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Re: July 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

508 m³ of water was extracted from Windy Lake for domestic use this month as permitted by water licences 2BE-HOP1222 and 2AM-DOH1323. On July 16th and July 17th volumes of water extracted from Windy Lake for domestic purposes exceeded the daily withdrawal limit of 63 m³. A new truck operator who was not aware of the daily limit extracted 70 m³ each day. The overage was quickly detected and the operator was instructed in the water usage limits from Windy Lake for domestic purposes. Water was not used under the 2AM-DOH1323 licence for drilling in support of the Doris North mine this month. Water used for surface drilling in July in support of the Regional Exploration program is reported under 2BE-HOP1222. 79 m³ of water was used for underground drilling purposes in support of the Doris North mine development. 48 m³ of water was used for dust suppression on site roads this month. Compliant berm discharge water was also used for dust suppression to reduce the volume withdrawn from the environment for this purpose. Water usage is presented in Table 1.

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

Water Usage	Domestic Water Use from Windy Lake ST-7a (m ³)	All Other Water Use* (m ³)	Total (m ³)
Monthly Total	508	127	635
Annual Cumulative	1792	443	2235

**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, July 2015

Sample ID			ST7-07JUL15	ST7A-14JUL15
ALS ID			L1638343-1	L1642126-1
Date Sampled			7/7/2015 9:50:00 AM	7/14/2015 8:35:00 AM
Parameter	Units	Detection Limit	Water	Water
Hardness (as CaCO ₃)	mg/L	0.5	68.7	69.5
pH	pH	0.1	7.81	7.97
Total Suspended Solids	mg/L	3	<3.0	<3.0
Ammonia, Total (as N)	mg/L	0.005	<0.0050	<0.0050
Nitrate (as N)	mg/L	0.005	0.0261	<0.0050
Nitrite (as N)	mg/L	0.001	0.0014	<0.0010
Orthophosphate-Dissolved (as P)	mg/L	0.001	0.0033	<0.0010
Phosphorus (P)-Total	mg/L	0.002	0.0158	0.0051
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	<1*
Total cyanobacterial cell count	cells/mL	1	252000	22*
Aluminum (Al)-Total	mg/L	0.005	0.0369	0.0626
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	15.5	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	0.0011
Iron (Fe)-Total	mg/L	0.03	0.266	0.069
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0034	0.0029
Magnesium (Mg)-Total	mg/L	0.1	7.27	9.37
Manganese (Mn)-Total	mg/L	0.0003	0.0397	0.00421
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	3.6
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	36.2	49.7
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	0.001	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050
Biochemical Oxygen Demand	mg/L	2	<2.0	<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 L1642288-1 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, July 2015

Sample ID			ST8B-07JUL15A	ST8B-07JUL15B*	Part G Item 3(b)	
ALS ID			L1638411-1	L1638411-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/7/2015 10:25:00 AM	7/7/2015 10:25:00 AM		
Parameter	Units	Detection Limit	Water	Water		
pH	pH	0.1	7.72	7.68	6.0 - 9.0	9.0
Total Suspended Solids	mg/L	3	<3.0	<3.0	100	100
Fecal Coliforms	CFU/ 100mL	1	<1	<1	10,000	10,000
Biochemical Oxygen Demand (BOD ₅)	mg/L	1	<2.0	<2.0	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.

*Duplicate sample.

This month, 259 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, July 2015

Sample ID			ST9-21JUL15
ALS ID			L1645778-1
Date Sampled			7/21/2015 8:05:00 AM
Parameter	Units	Detection Limit	Water
pH	pH	0.10	7.89
Total Suspended Solids	mg/L	3.00	11.4
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. 7681 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 July, 4581 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, July 2015

Sample ID			ST1-05JUL15	Part G Item 23(a)	
ALS ID			L1638337-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/5/2015 5:45:00 PM		
Parameter	Units	Detection Limit	Water		
Hardness (as CaCO ₃)	mg/L	0.5	373		
pH	pH	0.1	8	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	90.2		
Ammonia, Total (as N)	mg/L	0.005	2.67	2.0	4.0
Bromide (Br)	mg/L	0.5	<0.50 *		
Chloride (Cl)	mg/L	5	333		
Fluoride (F)	mg/L	0.2	<0.20 *		
Nitrate (as N)	mg/L	0.05	17.7		
Nitrite (as N)	mg/L	0.01	0.199		
Sulfate (SO ₄)	mg/L	5	49.7		
Cyanide, Total	mg/L	0.005	<0.0050	1.0	2.0
Aluminum (Al)-Total	mg/L	0.005	0.165	1.0	2.0
Antimony (Sb)-Total	mg/L	0.0005	<0.00050		
Arsenic (As)-Total	mg/L	0.0005	0.0006	0.05	0.10
Barium (Ba)-Total	mg/L	0.02	0.03		
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	0.0000312		
Calcium (Ca)-Total	mg/L	0.1	117		
Chromium (Cr)-Total	mg/L	0.001	<0.0010		
Cobalt (Co)-Total	mg/L	0.0003	0.00074		
Copper (Cu)-Total	mg/L	0.001	0.0063	0.02	0.30
Iron (Fe)-Total	mg/L	0.03	0.201	0.30	0.60
Lead (Pb)-Total	mg/L	0.0005	<0.00050	0.01	0.02
Lithium (Li)-Total	mg/L	0.005	0.0138		
Magnesium (Mg)-Total	mg/L	0.1	19.9		
Manganese (Mn)-Total	mg/L	0.0003	0.112		
Molybdenum (Mo)-Total	mg/L	0.001	0.0021		
Nickel (Ni)-Total	mg/L	0.001	0.0019	0.05	0.10
Potassium (K)-Total	mg/L	2	8.5		
Selenium (Se)-Total	mg/L	0.0001	0.000627		
Silver (Ag)-Total	mg/L	0.00002	<0.000020		
Sodium (Na)-Total	mg/L	2	131		
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	0.00052		
Vanadium (V)-Total	mg/L	0.001	0.00082		
Zinc (Zn)-Total	mg/L	0.005	0.0469	0.01	0.02

