	790	700	90	0.4
	MQ4	770	620	150	0.5
	MQ9	1,100	1,000	130	0.3
late July	MQ1	2,700	2,600	110	0.2
	MQ4	2,100	1,900	220	0.8
	MQ9	620	420	190	0.3
August	MQ1	2,100	2,000	140	6
	MQ4	1,100	980	110	4
	MQ9	1,100	1,000	120	9
September	MQ1	1,300	1,100	190	14
	MQ4	1,500	1,300	190	9
	MQ9	760	540	210	10

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-7 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2000

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	2,100	1,600	450	33
	LL4	2,500	1,800	700	68
	LL9	1,300	590	740	6.8
May	LL1	3,300	2,800	530	17
	LL4	3,000	2,600	320	15
	LL9	2,000	1,500	490	15
June	LL1	2,900	2,500	390	9.1
	LL4	2,900	2,400	400	19
	LL9	6,400	5,700	730	19
July	LL1	1,600	1,400	130	2.1
	LL4	1,400	1,200	250	1.6
	LL9	1,200	990	250	3.6
August	LL1	1,800	1,600	170	12
	LL4	1,100	940	190	8.2
	LL9	1,500	1,400	130	1.9
September	LL1	2,200	1,900	360	11
	LL4	2,000	1,800	200	9.2
	LL9	1,300	1,100	200	7.2
April	MQ1	1,800	1,300	450	5.9
	MQ4	1,700	1,300	420	1.6
	MQ9	1,500	1,200	280	1.7
May	MQ1	1,800	1,500	290	3
	MQ4	1,600	1,300	290	4.4
	MQ9	1,900	1,600	270	7.6
June	MQ1	2,100	1,900	250	1.4
	MQ4	2,400	2,200	200	2.1
	MQ9	1,800	1,500	380	1.1
July	MQ1	1,300	1,100	210	7.4
	MQ4	2,100	1,800	250	9.6
	MQ9	2,100	1,300	800	22
August	MQ1	1,500	1,200	290	5.8
	MQ4	2,200	1,900	310	7.2
	MQ9	2,400	1,900	500	7.5
September	MQ1	1,800	1,600	200	14
	MQ4	2,100	1,900	250	14
	MQ9	2,000	1,700	220	28

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-8 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2001

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	3,300	2,600	670	19
	LL4	4,400	3,900	830	13
	LL9	1,400	860	490	5
May	LL1	7,700	6,200	1,100	310
	LL4	11,000	10,000	980	100
	LL9	4,600	3,600	670	22
June	LL1	7,800	6,600	1,000	170
	LL4	6,800	5,100	1,500	210
	LL9	3,000	2,400	680	25
July	LL1	3,300	3,100	170	1
	LL4	3,200	3,000	180	1
	LL9	1,600	1,400	160	2
August	LL1	1,300	1,100	180	1
	LL4	1,700	1,500	200	2
	LL9	720	540	170	1
September	LL1	8,200	8,000	270	13
	LL4	8,800	8,600	260	13
	LL9	4,800	4,600	190	1
April	MQ1	3,600	3,200	400	10
	MQ4	3,500	3,200	310	11
	MQ9	5,700	4,900	830	24
May	MQ1	1,900	1,500	360	17
	MQ4	1,800	1,400	370	14
	MQ9	3,800	3,200	600	13
June	MQ1	2,200	1,900	240	2
	MQ4	3,700	3,400	310	2
	MQ9	4,000	3,600	390	4
July	MQ1	2,500	2,300	230	8
	MQ4	2,700	2,400	260	6
	MQ9	1,500	1,200	240	8
August	MQ1	1,800	1,600	190	17
	MQ4	1,900	1,700	180	15
	MQ9	1,800	1,600	160	16
September	MQ1	1,900	1,700	180	24
	MQ4	3,200	2,900	230	37
	MQ9	1,800	1,600	190	43

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-9 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2002

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	5,600	5,100	460	57
	LL4	5,600	5,100	490	40
	LL9	1,300	1,100	220	12
May	LL1	2,600	1,900	710	29
	LL4	2,700	2,000	690	41
	LL9	1,800	1,300	460	37
June	LL1	5,800	5,300	340	140
	LL4	9,200	8,600	450	96
	LL9	3,700	3,000	620	27
July	LL1	2,900	2,700	180	0.3
	LL4	2,400	2,200	160	0.6
	LL9	3,900	3,300	560	41.2
August	LL1	2,900	2,800	140	7.2
	LL4	2,300	2,200	150	3.2
	LL9	1,500	1,400	130	0.6
September	LL1	3,900	3,700	220	27
	LL4	3,500	3,200	260	31
	LL9	2,500	2,300	210	2.2
April	MQ1	2,000	1,700	360	8.2
	MQ4	1,900	1,600	300	3.6
	MQ9	1,500	1,200	260	4
May	MQ1	1,400	1,100	270	1.1
	MQ4	1,400	1,200	230	1.7
	MQ9	1,400	1,100	330	1.4
June	MQ1	1,000	940	110	1
	MQ4	800	680	120	0.3
	MQ9	60	50	7	0
July	MQ1	1,700	1,300	330	50
	MQ4	1,500	1,100	360	34
	MQ9	940	700	240	5.5
August*	MQ1	1,400	1,200	140	42
	MQ4	1,200	940	180	76
	MQ9	2,600	200	300	275
September	MQ1	1,400	1,200	160	33
	MQ4	2,100	1,900	220	28
	MQ9	1,100	920	160	28
NOTE:					
* Recalculated for counting <i>Cyclotella bodanica</i> at 400X rather than 100X					

