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Re: August 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 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

520 m³ 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 69 m³ 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 August in support of the Regional Exploration program is reported under 2BE-HOP1222. 90 m³ of water was used for underground drilling purposes in support of the Doris North mine development. 259 m³ 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, August 2015

Water Usage	Domestic Water Use from Windy Lake ST-7a (m ³)	All Other Water Use* (m ³)	Total (m ³)
Monthly Total	520	553	1073
Annual Cumulative	2311	996	3307

**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, August 2015

Sample ID			ST7-25AUG15	ST7A-04AUG15
ALS ID			L1662919-1	L1652326-1
Date Sampled			8/25/2015 8:05:00 AM	8/4/2015 8:15:00 AM
Parameter	Units	Detection Limit	Water	Water
Hardness (as CaCO ₃)	mg/L	0.5	59.8	70.2
pH	pH	0.1	7.74	7.92
Total Suspended Solids	mg/L	3	6.4	4.5
Ammonia, Total (as N)	mg/L	0.005	<0.0050	<0.0050
Nitrate (as N)	mg/L	0.005	0.2	<0.0050
Nitrite (as N)	mg/L	0.001	0.0029	<0.0010
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.002	0.0316	0.0061
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050
Fecal Coliforms	CFU/100mL	1	<1	10*
Total cyanobacterial cell count	cells/mL	1	17800	424*
Aluminum (Al)-Total	mg/L	0.005	0.0639	0.161
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<0.00050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010
Boron (B)-Total	mg/L	0.1	<0.10	<0.10
Cadmium (Cd)-Total	mg/L	0.000005	<0.0000050	<0.0000050
Calcium (Ca)-Total	mg/L	0.1	12.5	12.4
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030
Copper (Cu)-Total	mg/L	0.001	0.0015	0.0013
Iron (Fe)-Total	mg/L	0.03	0.151	0.17
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050
Lithium (Li)-Total	mg/L	0.001	0.0036	0.003
Magnesium (Mg)-Total	mg/L	0.1	6.96	9.5
Manganese (Mn)-Total	mg/L	0.0003	0.0208	0.00851
Mercury (Hg)-Total	mg/L	0.000005	<0.0000050	<0.0000050
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010
Potassium (K)-Total	mg/L	2	2.5	3.8
Selenium (Se)-Total	mg/L	0.00005	<0.000050	<0.000050
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020
Sodium (Na)-Total	mg/L	2	34.5	52.5
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	<0.00020	<0.00020
Vanadium (V)-Total	mg/L	0.0005	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050
Biochemical Oxygen Demand	mg/L	2	3	<2.0
Oil and Grease	mg/L	5	<5.0	<5.0
Oil And Grease (Visible Sheen)		n/a	NO	NO
Microcystin	ug/L	0.2	-	<0.20*

* Results on Lab Work Order L1652406-1 for Potable Water Station PDC10 (same location as ST-7a)

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, August 2015

Sample ID			ST8B-04AUG15	Part G Item 3(b)	
ALS ID			L1652332-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			8/4/2015 9:00:00 AM		
Parameter	Water	Detection Limit	Water		
pH	pH	0.1	7.93	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; however, no exceedances were noted.

This month, 411 m³ 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, August 2015

Sample ID			ST9-18AUG15A	ST9-18AUG15B	BLANKT-18AUG15	BLANKF-18AUG15
ALS ID			L1659415-1	L1659415-2	L1659415-3	L1659415-4
Date Sampled			8/18/2015 8:30:00 AM	8/18/2015 8:30:00 AM	8/18/2015 8:30:00 AM	8/18/2015 8:30:00 AM
Parameter	Units	Detection Limit	Water	Water	Water	Water
pH	pH	0.10	8.06	7.99	5.50	6.13
Total Suspended Solids	mg/L	3.00	10.20	12.90	<3.0	<3.0
Fecal Coliforms	CFU/100mL	1.00	1.00	<1	-	<1
Biochemical Oxygen Demand (BOD ₅)	mg/L	1.00	<2.0	<2.0	<2.0	<2.0
Oil and Grease	mg/L	5.00	<5.0	<5.0	<5.0	<5.0
Oil And Grease (Visible Sheen)		n/a	NO	NO	NO	NO

BLANKT and BLANKF are trip and field blanks respectively

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. 3340 m³ 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. In August, 2884 m³ 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.

