



March 29th, 2017

M. Karén Kharatyan
Technical Advisor
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0B 1J0
(867) 360-6338

Re: Meadowbank Water License 2AM-MEA1525 Part I, Item 11 – 2016 Annual Geotechnical Inspection Report

Dear M. Kharatyan,

Agnico Eagle Mine Ltd. received the report “*2016 Annual Geotechnical Inspection Meadowbank Gold Mine, Nunavut*”. An electronically and paper copy of this report will be send to your office via Xpresspost, as required by Water license 2AM-MEA1525 Part I, Item 11, as an Appendix of the 2016 Annual Report due on March 31st, 2017.

Please consider the following information as the implementation plan to address the recommendations in Section 9.0 of the report.

Should you have any question, please do not hesitate to contact me at the below.

Regards,

Agnico Eagle Mines Limited – Meadowbank Division

Marie-Pier Marcil
marie-pier.marcil@agnicoeagle.com
819-759-3700 x5193
Senior Compliance Technician

Table of Contents

1	DEWATERING DIKES.....	3
1.1	East Dike	3
1.2	South Camp Dike.....	3
1.3	Bay-Goose Dike	4
1.4	Vault Dike	5
2	TAILINGS STORAGE FACILITY.....	7
2.1	Saddle Dam 1.....	7
2.2	Saddle Dam 2.....	8
2.3	Stormwater Dike.....	8
2.4	Central Dike	9
2.5	Saddle Dam 3 and 4	10
3	AWAR.....	11
4	QUARRIES	13
5	BULK FUEL STORAGE FACILITIES	14
6	OTHER MEADOWBANK FACILITIES	16
6.1	Meadowbank Site Roads.....	16
6.2	Diversion Ditch and Sediment and Erosion Protection Structure.....	16
6.3	Diffuser	16
6.4	Stormwater Management Ponds.....	17

1 DEWATERING DIKES

Recommendation: The current versions of the Operation, Maintenance and Surveillance (OMS) Manual (AEM, 2016), including the Emergency Preparedness Plan (EPP), and of the overall Emergency Response Plan (ERP) for the mine (AEM, 2016c) are dated March 2016 and August 2016. It is a good practice to keep these documents up to date.

Action: Agnico will continue to keep the Dewatering Dikes OMS Manual up to date. The last update of the Dewatering Dikes OMS Manual is dated March 2016. The last update of the ERP is dated January 2017.

Recommendation: The condition of the dewatering dikes is regularly inspected by the mine and this practice should continue.

Action: As stated in the Dewatering Dikes OMS manual, Agnico will continue to inspect and monitor all the dewatering dikes on a monthly basis.

1.1 East Dike

Recommendation: Regular monitoring and assessment of the monitoring data (piezometric, thermal, inclinometer, flow meter and seismograph) should continue. Due to technical problems with dataloger, the piezometer and thermistor data from June 2016 to September 2016 are missing between Sta.60+240 and 60+700. As a result, partial pore water pressure or temperature data are available for the thawing period of 2016. It is recommended to fix the issue with these instruments to continue obtaining data. It is recommended to flag the piezometers that recorded data below 0°C in the past and be very careful when interpreting their data as they might be broken

Action: The monitoring and data interpretation of the instrumentation at East Dike is done on a regular basis and will continue. A dewatering dike instrumentation report is prepared every month by the engineering department.

1.2 South Camp Dike

Recommendation: It is recommended to continue keeping the downstream toe of the dike clear to facilitate inspection. The nearby ultramafic rock dump should not obstruct the toe of the dike.

Action: The nearest NPAG material placed on the downstream side of the South Camp Dike is at a distance of 10 m from the toe of the dike, in order to keep the area clear to facilitate inspection.

1.3 Bay-Goose Dike

Recommendation: The tension cracks observed in 2013 and 2014 on the upstream side within the thermal cap were still visible but are no longer active. The settlement within the thermal cap was observed but did not show any additional sign of movement since 2013. The area should continue to be monitored to make sure there are no aggravating conditions developing.

