

January 23, 2015

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

ISSUED FOR USE
FILE: W14103403-01
Via Email: josee.perron@gov.yk.ca

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

Subject: 2014 Annual Geotechnical Inspection Report on Earth Structures
Mount Nansen Site, YT

1.0 INTRODUCTION

As requested, Tetra Tech EBA Inc. (Tetra Tech 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. The format of this inspection conforms to that recommended in the Surveillance - Engineering Inspections section of the Canadian Dam Association's (CDA) Dam Safety Guidelines (2007). The tailings dam is classified as SIGNIFICANT with respect to the consequences of failure per the CDA Guidelines, and engineering inspections are required on an annual basis. Similar inspections have been completed by Tetra Tech EBA in the past. The scope of work for this study was to include two site inspections in 2014 (one in the spring (at or near freshet) with an interim report, and one in the fall, just before freeze-up for the final report). This letter presents the final report based on these inspections, the observations and recommendations from which have been combined to prepare this Annual Geotechnical Inspection Report. A copy of the spring (June 11/14) inspection report is included in Appendix A. This work was authorized by Josee Perron of Yukon Government Assessment and Abandoned Mines Branch (YG-AAM) under EBA's Standing Offer Agreement, through Contract No. C00024154 in May 2014.

2.0 OBSERVATIONS AND RECOMMENDATIONS

Mr. Richard Trimble, P.Eng. of Tetra Tech EBA's Whitehorse Office completed one-day inspections on June 11 and September 26, 2014. Both inspections were completed in the company of Luca Poloni and Josee Perron of YG-AAM. The structures examined were:

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

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 Safety Orientation by Denison personnel on site, as well as the completion of a Tetra Tech EBA 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 combined spillway, were in similar conditions to previous years, although in September 2014 it was observed that there had been recent dredging to remove accumulated silt/sand in the base to improve winter flows, and the sideslopes had been flattened/re-contoured to a more stable condition. See photos below.



Photo 1: Interceptor ditch above Dome Creek – stable sideslopes (September 26/14)

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. Previously recommended and subsequently implemented channel blocks using riprap were not entirely successful at containing the eroded sand. If monitoring and maintenance is not being provided, then a more permanent solution (geotextile placement) may have to be considered.



Photo 2: Re-contoured diversion ditch with stable sideslopes. (September 26/14)

One area that has historically had oversteep slopes was the intersection of the interceptor ditch with Dome Creek. In September 2014, the sideslopes in this area were observed to have been flattened satisfactorily (see Photo 3, below).



Photo 3: Re-contoured and stable sideslopes at intersection with Dome Creek (September 26/14)

The primary concern with all these ditches is the effects of erosion at the toes of the banks that contribute to widening, grade flattening due to channel infill, oversteep slopes during periods of high water flow, and the transport of sediment that increases total suspended solids further downstream. If regular maintenance is not provided, then some base and slope armouring will be required.

Emergency and Combined Spillway

During a Dam Safety Review conducted by Worley Parsons in the summer of 2013, it was recommended that the Emergency Spillway invert at the tailings pond be lowered by 0.3 m to provide the minimum 1.0 m freeboard per CDA Guidelines. This work had been completed prior to the Tetra Tech EBA inspection, but several deficiencies were noted. YG-AAM subsequently completed repair of these deficiencies, and provided photos of the completed repairs to Tetra Tech EBA. The new invert elevation of the spillway is 1097.8 m.

The combined emergency spillway/Dome Creek diversion channel was in a similar condition to previous years. The small erosion scar that was repaired in 2013 has blended in well with the rest of the channel.



Photo 4: View of stable emergency spillway with minor vegetation growth. The 2013 repair is located in upper centre of photo (September 26/14)

Woody vegetation (willows, etc.) that continue to grow in the combined emergency spillway channel may eventually have to be cut down if there is a potential for impeding the flow during flood events. Continued monitoring is recommended.

2.2 TAILINGS DAM

The tailings dam is considered stable in its present condition. Work completed in 2014 included levelling the crest of the dam to a uniform elevation of 1099.6 m, and installing four surface settlement monitoring points. Photo 5 shows the condition of the dam crest at the time of the inspection.