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

Sample ID			ST1-10AUG15	Part G Item 23(a)	
ALS ID			L1656544-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			8/10/2015 11:30:00 AM		
Parameter	Units	Detection Limit	Water		
Hardness (as CaCO ₃)	mg/L	0.5	707		
pH	pH	0.1	8.04	6.0 - 9.0	9.0
Total Suspended Solids	mg/L	3	<3.0	15.0	30.0
Alkalinity, Total (as CaCO ₃)	mg/L	1	125		
Ammonia, Total (as N)	mg/L	0.005	5.97	2.0	4.0
Bromide (Br)	mg/L	0.5	<1.0 *		
Chloride (Cl)	mg/L	5	642		
Fluoride (F)	mg/L	0.2	<0.40 *		
Nitrate (as N)	mg/L	0.05	35.3		
Nitrite (as N)	mg/L	0.01	0.507		
Sulfate (SO ₄)	mg/L	5	126		
Cyanide, Total	mg/L	0.005	<0.0050	1.0	2.0
Aluminum (Al)-Total	mg/L	0.005	0.0966	1.0	2.0
Antimony (Sb)-Total	mg/L	0.0005	<0.00050		
Arsenic (As)-Total	mg/L	0.0005	0.00095	0.05	0.10
Barium (Ba)-Total	mg/L	0.02	0.042		
Beryllium (Be)-Total	mg/L	0.001	<0.0010		

Boron (B)-Total	mg/L	0.1	0.37		
Cadmium (Cd)-Total	mg/L	0.00001	0.0000746		
Calcium (Ca)-Total	mg/L	0.1	215		
Chromium (Cr)-Total	mg/L	0.001	<0.0010		
Cobalt (Co)-Total	mg/L	0.0003	0.00215		
Copper (Cu)-Total	mg/L	0.001	0.0067	0.02	0.30
Iron (Fe)-Total	mg/L	0.03	0.154	0.30	0.60
Lead (Pb)-Total	mg/L	0.0005	<0.00050	0.01	0.02
Lithium (Li)-Total	mg/L	0.005	0.0246		
Magnesium (Mg)-Total	mg/L	0.1	37.3		
Manganese (Mn)-Total	mg/L	0.0003	0.343		
Molybdenum (Mo)-Total	mg/L	0.001	0.005		
Nickel (Ni)-Total	mg/L	0.001	0.0025	0.05	0.10
Potassium (K)-Total	mg/L	2	15.7		
Selenium (Se)-Total	mg/L	0.0001	0.00155		
Silver (Ag)-Total	mg/L	0.00002	<0.000020		
Sodium (Na)-Total	mg/L	2	241		
Thallium (Tl)-Total	mg/L	0.0002	<0.00020		
Tin (Sn)-Total	mg/L	0.0005	<0.00050		
Titanium (Ti)-Total	mg/L	0.01	0.011		
Uranium (U)-Total	mg/L	0.0002	0.00106		
Vanadium (V)-Total	mg/L	0.001	0.0008		
Zinc (Zn)-Total	mg/L	0.005	0.0906	0.01	0.02
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 23(a) Maximum Average Concentration and/or Maximum Concentration in a Grab Sample

*Detection Limit Adjusted due to sample matrix effects.

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

Sample ID			ST2-10AUG15
ALS ID			L1656544-2
Date Sampled			8/10/2015 11:45:00 AM
Parameter	Units	Detection Limit	Water
Hardness (as CaCO ₃)	mg/L	0.5	774
pH	pH	0.1	7.6
Total Suspended Solids	mg/L	3	6.5
Alkalinity, Total (as CaCO ₃)	mg/L	1	133
Ammonia, Total (as N)	mg/L	0.25	5.63
Bromide (Br)	mg/L	0.05	1
Chloride (Cl)	mg/L	0.5	725
Fluoride (F)	mg/L	0.02	<0.40 *
Nitrate (as N)	mg/L	0.025	38.2
Nitrite (as N)	mg/L	0.001	0.507
Sulfate (SO ₄)	mg/L	0.5	155
Cyanide, Total	mg/L	0.005	<0.0050
Aluminum (Al)-Total	mg/L	0.006	0.139
Antimony (Sb)-Total	mg/L	0.0005	<0.00050
Arsenic (As)-Total	mg/L	0.0005	0.00089
Barium (Ba)-Total	mg/L	0.02	0.036
Beryllium (Be)-Total	mg/L	0.001	<0.0010
Boron (B)-Total	mg/L	0.1	0.38
Cadmium (Cd)-Total	mg/L	0.00002	0.0000988
Calcium (Ca)-Total	mg/L	0.1	229
Chromium (Cr)-Total	mg/L	0.001	<0.0010
Cobalt (Co)-Total	mg/L	0.0003	0.00229
Copper (Cu)-Total	mg/L	0.001	0.006
Iron (Fe)-Total	mg/L	0.03	0.276

