November 7, 2017

ISSUED FOR USE
FILE: 704-ENG.WARC03301-01
Via Email: kwoloshyn@alexcoresource.com

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

Attention: Kai Woloshyn – Environmental Manager

Subject: 2017 Annual Geotechnical Inspection – Surface Engineered Earth Structures
Bellekeno Mine, Keno City, YT

1.0 INTRODUCTION

NND-EBA Land Protection Corp. operating as NELPCo Limited Partnership (NELPCo) was retained by Alexco Resource Corp (Alexco) to complete the 2017 annual geotechnical inspection of the surface engineered earth structures at the Bellekeno Mine near Keno City, Yukon. NELPCo is a limited partnership corporation owned by the NND Development Corporation (NNDDC) and Tetra Tech Canada Inc. (Tetra Tech). The inspection was conducted by Tetra Tech, NELPCo's exclusive engineering services provider. Authorization to complete this work was received by way of an Alexco purchase order (PO #18335) on July 21, 2017.

2.0 SCOPE OF SERVICES

The following is Tetra Tech's scope of services for the 2017 annual inspection as was presented in the proposal submitted to Alexco on July 5, 2017:

- Complete a visual inspection of the surface engineered earth structure identified by Alexco, which includes:
    - Potentially acid generating (PAG) waste storage facility;
    - Bellekeno waste rock pile;
    - Bellekeno 625 water treatment ponds;
    - Lightning Creek bridge abutments (Onek Road);
    - Lightning Creek bridge abutments (Bellekeno Haul Road);
    - Mill water storage pond; and
    - Dry stacked tailings facility (DSTF).

The location of each structure is shown on Figure 1.

- Prepare an inspection report including the results of the inspection, summary of the stability, integrity, and status of all inspected structures, and any recommendations for remedial actions; and
- Prepare a DSTF instrumentation memo summarizing ground temperature and slope indicator data collected during the site inspection.

NELPCo Limited Partnership
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

3.0 INSPECTION SUMMARY AND RECOMMENDATTIONS

The 2017 annual inspection was completed by J. Richard Trimble, M.Sc.(Eng.), P.Eng., FEC, and Taylor Pasloski, P.Eng., on August 24th, 2017. The following sections summarize observations for each structure and describe recommended remedial actions, if necessary. The recommended remedial actions have been separated into critical geotechnical stability concerns and ongoing facility maintenance issues to assist in the prioritization of remedial efforts. Select photographs taken during the inspection are included in the photographs section of this report.

3.1 PAG Waste Facility

The PAG waste storage facility is located south of the Bellekeno portal, as shown on Figure 1. The facility has not been used since mining operations were suspended in winter 2013, but currently contains some volume of PAG waste rock. At the time of inspection, the perimeter berms appeared intact with no visible sign of instability.

The client also requested revisions to the “standard” design drawing for future PAG storage sites to reflect their experience in water monitoring at the present sites (Photo 1).

3.2 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 sideslopes of the waste rock pile appeared to be intact and stable. No remedial action is required for the Bellekeno waste rock pile at this time.

3.3 Bellekeno 625 Ponds

The Bellekeno 625 water treatment ponds are located 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 inspection. The primary treatment pond was operating at the discharge invert elevation with a freeboard of 0.5 m below the perimeter berm crest at the time of inspection. The secondary pond was also operating at the discharge elevation, with a freeboard of 0.5 m in the south end. The north end was in the process of being raised to the recommended minimum 0.5 m freeboard elevation during the inspection. After the inspection was conducted, Alexco provided photos showing the north perimeter berm raised to the final grade, with the liner installed and perimeter berm compacted (Photos 2).

As recommended in the 2016 annual geotechnical inspection report, elevation surveys to monitor for settlement at the north end of the pond should be completed monthly during the snow free seasons. At the end of the discharge pipe at the 625 treatment pond, water is being discharged onto the natural soils without any protection from erosion (Photo 3). The current flow conditions of the discharge were low, but continuous monitoring should take place. If the rate of erosion increases, rip-rap armouring should be installed.

Tension cracks were observed on the access road north of 625 (Photo 4). The cracks should be filled and the ground surface re-compacted to prevent water infiltration and further erosion.

3.4 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 bridge is a single span steel structure founded on earth filled timber cribbing abutments. The abutments appeared stable at the time of the inspection and are sufficiently protected from erosion by rip-rap armouring (Photo 5). No remedial action is required for the Lightning Creek Bridge on the Onek road at this time.

3.5 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 is a single span steel structure with a wooden deck founded on earth filled timber cribbing abutments. The abutments appeared stable at the time of the inspection and are sufficiently protected from erosion by rip-rap armouring (Photo 6). No remedial action is required for the Lightning Creek Bridge on the Bellekeno Haul Road at this time.

3.6 Mill Water Storage Pond

The mill water storage pond is located at the Keno Hill District Mill Site, west of Keno City, as shown on Figure 1. At the time of the inspection the pond was not operating but contained some water, with a freeboard of about 2 m below the perimeter berm crest (Photo 7). The perimeter berms and pond liner appeared intact with no visible signs of instability. No remedial action is required for the mill water storage pond at this time.

