

4.3 Criteria for Cyanide in Water

4.3.1 Water Licence

As per Water Licence No. 2AM-MEA0815 (see Table A below), all effluent shall not exceed the following criteria for Cyanide:

Table A – Cyanide Effluent Criteria		
Parameter	Max. Average Concentration	Max. Allowable Grab Sample Concentration
Total Cyanide (mg/L)	0.5	1.0

4.3.2 General Criteria

In this investigation Total and WAD cyanide were measured on site, but not free cyanide. The reason for this is that WAD cyanide includes free cyanide. Thus, free cyanide was not included in the analysis as the purpose of this investigation was to determine the extent of the cyanide impacted material. Also, WAD cyanide is an appropriate measure for assessing potential toxicity of cyanide solutions to humans and animals.

Currently, there are no water guidelines for Total, WAD and Free Cyanide under the Under the Government of Nunavut's Contaminated Guidelines, "*Environmental Guideline for Contaminated site Remediation*" (March 2009 Revised) for water. As for CCME's, "*Canadian Water Quality Guidelines for Protection of Fresh/ Marine Water Aquatic Life*" guideline, there are only standards for free cyanide for freshwater aquatic life (5 µg/l or 0.005 mg/L). Therefore the BC Environmental Management Act for Contaminated Sites Regulations (CSR), Schedule 6- Generic Numerical Water standards were utilized as it contains standards for both Total (Drinking Water: 200 mg/L) and WAD cyanide (Aquatic Life: 50 mg/L-freshwater or 10 mg/L for marine/estuary). Therefore the water licence criteria for Total Cyanide in effluent are utilized to evaluate the results from the testing on recovered water samples.

5.0 SITE WORK

5.1 Site Safety

In accordance with AEM's policies, Tetra Tech EBA staff completed AEM's online site orientation and safety training. Pre-job hazard assessments were completed prior to going in the field, and were updated with a field-level assessment once on site. In conjunction with AEM, Tetra Tech EBA completed a job hazard analysis form (See Appendix D) prior to conducting any field work. Each day, Tetra Tech EBA, AEM, and the driller conducted a safety meeting prior to drilling and completed a Safe Work Form, which was updated and signed daily. Tetra Tech EBA participated in the staff safety meetings at the beginning of the program with various mine manager representatives to go over the job hazard analysis and to review the scope of the project. Prior to drilling, the electrical and water lines were located on site. During the course of the work, Tetra Tech EBA met with the electrical supervisor to confirm holes located near the buildings and that when drilling near electrical lines, the power to these lines were locked out and tagged out.

For the geotechnical QA/QC work, Tetra Tech EBA staff completed AEM's online site orientation and safety training. Pre-job hazard assessments were completed prior to going in the field, and were updated with a field-level assessment once on site.

5.2 Soil Sampling Program

Prior to the drilling program, Tetra Tech EBA completed a walkthrough of the site with an AEM employee to explain where the leaks originated and where the water was originally coming out of the pad. After the walkthrough it was decided to begin drilling in front of the Assay Lab first then continue to drill on either side of the Assay Lab. Photos were taken throughout the drilling program (Photos 1-8).

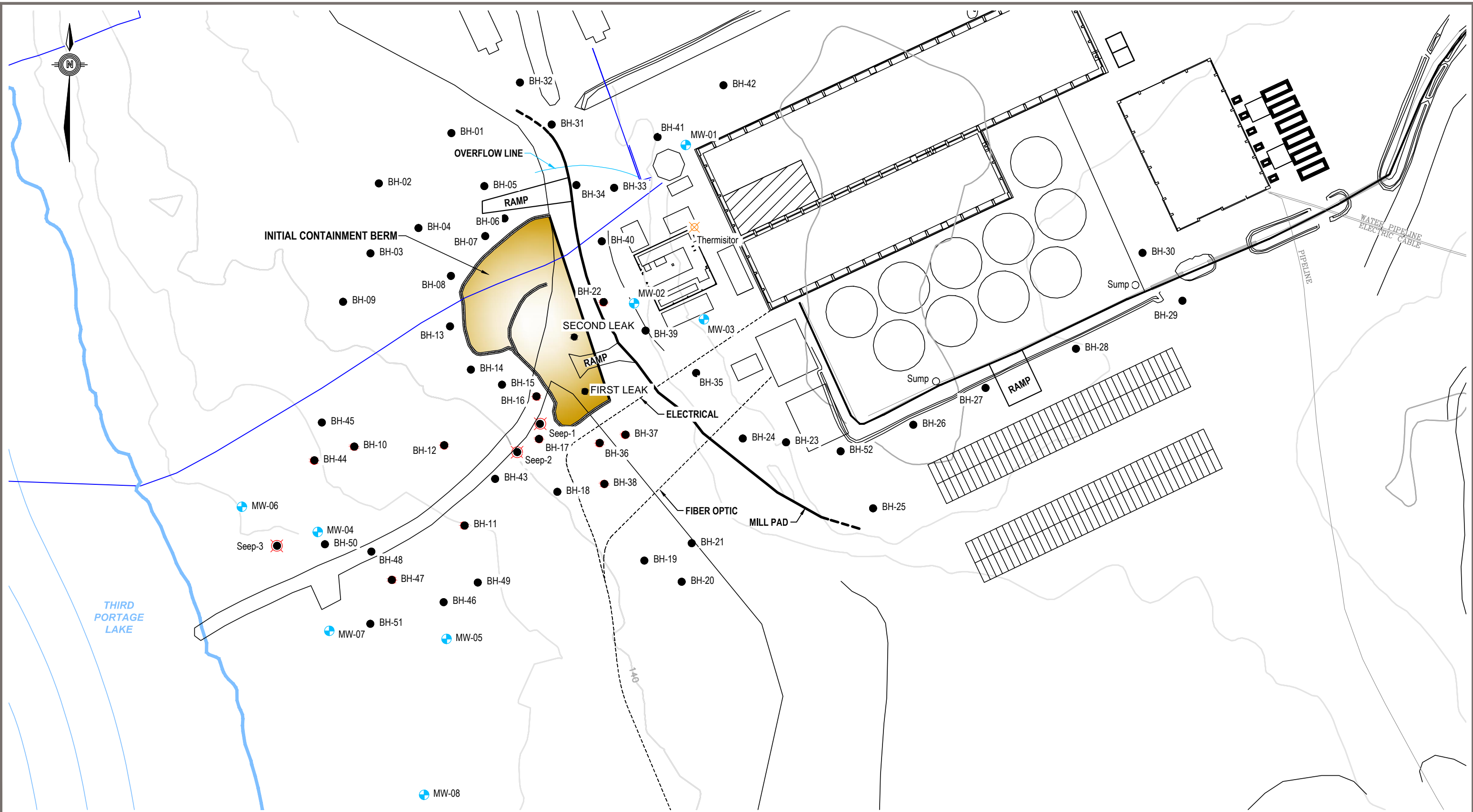
A total of 52 boreholes were drilled in various areas (Figure 2). All holes were drilled using a downhole hammer-air rotary drill without water. Samples were collected from the drill using either plywood or a metal pan and then scooped into plastic bags using a metal spoon. After the collection of each sample, the pans, spoon, and plywood were brushed off to minimize cross contamination. In addition, before drilling each hole, the drill was purged using compressed air to clean off the drill bit. When moving from a known contaminated site on the pad to the tundra, the drill rod and drill bit were exchanged for clean rods and drill bits.

