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March 2, 2017

Ministry of Environment
Mining Operations Environmental Protection
2080 Labieux Road
Nanaimo, BC
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PERMIT 11678 FEBRUARY 2017 MONTHLY REPORT

This report satisfies the requirements of Section 3.9 of *EMA* Permit 11678 (last amended September 19, 2016) and the changes to Section 3.9 provided in an approval letter from the Ministry of Environment (MoE) on February 7, 2017 (Attachment 1). This report includes the following components:

- Summary of volume of treated effluent discharges
- Update on Springer Pit lake elevation
- Update on Springer pit monitoring well levels
- Water quality results for treated effluent
- Water quality results for Springer pit related wells
- Summarized analysis of treated effluent turbidity/TSS discharged.

Water Treatment and Discharge

Discharge of treated water continued this month with an average discharge rate of 0.218 m^3/s. The total amount of treated water discharged between February 1 to February 28, 2017 was 504,826 m^3.

Springer Pit and Groundwater Wells

Water elevations of Springer Pit and the associated groundwater monitoring wells are provided in Table 1. Water quality monitoring is conducted on a monthly basis from the groundwater wells associated with Springer Pit. These wells were sampled the week of February 20, 2017 and the results will be reported in the next monthly report. The previous six months' analytical results for the parameters of interest are provided in Tables 2 through 7.

Table 1. Water elevations for Springer pit and groundwater wells

	Last Week	This Week		Change
	31-Jan-17	1-Mar-17		(m)
Springer	1010.32	1007.28		-3.04
GW12-2a	1012.96	1012.06		-0.90
GW12-2b	1013.03	1012.11		-0.92
GW15-1a	1013.02	1011.00		-2.02
GW15-1b	1012.87	1010.86		-2.01
GW15-2a	1020.30	1020.04		-0.26
GW15-2b	1020.64	1020.35		-0.29

Table 2. GW 12-2a water chemistry results

		GW 12-2A					
Date Sampled		**18-Aug-16**	**15-Sep-16**	**24-Oct-16**	**08-Nov-16**	**19-Dec-16**	**16-Jan-17**
Physical Tests							
Conductivity	µS/cm	231	230	232	228	238	236
Hardness (as CaCO3)	mg/L	46.2	48.5	48.3	47.0	46.5	50.5
pH	pH	7.92	7.99	8.02	7.92	8.07	7.88
Anions and Nutrients							
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sulfate (SO4)	mg/L	62.8	63.8	65.1	65.5	65.8	66.0
Dissolved Metals							
Aluminum (Al)-Dissolved	mg/L	0.0040	0.0045	0.0046	0.0041	0.0048	0.0045
Arsenic (As)-Dissolved	mg/L	0.00218	0.00237	0.00224	0.00240	0.00238	0.00244
Cadmium (Cd)-Dissolved	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved	mg/L	0.0388	0.0393	0.0403	0.0392	0.0370	0.0394
Selenium (Se)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

Table 3. GW 12-2b water chemistry results

		GW 12-2B					
Date Sampled		**17-Aug-16**	**15-Sep-16**	**24-Oct-16**	**08-Nov-16**	**19-Dec-16**	**16-Jan-17**
Physical Tests							
Conductivity	µS/cm	668	638	617	606	612	591
Hardness (as CaCO3)	mg/L	324.0	312.0	305.0	291.0	271.0	298.0
pH	pH	8.25	8.16	8.22	8.19	8.06	8.13
Anions and Nutrients							
Nitrate (as N)	mg/L	2.96	2.98	3.08	2.95	2.75	2.54
Sulfate (SO4)	mg/L	174.0	169.0	166.0	158.0	150.0	137.0
Dissolved Metals							
Aluminum (Al)-Dissolved	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Arsenic (As)-Dissolved	mg/L	0.00052	0.00057	0.00052	0.00057	0.00055	0.00056
Cadmium (Cd)-Dissolved	mg/L	0.0000052	<0.0000050	0.0000074	0.0000066	0.0000062	0.0000061
Copper (Cu)-Dissolved	mg/L	0.00081	0.00081	0.00084	0.00077	0.00071	0.00069
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved	mg/L	0.0210	0.0210	0.0213	0.0208	0.0192	0.0211
Selenium (Se)-Dissolved	mg/L	0.011200	0.010200	0.009110	0.008730	0.006320	0.006440