3.7 Dry Stacked Tailings Facility

The dry stacked tailings facility (DSTF) is located at the Keno Hill District Mill Site west of Keno City, as shown on Figure 1. No tailings have been placed in the DSTF since mining operations were suspended in winter 2013. The tailings placed to date have been regraded, covered with organic growth medium, and seeded as part of progressive reclamation activities (Photo 8). At the top of the DSTF near the south end, there was visible erosion and deposition of tailings from weathering (Photo 9). Arrangements should be made to fill the eroded area to prevent further erosion.

3.8 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 foundation soils. The locations of installed DSTF instrumentation are shown on Figure 2.

It should be noted that some critical instrumentation located within and adjacent to the DSTF is in need of repair and/or replacement.

3.8.1.1 Background Ground Temperature Readings

Updated ground temperature readings were collected from five of the six ground temperature cables installed in natural soils adjacent to the DSTF during the inspection. Readings were not collected from BH17 as the protective steel casing has been damaged, and the instrument connector is wedged out of inside the casing. The protective casing should be repaired or removed to allow for continued instrumentation reading.

As indicated on the updated ground temperature profiles included in Appendix B, the slight near surface warming trend observed in previous years has continued. Continued regular instrumentation readings are recommended to monitor ground temperature conditions.

The ground temperature cable installed in BH40, through the tailings and into the foundation soils below the DSTF has been damaged and requires replacement. This is a critical installation needed to confirm design assumptions and provide ongoing temperature monitoring.

3.8.1.2 Slope Indicator Readings

An updated lateral movement profile developed from readings collected from the slope indicator installed in BH36 in natural soils adjacent to the DSTF is included in Appendix C.

On August 7, 2017 the slope indicator installed in BH30 was replaced with BH38. Baseline readings were recorded after the installation and reconfirmed during the annual inspection. A profile of displacement within the slope indicator will be available once further recordings have been collected for comparison with the baseline readings. It was noted that during the inspection, approximately 4 m of water was in the casing of the slope indicator. The water should be removed, and the casing preserved using a silicone oil or suitable alternative to prevent freezing.

Readings were not possible in BH28 as the casing was blocked approximately 3.7 m down the hole. The hole was steamed out to approximately 22 m, and a subsequent attempt was made to record another measurement. The instrument was once again prevented from traveling down the casing. A downhole camera should be utilized to determine the cause of derailment of the slope indicator instrument.

4.0 CONCLUSIONS

The surface engineered earth 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 section are summarized in Table 1 for reference.

Table 1: Summary of Remedial Recommendations

Structure	Stability Recommendations	Maintenance Recommendations
PAG Waste Storage Facility	None	None
Bellekeno Waste Rock Pile	None	None
Bellekeno 625 Water Treatment Ponds	▪ Conduct monthly elevation surveys during snow free season of perimeter berm crest of secondary pond to monitor for settlement;	▪ Monitor the erosion on the discharge pipe and install rip rap if required; and, ▪ Repair tension cracks on access road.
Lightning Creek Bridge Abutments (Onek Road)	None	None
Lightning Creek Bridge Abutments (Bellekeno Haul Road)	None	None
Mill Water Storage Pond	None	None
Dry Stacked Tailings Facility	▪ Install new ground temperature cable to replace damaged cable at BH40; ▪ Purge and clean BH38 and preserve using liquid suitable for use in permafrost conditions; and ▪ Investigate cause of derailment in BH28 with downhole camera. Rehabilitate or replace as required	▪ Continue regular instrumentation readings to monitor DSTF foundation conditions

5.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Alexco Resource Corp. and their agents. Tetra Tech Canada Inc. (Tetra Tech) 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. NELPCo's Limitations are provided in Appendix A of this report.

