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January 28, 2019

Licensing
Nunavut Water Board
P.O. Box 119
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Re: December 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 and surface 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 5 at the end of this report.

In December TMAC continued with the Doris Crown Pillar Recovery activities. These activities included blasting and removal of waste rock and ore. All waste rock and ore was relocated to the permitted storage pads.

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

Water quality sampling was conducted in December 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).

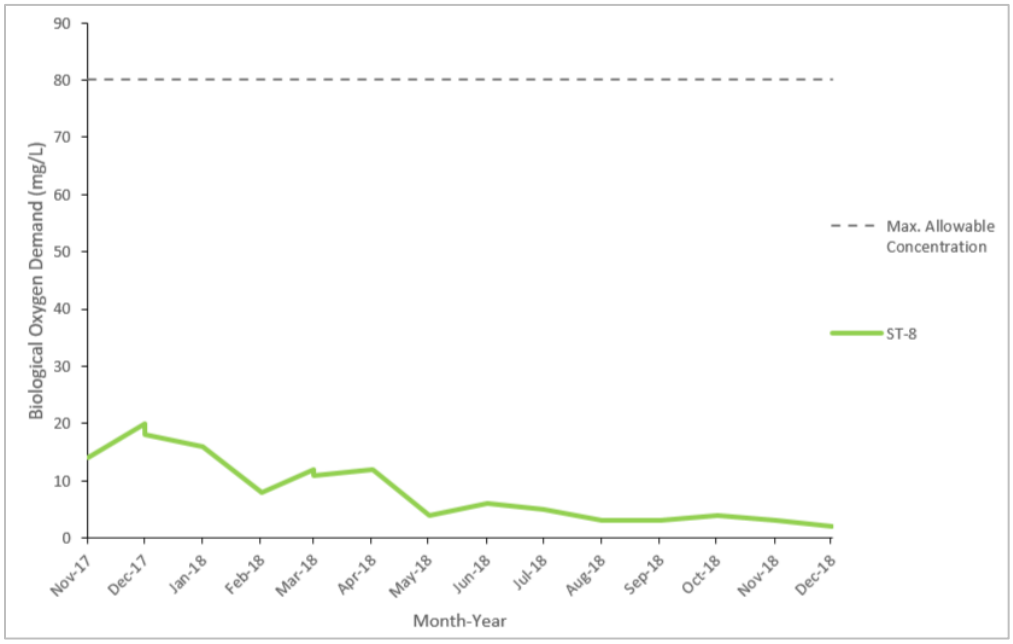
All parameters were compared to the applicable effluent quality limits outlined in Part G of the licence. No exceedances of effluent quality limits were observed in any samples collected this month. Results of all water quality monitoring are provided in Appendix A attached to this report.

In December, a visual inspection of the backfilled stopes underground was conducted to identify seepage from the stopes. Underground stopes have been backfilled in ten locations at this time; one seep was identified emanating from one backfilled stope. A flow measurement could not be completed due to the low volume of this seep. A sample was collected at this location (TL-11B) and submitted for analysis. An additional sample was also collected from a pool of water at the base of one backfilled stope. No

flowing water was identified from this location but a sample was collected (TL-11A) to provide additional characterization of water underground near backfilled materials. Results of this sampling are provided in Appendix A attached to this report.

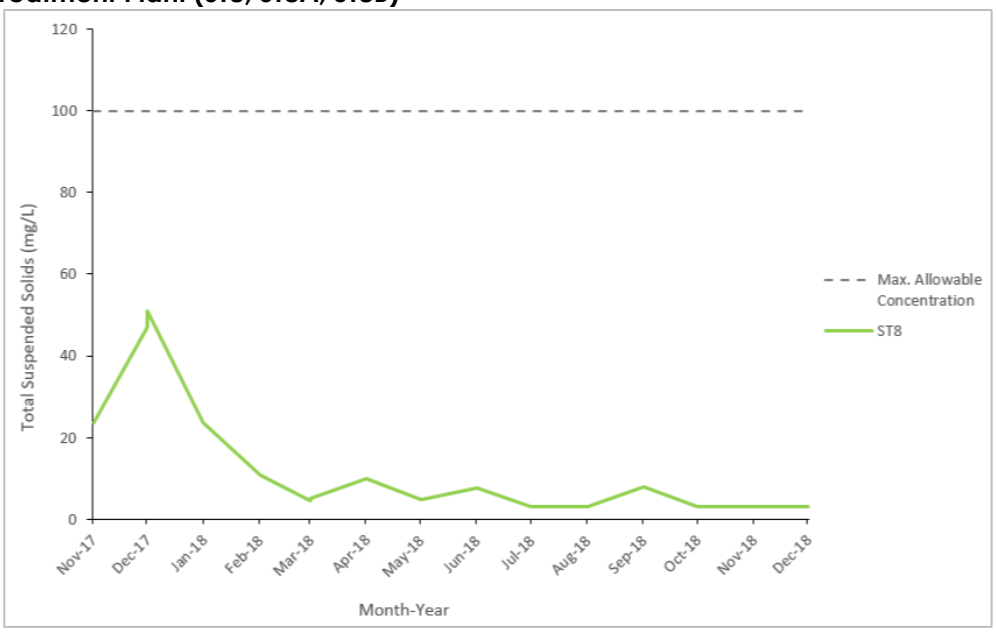
Figure 1 and 2 illustrates effluent quality characteristics for parameters of interest at select monitoring stations.