Sample ID			ST1-05JUL15	Part G Item 23(a)	
ALS ID			L1638337-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/5/2015 5:45:00 PM		
Parameter	Units	Detection Limit	Water		
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, July 2015

Sample ID			ST2-05JUL15
ALS ID			L1638337-2
Date Sampled			7/5/2015 5:35:00 PM
Parameter	Units	Detection Limit	Water
Hardness (as CaCO ₃)	mg/L	0.5	656
pH	pH	0.1	7.92
Total Suspended Solids	mg/L	3	<3.0
Alkalinity, Total (as CaCO ₃)	mg/L	1	116
Ammonia, Total (as N)	mg/L	0.25	5.22
Bromide (Br)	mg/L	0.05	<1.0 *
Chloride (Cl)	mg/L	0.5	601
Fluoride (F)	mg/L	0.02	<0.40 *
Nitrate (as N)	mg/L	0.025	37.3
Nitrite (as N)	mg/L	0.001	0.392
Sulfate (SO ₄)	mg/L	0.5	127
Cyanide, Total	mg/L	0.005	<0.0050
Aluminum (Al)-Total	mg/L	0.006	0.0239
Antimony (Sb)-Total	mg/L	0.0005	<0.00050
Arsenic (As)-Total	mg/L	0.0005	0.00063
Barium (Ba)-Total	mg/L	0.02	0.033
Beryllium (Be)-Total	mg/L	0.001	<0.0010
Boron (B)-Total	mg/L	0.1	0.34
Cadmium (Cd)-Total	mg/L	0.00002	0.0000686
Calcium (Ca)-Total	mg/L	0.1	197
Chromium (Cr)-Total	mg/L	0.001	<0.0010
Cobalt (Co)-Total	mg/L	0.0003	0.00157
Copper (Cu)-Total	mg/L	0.001	0.0047
Iron (Fe)-Total	mg/L	0.03	<0.030
Lead (Pb)-Total	mg/L	0.0005	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0239
Magnesium (Mg)-Total	mg/L	0.1	38.5
Manganese (Mn)-Total	mg/L	0.0003	0.333
Molybdenum (Mo)-Total	mg/L	0.001	0.0042
Nickel (Ni)-Total	mg/L	0.001	0.0027
Potassium (K)-Total	mg/L	2	15.1
Selenium (Se)-Total	mg/L	0.0002	0.00148
Silver (Ag)-Total	mg/L	0.00002	<0.000020
Sodium (Na)-Total	mg/L	2	240
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	<0.010
Uranium (U)-Total	mg/L	0.0002	0.00122
Vanadium (V)-Total	mg/L	0.002	<0.00050
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

Pre-discharge compliant water quality samples for ST-4 were reported in June. This month, 76m³ 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. A visible sheen was noted on the water surface at the beginning of discharge on July 11, 2015. Discharge was immediately suspended and water quality samples were collected. 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. Due to heavy rainfall in July, further consolidation from small temporary fuel berms around site occurred and pre-discharge samples will be collected prior to further discharge.

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

Sample ID			ST4-10JUL15A	ST4-10JUL15B*	ST4-11JUL15	Part G Item 24(c)	
ALS ID			L1642348-1	L1642348-2	L1642348-5	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/10/2015 8:35:00 AM	7/10/2015 8:35:00 AM	7/11/2015 7:36:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water		
pH	pH	0.1	8.31	8.28	8.34	6.0-9.0	9
Total Suspended Solids	mg/L	3	4.8	5	4	15.0	30.0
Total Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	5.0	10.0
Oil And Grease (Visible Sheen)		n/a	NO	NO	NO	No Visible Sheen	No Visible Sheen
Total Ammonia - N	mg/L	0.005	0.0114	0.0115	0.0118	2.0	4.0
Total Lead	mg/L	0.00005	<0.000050	0.000051	<0.000050	0.01	0.02
Benzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.37	
Toluene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.002	
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.090	

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

* Duplicate 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 stations ST-5 and ST-6b. Elevated TSS was noted in sample ST6A-22JUL15, which was discharged to roads and/or the overburden stockpile.