Action: The monitoring of the entire dike will continue on a regular basis, emphasis will be put on the spring freshet period. Visual inspection is performed every week during that period.

Recommendation: Regular monitoring and assessment of the monitoring data (piezometric, flow, thermal, inclinometer, and seismograph) should continue. It is recommended to flag the piezometers that recorded data below 0°C in the past and be very careful when interpreting their data as they might be broken. Once a piezometer has frozen, it cannot be relied upon even if it thaws.

Action: The monitoring of the instrumentation at Bay Goose Dike is done on a regular basis and will continue. The monitoring of the instrumentation at Bay Goose Dike is completed on a regular basis and will continue. A register of all the broken instruments is filed on a monthly basis in the Dewatering dikes instrumentation report.

Recommendation: Water ponds were observed at the downstream toe during the inspection. It is recommended to pump them periodically to allow for good visual inspection of the downstream toe. The pond flow formed by seepage should be monitored and recorded.

Action: The monitoring of the water ponds at the downstream toe of the dike will continue on a regular basis during the open water season. Pumping of the ponds is done as needed, normally 3-4 times during open water season depending on rain events.

Recommendation: Overall seepage is less than anticipated and is not a concern for now. The inflow of water from the pond at Central Channel should be monitored.

Action: The monitoring and flow measurement of the seepages along the downstream toe will continue as a part of our regular inspection and daily routine.

Recommendation: North Channel, Channel 1 and Channel 3 should be carefully monitored and inspected. Limited evidence of seepage is observed at the downstream toe of these channels. The instrumentation data and field observations seem to indicate that seepage occurs at these locations but reports directly to the Pits instead of the downstream toe area. The seepage being reported to the Pits should be included in the Bay-Goose Dike seepage statistics.

Action: Water inflow from the bedrock formations in the Goose pit (not considered as seepage) is coming from various locations around the pit and is not always associated with the Bay-Goose Dike. During mining operation at Goose pit, all the water from Goose pit was pumped into a collection sump and a flowmeter was installed on the pipe between this sump and the discharge in the Attenuation Pond. Therefore, it was not possible to differentiate the quantity of water coming from underneath the dike (seepage) with the water coming from the groundwater (talik). As the mining activities have ceased in the Goose pit, the water from some seepage and from the groundwater inflows are directed to Goose Pit as pumping is no longer required. Flooding rate is evaluated by scanning the Goose pit and monthly water volume evaluated with reflooding curve.

Recommendation: Further assessment is required to assess the impact of Portage Pit mining on the stability of Bay-Goose Dike as the North Channel piezometer seems to react to E3/E4 activity. This assessment is underway by AEM.

Action: This assessment is underway by Agnico. Dike designer has already provided insights on the design criteria's used for the Bay Goose Dike cutoff wall. A complimentary instrumentation campaign will be completed in the months to come to monitor the stability of the Pit slope as well as the temperature and hydraulic conditions of the bedrock and overburden at the toe of the dike. The instruments already installed within the dike and its foundation will continue to be monitored closely by the Geotech team. A procedure was put in place to inspect the dike and the surroundings after each blast done in the Pit E Pushback area.

1.4 Vault Dike

Recommendation: Vault Dike was in good condition at the time of the inspection. The settlement and cracks observed in 2013 and 2014 were not noticeable anymore. No new issues were observed.

Action: *The hole observed during the 2013 inspection was plugged before winter*

Recommendation: Regular monitoring and assessment of the thermistor data should continue.

Action: *The monitoring and data analysis of the instrumentation at Vault Dike is done on a weekly basis and will continue.*

2 TAILINGS STORAGE FACILITY

Recommendation: The most current versions of the Operation, Maintenance and Surveillance (OMS) Manual (AEM, 2016b), including the Emergency Preparedness Plan (EPP), and of the overall Emergency Response Plan (ERP) for the mine (AEM, 2016c) are dated March 2016 and August 2016. It is a good practice to keep these documents up to date.

