

Aug 6, 2014

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Re: June 2014 – 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. Doris Camp is currently operating in a care and maintenance phase with water management, drill exploration, and environmental compliance being the focus of current activities.

Part E: Conditions Applying to Water Use

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

395 m³ of water was extracted from Windy Lake for Doris Camp domestic use this month as permitted by water licences 2BE-HOP1222 and 2AM-DOH1323. Water was also used for drilling from Doris and Windy Lakes in support of the Doris North mine. Water usage is presented in Table 1. Drills also utilized compliant berm discharge water during June, reducing the freshwater lake use.

Table 1: Water usage, in cubic meters, June 2014

Water Usage	Domestic Water Use from Windy Lake ST-7a (m ³)	Monthly Drill Water Use – Doris and Windy Lakes (m ³)	Monthly Cumulative (m ³)
Monthly Total	395	642	1037

Schedule J: Water Quality Monitoring at Water Intake

Monthly water quality samples were taken from monitoring station ST-7a (Windy Lake raw water) in accordance with the Schedule J requirements of the licence (Table 2Table 2). Water was not sampled at ST-7 (Doris Lake raw water) as the Doris Lake Pumphouse is not operating.

Table 2: Monthly Compliance Sample Results for ST-7a, June 2014

Sample ID	ST7A-03JUN14	
ALS ID	L1464793-1	
Date Sampled	6/3/2014 11:04:00 AM	
Parameters	Units	Results
Hardness (as CaCO ₃)	uS/cm	49.8
pH	mg/L	7.65
Total Suspended Solids	pH	<3.0
Ammonia, Total (as N)	mg/L	0.0065
Nitrate (as N)	mg/L	0.124
Nitrite (as N)	mg/L	0.0017
Orthophosphate-Dissolved (as P)	mg/L	<0.0010
Phosphorus (P)-Total	mg/L	0.0092
Cyanide, Total	mg/L	<0.0050
Cyanide, Free	mg/L	<0.0050
Fecal Coliforms	CFU/100mL	<1
Total cyanobacterial cell count	cells/mL	<1
Aluminum (Al)-Total	cells/mL	0.0525
Antimony (Sb)-Total	cells/mL	<0.00050
Arsenic (As)-Total	cells/mL	<0.00050
Barium (Ba)-Total	mg/L	<0.020
Beryllium (Be)-Total	mg/L	<0.0010
Boron (B)-Total	mg/L	<0.10
Cadmium (Cd)-Total	mg/L	0.000035
Calcium (Ca)-Total	mg/L	8.94
Chromium (Cr)-Total	mg/L	<0.0010
Cobalt (Co)-Total	mg/L	<0.00030
Copper (Cu)-Total	mg/L	0.0012
Iron (Fe)-Total	mg/L	0.07
Lead (Pb)-Total	mg/L	<0.00050
Lithium (Li)-Total	mg/L	<0.0050
Magnesium (Mg)-Total	mg/L	6.66
Manganese (Mn)-Total	mg/L	0.00631
Mercury (Hg)-Total	mg/L	<0.000010
Molybdenum (Mo)-Total	mg/L	<0.0010
Nickel (Ni)-Total	mg/L	<0.0010
Potassium (K)-Total	mg/L	2.9
Selenium (Se)-Total	mg/L	<0.00010
Silver (Ag)-Total	mg/L	<0.000020
Sodium (Na)-Total	mg/L	35.8
Thallium (Tl)-Total	mg/L	<0.00020
Tin (Sn)-Total	mg/L	<0.00050
Titanium (Ti)-Total	mg/L	<0.010
Uranium (U)-Total	mg/L	<0.00020
Vanadium (V)-Total	mg/L	<0.0010
Zinc (Zn)-Total	mg/L	<0.0050
Oil and Grease	mg/L	<5.0
Oil And Grease (Visible Sheen)		No
Microcystin	mg/L	<0.20

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 May 24, 2014.

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 samples were in compliance with licence discharge criteria.

Table 3: Monthly Compliance Sample Results for ST-8B, June 2014

Sample ID		ST8B-03JUN14	Part G Item 3 (b)	
ALS ID		L1454791-1	Maximum Average Concentration	Maximum Allowable Grab Sample Concentration
Sample Date/Time		6/3/2014 11:15		
Parameter	Units	Results		
pH	pH	6.34	6 - 9	9
Total Suspended Solids	mg/L	<3.0	100	100
Biochemical Oxygen Demand (BOD ₅)	mg/L	4	80	80
Oil and Grease	mg/L	<5.0	5	10
Oil And Grease (Visible Sheen)		No Visible Sheen	No Visible Sheen	No Visible Sheen
Fecal Coliform	CFU/ 100mL	<1	10,000	10,000

This month, 321 m³ of sewage effluent was discharged from the sewage treatment plant.

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

Monthly compliance samples were taken from monitoring station ST-9 (Runoff from Wastewater Treatment Plant Discharge) in accordance with the Schedule J requirements of the licence (Table 4).

