



Giant Mine Remediation Project  
PO Box 1500  
Yellowknife, NT X1A 2R3

October 22, 2018

Mavis Cli-Michaud  
Mackenzie Valley Land and Water Board  
7th Floor, 4910-50th Avenue  
PO Box 2130  
Yellowknife, NT X1A 2P6

**Re: SEPTEMBER 2018 MONTHLY REPORT FOR WATER LICENCE MV2012L8-0010**

Dear Ms Cli-Michaud:

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) is pleased to submit the attached September 2018 Monthly Report for Water Licence MV2012L8-0010 (the Licence), on behalf of the Giant Mine Remediation Project (GMRP). The GMRP team consists of CIRNAC and the Government of the Northwest Territories, and is supported by the federal department of Public Services and Procurement Canada. This report is a requirement under Part B, Item 7 of the Licence.

If there are any questions or concerns, please contact the undersigned at 867-669-2775 or Katherine.Harris2@canada.ca.

Sincerely,

Katherine Harris  
Regulatory Manager  
Giant Mine Remediation Project

Attachment: September 2018 Monthly Report for Water Licence MV2012L8-0010

**GIANT MINE SITE STABILIZATION PLAN**

**WATER LICENCE MV2012L8-0010**

**MONTHLY REPORT**

**September 2018**

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## **INTRODUCTION**

Water Licence MV2012L8-0010 (the Licence) was issued to Aboriginal Affairs and Northern Development Canada (AANDC, now Crown-Indigenous Relations and Northern Affairs Canada [CIRNAC]) on March 28, 2013 for water use and waste disposal associated with roaster complex deconstruction and underground stabilization at the Giant Mine. This Licence has since been extended to July 31, 2020. Part B, Item 7 of the Licence requires that the commitments made in the *Communications Plan for Duration of Site Stabilization Activities* (Site Stabilization Plan [SSP] Communications Plan) be fulfilled. One of the commitments in the SSP Communications Plan is to provide monthly updates to the Mackenzie Valley Land and Water Board (MVLWB) and Identified Parties during active operations.

The SSP Communications Plan requires that the monthly updates include the following items:

- progress/status update of the work;
- summary of outcomes from environmental and health and safety-related inspections; and
- summary of outcomes from air and water quality monitoring.

## **ENGAGEMENT ACTIVITIES**

No engagement activities were completed in relation to the Site Stabilization Program during the reporting period.

## **PROGRESS UPDATE**

C5-09 Stope Backfill work progresses, with works on surface and underground:

- Stockpiled aggregate for self-leveling concrete (SLC).
- Delays in cement delivery for paste production.
- Extensometer installation.
- Mixing, testing, and pouring of SLC.

Akaitcho Pump – no activity in the reporting period.

## **INSPECTIONS**

### **Water Licence Inspections**

No Water Licence inspections were carried out in September 2018 in relation to SSP works.

### **Health and Safety Inspections**

Daily toolbox meetings are undertaken, and health and safety inspections in relation to the C5-09 stope backfilling were completed on a weekly basis. No incidents were reported for September 2018.

## MONITORING

### Spill Events

No reportable spills related to SSP activities for September 2018.

### Sanitary Waste Management

The volume of sanitary waste produced at the C5-09 work areas and transported to the Yellowknife municipal sewage lagoon during the reporting period is summarized in Table 1.

**Table 1: Volume of Sanitary Wastewater Discharged to the Yellowknife Municipal Sewage Lagoon in September 2018**

Date	Volume (m <sup>3</sup> )
Week ending Sept. 8, 2018	11.36
Week ending Sept. 15, 2018	11.36
Week ending Sept. 22, 2018	11.36
Week ending Sept. 29, 2018	11.36
<b>Total for Sept. 2018</b>	<b>45.44</b>

### Water Quantity Monitoring

Table 2 summarizes the volume of recycled water used for the C5-09 stope backfill in September.

