

December 19, 2014

Alexco Resource Corp.  
3 – 151 Industrial Road  
Whitehorse, YT Y1A 2V3

ISSUED FOR USE – REVISION I

FILE: W14103450-01

Via Email: [kwoloshyn@alexcoresource.com](mailto:kwoloshyn@alexcoresource.com)

**Attention:** Kai Woloshyn – Environmental Manager

**Subject:** 2014 Annual Inspection – Surface Engineered Earth Structures  
Bellekeno Mine, Keno City, YT

## 1.0 INTRODUCTION

### 1.1 General

Alexco Resource Corp. (Alexco) retained Tetra Tech EBA Inc. (Tetra Tech EBA) to complete the 2014 annual inspection of the surface engineered earth structures at the Bellekeno Mine near Keno City, Yukon. Authorization for this work was provided by purchase order (PO #15945) on July 11, 2014. The following structures were identified as requiring inspection:

- Potentially acid generating (PAG) waste storage facility
- Bellekeno 625 water treatment ponds
- Bellekeno waste rock pile
- Lightning Creek bridge abutments (Onek Road)
- Lightning Creek bridge abutments (Bellekeno Haul Road)
- Mill water storage pond
- Dry stacked tailings facility (DSTF)

The location of each structure is shown on Figure 1.

### 1.2 Scope of Services

EBA's scope of services for the 2014 annual inspection of the structures is as follows:

- Complete a visual inspection of the structures at the Bellekeno Mine prior to September 30, 2014.
- Prepare a report containing the results of the inspection, summary of the stability, integrity, and status of all inspected structures, and recommendations for remedial actions, if any.

## 2.0 INSPECTION SUMMARY AND RECOMMENDATIONS

The 2014 annual inspection was completed by Justin Pigage, P.Eng. August 12 to 13, 2014. The following sections summarize inspection results, for each structure, and provide recommended remedial actions, if necessary. Recommended remedial actions have been separated based on geotechnical stability concerns and ongoing facility operation (maintenance) concerns. Select photographs taken during the site inspection are attached to this report; the complete set of photographs taken during the inspection are available upon request.

### 2.1 PAG Waste Storage Facility

The PAG waste storage facility is located south of the existing Bellekeno portal, as shown on Figure 1. At the time of the inspection the facility perimeter berms appeared intact (Photo 1) with no visible signs of instability (tension cracks, erosion rills, slumps, etc.). The facility was impounding some surface water (Photo 2). This is likely a result of the laydown area immediately south (upslope) of the facility being generally graded toward the entrance (Photo 3). To reduce the amount of surface runoff water captured by the facility, the upslope laydown area can be regraded to drain away from the facility entrance or a diversion berm can be constructed to direct surface runoff around the entrance to the facility. This work can be completed during regular facility maintenance and is not a facility stability concern.

The north and west liner anchor trenches along the berm crests remain incomplete. For several years a recommendation to complete the trenching to adequately anchor the liner system has been made. The liner components have now been displaced by wind, due to insufficient anchoring (Photo 4). The liner system should be properly anchored before wind rips the material.

As noted in previous years, the protective geotextile and geonet materials have only been placed in the north half of the facility. Some waste rock currently being stored in the facility extends beyond this protection and is in direct contact with the liner (Photo 5). Large angular waste rock has the potential to puncture the liner and should be carefully relocated to the north (protected) end of the facility prior to the placement of additional material in the south end of the facility. Ultimately, the geotextile and geonet materials should be installed throughout the entire facility as was intended in the original facility design.

### 2.2 Bellekeno 625 Water Treatment Ponds

The Bellekeno 625 water treatment ponds are located about 750 m north of the Bellekeno portal, as shown on Figure 1. The facility consists of two water treatment ponds that were both operating at the time of the inspection (Photo 6). The perimeter berms and liners appeared intact at the time of the inspection (Photo 7). Surface water runoff transporting fine grained soil has been accumulating outside the southwest corner of the primary treatment pond (Photo 8). Fines in this area should be monitored and removed as part of facility maintenance to prevent accumulation to the point of allowing surface runoff water to enter the treatment pond. If sediment transport and accumulation continues to be an issue in this area, a diversion structure should be constructed upgradient of the facility.

The primary treatment pond had a freeboard of about 0.5 m below the perimeter berm crest at the time of the inspection. Water in the secondary pond was about 0.1 m below the discharge invert elevation and the pond had a freeboard of about 1.0 m below the perimeter berm crest (Photo 9). The discharge line appeared intact at the time of the inspection. Consistent with recommendations made in previous years, rip-rap armouring is required at the discharge location (Photo 10) to limit damage to the natural hillside.

### **2.3 Bellekeno Waste Rock Pile**

The Bellekeno waste rock pile forms a portion of the Bellekeno Haul Road and is located north of the Bellekeno portal, as shown on Figure 1. At the time of the inspection the waste rock pile sideslopes appeared intact and stable (Photo 11). South of the Bellekeno waste rock pile, ditching exists along the upslope side of the Bellekeno Haul Road to control surface water runoff. The ditching ends as the road passes through the waste rock pile and the surface water fans out across the roadway (Photo 12). During regular maintenance operations, the ditching should be continued on the upslope side of the Bellekeno Haul Road through the waste rock pile to prevent erosion damage to the road surface and waste rock pile sideslopes.

### **2.4 Lightning Creek Bridge Abutments (Onek Road)**

The Lightning Creek bridge on the Onek Road is located east of Keno City, as shown on Figure 1. The road was closed at the time of the inspection and the bridge was not in use. The bridge is a single span steel bridge with a 12 m long steel deck (Photo 13) founded on compacted earth fill and timber abutments. The abutments appeared stable at the time of the inspection (Photo 14). The abutments are sufficiently protected from erosion by rip-rap armouring (Photo 15). No remedial action is required for the Lightning Creek bridge on the Onek Road at this time.

### **2.5 Lightning Creek Bridge Abutments (Bellekeno Haul Road)**

The Lightning Creek bridge on the Bellekeno Haul Road is located southwest of Keno City, as shown on Figure 1. The bridge was in service at the time of the inspection. The bridge is a single span steel bridge with a 18 mm wooden deck (Photo 16) founded on earth filled timber cribbing abutments (Photo 17). The abutments are sufficiently protected from erosion by rip-rap armouring (Photo 18). No remedial action is required for the Lightning Creek bridge on the Bellekeno Haul Road at this time.

### **2.6 Mill Water Storage Pond**

The mill water storage pond is located at the Keno Hill District Mill Site, approximately 1 km west of Keno City, as shown on Figure 1. At the time of the inspection the pond was not operating but contained water with a freeboard of about 1 m below the perimeter berm crest (Photo 19). The pond liner and perimeter berms appeared intact with no signs of instability.

Following up on observations made during the annual inspection last year, no additional erosion was noted along the exterior berm in the southwest portion of the pond (Photo 20).

The surface water collection system below the DSTF collects runoff water and conveys it to the mill water pond for storage. Sediment collected in this system is also transported into the pond and has been depositing near the inlet (Photo 21). Additional bales of hay can be installed in the DSTF surface water collection system to control runoff velocity and limit the volume of sediment deposited in the mill water storage pond.

### **2.7 Dry Stacked Tailings Facility**

The dry stacked tailings facility (DSTF) is located at the Keno Hill District Mill Site, approximately 1 km west of Keno City, as shown on Figure 1. No additional tailings have been placed in the DSTF since the 2013 annual inspection because milling operations have stopped. Regrading of tailings placed within the DSTF to date was completed and progressive reclamation was underway at the time of the inspection. The front face of the lower bench has been covered, seeded, and grass has been established (Photo 22). Most of the tailings placed to date were covered and seeded at the time of the inspection (Photo 23), except for the very top of the facility where tailings placement will resume when milling operations begin again (Photo 24).

The DSTF sideslopes, liner system, and surface water runoff collection system appeared intact at the time of the inspection. The surface water runoff collection system was observed to contain tailings transported by surface water runoff (Photo 25). Tailings within the collection system should be mucked out and transported to the active portion of the facility to limit the potential for overtopping of the collection system during future surface water runoff events. In general, construction and performance of the DSTF has been consistent with the design to date.