Table 4: Monthly Compliance Sample Results for ST-9, June 2014

Sample ID		ST9-10JUN14
ALS ID		L1468516-1
Sample Date/Time		6/10/2014 8:10:00 AM
Parameter	Units	Results
pH	pH	7.82
Total Suspended Solids	mg/L	<3.0
Biochemical Oxygen Demand (BOD ₅)	mg/L	2
Oil and Grease	mg/L	<5.0
Oil And Grease (Visible Sheen)		No Visible Sheen
Fecal Coliform	CFU/ 100mL	<1

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

As described in the 2012 Interim Water Management Plan, the Sedimentation Pond (ST-1) is being used as a collection pond for the water that accumulates in the Pollution Control Pond (ST-2), the two Underflow Sumps (ST2S1 and ST2S2), and occasionally from various berms and containments in the project area. The water in ST-1 is transferred to the Tailings Impoundment Area (TIA) when there is enough accumulated water for the

pumps to operate effectively. At this time, no ST-1 water is being discharged to the tundra. Transfer of water from ST-1 to the TIA was initiated May 30, 2014 (Table 5). The water quality results for ST-1 are shown in Table 6.

Table 5: Water in cubic meters (m³) transferred from ST-1 to the TIA, June 2014

Parameters	Water volume transferred from ST-1 to TIA (m ³)
Monthly Cumulative	4834
Annual Cumulative	4945

Table 6: Water Quality Data Summary for Monitoring Station ST-1, June 2014

Sample ID		ST1-30JUN14	Part G Item 23(a)	
ALS ID		L1481623-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Sample Date/Time		6/30/2014 3:50:00 PM		
Parameters	Units	Results		
Hardness (as CaCO ₃)	mg/L	1110		
pH	pH	7.91	6.0 - 9.0	9
Total Suspended Solids	mg/L	9.2	15.0	30.0
Alkalinity, Total (as CaCO ₃)	mg/L	90		
Ammonia, Total (as N)	mg/L	16.9	2.0	4.0
Bromide (Br)	mg/L	1.7		
Chloride (Cl)	mg/L	1160		
Fluoride (F)	mg/L	<0.40 *		
Nitrate (as N)	mg/L	64.3		
Nitrite (as N)	mg/L	0.714		
Sulfate (SO ₄)	mg/L	126		
Cyanide, Total	mg/L	0.0076	1.0	2.0
Aluminum (Al)-Total	mg/L	0.06	1.0	2.0
Antimony (Sb)-Total	mg/L	<0.00050		
Arsenic (As)-Total	mg/L	0.00092	0.05	0.1
Barium (Ba)-Total	mg/L	0.061		
Beryllium (Be)-Total	mg/L	<0.0010		
Boron (B)-Total	mg/L	0.37		
Cadmium (Cd)-Total	mg/L	0.000109		
Calcium (Ca)-Total	mg/L	365		
Chromium (Cr)-Total	mg/L	<0.0010		
Cobalt (Co)-Total	mg/L	0.00197		
Copper (Cu)-Total	mg/L	0.0064	0.02	0.3
Iron (Fe)-Total	mg/L	0.175	0.3	0.6
Lead (Pb)-Total	mg/L	<0.00050	0.01	0.02
Lithium (Li)-Total	mg/L	0.0497		
Magnesium (Mg)-Total	mg/L	49.1		
Manganese (Mn)-Total	mg/L	0.458		
Molybdenum (Mo)-Total	mg/L	0.0039		
Nickel (Ni)-Total	mg/L	0.0022	0.05	0.1
Potassium (K)-Total	mg/L	24.3		
Selenium (Se)-Total	mg/L	0.0018		
Silver (Ag)-Total	mg/L	<0.000020		
Sodium (Na)-Total	mg/L	392		
Thallium (Tl)-Total	mg/L	<0.00020		
Tin (Sn)-Total	mg/L	<0.00050		

Table 6 (Continued): Water Quality Data Summary for Monitoring Station ST-1, June 2014

Sample ID		ST1-30JUN14	Part G Item 23(a)	
ALS ID		L1481623-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Sample Date/Time		6/30/2014 3:50:00 PM		
Parameters	Units	Results		
Titanium (Ti)-Total	mg/L	0.024		
Uranium (U)-Total	mg/L	0.00093		
Vanadium (V)-Total	mg/L	<0.0020 ^		
Zinc (Zn)-Total	mg/L	0.0469	0.01	0.02
Oil and Grease	mg/L	<5.0	5	10
Oil And Grease (Visible Sheen)		No	no visible sheen	no visible sheen

* Detection limit adjusted due to sample matrix effects

^ Detection limit adjusted for required dilution

Bold text indicates exceedance of criteria from Part G Item 23(a) (Maximum Concentration in Any Grab Sample); however, no water discharged to tundra (as above).

The Reagent and Cyanide Storage Facility Sumps (ST-11) is not constructed. 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 7 below.