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-10 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2003**

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	4,800	4,200	560	36
	LL4	3,600	2,900	640	8.6
	LL9	640	450	190	6.9
May	LL1	4,200	3,500	620	25
	LL4	4,600	3,800	800	23
	LL9	1,400	1,100	280	16
June	LL1	2,300	1,600	630	37
	LL4	6,800	6,100	600	43
	LL9	4,500	3,800	680	42
July	LL1	1,600	1,400	240	1
	LL4	2,400	2,100	270	0.5
	LL9	2,900	2,700	250	9.8
August	LL1	2,000	1,800	240	0.8
	LL4	2,200	1,900	250	0.5
	LL9	1,900	1,600	260	0.6
September	LL1	2,600	2,400	290	0.2
	LL4	3,700	3,400	340	1.8
	LL9	1,900	1,600	250	1.9
April	MQ1	3,500	2,900	570	28
	MQ4	3,000	2,400	510	17
	MQ9	2,000	1,600	310	17
May	MQ1	2,900	2,400	350	99
	MQ4	3,000	2,400	480	43
	MQ9	3,000	2,500	560	16
June	MQ1	1,300	1,100	180	6
	MQ4	1,900	1,500	420	21
	MQ9	3,000	2,700	350	16
July	MQ1	2,700	2,600	170	0.5
	MQ4	2,000	1,600	380	1.5
	MQ9	1,400	1,100	240	79
August	MQ1	1,300	1,000	280	43
	MQ4	1,500	1,200	240	44
	MQ9	3,500	2,500	620	338
September	MQ1	2,100	1,900	260	6.5
	MQ4	2,300	2,000	290	23
	MQ9	Not available			

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-11 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2004

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	5,300	4,100	1,200	20
	LL4	3,500	2,600	860	13
	LL9	3,300	2,600	730	9.1
May	LL1	8,000	7,100	860	34
	LL4	6,600	5,300	1,200	36
	LL9	2,800	2,000	770	22
June	LL1	2,900	2,600	270	3.1
	LL4	2,900	2,600	310	5
	LL9	4,900	4,100	730	39
July	LL1	1,600	1,300	280	2.7
	LL4	1,200	1,100	170	2.2
	LL9	1,700	1,400	270	1
August	LL1	1,300	960	350	18
	LL4	1,400	1,000	300	38
	LL9	1,700	1,600	110	27
September	LL1	3,800	3,400	370	27
	LL4	4,300	3,900	350	25
	LL4 - duplicate	3,100	2,800	320	19
	LL9	3,000	2,700	280	12
April	MQ1	1,500	1,120	400	2.2
	MQ4	1,400	1,030	370	5.2
	MQ9	1,500	1,200	340	4.2
May	MQ1	2,300	2,000	310	2.4
	MQ4	1,500	1,200	300	3.6
	MQ9	2,600	2,100	470	2.4
June	MQ1	1,900	1,700	190	34
	MQ4	3,000	2,700	250	48
	MQ9	2,200	1,900	210	123
July*	MQ1	1,200	960	260	6.2
	MQ4	1,700	1,400	260	9.9
	MQ9	1,300	840	340	82
August**	MQ1	2,900	2,600	260	53
	MQ4	3,800	3,500	250	51
	MQ4 - duplicate	2,500	2,200	210	53
September	MQ9	3,900	3,600	260	44
	MQ1	2,300	1,700	550	25
	MQ4	2,100	1,600	420	26
	MQ9	2,500	2,000	520	19
NOTES:					
* MQ9 recalculated for counting <i>Cyclotella bodanica</i> at 400X rather than 100X					
** MQ1, MQ4, MQ9 recalculated for counting <i>Elakatothrix gelatinosa</i> colonies at 400X rather than					

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

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Table 1-12 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2005

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	2,700	2,100	550	24
	LL4	3,500	2,800	610	29
	LL9	670	460	200	8.5
May	LL1	7,200	6,600	670	55
	LL4	5,700	4,900	850	20
	LL9	1,300	850	440	20
June	LL1	2,700	2,400	300	2.4*
	LL4	2,800	2,500	330	8.3*
	LL9	990	850	130	8.9
July	LL1	1,200	800	400	44*
	LL4	1,700	1,200	460	33*
	LL9	692	540	150	3.5*
August	LL1	1,400	1,100	290	26
	LL4	1,100	810	220	64
	LL9	2,400	1,900	360	73
September	LL1	1,400	1,100	170	170
	LL4	2,300	1,900	220	170
	LL9	1,800	1,200	590	31*
April	MQ1	1,400	1,100	370	8.8
	MQ4	1,900	1,500	400	3.6
	MQ9	1,700	1,300	400	6.6
May	MQ1	1,300	1,000	300	3.4
	MQ4	1,500	1,200	330	3.2
	MQ9	1,300	1,000	340	3.7
June	MQ1	1,700	1,600	150	4.6
	MQ4	1,000	710	270	2.1
	MQ9	1,100	900	200	1.1
July ¹	MQ1	1,100	860	220	14.6
	MQ4	1,100	920	200	11.2
	MQ9	1,400	700	170	489
August ²	MQ1	1,100	950	170	0.5
	MQ4	1,900	1,600	250	7.1
	MQ9	2,100	1,700	330	89*
September	MQ1	870	710	140	10.7
	MQ4	1,200	1,100	170	20.2
	MQ9	1,400	1,100	180	146
NOTE:					
* = Cyclotella bodanica counted at 400X rather than 100X					

