

July 29, 2016

Licensing
Nunavut Water Board
P.O. Box 119
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Re: June 2016 – 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 INAC. 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 mining, construction, 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 total of 712 m³ of water was extracted from Windy Lake for domestic use this month as permitted by water licences 2BE-HOP1222 and 2AM-DOH1323. 36 m³ of water was used from unnamed lakes proximal to the drill locations in the 2AM-DOH1323 licence area for surface exploration drilling. A total of 809 m³ of water was used from Doris and Windy Lakes (791 m³ and 18 m³, respectively) for underground drilling and other industrial purposes in support of the Doris North mine development. A total of 1,106 m³ of water was used from Doris Lake (644 m³) and a pool of accumulated runoff and precipitation at the base of the airstrip (462 m³) for dust suppression on the airstrip and site roads this month. Water usage is presented in Table 1.

Table 1: Water usage, in cubic meters, June 2016

Water Usage	Domestic Water Use from Windy Lake ST-7a (m ³)	Domestic Water Use from Doris Lake ST-7 (m ³)	Doris Surface Exploration Drilling (m ³)	All Other Industrial Water Use** (m ³)	Dust Suppression (m ³)	Total (m ³)
Monthly Total	712	0	36*	809	1,106	2,663
Annual Cumulative	3,925	0	334	2,052	1,206	7,517

* All water withdrawn from unnamed lakes proximal to the drilling location; location coordinates maintained on file.

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

No water was applied for ice road development during the month. In total, 1,068 m³ of water has been applied in 2016 for ice road development. These quantities are not included in the usage indicated in Table 1.

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, June 2016

Sample ID			ST7-28JUN16	ST7A-07JUN16
ALS ID			L1790650-1	L1779661-1
Date Sampled			6/28/2016 8:20:00 AM	6/7/2016 8:20:00 AM
Parameter	Units	Detection Limit	Water	Water
Hardness (as CaCO ₃)	mg/L	0.5	45.7	28.3
pH	pH	0.1	7.61	7.27
Total Suspended Solids	mg/L	3	3.3	3.8
Ammonia, Total (as N)	mg/L	0.005	<0.0050	0.0071
Nitrate (as N)	mg/L	0.005	0.0162	0.0067
Nitrite (as N)	mg/L	0.001	<0.0010	0.0032
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.002	0.0148	0.0124
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050
Fecal Coliforms ^	MPN/100mL	1	<1	<1 *
Aluminum (Al)-Total	mg/L	0.005	0.0496	0.38
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	0.00001	<0.0000050	<0.0000050
Calcium (Ca)-Total	mg/L	0.1	8.11	5.74
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	0.0017	0.0012
Iron (Fe)-Total	mg/L	0.03	0.432	0.461
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0029	0.0017
Magnesium (Mg)-Total	mg/L	0.1	6.18	3.38
Manganese (Mn)-Total	mg/L	0.0003	0.0123	0.0113
Mercury (Hg)-Total	mg/L	0.00001	<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	2.4	<2.0
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020
Sodium (Na)-Total	mg/L	2	30.9	16.1
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	0.018
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020
Vanadium (V)-Total	mg/L	0.001	0.00073	0.00085
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050
Biochemical Oxygen Demand	mg/L	2	<2.0	2
Oil and Grease	mg/L	5	<5.0	<5.0
Oil And Grease (Visible Sheen)		n/a	NO	no

* results on Lab Work Order L1779679-1 for Potable Water Station PDC10 (same location as ST-7a)

^ Analytical methodology used by laboratory to determine Fecal coliform concentrations has changed. Results now presented as Most Probable Number per 100mL (MPN/100mL).

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 3, 2016.

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

A notification of a planned replacement to the Waste Water Treatment Plant system was provided to the Nunavut Water Board and the Inspector on April 15, 2016. The new Waste Water Treatment Plant (ST8-A) replaced a non-functioning unit that was not in use and is located next to the existing Waste Water Treatment Plant (ST8-B). The new unit (which is identical to the unit being replaced) was commissioned this month, and samples were collected to confirm effluent quality prior to discharge commencing. Results of the pre-discharge and monthly compliance samples for ST8-A and ST8-B are provided in Table 3. All parameters were in compliance with the discharge criteria outlined in Schedule J, Table 2 of the licence.