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 bunded area has been used for storage of other hydrocarbon products; a leak from one of these containers is suspected as the source of the product.

Water from ST-6a had been pumped earlier in the day on July 25th to the overburden stockpile discharge location northeast of the tank farm. As a precautionary measure sorbent booms and peat moss berms were installed along the downstream toe of the overburden stockpile and water quality samples were collected from areas of visible water seepage. TPH, VOCs, BTEX, F1-F2 hydrocarbon fractions and Oil and Grease results of this sampling were below detection limits indicating it was unlikely that any product was released to the overburden stockpile.

As a temporary measure, the treated standing water from ST-6a was transferred to the Tailings Impoundment Area (TIA). For the remainder of 2015, analysis of samples from ST-6A will include F2 analysis. Water will be discharged to the TIA if the sum of Oil and Grease plus the F2, in mg/l, is greater than the maximum allowed discharge level as identified in Schedule J, of water license 2AM-DOH1323. Otherwise it will be handled as normal.

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

Sample ID			ST5-13JUL15	ST5-18JUL15	ST5-23JUL15	ST5-24JUL15	Part G Item 24(e)	
ALS ID			L1642278-1	L1645780-1	L1647932-5	L1647932-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/13/2015 10:30:00 AM	7/18/2015 8:00:00 AM	7/23/2015 8:19:00 AM	7/24/2015 8:10:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water		
pH	pH	0.1	8.31	8.31	8.16	8.1	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	<0.000050	<0.000050	0.000092	<0.000050	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			ST5-25JUL15	ST5-26JUL15	ST5-27JUL15	ST5-28JUL15	Part G Item 24(e)	
ALS ID			L1649400-1	L1649400-2	L1649400-3	L1649400-4	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/25/2015 9:45:00 AM	7/26/2015 9:40:00 AM	7/27/2015 8:10:00 AM	7/28/2015 8:10:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water		
pH	pH	0.1	8.12	8.24	8.28	8.34	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	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.

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

Sample ID			ST6A-01JUL15	ST6A-06JUL15	ST6A-14JUL15	ST6A-18JUL15	ST6A-21JUL15	ST6A-22JUL15	Part G Item 24(e)	
ALS ID			L1636804-1	L1638332-1	L1642311-2	L1645780-2	L1645780-3	L1647932-4	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/1/2015 11:35:00 AM	7/6/2015 11:25:00 AM	7/14/2015 7:45:00 AM	7/18/2015 7:30:00 AM	7/21/2015 8:45:00 AM	7/22/2015 7:00:00 PM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water		
pH	pH	0.1	8.31	8.31	8.35	8.31	8.16	8.31	6.0– 9.0	9
Total Suspended Solids	mg/L	3	4.2	<3.0	<3.0	<3.0	<3.0	39.7	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	0.000098	0.00007	0.0001	<0.000050	0.000123	0.000747	0.01	0.02
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	NO	NO	NO	NO	NO	NO		
Benzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.37	
Bromodichloromethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Bromoform	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Carbon Tetrachloride	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
Chlorobenzene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Dibromochloromethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Chloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Chloroform	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Chloromethane	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050		
1,2-Dichlorobenzene	mg/L	0.0007	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070		
1,3-Dichlorobenzene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
1,4-Dichlorobenzene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
1,1-Dichloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
1,2-Dichloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
1,1-Dichloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
cis-1,2-Dichloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
trans-1,2-Dichloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
1,3-Dichloropropene (cis & trans)	mg/L	0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014		
Dichloromethane	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050		
1,2-Dichloropropane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
cis-1,3-Dichloropropylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
trans-1,3-Dichloropropylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.090	
Methyl t-butyl ether (MTBE)	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
1,1,1,2-Tetrachloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
1,1,2,2-Tetrachloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Tetrachloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Toluene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	
1,1,1-Trichloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		

Sample ID			ST6A-01JUL15	ST6A-06JUL15	ST6A-14JUL15	ST6A-18JUL15	ST6A-21JUL15	ST6A-22JUL15	Part G Item 24(e)	
ALS ID			L1636804-1	L1638332-1	L1642311-2	L1645780-2	L1645780-3	L1647932-4	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/1/2015 11:35:00 AM	7/6/2015 11:25:00 AM	7/14/2015 7:45:00 AM	7/18/2015 7:30:00 AM	7/21/2015 8:45:00 AM	7/22/2015 7:00:00 PM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water		
1,1,2-Trichloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Trichloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Trichlorofluoromethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
Vinyl Chloride	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		
ortho-Xylene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
meta- & para-Xylene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
Xylenes	mg/L	0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075		
F1 (C6-C10)	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
4-Bromofluorobenzene (SS)	%	Surrogate	102	100.2	107.9	90.9	95.6	93.7		
1,4-Difluorobenzene (SS)	%	Surrogate	100.8	99.6	101.6	99.1	99.3	100.5		
F1-BTEX	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	-		
F2 (C10-C16)	mg/L	0.3	-	-	-	-	-	-		
TPH10-32	mg/L	1	-	-	-	-	-	-		
2-Bromobenzotrifluoride, EPH-sg (%)	%	Surrogate	-	-	-	-	-	-		
2-Bromobenzotrifluoride, F2-F4 (%)	%	Surrogate	-	-	-	-	-	-		