Table 7: Water Quality Data Summary for Monitoring Station ST-2, June 2014

Sample ID		ST2-30JUN14
ALS ID		L1481623-2
Sample Date/Time		6/30/2014 1:40:00 PM
Parameters	Units	Results
Hardness (as CaCO ₃)	mg/L	1130
pH	pH	7.93
Total Suspended Solids	mg/L	4.9
Alkalinity, Total (as CaCO ₃)	mg/L	133
Ammonia, Total (as N)	mg/L	14.2
Bromide (Br)	mg/L	1.6
Chloride (Cl)	mg/L	1110
Fluoride (F)	mg/L	<0.40 *
Nitrate (as N)	mg/L	66.3
Nitrite (as N)	mg/L	0.734
Sulfate (SO ₄)	mg/L	228
Cyanide, Total	mg/L	0.0052
Aluminum (Al)-Total	mg/L	0.247
Antimony (Sb)-Total	mg/L	<0.00050
Arsenic (As)-Total	mg/L	0.00125
Barium (Ba)-Total	mg/L	0.059
Beryllium (Be)-Total	mg/L	<0.0010
Boron (B)-Total	mg/L	0.45
Cadmium (Cd)-Total	mg/L	0.000126
Calcium (Ca)-Total	mg/L	355
Chromium (Cr)-Total	mg/L	0.0015
Cobalt (Co)-Total	mg/L	0.00304
Copper (Cu)-Total	mg/L	0.007
Iron (Fe)-Total	mg/L	0.573
Lead (Pb)-Total	mg/L	<0.00050

Table 7 (Continued): Water Quality Data Summary for Monitoring Station ST-2, June 2014

Sample ID		ST2-30JUN14
ALS ID		L1481623-2
Sample Date/Time		6/30/2014 1:40:00 PM
Lithium (Li)-Total	mg/L	0.05
Magnesium (Mg)-Total	mg/L	58.3
Manganese (Mn)-Total	mg/L	0.709
Molybdenum (Mo)-Total	mg/L	0.0065
Nickel (Ni)-Total	mg/L	0.0039
Potassium (K)-Total	mg/L	24.1
Selenium (Se)-Total	mg/L	0.00328
Silver (Ag)-Total	mg/L	<0.000020
Sodium (Na)-Total	mg/L	395
Thallium (Tl)-Total	mg/L	<0.00020
Tin (Sn)-Total	mg/L	<0.00050
Titanium (Ti)-Total	mg/L	0.031
Uranium (U)-Total	mg/L	0.00197
Vanadium (V)-Total	mg/L	<0.0020 ^
Zinc (Zn)-Total	mg/L	<0.0050
Oil and Grease	mg/L	<5.0
Oil And Grease (Visible Sheen)		No

* Detection limit adjusted due to sample matrix effects

^ Detection limit adjusted for required dilution

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

Compliance samples were collected from monitoring station ST-4 (Landfarm Sump) in accordance with the Schedule J requirements of the licence (Table 8). Samples were compliant with the licence criteria for discharge. No water was discharged from the facility in June.

Table 8: Water Quality Data Summary for Monitoring Station ST-4, June 2014

Sample ID		ST4-09JUN14	Part G Item 24 (c)	
ALS ID		L1468655-1	Maximum Average Concentration	Maximum Allowable Grab Sample Concentration
Sample Date/Time		6/9/2014 8:38:00 AM		
Parameter	Units	Results		
pH	pH	8.05	6 - 9	9
Total Suspended Solids	mg/L	<3.0	15.0	30.0
Total Oil and Grease	mg/L	<5.0	5	10
Oil And Grease (Visible Sheen)		No Visible Sheen	No Visible Sheen	No Visible Sheen
Total Ammonia - N	mg/L	0.0149	2.0	4.0
Total Lead	mg/L	0.000069	0.01	0.02
Benzene	mg/L	<0.00050	0.37	-
Toluene	mg/L	<0.00050	0.002	-
Ethylbenzene	mg/L	<0.00050	0.090	-

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

Sampling was undertaken at the Doris tank farm (ST-5), and Roberts Bay tank farms (ST-6a and ST-6b) this month daily during discharges from the facilities. Results are presented in Tables 9 through 11 below.

A discharge notification for these facilities was provided to the Inspector May 24/14. All results were in compliance with the licence, with the exception of total suspended solids at Roberts Bay tank farm ST-6a; permission was granted via email by the Inspector June 6/14 to discharge this effluent on the road system for dust suppression. Dewatering of these facilities was undertaken in June.

Table 9: Water Quality Data Summary for Monitoring Station ST-5, June 2014

Sample ID		ST5-08JUN14	ST5-09JUN14	ST5-13JUN14	ST5-18JUN14	ST5-22JUN14	Part G Item 24e	
ALS ID		L1468638-6	L1468638-7	L1470658-1	L1473811-1	L1476318-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Sample Date/Time		6/8/2014 8:18:00 AM	6/9/2014 7:56:00 AM	6/13/2014 7:33:00 AM	6/18/2014 5:15:00 PM	6/22/2014 1:20:00 PM		
Parameter	Unit	Results						
pH	pH	8.11	8.12	8.15	8.17	8.26	6.5 – 9.0	9
Total Suspended Solids	mg/L	<3.0	4.9	<3.0	<3.0	4.1	15	30
Lead (Pb)-Total	mg/L	0.0001	0.00016	0.000059	<0.000050	<0.000050	0.01	0.02
Oil and Grease	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	5	10
Benzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.37	-
Ethylbenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.09	-
Toluene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	

