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Re: September 2015 – 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, and additional requirements from AANDC. Licence items include:

- Part E (Conditions applying to Water Use) Item 1;
- Part G (Conditions Applying to Waste Management and Waste Management Plans) Items 1, 3(b) and 23 (a), 24 (c, e), 28, 29, 30, 32;
- Part J (Conditions Applying to General and Aquatic Effects Monitoring) Items 4(a), 8, 12 (a, d, g), 14, 15, 16, 20 and 21(e, f).

Other monitoring requirements stipulated in the licence refer to facilities that have not been constructed. During the subject period of this report the focus of activities at Doris North was surface exploration drilling, underground test work, water management and environmental compliance. Sampling locations monitored under this licence (seasonally or when facilities are operational) are provided in Figure 1.

Part E: Conditions Applying to Water Use

Item 1: Water Usage and Part J, Item 12(a) Water Volume

A discrepancy in the tracking of water used for surface drilling was identified during an inspection by AANDC staff on September 26, 2015. The volumes of water extracted for surface drilling have been corrected to account for this discrepancy and tracking procedures have been adjusted to capture this additional volume. Surface drilling in the 2AM-DOH1323 licence area commenced in August, 2015. The correct total volume of water extracted for surface drilling in August was 149 m^3 (80 m^3 more than was reported in the August SNP report). Volumes recorded for September discussed below were calculated in accordance with the correct method.

A total of 597 m^3 of water was extracted from Windy Lake for domestic use this month as permitted by water licences 2BE-HOP1222 and 2AM-DOH1323. A total of 399 m^3 of water was used under the 2AM-DOH1323 licence for surface drilling in support of the Doris North mine this month. Water used for surface drilling in September in support of the Regional Exploration program is reported under 2BE-HOP1222. 147 m^3 of water was used for underground drilling and other industrial purposes in support of the Doris North mine development. 345 m^3 of water was used for dust suppression on site roads this month. Water usage is presented in Table 1.

Table 1: Water usage, in cubic meters, September 2015

Water Usage	Domestic Water Use from Windy Lake ST-7a (m^3)	All Other Water Use* (m^3)	Total (m^3)
Monthly Total	597	891	1488
Annual Cumulative	2909	1967	4876

**Includes industrial uses such as surface and underground drilling, dust suppression, concrete batching, etc.*

Schedule J: Water Quality Monitoring at Water Intake

Monthly water quality samples were taken from monitoring stations ST-7 (Doris Lake raw water) and ST-7a (Windy Lake raw water) in accordance with the Schedule J requirements of the licence. Water quality results are presented in Table 2 below.

Table 2: Monthly Compliance Sample Results for ST-7 and ST-7a, September 2015

		Sample ID	ST7-22SEP15A	ST7-22SEP15B^	ST7A-01SEP15
		ALS ID	L1676829-1	L1676829-2	L1666413-1
		Date Sampled	9/22/2015 8:00:00 AM	9/22/2015 8:00:00 AM	9/1/2015 8:15:00 AM
Parameter	**Units**	**Detection Limit**	**Water**	**Water**	**Water**
Hardness (as CaCO3)	mg/L	0.5	47.4	47.7	71.2
pH	pH	0.1	7.65	7.62	8.11
Total Suspended Solids	mg/L	3	5.7	4.5	<3.0
Ammonia, Total (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	0.001	<0.0010	<0.0010	<0.0010
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.002	0.0223	0.0107	<0.0020
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050
Fecal Coliforms	CFU/100mL	1	<1	<1	<1*
Total cyanobacterial cell count	cells/mL	1	111000	116000	<1*
Aluminum (Al)-Total	mg/L	0.005	0.0551	0.0569	0.0897
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	mg/L	0.1	8.56	8.63	12.8
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030	<0.00030
Copper (Cu)-Total	mg/L	0.001	0.0052	0.0046	<0.0010
Iron (Fe)-Total	mg/L	0.03	0.629	0.925	0.084
Lead (Pb)-Total	mg/L	0.0005	0.00058	<0.00050	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0033	0.0033	0.0029
Magnesium (Mg)-Total	mg/L	0.1	6.32	6.34	9.54
Manganese (Mn)-Total	mg/L	0.0003	0.0164	0.0194	0.00322
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010
Potassium (K)-Total	mg/L	2	2.4	2.4	3.9
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050	<0.000050
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020
Sodium (Na)-Total	mg/L	2	33.4	33.5	51.2
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<0.010
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020
Vanadium (V)-Total	mg/L	0.001	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	0.005	0.0056	<0.0050	<0.0050
Biochemical Oxygen Demand	mg/L	2	<2.0	<2.0	<2.0
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0
Oil And Grease (Visible Sheen)		n/a	No	No	NO
Microcystin	ug/L	0.2	-	-	<0.20*