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

Sample ID			ST6A-24JUL15	ST6A-25JUL15	ST6A-27JUL15	ST6A-28JUL15	ST6A-31JUL15	Part G Item 24(e)	
ALS ID			L1647932-2	L1649367-1	L1649367-2	L1649382-1	L1651309-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/24/2015 7:37:00 AM	7/25/2015 9:00:00 AM	7/27/2015 12:00:00 PM	7/28/2015 11:15:00 AM	7/31/2015 8:20:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water		
pH	pH	0.1	8.16	8.04	8.12	-	8.21	6.0– 9.0	9
Total Suspended Solids	mg/L	3	11.1	6.6	<3.0	-	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	0.000313	0.00021	0.000085	-	<0.000050	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	
Bromodichloromethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Bromoform	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Carbon Tetrachloride	mg/L	0.0005	<0.00050	<0.00050	<0.00050	-	-		
Chlorobenzene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Dibromochloromethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		

Sample ID			ST6A-24JUL15	ST6A-25JUL15	ST6A-27JUL15	ST6A-28JUL15	ST6A-31JUL15	Part G Item 24(e)	
ALS ID			L1647932-2	L1649367-1	L1649367-2	L1649382-1	L1651309-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/24/2015 7:37:00 AM	7/25/2015 9:00:00 AM	7/27/2015 12:00:00 PM	7/28/2015 11:15:00 AM	7/31/2015 8:20:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water		
Chloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Chloroform	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Chloromethane	mg/L	0.005	<0.0050	<0.0050	<0.0050	-	-		
1,2-Dichlorobenzene	mg/L	0.0007	<0.00070	<0.00070	<0.00070	-	-		
1,3-Dichlorobenzene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
1,4-Dichlorobenzene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
1,1-Dichloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
1,2-Dichloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
1,1-Dichloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
cis-1,2-Dichloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
trans-1,2-Dichloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
1,3-Dichloropropene (cis & trans)	mg/L	0.0014	<0.0014	<0.0014	<0.0014	-	-		
Dichloromethane	mg/L	0.005	<0.0050	<0.0050	<0.0050	-	-		
1,2-Dichloropropane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
cis-1,3-Dichloropropylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
trans-1,3-Dichloropropylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	-	<0.00050	0.090	
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	<0.0010	-	-		
1,1,2,2-Tetrachloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Tetrachloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Toluene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	-	<0.00050	0.002	
1,1,1-Trichloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
1,1,2-Trichloroethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Trichloroethylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Trichlorofluoromethane	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
Vinyl Chloride	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	-		
ortho-Xylene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	-	<0.00050		
meta- & para-Xylene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	-	<0.00050		
Xylenes	mg/L	0.00075	<0.00075	<0.00075	<0.00075	-	<0.00075		
F1 (C6-C10)	mg/L	0.1	<0.10	<0.10	<0.10	-	-		
4-Bromofluorobenzene (SS)	%	Surrogate	94.6	99	99.3	-	100.4		
1,4-Difluorobenzene (SS)	%	Surrogate	99.9	101.4	101.1	-	98.1		
F1-BTEX	mg/L	0.1	-	-	-	-	-		
F2 (C10-C16)	mg/L	0.3	-	-	-	1.6	1.28		
TPH10-32	mg/L	1	-	-	-	1.1	-		
2-Bromobenzotrifluoride, EPH-sg (%)	%	Surrogate	-	-	-	68.3	-		

Sample ID			ST6A-24JUL15	ST6A-25JUL15	ST6A-27JUL15	ST6A-28JUL15	ST6A-31JUL15	Part G Item 24(e)	
ALS ID			L1647932-2	L1649367-1	L1649367-2	L1649382-1	L1651309-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/24/2015 7:37:00 AM	7/25/2015 9:00:00 AM	7/27/2015 12:00:00 PM	7/28/2015 11:15:00 AM	7/31/2015 8:20:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water		
2-Bromobenzotrifluoride, F2-F4 (%)	%	Surrogate	-	-	-	88.5	91.4		

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, July 2015

Sample ID			ST6B-06JUL15	ST6B-14JUL15	ST6B-17JUL15	ST6B-24JUL15	ST6B-25JUL15	Part G Item 24(e)	
ALS ID			L1638332-2	L1642311-1	L1644253-1	L1647932-3	L1649400-5	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/6/2015 11:10:00 AM	7/14/2015 7:54:00 AM	7/17/2015 8:10:00 AM	7/24/2015 7:40:00 AM	7/25/2015 9:15:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water		
pH	pH	0.1	8.37	8.43	8.33	8.17	8.19	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	<3.0	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	<0.000050	0.000104	<0.000050	0.000151	0.000115	0.01	0.02
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	<5.0	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	NO	NO	NO	NO	NO		
Benzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.37	
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.090	
Toluene	mg/L	0.0005	<0.00050	<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-26JUL15	ST6B-27JUL15	ST6B-28JUL15	ST6B-29JUL15	Part G Item 24(e)	
ALS ID			L1649400-6	L1649400-7	L1649400-8	L1651309-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/26/2015 9:20:00 AM	7/27/2015 7:40:00 AM	7/28/2015 7:45:00 AM	7/29/2015 7:35:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water		
pH	pH	0.1	8.19	8.25	8.24	8.3	6.0– 9.0	9
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	0.000061	<0.000050	<0.000050	<0.000050	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.

