Appendix B-1

2019 Annual Geotechnical Inspection

2019 Annual Geotechnical Inspection
Meliadine Gold Project, Rankin Inlet, Nunavut

PRESENTED TO

Agnico Eagle Mines Limited

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EXECUTIVE SUMMARY

Agnico Eagle Mines Limited (AEM) retained Tetra Tech Canada Inc. (Tetra Tech) to conduct the 2019 annual geotechnical inspection for the Meliadine Gold Mine, located approximately 25 km north of Rankin Inlet, in the Kivalliq Region of Nunavut. The Meliadine Gold Mine consists of underground development and open pits to extract gold ore.

The geotechnical inspection is pursuant to the requirements of the Type A Water Licence Permit No.2AM-MEL1631 (Nunavut Water Board 2016). Under Part I, Item 14 (page 21) and Schedule I, Item 1 (page 39) of the Water Licence, AEM is required to undertake an annual geotechnical inspection of its facilities between the months of July and September. The inspection is to be carried out by a geotechnical engineer, and to be in accordance with the Canadian Dam Association (CDA) Dam Safety Guidelines (CDA 2013), where applicable. The inspection occurred from August 19, 2019 to August 23, 2019 and was conducted by Bill Horne of Tetra Tech, a geotechnical engineer, holding professional registration in Nunavut.

The inspection included water collection ponds (CP), dikes (D-CP), saline water collection ponds, roads, landfills, landfarms, and other geotechnical structures. The following is a summary of the recommendations made based on the inspection.

CP1

Currently CP1, and Dike D-CP1, and Jetty1 are performing well. The water level in CP1 is high. A water management strategy must be developed to deal with the current high water levels in CP1.

The higher water levels may have an impact on the ground temperatures in the dike. It is understood that snow clearing on the downstream crest will be done to mitigate the thermal impact of the high-water levels. The temperatures should be monitored to determine the impact of the high-water level on the ground temperatures.

CP3

Collection Pond CP3 and its associated infrastructure is performing adequately. A water management strategy should be developed to deal with the high pond levels in spring 2020.

CP4

Collection Pond CP4 and its associated infrastructure is performing adequately. Significant thaw settlement has occurred in the original ground above the pond rockfill slope protection; however, the slopes appear to be stable. A water management strategy should be developed to deal with the high pond levels next spring.

CP5

CP5 and D-CP5 are performing adequately.

Saline Ponds

Saline Ponds 1, 2, and 3 are performing well. The settlement and cracking around Saline Ponds 1 and 2 should continue to be monitored.

P-Area

It is understood that the P-Area dikes will be decommissioned in the near future. In the interim AEM personnel should continue to conduct geotechnical inspections and document visual observations such as, cracking, slumping, and/or seepage. Thermistor data should continue to be collected, plotted, and reviewed, and pond water levels should continue to be measured and tracked

Diversion Channels and Berms

The diversion channels and berms are performing well. It is recommended to continue to monitor the slumping and cracking adjacent to Channel 5 to determine if sediment from the area is blocking the channel. Cracking and subsidence in the native ground above Channels 3 and 4 should be monitored to determine if they are impacting the channels' performance. The Berm 2 cover materials are susceptible to erosion and some minor erosion was observed during the inspection. Erosion of the slopes should be monitored.

Tailings Storage Facility

The TSF appeared to be functioning well at the time of the inspection. The ground temperatures should continue to be monitored in the TSF and the foundation using the GTCs presently installed. It is recommended that the tailings be tested to determine their unfrozen content curve below 0°C to determine how much of the tailings remain unfrozen. Ongoing water quality tests in CP3 can be used to assess the geochemical performance of the facility. The TSF perimeter rockfill berm appears to be functioning well from a geotechnical perspective with no signs of distress.

Site Roads

The site mine roads and culverts were generally well maintained and in good geotechnical condition at the time of the inspection. No specific recommendations for geotechnical improvements are provided.

Saline Water Treatment Plant

The concrete slab in the Saline Water Treatment Plant (SWTP) is settling due to thermal degradation. It is recommended that the SWTP plant be resurveyed to determine how much movement has occurred since the plant was releveled. A structural assessment of the plant and possibly the building should be carried out if it is determined that there has been significant settlement since it was last releveled. It is also recommended that the geotechnical conditions under the building be evaluated and GTCs installed under the building to evaluate how much additional settlement may occur.

Landfill

It is recommended that the landfill be covered in stages with intermediate cover to avoid blowing debris. A program to separate burnable debris could reduce the landfill requirements.

The landfill is nearing its current design capacity. A plan must be developed to raise the landfill berms.

AWAR Road

In general, the AWAR road appeared to be in good geotechnical condition at the time of the inspection. It was reported by site personnel that the road performed well during the 2019 freshet; although several areas have ponded water near the crest elevation of the road. Additional culverts would reduce the risk of the road overtopping.

Itivia Bypass Road

The Itivia Bypass road was in good condition at the time of the site inspection. A low area of the road northwest of Culvert C10 flooded during the 2019 freshet. It is recommended that additional culverts or other measures be implemented to prevent this from occurring in the future. It is also understood that significant flows and some overflow occurred around km 2 in the portion of the road that was constructed as cross slope fill. The drainage of this area should be improved, or the area maintained to direct the flow in the upslope ditch.

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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
ATV	All-terrain Vehicle
AWAR	All-weather Access Road
CDA	Canadian Dam Association
CP	Collection Pond
GTC	Ground Temperature Cable
HPDE	High Density Polyethlyene
IDF	Inflow Design Flood
km	Kilometers
masl	Metres Above Sea Level
mbgs	Metres below ground surface
MMER	Metal Mining Effluent Regulations
OMS	Operation Management and Surveillance
ppt	Parts Per Thousand
SP	Saline Pond
SWTP	Saline Water Treatment Plant
TSF	Tailings Storage Facility
WRSF	Waste Rock Storage Facility

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Agnico Eagle Mines Limited 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 Agnico Eagle Mines Limited, 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 document is subject to the Limitations on Use of this Document attached in Appendix A or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

Agnico Eagle Mines Limited (AEM) retained Tetra Tech Canada Inc. (Tetra Tech) to conduct the 2019 annual geotechnical inspection for the Meliadine Gold Mine, located approximately 25 km north of Rankin Inlet, in the Kivalliq Region of Nunavut. The Meliadine Gold Mine consists of underground development and open pits to extract gold ore.

The geotechnical inspection is pursuant to the requirements of the Type A Water Licence Permit No.2AM-MEL1631 (Nunavut Water Board 2016). Under Part I, Item 14 (page 21) and Schedule I, Item 1 (page 39) of the Water Licence, AEM is required to undertake an annual geotechnical inspection of its facilities between the months of July and September. The inspection is to be carried out by a geotechnical engineer, and to be in accordance with the Canadian Dam Association (CDA) Dam Safety Guidelines (CDA 2013), where applicable. The inspection occurred from August 19, 2019 to August 23, 2019 and was conducted by Bill Horne of Tetra Tech, a geotechnical engineer, holding professional registration in Nunavut.

The following structures were inspected:

Main Site Including:

- Water collection ponds CP1, CP3, CP4, and CP5 and their associated dikes (D-CP1 and D-CP5), berms, channels, and jetties
- Saline Pond 1 (SP1), Saline Pond 2 (SP2), and Saline Pond (SP3)
- P-Area temporary collection ponds (P1, P2, and P3) and associated dikes (DP1-A, DP1-B, DP2-A, and DP3-A)

Site Roads:

- Main site pad area roads, including culverts
- Tiriganiaq Esker access road
- Wesmeg access road, Wesmeg Borrow and vent raise
- Magazine storage access road
- Main site water intake access road
- Emulsion plant pad access road, including Culvert 13
- CP4 access road
- Landfill access road, Tailing Storage Facility (TSF) area, including Culvert 1

Pads:

- Main camp pad
- Industrial pad
- East ventilation raise pad
- Temporary cyanide storage pad

- Cyanide storage pad
- Effluent water treatment plant pad
- Explosives (ANFO plant) pad and magazine storage
- Emulsion plant pad
- Crusher ramp and MSE walls
- Paste plant ramp
- Ore and waste rock storage areas
- Landfarm
- Exploration and operations landfills
- Underground Portals No. 1 and No. 2
- Industrial fuel storage and mine site fuel storage

Exploration camp site including:

- Site pad and diffuser access road
- Genset storage area
- Freshwater intake
- Access road
- Fuel storage

All-weather Access Road (AWAR)

Itivia Site:

- Fuel storage
- Bypass road

The facilities at the main mine site and exploration camp areas are shown in Figure 1. The exploration camp site was the first area of the project to be developed and portions of it were being dismantled at the time of the 2019 inspection.

Some development for the project had not been constructed at the time of the visit including: Water Management Collection Pond 6 (CP6) and its associated thermal berm P6, open pits, waste rock storage facilities (WRSF), and several diversion channels (4). The planned final layout of the main site, including water management structures is shown on Figure 2.

The AWAR connecting Rankin Inlet to the Project provides one-way traffic access (with pull-outs to allow vehicles to pass). The Itivia bypass road provides a bypass around Rankin Inlet from the shipping and fuel storage area in Rankin Inlet.

Where applicable, the inspection was performed consistent with the principles set out by the CDA (2013). The inspection consisted of visually observing each of the facilities listed above; taking photographs to document the conditions at the time of the inspection, reviewing instrumentation data, inspection reports, and other relevant files and reports (listed in the reference section of this report); and communication with AEM on-site staff, Jennifer Pyliuk.

The inspection occurred when there was no snow or ice on the lakes or land, and when surface water flows were generally low. Peak surface water flows typically occur during the freshet (May and June). During the inspection, the weather was generally clear with some periods of rain. Daily temperatures varied between 8°C and 16°C. Water levels were somewhat higher than normal for this period of the year.

The site water management plan (AEM 2018) provides a summary of the water management infrastructure and the overall water management approach.

This report describes the geotechnical aspects of the areas inspected and presents general observations and recommendations. In addition, a description of the geophysical and permafrost conditions for the site is provided.

1.1 Scope Limitations

The scope of the inspection is limited to observation of the geotechnical aspects of each of the facilities listed above and review of the associated instrumentation data. The inspection did not include other assessments such as structural, mechanical, or environmental.

2.0 GENERAL SITE CONDITIONS

The Project is in the Kivalliq Region of Nunavut, near the northern border of the southern Arctic terrestrial eco-zone, and within the Arctic tundra climate region. It is located within the Churchill geological province, which forms part of the northern Canadian Shield.

The landscape is dominated by features characteristic of glaciated terrain and exposed bedrock. Primarily underlain by Precambrian granitic bedrock, the terrain consists of broadly rolling uplands and lowlands. The Project is located at an approximate elevation of 60 metres above sea level (masl) with a maximum topographic relief of 20 m. There are numerous small lakes, wetlands, and creeks, indicating poorly drained conditions. The upland areas are generally well drained. A series of low relief ridges composed of glacial deposits oriented northwest—southeast control the regional surface drainage pattern. Periodic ice blockages at outlets of small lakes and wetlands occur during the freshet, these can temporarily increase the downstream flood peak discharges and affect the flood characteristics. High flows are observed during the freshet, while low flows and dry stream channels are typical in late summer.

Glacial moraine deposits are predominant, ranging in thickness from veneers (less than 2 m) to blankets (2 m to 5 m) to hummocky deposits (5 m to 15 m). Glaciofluvial deposits are also present, with the most prominent being a network of sinuous eskers. Lacustrine deposits occur in association with the numerous lakes. Near the coast of Hudson Bay, finer textured marine sediments cover the ground surface.

The Project is in a zone of continuous permafrost and has an annual average air temperature of -10.4°C, based on climate data from Rankin Inlet. Within the permafrost there are intervening taliks (areas of unfrozen ground) and thaw bulbs induced by lakes. The permafrost in the region is "cold" (i.e., has an average annual surface temperature and zero amplitude temperature of less than -4°C. The depth of permafrost and of the active layer varies based on the proximity to lakes, soil thickness, vegetation, climate conditions, and slope direction. Based on thermal studies and measurements of ground temperatures, the depth of permafrost is generally between 360 to 495 metres below

ground surface (mbgs). The depth of the active layer ranges from about 1 mbgs in areas with shallow surficial soils, up to about 3 mbgs adjacent to the lakes (AEM 2014b). Typical permafrost ground temperatures at the depths of zero annual amplitude are in the range of -5.0°C to -7.5°C in areas away from lakes and streams and are generally reached at a depth of 15 mbgs to 35 mbgs. The geothermal gradient ranges from 0.012°C/m to 0.02°C/m (Golder 2014). The ground ice content in the region is expected to be between 0% and 10% (dry permafrost) based on the regional scale compilation data and the Canada Permafrost Map published by Natural Resources Canada (NRC 1993). However, areas of local higher ground ice content occur and are generally associated with low lying areas of poor drainage.

Taliks may occur where lake depths are greater than about 1 m to 2.3 m. The presence and extent of each talik is influenced by the geometry (size and shape) of the lake. As the depth and size of lakes increase, the extent of the talik increases. Formation of an open-talik, which penetrates through the permafrost, would be expected for lakes that exceed a critical depth and size. It is anticipated that open-taliks exists below Meliadine Lake, Lake B7, and Lake D7 based on their depth and geometry (Golder 2013).

The salinity of groundwater also influences the temperature at which the groundwater freezes. Testing has indicated that the salinity of the groundwater in the Project area generally increases with depth. Test results on two deep groundwater samples collected below the base of the permafrost as part of the baseline study indicated salinity level leads to a freezing point depression of about 3.2°C (AEM 2014a, Volume 7, Appendix 7.2-A).

3.0 WATER COLLECTION PONDS DIKES, JETTIES, BERMS, AND CHANNELS

3.1 Introduction

This section presents a summary of the water collection ponds and associated dikes, berms, and channels constructed prior to the 2019 inspection, including:

- Collection Pond CP1 and its associated Dike (D-CP1) and Jetty 1
- Collection Pond CP3 and its associated Berm CP3, Berm 2, and Channel 3,
- Collection Pond CP4 and its associated Berm CP4, Berm 4, and Channel 4,
- Collection Pond CP5 and its associated dike D-CP5 and Jetty 5, and Channel 5
- SP1, SP2, and SP3.

The following subsections provide a description of the structures, visual observations, a summary of geotechnical instrumentation (if any exists), followed by recommendations.

3.2 Pond CP1 and Dike D-CP1

3.2.1 Background

Dike D-CP1 was constructed across the outlets of former Lakes H6 and H17, which combine to form Pond CP1. Dike D-CP-1 was constructed between October 2016 and July 2017. Site water around the industrial facility and

various collection ponds is directed to Pond CP1. Water is retained in Pond CP1 prior to treatment and discharged to the environment.

Dike D-CP1 is approximately 600 m long with a maximum height of 6.6 m (Tetra Tech 2017g) as shown in Figure 1. The CDA (2013) dam consequence classification for Dike D-CP1 is Significant (Tetra Tech 2016a). A downstream collection sump and two channels were constructed approximately 5 m downstream of the D-CP1 toe to collect surface run-off and any possible dike seepage for pump back to CP1. As-Built drawings are included in Appendix B. Water from various parts of the site are pumped to CP1 for treatment and discharge to Meliadine Lake following treatment if necessary.

A jetty is constructed into CP1 to pump water to the water treatment plant.

3.2.2 Visual Observations

The inspection involved walking along the crests and toes of the dikes and examining the condition of the slopes of the dikes for visual signs of deformation and instability, cracking, and uneven surfaces. Water in CP1 at the time of the site visit precluded not observing upstream toes of the dikes. A photographic record of the inspection, with annotations added where appropriate, is included in Appendix B.

At the time of the inspection of D-CP1, the following general observations were made:

- Overall, the dike appeared stable, with no significant geotechnical concerns identified.
- Minor cracking and small settlement were observed along portions of the upstream and downstream crest (e.g., Photo 5, Appendix B). The largest cracks were up to 2 cm to 3 cm wide. The cracking was generally in about the same condition to what was observed in July 2019 and described in the 2018 geotechnical inspection report (Golder 2018), and AEM weekly reports. The cracking locations are marked by AEM staff conducting weekly inspections. The crack locations were surveyed for record in August 2019.
- No seepage was observed from the downstream toe.
- The downstream collection channel pond was filled with water at the time of the site visit due to recent precipitation events and wet ground conditions downstream of the dike as shown in Photos 2 and 7, Appendix B.
- Jetty 1 was in good condition. Minor erosion marks on the slope due to wave erosion from historic high water levels.

AEM's engineering and environment team conducted weekly visual geotechnical inspections of the dikes throughout 2018 and 2019. Monthly inspection reports included an assessment of ground temperatures, observations of cracking and settlement, pond elevation, pumping activities, and include photographs. No seepage was observed at Dike D-CP1 through the year. The observations made by AEM staff were consistent with the observations during the 2019 annual inspection. Cracks and locations of settlement were also marked with spray paint in the field to monitor changes.

3.2.3 Instrumentation and Monitoring

Horizontal and vertical ground temperature cables (GTCs) were installed in D-CP1 between March and July 2017, as shown in Appendix B. Five horizontal GTCs (HGTC-1 to 5) installed in D-CP1 above the liner parallel to the key trench and five vertical GTCs (VGTC-1 to 5) installed upstream and downstream of the key trench.

The key trench temperatures are warmest in late fall (October and November) and coldest in late spring (May and June). The average key trench temperatures are summarized Table 3-1.

Table 3-1: Summary of D-CP1 Key Trench Ground Temperatures

Cable	Average June 5, 2018 (°C)	Average June 5, 2019 (°C)	Difference (C°)	Average Nov 1, 2018 (°C)	Average Oct 31, 2019 (°C)	Difference (C°)
HGTC-1	-12.4	-8.4	4	-4.6	-4.5	0.1
HGTC-2	-9.2	-9.2	0	-5.3	-5.1	0.2
HGTC-3	-7.9	-8.6	-0.7	-5.8	-5.6	0.2
HGTC-4	-9.4	-8.9	0.5	-6.2	-6.0	0.2
HGTC-5	-9.2	-8.7	0.5	-3.8	-3.4	0.4
VGTC-1	-7.0	-7.2	-0.2	-6.4	-6.4	0
VGTC-2	-6.7	-6.2	0.5	-6.4	-6.1	0.3
VGTC-3	-7.2	-7.3	-0.1	-6.9	-7.0	-0.1
VGTC-4	-7.3	-6.6	0.7	-7.2	-6.7	0.5
VGTC-5	-10.2	-10.3	-0.1	-2.3	-2.1	0.2

Note: HGTC temperatures in base of the key trench, VGTC temperature deepest temperature of cable.

The following observations were made regarding the instrumentation readings collected for D-CP1:

Overall there has been a slight warming (average 0.2 C°) over the past year. The key trenches have remained below -2° C throughout the year.

- The horizontal GTC plots indicate a slight warming trend in the base of the key trench from 2018 to 2019. The average fall temperatures warmed by approximately 0.1 C° to 0.4 C°. The temperatures are below 2°C throughout the year.
- Vertical GTC plots indicate that maximum depth of 0°C temperature readings ranged from approximately 2.5 m to 2.7 m in the summer and early fall of 2019 in cables VGTC-1, VGTC-2, VGTC-3, and VGTC-4. VGTC-5 which had a maximum depth of 0°C of 1.5 m. The foundation temperature (i.e., deepest bead) was similar to 2018, with slight warming (0.2 C° to 0.5 C°) observed in VGTC-2, VGTC-4, and VGTC-5.
- The ground temperature data from HGTC-2 indicated warmer temperatures in June and July 2019. It was later determined that these measurements have an error, due to equipment malfunction.

Six settlement survey monuments were installed over the liner crest in the central area of the dike as shown in Appendix B. Survey monitoring points M-1 to M-6 indicate a range of total vertical downward displacement between 18 mm and 65 mm since they were installed on September 19, 2017. Most of the movement was in the first year after construction. There is “noise” in the readings as the readings fluctuate slightly; it appears to be a systematic error that may be due to a benchmark issue. The dike operating water levels were based on a settlement of 120 mm; the measured settlement has been less than this to date.

3.2.4 Water Management

CP1 receives inputs from the surrounding area as well as water pumped from other areas of the site (CP3, CP4, and CP5 and other sources). The design operating levels are specified in the Operation Management and Surveillance (OMS) manual (Agnico 2018) as listed in Table 3-2.

Table 3-2: Design Water Elevations for D-CP1 Operation

Situation	Maximum Operating Level (m)	Requirement
End of October each year	63.0	This level is required to provide sufficient storage for: ▪ 661,500 m^3 for the runoff water from an IDF event for the entire site (a total maximum catchment area of 3.675 km^2 during the design life of D-CP1); ▪ 38,800 m^3 for the treated sewage from late October to early June (8 months); and ▪ 69,600 m^3 for the treated water pumped from the SWTP to CP1 from late October to early June (8 months).
Before each spring freshet	64.1	This level is required to provide sufficient storage for: ▪ 661,500 m^3 for the runoff water from an IDF event for the entire site.
During non-IDF spring freshet or short-term after each spring freshet.	66.2	This water elevation is to allow CP1 to have a storage capacity of 119,000 m^3 to store the runoff water from a 1/1,000 24-hour extreme rainfall event (77 mm precipitation) for the CP1 maximum catchment area of 1.545 km^2, without exceeding the design D-CP1 maximum water elevation of 66.6 m (under the IDF).
Short-term water elevation under the IDF:	66.6	This is the design maximum water elevation for D-CP1 for a short period. The water elevation should be drawn down by pumping from CP1 to the EWTP and then discharging the treated water to Meliadine Lake.

As of October 29, 2019, the water level in CP1 was 65.84 m. This level is higher than both the specified levels for the end of October, and before the following spring freshet. The current available capacity in CP1 between the October 29, 2019 level and the design maximum water level of 66.6 m is 229,000 m^3. This is not sufficient to store the Inflow Design Flood (IDF) spring freshet from the CP1 catchment plus the design inflows from other areas of site. It is understood that AEM is developing a plan to deal with the excess water.

3.2.5 Summary and Recommendations

Currently CP1, Dike D-CP1, and Jetty1 are performing well. The following recommendations are provided:

- A water management strategy must be developed to deal with the current high water levels in CP1.
- The higher water levels may have an impact on the ground temperatures in the dike. It is understood that snow clearing on the downstream crest will be done to mitigate the impact of the high-water levels. Temperatures should be monitored to determine the impact of the high-water level on them.
- The D-CP1 sump and downstream collection channel should be emptied in the fall/early winter to refreeze the ground around these facilities. During the open water season, keeping the water level in the downstream channel and sump low will also reduce the potential for thaw of the ground and associated settlement.
- The open cracks and depressions observed in the dike crests should continue to be monitored.

3.3 Pond CP3, Associated Channels, and Berms

3.3.1 Background

Collection Pond CP3 and its associated infrastructure; Berm CP3, Channel 3, and Berm 2, collects and temporarily stores runoff water from the dry stack TSF. CP3 was created by excavating a large depression approximately 11 m deep in overburden and bedrock. Berm CP3 downstream of Pond CP3, provides thermal protection to maintain the underlying permafrost downstream of CP3. Channel 3 collects and diverts the runoff water from the TSF catchment areas. Berm 2 is to prevent non-contact water from flowing through the TSF into the Collection Pond CP3.

The design of the collection pond, channels, and berms is based on the following criteria and key considerations:

- CP3 was designed to store 3/7 of 1 in 100 wet precipitation year freshet (assume that freshet occurs in seven days and pumping from the facility begins three days after freshet begins).
- The maximum operating water elevation in CP3 under IDF is set at Elevation 63.0 m which is 2.0 m lower than the original outlet elevation of the collection pond area.
- The downstream berm, Berm CP3, is designed to preserve permafrost in the original ground below the center of the berms, which will minimize the potential seepage through its foundation into the downstream receiving environment (i.e., Lake B7).
- The water collected in CP3 will be actively pumped to former Lake H13, which flows into CP1 during the open water season. The intent is that CP3 will be nearly empty most of the time, except for several early days during the annual spring freshet for preparing the pump system or during an extreme rainfall event.
- Channel 3 was designed to pass the design inflow during an extreme intensity flow. A berm incorporated into the CP3 access road was along Channel 3 to provide sufficient freeboard and to prevent the water overflowing the channels under the design IDF or other unexpected extreme conditions.

CP3 and its infrastructure was constructed from August 2018 to January 2019. The as-built drawings for CP3 are included in Appendix C.

3.3.2 Visual Observations

The inspection involved walking along the crests of CP3, Berm 2, Channel 3, and Berm CP3 to examine the structures for visual signs of deformation and instability, cracking, and uneven surfaces.

At the time of inspection CP3 was filled with water to Elevation 58.0 m. The slopes of the pond are a combination of overburden and bedrock. The overburden is covered with a layer of waste rock. The bedrock slopes are blocky with some fractured rock. No obvious signs of instability were observed in the bedrock or overburden slopes. Portions of the slope were covered with sediment eroded from an area of disturbed ground east of CP3.

Berm CP3 was constructed of overburden till and rockfill obtained from the excavation of CP3. The till was partially frozen when it was placed in the berm. The till was covered with a layer of rockfill also obtained from the excavation. The slopes of the thermal berm were in good condition at the time of the inspection. The crest of the berm had cracks throughout the surface as shown in Photo 12, Appendix C. The cracks are either thermal cracks or due to settlement of the till in the berm. The cracks do not impact the berms function which is to insulate the original ground.

3.3.3 Instrumentation and Monitoring

Three GTCs (GTC-01, GTC-02, and GTC-03 Berm CP3) were installed in Berm CP3 to measure the active layer depth in the berm and subgrade ground temperatures. The ground temperatures are shown in Appendix C. The maximum active layer depth in 2019 varied from 1.8 m to 2.1 m. The ground temperature at Elevation 63.0 m ranged from -4.6°C to -5.1°C on October 31, 2019.

3.3.4 Water Management

The water levels in Collection Pond CP3 between mid-May and early-November 2019 varied between Elevations 55.1 m and 60.8 m. The level on November 6, 2019 was 59.8 m. The water level was 58.0 m at the time of the inspection resulting in a 3 m to 4 m water depth in CP3.

Water was pumped out sporadically throughout the open water season. It is understood that pumps are shared between Collection Ponds CP3 and CP4.

As of November 6, 2019, the remaining capacity (to the maximum operating level of 63.0 m) was 22,700 m^3. The inflow for the pond was based on 3/7 of the 1:100 freshet (171 mm) over the catchment area of 0.383 km^2 which equates to 28,000 m^3 of water. The current remaining capacity is less than this amount.

3.3.5 Summary and Recommendations

Collection Pond CP3 and its associated infrastructure is performing adequately. It is recommended that an OMS Manual be developed for the collection pond.

A water management strategy should be developed to deal with potential pond levels next spring. Pumps should be in place early to deal with freshet as it begins.

It should also be verified that there is enough pumping capacity to deal with the IDF during spring freshet.

3.4 Collection Pond CP4, Associated Channels, and Berms

3.4.1 Background

Collection Pond CP4, and its associated infrastructure; Berm CP4, and Channel 4, collects and temporarily stores runoff water from the waste rock storage area (WRSF1). CP4 was created by excavating a large depression approximately 15 m deep in overburden and bedrock. Berm CP4 downstream of Collection Pond CP4, provides thermal protection to maintain the underlying permafrost downstream of CP4. Channel 4 collects and diverts the runoff water from the proposed WRSF1 catchment area.

The design of the collection pond, channels, and berm is based on the following criteria and key considerations:

- CP4 was designed to store 3/7 of 1 in 100 wet precipitation year freshet (assumes that freshet occurs in seven days and pumping from the pond occurs after day three). The excess freshet water will be pumped out to partially drained Lake H13 during freshet period.
- The maximum operating water elevation in Collection Pond CP4 under IDF is set at Elevation 63.0 m which is 2.0 m lower than the original outlet elevation of the collection pond area.

- The downstream berm, Berm CP4, is designed to preserve permafrost in the original ground below the center of the berms, which will minimize the potential seepage through its foundation into the downstream receiving environment (i.e., Lake B7).
- The water collected in CP4 will be actively pumped to former Lake H13, which flows into CP1 during the open water season. The intent is that Collection Pond CP4 will be nearly empty most of the time, except for several early days during the annual spring freshet for preparing the pump system or during an extreme rainfall event.

CP4 and its associated infrastructure was constructed from October 2018 to May 2019. The as-built drawings for CP4 are included in Appendix D.

3.4.2 Visual Observations

The inspection involved walking along the crests of CP4, Channel 4, and the CP4 Berm to examine the structures for visual signs of deformation and instability, cracking, and uneven surfaces. Photographs of CP4 and the associated infrastructure are in Appendix D.

At the time of inspection CP4 was filled with water to Elevation 55.9 m. The slopes of the pond are a combination of overburden and bedrock. The overburden is covered with a layer of rockfill obtained from the pond excavation. No obvious signs of instability were observed in the bedrock or overburden slopes. Thaw settlement has occurred in the native ground above the overburden slope protection rockfill as shown in Photo 9, Appendix D. The settlement is up to 0.6 m deep. Thaw settlement has also occurred between the CP4 Berm and the overburden protection rockfill as shown in Photos 7, 8, and 10, Appendix D.

Berm CP4 was constructed of overburden till obtained from the excavation of CP4. The till was a combination of frozen and unfrozen material when it was placed in the berm. The till was covered with a layer of rockfill also obtained from the excavation. The slopes of the berm were in good condition. The crest of the berm had minor cracks throughout the surface up to 2 cm wide. The cracks are either thermal cracks or due to settlement of the till in the berm. The cracks do not impact the berms function which is to insulate the original ground.

3.4.3 Instrumentation and Monitoring

Two GTCs (GTC-01, GTC-02 Berm CP4) were installed in Berm CP4 to measure the active layer depth in the berm and subgrade ground temperatures. The GTCs are shown in Appendix D. The maximum active layer depth in 2019 was approximately 1.5 m. The ground temperature at Elevation 63.0 m ranged from -6.9°C to 7.7°C on October 2, 2019.

3.4.4 Water Management

Water levels in Pond CP4 between mid May and early November 2019 varied between Elevation 52.9 m and 59.0 m. The level on November 6, 2019 was 58.4 m. The water level was 55.9 m at the time of the inspection resulting in a 3 m to 4 m depth of water in the pond.

Water was pumped out sporadically throughout the open water season. It is understood that pumps are being shared between Collection Ponds CP3 and CP4.

As of November 6, 2019, the remaining capacity (to the maximum operating level of 63.0 m) was 28,656 m^3. The inflow for the pond was based on 3/7 of the 1:100 freshet (171 mm) over the catchment area of 0.441 km^2 which equates to 32,300 m^3 of water. The current remaining capacity is less than this amount.

3.4.5 Summary and Recommendations

Collection Pond CP4 and its associated infrastructure is performing adequately. Significant thaw settlement has occurred in the original ground above the pond rockfill slope protection, but the slopes appear to be stable. It is anticipated that less settlement will occur in future years. The settlement and the impact on the pond should be monitored in future years to determine if any remedial action is required.

It is recommended that an OMS Manual be developed for the pond and associated infrastructure.

A water management strategy should be developed to deal with potential pond levels next spring. Pumps should be in place early to deal with freshet as it begins. It should also be verified that there is sufficient pumping capacity to deal with the IDF during spring freshet.

3.5 Pond CP5 and Dike D-CP5

3.5.1 Background

Dike D-CP5 was constructed across the south portion of former Lake A54, to form CP5 between October 2016 and July 2017. The intent of D-CP5 is to create a contact water collection pond in the north portion of former Lake A54.

D-CP5 is approximately 300 m long with a maximum height of 3.3 m (Tetra Tech 2017f) and is located southeast of the P-Area, as shown in Figure 1. The CDA (2013) dam consequence classification for D-CP5 is Significant (Tetra Tech 2016b). A small collection sump is in a natural depression downstream of D-CP5 to collect surface run-off and any possible seepage through the dike for pump back to CP5. CP5 will be used seasonally for temporary water storage with active pumping to CP1 to transfer the water out of CP5.

3.5.2 Visual Observations

The inspection involved walking along the crests and toes of the dike and examining the condition of the slopes of the dike for visual signs of deformation and instability, cracking, and uneven surfaces. Water in CP5 at the time of the site visit precluded not observing upstream toes of the dike. A photographic record of the inspection, with annotations added where appropriate, is included in Appendix E.

At the time of the inspection of D-CP5, the following general observations were made:

- Overall, the dike appeared stable, with no significant geotechnical concerns identified.
- Minor cracking was observed in a few locations on the upstream and downstream sides of the dike crest (e.g., Photo 4 Appendix E). The cracking appeared to be like that observed in June 2019 and described in previous inspection reports (Golder 2018).
- There were no signs of seepage from the downstream toe.
- There was a small pond of water in a low area downstream of the dike near Station 1+170 with a pump in place but no active pumping at the time of the inspection. This water was likely due to surface runoff collecting in naturally low topography as D-CP5 was constructed across the southern portion of Lake A54.

Jetty 5 is the causeway for the pump back station for CP5. Jetty 5 appeared stable with no significant geotechnical concerns.

AEM's engineering team conducted visual geotechnical inspections of the dike throughout 2018 and 2019. The inspection reports included an assessment of ground temperatures, observations of cracking and settlement, pond elevation, pumping activities, and included photographs. The observations made by AEM staff were consistent with the observations during the 2019 annual inspection. Cracks and locations of settlement were marked with spray paint in the field to monitor changes.

3.5.3 Instrumentation and Monitoring

Horizontal and vertical GTCs were installed in D-CP5 between March and July 2017. Plots of the thermistor data are provided in Appendix E. Two horizontal GTCs (HGTC-1 and HGTC-2) installed in D-CP1 above the liner parallel to the key trench and three vertical GTCs (VGTC-1 to 3) installed upstream and downstream of the key trench.

The key trench temperatures are warmest in the late fall (October and November) and coldest in late spring (May June). The average key trench temperatures are summarized Table 3-3.

Table 3-3: Summary of D-CP5 Ground Temperatures

Cable	Average June 5, 2018 (°C)	Average June 4, 2019 (°C)	Difference (C°)	Average Nov 3, 2018 (°C)	Average Oct 31, 2019 (°C)	Difference (C°)
HGTC-1	-7.9	-7.8	0.1	-2.5	-2.2	0.3
HGTC-2	-7.5	-8.0	-0.5	-2.7	-2.9	-0.2
VGTC-01	-3.9	-4.3	-0.4	-3.1	-3.6	-0.5
VGTC-02	-4.1	-4.6	-0.5	-3.3	-3.8	-0.5
VGTC-03	-3.0	-3.3	-0.3	-3.0	-3.3	-0.3

The following observations were made regarding instrumentation readings collected from D-CP5:

- The horizontal GTCs indicate a slight warming trend in the base of the key trench from 2018 to 2019. The fall temperatures of HGTC-1 warmed by approximately 0.3 C°. The temperatures are below 2°C throughout the year.
- The vertical GTCs indicate the maximum depth of 0°C temperature ranged from approximately 2.0 m to 3.7 m in the summer and early fall of 2019. The temperatures were similar to 2018 temperatures.

Three settlement survey monuments were installed over the liner crest in the dike; however, all of the points were damaged at the time of the inspection. It is understood they were replaced in October 2019.

CP5 survey monitoring point M-2 indicate a range of total vertical downward displacement of approximately 29 mm since installation. There is “noise” in the readings as the readings fluctuate slightly. The dike operating water levels were based on a settlement of 100 mm; the measured settlement has been less than this to date.

3.5.4 Water Management

CP5 receives inputs from the surrounding area. Water from CP-5 is pumped to CP1 throughout the open water season. The design operating levels are specified in the OMS manual (Agnico 2018) as listed in Table 3-4.

Table 3-4: Design Water Elevations for D-CP5 Operation

Situation	Maximum Operating Level (m)	Requirement
Before and after each spring freshet	65.14	This water elevation was determined to allow CP5 to have a sufficient storage capacity to store the estimated maximum volume of 49,500 m^3 of the runoff water from an IDF event for a total maximum CP5 catchment area of 0.643 km^2 during the design life of D-CP5, which includes the catchment areas of the P1/P2/P3 and Portal No. 1 areas.
During mean spring freshet (assumed to store 3 of 7 days of spring freshet)	66.0	This water elevation was determined to store 3/7 of the runoff water from a mean spring freshet for the total maximum CP5 catchment area of 0.643 km^2.
Under the IDF	66.3	This is the design maximum water elevation for D-CP5 for a short period. The water elevation should be drawn down to 64.8 m by pumping water to CP1 after each spring freshet or rainfall event; and This water elevation is also constrained by the risk of flooding Portal No. 1, the nearby ventilation shaft, and the saline water storage pond.

At the time of the site inspection on August 21, 2019 the water level was at Elevation 65.56 m. As of October 29, 2019, the water level in CP5 was 65.45 m. These levels are 0.31 m higher than the specified levels to retain the IDF before and after freshet thus the current available capacity in CP5 is not sufficient to store the IDF.

3.5.5 Summary and Recommendations

The following recommendations are provided regarding D-CP5:

- The current OMS Manual is dated September 2018; it should be updated on an annual basis.
- The GTCs and survey monitoring points should continue to be monitored following the schedule and procedures developed in the OMS Manual.

4.0 SALINE PONDS

4.1 Saline Pond 1

SP1 which is located north of CP-5 was constructed during the third quarter of 2016 to manage underground saline water.

The saline pond was constructed by excavation within permafrost overburden and bedrock. A small berm approximately 1 m to 2 m high was constructed around the excavation with a till core and rockfill cover to promote permafrost development in the original ground below the berm and keep surface water from the surrounding area from draining into the pond. The pond is designed to maintain the maximum pond elevation under the IDF (1-in-100-year precipitation event) below original ground and below the level of CP5 to minimize the potential for seepage out of the saline pond.

The inspection involved walking along the crest of the saline pond perimeter berm, examining the condition of the berm for visual signs of deformation and instability, cracking, uneven surfaces, and seepage. A selection of photographs from the inspection are included in Appendix F.

At the time of the inspection of the saline pond, the following general observations were made:

- Overall, the pond and perimeter berm appeared stable, with no significant geotechnical concerns identified.
- There was no observed seepage from the adjacent Ponds CP5 or DP3-A.
- There was water in the pond at the time of the site visit that was below the top of the bedrock excavation (Photo SP-1, Appendix F).
- Cracking and settlement were observed in the perimeter berm in several locations on the upstream and downstream crest (Photos SP1-5 and SP1-6, Appendix F). The cracks were up to 0.2 m to 0.25 m wide and 0.2 m to 0.25 m deep. Most of the cracking was on the south and west portions of the berm. Cracking was also observed in previous years (2017 and 2018).
- No seepage into the saline pond was observed during the inspection.

The following recommendations are provided regarding the saline pond:

- The pond appears to be performing well. The settlement and cracking in the berm should continue to be monitored.

4.2 Saline Pond 2

SP2 is located south of D-CP-5 and was constructed during the winter of 2018 to 2019. It is in the footprint of the future Tiriganiaq Pit 2. It was constructed to manage underground saline water.

Like SP1, it was constructed by excavation within permafrost overburden and bedrock with a safety berm surrounding it. The pond is designed to maintain the maximum pond elevation under the IDF (1-in-100-year precipitation event) below original ground and below the level of CP5 to minimize the potential for seepage out of the saline pond.

The inspection involved walking along the crest of the saline pond perimeter berm, examining the condition of the berm for visual signs of deformation and instability, cracking, uneven surfaces, and seepage. A selection of photographs from the inspection are included in Appendix F.

At the time of the inspection of the saline pond, the following general observations were made:

- Overall, the pond and perimeter berm appeared stable.
- There was no observed seepage into the pond.
- There was water in the pond at the time of the site visit that was below the top of the bedrock excavation (Photo SP2-1, Appendix F).
- Cracking and settlement were observed in the overburden between the berm and the crest of the overburden slope. (Photos 7 and 10, Appendix F). The cracks were up to 0.01 m to 0.05 m wide and up to 0.3 m deep. It is speculated that it was caused by thaw subsidence following ground disturbance during construction.

- Localized subsidence as observed at the top of the access ramp to the pond. The localized subsidence was up to 0.6 m deep. It is understood this area was filled earlier in the summer. The ramp was blocked off with temporary barriers to prevent vehicle traffic in the area.

The following recommendations are provided regarding the saline pond:

- Overall the pond appears to be performing adequately.
- Monitoring of the settlement and cracking in the overburden above the pond should continue.
- The subsidence area on the access ramp should continue to be filled. Vehicle traffic into the area should continue to be restricted.

The observed cracking and settlement are not affecting the pond; however, it is a safety issue for entering the pond area. The area near the entrance should continue to be backfilled if the settlement continues. Light vehicle access to the area should continue to be restricted.

4.3 Saline Pond 3

SP3 was constructed during the 2018/2019 winter in the south portion of the P3 area. It is a HPDE Lined pond with a storage capacity of 5000 m^3. It was constructed for the temporary storage of saline water from the underground.

The pond is surrounded by perimeter berms constructed with mine rockfill. A layer of bedding material was placed over the native ground and rockfill berms. A geomembrane liner was placed over the base on the perimeter berms.

The inspection involved walking along the crest of the saline pond perimeter berm, examining the condition of the berm for visual signs of deformation and instability, cracking, uneven surfaces, and seepage. A selection of photographs from the inspection are included in Appendix F.

At the time of the inspection of the saline pond, the following general observations were made:

- The perimeter berms were in excellent condition with no significant signs of cracking or settlement.
- The HPDE liner was in good condition. There was a thin layer of water covering the base of the pond at the time of the inspection.

The following recommendations are provided regarding the saline pond:

- Overall the pond appears to be performing adequately.
- The pond should continue to be monitored for signs of settlement etc. as it was constructed on the native ground. Some thermal degradation and subsequent settlement may occur if the pond is used to store water over the winter months.

5.0 TEMPORARY P-AREA DIKES AND COLLECTION PONDS

5.1 Background

As an interim measure to manage an emergency, temporary water collection ponds were constructed to collect and manage surface runoff water near underground Portal No. 1 and the waste rock storage area in 2016 (AEM 2016a). The concern related to the potential that surface runoff water from the ore and waste rock stockpiles could contain

elevated chloride and ammonia concentrations, above the permitted discharge criteria standards per the Metal and Diamond Mining Effluent Regulations (MDMER) under the Fisheries Act and/or Canadian Council of Ministers of the Environment guidelines for the protection of aquatic life. The P-Area temporary dikes and collection ponds were intended to be an interim measure during development of the site to manage runoff water until the permanent water management dikes and collection ponds were constructed and operating to design and the saline water treatment plant (SWTP) is operational. As the project advances, the P-Area will become covered by waste rock and soil as WRSF2 is developed.

Four temporary containment dikes (referred to as DP1-A, DP1-B, DP2-A, and DP3-A) were constructed between March 25, 2016 and May 10, 2016 to create three temporary ponds (P1, P2, and P3). The collection ponds are referred to collectively as the P-Area. The dikes do not completely enclose the ponds. Portions of the pond boundaries are associated with natural areas of higher ground, the ore and waste stockpile area, and/or existing roads. These roads were not built as water containment structures. Similarly, the stockpiles of ore and waste are granular in nature and do not function as water containment structures on a year-round basis.

The P-Area receives direct precipitation, runoff from the site roads immediately surrounding the area and runoff and pore water from the ore and waste rock stockpiles near Portal No. 1. Water from underground was also pumped to the P-Area, typically via SP1. Pipelines and associated pumping systems exist to allow water to be transferred from P2 and P3 to P1. Five evaporator units are installed within P1.

The dikes are less than 2.5 m in height (to the top of the water retaining element), and therefore do not meet the definition of a dam (CDA 2013). AEM has been managing water within the ponds on a regular basis and visually monitoring the containment structures associated with the P-Area.

The central zone of each of the four P-Area containment dikes was constructed of crushed (30 mm minus) material. Transition material (200 mm minus) was placed on the upstream and downstream sides of the core, with additional coarser grained rockfill placed further upstream and downstream and above the core. The upstream and downstream slopes are approximately 2 horizontal to 1 vertical. The maximum height of the core of any of the dikes is approximately 2.5 m, and the maximum height of the entire dike (core and thermal cover) is 4 m.

Temporary single bead thermistor cables were installed at selected locations at the crest of the frozen core to monitor the initial thermal conditions at these locations. These instruments functioned for a few months after installation. Six new vertical thermistors were installed in 2017. Their locations are shown in Appendix G.

Appendix G contains a summary of photographs of the temporary dikes and collection ponds from the 2019 inspection.

There are no spillways in the dikes. Water levels within each pond are controlled through pumping and the use of the evaporators installed within P1. P1 was subdivided into two areas by an internal berm constructed after the completion of P1. Details regarding the internal divider berm are not included within the P-Area construction record report, nor is its location shown on the drawings.

A lined pond was constructed in the northwest corner of P1 in May 2017 to contain contaminated snow from a fuel spill at the exploration camp fuel farm. The snow melt water was treated with an oil water separator in September 2017 and the clean water pumped to CP1. The snow and rain that collects in the snow melt pond has continued to be treated. The snow melt pond will be decommissioned.

Table 5-1: Summary of P-Area Dike Information

Dike Structure	Minimum Elevation of Core	Minimum Saturated Elevation of Core[(a)]	Minimum Dike Rockfill Crest Elevation	Maximum Pond Operating Elevation[(b)]
DP1-A	68.9 m	67.9 m	70.3 m	68.5 m
DP1-B	68.9 m	none	70.5 m	68.5 m
DP2-A	67.9 m	none	69.5 m	67.25 m
DP3-A	67.4 m	65.7 m	69.0 m	66.35 m

(a) At the time of construction.

(b) Water level associated with a 24-hour duration extreme rainfall event with a return period of 1:100 years, which would bring the elevation to within 300 mm of the top of the core. (File: 20160530 P1_P2_P3 Water Balance for 2016.xlsm, P1-Area Water Balance, Tetra Tech 2016c).

Stn = Station (distance) along centreline of each dike from the starting reference point.

5.2 Visual Observations

The inspection involved walking along the crest of the dikes (DP1-A, DP1-B, DP2-A, and DP3-A), examining the condition of the upstream and downstream slopes of the dikes for visual signs of deformation and instability, cracking, and uneven surfaces. Due to ponded water and saturated conditions it was not possible to walk along the downstream toes of DP1-B and DP3-A. A photographic record of the inspection, with annotations added, where appropriate, is included in Appendix G.

At the time of the inspection, the following general observations were made:

- The evaporators were not running at the time of the inspection.
- Water was ponded in the north portion of P1 between DP1-B and the divider berm. The water elevation was approximately 68.3 m.
- There was ponded water south of the divider berm with a water level approximately 0.7 m below the water upstream of the divider berm; however, the southern portion of P1 against DP1-A was mostly dry with numerous small ponds.
- The dikes do not completely enclose P1 and P2. The ore and waste stockpile area and existing roads form a portion of the pond boundaries. Neither the stockpiles nor the roads function as water containment structures, on a year-round basis.
- Seepage was observed from P1 towards the ore and waste stockpile area, with shallow ponds in the ore and waste stockpile area.
- The P1 divider berm has been constructed of till with some rockfill on the downstream slope, as shown in Photos 5 and 6, Appendix G. Seepage was observed going through the divider berm and water was very near the crest. Water was flowing around a breach around the west end of the divider berm.
- There is a small breach in the divider berm near the waste rock storage area. Water was flowing into the waste rock storage area.
- The rockfill used as thermal cover above the core and on the upstream and downstream slopes of the dikes was of variable grain size.