** results on Lab Work Order L1666560-1 for Potable Water Station PDC10 (same location as ST-7a)*

^ Duplicate sample.

Part G: Conditions Applying to Waste Management and Waste Management Plans.

Item 1: Condition to Provide Notice of a Planned Discharge

Notification of planned discharges from facilities under this licence was provided to the Inspector on May 13, 2015.

Item 3(b): Conditions Applying to Sewage Effluent Quality and Schedule J, Table 2 Monitoring Requirements: Discharge from Wastewater Treatment Plant in cubic metres.

Monthly compliance samples were taken from monitoring station ST-8 (Wastewater Treatment Plant Effluent) in accordance with the Schedule J requirements of the licence (Table 3). All parameters were in compliance with discharge criteria.

Table 3: Monthly Compliance Sample Results for ST-8B, September 2015

		Sample ID	ST8B-15SEP15	Part G Item 3(b)	
		ALS ID	L1673168-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
		Date Sampled	9/15/2015 8:45:00 AM		
Parameter	**Units**	**Detection Limit**	**Water**		
pH	pH	0.1	8.13	6.0 - 9.0	9.0
Total Suspended Solids	mg/L	3	<3.0	100	100
Fecal Coliforms	CFU/ 100mL	1	<1	10,000	10,000
Biochemical Oxygen Demand (BOD_5)	mg/L	1	<2.0	80	80
Oil and Grease	mg/L	5	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	No	No Visible Sheen	No Visible Sheen

Bold/shading indicates exceedance of Part G Item 3(b) Maximum Concentration in a Grab Sample.

This month, 512 m^3 of treated effluent was discharged from the sewage treatment plant.

Schedule J, Table 2 Monitoring Requirements: Runoff from Waste Water Treatment Plant Discharge (ST-9)

Monthly water quality samples were taken from monitoring station ST-9 (Runoff from Wastewater Treatment Plant Effluent) in accordance with the Schedule J requirements of the licence. Water quality results are presented in Table 4 below.

Table 4: Monthly Compliance Sample Results for ST-9, September 2015

		Sample ID	ST9-15SEP15
		ALS ID	L1673168-2
		Date Sampled	9/15/2015 9:30:00 AM
Parameter	**Units**	**Detection Limit**	**Water**
pH	pH	0.10	7.86
Total Suspended Solids	mg/L	3.00	8.60
Fecal Coliforms	CFU/ 100mL	1.00	<1
Biochemical Oxygen Demand (BOD_5)	mg/L	1.00	<2.0
Oil and Grease	mg/L	5.00	<5.0
Oil And Grease (Visible Sheen)		n/a	No

Item 23(a): Water Discharged from the Sedimentation Pond (ST-1) and Reagent and Cyanide Storage Facility Sumps (ST-11) and Schedule J, Table 2 Monitoring Requirements

Water quality samples were collected from monitoring station ST-1 in accordance with Schedule J of the licence. Results are provided in Table 5 below. Levels of ammonia and zinc exceeded the criteria for discharge to tundra in Part G Item 23(a), though water is not discharged to tundra from this facility. 760 m^3 of water was discharged from the Sedimentation Pond (ST-1) to the Tailings Impoundment Area (TIA) this month in accordance with Part G Item 23(d) of the licence. The pumping of water from the ST-1 to the TIA was concluded on September 26, 2015.