Discharge of treated effluent from the new Wastewater Treatment Plant unit began on June 29, 2016. A total of 741 m³ of treated effluent was discharged from ST8-A and ST8-B (31 m³ and 710 m³ respectively) this month.

Table 3: Monthly Compliance Sample Results for ST-8, June 2016

Sample ID			ST8A-21JUN16	ST8B-14JUN16	Part G Item 3(b)	
ALS ID			L1786700-1	L1783056-1		
Date Sampled			6/21/2016 8:10:00 AM	6/14/2016 9:05:00 AM		
Parameter	Units	Detection Limit	Water	Water	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
pH	pH	0.1	7.27	7.87	6.0 - 9.0	9.0
Total Suspended Solids	mg/L	3	<3.0	<3.0	100	100
Fecal Coliforms ^	MPN/ 100mL	1	1	<1	10,000	10,000
Biochemical Oxygen Demand (BOD ₅)	mg/L	2	2	4	80	80
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 3(b) Maximum Concentration in a Grab Sample.

^ Analytical methodology used by laboratory to determine Fecal coliform concentrations has changed. Results now presented as Most Probable Number per 100mL (MPN/100mL).

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 Schedule J requirements of the licence. Water quality results are presented in Table 4 below.

Table 4: Monthly Compliance Sample Results for ST-9, June 2016

Sample ID			ST9-14JUN16A	ST9-14JUN16B *
ALS ID			L1783056-2	L1783056-3
Date Sampled			6/14/2016 9:40:00 AM	6/14/2016 9:40:00 AM
Parameter	Units	Detection Limit	Water	Water
pH	pH	0.10	7.6	7.66
Total Suspended Solids	mg/L	3.00	<3.0	<3.0
Fecal Coliforms ^	MPN/ 100mL	1.00	<1	<1
Biochemical Oxygen Demand (BOD ₅)	mg/L	1.00	<2.0	2
Oil and Grease	mg/L	5.00	<5.0	<5.0
Oil And Grease (Visible Sheen)		n/a	NO	NO

^ Analytical methodology used by laboratory to determine Fecal coliform concentrations has changed. Results now presented as Most Probable Number per 100mL (MPN/100mL).

* Duplicate sample.

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, iron and zinc exceeded the criteria for discharge to tundra in Part G Item 23(a). No water was discharged to tundra. 5963 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. An additional 145 m³ of water was transferred from the Sedimentation Pond to underground sumps to be used in support of the Doris North mine development. 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. In June, 2149 m³ of water was pumped from the Pollution Control Pond (ST-2) to ST-1.

Table 5: Monthly Compliance Sample Results for ST-1, June 2016

Sample ID			ST1-19JUN16	Part G Item 23(a)	
ALS ID			L1786676-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			6/19/2016 10:55:00 AM		
Parameter	Units	Detection Limit	Water		
Hardness (as CaCO ₃)	mg/L	0.5	685		
pH	pH	0.1	7.86	6.0 - 9.0	9.0
Total Suspended Solids	mg/L	3	5.9	15.0	30.0
Alkalinity, Total (as CaCO ₃)	mg/L	1	75.1		
Ammonia, Total (as N)	mg/L	0.005	7.79	2.0	4.0
Bromide (Br)	mg/L	0.5	<1.0 ^		
Chloride (Cl)	mg/L	5	596		
Fluoride (F)	mg/L	0.2	<0.40 ^		
Nitrate (as N)	mg/L	0.05	26.7		
Nitrite (as N)	mg/L	0.01	0.373		
Sulfate (SO ₄)	mg/L	5	54.1		
Cyanide, Total	mg/L	0.005	0.0080 *	1.0	2.0
Aluminum (Al)-Total	mg/L	0.005	0.301	1.0	2.0
Antimony (Sb)-Total	mg/L	0.0005	<0.00050		
Arsenic (As)-Total	mg/L	0.0005	0.00101	0.05	0.10
Barium (Ba)-Total	mg/L	0.02	0.05		
Beryllium (Be)-Total	mg/L	0.001	<0.0010		
Boron (B)-Total	mg/L	0.1	0.19		
Cadmium (Cd)-Total	mg/L	0.00001	0.0000704		
Calcium (Ca)-Total	mg/L	0.1	223		
Chromium (Cr)-Total	mg/L	0.001	0.0015		
Cobalt (Co)-Total	mg/L	0.0003	0.00118		
Copper (Cu)-Total	mg/L	0.001	0.0084	0.02	0.30
Iron (Fe)-Total	mg/L	0.03	0.451	0.30	0.60
Lead (Pb)-Total	mg/L	0.0005	<0.00050	0.01	0.02
Lithium (Li)-Total	mg/L	0.005	0.0152		
Magnesium (Mg)-Total	mg/L	0.1	30.9		
Manganese (Mn)-Total	mg/L	0.0003	0.201		
Molybdenum (Mo)-Total	mg/L	0.001	0.0026		
Nickel (Ni)-Total	mg/L	0.001	0.0023	0.05	0.10
Potassium (K)-Total	mg/L	2	13.7		
Selenium (Se)-Total	mg/L	0.0001	0.00105		
Silver (Ag)-Total	mg/L	0.00002	<0.000020		
Sodium (Na)-Total	mg/L	2	183		
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	0.02		
Uranium (U)-Total	mg/L	0.0002	0.0006		
Vanadium (V)-Total	mg/L	0.001	0.00131		

