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September 30, 2018

Licensing
Nunavut Water Board
P.O. Box 119
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Re: August 2018 – Monthly Monitoring Report for Water Licence 2AM-DOH1323

This report is comprised of monitoring requirements as set out in Part J and Schedule J of water licence 2AM-DOH1323 Amendment 1, and additional requirements from CIRNAC.

During the subject period of this report the focus of activities at Doris North was underground mining, construction, ore processing, water management and environmental compliance. Sampling locations monitored under this licence (seasonally or when facilities are operational) are provided in Figure 6 at the end of this report.

Site Wide Water Quality Monitoring Program (Part J Items 3, 8, and Schedule J)

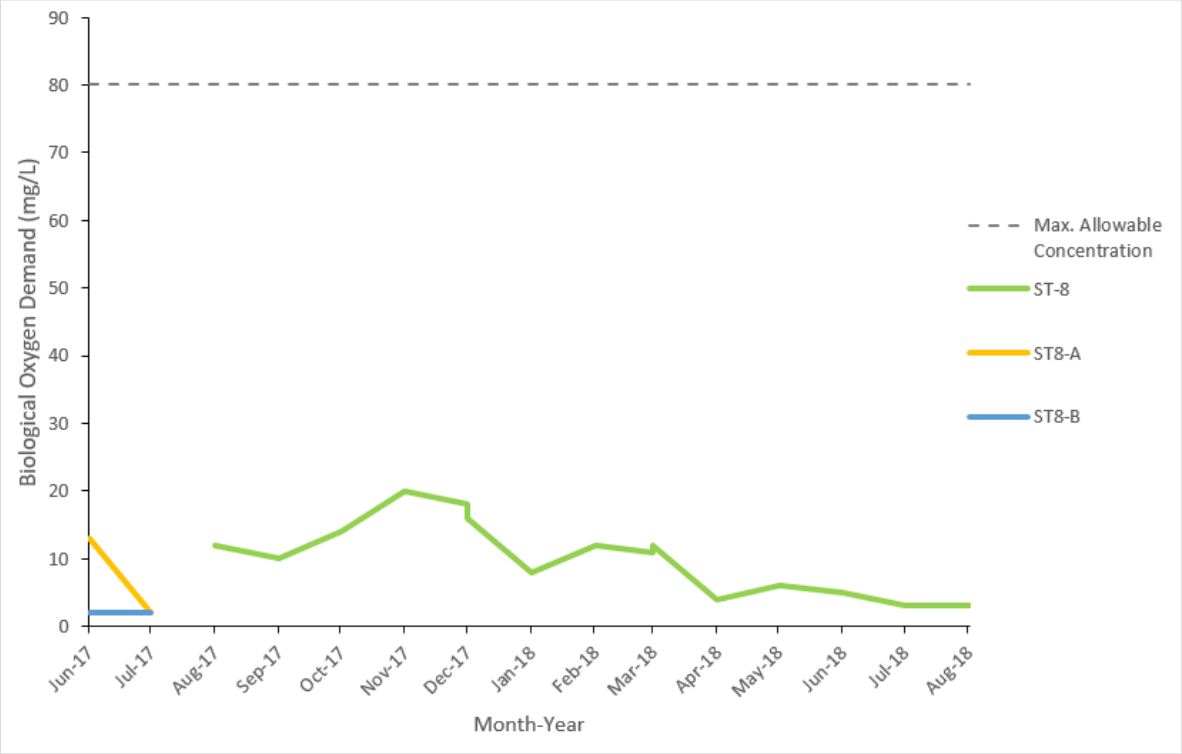
Water quality sampling was conducted in August at monitoring stations identified in Schedule J of the licence (ST-1 through ST-13, TL-1 through TL-12). Water quality samples were not collected for monitoring stations that were inactive during the month being reported (e.g., facilities that had not yet been constructed, were frozen during the month, or were not operationally active).

All parameters were compared to the applicable effluent quality limits outlined in Part G of the licence. No exceedances of effluent quality limits were observed in any samples collected this month. Results of all water quality monitoring are provided in Appendix A attached to this report.

Analytical results for both TL-6 and TL-7 are not included with this submission due to a service backlog with the laboratory utilized to process these particular samples. August analytical results for both monitoring stations will be included in the September 2018 Monthly Monitoring Report.