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 four stations associated with the TIA discharge (TL-1 through TL-4) in accordance with Part J Item 8 and Schedule J, Table 2 of the licence. Results are presented in Tables 11 through 14 below. An exceedance of the Part G Item 30 criteria for oil and grease was noted in one sample collected at Doris Creek station TL-3 (TL3-11JUL15), downstream of the TL-4 discharge location. Foam identified on the surface of the creek during sampling is believed to have contributed natural organics which caused this exceedance. Re-analysis of the sample was conducted by the laboratory (TL3-11JUL15DUP) and results for oil and grease were below the Part G Item 30 criteria. 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, July 2015

Sample ID			TL1-03JUL15	TL1-06JUL15	TL1-11JUL15	TL1-13JUL15	TL1-20JUL15	TL1-27JUL15	Part G Item 28	
ALS ID			L1636792-1	L1638435-1	L1642261-1	L1642261-4	L1645878-1	L1649292-1	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			7/3/2015 8:20:00 AM	7/6/2015 2:35:00 PM	7/11/2015 11:07:00 AM	7/13/2015 4:15:00 PM	7/20/2015 9:15:00 AM	7/27/2015 4:00:00 PM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water		
Hardness (as CaCO ₃)	mg/L	0.5	51.2	52.9	51.6	53.2	51.9	51.6		
pH	pH	0.1	7.65	7.71	7.81	7.8	7.63	7.92	6.0 - 9.5	6.0 - 9.5
Redox Potential	mV	-1000	351	-	-	-	-	-		
Total Suspended Solids	mg/L	3	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	15.00	30.00
Total Dissolved Solids	mg/L	10	131	123	114	121	115	145		
Ammonia, Total (as N)	mg/L	0.005	<0.0050	0.0051	0.0089	0.0064	0.006	0.0233	6	
Bromide (Br)	mg/L	0.05	0.072	0.063	0.078	0.062	0.077	0.076		
Chloride (Cl)	mg/L	0.5	40.5	40.9	40.5	39.9	39.5	39.8		
Fluoride (F)	mg/L	0.02	0.052	0.052	0.054	0.052	0.054	0.053		
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	0.0099	<0.0050	<0.0050	0.0877		
Nitrite (as N)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0018		
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013		
Phosphorus (P)-Total	mg/L	0.002	0.0154	0.0153	0.0117	0.0106	0.0147	0.0134		
Sulfate (SO ₄)	mg/L	0.5	1.94	1.83	2.24	2.05	2.05	3.03		
Cyanide, Total	mg/L	0.005	<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		
Aluminum (Al)-Total	mg/L	0.005	0.0115	0.0109	0.014	0.0116	0.0114	0.0306		
Antimony (Sb)-Total	mg/L	0.0005	<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	0.50	1.00
Barium (Ba)-Total	mg/L	0.02	<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		
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050	<0.0000050	0.0000054	<0.0000050	0.0000084	<0.0000050		
Calcium (Ca)-Total	mg/L	0.1	11.3	11.6	11.6	11.9	11.5	11.8		
Chromium (Cr)-Total	mg/L	0.001	<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		
Copper (Cu)-Total	mg/L	0.001	<0.0010	<0.0010	0.0071	0.0011	0.0043	0.0016	0.30	0.60
Iron (Fe)-Total	mg/L	0.03	0.163	0.157	0.27	0.14	0.156	0.161		
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	0.00255	<0.00050	0.00226	<0.00050	0.20	0.40
Lithium (Li)-Total	mg/L	0.005	0.0033	0.0032	0.0033	0.0032	0.0039	0.0035		
Magnesium (Mg)-Total	mg/L	0.1	5.59	5.55	5.51	5.7	5.62	5.37		
Manganese (Mn)-Total	mg/L	0.0003	0.0445	0.031	0.029	0.02	0.0255	0.0323		
Mercury (Hg)-Total	mg/L	0.00001	<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		

Sample ID			TL1-03JUL15	TL1-06JUL15	TL1-11JUL15	TL1-13JUL15	TL1-20JUL15	TL1-27JUL15	Part G Item 28	
ALS ID			L1636792-1	L1638435-1	L1642261-1	L1642261-4	L1645878-1	L1649292-1	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			7/3/2015 8:20:00 AM	7/6/2015 2:35:00 PM	7/11/2015 11:07:00 AM	7/13/2015 4:15:00 PM	7/20/2015 9:15:00 AM	7/27/2015 4:00:00 PM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water		
Nickel (Ni)-Total	mg/L	0.001	<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	<2.0	<2.0		
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050		
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		
Sodium (Na)-Total	mg/L	2	19.8	18.9	19.1	19.1	18.4	19.4		
Thallium (Tl)-Total	mg/L	0.0002	<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		
Titanium (Ti)-Total	mg/L	0.01	<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		
Vanadium (V)-Total	mg/L	0.001	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050	0.0528	0.0063	0.0159	<0.0050	0.50	1.00
Radium 226*	Bq/L	n/a	-	< 0.01	<0.0100	<0.0100	<0.0100	<0.0100	0.37	1.11

* Radium 226 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.