Zinc (Zn)-Total	mg/L	0.005	0.039	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.

* Lab reports may be biased high due to interference from high nitrite in this sample.

^ Detection Limit Raised

Table 6: Monthly Compliance Sample Results for ST-2, June 2016

Sample ID			ST2-19JUN16
ALS ID			L1786676-2
Date Sampled			6/19/2016 11:10:00 AM
Parameter	Units	Detection Limit	Water
Hardness (as CaCO ₃)	mg/L	0.5	306
pH	pH	0.1	8.08
Total Suspended Solids	mg/L	3	21.1
Alkalinity, Total (as CaCO ₃)	mg/L	1	95.5
Ammonia, Total (as N)	mg/L	0.25	1.3
Bromide (Br)	mg/L	0.05	0.47
Chloride (Cl)	mg/L	0.5	233
Fluoride (F)	mg/L	0.02	0.1
Nitrate (as N)	mg/L	0.025	15.1
Nitrite (as N)	mg/L	0.001	0.112
Sulfate (SO ₄)	mg/L	0.5	93.2
Cyanide, Total	mg/L	0.005	<0.0050
Aluminum (Al)-Total	mg/L	0.006	0.866
Antimony (Sb)-Total	mg/L	0.0005	<0.00050
Arsenic (As)-Total	mg/L	0.0005	0.00214
Barium (Ba)-Total	mg/L	0.02	0.023
Beryllium (Be)-Total	mg/L	0.001	<0.0010
Boron (B)-Total	mg/L	0.1	0.22
Cadmium (Cd)-Total	mg/L	0.00002	0.0000355
Calcium (Ca)-Total	mg/L	0.1	91.7
Chromium (Cr)-Total	mg/L	0.001	0.0041
Cobalt (Co)-Total	mg/L	0.0003	0.00108
Copper (Cu)-Total	mg/L	0.001	0.0053
Iron (Fe)-Total	mg/L	0.03	1.04
Lead (Pb)-Total	mg/L	0.0005	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0136
Magnesium (Mg)-Total	mg/L	0.1	18.8
Manganese (Mn)-Total	mg/L	0.0003	0.105
Molybdenum (Mo)-Total	mg/L	0.001	0.0044
Nickel (Ni)-Total	mg/L	0.001	0.0022
Potassium (K)-Total	mg/L	2	8.8
Selenium (Se)-Total	mg/L	0.0002	0.00133
Silver (Ag)-Total	mg/L	0.00002	<0.000020
Sodium (Na)-Total	mg/L	2	114
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	0.049
Uranium (U)-Total	mg/L	0.0002	0.00087
Vanadium (V)-Total	mg/L	0.002	0.00338
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

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

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

No water was discharged from the Landfarm (ST-4) this month and no sampling was conducted.

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 collected daily during discharge at the Doris Tank Farm (ST-5) and Roberts Bay tank farms (ST-6a and ST-6b) when discharging to tundra or when applying water to roads as dust suppression. All results were in compliance with requirements of Schedule J Table 2 of the licence. Results are presented in Tables 7 through 9 below.