All borehole locations had the total depth recorded, and depth of refusal. The colour of the cuttings was noted at some, but not all borehole locations, during the drilling program. Cuttings collected from the pad were grey in colour, while cuttings collected from the native terrain downslope of the mill pad were brown to reddish brown in colour. There were some locations on the pad where soil samples could not be collected due to voids in the rockfill materials used to construct the pad or underneath the pad.

Soil samples were placed into plastic Ziploc bags supplied by the laboratory, stored in an insulated cooler and kept cold for transport to Maxxam Analytics International Corporation in Montreal, Quebec. Holding times for all soil samples were within acceptable limits. The temperature of the samples upon being received by the laboratory was below 4°C. No samples were broken or lost during transport.

A total of 92 samples were analyzed for Total and WAD cyanide and 8 samples were analyzed for soil pH.

Q:\Edmonton\Drafting\PROJECTS\E14103172-01\Acad\E14103172-01 FIG 2.dwg [FIGURE 2] August 18, 2014 - 2:53:32 pm (BY: MARSH, MAUREEN)



NOTES
SEEP 3 HAD LOW LEVELS OF CYANIDE
(CNTOT = 0.192 ppm CNWAD = 0.033 ppm)

LEGEND

- GROUNDWATER MONITORING WELL
- SEEP SAMPLE (ICE AT SURFACE CYANIDE DETECTED)
- BOREHOLE LOCATION
- BOREHOLE LOCATION(CYANIDE DETECTED)
- THERMISITOR CABLE

0 50m
Scale: 1:1,250 @ 11"x17"

CLIENT



Meadowbank Assay Road Seepage
Meadowbank, NU

BOREHOLE AND MONITORING WELL
LOCATIONS

PROJECT NO. E14103172-01	DWN TK/MM	CKD TH	REV 0
OFFICE EDM	DATE August 2014		

Figure 2

5.3 Water Sampling Program

Where possible, ice or water samples were collected during drilling and placed into plastic containers for analysis. Samples were stored in an insulated cooler and were kept cold for transport to Multi-Lab Direct in Val-d'Or Quebec. A total of seven samples were sent to Multi-Lab Direct for analysis of Total Cyanide and WAD Cyanide. All water/ice samples were maintained below 4°C. An additional sample was taken at the same time for each of the seven water/ice samples and submitted to the Assay Lab on site for analysis of WAD Cyanide.

In addition to the sampled boreholes, eight (8) monitoring wells were installed, three (3) on the pad and five (5) in the natural terrain downslope of the mill pad. Monitoring wells were completed with 2" PVC solid pipe with a slotted screen at the bottom. These screens vary in depth, depending on the borehole depth (See Appendix B). The screen was surrounded by a silica sand filter pack followed by bentonite to grade. There were no metal coverings placed on the wells at the time of installation. After installation, no water samples could be obtained at the time of the investigation, due to frozen ground conditions.

5.4 Thermistor Cable

A thermistor cable was installed to 15.5 mbgs behind the Assay Lab near old monitoring wells 201, 202, and 203. The thermistor cable was completed with a 3" PVC solid pipe with caps at the bottom and top. The inside of the PVC pipe was filled with fine crushed gravel to the top of the PVC pipe. Readings were taken at the time of installation and every few days afterwards to determine the ground temperature. Appendix E presents the measured ground temperature and the calibration for the thermistor cable.

