CONSTRUCTION SUMMARY (AS-BUILT) REPORT FOR DIKE D-CP1, MELIADINE GOLD PROJECT, NUNAVUT

PRESENTED TO

AGNICO EAGLE MINES LTD.

MELIADINE GOLD PROJECT

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EXECUTIVE SUMMARY

Dike D-CP1 was constructed at the outlets of two existing shallow lakes (H6 and H17) at the Meliadine Gold Project site. It is approximately 600 m long with a maximum dike height of approximately 6.6 m. The construction of Dike D-CP1 started in October 2016 and was completed in July 2017. The primary water retention element in Dike D-CP1 is a geomembrane liner tied into a key trench in underlying permafrost.

Tetra Tech Canada Inc. designed the dike, provided construction monitoring, earth-work quality control and quality assurance testing services during the construction of Dike D-CP1. Construction management was overseen by Agnico Eagle Mines Ltd. MTKSL Contracting Joint Venture produced construction materials and constructed the dike. Liner installation was performed by Texel Geosol Inc. (Texel) working as a sub-contractor for MTKSL. Liner QC testing and monitoring was performed by Texel.

Dike D-CP1 was generally completed according to its design intent and overall specifications with the available construction materials. Some variations were made during construction to accommodate the field material availability, constructability, construction method and schedule, and design changes. Variations are documented in this report, Request for Information (RFI), and Engineering Change Notices (ECN). The Tetra Tech design team was responsible for approval of all implemented RFIs. Agnico Eagle Mines Ltd. was responsible for approval of all ECNs. The variations are not expected to materially impact the performance of the dike structure. Key variations are as follows:

- Unsuccessful attempts at mixing and placing Type K (nearly-saturated 20 mm minus granular fill) resulted in the suspension of its use. The material was only placed between Stations 0+090 and 0+310 prior to the suspension of its use. The bottom liner location was modified between Stations 0+310 to 0+585 to accommodate not using Tyke K material.
- A shortage of Coletanche ES3 liner resulted in Coletanche ES2 liner being used for all top liner panels from Station 1+520 to 1+570 and intermittent ES2/ES3 panels from Station 1+570 to 585.
- Bentonite-augmented 20 mm minus was placed from the hinge point up to an Elevation of 64.7 m from Station 1+132 to 1+551 on the top liner to reduce the risk of potential seepage through this section of the liner.
- Water was observed seeping from the upstream CP1 pond through the Type F material in mid-May and ultimately over-topped the working platform from Stations 1+170 to 1+460. To prevent the water flowing into the key trench, Type H material was placed as quickly as possible. As a result, "wet" placement of material was observed and optimum compaction of the material was not possible.
- Comparison of the as-built drawings with the design indicates dike dimensions are close to design. There are small variations; however, they will not affect the overall stability of the dike.
- The north section of the seepage channel was drilled and blasted with significant over blasting. The over excavated zone was backfilled with ROM material.
- Some of the Type C and Type F materials placed in the key trench below the liner during the winter had lower densities than designed. This was due to the frozen condition of the fills.

The QA/QC material testing results and construction record drawings are presented in this report.

Five (5) horizontal and five (5) vertical ground temperature cables and five (5) steel rod settlement monitoring hubs were installed to monitor the performance of Dike D-CP1.

To follow the best practices, the performance of Dike D-CP1 must be monitored throughout its operating life. Long-term monitoring of D-CP1 should include thermal monitoring, settlement monitoring, routine visual inspections, and annual inspections according to the regulatory requirements.

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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
AEM	Agnico Eagle Mines Ltd.
AEP	Annual Exceedance Probability
CAT	Caterpillar
CP	Collection Pond
DRE	Dike Resident Engineer
ECN	Engineering Change Notice
GTC	Ground Temperature Cable
HGTC	Horizontal Ground Temperature Cable
IDF	Inflow Design Flood
km	Kilometers
m	Meters
QA	Quality Assurance
QC	Quality Control
RFI	Request For Information
ROM	Run-Of-Mine
VGTC	Vertical Ground Temperature Cable

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Agnico Eagle Mines Ltd. 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 Ltd., or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

1.1 General

Tetra Tech Canada Inc. (Tetra Tech) was retained by Agnico Eagle Mines Ltd. (Agnico Eagle) to prepare a construction summary (as-built) report for Dike D-CP1 at the Meliadine Gold Project (the project) site. Agnico Eagle is currently developing the project which is located approximately 25 km north from Rankin Inlet, Nunavut. The project site is located on the peninsula between the east, south, and west basins of Meliadine Lake (63°01'23.8"N, 92°13'6.42"W). A general location plan for the project is shown in Figure 1.