**Table 2: Volume of Recycled Water Used for Paste Production, Dust Suppression, and/or Drilling Operations in September 2018**

	Dust Control Volume (m <sup>3</sup> )	Paste Production Volume (m <sup>3</sup> )	SLC Volume (m <sup>3</sup> )	Total Volume (m <sup>3</sup> )
Polishing Pond	656	0	0	<b>656</b>
North Pond	0	0	1575.86	<b>1575.86</b>
<b>Total for Sept. 2018</b>	<b>656</b>	<b>0</b>	<b>1575.86</b>	<b>2,231.86</b>

Table 3 summarizes the volume of wastewater disposed of in the Northwest Tailings Pond from the C5-09 stope backfill.

**Table 3: Volume of Wastewater Discharged to the Northwest Tailings Pond in September 2018**

<b>Date</b>	<b>Volume (m<sup>3</sup>)</b>
Week ending Sept. 8, 2018	0
Week ending Sept. 15, 2018	0
Week ending Sept. 22, 2018	0
Week ending Sept. 29, 2018	0
<b>Total for Sept. 2018</b>	<b>0</b>

### **Water Quality Monitoring**

As detailed in Table 2, recycled water was used from the North Pond for concrete production (deposited underground) and from the Polishing Pond for dust control. Water quality samples were collected from the Polishing and North ponds as part of the routine care and maintenance monitoring completed on site. Results for September are attached as Appendix A.

### **Wildlife Observations**

**Table 4: Wildlife Sightings for September 2018**

<b>Date</b>	<b>Species</b>	<b>Location</b>
9/2/2018	wolf pack	near townsite
9/29/2018	wolves	not stated
9/29/2018	lynx	not stated

### **Air Quality Monitoring Program**

The Air Quality Monitoring Program (AQMP) at the fenceline and community monitoring stations was on-going through the month of September, as well as activity-specific monitoring for the C5-09 Stope Stabilization Program.

AQMP results for the reporting period are included in Appendix B.

## **APPENDIX A – WATER QUALITY MONITORING PROGRAM RESULTS**

		SWP-1 (Polishing Pond)	SWP-3 (North Pond)
	Client Sample ID	GM-2018-5024-01	GM-2018-5024-03
	Date Sampled	14-Sep-2018	14-Sep-2018
	Time Sampled	12:55	12:24
	ALS Sample ID	L2164962-1	L2164962-3
Parameter	Units		
<b>Physical Tests (Water)</b>			
Conductivity	uS/cm	2960	2180
Hardness (as CaCO3)	mg/L	1500	1280
pH	pH	8.04	8.00
Total Suspended Solids	mg/L	3.5	6.7
Total Dissolved Solids	mg/L	2460	1970
Turbidity	NTU	0.67	2.72
<b>Anions and Nutrients (Water)</b>			
Acidity (as CaCO3)	mg/L	2.8	2.5
Alkalinity, Bicarbonate (as CaCO3)	mg/L	90.4	78.5
Alkalinity, Carbonate (as CaCO3)	mg/L	<1.0	<1.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	<1.0	<1.0
Alkalinity, Total (as CaCO3)	mg/L	90.4	78.5
Ammonia, Total (as N)	mg/L	0.0577	0.0153
Bromide (Br)	mg/L	5.1	0.97
Chloride (Cl)	mg/L	417	113
Fluoride (F)	mg/L	<0.40	<0.20
Nitrate and Nitrite (as N)	mg/L	1.05	0.165
Nitrate (as N)	mg/L	1.05	0.165
Nitrite (as N)	mg/L	<0.020	<0.010
Total Kjeldahl Nitrogen	mg/L	0.371	0.380
Silicate (as SiO2)	mg/L	3.28	1.77
Sulfate (SO4)	mg/L	1070	1110
<b>Cyanides (Water)</b>			
Cyanide, Total	mg/L	0.0088	0.0084
<b>Organic / Inorganic Carbon (Water)</b>			
Dissolved Organic Carbon	mg/L	4.89	5.97
Total Organic Carbon	mg/L	5.09	5.66
<b>Total Metals (Water)</b>			
Aluminum (Al)-Total	mg/L	0.0061	0.0692
Antimony (Sb)-Total	mg/L	0.260	0.662
Arsenic (As)-Total	mg/L	0.227	0.864
Barium (Ba)-Total	mg/L	0.0151	0.0109
Beryllium (Be)-Total	mg/L	<0.000040	<0.000040
Bismuth (Bi)-Total	mg/L	<0.00010	<0.00010
Boron (B)-Total	mg/L	0.273	0.204
Cadmium (Cd)-Total	mg/L	0.000026	0.000187
Calcium (Ca)-Total	mg/L	402	304
Cesium (Cs)-Total	mg/L	0.000304	0.000077