Lead (Pb)-Total	mg/L	0.0005	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0273
Magnesium (Mg)-Total	mg/L	0.1	41.1
Manganese (Mn)-Total	mg/L	0.0003	0.442
Molybdenum (Mo)-Total	mg/L	0.001	0.0055
Nickel (Ni)-Total	mg/L	0.001	0.0032
Potassium (K)-Total	mg/L	2	16.3
Selenium (Se)-Total	mg/L	0.0002	0.00177
Silver (Ag)-Total	mg/L	0.00002	<0.000020
Sodium (Na)-Total	mg/L	2	262
Thallium (Tl)-Total	mg/L	0.0002	<0.00020
Tin (Sn)-Total	mg/L	0.0005	<0.00050
Titanium (Ti)-Total	mg/L	0.01	0.015
Uranium (U)-Total	mg/L	0.0002	0.00131
Vanadium (V)-Total	mg/L	0.002	0.00107
Zinc (Zn)-Total	mg/L	0.005	<0.0050
Oil and Grease	mg/L	5	<5.0
Oil And Grease (Visible Sheen)		n/a	NO

* Detection Limit Adjusted due to sample matrix effects.

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

Following the July observations of an oily sheen, water at Landfarm was treated using an oil/water separator from August 13-16, 2015. Pre-discharge compliant water quality samples for ST-4 were collected on August 16, 2015. This month, 105 m³ of water was discharged from the Landfarm Sump (ST-4). Daily water quality samples were collected from monitoring station ST-4 in accordance with Schedule J, Table 2 of the licence. All parameters were in compliance with discharge criteria in accordance with Part G Items 24(c) and 24(d) of the licence. Results are provided in Table 7.

Table 7: Pre-Discharge Water Quality Results for ST-4, August 2015

Sample ID			ST4-16AUG15	ST4-27AUG15	Part G Item 24(c)	
ALS ID			L1659477-1	L1665001-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			8/16/2015 11:00:00 AM	8/27/2015 1:37:00 PM		
Parameter	Units	Detection Limit	Water	Water		
pH	pH	0.1	8.18	8.3	6.0-9.0	9
Total Suspended Solids	mg/L	3	14.8	6	15.0	30.0
Total Oil and Grease	mg/L	5	<5.0	<5.0	5.0	10.0
Oil And Grease (Visible Sheen)		n/a	NO	NO	No Visible Sheen	No Visible Sheen
Total Ammonia - N	mg/L	0.005	<0.0050	0.866	2.0	4.0
Total Lead	mg/L	0.00005	0.000128	0.00015	0.01	0.02
Benzene	mg/L	0.0005	<0.00050	<0.00050	0.37	
Toluene	mg/L	0.0005	<0.00050	<0.00050	0.002	
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	0.090	

Bold/shading indicates exceedance of Part G Item 24(c) Maximum Concentration in a Grab Sample.

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

Monitoring was conducted daily during discharges from the fuel storage and containment facilities this month. Compliant berm water (or berm water with TSS as the only elevated parameter) was used for dust suppression

and other industrial purposes; permission was granted for this use by the Inspector on May 14, 2015. High TSS water is also permitted to be discharged to the overburden stockpile adjacent to ST-6a.

Compliance monitoring samples were collected prior to discharge and daily during discharge at the Doris Tank Farm (ST-5) and Roberts Bay tank farms (ST-6a and ST-6b) this month. Results of water quality monitoring at ST-5, ST-6a and ST-6b are presented in Tables 8 through 10 below. All results were in compliance with the licence for tundra discharge at stations ST-5, ST-6a and ST-6b.

On July 25, 2015 a visible sheen was reported on water pooled in ST-6a immediately following heavy rains. Hydrocarbon products appeared to be present, though volumes were estimated to be less than 40L. Spill pads and booms were applied to the water surface and an oil-water separator was used to treat the standing water. Water quality samples collected from ST-6a were analyzed for TPH, VOCs, BTEX and F1-F2 hydrocarbon fractions in addition to standard Oil and Grease analysis. Results indicate the spilled product was an F2 hydrocarbon; concentrations in sample analysis did not exceed 1.6 mg/L. Since temporary decommissioning of the bulk fuel storage tank in the containment berm at ST-6a, the berm area has been used for storage of other hydrocarbon products. A leak from one of these containers and/or the saturation from rain water of an unknown historic spill is suspected as the potential source of the product.

While August pre-discharge results did not exceed tundra discharge criteria, as a precautionary measure water was discharged to the Tailings Impoundment Area (TIA) and recycled for use in underground test mining work.