## **2.7.1 Instrumentation**

Performance of the DSTF is monitored with compaction testing during tailings placement and regular instrumentation readings. DSTF instrumentation consists of seven ground temperature cables installed to monitor permafrost conditions (six in natural soils adjacent to the DSTF and one through tailings placed within the DSTF footprint) and three slope indicators installed to monitor lateral movement of the frozen foundation soils. The locations of installed instrumentation are shown on Figure 2.

### **2.7.1.1 Background Ground Temperature Readings**

Updated ground temperature profiles developed from readings collected from the six ground temperature cables installed in natural soils adjacent to the DSTF are included in Appendix B. As indicated on the included ground temperature profiles, a slight warming trend, resulting in a thickening of the active layer, has been observed in most monitored locations in recent years. The observed warming trend may be associated with disturbance to the insulating vegetative cover caused by instrumentation installation or a result of a broader trend in regional climate conditions. Continued regular instrumentation readings are recommended to monitor background subsurface conditions.

### **2.7.1.2 DSTF Ground Temperature Readings**

The ground temperature cable installed in BH40, through the placed tailings and into the foundation soils below the DSTF, has not returned proper readings since May 2013. During the site inspection a new connector was spliced onto the cable lead in an attempt to repair the cable (Photo 26). The repair was ineffective, leading us to believe the damage is within the buried portion of the cable and thus not repairable. The next time a geotechnical drill program is conducted near the DSTF, a borehole should be advanced through the placed tailings to install a replacement cable for the malfunctioning one in BH40.

### **2.7.1.3 Slope Indicator Readings**

Updated lateral movement profiles developed from readings collected from two of the three slope indicator installations in natural soils adjacent to the DSTF are included in Appendix C. No significant lateral movement of the foundation soils has been observed in the slope indicator results to date. The slope indicator casing in BH30 was broken near the surface due to frost jacking of the protective monument and has filled with water which has subsequently frozen. Despite modest repair efforts, instrumentation readings in BH 30 have not been possible since April 2013. In the summer of 2015, a steam unit should be used to thaw the ice within the slope indicator casing and a proper repair of the casing near surface should be completed. If casing repair does not salvage the installation, a replacement borehole should be advanced the next time a geotechnical drill program is conducted near the DSTF.

### 3.0 CONCLUSIONS

The structures inspected pose no significant risk to the environment or human health and safety in their current condition. The remedial actions recommended in the previous sections should be completed as soon as possible. The following Table 1 summarizes the recommended remedial actions for each structure:

**Table 1: Summary of Remedial Recommendations**

Structure	Remedial Recommendations (Stability)	Remedial Recommendations (Maintenance)
PAG Waste Storage Facility	<ul style="list-style-type: none"> <li>Re-align liner system components and complete proper anchor trenching along north and west sides of facility.</li> </ul>	<ul style="list-style-type: none"> <li>Regrade laydown above entrance to facility or construct diversion berm to limit the capture of surface water runoff.</li> <li>Complete placement of protective geotextile and geonet materials in southern portion of facility or remove waste rock stored in direct contact with exposed liner to limit risk of punctures.</li> </ul>
Bellekeno 625 Water Treatment Ponds	<ul style="list-style-type: none"> <li>Armour discharge location with rip-rap to protect hillside.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor sediment accumulation outside perimeter berm in southwest corner of primary pond and excavate as required to prevent surface water from entering pond.</li> </ul>
Bellekeno Waste Rock Pile	<ul style="list-style-type: none"> <li>No stability related remedial action required.</li> </ul>	<ul style="list-style-type: none"> <li>Continue ditch on upslope side of the Bellekeno Haul Road through the Bellekeno waste rock pile section to control surface water runoff and limit erosion to road surface and waste rock pile sideslopes.</li> </ul>
Lightning Creek Bridge Abutments (Onek Road)	<ul style="list-style-type: none"> <li>No stability related remedial action required.</li> </ul>	<ul style="list-style-type: none"> <li>No maintenance related remedial action required.</li> </ul>
Lightning Creek Bridge Abutments (Bellekeno Haul Road)	<ul style="list-style-type: none"> <li>No stability related remedial action required.</li> </ul>	<ul style="list-style-type: none"> <li>No maintenance related remedial action required.</li> </ul>
Mill Water Storage Pond	<ul style="list-style-type: none"> <li>No stability related remedial action required.</li> </ul>	<ul style="list-style-type: none"> <li>Consider adding bales of hay to the DSTF surface water collection system to control runoff velocity and limit the volume of sediment deposited in the pond.</li> </ul>
Dry Stacked Tailings Facility	<ul style="list-style-type: none"> <li>Muck out tailings in the surface water runoff collection system to limit the potential for overtopping of the collection system during future surface water runoff events.</li> <li>Repair slope indicator casing in BH30 or advance replacement borehole during future geotechnical drill investigation if salvage of the existing installation is not possible.</li> <li>Advance replacement borehole for malfunctioning ground temperature cable in BH40 during future geotechnical drill investigation.</li> </ul>	<ul style="list-style-type: none"> <li>Continue regular instrumentation readings to monitor DSTF foundation conditions.</li> </ul>

## 4.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Alexco Resource Corp. and their agents. Tetra Tech EBA Inc. (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 Alexco Resource Corp., 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 Tetra Tech EBA's Services Agreement. Tetra Tech EBA's General Conditions are provided in Appendix A of this report.

## 5.0 CLOSURE

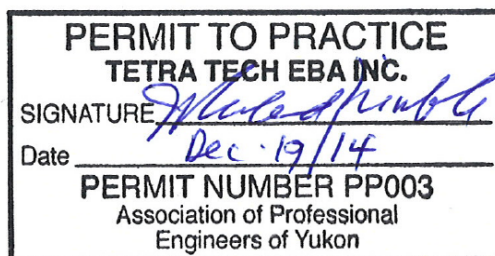
We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,  
Tetra Tech EBA Inc.



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### REVISION I SUMMARY:

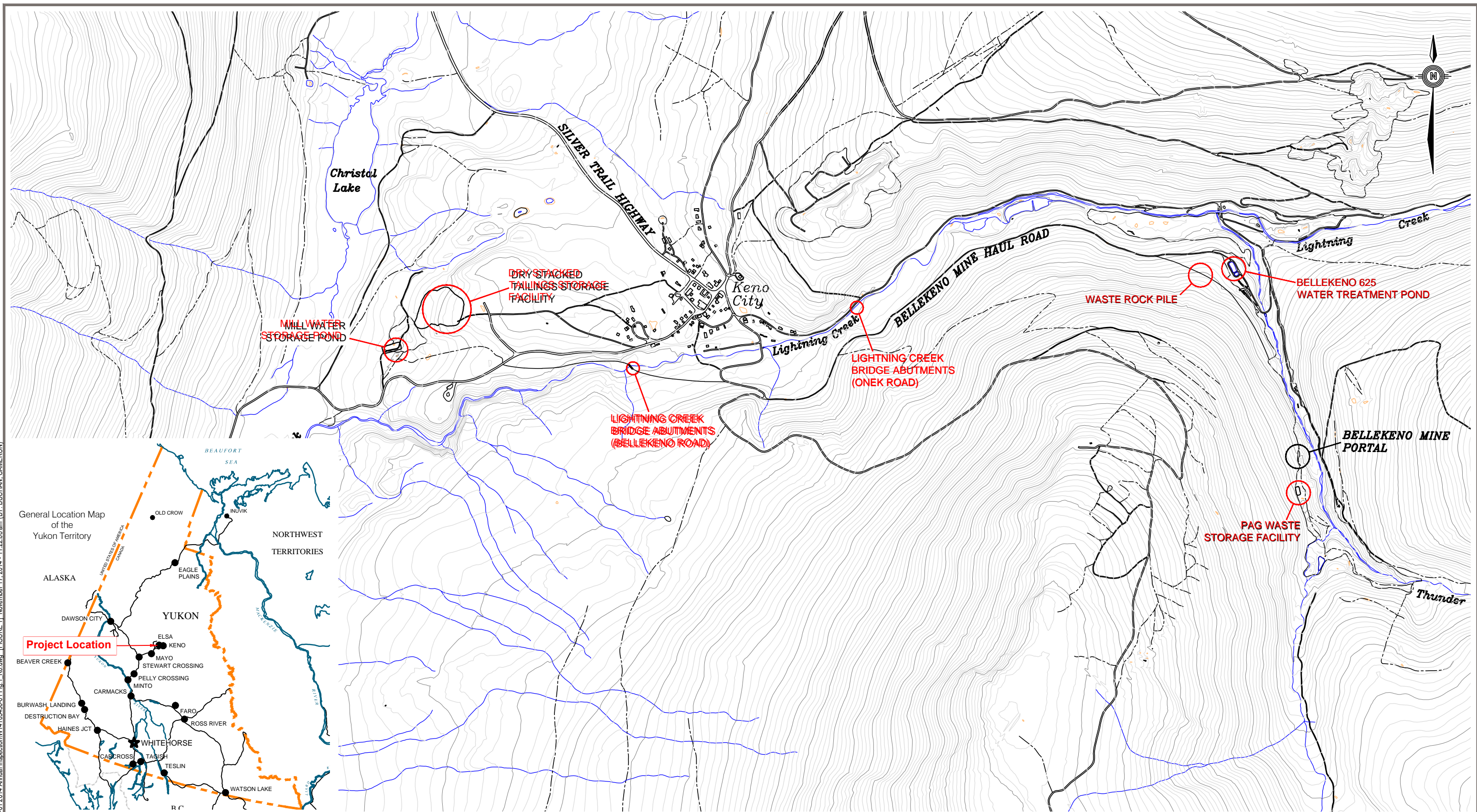
Added content to differentiate between stability and maintenance related remedial recommendations.