6.0 DESIGN AND CONSTRUCTION OF THE INTERCEPTION TRENCH

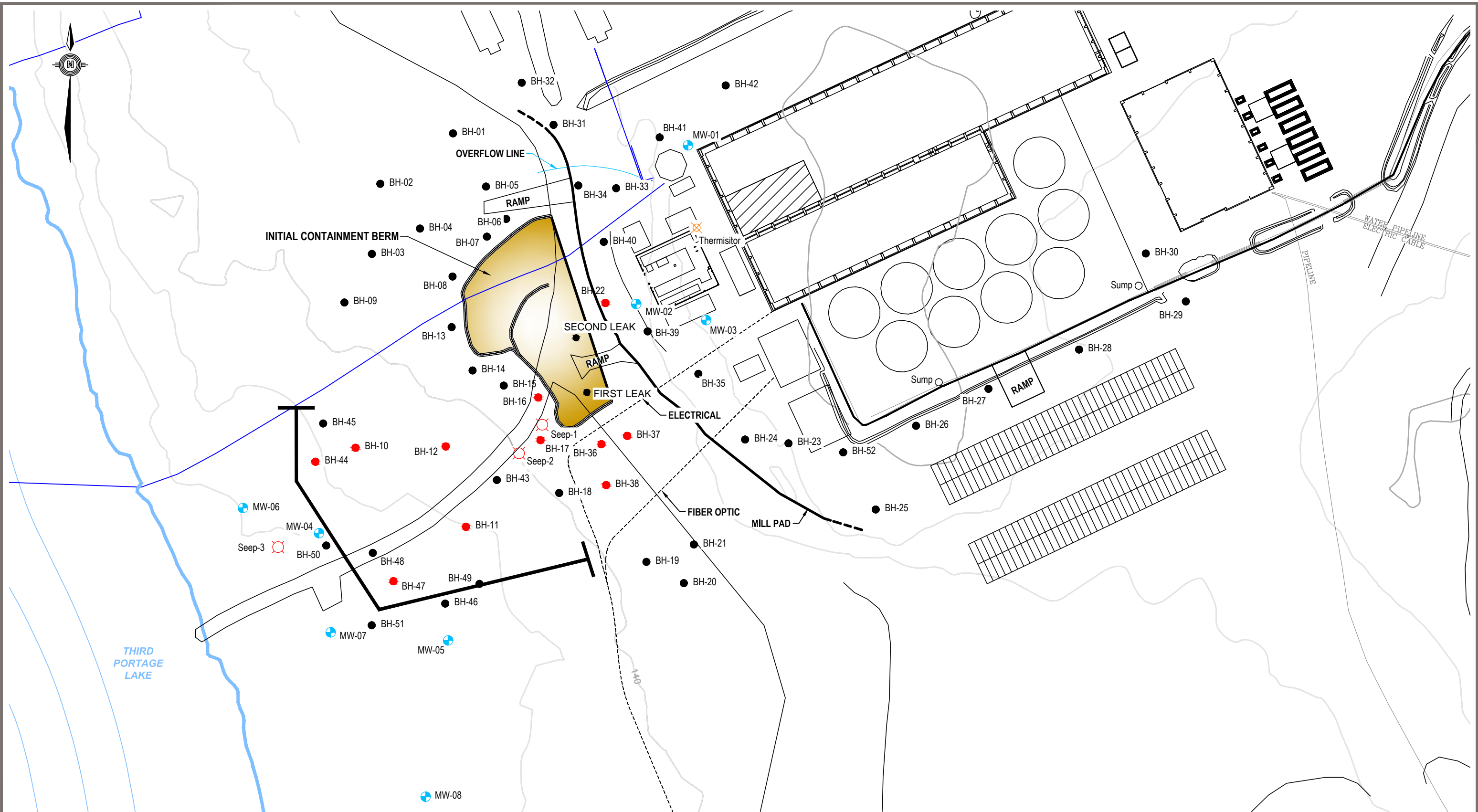
6.1 Interception Trench Location, Design and As-Built Construction

The interception trench design was developed by AEM with consultation by Tetra Tech EBA. The trench was located to minimize disturbance to the natural terrain, act as a barrier between detected cyanide and the lake, while staying at least 30 m away from Third Portage Lake. The approximate location of the interception trench is shown on Figure 3.

The initial design was to have a culvert within a rockfill mound and seacan placed on top for housing pumping equipment. The idea was to allow permafrost to aggrade into the bentonite material, providing a secondary impermeable boundary if water was allowed to pool in the collection area and started to slowly seep through the bentonite. This design was altered with input from Tetra Tech EBA and AEM, since the trench was over-blasted, and if the collection area was covered by rockfill to the original ground level, there was potential that the permafrost would aggrade too high and potentially freeze any pooled water before it could be pumped out. As a result, AEM committed that any pooled water in the collection area will be immediately pumped out to limit the possibility of long term pooling and seeping through the bentonite material, therefore the rockfill mound and seacan were abandoned.

Construction of the interception trench generally followed the intended design with a few changes made to "field-fit" to site conditions. As-built drawings provided by AEM are presented in Appendix C.

Q:\Edmonton\Drafting\PROJECTS\E14103172-01\Acad\E14103172-01 FIG 3.dwg [FIGURE 3] August 18, 2014 - 2:55:14 pm (BY: MARSH, MAUREEN)



LEGEND

- GROUNDWATER MONITORING WELL
- SEEP SAMPLE (ICE AT SURFACE CYANIDE DETECTED)
- BOREHOLE LOCATION
- BOREHOLE LOCATION(CYANIDE DETECTED)
- THERMISITOR CABLE
- INTERCEPTION TRENCH

0 50m
Scale: 1:1,250 @ 11"x17"

NOTES
SEEP 3 HAD LOW LEVELS OF CYANIDE
(CNTOT = 0.192 ppm CNWAD = 0.033 ppm)

CLIENT



Meadowbank Assay Road Seepage
Meadowbank, NU

INTERCEPTION TRENCH
LOCATION

PROJECT NO. E14103172-01	DWN TK/MM	CKD TH	REV 0
OFFICE EDM	DATE August 2014		

Figure 3

The AEM design for the interception trench utilizes shallow ditches and a sump. To mitigate anticipated thaw in permafrost conditions, the final design for the interception trench includes significant over excavation and replacement with thaw stable materials, and a cut-off system keyed in deep enough below the ditch or sump bottom to be below the depth of anticipated thaw. However, to insure thermal stability, it will be essential that water not be allowed to pond in the ditches or sump for longer than 1 day.

6.1.1 Interception Trench Preparation

The excavation of blast debris from the interception trench was ongoing when Tetra Tech EBA arrived on site on April 24, 2014. Excavation was carried out with a Caterpillar (CAT) 365 excavator positioned parallel to the trench. Excavation removed the bulk of the blast material down to refusal on bedrock. The contractor was directed to remove all smaller rock fragments and unsound rock that remained at the bottom of the interception trench with the smaller CAT 345 backhoe equipped with a small (1 m wide) bucket fitted with “duck teeth”. Almost the entire excavation was located within sound bedrock. The bottom of the trench was somewhat irregular as a result of the inaccuracies of blasting. Photos 9 and 10 show the interception trench after the initial removal of blast material and after final cleaning, respectively.

6.1.2 Geotextile Placement

Geotextile was placed on the downstream slope of the interception trench under observation of Tetra Tech EBA. The geotextile was placed with a minimum panel overlap of 300 mm, and with approximately 1000 mm tied in at the top of the downstream slope. Photo 11 shows the geotextile on the downstream slope as it is being tied in.