- Circular cracks with settlement (vertical displacement or slump) and small circular voids were observed during the 2016 inspection along the upstream slope of DP2-A, near Stn 0+40. The slump was present during the 2019 inspection (Photo 13, Appendix G). There were also some cracks on the crest of the dike (Photo 11, Appendix G). The observed settlement and cracking may have been associated with 1) thawing of the foundation soils, in particular, if the soils were ice-rich, and/or 2) melting of snow or ice that may have been entrapped within the transition and rockfill material at the time of construction.
- There are some pipes through the base of Dike DP2-A that channel the flow of water towards the south and east. These pipes appear to limit the storage capacity of P2 to a level lower than its maximum operating level.
- Water levels within each pond are measured daily during the open water season. The measurements indicate that the pond levels were generally maintained below the maximum design water elevation.

5.3 Instrumentation and Monitoring

Six vertical GTCs were installed in the P-Area dikes on September 30, 2017 and November 2, 2017. Two were installed in DP1-B, one in DP2-A, and three in DP3-A. The GTCs were read by AEM staff after installation and throughout 2018 and 2019. The ground temperature readings are presented in Appendix G.

Initially after installation of the instruments, the data indicated that the dikes, and the foundation materials directly below them, were at or below 0°C by late October to early November 2017. All instrument nodes remained at or below 0°C throughout the winter until early June 2018 when temperatures rose above 0°C.

The maximum depth of the 0°C isotherm is summarized in Table 5-2. The active layer is below the top of the dike core in all locations. The maximum active layer depth in DP3-A was 4.4 m or greater in two of the cables in 2018. This is relatively deep and may be due to seepage through the dike towards CP-5. The temperatures at these locations were cooler in August 2019, than August 2018.

The performance of the dikes, as frozen core structures, is more important during the freshet, when water levels tend to rise within the ponds. In the fall, when temperatures within the core tend to be the warmest or thawed, seepage may occur through the dikes, depending on the water levels in the ponds.

Table 5-2: Summary of P-Area Dike Instrumentation

Dike Structure	Instrument Name	Instrument Location	Minimum Elevation of Dike Core (m)	Maximum Depth of 0°C Fall 2018 (m)	Minimum Elevation 0°C Fall 2018 (m)	Maximum Depth 0°C Aug 1, 2019 (m)	Minimum Elevation 0°C Aug 1, 2019 (m)
DP1-B	DP1B-1	Station 0+150	68.9	2.6	68.2	2.3	68.5
	DP1B-2	Station 0+220		2.6	68.3	2.3	68.6
DP2-A	DP2A-1	Station 0+090	67.9	3.6	66.1	2.2	67.5
DP3-A	DP3A-1	Station 0+050	67.4	4.4	64.7	2.4	66.7
	DP3A-2	Station 0+150		> 4.5	<64.7	2.5	66.5
	DP3A-3	Station 0+250		2.5	66.5	2.2	66.9

AEM staff performed the following monitoring activities:

- Recorded daily volumes of water pumped from underground to the P-Area.
- Recorded daily volumes of water transferred between the ponds.
- Measured and recorded water elevations within each pond during the open water season on a graph with the maximum allowable pond elevation.

5.4 Summary and Recommendations

It is understood that the P-Area dikes will be decommissioned in the near future. In the interim, the following recommendations are provided regarding the temporary dikes and ponds:

- Cracks with settlement (vertical displacement or slump) and small circular voids evident along the dikes should continue to be monitored.
- The divider berm in P1 should not be relied upon in its current condition. If a breach does occur, it will flow towards the southern side of P1 towards DP1-A. Seepage through DP1-A may occur which will flow into P2. Water may flow out of P2 through the pipe sleeves to the south and east.
- The thermistor data available indicates that the dikes are not fully functioning as frozen core dams through the summer and early fall. DP3-A was fully thawed and the data for the other P-Area dikes indicates only the lower 0.5 m to 1 m of the dikes remained below 0°C through the summer and early fall.
- Given the condition of the P Area it should not be considered a fully contained area. Water seeps towards the adjacent waste rock and ore storage area and may seep towards CP5.
- If the P-Area ponds and associated dikes continue to be used by AEM, it is recommended that they are included in an OMS manual.
- AEM personnel should continue to conduct geotechnical inspections and document visual observations such as, cracking, slumping, and/or seepage. Thermistor data should continue to be collected, plotted, and reviewed, and pond water levels should continue to be measured and tracked. Inspection reports should continue to be prepared for documentation. It is recommended that the frequency of visual geotechnical inspections be weekly during freshet and monthly during the open water period.
- Continue to collect and pump back seepage water, as deemed necessary, in areas where seepage could impact downstream areas.

6.0 DIVERSION CHANNELS AND BERMS

6.1.1 Background

Diversion Channel 1, 2, 3, 4, and 5, and associated Berms 2 and 3 were inspected. The channels were constructed by excavating a trench, placing woven geotextile to line the excavation, and then placement of riprap (coarser rocks) over the fabric to line the channels. The berms were constructed by using a combination of esker material and till.

Channel 1 is designed to move water from former Pond H13 to CP1 and extends from Culvert 2 to Pond H9 along the north and east sides of Portal No. 2. Channel 1 is approximately 493 m long with a base width of approximately 3 m.

Channel 2 is located along the northern end of the main mine site industrial pad and is approximately 270 m long with a base width of 1 m. During construction and operation, contact water from the area will flow into Channel 2, which in turn eventually flows into CP1.

Channel 3 directs seepage and run-off water from the TSF into Pond CP3. Channel 3 is located along the southwestern boundary of the TSF. Channel 3 is approximately 620 m long with a designed base width of 1 m to 2 m.

Channel 4 directs seepage and run-off water from the future WRSF1 in Pond CP4. It is located along the northwestern boundary of WRSF1. Channel 4 has a designed base width of 1 m to 2 m. Channel 4 Berm was constructed downstream of Channel 4 to raise the active layer downstream of the channel.

Channel 5 and Berm 3 are located west of CP5 and are designed to divert water from the Pond A12 catchment area into CP5 so that this water does not flow into the future Tiriganiaq Pit 1. Channel 5 is the main water diversion structure; Berm 3 is only required to temporarily retain water under an extreme rainfall event when the water level in CP5 is temporarily high (Tetra Tech 2016d). Channel 5 is approximately 429 m long with a base width of approximately 3 m. Berm 3 is approximately 315 m long with a maximum height of about 2.8 m. Berm 3 consists of a till core, a foundation key trench backfilled with till, and a cover layer constructed out of 600 mm minus esker material.

Channel 7 was constructed in the summer of 2019 to direct water around Portal No. 2. It directs the water into Channel 1.

Berm 2 was constructed in the fall of 2018 to reduce the amount of non-contact water entering the TSF and Collection Pond CP3 catchment areas. Berm 2 was predominately constructed of 50 mm minus screened esker material with a till zone of approximately 2 m wide.

6.1.2 Visual Observations

Channel 1

The inspection of Channel 1 involved walking along the channel from Culvert 2, around the crusher ramp, towards Pond H9. A selection of photographs from the inspection are included in Appendix H. The channel was relatively dry around the crusher ramp but had standing water in it from Culvert 16 to Pond H9. The water level in the eastern portion of the channel is controlled by the water level in Pond H9.

Cracking and settlement was observed along the edges of the channel. This was also reported in 2018.

Channel 2

Channel 2 was inspected by walking from the channel outlet culvert, towards the top of the channel behind the accommodations complex. A selection of photographs from the inspection are included in Appendix H. As noted in 2018, the slope of the channel base is not consistent and some pooling of water and deposition of sediment in lower areas. No geotechnical concerns associated with Channel 2 were identified.

Channel 3

Channel 3 was constructed to divert runoff from the catchment area from TSF towards Collection Pond CP3. The side slopes range from 3.5H:1.0V to 1.8H:1.0V with the base of the channel varying from 0.8 m to 3.3 m. Channel 3 is shown in Photos CH7 to CH12, Appendix H. No water was flowing in the channel at the time of the inspection; however, there were areas of shallow ponded water due to an uneven base of the channel. It is speculated that the

subgrade has thawed and settled over the summer resulting in low areas within the channel. There are some minor subsidence areas where the channel ties into the native subgrade. The road adjacent to the channel has some cracking and slumping on the side slopes adjacent to the channel. There was also settlement and slumping on the east side of the channel in the native ground. Both the settlement on the road slope and in the native ground is attributed to the thawing of permafrost due to ground disturbance.

Channel 4

Channel 4 was constructed to divert runoff from the catchment area from the proposed waste rock storage area WRSF1 to Pond CP4. The as-built side slopes range from 3.5H:1.0V to 1.8H:1.0V with the base of the channel varying from 0.8 m to 3.3 m wide. Channel 4 is shown in Photos 13 to 23, Appendix H. No water was flowing in the channel at the time of the inspection; however, there were areas of shallow ponded water due to an uneven base of the channel. It is speculated that the subgrade had thawed and settled over the summer resulting in low areas within the channel. There are some settlement subsidence areas where the channel ties into the native subgrade, east of the channel.

Channel 5

Channel 5 was inspected by walking along its length. A selection of photographs is included in Appendix H. Overall Channel 5 appeared stable, with no significant geotechnical concerns identified along most of the channel. There was some deep cracking and subsidence observed adjacent to former Pond A13 (Photos 26 and 27, Appendix H). Water was ponded within the entire channel.

Channel 7

Channel 7 was inspected by walking along its length. A selection of photographs is included in Appendix H. It is newly constructed with no significant geotechnical concerns identified along the channel.

Berm 2

Berm 2 was constructed to reduce the amount of non-contact water entering the TSF and Collection Pond CP3 catchment areas. Berm 2 was predominately constructed of 50 mm minus screened esker material with a till zone approximately 2 m wide. At the time of the inspection Berm 2 was retaining water in a low area along the berm. The water was up to approximately 0.5 m deep as shown in Photo CH32. Surface erosion was observed along the lower slope of the berm indicating that the water may have been 0.6 m higher sometime prior to the inspection as shown in Photo CH31, Appendix H. There was minimal water on the downslope side of the berm indicating that the berm is functioning as intended. Minor cracking was observed along the toe of the berm, and on the slope where water impounded against as shown in Photos CH29, CH30, and CH33, Appendix H. There was also minor cracking on the crest of the berm.

Berm 3

Berm 3 was inspected by walking along the crest and slopes and examining the condition of the berm for visual signs of deformation and instability, cracking, or uneven surfaces. A selection of photographs from the inspection are included in Appendix H (Photos 34 to 36). Overall, Berm 3 appeared stable with no significant geotechnical concerns identified. Water was ponding near the upstream toe of Berm 3 along the western portion of the berm. Water was ponded over the tundra in some areas downstream of the berm, but there was no seepage observed from the berm.

6.1.3 Summary and Recommendations

The following recommendations are provided regarding the diversion channels and berms:

- Monitor the slumping and cracking adjacent to Channel 5 to determine if sediment from the area is blocking the channel.
- Monitor the cracking and subsidence in the native ground above Channels 3 and 4 to determine if they impact the channels' performance.
- Berms 2 and 3 cover materials are susceptible to erosion and some minor erosion was observed during the inspection. Erosion of the slopes should be monitored, and consideration should be given to placing coarser material on Berm 3 to reduce the potential for erosion if it becomes substantial.

7.0 TAILINGS STORAGE FACILITY

7.1.1 Background

A dry stack TSF is being used at the mine. Water is pressed out of the tailings in the process plant. The tailings are temporarily stored in the Tailings Dewatering Building next to the process plant known as the "Church"; where they are loaded in trucks and hauled to the TSF.

The tailings are dumped in the TSF, spread in 0.3 m lifts, and compacted.

The tailings are surrounded by a rockfill berm that will eventually cover the tailings. Presently Cell 1 of the facility is in use, as per the tailings deposition plan.

7.1.2 Visual Observations

In general, the tailings appear to be well compacted. Trucks can easily traffic on the compacted tailings as shown in Appendix I.

At the time of the inspection the northwest corner of the facility was relatively soft and wet. This was due to tailings being placed in a wet area of the original ground. The tailings also grade slightly to the north, which may be compounding the moisture problems.

7.1.3 Instrumentation and Monitoring

AEM's geotechnical engineer prepares weekly inspection reports and monthly analytical reports describing the tailings placement and design verification updates. The tailings have an optimum moisture content of 15.5% and are typically placed at a moisture content ranging from 8% to 21%. The salinity of the tailings has ranged from 10 parts per thousand (ppt) to 30 ppt, with an average of 21 ppt. This is somewhat higher than the salinity assumed during design of 15 ppt. The salinity in recent months has been closer to the assumed salinities than earlier in the facility life. Additional testing includes: ARD/ML sampling and testing; process water analysis including salinity testing; quarterly off-site geotechnical verification (moisture-density testing; particle size).

Four GTCs have been installed in the placed tailings. The measured ground temperatures are presented in Appendix I. The GTCs indicate the tailings were predominately unfrozen in the summer months but were generally at temperatures below 0°C by January 1, 2020. The exception is GTC-2 where there were thicker tailings. As of

January 1, 2020, the GTC2 location had approximately 3 m of frozen tailings overlying 3 m tailings that are approximately 0°C. Phase change is starting to occur in these tailings.

Nuclear density tests on the in situ placed and compacted tailings indicate, for the most part, that the filter cake is achieving dry densities in excess of the maximum dry density from the Standard Proctor test. The placed tailings material shows very little signs of bleed water and are easily trafficable after placement and compaction.

7.1.4 Water Management

Water from the TSF is directed to CP3. Some runoff naturally drains to the pond, and other runoff is directed to CP3 via Channel 3. Berm 2, north of the facility was constructed to divert water away from the TSF and CP3.

7.1.5 Summary and Recommendations

The TSF appeared to be functioning well at the time of the inspection. The ground temperatures should continue to be monitored in the TSF and the foundation using the GTCs presently installed. It is recommended that the tailings be tested to determine their unfrozen content curve below 0°C to determine how much of the tailings remain unfrozen. Ongoing water quality tests in CP3, process water testing and ARD/ML testing can be used to assess the geochemical performance of the facility.

The TSF perimeter rockfill berm appears to be functioning well from a geotechnical perspective with no signs of distress.

8.0 SITE ROADS

8.1.1 Background

The site has numerous site roads, including haul roads, service roads, as well roads to borrow areas and other facilities. The following is a list of roads inspected. Photographs of the site roads are included in Appendix J.

- TSF and landfill access road including Culvert 1;
- Main site pad area roads, including Culverts 2, 3, and 4;
- Main site water intake access road;
- Emulsion plant pad access road and Culvert 13;
- Tiriganiaq Esker access road;
- Magazine storage area and access road;
- Wesmeg access road, Wesmeg esker area, and vent raise;
- CP3 access road; and
- CP4 access road.

8.1.2 Visual Observations

At the time of the site visit, the site roads were generally in good condition. The roads appeared to generally be of adequate width with pull outs where required to allow vehicles to safely pass. The heights of the road fills were such that berms were not required. Many of the roads appeared to have been constructed using a combination of sand and gravel obtained from esker borrow areas, rockfill, and crushed aggregate. Normal maintenance of the roads should be anticipated. No geotechnical concerns were identified during the inspection.

Permanent water management culverts are in place through road fills. Culverts observed were: Culverts 1, 2, 3, 4, 8, 10, 11, 13, 15, and 16.

8.1.3 Summary and Recommendations

The site mine roads and culverts were generally well maintained and good geotechnical condition at the time of the inspection. No specific recommendations for geotechnical improvements are provided.

9.0 BORROW SOURCES

9.1.1 Background

Numerous borrow sources have been developed during the construction of the mine. Many of the borrow sources were reclaimed in 2019. The following borrow areas were observed:

- Meliadine North Esker
- Meliadine Esker
- SP2 Temporary Stockpile
- Tiriganiaq Esker
- Wesmeg Esker

Photographs of the borrow areas are in Appendix K.

9.1.2 Visual Observations

In general, the borrow areas were in good condition and had been reclaimed by grading to knock down various piles and ruts.

A drainage channel is present through the center of the Meliadine Borrow Area. The channel is within the native sand. It is anticipated that the channel will naturally erode. Some remediation may be required to stabilize portions of the channel in future years.

9.1.3 Summary and Recommendations

The borrow areas should be monitored for future erosion and thaw settlement. The need for further reclamation can be assessed in future years.

10.0 ORE STOCKPILES

10.1.1 Background

The ore and waste rock storage area are located east of the P-Area and east of the crusher area. The rock and ore (high grade and low grade) piles were relatively small (less than 10 m high) during the time of the inspection.

Ore and waste materials removed from the underground development are transported to surface and placed in stockpiles. Most of the waste rock is crushed into various sizes for use in construction. Berms were in place around the top benches of the piles.

The piles appeared to be stable and well managed with no signs of instability.

No geotechnical concerns related to the stability of the stockpiles were identified.

11.0 OTHER MELIADINE FACILITIES

11.1 Crusher Ramp

The crusher ramp is an earthfill structure consisting of a ramp, turn around area, and loading area adjacent to the crusher. It was constructed in 2018. It was mainly constructed of Run of Mine Rock with an MSE wall surrounding the crusher.

The area was visually inspected. The gabion wall appears to be performing well with no visual signs of distress. It is leaning in towards the fill materials as intended.

The fill slopes were relatively smooth with no obvious cracking, erosion, or signs of instability. There was also no cracking on the surface of the ramp, turn around area, or the loading area adjacent to the crusher.

It appears to be performing well from a geotechnical perspective.

11.2 Saline Water Treatment Plant

The SWTP was constructed to treat water from the underground operations. It was constructed in an existing storage warehouse/shop that was extended on one end. The structure is a fabric building founded on a concrete slab.

The SWTP generates considerable heat, making the interior of the building warm. The concrete slab of both the original building and the extension has undergone a considerable amount settlement. It is speculated the settlement is due to thawing of the ice rich permafrost. The settlement is reported to be up to 0.4 m.

The plant itself is built on a large metal frame. Portions of the plant have been jacked up to relevel it. The warehouse racking has also been jacked up.

It is recommended that the plant be resurveyed to determine how much movement has occurred since the plant was releveled. A structural assessment of the plant and possibly the building should be carried out if it is determined that significant settlement has occurred since it was last releveled. It is also recommended that the geotechnical

conditions under the building be evaluated and GTCs installed under the building to evaluate how much additional settlement may occur.

11.3 Landfill

The main landfill for the mine is located at the northeast corner of WRSF1. The landfill has perimeter berms constructed of esker material. The landfill is used for dry waste only. Kitchen waste etc. is burned in the onsite incinerator.

The perimeter berms are performing well from a geotechnical perspective with no signs of instability.

At the time of the site inspection the landfill debris was predominately uncovered. The landfill appeared to contain construction waste among other things. A significant amount of burnable waste (wood etc.) was present in the landfill.

It is recommended that the landfill be covered in stages with intermediate cover to avoid blowing debris. A program to separate burnable debris could reduce the landfill requirements.

The landfill is nearing its current design capacity. A plan must be developed to raise the landfill berms.

11.4 Emulsion Plant Pad

The emulsion plant is located at the north end of the mine. The plant was constructed on a pad constructed of esker material.

It is understood that the pad had some settlement after it was constructed but there were no reports of recent settlement issues. The north edge of the pad is experiencing erosion, with channels up to 0.3 m to 0.4 m deep. The erosion channels are not currently impacting the use of the pad.

It is recommended that the pad settlement and erosion should continue to be monitored. Remedial action does not appear to be required at the time of the inspection.

11.5 Landfarm

A lined landfarm was constructed south east of the process plant. Windrows of soil 1.0 m to 1.5 m have been placed in the landfarm.

Water was ponded to the top of the berm in the landfarm sump.

The landfarm berms appear to be in a stable condition with no geotechnical issues. A small amount of geomembrane liner and geotextile was exposed on the perimeter of the berm. The exposed liner will not impact the landfarm performance.

It is recommended that the water in the landfarm sump be tested as per AEM's protocol and then removed from the landfarm.

11.6 Other Facilities

The following other facilities were inspected during the site visit:

- New Cyanide Storage Pad, constructed in 2019
- Cyanide Storage Pad
- Emulsion Plant Storage
- Freshwater Intake
- Industrial Fuel Storage
- Incinerator Pad
- Mine Site Fuel Farm
- Paste Plant Ramp
- Industrial Pad
- Portal No. 1 and Portal No. 2

No significant geotechnical issues where noted in these facilities.

12.0 EXPLORATION CAMP AND ACCESS ROAD

Portions of the exploration camp were being dismantled at the time of the annual geotechnical inspection. Some of the dorms had been removed out of the area; although other portions of the camp were still in use.

The landfarm at the exploration camp access road was also being dismantled with portions of liner no longer providing containment.

The access road to the exploration camp was in good condition.

No obvious geotechnical issues were noted at the time of the inspection.

13.0 ALL-WEATHER ACCESS ROAD AND ASSOCIATED WATER MANAGEMENT STRUCTURES

The AWAR construction activities began during the winter of 2012, and construction was completed by the end of October 2013 to connect the hamlet of Rankin Inlet to the Project. Appendix M contains photographs taken during the inspection. The road is approximately 23.8 km long, with three bridge crossings and culverts installed at a total of 19 locations. The road has two-way traffic and is approximately 6.5 m wide with pull outs approximately every 400 m ±50 m to facilitate vehicles passing.

The AWAR is used by AEM and also provides unrestricted all-terrain vehicle (ATV) access for the public, if it is safe to do so. The AWAR is used to transport building materials, construction/mining equipment, fuel, reagents, supplies, workers, and contractors to the Project.

The road design is based on a general sub-base composed of rockfill or sand and gravel from esker sources and crushed granular surfacing with a combined minimum thickness of 500 mm. The road design varied based on the relative susceptibility to freeze and thaw induced settlement of the foundation soils. The thickness of the road fill material was generally increased, to a minimum of 1.3 m, in areas where potentially thaw-sensitive soils were identified. Along portions of the road where thaw-sensitive soils were identified, a geotextile material was incorporated into the road design to limit damage to the road should the foundation material thaw.

13.1 Observations and Recommendations

The culverts were generally observed to be in good condition, at the time of the inspection. Most culverts were unobstructed with no signs of substantial damage to the culverts. All bridges and their embankments were in good geotechnical condition at the time of the inspection. A structural and/or mechanical assessment of the bridges was not conducted and is beyond the scope of this geotechnical inspection.

The locations and a photographic record of the inspected culverts and bridges is provided in Appendix M.

Table 13-1 lists the locations of water management structures: culverts and bridges that have been installed along the AWAR. The location of the culverts and bridges are listed, based on distance from the Healing Centre in Rankin Inlet, with the gate house at Meliadine being 29 km. Size and number of culverts is provided in Table 13-1, along with specific observations and photos at the time of the inspection, and any recommendations.

It is understood that AEM has implemented a watercourse crossing inspection and maintenance program, which includes:

- A regular inspection program to identify issues relating to watercourse crossings, such as structural integrity and hydraulic function;
- An event-based inspection program to track the impacts of larger storm events on watercourse crossings; and
- A culvert location inspection program to ensure that culverts have been installed in the correct location with respect to watercourses and that the culvert capacity is adequate, for hydraulic conditions.

Road maintenance and snow management are carried out, as deemed necessary. Steaming of culverts, is included as a maintenance activity. AEM has placed additional crush on the AWAR in 2019 and applied calcium chloride for dust control through the summer.

In general, the road appeared to be in good geotechnical condition at the time of the inspection. Recommendations for improvements to the water management structures are presented in Table 13-1.

Table 13-1: AWAR Road – Water Management Structures Summary

Station (distance from Friendship Centre)	Water Management Structure Description	Conditions, Observations, and Recommendations (at time of inspection)
KM 6.0	Char River Bridge	Good condition, stable embankments and abutments. Armouring appears to be added to left abutment (as recommended in 2018).
KM 6.2	3 CSP culverts: 2 x 1,300 mm 1 x 700 mm	The culverts are vertically offset with the 700 mm culvert elevated above the 1,300 mm culverts. Some minor erosion observed between the culverts on the downstream side. All clear and in good condition. Small flow in the lower 1,300 mm culvert. Armouring appears to be adequate.
KM 7.0	3 CSP culverts: 2 x 1,000 mm 1 x 700 mm	The culverts are vertically offset with the 700 mm culvert elevated above the 1,000 mm culverts. The 700 mm culvert had a dent in side. Ponded water observed in the lower culvert. Small amount of water ponded upstream. No flow at time of inspection. Sandy soil around culverts, potential for erosion, but none noted during inspection. Recommendation: Consider adding armouring around culverts to reduce potential for erosion.
KM 7.1	3 CSP culverts: 2 x 1,000 mm 1 x 700 mm	Vertically offset. 700 mm culvert is elevated. Water ponded in the lower culvert on the right side when looking downstream, minor deformation of culverts under the road, no substantial reduction of cross-sectional area. Minor flow in lower 1,000 mm culvert. The culverts and riprap appear in good condition. No flow at time of inspection.
KM 7.4	3 CSP culverts: 1 x 900 mm 1 x 700 mm 1 x 1,000 mm	Vertically offset. 700 mm culvert is elevated. Minor damage the inlet of the 900 mm culvert. Erosion potential due to finer grained soils around 700 mm culvert at the inlet and outlet, but no significant erosion noted. 1,000 mm clear, low flow/ponding water.
KM 8.0	Meliadine River Bridge	Right abutment, downstream slope has exposed esker sand and gravel upstream of bridge; no erosion noted.
KM 9.1	2 x 1,000 mm CSP culverts	Minor deformation of both culverts under the road. No flow, water ponded below the inlets. Armoured, no obvious signs of erosion.
KM 9.5	1 x 1,300 mm CSP culvert	Water ponded on upstream side of culvert/road with very low flow due to elevated inlet of CSP. Minimal flow during inspection. CSP in good condition.
KM 10.5	M-5 Bridge	Good condition, stable embankment and abutments of the bridge. Exposed geotextile at base of downstream end of left abutment that could be due to erosion. Gabion damaged on downstream of left (north) abutment. Damaged gabion above water line. No obvious signs of erosion. Recommendation: Replace or repair damaged gabion. Continue to monitor for erosion and/or settlement.

Table 13-1: AWAR Road – Water Management Structures Summary

Station (distance from Friendship Centre)	Water Management Structure Description	Conditions, Observations, and Recommendations (at time of inspection)
KM 12.1	4 CSP culverts: 2 x 1,300 mm 1 x 900 mm 1 x 700 mm	Vertically offset. 700 mm and 900 mm culverts are elevated. Minor small dents and bending of haunches in 700 mm and one of the 1,300 mm culverts. Minor flow through the lowest of the 1,300 mm culverts. Minimal armouring, however no obvious erosion. Embankment slope is generally in good condition.
KM 12.6	no culverts	Area of poor drainage. In good condition, no signs of water flow at time of inspection.
KM 13.5	5 CSP culverts: 3 x 1,300 mm 2 x 900 mm	Vertically offset, 900 mm culverts are elevated above 1,300 mm culverts. Good condition, small flow, minor dents and deflection in haunch, otherwise in good condition.
KM 14.7	Access road to B12 quarry, 500 mm HDPE corrugated culvert	No flow, small amount of water ponded against AWAR and quarry access road, below inlet of culvert. Minor dents observed in culvert. Small erosion at outlet. Culvert and embankments are generally in good condition.
KM 16.3	3 CSP culverts: 1 x 1,300 mm 1 x 700 mm 1 x 1,000 mm	Vertically offset, 1,300 mm culvert is the lowest, then the 1,000 mm culvert and the 700 mm culvert is the highest. No flow in the 700 mm and 1,000 mm culverts, good condition. Small flow in 1,300 mm culvert, good condition, small erosion visible at outlet. Outlets are all elevated increasing erosion potential. No signs of overflow, area armoured.
KM 18.1	2 CSP culverts: 1 x 900 mm, 1 x 1,000 mm	Vertically offset culverts. The 900 mm culvert is elevated above 1,000 mm culvert. Lower culvert has some flow, minor dent on upstream end. Upper culvert is in good condition. Upper culvert is high on the embankment and has thin cover on the upstream side. Trench exists along upstream toe of road connecting the culverts at KM 18.1 to KM 18.15. Appears culvert installed to replace KM 18.15 culvert. No erosion noted, appears to performing adequately.
KM 18.15	1 x 600 mm CSP culvert.	Ponding on the upstream side. Additional ponding adjacent to road required before reaching the culvert inlet. Appears that KM 18.1 culvert installed to replace/supplement this culvert. Culvert outlet elevated, potential for erosion of toe of road embankment. Flow may initially occur through the road fill beneath the culvert. Trench exists along upstream toe of road connecting the culverts at KM 18.1 to KM18.15.
KM 19.5	No culverts	Ponding on west side of road, reportedly the water ponds here year-round and can reach as high as half way up the embankment. Water 1 m below road at time of the 2019 inspection. 2018 Inspection reports by AEM note straw logs were placed at KM 19, so there may have been some flow over the road in this area in 2018. No overflow reported in 2019. Recommendation: Consider installation of a culvert at this location to reduce the risk of overtopping.

Table 13-1: AWAR Road – Water Management Structures Summary

Station (distance from Friendship Centre)	Water Management Structure Description	Conditions, Observations, and Recommendations (at time of inspection)
KM 21.2 to 21.5	No culverts	Low ponded on west side of road near KM 21.2. Water reportedly flowed over the road near KM 21.5 during the 2017 freshet. Straw logs were placed on east side of road embankment to control suspended solids in flow in 2018. No reports of overflow in 2019. Inspection in in 2019 had a “wash zone” of road embankment indicating likely high water in 2019. Recommendation: Consider installation of a culvert in this area to reduce the risk of overtopping.
KM 21.7	2 x 160 mm steel pipes, used as culverts	Vertically offset steel pipes, clear, no flow. Water ponded upstream in 2018, erosion mark from higher water level evident in road embankment. Water reportedly flowed over the road at this location during freshet. AEM personnel reported that the road was excavated in 2018 to allow the water to drain. Capacity of pipes may be inadequate, or pipes could have been frozen (blocked) causing water to backup. Straw logs were observed on west side of road. No reports of overflow in 2019, and no indications of high water in 2019. Recommendation: Consider installation of larger diameter culvert(s) to reduce the risk of overflow.
KM 22.3	2 x 160 mm steel pipes, used as culverts	Ponded water observed in 2019; no armour around inlets. Culverts, vertically offset, clear, no flow. Inlets are elevated above ponded water. No indication of overflow.
KM 22.7	No culverts	Water ponded on the east side of the road. No signs of overtopping or overflow, or instability.
KM 25.8	1 x 600 mm HDPE corrugated culvert	No flow, minor amount of gravel in base of culvert, some dents on upstream inlet to culvert. Sandy soil around inlet and outlet, no armor. Minor erosion of slope of road. 2018 inspection reports noted ponding of water at or over the road in this area during the freshet. Recommendation: Clear culvert inlet of road fill material. Consider adding armouring around culverts. Consider adding additional culverts if water management continues to be an issue during freshet.
KM 26.2	2 x 160 mm steel pipes, used as culverts	Vertically offset, lower pipe bent upward. Bottom pipe blocked. The inlets are elevated close to the road surface. Some sediment deposition downstream is evident. Water ponded along road below upstream inverts of pipes. 2018 AEM inspection reports noted ponding of water at or over the road in this area during the freshet. No reports of overflow in 2019. Recommendation: Lower pipe should be replaced. Consider adding additional culverts if water management continues to be an issue during freshet.
KM 26.5	3 x 700 mm CSP culverts	Equal elevation, some sediment buildup, no flow, small dents, well armoured, lower culvert in 100 mm of water.
KM 26.8	2 x 160 mm steel pipes, used as culverts	Vertically offset, no flow. Inlet of the lower culvert was completely covered by road fill. Some erosion evident at downstream ends. Recommendation: Inlet of the lower culvert should be cleared and possibly extended.

Table 13-1: AWAR Road – Water Management Structures Summary

Station (distance from Friendship Centre)	Water Management Structure Description	Conditions, Observations, and Recommendations (at time of inspection)
KM 27.1	3 CSP culverts: 1 x 900 mm 1 x 700 mm 1 x 1,000 mm (southernmost)	Vertically offset, middle culvert (700 mm) elevated above adjacent culverts. Clear, minor flow in lowest culvert, some small dents in 900 mm and 1,000 mm culverts. Some sloughing of riprap near culvert inlets. Recommendation: Monitor riprap and add more protection if more erosion occurs.
KM 28.7	No culverts	Ponded water on east side of road. 2018 water flowed over the road at this location during freshet. No reports of water flowing over the road in 2019. Recommendation: A culvert could be installed to reduce the risk of overflow.
KM 29.6	1 x 500 mm HDPE corrugated culvert	Inlet is clear, minor damage on culvert.

14.0 ITIVIA FUEL STORAGE SITE AND BYPASS ROAD

The Itivia bypass road is a 6.3 km gravel road that was constructed to divert traffic from the Itivia fuel storage and laydown area to the Project site around Rankin Inlet as shown in Appendix N. The Itivia fuel farm is used to store fuel for Meliadine Mine.

The Itiivia road is designed to be 6.5 m wide for most of its length with pull outs to allow two-way traffic. Two sections are designed to be 8 m to allow two-way traffic without pullouts. The road was constructed in 2017 and 2018. The eastern portion of the road was constructed using blast rock from the Itivia Quarry, but the majority of the road was constructed using esker materials.

The road and culvert locations were observed. The culvert locations are referenced from the southeast corner of the Itivia fuel storage facility. The observations are summarized in Table 14-1. The culvert names are referenced from the construction drawings and the 2018 inspection. Some of the culverts now have the names attached to the culverts, and do not correlate to the previous names as noted in Table 14-1.

In general, the road was in good condition. Minimal signs of cracking or settlement were noted. Some sections of the road were high enough that they required safety berms, which were constructed using large boulders along the eastern section and with esker materials along the remainder of the road. Riprap was generally placed at the inlet and outlets of culverts, per the design. Table 14-1 presents a summary of the culvert inspections completed.

Based on discussions with AEM personal, it is understood that two areas had issues during the 2019 freshet; the area northwest of Culvert C10 flooded, and the road at 2 km had significant flows in the upstream ditch running along the road, and across the road. Culvert C10 handles the flow of the water from a small lake north of the road. It appears that the majority of the runoff ran along the road as opposed to flowing through the culverts. This is evidenced by the high water mark on the shoulder of the road (Photos 20, 21, 23, and 24, Appendix N). The water ran to a low area of the road northwest of the culverts, and then across the road. This may have been a result of icings around the culvert area in the spring. This issue could be rectified by placing culverts in the low area of the road, or possibly building up the low area of the road as per (Tetra Tech 2019). The road along km 2 has been constructed as a cross slope fill. Water runs from the up-gradient slope into a ditch upslope of the road. The ditch is relatively shallow (0.6 m). The water spilled out of the ditch and ran across the road and down the road slope. Rectifying this will be difficult due to the steep up-gradient slope, steep downstream road fill, and shallow road fill at this location. It is recommended that diligent monitoring and maintenance be applied to prevent this from reoccurring. The ditch should be cleared of snow and ice prior to the freshet.

Table 14-1: Summary on Culverts on Itivia Bypass Road

Approximate Distance from SE Corner of Fuel Farm	Culvert Design Identification	Water Management Structure Description	Observations	Photographs (Appendix N)
0.35 km	C01	2 x 1,000 CSP culverts	No water flowing through culverts. Road constructed out of blast rock. Large boulders placed on south crest of road as safety berm.	1
0.6 km	C02	2 x 700 mm CSP culverts	No water flowing through culverts. Road constructed out of blast rock. Some riprap at the outlet of the lower culvert. Large boulders placed on south crest of road as safety berm.	2
0.8 km	C03	2 x 1,000 mm 1 x 700 mm	No water flowing through culverts. Minor erosion in tundra observed upstream of culverts. Road constructed out of blast rock. Large boulders placed on south crest of road as safety berm.	3
1.0 km	C04	2 x 1,000 mm	No flow in culverts. Minor amount of riprap upstream of culvert. Road constructed out of blast rock. Large boulders placed on south crest of road as safety berm.	4
1.2 km	C05	2 x 1,000 mm	No water flowing through culverts. Minor amount of rockfill in front of inlets could erode into the culverts. Road and safety berm on south crest of road constructed out of esker materials.	5
1.5 km	C06	2 x 800 mm	Culvert inlets installed above surrounding natural ground. Ponded water against toe upstream side of road north of the culvert inlets, a small berm has been constructed between the ponded water and the culvert inlet location. No water flowing through the culverts. Some rockfill in front of inlets could erode into the culverts. Road constructed out of esker materials.	6
1.6 km	C06-1 (marked C07 on sign)	1 x 800 mm	No water flow in culverts, road constructed out of esker materials, inlet and outlet covered with riprap.	7
1.8 km	C07a C07b (marked C08 on sign)	2 x 800 mm	Ponded water observed at the inlets around the culverts and against the toe of the road embankment. Small flow through the east culvert. Culvert inlets installed over rockfill base raised above surrounding natural ground. Road constructed out of esker materials. Recommendation: Monitor ponding of water upstream of inlets and consider lowering culverts to reduce ponding.	8
1.9 km	C07b (marked C09 on sign)	2 x 1,000 mm	No water flowing through the culverts, inlets and outlets are clear. Road constructed out of esker materials. Safety berm constructed on south crest of road. Outlet discharges on coarse (cobbly) esker. Road crush has washed onto outlet culverts.	9

Table 14-1: Summary on Culverts on Itivia Bypass Road

Approximate Distance from SE Corner of Fuel Farm	Culvert Design Identification	Water Management Structure Description	Observations	Photographs (Appendix N)
2.4 km	C09 (marked C10 on sign)	2 x 1,000 mm	No water flowing through culverts. Ponded water observed around the inlets and against the toe of the road embankment to the south. Road constructed out of esker material.	10
3.1 km	C10 (marked C11 on sign)	5 x 1,200 mm 1 x 1,000	Some damage to culvert inlets and deformation under road observed. Some water flow observed flowing into lowest culvert. Ponded water observed along the toe of the road embankment to the north of the culvert inlets. Based on wave wash mark on road fill, water did not reach the higher culvers. Road constructed out of esker material. Wave wash zone along road fill to the northwest indicating pond north of culverts flooded to a higher level than present. Water raised to near the crest elevation of low area in the road to the northwest. Minor cracking in the road fill slopes on the south side of the road. Erosion booms placed on downstream slope of the road low point to the northwest. Recommendation: Additional culverts should be installed in low road area to the northwest; alternatively, the low area in the road could be raised, but would result in a large flooded area.	11, 20, 21, 22, 23
4.0 km	C11a (marked C12 on sign)	2 x 1,200 mm	Culverts are constructed over riprap and inverts are raised above surrounding tundra. No flow observed through both culverts. Shallow ponding of water over tundra upstream of the inlets and against the toe of the road embankment. Water mark visible along toe of road embankment, approximately 0.2 m above toe of road at culverts, higher along road to northeast. Road constructed out of esker material; minor erosion at toe of road.	12
4.3 km	C11b (marked C13 on sign)	2 x 1,000 mm	Culverts are constructed over riprap and inverts are raised above surrounding tundra. No flow through the north culvert. Small amount of water ponded over tundra on both sides of culverts. Road constructed out of esker material, performing adequately, no signs of erosion.	13
4.8 km	C11b-1	1 x 1,000 mm	Culvert is constructed over riprap and invert is raised above surrounding tundra. Small natural drainage path observed upstream and downstream of culvert. Water observed within drainage downstream of outlets. No flow in culvert. Road constructed out of esker material performing adequately.	14

Table 14-1: Summary on Culverts on Itivia Bypass Road

Approximate Distance from SE Corner of Fuel Farm	Culvert Design Identification	Water Management Structure Description	Observations	Photographs (Appendix N)
4.9 km	C11c	2 x 1,200 mm	Culverts are constructed over riprap and inverts are raised above surrounding tundra. No flow through culverts. Shallow ponded water observed upstream and downstream of the culverts. Road constructed out of esker materials. Road fill performing adequately.	15
5.0 km	C12a	2 x 1,200 mm	Culverts are constructed over riprap and upstream inverts raised above surrounding tundra. Ponded water observed over tundra upstream and downstream of the culverts. No flow through culverts. Road constructed out of esker materials. Road slopes performing adequately.	16
5.1 km	C12b	2 x 1,000 mm	Culverts are constructed over riprap and inverts are raised above surrounding tundra. Water ponded upstream and downstream of the culverts and along the toe of the embankment. Road constructed out of esker materials. Riprap placed in local area of culvert. No signs of erosion on road side slopes indicating previous higher water levels.	17
6.2 km	C13	2 x 800 mm	Culverts are constructed over riprap and inverts are raised above surrounding tundra. Relatively large pond of water upstream and downstream of the culverts; road constructed through natural pond. Road constructed out of esker materials.	18
6.3 km	C14	3 x 800 mm	Culverts are constructed over riprap and inverts are raised above surrounding tundra. Water ponded upstream and downstream of the culverts. No signs of subsidence due to ponded water. Road constructed out of esker materials.	19

The Itivia fuel farm consists of a 20,000,000 L and a 13,500,000 L fuel storage tanks as shown in Photos 24 through 28, Appendix N. The fuel is hauled to mine site on an as need basis. The tanks are contained within a geomembrane lined containment facility. The geomembrane liner is covered with a layer of geotextile and 20 mm crushed rock. Some small areas on the east berm had exposed geotextile on the crest of the berm; however, these will not affect the performance of the facility. In general, facility appears to be in good condition from a geotechnical perspective.

15.0 CLOSURE

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

Respectfully submitted,
Tetra Tech Canada Inc.

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FIGURES

Figure 1 General Site Layout - 2019
Figure 2 Location Plan - Year 7

NO. DESSIN
DRAWING NO.

FORMAT ANSI B–11x17

LEGEND

- CATCHMENT BOUNDARY
- SERVICE ROAD
- HAUL ROAD
- WATERBODY
- WATER COLLECTION POND
- DRAINED POND AREA
- OPEN PIT
- OVERBURDEN
- WASTE ROCK
- ORE
- TAILINGS
- INDUSTRIAL SITE PAD
- CONTACT WATER FLOW DIRECTION

AGNICO EAGLE

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TITRE / TITLE	# DWG

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REV	DESCRIPTION	DATE	PAR BY
A	ISSUED FOR REVIEW	2019–06–03	WTH

REVISIONS

DESSINÉ PAR DRAWN BY	EL	DATE 2019–06–03
VÉRIFIÉ PAR CHECKED BY	WTH	2019–06–03
APPROUVÉ PAR APPROVED BY		
No. PROJET PROJECT NO.	6515	
DATE		

TITRE / TITLE

AGNICO EAGLE – MELIADINE GOLD PROJECT

FIGURE 1
GENERAL SITE LAYOUT

ÉCHELLE/ SCALE	1:15000	FICHIER FILE	General Site Layout Plan .DWG
No. DESSIN/ DRAWING NO.		REVISION A	FEUILLE/SHT 1 / 2

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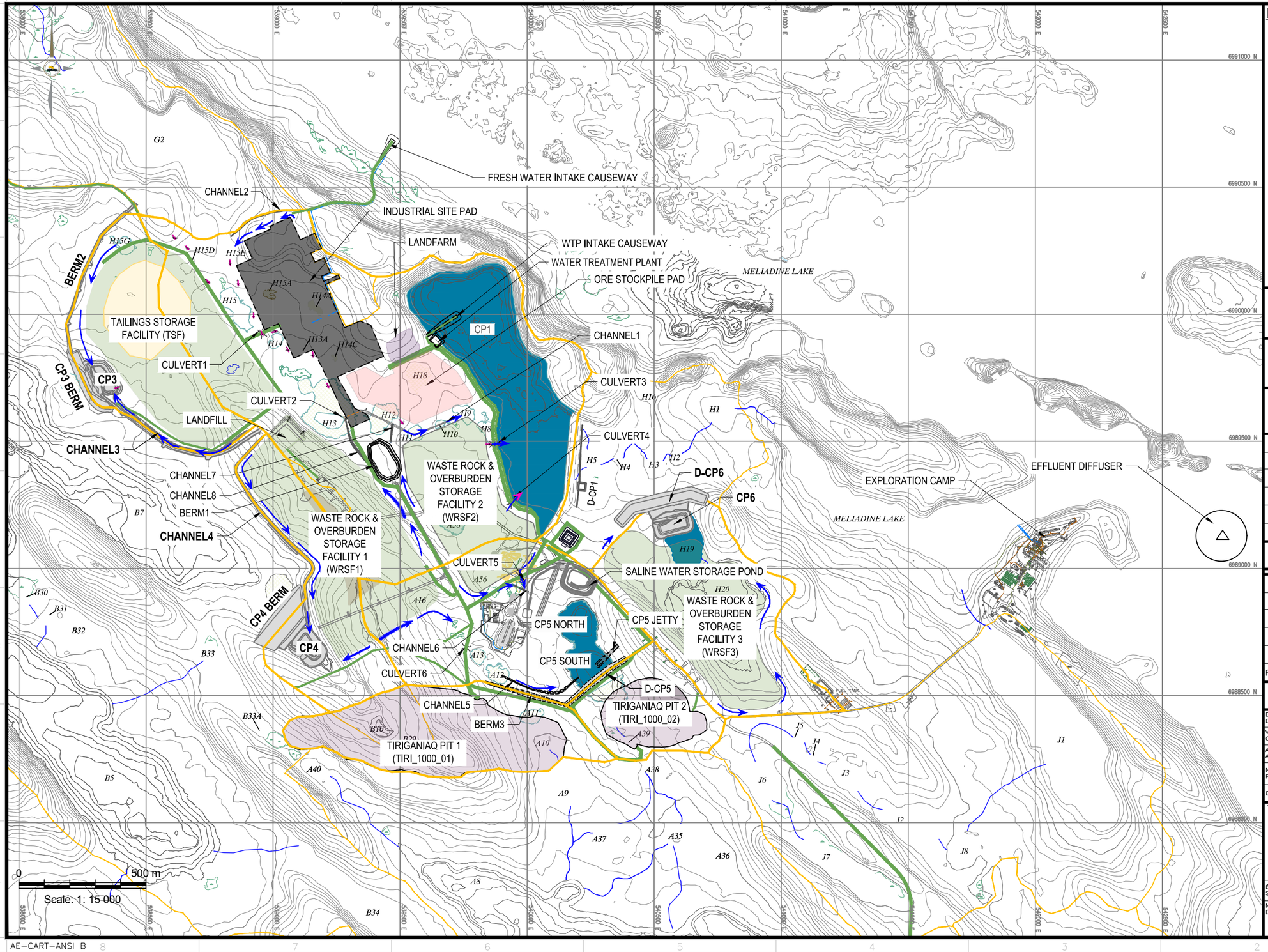

LEGEND

- CATCHMENT BOUNDARY
- SERVICE ROAD
- HAUL ROAD
- WATERBODY
- WATER COLLECTION POND
- DRAINED POND AREA
- OPEN PIT
- OVERBURDEN
- WASTE ROCK
- ORE
- TAILINGS
- INDUSTRIAL SITE PAD
- CONTACT WATER FLOW DIRECTION

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AGNICO EAGLE – MELIADINE GOLD PROJECT

FIGURE 2
LOCATION PLAN – YEAR 7

ÉCHELLE/ SCALE	1:15000	FICHIER FILE	General Site Layout Plan .DWG
No. DESSIN/ DRAWING NO.		REVISION A	FEUILLE/SHT 2 / 2

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APPENDIX A

TETRA TECH'S LIMITATIONS ON USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOTECHNICAL

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Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH'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 TETRA TECH shall be deemed to be the original. TETRA TECH 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 TETRA TECH's Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH's Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH 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 TETRA TECH 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 TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH 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 TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by persons other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH 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 TETRA TECH 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 report, at or on the development proposed as of the date of the Professional Document requires a supplementary investigation and assessment.