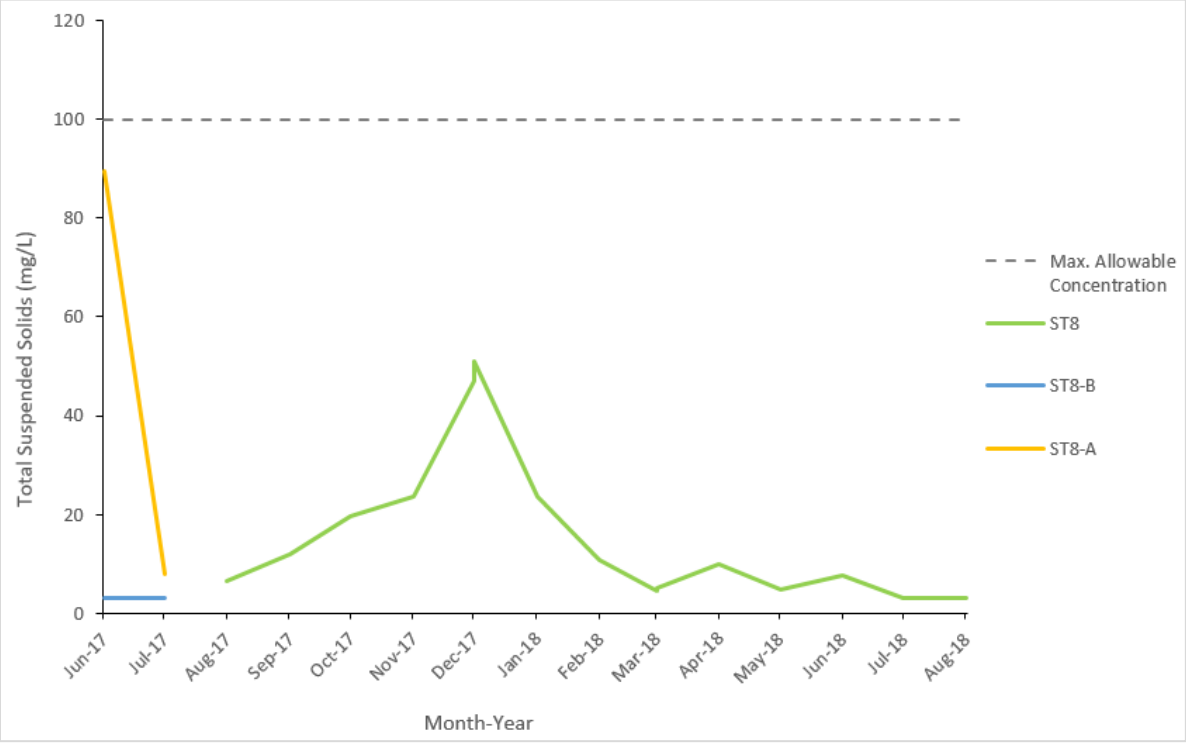
Figure 1 and 2 illustrates effluent quality characteristics for parameters of interest at select monitoring stations.

Figure 1. Biological Oxygen Demand Results Consistently Below Discharge Criteria for Wastewater Treatment Plant (ST8, ST8A, ST8B)



Note: Maximum Average Concentration as per Part G Item 4(b).

Figure 2. Total Suspended Solids Results Consistently Below Discharge Criteria for Wastewater Treatment Plant (ST8, ST8A, ST8B)



Note: Maximum Average Concentration as per Part G Item 4(b).

Flow and Volume Measurements (Part J Items 11, 12, and Schedule J)

