A TETRA TECH COMPANY

December 20, 2013

ISSUED FOR USE
EBA FILE: W14103179-01

Government of Yukon
Department of Energy Mines and Resources
P.O. Box 2703
Whitehorse, YT Y1A 2C6

Attention: Ms. Josée Perron. P.Eng.
Senior Project Manager, Assessment and Abandoned Mines

Subject: 2013 Annual Geotechnical Inspection of Earth Structures
Mount Nansen Site, YT.

1.0 INTRODUCTION

As requested, EBA Engineering Consultants Ltd., operating as EBA, A Tetra Tech Company (EBA) has completed a geotechnical inspection of the earth structures located at the abandoned Mount Nansen mine site west of Carmacks, YT. The intent of the inspection was to provide a geotechnical engineering report on the stability of the tailings, water-retaining, and water diversion structures as part of the on-going care and maintenance program recommended in the Canadian Dam Association's (CDA) Dam Safety Guidelines (2007). Similar inspections have been completed by EBA in the past. The scope of work for this study was to include two site inspections in 2013 (one in June with a separate report, one in September for the final report), with the existing instrumentation to be read by EBA during the June trip. This letter presents the final report based on the June 21 and October 1 2013 inspections, the observations and recommendations from which have been combined to prepare this Annual Geotechnical Inspection Report. The June 21 inspection report is included in Appendix A. All this work was authorized by Josee Perron of Yukon Government Assessment and Abandoned Mines Branch (YG-AAM) under EBA's existing Standing Offer Agreement, through Contract No. C00018602 in May 2013.

2.0 OBSERVATIONS AND RECOMMENDATIONS

Mr. Richard Trimble, P.Eng. and Ms. Kathleen Jarvis, EIT of EBA's Whitehorse Office completed a one-day inspection on June 21, 2013, and Richard Trimble completed a second inspection on October 1/13. Both inspections were completed in the company of YG-AAM personnel. The structures examined were:

- North Interceptor Ditch/Dome Creek Diversion Ditch/Emergency Spillway;
- Tailings Dam; and
- Seepage Collection Dam.

Using YG-AAM's instrumentation readout equipment, water pressure data from the working piezometers and ground temperature data from the working thermistor cables was obtained by EBA personnel during the June 21/13 trip.

EBA, A Tetra Tech Company
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
p. 867.668.3068 f. 867.668.4349

This collected data, along with that collected by YG-AAM personnel over the past year will be presented in a separate report.

Specific observations and recommendations are presented in the following sections of this letter, including selected photos. Other photos taken are available for review in EBA's files. Prior to the site visit, a site specific Health and Safety Plan was prepared and submitted to YG-AAM, followed by the completion of a Safe Work Form before starting the site work.

2.1 NORTH INTERCEPTOR DITCH/DOME CREEK DIVERSION/EMERGENCY SPILLWAY

Interceptor/Diversion Ditch

The ditches above and around the tailings pond, connecting to the emergency spillway were in similar conditions to previous years. The effects of ice excavation and cleanout to keep the ditch flowing over the previous winter were evident – this included some oversteep sideslopes near Dome Creek, some areas of slower flow, and general siltation/sanding of the ditch bottom up to about the bridge. See Photos below.

Photo 1: Oversteep ditch slope on Dome Creek Diversion (June 21/13)

Photo 2: Oversteep ditch slope upstream of Dome Creek intersection (June 21/13)

Photo 3: Naturally eroded ditch slope on Dome Creek Diversion (October 1/13)

Photo 4: Naturally eroded ditch slope upstream of Dome Creek intersection (October 1/13)

The primary concern with these ditches is the effects of erosion on the toes of the banks that contribute to widening, grade flattening due to channel infill, and oversteep slopes during periods of high water flow. It was recommended that these slopes be flattened prior to the onset of winter.

As described in the report attached in Appendix B, these sideslopes were flattened by Boreal Engineering, under direction of YG-AAM on October 12, 2013.