TETRA TECH 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, TETRA TECH 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.

1.8 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 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 historic environment. TETRA TECH 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.

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

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.

1.14 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.

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 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 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.

1.17 SAMPLES

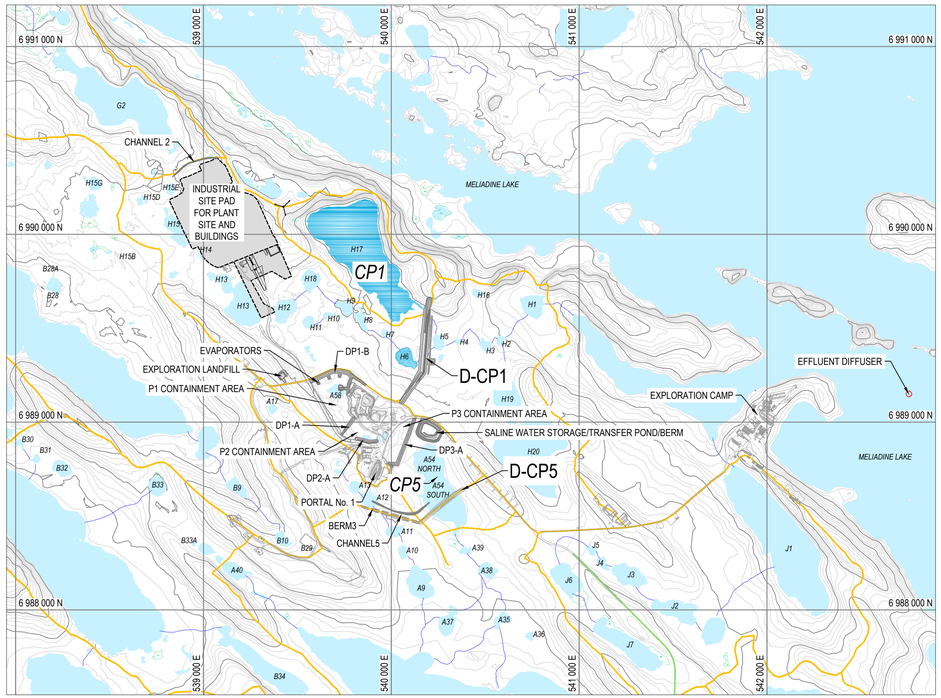
TETRA TECH will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

APPENDIX B

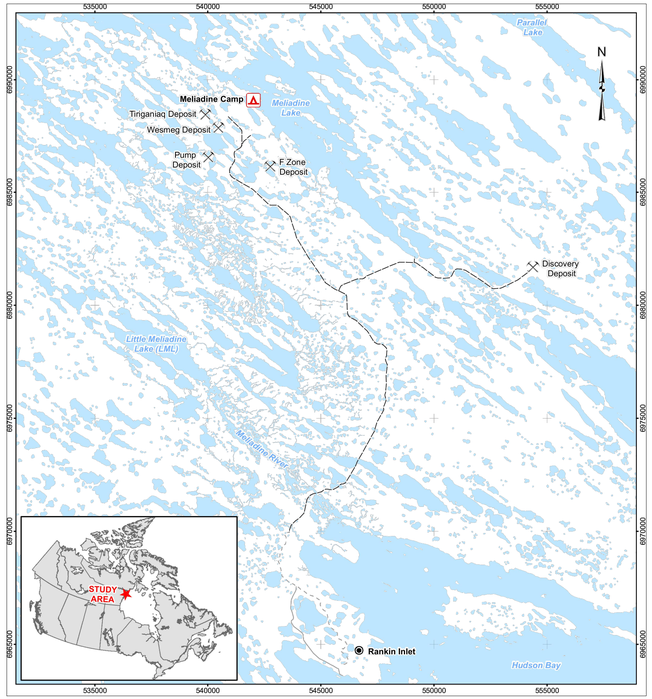
POND CP1 AND DIKE D-CP1

NO. DESSIN
DRAWING NO. 65-685-230-204_R2

FORMAT ARCHD



GENERAL SITE LOCATION
SCALE: 1:15,000



LOCATION MAP
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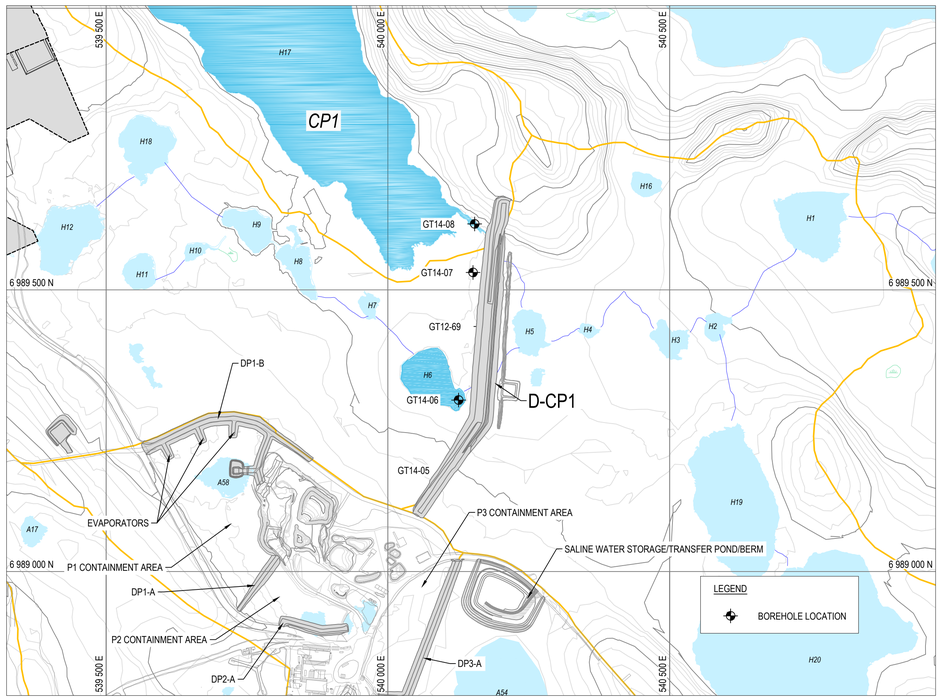

D-CP1 SITE LOCATION
SCALE: 1:5,000

D-CP1 CONSTRUCTION DRAWING INDEX

DRAWING NUMBER	REV.	DRAWING TITLE
65-685-230-204	2	D-CP1 AS-BUILT GENERAL LOCATION PLAN
65-685-230-205	2	D-CP1 AS-BUILT KEY TRENCH AND DIKE LAYOUT PLAN
65-685-230-206	2	D-CP1 AS-BUILT PROFILES
65-685-230-207	2	D-CP1 AS-BUILT THERMAL COVER LAYOUT PLAN AND PROFILES
65-685-230-208	2	D-CP1 AS-BUILT TYPICAL SECTIONS AND QUANTITIES
65-685-230-209-001	2	D-CP1 AS-BUILT SECTIONS STATION 0+025 TO 0+200
65-685-230-209-002	2	D-CP1 AS-BUILT SECTIONS STATION 0+225 TO 0+400
65-685-230-209-003	2	D-CP1 AS-BUILT SECTIONS STATION 0+425 TO 0+575
65-685-230-210	2	D-CP1 AS-BUILT DOWNSTREAM WATER COLLECTION CHANNEL AND SUMP LAYOUT PLAN AND PROFILES
65-685-230-211	2	D-CP1 AS-BUILT INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES
65-685-230-212	2	D-CP1 AS-BUILT INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES AND SETTLEMENT SURVEY MONUMENT POINTS
65-685-230-213	2	D-CP1 AS-BUILT DOWNSTREAM WATER COLLECTION CHANNEL AND SUMP PROFILES AND INSTRUMENTATION DETAILS

TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

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TETRA TECH CANADA INC.
Signature
Date Oct 19, 2017
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

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AGNICO EAGLE
DATE : 2017-10-19

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A	2016-08-05	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

REGISTERED PROFESSIONAL ENGINEER — W.T. HORNE — LICENSEE — N.W.T. — Oct 19, 2017
REGISTERED PROFESSIONAL ENGINEER — G. ZHANG — LICENSEE — NWT/NU — Oct 19, 2017

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP1 AS-BUILT
GENERAL LOCATION PLAN

DESSINÉ PAR / DRAWN BY	EL	DATE 2017-10-06
VÉRIFIÉ PAR / CHECKED BY	WTH	2017-10-06
APPROUVÉ PAR / APPROVED BY	NG	2017-10-06
ÉCHELLE / SCALE	AS SHOWN	DATE 2017-10-06
NO. DESSIN / DRAWING NO.	65-685-230-204	
NO. PROJET / PROJECT NO.	6515	REVISION 2
		FEUILLE / SHT 1 / 12

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FILE NO. 65-685-230-204_R2.dwg

NO. DESSIN
DRAWING NO. 65-685-230-211_R2

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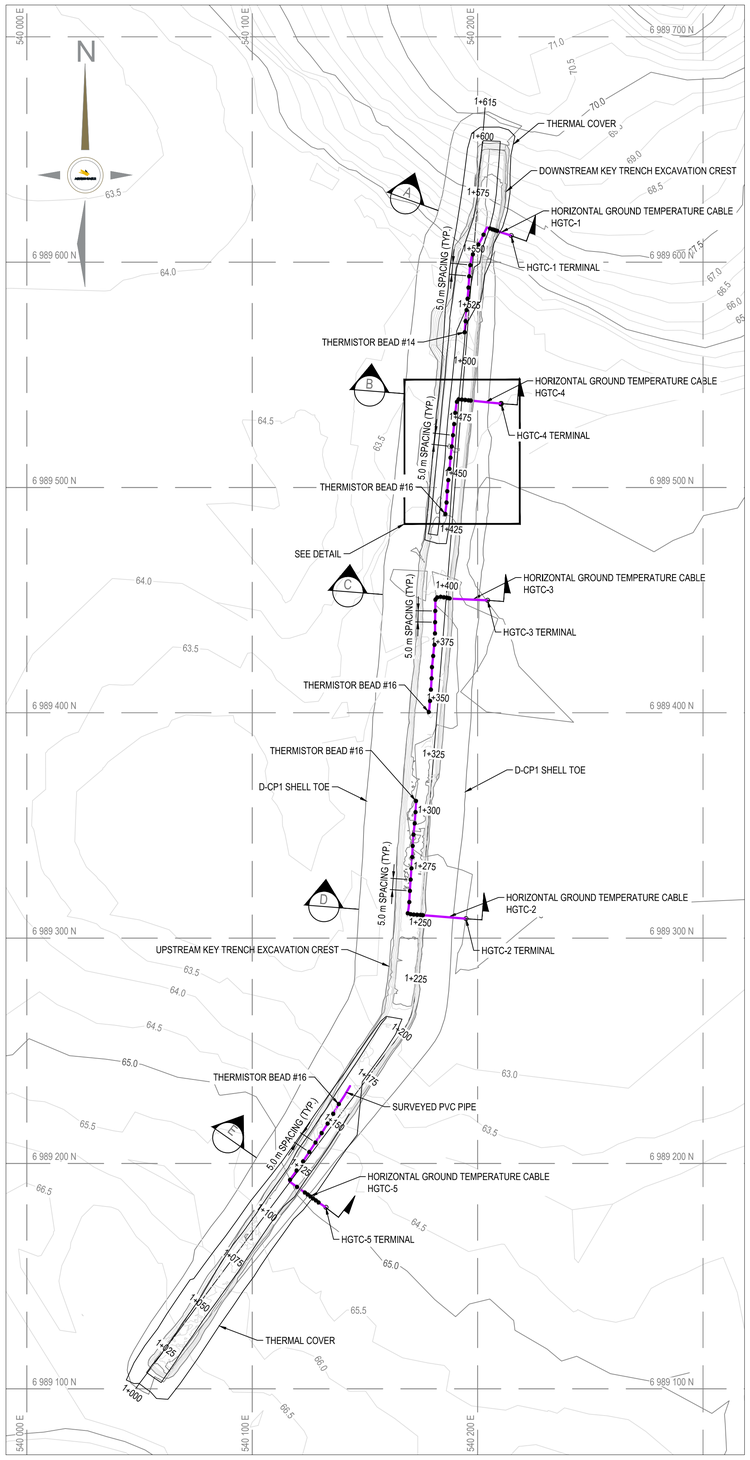

D-CP1 AS-BUILT HORIZONTAL GROUND TEMPERATURE CABLE LAYOUT
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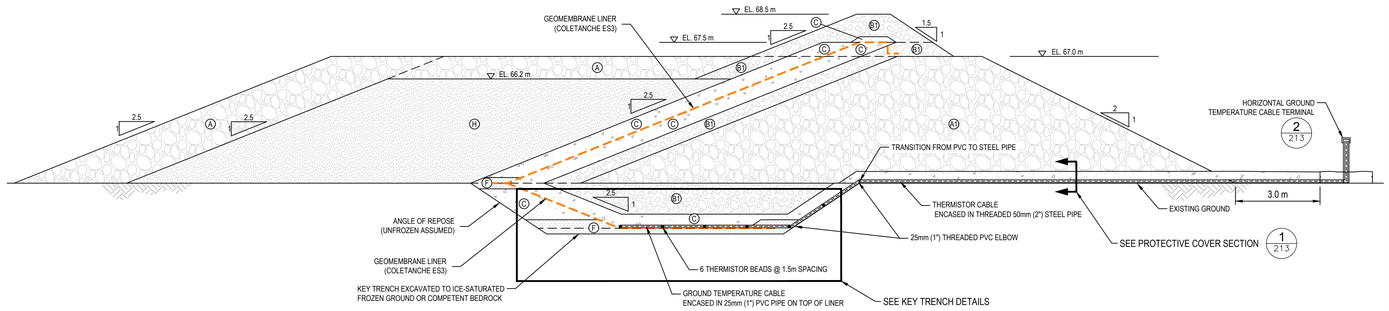

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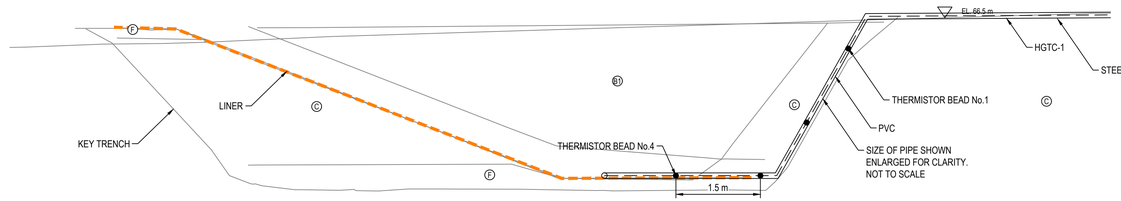

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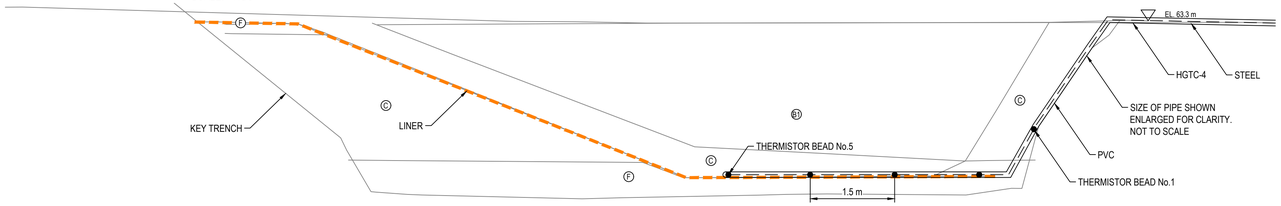

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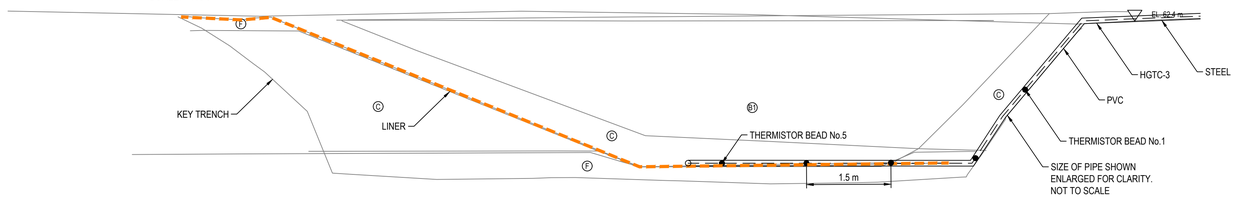

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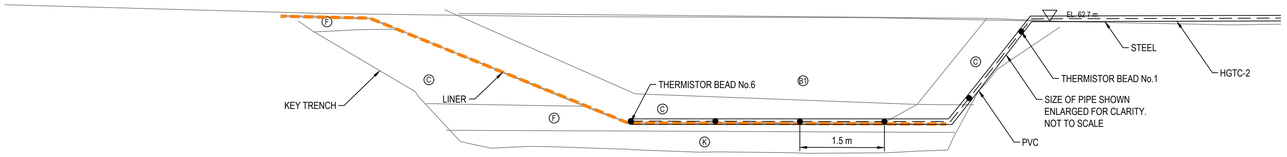

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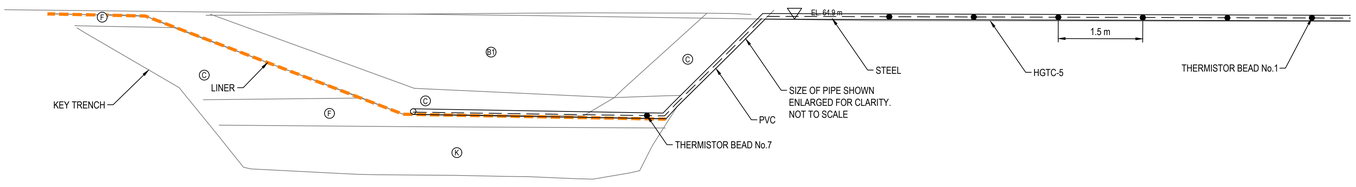

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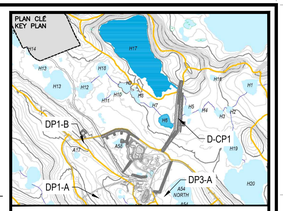

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NOTES GÉNÉRALES / GENERAL NOTES

LEGEND

- (A) RUN-OF-MINE ROCKFILL (600 mm MINUS) IN DIKE UPSTREAM AND FOR THERMAL COVER
- (A1) RUN-OF-MINE ROCKFILL (600 mm MINUS) IN DIKE DOWNSTREAM
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- (H) ESKER SAND AND GRAVEL (75 mm MINUS)
- (K) NEARLY-SATURATED BACKFILL (20 mm MINUS)

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Date Oct 19, 2017
PERMIT NUMBER: P 018
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REGISTERED PROFESSIONAL ENGINEER G. ZHANG LICENSEE NWT/NU

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AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP1 AS-BUILT
INSTRUMENTATION PLAN AND DETAILS
FOR GROUND TEMPERATURE CABLES

DESSINÉ PAR / DRAWN BY	DRG	DATE 2017-10-06
VÉRIFIÉ PAR / CHECKED BY	GZ	2017-10-06
APPROUVÉ PAR / APPROVED BY	KJ	2017-10-06
ÉCHELLE / SCALE	AS SHOWN	DATE 2017-10-06
NO. DESSIN / DRAWING NO.	65-685-230-211	
NO. PROJET / PROJECT NO.	6515	REVISION 2 / FEUILLE / SHT 10 / 12

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FILE NO. 65-685-230-211_R2.dwg

NO. DESSIN DRAWING NO. 65-685-230-212_R2

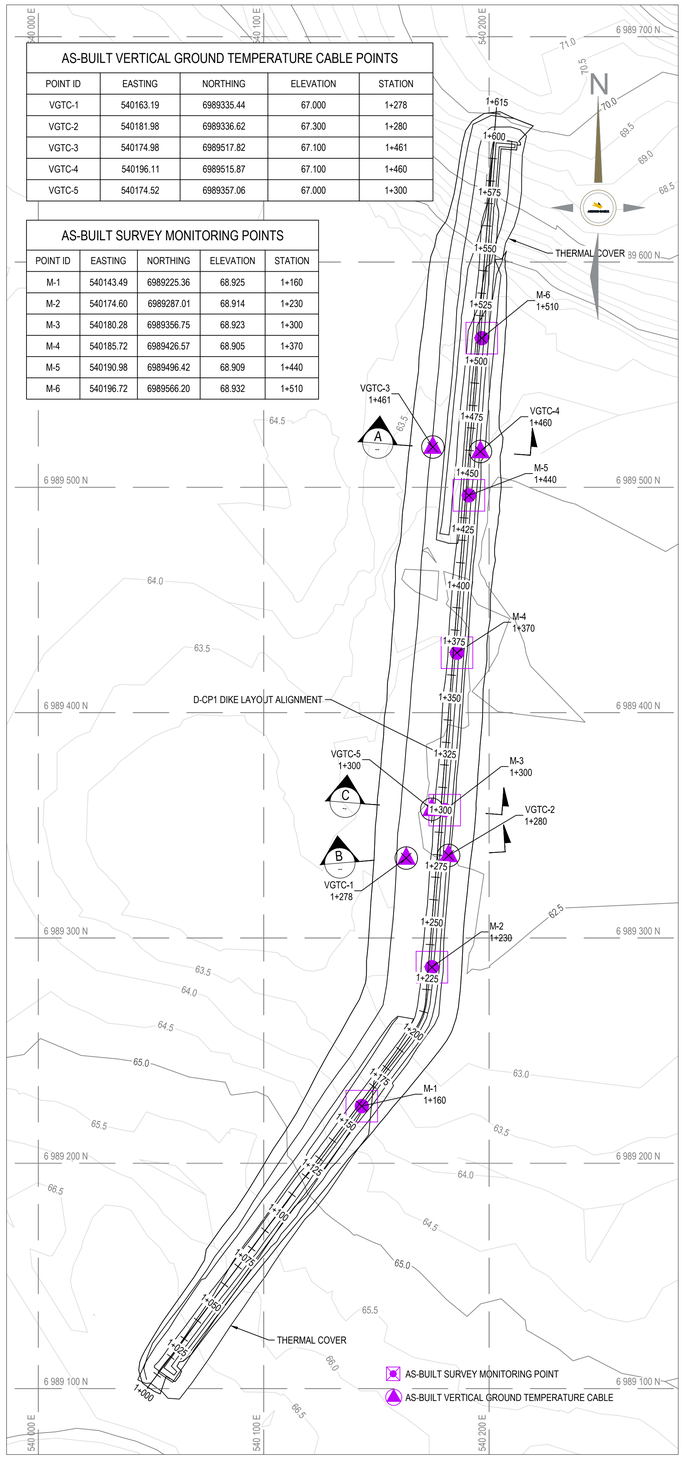
FORMAT ARCHD

AS-BUILT VERTICAL GROUND TEMPERATURE CABLE POINTS

POINT ID	EASTING	NORTHING	ELEVATION	STATION
VGTC-1	540163.19	6989335.44	67.000	1+278
VGTC-2	540181.98	6989336.62	67.300	1+280
VGTC-3	540174.98	6989517.82	67.100	1+461
VGTC-4	540196.11	6989515.87	67.100	1+460
VGTC-5	540174.52	6989357.06	67.000	1+300

AS-BUILT SURVEY MONITORING POINTS

POINT ID	EASTING	NORTHING	ELEVATION	STATION
M-1	540143.49	6989225.36	68.925	1+160
M-2	540174.60	6989287.01	68.914	1+230
M-3	540180.28	6989356.75	68.923	1+300
M-4	540185.72	6989426.57	68.905	1+370
M-5	540190.98	6989496.42	68.909	1+440
M-6	540196.72	6989566.20	68.932	1+510



D-CP1 AS-BUILT SURVEY MONUMENT AND VERTICAL GROUND TEMPERATURE CABLE LAYOUT
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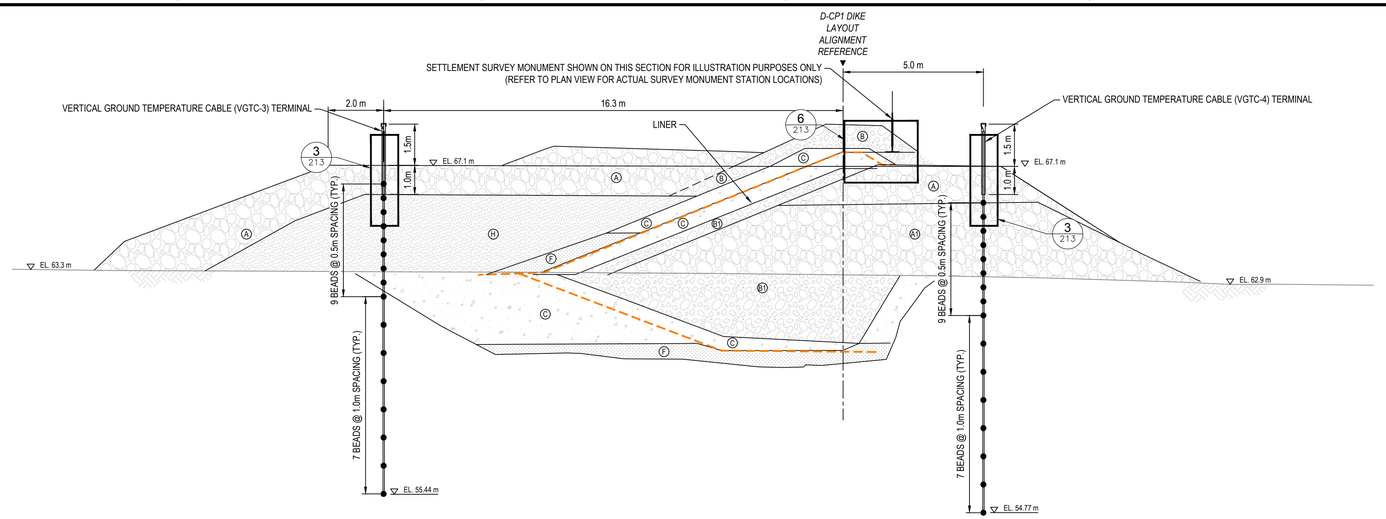

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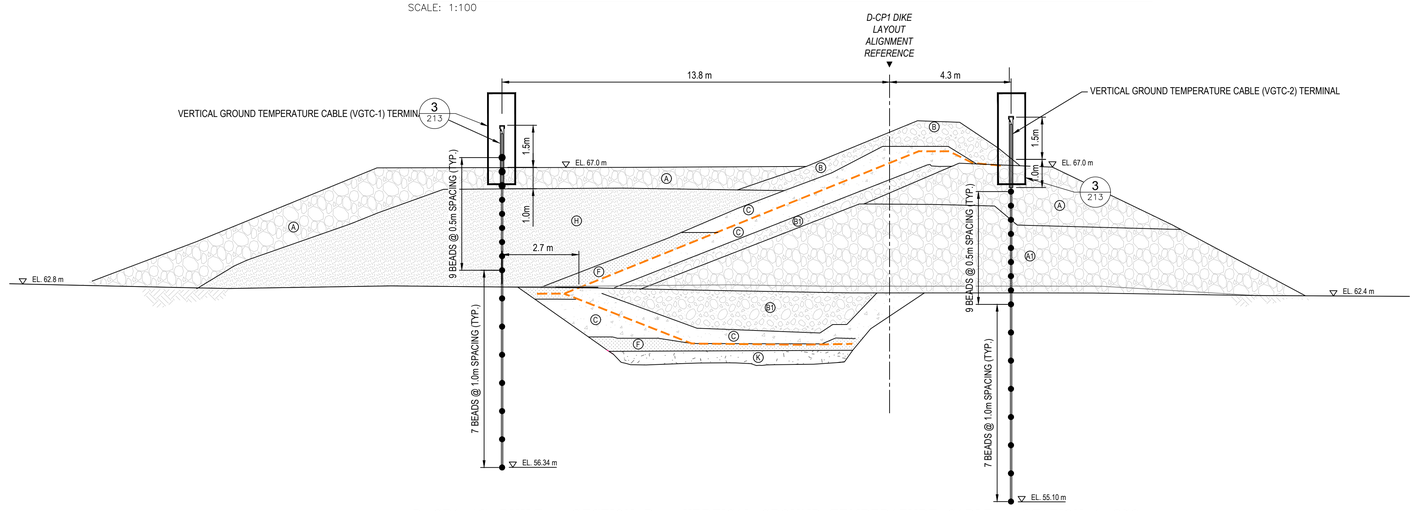
SCALE: 1:100



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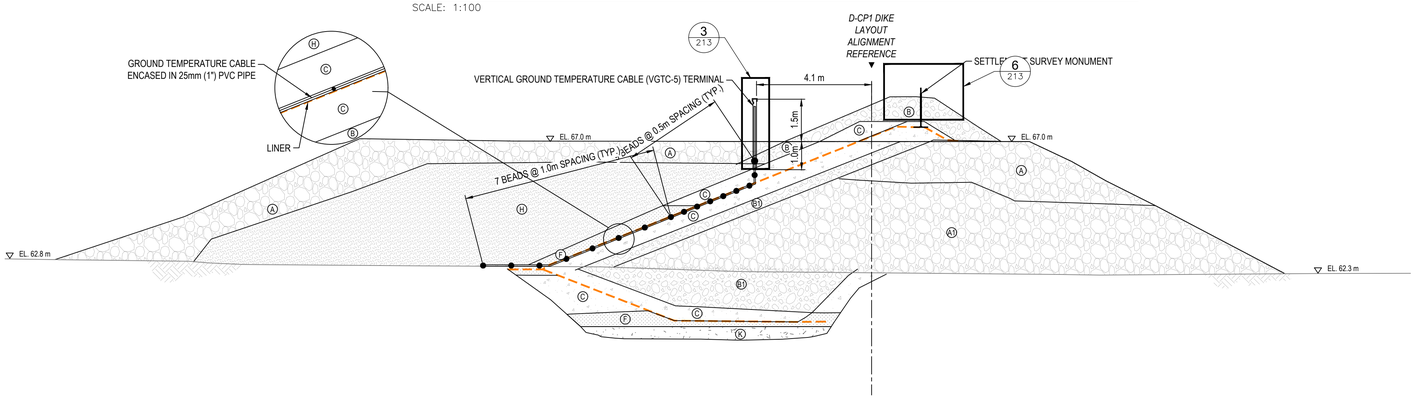

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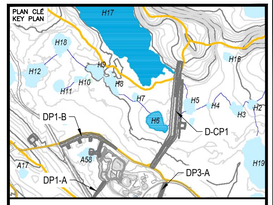

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REGISTERED PROFESSIONAL ENGINEER W.T. HORNE LICENSEE N.W.T. — REGISTERED PROFESSIONAL ENGINEER G. ZHANG LICENSEE N.W.T./NU

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP1 AS-BUILT INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES AND SETTLEMENT SURVEY MONUMENT POINTS

DESSINÉ PAR DRAWN BY	DRG	DATE 2017-10-06
VÉRIFIÉ PAR CHECKED BY	GZ	2017-10-06
APPROUVÉ PAR APPROVED BY	GZ	2017-10-06
ÉCHELLE SCALE	AS SHOWN	DATE 2017-10-06

NO. DESSIN DRAWING NO. 65-685-230-212

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
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Photo 1: CP1 Upstream Crest

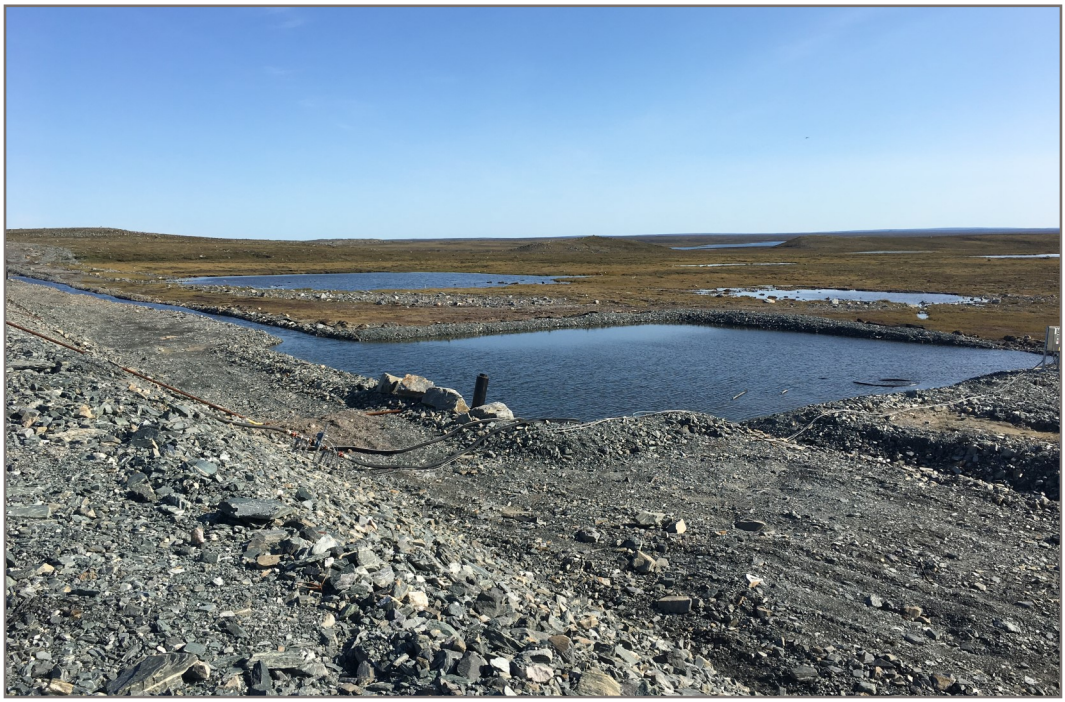


Photo 2: CP1 Downstream Crest, water collection pond

Photo 3: CP1 Thermistor data acquisition system

Photo 4: Cracks in dam crest, centre of dam close to the crest of the upstream slope

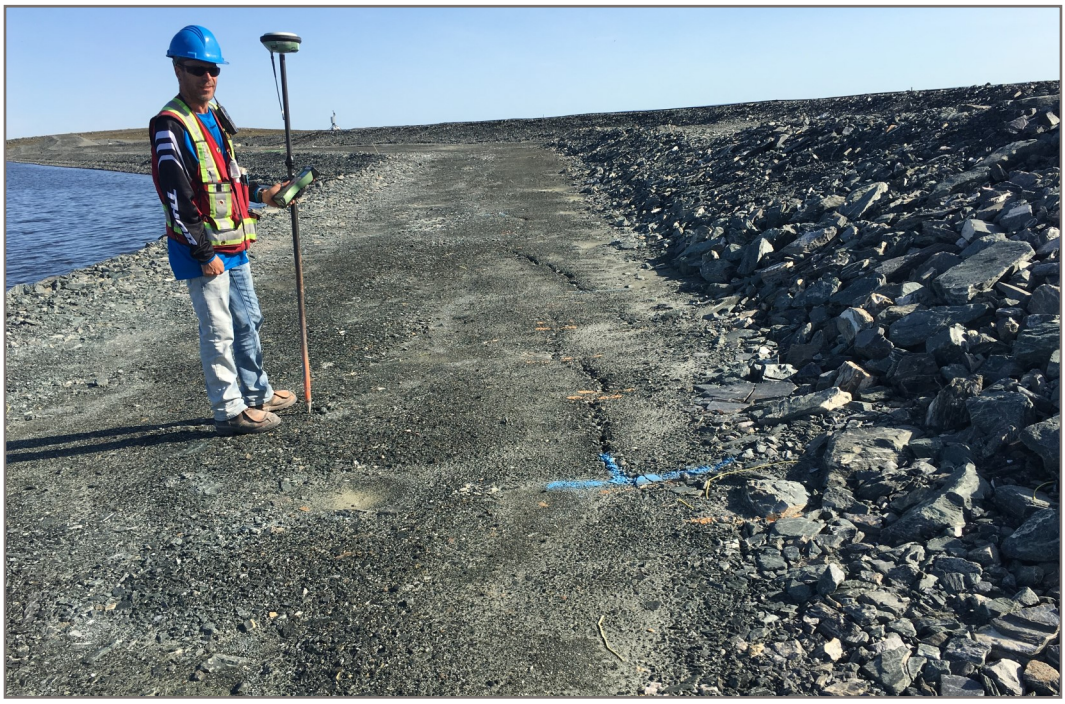


Photo 5: CP1 Cracks in dam crest, south end of dam close to the crest of the upstream slope

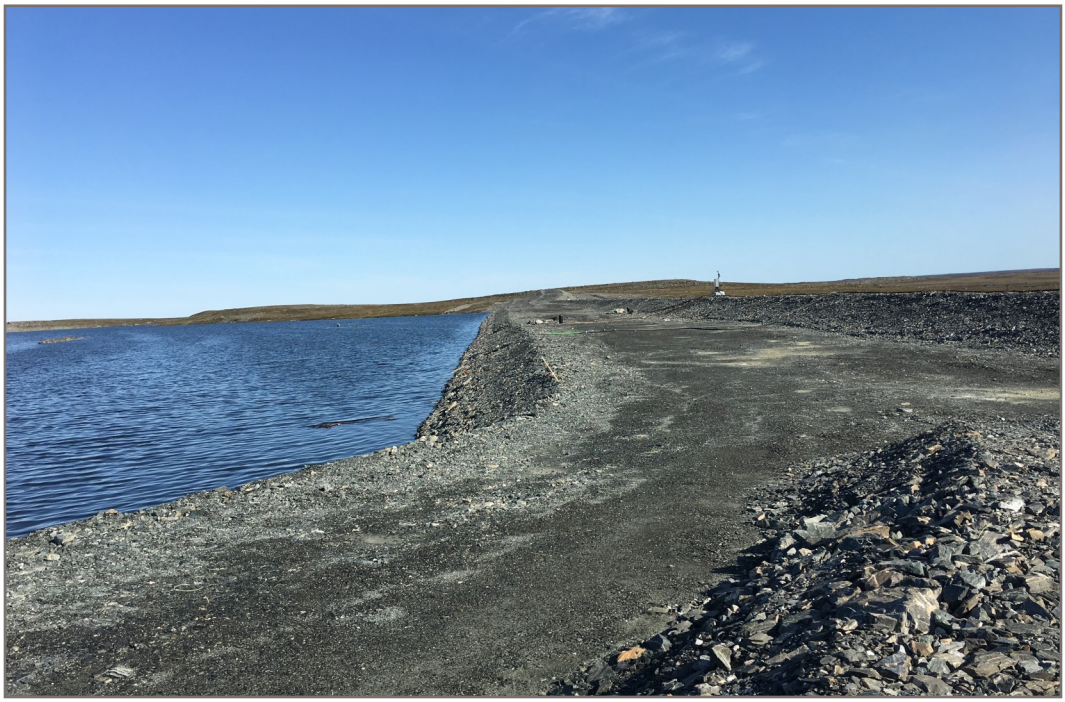


Photo 6: CP1 Upstream Crest and Slope

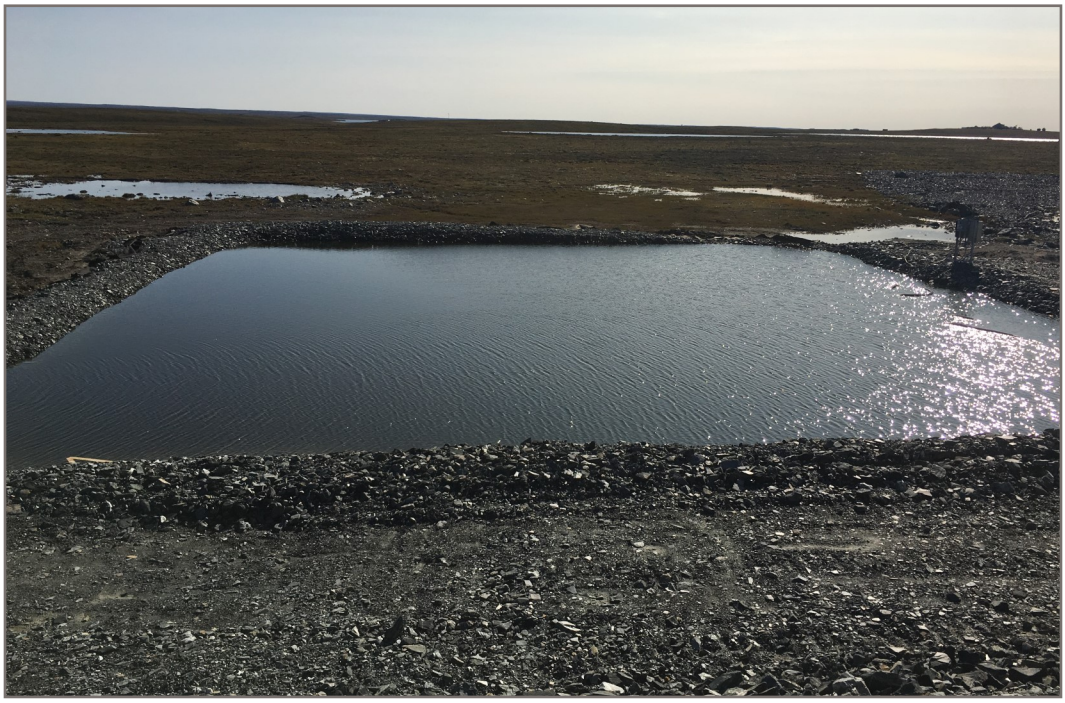
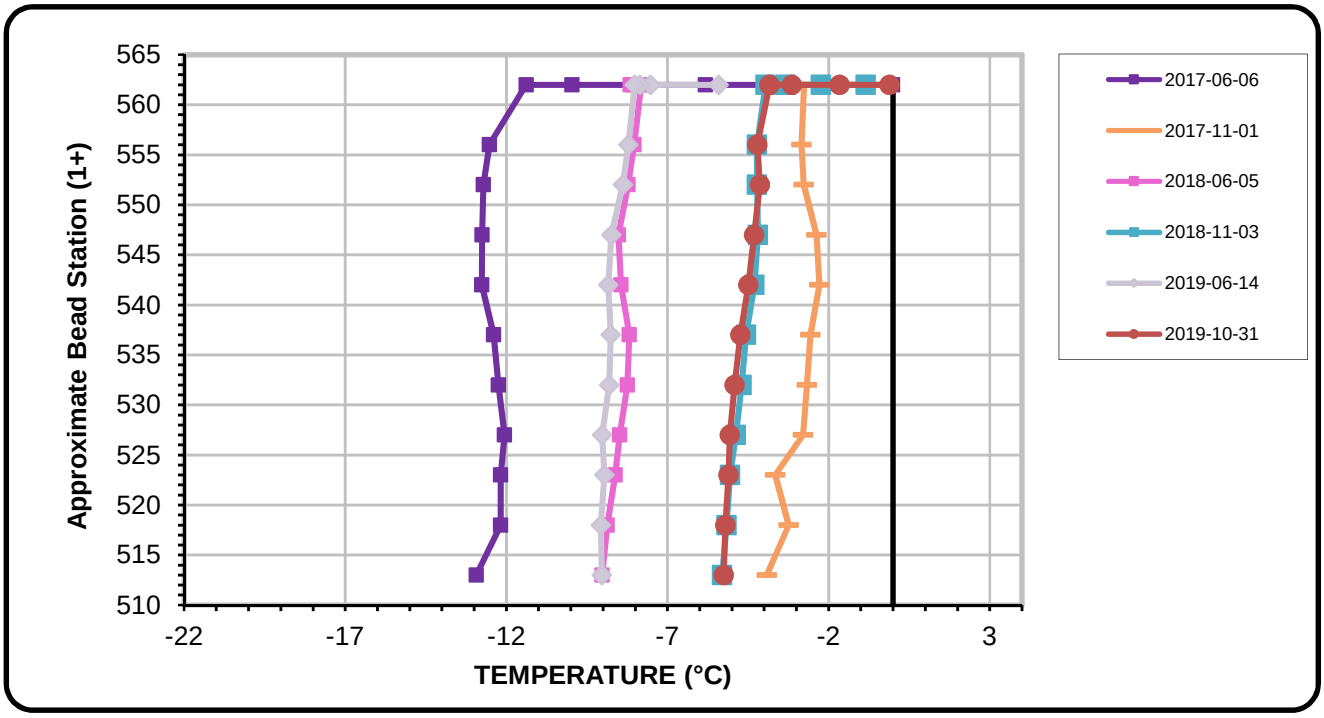
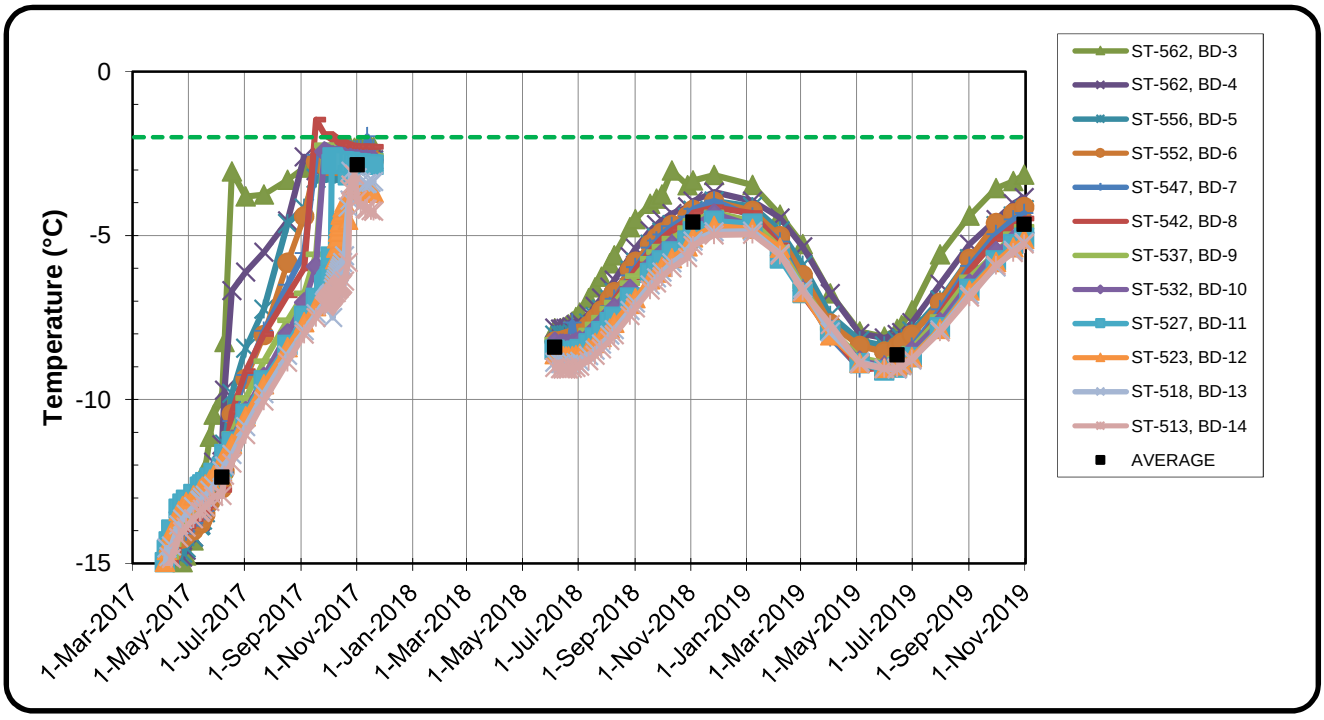