Table 10: Water Quality Data Summary for Monitoring Station ST-6A, June 2014

Sample ID		ST6A-07JUN14	ST6A-08JUN14	ST6A-09JUN14	ST6A-10JUN14	ST6A-11JUN14	ST6A-13JUN14	Part G Item 24e	
ALS ID		L1468638-3	L1468638-5	L1468638-8	L1470658-2	L1470658-3	L1470658-5	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Sample Date/Time		6/7/2014 12:45:00 PM	6/8/2014 7:50:00 AM	6/9/2014 8:15:00 AM	6/10/2014 9:28:00 AM	6/11/2014 7:35:00 AM	6/13/2014 3:38:00 PM		
Parameter	Unit	Results						Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
pH	pH	8.21	8.21	2.2	8.14	8.13	8.07		
Total Suspended Solids	mg/L	30.3	15.3	7.6	133	<3.0	10.4	15	30
Lead (Pb)-Total	mg/L	0.00144	0.000138	0.000141	0.00135	0.000188	0.000684	0.01	0.02
Oil and Grease	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5	10
Benzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.37	-
Ethylbenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.09	-
Toluene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	

Table 10 (Continued): Water Quality Data Summary for Monitoring Station ST-6A, June 2014

Sample ID		ST6A-19JUN14	ST6A-20JUN14	ST6A-21JUN14	ST6A-23JUN14	ST6A-25JUN14	ST6A-29JUN14	Monthly Average ST6A *	Part G Item 24e	
ALS ID		L1473811-3	L1476318-2	L1476318-3	L1476318-4	L1478581-1	L1481613-1		Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Sample Date/Time		6/19/2014 9:45:00 AM	6/20/2014 11:45:00 AM	6/21/2014 1:15:00 PM	6/23/2014 8:30:00 AM	6/25/2014 9:45:00 AM	6/29/2014 9:00:00 AM			
Parameter	Unit	Results						Monthly Average ST6A *	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
pH	pH	8.08	8.19	8.23	8.36	8.12	8.26			
Total Suspended Solids	mg/L	9.9	169	24.3	<3.0	13.4	9.6	35.5	15	30
Lead (Pb)-Total	mg/L	0.00027	0.00154	0.000405	<0.000050	0.000187	0.000271	0.000553	0.01	0.02
Oil and Grease	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5	10
Benzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0005	0.37	-
Ethylbenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0005	0.09	-
Toluene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0005	0.002	

* Values less than detection limit were assumed ½ detection limit to calculate monthly average.

Bold values indicate exceedance of the Maximum Concentration in Any Grab Sample; however, no water discharged to tundra (as above).

Bold underlined values indicate exceedance of the Maximum Average Concentration by the calculated monthly average; however, no water discharged to tundra (as above).

Table 11: Water Quality Data Summary for Monitoring Station ST-6B, June 2014

Sample ID		ST6B-06JUN14	ST6B-07JUN14	ST6B-08JUN14	ST6B-12JUN14	ST6B-18JUN14	Part G Item 24e	
ALS ID		L1468638-1	L1468638-2	L1468638-4	L1470658-4	L1473811-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Sample Date/Time		6/6/2014 5:17:00 PM	6/7/2014 7:47:00 AM	6/8/2014 7:45:00 AM	6/12/2014 7:40:00 AM	6/18/2014 12:15:00 PM		
Parameter	Unit	Results						
pH	pH	8.12	8.15	8.18	8.18	8.12	6.5 – 9.0	9
Total Suspended Solids	mg/L	12.9	19.8	7.8	<3.0	13.9	15	30
Lead (Pb)-Total	mg/L	0.000329	0.00028	0.000233	0.000066	0.000373	0.01	0.02
Oil and Grease	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	5	10
Benzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.37	-
Ethylbenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.09	-
Toluene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	

Table 11 (Continued): Water Quality Data Summary for Monitoring Station ST-6B, June 2014

Sample ID		ST6B-19JUN14	ST6B-20JUN14	ST6B-23JUN14	ST6B-24JUN14	ST6B-29JUN14	Monthly Average ST6B *	Part G Item 24e	
ALS ID		L1473811-4	L1476318-5	L1476318-6	L1478581-2	L1481613-2		Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Sample Date/Time		6/19/2014 9:50:00 AM	6/20/2014 11:55:00 AM	6/23/2014 10:45:00 AM	6/24/2014 11:45:00 AM	6/29/2014 11:34:00 AM			
Parameter	Unit	Results							
pH	pH	8.14	8.29	8.28	8.17	8.4	8.2	6.5 – 9.0	9
Total Suspended Solids	mg/L	<3.0	<3.0	8.6	<3.0	<3.0	7.1	15	30
Lead (Pb)-Total	mg/L	0.000112	0.000125	0.000269	<0.000050	<0.000050	0.000223	0.01	0.02
Oil and Grease	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5	10
Benzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.37	-
Ethylbenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.09	-
Toluene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	

* Values less than detection limit were assumed ½ detection limit to calculate monthly average.

