



MEADOWBANK DIVISION

Monitoring Program Summary Report

October 2016

Type A Water License 2AM-MEA1525

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SECTION 1 • BACKGROUND

As required under Part I, Item 20 of Type A Water License 2AM-MEA1525, this report documents the water management and monitoring activities at the mine site for the month. This includes water usage, Vault Attenuation Pond discharge water quality, East Dike Seepage discharge water quality, RSF Seepage, Central Dike Seepage, Assay Road Seepage, and sewage treatment plant discharge water quality (which are directed to the onsite storm water management pond).

In addition, a summary of spills/actions for the month is reported.

SECTION 2 • WATER MANAGEMENT

2.1 WATER USAGE

Fresh and reclaim water usage for October 2016 is summarized in Table 2-1 below.

Table 2-1: Freshwater Usage (m³)

Water Location	Source	January	February	March	April	May	June	July
Camp	Third Portage Lake	3,181	3,061	3,418	3,297	3,478	3,235	3,441
Mill (freshwater tank)	Third Portage Lake	38,578	47,316	84,254	84,309	37,388	41,429	35,270
Emulsion plant	No-name Lake	135	125	119	138	147	54	116
Total Freshwater Usage (m³)		41,894	50,502	87,791	87,744	41,013	44,718	38,827
Reclaim Water Usage (m³)	South Cell TSF	261,513	207,769	204,407	200,883	268,825	231,995	273,558

Water Location	Source	August	September	October	Total 2016
Camp	Third Portage Lake	3,530	3,342	3,601	33,584
Mill (freshwater tank)	Third Portage Lake	33,516	27,030	44,773	473,863
Emulsion plant	No-name Lake	124	116	152	1,226
Total Freshwater Usage (m³)		37,170	30,488	48,526	508,673
Reclaim Water Usage (m³)	South Cell TSF	264,956	259,254	240,238	2,413,398

2.2 WASTE ROCK STORAGE FACILITY SEEPAGE

In October 2016, 2,494 m³ of water was pumped back to the North Cell TSF from the ST-16 sump. Of that amount, 321 m³ was transferred from the WEP1 sump to the ST-16 sump. Total year to date pumped from ST-16 was 26,340 m³.

In October, Agnico Eagle completed weekly inspections at the Portage and Vault RSFs, and NP-2 Lake. No issues were observed. Inspections/Monitoring as per the Freshet Action Plan will resume in 2017 Freshet. Open water sampling at WEP1 (Station ST-30), ST-16, NP2, and the downstream lakes required under the Freshet Action Plan was completed beginning of October before all water freeze. Frozen condition for WEP2 (Station ST-31).

2.3 CENTRAL DIKE SEEPAGE

In October 2016, 503,283 m³ of water was pumped from the ST-S-5 sump back into the South Cell TSF. Total year to date is 3,678,933 m³.

Sampling was conducted monthly at ST-S-5 and the South Cell TSF (ST-21) as per the requirements of the NWB water license.

Daily visual inspections were also completed by the Engineering Department.

2.4 ASSAY ROAD SEEPAGE

In October 2016, 512 m³ of water was pumped from the interception trench back to the mill. The total for 2016 is 11,078 m³. Weekly inspections of the area were conducted this month.

2.5 SEEPAGE AND RUNOFF FROM THE LANDFILL

The landfill was inspected weekly and no seepage or runoff was observed.

2.6 SEEPAGE AT PIT WALL AND PIT WALL FREEZE/THAW AND PERMAFROST AGGRADATION

In October, water was observed seeping on the eastern wall of the Vault Pit. It was not possible to assess flow. In October, 1,458 m³ of water was pumped out of Vault Pit to the Vault Attenuation Pond. No water was pumped out of Portage Pit South, and 1,536 m³ was pumped from Portage Pit North to the South Cell TSF.

2.7 SEWAGE TREATMENT PLANT

One (1) effluent wastewater sample was collected at the onsite sewage treatment plant (STP) in October 2016.

The Seprotech STP results are shown in Table 2.7.1 below; the LJ-Mix STP results are shown in Table 2.7.2. The effluent is discharged to the Stormwater Management pond which is pumped to the South Cell TSF twice a year.

