



A TETRA TECH COMPANY

October 5, 2011

ISSUED FOR USE  
EBA FILE: W14101068.037

Minto Explorations Ltd.  
Suite 900 – 999 West Hastings Street  
Vancouver, BC V6C 2W2

**Attention:** Mr. John Knapp, General Manager

**Subject:** Water Storage Pond Dam – 2011 Physical Observation Report  
Minto Mine, YT

## 1.0 INTRODUCTION

As requested, this letter presents a report by EBA, A Tetra Tech Company (EBA) resulting from a site visit completed to examine the current condition of the Water Storage Pond (WSP) Dam (the dam) at Minto Mine, YT. The intent of the site visit was to provide a geotechnical engineering report on the physical condition of the dam, in partial fulfillment of the requirements of the existing Quartz Mining Licence QML 0001. Review of the instrumentation monitoring data for the dam is not included in this letter; this information will be presented in a separate report.

EBA's last formal review of the dam was in July 2010. This inspection is summarized in EBA's letter report "Water Storage Pond Dam – 2010 Physical Inspection Report, Minto Mine, YT" dated September 28, 2010. EBA has used this background information to assist in assessing the recent performance of the dam.

The WSP elevation at the time of inspection was at approximately El. 714.3 m, 2.0 m below the spillway invert. The WSP volume was estimated to be 260,000 m<sup>3</sup> using the reservoir rating curve supplied by Minto Explorations Ltd. (Minto).

## 2.0 OBSERVATIONS AND CONCLUSIONS

Mr. Chad Cowan, P.Eng. of EBA's Whitehorse office completed a site visit on August 26, 2011. Specific details are presented below, and are also noted on Figure 1 attached to this letter. Photographs were taken of the dam during the visit. Selected photos are attached while the remainder are available for review in the EBA files, if desired.

The left and right sides of the dam are the north and south sides respectively, based on the perspective of looking downstream from the crest of the dam.

Observations noted during the site visit are as follows:

- The upstream sideslope of the dam appears consistent with original construction and does not show any signs of instability (settlement, bulging or slumping). Photo 1 shows the extent of the visible upstream sideslope.

- The left upstream abutment at the general fill soil/Zone 1 fill contact did not show any signs of settlement or movement. The general fill soil was used in the construction of the pad for the water treatment buildings and does not form a part of the actual dam. A minor erosion channel was noted in the general fill in this area that resulted from surface water flow from the main access road as noted in Figure 1. This erosion channel does not affect the actual Zone 1 dam fill.
- The right upstream abutment at the natural soil/Zone 1 fill contact did not show any signs of settlement or instability.
- The consistent condition of the above noted sideslopes bordering the WSP is an important observation when considering the fluctuation of the WSP water level and the fact that Minto has drawn down the WSP significantly more than three times in the last three years. The drawdown rates used by Minto during these events appear to be satisfactory and did not cause any noticeable instability in the natural or fill soils.
- The crest of the dam was relatively level with coarse rock fill and some Zone 1 fill material at the surface as shown in Photo 2. Localized depressions or evidence of settlement were not observed. Any unevenness observed was attributed to drill pad and access road construction for instrumentation installations that were completed in November 2007. Three 200 mm diameter siphon pipelines are present in the spillway and run its entire length to the seepage pump house.
- The downstream sideslope of the dam including the spillway appears consistent with original construction and did not show any signs of instability (settlement, bulging or slumping). Photos 3, 4 and 5 show the downstream sideslope of the dam, including the left and right abutments and the spillway.
- The left downstream abutment at the natural soil and rock fill contact appears consistent with original construction and did not show any signs of instability or seepage.
- The right downstream abutment at the natural soil and rock fill contact appears consistent with original construction and did not show any signs of instability. As noted in the 2008, 2009 and 2010 inspection reports, ponded seepage water was observed southwest of the spillway as depicted in Figure 1 and Photo 6. This water flows back into the spillway as presented in Figure 1. Water flow could not be heard within the spillway north of the ponded water.
- The observed seepage water was clear with no turbidity or suspended solids. Accumulations of eroded sand and silt were also not observed. It is EBA's opinion that this area of ponded water and any water in the fill of the spillway is the result of seepage through the ungrouted right abutment dam foundation that then passes through the zoned filter materials along the base of the downstream shell. Review of the existing instrumentation and construction records are currently taking place to confirm this assumption.
- The stilling basin appears to be in satisfactory condition and functioning properly as it was full of water which overflowed into the gravels upstream of the seepage pump house (Photo 9). The observed seepage water was clear with no turbidity or suspended solids. Accumulations of eroded sand and silt were also not observed.