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.)

Dewatering of the Tailings Impoundment Area started June 19, 2014. Pre-discharge samples were collected at TL-1, TL-2 and TL-3 May 29/14 and the results presented in the May monthly report, but cold weather prevented commencement of discharge in early June as planned. Pre-discharge samples were collected again during the week of June 9 to 16 at TL-1, and on June 16 at stations TL-2 and TL-3. Bi-weekly sampling was then conducted at stations TL-1, TL-2 and TL-3, and weekly sampling at station TL-4 started June 23, 2014. Results are provided in Tables 12 through 15 below. Exceedences of the Part G, Item 30 criteria for aluminium and iron were noted at Doris Creek stations TL-3 (downstream) of the TL-4 discharge, however, exceedences of the same parameters were also seen upstream in Doris Creek (TL-2), and have been observed to be elevated naturally in this creek, indicating that this is not a project related effect. Furthermore, water discharged from Tail Lake to Doris Creek during the same sampling event as measured at stations TL-1 (Tail Lake discharge intake) and TL-4 (end-of-pipe discharge), did not exceed criteria.

Table 12: Water Quality Data Summary for Monitoring Station TL-1, June 2014

Sample ID		TL1-09JUN14	TL1-12JUN14	TL1-16JUN14	TL1-19JUN14	TL1-23JUN14	TL1-26JUN14	TL1-30JUN14
ALS ID		L1468523-1	L1470655-1	L1472482-1	L1473846-1	L1476338-1	L1478465-1	L1481648-1
Sample Date/Time		6/9/2014 4:41:00 PM	6/12/2014 6:35:00 PM	6/16/2014 3:34:00 PM	6/19/2014 11:25:00 AM	6/23/2014 2:45:00 PM	6/26/2014 6:55:00 PM	6/30/2014 2:35:00 PM
Parameter	Units	Results						
Hardness (as CaCO ₃)	mg/L	43.4	43.1	45.7	42.9	48.7	57.8	42.1
pH	pH	7.68	7.57	7.66	7.79	7.82	7.86	7.69
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	4	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L	101	115	117	105	114	136	111
Ammonia, Total (as N)	mg/L	0.0157	0.0071	0.0696	0.005	0.0122	0.007	0.0174
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.075	0.055
Chloride (Cl)	mg/L	31	32.7	32.2	28.2	35.2	43.1	31.2
Fluoride (F)	mg/L	0.049	0.054	0.048	0.046	0.051	0.06	0.046
Nitrate (as N)	mg/L	0.0067	<0.0050	<0.0050	0.01	0.0535	0.0509	0.0514
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0016	0.0013	<0.0010
Orthophosphate-Dissolved (as P)	mg/L	0.0046	0.0021 *	<0.0010	0.0015	0.0016	<0.0010	0.0012
Phosphorus (P)-Total	mg/L	0.0424	0.0512	0.0252	0.0413	0.0347	0.0194	0.0214
Sulphate (SO ₄)	mg/L	2.07	2.15	1.97	1.84	2.98	2.98	2.1
Cyanide, Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, Free	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Aluminum (Al)-Total	mg/L	0.0102	0.0191	0.0421	0.0543	0.0178	0.0491	0.0162
Antimony (Sb)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic (As)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Barium (Ba)-Total	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Beryllium (Be)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)-Total	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium (Ca)-Total	mg/L	9.61	9.57	10	9.66	11.1	13.3	9.46
Chromium (Cr)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)-Total	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)-Total	mg/L	<0.0010	0.0014	0.0014	0.0014	0.0013	0.0018	<0.0010
Iron (Fe)-Total	mg/L	0.477	0.333	0.253	0.289	0.164	0.234	0.114
Lead (Pb)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lithium (Li)-Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Magnesium (Mg)-Total	mg/L	4.71	4.67	5.02	4.56	5.06	6	4.5

Table 12 (Continued): Water Quality Data Summary for Monitoring Station TL-1, June 2014

Sample ID		TL1-09JUN14	TL1-12JUN14	TL1-16JUN14	TL1-19JUN14	TL1-23JUN14	TL1-26JUN14	TL1-30JUN14
ALS ID		L1468523-1	L1470655-1	L1472482-1	L1473846-1	L1476338-1	L1478465-1	L1481648-1
Sample Date/Time		6/9/2014 4:41:00 PM	6/12/2014 6:35:00 PM	6/16/2014 3:34:00 PM	6/19/2014 11:25:00 AM	6/23/2014 2:45:00 PM	6/26/2014 6:55:00 PM	6/30/2014 2:35:00 PM
Parameter	Units	Results						
Manganese (Mn)-Total	mg/L	0.0373	0.0204	0.0312	0.0263	0.0139	0.0161	0.00941
Mercury (Hg)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel (Ni)-Total	mg/L	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Potassium (K)-Total	mg/L	2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Selenium (Se)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silver (Ag)-Total	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium (Na)-Total	mg/L	16.7	15.6	16.5	14.7	17.1	19.5	15.5
Thallium (Tl)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Titanium (Ti)-Total	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vanadium (V)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L	0.0071	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Table 13: Water Quality Data Summary for Monitoring Station TL-2, June 2014