Chromium (Cr)-Total	mg/L	0.00025	0.00034
Cobalt (Co)-Total	mg/L	0.00690	0.00573
Copper (Cu)-Total	mg/L	0.0059	0.0078
Iron (Fe)-Total	mg/L	0.200	0.165
Lead (Pb)-Total	mg/L	<0.00010	0.00407
Lithium (Li)-Total	mg/L	0.0290	0.0165
Magnesium (Mg)-Total	mg/L	92.2	111
Manganese (Mn)-Total	mg/L	0.0201	0.0360
Mercury (Hg)-Total	mg/L	<0.0000050	0.0000085
Molybdenum (Mo)-Total	mg/L	0.0171	0.0338
Nickel (Ni)-Total	mg/L	0.0157	0.0088
Phosphorus (P)-Total	mg/L	<0.10	<0.10
Potassium (K)-Total	mg/L	11.5	11.9
Rubidium (Rb)-Total	mg/L	0.00929	0.00803
Selenium (Se)-Total	mg/L	0.00041	0.00094
Silicon (Si)-Total	mg/L	1.75	0.93
Silver (Ag)-Total	mg/L	0.000023	0.000033
Sodium (Na)-Total	mg/L	172	69.7
Strontium (Sr)-Total	mg/L	3.69	0.871
Sulfur (S)-Total	mg/L	411	412
Thallium (Tl)-Total	mg/L	0.000023	0.000090
Tin (Sn)-Total	mg/L	<0.00020	<0.00020
Titanium (Ti)-Total	mg/L	<0.00060	<0.00090
Uranium (U)-Total	mg/L	0.00454	0.00203
Vanadium (V)-Total	mg/L	0.0011	<0.0010
Zinc (Zn)-Total	mg/L	<0.0060	0.0131
Zirconium (Zr)-Total	mg/L	<0.00030	<0.00030
<b>Dissolved Metals (Water)</b>			
Dissolved Mercury Filtration Location	-	FIELD	FIELD
Dissolved Metals Filtration Location	-	FIELD	FIELD
Dissolved Metals Filtration Location	-	FIELD	FIELD
Aluminum (Al)-Dissolved	mg/L	0.0021	0.0089
Antimony (Sb)-Dissolved	mg/L	0.248	0.629
Arsenic (As)-Dissolved	mg/L	0.168	0.850
Barium (Ba)-Dissolved	mg/L	0.0154	0.0103
Beryllium (Be)-Dissolved	mg/L	<0.000040	<0.000040
Bismuth (Bi)-Dissolved	mg/L	<0.00010	<0.00010
Boron (B)-Dissolved	mg/L	0.309	0.210
Cadmium (Cd)-Dissolved	mg/L	0.000015	0.000177
Calcium (Ca)-Dissolved	mg/L	430	312
Cesium (Cs)-Dissolved	mg/L	0.000257	0.000055
Chromium (Cr)-Dissolved	mg/L	0.00029	0.00021
Cobalt (Co)-Dissolved	mg/L	0.00745	0.00547
Copper (Cu)-Dissolved	mg/L	0.00443	0.00666
Iron (Fe)-Dissolved	mg/L	<0.020	<0.020
Lead (Pb)-Dissolved	mg/L	<0.00010	0.00014
Lithium (Li)-Dissolved	mg/L	0.0308	0.0170