Table 8: Pre-Discharge and Daily Discharge Compliance Monitoring Water Quality Data for ST-5, August 2015

Sample ID			ST5-08AUG15	Part G Item 24(e)	
ALS ID			L1654734-4	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			8/8/2015 7:50:00 AM		
Parameter	Units	Detection Limit	Water		
pH	pH	0.1	8.19	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	<0.000050	0.01	0.02
Oil and Grease	mg/L	5	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	NO		
Benzene	mg/L	0.0005	<0.00050	0.37	
Ethylbenzene	mg/L	0.0005	<0.00050	0.090	
Toluene	mg/L	0.0005	<0.00050	0.002	

Bold/shading indicates exceedance of Part G Item 24(e) Maximum Concentration in a Grab Sample; however no exceedances observed.

Table 9: Pre-Discharge and Daily Discharge Compliance Monitoring Water Quality Data for ST-6A, August 2015

Sample ID			ST6A-07AUG15	ST6A-08AUG15	ST6A-17AUG15	ST6A-18AUG15	Part G Item 24(e)	
ALS ID			L1654734-1	L1654734-2	L1659478-1	L1661539-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			8/7/2015 8:10:00 AM	8/8/2015 8:15:00 AM	8/17/2015 11:35:00 AM	8/18/2015 11:16:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water		
pH	pH	0.1	8.18	8.17	8.33	7.9	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	10.6	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	<0.000050	0.00006	<0.000050	0.000103	0.01	0.02
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	NO	NO	NO	NO		
Benzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	0.37	
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	0.090	
Toluene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	0.002	
Bromodichloromethane	mg/L	0.001	<0.0010	<0.0010	-	-		
Bromoform	mg/L	0.001	<0.0010	<0.0010	-	-		
Carbon Tetrachloride	mg/L	0.0005	<0.00050	<0.00050	-	-		
Chlorobenzene	mg/L	0.001	<0.0010	<0.0010	-	-		
Dibromochloromethane	mg/L	0.001	<0.0010	<0.0010	-	-		
Chloroethane	mg/L	0.001	<0.0010	<0.0010	-	-		
Chloroform	mg/L	0.001	<0.0010	<0.0010	-	-		

Sample ID			ST6A-07AUG15	ST6A-08AUG15	ST6A-17AUG15	ST6A-18AUG15	Part G Item 24(e)	
ALS ID			L1654734-1	L1654734-2	L1659478-1	L1661539-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			8/7/2015 8:10:00 AM	8/8/2015 8:15:00 AM	8/17/2015 11:35:00 AM	8/18/2015 11:16:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water		
Chloromethane	mg/L	0.005	<0.0050	<0.0050	-	-		
1,2-Dichlorobenzene	mg/L	0.0007	<0.00070	<0.00070	-	-		
1,3-Dichlorobenzene	mg/L	0.001	<0.0010	<0.0010	-	-		
1,4-Dichlorobenzene	mg/L	0.001	<0.0010	<0.0010	-	-		
1,1-Dichloroethane	mg/L	0.001	<0.0010	<0.0010	-	-		
1,2-Dichloroethane	mg/L	0.001	<0.0010	<0.0010	-	-		
1,1,2-Dichloroethylene	mg/L	0.001	<0.0010	<0.0010	-	-		
cis-1,2-Dichloroethylene	mg/L	0.001	<0.0010	<0.0010	-	-		
trans-1,2-Dichloroethylene	mg/L	0.001	<0.0010	<0.0010	-	-		
1,3-Dichloropropene (cis & trans)	mg/L	0.0014	<0.0014	<0.0014	-	-		
Dichloromethane	mg/L	0.005	<0.0050	<0.0050	-	-		
1,2-Dichloropropane	mg/L	0.001	<0.0010	<0.0010	-	-		
cis-1,3-Dichloropropylene	mg/L	0.001	<0.0010	<0.0010	-	-		
trans-1,3-Dichloropropylene	mg/L	0.001	<0.0010	<0.0010	-	-		
Methyl t-butyl ether (MTBE)	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050		
1,1,1,2-Tetrachloroethane	mg/L	0.001	<0.0010	<0.0010	-	-		
1,1,2,2-Tetrachloroethane	mg/L	0.001	<0.0010	<0.0010	-	-		
Tetrachloroethylene	mg/L	0.001	<0.0010	<0.0010	-	-		
1,1,1-Trichloroethane	mg/L	0.001	<0.0010	<0.0010	-	-		
1,1,2-Trichloroethane	mg/L	0.001	<0.0010	<0.0010	-	-		
Trichloroethylene	mg/L	0.001	<0.0010	<0.0010	-	-		
Trichlorofluoromethane	mg/L	0.001	<0.0010	<0.0010	-	-		
Vinyl Chloride	mg/L	0.001	<0.0010	<0.0010	-	-		
ortho-Xylene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.00305		
meta- & para-Xylene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.00188		
Xylenes	mg/L	0.00075	<0.00075	<0.00075	<0.00075	0.00493		
F1 (C6-C10)	mg/L	0.1	<0.10	<0.10	-	-		
4-Bromofluorobenzene (SS)	%	Surrogate	91.9	90.3	104.9	101.9		
1,4-Difluorobenzene (SS)	%	Surrogate	100	99.6	100.6	100.8		
F2 (C10-C16)	mg/L	0.3	<0.30	<0.30	-	<0.30		
TPH10-32	mg/L	1	<1.0	<1.0	-	-		
2-Bromobenzotrifluoride, EPH-sg (%)	%	Surrogate	83.5	82.7	-	-		
2-Bromobenzotrifluoride, F2-F4 (%)	%	Surrogate	90.1	86.9	-	85.4		