# FIGURES

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Figure 1	Site Plan Showing Structure Locations
Figure 2	DSTF Site Plan Showing Instrumentation Locations

Q:\WhitehorseData\2014\Drawings\Keno\W14103450-01 2014 Annual Inspection\W14103450-01 Fig. 1\_R0.dwg [FIGURE 1] November 17, 2014 - 11:22:08 am (BY: BUCHAN, CAMERON)



0 500  
Scale: 1: 15 000 (metres)

NOTES  
CONTOUR INFORMATION IS BASED ON DRAWING  
PROVIDED BY ALEXCO RESOURCE INC.

CLIENT



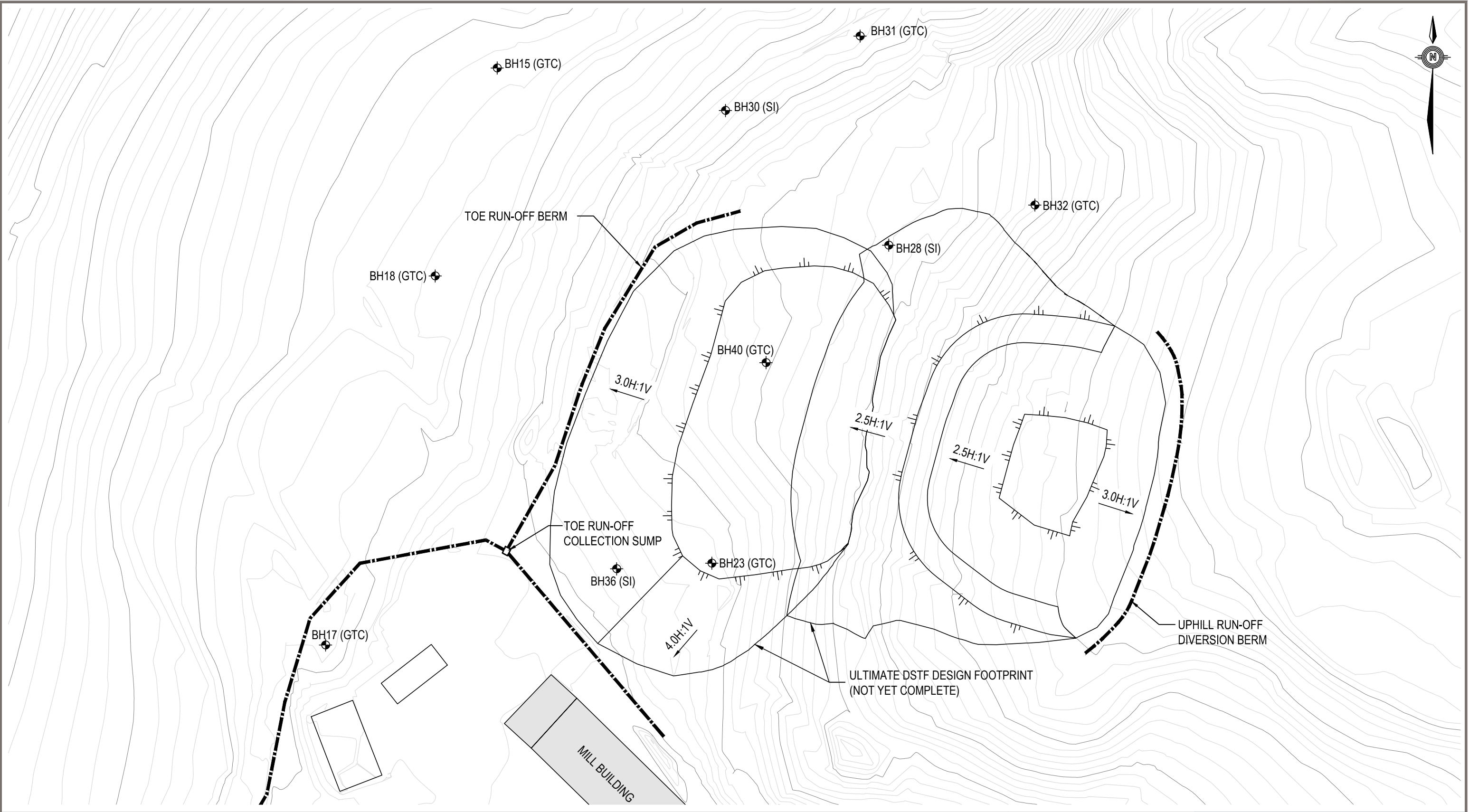
2014 ANNUAL INSPECTION  
BELLEKENO MINE SITE - KENO CITY, YUKON

SITE PLAN SHOWING  
STRUCTURE LOCATIONS

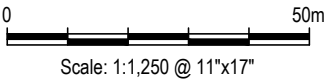
PROJECT NO. W14103450-01	DWN CB	CKD JTP	REV 0
OFFICE EBA-WHSE	DATE November 17, 2014		



Figure 1

Q:\Whitehorse\Data\0201\drawings\Keno\W14103450-01 2014 Annual Inspection\W14103450-01 Fig.2\_R0.dwg [FIGURE 2] November 19, 2014 - 3:47:12 pm (BY: BUCHAN, CAMERON)



**LEGEND**  
GTC - GROUND TEMPERATURE CABLE  
SI - SLOPE INDICATOR



<div>CLIENT</div> <div></div>	2014 ANNUAL INSPECTION BELLEKENO MINE SITE - KENO CITY, YUKON				
	SITE PLAN SHOWING BOREHOLE AND INSTRUMENTATION LOCATIONS				
 <b>TETRA TECHEBA</b>	PROJECT NO. W14103450-01	DWN CB	CKD JTP	REV 0	Figure 2
	OFFICE EBA-WHSE	DATE November 17, 2014			

# PHOTOGRAPHS

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**Photo 1:** PAG Waste Storage Facility  
Facility berms and sideslopes  
Facing north – August 12, 2014



**Photo 2:** PAG Waste Storage Facility  
Surface water in facility  
Facing north – August 12, 2014



**Photo 3: PAG Waste Storage Facility**  
Laydown area graded toward facility entrance  
Facing south – August 12, 2014



**Photo 4: PAG Waste Storage Facility**  
Liner components displaced due to wind  
Facing east – August 12, 2014



**Photo 5: PAG Waste Storage Facility**  
Angular waste rock in direct contact with liner  
Facing east – August 12, 2014



**Photo 6: Bellekeno 625 Water Treatment Ponds**  
Facility overview  
Facing north – August 12, 2014



**Photo 7: Bellekeno 625 Water Treatment Ponds**  
Intact perimeter berms and liners  
Facing east – August 12, 2014



**Photo 8: Bellekeno 625 Water Treatment Ponds**  
Surface water and sediment accumulation outside southwest corner of primary pond  
Facing west – August 12, 2014