Magnesium (Mg)-Dissolved	mg/L	102	121
Manganese (Mn)-Dissolved	mg/L	0.0189	0.0283
Mercury (Hg)-Dissolved	mg/L	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved	mg/L	0.0155	0.0312
Nickel (Ni)-Dissolved	mg/L	0.0170	0.0086
Phosphorus (P)-Dissolved	mg/L	<0.10	<0.10
Potassium (K)-Dissolved	mg/L	12.1	12.8
Rubidium (Rb)-Dissolved	mg/L	0.00929	0.00762
Selenium (Se)-Dissolved	mg/L	0.00040	0.00089
Silicon (Si)-Dissolved	mg/L	1.70	0.82
Silver (Ag)-Dissolved	mg/L	<0.000020	<0.000020
Sodium (Na)-Dissolved	mg/L	190	74.6
Strontium (Sr)-Dissolved	mg/L	3.73	0.893
Sulfur (S)-Dissolved	mg/L	422	428
Thallium (Tl)-Dissolved	mg/L	0.000024	0.000085
Tin (Sn)-Dissolved	mg/L	<0.00020	<0.00020
Titanium (Ti)-Dissolved	mg/L	<0.00060	<0.00060
Uranium (U)-Dissolved	mg/L	0.00416	0.00189
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010
Zinc (Zn)-Dissolved	mg/L	<0.0020	0.0084
Zirconium (Zr)-Dissolved	mg/L	<0.00030	<0.00030

## **APPENDIX B – AIR QUALITY MONITORING PROGRAM RESULTS**



PO BOX 1500  
YELLOWKNIFE NT X1A 2R3

October 2, 2018

Distribution List

**RE: Air Quality Reports for the Week of September 8, 2018.**

A summary of the Giant Mine ambient air quality monitoring program (AQM) for the week ending September 8, 2018 is as follows:

Fence Line Network:

- No 15-minute average particulate matter less than 10 microns in diameter (PM<sub>10</sub>) concentrations above the established Risk Based Action Level (RBAL) of 159 µg/m<sup>3</sup> were measured at the fence line monitoring stations during the week. PM<sub>10</sub> concentrations measured at the fence line monitoring locations during the week were typical of seasonal background concentrations;
- No 15-minute average total suspended particulate (TSP) concentrations above the established RBAL of 333 µg/m<sup>3</sup> were measured at the fence line monitoring stations during the week. TSP concentrations measured the fence line monitoring locations during the week were typical of seasonal background concentrations;
- Laboratory results for TSP, PM<sub>10</sub>, and trace metals (including arsenic) analyses from samples collected on August 15, 2018 at the fence line monitoring locations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of integrated 24-hour arsenic, PM<sub>10</sub>, and TSP filter samples collected at the fence line sampling locations August 15, 2018 are pending.

Community Stations:

- No real time PM<sub>2.5</sub> or PM<sub>10</sub> 24-hour average concentrations above the referenced standards for each were measured at any of the community stations during the week;

- Laboratory results from TSP, PM<sub>10</sub>, and trace metals (including arsenic) samples collected on August 15 and 18, 2018 at the community stations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of community station filters collected after August 18, 2018 are pending;
- Laboratory analyses of asbestos samples collected at the community stations after August 18, 2018 are pending;
- There were no NO<sub>2</sub> concentrations measured at the Niven Lake community air monitoring station above the NWT Ambient Air Quality 24-Hour Standard of 106 parts per billion (ppb) or the 1-Hour Standard of 213 ppb during the week. Table 1 summarizes the daily hourly maximum concentrations and the daily 24-Hour average concentrations measured at the Niven Lake community station during the week.