Erosion gullies from water entering the interceptor ditch were in the same condition as previous years, and should continue to be monitored. These small erosion gullies are significant contributors to sand and silt deposits in the diversion ditch. See Photos 5 and 6.

Photo 5: Sand deposits in channel bottom upstream of Dome Creek intersection (June 21/13)

Photo 6: Sand deposits in channel bottom upstream of Dome Creek intersection (October 1/13)

It was recommended that some riprap be placed at this location to slow down the inflow of sand to the interceptor ditch. This work was completed by Denison Environmental Services on October 6, 2013 under the direction of YG-AAM. A summary of this work is also presented in the report in Appendix B.

One final item was the removal of the culvert from the original tailings line that crossed the berm between the diversion ditch and the tailings pond. This was satisfactorily removed in the summer of 2013.

Emergency Spillway

An item identified in the June 21 inspection that required immediate attention was a small erosion scar on the north side of the emergency spillway. It appears as though ice-damming during the winter of 2012/13 caused the channel to deflect into the north bank, overtopping the riprap and geotextile, and eroding the sand. Recommendations for repair were presented in the June 21/13 inspection report.

This work was essentially completed by the October 1 inspection, with the exception of additional riprap to be placed at the toe of the repair, closer to the water level in the diversion. This final repair work was completed by Denison Environmental Services on October 1, 2013 under the direction of YG-AAM. The report describing the repair is attached in Appendix C.

Photo 7: View of erosion scour on north side of spillway that must be repaired (June 21/13)

Photo 8: Completed repairs to erosion scour on north side of spillway (October 1/13)

2.2 TAILINGS DAM

During 2013, the water level in the tailings pond was below the maximum operating level elevation, but slightly higher than it has been in previous years, most likely due to retained rainfall and snowmelt. However, the dam itself is considered to be in a stable condition (see Photos 9 and 10). No evidence of previously noted instabilities or seepage on the north abutment was observed, and there were no signs of significant erosion or permafrost thaw features that could affect stability. Minor surface thaw depressions previously observed on the south crest have not changed over the past several years.

Photo 9: View to the south along crest of tailings dam (June 21/13)

Photo 10: View to the north along crest of tailings dam (October 1/13)

The water in the pond was above the height of the installed staff gauges in June 2013 (reading of 2.11 m, elevation 1096.17 m) but had dropped significantly by October 1, 2013 (reading of 1.78 m, elevation 1095.84 m). This elevation also corresponds to that recorded in the fall of 2012 (1095.9 m). For reference, the maximum design operating level is 1097.8 m, which also corresponds to the invert of the spillway.

One item of concern noted in the October inspection was the condition of the backfilled testpits excavated by others on the dam surface. The backfilled areas contained no erosion protection and should be repaired.

Photo 11: View of backfilled testpit near crest of tailings dam (October 1/13)

Photo 12: View of backfilled testpit near crest of tailings dam (October 1/13)

This repair work was completed by Boreal Engineering, under the direction of YG-AAM on October 11, 2013, and is summarized in the report contained in Appendix D.

2.3 SEEPAGE COLLECTION DAM

As previously arranged by YG-AAM, the water in the seepage collection pond had been "drawn down" as low as practically possible in the days before the inspection on June 21/13. This facilitated a better observation of several seepage zones that had been observed over the years – primarily from the toe of the tailings dam, and also from the north abutment. Based on these new observations, the seepages are still not considered to significantly affect dam stability.

Photo 11:View of Seepage Collection Pond – water level pumped down (June 21/13)

Photo 12:View of Seepage Collection Pond – normal operating water level (October 1/13)

The water level on October 1/13 was back to normal operating levels, with a reading of 0.5 m on the staff gauge that corresponds to an elevation of 1077.5 m. The Fall 2012 reading at this location indicated an elevation of 1077.3 m. For reference, the maximum operating level of this pond is 1078.1 m.

A review of flow meter data was also completed, and indicates a relatively constant pumping rate of ~175 L/min over the year. No stability concerns are noted as a result of the 2013 inspections of the pond.