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

Sample ID			TL2-03JUL15	TL2-06JUL15	TL2-11JUL15	TL2-13JUL15	TL2-20JUL15	TL2-27JUL15	Part G Item 30
ALS ID			L1636792-2	L1638435-2	L1642261-2	L1642261-5	L1645878-2	L1649292-2	
Date Sampled			7/3/2015 8:00:00 AM	7/6/2015 2:25:00 PM	7/11/2015 10:50:00 AM	7/11/2015 4:00:00 PM	7/20/2015 3:30:00 PM	7/27/2015 4:15:00 PM	Maximum Concentration of Any Grab Sample (mg/L)
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water	
Hardness (as CaCO ₃)	mg/L	0.5	50.4	53.3	47.2	48	46.3	45.5	
pH	pH	0.1	7.46	7.56	7.71	7.7	7.76	7.85	6.0 - 9.0
Total Suspended Solids	mg/L	3	4.8	5.6	5.1	5.3	4.7	<3.0	15.0
Total Dissolved Solids	mg/L	10	182	184	153	152	140	172	
Ammonia, Total (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.54
Bromide (Br)	mg/L	0.05	0.237	0.234	0.216	0.222	0.209	0.207	
Chloride (Cl)	mg/L	0.5	69.4	71.8	64	63.7	63.1	61.8	150
Fluoride (F)	mg/L	0.02	0.055	0.056	0.051	0.051	0.048	0.05	
Nitrate (as N)	mg/L	0.005	<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	0.060
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	0.0025	<0.0010	<0.0010	<0.0010	<0.0010	
Phosphorus (P)-Total	mg/L	0.002	0.0219	0.0281	0.0274	0.0206	0.0253	0.0175	
Sulfate (SO ₄)	mg/L	0.5	2.96	2.63	2.76	2.76	2.69	2.74	

Sample ID			TL2-03JUL15	TL2-06JUL15	TL2-11JUL15	TL2-13JUL15	TL2-20JUL15	TL2-27JUL15	Part G Item 30
ALS ID			L1636792-2	L1638435-2	L1642261-2	L1642261-5	L1645878-2	L1649292-2	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			7/3/2015 8:00:00 AM	7/6/2015 2:25:00 PM	7/11/2015 10:50:00 AM	7/11/2015 4:00:00 PM	7/20/2015 3:30:00 PM	7/27/2015 4:15:00 PM	
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water	
Cyanide, Total	mg/L	0.005	<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	0.005
Aluminum (Al)-Total	mg/L	0.005	0.0507	0.0589	0.078	0.0622	0.07	0.0711	0.100
Antimony (Sb)-Total	mg/L	0.0005	<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	0.0050
Barium (Ba)-Total	mg/L	0.02	<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	
Boron (B)-Total	mg/L	0.1	<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	0.000017
Calcium (Ca)-Total	mg/L	0.1	8.98	9.56	8.43	8.54	8.29	8.24	
Chromium (Cr)-Total	mg/L	0.001	<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	
Copper (Cu)-Total	mg/L	0.001	0.0015	0.0014	0.0013	0.0014	0.0014	0.0014	0.002
Iron (Fe)-Total	mg/L	0.03	0.103	0.252	0.23	0.207	0.175	0.132	0.300
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001
Lithium (Li)-Total	mg/L	0.005	0.0036	0.0036	0.0032	0.0031	0.0036	0.0033	
Magnesium (Mg)-Total	mg/L	0.1	6.78	7.15	6.35	6.47	6.21	6.06	
Manganese (Mn)-Total	mg/L	0.0003	0.0128	0.0367	0.0279	0.0234	0.0185	0.0119	
Mercury (Hg)-Total	mg/L	0.00001	<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	0.073
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.025
Potassium (K)-Total	mg/L	2	2.4	2.6	2.3	2.3	2.3	2.2	
Selenium (Se)-Total	mg/L	0.0001	<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	0.0001
Sodium (Na)-Total	mg/L	2	34.5	36.8	32.9	33.4	31.2	32.2	
Thallium (Tl)-Total	mg/L	0.0002	<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	
Titanium (Ti)-Total	mg/L	0.01	<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	
Vanadium (V)-Total	mg/L	0.001	<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	0.030

Bold/shading indicates exceedance of Part G Item 30 Maximum Concentration in a Grab Sample.