Table 4. GW 15-1a water chemistry results

		GW 15-1A					
Date Sampled		**18-Aug-16**	**15-Sep-16**	**24-Oct-16**	**09-Nov-16**	**21-Dec-16**	**18-Jan-17**
Physical Tests							
Conductivity	µS/cm	279	277	280	281	284	279
Hardness (as CaCO3)	mg/L	70.5	72.7	73.7	76.6	75.7	74.3
pH	pH	8.03	8.05	8.02	7.96	8.11	8.07
Anions and Nutrients							
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sulfate (SO4)	mg/L	63.2	64.9	66.3	68.2	65.4	64.2
Dissolved Metals							
Aluminum (Al)-Dissolved	mg/L	0.0082	<0.0030	0.0030	<0.0030	<0.0030	<0.0030
Arsenic (As)-Dissolved	mg/L	0.00404	0.00460	0.00432	0.00416	0.00408	0.00444
Cadmium (Cd)-Dissolved	mg/L	<0.0000050	<0.0000050	0.0000099	<0.0000050	<0.0000050	<0.0000050
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved	mg/L	0.0256	0.0256	0.0259	0.0265	0.0259	0.0249
Selenium (Se)-Dissolved	mg/L	<0.000050	0.000067	0.000065	<0.000050	<0.000050	<0.000050

Table 5. GW 15-1b water chemistry results

		GW 15-1B					
Date Sampled		**17-Aug-16**	**15-Sep-16**	**24-Oct-16**	**08-Nov-16**	**09-Dec-16**	**16-Jan-17**
Physical Tests							
Conductivity	µS/cm	866	820	740	703	648	577
Hardness (as CaCO3)	mg/L	404.0	379.0	338.0	322.0	274.0	256.0
pH	pH	8.16	8.08	8.15	8.16	8.11	8.05
Anions and Nutrients							
Nitrate (as N)	mg/L	2.12	1.85	1.42	1.37	1.36	1.02
Sulfate (SO4)	mg/L	295.0	278.0	234.0	203.0	172.0	165.0
Dissolved Metals							
Aluminum (Al)-Dissolved	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Arsenic (As)-Dissolved	mg/L	0.00149	0.00152	0.00149	0.00155	0.00156	0.00167
Cadmium (Cd)-Dissolved	mg/L	0.0000091	0.0000119	0.0000094	0.0000101	0.0000060	<0.0000050
Copper (Cu)-Dissolved	mg/L	0.00052	<0.00050	0.00072	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved	mg/L	0.0044	0.0046	0.0048	0.0049	0.0048	0.0047
Selenium (Se)-Dissolved	mg/L	0.008450	0.007090	0.007660	0.006670	0.003730	0.007710

Table 6. GW 15-2a water chemistry results

		GW 15-2A					
Date Sampled		**17-Aug-16**	**15-Sep-16**	**24-Oct-16**	**08-Nov-16**	**09-Dec-16**	**16-Jan-17**
Physical Tests							
Conductivity	µS/cm	200	200	200	197	201	194
Hardness (as CaCO3)	mg/L	55.4	56.5	56.4	53.6	52.4	55.0
pH	pH	8.08	8.08	8.10	8.06	8.20	8.04
Anions and Nutrients							
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sulfate (SO4)	mg/L	35.7	36.4	37.1	37.1	37.4	37.1
Dissolved Metals							
Aluminum (Al)-Dissolved	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Arsenic (As)-Dissolved	mg/L	0.00394	0.00401	0.00388	0.00412	0.00370	0.00413
Cadmium (Cd)-Dissolved	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved	mg/L	0.0430	0.0430	0.0431	0.0417	0.0408	0.0425
Selenium (Se)-Dissolved	mg/L	<0.000050	0.000052	0.000074	0.000058	<0.000050	<0.000050

Table 7. GW 15-2b water chemistry results

		GW 15-2B					
Date Sampled		**17-Aug-16**	**15-Sep-16**	**24-Oct-16**	**08-Nov-16**	**09-Dec-16**	**16-Jan-17**
Physical Tests							
Conductivity	µS/cm	384	375	368	358	353	342
Hardness (as CaCO3)	mg/L	143.0	142.0	138.0	133.0	125.0	131.0
pH	pH	8.12	8.12	8.13	8.11	8.14	8.07
Anions and Nutrients							
Nitrate (as N)	mg/L	0.696	0.649	0.502	0.44	0.301	0.259
Sulfate (SO4)	mg/L	81.5	82.5	81.0	80.0	75.0	73.2
Dissolved Metals							
Aluminum (Al)-Dissolved	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Arsenic (As)-Dissolved	mg/L	0.00197	0.00210	0.00195	0.00215	0.00236	0.00238
Cadmium (Cd)-Dissolved	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved	mg/L	0.0437	0.0436	0.0447	0.0437	0.0423	0.0445
Selenium (Se)-Dissolved	mg/L	0.000353	0.000339	0.000307	0.000377	0.000242	0.000294

Water Quality Monitoring

Samples were collected at end of pipe at the water treatment plant (station HAD-03) and throughout Hazeltine Creek weekly in February. Four sampling events occurred in February and results for HAD-03 from these sampling events are shown in Table 8.