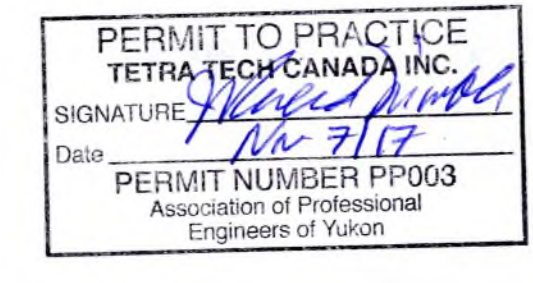
6.0 CLOSURE

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

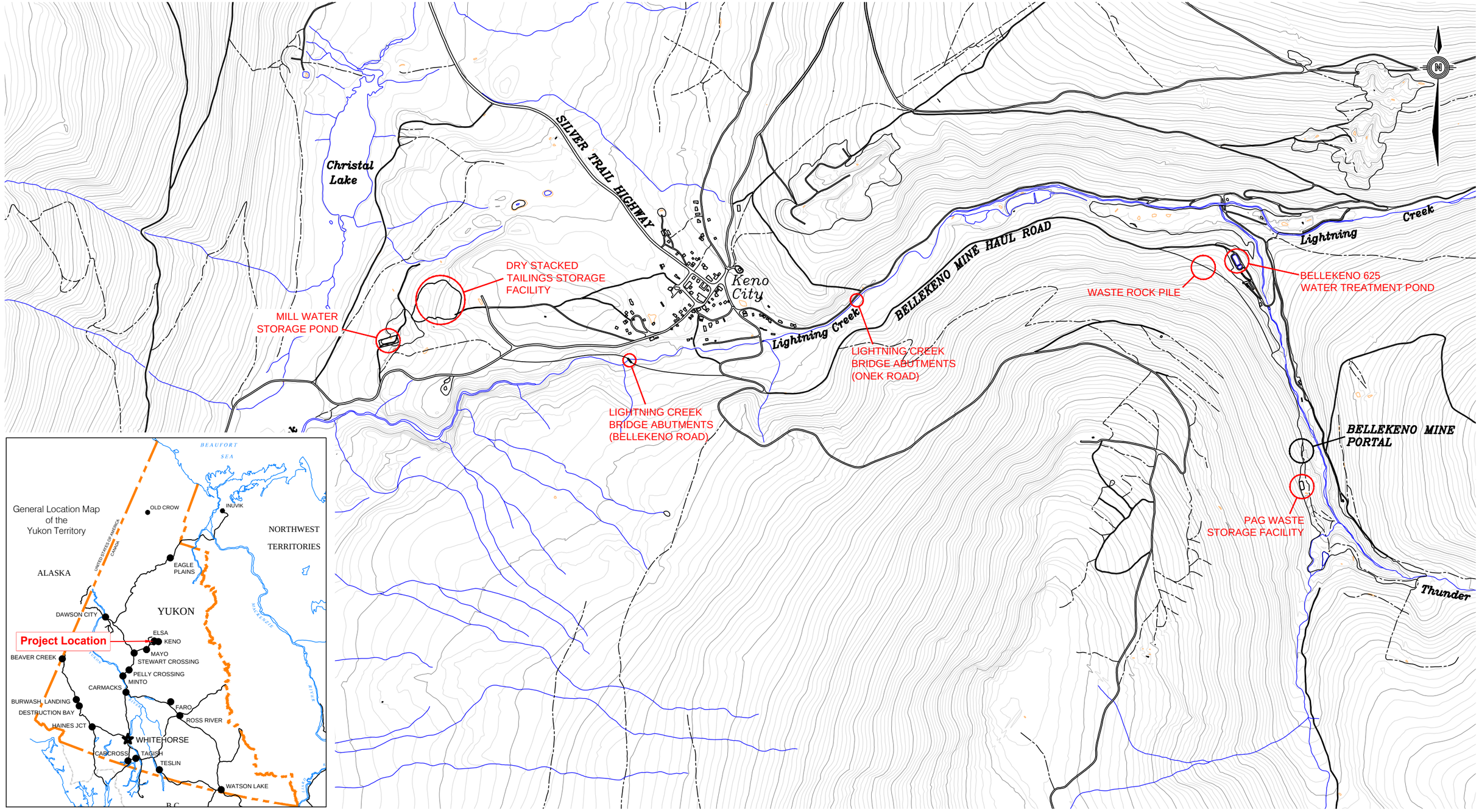
Respectfully submitted,
NELPCo Limited Partnership

Prepared by:
Taylor Pasloski, P.Eng
Intermediate Geotechnical Engineer, Arctic Region
Direct Line: 867.668.9213
Taylor.Pasloski@tetratech.com

Reviewed by:
J Richard Trimble, M.Sc.(Eng.), P.Eng., FEC
Principal Consultant, Arctic Region
Direct Line: 867.668.9216
Richard.Trimble@tetratech.com



FIGURES



NOTES

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

CLIENT

ALEXCO

TETRA TECH

2017 ANNUAL INSPECTION
BELLEKENO MINE SITE - KENO CITY, YUKON

SITE PLAN SHOWING STRUCTURE LOCATIONS

PROJECT NO.	DWN	CKD	REV
ENG.WARC03301-01	CB	TP	0

OFFICE	DATE
EBA-WHSE	August 31, 2017

Figure 1

BH31 (GTC)

BH15 (GTC)

BH17-38 (SI)

BH30 (SI)

BH32 (GTC)

TOE RUN-OFF BERM

BH28 (SI)

BH18 (GTC)

CURRENT DSTF FOOTPRINT

3.0H:1V

BH40 (GTC)

2.5H:1V

BH39 (MW)

TOE RUN-OFF
COLLECTION SUMP

BH23 (GTC)

BH36 (SI)

BH17 (GTC)

MILL BUILDING

LEGEND

GTC - GROUND TEMPERATURE CABLE

SI - SLOPE INDICATOR

MW - MONITORING WELL

0 50m

Scale: 1:1,250 @ 11"x17"

NOTE

INSTRUMENTATION SHOWN IN RED HAS BEEN DAMAGED.