Photo 7: CP1 Water collection downstream of dyke



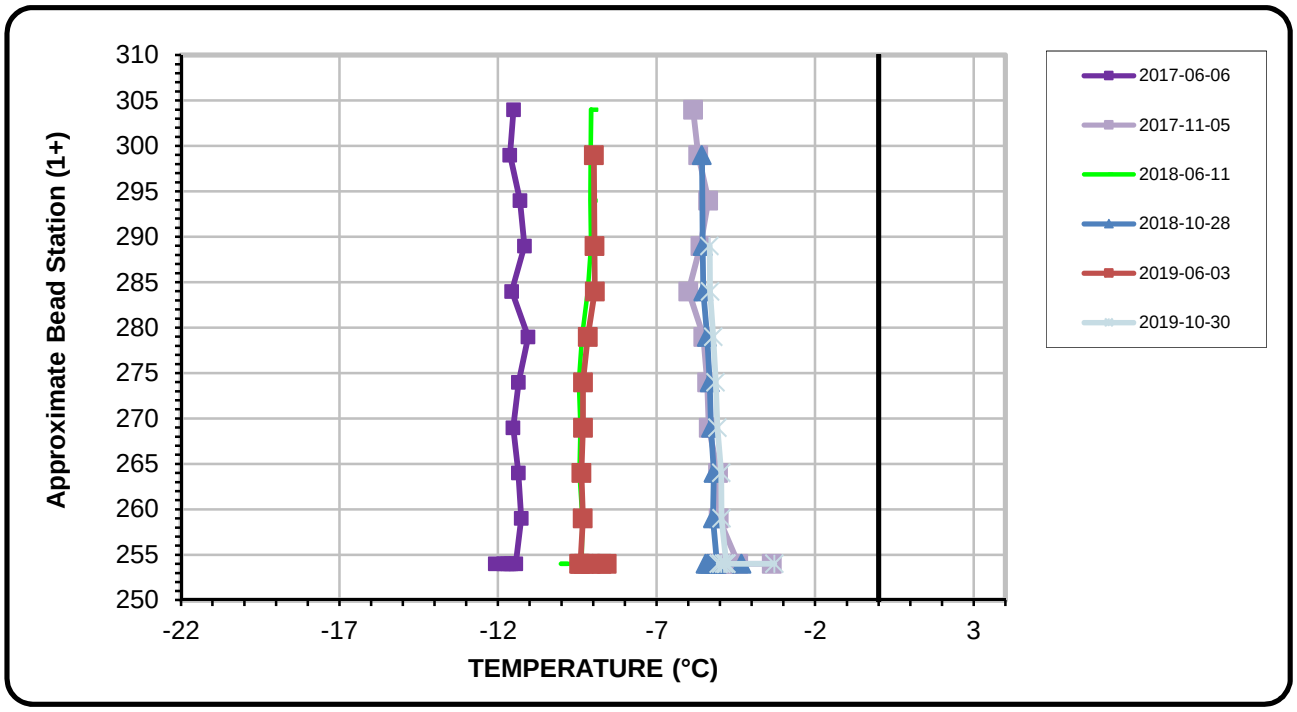


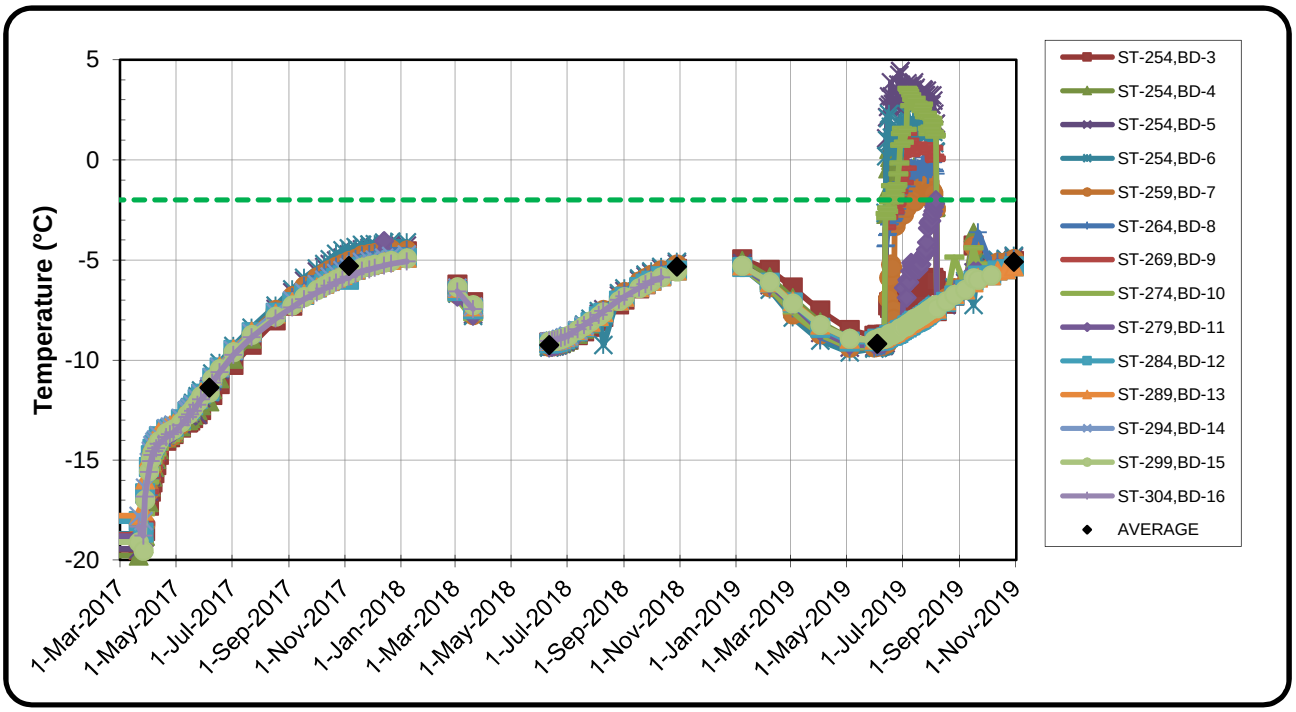
Serial No.: 2595
Date Installed: March 24, 2017

EBA File No: E14103230.01-023

Horizontal Ground Temperature Profile for Cable HGTC-01
Dike D-CP1

TETRA TECH



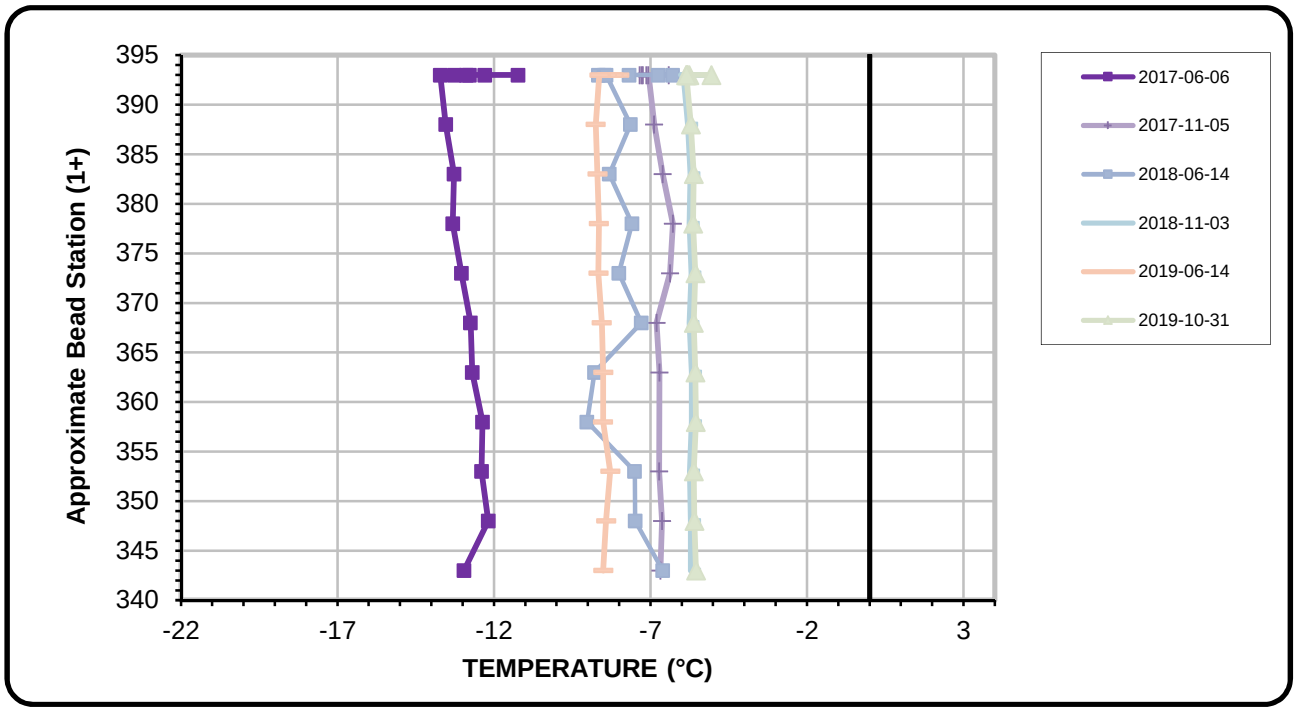


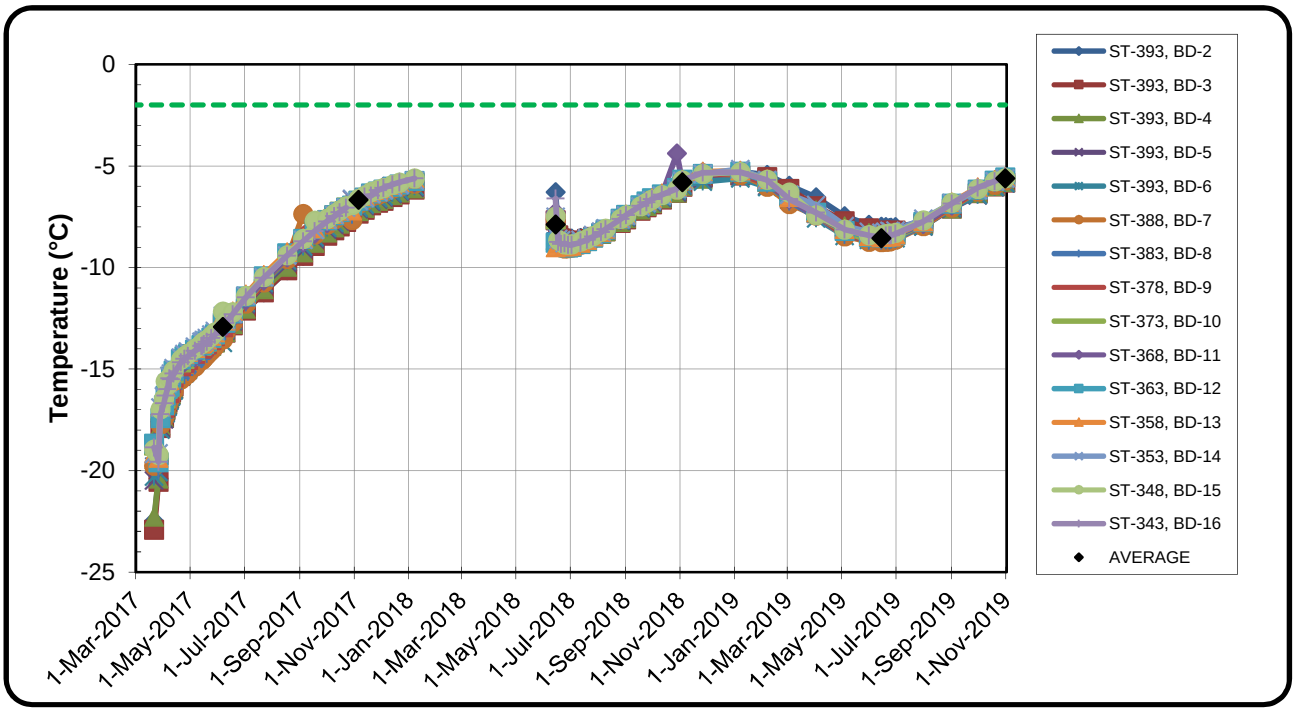
Serial No.: 2596
Date Installed: March 3, 2017

EBA File No: E14103230.01-023

Horizontal Ground Temperature Profile for Cable HGTC-02
Dike D-CP1

TETRA TECH



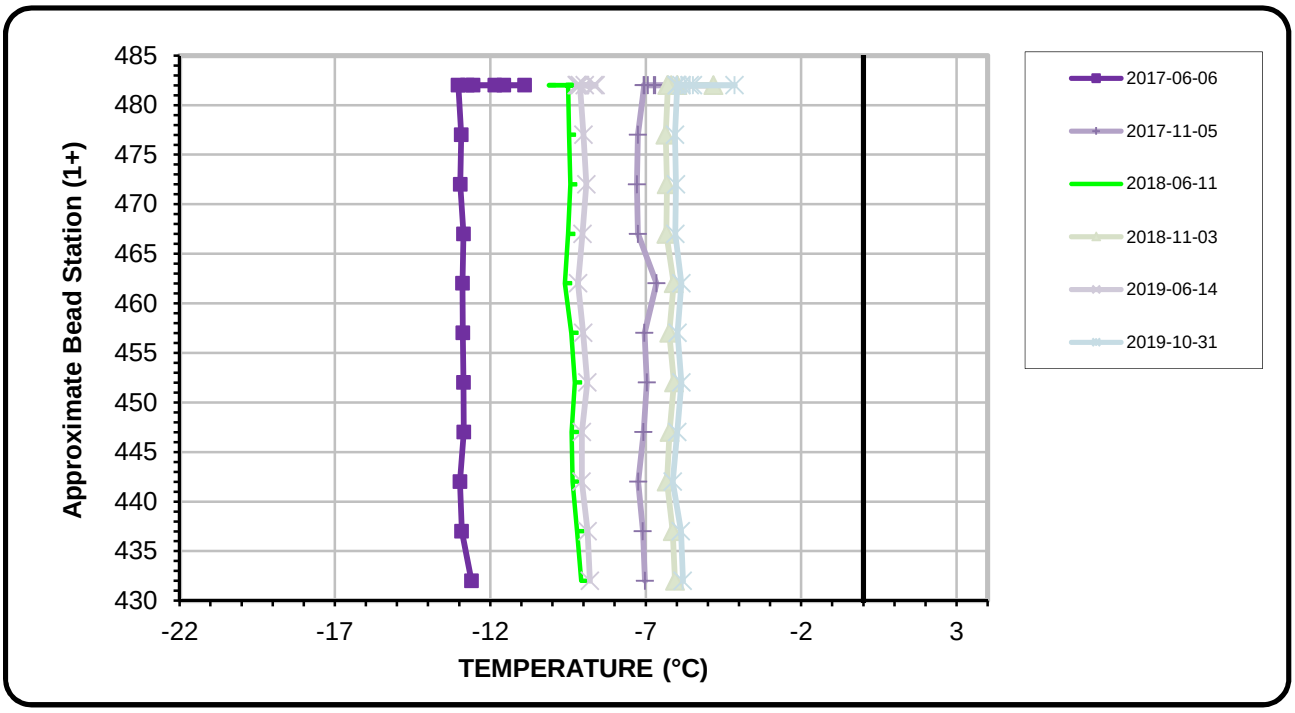


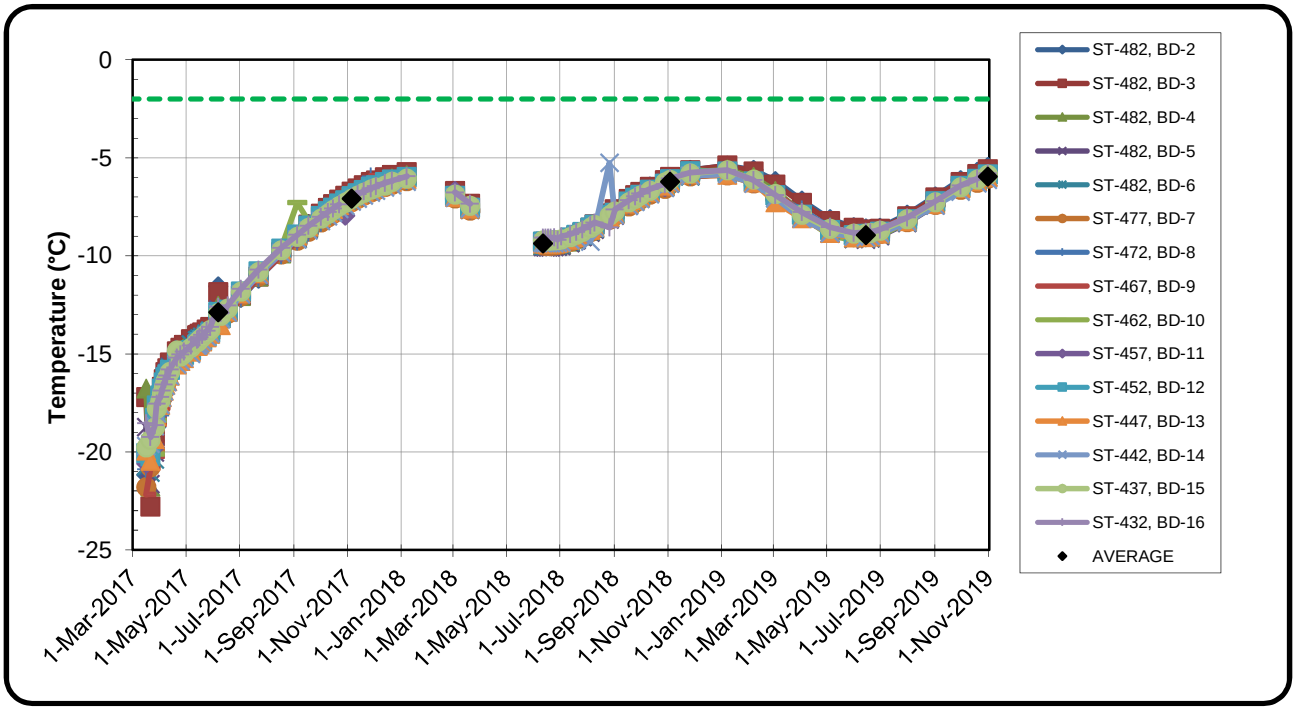
Serial No.: 2597
Date Installed: March 14, 2017

EBA File No: E14103230.01-023

Horizontal Ground Temperature Profile for Cable HGTC-03
Dike D-CP1

TETRA TECH



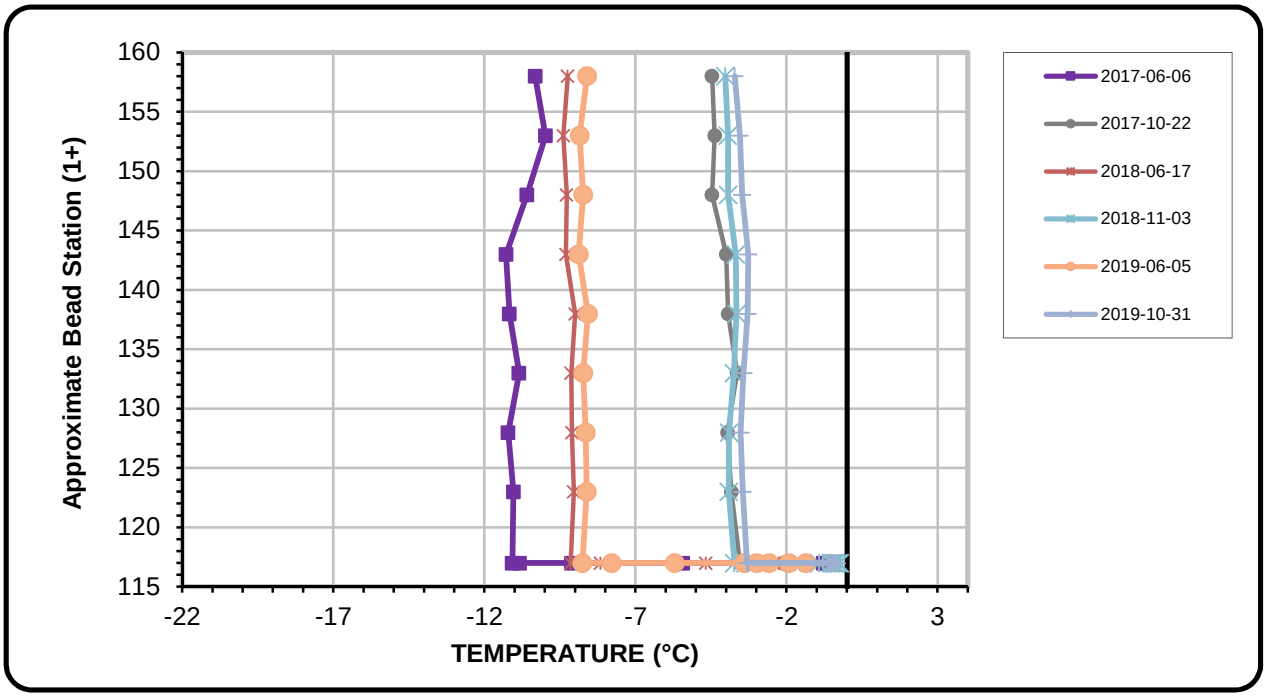


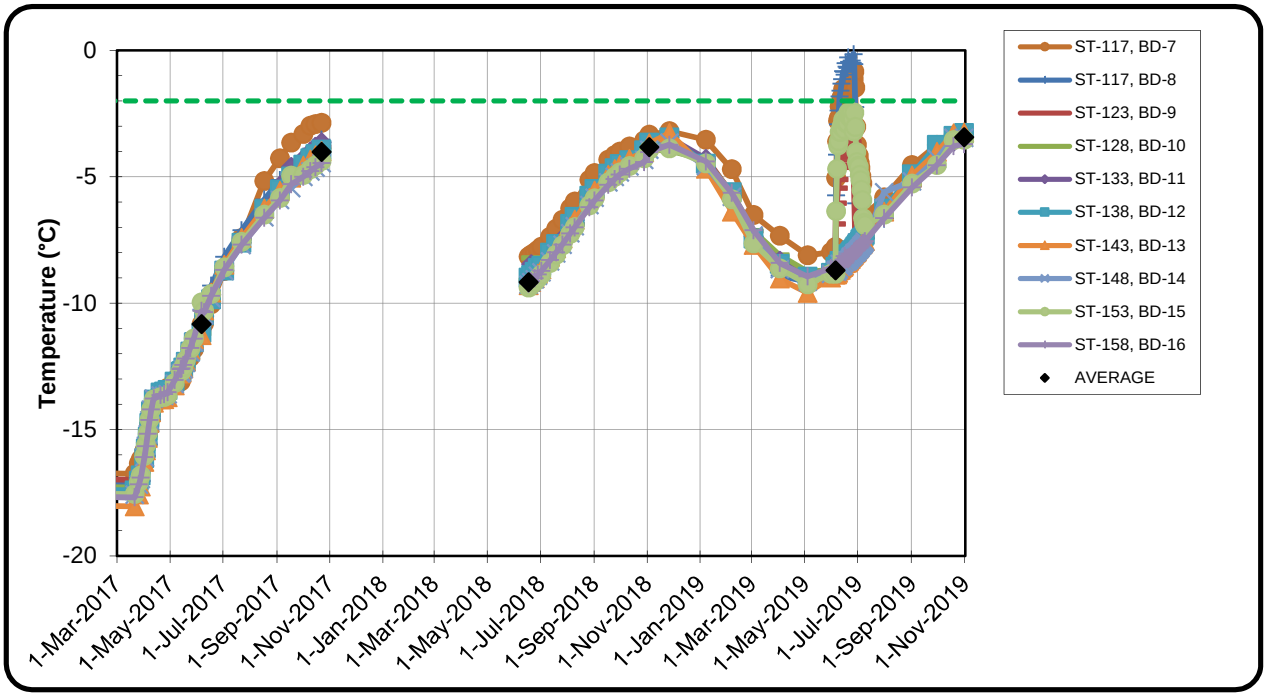
Serial No.: 2598
Date Installed: March 16, 2017

EBA File No: E14103230.01-023

Horizontal Ground Temperature Profile for Cable HGTC-04
Dike D-CP1

TETRA TECH



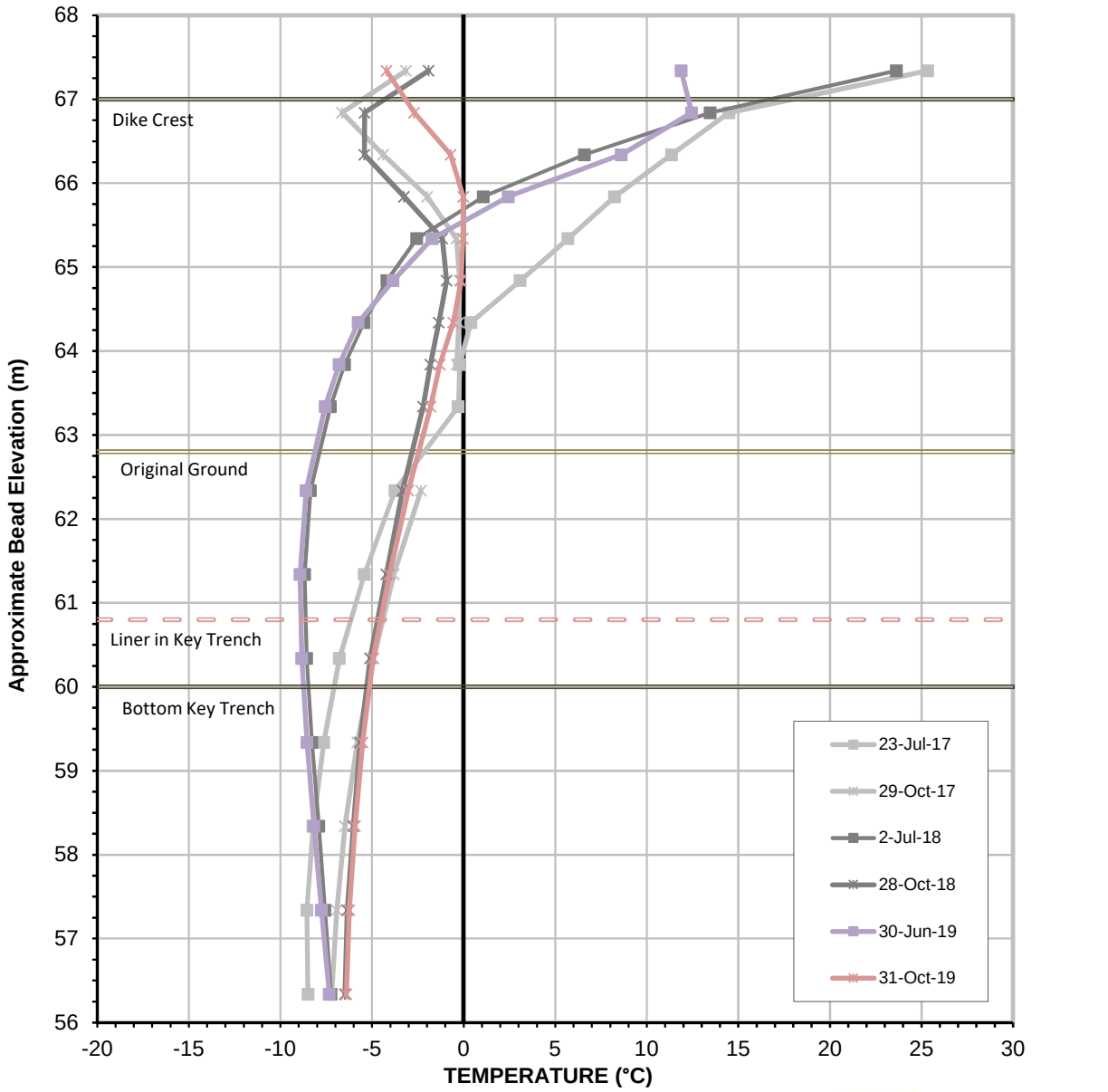


Serial No.: 2599
Date Installed: March 2, 2017

EBA File No: E14103230.01-023

Horizontal Ground Temperature Profile for Cable HGTC-05
Dike D-CP1

TETRA TECH



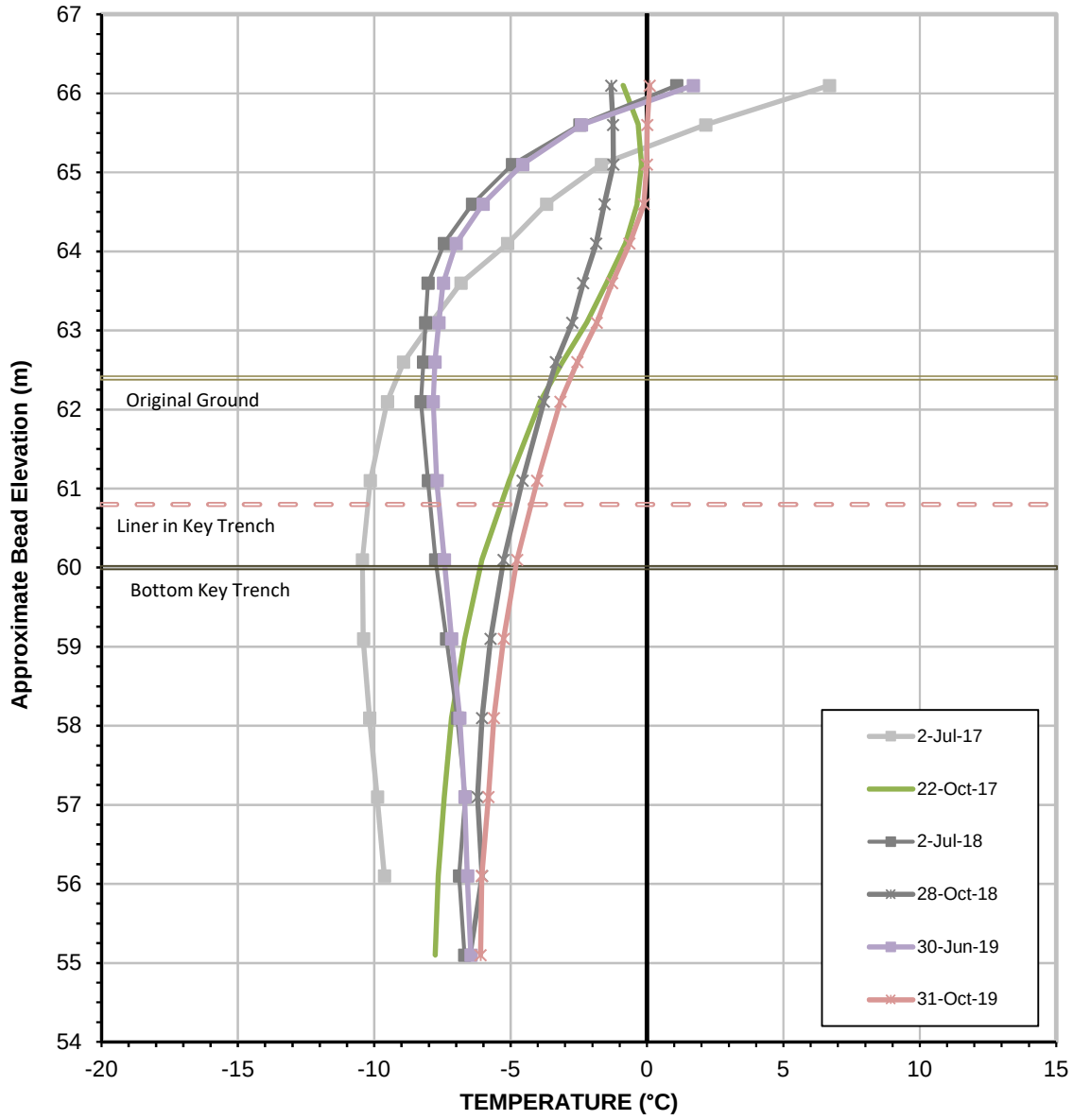
Serial No.: 2626
Date Installed: July 22, 2017

Vertical Ground Temperature Profile for Cable VGTC-01
Dike D-CP1

TETRA TECH

Average Annual Temperature at Various Elevations

	November 2017 - November 2018	November 2018 - November 2019
Bottom of Cable	-7.0	-6.8
Liner Base Elevation	-6.8	-7.5



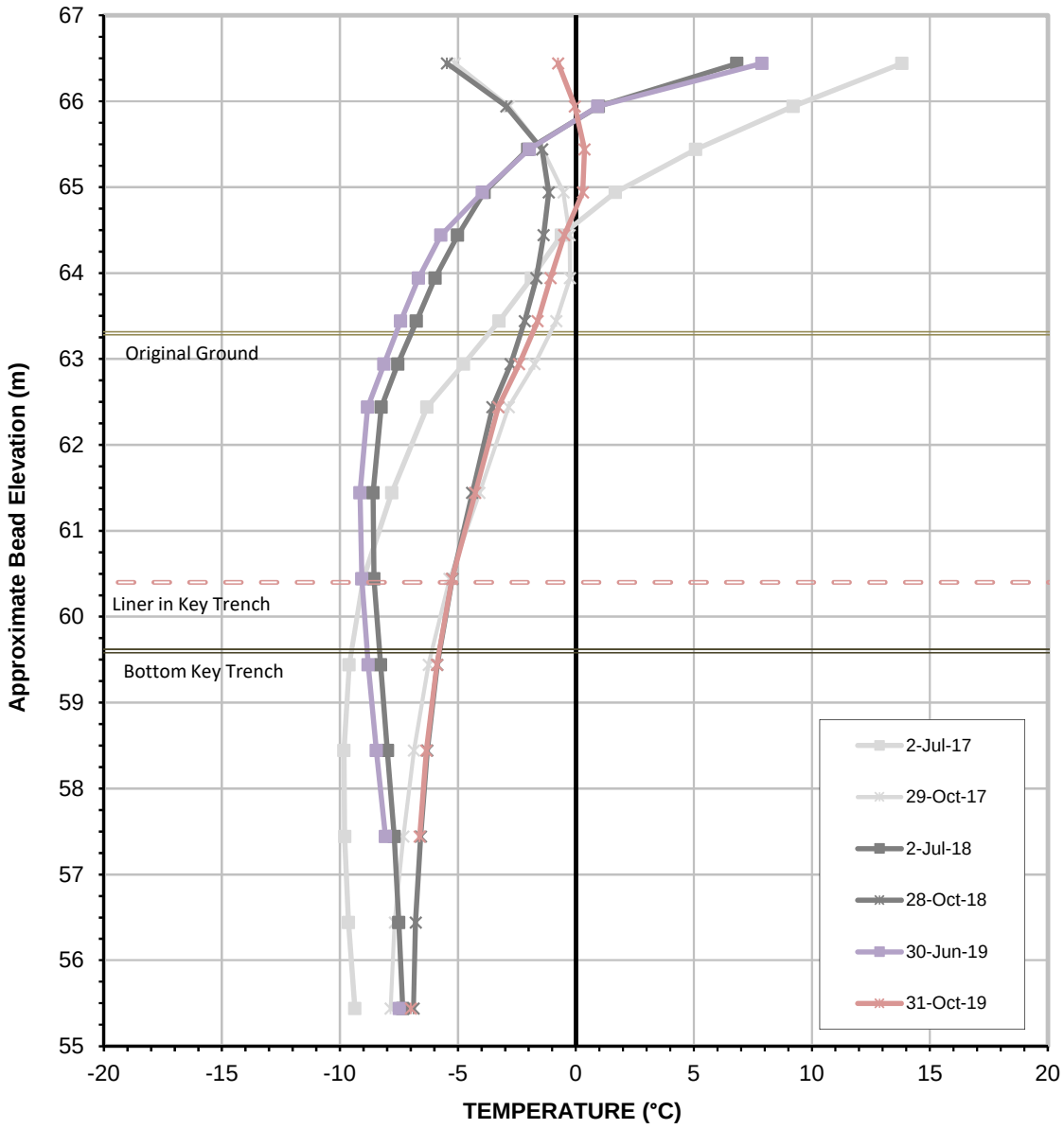
Vertical Ground Temperature Profile for Cable VGTC-02
Dike D-CP1

Serial No.: 2627
Date Installed: June 16, 2017

TETRA TECH

Average Annual Temperature at Various Elevations

	November 2017 - November 2018	November 2018 - November 2019
Bottom of Cable	-6.9	-6.2
Liner Base Elevation	-6.9	-6.3



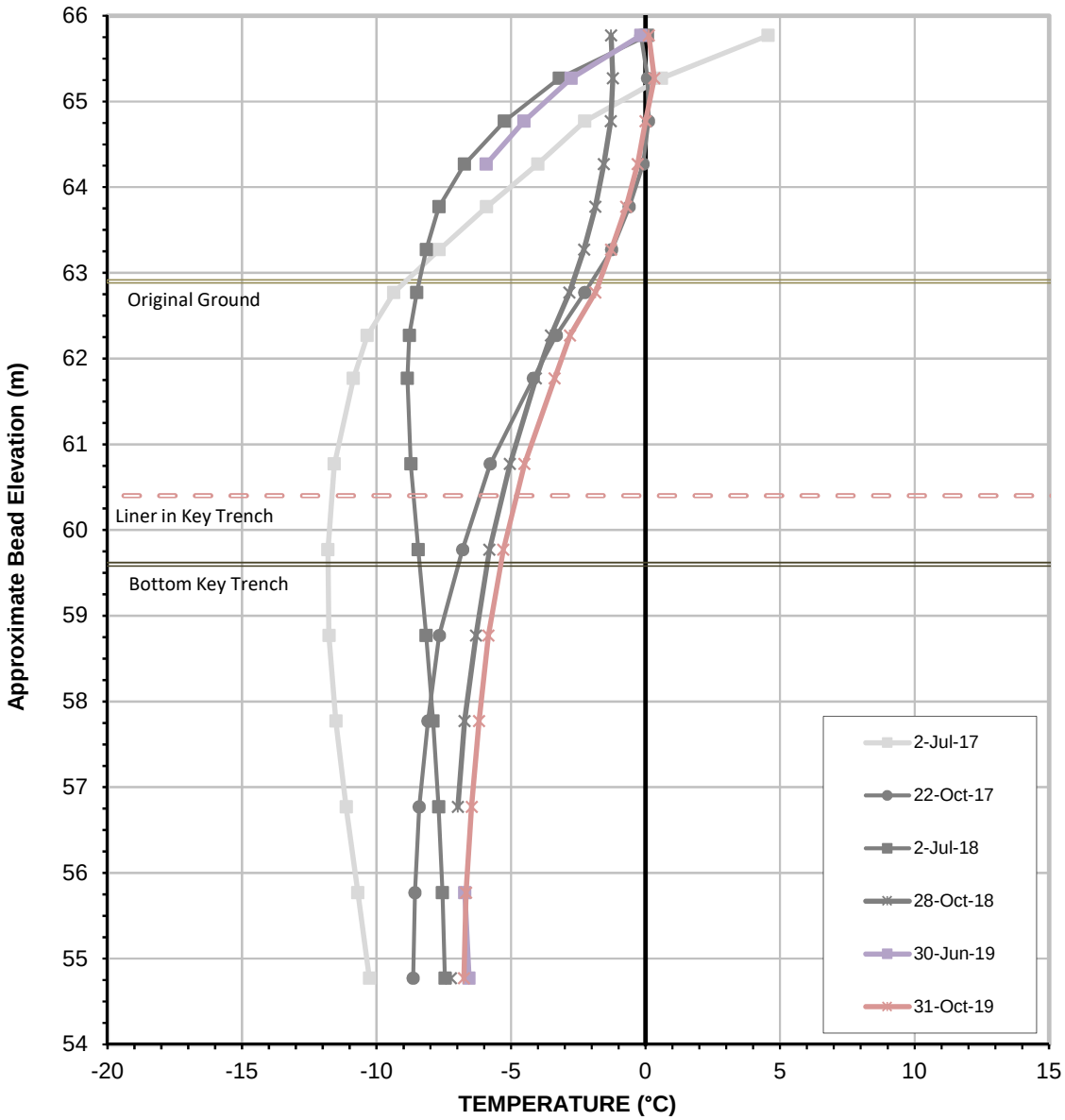
Vertical Ground Temperature Profile for Cable VGTC-03
Dike D-CP1

Serial No.: 2628
Date Installed: June 15, 2017

TETRA TECH

Average Annual Temperature at Various Elevations

	November 2017 - November 2018	November 2018 - November 2019
Bottom of Cable	-7.2	-7.0
Liner Base Elevation	-6.9	-7.2



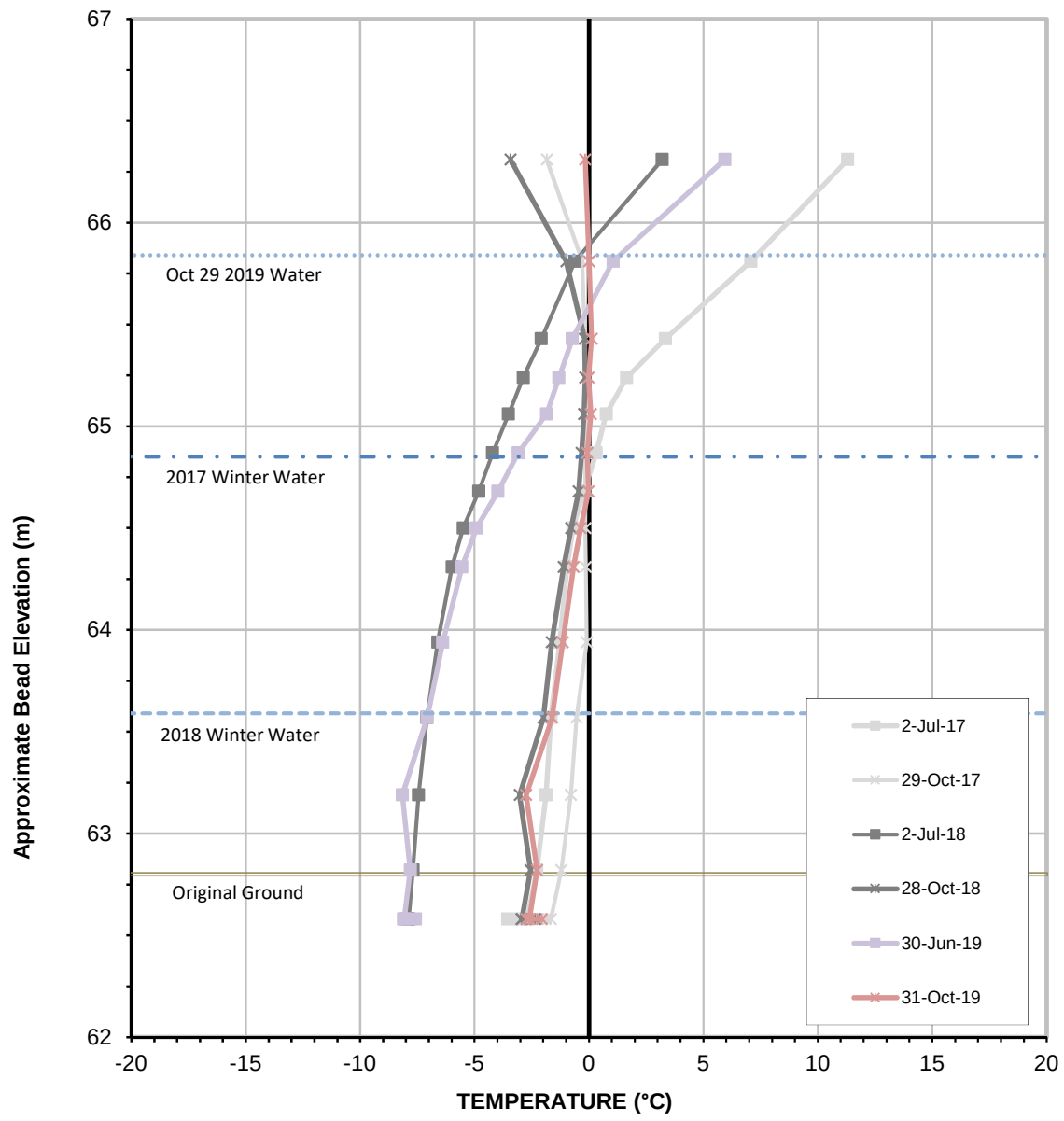
Serial No.: 2629
Date Installed: June 15, 2017

Vertical Ground Temperature Profile for Cable VGTC-04
Dike D-CP1

TETRA TECH

Average Annual Temperature at Various Elevations

	November 2017 - November 2018	November 2018 - November 2019
Bottom of Cable	-7.3	-6.7
Liner Base Elevation	-7.0	-6.3