Table 13: Water Quality Sample Results for TL-3, July 2015

Sample ID			TL3-03JUL15	TL3-06JUL15	TL3-11JUL15	TL3-11JUL15 DUP	TL3-13JUL15	TL3-20JUL15	TL3-27JUL15	Part G Item 30
ALS ID			L1636792-3	L1638435-3	L1642261-3	L1642261-7	L1642261-6	L1645878-3	L1649292-3	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			7/3/2015 7:45:00 AM	7/6/2015 2:10:00 PM	7/11/2015 10:35:00 AM	7/11/2015 10:35:00 AM	7/11/2015 3:40:00 PM	7/20/2015 4:00:00 PM	7/27/2015 4:30:00 PM	
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water	Water	
Hardness (as CaCO ₃)	mg/L	0.5	51.1	54.6	48.1	-	48.1	47.4	46.4	
pH	pH	0.1	7.53	7.62	7.72	-	7.71	7.81	7.75	6.0 - 9.0
Total Suspended Solids	mg/L	3	7.3	5.4	4.5	-	3.5	3	4.1	15.0
Total Dissolved Solids	mg/L	10	184	183	154	-	156	142	173	
Ammonia, Total (as N)	mg/L	0.005	<0.0050	<0.0050	0.0093	-	0.009	0.0127	0.0118	1.54
Bromide (Br)	mg/L	0.05	0.23	0.225	0.215	-	0.207	0.2	0.199	
Chloride (Cl)	mg/L	0.5	68.1	70.4	62.6	-	62.3	61.3	61	150
Fluoride (F)	mg/L	0.02	0.055	0.056	0.051	-	0.051	0.048	0.05	
Nitrate (as N)	mg/L	0.005	<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	0.060
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	0.0024	<0.0010	-	<0.0010	<0.0010	<0.0010	
Phosphorus (P)-Total	mg/L	0.002	0.0306	0.0272	0.0302	-	0.0128	0.0207	0.0212	
Sulfate (SO ₄)	mg/L	0.5	2.92	2.64	2.75	-	2.73	2.69	2.74	
Cyanide, Total	mg/L	0.005	<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	0.005
Aluminum (Al)-Total	mg/L	0.005	0.0487	0.058	0.0652	-	0.0525	0.0553	0.0663	0.100
Antimony (Sb)-Total	mg/L	0.0005	<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	0.0050
Barium (Ba)-Total	mg/L	0.02	<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	
Boron (B)-Total	mg/L	0.1	<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	0.000017
Calcium (Ca)-Total	mg/L	0.1	9.19	9.91	8.74	-	8.73	8.68	8.5	
Chromium (Cr)-Total	mg/L	0.001	<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	
Copper (Cu)-Total	mg/L	0.001	0.0015	0.0013	0.0013	-	0.0014	0.0013	0.0014	0.002
Iron (Fe)-Total	mg/L	0.03	0.107	0.246	0.212	-	0.185	0.164	0.129	0.300
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	0.001
Lithium (Li)-Total	mg/L	0.005	0.0036	0.0036	0.003	-	0.0031	0.0036	0.0032	
Magnesium (Mg)-Total	mg/L	0.1	6.84	7.24	6.38	-	6.39	6.26	6.12	
Manganese (Mn)-Total	mg/L	0.0003	0.0143	0.0333	0.0249	-	0.0216	0.018	0.0132	
Mercury (Hg)-Total	mg/L	0.00001	<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	0.073

Sample ID			TL3-03JUL15	TL3-06JUL15	TL3-11JUL15	TL3-11JUL15 DUP	TL3-13JUL15	TL3-20JUL15	TL3-27JUL15	Part G Item 30
ALS ID			L1636792-3	L1638435-3	L1642261-3	L1642261-7	L1642261-6	L1645878-3	L1649292-3	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			7/3/2015 7:45:00 AM	7/6/2015 2:10:00 PM	7/11/2015 10:35:00 AM	7/11/2015 10:35:00 AM	7/11/2015 3:40:00 PM	7/20/2015 4:00:00 PM	7/27/2015 4:30:00 PM	
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water	Water	Water	
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	0.025
Potassium (K)-Total	mg/L	2	2.4	2.6	2.3	-	2.3	2.3	2.2	
Selenium (Se)-Total	mg/L	0.0001	<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	0.0001
Sodium (Na)-Total	mg/L	2	33.9	36.5	32.2	-	32.5	30.5	32.3	
Thallium (Tl)-Total	mg/L	0.0002	<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	
Titanium (Ti)-Total	mg/L	0.01	<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	
Vanadium (V)-Total	mg/L	0.001	<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	0.030
Hexavalent Chromium	mg/L	0.001	<0.0010	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	0.0010
Oil and Grease	mg/L	5	<5.0	<5.0	6.3	<5.0	<5.0	<5.0	<5.0	5
Oil And Grease (Visible Sheen)		n/a	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.

