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November 27, 2020

Distribution List

GMRP AAQMP summary for the week ending October 31, 2020 – revised

The following is a revised weekly report based on stakeholder questions on the original to provide additional information. Changes are noted in underlined italics.

A summary of the Giant Mine Remediation Project ambient air quality monitoring program for the week ending October 31, 2020 is as follows:

Site Perimeter Monitoring Network

- No 15-minute average particulate matter less than 10 microns in diameter (PM₁₀) concentrations above the established Risk Based Action Level (RBAL) of 159 µg/m³ were measured at the site perimeter monitoring stations during the week. PM₁₀ concentrations measured at the site perimeter 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/m³ were measured at the site perimeter monitoring stations during the week. TSP concentrations measured at the site perimeter monitoring locations during the week were typical of seasonal background concentrations.
- Laboratory analyses of integrated filter samples collected at the site perimeter stations on September 27, October 8, and after October 16, 2020 are pending.
- Laboratory analyses from samples collected during days of high winds on October 12 and 13, 2020 at the site perimeter monitoring stations were less than the analytical detection limit and/or below the referenced standard. All results from days with high winds (October 12 to October 16, 2020) have been reported below.
- Laboratory results from integrated samples collected from the site perimeter on October 14, 2020 indicated PM₁₀, TSP, arsenic, and iron concentrations above the referenced standard as follows:
 - 24-hour integrated PM₁₀ concentrations measured at site perimeter Station A-North Pond (76 µg/m³); Station C-Northwest (106 µg/m³) and Station I-South Pond (72 µg/m³) exceeded the 24-hour Ontario Standard for PM₁₀ of 50 µg/m³;



- 24-hour integrated TSP concentrations measured at site perimeter Station A-North Pond ($128 \mu\text{g}/\text{m}^3$) and Station C-Northwest ($143 \mu\text{g}/\text{m}^3$) exceeded the 24-hour Northwest Territory Standard for TSP of $120 \mu\text{g}/\text{m}^3$;
- 24-hour integrated PM_{10} arsenic concentrations measured at site perimeter Station A-North Pond ($0.37 \mu\text{g}/\text{m}^3$) and Station C-Northwest ($0.50 \mu\text{g}/\text{m}^3$) exceeded the 24-hour Ontario Standard for arsenic of $0.30 \mu\text{g}/\text{m}^3$;
- 24-hour integrated total arsenic concentrations measured at site perimeter Station A-North Pond ($0.53 \mu\text{g}/\text{m}^3$) and Station C-Northwest ($0.52 \mu\text{g}/\text{m}^3$) exceeded the 24-hour Ontario Standard for arsenic of $0.30 \mu\text{g}/\text{m}^3$;
- 24-hour integrated total iron concentrations measured at site perimeter Station A-North Pond ($5.0 \mu\text{g}/\text{m}^3$) and Station C-Northwest ($8.2 \mu\text{g}/\text{m}^3$) exceeded the 24-hour Ontario Standard for iron of $4.0 \mu\text{g}/\text{m}^3$;
- Laboratory results from integrated samples collected from the site perimeter on October 15, 2020 indicated PM_{10} , TSP, arsenic, and iron concentrations above the referenced standard as follows:
 - 24-hour integrated PM_{10} concentrations measured at site perimeter Station A-North Pond ($60 \mu\text{g}/\text{m}^3$); Station C-Northwest ($65 \mu\text{g}/\text{m}^3$) exceeded the 24-hour Ontario Standard for PM_{10} of $50 \mu\text{g}/\text{m}^3$;
 - 24-hour integrated TSP concentrations measured at site perimeter Station A-North Pond ($106 \mu\text{g}/\text{m}^3$) and Station C-Northwest ($110 \mu\text{g}/\text{m}^3$) exceeded the 24-hour Northwest Territory Standard for TSP of $120 \mu\text{g}/\text{m}^3$;
 - 24-hour integrated total arsenic concentrations measured at site perimeter Station A-North Pond ($0.48 \mu\text{g}/\text{m}^3$) and Station C-Northwest ($0.35 \mu\text{g}/\text{m}^3$) exceeded the 24-hour Ontario Standard for arsenic of $0.30 \mu\text{g}/\text{m}^3$;
 - 24-hour integrated total iron concentrations measured at site perimeter Station A-North Pond ($8.0 \mu\text{g}/\text{m}^3$); Station C-Northwest ($4.7 \mu\text{g}/\text{m}^3$); and Station I-South Pond ($4.1 \mu\text{g}/\text{m}^3$) exceeded the 24-hour Ontario Standard for iron of $4.0 \mu\text{g}/\text{m}^3$;
- Laboratory results from integrated samples collected from the site perimeter on October 16, 2020 indicated PM_{10} , and iron concentrations above the referenced standard as follows:
 - 24-hour integrated total iron concentrations measured at site perimeter Station A-North Pond ($6.2 \mu\text{g}/\text{m}^3$) exceeded the 24-hour Ontario Standard for iron of $4.0 \mu\text{g}/\text{m}^3$;
- During the time period of October 12 through October 16, 2020, there were no real-time 15-minute averages of PM_{10} or TSP above their respective RBALs measured, however, elevated 15-minute average PM_{10} and TSP concentrations were

measured at Station A-North Pond; Station C-Northwest and Station I-South Pond. High winds and visible dust blowing from the tailings ponds were observed each day resulting in the elevated PM₁₀ and TSP measurements.