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

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Table 1-13 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2006**

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	> 25 mm (100X)
April	LL1	1,800	1,100	610	1.9*
	LL4	3,200	2,700	520	14.7
	LL9	690	550	135	2.2
May	LL1	2,600	2,000	620	19.7
	LL4	4,900	4,200	640	12.9
	LL9	540	380	160	4.8
June	LL1	860	610	200	39.5
	LL4	2,000	1,800	190	22.2
	LL4 (rep)	1,100	940	190	23.2
	LL9	1,700	1,400	220	17.7
July	LL1	1,300	1,100	160	54.8
	LL4	2,700	2,200	370	165
	LL9	1,700	1,300	350	19.1
August	LL1	2,700	2,500	200	14.3
	LL4	2,600	2,300	220	34.6
	LL9	2,800	2,300	470	23.8
September	LL1	3,800	3,600	160	0.4
	LL4	1,300	1,200	120	2
	LL9	1,800	1,700	130	3.6
April	MQ1	2,200	16,00	240	9.4
	MQ4	2,400	1,900	550	8.6
	MQ9	1,600	1,400	180	8.2
May	MQ1	1,700	1,500	240	10.8
	MQ4	1,700	1,400	320	7.4
	MQ4 (rep)	2,100	1,800	310	11.8
	MQ9	1,900	1,600	280	4.1
June	MQ1	1,900	1,800	130	0.9
	MQ4	1,400	1,200	200	4.4
	MQ9	950	840	110	0.6
July	MQ1	1,100	870	220	42.8
	MQ4	2,000	1,700	260	16.6
	MQ9	2,300	2,100	180	18.8*
August	MQ1	1,500	1,200	280	6.5
	MQ4	2,100	1,800	290	13.3
	MQ9	1,300	880	400	17.0*
September	MQ1	2,500	2,300	200	1.9
	MQ4	2,100	1,800	260	11.8
	MQ9	3,400	2,400	970	1.8*
NOTE:					
* <i>Cyclotella bodanica</i> (diatom) counted at 400X rather than 100X					

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

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Table 1-14 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2007**

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)
April	LL1	3,100	2,800	240
	LL4	3,000	2,200	620
	LL9	1,200	910	240
May	LL1	2,600	2,000	540
	LL4	3,300	2,600	670
	LL9	1,300	890	430
June	LL1	2,100	1,600	420
	LL4	2,500	2,000	520
	LL9	1,100	750	300
July	LL1	2,300	2,000	240
	LL4	2,400	2,100	270
	LL9	3,100	3,000	180
August	LL1	1,100	900	240
	LL4	2,300	2,100	150
	LL4 (rep)	2,600	2,400	150
	LL9	570	480	90
September	LL1	2,500	2,200	280
	LL4	1,700	1,400	240
	LL9	420	350	68
April	MQ1	1,700	1,500	230
	MQ4	1,900	1,602	300
	MQ9	1,100	900	200
May	MQ1	1,500	1,300	250
	MQ4	1,800	1,500	320
	MQ9	2,600	2,300	310
June	MQ1	1,500	1,200	300
	MQ4	1,800	1,600	200
	MQ9	1,500	1,200	290
July	MQ1	1,500	1,100	220
	MQ4	1,900	1,500	440*
	MQ9	1,000	860	150
	MQ9 (rep)	1,600	1,400	150
August	MQ1	2,300	2,100	200
	MQ4	1,100	970	160
	MQ9	710	590	120
September	MQ1	1,400	1,100	270
	MQ4	1,500	1,200	290
	MQ9	1,000	690	300

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Table 1-15 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2008

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 mm (400X)	>25 mm (100X)	> 25 µm (100X)
April	LL1	2,500	2,070	360	13	30
	LL4	3,100	2,500	540	22	50
	LL9	1,300	1,030	240	6.4	20
May	LL1	3,100	2,840	220	36	20
	LL4	5,300	4,820	430	37	25
	LL9	1,300	1,030	260	11	20
June	LL1	1,000	880	110	40	1
	LL4	960	730	220		8
	LL9 (rep)	1,500	1,060	380*	40	16*
	LL9	1,200	780	380*	10	7*
July	LL1	1,000	970	80	2.1	1
	LL4	1,400	1,300	110	7.8	17
	LL9	2,000	1,500	370	4.2	110
August	LL1	1,100	1,000	50	5.6	1
	LL4	1,400	1,300	50	5.8	11
	LL9	1,100	1,060	40	2.8	9
September	LL1	2,100	1,730	420**	16	2**
	LL4	2,300	1,780	490**	13	3**
	LL9	2,900	2,250	690**	4.4	6**
April	MQ1	2,100	1,850	200	2.8	1
	MQ4	1,700	1,530	200	5.8	3
	MQ9	2,800	2410	400	5	4
May	MQ1	1,000	870	130	2.1	1
	MQ4	1,700	1460	230	1.2	2
	MQ9	1,200	1,000	180	2.7	2
June	MQ1	840	700	140	2.9	0.4
	MQ4	1,300	1,040	240	2.1	1
	MQ9	870	580	280	5.8	0.5
July	MQ1	620	520	90	180	8
	MQ4	500	370	130	7.4	8
	MQ9	870	680	180	3.3	0.5
	MQ9 (rep)	1,000	760	260	0.8	9
August	MQ1	750	660	100	5.8	1
	MQ4	980	860	110	14	6
	MQ9	1,300	990	290		5
September	MQ1	1,500	1,310	160		14
	MQ4	1,100	980	150		3
	MQ9	2,800	2,680	130		10
NOTES:						
* <i>Synedra radians</i> (diatom) counted at 400X rather than 100X, due to high numbers						
** <i>Asterionella formosa</i> (diatom) counted at 400X rather than 100X, due to high numbers						