Table 2.7.1: Seprotech Effluent Results

Parameters	Units	October 3, 2016
Ammonia (NH ₃)	mg N/L	0.41
Ammonia-Nitrogen (NH ₃ -NH ₄)	mg N/L	51.3
Total Kjeldahl Nitrogen	mg N/L	50.7
BOD-5	mg/L	5
COD	mg/L	56
Total Suspended Solids	mg/L	12
Nitrate	mg N/L	4.52
Nitrite	mg N/L	1.36
pH*	Units	7.20
Fecal Coliform	UFC/100 mL	<10
Total Coliform	UFC/100 mL	1,800

*Parameter measured by STP operators

Table 2.7.2: LJ-Mix Effluent Results

Parameters	Units	October 3, 2016
Ammonia (NH ₃)	mg N/L	<0.01
Ammonia-Nitrogen (NH ₃ -NH ₄)	mg N/L	18.5
Total Kjeldahl Nitrogen	mg N/L	21.8
BOD-5	mg/L	4
COD	mg/L	55
Total Suspended Solids	mg/L	12
Nitrate	mg N/L	20.4
Nitrite	mg N/L	0.24

pH*	Units	6.20
Fecal Coliform	UFC/100 mL	10
Total Coliform	UFC/100 mL	1000

*Parameter measured by STP operators

2.8 PHASER LAKE DEWATERING

Phaser Lake dewatering started on August 26, 2016 and was completed on October 4, 2016. In October, a total of 14,720 m³ of water were transferred to the Vault Attenuation Pond. Total year to date is 407,666 m³. Water was managed according to NWB water license 2AM-MEA1525 and is directed through the approved Vault Attenuation pond. During dewatering and operations, Agnico Eagle continued to meet approved license discharge limits of effluent from the Vault Attenuation Pond prior to discharge through Wally Lake diffuser. Discharging water during dewatering and operations follow Part F effluent discharge limits, monitoring and acute lethality testing (See section 2.9 below). The approved monitoring of Wally Lake receiving environment as part of the CREMP and MMER monitoring continue.

2.9 VAULT ATTENUATION POND EFFLUENT

Discharge from the Vault Attenuation pond stopped on October 11, 2016. A total of 137,385 m³ of water was discharged into Wally Lake in October 2016. Total year to date is 1,008,457 m³.

Five (5) weekly effluent samples were taken at ST-10 in October. No Actiflo Water Treatment Plant was necessary during the month as the TSS levels were below the effluent criteria stated in Part F, Item 4 of Water Licence 2AM-MEA1525.

Table 2.9.1: October 2016 Vault Discharge Results

Date	Units	Max. grab conc.	03-Oct-16	10-Oct-16	Monthly Average	Max. avg. conc.
Parameters						
pH*		6.0-9.0	7.71	7.34	7.53	6.0-9.0
TSS	mg/L	30	10	2	6	15
TDS	mg/L	1400	127	129	128	1400
Turbidity*	NTU	15	9.85	7.84	8.90	15
Aluminium	mg/L	3.0	0.234	0.248	0.241	1.5
Dissolved Aluminium	mg/L	2.0	0.011	<0.006	0.007	1.0
Arsenic	mg/L	0.2	<0.0005	<0.0005	0.00025	0.1
Cadmium	mg/L	0.004	<0.00002	<0.00002	0.00001	0.002
Copper	mg/L	0.2	0.0026	0.0029	0.00275	0.1
Mercury	mg/L	0.008	<0.00001	<0.00001	0.000005	0.004
Ammonia nitrogen	mg N/L	40	0.80	0.65	0.725	20
Nickel	mg/L	0.4	0.0045	0.0041	0.0043	0.2
Nitrate	mg N/L	100	2.09	1.84	1.965	50
Lead	mg/L	0.2	0.0008	<0.0003	0.00048	0.1
Phosphorus	mg/L	3.0	0.02	<0.01	0.0125	1.5
Zinc	mg/L	0.4	0.002	0.003	0.0025	0.2

Chloride	mg/L	1000	5.9	5.8	5.85	500
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*Parameter measured by Environment Technician on field

2.10 EAST DIKE SEEPAGE EFFLUENT

Discharge from the East Dike Seepage occurred for the entire month of October. A total of 14,867 m³ of water was discharged into Second Portage Lake in October 2016. Total year to date is 153,632 m³.