3.0 SUMMARY OF RECOMMENDATIONS

The following Table has been prepared to summarize the recommendations from this and previous annual geotechnical inspections. This table will be updated annually, with items noted as "completed" being removed from subsequent versions of the Table, and the others carried forward if still applicable.

Table 1: Summary and Status of Maintenance Items from 2012 and June 2013 Annual Geotechnical Inspections

Item Description	Recommended Maintenance	Status
June 2013 Recommendations		
North Interceptor, Diversion Ditch and Emergency Spillway	Continue to monitor steep sideslopes and sand/silt buildup. Flatten sideslopes as required, armour toes and minimize the clean out of sand in base of ditch, as this creates over-steep slopes and reduces the ditch grade.	On-going
	Repair erosion damage on north side of spillway.	completed
Tailings Dam	Continue to monitor minor permafrost thaw settlements near downstream toe. Don't let water in tailings pond get too much higher than 1.5 m below the design operating level (El. 1097.8 m – 1.5 m = 1096.3 m, a reading of 2.24 m, or 0.24 m above top of staff gauge), which provides a good buffer for any extreme weather events.	On-going
Seepage Collection Dam	Monitor seepage zones from toe of tailings dam and from base of north terrace. If water becomes silty, notify a geotechnical engineer immediately.	On-going
	Continue to record pumping rates from seepage collection pond, and notify a geotechnical engineer if the rates significantly increase to maintain a constant water pond elevation.	On-going

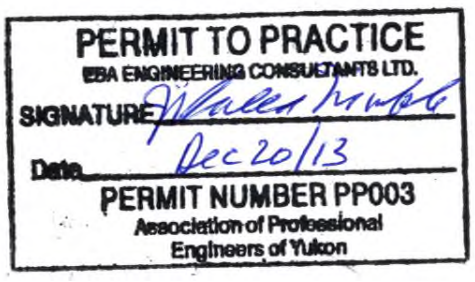
4.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the Government of Yukon, Energy Mines and Resources and their agents. EBA, A Tetra Tech Company, does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Government of Yukon, Energy Mines and Resources or for any Project other than the site described herein. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in the attached General Conditions.

5.0 CLOSURE

We trust this report meets your present requirements. The inspections reported herein are specifically related to geotechnical observations completed by the author regarding the north interceptor ditch/Dome Creek diversion/emergency spillway, tailings pond, and seepage collection pond at the time of the inspections. Should geotechnical stability issues be noted by site personnel during other routine inspections, EBA should be notified as these observations may affect the conclusions presented in this report. Should you have any questions or comments, please contact the undersigned.

Sincerely,
EBA, A Tetra Tech Company



J. Richard Trimble, P.Eng., FEC
Principal Consultant, Arctic Region
Direct Line: 867.668.9216
Email: rtrimble@eba.ca

GENERAL CONDITIONS

GEOTECHNICAL REPORT

This report incorporates and is subject to these “General Conditions”.

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA’s Client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA’s Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA’s instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. EBA’s instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

7.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

8.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

9.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

10.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

11.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

12.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

13.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

14.0 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of the report, EBA may rely on information provided by persons other than the Client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

APPENDIX A

EBA REPORT ON JUNE 2013 INSPECTION OF EARTH STRUCTURES – MOUNT NANSEN, YT

A TETRA TECH COMPANY

August 6, 2013

ISSUED FOR USE
EBA FILE: W14103179-01

Government of Yukon
Department of Energy Mines and Resources
P.O. Box 2703
Whitehorse, Yukon Y1A 2C6

Attention: Ms. Josée Perron. P.Eng.
Senior Project Manager, Assessment and Abandoned Mines

Subject: June 2013 Geotechnical Inspection of Earth Structures
Mount Nansen Site, YT.

