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**Sent by Email**

**February 28, 2019**

Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU  
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**Re: January 2019 – Monthly Monitoring Report for Water Licence 2AM-DOH1335**

This report is comprised of monitoring requirements as set out in Part I and Schedule I of water licence 2AM-DOH1335 Amendment 2, 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. No activities were conducted at Madrid under this licence in January.

Sampling locations monitored under this licence (seasonally or when facilities are operational) are provided in Figure 3 at the end of this report. Madrid infrastructure has not yet been constructed. Monitoring locations associated with Madrid infrastructure (MMS) will be established with the Inspector as per Part I Item 3 once these facilities have been constructed.

In January TMAC continued with the Doris Crown Pillar Recovery activities. These activities included underground blasting and removal of waste rock and ore via the underground workings. No surface blasting was conducted in January. On January 17, TMAC began backfilling portions of the crown pillar area where mining activity has been completed.

**Site Wide Water Quality Monitoring Program (Part I Item 3 and Schedule I)**

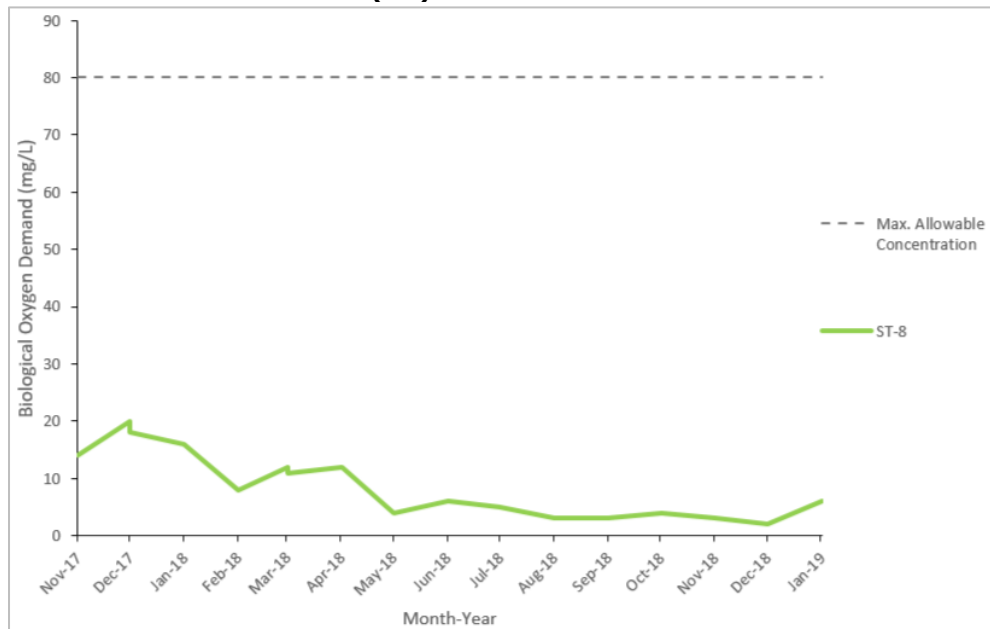
Water quality sampling was conducted in January at monitoring stations identified in Schedule I of the licence (ST-1 through ST-13, TL-1 through TL-12 and MMS-1 through MMS-10). Water quality samples were not collected for monitoring stations that were inactive during the month being reported (e.g., 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 F 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-7A collected in January are not included with this submission due to a service backlog with the laboratory utilized to process these particular samples. January analytical results for both monitoring stations will be included in the February 2019 Monthly Monitoring Report.