This month, 225 m³ of compliant berm water was discharged to tundra. An additional 280 m³ of compliant berm water was used for dust suppression on site roads. Beginning on June 15, 2016, all water accumulating at stations ST-5, ST-6a and ST-6b was redirected to the Sedimentation Control Pond for transfer to the TIA.

Table 7: Monthly Compliance Sample Results for ST-5, June 2016

Sample ID			ST5-06JUN16	ST5-09JUN16	Part G Item 24(e)	
ALS ID			L1779665-5	L1781650-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			6/6/2016 8:00:00 AM	6/9/2016 8:30:00 AM		
Parameter	Units	Detection Limit	Water	Water		
pH	pH	0.1	8.06	8.2	6.0– 9.0	9
Total Suspended Solids	mg/L	3	3.8	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	0.000068	<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.

Table 8: Monthly Compliance Sample Results for ST-6a, June 2016

Sample ID			ST6A-04JUN16	Part G Item 24(e)	
ALS ID			L1779665-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			6/4/2016 8:20:00 AM		
Parameter	Units	Detection Limit	Water		
pH	pH	0.1	8.07	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	0.000067	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.

Table 9: Monthly Compliance Sample Results for ST-6b, June 2016

Sample ID			ST6B-04JUN16	ST6B-05JUN16	ST6B-06JUN16	ST6B-09JUN16	Part G Item 24(e)	
ALS ID			L1779665-2	L1779665-3	L1779665-4	L1781650-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			6/4/2016 4:55:00 PM	6/5/2016 9:20:00 AM	6/6/2016 7:40:00 AM	6/9/2016 8:05:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water		
pH	pH	0.1	7.83	7.77	8.1	8.3	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	<3.0	6.2	4	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	0.000332	0.000227	0.00015	0.000087	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	

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

Sample ID			ST6B-11JUN16	ST6B-12JUN16	ST6B-13JUN16	Part G Item 24(e)	
ALS ID			L1783051-1	L1783051-2	L1783051-3	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			6/11/2016 2:15:00 PM	6/12/2016 9:25:00 AM	6/13/2016 9:00:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water		
pH	pH	0.1	8.15	8.12	8.13	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	0.000079	<0.000050	<0.000050	0.01	0.02
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	NO	NO	NO		
Benzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.37	
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.090	
Toluene	mg/L	0.0005	<0.00050	<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.)

Pre-discharge 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 10 through 12 below. No discharge from the TIA to Doris Creek occurred in June.

On June 6, 2016 an exceedance of hexavalent chromium was noted in a duplicate sample collected at monitoring station TL-3 (downstream of the discharge pipeline). This exceedance is may be a laboratory error, as Total Chromium for this sample, as well as it's duplicate and the upstream sampling location were all below detection (0.001 mg/L). Further, this sample reflects pre-discharge conditions, no detections of Cr VI were seen in subsequent sampling events, and the value was very close to the analytical detection. No other exceedances were observed.