6.1.3 20 mm Aggregate/8% Bentonite Material Placement

Bottom of Interception Trench

A mixture of 20 mm crushed aggregate with 8% bentonite (bentonite material) was placed on the bottom of the interception trench following inspection by Tetra Tech EBA. The bentonite material was compacted using a Wacker DPU 5045H Vibrating Plate with a minimum of four passes per lift; compaction activities are shown in Photo 12.

The aggregate/bentonite material was first placed to fill in the low (over-blasted) areas of the interception trench. Lift thicknesses between 200 and 300 mm were used. The bottom of the interception trench was built up in this manner until the desired thicknesses and grades were reached, as measured by the on-site surveyor. To meet the design intent, a minimum bentonite material thickness of 500 mm above the bedrock and minimum grades of 1.5 percent towards the collection area were achieved.

Downstream (Lake Side) Slope

Bentonite material was placed on the downstream slope of the trench in two lifts (300 mm and 200 mm) and compacted with the CAT 365 excavator bucket for a total thickness of 500 mm. Photo 13 shows the CAT 365 excavator compacting two lifts of bentonite material on the downstream slope.

Upstream (Mill side) Slope

Bentonite material was placed along the upstream slope to direct any flowing subsurface water (most likely flowing in the active layer at the overburden/bedrock contact) into the interception trench. Compaction was carried out with the CAT 365 excavator bucket. The contractor was directed to ensure there was no gap or “gutter” between the upstream wall and bentonite material. Care was taken so that the top of the bentonite material was below the overburden/bedrock contact. Photos 13 to 16 show bentonite placement on the upstream slope.

6.1.4 150 mm and Rock Fill Material Placement

The placement of the 150 mm and Rock Fill material was done after Tetra Tech EBA had left the site. This stage was not as crucial to the performance of the interception trench as the bentonite material placement. Photo 17 shows the interception trench at completion, photos courtesy of AEM.

6.1.5 Testing of 20 mm Crushed Aggregate/8% Bentonite Material

One sample (sample 1) of bentonite material was subjected to constant head hydraulic conductivity testing in Tetra Tech EBA's Edmonton laboratory in accordance with ASTM D5084. To get a sample representative of in-situ conditions, the sample was taken directly out of the bottom of the interception trench as the contractor was placing the bentonite material. In-situ moisture content prior to testing was 3.7%, moisture content after testing was 12.7%, with an average dry density of 1875 kg/m^3 . The hydraulic conductivity of the bentonite material was determined to be $2.2 \times 10^{-5} \text{ cm/s}$, which is adequate to minimize water seepage out of the interception trench. Detailed constant head hydraulic conductivity test results are presented in Appendix F.

7.0 RESULTS AND DISCUSSIONS

The results of the 2014 Meadowbank Mine Assay Seepage Environmental Site Assessment are presented in the following section and in Tables 1 to 3. The laboratory reports are in Appendix A.

7.1 Soil

Natural Terrain

There were a total of 62 soil samples submitted for analysis of Total and WAD Cyanide from the boreholes drilled in the natural terrain downslope of the mill pad. Of those 62 samples, there were 17 samples where Total Cyanide was detected, with values ranging from 0.5 to 51 mg/kg. When compared to the British Columbia (BC) Environmental Management Act: Contaminated Sites Regulations for Urban Park (Wildlands), Schedule 5, only one location (BH-38, 51 mg/kg) was greater than the BC guidelines (50 mg/kg) for Total Cyanide.

For WAD Cyanide, there were only three samples where WAD Cyanide was detected, with values ranging from 0.9 to 3 mg/kg. All of these samples were below the British Columbia (BC) Environmental Management Act: Contaminated Sites Regulations for Urban Park (Wildlands), Schedule 5 (10 mg/kg).

The pH of the soil on the tundra ranged from 6.89 to 7.20, which meets applicable guidelines.

Mill Pad

There were a total of 30 soil samples submitted for analysis of Total and WAD Cyanide from boreholes drilled through the pad. Of those 30 samples, there was one sample (BH-22, 1.7 mg/kg) where Total Cyanide was detected. No WAD Cyanide was detected. Water was observed in BH-22 and MW-02, which was located in front of the Assay Lab.

The pH of the material on the pad ranged from 8.58 to 9.38 which is greater than the applicable guidelines. This material is created mainly of crushed blast rock, which would have been pulverized during drilling. In gold mines there are issues with having waste rock having low pH causing acid drainage, thus having higher than neutral pH values is better than lower pH values. Therefore, the pH values observed in the pad should not be a concern.

7.2 Water

Natural Terrain

There were a total of 6 water (ice) samples submitted for analysis of Total and WAD Cyanide from the natural terrain downslope of the mill pad. Total and WAD Cyanide was detected at all six sample locations. Total Cyanide was detected with values ranging from 0.192 to 2.23 ppm. The Water Licence No. 2AM-MEA0815 provides effluent discharge for Total Cyanide at 0.5 ppm for maximum average concentration and 1.0 pm for maximum allowable grab sample concentration. Using this value as a guideline, all samples analyzed, except Seep 3, exceed the water License for Total Cyanide. Seep 3 is located approximately 30 m from the edge of the lake, where cyanide was detected.

The Water Licence No. 2AM-MEA0815 does not have effluent discharge values for WAD Cyanide. Using the BC guidelines as a guide, none of the water samples exceeded the BC guidelines to protect freshwater aquatic life (50 ppm).

Mill Pad

There was one water sample (BH-22) submitted for analysis of Total and WAD Cyanide from boreholes drilled in the pad. The Total Cyanide detected was 24.59 ppm and WAD Cyanide was 10.6 ppm. The Total Cyanide exceeds the effluent discharge established in the Water Licence No. 2AM-MEA0815.

Monitoring well MW-02 did contain water, but no sample was collected, as it was adjacent to BH-22.

7.3 Ground Temperature

Regular readings have been obtained from the thermistor cable between March 5, 2014 and June 16, 2014 to determine changes in the ground temperature regime and determine the thickness of the active layer. The active layer depth is approximately 1.5 mbgs and ground temperature at the depth of zero annual amplitude (approximately 12 mbgs) is -2.0°C.