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

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Table 1-16 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2009

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 µm (400X)	> 25 µm (100X)
April	LL1	780	480	300	6
	LL4	1,600	1,220	340	4
	LL9	90	60	30	1
May	LL1	6,000	5,150	820	19
	LL4	4,900	4,100	760	10
	LL9	430	290	140	5
June	LL1	1,700	1,370	370	5
	LL4	1,400	1,030	360	12
	LL9	680	340	330	6
July	LL1	2,100	1,900	270	3
	LL4	2,700	2,400	330	4
	LL9	700	340	350	4
August	LL1	3,100	2,900	170	3
	LL4	2,400	2,200	190	15
	LL9	1,700	1,300	370	10
September	LL1	3,700	3,500	220	5
	LL4	2,300	2,100	180	3
	LL9	1,100	950	170	1
April	MQ1	1,400	1,130	250	33
	MQ4	1,300	1,170	160	12
	MQ9	2,300	2,730	520	13
May	MQ1	1,700	1,440	260	3
	MQ4	2,100	1,750	340	5
	MQ9	3,800	3,060	720	18
June	MQ1	1,500	1,360	160	0.1
	MQ4	1,100	990	150	0.2
	MQ9	1,100	940	200	0.8
July	MQ1	1,000	790	190	4
	MQ4	1,300	1,100	220	8
	MQ9	1,200	940	240	5
August	MQ1	610	450	160	0.3
	MQ4	1,300	1,170	170	3
	MQ9	1,600	1,200	390	0.4
September	MQ1	830	670	160	5
	MQ4	1,200	970	170	6
	MQ9	1,400	1,200	240	1

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

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Table 1-17 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2010**

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 µm (400X)	> 25 µm (100X)
April	LL1	630	490	140	1.6
	LL4	1,900	1,500	390	3
	LL9	170	100	70	0.4
May	LL1	1,200	940	270	13.4
	LL4	4,500	3,800	650	17
	LL9	530	390	140	0.9
June	LL1	2,400	1,900	500	5.2
	LL4	3,600	3,000	610	11
	LL9	1,500	1,100	400	10.6
July	LL1	2,100	1,900	170	8.7
	LL1 (rep)	1,900	1,700	180	5
	LL4	3,000	2,800	250	2
	LL9	1,900	1,700	210*	0
August	LL1	1,200	990	180	1.5
	LL4	1,600	1,400	190	1
	LL4 (rep)	1,600	1,400	180	2
	LL9	1,800	1,600	170	0
September	LL1	2,100	1,800	260	15.1
	LL4	4,400	4,200	200	5
	LL9	1,200	1,100	130	0.4
April	MQ1	1,700	1,600	100	0.4
	MQ4	1,200	1,100	120	1
	MQ9	800	710	90	2.4
May	MQ1	1,100	990	120	0.9
	MQ4	1,100	960	150	1
	MQ9	1,600	1,330	240	2.9
June	MQ1	2,000	1,700	270	0.9
	MQ4	1,400	1,100	240	1
	MQ9	1,000	850	200	1.1
July	MQ1	1,800	1,500	250	8.7
	MQ1 (rep)	1,400	1,300	170	6
	MQ4	1,500	1,300	180	10
	MQ9	1,600	1,400	180	4
August	MQ1	1,400	1,200	140	7.2
	MQ4	1,000	870	160	5
	MQ4 (rep)	1,100	900	150	5
	MQ9	1,200	1,000	150	8
September	MQ1	1,300	1,000	260	1.3
	MQ4	1,300	1,040	220	3
	MQ9	1,100	900	190	1.7

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Table 1-18 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2011