**Table 1**  
**Niven Lake Community AQM Station NO<sub>2</sub> Concentrations**

<b>Date</b>	<b>Maximum One-hour Average (ppb)</b>	<b>24-hour Average (ppb)</b>
September 02, 2018	5.2	1.3
September 03, 2018	3.6	0.5
September 04, 2018	4.9	1.0
September 05, 2018	5.5	0.7
September 06, 2018	8.5	1.9
September 07, 2018	2.3	0.8
September 08, 2018	3.3	0.4

**C5-09 Stope Stabilization Program:**

- Air quality monitoring specific to the C5-09 stope stabilization program was conducted throughout the week at four locations within the vicinity of UBC Pit, and at four locations within the vicinity of the North, Central, and South Tailings Ponds;
- There were no 15-minute average PM<sub>10</sub> concentrations above the RBAL of 260 µg/m<sup>3</sup> measured at the monitors associated with the C5-09 stope stabilization program during the week;
- Laboratory analyses of C5-09 PM<sub>10</sub> and arsenic filter samples collected on August 15 and 18, 2018 were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of C5-09 PM<sub>10</sub> and arsenic filter samples collected after August 18, 2018 are pending.

General Operation:

- Data completeness for the reporting period was 99.92% for real time TSP samplers associated with the fence line monitoring network, 100% for real time PM<sub>10</sub> samplers associated with the fence line monitoring network, and 99.83% for real time PM<sub>10</sub> samplers associated with the C5-09 monitoring network;
- The AQM program operated as specified during the week ending September 8, 2018, with the following exceptions:
  - A total of 1.25 hours of real-time PM<sub>10</sub> and/or TSP data were invalidated from the fence line sampling locations during maintenance and repair;
  - A total of 4.25 hours of real-time PM<sub>10</sub> were invalidated from the C5-09 sampling locations during maintenance and repair.

Sincerely,



Natalie Plato  
Deputy Director  
Giant Mine Remediation Project

c.c.: Distribution List



PO BOX 1500  
YELLOWKNIFE NT X1A 2R3

October 2, 2018

Distribution List

**RE: Air Quality Reports for the Week of September 15, 2018.**

A summary of the Giant Mine ambient air quality monitoring program (AQM) for the week ending September 15, 2018 is as follows:

Fence Line Network:

- No 15-minute average particulate matter less than 10 microns in diameter (PM<sub>10</sub>) concentrations above the established Risk Based Action Level (RBAL) of 159 µg/m<sup>3</sup> were measured at the fence line monitoring stations during the week. PM<sub>10</sub> concentrations measured at the fence line monitoring locations during the week were typical of seasonal background concentrations;
- No 15-minute average total suspended particulate (TSP) concentrations above the established RBAL of 333 µg/m<sup>3</sup> were measured at the fence line monitoring stations during the week. TSP concentrations measured the fence line monitoring locations during the week were typical of seasonal background concentrations;
- Laboratory results for TSP, PM<sub>10</sub>, and trace metals (including arsenic) analyses from samples collected on August 18, 21 and 24, 2018 at the fence line monitoring locations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of integrated 24-hour arsenic, PM<sub>10</sub>, and TSP filter samples collected at the fence line sampling locations August 24, 2018 are pending.

Community Stations:

- No real time PM<sub>2.5</sub> or PM<sub>10</sub> 24-hour average concentrations above the referenced standards for each were measured at any of the community stations during the week;

- Laboratory analyses of community station filters collected after August 18, 2018 are pending;
- Laboratory results from asbestos samples collected on August 21, 24 and 27, 2018 at the community stations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of asbestos samples collected at the community stations after August 27, 2018 are pending;
- There were no NO<sub>2</sub> concentrations measured at the Niven Lake community air monitoring station above the NWT Ambient Air Quality 24-Hour Standard of 106 parts per billion (ppb) or the 1-Hour Standard of 213 ppb during the week. Table 1 summarizes the daily hourly maximum concentrations and the daily 24-Hour average concentrations measured at the Niven Lake community station during the week.