8.0 CONCLUSIONS AND RECOMMENDATIONS

During this investigation cyanide was detected at a depth of 1.68 mbgs near the location where the seep was initially identified. Down gradient of the initial containment, cyanide was detected to depths of 0.7 mbgs. Cyanide was not detected approximately 60 m from the lake (BH-47) in the soil, but was found at low levels in water (ice) that accumulated on the surface (Seep 3). Seep 3 is located about 30 m from the lakes edge and had low levels of cyanide (Total cyanide- 0.192 mg/L; WAD cyanide-0.033 mg/L). This information suggests that the cyanide initially infiltrated into the soil close to the initial seepage area; however further away from the seepage cyanide may have accumulated in the topsoil with little infiltration into the mineral soil (till overburden) or bedrock.

It was decided that the interception trench be installed between Seep 3 and BH-47. The decision for the location of the interception trench was based on the premise to minimize disturbance to the natural terrain, and act as a barrier between detected cyanide and the lake, while staying at least 30 m away from Third Portage Lake. An interception trench at this location should prevent cyanide contamination reaching Third Portage Lake. It is recommended that any pooled water within the collection area of the interception trench be pumped out immediately.

In order to remove the source of contaminant, AEM has taken steps to repair/reseal the containment systems that have been identified to be leaking and lead to the seepage. The main area of concern was the CIP tank containment system, which has been repaired. A ground temperature cable (thermistor cable) was installed near

the mill to determine the ground thermal regime. The fact that the mill pad has refrozen and there is only a thin active layer in the pad indicates that the repairs to the containment system have been effective in limiting seepage to the point that the ground has refrozen as significant continued seepage would likely preclude freezing.

AEM has currently established a Freshet Action Plan (April 2014), which outlines protocols AEM will take to monitor the interception trench and sampling protocols. AEM will conduct daily inspections of the pumping, collection systems and perimeter area and will record all pumped volumes of water from the interception trench. Any of the water collected will be pumped to the mill and discharged with the tailings to the tailings storage facility (TSF). The sampling program in this action plan states that on a monthly basis AEM will submit water samples to Multi Lab for analysis of Free Cyanide, Total Cyanide, Copper and Iron from the interception trench, monitoring wells 14MW04, 14MW05, 14MW06, 14MW07, and 14MW08, the original containment area and Third Portage Lake. AEM will collect waters twice a week from the area within the original containment berm, the interception trench, and monitoring wells 14MW02, 14MW03, 14MW08, 201, 202, and 203 to be submitted to the AEM on-site lab for WAD cyanide analysis.

After reviewing the information from this Environmental Site Assessment and AEM's Freshet Action Plan (April 2014), the following recommendations apply:

- Continue to sample water ponding within the original containment berm, interception trench, Third Portage Lake and monitoring wells 14MW01 to 14MW08, 201, 202 and 203, if water is present and not frozen, for analysis by Multi Lab of Free and Total cyanide, Copper, and Iron;
- In monitoring wells with known detected cyanide, collect and submit water samples to Multi Lab once in the spring and fall for analysis of ammonium, nitrate/nitrite, and pH. The purpose for the ammonium and nitrate/nitrite is that these compounds increase with the biodegradation of cyanide;
- If water is ponding down gradient of the interception trench, water samples should be collected and submitted to Multi Lab for analysis of Free and Total cyanide, Copper, and Iron;
- During the investigation no seep (water) samples or soil samples were collected within 30 m of the lake. Cyanide was detected at Seep 3, thus further sampling should be conducted down gradient of the trench in the soil and water. Water should be analyzed by Multi Lab for Free and Total Cyanide, Copper, and Iron, while soils should be analyzed for Free and Total cyanide;
- Depending on the results of the soil samples collected and potentially ponded water samples collected within 30 m of Third Portage Lake then sediment samples should be collected from the shore of Third Portage Lake. These sediment samples should be analyzed by Multi Lab for Free and Total Cyanide, Copper and Iron.
- AEM should install sumps inside the original containment berm to aid in the collection of water. This water can be pumped up to the mill and discharged to the TSF. This should improve collection of water in the spring near the mill pad;
- If not already complete, AEM should continue with the repairs to the secondary containment systems within the mill to ensure seepage sources are eliminated; and
- Collect additional soil samples on the northeast side of the mill in the direction of Tear Drop Lake to confirm if any cyanide travelled in that direction. If water is observed in the boreholes during this recommended investigation a well should be installed.

The following soil sampling recommendations should be implemented at closure of the mine:

- Soil samples should be collected for Free cyanide in the areas where known cyanide was detected, as free cyanide was not analyzed in this investigation. These areas should be delineated in order to produce a remedial action plan, if needed;

9.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

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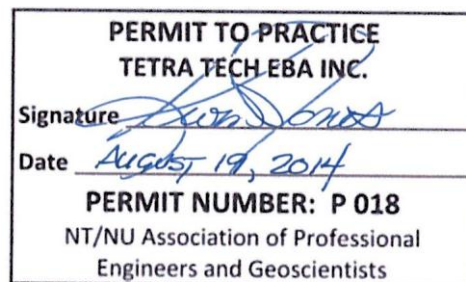


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TABLES

Table 1	Analytical Results for Tundra Soil - AEM- Meadowbank Assay Seepage
Table 2	Analytical Results for Mill Pad Soil - AEM- Meadowbank Assay Seepage
Table 3	Water/Ice Analytical Results - AEM - Meadowbank Assay Seepage

Table 1: Analytical Results Tundra Soil - AEM- Meadowbank Assay Seepage

Parameters	Units	Guidelines	Downgradient of the Assay Lab															
		Wildland/ Urban Park	BH-01	BH-02	BH-03	BH-04	BH-05	BH-06	BH-07	BH-08	BH-09	BH-10	BH-11		BH-12		BH-13	BH-14
			40-60	0-44	40-60	0-39	0-45	40-75	40-60	40-60	40-52	0-40	0-40	40-62	0-40	40-70	40-70	40-70
pH ²		6 to 8								6.91			7.20					
Total Cyanide ¹	mg/kg	50	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	13	30	0.6	1.5	1.4	<0.5	<0.5
WAD Cyanide ¹	mg/kg	10	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Moisture Content	%	NG	20	56	14	16	15	18	12	13	6.6	17	25	15	16	6.9	5.6	4.4
Laboratory Identification No.			X63656	X63657	X63658	X63659	X63660	X63661	X63662	X63663	X63664	X63665	X63666	X63667	X63668	X68074	X63669	X68075