Dike D-CP1 was designed by Tetra Tech. It was constructed at the project site as part of its development plan between October 2016 and July 2017. Construction management was overseen by Agnico Eagle's Meliadine Division's Construction Department. MTKSL Contracting Joint Venture (MTKSL) produced construction materials and constructed the dike. MTKSL was also responsible for survey control during construction and compilation of as-built information. Tetra Tech was retained by Agnico Eagle to provide construction monitoring, quality assurance, and earthworks quality control testing services during the construction of Dike D-CP1. Liner installation was performed by Texel Geosol Inc. (Texel) working as a sub-contractor for MTKSL. Liner QC testing and monitoring was performed by Texel.

A technical advisory committee reporting to Agnico Eagle oversaw the dike construction. The committee included Mr. Thomas Lepine from Agnico Eagle, Mr. Luciano Piciacchia from BBA, and Mrs. Fiona Esford from Golder Associates. During the dike construction the team received the daily and weekly dike construction QA/QC reports, was involved in several key technical discussions, and had several field visits to the project site.

Dike D-CP1 is located at the outlets of two existing shallow lakes (H6 and H17). The dike is approximately 600 m long with a maximum dike height of about 6.6 m above the original ground. A general site plan showing the location is presented in Figure 2. A description of the dike construction activities and the quality assurance and quality control test results are presented in this report. Construction record drawings are attached in Appendix B. The survey data used for producing Dike D-CP1 construction record drawings was provided by MTKSL.

Dike D-CP1 was generally completed according to its design intent and overall specifications with the available construction materials under the field site and construction conditions. Some variations were made during construction to accommodate the field material availability, constructability, construction method and schedule, and design changes made during the construction. These variations are described in Section 7.0. Variations are documented in this report, Request for Information (RFI), and Engineering Change Notices (ECN). The Tetra Tech design team was responsible for approval of all implemented RFIs. Agnico Eagle was responsible for approval of all ECNs.

This report, which is to be submitted to the Nunavut Water Board, is prepared to meet the requirements in the Type "A" Water Licence No. 2AM-MEL 1631 – Agnico Eagle Mines Limited for the Meliadine Gold Project (Part D, Item 3).

1.2 Dike Design Concept

The detailed design of Dike D-CP1 was presented in Design Report for D-CP1 Meliadine Gold Project, NU. Version 0 (Tetra Tech EBA 2016a). This dike is one of several water retention dikes required to manage the site contact water during pre-production, operation, and interim mine closure.

D-CP1 is located at the outlets of two existing shallow lakes (H6 and H17) which were partially dewatered from September 2016 to October 2016 prior to and at the start of the dike's construction. Following the construction of D-CP1 the former Lakes H6 and H17 will now be combined to form water storage pond CP1. Dike D-CP1 retains the water stored in the CP1 pond. CP1 is the final water collection pond for the project site and will receive all of the site contact water from the Industrial Area (plant site and accommodation complex buildings), Waste Rock Storage

Facility, Dry Stack Tailings Facility, Ore Stockpiles, and two open pits. The water stored in CP1 during the open water season will be pumped to an effluent water treatment plant. Treated water that meets discharge criteria will be pumped through a pipeline to a diffuser in Meliadine Lake for final discharge. It is intended that the water elevation in CP1 will be kept low during most of its operation. Temporary water storage will occur during the annual spring freshet or during extreme rainfall events.

Dike D-CP1 was designed and built as a lined dike with the liner keyed into a central key trench. The liner system consists of a bituminous geomembrane liner (Coletanche ES3 and ES2). The liner is tied into the base of the key trench with bentonite-augmented 20 mm minus material (Type F). The superstructure is constructed of run-of-mine rock (Types A and A1), transition rockfill (Types B and B1), sand and gravel fill (Type H), and granular fill material (Type C). A general section of D-CP1 design concept is presented in Figure 3.

1.3 Downstream Water Collection Channels and Sump

A water collection sump and two channels that feed into the sump were constructed approximately 5 m away from the downstream toe of Dike D-CP1. These structures will collect contact water seeping through the dike. The water in the channels will flow into the sump and water collected in the sump will be pumped back to CP1 on an as-needed basis.

