

APPENDIX D.3

STREAMFLOW DATA FOR TYPE A WATER LICENCE MONITORING LOCATIONS

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Re: 2016 Hydrometric Monitoring Program at
Water License Sites

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1 Introduction

A monitoring requirement of the Type A Water Licence #2AM-MRY1325 issued to Baffinland Iron Mines Corporation (Baffinland) for the Mary River Project is to measure the flow and the water quality of surface discharge at locations established as part of the Surveillance Network Program (SNP). Hydrometric monitoring at or near nine of the SNP stations was initiated in 2014. The SNP Station names, types, and data collected are summarized in Table 1.1.

Table 1.1 SNP Hydrometric Stations

| SNP Station | Hydrometric Station Type | Data Collected |
|--|---|--|
| MQ-C-B MQ-C-D MS-C-A/B | Hydrometric station installed using natural channel control | Discharge and water level were measured during weekly sampling events to validate stage-discharge relationships. Water level data loggers were downloaded monthly. |
| MP-Q1-01 MP-Q1-02 MP-C-B MS-MRY-13a MQ-C-A MS-C-E | Hydrometric station installed using thin plate V-notch weir flow measurement structures | Water level measured weekly. Water level data loggers downloaded monthly. |

2 Measurement of Discharge

Site visits were made to the SNP hydrometric stations in June, July, and August 2016. An initial site visit was conducted in June 2016 to re-install the water level data loggers, measure flow, and perform maintenance where required. The weir boxes were removed and re-installed at MP-Q1-01 and MP-Q1-02 to address the accumulation of sediment and leakage. Additional site visits were made in July and August to measure flow.

3 Daily Discharge Data

Water level data were recorded at each site on 15 minute intervals and daily discharge was calculated by averaging the 15 minute data on a daily basis.

The daily discharge data recorded at all SNP Stations for June and July are shown in Table 3.1 and for August and September in Table 3.2.

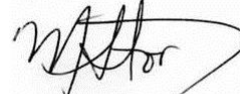
To: Andrew Vermeer, Baffinland Iron Mines

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Attachments:

Table 3.1 SNP Station Daily Average Discharge – June and July

Table 3.2 SNP Station Daily Average Discharge – August and September

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Attachments

Table 3.1 - SNP Station Daily Average Discharge - June and July

| Date | Daily Average Discharge (l/s) | | | | | | | | |
|-----------|-------------------------------|----------|----------|--------|--------|--------|---------|---------|--------|
| | MP-C-B | MP-Q1-01 | MP-Q1-02 | MQ-C-A | MQ-C-B | MQ-C-D | MRY-13a | MS-C-AB | MS-C-E |
| 23-Jun-16 | | | | 3.98 | 10.6 | | 0.006 | | |
| 24-Jun-16 | | | | 0.96 | 10.1 | | 0.013 | | |
| 25-Jun-16 | | 1.1 | 2.2 | 1.58 | 7.4 | | 0.015 | | |
| 26-Jun-16 | | 1.2 | 1.9 | 1.29 | 6.1 | | 0.014 | | |
| 27-Jun-16 | | 1.3 | 1.8 | 1.72 | 4.8 | 17.9 | 0.018 | 4.7 | 0.6 |
| 28-Jun-16 | 4.7 | 1.5 | 1.8 | 1.74 | 4.7 | 10.8 | 0.010 | 4.7 | 0.5 |
| 29-Jun-16 | 4.6 | 1.3 | 1.6 | 0.84 | 4.7 | 6.3 | 0.011 | 4.4 | 0.4 |
| 30-Jun-16 | 4.5 | 1.1 | 1.5 | 0.76 | 4.1 | 7.7 | 0.036 | 4.4 | 0.5 |
| 1-Jul-16 | 3.9 | 0.9 | 1.4 | 0.52 | 4.0 | 4.7 | 0.014 | 4.1 | 0.5 |
| 2-Jul-16 | 2.8 | 0.7 | 1.2 | 0.22 | 3.8 | 1.6 | 0.001 | 3.8 | 0.5 |
| 3-Jul-16 | 2.3 | 0.6 | 1.0 | 0.16 | 3.3 | 1.9 | 0.002 | 3.0 | 0.6 |
| 4-Jul-16 | 2.0 | 0.5 | 0.9 | 0.12 | 2.9 | 2.9 | 0 | 2.7 | 0.7 |
| 5-Jul-16 | 1.9 | 0.4 | 0.8 | 0.10 | 2.4 | 3.5 | 0 | 2.6 | 0.7 |
| 6-Jul-16 | 1.5 | 0.4 | 0.8 | 0.05 | 2.0 | 1.9 | 0 | 3.0 | 0.5 |
| 7-Jul-16 | 1.1 | 0.5 | 0.7 | 0.03 | 1.9 | 2.7 | 0 | 3.2 | 0.6 |
| 8-Jul-16 | 1.0 | 0.5 | 0.7 | 0.01 | 1.8 | 2.4 | 0 | 3.5 | 0.7 |
| 9-Jul-16 | 0.9 | 0.6 | 0.6 | 0.004 | 1.8 | 2.7 | 0 | 3.7 | 0.8 |
| 10-Jul-16 | 0.8 | 0.6 | 0.6 | 0 | 1.7 | 0.9 | 0 | 3.8 | 0.8 |
| 11-Jul-16 | 2.6 | 0.9 | 0.8 | 0.001 | 1.9 | 0.2 | 0 | 4.9 | 1.3 |
| 12-Jul-16 | 3.9 | 1.1 | 1.3 | 0.16 | 5.0 | 2.8 | 0.009 | 7.9 | 3.4 |
| 13-Jul-16 | 2.7 | 1.1 | 0.9 | 0.05 | 4.3 | 6.9 | 0 | 9.4 | 3.6 |
| 14-Jul-16 | 2.2 | 0.9 | 0.6 | 0.003 | 3.7 | 3.9 | 0 | 8.3 | 2.8 |
| 15-Jul-16 | 1.7 | 0.8 | 0.6 | 0.01 | 4.4 | 0.5 | 0 | 8.3 | 2.7 |
| 16-Jul-16 | 1.2 | 0.6 | 0.5 | 0.01 | 5.1 | 1.0 | 0 | 8.6 | 2.4 |
| 17-Jul-16 | 0.9 | 0.5 | 0.4 | 0 | 1.6 | 0.6 | 0 | 7.2 | 1.2 |
| 18-Jul-16 | 0.7 | 0.4 | 0.4 | 0 | 2.3 | 0.1 | 0 | 6.7 | 1.4 |
| 19-Jul-16 | 0.5 | 0.3 | 0.3 | 0.01 | 3.6 | 0.03 | 0 | 7.3 | 1.8 |
| 20-Jul-16 | 0.7 | 0.2 | 0.3 | 0.01 | 4.0 | 0.8 | 0 | 7.4 | 1.8 |
| 21-Jul-16 | 1.0 | 0.3 | 0.3 | 0.07 | 5.6 | 3.6 | 0 | 8.3 | 2.4 |
| 22-Jul-16 | 1.0 | 0.2 | 0.2 | 0.01 | 3.8 | 4.9 | 0 | 7.9 | 1.9 |
| 23-Jul-16 | 0.9 | 0.1 | 0.2 | 0.002 | 3.7 | 3.2 | 0 | 7.3 | 1.6 |
| 24-Jul-16 | 1.0 | 0.1 | 0.2 | 0.08 | 5.9 | 3.3 | 0 | 7.9 | 2.0 |
| 25-Jul-16 | 1.2 | 0.1 | 0.2 | 0.45 | 9.5 | 5.1 | 0 | 11.0 | 3.0 |
| 26-Jul-16 | 1.1 | 0.1 | 0.1 | 0.37 | 9.7 | 6.9 | 0 | 12.6 | 2.9 |
| 27-Jul-16 | 0.9 | 0.1 | 0.1 | 0.11 | 6.6 | 8.6 | 0 | 13.2 | 2.3 |
| 28-Jul-16 | 0.7 | 0.1 | 0.1 | 0.07 | 6.2 | 6.0 | 0 | 14.5 | 2.1 |
| 29-Jul-16 | 0.8 | 0.1 | 0.1 | 0.09 | 6.2 | 5.5 | 0 | 15.4 | 2.1 |
| 30-Jul-16 | 0.8 | 0.1 | 0.1 | 0.13 | 7.1 | 6.7 | 0 | 15.9 | 2.1 |
| 31-Jul-16 | 0.9 | 0.1 | 0.1 | 0.21 | 7.9 | 5.6 | 0 | 15.6 | 2.1 |