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



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, December 2018

Facility	Station Code	Discharge Volume (m^3)	Exceedances of Discharge Criteria	Discharge Location	Licence Reference
Sedimentation Pond	ST-1	0	N/A	Tailings Impoundment Area	Schedule J Table 2
Pollution Control Pond #1	ST-2	0	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	0	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	0	0	Tailings Impoundment Area	Part G Item 23 (e, f, g)
Rob Bay Three 5ML Tank Farm	ST-6b	0	0	Tailings Impoundment Area	Part G Item 23 (e, f, g)
Wastewater Treatment Plant, Effluent	ST-8	1,194	0	Tundra Discharge 13W 432933 7559057	Part G Item 4 (b-d)
Wastewater Treatment Plant, Sewage Sludge	N/A	25.0	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	20,245	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: The Sedimentation Pond discharge line was shut down on September 18, 2018 for the winter season. Mine Water Discharge from underground is re-routed through the Mill Tailings Discharge pipeline to the Tailings Impoundment Area.

Table 2. Discharge from TIA to Doris Creek, December 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
September	0	0	0
October	0	0	0
November	0	0	0
December	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, December 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
September	1,144	0	0	114	0	0	0	1,258
October	1,293	0	0	42	0	8	0	1,343
November	1,265	0	0	58	0	0	0	1,323
December	1,252	0	0	52	0	464	0	1,768
Annual Total	14,277	0	97	639	2,757	727	433	18,930
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, December 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
September	65,833
October	64,395
November	66,692
December	65,565
Annual Cumulative	**852,026**

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

Table 5. Waste Rock and Process Volumes, December 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
September	29,216	22,424	0	6,792	610,235	34,823	1,013,902	363,201	50,645	48,426	2,219
October	102,460	25,624	0	76,836	687,071	125,037	1,138,939	407,857	58,885	57,379	1,583
November	161,749	26,496	0	134,983	822,054	189,028	1,327,967	475,367	56,564	55,253	1.319
December	55,762	35,744	1,760	20,018	840,312	73,873	1,401,840	502,379	49,458	48,208	1,211
Cumulative Total	557,007	260,452	1,760	299,188	840,312	627,166	1,401,840	502,379	464,615	446,594	17,680

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

** As per Part J Item 12.

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. The significant increase in waste rock production and the associated void space can be attributed to the Doris Crown Pillar Recovery activities that commended in October 2018. Values associated with waste rock and underground void space have been adjusted for October and November due to a reconciliation of ore and waste rock calculations.

Table 7. Doris Lake Water Level (ST-12), December 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
September	21.755	21.781	21.764	0.026	-0.097	21.347
October	21.704	21.770	21.739	0.066	-0.025	21.347
November	21.694	21.715	21.704	0.021	-0.035	21.347
December	21.703	21.736	21.720	0.033	0.016	21.347

* Low action level trigger is relative to the average water level value (September 10-30, 2018) 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.

Waste Management (Part G Item 12)

Empty cargo aircraft were utilized for waste backhaul from the Doris Camp. A total of 33 totes (approximately 33 m^3) of waste oil, 5 totes (approximately 5 m^3) of waste glycol, and 13 totes (approximately 13 m^3) of kitchen grease were transported to KBL Environmental in Yellowknife to arrange for final remediation/disposal.

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 December. 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 December 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 #18-475 – On December 9, 2018 a grader operator was clearing snow on the Tailings Impoundment Area (TIA) access road when he discovered a spill of flotation tailings onto the roadway and into the TIA from the tailings distribution pipeline. An estimated 6m^3 of flotation tailings was released to the access roadway and an unknown volume of tailings was spilled into the TIA downstream of this location.