**Photo 9:** Bellekeno 625 Water Treatment Ponds  
Freeboard in secondary pond at outlet location  
Facing east – August 12, 2014



**Photo 10:** Bellekeno 625 Water Treatment Ponds  
Discharge location  
Facing south – August 12, 2014



**Photo 11: Bellekeno Waste Rock Pile**  
Intact sideslopes  
Facing east – August 12, 2014



**Photo 12: Bellekeno Waste Rock Pile**  
Surface water and erosion on roadway  
Facing west – August 12, 2014



**Photo 13:** Lightning Creek Bridge Abutments (Onek Road)  
Bridge overview  
Facing south – August 12, 2014



**Photo 14:** Lightning Creek Bridge Abutments (Onek Road)  
Stable timber bridge abutments  
Facing west – August 12, 2014



**Photo 15: Lightning Creek Bridge Abutments (Onek Road)**  
Rip-rap armouring bridge abutments  
Facing north – August 12, 2014



**Photo 16: Lightning Creek Bridge Abutments (Bellekeno Haul Road)**  
Bridge overview  
Facing west – August 12, 2014



**Photo 17: Lightning Creek Bridge Abutments (Bellekeno Haul Road)**  
Stable earth filled timber abutments  
Facing west – August 12, 2014



**Photo 18: Lightning Creek Bridge Abutments (Bellekeno Haul Road)**  
Rip-rap armouring bridge abutments  
Facing west – August 12, 2014



**Photo 19: Mill Water Storage Pond**  
Water level in pond  
Facing west – August 13, 2014



**Photo 20: Mill Water Storage Pond**  
Stable berm sideslope  
Facing west – August 13, 2014



**Photo 21: Mill Water Storage Pond**  
Sediment deposited at inlet from DSTF surface water collection system  
Facing east – August 13, 2014



**Photo 22: Dry Stacked Tailings Facility**  
Grass on front face of lower bench  
Facing north – August 13, 2014



**Photo 23: Dry Stacked Tailings Facility**  
Progressive reclamation of upper bench (cover and seed mixture applied)  
Facing east – August 13, 2014



**Photo 24: Dry Stacked Tailings Facility**  
Top of facility where tailings placement will continue  
Facing west – August 13, 2014



**Photo 25: Dry Stacked Tailings Facility**  
Tailings in the surface water runoff collection system  
Facing north – August 13, 2014



**Photo 26: Dry Stacked Tailings Facility**  
Attempted repair of the ground temperature cable in BH40  
Facing north – August 13, 2014

# APPENDIX A

## TETRA TECH EBA'S GENERAL CONDITIONS

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# GENERAL CONDITIONS

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## GEOTECHNICAL REPORT

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

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### 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 Tetra Tech EBA's Client. Tetra Tech 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 Tetra Tech EBA's Client unless otherwise authorized in writing by Tetra Tech 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 Tetra Tech EBA. Additional copies of the report, if required, may be obtained upon request.

### 2.0 ALTERNATE REPORT FORMAT

Where Tetra Tech EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed Tetra Tech 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 Tetra Tech EBA shall be deemed to be the original for the Project.

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

Electronic files submitted by Tetra Tech EBA have been prepared and submitted using specific software and hardware systems. Tetra Tech 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, Tetra Tech 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. Tetra Tech 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. Tetra Tech 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

Tetra Tech 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.