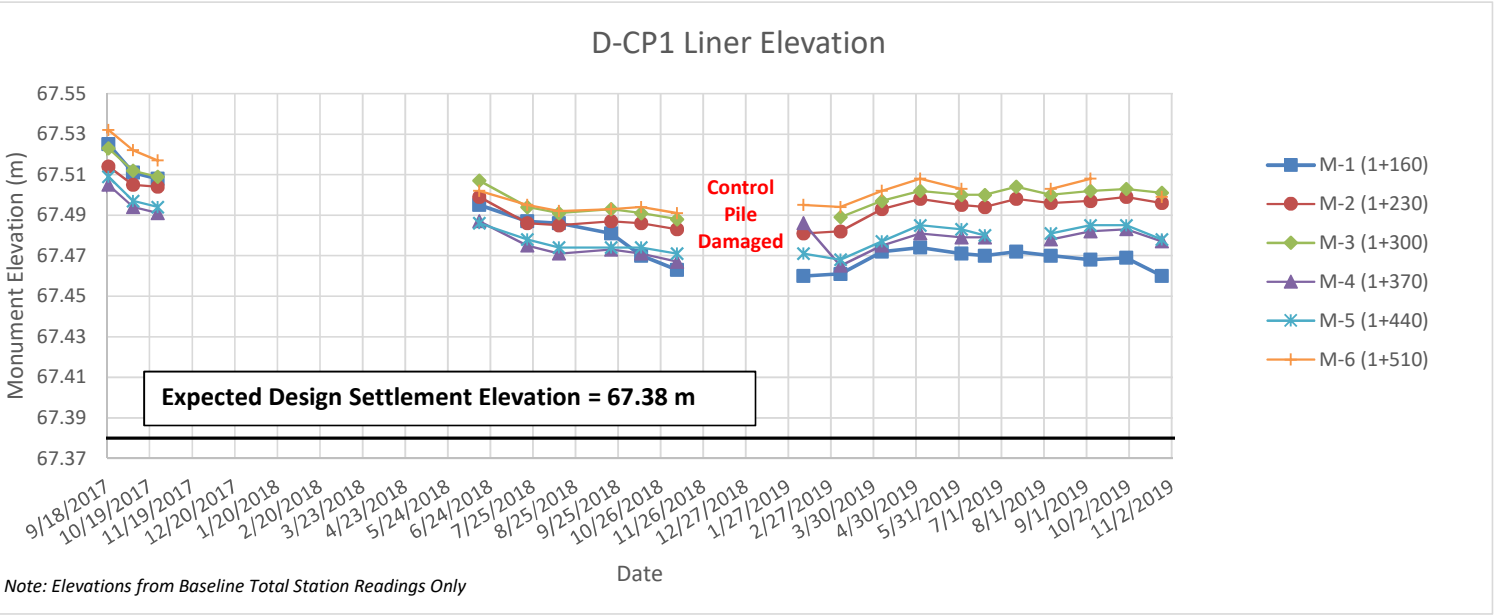
Serial No.: 2630
Date Installed: May 16, 2017

Vertical Ground Temperature Profile for Cable VGTC-05
Dike D-CP1

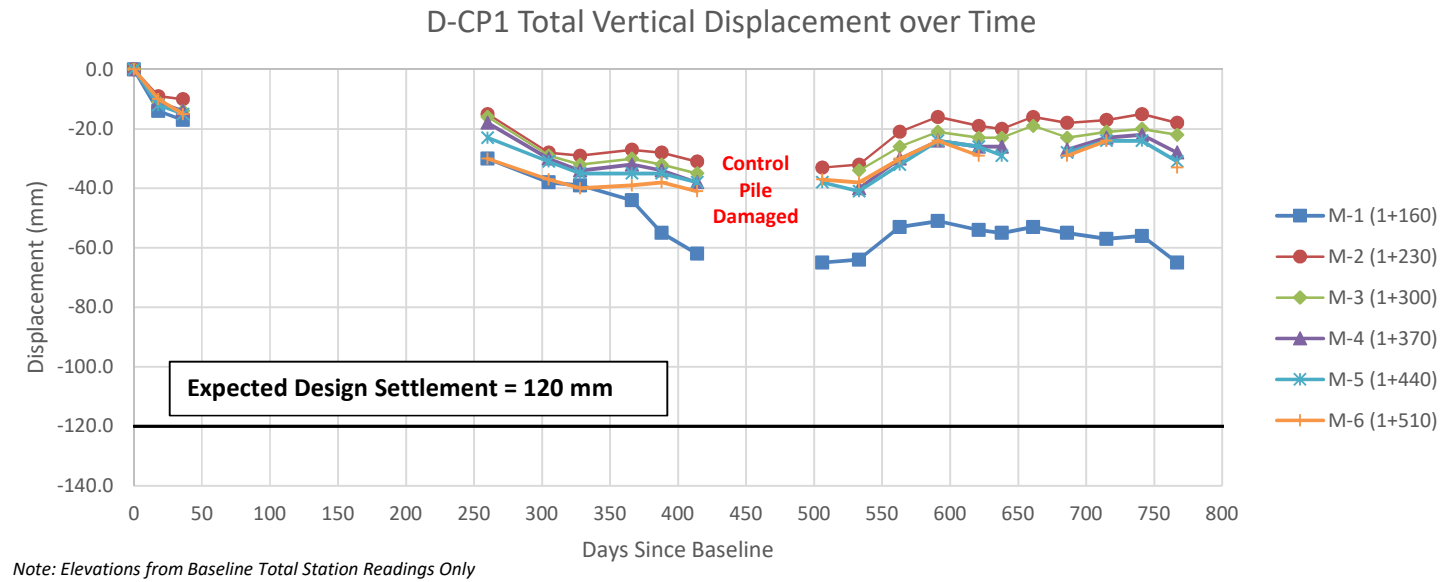
TETRA TECH

Average Annual Temperature at Bottom of Cable

	November 2017 - November 2018	November 2018 - November 2019
Temperature (°C)	-5.7	-7.0



Note: Elevations from Baseline Total Station Readings Only



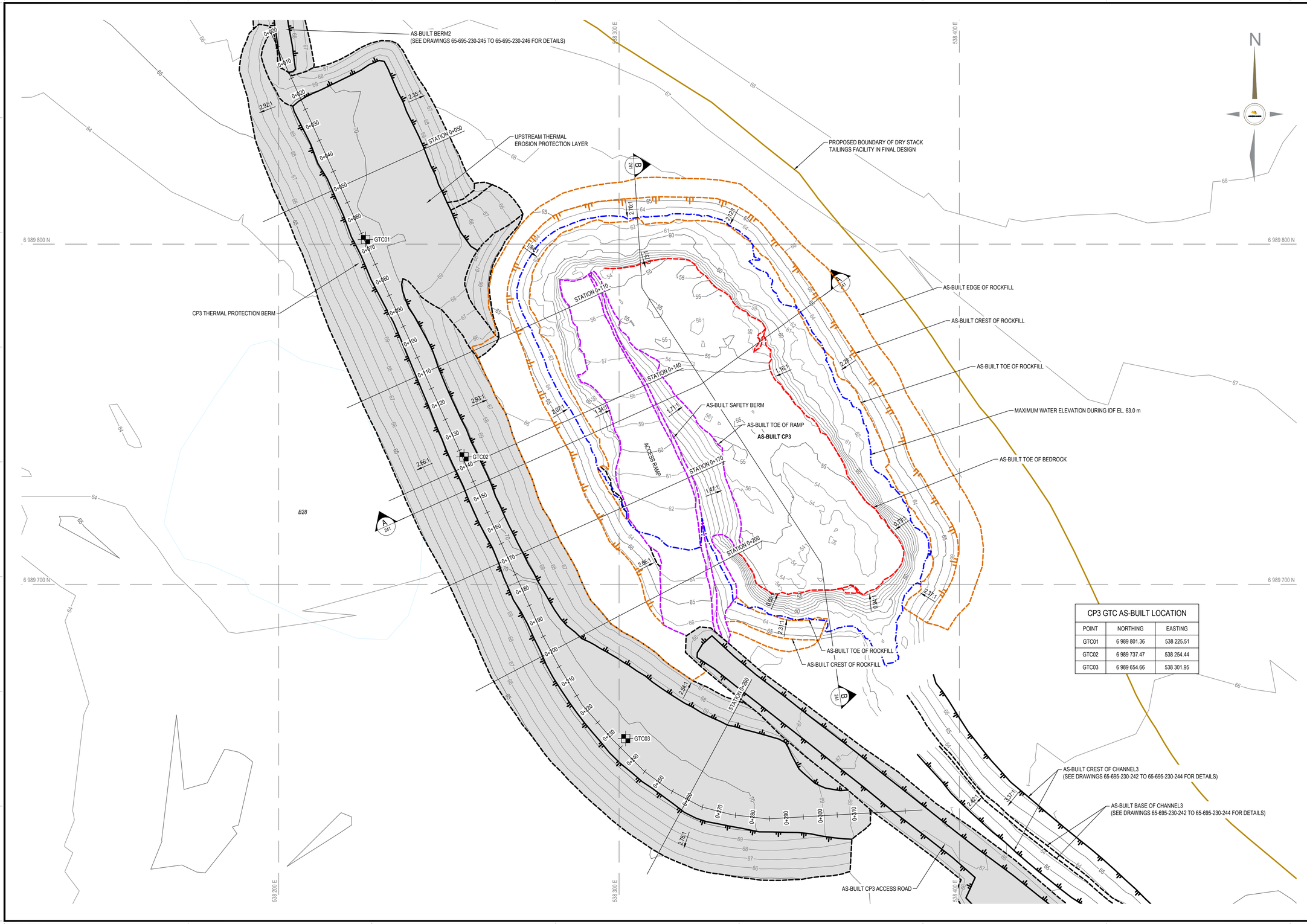
Note: Elevations from Baseline Total Station Readings Only

APPENDIX C

POND CP3 AND CHANNELS AND BERMS

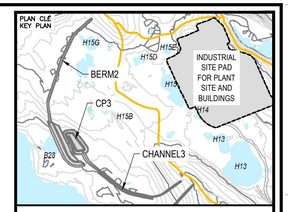
NO. DESSIN
DRAWING NO. 65-695-230-238

FORMAT ARCHD



CP3 GTC AS-BUILT LOCATION		
POINT	NORTHING	EASTING
GTC01	6 989 801.36	538 225.51
GTC02	6 989 737.47	538 254.44
GTC03	6 989 654.66	538 301.95

PLAN CLÉ
KEY PLAN



TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

1. ASSUMED CONSTRUCTION SCHEDULE WINTER 2018 / 2019
2. ASSUMED OPERATION SCHEDULE STARTING TO STORE WATER FROM FRESHET OF 2019.
3. POND DESIGN CAPACITY IS BASED ON STORING 3 OUT OF 7 FRESHET WATER UNDER 1:100 WET YEAR CONDITION.
4. THE MAXIMUM ALLOWABLE OPERATING WATER LEVEL IS AT ELEVATION 63.0 m UNDER THE DESIGN IDF CONDITION.
5. MATERIAL PLACEMENT AND FOUNDATION PREPARATION SHOULD BE IN ACCORDANCE WITH THE REQUIREMENTS OF GEOTECHNICAL CONSTRUCTION / MATERIAL SPECIFICATIONS (TETRA TECH 2018).

TEL QUE CONSTRUIT
AS BUILT
AGNICO EAGLE
DATE : 2019-09-27

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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2019-09-27	RECORD DRAWINGS	EL	WTH	
0	2018-06-21	ISSUED FOR CONSTRUCTION	HX	WTH	
A	2018-05-29	ISSUED FOR REVIEW	HX	WTH	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
Signature
Date Sept 27, 2019
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

W.T. HORNE LICENSED PROFESSIONAL ENGINEER NWT/NU
Sept 27, 2019

TITRE / TITLE

AGNICO EAGLE MELIADINE GOLD PROJECT

CP3 AND CP3 THERMAL PROTECTION BERM LAYOUT PLAN

DESSINÉ PAR DRAWN BY	EL	DATE 2019-06-12
VERIFIÉ PAR CHECKED BY	HX	2019-06-12
APPROUVÉ PAR APPROVED BY	WTH	2019-06-12
ÉCHELLE SCALE	1:500	DATE 2019-06-12
NO. DESSIN DRAWING NO.	65-695-230-238	
NO. PROJET PROJECT NO.	6515	REVISION 1 / FEUILLE / SHT 1 / 13

AE-CART-ARCH D

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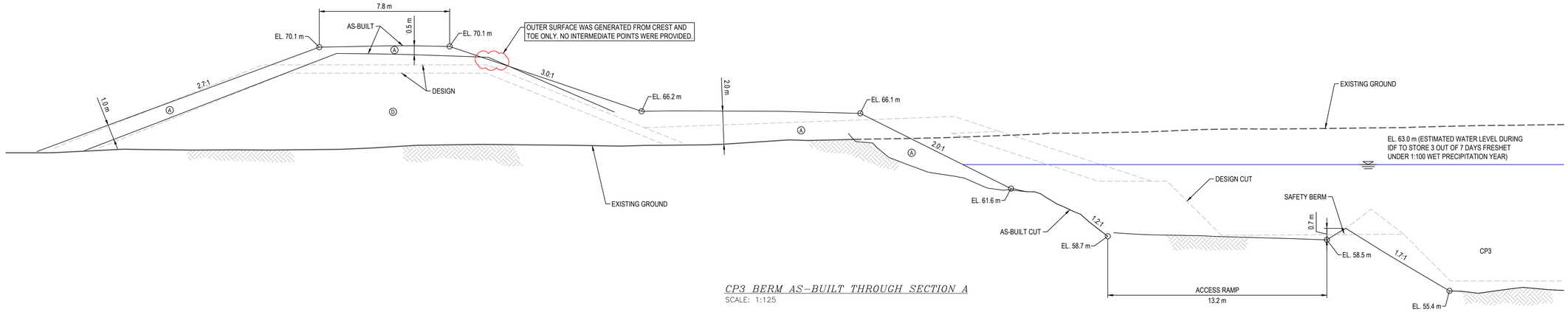
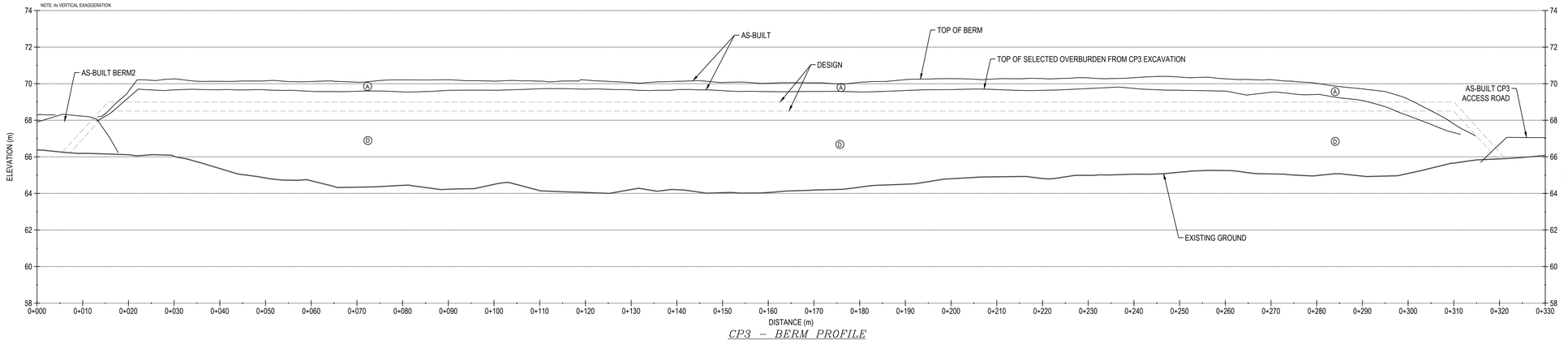
FILE NO. 65-695-230-238.dwg

NO. DESSIN
DRAWING NO. 65-695-230-239

FORMAT ARCHD

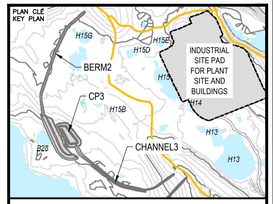


CP3 BERM AS-BUILT THROUGH SECTION A
SCALE: 1:125



CP3 – BERM PROFILE
SCALE: H-1:500 V-1:125

PLAN CLÉ
KEY PLAN



TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

1. ASSUMED CONSTRUCTION SCHEDULE WINTER 2018 / 2019
2. ASSUMED OPERATION SCHEDULE STARTING TO STORE WATER FROM FRESHET OF 2019.
3. POND DESIGN CAPACITY IS BASED ON STORING 3 OUT OF 7 FRESHET WATER UNDER 1:100 WET YEAR CONDITION.
4. THE MAXIMUM ALLOWABLE OPERATING WATER LEVEL IS AT ELEVATION 63.0 m UNDER THE DESIGN IDF CONDITION.
5. MATERIAL PLACEMENT AND FOUNDATION PREPARATION SHOULD BE IN ACCORDANCE WITH THE REQUIREMENTS OF GEOTECHNICAL CONSTRUCTION / MATERIAL SPECIFICATIONS (TETRA TECH 2018).

LEGEND

Ⓐ CLEAN ROCKFILL FROM EXCAVATION (600 mm MINUS)
Ⓓ OVERBURDEN FROM EXCAVATION (300 mm MINUS)

TEL QUE CONSTRUIT
AS BUILT
AGNICO EAGLE
DATE : 2019-09-27

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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2019-09-27	RECORD DRAWINGS	EL	WTH	
0	2018-06-21	ISSUED FOR CONSTRUCTION	HX	WTH	
A	2018-05-29	ISSUED FOR REVIEW	HX	WTH	

REVISIONS

PROFESSIONAL ENGINEER — W.T. HORNE — LICENSEE — NUNAVUT
Sept 27, 2019

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
Signature
Date Sept 27, 2019
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

CP3 TYPICAL SECTION AND
CP3 THERMAL PROTECTION BERM PROFILE

DESSINÉ PAR DRAWN BY	EL	DATE 2019-06-12
VÉRIFIÉ PAR CHECKED BY	HX	2019-06-12
APPROUVÉ PAR APPROVED BY	WTH	2019-06-12
ÉCHELLE SCALE	AS SHOWN	DATE 2019-06-12

NO. DESSIN
DRAWING NO.
65-695-230-239

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6515	1	2 / 13

AE-CART-ARCH D

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FILE NO. 65-695-230-239.dwg

Photo 1: CP3 Collection Pond - looking towards the west, thermal berm on the left of the photo, secondary pumphouse at the top of the ramp

Photo 2: CP3 Collection Pond - looking towards the east, north slope, overburden over bedrock

Photo 3: CP3 Collection Pond - Northwest slope

Photo 4: CP3 Collection Pond - Ramp and thermal berm

Photo 5: CP3 Crest of north slope

Photo 6: CP3 Ground north of CP3, Drainage channel cut to drain TSF area

Photo 7: CP3 Ground north of CP3, unconsolidated sediments - erosion channel due to concentrated flow

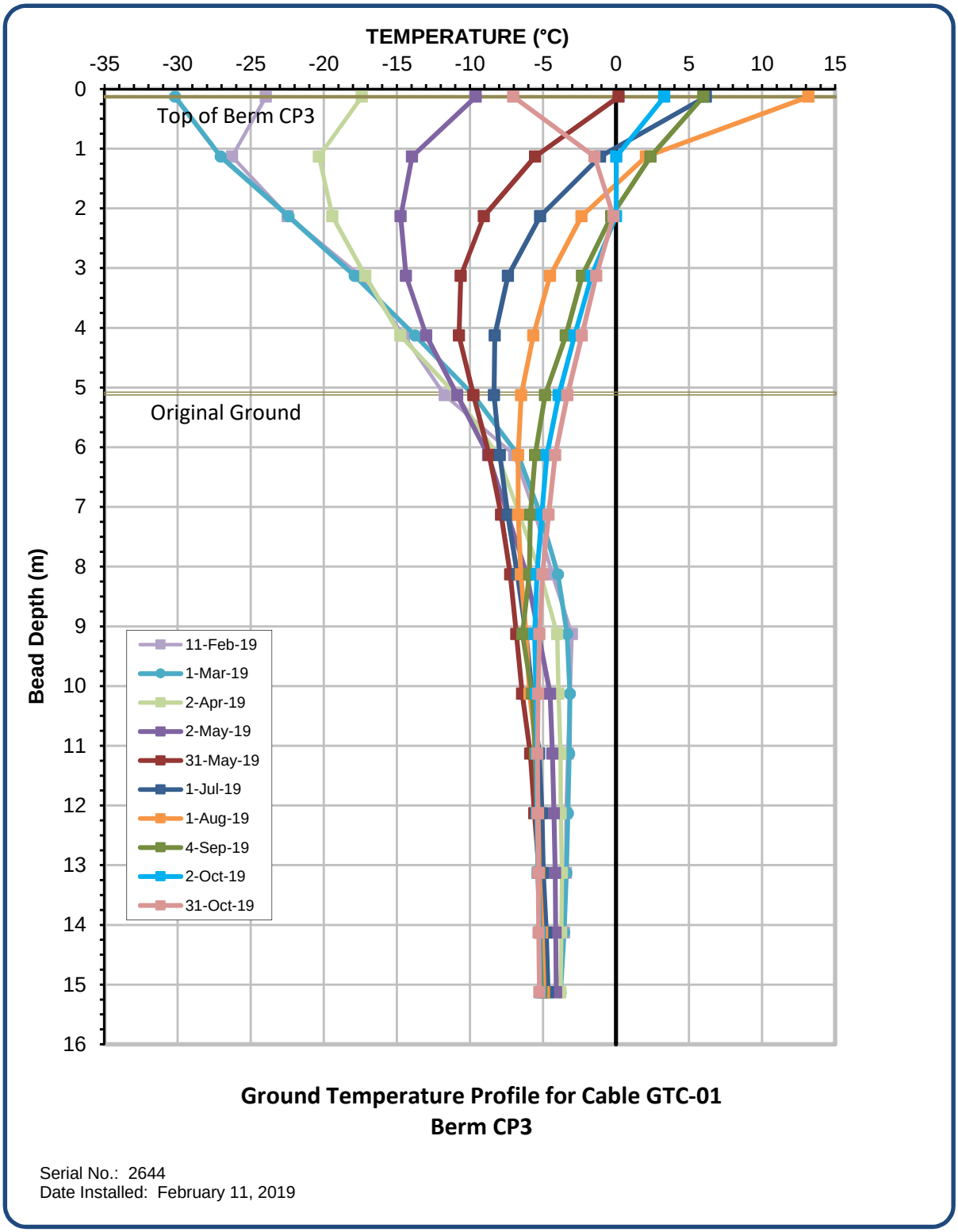
Photo 8: CP3 Thermal Berm - crack in top of berm

Photo 9: CP3 Thermal Berm - downstream of CP3

Photo 10: CP3 Thermal Berm downstream slope

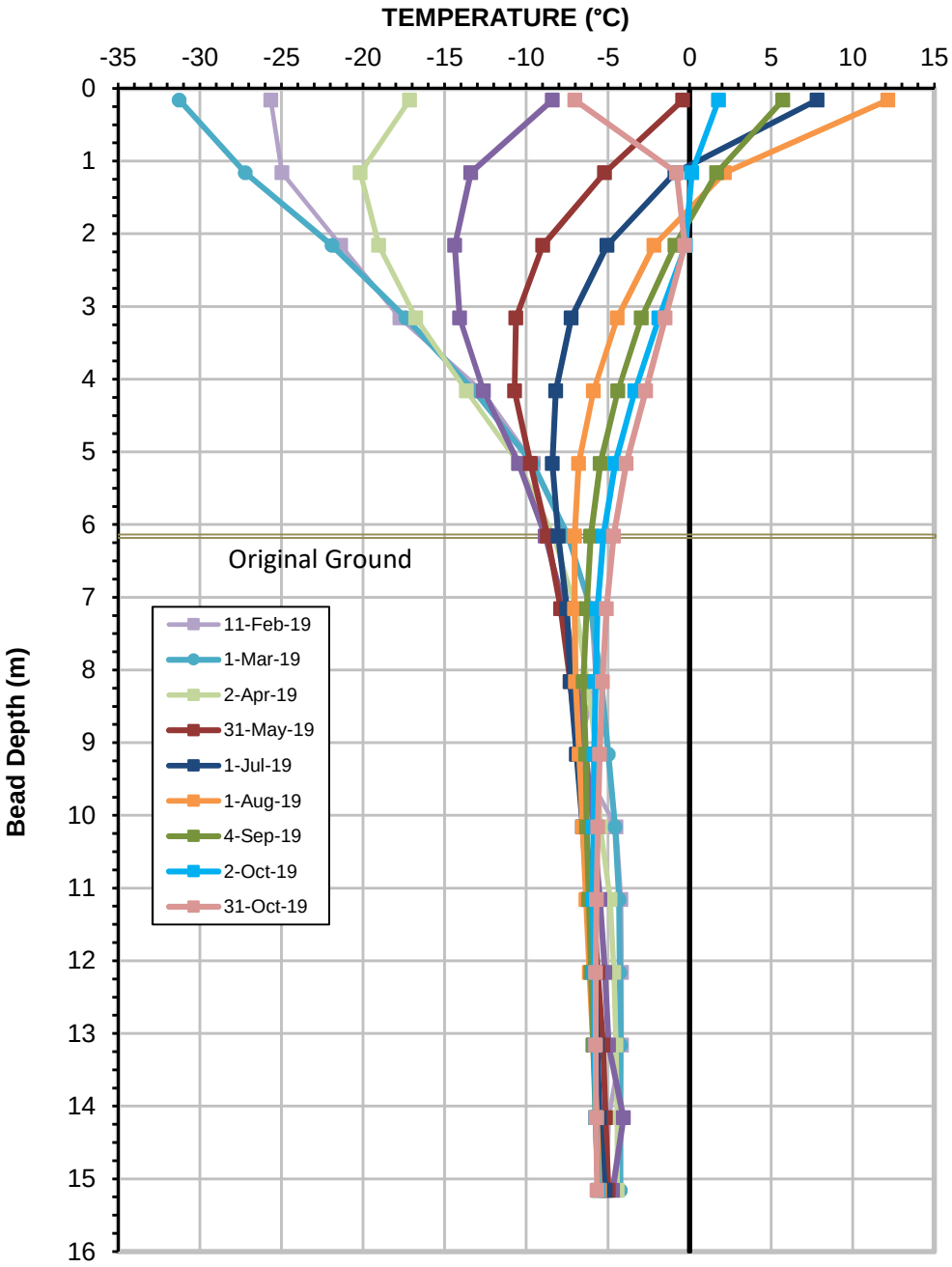
Photo 11: CP3 Thermal Berm ground temperature cable

Photo 12: CP3 Thermal Berm - crack in top of berm



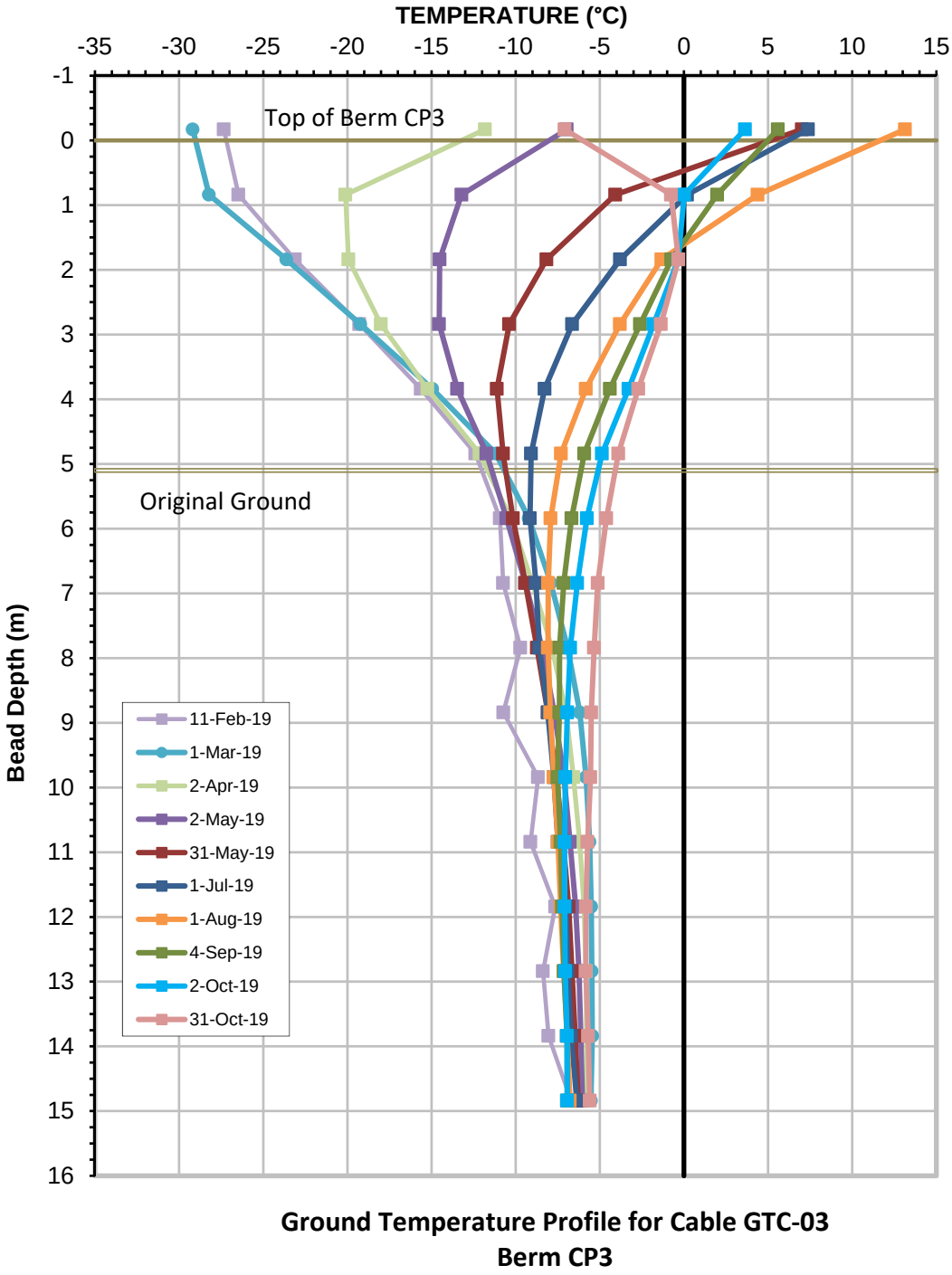
Ground Temperature Profile for Cable GTC-01
Berm CP3

Serial No.: 2644
Date Installed: February 11, 2019



Ground Temperature Profile for Cable GTC-02
Berm CP3

Serial No.: 2645
Date Installed: February 11, 2019



Ground Temperature Profile for Cable GTC-03
Berm CP3

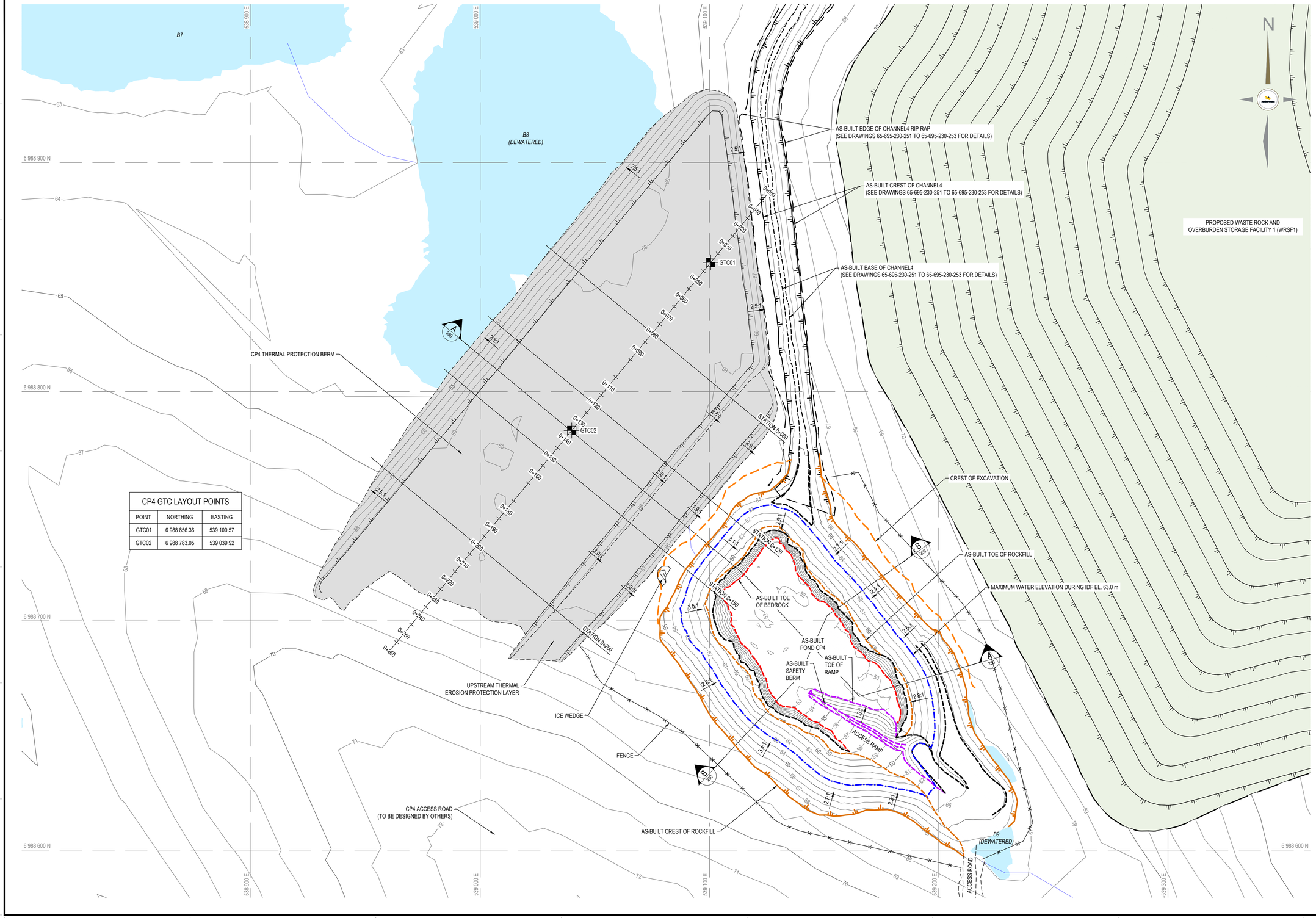
Serial No.: 2644
Date Installed: February 11, 2019

APPENDIX D

POND CP4 AND CHANNELS AND BERMS

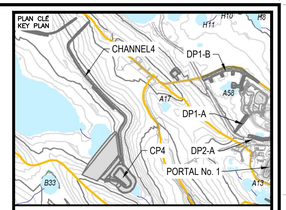
NO. DESSIN
DRAWING NO. 65-695-230-247

FORMAT ARCHD



CP4 GTC LAYOUT POINTS		
POINT	NORTHING	EASTING
GTC01	6 988 856.36	539 100.57
GTC02	6 988 783.05	539 039.92

PLAN CLÉ
KEY PLAN



TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

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TEL QUE CONSTRUIT
AS BUILT
AGNICO EAGLE
DATE : 2019-12-04

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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
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0	2018-06-21	ISSUED FOR CONSTRUCTION	HX	WTH	
A	2018-05-29	ISSUED FOR REVIEW	HX	WTH	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
Signature
Date
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

PROFESSIONAL ENGINEER
W.T. HORNE
LICENSEE
N.W.T.

TITRE / TITLE

AS-BUILT REPORT FOR CHANNEL4,
POND CP4, AND BERM CP4

CP4 AND CP4 THERMAL PROTECTION BERM
LAYOUT PLAN

DESSINÉ PAR / DRAWN BY	EL	DATE 2019-07-31
VÉRIFIÉ PAR / CHECKED BY	HX	2019-07-31
APPROUVÉ PAR / APPROVED BY	WTH	2019-07-31
ÉCHELLE / SCALE	1:750	DATE 2019-07-31

NO. DESSIN / DRAWING NO. 65-695-230-247

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6515	1	1 / 9

AE-CART-ARCH D

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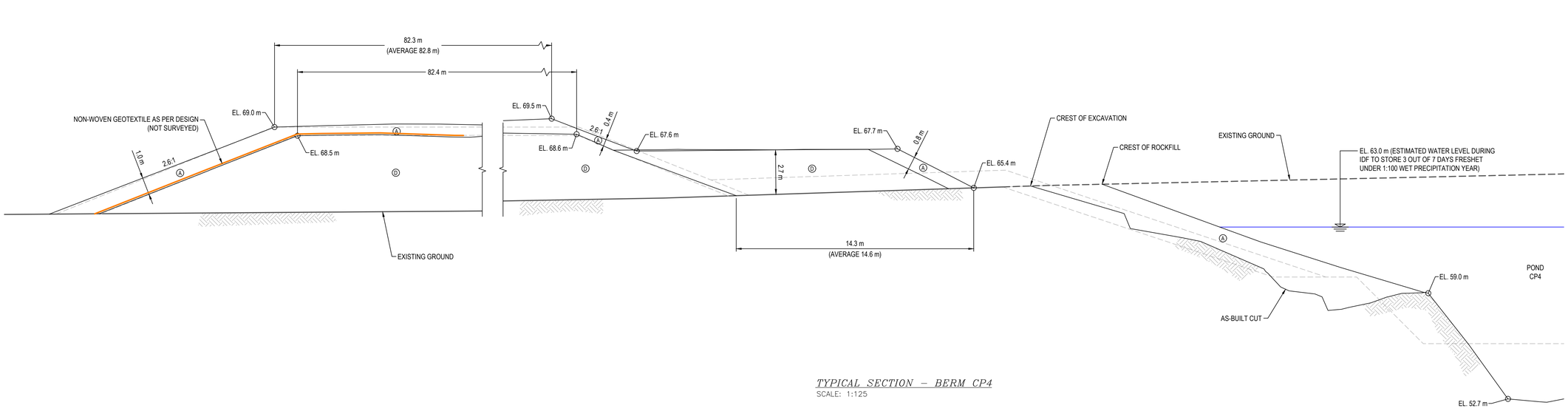
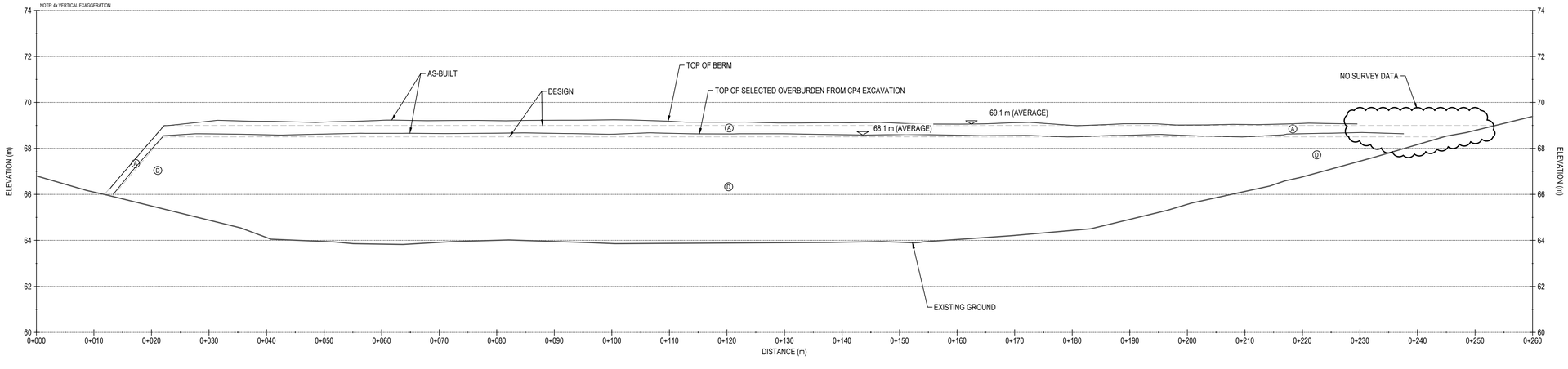
FILE NO. 65-695-230-247.dwg

NO. DESSIN
DRAWING NO. 65-695-230-248

FORMAT ARCHD

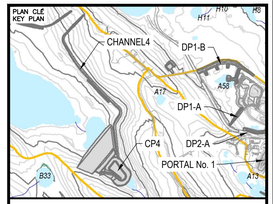


TYPICAL SECTION – BERM CP4
SCALE: 1:125



BERM CP4 – PROFILE
SCALE: H-1:400 V-1:100

PLAN CLÉ
KEY PLAN



TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

1. ASSUMED CONSTRUCTION SCHEDULE WINTER 2018 / 2019
2. ASSUMED OPERATION SCHEDULE STARTING TO STORE WATER FROM FRESHET OF 2019.
3. POND DESIGN CAPACITY IS BASED ON STORING 3 OUT OF 7 FRESHET WATER UNDER 1:100 WET YEAR CONDITION.
4. THE MAXIMUM ALLOWABLE OPERATING WATER LEVEL IS AT ELEVATION 63.0 m UNDER THE DESIGN IDF CONDITION.
5. MATERIAL PLACEMENT AND FOUNDATION PREPARATION SHOULD BE IN ACCORDANCE WITH THE REQUIREMENTS OF GEOTECHNICAL CONSTRUCTION / MATERIAL SPECIFICATIONS (TETRA TECH 2018).

LEGEND

(A) CLEAN ROCKFILL FROM EXCAVATION (600 mm MINUS)
(D) OVERBURDEN FROM EXCAVATION (300 mm MINUS)

TEL QUE CONSTRUIT
AS BUILT
AGNICO EAGLE
DATE : 2019-12-04

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0	2018-06-21	ISSUED FOR CONSTRUCTION	HX	WTH	
A	2018-05-29	ISSUED FOR REVIEW	HX	WTH	

REVISIONS

REGISTERED PROFESSIONAL ENGINEER
W.T. HORNE
LICENSEE
NWT / NU
2019-12-04

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
Signature
Date December 4, 2019
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE
AS-BUILT REPORT FOR CHANNEL4,
POND CP4, AND BERM CP4

CP4 TYPICAL SECTION AND
CP4 THERMAL PROTECTION BERM PROFILE

DESSINÉ PAR / DRAWN BY	EL	DATE 2019-07-31
VERIFIÉ PAR / CHECKED BY	HX	2019-07-31
APPROUVÉ PAR / APPROVED BY	WTH	2019-07-31
ÉCHELLE / SCALE	AS SHOWN	DATE 2019-07-31

NO. DESSIN / DRAWING NO.
65-695-230-248

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
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FILE NO. 65-695-230-248.dwg

Photo 1: CP4 Pond looking towards CP4 Berm - armoured overburden slopes over bedrock

Photo 2: CP4 Pond looking towards CP4 Berm

Photo 3: CP4 Pond - armoured overburden slopes

Photo 4: CP4 Pond - Channel4 lower reach

Photo 5: CP4 Pond - Cracking in armour over bedrock slopes

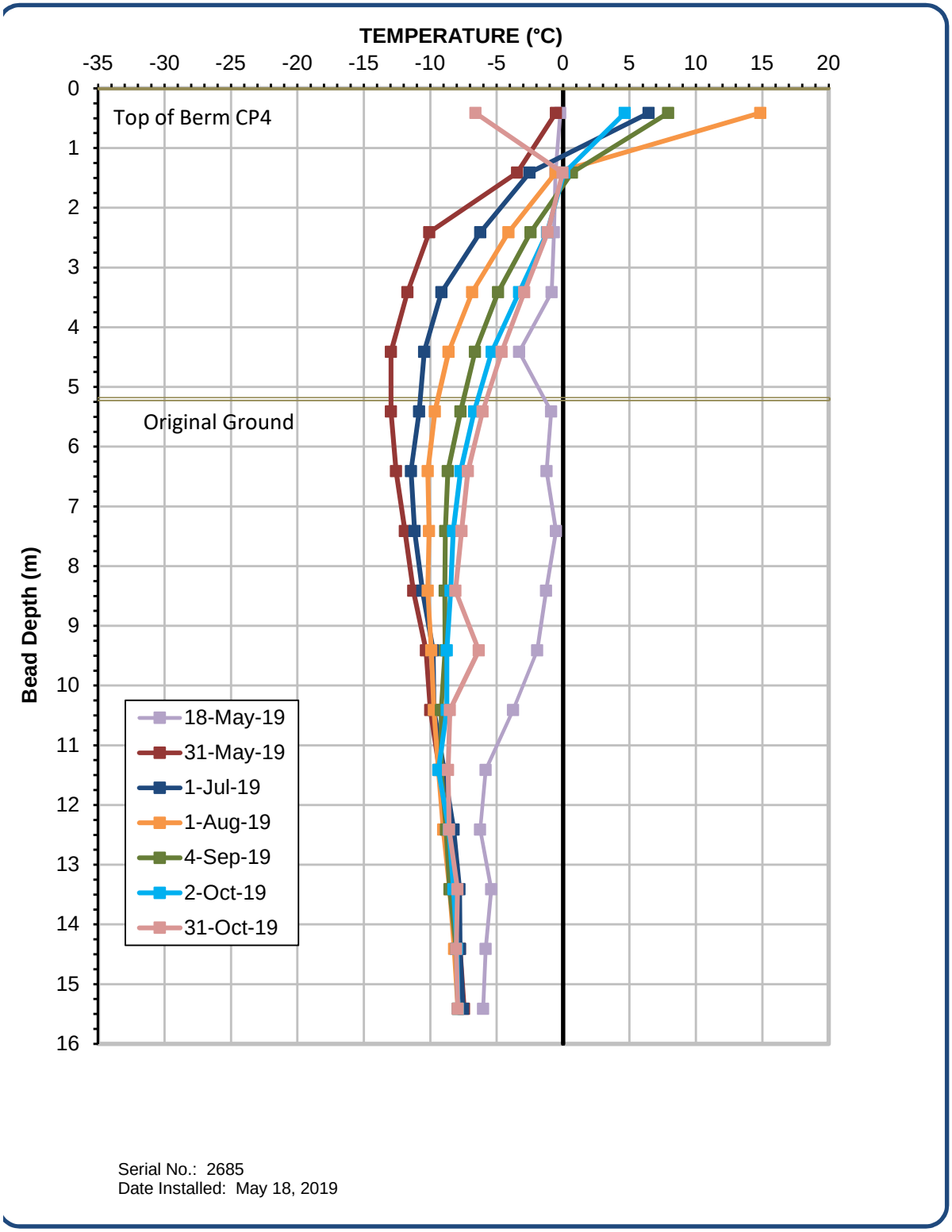
Photo 6: CP4 Pond - looking south towards ram and diesel pump

Photo 7: CP4 Pond - Subsidence in original ground between Berm CP4 and Pond CP4 slopes - close to excavated ice wedge