CLIENT

ALEXCO

TETRA TECH

2017 ANNUAL INSPECTION
BELLEKENO MINE SITE - KENO CITY, YUKON

SITE PLAN SHOWING
BOREHOLE AND INSTRUMENTATION LOCATIONS

PROJECT NO.	DWN	CKD	REV
ENG.WARC03301-01	CB	TP	0

OFFICE: EBA-WHSE

DATE: August 31, 2017

Figure 2

PHOTOGRAPHS

Photo 1: PAG Waste Storage Facility
Facing North – August 24, 2017

Photo 2: Bellekeno 625 Water Treatment Ponds
North Perimeter Berm
Facing South – August 24, 2017

Photo 3: Bellekeno 625 Water Treatment Ponds
Water Discharge
August 24, 2017

Photo 4: Bellekeno 625 Water Treatment Ponds
Access Road Tension Cracks
August 24, 2017

Photo 5: Lightning Creek Abutments
Onek Road
August 24, 2017

Photo 6: Lightning Creek Abutments
Bellekeno Haul Road
August 24, 2017

Photo 7: Mill Water Storage Pond
August 24, 2017

Photo 8: DSTF Progressive Reclamation
August 24, 2017

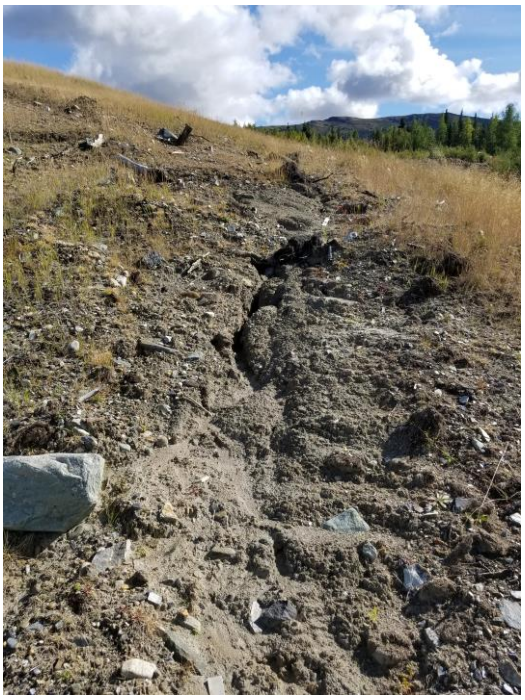


Photo 9: DSTF
Visible Erosion and Deposition
August 24, 2017

APPENDIX A
NELPCO'S LIMITATIONS

LIMITATIONS ON USE OF THIS DOCUMENT

GEOTECHNICAL

1.1 USE OF DOCUMENT AND OWNERSHIP

This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the "Professional Document").

The Professional Document is intended for the sole use of NELPCo Limited Partnership's (NELPCo) Client (the "Client") as specifically identified in the NELPCO Services Agreement or other Contractual Agreement entered into with the Client (either of which is termed the "Contract" herein). NELPCO does not accept any responsibility for the accuracy of any of the data, analyses, recommendations or other contents of the Professional Document when it is used or relied upon by any party other than the Client, unless authorized in writing by NELPCO.

Any unauthorized use of the Professional Document is at the sole risk of the user. NELPCO accepts no responsibility whatsoever for any loss or damage where such loss or damage is alleged to be or, is in fact, caused by the unauthorized use of the Professional Document.

Where NELPCO has expressly authorized the use of the Professional Document by a third party (an "Authorized Party"), consideration for such authorization is the Authorized Party's acceptance of these Limitations on Use of this Document as well as any limitations on liability contained in the Contract with the Client (all of which is collectively termed the "Limitations on Liability"). The Authorized Party should carefully review both these Limitations on Use of this Document and the Contract prior to making any use of the Professional Document. Any use made of the Professional Document by an Authorized Party constitutes the Authorized Party's express acceptance of, and agreement to, the Limitations on Liability.

The Professional Document and any other form or type of data or documents generated by NELPCO during the performance of the work are NELPCO's professional work product and shall remain the copyright property of NELPCO.

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

1.2 ALTERNATIVE DOCUMENT FORMAT

Where NELPCO submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed NELPCO's "Instruments of Professional Service"), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by NELPCO shall be deemed to be the original. NELPCO will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Both electronic file and/or hard copy versions of NELPCO's Instruments of Professional Service shall not, under any circumstances, be altered by any party except NELPCO. NELPCO's Instruments of Professional Service will be used only and exactly as submitted by NELPCO.

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

1.3 STANDARD OF CARE

Services performed by NELPCO for the Professional Document have been conducted in accordance with the Contract, in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of NELPCO.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with NELPCO with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for NELPCO to properly provide the services contracted for in the Contract, NELPCO has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO NELPCO BY OTHERS

During the performance of the work and the preparation of this Professional Document, NELPCO may have relied on information provided by third parties other than the Client.

While NELPCO endeavours to verify the accuracy of such information, NELPCO accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to NELPCO at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this document, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

NELPCO is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 ENVIRONMENTAL AND REGULATORY ISSUES

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

1.8 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems, methods and standards 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. NELPCO 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.

1.9 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.

1.10 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 historical environment. NELPCO 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 exploration and review may be necessary.

1.11 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.

1.12 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.

1.13 INFLUENCE OF CONSTRUCTION ACTIVITY

Construction activity can impact 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, and construction sequence are known.

1.14 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, and 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.

1.15 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 satisfactory 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.

1.16 DESIGN PARAMETERS

Bearing capacities for Limit States or Allowable Stress Design, strength/stiffness properties and similar geotechnical design parameters 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 used in this report. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions considered in this report in fact exist at the site.