Sample ID		TL2-16JUN16A	TL2-16JUN16B	TL2-19JUN14	TL2-23JUN14	TL2-26JUN14	TL2-30JUN14
ALS ID		L1472482-4	L1472482-5	L1473846-2	L1476338-2	L1478465-2	L1481648-2
Sample Date/Time		6/16/2014 2:40:00 AM	6/16/2014 2:44:00 PM	6/19/2014 11:15:00 AM	6/23/2014 2:00:00 PM	6/26/2014 6:25:00 PM	6/30/2014 2:05:00 PM
Parameter	Units	Results					
Hardness (as CaCO ₃)	mg/L	52.4	52.9	41	25.3	28.6	23
pH	pH	7.75	7.76	7.68	7.38	7.39	7.39
Total Suspended Solids	mg/L	<3.0	<3.0	5.8	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L	167	182	155	94	100	101
Ammonia, Total (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Bromide (Br)	mg/L	0.231	0.23	0.183	0.117	0.126	0.105
Chloride (Cl)	mg/L	67.5	67.6	56.2	35.1	37.7	30.5
Fluoride (F)	mg/L	0.057	0.057	0.047	0.034	0.036	0.031
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Orthophosphate-Dissolved (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.0325	0.0207	0.0318	0.0224	0.0185	0.0128
Sulphate (SO ₄)	mg/L	3.05	3.06	2.15	1.4	1.59	1.34
Cyanide, Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, Free	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Aluminum (Al)-Total	mg/L	0.0359	0.0327	0.343	0.24	0.16	0.122
Antimony (Sb)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic (As)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Barium (Ba)-Total	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Beryllium (Be)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)-Total	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium (Ca)-Total	mg/L	9.7	9.77	6.68	3.95	4.91	4.03
Chromium (Cr)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)-Total	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)-Total	mg/L	0.0014	0.0014	0.0015	0.0012	0.0015	<0.0010
Iron (Fe)-Total	mg/L	0.068	0.089	0.492	0.387	0.276	0.192
Lead (Pb)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lithium (Li)-Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Magnesium (Mg)-Total	mg/L	6.84	6.93	5.9	3.74	3.96	3.15

Table 13 (Continued): Water Quality Data Summary for Monitoring Station TL-2, June 2014

Sample ID		TL2-16JUN16A	TL2-16JUN16B	TL2-19JUN14	TL2-23JUN14	TL2-26JUN14	TL2-30JUN14
ALS ID		L1472482-4	L1472482-5	L1473846-2	L1476338-2	L1478465-2	L1481648-2
Sample Date/Time		6/16/2014 2:40:00 AM	6/16/2014 2:44:00 PM	6/19/2014 11:15:00 AM	6/23/2014 2:00:00 PM	6/26/2014 6:25:00 PM	6/30/2014 2:05:00 PM
Parameter	Units	Results					
Manganese (Mn)-Total	mg/L	0.0106	0.0257	0.0861	0.0442	0.0341	0.0212
Mercury (Hg)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel (Ni)-Total	mg/L	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010
Potassium (K)-Total	mg/L	2.5	2.6	2.7	<2.0	<2.0	<2.0
Selenium (Se)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silver (Ag)-Total	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium (Na)-Total	mg/L	34.2	34.7	29.1	19.3	19.3	15.8
Thallium (Tl)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Titanium (Ti)-Total	mg/L	<0.010	<0.010	0.015	<0.010	<0.010	<0.010
Uranium (U)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vanadium (V)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Bold values indicate an exceedance of discharge criteria for TL-3 at background station TL-2.