Construction record drawings for the sump and channels are attached in Appendix B. The survey data used for producing construction record drawings was provided by MTKSL.

1.4 Related Documents

The supporting and related documents for Dike D-CP1 construction are as follows:

- Design Report for Dike D-CP1, AEM Document Number: 6515-132-007-132-REP-003, Version 0 (Tetra Tech EBA 2016a);
- Geotechnical Specifications for the Construction of Dike D-CP1, AEM Document Number: 6515-E-132-007-132-SPT-002 R1, Revision 1 (Tetra Tech EBA 2016b);
- Construction Quality Plan for Dikes D-CP1 and D-CP5, AEM Document Number: 6515-132-007-132-QQP-001, Version 0 (Tetra Tech EBA 2016c); and
- Liner Installation QC Plan prepared by Texel.

Table 1-1 below presents the list of construction drawings used for the construction of D-CP1.

Table 1-1: List of Construction Drawings used for the Construction of Dike D-CP1

AEM Design Drawing Number	Revision Number	Tittle
65-685-230-204	1	D-CP1 General Location Plan
65-685-230-205	1	D-CP1 Key Trench and Dike Layout
65-685-230-206	1	D-CP1 Profiles
65-685-230-207	1	D-CP1 Thermal Cover Layout Plan and Profiles
65-685-230-208	1	D-CP1 Typical Sections and Quantities
65-685-230-209-001	1	D-CP1 Sections Station 1+025 to 1+200
65-685-230-209-002	1	D-CP1 Sections Station 1+225 to 1+400
65-685-230-209-003	1	D-CP1 Sections Station 1+425 to 1+575
65-685-230-210	1	D-CP1 Downstream Water Collection Channel and Sump Layout Plan and Profiles

Table 1-1: List of Construction Drawings used for the Construction of Dike D-CP1

AEM Design Drawing Number	Revision Number	Tittle
65-685-230-211	1	D-CP1 Instrumentation Plan and Details for Ground Temperature Cables
65-685-230-212	1	D-CP1 Instrumentation Plan and Details for Ground Temperature Cables and Settlement Survey Monument Points
65-685-230-213	1	D-CP1 Typical Details

1.5 Request for Information (RFI)

An RFI register for Agnico Eagle's Meliadine Project (Project Number 6515) under Contract Number C-007 which included Dikes D-CP1 and D-CP5 was established during the dike's construction. Table 1-2 below summarizes RFIs related to Dike D-CP1 that were received from MTKSL or Agnico Eagle prior to and during construction. Details of these RFIs and corresponding responses are attached in Appendix D1.

Table 1-2: Summary of RFIs for Dike D-CP1

RFI Number	Description	Date Submitted	Date Closed
RFI_6515-C-230-007_001	Missing bid items for D-CP1 downstream water collection channel sump and D-CP1/D-CP5 Instrumentation	09/01/2016	09/01/2016
RFI_6515-C-230-007_002	20 mm minus material classification / Liner type for D-CP5	09/06/2016	09/06/2016
RFI_6515-C-230-007_003	D-CP1 Change materiel from type H to CL-A	10/09/2016	10/11/2016
RFI_6515-C-230-007_004	Horizontal tolerances that will be acceptable for lift placement	10/11/2016	10/12/2016
RFI_6515-C-230-007_005	Stake out point for each material	10/14/2016	10/17/2016
RFI_6515-C-230-007_006	Type K Material Mixing	10/24/2016	11/10/2016
RFI_6515-C-230-007_008_Rev1	D-CP1 Profile – Top of liner between Stations 1+560 & 1+590	10/26/2016	11/04/2016
RFI_6515-C-230-007_009	Variation of fill placement specification	11/01/2016	11/04/2016
RFI_6515-C-230-007_010	Key Excavation From 1.8 m to 2.8 m	11/04/2016	11/10/2016
RFI_6515-C-230-007_011	Liner termination details	11/16/2016	11/17/2016
RFI_6515-C-230-007_012	Crushing and screening material acceptance	11/29/2016	12/09/2016
RFI_6515-C-230-007_013	Type H material compaction	12/01/2016	12/09/2016
RFI_6515-C-230-007_014	Solutions to address potential Type A1 material shortage	12/10/2016	12/22/2016
RFI_6515-C-230-007_015	This RFI was not submitted to Tetra Tech		
RFI_6515-C-230-007_016	Type K material mixing	01/05/2017	01/09/2017
RFI_6515-C-230-007_018	Type K placement	01/19/2017	01/20/2017
RFI_6515-C-230-007_019	Downstream excavation proposal	01/22/2017	01/22/2017
RFI_6515-C-230-007_021	Design liner base width and slope	01/24/2017	01/25/2017
RFI_6515-C-230-007_022	Slope when excavating below 1.8 m	01/27/2017	01/27/2017
RFI_6515-C-230-007_023	Type H material particle size distribution specifications	01/28/2017	01/20/2017
RFI_6515-C-230-007_024	Type B Material Shortage	02/20/2017	02/21/2017