In September, 1007 m^3 of water was pumped from the Pollution Control Pond (ST-2) to ST-1. Monitoring was undertaken at the Pollution Control Pond (ST-2) this month in accordance with the requirements of Schedule J, Table 2 of the licence. Results are presented in Table 6 below. The pumping of water from the Pollution Control Pond to the Sedimentation Pond was concluded on September 30, 2015.

Table 5: Monthly Compliance Sample Results for ST-1, September 2015

		Sample ID	ST1-10SEP15A	ST1-10SEP15B^	Part G Item 23(a)	
		ALS ID	L1672060-1	L1672060-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
		Date Sampled	9/10/2015 5:30:00 PM	9/10/2015 5:30:00 PM		
Parameter	Units	Detection Limit	Water	Water		
Hardness (as CaCO3)	mg/L	0.5	1640	1640		
pH	pH	0.1	7.93	7.95	6.0 - 9.0	9.0
Total Suspended Solids	mg/L	3	6.4	5	15.0	30.0
Alkalinity, Total (as CaCO3)	mg/L	1	129	128		
Ammonia, Total (as N)	mg/L	0.005	**19.9**	**20.1**	2.0	4.0
Bromide (Br)	mg/L	0.5	<2.5 *	<2.5 *		
Chloride (Cl)	mg/L	5	1700	1690		
Fluoride (F)	mg/L	0.2	<1.0 *	<1.0 *		
Nitrate (as N)	mg/L	0.05	78.1	77.3		
Nitrite (as N)	mg/L	0.01	0.84	0.84		
Sulfate (SO4)	mg/L	5	162	162		
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	1.0	2.0
Aluminum (Al)-Total	mg/L	0.005	0.0407	0.0376	1.0	2.0
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050		
Arsenic (As)-Total	mg/L	0.0005	0.00146	0.00091	0.05	0.10
Barium (Ba)-Total	mg/L	0.02	0.093	0.09		
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010		
Boron (B)-Total	mg/L	0.1	0.42	0.4		
Cadmium (Cd)-Total	mg/L	0.00001	0.000263	0.000261		
Calcium (Ca)-Total	mg/L	0.1	545	533		
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010		
Cobalt (Co)-Total	mg/L	0.0003	0.00421	0.00406		
Copper (Cu)-Total	mg/L	0.001	0.0106	0.0094	0.02	0.30
Iron (Fe)-Total	mg/L	0.03	0.186	0.183	0.30	0.60
Lead (Pb)-Total	mg/L	0.0005	0.00059	0.00055	0.01	0.02
Lithium (Li)-Total	mg/L	0.005	0.0567	0.0546		
Magnesium (Mg)-Total	mg/L	0.1	71.1	68.6		
Manganese (Mn)-Total	mg/L	0.0003	0.975	0.953		
Molybdenum (Mo)-Total	mg/L	0.001	0.0047	0.0045		
Nickel (Ni)-Total	mg/L	0.001	0.0049	0.0047	0.05	0.10
Potassium (K)-Total	mg/L	2	29.8	28.9		
Selenium (Se)-Total	mg/L	0.0001	0.00193	0.0019		
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020		

Sodium (Na)-Total	mg/L	2	476	458		
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020		
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050		
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010		
Uranium (U)-Total	mg/L	0.0002	0.00125	0.0012		
Vanadium (V)-Total	mg/L	0.001	<0.0010 **	<0.0010 **		
Zinc (Zn)-Total	mg/L	0.005	**0.141**	**0.146**	0.01	0.02
Oil and Grease	mg/L	5	<5.0	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	NO	NO	No Visible Sheen	No Visible Sheen

Bold/shading indicates exceedance of Part G Item 23(a) Maximum Average Concentration and/or Maximum Concentration in a Grab Sample.
*Detection Limit Adjusted due to sample matrix effects.
**Detection Limit adjusted for required dilution.
^ Duplicate sample.