1.0 INTRODUCTION

As requested, EBA Engineering Consultants Ltd., operating as EBA, A Tetra Tech Company (EBA) has completed a geotechnical inspection of the earth structures located at the abandoned Mount Nansen mine site west of Carmacks, YT. The intent of the inspection was to provide a geotechnical engineering report on the stability of the tailings, water-retaining, and water diversion structures as part of the on-going care and maintenance program recommended in the Canadian Dam Association's (CDA) Dam Safety Guidelines (2007). Similar inspections have been completed by EBA in the past. The scope of work for this study was to include two site inspections in 2013 (one in June, one in September), with the existing instrumentation being read by EBA during the June trip. This letter presents an interim report based on the June inspection, which will be combined with the September inspection to prepare the Annual Geotechnical Inspection Report.

2.0 OBSERVATIONS AND RECOMMENDATIONS

Mr. Richard Trimble, P.Eng. and Kathleen Jarvis, EIT of EBA's Whitehorse Office completed a one-day inspection on June 21, 2013. The structures examined were:

- North Interceptor Ditch/Dome Creek Diversion Ditch/Emergency Spillway
- Tailings Dam
- Seepage Collection Dam

Using YG-AAM's instrumentation readout equipment, water pressure data from the working piezometers and ground temperature data from the working thermistor cables was also obtained.

Specific observations and recommendations are presented in the following sections of this letter, including selected photos. Other photos taken are available for review in EBA's files. Prior to the site visit, a site specific Health and Safety Plan was prepared and submitted to YG-AAM, followed by the completion of a Safe Work Form before starting the site work.

EBA, A Tetra Tech Company
Calcite Business Centre, Unit 6, 151 Industrial Road
Whitehorse, YT Y1A 2V3 CANADA
p. 867.668.3068 f. 867.668.4349

2.1 NORTH INTERCEPTOR DITCH/DOME CREEK DIVERSION/EMERGENCY SPILLWAY

The ditches above and around the tailings pond, connecting to the emergency spillway were in similar conditions to previous years. The effects of ice excavation and cleanout to keep the ditch flowing over the previous winter were evident – this included some oversteep sideslopes near Dome Creek, some areas of slower flow, and general siltation/sanding of the ditch bottom up to about the bridge. See Photos below.

Photo 1: Oversteep ditch slope on Dome Creek Diversion (June 21/13)

Photo 2: Oversteep ditch slope upstream of Dome Creek intersection (June 21/13)

Erosion gullies from water entering the interceptor ditch were in the same condition as previous years, and should continue to be monitored. These small erosion gullies are probably significant contributors to sand and silt deposits in the diversion ditch. See Photo 3.

Photo 3: Sand deposits in channel bottom upstream of Dome Creek intersection (June 21/13)

The primary concern with these ditches is the effects of erosion on the toes of the banks – this will have to be monitored and corrective actions taken (regular repair – flattening to 1.5:1, possible riprap placement) if over-steepening occurs.

One item requiring immediate attention is a small erosion scar on the north side of the emergency spillway. It appears as though ice-damming this past winter caused the channel to deflect into the north bank, overtopping the riprap and geotextile, and eroding the sand. This area must be repaired before next winter, using the following suggested procedure:

1. Expose the ends of the geotextile adjacent to the erosion scar, and fold them back
2. Remove all riprap down to the water line
3. Smooth out the edges of the scour area by excavating the sand
4. Reconstruct the channel bank by using compacted sand and/or gravel, in maximum 300 mm lifts
5. Add new geotextile, overlapping at least 1.0 m on all three sides
6. Replace the riprap to match adjacent area (EBA took samples of the riprap on site, and it is presently being tested for suitability, prior to placement).

Photo 4 shows the erosion scour on June 21/13.

During re-construction, photos should be taken at all stages of the work, for future reference purposes.

Photo 4: View of Erosion Scour on north side of spillway that must be repaired (June 21/13)

2.2 TAILINGS DAM

The water level in the tailings pond was below the maximum operating level elevation, but higher than it has been in previous years. However, the dam itself is considered to be in a stable condition (see Photo 5). No evidence of previously noted instabilities or seepage on the north abutment was observed, and there were no signs of significant erosion or permafrost thaw features that could affect stability. Minor surface thaw depressions previously observed on the south crest have not changed over the past several years.