Table 10: Monthly Compliance Sample Results for TL-1, June 2016

Sample ID			TL1-06JUN16	TL1-08JUN16	TL1-10JUN16	TL1-12JUN-16	TL1-14JUN-16	TL1-16JUN16	TL1-19JUN16	Part G Item 28	
ALS ID			L1779671-1	L1781642-1	L1781642-4	L1783067-1	L1783067-4	L1785401-1	L1786668-1	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			6/6/2016 4:50:00 PM	6/8/2016 5:40:00 PM	6/10/2016 8:40:00 AM	6/12/2016 8:50:00 AM	6/14/2016 8:40:00 AM	6/16/2016 3:05:00 PM	6/19/2016 11:25:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water	Water		
Hardness (as CaCO3)	mg/L	0.5	38.6	30.6	36.6	60	50.2	51.6	57		
pH	pH	0.1	7.54	7.52	7.6	7.55	7.56	7.59	7.66	6.0 - 9.5	6.0 - 9.5
Redox Potential	mV	-1000	-	-	-	-	-	-			
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.1	15.00	30.00
Total Dissolved Solids	mg/L	10	98	92	82	174	114	127	134		
Ammonia, Total (as N)	mg/L	0.005	0.0492	0.0258	0.0084	0.0088	0.0054	0.0064	0.0104	6	
Bromide (Br)	mg/L	0.05	<0.050	<0.050	<0.050	0.081	0.056	0.066	0.083		
Chloride (Cl)	mg/L	0.5	27.8	22.8	26.4	46.9	37.3	37.7	41.1		
Fluoride (F)	mg/L	0.02	0.045	0.039	0.04	0.061	0.051	0.051	0.059		
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	0.0057	<0.0050	<0.0050	0.0303	0.164		
Nitrite (as N)	mg/L	0.001	0.0038	<0.0010	<0.0010	<0.0010	<0.0010	0.0022	0.0035		
Orthophosphate-Dissolved (as P)	mg/L	0.001	0.0021	0.0017	0.0015	0.002	0.0017	<0.0010	<0.0010		
Phosphorus (P)-Total	mg/L	0.002	0.0245	0.0163	0.0124	0.0138	0.0152	0.0134	0.0106		
Sulfate (SO4)	mg/L	0.5	2.08	1.54	1.8	3.12	2.17	2.5	5.37		
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<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	<0.0050	<0.0050		
Aluminum (Al)-Total	mg/L	0.005	0.0455	0.0281	0.0248	0.0238	0.0187	0.0206	0.0713		
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<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	<0.00050	<0.00050	0.50	1.00
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<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	<0.0010	<0.0010		
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<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	<0.0000050	<0.0000050		
Calcium (Ca)-Total	mg/L	0.1	9.06	7.18	8.46	13.4	11.4	11.5	12.6		
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<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	<0.00030	<0.00030		
Copper (Cu)-Total	mg/L	0.001	0.0011	<0.0010	<0.0010	0.0011	<0.0010	0.0011	0.0015	0.30	0.60
Iron (Fe)-Total	mg/L	0.03	0.256	0.185	0.13	0.137	0.142	0.163	0.2		
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.20	0.40
Lithium (Li)-Total	mg/L	0.005	0.0022	0.0021	0.0025	0.0041	0.0033	0.0039	0.0033		
Magnesium (Mg)-Total	mg/L	0.1	3.87	3.09	3.77	5.28	5.28	5.59	6.24		
Manganese (Mn)-Total	mg/L	0.0003	0.0292	0.0105	0.0118	0.0124	0.00872	0.0122	0.0185		
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0015		
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.50	1.00
Potassium (K)-Total	mg/L	2	<2.0	<2.0	<2.0	2.2	<2.0	2	2.4		
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050	<0.000050	0.000056	<0.000050	<0.000050	0.000085		
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		
Sodium (Na)-Total	mg/L	2	15	11.3	12.8	21.2	17	19.4	24.5		
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<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	<0.00050	<0.00050		
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<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	<0.00020	<0.00020		
Vanadium (V)-Total	mg/L	0.001	<0.00050	<0.00050	<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	<0.0050	<0.0050	0.50	1.00
Radium 226*	Bq/L	n/a	<0.0100	-	-	-	-	-	-	0.37	1.11
Fecal Coliforms*^	MPU/100mL	1	-	-	-	-	-	-	-	10,000	10,000
BOD (BOD ₅)*	mg/L	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.

^ Analytical methodology used by laboratory to determine Fecal coliform concentrations has changed. Results now presented as Most Probable Number per 100mL (MPN/100mL).