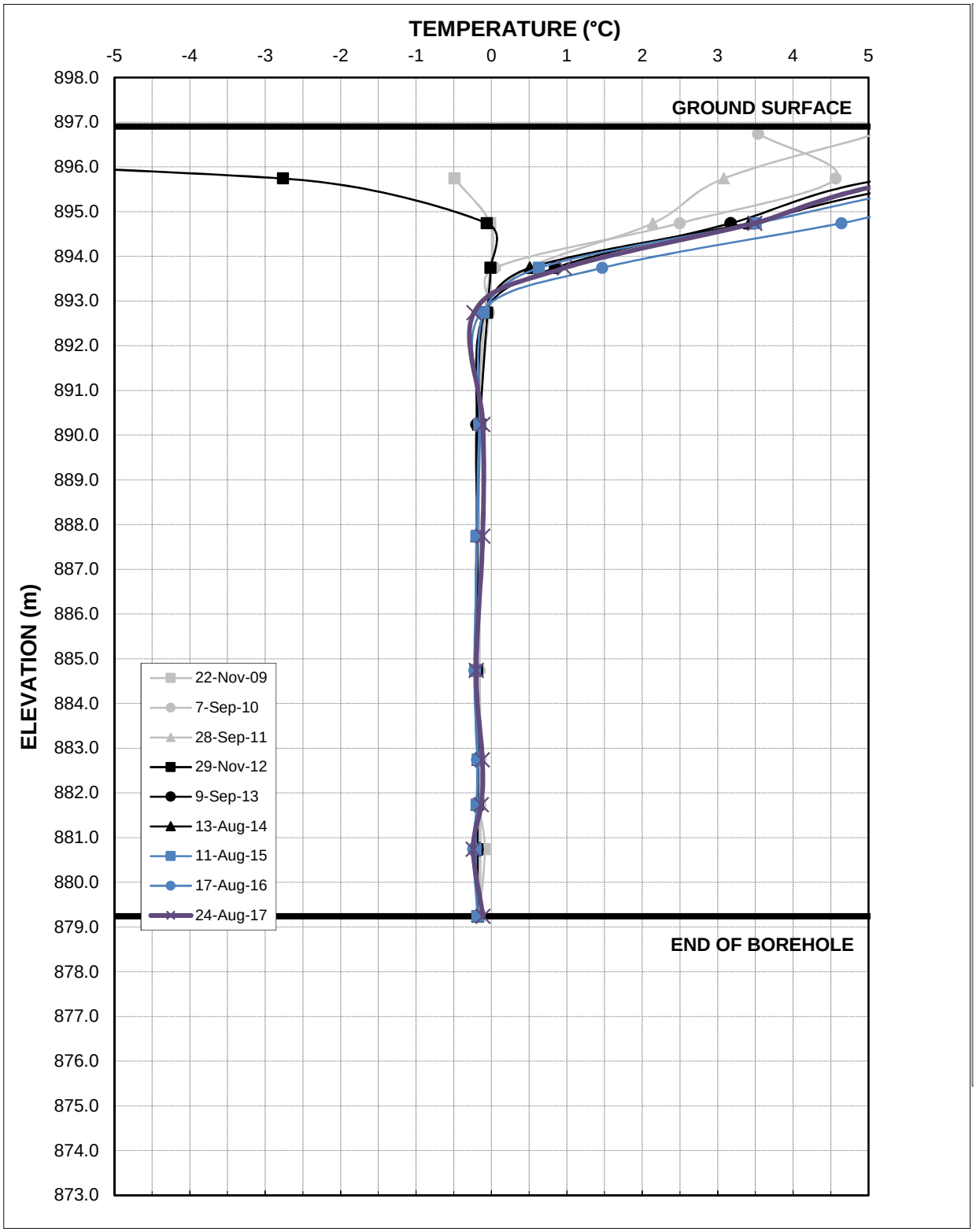
1.17 SAMPLES

NELPCO 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.