Table 1. Effluent discharge, August 2018

Facility	Station Code	Discharge Volume (m^3)	Exceedances of Discharge Criteria	Discharge Location	Licence Reference
Sedimentation Pond	ST-1	31,498	N/A	Tailings Impoundment Area	Schedule J Table 2
Pollution Control Pond #1	ST-2	4,023	N/A	Tailings Impoundment Area	Schedule J Table 2
Landfill Sump	ST-3	0	0	Facility not constructed	Part G Item 23 (a, b, g)
Landfarm Sump	ST-4	4	0	Tundra Discharge 13W 432450 7559600	Part G Item 23 (c, d, g)
Doris Tank Farm	ST-5	0	0	Tailings Impoundment Area	Part G Item 23 (e, f, g)
Rob Bay 5ML Tank Farm	ST-6a	41	1	Tailings Impoundment Area	Part G Item 23 (e, f, g)
Rob Bay Three 5ML Tank Farm	ST-6b	61	1	Tailings Impoundment Area	Part G Item 23 (e, f, g)
Wastewater Treatment Plant, Effluent	ST-8	1,115	0	Tundra Discharge 13W 432933 7559057	Part G Item 4 (b-d)
Wastewater Treatment Plant, Sewage Sludge	N/A	30.0	N/A	Tailings Impoundment Area	Part J Item 11 (g)
Reagent and Cyanide Storage Facility Sump	ST-11	0	0	Tailings Impoundment Area	Schedule J Table 2
Pollution Control Pond #2	ST-13	0	0	Facility not constructed	Schedule J Table 2
Mine Water Discharge	TL-12	9,790	N/A	Tailings Impoundment Area	Schedule J Table 2

Records of visual monitoring of discharge to tundra are maintained on file as per Part J Item 18.
Note: Mine Water Discharge reported to the Sedimentation Pond August. Water was pumped from the underground sump to the Sedimentation Pond and to the TIA through the Sedimentation Pond discharge pipeline. Volumes presented for discharge from the Sedimentation Pond include the volume of Mine Water Discharge.

Table 2. Discharge from TIA to Doris Creek, August 2018

Month	Number of days of discharge	Discharge Volume (m^3)	Exceedances of Discharge Criteria*
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0	0
May	0	0	0
June	0	0	0
July	0	0	0
August	0	0	0
Annual Cumulative	**0**	**0**	**0**

* Discharge criteria outlined in Part G Items 29, 30, 31 and Part J Item 8.

A comparison of flows between TL-4 and TL-2 as per Part G Item 32 of the licence was not conducted as no water was discharged from the Tailings Impoundment Area to Doris Creek this month.

Table 3. Water usage, August 2018

Month	Windy Lake (ST-7A)	Doris Lake (ST-7)					Mine Inflow	Total Usage
	Domestic Water* (m^3)	Domestic Water* (m^3)	Surface Exploration (m^3)	Industrial Usage** (m^3)	Dust Suppression (m^3)	Winter Track (m^3)	Industrial Usage ^ (m^3)	
January	1,051	0	0	0	0	119	433	1,603
February	1,277	0	0	34	0	136	0	1,447
March	1,231	0	0	29	0	0	0	1,260
April	1,208	0	0	74	0	0	0	1,282
May	1,224	0	93	46	0	0	0	1,363
June	1,115	0	4	45	669	0	0	1,833
July	1,064	0	0	78	1,863	0	0	3,005
August	1,153	0	0	67	225	0	0	1,445
Annual Total	9,323	0	97	373	2,757	255	433	13,238
Annual Allowance	**22,995**							**480,000**

* As permitted by water licences 2BE-HOP1222 and 2AM-DOH1323

** Includes industrial uses such as underground drilling, core processing, concrete batching, etc.

^ Discharge of groundwater inflow from mine development in the Doris Connector zone to the Tailings Impoundment Area began in February. Mine water inflow is no longer being recycled into underground sumps for use in mining activities. The volume of inflow discharged to the TIA is presented in Table 1 above.

Table 4. Volume of Reclaim Water from the TIA, August 2018

Month	Reclaim Water (m^3) *
January	82,577
February	69,744
March	78,864
April	74,638
May	76,444
June	69,120
July	66,699
August	71,186
Annual Cumulative	**589,272**

* As per Part J Item 11(d)
Numbers rounded to the nearest cubic meter.