Action: Agnico will continue to keep the TSF OMS Manual up to date. The last update of the TSF OMS Manual is dated March 2016. The last update of the ERP is dated January 2017

Recommendation: At the time of the inspection, the peripheral structures of the TSF North Cell had an adequate tailings beach against them. Water was observed ponding against the northern portion of Central Dike as tailings deposition from Central Dike was stopped during the 2016 construction season. Agnico is planning to quickly restore the tailings beach against Central Dike per the design requirement.

Action: The tailings deposition in the North Cell was completed in October 2015. The peripheral structures of the cell, including the Stormwater Dike presented adequate tailings beaches. It is also important to note that during the summer 2015, the water from the North Cell pond was transferred to the South Cell as the reclaim water system was located in the South Cell. Until North Cell TSF capping will be completed water elevation will be maintained under 148masl. The gap in tailings beach against the structure of the Central Dike was completely filled at the beginning of 2017.

Recommendation: Regular visual inspection as well as collection and regular review of instrument data should continue for all structures within the TSF.

Action: Inspection of the TSF structures are conducted on a monthly basis and will continue.

2.1 Saddle Dam 1

Recommendation: The environmental department should continue monitoring the water quality and share this information with the engineering department.

Action: The water quality is monitored at the downstream toe of Saddle Dam 1 (monitoring station ST-S-2). The water sampling is conducted monthly at ST-S-2

during open water season. The sampling results are reviewed by the environment department and shared with the engineering department.

2.2 Saddle Dam 2

Recommendation: Water was observed on the downstream side ponding within the rockfill embankment between Sta. 20+275 and Sta. 20+475. It is recommended to install a thermistor within this sector and to be on the lookout for signs of change in the thermal regime of the foundation.

Action: The results of the thermistors located in Saddle Dam 2 are reviewed on a regular basis to detect any change or anomaly in temperature trend within the structure. No trend indicating changes in the thermal regime of Saddle Dam 2 have been observed to date. Review of the thermistors results will continue.

2.3 Stormwater Dike

Recommendation: Several tension cracks associated with movement were observed on the crest from Sta. 10+500 to 10+750. These movements appeared in August 2016 shortly after water from the South Cell reached this sector and stabilized, then stopped shortly after a rockfill buttress was constructed at the toe on the downstream side in September 2016. The observed movements are happening in a sector where the dike was built on frozen soft sediment and were probably caused by the water thawing this soft layer. The MDRB recommended that more instruments be installed, that a better understanding of the foundation be obtained through a geotechnical investigation, and that design criteria be established for the mitigation measure put in place.

Action: In January 2017, Agnico underwent a 3 holes geotechnical investigation with material sampling and instruments installation in the area the movements happened. 2 Holes were targeting the materials within the buttress foundation and another hole was installed in the tailings on the upstream side of the dike. The campaign aimed to better characterize the materials and assess it in-situ conditions. Thermistors and piezometers were installed and currently monitored daily by AEM. The long term stability of the Stormwater Dike is currently being assessed by GAL and a report will be emitted shortly.

Recommendation: Shallow water (30 cm deep) was observed ponding against a portion of Stormwater Dike in the North Cell. This small accumulation of water against the dike is not considered a problem.

Action: That small amount of water ponding against is formed from heavy fall precipitations and is not judge critical by Agnico.

Recommendation: A small hole in the bituminous geomembrane was observed at approximately Sta. 10+200. A punctured water balloon in the liner was also observed at 10+380. These two areas were repaired after the inspection.

Action: Holes on the Coletanche geomembrane are easily fixed by Agnico personnel every time they are found. AEM consider these holes not a threat to the environment since tailings deposition in front of the Stormwater dike structure have reached its final elevation.

2.4 Central Dike

Recommendation: Tailings deposition from Central Dike stopped during the 2016 construction season. Tailings deposition from the structure was planned to resume in October 2016 to promote a tailings beach against the structure.