Due to the high winds and visible dust, a number of mitigation actions were employed, including the use of water trucks and helicopters to deploy water to areas of site such as sections of tailings containment areas. Meteorological conditions for each day are summarized below:

- On each of these days the average winds were from the northwest with an average wind speed of approximately 10 m/s, placing Yellowknife and the community of Ndilo downwind from Giant Mine;
 - October 12, 2020: winds were predominantly from the north-northwest with an average speed of 9.2 m/s (max: 11.9 m/s, min: 5.4 m/s).
 - October 13, 2020: winds were predominantly from the north-northwest with an average speed of 10.2 m/s (max: 11.3 m/s, min: 8.8 m/s).
 - October 14, 2020: winds were predominantly from the northwest with an average speed of 11.5 m/s (max: 13 m/s, min: 10.2 m/s).
 - October 15, 2020: winds were predominantly from the west-northwest with an average speed of 10 m/s (max: 19 m/s, min: 7 m/s).
 - October 16, 2020: winds were predominantly from the northwest with an average speed of 8 m/s (max: 14 m/s, min: 6 m/s).
- Laboratory analyses from samples collected during days of high winds (October 12 to October 16, 2020) are summarized below in Table 1.

Table 1
Site Perimeter Analytical Results During High Winds ($\mu\text{g}/\text{m}^3$)

Site Perimeter Station	Analyte	<u>October 12, 2020</u>	October 13, 2020	October 14, 2020	October 15, 2020	October 16, 2020	Standard
A-North	PM ₁₀ Particulate	<u>ND</u>	13	76	60	13	50
	TSP Particulate	<u>ND</u>	20	128	106	55	120
	PM ₁₀ Arsenic	<u>ND</u>	0.023	0.37	0.3	0.034	0.30
	TSP Arsenic	<u>ND</u>	0.047	0.37	0.3	0.034	0.30
	TSP Iron	<u>ND</u>	ND	5	8	3.1	4.0
C-Northwest	PM ₁₀ Particulate	<u>ND</u>	ND	106	65	ND	50
	TSP Particulate	<u>ND</u>	11	143	110	17	120
	PM ₁₀ Arsenic	<u>ND</u>	ND	0.5	0.3	ND	0.30
	TSP Arsenic	<u>ND</u>	ND	0.52	0.35	0.028	0.30
	TSP Iron	<u>ND</u>	ND	8.2	4.7	ND	4.0
I South Pond	PM ₁₀ Particulate	<u>ND</u>	34	72	43	31	50
	TSP Particulate	<u>ND</u>	53	82	67	83	120
	PM ₁₀ Arsenic	<u>ND</u>	0.12	0.2	0.12	0.097	0.30
	TSP Arsenic	<u>ND</u>	0.16	0.2	0.16	0.23	0.30
	TSP Iron	<u>ND</u>	3.5	2.9	4.1	6.2	4.0

- **BOLD** indicates results above or equal to relevant standard
- **ND** indicates results below analytical detection limit

Community Station Monitoring Network

- No continuous PM_{2.5} or PM₁₀ 24-hour average concentrations above the referenced standards for each were measured at any of the community stations during the week. PM_{2.5} and PM₁₀ concentrations during the week were typically representative of seasonal background concentrations.

- Laboratory results for integrated TSP, PM₁₀, and trace metals (including arsenic) analyses from samples collected on September 24, 27, 30, and October 3, 6, 9, 12, 15, and 18, 2020 at the community stations were less than the analytical detection limit and/or below the referenced standard.
- There were no NO₂ concentrations measured at the Niven Lake Community Station above the NWT Ambient Air Quality 24-hour Standard of 106 parts per billion (ppb) or the one-hour Standard of 213 ppb during the week. Table 2 summarizes each day's maximum hourly concentration and each day's 24-hour average concentration at the Niven Lake community station during the week.

Table 2
Niven Lake Community Station NO₂ Concentrations

Date	Maximum One-hour Average (ppb)	24-hour Average (ppb)
October 25, 2020	2.9	0.9
October 26, 2020	2.4	0.3
October 27, 2020	2.7	0.7
October 28, 2020	4.5	1.7
October 29, 2020	15.8	2.4
October 30, 2020	2.7	0.7
October 31, 2020	1.4	0.0

General Operation

- Integrated sampling for TSP, PM₁₀, and trace metals (including arsenic) was conducted on October 27 and 30, 2020. The next regularly scheduled sampling is November 2, 2020.
- Data completeness for the reporting period was 99.69% for continuous TSP and 99.67% for continuous PM₁₀ concentrations measured at the site perimeter monitoring stations.

The AAQM program operated as specified during the week ending October 31, 2020

Sincerely,



Natalie Plato
Deputy Director
Giant Mine Remediation Project
c.c.: Distribution List