Table 6: Water Quality Data Summary for ST-2, September 2015

			Sample ID	**ST2-10SEP15A**	**ST2-10SEP15B^**
			ALS ID	**L1672060-3**	**L1672060-4**
			Date Sampled	**9/10/2015 7:00:00 PM**	**9/10/2015 7:00:00 PM**
Parameter	**Units**	**Detection Limit**		**Water**	**Water**
Hardness (as CaCO3)	mg/L	0.5		2240	1950
pH	pH	0.1		7.64	7.64
Total Suspended Solids	mg/L	3		8.7	13.1
Alkalinity, Total (as CaCO3)	mg/L	1		136	136
Ammonia, Total (as N)	mg/L	0.25		20.9	25.2
Bromide (Br)	mg/L	0.05		3	2.9
Chloride (Cl)	mg/L	0.5		2440	2370
Fluoride (F)	mg/L	0.02		<1.0 *	<1.0 *
Nitrate (as N)	mg/L	0.025		107	104
Nitrite (as N)	mg/L	0.001		0.942	0.915
Sulfate (SO4)	mg/L	0.5		210	204
Cyanide, Total	mg/L	0.005		0.0057 ^^	0.0062 ^^
Aluminum (Al)-Total	mg/L	0.006		0.181	0.097
Antimony (Sb)-Total	mg/L	0.0005		<0.00050	<0.00050
Arsenic (As)-Total	mg/L	0.0005		0.00089	0.00101
Barium (Ba)-Total	mg/L	0.02		0.109	0.111
Beryllium (Be)-Total	mg/L	0.001		<0.0010	<0.0010
Boron (B)-Total	mg/L	0.1		0.46	0.47
Cadmium (Cd)-Total	mg/L	0.00002		0.000349	0.000422
Calcium (Ca)-Total	mg/L	0.1		730	732
Chromium (Cr)-Total	mg/L	0.001		0.0011	<0.0010
Cobalt (Co)-Total	mg/L	0.0003		0.00602	0.00613
Copper (Cu)-Total	mg/L	0.001		0.0073	0.0072
Iron (Fe)-Total	mg/L	0.03		0.426	0.26
Lead (Pb)-Total	mg/L	0.0005		<0.00050	<0.00050
Lithium (Li)-Total	mg/L	0.005		0.0725	0.064
Magnesium (Mg)-Total	mg/L	0.1		89.8	91.7
Manganese (Mn)-Total	mg/L	0.0003		1.38	1.4
Molybdenum (Mo)-Total	mg/L	0.001		0.0053	0.0044
Nickel (Ni)-Total	mg/L	0.001		0.0069	0.007
Potassium (K)-Total	mg/L	2		37.5	37.9
Selenium (Se)-Total	mg/L	0.0002		0.00232	0.00212
Silver (Ag)-Total	mg/L	0.00002		<0.000050 **	<0.000050 **
Sodium (Na)-Total	mg/L	2		599	598
Thallium (Tl)-Total	mg/L	0.0002		<0.00020	<0.00020
Tin (Sn)-Total	mg/L	0.0005		<0.00050	<0.00050
Titanium (Ti)-Total	mg/L	0.01		0.011	<0.010
Uranium (U)-Total	mg/L	0.0002		0.00168	0.00145
Vanadium (V)-Total	mg/L	0.002		<0.0025 **	<0.0025 **

Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050
Oil and Grease	mg/L	5	<5.0	<5.0
Oil And Grease (Visible Sheen)		n/a	NO	NO

* Detection Limit Adjusted due to sample matrix effects.
** Detection Limit adjusted for required dilution
^ Duplicate sample.
^^ Test result for Total Cyanide may be biased high due to interference from high nitrite in this sample. Nitrite can cause false positives for T-CN at up to ~ 0.8% of the nitrite concentration. Interpret result as a maximum possible value.

The Reagent and Cyanide Storage Facility Sumps (ST-11) is not constructed.

Items 24(c): Landfarm Sump (ST-4) and Schedule J, Table 2 Monitoring Requirements

Compliance samples were not required from monitoring station ST-4 (Landfarm Sump) in accordance with the Schedule J requirements of the licence as no water was discharged from this facility during the month.