Table 14: Water Quality Sample Results for TL-4, July 2015

Sample ID			TL4-03JUL15	Part G Item 28	
ALS ID			L1636792-4	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
Date Sampled			7/3/2015 7:45:00 AM		
Parameter	Units	Detection Limit	Water		
Hardness (as CaCO ₃)	mg/L	0.5	50.6		
pH	pH	0.1	7.5	6.0 - 9.5	6.0 - 9.5
Redox Potential	mV	-1000	-		
Total Suspended Solids	mg/L	3	<3.0	15.00	30.00
Total Dissolved Solids	mg/L	10	130		
Ammonia, Total (as N)	mg/L	0.005	0.006	6	
Bromide (Br)	mg/L	0.05	0.077		
Chloride (Cl)	mg/L	0.5	40.8		
Fluoride (F)	mg/L	0.02	0.054		
Nitrate (as N)	mg/L	0.005	<0.0050		
Nitrite (as N)	mg/L	0.001	<0.0010		
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010		
Phosphorus (P)-Total	mg/L	0.002	0.0186		
Sulfate (SO ₄)	mg/L	0.5	1.95		
Cyanide, Total	mg/L	0.005	<0.0050	1.00	2.00
Cyanide, Free	mg/L	0.005	<0.0050		
Fecal Coliforms	CFU/100mL	1	<1	10,000	10,000
Aluminum (Al)-Total	mg/L	0.005	0.013		
Antimony (Sb)-Total	mg/L	0.0005	<0.00050		
Arsenic (As)-Total	mg/L	0.0005	<0.00050	0.50	1.00
Barium (Ba)-Total	mg/L	0.02	<0.020		
Beryllium (Be)-Total	mg/L	0.001	<0.0010		
Boron (B)-Total	mg/L	0.1	<0.10		
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050		
Calcium (Ca)-Total	mg/L	0.1	11.1		
Chromium (Cr)-Total	mg/L	0.001	0.0011		
Cobalt (Co)-Total	mg/L	0.0003	<0.00030		
Copper (Cu)-Total	mg/L	0.001	0.0015	0.30	0.60
Iron (Fe)-Total	mg/L	0.03	1.65		
Lead (Pb)-Total	mg/L	0.0005	<0.00050	0.20	0.40
Lithium (Li)-Total	mg/L	0.005	0.0032		
Magnesium (Mg)-Total	mg/L	0.1	5.55		
Manganese (Mn)-Total	mg/L	0.0003	0.0712		
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050		
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010		
Nickel (Ni)-Total	mg/L	0.001	0.0011	0.50	1.00
Potassium (K)-Total	mg/L	2	<2.0		
Selenium (Se)-Total	mg/L	0.0001	<0.000050		
Silver (Ag)-Total	mg/L	0.00002	<0.000020		
Sodium (Na)-Total	mg/L	2	19.4		
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	<0.010		
Uranium (U)-Total	mg/L	0.0002	<0.00020		
Vanadium (V)-Total	mg/L	0.001	<0.00050		
Zinc (Zn)-Total	mg/L	0.005	0.152	0.50	1.00
BOD (BOD ₅)	mg/L	2	3	80	160
Radium 226	Bq/L	n/a	< 0.01	0.37	1.11

Bold/shading indicates exceedance of Part G Item 28 Maximum Average Concentration (most conservative criteria); however no exceedances observed.

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 15 below.

Table 15: Comparison of Flows at TL-4 and TL-2, July 2015

Date	TL-4 Discharge (m ³)	10% of TL-2 Flow (Predicted) (m ³)
July-01-15	7832.73	19291
July-02-15	4413.08	18190
July-03-15	7896.83	17437
July-04-15	7822.54	16737
July-05-15	7729.94	16265
July-06-15	7821.53	15748
July-07-15	7888.03	15208
July-08-15	5149.37	14688
July-09-15	7821.84	14312
July-10-15	7829.49	14164
July-11-15	7925.02	13826
July-12-15	7546.47	13381
July-13-15	7927.15	13027
July-14-15	7848.71	12616
July-15-15	7519.18	12057
July-16-15	8034.92	11607
July-17-15	7781.47	11038
July-18-15	7705.94	10423
July-19-15	7630.58	9889
July-20-15	7658.26	10113
July-21-15	7679.48	10170
July-22-15	7320.59	10022
July-23-15	7507.08	13147
July-24-15	4178.8	14445
July-25-15	7268.56	17732
July-26-15	7337.27	19731
July-27-15	7607.89	21908
July-28-15	7899.35	24267
July-29-15	7855.54	26735
July-30-15	7647.53	25775
July-31-15	8058.8	24429

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 is scheduled to be completed in August 2015.

Part J: Conditions Applying to General and Aquatics Effects Monitoring

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

An exceedance of Part G, Item 30 criteria for oil and grease was noted in one sample collected at Doris Creek station TL-3 (downstream of TL-4 discharge location); however, this is believed to be due to naturally occurring organic foam present on the water surface during the sampling event. Re-analysis of this sample by the

laboratory resulted in oil and grease levels below detection limits. No elevated levels were noted in subsequent samples collected at TL-3 in July indicating that this result was likely not a project related effect.

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

Pre-discharge acute lethality testing results were reported in June. Acute lethality testing required midway through the annual discharge period will be conducted in August.

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. This month discharges to the Roberts Bay overburden stockpile occurred at station ST-6a as permitted by the Inspector. During daily discharge sampling, visual observations were made and no erosion was noted. Compliant water accumulated at station ST-6a was also discharged to site roads for dust suppression.

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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Hope Bay Project
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cc. Eva Paul, Water Resources Officer, AANDC

Figure 1. 2AM-DOH1323 SNP Monitoring Locations