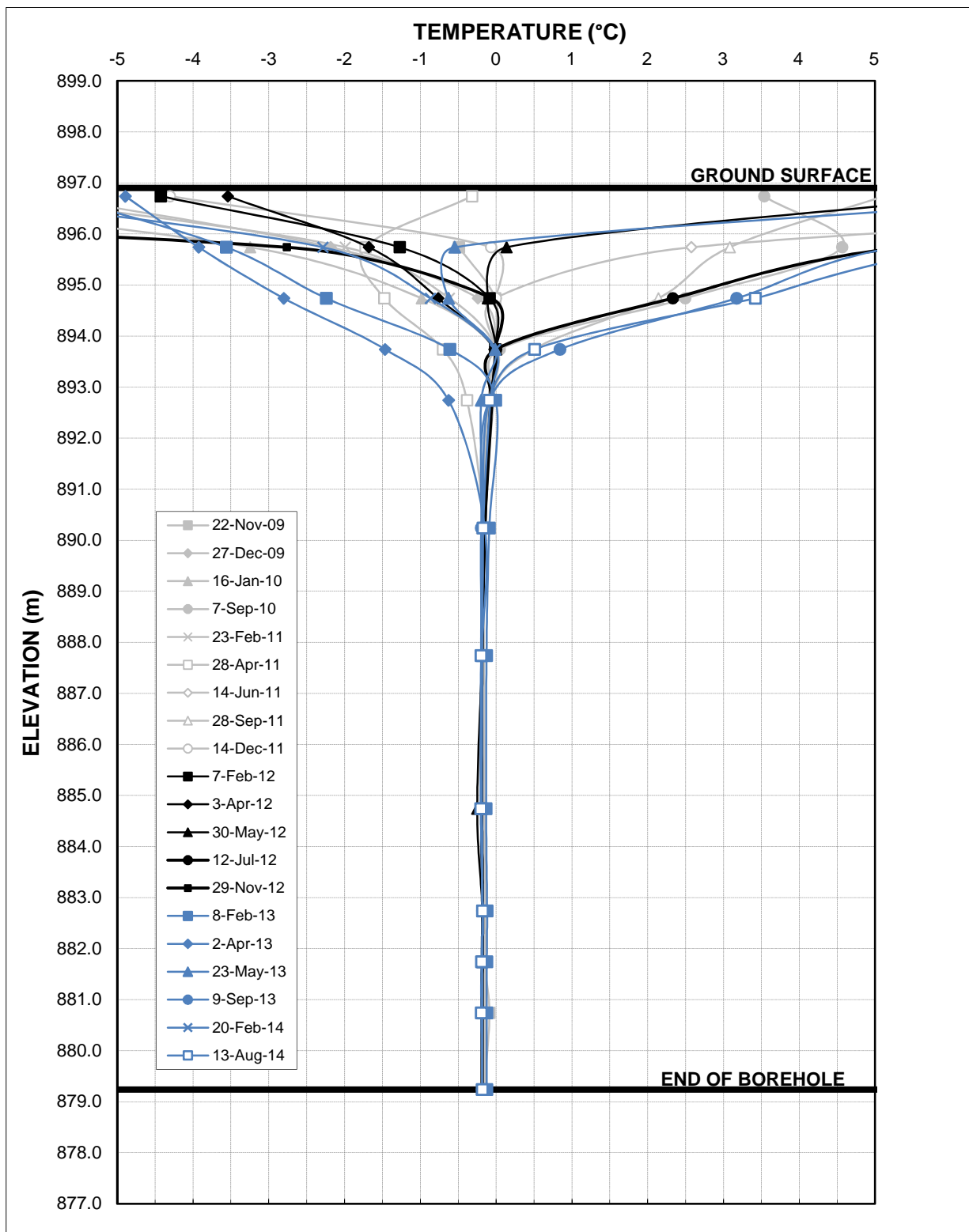
## 14.0 INFORMATION PROVIDED TO TETRA TECH EBA BY OTHERS

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

# APPENDIX B

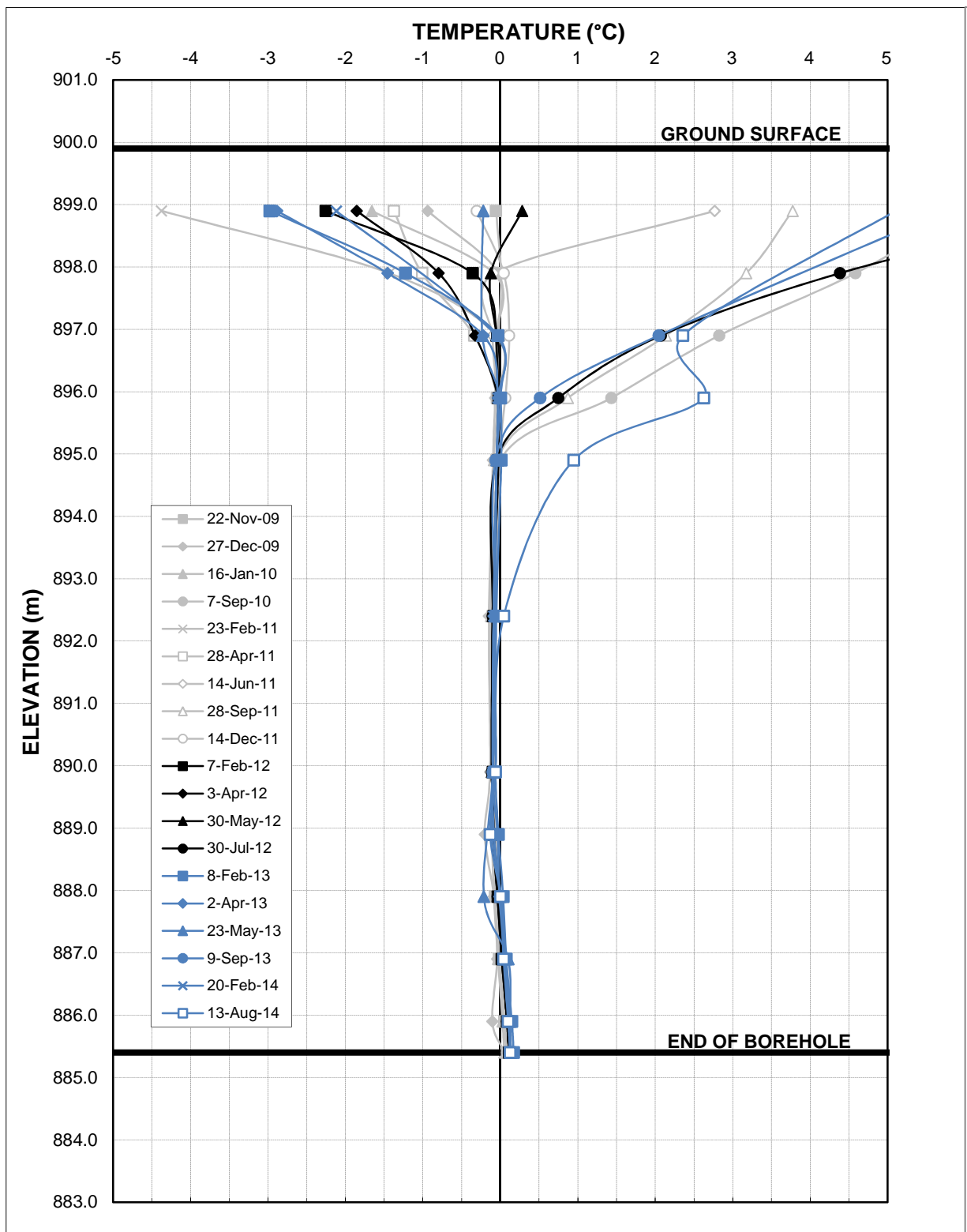
## DSTF GROUND TEMPERATURE PROFILES

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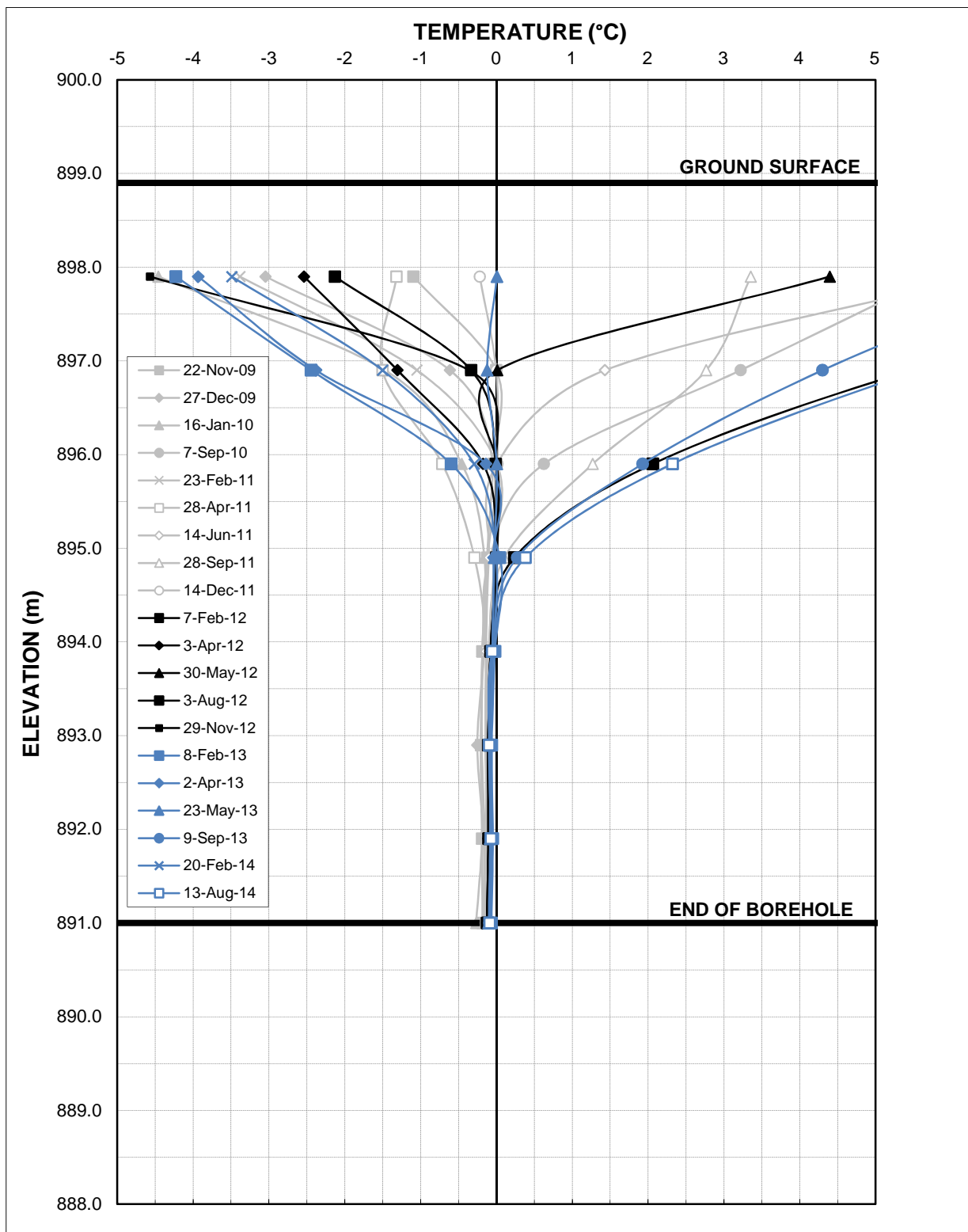
Install Date August 30, 2009  
 Last Updated August 13, 2014  
 Cable No: 2207