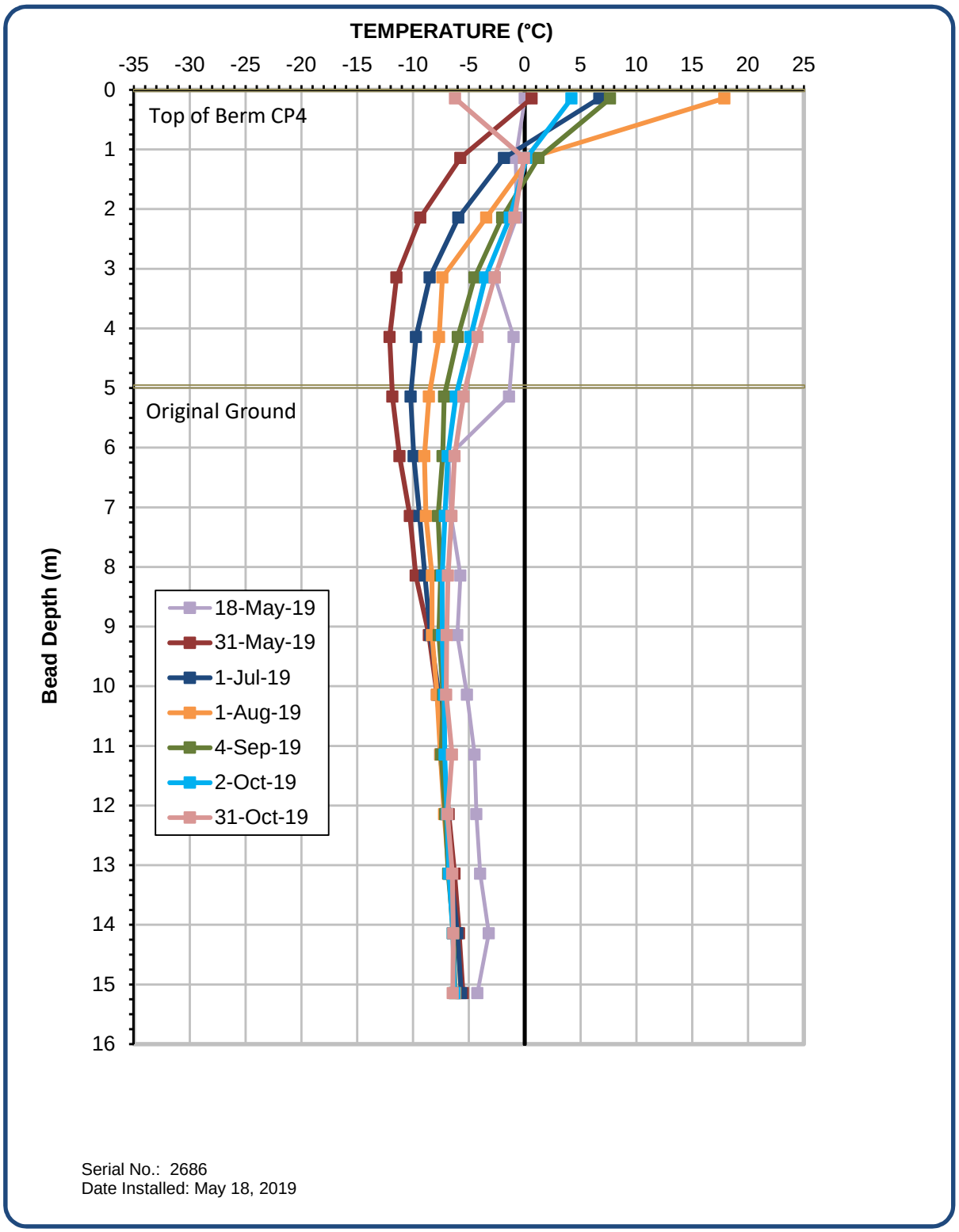
Photo 8: CP4 Pond - Subsidence in original ground between Berm CP4 and Pond CP4 slopes

Photo 9: CP4 Pond - thaw settlement in native ground behind armoured

Photo 10: CP4 Pond - Thermal cover between Pond CP4 and Berm CP4 - some settlement and erosion



Ground Temperature Profile for Cable GTC-01
Berm CP4



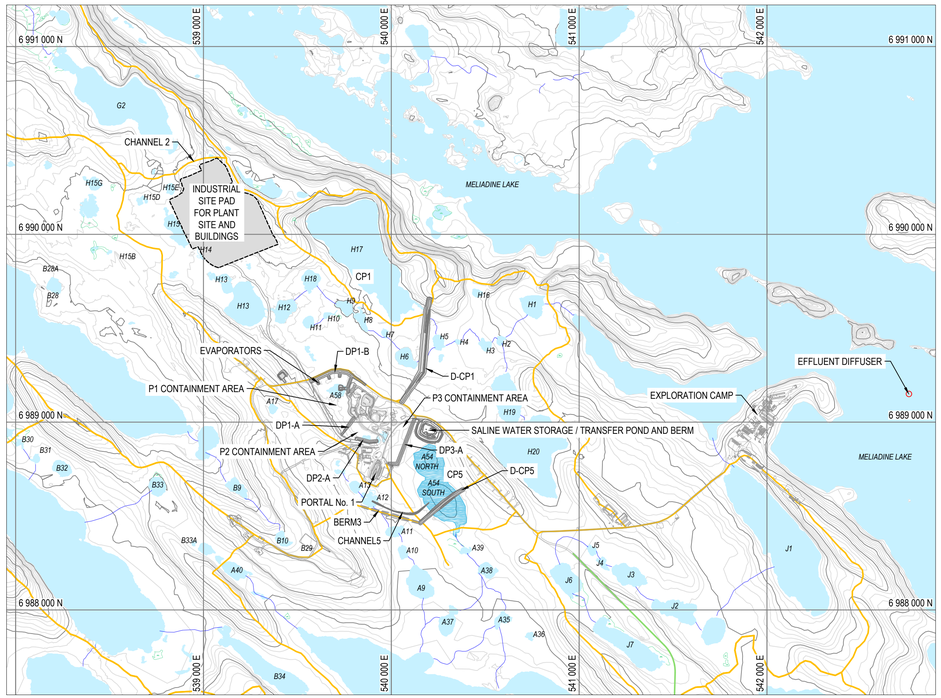
Ground Temperature Profile for Cable GTC-02
Berm CP4

APPENDIX E

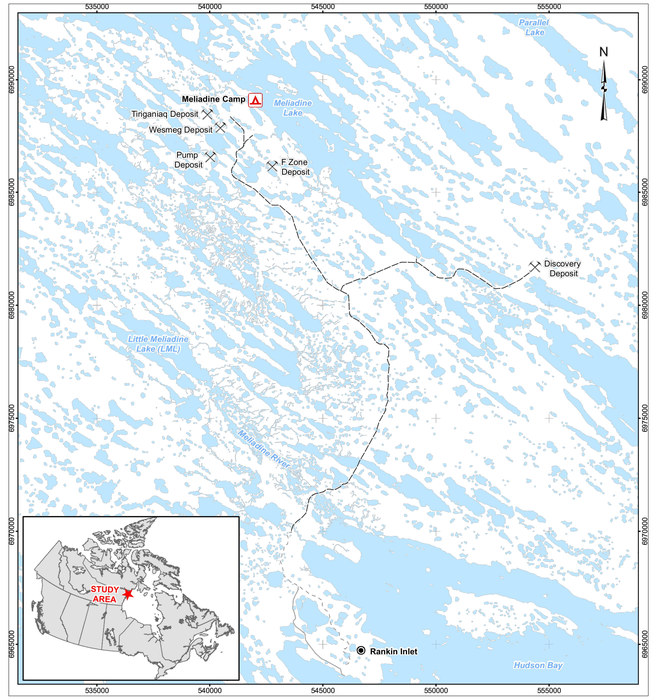
POND CP5 AND D-CP5

NO. DESSIN
DRAWING NO. 65-685-230-214_R1

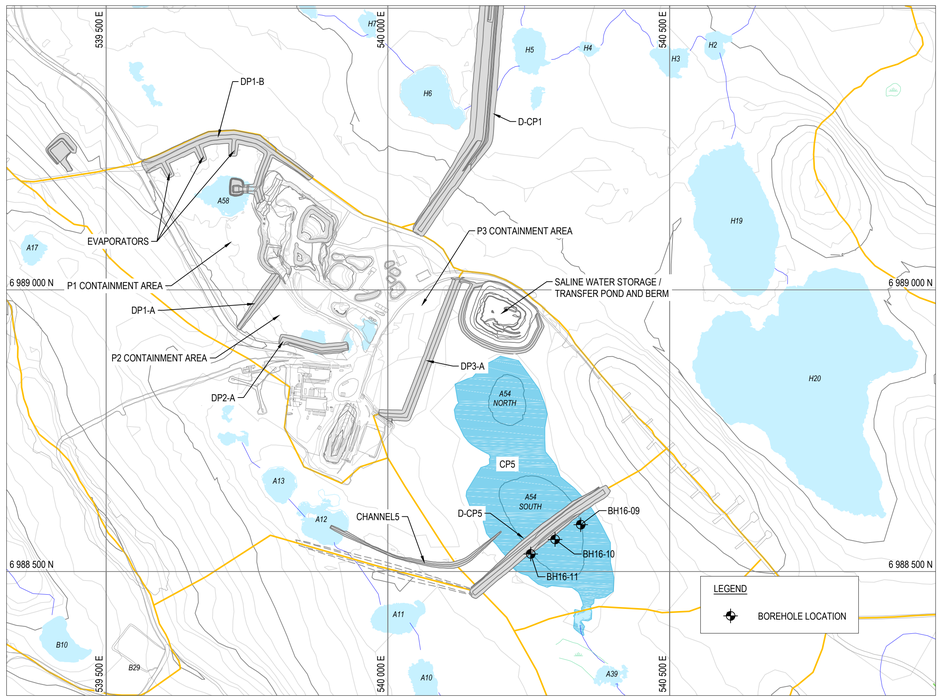
FORMAT ARCHD



GENERAL SITE LOCATION
SCALE: 1:15,000



LOCATION MAP
SCALE: N.T.S.



D-CP5 SITE LOCATION
SCALE: 1:5,000

D-CP5 AS-BUILT DRAWING INDEX

DRAWING NUMBER	DRAWING TITLE
65-685-230-214	D-CP5 AS-BUILT GENERAL LOCATION PLAN
65-685-230-215	D-CP5 AS-BUILT KEY TRENCH AND DIKE LAYOUT PLAN
65-685-230-216	D-CP5 AS-BUILT PROFILES
65-685-230-217	D-CP5 AS-BUILT THERMAL COVER LAYOUT PLAN AND PROFILES
65-685-230-218	D-CP5 AS-BUILT TYPICAL SECTIONS AND QUANTITIES
65-685-230-219-001	D-CP5 AS-BUILT SECTIONS STATION 0+030 TO 0+170
65-685-230-219-002	D-CP5 AS-BUILT SECTIONS STATION 0+180 TO 0+310
65-685-230-220	D-CP5 AS-BUILT INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES
65-685-230-221	D-CP5 AS-BUILT INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES AND SETTLEMENT SURVEY MONUMENT POINTS

TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

- LAKE A54 WAS PARTIALLY DEWATERED PRIOR TO D-CP5 CONSTRUCTION

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
Signature
Date Oct 19, 2017
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

TEL QUE CONSTRUIT
AS BUILT
AGNICO EAGLE DATE : 2017-10-19

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0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
A	2016-08-10	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

REGISTERED PROFESSIONAL ENGINEER W.T. HORNE LICENSEE N.W.T. — REGISTERED PROFESSIONAL ENGINEER G. ZHANG LICENSEE NWT/NU

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP5 AS-BUILT
GENERAL LOCATION PLAN

DESSINÉ PAR / DRAWN BY	EL	DATE	2016-08-15
VÉRIFIÉ PAR / CHECKED BY	GZ		2016-08-15
APPROUVÉ PAR / APPROVED BY	GZ		2016-08-15
ÉCHELLE / SCALE	AS SHOWN	DATE	2016-08-15
NO. DESSIN / DRAWING NO.	65-685-230-214		
NO. PROJET / PROJECT NO.	6515	REVISION	1
		FEUILLE / SHT	1 / 9

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DRAWING NO. 65-685-230-220_R1

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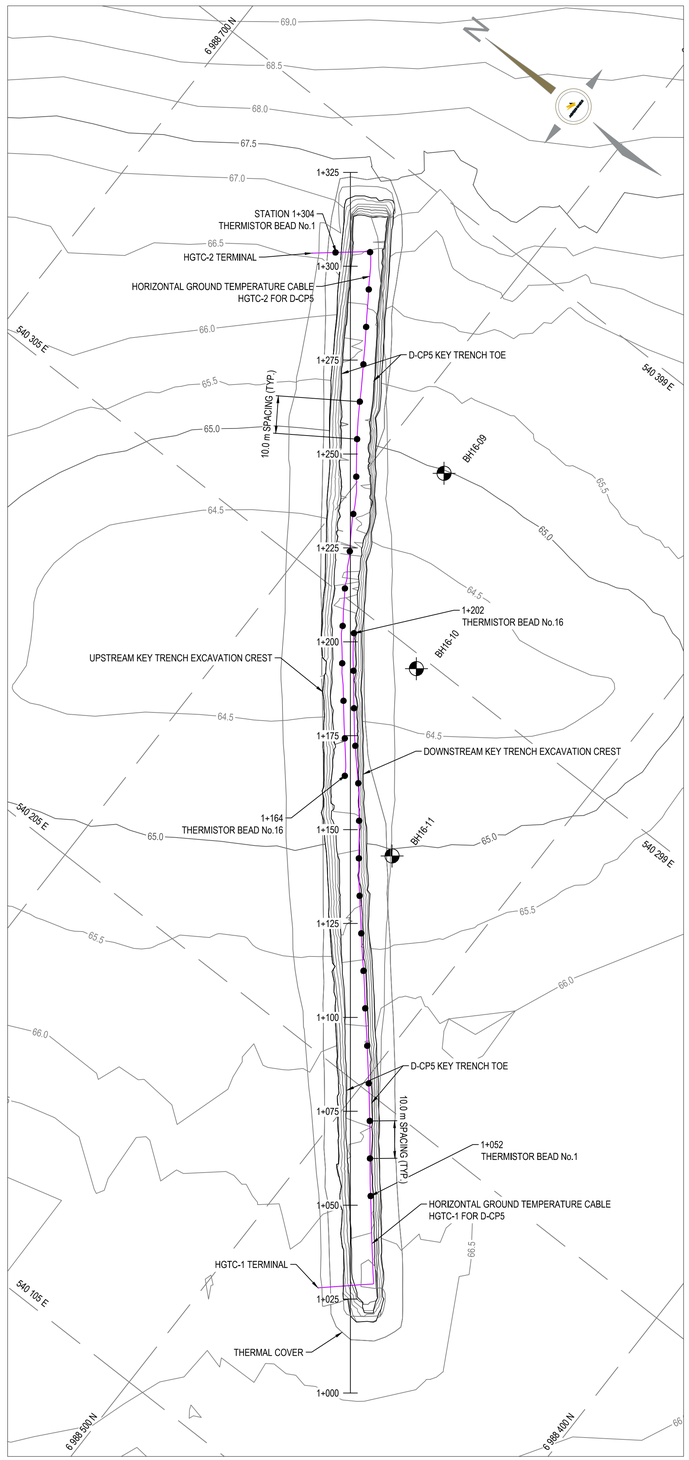

D-CP5 AS-BUILT HORIZONTAL GROUND TEMPERATURE CABLE LAYOUT
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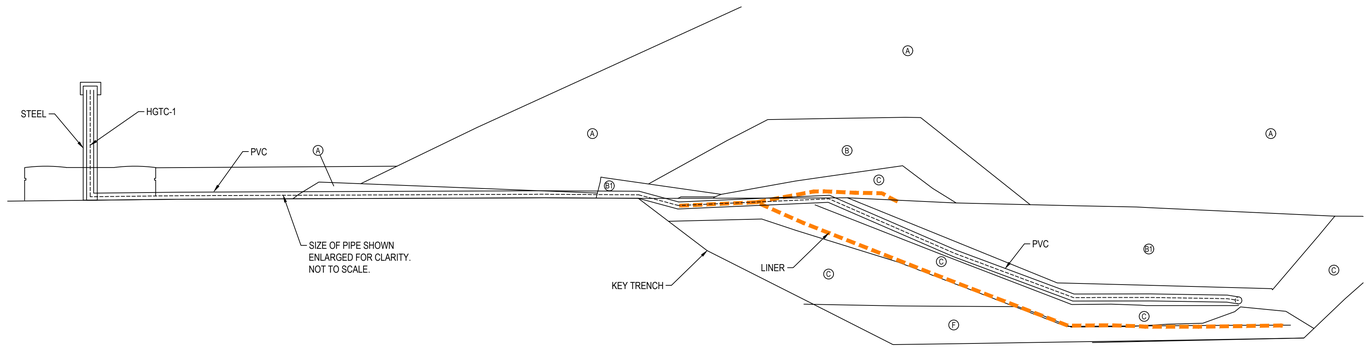

D-CP5 AS-BUILT HORIZONTAL GROUND TEMPERATURE CABLE - SOUTH TERMINAL SECTION THROUGH STATION 1+028
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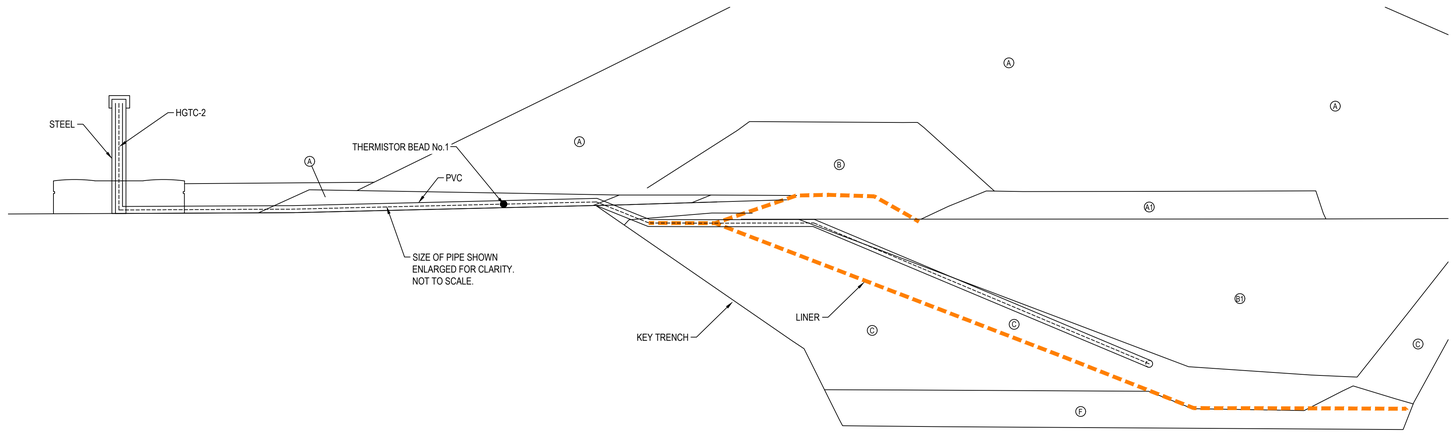

D-CP5 AS-BUILT HORIZONTAL GROUND TEMPERATURE CABLE - NORTH TERMINAL SECTION THROUGH STATION 1+304
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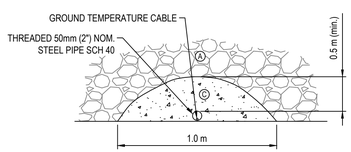

TEMPERATURE CABLE - PROTECTIVE COVER SECTION
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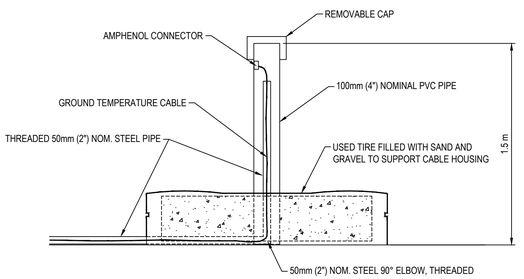

TEMPERATURE CABLE - TERMINAL SUPPORT DETAIL
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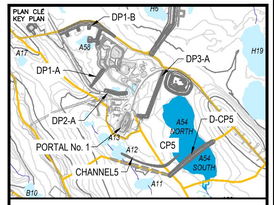

TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
Signature
Date Oct 19, 2017
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

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AS BUILT
AGNICO EAGLE
DATE : 2017-10-19

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0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
A	2016-08-10	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

REGISTERED PROFESSIONAL ENGINEER W.T. HORNE LICENSEE 14-19 N.W.T. 2017
REGISTERED PROFESSIONAL ENGINEER G. ZHANG LICENSEE 14-19 NWT/NU 2017

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP5 AS-BUILT
INSTRUMENTATION PLAN AND DETAILS
FOR GROUND TEMPERATURE CABLES

DESSINÉ PAR / DRAWN BY	DRG	DATE 2016-08-08
VÉRIFIÉ PAR / CHECKED BY	GZ	2016-08-15
APPROUVÉ PAR / APPROVED BY	KJ	2016-08-15
ÉCHELLE / SCALE	AS SHOWN	DATE 2016-08-08

NO. DESSIN / DRAWING NO. 65-685-230-220

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6515	1	8 / 9

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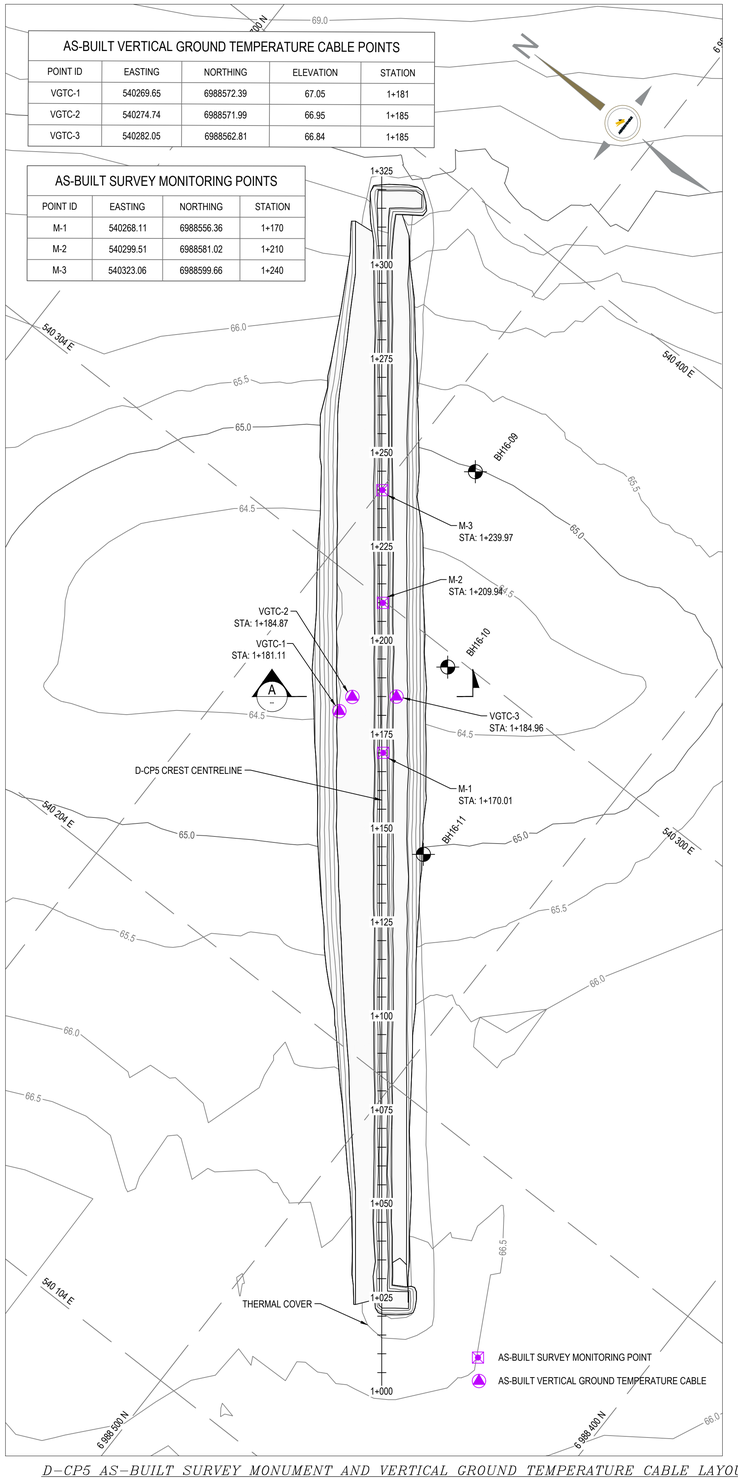
FILE NO. 65-685-230-220_R1.dwg

NO. DESSIN DRAWING NO. 65-685-230-221_R1

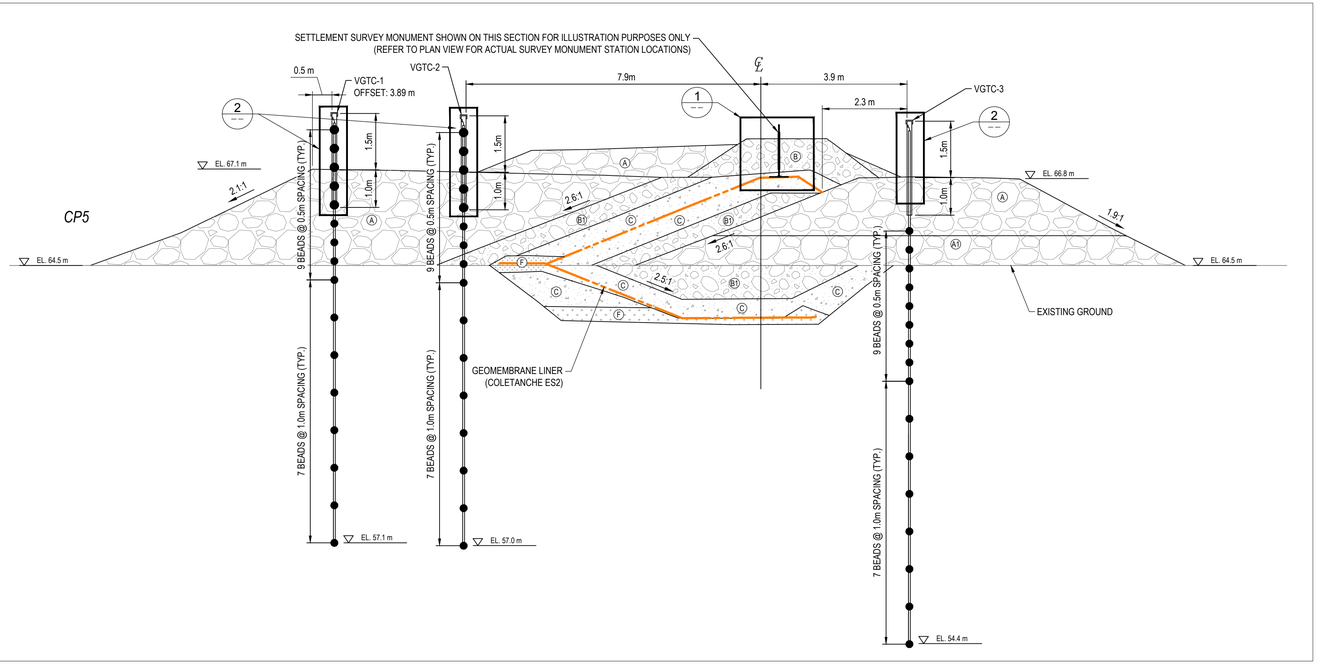
FORMAT ARCHD

AS-BUILT VERTICAL GROUND TEMPERATURE CABLE POINTS				
POINT ID	EASTING	NORTHING	ELEVATION	STATION
VGTC-1	540269.65	6988572.39	67.05	1+181
VGTC-2	540274.74	6988571.99	66.95	1+185
VGTC-3	540282.05	6988562.81	66.84	1+185

AS-BUILT SURVEY MONITORING POINTS			
POINT ID	EASTING	NORTHING	STATION
M-1	540268.11	6988556.36	1+170
M-2	540299.51	6988581.02	1+210
M-3	540323.06	6988599.66	1+240



D-CP5 AS-BUILT SURVEY MONUMENT AND VERTICAL GROUND TEMPERATURE CABLE LAYOUT
SCALE: 1:750



D-CP5 AS-BUILT SECTION A - VERTICAL GROUND TEMPERATURE CABLE - STATION 1+185
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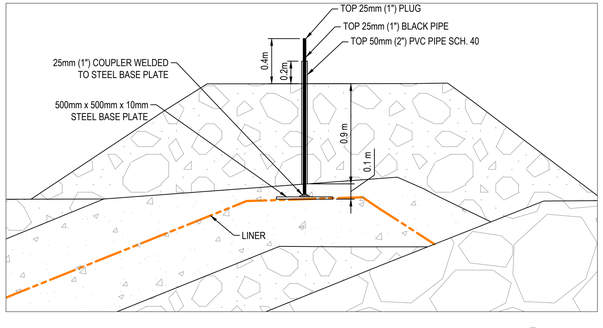

D-CP1 TYPICAL SETTLEMENT SURVEY MONUMENT DETAIL (1)
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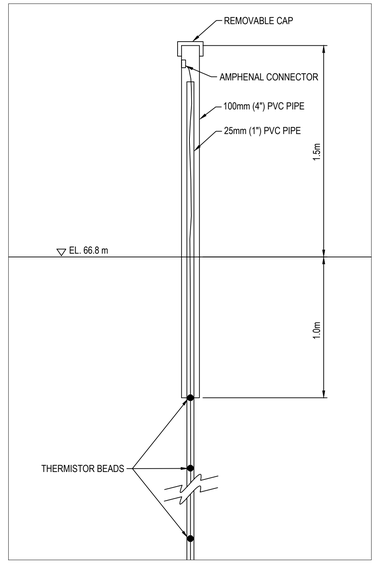

D-CP1 TYPICAL VERTICAL GROUND TEMPERATURE CABLE TERMINAL DETAIL (2)
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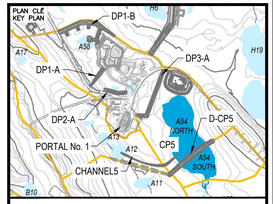

TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

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TETRA TECH CANADA INC.
Signature
Date Oct 19, 2017
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

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AGNICO EAGLE
DATE : 2017-10-19

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0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
A	2016-08-10	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

PROFESSIONAL ENGINEER W.T. HORNE LICENSEE NWT/NU — PROFESSIONAL ENGINEER G. ZHANG LICENSEE NWT/NU

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP5 AS-BUILT - INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES AND SETTLEMENT SURVEY MONUMENT POINTS

DESSINÉ PAR DRAWN BY	DRG	DATE 2016-08-08
VERIFIÉ PAR CHECKED BY	GZ	2016-08-15
APPROUVÉ PAR APPROVED BY	KJ	2016-08-15
ÉCHELLE SCALE	AS SHOWN	DATE 2016-08-08

NO. DESSIN DRAWING NO. 65-685-230-221

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6515	1	9 / 9

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FILE NO. 65-685-230-221_R1.dwg

Photo 1: CP5 - Berm 3 and Channel 5

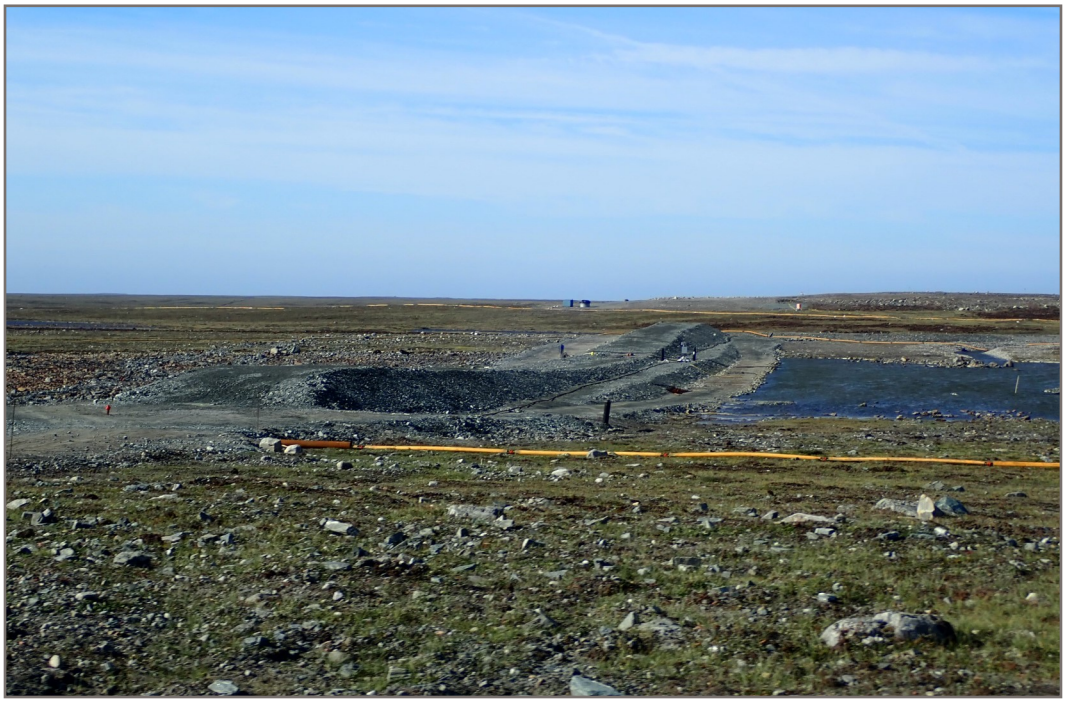


Photo 2: CP5 - Dike D-CP5

Photo 3: CP5 - Downstream Dike D-CP5 - former lakebed

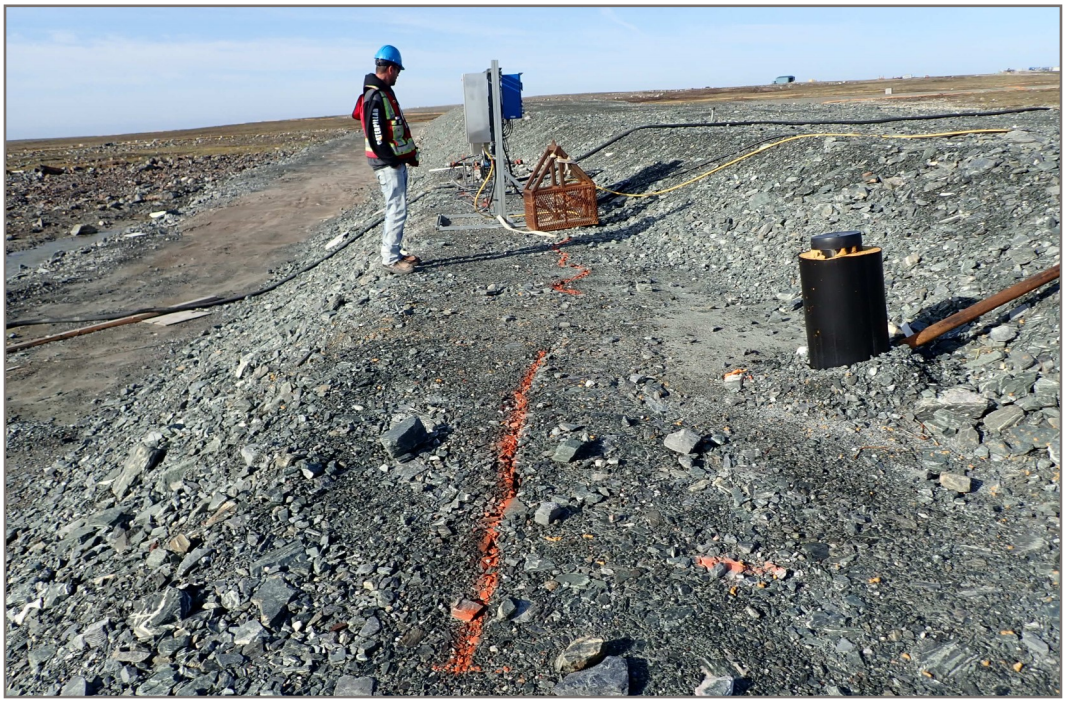


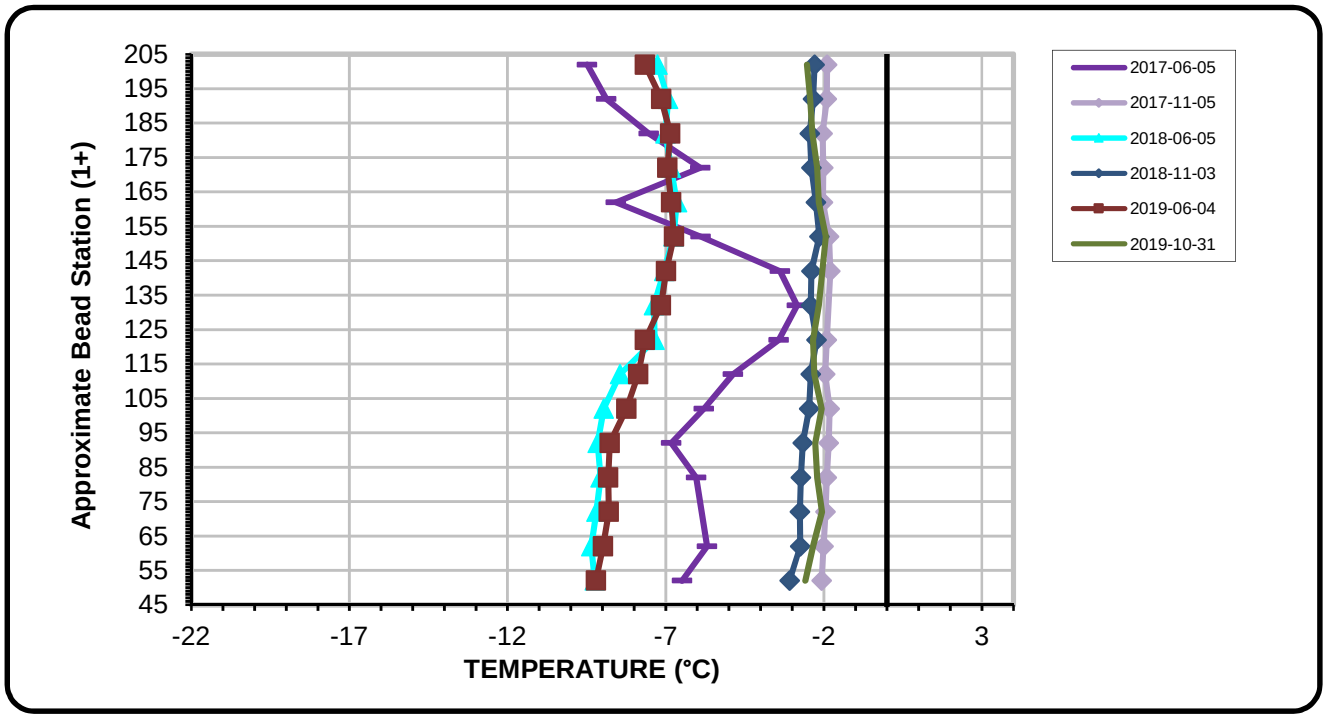
Photo 4: CP5 - Dyke D-CP5 - Crack on downstream edge of crest - Data acquisition system for GTCs

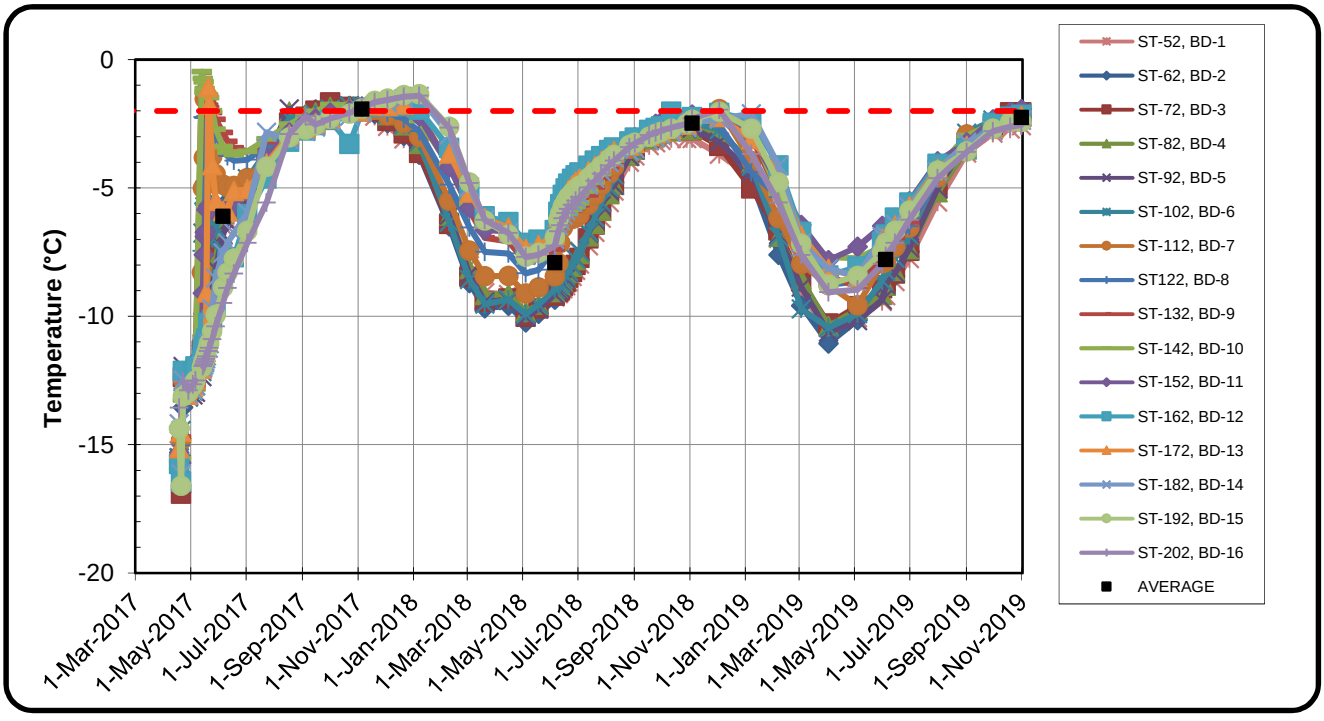
Photo 5: CP5 - Upstream Dike D-CP5 - CP5 Jetty in background

Photo 6: CP5 - Upstream Dike D-CP5 - small subsidence in upstream dike berm

Photo 7: CP5 - Upstream Dike D-CP5

Photo 8: CP5 Jetty



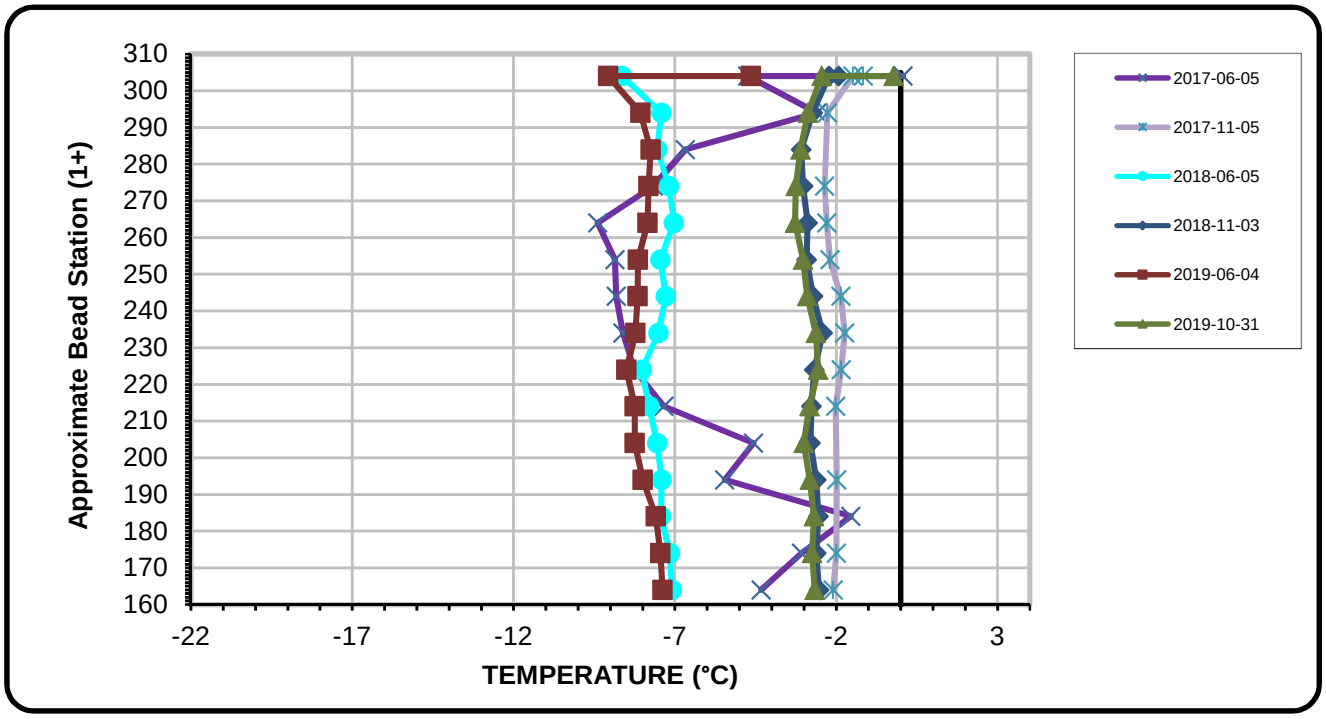


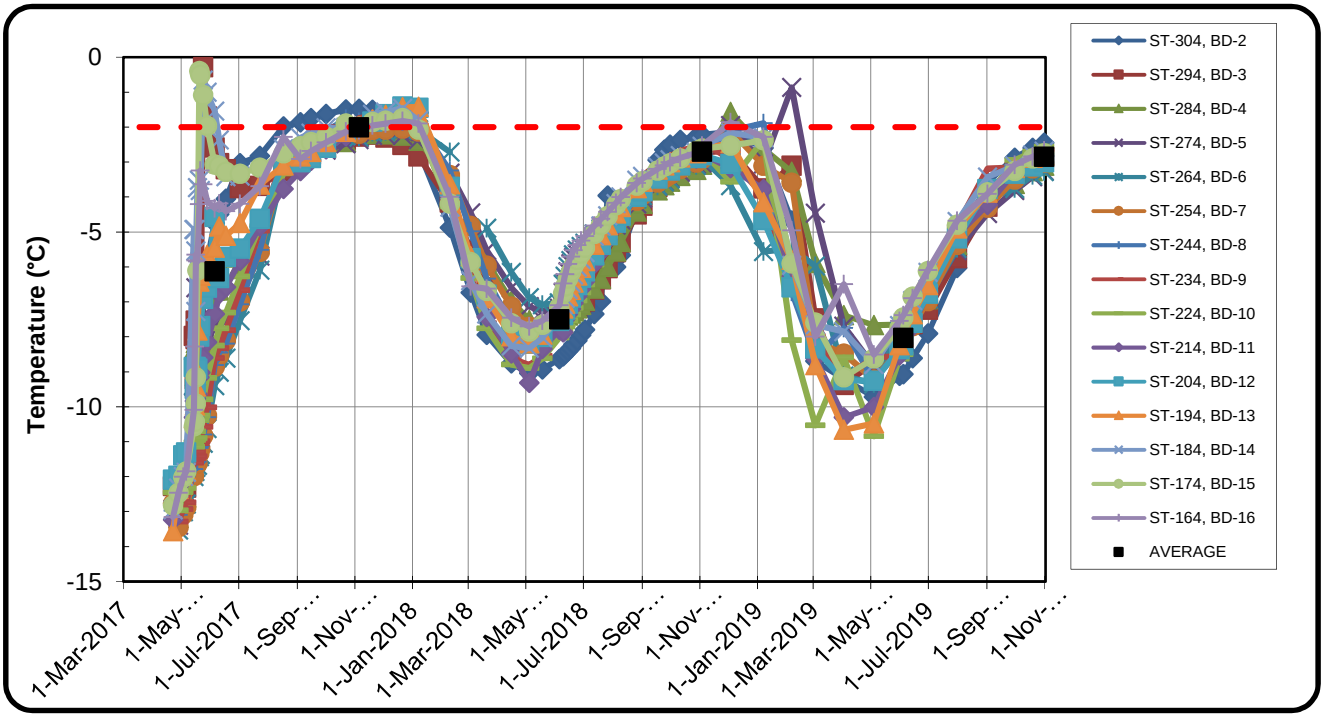
Serial No.: 2600
Date Installed: April 15, 2017