Items 24(e): Fuel Storage and Containment Facility Sumps (ST-5, ST-6a and ST-6b) and Schedule J, Table 2 Monitoring Requirements

Compliance monitoring samples were not collected at the Doris Tank Farm (ST-5) and Roberts Bay tank farms (ST-6a and ST-6b) in September as no water was discharged from these facilities.

Item 28, 29, 30 and Part J Item 8: Water Quality Discharged from Tailings Impoundment Area (TL-1, TL-2, TL-3 or TL-4.)

Water quality sampling was conducted this month at three stations associated with the TIA discharge (TL-1 through TL-3) in accordance with Part J Item 8 and Schedule J, Table 2 of the licence. Results are presented in Tables 7 through 9 below. All results were in compliance with the licence this month.

Beginning on July 6, 2015, water quality sampling required under the licence for monitoring station TL-4 (end of TIA discharge pipeline) was conducted at monitoring station TL-1 (intake of TIA discharge pipeline). These monitoring stations are at opposite ends of the same discharge line and no water quality treatment is undertaken between the two monitoring stations. During the 2015 discharge period, samples collected at monitoring station TL-1 were analyzed for the licence criteria outlined in Part J Item 8 and Schedule J, Table 2 for monitoring station TL-4.

Due to freezing conditions all discharge from the TIA to Doris Creek was concluded on September 23, 2015.

Table 7: Water Quality Sample Results for TL-1, September 2015

		Sample ID	TL1-8SEP15A	TL1-8SEP15B^	TL1-14SEP15	TL1-21SEP15	Part G Item 28	
		ALS ID	L1669385-1	L1669385-2	L1673349-1	L1676985-1	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
		Date Sampled	9/8/2015 10:05:00 AM	9/8/2015 10:05:00 AM	9/14/2015 4:30:00 PM	9/21/2015 1:20:00 PM		
Parameter	**Units**	**Detection Limit**	**Water**	**Water**	**Water**	**Water**		
Hardness (as CaCO3)	mg/L	0.5	54	54.6	50.5	53.1		
pH	pH	0.1	7.71	7.7	7.77	7.55	6.0 - 9.5	6.0 - 9.5
Redox Potential	mV	-1000	-	-	-	438		
Total Suspended Solids	mg/L	3	<3.0	<3.0	3.3	<3.0	15.00	30.00
Total Dissolved Solids	mg/L	10	137	133	126	130		
Ammonia, Total (as N)	mg/L	0.005	0.0313	0.031	0.0226	0.0343	6	
Bromide (Br)	mg/L	0.05	0.075	0.081	0.08	0.07		
Chloride (Cl)	mg/L	0.5	40.4	40.4	40.1	40.2		
Fluoride (F)	mg/L	0.02	0.051	0.052	0.054	0.056		
Nitrate (as N)	mg/L	0.005	0.0357	0.0353	0.0187	0.0191		
Nitrite (as N)	mg/L	0.001	0.0013	0.0013	<0.0010	<0.0010		
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	0.0011	<0.0010	<0.0010		
Phosphorus (P)-Total	mg/L	0.002	0.0151	0.0136	0.012	0.0119		
Sulfate (SO4)	mg/L	0.5	2.61	2.6	2.7	2.77		
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	1.00	2.00
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050		
Aluminum (Al)-Total	mg/L	0.005	0.0481	0.0465	0.202	0.158		
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050		
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	0.50	1.00
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020	<0.020		
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010		
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10	<0.10		
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050		
Calcium (Ca)-Total	mg/L	0.1	12.1	12.2	11.1	11.7		
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010		
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030	<0.00030	<0.00030		
Copper (Cu)-Total	mg/L	0.001	0.0015	0.0029	0.002	0.0016	0.30	0.60
Iron (Fe)-Total	mg/L	0.03	0.283	0.332	0.359	0.3		
Lead (Pb)-Total	mg/L	0.0005	<0.00050	0.00066	<0.00050	<0.00050	0.20	0.40
Lithium (Li)-Total	mg/L	0.005	0.004	0.004	0.0044	0.0038		
Magnesium (Mg)-Total	mg/L	0.1	5.79	5.87	5.54	5.8		
Manganese (Mn)-Total	mg/L	0.0003	0.0232	0.0239	0.0141	0.0177		
Mercury (Hg)-Total	mg/L	0.00001	0.0000055	0.0000055	<0.0000050	<0.0000050		
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010		
Nickel (Ni)-Total	mg/L	0.001	<0.0010	0.001	<0.0010	<0.0010	0.50	1.00
Potassium (K)-Total	mg/L	2	<2.0	<2.0	<2.0	2		
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050	<0.000050	<0.000050		
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020	<0.000020		
Sodium (Na)-Total	mg/L	2	19.1	19.3	18.2	20.1		
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020		
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050		
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<0.010	<0.010		
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020		
Vanadium (V)-Total	mg/L	0.001	<0.00050	<0.00050	0.0009	<0.00050		
Zinc (Zn)-Total	mg/L	0.005	<0.0050	0.008	0.0073	0.0074	0.50	1.00
Radium 226*	Bq/L	n/a	<0.0100	<0.0100	<0.0100	<0.0100	0.37	1.11
Fecal Coliforms*	CFU/100mL	1	<1	1	-	-	10,000	10,000
BOD (BOD_5)*	mg/L	2	3	2	-	-	80	160