Parameters	Units	Guidelines	Downgradient of the Assay Lab															
		Wildland/ Urban Park	BH-14	BH-15		BH-16			BH-17				BH-18		BH-19	BH-20	BH-21	BH-36
			70-112	40-70	70-100	0-40	70-100	100-140	40-70	70-100	100-140	140-168	40-70	70-100	40-59	40-70	70-90	40-70
pH ²		6 to 8							7.12				6.89				7.93	
Total Cyanide ¹	mg/kg	50	<0.5	<0.5	<0.5	1.9	14	0.6	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	27
WAD Cyanide ¹	mg/kg	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3
Moisture Content	%	NG	4.2	14	9.4	11	7.9	8.2	12	9.9	7.0	3.8	13	12	3.7	6.8	2.9	9.4
Laboratory Identification No.			X63670	X63671	X68076	X68077	X63672	X68078	X63673	X68079	X68080	X63674	X63683	X68081	X63684	X63685	X63686	X68105

Parameters	Units	Guidelines	Downgradient of the Assay Lab															
		Urban Park (Wildland)	BH-36		BH-37		BH-38	BH-43			BH-44		BH-45	BH-46		BH-47	BH-48	
			70-100	100-129	40-70	70-109	0-29	0-40	70-100	100-121	40-70	70-94	40-52	40-70	100-139	0-41	40-70	100-140
pH ²		6 to 8																
Total Cyanide ¹	mg/kg	50	1.7	0.9	1	0.9	51	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	4	<0.5	<0.5
WAD Cyanide ¹	mg/kg	10	<0.5	<0.5	1.2	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Moisture Content	%	NG	6.3	7.4	13	6.0	30	41	6.9	9.9	9.9	6.4	16	7.6	5.6	19	9.4	7.3
Laboratory Identification No.			X68106	X68107	X68114	X68115	X68116	X71668	X71669	X71670	X71671	X71672	X71673	X71674	X71675	X71676	X71677	X71678

Parameters	Units	Guidelines	Downgradient of the Assay Lab									Monitoring Wells					
		Urban Park (Wildland)	BH-49		BH-50			BH-51			MW-04	MW-05	MW-06	MW-07	MW-08		
			40-70	70-100	0-40	70-100	100-133	0-40	70-100	100-133	70-91	70-100	70-122	40-70	40-70	70-100	
pH ²		6 to 8															
Total Cyanide ¹	mg/kg	50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
WAD Cyanide ¹	mg/kg	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Moisture Content	%	NG	6.0	5.5	19	7.7	6.3	22	9.0	4.4	7.6	8.4	8.0	16	9.1	6.2	
Laboratory Identification No.			X71679	X71680	X71681	X71682	X71683	X71684	X71685	X71686	X71690	X71691	X71692	X71693	X71694	X71695	

Notes:

¹ Environmental Management Act: Contaminated Sites Regulations, British Columbia (updated January 31, 2014); Urban Park (Wildlands). The BC guidelines are in µg/g which are equal to mg/kg

² Environmental Guidelines for Contaminated Site Remediation, Nunavut. Wildland

Blank-Not analyzed

NG- No Guideline

Bold - Greater than the referenced guideline

Cyanide Detected

Table 2: Analytical Results for Mill Pad Soil - AEM- Meadowbank Assay Seepage

Parameters	Units	Guidelines	North of Mill			Northwest of Assay Lab				In Front of Assay Lab					Southwest of Assay Lab			
		Urban Park (Wildland)	BH-41		BH-42	BH-33		BH-34		BH-40		BH-22	BH-39		BH-35		BH-23	BH-24
			300-350	400-450	300-350	300-350	400-450	300-350	500-577	400-450	550-645	500-550	300-350	400-450	300-350	400-450	450-500	400-450
pH ²		6 to 8														9.28		
Total Cyanide ¹	mg/kg	50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WAD Cyanide ¹	mg/kg	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Moisture Content	%	NG	7.2	0.8	1.1	14	2.7	4.8	5.2	12	4.5	16	3.6	3.0	3.2	3.4	0.8	2.3
Laboratory Identification No.			X68121	X68122	X68123	X68099	X68100	X68101	X68102	X68119	X68120	X63687	X68117	X68118	X68103	X68104	X68082	X68083

Parameters	Units	Guidelines	Southwest of Assay Lab		Southwest side of Tanks								Northwest of Tanks		Monitoring Wells	
		Urban Park (Wildland)	BH-24	BH-52	BH-25			BH-26	BH-27	BH-28	BH-29		BH-30		MW-01	MW-03
			500-530	300-350	250-300	400-450	500-530	400-450	500-550	500-550	300-350	500-550	400-450	550-690	400-450	400-450
pH ²		6 to 8			<u>9.30</u>						<u>8.58</u>			<u>9.38</u>		
Total Cyanide ¹	mg/kg	50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WAD Cyanide ¹	mg/kg	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Moisture Content	%	NG	1.2	0.3	1.9	0.8	0.5	0.8	0.2	0.8	1.0	0.3	3.3	1.0	2.2	2.4
Laboratory Identification No.			X68088	X71687	X68089	X68090	X68091	X68092	X68093	X68094	X68095	X68096	X68097	X68098	X71688	X71689

Notes:
¹ Environmental Management Act: Contaminated Sites Regulations, British Columbia (updated January 31, 2014); Urban Park (Wildlands). The BC guidelines are in µg/q which are equal to mg/kg
² Environmental Guidelines for Contaminated Site Remediation, Nunavut. Wildland
Blank-Not analyzed
Bold - Greater than the referenced guideline
Cyanide Detected