Table 11: Monthly Compliance Sample Results for TL-2, June 2016

Sample ID			TL2-06JUN16A	TL2-06JUN16B	TL2-09JUN16	TL2-10JUN16	TL2-12JUN-16	TL2-14JUN-16	TL2-16JUN16	TL2-19JUN16	Part G Item 30
ALS ID			L1779671-2	L1779671-3	L1781642-2	L1781642-5	L1783067-2	L1783067-5	L1785401-2	L1786668-2	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			6/6/2016 4:20:00 PM	6/6/2016 4:20:00 PM	6/9/2016 12:00:00 PM	6/10/2016 8:20:00 AM	6/12/2016 8:30:00 AM	6/14/2016 8:25:00 AM	6/16/2016 2:40:00 PM	6/19/2016 11:45:00 AM	
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water	Water	Water	
Hardness (as CaCO3)	mg/L	0.5	30.8	30.4	26.5	23.4	27.2	24.7	27.7	51.8	
pH	pH	0.1	7.55	7.52	7.46	7.16	7.24	7.24	7.25	7.55	6.0 - 9.0
Total Suspended Solids	mg/L	3	<3.0	<3.0	3.2	<3.0	<3.0	<3.0	<3.0	4.6	15.0
Total Dissolved Solids	mg/L	10	97	99	84	82	86	79	91	166	
Ammonia, Total (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.54
Bromide (Br)	mg/L	0.05	0.123	0.114	0.113	0.099	0.116	0.107	0.113	0.209	
Chloride (Cl)	mg/L	0.5	37	36.9	33.6	30.1	35.1	32.7	33.7	63.4	150
Fluoride (F ⁻)	mg/L	0.02	0.038	0.038	0.036	0.032	0.036	0.034	0.034	0.057	
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050	<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	<0.0010	<0.0010	<0.0010	0.060
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010	0.0011	0.0011	0.0013	0.0016	0.0016	<0.0010	
Phosphorus (P)-Total	mg/L	0.002	0.014	0.0143	0.0114	0.0104	0.0097	0.0149	0.0138	0.0221	
Sulfate (SO4)	mg/L	0.5	1.67	1.67	1.42	1.26	1.55	1.44	1.44	2.94	
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<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	<0.0050	<0.0050	<0.0050	0.005
Aluminum (Al)-Total	mg/L	0.005	0.0707	0.065	0.0808	0.0718	0.0794	0.0625	0.0649	0.06	0.100
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<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	<0.00050	<0.00050	<0.00050	0.0050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020	<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	<0.0010	<0.0010	<0.0010	
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10	<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	<0.0000050	<0.0000050	<0.0000050	0.000017
Calcium (Ca)-Total	mg/L	0.1	5.88	5.84	4.79	4.19	4.9	4.5	4.92	9.36	
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<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	<0.00030	<0.00030	<0.00030	
Copper (Cu)-Total	mg/L	0.001	0.0012	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	0.001	0.0018	0.002
Iron (Fe)-Total	mg/L	0.03	0.119	0.11	0.12	0.103	0.119	0.111	0.11	0.116	0.300
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001
Lithium (Li)-Total	mg/L	0.005	0.0016	0.0016	0.002	0.0022	0.0019	0.0018	0.0016	0.0033	
Magnesium (Mg)-Total	mg/L	0.1	3.9	3.84	3.54	3.13	3.62	3.28	3.74	6.9	
Manganese (Mn)-Total	mg/L	0.0003	0.0192	0.018	0.0231	0.0193	0.0224	0.0199	0.0167	0.0158	
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	<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	<0.0010	<0.0010	<0.0010	0.073
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.025
Potassium (K)-Total	mg/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.8	
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<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	<0.000020	<0.000020	<0.000020	0.0001
Sodium (Na)-Total	mg/L	2	22.6	21.5	18.5	16.3	17.9	16.3	19.5	35.6	
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<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	<0.00050	<0.00050	<0.00050	
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<0.010	<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	<0.00020	<0.00020	<0.00020	
Vanadium (V)-Total	mg/L	0.001	0.0005	0.00052	0.00051	<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	<0.0050	<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 12: Monthly Compliance Sample Results for TL-3, June 2016