Action: The tailings deposition in the South Cell resumed on North section on October 16th 2016 and a complete beach against the liner was observed in January 2017.

Recommendation: Seepage from the South Cell is ponding on the downstream side of Central Dike. At the time of the inspection, the water was clear and an average flow of approximately 550 m³/hr was pumped back to the South Cell to maintain the downstream pond at El. 115 m. AEM is working closely with the MDRB and the dike designer (Golder) to determine the seepage pathway and to establish measures to keep the situation under control. Golder recommends: 1) maintaining a tailings beach against Central Dike, 2) controlling the hydraulic gradient by proper management of the South Cell water pond and dike downstream toe pond, 3) closely monitoring the water quality; and 4) inspecting the structure for changing conditions.

Action:

- 1) According to the latest deposition plan, a complete beach will remain in front of the liner of CD for the entire 2016 season.*
- 2) The level of the downstream pond is maintained since the end of October 2015 to a 115m elevation which is controlled by pumping the seepage water back to the South Cell.*
- 3) A weekly sampling program has been implemented to follow up on the water quality of the seepage, as well as a daily turbidity assessment. All data is communicated to the Engineering department. New instruments have been added to the West Road to monitor its condition and are read on a regular basis.*

- 4) *Daily inspection of the Central Dike downstream toe is done by the AEM personnel.*

2.5 Saddle Dam 3 and 4

Recommendation: During the inspection, water was observed ponding on the downstream side of Saddle Dam 3 and Saddle Dam 4. As the downstream toe is higher than the South Cell pond, this water does not come from the TSF. It is important to maintain the water level on the downstream side lower than the granular layer of the upstream toe liner tie-in granular material to prevent uplift of the geomembrane. As the elevation of the downstream side is lower than the elevation of the granular material, this should not be a problem if the downstream water level is managed. The management of this water could be simplified by the construction of a sump, as indicated in the construction drawings, to direct the water in a low point.

Action: As these structures are still in construction phase, the sump that figure on the plans issued for construction won't be built for the moment. Water in these areas is managed, at spring freshet and during construction season, by pumping it back to the tailings pond. These sumps will be built as part of the Water Management of the Closure of the mine site.

3 AWAR

Recommendation: Regular inspections and maintenance of the road by AEM should continue. Consideration should be given to expanding AEM's monitoring program to include all culverts and bridges along the road in order to assess whether they are providing adequate capacity during the freshet and following large precipitation events.

Action: AWAR road crews remove ice and snow from all culverts and bridges before the freshet. Some culverts were added to prevent road washout. A weekly environmental inspection is conducted on the AWAR which includes all, the bridges and the culverts. Additional inspections on the bridges and culverts are also performed during the freshet period.

Recommendation: AEM has been conducting regular and event-based inspections of the fish-bearing water crossing locations along the road and these should continue in order to confirm the hydraulic function of the crossings, adequacy of crossing locations with respect to the watercourses, and minimal impact to fish habitat.

Action: The environment department monitors and inspects the bridges during the weekly AWAR inspections. During freshet and summer periods, Agnico conducts fish monitoring every two years. The last fisheries monitoring program was conducted during summer 2015. In summer 2017, another fisheries program is planned. Results of the program will be available in the Meadowbank Annual Report 2017.

Recommendation: The erosion of the culverts is stable. The progression of the erosion of culverts PC-17A (8+830), R14 (67+840), R18-B, R-20 (85+490), R-23(93+600) and R24 (98+100) should be monitored at freshet for any signs of progression or washout, as signs of water flowing beneath the road were observed at these locations.

Action: A weekly environmental inspection is conducted on the AWAR to inspect the bridges and the culverts. Additional inspections of the bridges and culverts are also performed during the freshet period to monitor signs of erosion and turbidity in the water. The Meadowbank Energy and Infrastructure Department also conducts inspections, especially during freshet period. Following the inspections, if work such as material placement for erosion control is deemed required around the culverts (stated in the above recommendation or for other culverts; the work will be completed by Agnico.