* Analysis included at monitoring station TL-1 to satisfy monitoring requirements at monitoring station TL-4 under Part J Item 8 and Schedule J, Table 2.
Bold/shading indicates exceedance of Part G Item 28 Maximum Average Concentration (mg/L) and/or Maximum Concentration in a Grab Sample.
^ Duplicate sample.

Table 8: Water Quality Sample Results for TL-2, September 2015

		Sample ID	TL2-8SEP15	TL2-14SEP15	TL2-21SEP15	Part G Item 30
		ALS ID	L1669385-3	L1673349-2	L1676985-2	Maximum Concentration of Any Grab Sample (mg/L)
		Date Sampled	9/8/2015 10:25:00 AM	9/14/2015 5:10:00 PM	9/21/2015 9:00:00 AM	
Parameter	**Units**	**Detection Limit**	**Water**	**Water**	**Water**	
Hardness (as CaCO3)	mg/L	0.5	48.2	46.1	46.9	
pH	pH	0.1	7.9	7.94	7.64	6.0 - 9.0
Total Suspended Solids	mg/L	3	6	6.6	9.8	15.0
Total Dissolved Solids	mg/L	10	164	150	149	
Ammonia, Total (as N)	mg/L	0.005	<0.0050	0.007	<0.0050	1.54
Bromide (Br)	mg/L	0.05	0.199	0.2	0.201	
Chloride (Cl)	mg/L	0.5	59.9	60.8	60.1	150
Fluoride (F)	mg/L	0.02	0.047	0.051	0.052	
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050	2.9
Nitrite (as N)	mg/L	0.001	<0.0010	<0.0010	<0.0010	0.060
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010	<0.0010	
Phosphorus (P)-Total	mg/L	0.002	0.0253	0.0233	0.0262	
Sulfate (SO4)	mg/L	0.5	2.69	2.91	2.69	
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	0.010
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050	0.005
Aluminum (Al)-Total	mg/L	0.005	0.0712	0.0769	0.0748	0.100
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.0050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020	
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10	
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	0.000017
Calcium (Ca)-Total	mg/L	0.1	8.71	8.29	8.48	
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030	<0.00030	
Copper (Cu)-Total	mg/L	0.001	0.0015	0.0015	0.0015	0.002
Iron (Fe)-Total	mg/L	0.03	0.142	0.133	0.121	0.300
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.001
Lithium (Li)-Total	mg/L	0.005	0.0035	0.0037	0.0034	
Magnesium (Mg)-Total	mg/L	0.1	6.41	6.17	6.25	
Manganese (Mn)-Total	mg/L	0.0003	0.018	0.0193	0.016	
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	0.000026
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	0.073
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	0.025
Potassium (K)-Total	mg/L	2	2.3	2.2	2.3	
Selenium (Se)-Total	mg/L	0.0001	0.000065	<0.000050	<0.000050	0.0010
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020	0.0001
Sodium (Na)-Total	mg/L	2	31.7	30.6	32.4	
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	0.0008
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<0.010	
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	
Vanadium (V)-Total	mg/L	0.001	<0.00050	0.00084	<0.00050	
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	0.030