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 µm (400X)	> 25 µm (100X)
April	LL1	1,700	1,400	220	52
	LL4	3,900	3,260	540	80
	LL9	2,200	1,820	340	9
May	LL1	3,600	2,880	720	6
	LL1 (rep)	3,500	2,790	690	6
	LL4	4,900	4,160	700	6
	LL9	1,300	900	350	5
June	LL1	2,100	1,750	330	36
	LL4	2,300	2,050	290	3
	LL9	1,500	1,060	450	4
July	LL1	1,400	1,150	270	3
	LL4	1,800	1,440	350	1
	LL4 (rep)	1,900	1,600	300	0.1
	LL9	1,900	1,550	320	2
August	LL1	2,900	2,500	360	15
	LL4	1,800	1,400	320	27
	LL9	1,500	1,200	280	0.9
September	LL1	1,300	940	380	2.2
	LL4	1,800	1,500	380	0.4
	LL9	960	770	190	0.3
April	MQ1	1,600	1,370	270	7
	MQ4	1,400	1,160	270	6
	MQ9	1,900	1,400	490	3
May	MQ1	1,200	1,050	190	2
	MQ1 (rep)	1,200	1,040	170	3
	MQ4	1,800	1,370	410	4
	MQ9	1,600	670	920	4
June	MQ1	2,000	1,840	150	1
	MQ4	1,500	1,300	200	1
	MQ9	1,700	1,200	520	10
July	MQ1	2,200	2,100	110	0.4
	MQ4	1,600	1,330	230	3
	MQ9	1,000	770	200	1
	MQ9(rep)	1,100	860	200	1
August	MQ1	1,400	1,200	210	4
	MQ4	3,300	3,000	280	0.6
	MQ9	1,200	1,000	200	0.1
September	MQ1	2,300	2,100	190	17.2
	MQ4	2,600	2,400	190	0.2
	MQ9	1,600	1,400	240	9.6

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Table 1-19 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2012

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 µm (400X)	> 25 µm (100X)
April	LL1	2,300	1,980	330	5
	LL4	3,200	2,570	590	6
	LL9	1,000	800	190	6
May	LL1	3,000	2,470	470	15
	LL4	2,200	1,640	600	7
	LL9	2,300	2,050	280	7
June	LL1	1,400	1,080	310	3
	LL4	1,700	1,400	320	2
	LL9	980	810	170	2
	LL9 (rep)	1,200	1,020	140	1
July	LL1	1,600	1,390	170	3
	LL4	Sample lost in transit (broken bottle)			
	LL9	880	730	150	2
August	LL1	970	740	210	19
	LL1 (rep)	940	760	170	14
	LL4	1,300	990	250	35
	LL9	380	250	130	0.5
September	LL1	Sample unpreserved – no analysis done			
	LL4	2,800	2,350	480	1
	LL9	Sample unpreserved – no analysis done			
April	MQ1	2,200	2,010	200	3
	MQ4	1,700	1,440	220	3
	MQ9	1,600	1,420	180	5
May	MQ1	1,100	990	140	1
	MQ4	830	680	140	0
	MQ9	1,200	1,000	150	0.2
June	MQ1	2,100	1,920	170	0.4
	MQ4	890	740	150	0.3
	MQ9	1,100	910	200	0.4
	MQ9 (rep)	1,100	920	200	0.5
July	MQ1	1,300	1,210	100	0.4
	MQ4	1,100	1,010	90	10
	MQ9	740	640	100	1
August	MQ1	1,030	860	180	0.8
	MQ1 (rep)	920	720	200	0.2
	MQ4	810	660	140	10
	MQ9	430	340	90	1.6
September	MQ1	900	730	170	0.5
	MQ4	760	650	115	2
	MQ9	580	430	160	0.5
June	NNL1	1,600	1,240	320	0.5
	NNL4	1,000	670	370	0.2
	NNL9	840	700	140	1
	NNL9 (rep)	880	730	160	0.8

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Table 1-19 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2012**

Date	Sampling Site	Total Abundance	< 5mm (1,000X)	5 to 25 µm (400X)	> 25 µm (100X)
July	NNL1	1,300	1,000	260	1.2
	NNL4	1,700	1,390	310	1
	NNL9	820	540	280	0.2
August	NNL1	810	660	150	1.6
	NNL1 (rep)	790	590	200	1
	NNL4	1,800	1,350	440	0.8
	NNL9	730	530	195	0.04
September	NNL1	1,530	1,170	360	1.2
	NNL4	1,260	970	290	2
	NNL9	1,740	1530	220	0.2

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Table 1-20 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2013**

Sampling Site	Date	Depth	< 5mm (1,000X)	< 5 µm (1,000X)	5 to 25 µm (400X)	> 25 µm (100X)
Long Lake	April	0.5 m	2,300	1,750	530	10
		1 m	3,000	2,470	570	15
	August	0.5 m	1,300	880	455	2
		1.0 m	1,700	1,170	470	15
	October	0.5 m	1,500	1,150	340	12
		1.0 m	1,900	1,440	400	14
Middle Quinsam Lake	April	0.5 m	1,350	1,080	270	2
		1.0 m	1,400	1,150	250	2
		1.0 m (rep)	1,200	990	230	9
	August	0.5 m	1,300	1,045	235	7
		1.0 m	1,300	1,010	325	6
		1.0 m (rep)	1,200	990	230	9
	October	0.5 m	1,800	1,440	350	2
		1.0 m	1,900	1,570	290	2
		1.0 m (rep)	1,600	1,310	300	3
No Name Lake	April	0.5 m	1,300	900	370	45
		1.0 m	1,600	1,150	380	36
		1.0 m (rep)	1,700	1,315	470	8
	August	0.5 m	1,200	880	440	5
		1.0 m	1,500	1,060	455	6
		1.0 m (rep)	1,700	1,315	470	8
	October	0.5 m	1,800	1,310	460	1
		1.0 m	1,600	1,060	540	1
Lower Quinsam Lake	April	0.5 m	1,800	1,420	406	2
		1 m	950	700	245	2
	August	0.5 m	960	810	150	2
		1.0 m	620	460	160	3
	October	0.5 m	1,300	1,040	200	12
		1.0 m	1,300	1,060	230	4