Table 5. Waste Rock and Process Volumes, August 2018

Month	Waste Rock Management					Underground Void Space			Ore Processing and Tailings Management		
	Produced from Mining Activity (tonnes)*	Backfilled Directly to Underground Stopes (tonnes)*	Returned Underground from Temporary Waste Rock Pile* (tonnes)	Moved to Temporary Waste Rock Pile (tonnes)*	Cumulative on Temporary Waste Rock Pile (tonnes)	Volume Created from Mining Activities (tonnes)	Cumulative Volume Available for Backfill (tonnes)	Cumulative Volume Available for Backfill (m^3)	Quantity of Ore Processed** (tonnes)	Total Dry Tailings Placed in TIA** (tonnes)	Total Dry Cyanide Leach Tailings Placed Underground** (tonnes)
December Balance	-	-	-	-	542,884	-	774,674	277,762	-	-	-
January	22,951	25,584	0	0	542,884	16,558	791,232	283,676	25,219	23,916	1,304
February	21,415	20,308	0	1,107	543,991	22,438	813,670	291,689	27,036	25,615	1,434
March	27,092	20,360	0	6,732	550,723	24,236#	837,906	300,345	31,375	30,366	1,008
April	25,068	17,536	0	7,532	558,255	22,069	859,975	308,227	33,619	32,209	1,403
May	34,829	9,392	0	25,437	583,692	40,314	900,289	322,625	28,869	27,692	1,150
June	26,985	16,856	0	10,129	593,821	31,176	931,465	333,759	25,826	24,527	1,296
July	25,330&	17,480&	0	7,850&	601,671&	28,043&	959,508	343,774	31,843	30,030	1,453
August	24,420	22,648	0	1,772	603,443	19,571	979,079	350,764	45,276	42,973	2,300
Cumulative Total	208,090	150,164	0	60,559	603,443	204,405	979,079	350,764	249,063	237,328	11,348

* As per Part J Item 11(e, f)

** As per Part J Item 12.

& Volume reconciled since submission of July SNP report.

Note: Void space created from mining activities is determined as the sum of the initial void space as calculated in March 2017 and void space created each month from mining activities. A negative volume of void space created in a month indicates that a higher volume of waste rock and dry cyanide leach tailings was returned underground compared to the volume of void space created from new mining activities.

Note: An error was identified in the formulas used to calculate the Cumulative Volume Available for Backfill (tonnes and m^3). Volumes presented in Table 5 for Cumulative Volume Available for Backfill have been corrected in this report.

Table 7. Doris Lake Water Level (ST-12), August 2018

Month	Minimum Water Level (masl)	Maximum Water Level (masl)	Mean Water Level (masl)	Monthly Water Level Variation (masl)**	Comparison of Mean Water Level from Month to Month (masl)^	Low Action Level Trigger (masl)*
January	21.672	21.689	21.679	0.017	0.003	21.346
February	21.674	21.689	21.681	0.015	0.002	21.346
March	21.681	21.694	21.686	0.013	0.005	21.346
April	21.680	21.692	21.687	0.012	0.001	21.346
May	21.703	21.711	21.707	0.008	0.020	21.346
June	21.709	22.389	22.073	0.680	0.366	21.346
July	21.902	22.244	22.063	0.342	-0.010	21.346
August	21.815	21.926	21.861	0.111	-0.202	21.346

* Low action level trigger is relative to the average water level value (September 10-30, 2017) measured in Doris Lake. Low action level trigger (-0.42 m) outlined in Section 5.4 of the Doris Aquatic Effects Monitoring Plan, September 2016.

** Monthly Water Level Variation is calculated as the difference between the Maximum Water Level and the Minimum Water Level measured during the month.

^ Comparison of the change in water level from month to month. This value is calculated by subtracting the Mean Water Level of the current month from the Mean Water Level of the previous month (e.g. February Mean Water level - January Mean Water level). A positive value from this calculation indicates a rise in water level since the previous month; a negative value from this calculation indicates a drop in water level since the previous month.

Note: Water level surveys were performed in June to calibrate the two pressure transducer stations installed in Doris Lake. Based on these surveys there was an adjustment of +2.0cm to the constant added to the data to determine the water elevation. This has resulted in a 2cm step increase between the data from April and May.

Summary of Assessments of Water Balance and Water Quality Model (Part G Item 34)

Average monthly water quality, hydrologic, and climatic monitoring data were collected while in operations during August. Data will contribute to the assessment of the water and load balance model, and will be compared to the predicted water quality and elevation within the TIA and will be reported in the annual report for 2018.

Thermal Monitoring (Part J Items 13 and 14)

Thermal monitoring undertaken as per Part J Items 13, 14 and Schedule J is reported in the annual Geotechnical Report.

Doris North Camp Diversion Berm Effectiveness (Part J Item 19(d))

Visual monitoring was conducted during August to evaluate the diversion berm's efficacy of diverting runoff away from the camp pad. The diversion berm was observed to be functioning as per its design purpose.