Photo 5: View to the south along crest of tailings dam (June 21/13)

The water in the pond was above the height of the installed staff gauges, and was read at 1.11 (actually 2.11 as there are two staff gauges on top of each other) using binoculars interpreting hand-written marks on an adjacent PVC pipe. Using last year's data (reading of 1.72=1095.93 m) the water level on June 21/13 was at 1096.32 m which is about 0.39 m higher than August 2012 and about 1.5 m below the design "pond operating level" of 1097.8 m. A re-survey by YG-AAM personnel early on July 17/13 indicated that a reading of 1.91 on the staff gauge now corresponds to an elevation of 1095.97 m.

2.3 SEEPAGE COLLECTION DAM

As previously arranged by YG-AAM, the water in the seepage collection pond had been "drawn down" as low as practically possible in the days before the inspection – see Photo 6.

Photo 6: View of Seepage Collection Pond – water level pumped down (June 21/13).

This facilitated a better observation of several seepage zones that had been observed over the years – primarily from the toe of the tailings dam, and also from the north abutment. Based on these new observations, they are still not considered to significantly affect dam stability.

Photo 7 shows one of these seepage zones from the base of the sand terrace on the north side of the pond. The water was observed to be clear, and the small alluvial fan visible in the photo is the result of erosion of the natural sand surface by moving water, not by subsurface piping.

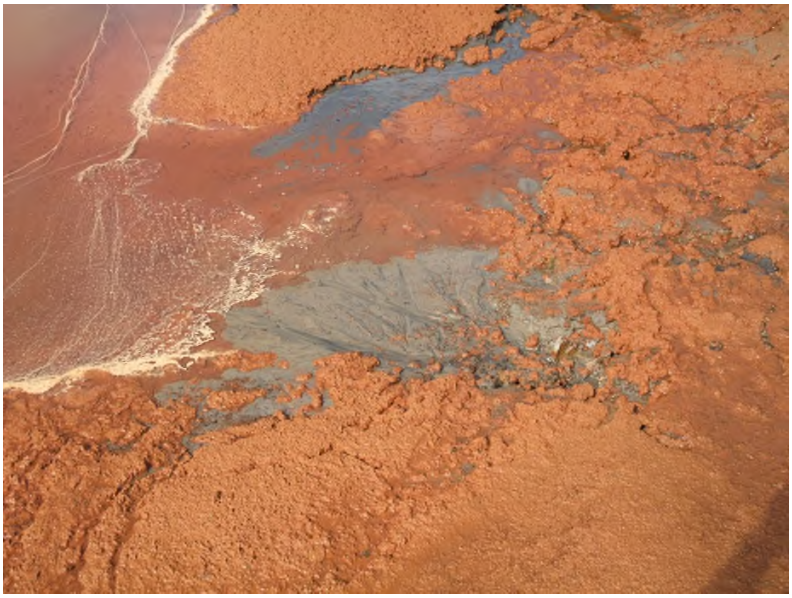


Photo 7: Seepage observed from base of sand terrace at north side of seepage collection pond (June 21/13).

No stability concerns are noted as a result of this inspection during lower water levels in the pond.

3.0 SUMMARY OF RECOMMENDATIONS

The following Table has been prepared to summarize the recommendations from the annual geotechnical inspection. This table will be updated annually, with items noted as "completed" being removed from subsequent versions of the Table, and the others carried forward if still applicable.

Table 1: Summary and Status of Maintenance Items from 2012 and June 2013 Annual Geotechnical Inspections

Item Description	Recommended Maintenance	Status
From 2012 Report		
North Interceptor, Diversion Ditch and Emergency Spillway	Monitor the condition of bank sideslopes on a regular basis, and if undercut/over-steepened by erosion, then either repair or provide armour consisting of non-woven geotextile and suitably sized riprap.	Continue Monitoring
Tailings Dam	Continue to visually monitor permafrost thaw settlement on the downstream face near the south abutment.	Continue Monitoring
	Monitor and possibly test seepage from toe of tailings dam immediately above seepage collection pond, to determine its origin.	Discussed/ not necessary
Seepage Collection Dam	Monitor seepage quantity and clarity of water from base of sand terrace to north of seepage collection pond,	Continue Monitoring
	Monitor seepage zones on downstream face of dam	Continue Monitoring
	Continue to collect pumping data, with periodic calibration checks using the "time to fill a 20 L pail method".	Continue Monitoring