1.6 Engineering Change Notice (ECN)

An Engineering Change Notice (ECN) was issued if a change initiated by the dike design team was made and approved by Agnico Eagle during the dike construction. Table 1-3 below summarizes the ECNs related to Dike D-CP1. Details of these ECNs and corresponding responses are attached in Appendix D2.

Table 1-3: Summary of ECNs for Dike D-CP1

ECN Number	Description	Date Issued
6515-C-235-007-ECN-001_RA	Revision 1 for Construction Specifications of D-CP1 and D-CP5	11/10/2016
6515-C-235-007-ECN-002_RA	Design Change of Dike Liner Key-in Detail at Crest for D-CP1 and D-CP5	11/14/2016
6515-C-235-007-ECN-003_R0	Design Change of Dike D-CP1 Over-Liner Bedding (replacing a zone of Type C with Type F)	04/17/2017

2.0 CONSTRUCTION MATERIALS

2.1 General

The following materials were used for the construction of Dike D-CP1:

- Run-of-Mine Rockfill (600 mm minus) – Type A and A1;
- Transition Rockfill (150 mm minus) – Types B and B1;
- Granular Fill (20 mm minus) – Type C;
- Bentonite-Augmented Material (20 mm minus) – Type F;
- Esker Sand and Gravel (75 mm minus) – Type H;
- Nearly-Saturated Backfill (20 mm minus) – Type K; and
- Geomembrane Liner (Coletanche ES2 and ES3).

2.2 Run-of-Mine Rockfill (600 mm minus) – Types A and A1

Type A material consisted principally of greywacke run-of-mine (ROM) from underground operations. Type A material generally had a maximum particle size of about 600 mm and a higher residual salinity compared to Type A1 material.

Type A1 material consisted principally of greywacke ROM that was excavated from the saline water storage pond during its construction from September to October 2016. The material generally had a maximum particle size of about 600 mm. This was generally referred to on site as “clean” ROM. The principal difference between Types A and A1 material, is that the Type A material has a residual salinity as it originated from underground operations.

Based on the dike design, Type A material was to be used for the upstream shell of the dike and for thermal cover in the abutments while Type A1 material was to be used for the downstream shell of the dike.

Shortage of Type A1 material resulted in the uppermost section (Elevation 65 m to top) of the downstream shell being constructed with Type A material as per RFI_6515-C-230-007_014.

The material was placed in lifts with maximum thickness of about 900 mm. Care was taken during placement to avoid segregation and nesting of larger particles. Each lift was compacted with a 10 ton vibratory roller drum compactor (minimum of six complete passes) and haul truck traffic prior to placing the next.

2.3 Transition Rockfill (150 mm minus) – Types B and B1

Transition rockfill material was used to backfill most of the key trench and as a filter-graded material between the ROM and fine granular fill (Type C) materials.

The dike's design called for the use of transition rockfill produced from Type A1 material obtained from the Saline Pond excavation. Due to the shortage of Type A1 material, as discussed in Section 2.2, some of the transition rockfill used was produced from Type A material. Based on Tetra Tech QA/QC personnel field notes and daily reports, most of the transition material produced from Type A material was placed above the top liner (from approximately Elevation 67.0 m to 68.6 m). This information was not provided in MTKSL as-built survey data. To differentiate between these materials, transition material produced from Type A material is referred to in this report and the as-built drawings as Type B material while transition material produced from Type A1 material is referred to as Type B1 material.

Type B1 material was used to backfill the key trench and most of the transition zone between the ROM and Type C materials. Type B material was used in the upper areas over the liner crest.