Recommendation: For some culvert locations, monitoring is recommended to see if flow occurs through the culvert (i.e. during the freshet). If insufficient capacity to handle the flows is observed, or water circulates under the road, then it is recommended to clear the obstructions or repair the culverts. Particular attention should be paid to R-00A (km 2+550), the culvert at 5+700, PC-14 (km 4+260), and PC-16 (km 54+950).

Action: The AWAR road crew removes ice and snow from all culverts and bridges before the freshet to ensure water flow. Some culverts were added to prevent road washout from occurring. A weekly environmental inspection is conducted on the AWAR to inspect the bridges and the culverts and additional inspections are also performed during the freshet period. Following the inspections, if work is deemed required such as culvert repair or replacement to prevent road washout, the work will be completed by Agnico.

Recommendation: The inspected bridges and their embankments were in good geotechnical condition. Signs of settlement were observed at Bridge 6, R15. The bridge was dipping toward the western side on both abutments. The bridge foundation did not show signs of adverse conditions. It is recommended to monitor the situation.

Action: A weekly environmental inspection is conducted on the AWAR to inspect the bridges and the culverts and additional inspections are also performed during the freshet period. The Meadowbank Energy and Infrastructure Department also conducts inspections, especially during freshet period. Following the inspections, if work is deemed required such as culvert repair or replacement to prevent road washout, the work will be completed by Agnico.

4 QUARRIES

Recommendation: Presence of unstable blocks and loose rocks along steep walls was observed in Quarries 3, 7, 9, 10, 12, 16, and 23. It is recommended that workers be cautious in these quarries and are aware of the potential hazard.

Action: If deemed necessary, additional work will be completed in 2017. The AWAR road crew will clean up unstable blocks and loose rocks should operations resume.

Recommendation: Most quarries have been cleaned since the 2015 inspection. Loose blocks and granular material have also been removed from the quarry walls. Slope remediation is in progress, but none of them were totally reclaimed. It is understood that AEM is developing a plan to progressively close some of the quarries along the AWPR while maintaining others to produce and store material supplies for ongoing road maintenance.

Action: The quarry reclamation along the AWAR is part of the Meadowbank Closure Plan. Reclamation activities for the quarries may occur during operations. The remaining reclamation activities for the quarries will occur during the closure period. As the AWAR will remain open during the closure and part of the post closure period, some quarries will remain open to supply material for ongoing road maintenance.

Recommendation: Quarry 4 and Quarry 14 are flooded. It is understood that AEM is evaluating how best to eliminate the ponding of water within these quarries.

Action: During the environmental inspections AWAR, the quarries are inspected. If actions are required for mitigation measures to control the water or to promote drainage, the Environmental department would advise the Energy and Infrastructure Department of actions to be taken. The water ponding at freshet or during the summer period in the quarries does not drain to any nearby watercourse. During previous summer periods (2014, 2015, 2016) no mitigation was deemed necessary as no significant amounts of water were observed in the quarries. During winter, the snow is also removed from the quarries to minimize water runoff at freshet within the quarry areas.

5 BULK FUEL STORAGE FACILITIES

Recommendation: Ponded water within the secondary containment cell was observed at the Baker Lake and Meadowbank main camp fuel tank farm. Ongoing removal of water should be managed to keep the water accumulation at a minimum near the tank foundation.

Action: Each year, the accumulated water is pumped out in accordance with the Type A Water License 2AM-MEA1525 (particularly after freshet and as needed during the open water season). Effluent must meet criteria stated in the License. After the water is pumped, each tank foundation is inspected.

Recommendation: The granular fill material protecting the geomembrane was eroded at Baker Lake due to wave actions in some areas, exposing the geomembrane. This condition was observed all along the south side of Tanks 3 and 4 and on the west side of Tank 1. It is recommended to cover the exposed area with geotextile and fill material to re-establish the liner protection.