- At the time of this site visit, EBA noted that Minto had constructed a weir along the discharge side of the ponded seepage water to monitor the amount of seepage coming from the dam toe (Photo 11). The estimated flow rate through the weir was 5 L/s.

### 3.0 RECOMMENDATIONS

With regards to the above mentioned observations and comments, EBA recommendations are as follows:

- Minto should continue to complete regular inspections of the dam, and specifically note the clarity of the seepage at the noted seepage pond at the toe of the right abutment and flow exiting the stilling basin. Written records of these inspections should be kept by Minto staff.
- Minto should continue to measure the actual seepage rate through the weir for the ponded seepage water next to the dam toe and compare it to the flow at the W-3 flume. To determine how much water is being collected at the seepage pump house at the dam toe and being pumped back to the Water Storage Pond, it is suggested that the seepage pump be periodically shut-off and the flow rate recorded at the W-3 monitoring station after the flow rate has stopped increasing in response to the cessation of pumping. Once the maximum flow rate has been recorded the pumping could be started again. This should be conducted once a month during summer months with surveys of the WSP level taken each time.

EBA should be contacted immediately if the condition or performance of the dam is observed to change from what is described in this letter.

### 4.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Minto Explorations Ltd. 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 Minto Explorations Ltd., or for any Project other than the proposed development at the subject site. 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 EBA's Services Agreement. EBA's General Conditions are provided in Appendix A of this report.

## 5.0 CLOSURE

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

Sincerely,  
EBA, A Tetra Tech Company

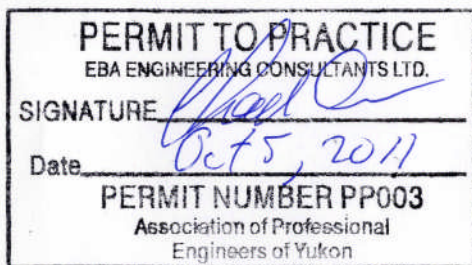


Chad P. Cowan, P. Eng.  
Project Director – Yukon, Arctic Region  
Direct Line: 867.668.2071 ext. 229  
ccowan@eba.ca

Handwritten signature of Brian Cutts in blue ink.

Brian Cutts, P.Eng.  
Senior Geotechnical Engineer, Pacific Region  
Direct Line: 250.505.4467  
bcutts@eba.ca