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Table 1-21 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2014**

Sampling Site	Date	Depth	< 5mm (1,000X)	< 5 µm (1,000X)	5 to 25 µm (400X)	> 25 µm (100X)
Long Lake	April	1 m	3100	2665	330	86.6
	July	1 m	1700	1170	490	0.9
	October	1 m	1500	1200	290	18.6
Middle Quinsam Lake	April	1 m	1000	840	155	11.4
		1 m replicate	590	480	100	11.7
	July	1 m	3200	2950	240	0.5
	October	1 m	1700	1400	310	3.2
No Name Lake	April	1 m	1600	1260	290	83
	July	1 m	1300	970	310	2.5
		1 m replicate	1200	830	250	3.1
	October	1 m	1600	1400	200	1.7
		1 m replicate	1500	1200	230	2.2
Lower Quinsam Lake	April	1 m	1600	1400	225	7.6
	July	1 m	1200	1010	210	1.8
	October	1 m	2400	2000	350	66

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Table 1-22 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2015

Lake	Month	Depth (m)	< 5mm (1,000X)	< 5 µm (1,000X)	5 to 25 µm (400X)	> 25 µm (100X)
Long	April	1	3700	3300	400	15
	July	1	1300	1030	260	6.6
	October	1	2100	1800	230	14.6
Middle Quinsam	April	1	1600	1300	300	2.4
	July	1	2900	1060	1850	2.8
	October	1	1150	920	230	0.3
No Name	April	1	1200	870	350	1.1
	July	1	880	610	260	6.6
	October	1	1350	1000	300	4.3
	October replicate	1	1200	920	280	4.5
Lower Quinsam	April	1	2200	1800	350	28
	April replicate	1	2300	1800	520	18
	July	1	3200	580	2630	3.3
	October	1	1500	1100	330	71

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-23 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2016**

Lake	Month	Abundance (cells/mL) at 1 m depth			
		Total	< 5 µm (1,000 X)	5 to 25 µm (400 X)	> 25 µm (100 X)
Long	April	1,500	1,300	240	5.5
Middle Quinsam		1,100	882	240	2.8
No Name		1,100	864	240	1.8
No Name (replicate)		970	792	180	1.8
Lower Quinsam		1,500	1,200	260	5.4
Long	August	1,200	990	140	22
Middle Quinsam		930	810	116	1.5
No Name		1,800	1,200	500	42
No Name (replicate)		1,900	1,280	595	46
Lower Quinsam		2,400	1,850	578	1.4
Long	November	780	640	140	0.5
Middle Quinsam		610	520	90	3
No Name		650	600	50	0.4
Lower Quinsam		300	250	50	0

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-24 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2017**

Lake	Month	Abundance (cells/mL) at 1 m depth			
		Total	< 5 µm (1,000 X)	5 to 25 µm (400 X)	> 25 µm (100 X)
Long	May	2,700	2,400	340	16.2
Middle Quinsam		1,900	1,500	370	15.4
No Name		1,300	1,000	320	7.9
Lower Quinsam		1,700	1,300	390	1.2
Long	Sept.	1,100	940	200	1.5
Middle Quinsam		980	760	220	0.9
No Name		1,400	860	480	29.8
No Name Replicate		1,500	1,000	450	28.1
Lower Quinsam		1,700	990	600	86.6
Long	Oct.	2,000	1,800	190	0.4
Middle Quinsam		860	770	80	7.5
No Name		1,600	1,370	260	1
No Name Replicate		1,800	1,400	390	4.2
Lower Quinsam		1,300	770	530	14.8

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-25 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2018**

Lake	Month	Abundance (cells/mL) at 1 m depth			
		Total	<5 µm (1,000 X)	5 to 25 µm (400 X)	>25 µm (100 X)
Long	May	1,500	1,300	150	3.4
Long—duplicate		1,300	1,100	140	4.8
Middle Quinsam		1,000	920	110	0.4
No Name		1,800	1,500	250	0.1
Lower Quinsam		2,700	2,400	320	0.5
Long	August	1,200	1,100	110	1.7
Middle Quinsam		1,600	1,500	180	0.2
No Name		1,400	1,200	270	2
Lower Quinsam		2,300	680	1,600	13
Lower Quinsam—replicate		3,400	1,100	2,300	6.6
Long	November	9,200	2,500	210	6,500
Middle Quinsam		2,100	1,700	360	0.04
No Name		1,600	1,300	300	0.7
Lower Quinsam		1,800	1,500	230	96

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-26 **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2019**

Lake	Month	Abundance (cells/mL) at 1 m depth			
		Total	<5 µm (1,000 X)	5 to 25 µm (400 X)	>25 µm (100 X)
Long	1-May	2,400	1,900	430	1
Long (duplicate)		2,100	1,700	420	1.7
Middle Quinsam	2-May	320	260	60	1.2
No Name	1-May	740	440	300	0.1
Lower Quinsam	2-May	600	500	99	1.2
Long	8-May	2,000	1,700	300	0.5
Middle Quinsam		1,000	920	80	0.4
No Name		2,700	2,100	570	0.03
Lower Quinsam		2,100	1,800	310	11.9
Long	30-Jul	2,600	2,300	220	1.3
Middle Quinsam		1,800	1,600	220	0.7
No Name		2,400	2,100	350	4.9
No Name (duplicate)		2,200	1,800	370	9
Lower Quinsam		1,900	1,500	320	1
Long	Oct. 24	2,400	1,900	450	0.7
Middle Quinsam		1,300	1,100	210	0.04