Bold/shading indicates exceedance of Part G Item 24(e) Maximum Concentration in a Grab Sample.

Table 10: Pre-Discharge and Daily Discharge Compliance Monitoring Water Quality Data for ST-6B, August 2015

Sample ID			ST6B-08AUG15	ST6B-28AUG15	Part G Item 24(e)	
ALS ID			L1654734-3	L1665013-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			8/8/2015 8:30:00 AM	8/28/2015 8:54:00 AM		
Parameter	Units	Detection Limit	Water	Water		
pH	pH	0.1	8.22	8.36	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	<0.000050	<0.000050	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		
Benzene	mg/L	0.0005	<0.00050	<0.00050	0.37	
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	0.090	
Toluene	mg/L	0.0005	<0.00050	<0.00050	0.002	

Bold/shading indicates exceedance of Part G Item 24(e) Maximum Concentration in a Grab Sample; however no exceedances observed.

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 11 through 13 below. An exceedance of the Part G Item 30 criteria for aluminum was noted in one sample collected at Doris Creek station TL-2 (TL2-31AUG15); however, the TL-2 station is upstream of the TIA discharge into creek and represents background conditions. All other 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. For the remaining 2015 discharge period, samples collected at monitoring station TL-1 will be analyzed for the licence criteria outlined in for Part J Item 8 and Schedule J, Table 2 for monitoring station TL-4.

Table 11: Water Quality Sample Results for TL-1, August 2015

Sample ID			TL1-03AUG15	TL1-11AUG15	TL1-17AUG15	TL1-24AUG15	TL1-31AUG15	Part G Item 28	
ALS ID			L1652373-1	L1655590-1	L1659466-1	L1663071-1	L1666614-1	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			8/3/2015 8:55:00 AM	8/11/2015 8:30:00 AM	8/17/2015 2:50:00 PM	8/24/2015 9:10:00 AM	8/31/2015 8:45:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water		
Hardness (as CaCO ₃)	mg/L	0.5	50.4	55.3	53.7	52	55.6		
pH	pH	0.1	7.67	7.4	7.76	7.55	7.78	6.0 - 9.5	6.0 - 9.5
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	<3.0	3.6	15.00	30.00
Total Dissolved Solids	mg/L	10	143	145	137	151	121		
Ammonia, Total (as N)	mg/L	0.005	0.0161	0.0342	0.0228	0.0154	0.0243	6	
Bromide (Br)	mg/L	0.05	0.074	0.08	0.081	0.077	0.077		
Chloride (Cl)	mg/L	0.5	39	42.1	39.1	40	40.5		
Fluoride (F)	mg/L	0.02	0.05	0.051	0.056	0.054	0.054		
Nitrate (as N)	mg/L	0.005	0.0056	0.141	<0.0050	<0.0050	0.0138		
Nitrite (as N)	mg/L	0.001	<0.0010	0.0042	<0.0010	<0.0010	<0.0010		
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Phosphorus (P)-Total	mg/L	0.002	0.013	0.0129	0.0146	0.0112	<0.0020		
Sulfate (SO ₄)	mg/L	0.5	2.37	2.92	2.5	2.93	2.76		
Cyanide, Total	mg/L	0.005	<0.0050	<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	<0.0050		
Aluminum (Al)-Total	mg/L	0.005	0.0437	0.0324	0.0372	0.0398	0.0674		
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<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	<0.020		
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10		
Cadmium (Cd)-Total	mg/L	0.00001	0.0000052	<0.0000050	<0.0000050	<0.0000050	<0.0000050		
Calcium (Ca)-Total	mg/L	0.1	11.4	12.7	11.9	11.6	12.5		
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030		
Copper (Cu)-Total	mg/L	0.001	0.002	0.0012	0.0013	0.0013	0.0013	0.30	0.60
Iron (Fe)-Total	mg/L	0.03	0.259	0.341	0.325	0.277	0.315		
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.20	0.40
Lithium (Li)-Total	mg/L	0.005	0.0035	0.0039	0.0036	0.0036	0.0037		
Magnesium (Mg)-Total	mg/L	0.1	5.33	5.72	5.83	5.62	5.9		
Manganese (Mn)-Total	mg/L	0.0003	0.0518	0.0452	0.0332	0.023	0.0262		
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		