The maximum particle size of materials produced and used for dam construction was typically less than 150 mm. The 150 mm minus material was produced by the jaw crusher and did not require further processing. The specified gradation limits are presented in the design documents (Tetra Tech EBA 2016a and 2016b) and shown on the particle size analyses in Appendix E1. Quality assurance particle size analysis testing conducted during production by Tetra Tech QC site representatives indicated that the average gradation was within the specified gradation limits.

The material was placed in lifts with maximum thickness of 300 mm. Despite the care taken during material handling and placement to avoid segregation and nesting of larger particles, minor segregation issues were observed throughout the placement of Type B1 material due to the nature of placing frozen material, especially when the first two lifts in the key trench between Stations 0+007 and 0+060 were being placed. Following advice from QA/QC personnel, MTKSL generally mitigated this by ripping and mixing the stockpile and placing mostly with a dozer and not excavator when feasible.

In the months of January, February, and March 2017, the Type B1 material stockpile was essentially frozen. MTKSL used a D8 or D9 CAT dozer to rip the stockpile. As a result, some larger and frozen lumps were noticed in the material placed during those months. When observed by field QC staff, MTKSL was instructed to remove the frozen chunks prior to compaction.

Lifts of transition material were generally compacted with a 10 ton vibratory roller drum compactor (minimum of six complete passes). The first lift of Type B1 material in the key trench over the Type C material and liner was lightly compacted to avoid damaging the liner.

2.4 Granular Fill (20 mm minus) – Type C

The granular fill material (20 mm minus) referred to as Type C was used to construct the key trench fillet zone and also serves as the bedding layers above and below the liner to protect it from damage.

The 20 mm minus material was produced by the crusher from natural esker material sourced from the Meliadine Esker. The specified gradation limits are presented in the design documents (Tetra Tech EBA 2016a and 2016b). Tetra Tech's QC site representatives performed quality assurance testing on the material produced for the dike's construction. The tests included particle size analyses, moisture contents, moisture-density relationship test, and single point "frozen" dry density. Test results are attached in Appendix E2.

2.5 Bentonite-Augmented Material – Type F

Bentonite-augmented material referred to as Type F was used to construct the key trench levelling course and to provide a low permeability seal between the liner and the underlying frozen till and bedrock foundation. The Type F material was also used to seal the liner hinge point. As per ECN No. 6515-C-235-007-ECN-003_R0, a design change was introduced which authorized the placement of Type F material instead of the designed Type C material in the critical section of the dike (from the hinge point up to Elevation 64.7 m) from Station 1+132 to 1+551.

Type F material was produced by blending Type C (20 mm minus) material with dry powdered bentonite to achieve an average bentonite content of not less than 10% (by weight) with a minimum of 8% (by weight) at any grab sample. Two different particle sizes of bentonite were supplied and used for dikes construction; bentonite in smaller-sized (2,500 pound) cylindrical bags which had a slightly finer grainsize and bentonite in larger (3,000 pound) bags. Both materials were tested (swell tests and bulk density) by Tetra Tech QA/QC personnel and found suitable for dike construction.

Three 20 foot containers were used to construct a U-shaped area on the Industrial Pad for the purpose of blending bentonite and Type C material. Materials were blended by dumping/spreading Type C material within the U-shaped area, followed by placing the appropriate volume of bentonite on top of it and mixing using either a CAT 980 or a CAT IT62 loader. The mix proportions developed by MTKSL are presented in Table 2-1 below. The material was loaded in CAT 740 haul trucks and hauled to the dike where it was dumped and placed along the key trench using a CAT Excavator which further assisted in the blending.

Table 2-1: Summary Mix Proportion of Bentonite Augmented (Type F) Material

Loader	Bag Type	Number of Loader buckets of Type C Material	Number of Bentonite Bags
CAT IT62	Large Bag (3,000 Lbs.)	3 level	1
CAT IT62	Small Bag (2,500 Lbs.)	3 level	1
CAT 980	Large Bag (3,000 Lbs.)	1 level and 1 heaped	1
CAT 980	Small Bag (2,500 Lbs.)	2 level	1

Tetra Tech's QC representatives frequently visited the mixing station and observed the mixing process as well as verifying the number of bentonite bags and quantity of Type C material used were as indicated. The number of bentonite bags used for the blending were tracked by MTKSL on a daily basis and recorded by Tetra Tech's QC representatives.

Visual swell assessments on samples of placed Type F material were performed with satisfactory results obtained. Density and moisture QA/QC test results on the Type F material are presented in Appendix E3.