Bold/shading indicates exceedance of Part G Item 30 Maximum Concentration in a Grab Sample at the background station TL2

Table 9: Water Quality Sample Results for TL-3, September 2015

		Sample ID	TL3-8SEP15	TL3-14SEP15	TL3-21SEP15	Part G Item 30
		ALS ID	L1669385-4	L1673349-3	L1676985-3	Maximum Concentration of Any Grab Sample (mg/L)
		Date Sampled	9/8/2015 10:35:00 AM	9/14/2015 4:55:00 PM	9/21/2015 8:15:00 AM	
Parameter	**Units**	**Detection Limit**	**Water**	**Water**	**Water**	
Hardness (as CaCO3)	mg/L	0.5	47.6	46.8	47.4	

pH	pH	0.1	7.87	7.75	7.57	6.0 - 9.0
Total Suspended Solids	mg/L	3	6.2	7.4	10.4	15.0
Total Dissolved Solids	mg/L	10	158	152	149	
Ammonia, Total (as N)	mg/L	0.005	<0.0050	0.0052	0.0076	1.54
Bromide (Br)	mg/L	0.05	0.191	0.198	0.193	
Chloride (Cl)	mg/L	0.5	58.4	58.6	58.1	150
Fluoride (F)	mg/L	0.02	0.048	0.05	0.053	
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050	2.9
Nitrite (as N)	mg/L	0.001	<0.0010	<0.0010	<0.0010	0.060
Orthophosphate-Dissolved (as P)	mg/L	0.001	0.0011	<0.0010	<0.0010	
Phosphorus (P)-Total	mg/L	0.002	0.0238	0.0253	0.0139	
Sulfate (SO4)	mg/L	0.5	2.56	2.65	2.68	
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	0.010
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050	0.005
Aluminum (Al)-Total	mg/L	0.005	0.0717	0.0801	0.0861	0.100
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.0050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020	
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10	
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	0.000017
Calcium (Ca)-Total	mg/L	0.1	8.8	8.65	8.78	
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030	<0.00030	
Copper (Cu)-Total	mg/L	0.001	0.0014	0.0015	0.0015	0.002
Iron (Fe)-Total	mg/L	0.03	0.168	0.166	0.151	0.300
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.001
Lithium (Li)-Total	mg/L	0.005	0.0036	0.0038	0.0033	
Magnesium (Mg)-Total	mg/L	0.1	6.23	6.12	6.18	
Manganese (Mn)-Total	mg/L	0.0003	0.0197	0.0202	0.0181	
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	0.000026
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	0.073
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	0.025
Potassium (K)-Total	mg/L	2	2.2	2.1	2.3	
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050	<0.000050	0.0010
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020	0.0001
Sodium (Na)-Total	mg/L	2	29.8	29.3	31.1	
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	0.0008
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<0.010	
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	
Vanadium (V)-Total	mg/L	0.001	<0.00050	0.00095	<0.00050	
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	0.030
Hexavalent Chromium	mg/L	0.001	<0.0010	<0.0010	<0.0010	0.0010
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	5
Oil And Grease (Visible Sheen)		n/a	No	No	No	

Bold/shading indicates exceedance of the greater of background concentration at station TL2 or Part G Item 30 - Maximum Concentration in a Grab Sample.

Item 32: Tailings Impoundment Area Discharge Volume – Comparison of Flows at TL-4 and TL-2

Discharge from the TIA began June 30, 2015 and continued to September 23, 2015 at which time freezing conditions prevented ongoing pumping. The hydrological monitoring station at TL-2 was also removed and Doris Creek flow predictions were stopped. A comparison of flows for this month is presented in Table 10 below. Discharge at TL-4 marginally exceeded the 10% allowable discharge criteria to Doris Creek on three dates this month; September 2, 2015 by 7 m^3 (equivalent to 10.01% of creek discharge), September 7, 2015 by 307 m^3 (10.4%), and September 11, 2015 by 103 m^3 (10.1%). All other discharges during the month were within allowable volumes.