Five (5) weekly effluent samples were collected at ST-8 in October 2016. TSS results did not exceed the maximum allowable grab sample concentration (30 mg/L) and maximum average concentration (15 mg/L) permitted by Water License, Part F, Item 6. TSS monitoring results for October 2016 are shown in Table 2.9.2 below.

Table 2.9.2: October 2016 East Dike Seepage Results

Parameters	Units	3-Oct-16	10-Oct-16	17-Oct-16	24-Oct-16	31-Oct-16	Maximum Average Concentration
Total Suspended Solids	mg/L	2	<1	4	<1	<1	1.5

Monthly regular sampling pursuant to the Water license was also conducted at this location. Results are shown in Table 2.9.3 below. There have been no exceedances of MMER or Water License criteria.

Table 2.9.3: October 2016 Monthly Monitoring Results

Parameters	Units	10-Oct-16
Aluminum	mg/L	0.031
Sulphate	mg/L	12.9
Arsenic	mg/L	<0.0005
Copper	mg/L	0.0008
Nickel	mg/L	0.0008
Lead	mg/L	<0.0003
Zinc	mg/L	0.001
Radium 226	mg/L	0.002
Total Cyanide	mg/L	<0.001

2.11 NON CONTACT WATER

In October, Agnico Eagle completed inspections at ST-5 and ST-6 as per the 2016 Freshet Action Plan and Water License. Portage Area East (ST-5) and West (ST-6) diversion ditches water quality results are shown in Tables 2.10.1 and 2.10.2, respectively. TSS results didn't exceed the maximum average concentration (15 mg/L) and maximum allowable grab sample concentration (30 mg/L) permitted by the Water License, Part F, Item 6.

Table 2.10.1: Portage Area East Diversion Ditch (ST-5) Results

Parameters	Units	10-Oct-16
Total Suspended Solids	mg/l	4

Table 2.10.2: Portage Area West Diversion Ditch (ST-6) Results

Parameters	Units	10-Oct-16
Total Suspended Solids	mg/l	2

SECTION 3 • SPILL MANAGEMENT

Figure 3.1 shows reported and non-reported spills for 2016 broken down per month and Table 3.1 summarizes AEM spill reports for October 2016. All spills reported internally and to regulators were managed appropriately on site according to AEM's spill contingency plan. Spills were contained and cleaned, contaminated material was disposed to the appropriate area (landfarm, TSF if required), and the clean-up actions were monitored closely by the Environment Department. There was no off site impact to any watercourses.