1.18 APPLICABLE CODES, STANDARDS, GUIDELINES & BEST PRACTICE

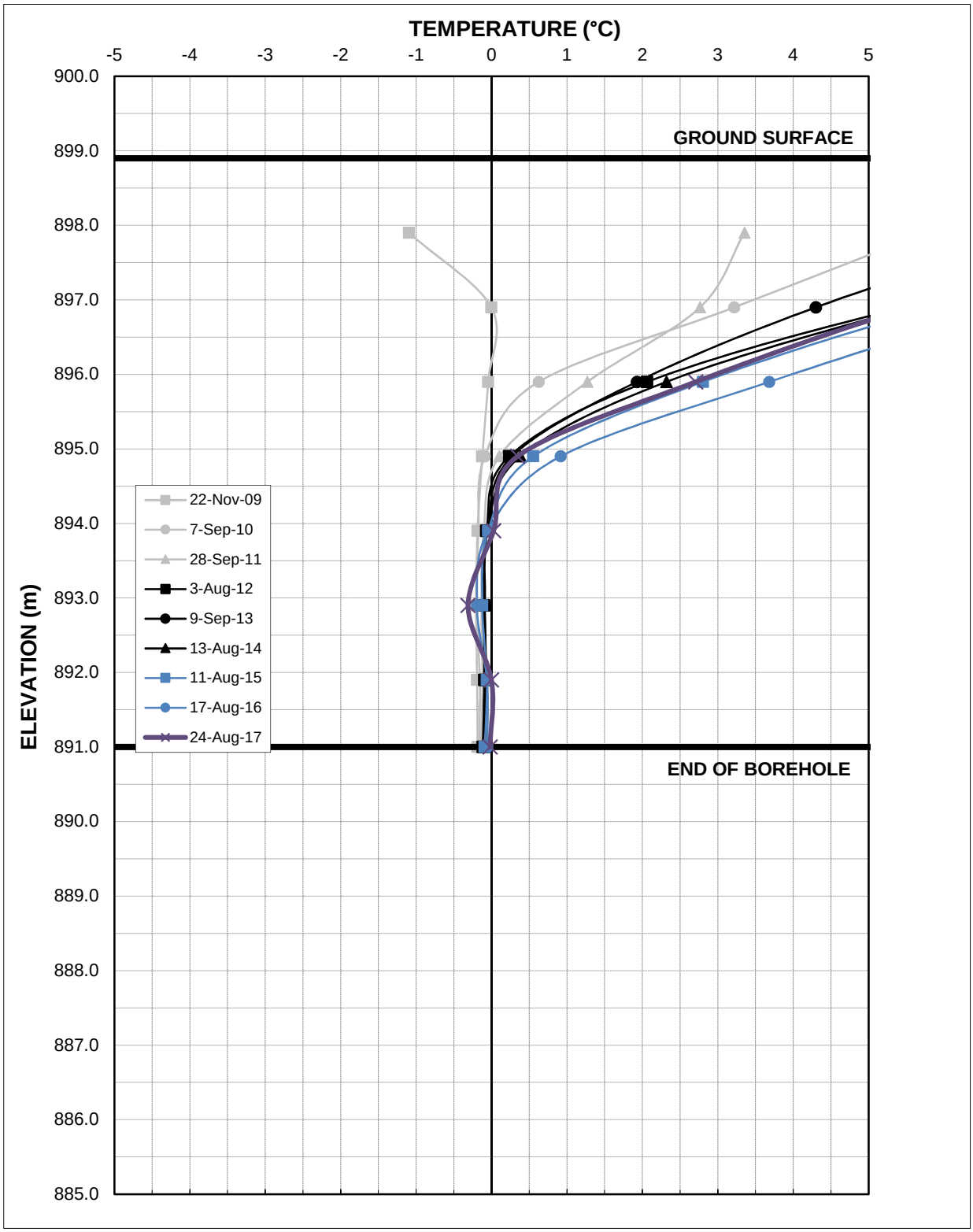
This document has been prepared based on the applicable codes, standards, guidelines or best practice as identified in the report. Some mandated codes, standards and guidelines (such as ASTM, AASHTO Bridge Design/Construction Codes, Canadian Highway Bridge Design Code, National/Provincial Building Codes) are routinely updated and corrections made. NELPCO cannot predict nor be held liable for any such future changes, amendments, errors or omissions in these documents that may have a bearing on the assessment, design or analyses included in this report.

APPENDIX B
DSTF GROUND TEMPERATURE PROFILES



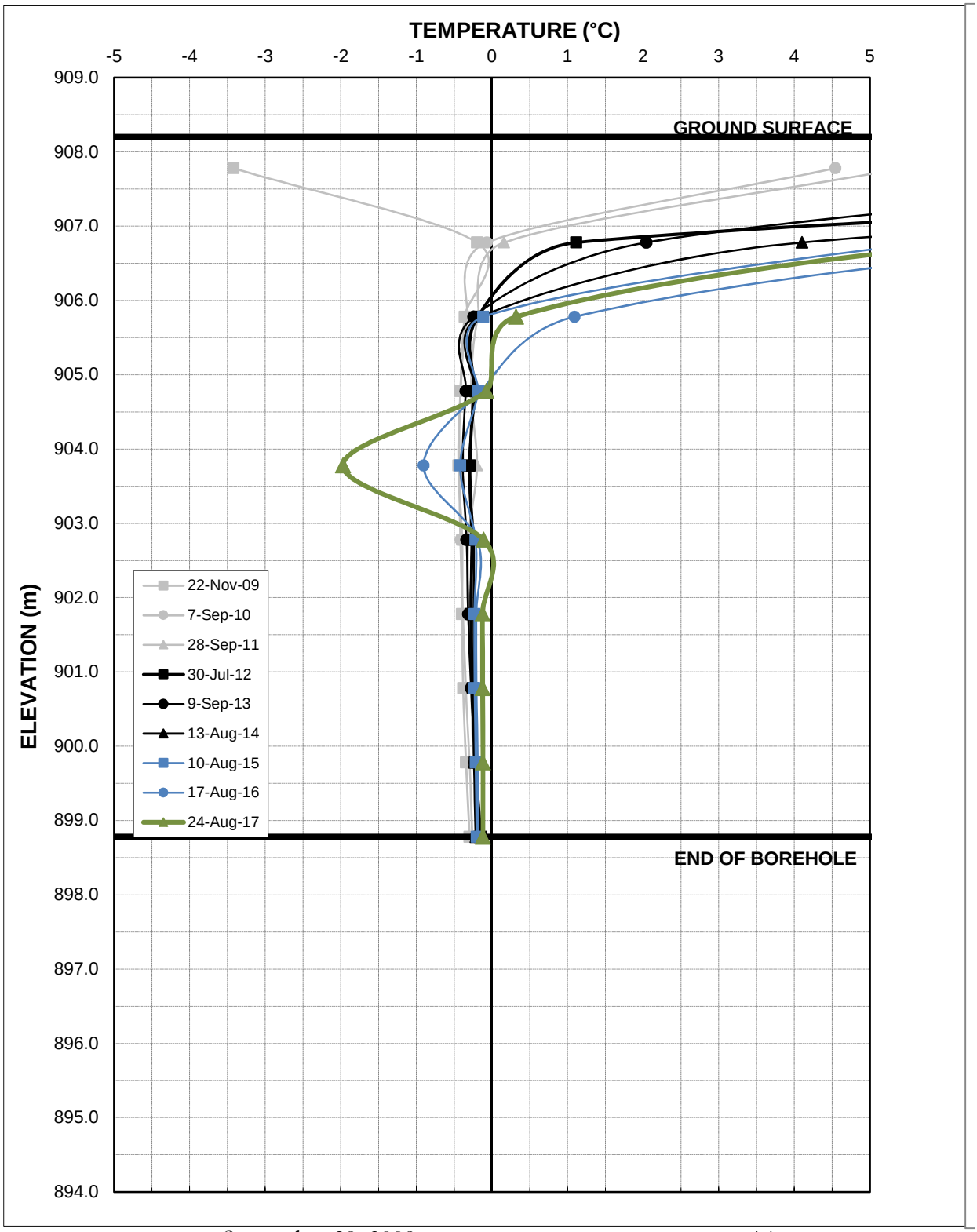
Install Date	August 30, 2009
Last Updated	August 24, 2017
Cable No:	2207