EBA File No: E14103230.01-023

Horizontal Ground Temperature Profile for Cable #1 (HGTC-01)
Dike D-CP5

TETRA TECH



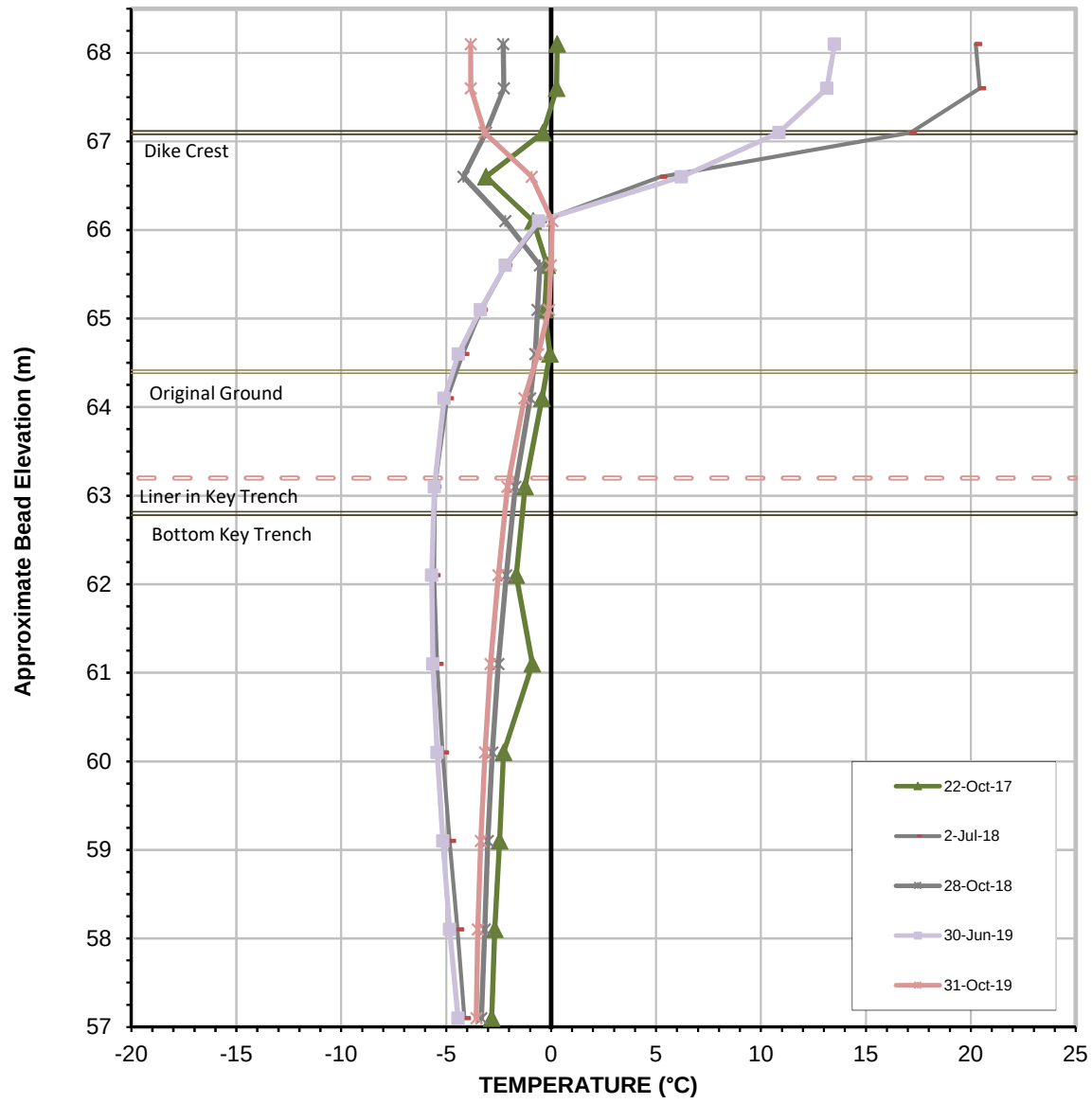


Serial No.: 2601
Date Installed: April 20, 2017

EBA File No: E14103230.01-023

Horizontal Ground Temperature Profile for Cable #2 (HGTC-02)
Dike D-CP5

TETRA TECH



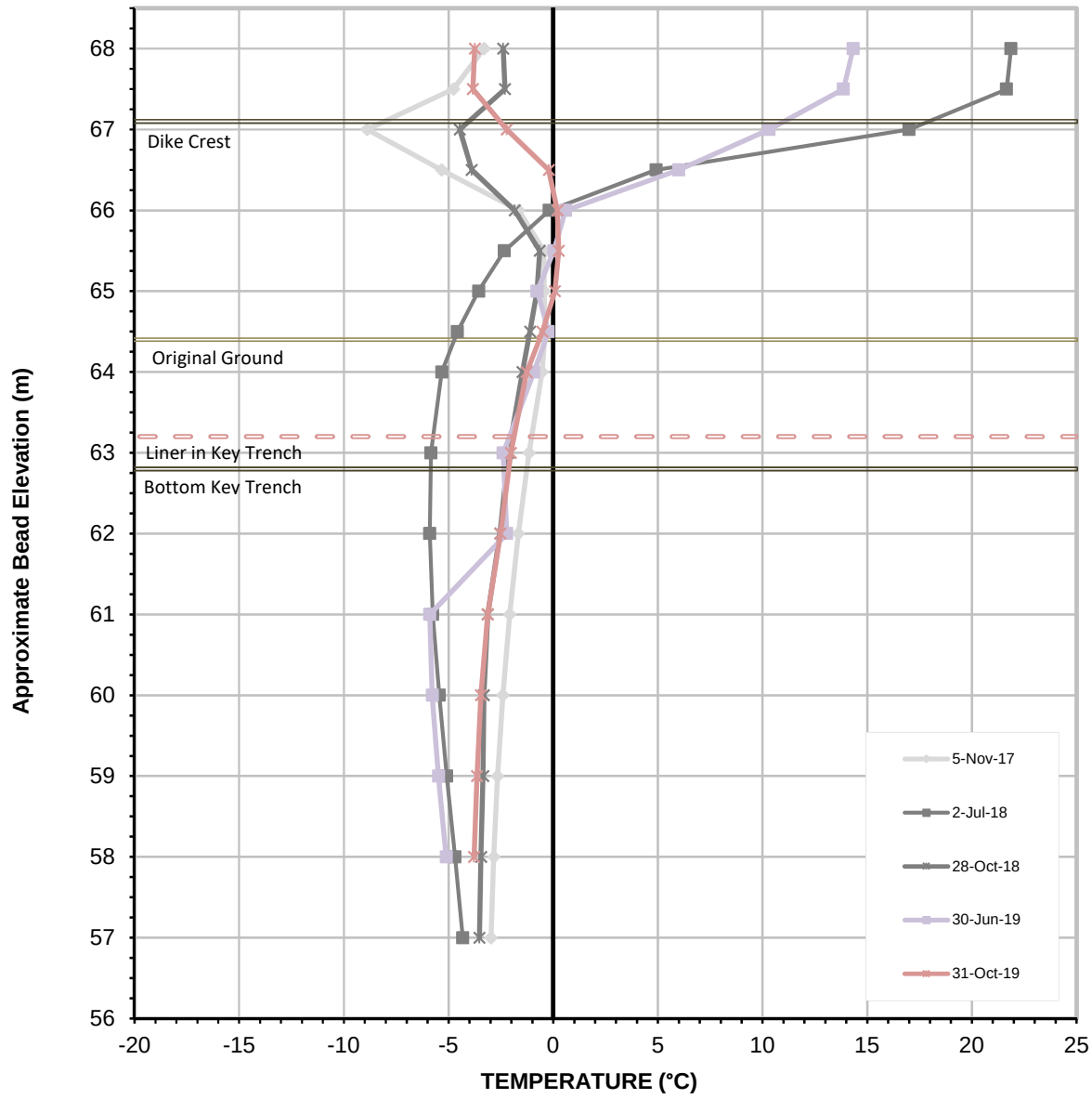
Serial No.: 2631
Date Installed: July 24, 2017

Vertical Ground Temperature Profile for Cable VGTC-01
Dike D-CP5

TETRA TECH

Average Annual Temperature at Various Elevations

	November 2017 - November 2018	November 2018 - November 2019
Bottom of Cable	-3.4	-3.6
Liner Base Elevation	-4.2	-4.2



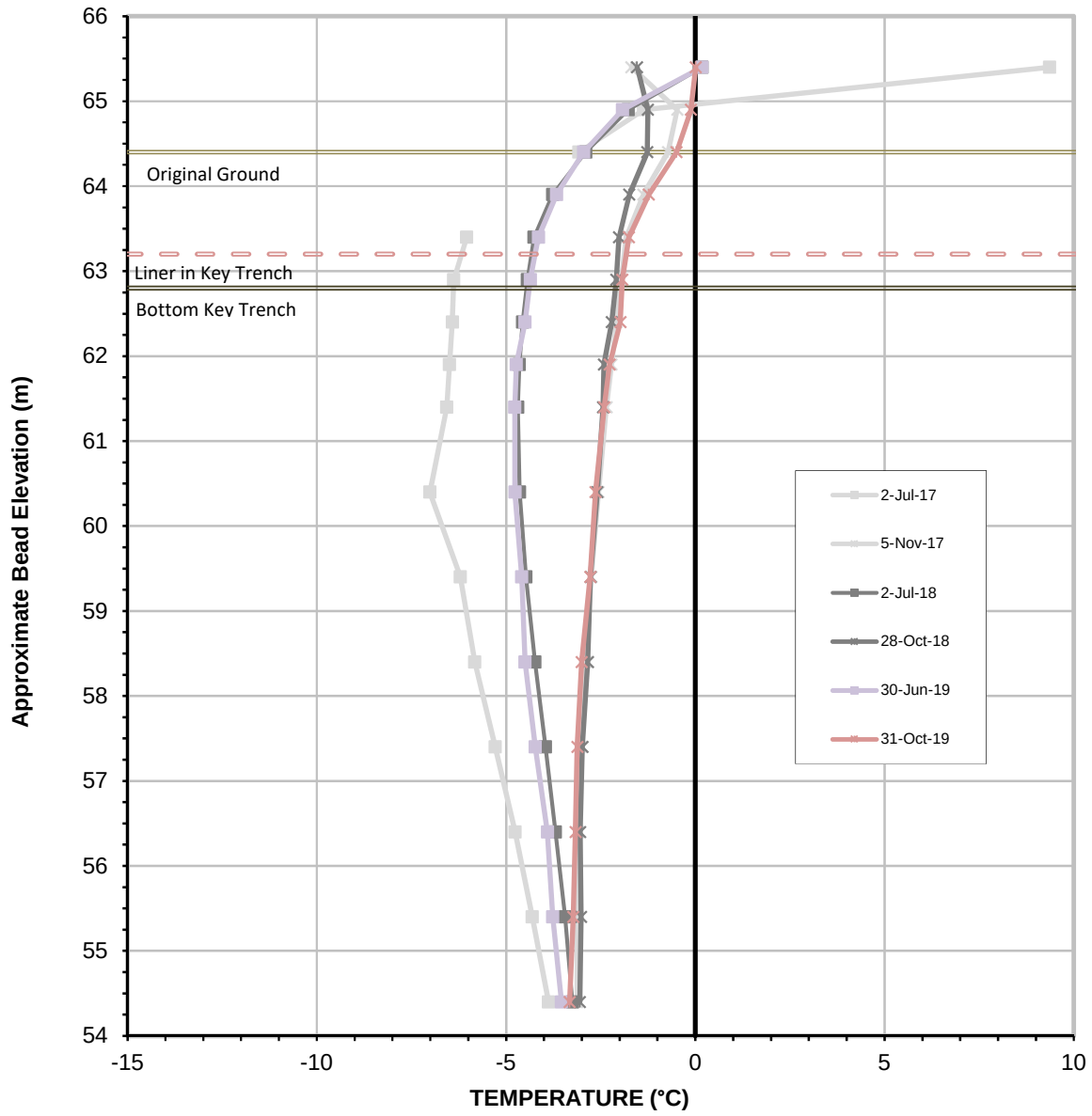
Serial No.: 2632
Date Installed: July 24, 2017

Vertical Ground Temperature Profile for Cable VGTC-02
Dike D-CP5

TETRA TECH

Average Annual Temperature at Various Elevations

	November 2017 - November 2018	November 2018 - November 2019
Bottom of Cable	-3.7	-4.1
Liner Base Elevation	-4.7	-3.5



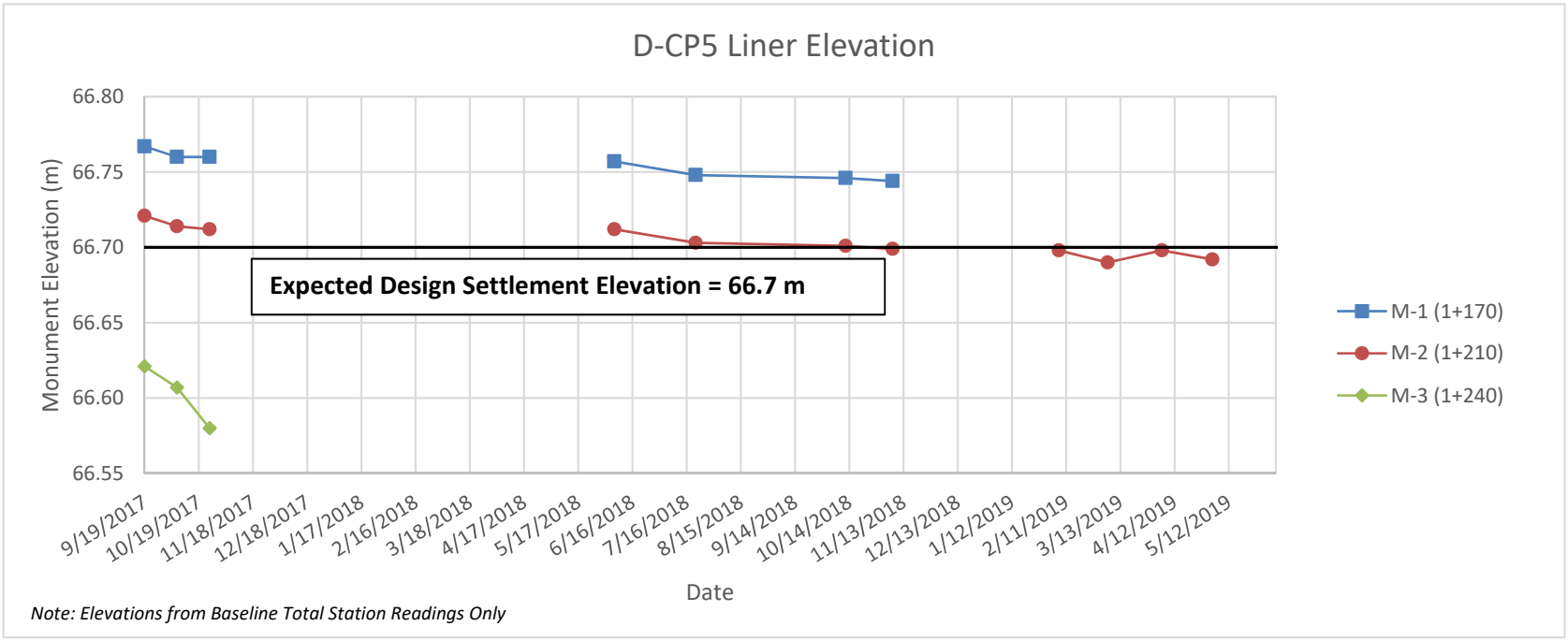
Vertical Ground Temperature Profile for Cable VGTC-03
Dike D-CP5

Serial No.: 2633
Date Installed: June 15, 2017

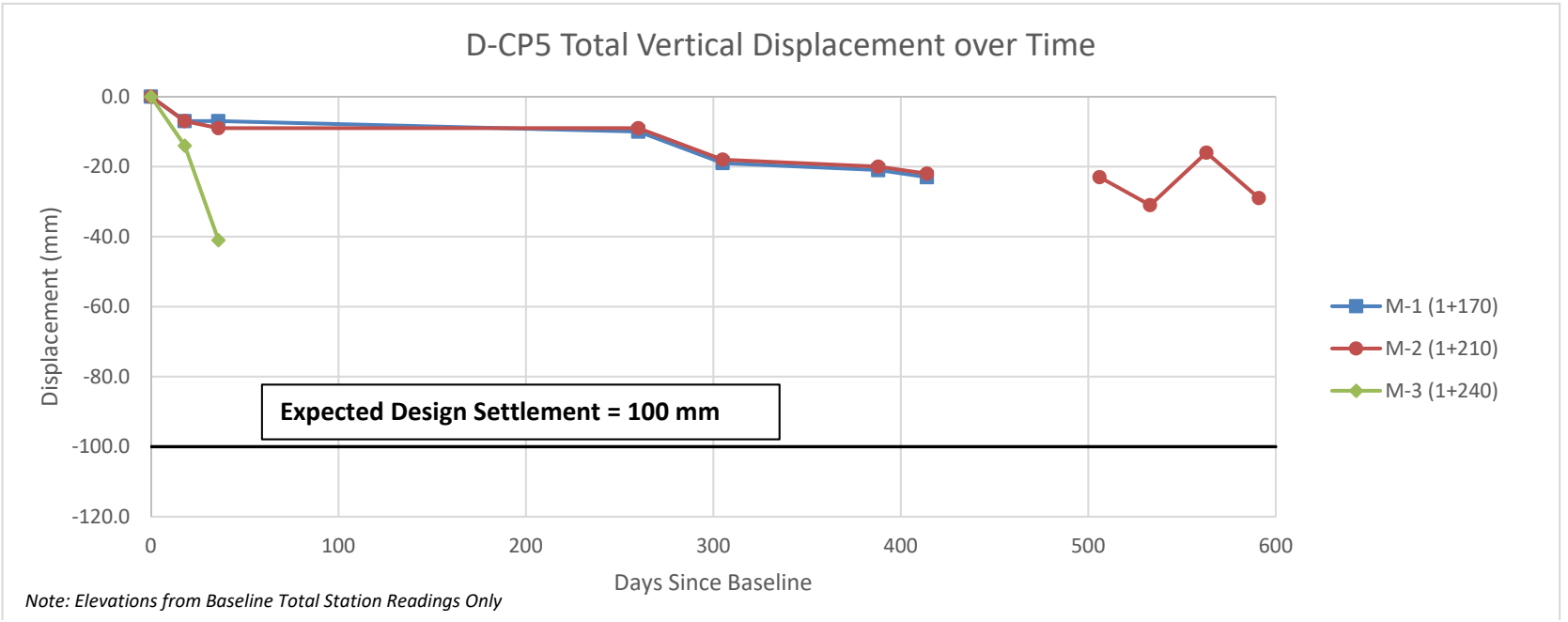
TETRA TECH

Average Annual Temperature at Various Elevations

	November 2017 - November 2018	November 2018 - November 2019
Bottom of Cable	-3.1	-3.2
Liner Base Elevation	-3.9	-3.8



Note: Elevations from Baseline Total Station Readings Only



Note: Elevations from Baseline Total Station Readings Only

APPENDIX F

SALINE PONDS

Photo 1: Saline Pond 1 looking west-Overburden of bedrock slopes - berm around the pond

Photo 2: 2 Saline Pond 1 looking north west

Photo 3: Saline Pond 1 perimeter berm - CP5 in the background

Photo 4: Saline Pond berm offset from overburden slope

Photo 5: Saline Pond 1 berm - crack at upstream crest of the berm

Photo 6: Saline Pond 1 berm - crack at upstream crest of the berm

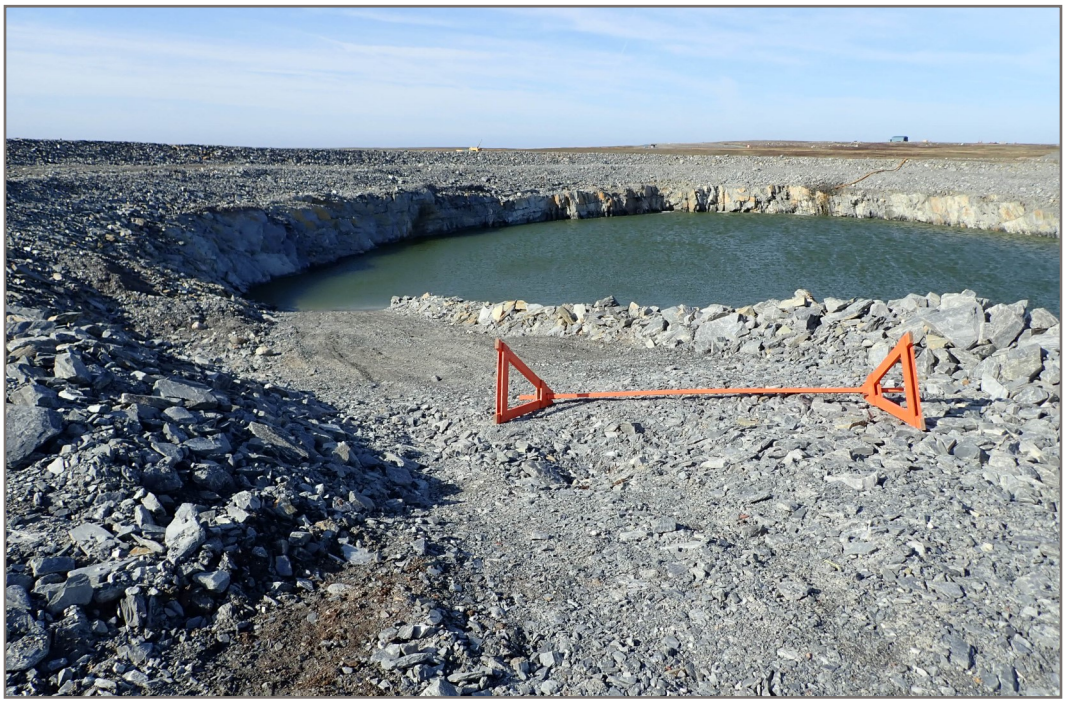


Photo 7: Saline Pond 2 looking west-Overburden of bedrock slopes - berm around the pond

Photo 8: Saline Pond 2 looking west

Photo 9: Saline Pond 2 looking north west

Photo 10: Saline Pond 2 - Jointed bedrock

Photo 11: Saline Pond 2 - Perimeter Berm

Photo 12: Subsidence at ramp entrance

Photo 13: Saline Pond 2 - Cracks in overburden crest

Photo 14: Saline Pond 2 - Cracks in overburden slope

Photo 15: Saline Pond 2 - Cracks in overburden crest

Photo 16: Saline Pond 2 - Cracks in overburden at top of slope

Photo 17: Saline Pond 2 - Subsidence 0verburden crest

Photo 18: Saline Pond 2 - Access Ramp

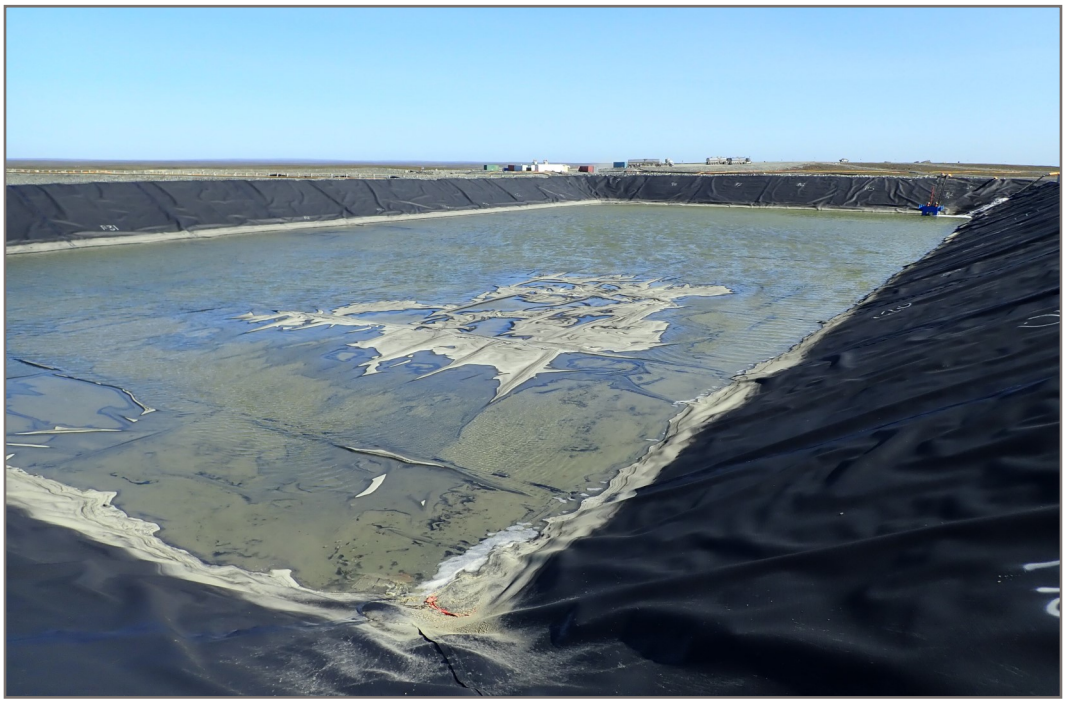


Photo 19: Saline Pond 3 - HDPE Lined Pond

Photo 20: Saline Pond 3 - North perimeter Berm

Photo 21: Saline Pond 3 - South perimeter Berm

Photo 22: Saline Pond 3 - South perimeter Berm

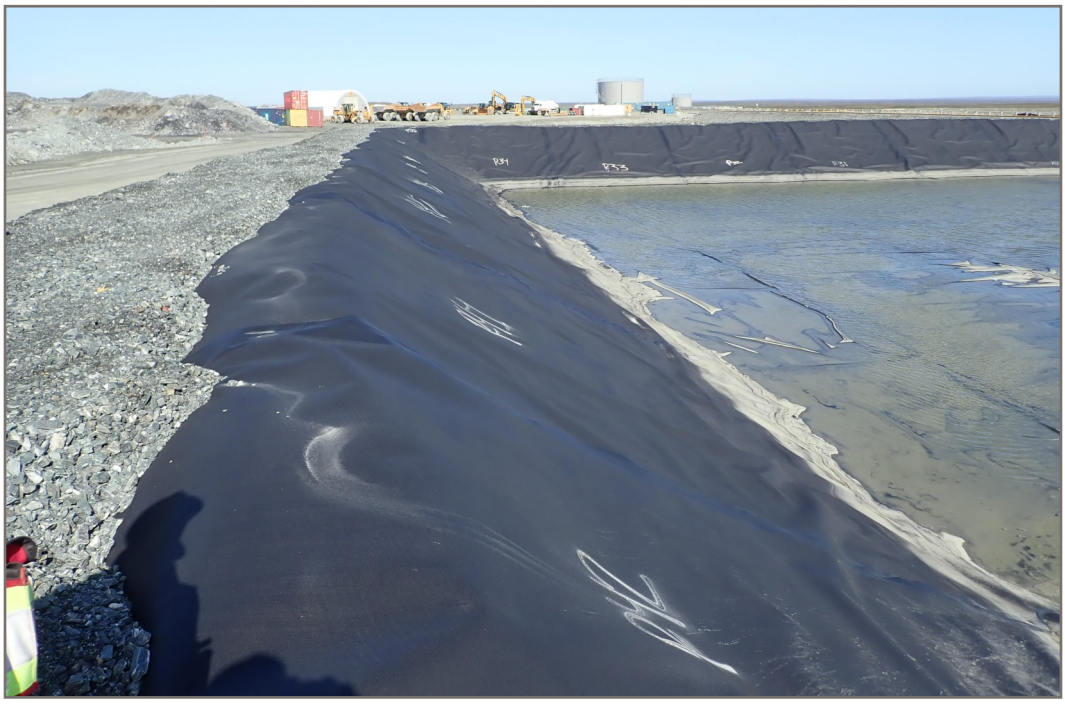


Photo 23: Saline Pond 3 - Perimeter Berm

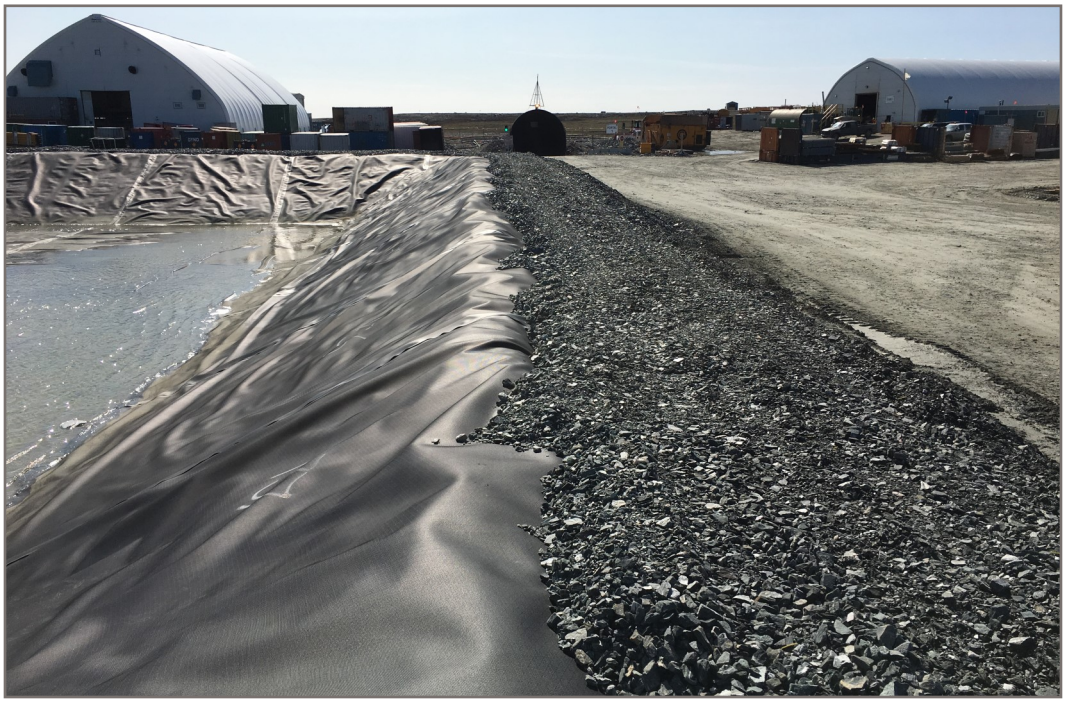


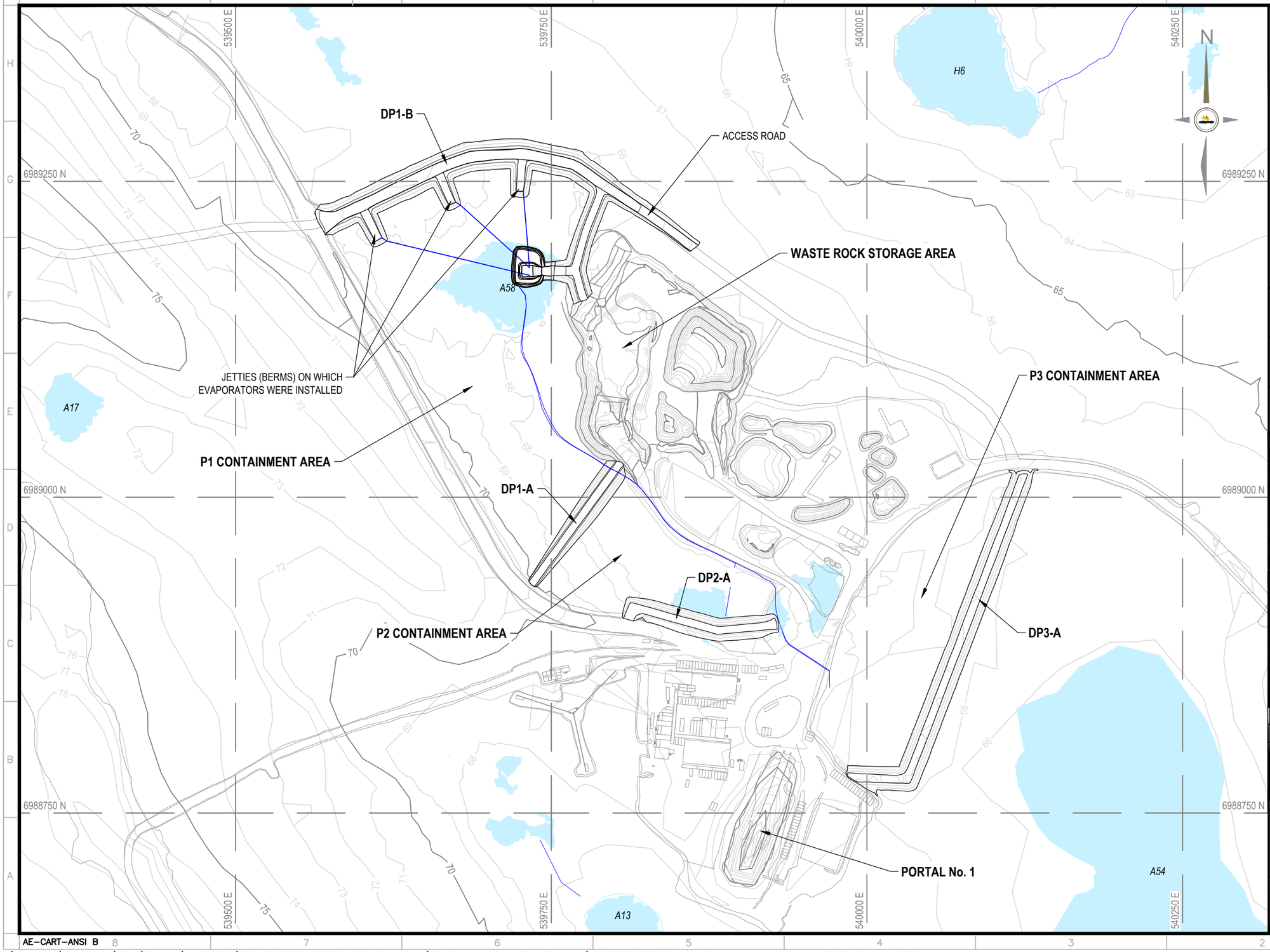
Photo 24: Saline Pond 3 - Perimeter Berm

APPENDIX G

TEMPORARY P-AREA DIKES AND COLLECTION

NO. DESSIN
DRAWING NO.

FORMAT ANSI B–11x17



NOTES:

TEL QUE CONSTRUIT
AS BUILT
AGNICO EAGLE
DATE : 2016–09–15

AGNICO EAGLE

TETRA TECH EBA

L'INFORMATION CI-CONTENUE EST LA PROPRIÉTÉ DE AGNICO EAGLE LTÉE ET DOIT ÊTRE RETOURNÉE SUR DEMANDE, SANS AUTORISATION ÉCRITE PRÉALABLE, TOUTE TRANSMISSION DE COPIE(S) À AUTRUI ET TOUTE UTILISATION AUTRE QUE CELLE POUR LAQUELLE L'INFORMATION EST PRÊTÉE SONT INTERDITES.
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TITRE / TITLE	# DWG

DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	PAR BY
	ISSUED FOR RECORD	2016–09–15	
	ISSUED FOR REVIEW	2016–03–21	

REVISIONS

DESSINÉ PAR / DRAWN BY	EL	DATE	2016–09–15
VÉRIFIÉ PAR / CHECKED BY	NG		2016–09–15
APPROUVÉ PAR / APPROVED BY			
No. PROJET / PROJECT NO.			
DATE			

TITRE / TITLE

AGNICO EAGLE MELIADINE GOLD PROJECT

TEMPORARY WATER CONTAINMENT STRUCTURES
DP1–A, DP1–B, DP2–A AND DP3–A
GENERAL LAYOUT

ÉCHELLE / SCALE	FICHIER / FILE		
1:3000			
No. DESSIN / DRAWING NO.		REVISION	FEUILLE/SHT
1		00	1 / 13

AE–CART–ANSI B

Q:\Edmonton\Engineering\E141\Projects_MELIADINE\704–ENG.EARC03038–01 P1 Containment\P1 Containment As–Built Drawings\ENG.EARC03038–01_P1 Containment_As–Built.dwg–2013–02–19 14:03:29

Photo 1: P1 pond, divider dyke in foreground, DP1-B in background

Photo 2: P1 Evaporator on DP1-B

Photo 3: P1 pond, DP1-B upstream slope

Photo 4: P1 pond, seepage from DP1-B into ore storage area

Photo 5: P1 pond, divider berm

Photo 6: P1 pond, divider berm, breach

Photo 7: P1 pond, , DP1-B

Photo 8: P1 pond, Dike DP1-A upstream crest - Evaporator jetty

Photo 9: P1 pond, Dike DP1-A upstream crest

Photo 10: P2 pond, Dike DP2-A upstream crest - slump at toe

Photo 11: Photo PArea-11 P2 pond, Dike DP2-A crest - crack

Photo 12: P2 pond, Dike DP2-A outlet pipe sleeves

Photo 13: P2 pond, Dike DP2-A upstream crest - slump at toe of dyke

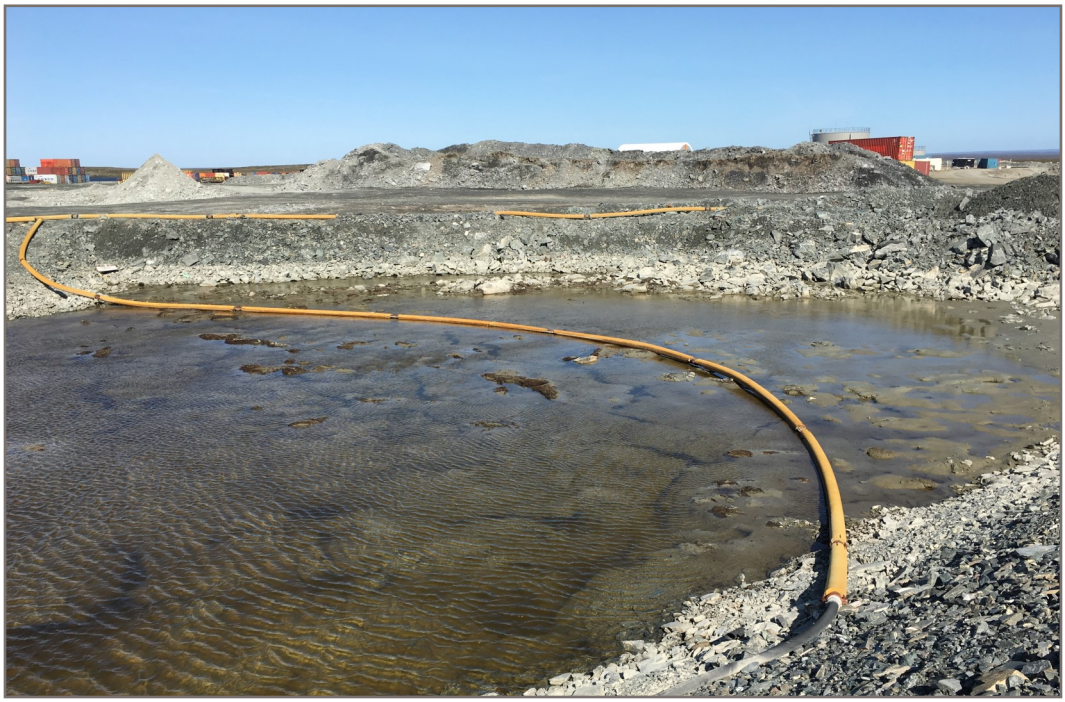


Photo 14: P2 pond, waste rock on north side of pon2 P2

Photo 15: P3 pond, Dike DP3-A upstream crest - looking south

Photo 16: P3 pond, Dike DP3-A downstream slope - looking south

Photo 17: P3 pond, Dike DP3-A newly constructed Saline Pond 3

APPENDIX H

DIVERSION CHANNELS AND BERMS

Photo 1: Channel 1, looking towards pond H9

Photo 2: Channel 1, adjacent to the crusher ramp

Photo 3: Channel 1 - looking south to Culvert 2

Photo 4: Channel 1, settlement of natural ground adjacent to the channel

Photo 5: Channel 2, looking upstream

Photo 6: Channel 2, minor ponding in the channel

Photo 7: Channel 3 - Subsidence and uneven channel base causing ponded water

Photo 8: Channel 3 - Subsidence of original ground adjacent to the channel

Photo 9: Channel 3 looking north towards Collection Pond CP3

Photo 10: Channel 3 looking north west - some exposed geotextile adjacent to channel and minor erosion on slope access road

Photo 11: Channel 3 looking south - CP3 access road on the right

Photo 12: Channel 3 looking west towards top of channel

Photo 13: Channel4 - beginning of Berm 4

Photo 14: Channel4 - Berm CP4 in background

Photo 15: Channel4 - exposed geotextile under rip rap

Photo 16: Channel4 - minor ponded water

Photo 17: Channel4 - thaw settlement underlying rip rap

Photo 18: Channel4 - thaw settlement underlying rip rap

Photo 19: Channel4 - upper reach

Photo 20: Channel4 and berm

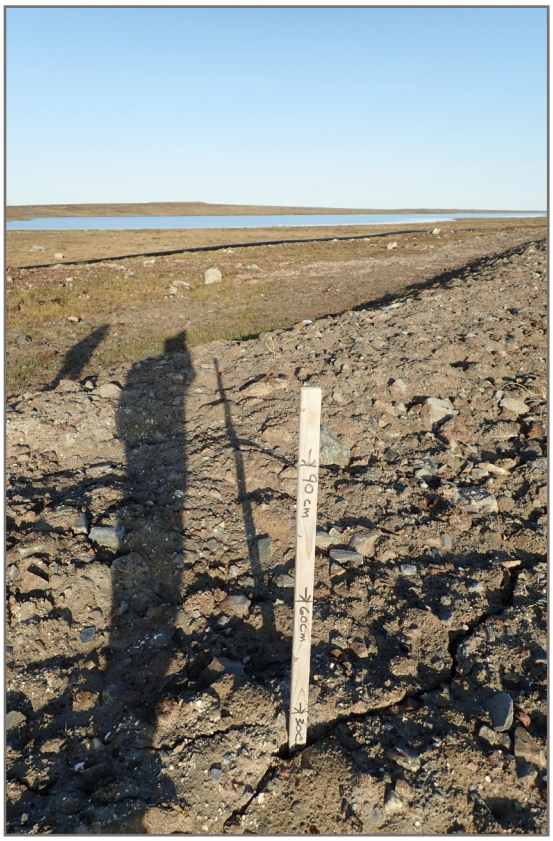


Photo 21: Channel4 Berm - crack 30 cm deep

Photo 22: Channel4 Berm - discharge CP4 discharge pipe line downslope of berm

Photo 23: Channel4 lower reach

Photo 24: Channel 5, looking downstream toward Pond CP5

Photo 25: Channel 5, looking upstream

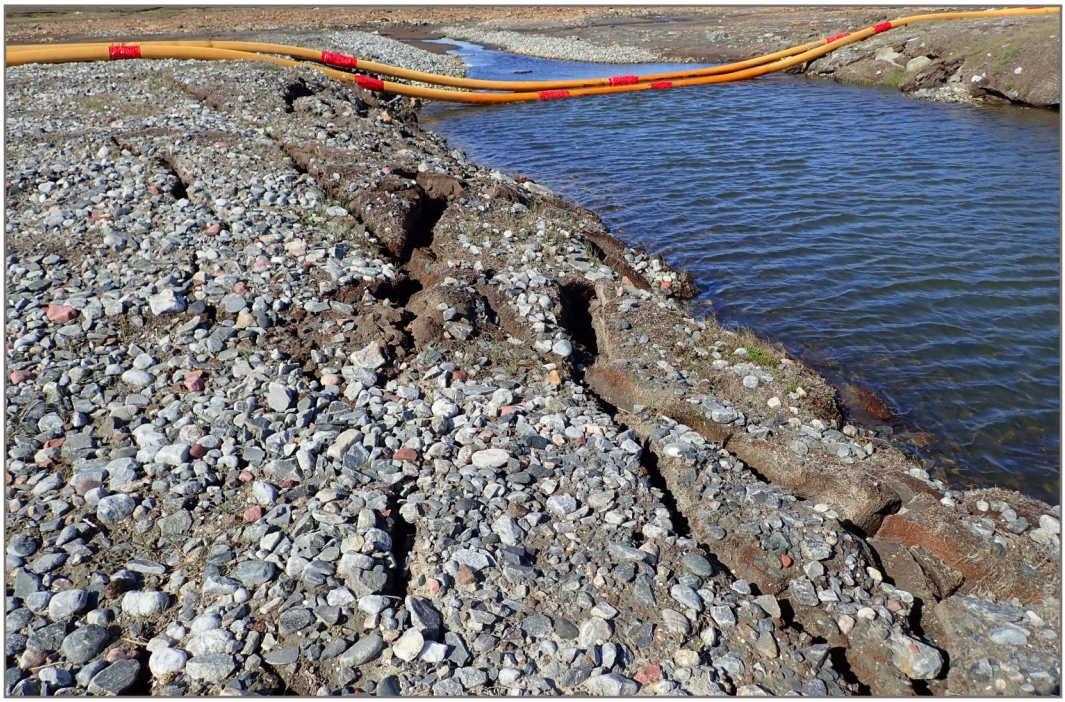


Photo 26: Channel 5, Cracking and subsidence near A13

Photo 27: Channel 5, Cracking and subsidence near A13

Photo 28: Berm2 looking west

Photo 29: Berm2 crack along the crest of the berm

Photo 30: Berm2 crack along the slope of the berm

Photo 31: Berm2 Evidence of high and surface erosion along the upstream side of the berm