Table 14: Water Quality Data Summary for Monitoring Station TL-3, June 2014

Sample ID		TL3-16JUN14A	TL3-16JUN14B	TL3-19JUN14	TL3-23JUN14	TL3-26JUN14	TL3-30JUN14	Part G Item 30
ALS ID		L1472482-2	L1472482-3	L1473846-3	L1476338-3	L1478465-3	L1481648-3	Maximum
Sample Date/Time		6/16/2014 2:25:00 PM	6/16/2014 2:29:00 PM	6/19/2014 11:05:00 AM	6/23/2014 2:15:00 PM	6/26/2014 6:35:00 PM	6/30/2014 2:15:00 PM	Concentration of Any Grab Sample (mg/L)
Parameter	Units	Results						
Hardness (as CaCO ₃)	mg/L	52.8	53.6	41.6	26.3	27.3	25.4	
pH	pH	7.75	7.74	6.83	7.43	7.4	7.55	6.0 – 9.0
Total Suspended Solids	mg/L	3.2	<3.0	6.5	3.7	<3.0	3.7	15
Total Dissolved Solids	mg/L	174	178	152	93	96	95	
Ammonia, Total (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	1.54 **
Bromide (Br)	mg/L	0.232	0.222	0.19	0.112	0.121	0.104	
Chloride (Cl)	mg/L	65.9	65.6	56.4	34	36.1	31.9	150
Fluoride (F)	mg/L	0.056	0.056	0.048	0.034	0.037	0.033	
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	2.9
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.060
Orthophosphate-Dissolved (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Phosphorus (P)-Total	mg/L	0.022	0.0257	0.0335	0.0182	0.0147	0.0132	
Sulphate (SO ₄)	mg/L	3.03	3.02	2.17	1.47	1.57	1.42	
Cyanide, Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.01
Cyanide, Free	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.005
Aluminum (Al)-Total	mg/L	0.0568	0.0328	0.373	0.221	0.15	0.179	0.100
Antimony (Sb)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Arsenic (As)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0050
Barium (Ba)-Total	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	
Beryllium (Be)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron (B)-Total	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Cadmium (Cd)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000017
Calcium (Ca)-Total	mg/L	9.81	9.91	6.8	4.44	4.86	4.52	
Chromium (Cr)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Cobalt (Co)-Total	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper (Cu)-Total	mg/L	0.0014	0.0013	0.0015	0.0012	0.0013	<0.0010	0.002
Iron (Fe)-Total	mg/L	0.101	0.078	0.522	0.329	0.255	0.249	0.300
Lead (Pb)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001
Lithium (Li)-Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Magnesium (Mg)-Total	mg/L	6.87	7.01	5.99	3.71	3.69	3.43	

Table 14 (Continued): Water Quality Data Summary for Monitoring Station TL-3, June 2014

Sample ID	TL3-16JUN14A	TL3-16JUN14B	TL3-19JUN14	TL3-23JUN14	TL3-26JUN14	TL3-30JUN14	Part G Item 30
ALS ID	L1472482-2	L1472482-3	L1473846-3	L1476338-3	L1478465-3	L1481648-3	Maximum
Sample Date/Time	6/16/2014 2:25:00 PM	6/16/2014 2:29:00 PM	6/19/2014 11:05:00 AM	6/23/2014 2:15:00 PM	6/26/2014 6:35:00 PM	6/30/2014 2:15:00 PM	Concentration of Any Grab Sample (mg/L)
Parameter	Units	Results					
Manganese (Mn)-Total	mg/L	0.0127	0.0135	0.0794	0.0345	0.0262	0.0203
Mercury (Hg)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel (Ni)-Total	mg/L	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010
Potassium (K)-Total	mg/L	2.5	2.6	2.7	<2.0	<2.0	<2.0
Selenium (Se)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silver (Ag)-Total	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium (Na)-Total	mg/L	33.2	35.7	29.8	18.6	17.6	16.9
Thallium (Tl)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Titanium (Ti)-Total	mg/L	<0.010	<0.010	0.017	<0.010	<0.010	<0.010
Uranium (U)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vanadium (V)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Hexavalent Chromium	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Oil and Grease	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Oil and Grease (visible sheen)		No	No	No	No	No	No

As per Part G Item 30, during periods of discharge, water quality in Doris Creek at monitoring station TL-3 shall not exceed the greater of background water quality at the time of discharge as measured at monitoring station TL-2, or the criteria listed here. **Bold** values indicate an exceedance of TL-2 background water quality and discharge criteria for TL-3.

** 1.54 at pH 7.5 and temperature of 20 degrees C

Table 15: Water Quality Data Summary for Monitoring Station TL-4, June 2014

Sample ID		TL4-23JUN14	TL4-26JUN14	TL4-30JUN14	Monthly Average TL4 *	Part G Item 28	
ALS ID		L1476338-4	L1478465-4	L1481648-4		Maximum Average Concentration (mg/L)	Maximum Concentration in Any Grab Sample (mg/L)
Sample Date/Time		6/23/2014 2:30:00 PM	6/26/2014 6:45:00 PM	6/30/2014 2:25:00 PM			
Parameter	Units	Results					
Hardness (as CaCO ₃)	mg/L	44	50.5	44.8	46.4		
pH	pH	7.75	7.75	7.77	7.76	6.0 – 9.5	6.0 – 9.5
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	1.5	15.00	30.00
Total Dissolved Solids	mg/L	106	120	115	114		
Ammonia, Total (as N)	mg/L	0.0097	0.0133	0.0331	0.0187	6	
Bromide (Br)	mg/L	<0.050	0.065	0.057	0.049		
Chloride (Cl)	mg/L	31.3	39	33.3	34.5		
Fluoride (F)	mg/L	0.046	0.056	0.046	0.049		
Nitrate (as N)	mg/L	0.016	0.0388	0.14	0.0649		
Nitrite (as N)	mg/L	<0.0010	<0.0010	0.0016	0.0009		
Orthophosphate-Dissolved (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010		
Phosphorus (P)-Total	mg/L	0.0254	0.0185	0.0157	0.0199		
Sulphate (SO ₄)	mg/L	1.9	2.14	1.86	1.97		
Cyanide, Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	1.00	2.00
Cyanide, Free	mg/L	<0.0050	<0.0050	<0.0050	<0.0050		
Aluminum (Al)-Total	mg/L	0.0133	0.0091	0.0115	0.0113		
Antimony (Sb)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050		
Arsenic (As)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.50	1.00
Barium (Ba)-Total	mg/L	<0.020	<0.020	<0.020	<0.020		
Beryllium (Be)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010		
Boron (B)-Total	mg/L	<0.10	<0.10	<0.10	<0.10		
Cadmium (Cd)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010		
Calcium (Ca)-Total	mg/L	9.95	11.5	10.1	10.52		
Chromium (Cr)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010		
Cobalt (Co)-Total	mg/L	<0.00030	<0.00030	<0.00030	<0.00030		
Copper (Cu)-Total	mg/L	0.001	0.0012	<0.0010	0.0009	0.30	0.60
Iron (Fe)-Total	mg/L	0.107	0.118	0.123	0.116		
Lead (Pb)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.20	0.40
Lithium (Li)-Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050		