Sample ID			TL3-06JUN16A	TL3-06JUN16B	TL3-09JUN16	TL3-10JUN16	TL3-12JUN-16	TL3-14JUN-16	TL3-16JUN16	TL3-19JUN16	Part G Item 30
ALS ID			L1779671-4	L1779671-5	L1781642-3	L1781642-6	L1783067-3	L1783067-6	L1785401-3	L1786668-3	
Date Sampled			6/6/2016 3:40:00 PM	6/6/2016 3:40:00 PM	6/9/2016 11:40:00 AM	6/10/2016 8:00:00 AM	6/12/2016 8:15:00 AM	6/14/2016 8:05:00 AM	6/16/2016 2:20:00 PM	6/19/2016 9:20:00 AM	
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water	Water	Water	Maximum Concentration of Any Grab Sample (mg/L)
Hardness (as CaCO3)	mg/L	0.5	33.2	33	27.1	23.1	27.1	24.3	27.4	51.4	
pH	pH	0.1	7.53	7.54	7.47	7.32	7.2	7.2	7.24	7.55	6.0 - 9.0
Total Suspended Solids	mg/L	3	<3.0	3	<3.0	<3.0	<3.0	<3.0	<3.0	5.6	15.0
Total Dissolved Solids	mg/L	10	105	104	87	80	83	77	88	165	
Ammonia, Total (as N)	mg/L	0.005	0.0071	0.0066	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.54
Bromide (Br)	mg/L	0.05	0.13	0.128	0.111	0.1	0.12	0.103	0.113	0.211	
Chloride (Cl)	mg/L	0.5	39.5	39.6	33.9	29.6	35.5	31.9	33.7	61.5	150
Fluoride (F)	mg/L	0.02	0.041	0.04	0.037	0.032	0.036	0.034	0.035	0.057	
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	2.9
Nitrite (as N)	mg/L	0.001	0.0011	0.0063	<0.0010	<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	0.0014	0.0018	0.0014	<0.0010	<0.0010	
Phosphorus (P)-Total	mg/L	0.002	0.0153	0.009	0.0069	0.0057	0.0128	0.0092	0.0133	0.0193	
Sulfate (SO4)	mg/L	0.5	1.97	1.97	1.47	1.28	1.59	1.43	1.5	3.24	
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<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	<0.0050	<0.0050	<0.0050	0.005
Aluminum (Al)-Total	mg/L	0.005	0.0659	0.0644	0.0812	0.0963	0.0762	0.0703	0.0767	0.0811	0.100
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<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	<0.00050	<0.00050	<0.00050	0.0050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020	<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	<0.0010	<0.0010	<0.0010	
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10	<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	<0.0000050	<0.0000050	<0.0000050	0.000017
Calcium (Ca)-Total	mg/L	0.1	6.42	6.4	4.92	4.16	4.89	4.42	4.96	9.48	
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<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	<0.00030	<0.00030	<0.00030	
Copper (Cu)-Total	mg/L	0.001	0.0013	0.0013	0.001	<0.0010	<0.0010	<0.0010	0.001	0.0019	0.002
Iron (Fe)-Total	mg/L	0.03	0.12	0.115	0.123	0.124	0.121	0.112	0.126	0.137	0.300
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001
Lithium (Li)-Total	mg/L	0.005	0.0018	0.0019	0.0021	0.0021	0.002	0.0018	0.0016	0.0034	
Magnesium (Mg)-Total	mg/L	0.1	4.16	4.13	3.59	3.09	3.62	3.23	3.66	6.73	
Manganese (Mn)-Total	mg/L	0.0003	0.0239	0.0235	0.0203	0.0177	0.0184	0.0156	0.0153	0.016	
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	<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	<0.0010	<0.0010	<0.0010	0.073
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.025
Potassium (K)-Total	mg/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.7	
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<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	<0.000020	<0.000020	<0.000020	0.0001
Sodium (Na)-Total	mg/L	2	23.3	22.8	18.8	16	18.1	16.3	18.6	36.8	
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<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	<0.00050	<0.00050	<0.00050	
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010	<0.010	<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	<0.00020	<0.00020	<0.00020	
Vanadium (V)-Total	mg/L	0.001	0.00053	<0.00050	<0.00050	<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	<0.0050	<0.0050	<0.0050	0.030
Hexavalent Chromium	mg/L	0.001	0.001	0.0013	<0.0010	<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	<5.0	<5.0	<5.0	5
Oil And Grease (Visible Sheen)		n/a	NO	NO	NO	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

No water was discharged from the TIA to Doris Creek this month; a comparison of flows was not conducted.

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

Pre-discharge water quality samples were collected at station TL-10 in accordance with Schedule J, Table 2 of the licence. Results of this sampling are presented in Table 13 below.