Photo 32: Berm2 Ponded water against the upstream side of the berm

Photo 33: Berm2 crack along the toe of the berm

Photo 34: Berm3 crest, looking north, Channel 5 to the right

Photo 35: Berm3 ponded water along the toe

Photo 36: Berm3 ponded water along the toe

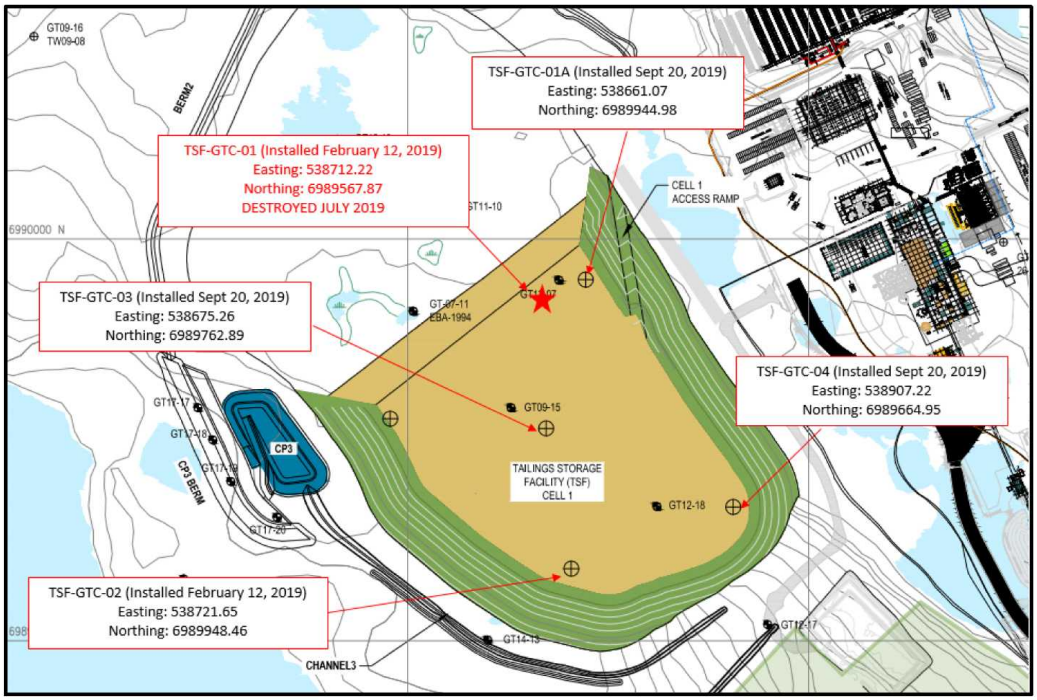
Photo 37: Channel 7 exit into Channel 1

Photo 38: Channel 7 start - channel is relatively shallow

Photo 39: Channel 7

APPENDIX I

TAILINGS STORAGE FACILITY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Northing: 6989944.98
TSF-GTC-01 (Installed February 12, 2019)
Easting: 538712.22
Northing: 6989567.87
DESTROYED JULY 2019
TSF-GTC-03 (Installed Sept 20, 2019)
Easting: 538675.26
Northing: 6989762.89
TSF-GTC-04 (Installed Sept 20, 2019)
Easting: 538907.22
Northing: 6989664.95
TSF-GTC-02 (Installed February 12, 2019)
Easting: 538721.65
Northing: 6989948.46
GT09-16
TW09-08
BERM2
6990000 N
GT11-10
CELL 1
ACCESS RAMP
GT-97-11
EBA-1994
GT09-15
CP3
CP3 BERM
TAILINGS STORAGE
FACILITY (TSF)
CELL 1
GT12-18
GT14-13
GT12-17
CHANNEL3

Photo 1: TSF - Waste Rock Berm surrounding facility

Photo 2: TSF Facility - Hauling tailings to facility

Photo 3: TSF Placing tailings

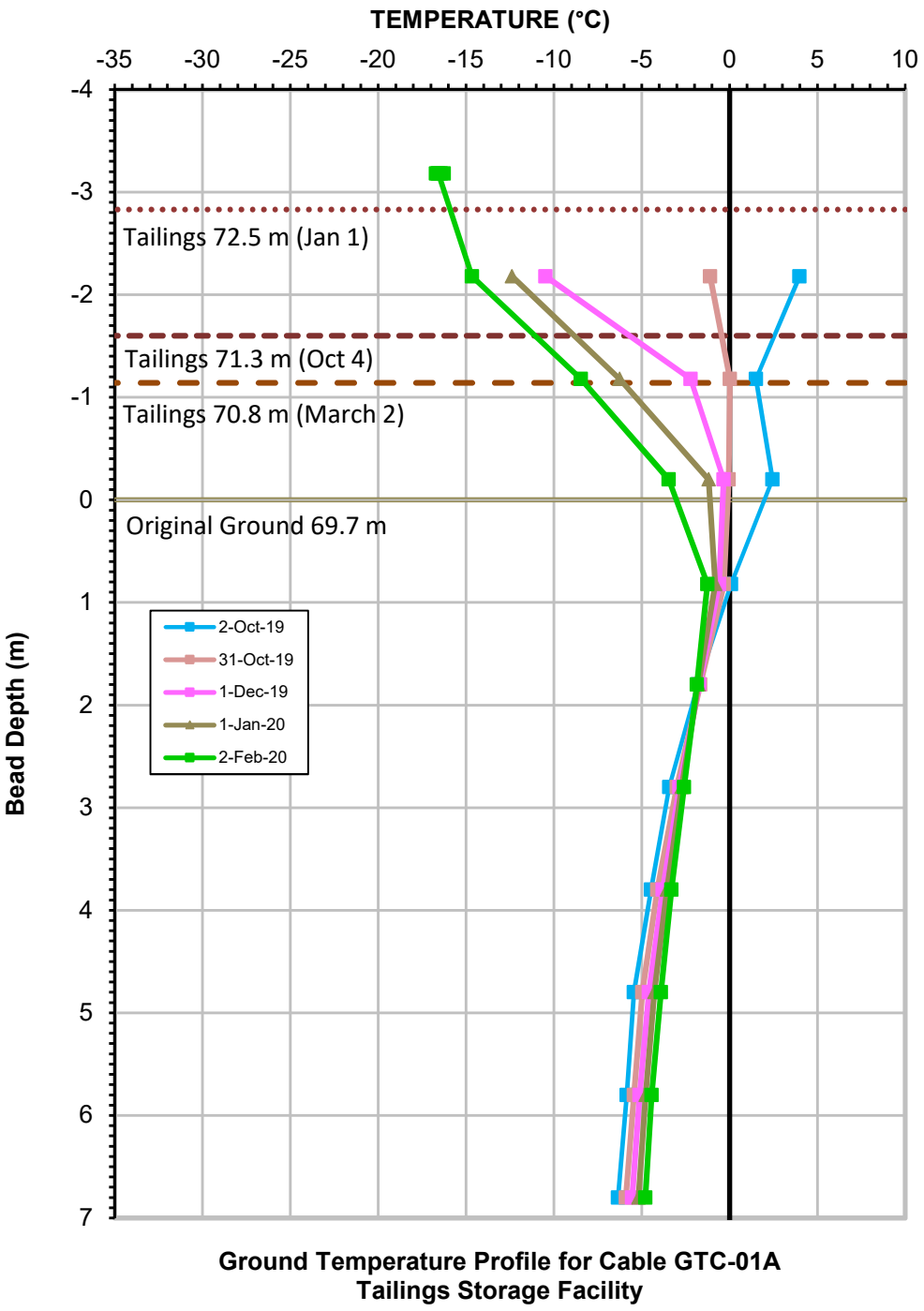
Photo 4: TSF Compacted Tailings

Photo 5: TSF Compacted Tailings

Photo 6: TSF Perimeter Rockfill Berm - crest with safety berm

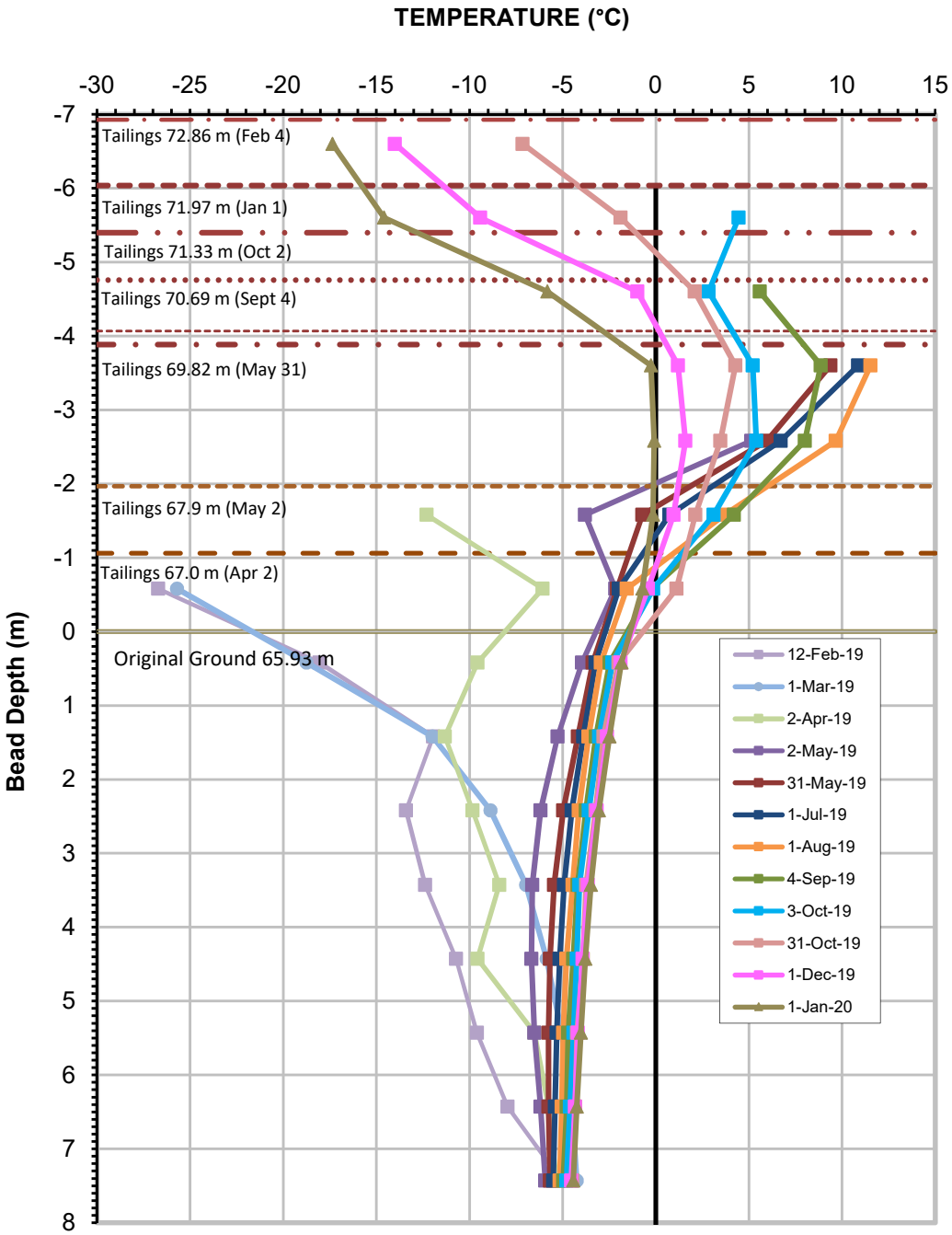
Photo 7: TSF Perimeter Rockfill slope

Photo 8: TSF Channel 3 downslope TSF



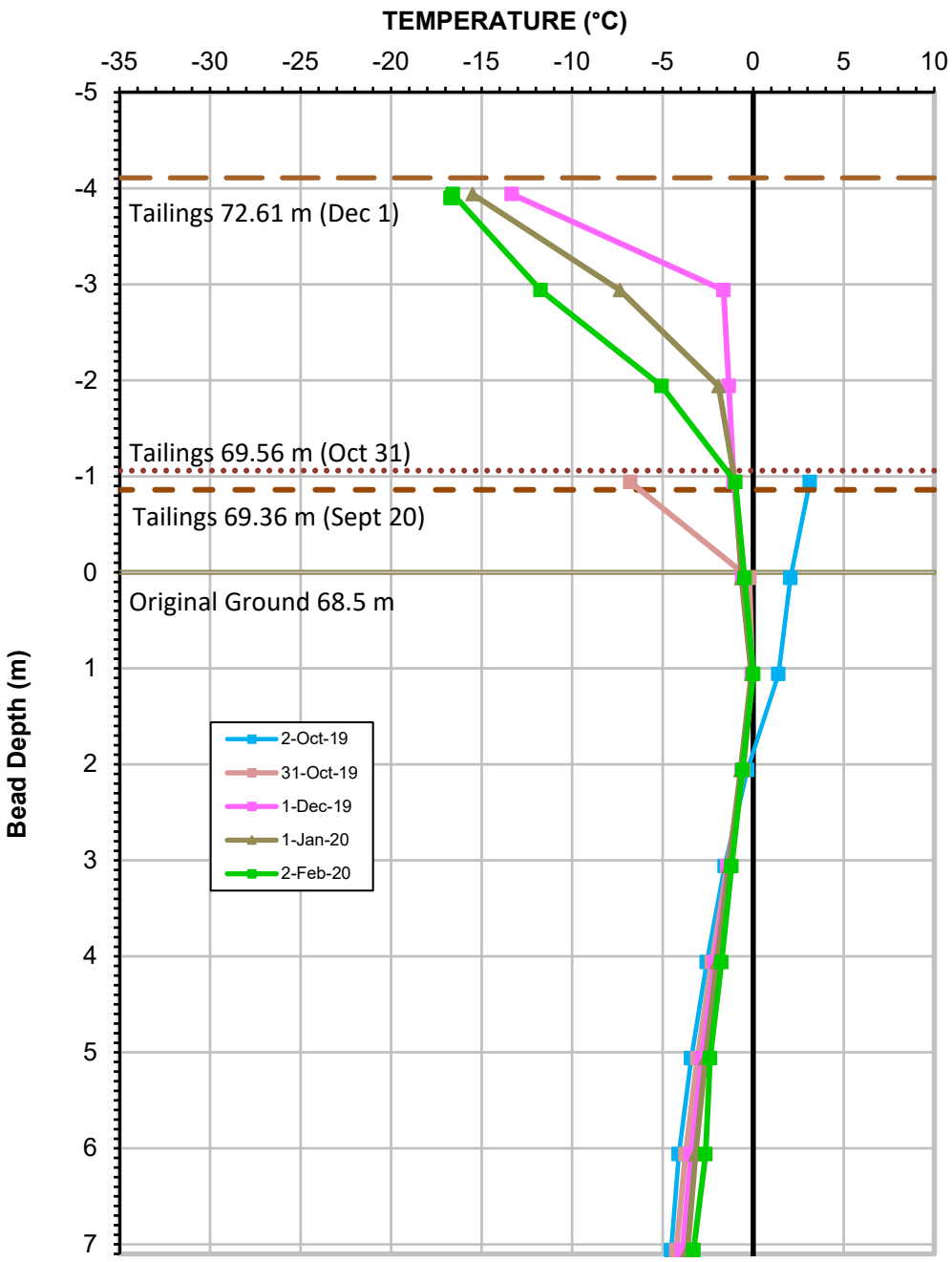
Ground Temperature Profile for Cable GTC-01A
Tailings Storage Facility

Serial No.: 2698
Date Installed: September 20, 2019



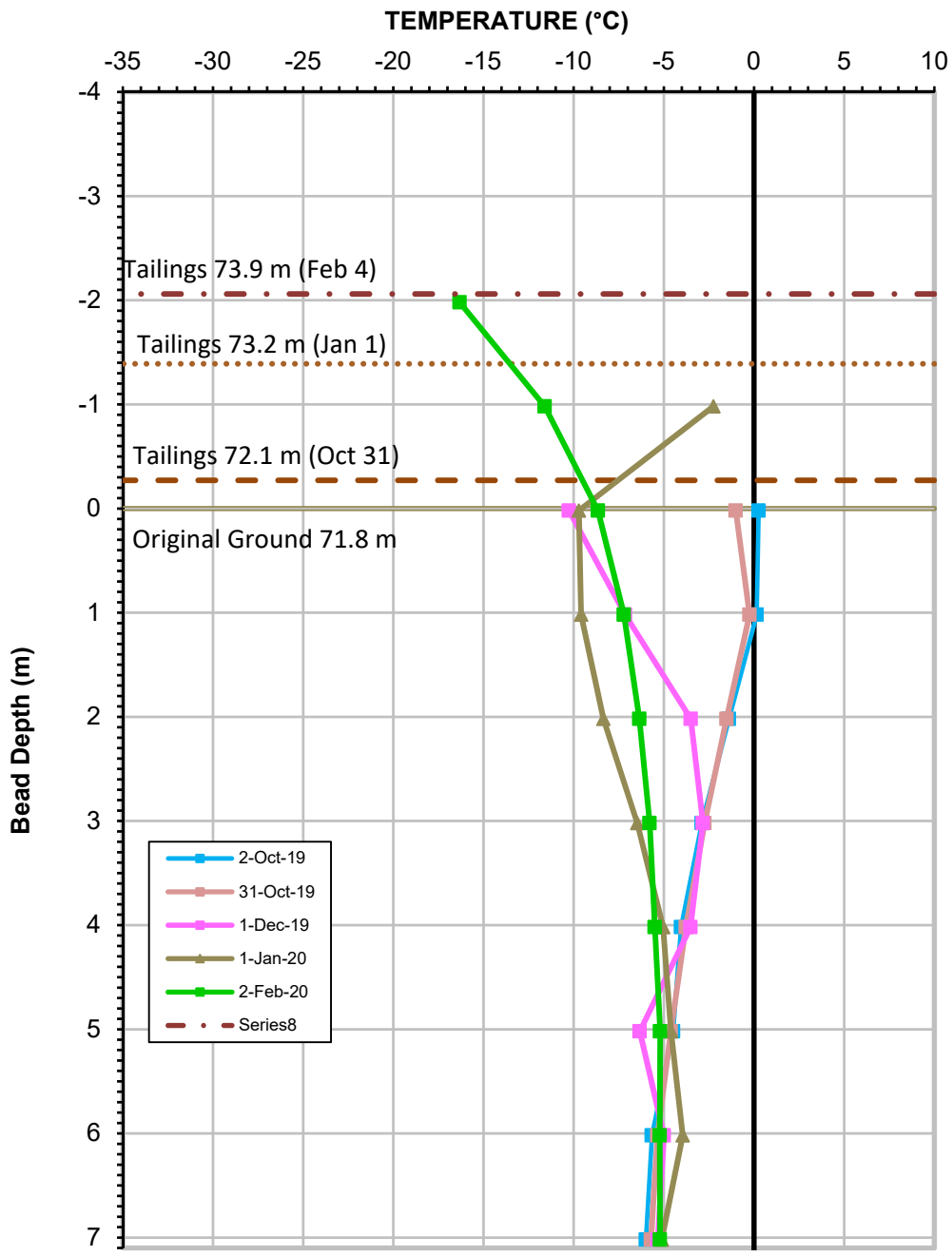
Ground Temperature Profile for Cable GTC-02
Tailings Storage Facility

Serial No.: 2687
Date Installed: February 12, 2019



Ground Temperature Profile for Cable GTC-03
Tailings Storage Facility

Serial No.: 2699
Date Installed: September 20, 2019



Ground Temperature Profile for Cable GTC-04
Tailings Storage Facility

Serial No.: 2697
Date Installed: September 20, 2019

APPENDIX J

SITE ROADS

Photo 1: Culvert 1, upstream

Photo 2: Culvert 1 - downstream

Photo 3: Culvert 2 downstream

Photo 4: Culvert 2 upstream

Photo 5: Culvert 3 upstream

Photo 6: Culvert 2 downstream - culvert completely submerged

Photo 7: Culvert 4 upstream

Photo 8: Culvert 8 upstream

Photo 9: Culvert 10

Photo 10: Culvert 11

Photo 11: Culvert 13 upstream

Photo 12: Culvert 15 downstream

Photo 13: Culvert 15 upstream

Photo 14: Culvert 16

Photo 15: Site access road adjacent to CP1

Photo 16: Site access road adjacent to fuel storage

Photo 17: Road between industrial pad and Portal

Photo 18: Road adjacent to crusher

Photo 19: Road to crusher ramp

Photo 20: Site access road to Exploration Camp

Photo 21: Site access road water discharge at exploration camp

APPENDIX K

BORROW SOURCES

Photo 1: Meliadine Esker Borrow Area

Photo 2: Meliadine Esker Borrow Area - drainage channel

Photo 3: Meliadine Esker Borrow Area - drainage channel culvert

Photo 4: Meliadine Esker Borrow Area drainage channel outlet towards CP1

Photo 5: Meliadine North North Esker

Photo 6: SP2 Waste Rock and Borrow Area

Photo 7: SP2 Waste Rock and Borrow Area - Grizzly

Photo 8: Tiriganiaq Borrow Area

APPENDIX L

OTHER MELIADINE FACILITIES

Photo 1: Crusher Ramp

Photo 2: Crusher Ramp

Photo 3: Crusher Ramp Slope

Photo 4: Crusher Ramp - MSE wall

Photo 5: Crusher Ramp - MSE wall

Photo 6: Crusher Ramp - MSE wall

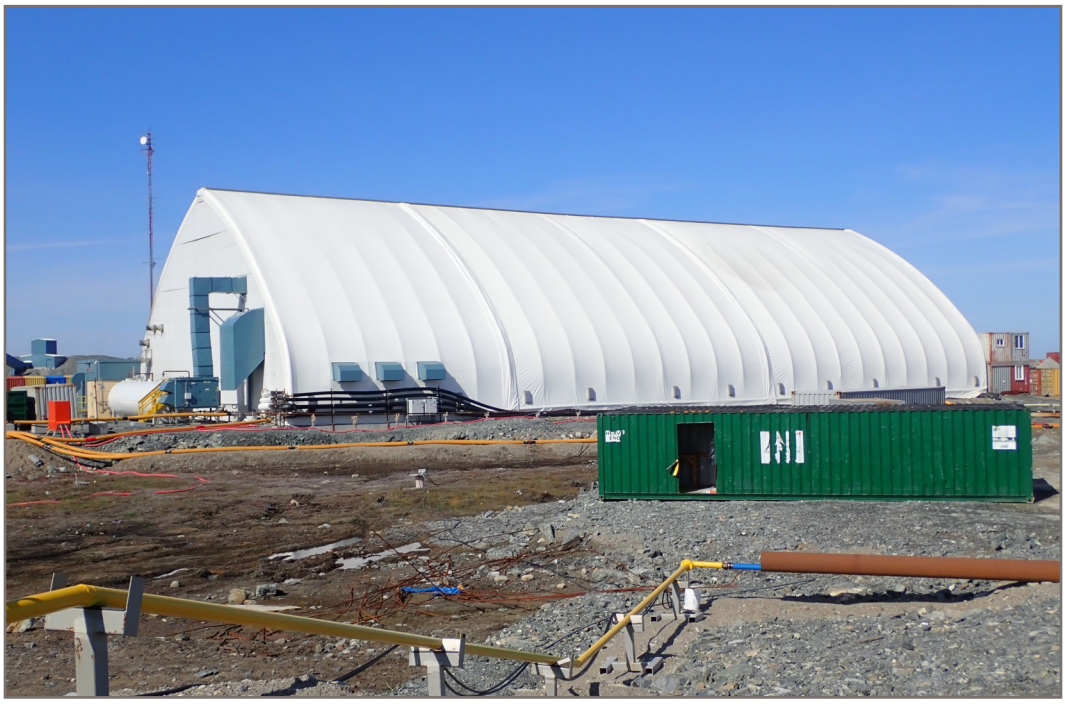


Photo 7: SWTP Structure

Photo 8: SWTP Saline water treatment plant

Photo 9: SWTP Shims to level the plant

Photo 10: SWTP Racking not level

Photo 11: SWTP Distress due to floor movement

Photo 12: Landfill

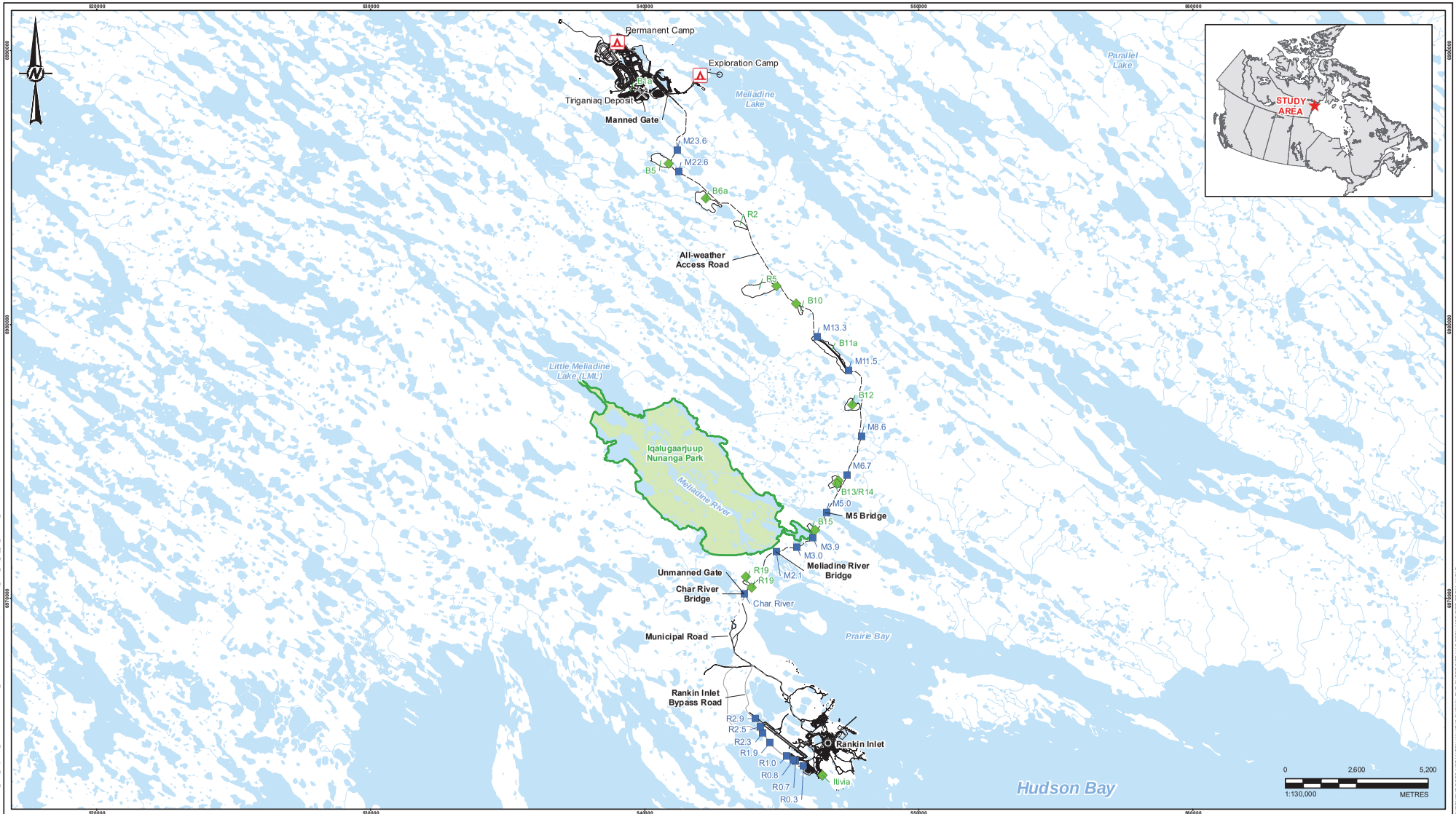
Photo 13: Landfill East Berm

Photo 14: Landfill West Berm

Photo 15: Landfill debris

APPENDIX M

ALL-WEATHER ACCESS ROAD



LEGEND

- CAMP
- PROPOSED MINE SITE
- QUARRY/BORROW PIT LOCATION
- WATERCOURSE CROSSING
- ALL-WEATHER ACCESS ROAD (AWAR)
- ROAD - NEW
- ROAD - EXISTING
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT
AGNICO EAGLE MINES LTD.

CONSULTANT
GOLDER

YYYY-MM-DD	2019-02-14
DESIGNED	FE
PREPARED	CDB
REVIEWED	FE
APPROVED	ACI

PROJECT
MELIADINE GOLD PROJECT

TITLE
MELIADINE ALL WEATHER ACCESS ROAD WITH QUARRIES AND WATERCOURSE CROSSINGS

PROJECT NO.	CONTROL	REV.	FIGURE
18105719	3000/002	0	5

PATH: Y:\Burnaby\CAD-GIS\Client\Agnico_Eagle_Mines_Ltd\Meliadine_Gold_Project\99_PROJECTS\18105719.002_PRODUCTION\3000\MXD\Rpt\18105719_3000_002_Fig_05_Meliadine_AWAR.mxd PRINTED ON: 2019-02-14 AT: 2:39:52 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

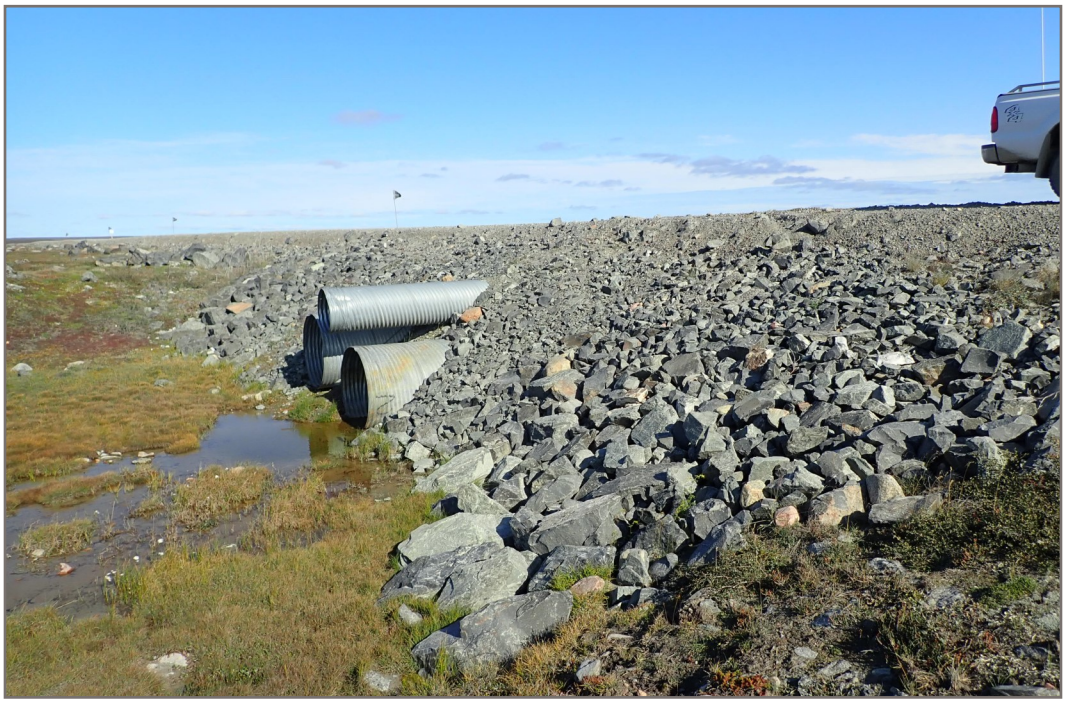


Photo 1: Culvert km 6.2

Photo 2: Culvert km 7.2

Photo 3: Culvert km 7.1

Photo 4: Culvert km 7.4

Photo 5: Culvert km 9.1

Photo 6: Culvert km 9.5

Photo 7: Culvert km 12.1

Photo 8: Culvert km 13.5

Photo 9: Culvert km 14.7

Photo 10: Culvert km 16.3

Photo 11: Culvert km 18.1

Photo 12: km 19.5 no culvert

Photo 13: Culvert 21.7

Photo 14: Culvert 22.3

Photo 15: Culvert km 22.7

Photo 16: Culvert 25.8

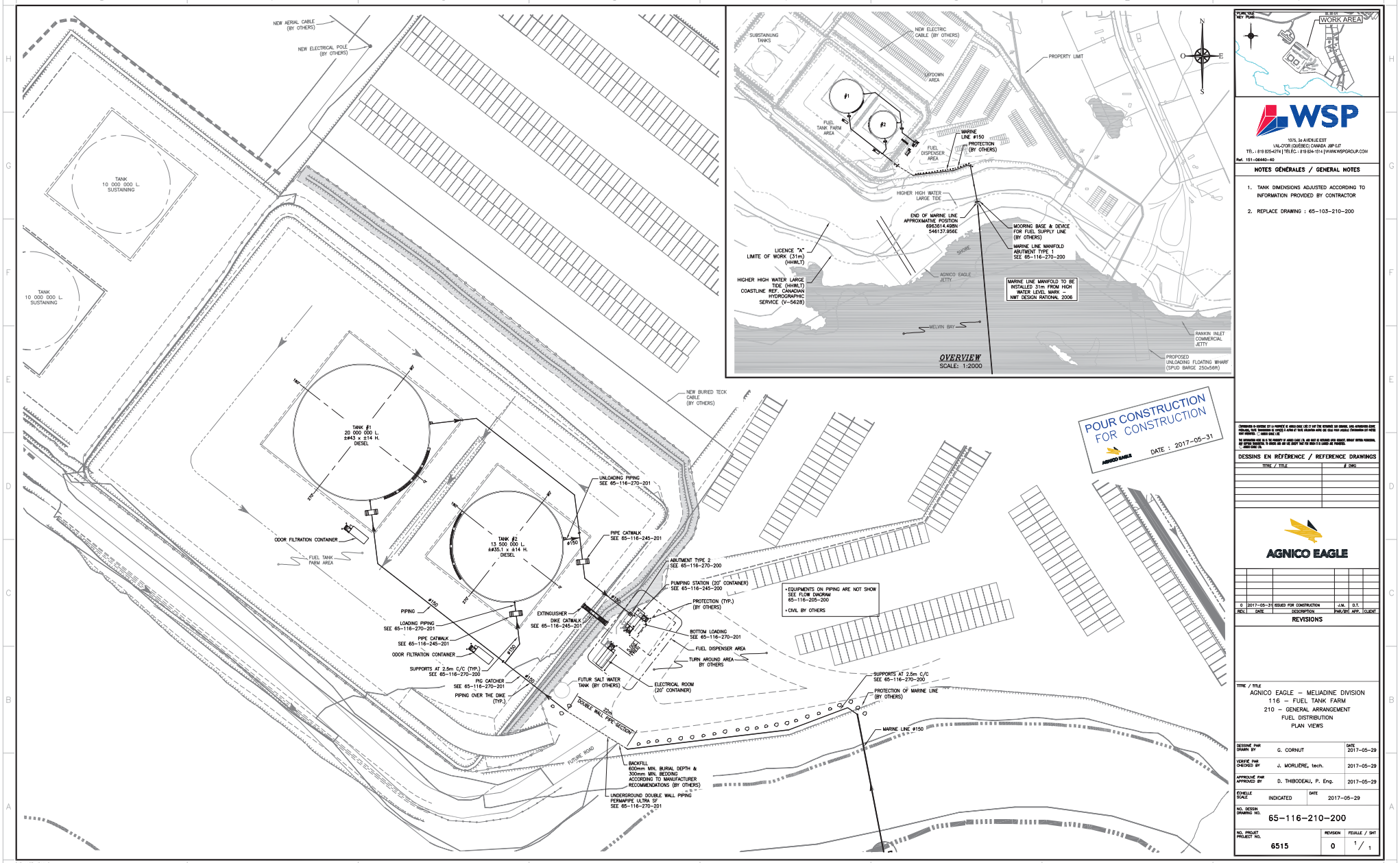
Photo 17: Culvert km 29.6

APPENDIX N

ITIVIA FUEL STORAGE SITE AND BYPASS ROAD

NO. DESSIN
DRAWING NO. 65-116-210-200

FORMAT ARCH D



POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2017-05-31
AGNICO EAGLE

PLAN TITLE
KEY PLAN

WSP
1075, 3e AVENUE EST
VAL-D'OR (QUÉBEC) CANADA J9P 0J7
TÉL. : 819 825-4274 | TÉLÉC. : 819 824-1514 | WWW.WSPGROUP.COM

Ref. 151-06440-40

NOTES GÉNÉRALES / GENERAL NOTES

1. TANK DIMENSIONS ADJUSTED ACCORDING TO INFORMATION PROVIDED BY CONTRACTOR
2. REPLACE DRAWING : 65-103-210-200

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG

AGNICO EAGLE

REV.	DATE	DESCRIPTION	DWN./DR.	APP.	CLIENT
0	2017-05-31	ISSUED FOR CONSTRUCTION	J.M.	D.T.	

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEL IADINE DIVISION
116 – FUEL TANK FARM
210 – GENERAL ARRANGEMENT
FUEL DISTRIBUTION
PLAN VIEWS

DESSINÉ PAR / DRAWN BY	G. CORNUT	2017-05-29
VÉRIFIÉ PAR / CHECKED BY	J. MORLIÈRE, tech.	2017-05-29
APPROUVÉ PAR / APPROVED BY	D. THIBODEAU, P. Eng.	2017-05-29

ÉCHELLE / SCALE: INDICATED
DATE: 2017-05-29

NO. DESSIN / DRAWING NO.: 65-116-210-200

NO. PROJET / PROJECT NO.: 6515

RÉVISION: 0

FEUILLE / SHT: 1 / 1

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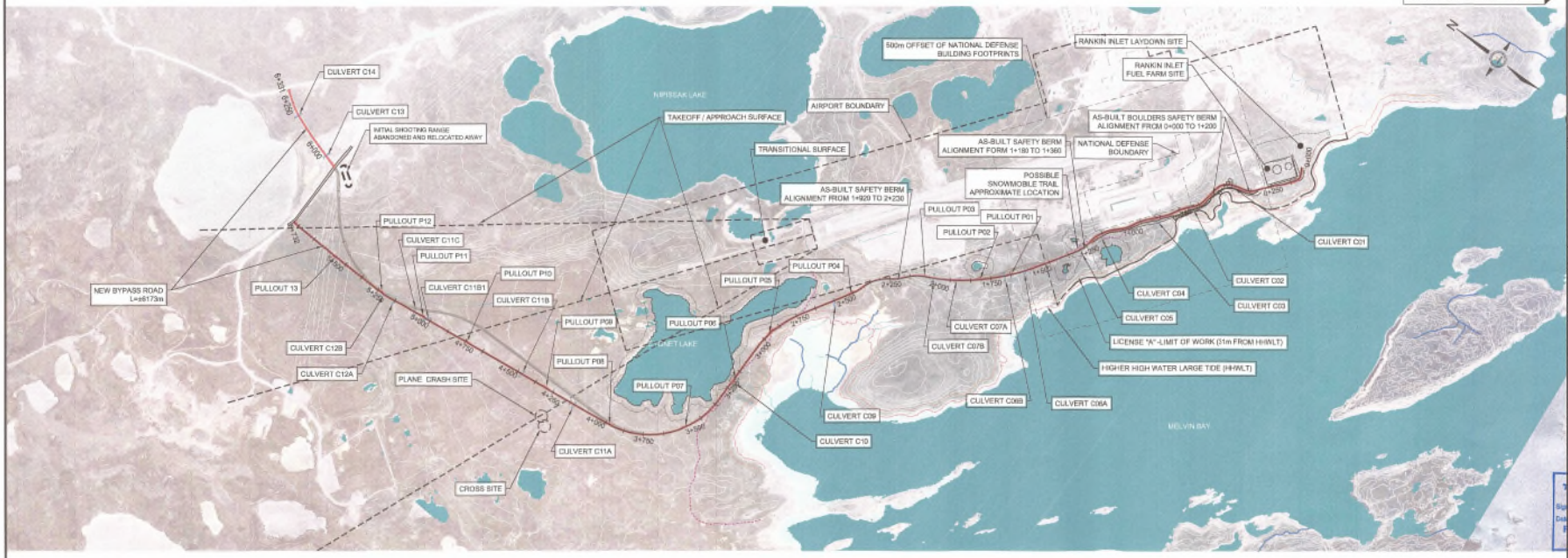
\\CAMTL1DATA01\projets\2015\1\151-06440-40\Genie Nordique\Dao\65-116-210-200_R0.dwg-2013-02-19 14:03:29

FILE NO. 65-116-210-200_R0.dwg

NO. DESSIN DRAWING NO. 65-117-230-201_R4-AS-BUILT-F

FORMAT ARCH D



LEGEND:
- CULVERT
- BYPASS ROAD

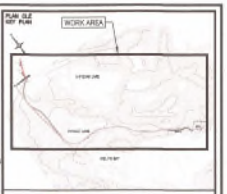
TEL QUE CONSTRUIT
AS BUILT
AGNICO EAGLE
DATE : 2019-02-13

TETRA TECH

FINAL ISSUE
AFTER CONSTRUCTION

SOME ANNOTATIONS HAVE BEEN ADDED TO THE DRAWING ISSUED FOR CONSTRUCTION IN ORDER TO INCORPORATE THE INFORMATIONS RECEIVED. IN THIS PROJECT, TETRA TECH HADN'T DONE ANY FIELD SUPERVISION AT THE CONSTRUCTION SITE.

PLAN DE REPÉRAGE KEY PLAN



TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

GENERAL NOTES:
1. EXISTING GROUND DTM PROVIDED BY AEM.
2. ALL UNITS ARE IN METERS.
3. ELEVATIONS IN DRAWING PROVIDE FINISHED GRADE ELEVATIONS AT THE TOP OF THE SURFACE GRAVEL LAYER.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY, SECURITY AND SLOPES OF ALL EXCAVATIONS/ BACKFILL AND SHALL ABIDE BY ALL RELEVANT STANDARDS AND REGULATIONS. THE STABILITY, DEWATERING AND MAINTENANCE OF ALL EXCAVATIONS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
5. GRANULAR MATERIAL 0-30 mm OR 0-80 mm SHALL BE PLACED IN LIFTS NOT EXCEEDING 300 mm AND COMPACTED TO A MINIMUM OF 98% OF MAXIMUM DRY DENSITY (STANDARD PROCTOR). BORROW PIT MATERIAL, GRANULAR FILL MATERIAL 0-80 mm OR OVERBURDEN MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 600 mm AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY (STANDARD PROCTOR). MOISTURE CONDITIONING MAY BE REQUIRED PRIOR TO COMPACTION.
6. OVERBURDEN MATERIAL CAN BE USED FOR FILL IN SPECIFIED AREAS ONLY WHEN APPROVED BY FIELD GEOTECHNICAL ENGINEER.
7. AN AS-BUILT DRAWING SHALL BE PROVIDED AFTER CONSTRUCTION.
8. THE LOCATION, ELEVATION AND LENGTH OF CULVERT GROUP SHALL BE CONFIRMED ON SITE.
9.
10.
11. NO EQUIPMENT CAN BE STORED AND NO DEPOSITION OF EXCAVATED AND STOCKPILED MATERIALS CAN BE DONE WITHIN THE LICENCE "A" - LIMIT OF WORK (31M) LINE.
12. FOR SUMMER CONSTRUCTION, GEOTEXTILE SHALL BE INSTALLED BETWEEN THE ORIGINAL GROUND AND THE GRANULAR MATERIAL WHEREVER THE ORIGINAL GROUND IS UNSTABLE TO SUPPORT FILL MATERIAL COMPACTION.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TYPE / TITLE	# DWG

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.
4	2019-02-13	ISSUED FOR AS-BUILT	S.M.	J.A.
3	2017-07-26	ISSUED FOR 0-230-005, 006&008	S.M.	J.A.
2	2017-07-06	ISSUED FOR 0-230-005, 006&008	S.M.	J.A.
1	2017-04-21	ISSUED FOR CONSTRUCTION	C.M.	J.A.
0	2017-03-17	ISSUED FOR CONSTRUCTION	C.M.	J.A.

REVISIONS

PERMIT TO PRACTICE
TETRA TECH (NDUSTRIES, INC.
O/A TETRA TECH
Signature
Date 17-07-13
PERMIT NUMBER: P 1029
NWT/NU Association of Professional Engineers and Geoscientists

AGNICO EAGLE – MEADOWBANK DIVISION
117 – ROADS, FENCES, AND YARDS
230 – GENERAL EARTH WORKS
RANKIN INLET BYPASS ROAD
PLAN / PROFILE
GENERAL OVERVIEW

DESSINÉ PAR DRAWN BY	PATRICK HAMEL	DATE 2017-03-17
VÉRIFIÉ PAR CHECKED BY	JOSÉE ALARIE	2017-03-17
APPROUVÉ PAR APPROVED BY	JOSÉE ALARIE	2017-03-17
ÉCHELLE SCALE	1:10000	DATE 2016-11-07

NO. DESSIN DRAWING NO. 65-117-230-201

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6515 / 28920	4	1 / 1

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FILE NO. 65-117-230-201_R4-AS-BUILT-F.dwg

Photo 1: Culvert C01

Photo 2: Culvert C02

Photo 3: Culvert C03

Photo 4: Culvert C04

Photo 5: Culvert C05

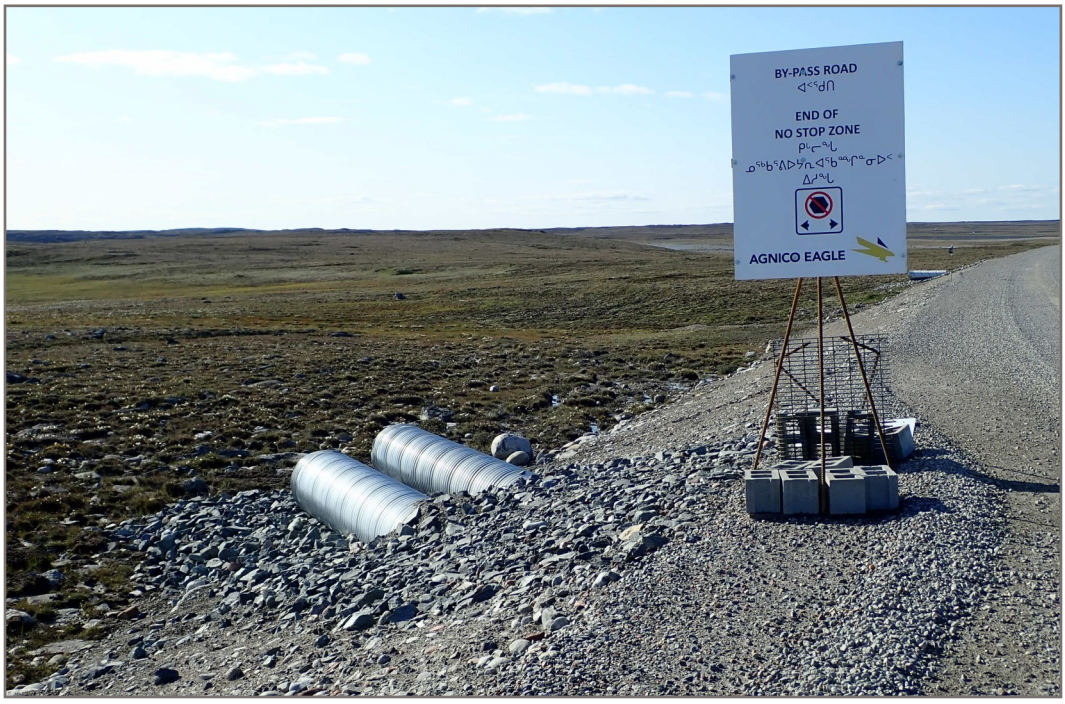

Photo 6: Culvert C06

Photo 7: Culvert C06-1 (07)

Photo 8: Culvert C07a (C08)

Photo 9: Culvert C07b (C9)

Photo 10: Culvert C09 (C10)

Photo 11: Culvert C10 (C1)

Photo 12: Culvert C11a

Photo 13: Culvert 11b

Photo 14: Culvert C11b-1

Photo 15: Culvert C11c

Photo 16: Culvert C12a

Photo 17: Culvert 12b

Photo 18: Culvert C13

Photo 19: Culvert 19

Photo 20: Low area in road northwest of C10

Photo 21: Low area in road northwest of C10, higher mark on road

Photo 22: Low area in road northwest of C10, higher mark on road

Photo 23: Low area in road northwest of C10, erosion booms on downslope of road

Photo 24: ITIVIA Tankfarm - north berm

Photo 25: ITIVIA Tankfarm - south berm

Photo 26: ITIVIA Tankfarm - north berm

Photo 27: ITIVIA Tankfarm - east berm - geotextile exposed

Photo 28: ITIVIA Tankfarm - east berm - geotextile exposed