**Table 1**  
**Niven Lake Community AQM Station NO<sub>2</sub> Concentrations**

<b>Date</b>	<b>Maximum One-hour Average (ppb)</b>	<b>24-hour Average (ppb)</b>
September 09, 2018	3.1	0.9
September 10, 2018	1.2	0.2
September 11, 2018	0.6	0.1
September 12, 2018	2.3	0.4
September 13, 2018	8.1	1.7
September 14, 2018	1.8	0.3
September 15, 2018	2.0	0.5

**C5-09 Stope Stabilization Program:**

- Air quality monitoring specific to the C5-09 stope stabilization program was conducted throughout the week at four locations within the vicinity of UBC Pit, and at four locations within the vicinity of the North, Central, and South Tailings Ponds;
- There were no 15-minute average PM<sub>10</sub> concentrations above the RBAL of 260 µg/m<sup>3</sup> measured at the monitors associated with the C5-09 stope stabilization program during the week;
- Laboratory analyses of C5-09 PM<sub>10</sub> and arsenic filter samples collected on August 21 and 24, 2018 were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of C5-09 PM<sub>10</sub> and arsenic filter samples collected after August 24, 2018 are pending.



General Operation:

- Data completeness for the reporting period was 99.88% for real time TSP samplers associated with the fence line monitoring network, 99.90% for real time PM<sub>10</sub> samplers associated with the fence line monitoring network, and 99.65% for real time PM<sub>10</sub> samplers associated with the C5-09 monitoring network;
- The AQM program operated as specified during the week ending September 15, 2018, with the following exceptions:
  - A total of 1.75 hours of real-time TSP data were invalidated from the fence line sampling locations during maintenance and repair;
  - A total of 1.5 hours of real-time PM<sub>10</sub> data were invalidated from the fence line sampling locations during maintenance and repair;
  - A total of 4.75 hours of real-time PM<sub>10</sub> data were invalidated from the C5-09 sampling locations during maintenance and repair.

Sincerely,



Natalie Plato  
Deputy Director  
Giant Mine Remediation Project

c.c.: Distribution List



PO BOX 1500  
YELLOWKNIFE NT X1A 2R3

October 2, 2018

Distribution List

**RE: Air Quality Reports for the Week of September 22, 2018.**

A summary of the Giant Mine ambient air quality monitoring program (AQM) for the week ending September 22, 2018 is as follows:

Fence Line Network:

- No 15-minute average particulate matter less than 10 microns in diameter (PM<sub>10</sub>) concentrations above the established Risk Based Action Level (RBAL) of 159 µg/m<sup>3</sup> were measured at the fence line monitoring stations during the week. PM<sub>10</sub> concentrations measured at the fence line monitoring locations during the week were typical of seasonal background concentrations;
- No 15-minute average total suspended particulate (TSP) concentrations above the established RBAL of 333 µg/m<sup>3</sup> were measured at the fence line monitoring stations during the week. TSP concentrations measured the fence line monitoring locations during the week were typical of seasonal background concentrations;
- Laboratory results for TSP, PM<sub>10</sub>, and trace metals (including arsenic) analyses from samples collected on August 27, 30, and September 2, 2018 at the fence line monitoring locations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of integrated 24-hour arsenic, PM<sub>10</sub>, and TSP filter samples collected at the fence line sampling locations September 2, 2018 are pending.

Community Stations:

- No real time PM<sub>2.5</sub> or PM<sub>10</sub> 24-hour average concentrations above the referenced standards for each were measured at any of the community stations during the week;
- Laboratory results from TSP, PM<sub>10</sub>, and trace metals (including arsenic) samples collected on August 27, 30, and September 2, 2018 at the community stations were less than the analytical detection limit and/or below the referenced

standard. Laboratory analyses of community station filters collected on August 21, 24, and after September 2, 2018 are pending;

- Laboratory results from asbestos samples collected on August 30, September 2, and 5, 2018 at the community stations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of asbestos samples collected at the community stations after September 5, 2018 are pending;
- There were no NO<sub>2</sub> concentrations measured at the Niven Lake community air monitoring station above the NWT Ambient Air Quality 24-Hour Standard of 106 parts per billion (ppb) or the 1-Hour Standard of 213 ppb during the week. Table 1 summarizes the daily hourly maximum concentrations and the daily 24-Hour average concentrations measured at the Niven Lake community station during the week.