**Ground Temperature Profile**  
**Keno Hill District Mill Site Borehole BH15**  
**Figure T1**



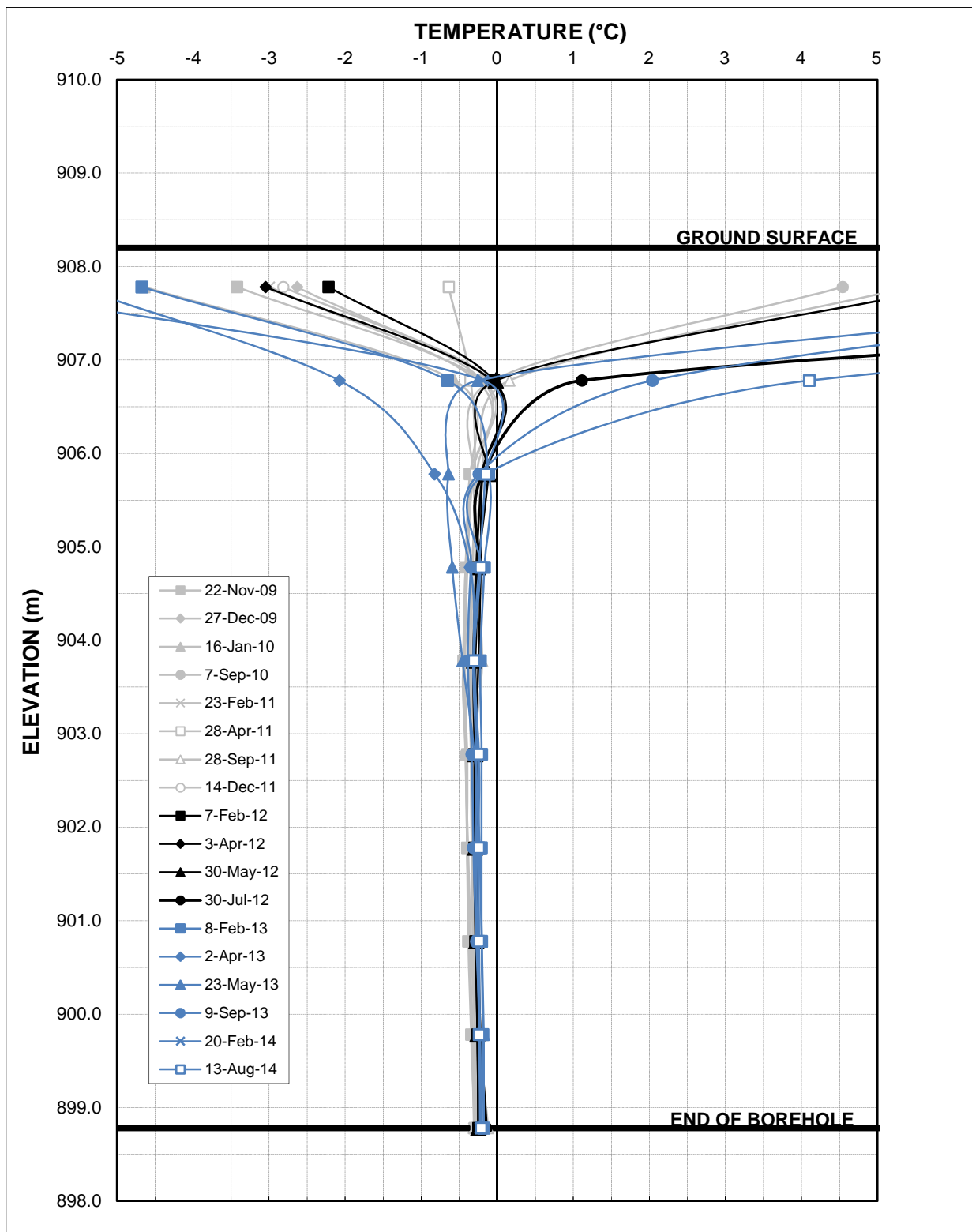
Install Date August 30, 2009  
 Last Updated August 13, 2014  
 Cable No: 2208

**Ground Temperature Profile**  
**Keno Hill District Mill Site Borehole BH17**  
**Figure T2**



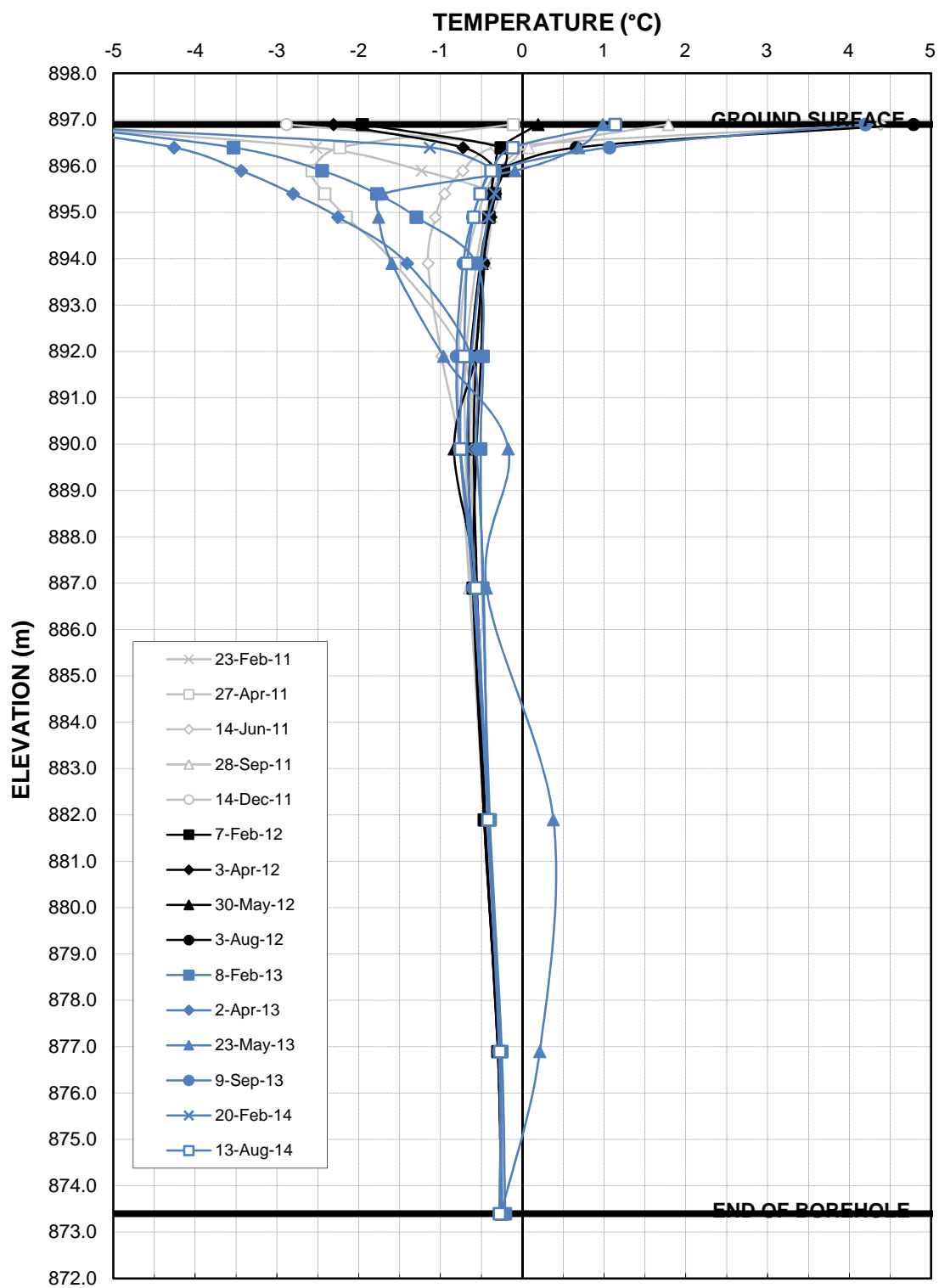
Install Date      September 2, 2009  
 Last Updated    August 13, 2014  
 Cable No:        2209