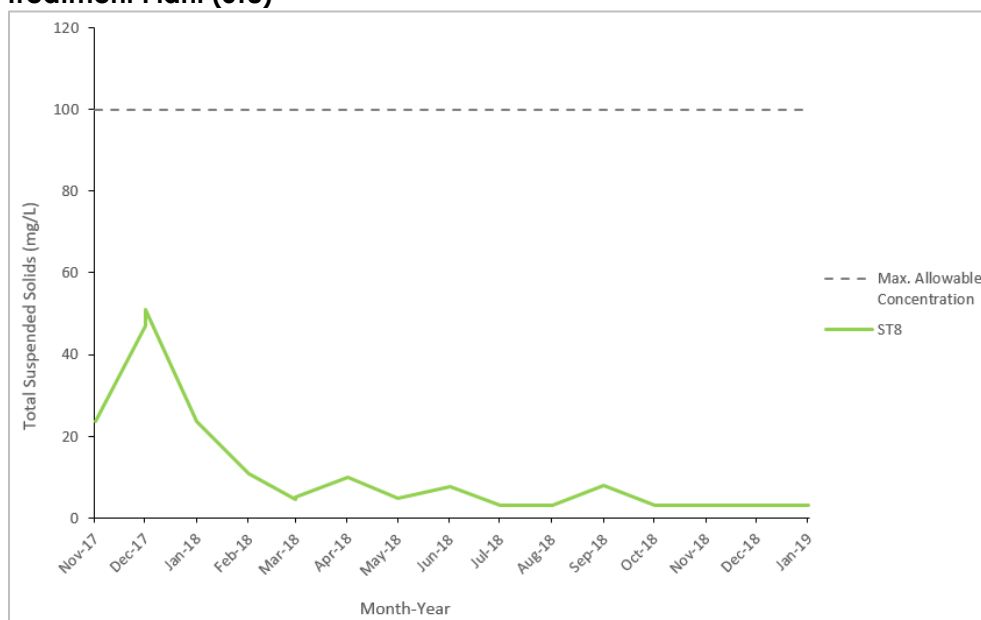
Figure 1 and 2 illustrates effluent quality characteristics for parameters of interest at select monitoring stations.

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



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

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



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

### Flow and Volume Measurements (Part F, Part I and Schedule I)

**Table 1. Effluent discharge, January 2019**

Facility	Station Code	Discharge Volume (m <sup>3</sup> )	Exceedances of Discharge Criteria	Discharge Location	Licence Reference
Doris Sedimentation Pond	ST-1	0	N/A	Tailings Impoundment Area	Part F Item 17
Doris Contact Water Pond #1	ST-2	0	N/A	Tailings Impoundment Area	Part F Item 17, 18(a)
Non-Hazardous Landfill Sump	ST-3	0	0	Facility not constructed	Part F Item 18(a)
Landfarm Sump	ST-4	0	0	Tundra Discharge 13W 432450 7559600	Part F Item 18(b)
Doris Plant Site Fuel Storage Area	ST-5	0	0	Tundra Discharge	Part F Item 18(b)
Rob Bay Single 5ML Fuel Storage Area	ST-6a	0	0	Tundra Discharge	Part F Item 18(b)
Rob Bay Fuel Storage and Containment Berm	ST-6b	0	0	Tundra Discharge	Part F Item 18(b)
Doris Sewage Treatment Plant, Effluent	ST-8	1,239	0	Tundra Discharge 13W 432933 7559057	Part F Item 5(b-c)
Doris Sewage Treatment Plant, Sludge	N/A	26.9	N/A	Tailings Impoundment Area	Part I Item 5(f)
Doris Reagent and Cyanide Storage Facility Sump	ST-11	0	N/A	Tailings Impoundment Area	Part F Item 17
Doris Contact Water Pond #2	ST-13	0	N/A	Facility not constructed	Part F Item 17
Doris Mine Water Discharge	TL-12	20,108	N/A	Tailings Impoundment Area	
Madrid North Contact Water Pond	MMS-1	0	N/A	Facility not constructed	Part F Item 17, 18(a)
Madrid South Primary Contact Water Pond	MMS-2	0	N/A	Facility not constructed	Part F Item 17, 18(a)
Madrid South Secondary Contact Water Pond	MMS-3	0	N/A	Facility not constructed	Part F Item 17, 18(a)
Madrid South Fuel Storage Facility	MMS-5	0	0	Facility not constructed	Part F Item 18(b)
Madrid Brine Mixing Facility	MMS-6	0	N/A	Facility not constructed	
Madrid North Connector	MMS-7	0	N/A	No mining occurring at this time	
Madrid North Fuel Storage Facility	MMS-8	0	0	Facility not constructed	Part F Item 18(b)
Madrid Mine Water Discharge	MMS-10	0	N/A	Facility not constructed	

Records of visual monitoring of discharge to tundra are maintained on file as per Part I Item 11.