Table 15 (Continued): Water Quality Data Summary for Monitoring Station TL-4, June 2014

Sample ID		TL4-23JUN14	TL4-26JUN14	TL4-30JUN14	Monthly Average TL4 *	Part G Item 28	
ALS ID		L1476338-4	L1478465-4	L1481648-4		Maximum Average Concentration (mg/L)	Maximum Concentration in Any Grab Sample (mg/L)
Sample Date/Time		6/23/2014 2:30:00 PM	6/26/2014 6:45:00 PM	6/30/2014 2:25:00 PM			
Parameter	Units	Results					
Magnesium (Mg)-Total	mg/L	4.66	5.32	4.72	4.9		
Manganese (Mn)-Total	mg/L	0.0126	0.0133	0.0155	0.0138		
Mercury (Hg)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010		
Molybdenum (Mo)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010		
Nickel (Ni)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.50	1.00
Potassium (K)-Total	mg/L	<2.0	<2.0	<2.0	<2.0		
Selenium (Se)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010		
Silver (Ag)-Total	mg/L	<0.000020	<0.000020	<0.000020	<0.000020		
Sodium (Na)-Total	mg/L	15.3	17.2	16.1	16.2		
Thallium (Tl)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020		
Tin (Sn)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050		
Titanium (Ti)-Total	mg/L	<0.010	<0.010	<0.010	<0.010		
Uranium (U)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020		
Vanadium (V)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010		
Zinc (Zn)-Total	mg/L	<0.0050	0.0086	0.0089	0.0067	0.50	1.00
Radium 226	Bq/L	<0.0037	<0.0037	<0.0056	<0.0056	0.37	1.11
BOD	mg/L		5		5	80	160
Fecal Coliform	CFU/m L		<1		<1	10000	10000

** Values less than detection limit were assumed 1/2 detection limit to calculate monthly average.

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

Water was discharged from the TIA starting June 19, 2014; a comparison of flows is presented in Table 16.

Table 16: Comparison of Flows at TL-4 and TL-2, June 2014

Date	TL-4 Discharge(m ³)	10% of TL-2 Flow (Predicted) (m ³)
June-19-14		
June-20-14	9223.25	
June-21-14	9852.00	21290
June-22-14	9812.60	21830
June-23-14	9643.03	22130
June-24-14	9659.33	
June-25-14	9631.59	19000
June-26-14	9619.86	21800
June-27-14	9497.15	22000
June-28-14	9468.05	16000
June-29-14	9449.79	15600
June-30-14	9506.10	17700

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

Monitoring at TL-10 is not required during Care and Maintenance.

Part J: Conditions Applying to General and Aquatics Effects Monitoring

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

Exceedences of the Part G, Item 30 criteria for aluminium and iron were noted at Doris Creek stations TL-3 (downstream) of the TL-4 discharge. However, exceedences of the same parameters were also seen upstream in Doris Creek (TL-2), and have been observed to be elevated naturally in this creek. Furthermore, water discharged from Tail Lake to Doris Creek during the same sampling event as measured at stations TL-1 (Tail Lake discharge intake) and TL-4 (end-of-pipe discharge), did not exceed criteria, indicating that concentrations in Doris Creek were not elevated due to TIA discharge.

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

Acute lethality samples were collected in June at station TL-1. The water was found to be non-acutely toxic to Rainbow Trout and *Daphnia magna*. Results are presented in Table 17.

Table 17: Acute Lethality Testing at Station TL-1, June 2014

Sample ID	TL1-02JUN14
ALS ID	L1464762-1
Sample Date/Time	6/2/2104 15:34
Parameter	Results*
96-h LC50 Rainbow Trout Acute Toxicity EPS 1/RM/13	>100%
48-h LC50 <i>Daphnia magna</i> 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

Underground mining did not occur during the month. The total volume of 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 at Tail Lake is not required during Care and Maintenance.

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 ST6B. During daily discharge sampling, visual observations were made and no erosion was noted.

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

During sample collection at station TL-1 and during weekly dam inspections, visual assessments are made for suspended sediment at the TIA. During the month, none was noted.

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

There were no environmental incidents reported during the month.

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

Yours sincerely,



Katsky Venter
Site Environmental Manager
Hope Bay Project

cc. Eva Paul, Water Resources Officer, AANDC