The mill operations were promptly suspended and the tailings pump shutdown. Snow banks on the roadway had prevented tailings from migrating off the road to the tundra east of the Tailings Impoundment Area and all spilled tailings were contained to the roadway and the TIA. The grader operator immediately constructed a berm with snow on the roadway upon discovery of the spill to minimize the spread of the spill. An excavator was used to excavate the tailings and contaminated crush from the road surface and dispose of this material into the Tailings Impoundment Area.

The spill investigation determined that a small hole had worn through a steel flange located on a low point drain of the HDPE tailings distribution pipeline allowing release of tailings from the flange. TMAC internally reviewed the incident and identified the following corrective actions in order to reduce the likelihood of a reoccurrence:

- The worn steel flange was replaced;
- Routine ultrasonic thickness testing of drains/spigot points to confirm thickness integrity; and

- Options to install a Leak Detection System (LDS) have been investigated and TMAC is in the process of evaluating operational effectiveness of these options in order to determine which system will be most suitable given the tailings pipeline alignment and operation in arctic conditions.

Refer to Figures 3 through 4 below documenting the spill location, contamination area as well as pre and post cleanup.

Figure 3. Spill #18-475 spill location and area of contamination (post-cleanup)

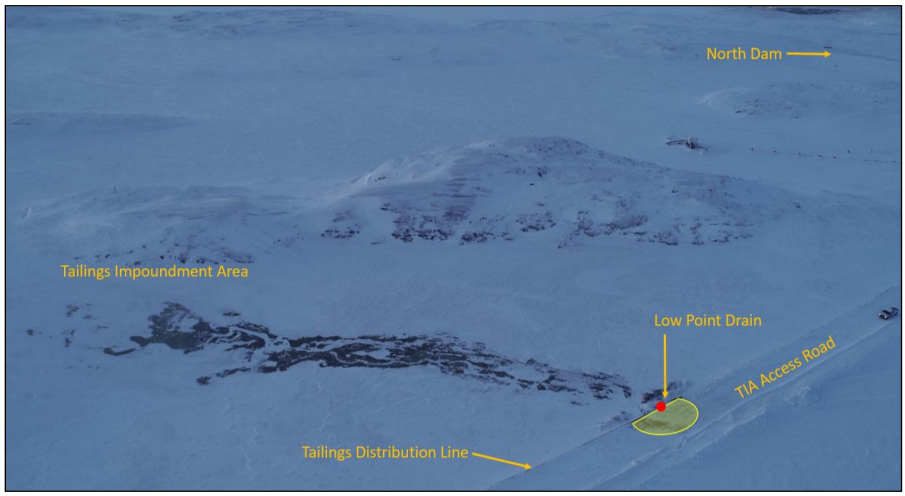


Figure 4. Spill #18-475 spill location prior to cleanup

Figure 5. Spill #18-475 excavation of contaminated materials

Figure 6. Spill #18-475 worn flange (left) and repaired pipeline (right)

Figure 7. Spill #18-475 post-cleanup activities

Spill #18-487 – On December 28, 2018, the sewage treatment operator noted lower than normal overnight input into the Sewage Treatment Plant by approximately 4 m^3. At approximately 5:45am, during a daily inspection of the main Doris Camp lift station, the sump was found to be overflowing and weeping on to the gravel floor of the building. On December 27th at 17:00, the sump pump was replaced in the same lift station. Multiple tests were completed to ensure proper function of the pump and the sump was closed up for the night. Upon investigation, the root cause was found to be excess wire from the new pump installation had broken its mooring and fallen, trapping the floats in the down or off position. The pump did not turn on as needed and the sump over flowed.

The sump pump was immediately switched to manual mode to pump the water level down and determine the problem. The excess wire was secured to an area away form the float with additional strapping. Additionally, the float connection point was also relocated to ensure free movement and no chance of obstruction.

The spill area surrounding the sump was hand excavated to the extent practicable and contaminated soil was removed from the area. Lime was also placed on the impacted areas to prevent the development of odors or pathogens during the warmer months.

TMAC internally reviewed the incident and identified the following corrective action to reduce the likelihood of a reoccurrence:

- An upgraded inspection schedule will be made after repairs on key systems to monitor the first few hours or as deemed necessary to ensure correct function.

Figure 8. Area of contamination.

Figure 9. Area of contamination post cleanup.

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

Yours sincerely,

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Figure 10. 2AM-DOH-1323 SNP Monitoring Locations