**Table 2. Discharge from TIA, January 2019**

Month	Number of days of discharge	Discharge Volume (m <sup>3</sup> )	Exceedances of Discharge Criteria*
January	0	0	0
<b>Annual Cumulative</b>	<b>0</b>	<b>0</b>	<b>0</b>

\* Discharge criteria as outlined in *Metal and Diamond Mining Effluent Regulations*.

Acute Lethality testing conducted as outlined in Part F Item 22 and Part I Item 14

**Table 3. Water usage, January 2019**

Month	Windy Lake (ST-7A)	Doris Lake (ST-7)					Total Usage
	Domestic Water (m <sup>3</sup> )	Domestic Water (m <sup>3</sup> )	Surface Exploration (m <sup>3</sup> )	Industrial Usage* (m <sup>3</sup> )	Dust Suppression (m <sup>3</sup> )	Winter Track (m <sup>3</sup> )	
January	1,438	0	0	16	0	432	1,886
<b>Annual Total</b>	1,438	0	0	16	0	432	1,886
<b>Annual Allowance</b>	<b>43,800</b>			<b>1,930,000</b>		<b>60,000</b>	<b>2,033,800</b>

As permitted by water licence 2AM-DOH1335 Part E Item 1 and Part I Item 5(a)(b).

\* Includes industrial uses such as mining, core processing, concrete batching, etc.

**Table 4. Volume of Reclaim Water from the TIA for Process Water, January 2019**

Month	Reclaim Water (m <sup>3</sup> ) *
January	64,572
<b>Annual Cumulative</b>	<b>64,572</b>

\* As per Part E Item 5 and Part I Item 5(c)

Numbers rounded to the nearest cubic meter.

Table 5. Waste Rock and Process Volumes, January 2019

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 (m³)	Quantity of Ore Processed** (tonnes)	Total Dry Tailings Placed in TIA** (tonnes)	Total Dry Detoxified Tailings Placed Underground** (tonnes)
December Balance	-	-	-	-	838,227	-	1,287,608	510,092	-	-	-
January	37,535	29,226	8,326	13,394	838,210	27,861	1,259,747	523,016	45,387	44,133	1,054
Cumulative Total	37,535	29,226	8,326	13,394	838,210	27,861	1,259,747	523,016	45,387	44,133	1,054

\* As per Part I Item 5(d)(e)

\*\* As per Part I Item 6

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 detoxified tailings was returned underground compared to the volume of void space created from new mining activities. Cumulative volumes of waste rock and available volume for backfill for the December Balance were modified due to a year end reconciliation completed after submission of the December 2018 monthly monitoring report.

Table 7. Doris Lake Water Level (ST-12), January 2019

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	21.726	21.747	21.739	0.011	0.019	21.347

As per Part I Item 1 and outlined in the Hope Bay Project Aquatic Effects Monitoring Plan.

\* 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.

### **Waste Management (Part F Item 10 and 11)**

Empty cargo aircraft were utilized for waste backhaul from the Doris Camp. A total of 13 totes (approximately 13 m<sup>3</sup>) of waste oil and 4 totes (approximately 4 m<sup>3</sup>) of waste glycol were transported to KBL Environmental in Yellowknife to arrange for final remediation and/or disposal this month.

### **Summary of Assessments of Water Balance and Water Quality Model (Part F Item 24 and Part I Item 12 c)**

Average monthly water quality, hydrologic, and climatic monitoring data were collected while in operations during January. 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 2019.

### **Thermal Monitoring (Part I Items 7, 8 and Schedule I)**

Thermal monitoring undertaken as per Part I Items 7, 8 and Schedule I is reported in the annual Geotechnical Report.

### **Site Freshet and Precipitation Conditions (Part I Item 12(d))**

Visual monitoring was conducted of the diversion berm and site runoff structures. No issues were identified as these facilities were frozen.

### **Incident Reporting**

No incidents pertaining to this licence occurred this month.

Should there be any questions regarding this monthly report, please contact [enviro@tmacresources.com](mailto:enviro@tmacresources.com).

Yours sincerely,



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Figure 3. 2AM-DOH1335 SNP Monitoring Locations