**Ground Temperature Profile**  
**Keno Hill District Mill Site Borehole BH18**  
**Figure T3**



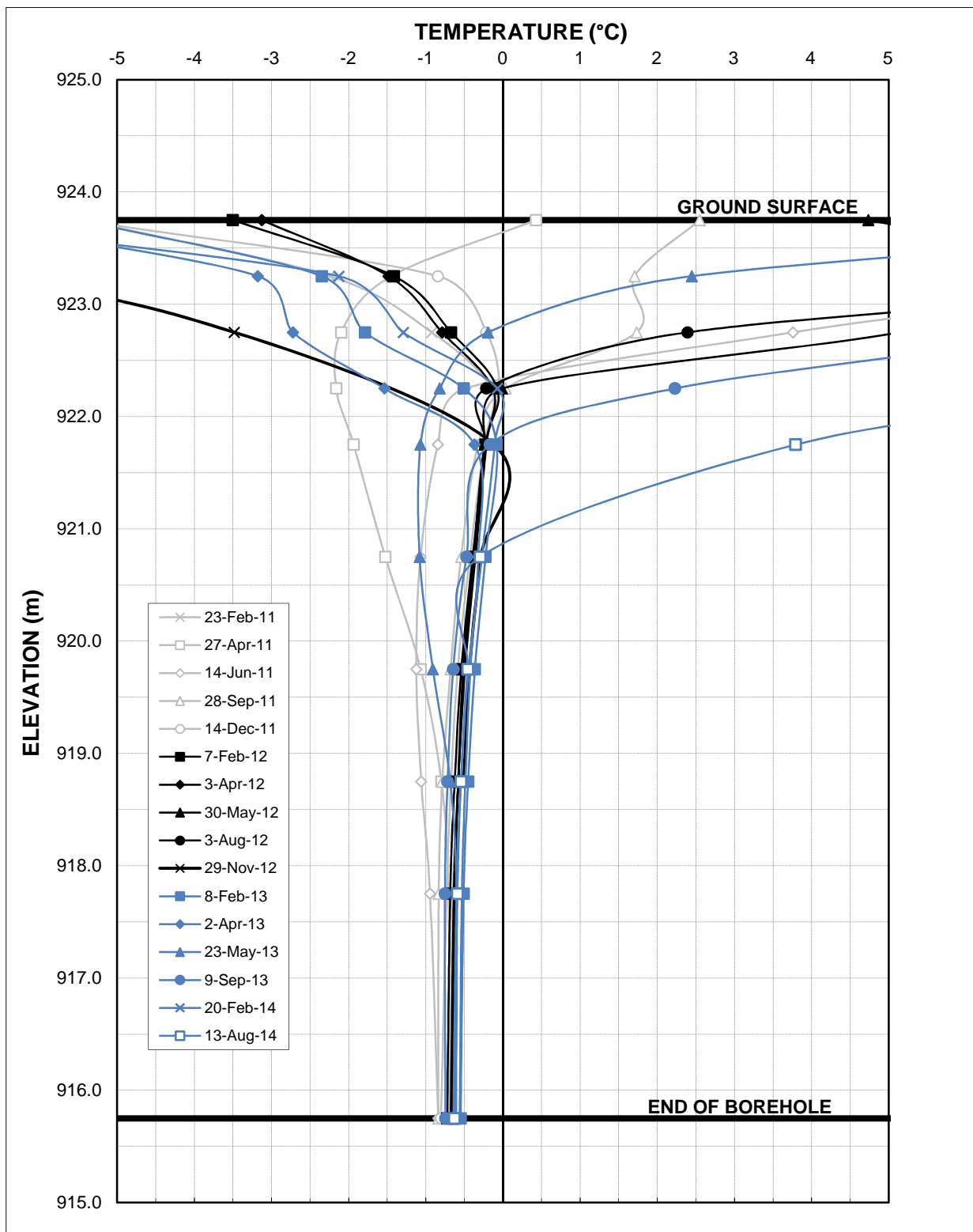
Install Date      September 29, 2009  
 Last Updated    August 13, 2014  
 Cable No:        2210

**Ground Temperature Profile**  
**Keno Hill District Mill Site Borehole BH23**  
**Figure T4**



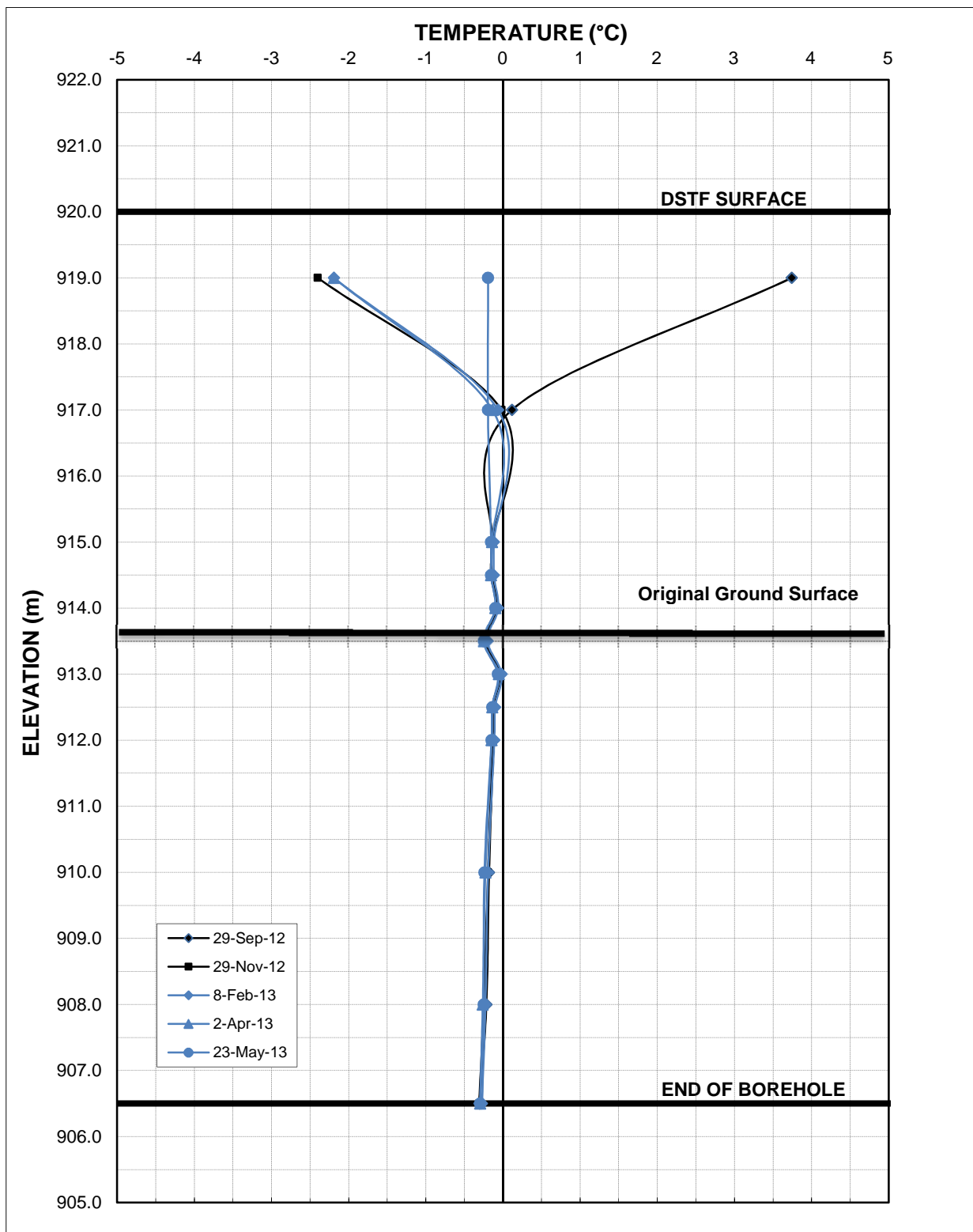
Install Date      February 22, 2011  
 Last Updated      August 13, 2014  
 Cable No:          2263

**Ground Temperature Profile**  
**Keno Hill District Mill Site Borehole BH31**  
**Figure T5**



Install Date      February 22, 2011  
 Last Updated      August 13, 2014  
 Cable No:          2264

Ground Temperature Profile  
 Keno Hill District Mill Site Borehole BH32  
 Figure T6