Sample ID			TL1-03AUG15	TL1-11AUG15	TL1-17AUG15	TL1-24AUG15	TL1-31AUG15	Part G Item 28	
ALS ID			L1652373-1	L1655590-1	L1659466-1	L1663071-1	L1666614-1	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			8/3/2015 8:55:00 AM	8/11/2015 8:30:00 AM	8/17/2015 2:50:00 PM	8/24/2015 9:10:00 AM	8/31/2015 8:45:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water		
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.50	1.00
Potassium (K)-Total	mg/L	2	<2.0	<2.0	2	<2.0	<2.0		
Selenium (Se)-Total	mg/L	0.0001	<0.000050	0.000107	<0.000050	<0.000050	<0.000050		
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		
Sodium (Na)-Total	mg/L	2	18	18.7	19.7	18.8	18.8		
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010		
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		
Vanadium (V)-Total	mg/L	0.001	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
Zinc (Zn)-Total	mg/L	0.005	0.0089	<0.0050	<0.0050	<0.0050	<0.0050	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	-	-	-	10,000	10,000
BOD (BOD ₅)*	mg/L	2	-	3	-	-	-	80	160
96-h LC50**	%v/v	-	-	-	>100	-	-		
48-h LC50**	%v/v	-	-	-	>100	-	-		

* 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.

**Analysis included at monitoring station TL-1 and TL-4 to satisfy monitoring requirements for Acute Lethality Testing under Item 8 and Schedule J

Table 12: Water Quality Sample Results for TL-2, August 2015

Sample ID			TL2-03AUG15	TL2-11AUG15	TL2-17AUG15	TL2-24AUG15	TL2-31AUG15	Part G Item 30	
ALS ID			L1652373-2	L1655590-2	L1659466-2	L1663071-2	L1666614-2	Maximum Concentration of Any Grab Sample (mg/L)	
Date Sampled			8/3/2015 8:40:00 AM	8/11/2015 7:50:00 AM	8/17/2015 2:35:00 PM	8/24/2015 8:45:00 AM	8/31/2015 8:30:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water		
Hardness (as CaCO ₃)	mg/L	0.5	43.3	46.7	47.1	45.4	47.7		
pH	pH	0.1	7.72	7.68	7.83	7.72	7.93	6.0 - 9.0	
Total Suspended Solids	mg/L	3	<3.0	<3.0	3.6	5.1	7	15.0	
Total Dissolved Solids	mg/L	10	159	157	140	171	141		
Ammonia, Total (as N)	mg/L	0.005	0.0216	<0.0050	0.009	<0.0050	<0.0050	1.54	

Sample ID			TL2-03AUG15	TL2-11AUG15	TL2-17AUG15	TL2-24AUG15	TL2-31AUG15	Part G Item 30
ALS ID			L1652373-2	L1655590-2	L1659466-2	L1663071-2	L1666614-2	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			8/3/2015 8:40:00 AM	8/11/2015 7:50:00 AM	8/17/2015 2:35:00 PM	8/24/2015 8:45:00 AM	8/31/2015 8:30:00 AM	
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	
Bromide (Br)	mg/L	0.05	0.193	0.197	0.203	0.205	0.2	
Chloride (Cl)	mg/L	0.5	58.3	58.7	60.2	60.5	60.3	150
Fluoride (F)	mg/L	0.02	0.052	0.047	0.052	0.05	0.052	
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	2.9
Nitrite (as N)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.060
Orthophosphate- Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Phosphorus (P)-Total	mg/L	0.002	0.0094	0.0172	0.0209	0.0213	0.0162	
Sulfate (SO4)	mg/L	0.5	2.63	2.63	2.91	2.93	2.76	
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.005
Aluminum (Al)-Total	mg/L	0.005	0.0919	0.0875	0.0625	0.0626	0.123	0.100
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000017
Calcium (Ca)-Total	mg/L	0.1	7.81	8.47	8.53	8.19	8.65	
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper (Cu)-Total	mg/L	0.001	0.0015	0.0014	0.0015	0.0014	0.0015	0.002
Iron (Fe)-Total	mg/L	0.03	0.116	0.136	0.121	0.138	0.229	0.300
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001
Lithium (Li)-Total	mg/L	0.005	0.0033	0.0033	0.0031	0.0035	0.0034	
Magnesium (Mg)-Total	mg/L	0.1	5.77	6.22	6.26	6.07	6.33	
Manganese (Mn)-Total	mg/L	0.0003	0.00973	0.0144	0.0181	0.0211	0.0273	
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000026
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.073
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.025
Potassium (K)-Total	mg/L	2	2.1	2.2	2.3	2.2	2.3	
Selenium (Se)-Total	mg/L	0.0001	<0.000050	0.000105	<0.000050	<0.000050	<0.000050	0.0010
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.0001
Sodium (Na)-Total	mg/L	2	29.6	30.1	30.9	30.5	30.6	
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0008
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	