Incident Reporting

Spill #18-310 – On August 4, 2018 an estimated 10m^3 of flotation tailings was released to the engineered mine pad surface from the tailings distribution line running from the Doris North mill facility to the Tailings Impoundment Area (TIA). The flotation tailings spill was comprised of 1.6 m^3 of solids and 8.4 m^3 of solution. The mill operations were immediately suspended and the tailings pump shut down. Heavy equipment operators were called to the scene in order to recover the spilled and contaminated materials. A berm was initially constructed with clean crush rock material to minimize the spread of the spill. An excavator was used to excavate the tailings and contaminated materials from the mine pad surface, and a haul truck was used to transport contaminated materials to the TIA for disposal. Photos are provided in Figure 3 below.

Root Cause:

- Small hole had worn through an elbow joint on the steel tailings line from the inside. The line had not been punctured from the outside.
- A spigot change had occurred earlier that morning that may have caused a temporary increase in line pressure. This may have also contributed to the rupture

Corrective Actions:

- A ¼" thick halfpipe was welded overtop of the hole in order to prevent another spill occurrence;
- Routine ultrasonic thickness testing at elbows to confirm pipe thickness;
- The steel section of the tailings line was in the process of being replaced with an HDPE line that has a significantly reduced wear rate (now complete); and
- A Leak Detection System (LDS) is being investigated and may be installed on the tailings line to improve leak detection capability and decrease response time in the event of a spill.

Figure 3. Spill #18-310 Completed spill cleanup

Spill location.

Spill reclamation.

Spill location.

Spill reclamation.

Spill #18-335 – On August 20, 2018 a spill of flotation tailings slurry was discovered emanating from the inspection port on an elbow of the steel tailings distribution. A contractor working in the area identified the spill immediately and contacted the mill control room operator. The tailings pump was shut down to reduce pressure in the line and minimize the volume of material released. An estimated 150L of tailings slurry was released to the crush pad at the north-west corner of the Pollution Control Pond. Contaminated crush was excavated from the area and disposed of in the Tailings Impoundment Area. Photos are provided in Figure 4 below.

Root Cause:

- Thread on the inspection port was worn resulting in failure of the cap on the inspection port located on the elbow of the steel tailings line.

Corrective Actions:

- Repairs were completed to the inspection port threads and the cap replaced;
- The steel section of the tailings line has since been replaced with a fuse welded HDPE line which does not require the same inspection port installation;

- An additional flowmeter will be installed on the tailings distribution line prior to discharge into the Tailings Impoundment Area. This flowmeter will be linked to the mill control room and monitor for potential loss of flow within the line. A loss of flow could indicate an issue or leak with the tailings line and would trigger additional inspections of the tailings line; and,
- A Leak Detection System (LDS) is being investigated and may be installed on the new HDPE tailings line to improve leak detection capability and decrease response time in the event of a spill.

Figure 4. Spill #18-335 Spill location and root cause

Spill location and extent of contaminated material.

Worn threads on plugged inspection port prior to repair.

Spill #18-351 – On August 29, 2018 an employee conducting inspections of the various sewage lift stations at Doris Camp observed evidence of a leak emanating from a deformed sewage distribution pipeline. It is not known when the leak began and therefore, the spill volume released cannot be estimated. Repairs to the line were completed immediately and contaminated soils were excavated and disposed of on the overburden stockpile. Photos are provided in Figure 5 below.

Root Cause:

- Large, heavy piece of rubber liner being used as a temporary roof cover had blown off during a storm and landed on the pipeline below. The cribbing used to support the pipe was insufficient to support this additional weight and caused the pipeline to sag over time resulting in the leak.

Corrective Actions:

- A inspection of all service pipes was conducted to ensure all pipelines are adequately supported, insulated and protected from potential falling objects; and
- Inspections of all service pipelines will be conducted on a routine basis to evaluate pipeline integrity and identify any potential issues requiring maintenance.

Figure 5. Spill #18-351 Spill location prior to and after pipe repair

Spill location showing damaged pipeline and cribbing.

Spill location post-cleanup. Pipeline now fully supported.

Should there be any questions regarding this monthly report, please contact enviro@tmacresources.com.

Yours sincerely,

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Figure 6. 2AM-DOH-1323 SNP Monitoring Locations