2.6 Crushed Esker Sand and Gravel – Type H

Crushed esker sand and gravel (75 mm minus) referred to as Type H material, was used to construct the upstream shell of the dike. This material has two main roles which are as follows:

- Transition material between the ROM outermost upstream shell and Type C material; and
- Main upstream zone to provide thermal and mechanical protection to the dikes central liner system.

Type H material was produced by the crusher from natural esker material sourced from the Meliadine Esker. The specified gradation limits are presented in the design documents (Tetra Tech EBA 2016a and 2016b). Tetra Tech's QC site representatives performed quality assurance testing on the material, including particle size analyses (gradation test), moisture contents, moisture-density relationships test, and single point frozen dry densities. Test results are attached in Appendix E4.

Most of the Type H material used for the construction of D-CP1 was produced in April and May 2017 from mainly frozen esker material. Concerns of introducing frozen chunks of finer particles, and high ice content (excess water) in the material produced and placed were raised. The Design Engineer recommended that Tetra Tech's QC team perform gradation tests on both frozen and non-frozen (thawed) materials. Some test results showed moisture contents >10% and a higher than specified fines content. Such material was stockpiled separately and not used for dike construction. MTKSL had to keep sorting the material to avoid the silty/sandy frozen chunks which could raise the fines content and/or the moisture content to levels >10%.

2.7 Nearly Saturated Backfill – Type K

Nearly saturated backfill (Type K) material was produced by mixing warm water and Type C material in a pit prepared by MTKSL about 20 m from the dike south abutment end on the upstream side. This material was to be used to backfill the lower portion of all zones over-excavated (below 1.8 m from original ground surface) below the key trench base as depicted in sketches in Appendix A of the specifications. However, Type K material was only placed between Stations 0+090 and 0+310.

Tetra Tech's QC site representatives performed quality assurance testing on the material including, moisture contents and density tests. Test results are attached in Appendix E5.

Following unsuccessful attempts at mixing/placing Type K material from mid-December 2016 to January 2017 due to the mixing method, the frozen nature of Type C material and low ambient temperatures, RFI No. 6515-C-230-007_018 was issued. Recommendations from the RFI provided alternatives to backfilling over-excavated zones in the key trench base. The main alternative was placing Type F material directly on the key trench base following its specified thickness and hence lowering the liner below the specified 1.8 m from original ground elevation. Following these recommendations, the material was not used from Station 0+310 to 0+585.

2.8 Geomembrane Liner (Coletanche ES3 and ES2)

The geomembrane liner system is the primary water retention element for Dike D-CP1. Coletanche bituminous geomembrane liner ES3 was selected to be used for the construction of Dike D-CP1. A shortage of ES3 liner resulted in ES2 liner substituted for ES3 for all top liner panels from Station 1+521 to 1+570 and intermittent ES2/ES3 panels installed from Station 1+570 to 585. All changes in liner type were clearly identified and picked up by survey for inclusion on the as-built drawings.

The liner was purchased from Coletanche and shipped to site by Agnico Eagle. Liner installation was performed by Texel working as a sub-contractor for MTKSL. MTKSL provided logistical and equipment support to the Texel team. Liner QC testing and monitoring was performed by Texel while QA was performed by the Dike Resident Engineer (DRE).

The Coletanche ES2 and ES3 geomembrane were rolled and shipped to site in sea containers. It was un-rolled, placed in panels of varying lengths accordingly, and welded in place.

3.0 CONSTRUCTION EQUIPMENT

3.1 General

Most of the mobile equipment used for the construction of Dike D-CP1 was provided by MTKSL. Details of the principal equipment used for the dike construction are presented in the following subsections.

3.2 Mobile Construction Equipment

Table 3-1 presents the major equipment used during Dike D-CP1 construction.

Table 3-1: Equipment Used During D-CP1 Construction

Haul Trucks	Bulldozers	Excavators	Loaders	Others
CAT 773	CAT D5K	CAT 330C	CAT 988G	Compactor CS563E
CAT 740	CAT D6M	CAT345B	CAT 980G	Compactor CS56
CAT D300	CAT D8T	CAT345C	CAT IT62	HAMM 3205
	CAT D9R	CAT336		Walk-behind Drum roller
		CAT320E		CAT Skid Steer
		Komatsu PC400		Hydra-Trac 400 RAB Drill

3.3 Crusher

MTKSL's aggregate crushing plant was used to produce the crushed granular materials (Types B, B1, C, and H) required for the construction of Dike D-CP1. The crushing plant was operated by MTKSL employees. The crusher system consists of a primary jaw crusher, a vibratory screen deck, and a secondary cone crusher.