Figure 3-1 2016 Reported and Non-Reported Spills

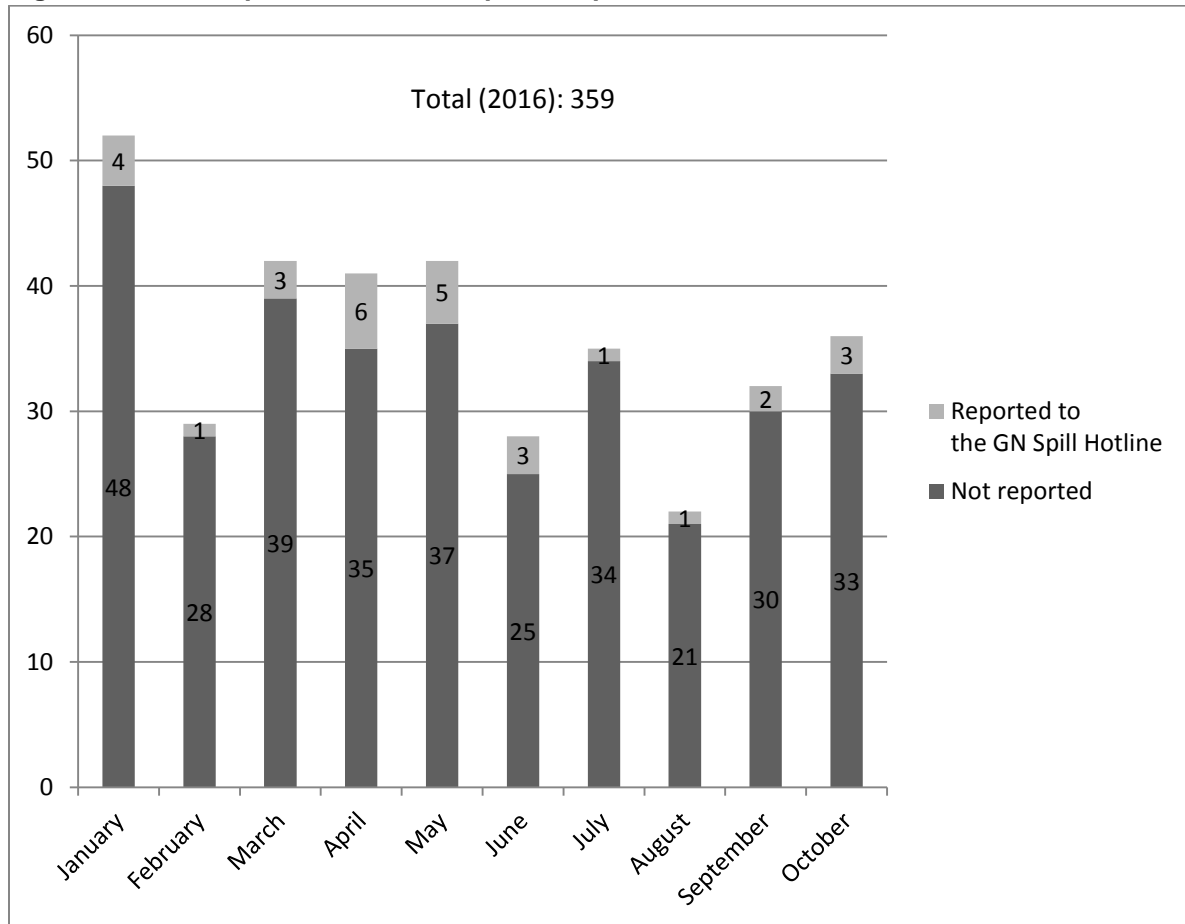


Table 3.1: Summary of Agnico Eagle Internal Spill Reports, October 2016

Date of Spill	Hazardous Material	Quantity (L/Kg)	Location	Cause of spill	Clean-up action taken	Reported to Spill GN HotLine
October 1, 2016	Hydraulic oil	70 L	Vault Road	O'ring failure on hydraulic line	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	No
October 2, 2016	Hydraulic oil	80 L	Portage pit	Broken hydraulic hose	Contaminated soil was picked up and disposed of adequately.	No
October 2, 2016	Diesel fuel	5 L	Portage Washroom	Equipment failure	Contaminated soil was picked up and disposed of adequately.	No
October 3, 2016	Hydraulic oil	50 L	Vault Pit	Broken hydraulic hose	Contaminated soil was picked up and disposed of adequately.	No
October 3, 2016	Glycol	12000 L	Mill	During routine inspections, an operator noticed glycol leaking from a pipe in the underground access tunnel from the crusher to the dome area.	Quickly the valve of the system was closed to prevent more spillage. The glycol within the tunnel was immediately started to be collected and pumped. On first assessment the majority of the glycol was contained within the tunnel area.	Yes
October 3, 2016	Hydraulic oil	8 L	Vault parking	Broken hydraulic hose	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	No
October 4, 2016	Hydraulic oil	25 L	Portage pit	Hydraulic filter came loose	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	No
October 4, 2016	Diesel fuel	50 L	Vault Pit	Broken diesel line	Can't be picked up as it is on the blasting floor	No
October 4, 2016	Diesel fuel	50 L	Vault Pit	Broken diesel line	Can't be picked up as it is on the blasting floor	No
October 5, 2016	Hydraulic oil	40 L	Vault Pit	Broken hydraulic hose	Talked with maintenance and discussed issue; maintenance is sending a tech to observe and fix the issue	No
October 5, 2016	Diesel fuel	50 L	Vault Pit	Broken diesel line	Can't be picked up as it is on the blasting floor	No
October 6, 2016	Hydraulic oil	50 L	Vault Pit	Broken hydraulic hose	Talked with maintenance and discussed issue; maintenance is sending a tech to observe and fix the issue	No
October 7, 2016	Hydraulic oil	90 L	Vault Pit	Broken hydraulic hose	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	No
October 9, 2016	Hydraulic oil	80 L	Vault Pit	O'ring failure on hydraulic line	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll	No