Sample ID			TL2-03AUG15	TL2-11AUG15	TL2-17AUG15	TL2-24AUG15	TL2-31AUG15	Part G Item 30
ALS ID			L1652373-2	L1655590-2	L1659466-2	L1663071-2	L1666614-2	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			8/3/2015 8:40:00 AM	8/11/2015 7:50:00 AM	8/17/2015 2:35:00 PM	8/24/2015 8:45:00 AM	8/31/2015 8:30:00 AM	
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Vanadium (V)-Total	mg/L	0.001	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050	<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 13: Water Quality Sample Results for TL-3, August 2015

Sample ID			TL3-03AUG15	TL3-11AUG15	TL3-17AUG15	TL3-24AUG15	TL3-31AUG15	Part G Item 30
ALS ID			L1652373-3	L1655590-3	L1659466-3	L1663071-3	L1666614-3	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			8/3/2015 8:20:00 AM	8/11/2015 8:05:00 AM	8/17/2015 2:50:00 PM	8/24/2015 8:35:00 AM	8/31/2015 8:17:00 AM	
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	
Hardness (as CaCO ₃)	mg/L	0.5	44.8	47.6	48	46.3	48.4	
pH	pH	0.1	7.67	7.65	7.81	7.67	7.87	6.0 - 9.0
Total Suspended Solids	mg/L	3	<3.0	<3.0	5.2	5	7	15.0
Total Dissolved Solids	mg/L	10	159	162	155	171	137	
Ammonia, Total (as N)	mg/L	0.005	0.0073	0.0051	<0.0050	<0.0050	<0.0050	1.54
Bromide (Br)	mg/L	0.05	0.194	0.187	0.193	0.199	0.191	
Chloride (Cl)	mg/L	0.5	57.3	57.7	58.5	59.1	58.9	150
Fluoride (F)	mg/L	0.02	0.052	0.047	0.053	0.05	0.052	
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	2.9
Nitrite (as N)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.060
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Phosphorus (P)-Total	mg/L	0.002	0.0091	0.0145	0.0221	0.0222	0.0181	
Sulfate (SO ₄)	mg/L	0.5	2.47	2.47	2.72	2.82	2.69	
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.005
Aluminum (Al)-Total	mg/L	0.005	0.0883	0.0906	0.0559	0.059	0.0886	0.100
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000017

Sample ID			TL3-03AUG15	TL3-11AUG15	TL3-17AUG15	TL3-24AUG15	TL3-31AUG15	Part G Item 30
ALS ID			L1652373-3	L1655590-3	L1659466-3	L1663071-3	L1666614-3	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			8/3/2015 8:20:00 AM	8/11/2015 8:05:00 AM	8/17/2015 2:50:00 PM	8/24/2015 8:35:00 AM	8/31/2015 8:17:00 AM	
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	
Calcium (Ca)-Total	mg/L	0.1	8.17	8.75	8.83	8.6	8.99	
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper (Cu)-Total	mg/L	0.001	0.0015	0.0014	0.0014	0.0013	0.0015	0.002
Iron (Fe)-Total	mg/L	0.03	0.132	0.153	0.136	0.161	0.203	0.300
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001
Lithium (Li)-Total	mg/L	0.005	0.0033	0.0034	0.0031	0.0034	0.0033	
Magnesium (Mg)-Total	mg/L	0.1	5.93	6.24	6.31	6.03	6.31	
Manganese (Mn)-Total	mg/L	0.0003	0.0135	0.017	0.0195	0.0214	0.0256	
Mercury (Hg)-Total	mg/L	0.00001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000026
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.073
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.025
Potassium (K)-Total	mg/L	2	2.1	2.2	2.3	2.2	2.3	
Selenium (Se)-Total	mg/L	0.0001	0.000059	0.000095	<0.000050	<0.000050	<0.000050	0.0010
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.0001
Sodium (Na)-Total	mg/L	2	29.8	29.4	30.7	27.6	29.9	
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0008
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Vanadium (V)-Total	mg/L	0.001	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.030
Hexavalent Chromium	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	<5.0	<5.0	5
Oil And Grease (Visible Sheen)		n/a	NO	NO	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. However, no exceedances were reported.