Quality control testing of all material produced was performed daily by Tetra Tech's QC site representatives. Test results for materials produced and used throughout the dike construction period are provided in Appendixes E1 to E5.

4.0 DIKE D-CP1 CONSTRUCTION ACTIVITIES

4.1 General

Construction activities of Dike D-CP1 occurred between October 2016 and July 2017. Dike D-CP1 was generally constructed according to the guidelines and requirements stated in the design documents. Variations from the design were documented in RFIs and ECNs and are discussed in Section 7.0.

Dike D-CP1 construction management was performed by Agnico Eagle's Meliadine Construction Division. The construction crew constituting a site superintendent, foremen, mobile equipment operators, truck drivers, laborers, drill/blast personnel, and surveyors was provided solely by MTKSL. The drill/blast of the downstream channel/sump was conducted by a sub-contractor (McCaw South). MTKSL sub-contracted Texel for liner installation and liner QC.

A technical advisory committee reporting to Agnico Eagle oversaw the dike construction. The committee received the daily and weekly dike construction QA/QC reports, was involved in several technical discussions, and had several field visits to the project site during the dike construction.

Tetra Tech's quality control team carried out quality control testing for the earthworks, prepared daily reports for their work on site, and maintained a photographic record of the work completed during construction. Liner quality control was performed by Texel technicians.

DREs from Tetra Tech carried out quality assurance and overall quality monitoring. They produced daily and weekly reports which covered all construction activities on site. The daily and weekly reports are not attached to this report but can be provided upon request.

Figure 4 summarizes the relationship between various stake holders during the dike's construction.

Selected photographs showing various aspects and activities during the dike's construction are presented in the Photographs section of the report. The major components of the construction are listed below and summarized in detail in the following sections.

- Surveying (Section 4.2);

- Working Platforms Construction (Section 4.3);
- Key Trench Excavation and Cleaning (Section 4.4);
- Bentonite-Augmented Material Placement (Section 4.5);
- Fillet Zone Material Placement (Section 4.6);
- Key Trench Backfilling (Section 4.7);
- Run-of-Mine Placement (Section 4.8);
- Type H Material Placement (Section 4.9);
- Liner System Installation (Section 4.10);
- Downstream Water Collection Channel and Sump (Section 4.11); and
- Instrumentation Installation (Section 5.0).

4.2 Survey

MTKSL surveyors provided the following survey services throughout the construction of Dike D-CP1:

- Original ground surface surveying prior to construction;
- Layout for key trench excavation;
- Construction grade control;
- Detailed survey of as-built dike fill placement, liner installation, and final graded slopes for all material zones;
- Modeled top surfaces of placed material at the end of construction; and
- Survey of instrumentation installations.

4.3 Working Platforms Construction

Prior to key trench excavation, working platforms were constructed on the upstream and downstream sides of the key trench to facilitate the movement of equipment and personnel. The upstream platform also acted as a cofferdam to minimize inflow from Lake H6 into the key trench. The working platforms were basically the first one to three lifts of either Type A (upstream side), a combination of Types A and A1 (downstream side), and Type H (upstream) materials which constitute the upstream and downstream shells of the dike. They were approximately 1 m thick and were placed and compacted following specifications for the various materials.

Foundation preparation was necessary to ensure that there was good contact between the fill materials placed for the working platforms as this material constitutes a portion of the dike's shell. Foundation preparation activities included removing loose boulders and cobbles, snow and ice within the footprint of upstream and downstream shells.

Foundation preparation was executed principally with the CAT dozers and excavators (see Photos 1, 2, and 3). Pumping of water from Lake H6 was started about a week before construction started and continued to early November 2016. This reduced the amount of seepage through the working platform in to the key trench. The loose boulders and cobbles, snow and ice were loaded and hauled to a dump location designated by Agnico Eagle.

4.4 Key Trench Excavation and Cleaning

Key trench excavation and ripping started in October 2016 and was finalized in February 2017. Excavating and ripping from Station 0+005 to ~0+400 occurred from October to December 2016 and was mostly carried out with the CAT D8T and D9R dozers and CAT excavators as the ground was predominately unfrozen. From Station ~0+400 to 0+585 excavating and ripping which was executed mainly in January and February 2017 was challenging because the ground was frozen. Ripping with excavators (PC400 and CAT 330C) with a rock breaker attached was the main digging mechanism. Cleaning and removing excavated and ripped material was done with the CAT excavators.