Action: Repairs on the geomembrane close to tanks 3 and 4 was completed each year since summer 2015 by qualified contractors.

Recommendation: A hole in the exposed geomembrane (300 mm diameter hole) was observed at Baker Lake on the south southwestern corner of Tank 3 at the toe of the slope. The hole in the geomembrane should be repaired to ensure a good performance of the retention basin.

Action : Repair has been done in 2016 by the dewatering crew.

Recommendation: The embankments around the Baker Lake tank farm containment areas were stable. Tension cracks observed in the past on the upper bench north of Tanks 3 and 4 and south of Tanks 5 and 6 are disappearing. The northern slope of the containment area of Tanks 5 and 6 should be inspected periodically for signs of erosion.

Action: Regular inspections are completed at the fuel tank farm by the Energy and Infrastructures supervisor. Regular inspections are also completed by the environment department.

Recommendation: The geomembrane remains uncovered around the tanks of the twenty Jet A fuel tanks at Baker Lake. It is recommended to remain vigilant during the freshet and throughout the year to manage water accumulated within the bermed area.

Action: Water accumulation is monitored on a regular basis during freshet and pumped out in accordance with the Type A Water License 2AM-MEA1525. The geomembrane was repaired during summer 2015. The Jet A tankfarm is inspected regularly by the environment department.

Recommendation: A 3 m long tension crack was observed at the Meadowbank Main Camp tank farm on top of the subexcavated area behind the fueling station. It is recommended to monitor this area for changing conditions.

Action: Monitoring of the tension crack will continue to be observed.

6 OTHER MEADOWBANK FACILITIES

6.1 Meadowbank Site Roads

Recommendation: Three culverts were installed on Vault Road (coordinates 640 964 E / 7 217 466 N). As previously observed in past annual inspections, these three culverts were partially collapsed in the middle and showed signs of erosion at the inlet. This is currently not a significant issue, but it is recommended to monitor these culverts at freshet to ensure that they provide sufficient capacity and that erosion is not occurring.

Action: The area has been regularly monitored since the installation of the culverts in 2013 and no issues were identified at the location in regard to water flow, quality or erosion. The same inspections will be performed during the 2017 freshet.

Recommendation: Two culverts are installed on Vault Road (coordinate 639214E/7216189N). It was observed that the inlet of one of the culvert was entirely obstructed by rockfill and that the outlet of one of the culvert was partially obstructed while the outlet of the other culvert was broken. It is recommended to observe this area at freshet and to clear the obstructions if insufficient capacity to handle the flow is observed.

Action: As part of the freshet action plan, the area for the culverts located on the Vault Road between the diversion ditches and Lake NP1 is closely monitored during freshet period. Some work was completed around the culverts during summer 2015 to ensure proper flow and to minimize erosion. The same inspections will be performed in 2016. If required, additional work will be performed in 2016.

6.2 Diversion Ditch and Sediment and Erosion Protection Structure

Recommendation: It is important that the erosion protection structure and sediment barriers be inspected during the next freshet season.

Action: The Diversion ditches as well as all structures and sediment barriers will be inspected during the 2017 freshet season as a part of the Freshet Action Plan.

6.3 Diffuser

Recommendation: The diffuser at Wally Lake had moved to a less deep water location and was spraying water in the air. It is recommended to repair this

diffuser so that the pipe is entering the lake to reduce the risk of shoreline erosion.

Action: A new diffuser will be installed in winter 2017 at its original place. More boulder will be use to avoid the diffuser to move again.

6.4 Stormwater Management Ponds

Recommendation: No geotechnical concerns were identified regarding the Stormwater Management Pond, or the crusher ramp located nearby. The geotechnical stability of the crusher ramp should be regularly inspected by AEM due to its proximity with Stormwater management pond.

Action: Inspection and monitoring of the roads is performed on regular basis and will continue. No geotechnical issues have been identified on the crusher ramp since the beginning of its operation.