Table 3: Water/Ice Analytical Results - AEM - Meadowbank Assay Seepage

Parameters	Unit	Guidelines			In Front of Assay Lab	Downgradient of Assay Lab-Tundra					
		Drinking Water ¹	Aquatic Life ¹	Licence No. 2AM-MEA0815	BH-22	BH-36	Seep 1	Seep 2	BH-11	BH-47	Seep 3
Total Cyanide ²	mg/L	200	NG	0.5 (1.0) ⁴	24.59	2.23	2.31	1.59	1.76	1.05	0.192
WAD Cyanide ²	mg/L	NG	50	NG	10.6	0.644	0.944	0.935	1.48	0.101	0.033
WAD Cyanide ³	mg/L	NG	50	NG		1.31	1.05	0.883	4.91	0.237	0.544
Laboratory Identification No.					V-32663	V-32719	V-32716	V-32717	V-32662	V-32758	V-32718

Notes:

¹ Environmental Management Act: Contaminated Sites Regulations, British Columbia (updated January 31, 2014); Schedule 6 Generic Numerical Water Standards

² Multi-lab Direct Analytical Results

³ Meadowbank Assay Lab Analytical Results

⁴ Maximum Average Concentration (Maximum Allowable Grab Sample Concentration)

Blank-Not analyzed

Bold = Greater than the referenced guideline or Water License

Cyanide Detected

PHOTOGRAPHS

Photo 1	Southwest view of the downhole hammer-air rotary drill drilling BH-18
Photo 2	Metal containers underneath the curtain of the drill to collect soil samples
Photo 3	Ice (~12 cm thick) located at BH-11.
Photo 4	Northwest view of drill, drilling BH-39 in front of the Assay Lab
Photo 5	View from MW-04 facing northeast towards the Assay Lab
Photo 6	Northwest view of the location for the three old wells (201, 202, and 203) located in the tires and the location of the thermistor cable just southeast of the tires. This area is located between the Assay Lab and the Mill.
Photo 7	View of the North side of the Mill, illustrating the location of monitoring well MW01 behind the two cement blocks
Photo 8	View on the south side of the tank farm drilling BH-27
Photo 9	West End of Interception Trench Facing Northwest, Trench Bottom Prior to Cleaning
Photo 10	West End of Interception Trench Facing Northwest, Trench Bottom after Cleaning, Contractors Laying Geotextile on Downstream Slope
Photo 11	East End of Interception Trench Facing Northeast, Geotextile Placement with Overlap and Tie-in at Top
Photo 12	West End of Interception Trench Facing North, Contractor Filling in and Compacting Low Areas
Photo 13	West End of Interception Trench Facing Northwest, Background: CAT 365 Excavator Bucket Compacting Two Lifts of Bentonite Material on Downstream Slope. Foreground: Two Lifts of Bentonite Material Visible
Photo 14	West End of Interception Trench Facing Southeast, CAT 365 Excavator Bucket Compacting Upstream Bentonite Material Slope below the Bedrock Contact
Photo 15	East End of Interception Trench Facing Northwest, Bentonite Material on Upstream Slope below Bedrock Contact
Photo 16	West End of Interception Trench Facing Northwest, Completed Bentonite Placement
Photo 17	East End of Interception Trench Facing Southwest, Completed Interception Trench Covered in Rockfill (Photo courtesy AEM)



Photo 1: Southwest view of the down hole air hammer drill drilling BH-18.



Photo 2: Metal containers underneath the curtain of the drill to collect soil samples.



Photo 3: Ice (~12 cm thick) located at BH-11.



Photo 4: Northwest view of drill, drilling BH-39 in front of the Assay Lab.



Photo 5: View from MW-04 facing northeast towards the Assay Lab.



Photo 6: Northwest view of the location for the three old wells (201, 202, and 203) located in the tires and the location of the thermistor cable just southeast of the tires. This area is located between the Assay Lab and the Mill.



Photo 7: View of the North side of the Mill , illustrating the location of monitoring well MW01 behind the two cement blocks.



Photo 8: View on the south side of the tank farm drilling BH-27.



Photo 9: West End of Interception Trench Facing Northwest
Trench Bottom Prior to Cleaning



Photo 10: West End of Interception Trench Facing Northwest
Trench Bottom after Cleaning. Contractors Laying Geotextile on Downstream Slope



Photo 11: East End of Interception Trench Facing Northeast
Geotextile Placement with Overlap and Tie-in at Top



Photo 12: West End of Interception Trench Facing North
Contractor Filling in and Compacting Low Areas



Photo 13: West End of Interception Trench Facing Northwest
Background: CAT 365 Excavator Bucket Compacting Two Lifts of Bentonite Material on Downstream Slope. Foreground: Two Lifts of Bentonite Material Visible



Photo 14: West End of Interception Trench Facing Southeast
CAT 365 Excavator Bucket Compacting Upstream Bentonite Material Slope Below the Bedrock Contact



Photo 15: East End of Interception Trench Facing Northwest
Bentonite Material on Upstream Slope Below Bedrock Contact



Photo 16: West End of Interception Trench Facing Northwest
Completed Bentonite Placement



Photo 17: East End of Interception Trench Facing Southwest
Completed Interception Trench Covered in Rockfill
(Photo courtesy AEM)

APPENDIX A

LABORATORY DATA

Analytical Report

Company: **Agnico Eagle Division Meadowbank**

Client: M. Stéphane Robert
Address: General Delivery
Baker Lake Nunavut X0C 0A0
Phone: (604) 677-0689 (--)
Fax: (604) 677-0687

Lab number: V-32716

Sampling location: Seep 1

Sampling date: February 27, 2014

Sample name: Seep 1

Sampling hour: N/D

Sampled by: Tyrel Hemsley

Date received: March 04, 2014

Matrix: Waste Water

Drinking water distribution:

Reported on: March 04, 2014

Unless otherwise stated, all samples were received in acceptable condition.

Results relate only to the sample tested.

All samples will be disposed of after 30 days following analysis.