Item Description	Recommended Maintenance	Status
June 2013 Recommendations		
North Interceptor, Diversion Ditch and Emergency Spillway	Continue to monitor steep sideslopes and sand/silt buildup. Flatten sideslopes as required, clean out sand in base of ditch as required.	On-going
	Repair erosion damage on north side of spillway	To be completed in Summer 2013
Tailings Dam	Continue to monitor minor permafrost thaw settlements. Don't let water in tailings pond get too much higher than the June 21/13 water level. This is about 1.5 m below the design operating level, which provides a good buffer for any unanticipated weather events.	On-going
Seepage Collection Dam	Monitor seepage zones from toe of tailings dam and from base of north terrace. If water becomes silty, notify a geotechnical engineer immediately.	On-going
	Continue to record pumping rates from seepage collection pond, and notify a geotechnical engineer if the rates significantly increase to maintain a constant water pond elevation.	On-going

4.0 LIMITATIONS OF REPORT

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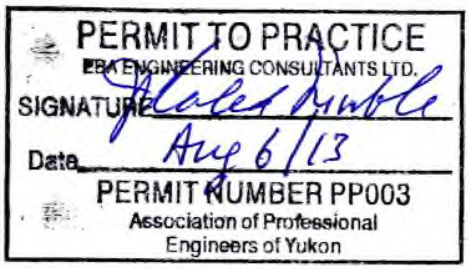
5.0 CLOSURE

We trust this report meets your present requirements. The inspections reported herein are specifically related to geotechnical observations completed by the author regarding the north interceptor ditch/Dome Creek diversion/emergency spillway, tailings pond, and seepage collection pond at the time of the inspections. Should geotechnical stability issues be noted by site personnel during other routine inspections, EBA should be notified as these observations may affect the conclusions presented in this report. Should you have any questions or comments, please contact the undersigned.

Sincerely,
EBA, A Tetra Tech Company

J. Richard Trimble, P.Eng., FEC
Principal Consultant, Arctic Region
Direct Line: 867.668.9216
Email: rtrimble@eba.ca



APPENDIX B

REPAIRS TO THE DOME CREEK INTERCEPTOR AND DIVERSION DITCHES REPORT – OCTOBER 12, 2013

(report prepared by Yukon Government, Assessment and Abandoned Mines)

Repairs to the Dome Creek Interceptor and Diversion Ditches

Mount Nansen Site

October 12, 2013

On October 12, 2013, Boreal Engineering completed the repairs to an embankment within the Dome Creek diversion channel as per the recommendations by EBA Engineering during their Geotechnical inspection of the Mount Nansen site.

Rip Rap material was sourced from piles used during the spillway repairs that were completed in September by the site operations staff. The rip rap material was sorted by EBA during a site visit in September to remove materials that could be potentially acid-rock generating as per the laboratory analysis conducted on 3 samples taken by EBA in June from these piles.

The over-steep embankment was pulled back to create a longer slope. From there, loose material was removed from the eroded area to make room for the coarse rip rap material which would strengthen the base of the embankment. The larger pieces of the rip rap were placed in the bottom of the eroded area and pressed firmly into the embankment with the bucket of the excavator. Smaller pieces were placed on top, as well as above these large pieces to secure this portion of the embankment and to try and eliminate any further erosion in this area. Once the rip rap was placed, final corrections were made to the slope of the embankment, and the area where material was removed was then packed with the bucket of the excavator.

The following photos were taken by Jeff Moore, an AAM representative on-site during the repairs to document these activities.

There are several photos included also of the repairs to the Interceptor ditch that were completed by the site operations contractor, Denison Environmental Services.