Attachment 1 Historical Abundance Data: Quinsam Lakes System, 1993–2020

July 16, 2021

Table 1-27 **Phytoplankton Abundance (cells/mL) in the Quinsam Lake System, 2020**

Lake	Date	Abundance (cells/mL) at 1 m depth			
		Total	<5 µm (1,000 X)	5 to 25 µm (400 X)	>25 µm (100 X)
Long	12-May	3,400	2,800	330	275
Middle Quinsam		1,200	1,150	65	4.2
No Name ¹		4,100	1,600	2,500	0.4
Lower Quinsam	13-May	4,000	3,500	360	95
Long	5-Aug	2,600	2,400	160	13
Middle Quinsam		1,500	1,300	190	0.4
Middle Quinsam replicate		1,400	1,200	200	0.5
Long	7-Oct	3,200	3,000	200	2.6
Long replicate		3,000	2,800	200	1.6
Middle Quinsam		3,000	2,700	250	2.2
NOTE:					
^{1.} <i>Dinobryon</i> spp. counted at 400X rather than 100X due to high abundance					

ATTACHMENT 2

Species Composition Data: May, 2021

Quinsam Lake Phytoplankton - 4 May 2021
Long Lake 1 m (ZS7968-11, Job C129542)
27 ml sample settled

Total Cells Counted 306
Total Cells Per mL 1,000

	Number Counted	Cells per mL
1000X magnification - 50 fields		
CHRYSTOPHYCEAE		
Ochromonas/Chromulina spp. (2-A13 um)	23	414
Ochromonas/Chromulina spp. (4-5 um)	21	378
Ochromonas/Chromulina spp. (6-7 um)	4	72
Chrysochromulina parva	1	18
Pseudoekephyrion sp.	2	36
TOTAL	51	918
400X magnification - 3 strips		
CHRYSTOPHYCEAE		
Dinobryon sp. (cells)	2	1
Mallomonas sp.	2	1
Ochromonas spp. (8-10 um)	131	74
BACILLARIOPHYCEAE		
Cyclotella ocellata/stelligera	12	7
Melosira italica (filaments)	5	3
CRYPTOPHYCEAE		
Cryptomonas spp.	18	10
Rhodomonas minuta	39	22
CYANOPHYCEAE		
Dactylococcus acicularis (cols)	3	2
TOTAL	212	120
100X magnification - whole sample		
CHRYSTOPHYCEAE		
Dinobryon bavaricum (15 cols, 22 cells)	22	0.9
BACILLARIOPHYCEAE		
Synedra sp. (small)	2	0.1
Synedra radians	6	0.2
Synedra ulna	2	0.1
Tabellaria fenestrata (1 col, 4 cells)	4	0.2
CHLOROPHYCEAE		
Botryococcus braunii (col)	1	0.04
Elakatothrix gelatinosa (col)	1	0.04
DINOPHYCEAE		
Ceratium hirudinella	5	0.2
TOTAL	43	1.7

Quinsam Lake Phytoplankton - 4 May 2021
Long Lake 1 m, replicate (ZS7969-02, Job C129542)
27 ml sample settled

Total Cells Counted 297
Total Cells Per mL 1,200

	Number Counted	Cells per mL
1000X magnification - 50 fields		
CHRYSTOPHYCEAE		
Ochromonas/Chromulina spp. (2-A13 um)	31	558
Ochromonas/Chromulina spp. (4-5 um)	20	360
Ochromonas/Chromulina spp. (6-7 um)	4	72
Chrysochromulina parva	1	18
Pseudoekephyrion sp.	4	72
TOTAL	60	1,080
400X magnification - 3 strips		
CHRYSTOPHYCEAE		
Chrysocapsa paludosa (cols)	2	1
Diceras chodati	1	1
Mallomonas sp.	2	1
Ochromonas spp. (8-10 um)	122	69
BACILLARIOPHYCEAE		
Cyclotella ocellata/stelligera	10	6
Melosira italica (filaments)	1	1
CHLOROPHYCEAE		
Gloeocystis sp. (cols +cells)	1	1
Nephrocystium sp. (cells)	1	1
DINOPHYCEAE		
Gymnodinium sp.	1	1
Peridinium sp.	2	1
CRYPTOPHYCEAE		
Cryptomonas spp.	21	12
Rhodomonas minuta	54	31
CYANOPHYCEAE		
Dactylococcus acicularis (cols)	2	1
TOTAL	220	125
100X magnification - whole sample		
CHRYSTOPHYCEAE		
Dinobryon bavaricum (2 cols, 2 cells)	2	0.1
Dinobryon cylindricum (1 cols, 1 cells)	1	0.04
BACILLARIOPHYCEAE		
Synedra radians	2	0.1
Synedra ulna	1	0.04
CHLOROPHYCEAE		
Elakatothrix gelatinosa (col)	2	0.1
Mougeotia sp. (1 fil, 2 cells)	2	0.1
DINOPHYCEAE		
Ceratium hirudinella	7	0.3
TOTAL	17	0.7