Table 10: Comparison of Flows at TL-4 and TL-2, September 2015

Date	TL-4 Discharge (m^3)	10% of TL-2 Flow (Predicted) (m^3)
September-01-15	6946.72	7038
September-02-15	**7072.54**	7066
September-03-15	7058.39	8458
September-04-15	7857.37	8377
September-05-15	8052.68	8158
September-06-15	7796.36	8047
September-07-15	**8245.75**	7939
September-08-15	7921.7	7923
September-09-15	7633.52	7844
September-10-15	7604.97	7766
September-11-15	**7762.03**	7659
September-12-15	7426.42	7655
September-13-15	7422.5	7429
September-14-15	7085.49	7135
September-15-15	7002.43	7049
September-16-15	6636.92	6865
September-17-15	6460.38	6689
September-18-15	6398.25	6581
September-19-15	6478.01	6523
September-20-15	6367.24	6468
September-21-15	6353.23	6434
September-22-15	6364.63	6379
September-23-15	6312.88	6325
September-24-15	0	No prediction*
September-25-15	0	No prediction*
September-26-15	0	No prediction*
September-27-15	0	No prediction*
September-28-15	0	No prediction*
September-29-15	0	No prediction*
September-30-15	0	No prediction*

*No prediction (hydrological monitoring station decommissioned for winter)
Bold/shading indicates exceedance of 10% allowable discharge.

Schedule J: Tailings Impoundment Area Water Quality (TL-10)

Monitoring at TL-10 is conducted annually prior to the deposition of tailings into the Tailings Impoundment Area. This monitoring was conducted on August 7, 2015 and results were presented in the August monthly SNP report.

Part J: Conditions Applying to General and Aquatics Effects Monitoring

Item 4(a): TIA Discharge Quality – Water Quality Comparison/Deviations

Water quality samples were collected at three monitoring stations associated with the TIA discharge this month; all sample results were below the discharge criteria.

Item 8 and Schedule J, Monitoring Requirements: Acute Lethality Testing (TL-1 and TL-4)

Acute lethality testing was conducted in mid-August. The results of this monitoring were presented in the August SNP report.

Item 12d: Tonnages of Waste Rock Stored on the Temporary Waste Rock Pad

Underground test mining restarted in April 2015 and modifications to the existing vent raise were also started. The waste rock produced from the test mining program will be stored underground until October 2015 when waste rock will be hauled to surface for storage on the temporary waste rock pad. The volume of waste rock brought to surface will be tracked and changes to the total volume will be reported in future SNP reports. The current total volume of waste rock on the temporary waste rock pad is 189,607 tonnes, as per the December 2011 survey.

Item 12g: Tail Lake Ice Thickness

Ice thickness measurement on the TIA is only required following deposition of tailings.

Item 14, 15, 16 and Schedule J, Monitoring Requirements: Thermal Monitoring

Thermal monitoring undertaken under this part is reported in the annual Geotechnical Inspection Report.

Item 20: Daily Visual Monitoring of Discharges to Tundra

No discharges to tundra occurred during this period. During periods of discharge monitoring observations will be documented.

Item 21 (e) Daily Visual Assessment of Suspended Sediment at TIA

During sample collection at station TL-1 and during weekly dam inspections, visual assessments were made for suspended sediment at the TIA. No suspended sediment was noted during the month.

Item 21 (f) Doris North Camp Diversion Berm Effectiveness

During spring melt and after heavy rainfall events, visual observations were made of runoff associated with the diversion berm. No sedimentation was noted and water is effectively routed away from camp facilities.

Environmental Incident Reporting

No incidents occurred pertaining to this licence during the period.

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

Yours sincerely,

M. John Roberts
Vice President, Environmental Affairs
Hope Bay Project
(416) 628-0216

cc. Eva Paul, Water Resources Officer, AANDC

Figure 1. 2AM-DOH1323 SNP Monitoring Locations