**Table 1**  
**Niven Lake Community AQM Station NO<sub>2</sub> Concentrations**

<b>Date</b>	<b>Maximum One-hour Average (ppb)</b>	<b>24-hour Average (ppb)</b>
September 16, 2018	5.3	1.5
September 17, 2018	10.0	2.0
September 18, 2018	6.0	0.9
September 19, 2018	1.0	0.1
September 20, 2018	3.6	0.4
September 21, 2018	9.4	1.7
September 22, 2018	5.5	1.5

**C5-09 Stope Stabilization Program:**

- Air quality monitoring specific to the C5-09 stope stabilization program was conducted throughout the week at four locations within the vicinity of UBC Pit, and at four locations within the vicinity of the North, Central, and South Tailings Ponds;
- There were no 15-minute average PM<sub>10</sub> concentrations above the RBAL of 260 µg/m<sup>3</sup> measured at the monitors associated with the C5-09 stope stabilization program during the week;
- Laboratory analyses of C5-09 PM<sub>10</sub> and arsenic filter samples collected on August 27, 30, and September 2, 2018 were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of C5-09 PM<sub>10</sub> and arsenic filter samples collected after September 2, 2018 are pending.

General Operation:

- Data completeness for the reporting period was 99.83% for real time TSP samplers associated with the fence line monitoring network, 99.69% for real time PM<sub>10</sub> samplers associated with the fence line monitoring network, and 99.4% for real time PM<sub>10</sub> samplers associated with the C5-09 monitoring network;
- The AQM program operated as specified during the week ending September 22, 2018, with the following exceptions:
  - A total of 2.5 hours of real-time TSP data were invalidated from the fence line sampling locations during maintenance and repair;
  - A total of 4.75 hours of real-time PM<sub>10</sub> data were invalidated from the fence line sampling locations during maintenance and repair;
  - A total of 8 hours of real-time PM<sub>10</sub> data were invalidated from the C5-09 sampling locations during maintenance and repair.

Regards,

Sincerely,



Natalie Plato  
Deputy Director  
Giant Mine Remediation Project

c.c.: Distribution List

**From:** [Irwin, Geneva \(AADNC/AANDC\)](#)  
**Subject:** Air Quality Monitoring Weekly Summary - Week Ending in September 29  
**Date:** October 18, 2018 3:49:50 PM

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Good Afternoon,

A summary of the Giant Mine ambient air quality monitoring program (AQM) for the week ending September 29, 2018 is as follows:

Fence Line Network:

- No 15-minute average particulate matter less than 10 microns in diameter (PM<sub>10</sub>) concentrations above the established Risk Based Action Level (RBAL) of 159 µg/m<sup>3</sup> were measured at the fence line monitoring stations during the week. PM<sub>10</sub> concentrations measured at the fence line monitoring locations during the week were typical of seasonal background concentrations;
- No 15-minute average total suspended particulate (TSP) concentrations above the established RBAL of 333 µg/m<sup>3</sup> were measured at the fence line monitoring stations during the week. TSP concentrations measured the fence line monitoring locations during the week were typical of seasonal background concentrations;
  - One 15-minute average TSP concentration of 252 µg/m<sup>3</sup> was measured at monitoring location Site I-South Pond on September 29, 2018 at 02:30 AM MST, and it was higher than the fence line TSP warning level of 220 µg/m<sup>3</sup>. During this time, wind speeds were 7.03 m/s and were blowing from the north-northwest, placing Yellowknife downwind from Giant Mine;
- Laboratory results for TSP, PM<sub>10</sub>, and trace metals (including arsenic) analyses from samples collected on September 5, 2018 at the fence line monitoring locations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of integrated 24-hour arsenic, PM<sub>10</sub>, and TSP filter samples collected at the fence line sampling locations after September 11, 2018 are pending;
- Trace metals (including arsenic) laboratory results from the TSP sampler at monitoring location Station I-South Pond collected on September 11, 2018 indicated a measured total arsenic concentration of 0.36 µg/m<sup>3</sup> which is above the Ontario 24-Hour Standard of 0.3 µg/m<sup>3</sup>, and a measured total iron concentration of 7.4 µg/m<sup>3</sup> which is above the Ontario 24-Hour Standard of 4.0 µg/m<sup>3</sup>;
  - On September 11, 2018 the winds were predominately from the northwest with an average speed of 5 m/s, placing the City of Yellowknife downwind from Giant Mine. On this day, all continuous 15-minute average PM<sub>10</sub> and TSP concentrations were below the RBAL however, above average concentrations of both PM<sub>10</sub> and TSP were measured at monitoring location Site I-South Pond