Install Date August 2, 2012  
 Last Updated May 23, 2013  
 Cable No: 2356

**Ground Temperature Profile**  
**Keno Hill District Mill Site Borehole BH40**  
**Figure T7**

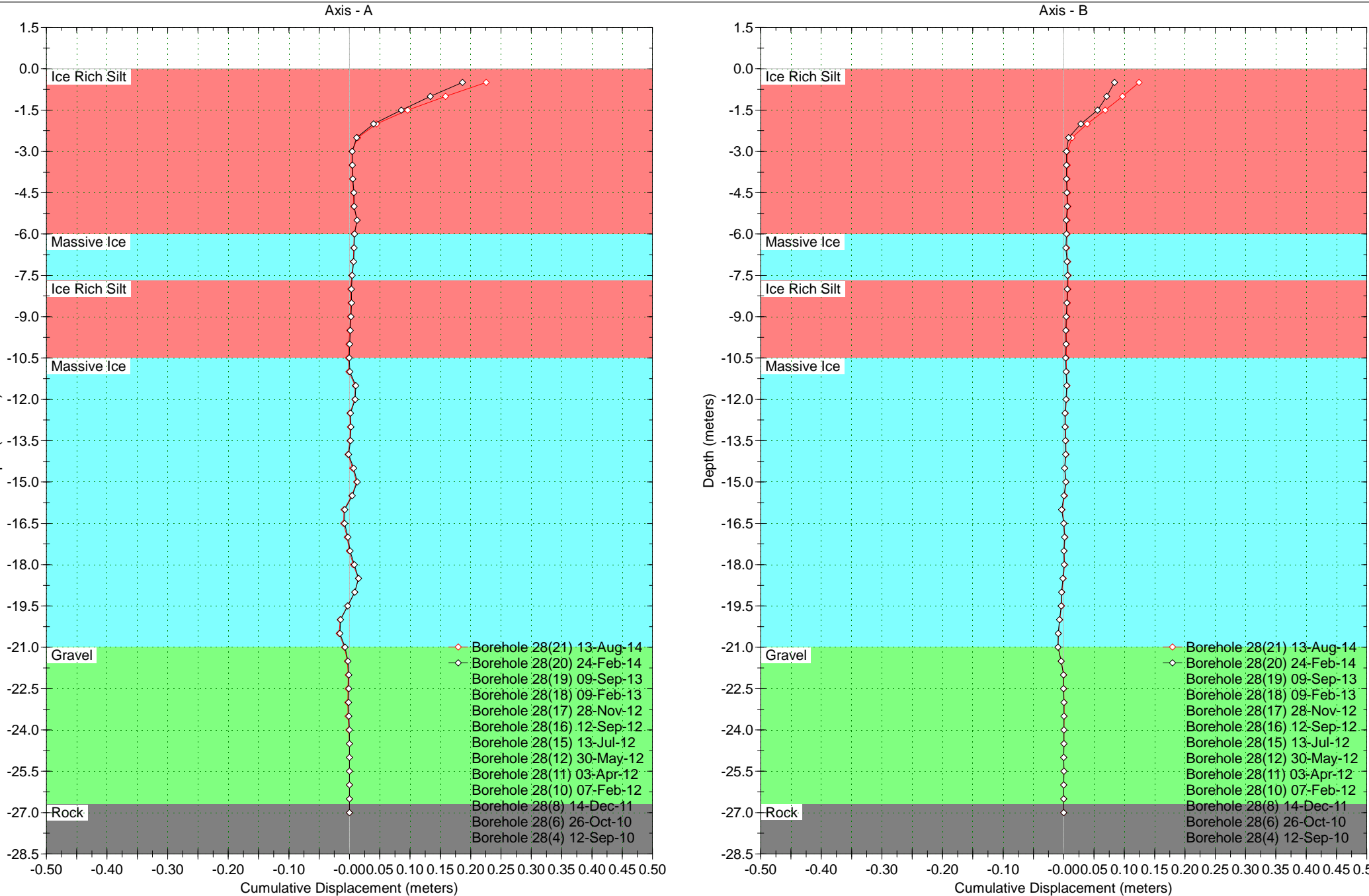
# APPENDIX C

## DSTF LATERAL MOVEMENT PROFILES

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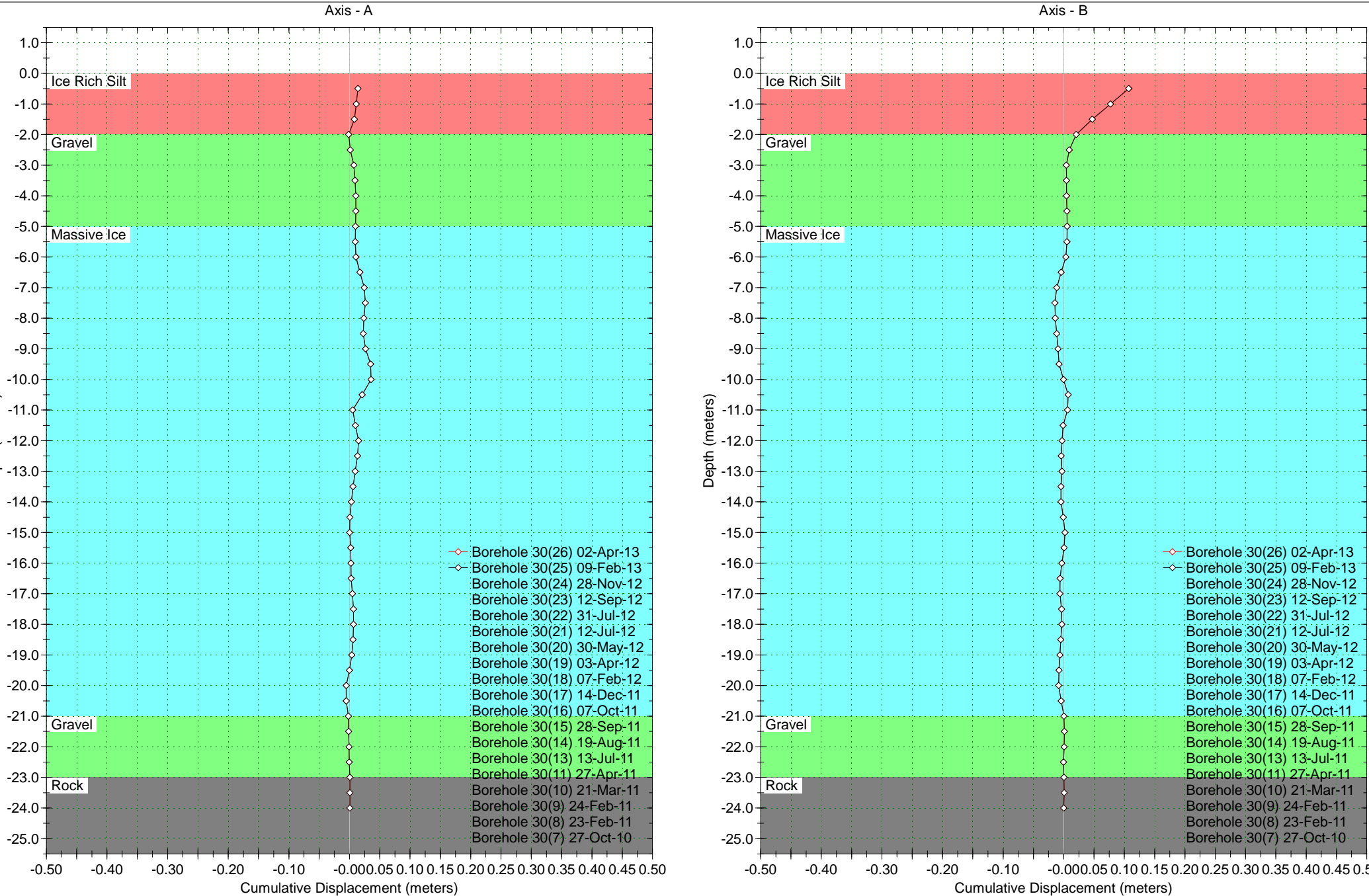
Borehole : BH28  
Project : Keno  
Location : DSTF  
Northing : 7086985  
Easting : 484026  
Collar :

Spiral Correction : N/A  
Collar Elevation : 0.0 meters  
Borehole Total Depth : 27.0 meters  
A+ Groove Azimuth :  
Base Reading : 2010 Sep 07 10:08  
Applied Azimuth : 0.0 degrees



Borehole : BH30  
Project : Keno  
Location : DSTF  
Northing : 7087032  
Easting : 483969  
Collar :

Spiral Correction : N/A  
Collar Elevation : 0.0 meters  
Borehole Total Depth : 24.0 meters  
A+ Groove Azimuth :  
Base Reading : 2010 Oct 26 15:40  
Applied Azimuth : 0.0 degrees



Borehole : BH36  
Project : Keno  
Location : DSTF  
Northing : 7086872  
Easting : 483931  
Collar :

Spiral Correction : N/A  
Collar Elevation : 0.0 meters  
Borehole Total Depth : 14.5 meters  
A+ Groove Azimuth :  
Base Reading : 2011 Dec 14 16:52  
Applied Azimuth : 0.0 degrees