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

Discharge from the TIA began June 30, 2015. A comparison of flows for this month is presented in Table 14 below.

Table 14: Comparison of Flows at TL-4 and TL-2, August 2015

Date	TL-4 Discharge (m ³)	10% of TL-2 Flow (Predicted) (m ³)
August 1, 2015	7762.89	26374
August 2, 2015	7875	24576
August 3, 2015	7714.52	22119
August 4, 2015	6569.56	19946
August 5, 2015	6056.35	20659
August 6, 2015	7530.32	20111
August 7, 2015	7802.09	19207
August 8, 2015	7945.5	17067
August 9, 2015	7646.68	16233
August 10, 2015	7599.3	15476
August 11, 2015	7418.23	14151
August 12, 2015	7599.23	13457
August 13, 2015	7667.3	12529
August 14, 2015	7531.73	12242
August 15, 2015	7567.82	11681
August 16, 2015	5376.74	11093
August 17, 2015	8320.42	10554
August 18, 2015	8342.75	9721
August 19, 2015	8236.22	9317
August 20, 2015	7995.36	8798
August 21, 2015	7699.92	8432
August 22, 2015	7668.32	8104
August 23, 2015	7378	7795
August 24, 2015	7033.24	8242
August 25, 2015	7832.15	8117
August 26, 2015	7857.25	8036
August 27, 2015	7551.68	7944
August 28, 2015	7557.85	7855
August 29, 2015	7707.25	7653
August 30, 2015	7543.44	7546
August 31, 2015	7215.61	7045

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, with results presented in Table 15 below.

Table 15: Water Quality Sample Results for TL-10, August 2015

ALS ID			L1654731-1	L1654731-2	L1654731-3
Date Sampled			8/7/2015 4:55:00 PM	8/7/2015 5:10:00 PM	8/7/2015 5:25:00 PM
Parameter	Units	Detection Limit	Water	Water	Water
Hardness (as CaCO ₃)	mg/L	0.5	51.2	50.8	51.8
pH	pH	0.1	7.5	7.58	7.58
Redox Potential	mV	-1000	486	489	477
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L	10	122	122	123
Ammonia, Total (as N)	mg/L	0.005	0.0114	0.0253	0.0093
Bromide (Br)	mg/L	0.05	0.088	0.08	0.08
Chloride (Cl)	mg/L	0.5	38	37.7	37.8
Fluoride (F)	mg/L	0.02	0.053	0.054	0.054
Nitrate (as N)	mg/L	0.005	0.0107	<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	0.0126	0.0201	0.013
Sulfate (SO ₄)	mg/L	0.5	2.2	2.15	2.15
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050
Aluminum (Al)-Total	mg/L	0.005	0.0403	0.0415	0.0419
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	11.3	11.2	11.3
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	0.0013	0.0011	0.001
Iron (Fe)-Total	mg/L	0.03	0.167	0.162	0.165
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0036	0.0037	0.0036
Magnesium (Mg)-Total	mg/L	0.1	5.6	5.56	5.75
Manganese (Mn)-Total	mg/L	0.0003	0.038	0.0377	0.0374
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	<2.0	<2.0	2.1
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	19	18.7	19.9
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	0.0062	<0.0050	<0.0050

Part J: Conditions Applying to General and Aquatics Effects Monitoring

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

Excluding a naturally occurring elevated concentration of aluminum in a single sample collected at the background Doris Creek station TL-2 (TL2-31AUG15), there were no sample results exceeding discharge TIA criteria.

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

Acute lethality testing was conducted midway in August as required through the annual discharge period. The tests met performance criteria and there were no deviations from the test methods. Results are shown in Table 11, Water Quality Samples for TL-1 August 2015.

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 September 2015 when more underground equipment is delivered to site on the sea lift and the waste rock can be hauled to surface. The 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

Discharges to tundra occurred at stations ST-5 and ST-6b. During daily discharge sampling, visual observations were made and no erosion was noted.

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,



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cc. Eva Paul, Water Resources Officer, AANDC

Figure 1. 2AM-DOH1323 SNP Monitoring Locations