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					off container.	
October 11, 2016	Hydraulic oil	30 L	Portage pit	O'ring failure on hydraulic line	Contaminated soil was picked up and disposed of adequately.	No
October 15, 2016	Coolant	50 L	Portage pit	Broken hydraulic hose	Contaminated soil was picked up and disposed of adequately.	No
October 16, 2016	Coolant	10 L	Vault kitchen	Broken coolant line.	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	No
October 18, 2016	Hydraulic oil	120 L	Portage pit	Broken hydraulic hose	Spill was contained with absorbent pads. Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	Yes
October 19, 2016	Hydraulic oil	80 L	Portage pit	Broken hydraulic hose	Contaminated soil was picked up and disposed of adequately.	No
October 21, 2016	Hydraulic oil	8 L	Vault Pit	Broken hydraulic hose	Contaminated soil was picked up and disposed of adequately.	No
October 21, 2016	Hydraulic oil	90 L	Portage pit	Broken hydraulic hose	Contaminated soil was picked up and disposed of adequately.	No
October 21, 2016	Coolant	20 L	Vault Pit	Broken coolant line.	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	No
October 23, 2016	Diesel fuel	300 L	AWAR	Hauling containers from the Baker Lake laydown area to the Meadowbank site roll over on AWAR Km 102	Spill contained and stopped. Cleanup operations completed.	Yes
October 23, 2016	Hydraulic oil	10 L	Pushback parking	Broken hydraulic hose	Contaminated soil was picked up and disposed of adequately.	No
October 24, 2016	Coolant	40 L	Portage pit	Broken coolant line.	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	No
October 25, 2016	Hydraulic oil	95 L	Vault Pit	O'ring failure on hydraulic line	Contaminated soil was picked up and disposed of adequately.	No
October 25, 2016	Hydraulic oil	25 L	Portage pit	Broken hydraulic hose	Contaminated soil was picked up and disposed of at the landfarm	No
October 27, 2016	Hydraulic oil	35 L	Vault Pit	Broken hydraulic hose	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	No
October 27, 2016	Coolant	35 L	Vault parking	Broken coolant line.	Contaminated soil was picked up and disposed of adequately.	No
October 27,	Hydraulic	10 L	Vault parking	Broken	Contaminated soil was picked	No

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2016	oil			hydraulic hose	up and disposed of at the landfarm	
October 28, 2016	Hydraulic oil	95 L	Portage pit	O'ring failure on hydraulic line	Contaminated soil was picked up and disposed of at the landfarm	No
October 29, 2016	Hydraulic oil	3 L	Warehouse	Broken hydraulic hose	Contaminated material soil was picked up and disposed of in yellow contaminated soil roll off container.	No
October 29, 2016	Diesel fuel	15 L	Portage pit	Spill during maintenance operations	Contaminated soil was picked up and disposed of at the landfarm	No
October 29, 2016	Hydraulic oil	50 L	Vault Pit	O'ring failure on hydraulic line	Contaminated soil was picked up and disposed of at the landfarm	No
October 29, 2016	Hydraulic oil	45 L	Portage pit	O'ring failure on hydraulic line	Contaminated soil was picked up and disposed of adequately.	No
October 31, 2016	Hydraulic oil	15 L	Maintenance Shop	Broken hydraulic hose	Contaminated soil was picked up and disposed of adequately.	No