Table 8. Sample analysis results for HAD-03 (end of pipe from the water treatment plant)

	Lab Analysis Results for HAD-03				Permit 11678
	01-Feb-17	07-Feb-17	14-Feb-17	21-Feb-17	mg/L
Total Suspended Solids (mg/L)	7.8	1.7	8.6	7.9	15
Nitrate (as N)- Total (mg/L)	8.72	8.88	8.45	8.48	9.7
Ammonia (as N) - Total (mg/L)	0.0215	0.0248	0.0236	<0.0050	0.41
Phosphorus (P) - Total (mg/L)	0.0039	0.0078	0.0049	0.0030	0.09
Sulphate (mg/L)	540	550	526	530	720
Arsenic (As) - Total (mg/L)	0.0007	0.00121	0.00075	0.00090	0.0034
Copper (Cu)-Total (mg/L)	0.0046	0.00773	0.00506	0.00632	0.012
Cadmium (Cd)-Total (mg/L)	<0.000030	<0.000030	0.0000215	<0.000050	N/A
Chromium (Cr) - Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.0011
Iron (Fe) - Total (mg/L)	<0.030	0.033	<0.030	<0.030	0.11
Molybdenum (Mo)-Total (mg/L)	0.19	0.179	0.171	0.185	0.2
Selenium (Se)-Total (mg/L)	0.0369	0.0353	0.0349	0.0372	0.06
Vanadium (V) - Total (mg/L)	0.00112	0.00136	0.00113	0.00127	0.0081
Zinc (Zn) - Total (mg/L)	<0.0030	<0.0030	0.0031	<0.0030	0.0083

The water treatment plant is currently operating in active treatment mode, providing treatment for TSS and turbidity. Analytical results from samples collected in February 2017 for TSS ranged from 1.7 mg/L to 8.3 mg/L

Colleen Hughes
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Submitted via email
environmentalreporting@gov.bc.ca

February 07, 2017 Authorization: 11678

VIA E-mail and Mail Delivery
dreimer@mountpolley.com

Dale Reimer, Mine Manager
Mount Polley Mining Corporation
PO Box 12
Likely BC V0L 1N0

Dear Mr. Reimer:

Re: **Monthly Reporting Under Permit Section 3.9 – Approval**

Mount Polley Mining Corporation (MPMC) submitted a memorandum request on November 10, 2016 to reduce the frequency of reporting of monitoring results for the Springe Pit, related groundwater wells, and the treated effluent discharge. MPMC further submitted a technical memorandum on January 16, 2017 that supported assessment of groundwater in the vicinity of Springer Pit.

The request and report has been reviewed and found suitable to amend the first paragraph under Permit section 3.9:

From:

> *During the period of treated effluent discharge authorized by section 1.2 above, a **weekly** report must be submitted to the Director, summarizing the volume of treated effluent discharged, an updated Springer Pit lake elevation and related observation well levels, water quality results for treated effluent and Springer Pit related wells, and a summarized analysis of the treated effluent continuous turbidity/TSS discharged. Each report must be submitted within seven days of the previous **week** and must include the most recent water quality results available.*

To:

> *During the period of treated effluent discharge authorized by section 1.2 above, a **monthly** report must be submitted to the Director, summarizing the volume of treated effluent discharged, an updated Springer Pit lake elevation and related observation well levels, water quality results for treated effluent and Springer Pit related wells, and a summarized analysis of the treated effluent continuous turbidity/TSS discharged. Each report must be submitted within seven days of the previous **month** and must include the most recent water quality results available.*

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The monthly report referred to in the amended section 3.9 must be made available to the general public, in a manner acceptable to the Director. The report must be made available to the general public at the same time as it is submitted to the Director.

MPMC is reminded that under Permit section 3.9 (c), (g) and (o), treated effluent discharge and the related plant, the Springer Pit groundwater model, and groundwater monitoring results shall be evaluated annually, including but not limited to, adequate trending analysis.

If you have any questions, please contact Mike Reiner at Mike.Reiner@gov.bc.ca or at 250-490-8206.

Yours truly

Luc Lachance, P.Eng
for Director, *Environmental Management Act*
Environmental Protection, Regional Operations

cc: Diane Howe (Diane.Howe@gov.bc.ca), Ministry of Energy and Mines