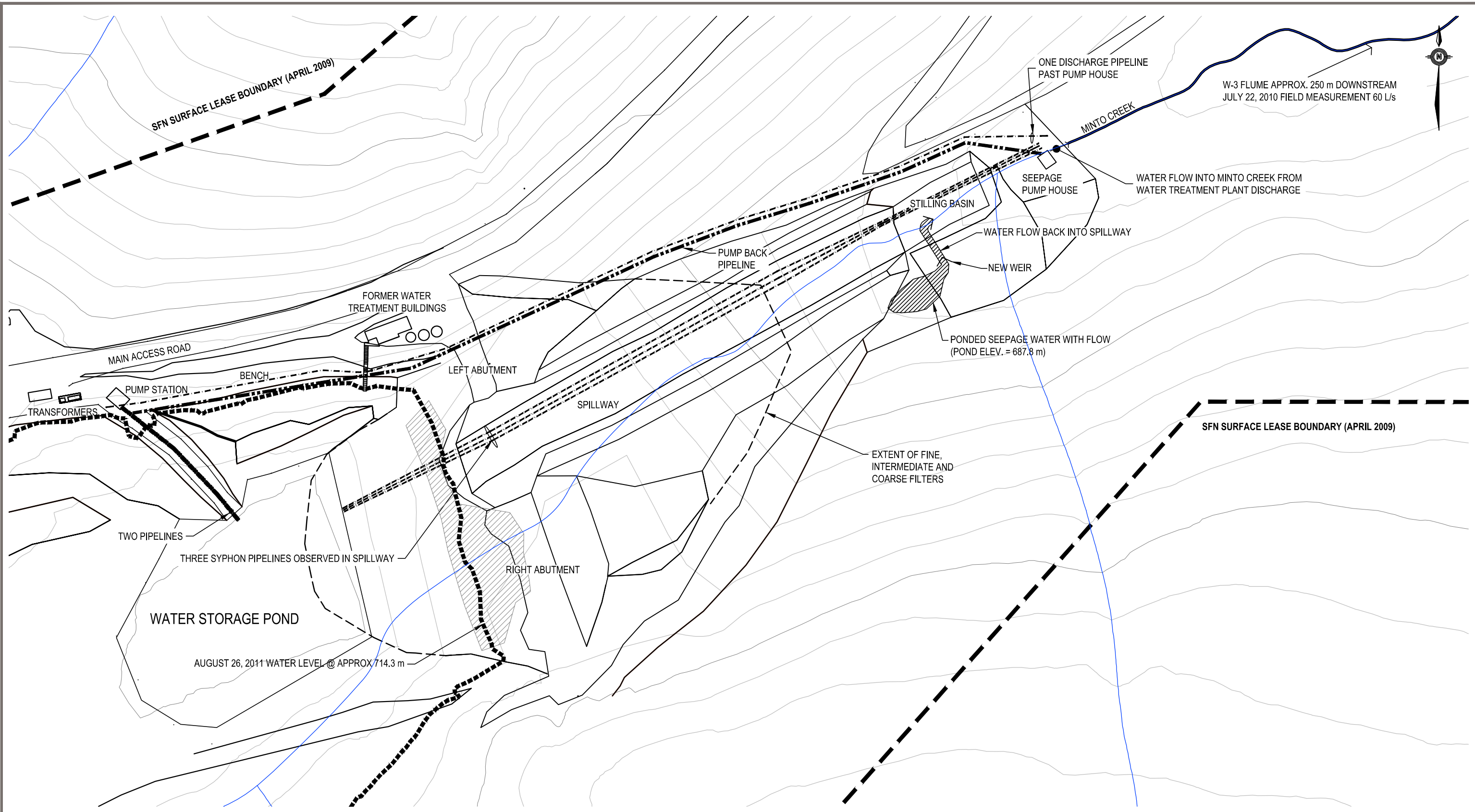
/cc



# FIGURES

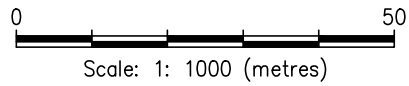
---


Figure I      Site Plan



Q:\Whitehorse\Data\0201 Drawings\Minto\Minto Mine Site\Phase 037 2011 Annual Reports\2011 Annual Report\WSP.dwg [FIGURE 1] September 30, 2011 - 10:24:24 am (BY: BUCHAN, CAMERON)

**NOTE:**  
 CONTOUR INFORMATION REPRESENTS JULY 2010 GROUND SURFACE.  
 5 m CONTOURS PROVIDED



CLIENT		2011 ANNUAL REVIEW				<b>Figure 1</b>
MINTO EXPLORATIONS LTD.		WATER STORAGE POND DAM - MINTO MINE, YUKON				
		2011 PHYSICAL INSPECTIONS AND NOTES				
		PROJECT NO.	DWN	CKD	REV	
		W14101068.037	CB	CPC	0	
OFFICE		DATE				
EBA-WHSE		September 30, 2011				

# PHOTOGRAPHS

---

Photo 1	Upstream slope of the WSP dam.
Photo 2	Crest of the WSP dam.
Photo 3	Looking at the right downstream slope.
Photo 4	Looking at the left downstream slope.
Photo 5	Looking up at the spillway.
Photo 6	Ponded seepage water at the WSP dam toe – right side.
Photo 7	Seepage at the stilling basin toe upstream of seepage pump house
Photo 8	Weir at the ponded seepage water near the WSP dam toe.





**Photo 1**

Upstream slope of the WSP dam. (August 26, 2011)



**Photo 2**

Crest of the WSP dam. (August 26, 2011)





**Photo 3**

Looking at the right downstream slope. (August 26, 2011)



**Photo 4**

Looking at the left downstream slope. (August 26, 2011)



**Photo 5**

Looking up at the spillway. (August 26, 2011)



**Photo 6**

Ponded seepage water at the WSP dam toe – right side. (August 26, 2011)





**Photo 7**

Seepage at the stilling basin toe upstream of seepage pump house. (August 26, 2011)



**Photo 8**

Weir at the ponded seepage water near the WSP dam toe. (September 14, 2010)

# APPENDIX A

## APPENDIX A 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.