between 08:00 MST and 11:00 MST, with a maximum PM<sub>10</sub> concentration of 61 µg/m<sup>3</sup> measured at 09:30 MST and a maximum TSP concentration of 129 µg/m<sup>3</sup> measured at 09:15 MST. It was observed that limited activity was occurring on-site. Exposed stockpiles of tailings and crushed rock were observed at the South Pond on that day.

Community Stations:

- No real time PM<sub>2.5</sub> or PM<sub>10</sub> 24-hour average concentrations above the referenced standards for each were measured at any of the community stations during the week;
- Laboratory results from TSP, PM<sub>10</sub>, and trace metals (including arsenic) samples collected on August 21, 24, September 5, 8, and 11, 2018 at the community stations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of community station filters collected after September 11, 2018 are pending;
- Laboratory results from asbestos samples collected on September 8, and 11, 2018 at the community stations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of asbestos samples collected at the community stations after September 11, 2018 are pending;
- There were no NO<sub>2</sub> concentrations measured at the Niven Lake community air monitoring station above the NWT Ambient Air Quality 24-Hour Standard of 106 parts per billion (ppb) or the 1-Hour Standard of 213 ppb during the week. Table 1 summarizes the daily hourly maximum concentrations and the daily 24-Hour average concentrations measured at the Niven Lake community station during the week.

**Table 1**

**Niven Lake Community AQM Station NO<sub>2</sub> Concentrations**

<b>Date</b>	<b>Maximum One-hour Average (ppb)</b>	<b>24-hour Average (ppb)</b>
September 23, 2018	5.8	1.6
September 24, 2018	16.3	3.4
September 25, 2018	6.6	2.0
September 26, 2018	1.0	0.4
September 27, 2018	1.9	0.4
September 28, 2018	0.7	0.0
September 29, 2018	1.1	0.3

C5-09 Slope Stabilization Program:

- Air quality monitoring specific to the C5-09 slope stabilization program was conducted throughout the week at four locations within the vicinity of UBC Pit, and at four locations within the vicinity of the North, Central, and South Tailings Ponds;

There were no 15-minute average PM<sub>10</sub> concentrations above the RBAL of 260 µg/m<sup>3</sup> measured at the monitors associated with the C5-09 stope stabilization program during the week;

- Laboratory analyses of C5-09 PM<sub>10</sub> and arsenic filter samples collected on September 5, 8, and 11, 2018 were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of C5-09 PM<sub>10</sub> and arsenic filter samples collected after September 11, 2018 are pending.

General Operation:

- Data completeness for the reporting period was 99.95% for real time TSP samplers associated with the fence line monitoring network, 99.98% for real time PM<sub>10</sub> samplers associated with the fence line monitoring network, and 99.93% for real time PM<sub>10</sub> samplers associated with the C5-09 monitoring network;
- The AQM program operated as specified during the week ending September 29, 2018, with the following exceptions:
  - A total of 0.75 hours of real-time TSP data were invalidated from the fence line sampling locations during maintenance and repair;
  - A total of 0.25 hours of real-time PM<sub>10</sub> data were invalidated from the fence line sampling locations during maintenance and repair;
  - A total of 1 hour of real-time PM<sub>10</sub> data were invalidated from the C5-09 sampling locations during maintenance and repair.

Best,

Geneva Irwin