Table 13: Monthly Compliance Sample Results for TL-10, June 2016

Sample ID			TL10-20JUN16S*	TL10-20JUN16M*	TL10-20JUN16D*	TL10-20JUN16A^
ALS ID			L1786683-1	L1786683-2	L1786683-3	L1786683-4
Date Sampled			6/20/2016 3:30:00 PM	6/20/2016 3:50:00 PM	6/20/2016 4:10:00 PM	6/20/2016 3:30:00 PM
Parameter	Units	Detection Limit	Water	Water	Water	Water
Hardness (as CaCO ₃)	mg/L	0.5	54.1	55.1	54.1	54.7
pH	pH	0.1	7.59	7.59	7.6	7.6
Redox Potential	mV	-1000	432	416	407	398
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L	10	147	143	143	146
Ammonia, Total (as N)	mg/L	0.005	0.0056	0.0053	<0.0050	<0.0050
Bromide (Br)	mg/L	0.05	0.083	0.082	0.081	0.079
Chloride (Cl)	mg/L	0.5	40.6	40.7	40.5	40.7
Fluoride (F)	mg/L	0.02	0.056	0.056	0.056	0.056
Nitrate (as N)	mg/L	0.005	0.019	0.021	0.0234	0.018
Nitrite (as N)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.002	0.0118	0.0077	0.0112	0.0111
Sulfate (SO ₄)	mg/L	0.5	2.47	2.51	2.48	2.48
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050
Aluminum (Al)-Total	mg/L	0.005	0.037	0.04	0.0442	0.043
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
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	12.1	11.9	12
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	0.001	0.0012	0.0012	0.0011
Iron (Fe)-Total	mg/L	0.03	0.199	0.201	0.201	0.202
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0037	0.004	0.0039	0.004
Magnesium (Mg)-Total	mg/L	0.1	5.89	6.06	5.9	5.98
Manganese (Mn)-Total	mg/L	0.0003	0.0304	0.0316	0.0302	0.0313
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<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	<0.0010	<0.0010	<0.0010
Potassium (K)-Total	mg/L	2	2.1	2.2	2.1	2.2
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	20.1	21.3	20.3	20.8
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	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050

* S = shallow; M = mid-depth; D = 1m above bottom

^ Duplicate sample of TL10-20JUN16S.

Part J: Conditions Applying to General and Aquatics Effects Monitoring

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

Excluding the hexavalent chromium exceedance at monitoring station TL-3 discussed above, there were no sample results exceeding discharge TIA criteria. No water has been discharged from the TIA this year.

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

Pre-discharge acute lethality testing was conducted at sample station TL-1 (TIA intake) this month. Results indicate that effluent is non-acutely toxic to Rainbow Trout and Daphnia magna (Table 14).

Table 14: Acute Lethality Testing, Pre-Discharge at TL-1, June 2016

Sample ID	TL1-06JUN16
ALS ID	L1779671-1
Sample Date/Time	6/6/2016 4:50:00 PM
Parameter	Water
96-h LC50 Rainbow Trout Acute Toxicity EPS 1/RM/13	>100%
48-h LC50 Daphnia magna Acute Toxicity EPS 1/RM/14	>100%

*>100% indicates all test organisms survived ie: non-lethal

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

Waste rock produced from the underground mining program is hauled to surface. The volume of waste rock brought to surface in June was 9,940 tonnes. The current total volume of waste rock on Pad T and the temporary waste rock pad is 297,642 tonnes.

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. Daily visual observations were made during tundra discharge and no erosion was noted.

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

Incident Reporting

Jun 18/2016 – Spill #16-228. On June 18, 2016 a new operator was using a vacuum truck to transfer sewage from portable washrooms/washcars at Doris Camp into the main building lift station. After completing the transfer, the operator lifted the hose to drain the remaining contents into the lift station; however failed to disconnect the hose from the truck prior to draining the line. This allowed a small amount of sewage to remain in the hose line. When the operator disconnected the hose from the lift station and placed it back onto the side of the truck, approximately 5L of sewage was released from the open end of the hose onto the camp pad next to the vacuum truck. Contaminated snow and gravel were immediately

removed from the camp pad and disposed of in the overburden stockpile, where sewage solids may be disposed of in accordance with the Wastewater Treatment Management Plan. A review of the proper procedure for draining the line was conducted with new operators performing this task.

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, INAC

Figure 1. 2AM-DOH-1323 SNP Monitoring Locations