Photo log of the repairs to the Dome Creek diversion channel

Figure 1: The first row of large rip rap material pressed firmly into bank with the excavator.

Figure 2: Smaller rip rap material added to fill in the eroded portion of the bank.

Figure 3: Rip rap material in place within the eroded area.

Figure 4: Overview of the area where the work was completed.

Figure 5: View of the completed work with the bank pulled back to remove some of the steep gradient.

Photo log of the repairs to the North Interceptor ditch in the tailings facility

Figure 6: October 6, 2013- repairs to the Interceptor ditch by the site operations staff.

Figure 7: October 6, 2013. Material added to the area where sand was deposited in the Interceptor ditch.

Figure 8: October 12, 2013. Repairs to Interceptor ditch with snow in the area.

APPENDIX C

REPAIRS TO THE SPILLWAY AT THE MOUNT NANSEN SITE REPORT – SEPTEMBER 26, 2013

(report prepared by Yukon Government, Assessment and Abandoned Mines)

Repairs to the spillway at the Mount Nansen site

September 26, 2013.

On September 26, 2013, the site operator at the Mount Nansen site (Denison Environmental Services) began the repair of the erosion scar in the spillway, following the recommendations in the EBA Geotechnical inspection report from June 2013. Jeff Moore, a representative from the Assessment and Abandoned Mines Branch (AAM) was onsite during the repairs to ensure the repairs were completed according the recommendations put forth by EBA.

The rip rap material used to armour the bank of the spillway was sourced from 2 piles of material from the south side of the spillway. These piles were sampled by EBA in June during the geotechnical inspection and analyzed for acid rock potential. Three samples were collected and analyzed, with one sample potentially acid generating (PAG). On September 13, an EBA representative arrived on-site and began to sort and mark the rock from these piles that could be used for rip rap in the repairs of the spillway. These rocks were marked with orange paint, and with the assistance of the site operations staff, were placed in a separate pile where they could be used for the spillway repairs.

Before the backfilling of the erosion scar began, Jeff Moore measured the depth of the erosion scar. Measuring from the highest point on the bank to the bottom of the erosion scar, the height was approximately 69 inches, or 175.30 centimetres. According to the EBA recommendations, the sand that would be used for backfilling the erosion scar should be placed in 300mm lifts and then compacted between each lift. Using the 300 millimetre increments compared to the depth of the erosion scar, it should be filled with 6 lifts of sand. During the backfilling process, it took 9 lifts of sand to backfill the erosion scar and slope the area similar to the rest of the spillway.

The sand was damp and compacted very well with the 700 pound plate packer. In the areas where the plate packer could not access, the bottom of the 210 excavator was used. Weather conditions on this day were cool (approximately 0°C), with precipitation switching between rain and snow throughout the day. The precipitation kept the backfill material damp which helped with the compaction while using the 700 pound plate packer.

Geotextile cloth was placed over the backfilled area and overlapped the existing geotextile cloth downstream by 1 metre. On the upstream side of the erosion scar, no geotextile cloth was located. The new cloth was laid approximately 3 metres beyond the erosion scar to ensure proper coverage, without disturbing the rip rap material already placed in the spillway.

Photos were taken of the spillway repairs and a photo log is included with this report.

Photo log of the spillway repair:

Figure 1: 2013-09-26 Erosion area before backfilling.