Photo 5: View of recently re-levelled crest of tailings dam looking south (September 26/14)

Previously recommended repairs to backfilling of testpits and the removal of woody vegetation had all been completed satisfactorily at the time of the inspection.

On September 26/14 the water in the pond was read at 1.38 m on the installed staff gauge, which corresponds to an elevation of 1095.49 m. It is understood that the invert of the spillway was lowered this year to about 1097.8 m elevation to provide additional freeboard below the dam crest.

The following table summarizes the existing and design elevation details for the **tailings pond**, and the water level at the time of the inspection.

Description	Elevation
Crest of Dam	1099.6 m
Top of Geocomposite Liner	1098.8 m
Design Flood Water Elevation	1098.6 m
Spillway Invert	1097.8 m
Maximum Operating Level	1097.8 m
September 26/14 Water Level	1095.5 m

2.3 SEEPAGE COLLECTION DAM

The water level on September 26/14 was read at 0.21 m on the staff gauge, which corresponds to an elevation of 1077.28 m. For reference, the maximum operating level of this pond is 1078.1 m. The crest of the dam is at an elevation of 1079.10 m, and the September 26/14 freeboard was about 1.8 m.

Some minor seepage was observed from the base of the riprap at the toe of the tailings dam, and from the north terrace at the seepage pond. Both of these seepage zones were observed as containing clear water, and are consistent in flow rates with that observed in previous years. Seeps at the downstream toe of the berm, as noted in previous years, were not observed during the September inspection.

During the June inspection, it was observed that there was an increase in the number of ground squirrel holes and burrows along the dam crest that could potentially create seepage pathways, damage the buried liner, and create instability. As a result, a recommendation was made to remove the squirrels and backfill the holes. Over the summer, YG-AAM staff contracted Orkin Canada to address the issue, and they have made several site visits to implement and assess the effectiveness of their control measures. It was noted by Tetra Tech EBA that the ground squirrel activity was reduced, and if the final visit by Orkin in May 2015 shows an acceptable decrease in population, it is understood that the burrows and holes will be backfilled and compacted to maintain the integrity of the dam.

The removal of woody vegetation that had been previously recommended has been satisfactorily completed.

The pumping rate from the pond was read at 184 L/min, which is consistent with previously recorded pumping rates.



Photo 6: View of seepage collection pond, with areas of minor seepage noted just above the green moss at lower right of photo. This seepage from the north abutment is consistent with that noted in previous years (September 26/14)

The following table summarizes the existing and design elevation details for the **seepage collection pond**, and the water level at the time of the inspection.

Description	Elevation
Crest of Dam	1079.1 m
Top of 38 mil Arctic Liner	1078.7 m
Maximum Operating Level	1078.1 m
September 26/14 Water Level	1077.3 m

No stability concerns are noted as a result of the 2014 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 2014 Annual Geotechnical Inspections

Item Description	Recommended Maintenance	Status
North Interceptor, Diversion Ditch and Combined Emergency Spillway	Continue to monitor steep sideslopes and sand/silt buildup. Flatten sideslopes as required. Minimize the clean out of sand in base of ditch, as this creates over-steep slopes and reduces the ditch grade. Monitor woody vegetation growth in the combined emergency spillway – removal will be required when vegetation is deemed to be a potential blockage threat during design flows.	Satisfactory maintenance completed in 2014, and monitoring is continuing
Tailings Dam	Stable – no issues to report. Continue to read instrumentation on a monthly basis. Fill in ground squirrel burrows next summer after confirmation of successful decrease in ground squirrel population. If water level in the pond exceeds about 1097.0 m (0.8 m below spillway) implement a plan to ensure that untreated water does not spill from the tailings pond.	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. Continue to read instrumentation on a monthly basis. Fill in ground squirrel burrows next summer after confirmation of successful decrease in ground squirrel population.	On-going
	Continue to record pumping rates from seepage collection pond, and notify a geotechnical engineer if the rates to maintain a constant water pond elevation significantly increase (+25%).	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. Tetra Tech EBA 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,
Tetra Tech EBA Inc.