Quinsam Lake Phytoplankton - 4 May 2021
Middle Quinsam Lake 1 m (ZS7940-11, Job C129531)
27 ml sample settled

Total Cells Counted 199
Total Cells Per mL 2,200

	Number Counted	Cells per mL
1000X magnification - 25 fields		
CHRYSTOPHYCEAE		
Ochromonas/Chromulina spp. (2-3 um)	37	1332
Ochromonas/Chromulina spp. (4-5 um)	16	576
Ochromonas/Chromulina spp. (6-7 um)	4	144
TOTAL	57	2,052
400X magnification - 2 strips		
CHRYSTOPHYCEAE		
Mallomonas spp.	1	1
Ochromonas spp. (8-10 um)	102	87
BACILLARIOPHYCEAE		
Cyclotella ocellata/stelligera	1	1
CHLOROPHYCEAE		
Crucigenia sp. (col)	1	1
Gloeocystis sp. (cols + cells)	4	3
Nephrocystium sp. (cells)	1	1
Oocystis sp. (cols+ cells)	2	2
Scenedesmus sp. (cols)	1	1
Tetraedron sp.	1	1
CRYPTOPHYCEAE		
Cryptomonas spp.	6	5
Rhodomonas minuta	19	16
TOTAL	139	118
100X magnification - whole sample		
BACILLARIOPHYCEAE		
Synedra radians	1	0.04
Synedra ulna	1	0.04
CHLOROPHYCEAE		
Ankistrodesmus sp.	1	0.04
TOTAL	3	0.1

Quinsam Lake Phytoplankton - 4 May 2021
No Name Lake 1 m (ZS7906-11, Job C129518)
27 ml sample settled

Total Cells Counted 315
Total Cells Per mL 1,200

	Number Counted	Cells per mL
1000X magnification - 50 fields		
CHRYSTOPHYCEAE		
Ochromonas/Chromulina spp. (2-A13 um)	26	468
Ochromonas/Chromulina spp. (4-5 um)	20	360
Ochromonas/Chromulina spp. (6-7 um)	7	126
Chrysochromulina parva	1	18
Pseudoekephyrion sp.	1	18
TOTAL	55	990
400X magnification - 2 strips		
CHRYSTOPHYCEAE		
Chrysocapsa paludosa (cols + cells)	1	1
Dinobryon sp. (cells)	1	1
Mallomonas sp.	6	5
Ochromonas spp. (8-10 um)	102	87
BACILLARIOPHYCEAE		
Melosira italica (filaments)	7	6
CHLOROPHYCEAE		
Gloeocystis sp (cells + cols)	6	5
Oocystis sp. (cells + cols)	4	3
Staurostrum sp.	1	1
CRYPTOPHYCEAE		
Cryptomonas spp.	24	20
Rhodomonas minuta	89	76
CYANOPHYCEAE		
Dactylococcus acicularis (cols)	14	12
TOTAL	255	217
100X magnification - whole sample		
CHRYSTOPHYCEAE		
Dinobryon bavaricum (1 col, 1 cell)	1	0.04
BACILLARIOPHYCEAE		
Gyrosigma sp.	1	0.04
Synedra radians	3	0.1
TOTAL	5	0.2

Quinsam Lake Phytoplankton - 4 May 2021
Lower Quinsam Lake 1 m (ZS7934-11, Job C129528)
27 ml sample settled

Total Cells Counted **320**
Total Cells Per mL **1,300**

	Number Counted	Cells per mL
1000X magnification - 50 fields		
CHRYSTOPHYCEAE		
Ochromonas/Chromulina spp. (2-A13 um)	27	486
Ochromonas/Chromulina spp. (4-5 um)	19	342
Ochromonas/Chromulina spp. (6-7 um)	10	180
Chrysochromulina parva	2	36
Pseudoekephyrion sp.	3	54
TOTAL	61	1,098
400X magnification - 2 strips		
CHRYSTOPHYCEAE		
Dinobryon sp. (cells)	27	23
Ochromonas spp. (8-10 um)	123	105
BACILLARIOPHYCEAE		
Cyclotella glomerata (cols+cells)	1	1
Cyclotella ocellata/stelligera	1	1
CHLOROPHYCEAE		
Gloeocystis sp. (cols +cells)	2	2
DINOPHYCEAE		
Peridinium sp.	3	3
CRYPTOPHYCEAE		
Cryptomonas spp.	25	21
Rhodomonas minuta	31	26
CYANOPHYCEAE		
Dactylococcus acicularis (cols)	1	1
TOTAL	214	182
100X magnification - whole sample		
CHRYSTOPHYCEAE		
Dinobryon bavaricum (4 cols, 4 cells)	4	0.2
Dinobryon cylindricum (5 cols, 5 cells)	5	0.20
Dinobryon sociale (4 cols, 4 cells)	4	0.16
BACILLARIOPHYCEAE		
Gyrosigma sp.	1	0.04
Synedra acus	5	0.20
Synedra radians	18	0.72
Synedra ulna	2	0.08
Tabellaria fenestrata (2 col, 6 cells)	6	0.24
TOTAL	45	1.8