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



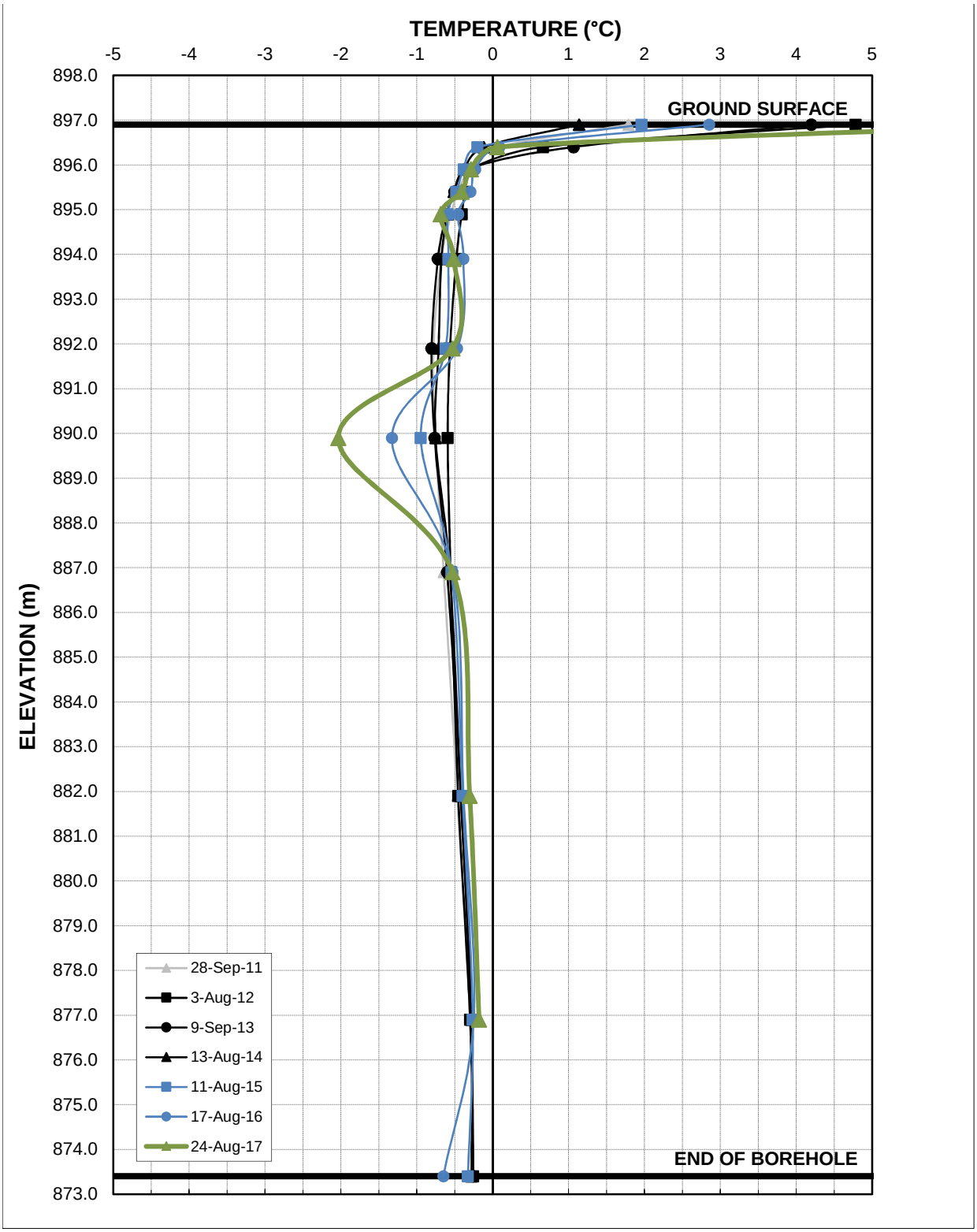
Install Date	September 2, 2009
Last Updated	August 24, 2017
Cable No:	2209