J. Richard Trimble, P.Eng., FEC
Principal Consultant, Arctic Region
Direct Line: 867.668.9216
richard.trimble@tetrattech.com

APPENDIX A

TETRA TECH EBA'S GENERAL CONDITIONS

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 B

TETRA TECH EBA JUNE2014 INSPECTION REPORT

July 17, 2014

ISSUED FOR USE
FILE: W14103403-01

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

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

Subject: June 2014 Geotechnical Inspection of Earth Structures
Mount Nansen Site, YT.

1.0 INTRODUCTION

As requested, Tetra Tech EBA Inc. (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. The format and content of the inspection generally conforms to that 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 2014 (one in June, one in September) per EBA's proposal dated May 9, 2014 and authorized by Contract C00024154 on May 27/14. 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. of EBA's Whitehorse Office completed a one-day inspection on June 11, 2014 in the company of Josee Perron, P.Eng. and Luca Poloni from the Yukon Government, Assessment and Abandoned Mines (YG-AAM). The structures examined were:

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

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 to forward to the site maintenance personnel, followed by the completion of a Safe Work Form on the day of the site work.

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.

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 oversteepening occurs.



Photo 1:

Oversteep ditch slope just south of Dome Creek intersection (June 11/14)

During the June 2014 inspection, some oversteepening and potential instability was observed that should be repaired this year (see Photo 1). The east interceptor ditch slope upstream (south) of the intersection with Dome Creek, for about 30 m or so (estimate, field decision required), should be flattened to about 1.5:1 (cut about one metre out of the crest width) and the toe of the slope armoured to minimize the effects of oversteepening created by erosion at the toe. While on site, a survey stake with “0+377” was observed on the west slope of the interceptor ditch – the slope flattening and armouring should proceed from this stake, proceeding north to the intersection with Dome Creek. Care should be taken to maintain the width of the access road to be at least 6.0 m in this area. The excavated material from the upstream side could be re-used as fill on the downstream side to maintain the road width. Regarding armouring, the intent would be to salvage the existing armouring from this area and re-use it, and import acceptable riprap as required from other identified areas on the site.

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. The placement of riprap recommended in 2013 has been completed (see Photo 2). This hasn't done much to minimize sand migration into the ditch, but does provide some stability to the sideslopes. If desired, a short section of geotextile "silt fence" or other alternate material could be placed on the upstream side of this riprap (and anchored with hand placed riprap) to trap and prevent sand from entering the interceptor ditch.



Photo 2:

Armouring to minimize sand deposits in channel bottom upstream of Dome Creek intersection (June 11/14)

The diversion ditch and spillway were in an acceptable and stable condition – no work is required at this time other than the regular maintenance. Photo 3 shows the typical condition of the diversion ditch and Photo 4 shows the emergency spillway below the tailings dam.

The erosion scour noted in June 2013 had been repaired, as previously reported in the 2013 Annual Report.



Photo 3:

Typical condition of the Dome Creek diversion ditch (June 11/14)



Photo 4:

Typical condition of the emergency spillway channel – last year's repair is in centre upper right of photo (June 11/14)

2.2 TAILINGS DAM

The water level in the tailings pond was below the maximum operating level elevation, lower than it was last year, and more consistent with water levels noted in previous years. The dam itself is considered to be in a stable condition with a large upstream tailings beach (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. The crest of the dam is still “stepped” (south end lower than north end) and it is understood that this will be repaired this year – the entire crest should be at the same elevation to facilitate future settlement monitoring.



Photo 5:

View to the south along upstream face of tailings dam (June 11/14)

The water in the pond was recorded at 1.74 m on the installed staff gauge(s). Using the 2013 conversion (a reading of 1.91 = 1095.97 m) this places the water at about 2.0 m below the design “pond operating level” of 1097.80 m. It is understood that the 2014 conversion/elevation check will be provided by YG-AAM with the next submission of instrumentation readings.

One item to be addressed is the woody vegetation that is growing near the crest on the upstream and downstream sides. All large and small woody vegetation should be removed (pulled out with roots) everywhere on the upstream face and within the top 10 m, as measured on the slope, on the downstream side. Do not disturb natural vegetation on the natural abutments.