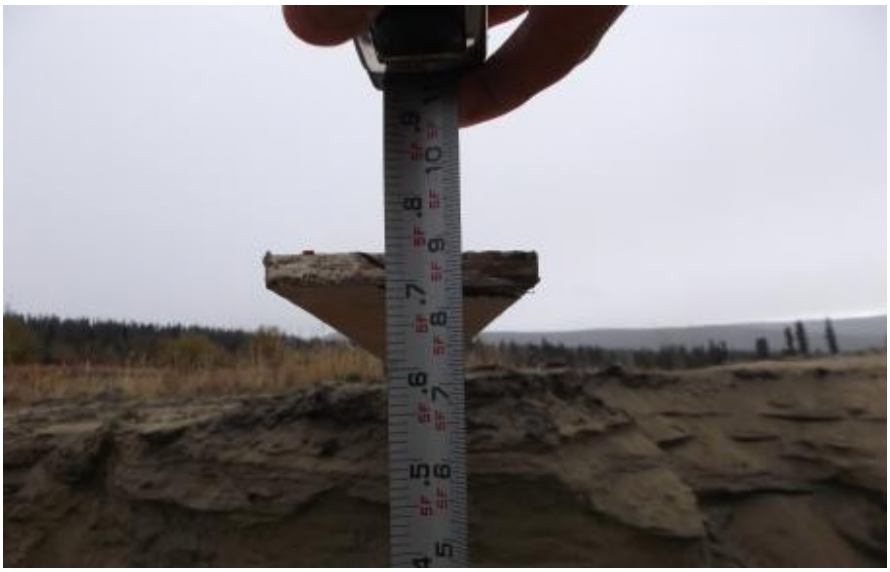


Figure 2: 2013 09 26 Depth of erosion scar before backfilling.

Figure 3: 2013 09 26 Compacting first 300mm lift of sand.

Figure 4: 2013 09 26 Adding third lift of sand to the erosion area.

Figure 5: 2013 09 26 compacting and adding fill to the erosion area.

Figure 6: 2013 0927 Operator moving material to access lower portion of eroded area.

Figure 7: 2013 09 27 Eroded area backfilled, compacted and sloped.

Figure 8: 2013 09 27 Site staff installing the geotextile cloth to the eroded area.

Figure 9: 2013 09 27 placing rip rap material along the lower portion of geotextile cloth.

Figure 10: 2013 09 27 Rip rap material being placed on the geotextile cloth.

Figure 11: 2013 10 01 Final repairs completed to the erosion scar on the emergency spillway.

APPENDIX D

REPAIRS TO THE TESTPITS ON THE MOUNT NANSEN TAILINGS FACILITY – OCTOBER 11, 2013

(report prepared by Yukon Government, Assessment and Abandoned Mines)

Government of Yukon

Repairs to the test pits on the Mount Nansen tailings facility

Repairs completed on October 11, 2013

Jeff.Moore
10/28/2013

On October 11th, 2013 Boreal Engineering arrived on site along with an AAM representative (Jeff Moore) and a Associated Engineering representative (Richard Annette), to oversee and document the repairs to areas on the Mount Nansen site that were disturbed during the fall drilling program.

One of the main areas of concern were the three test pits that were excavated in the face of the tailings facility (TP-TD-01, TP-TD-02 and TP-TD-03). These three areas were back-filled, but did not have the appropriate, coarse material(s) placed on top to prevent erosion and melting of the permafrost within the tailings dam. The recommendations to repair the test pits and place the appropriate materials in these areas were a result of the fall geotechnical inspection conducted by EBA Engineering on October 1, 2013.

Coarse rock was obtained from a borrow source on-site that is located between the haul road and the lower road leading to the tailings area. Five dump truck loads were taken from the borrow source and were placed at each of the three test pits to ensure adequate coverage of the distrubed areas.

Boreal Engineering used their CAT 324 excavator to place the materials in on each test pit and used the tracks to run back and forth over the areas for compaction and to blend with the surrounding area.

Contained in this report are the photos taken by Jeff Moore to document the repairs to the three test pits on the face of the tailings dam.

Photo log of the repairs to the three test pits

Figure 1: The five piles of borrow material to repair the test pit locations on the tailings dam.

Figure 2: Test Pit TP-TD-01 with coarse material in place and compacted with tracks of the excavator.

Figure 3: Test Pit TP-TD-02 with coarse material and compacted by the tracks of the excavator.

Figure 4: Test Pit TP-TD-03 with coarse material and packed with the tracks of the excavator.

Figure 5: Coarse material compacted with excavator tracks at TP-TD-03.

Figure 6: Boreal Engineering placing coarse material at TP-TD-02.

Figure 7: Boreal Engineering placing coarse material at TP-TD-03.