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



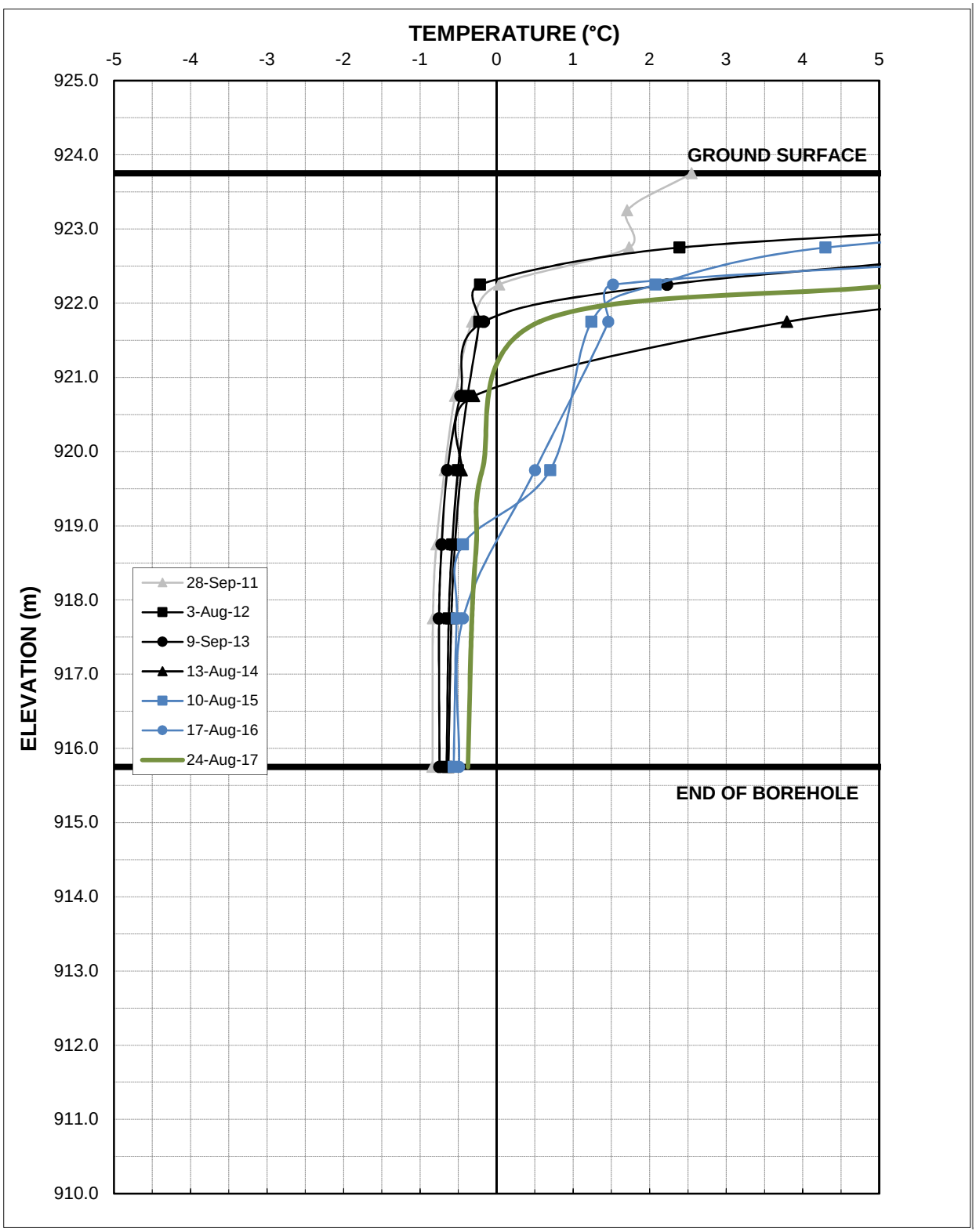
Install Date	September 29, 2009
Last Updated	August 24, 2017
Cable No:	2210

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



Install Date	February 22, 2011
Last Updated	August 24, 2017
Cable No:	2263

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



Install Date	February 22, 2011
Last Updated	August 24, 2017
Cable No:	2264

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

APPENDIX C
DSTF LATERAL MOVEMENT PROFILES

RST Instruments Ltd.

CUMULATIVE DISPLACEMENT

Inclinalysis v.2.40

Borehole : Borehole 36
Project : Keno Hill District Mill
Location : DSTF
Northing : 7086872
Easting : 483931
Collar :

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