2.3 SEEPAGE COLLECTION DAM

The water in the seepage collection pond was recorded at a level of 0.30 m on the staff gauge, and the pumping rate was 169 L/min at the time of the inspection. According to the onsite maintenance personnel, this has been the usual operating level of the pond over the past year, and they pump to keep it at about this level. The corresponding elevation for this reading is about 1077.31 m, or about 0.79 m below the design operating level of 1078.10 m. Photo 6 shows the pond at the time of the inspection.



Photo 6:
View of Seepage Collection Pond (June 11/14).

The three minor seeps that have been noted in previous years on the downstream face of the dam were still present, but were observed as primarily wet spots on the ground surface, rather than actual seeps with flowing water. The other seeps flowing into the dam from the north abutment were also still observed, with clear water flowing – this is no cause for concern.

An item that needs to be addressed is the increased number of ground squirrel holes and burrows along the dam crest. There appears to be more of them this year than in previous years, and it is recommended that the ground squirrels be removed/relocated from the crest and their burrows backfilled. The concern is potential damage to the buried liner, as well as the creation of seepage paths if the water level in the pond was to increase.

All woody vegetation, including roots, should be removed from the crest of the dam and the upstream face, and within the top 5 m of the downstream face as measured on the face.

No other stability concerns are noted as a result of this pond inspection

3.0 RIPRAP EVALUATION

It was noted by YG-AAM that more riprap is required for the ongoing care and maintenance of the site. Several stockpiles of potential riprap were located and examined while on site, and the acceptable rock pieces (greyish granite or granodiorite), based on the results of the 2013 ARD testing were noted for the YG-AAM personnel. These rock pieces will be acceptable for use as riprap provided they don't contain any oxidized materials, or sulphide inclusions.



Photo 7:

View of acceptable riprap by open pit, including an enlargement (below) showing the best materials (June 11/14).



Photo 8:

Enlargement of a section of Photo 7 showing the best riprap materials to use (June 11/14).

4.0 SUMMARY OF RECOMMENDATIONS

The following Table has been prepared to summarize the recommendations from the current 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 2013 and June 2014 Geotechnical Inspections

Item Description	Recommended Maintenance	Status
<u>From 2013 Report</u>		
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 riprap.	Continue Monitoring
	Repair erosion scar in emergency spillway	Completed in 2013
Tailings Dam	Continue to visually monitor permafrost thaw settlement on the downstream face near the south abutment.	Continue Monitoring
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

Item Description	Recommended Maintenance	Status
<u>June 2014 Recommendations</u>		
North Interceptor, Diversion Ditch and Emergency Spillway	Flatten sideslopes upstream of Dome Creek intersection, salvaging and replacing existing armouring as required.	To be completed in 2014
Tailings Dam	Remove woody vegetation, including roots from upstream face, and within the top 10 m (measured along the slope) from the downstream face.	To be completed in 2014
	Flatten crest of dam to a uniform elevation by adding fill to south end.	To be completed in 2014
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
	Remove/relocate ground squirrels and backfill their burrows/nests to minimize potential for liner damage or the creation of seepage channels.	To be completed in 2014
	Remove woody vegetation, including roots, from the crest and upstream face, and on the downstream face for a distance of 5 m from the crest as measured on the face.	To be completed in 2014

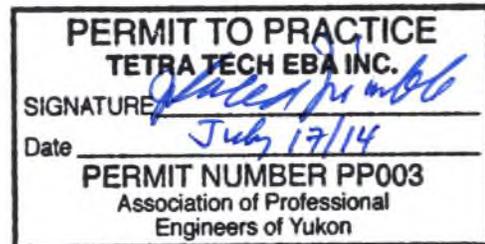
5.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the Government of Yukon, Energy Mines and Resources and their agents. Tetra Tech EBA Inc. 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.

6.0 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,
Tetra Tech EBA Inc.



J. Richard Trimble, P.Eng., FEC
Principal Consultant, Arctic Region
Direct Line: 867.668.9216
Email: richard.trimble@tetrattech.com

/chr

Attachment: Tetra Tech EBA's General Conditions - Geotechnical