Table 3.2 - SNP Station Daily Average Discharge - August and September

| Date | Daily Average Discharge (l/s) | | | | | | | | |
|-----------|-------------------------------|----------|----------|--------|--------|--------|---------|---------|--------|
| | MP-C-B | MP-Q1-01 | MP-Q1-02 | MQ-C-A | MQ-C-B | MQ-C-D | MRY-13a | MS-C-AB | MS-C-E |
| 1-Aug-16 | 3.1 | 0.2 | 0.26 | 4.3 | 36.5 | 27.2 | 0.04 | 32.7 | 6.2 |
| 2-Aug-16 | 4.7 | 0.4 | 0.36 | 7.8 | 66.5 | 71.0 | 0.15 | 106.3 | 18.7 |
| 3-Aug-16 | 5.2 | 1.2 | 0.43 | 4.5 | 56.7 | 71.7 | 0.09 | 168.9 | 18.9 |
| 4-Aug-16 | 16.8 | 5.3 | 1.17 | 10.0 | 80.3 | 80.2 | 0.28 | 147.4 | 22.0 |
| 5-Aug-16 | 20.5 | 5.9 | 1.33 | 7.3 | 77.0 | 97.5 | 0.20 | 193.4 | 14.6 |
| 6-Aug-16 | 14.1 | 4.1 | 1.28 | 3.2 | 49.6 | 65.0 | 0.10 | 124.3 | 15.6 |
| 7-Aug-16 | 10.4 | 3.4 | 1.17 | 2.1 | 38.2 | 50.2 | 0.06 | 94.1 | 10.2 |
| 8-Aug-16 | 8.2 | 3.1 | 1.03 | 1.6 | 31.5 | 45.6 | 0.03 | 77.4 | 8.5 |
| 9-Aug-16 | 7.6 | 2.3 | 0.87 | 1.2 | 25.2 | 36.1 | 0 | 64.4 | 7.1 |
| 10-Aug-16 | 8.5 | 1.8 | 0.71 | 0.9 | 21.4 | 29.5 | 0 | 53.8 | 6.0 |
| 11-Aug-16 | 5.5 | 1.5 | 0.60 | 0.7 | 17.8 | 23.7 | 0 | 45.2 | 5.0 |
| 12-Aug-16 | 12.6 | 1.3 | 0.49 | 0.6 | 15.9 | 18.9 | 0 | 38.8 | 4.2 |
| 13-Aug-16 | 13.9 | 1.0 | 0.39 | 0.6 | 15.0 | 19.1 | 0 | 34.3 | 3.8 |
| 14-Aug-16 | 5.9 | 0.6 | 0.30 | 0.5 | 13.2 | 13.9 | 0 | 30.1 | 3.2 |
| 15-Aug-16 | 5.0 | 0.5 | 0.24 | 0.5 | 12.7 | 12.5 | 0 | 26.3 | 2.9 |
| 16-Aug-16 | 4.0 | 0.5 | 0.19 | 0.6 | 13.7 | 12.1 | 0 | 24.1 | 2.6 |
| 17-Aug-16 | 3.6 | 0.4 | 0.16 | 1.1 | 19.0 | 18.8 | 0 | 24.4 | 3.0 |
| 18-Aug-16 | 3.2 | 0.3 | 0.12 | 1.0 | 17.1 | 18.4 | 0 | 23.5 | 2.5 |
| 19-Aug-16 | 2.3 | 0.2 | 0.09 | 0.6 | 14.0 | 9.1 | 0 | 20.2 | 1.9 |
| 20-Aug-16 | 2.1 | 0.2 | 0.08 | 0.5 | 13.0 | 8.5 | 0 | 17.9 | 1.6 |
| 21-Aug-16 | 2.0 | 0.2 | 0.07 | 0.5 | 12.1 | 10.5 | 0 | 16.2 | 1.4 |
| 22-Aug-16 | 1.9 | 0.2 | 0.07 | 0.5 | 12.0 | 11.4 | 0 | 14.9 | 1.2 |
| 23-Aug-16 | 1.4 | 0.1 | 0.07 | 0.3 | 8.9 | 5.9 | 0 | 13.5 | 0.9 |
| 24-Aug-16 | 1.2 | 0.1 | 0.06 | 0.4 | 9.8 | 4.1 | 0 | 12.8 | 0.8 |
| 25-Aug-16 | 1.6 | 0.1 | 0.07 | 0.5 | 11.6 | 8.3 | 0 | 12.9 | 0.9 |
| 26-Aug-16 | 1.6 | 0.1 | 0.06 | 0.4 | 8.9 | 4.8 | 0 | 12.1 | 0.6 |
| 27-Aug-16 | 1.3 | 0.1 | 0.05 | 0.4 | 9.3 | 5.6 | 0 | 11.6 | 0.6 |
| 28-Aug-16 | 1.2 | 0.1 | 0.05 | 0.4 | 9.7 | 6.5 | 0 | 11.0 | 0.6 |
| 29-Aug-16 | 1.3 | 0.0 | 0.05 | 0.4 | 9.4 | 6.8 | 0 | 10.5 | 0.5 |
| 30-Aug-16 | 1.2 | 0.0 | 0.04 | 0.4 | 9.4 | 3.8 | 0 | 9.9 | 0.4 |
| 31-Aug-16 | 0.9 | 0.1 | 0.14 | 0.3 | 9.1 | 0.7 | 0 | 9.2 | 0.3 |
| 1-Sep-16 | 0.7 | | 0.03 | 0.3 | 9.3 | 0.4 | 0 | 8.4 | 0.3 |
| 2-Sep-16 | 0.7 | | 0.03 | 0.4 | 10.4 | 0.7 | 0 | 7.9 | 0.3 |
| 3-Sep-16 | | | | 0.4 | 10.8 | 0.7 | 0 | 7.4 | 0.3 |