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Analytical Report

Lab number: V-32716

Sample name: Seep 1

Sampling location: Seep 1

Sampling date: February 27, 2014

Sampling hour: N/D

Parameter	Result	Method name	Analysis date
Cyanide W.A.D.	0.944 mg/L	Sous-traitance\Multilab Direct	March 04, 2014
Total Cyanide (CNT)	2.31 mg/L	M-CN-1.0	March 04, 2014

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Detection limit

Lab number: V-32716

Sample name: Seep 1

Sampling location: Seep 1

Sampling date: February 27, 2014

Sampling hour: N/D

Parameter	Value	Unit	Method	Accreditation
Cyanide W.A.D.	0.005	mg/L	Sous-traitance	Yes
Total Cyanide (CNT)	0.005	mg/L	M-CN-1.0	Yes

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Quality control Report

Additional information

Lab number: V-32716
Sample name: Seep 1
Sampling location: Seep 1

Sampling date: February 27, 2014
Sampling hour: N/D

Lab method	Method reference
M-CN-1.0	MA.300-CN 1.2

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
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Analytical Report

Company: **Agnico Eagle Division Meadowbank**

Client: M. Stéphane Robert
Address: General Delivery
Baker Lake Nunavut X0C 0A0
Phone: (604) 677-0689 (--)
Fax: (604) 677-0687

Lab number: V-32717

Sampling location: Seep 2

Sampling date: February 27, 2014

Sample name: Seep 2

Sampling hour: N/D

Sampled by: Tyrel Hemsley

Date received: March 04, 2014

Matrix: Waste Water

Drinking water distribution:

Reported on: March 04, 2014

Unless otherwise stated, all samples were received in acceptable condition.

Results relate only to the sample tested.

All samples will be disposed of after 30 days following analysis.

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Analytical Report

Lab number: V-32717

Sample name: Seep 2

Sampling location: Seep 2

Sampling date: February 27, 2014

Sampling hour: N/D

Parameter	Result	Method name	Analysis date
Cyanide W.A.D.	0.935 mg/L	Sous-traitance\Multilab Direct	March 04, 2014
Total Cyanide (CNT)	1.59 mg/L	M-CN-1.0	March 04, 2014

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Detection limit

Lab number: V-32717

Sample name: Seep 2

Sampling location: Seep 2

Sampling date: February 27, 2014

Sampling hour: N/D

Parameter	Value	Unit	Method	Accreditation
Cyanide W.A.D.	0.005	mg/L	Sous-traitance	Yes
Total Cyanide (CNT)	0.005	mg/L	M-CN-1.0	Yes

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Quality control Report

Additional information

Lab number: V-32717
Sample name: Seep 2
Sampling location: Seep 2

Sampling date: February 27, 2014
Sampling hour: N/D

Lab method	Method reference
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M-CN-1.0	MA.300-CN 1.2
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Sauf indication contraire, tous les échantillons ont été reçus en bon état.
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Analytical Report

Company: **Agnico Eagle Division Meadowbank**

Client: M. Stéphane Robert
Address: General Delivery
Baker Lake Nunavut X0C 0A0
Phone: (604) 677-0689 (--)
Fax: (604) 677-0687

Lab number: V-32718

Sampling location: Seep 3

Sampling date: February 27, 2014

Sample name: Seep 3

Sampling hour: N/D

Sampled by: Tyrel Hemsley

Date received: March 04, 2014

Matrix: Waste Water

Drinking water distribution:

Reported on: March 04, 2014

Unless otherwise stated, all samples were received in acceptable condition.

Results relate only to the sample tested.

All samples will be disposed of after 30 days following analysis.

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Analytical Report

Lab number: V-32718

Sample name: Seep 3

Sampling location: Seep 3

Sampling date: February 27, 2014

Sampling hour: N/D

Parameter	Result	Method name	Analysis date
Cyanide W.A.D.	0.033 mg/L	Sous-traitance\Multilab Direct	March 04, 2014
Total Cyanide (CNT)	0.192 mg/L	M-CN-1.0	March 04, 2014

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Detection limit

Lab number: V-32718

Sample name: Seep 3

Sampling location: Seep 3

Sampling date: February 27, 2014

Sampling hour: N/D

Parameter	Value	Unit	Method	Accreditation
Cyanide W.A.D.	0.005	mg/L	Sous-traitance	Yes
Total Cyanide (CNT)	0.005	mg/L	M-CN-1.0	Yes

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Quality control Report

Additional information

Lab number: V-32718
Sample name: Seep 3
Sampling location: Seep 3

Sampling date: February 27, 2014
Sampling hour: N/D

Lab method	Method reference
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M-CN-1.0	MA.300-CN 1.2
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Sauf indication contraire, tous les échantillons ont été reçus en bon état.
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Analytical Report

Company: **Agnico Eagle Division Meadowbank**

Client: M. Stéphane Robert
Address: General Delivery
Baker Lake Nunavut X0C 0A0
Phone: (604) 677-0689 (--)
Fax: (604) 677-0687

Lab number: V-32719

Sampling location: BH-36

Sampling date: March 02, 2014

Sample name: BH-36

Sampling hour: N/D

Sampled by: Tyrel Hemsley

Date received: March 04, 2014

Matrix: Waste Water

Drinking water distribution:

Reported on: March 04, 2014

Unless otherwise stated, all samples were received in acceptable condition.

Results relate only to the sample tested.

All samples will be disposed of after 30 days following analysis.

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Analytical Report

Lab number: V-32719

Sample name: BH-36

Sampling date: March 02, 2014

Sampling location: BH-36

Sampling hour: N/D

Parameter	Result	Method name	Analysis date
Cyanide W.A.D.	0.644 mg/L	Sous-traitance\Multilab Direct	March 04, 2014
Total Cyanide (CNT)	2.23 mg/L	M-CN-1.0	March 04, 2014

Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.

Detection limit

Lab number: V-32719

Sample name: BH-36

Sampling date: March 02, 2014

Sampling location: BH-36

Sampling hour: N/D

Parameter	Value	Unit	Method	Accreditation
Cyanide W.A.D.	0.005	mg/L	Sous-traitance	Yes
Total Cyanide (CNT)	0.005	mg/L	M-CN-1.0	Yes

Sauf indication contraire, tous les échantillons ont été reçus en bon état.

This report shall not be reproduced except in full without the written authority of the laboratory.

Quality control Report

Additional information

Lab number: V-32719
Sample name: BH-36
Sampling location: BH-36

Sampling date: March 02, 2014
Sampling hour: N/D

Lab method	Method reference
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M-CN-1.0	MA.300-CN 1.2
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Sauf indication contraire, tous les échantillons ont été reçus en bon état.
This report shall not be reproduced except in full without the written authority of the laboratory.