The key trench excavation is shown in Photos 3 to 6.

The final key trench geometry varies along the dike depending on the depth of the key trench excavation and the key trench side slopes. Variations are a result of variable ground conditions and adjustments made following RFI_6515-C-230-007_019 and RFI_6515-C-230-007_021 to achieve the design slope and dimensions of the liner.

Final key trench excavation depths were governed by where competent bedrock or non-ice-rich, ice-saturated frozen till or sediments (with an ice saturation of no less than 90%) was encountered. If the key trench was excavated to a depth of 2.8 m from the original ground, the key trench excavation was terminated at 2.8 m. The key trench was excavated to a maximum depth of 3.2 m. Appendix E6 presents the jar test results during the key trench excavation and a chart showing the final key trench depths. Table 4-1 below summarises final key trench excavation depths and material encountered at or near the base of the key trench.

Table 4-1: Summary of Final Key Trench Excavation Depths

Station in Key Trench	Final Key Trench Depth from the Original Ground Surface (m)	Material at or Near the Base of Key Trench
0+005 to 0+230	1.6 to 3.1	Bedrock at key trench bottom
0+240 to 0+255	2.4	Ice rich soil at 2.32 m depth
0+265 to 0+280	2.4 to 2.7	Ice saturated soil at 2.33 m depth
0+290	2.5	Ice rich soil at 2.43 m depth
0+300 to 0+350	2.5 to 3.1	No excess water after thaw at 2.34 m depth
0+360	3.10	Ice rich soil at 2.8 m depth
0+370 to 0+430	2.9 to 3.2	No excess water after thaw at 2.8 m depth
0+440	2.9	Ice saturated soil at 2.8 m depth
0+465	3.0	No excess water after thaw at 2.38 m depth
0+475 to 0+495	3.0 to 3.2	Icy soil at 1.94 m to 2.25 m depth
0+535 to 0+545	2.8 to 3.2	Icy soil at 2.42 m to 2.63 m depth
0+555	3.0	Ice rich soil at 2.62 depth
0+565 to 0+585	2.9 to 3.2	No excess water after thaw at 2.47 m depth

Till material, sedimentary deposits, and weathered rock from the excavation was hauled to the dump area designated by Agnico Eagle.

Key trench base bulk cleaning was carried out with CAT excavators. Final and dental cleaning was done with hand tools which included shovels, brooms, and compressed air. Loose, broken, or altered material from the base of the key trench was blown out with compressed air. Snow and ice was also hand shovelled and blown out with compressed air prior to fill placement.

Open joints identified on some isolated areas in exposed bedrock were filled with powdered Sika 100 grout prior to fill placement. Local depressions and voids on rugged solid bedrock surface were filled with bentonite-augmented

material. All key trench cleaning was inspected and approved by Tetra Tech's QC personnel and the DRE prior to fill placement.

4.5 Bentonite-Augmented Material (Type F) Placement

Type F material was placed in lifts of approximately 200 mm thickness prior to placing the liner on the key trench base, below and on the liner at the hinge point, and from the hinge point up to Elevation 64.7 m from Station 1+132 to 1+551 on the top liner. The placement and compaction of Type F material is shown in Photos 7 to 9. The number of lifts at each location depended on the final key trench excavation depth and the liner depth which ranged from 1.45 m to 2.65 m below original ground level. Type F material was placed using either the CAT D5K dozer along the key trench bottom and the upstream fillet zone or using CAT excavators for the downstream fillet zone and the liner hinge point. The compaction of the Type F material was performed with the CAT CS563E or CS56 compactors for the most part with the downstream fillet compacted with a walk-behind drum roller.

The Type F material was produced by mixing Type C material with dry bentonite powder at the mixing station described in Section 2.6.

The key trench bottom was cleaned and inspected to make sure it was free of detritus prior to placement of the Type F material. As per ECN No. 6515-C-235-007-ECN-003_R0, Type F material was placed from the hinge point up to Elevation 64.7 m from Station 1+132 to 1+551 on the top liner.

Material placement and compaction was monitored by Tetra Tech's QC site representatives. Density testing was carried out using a nuclear densometer and/or the "modified" sand cone method. From the test results and field observations, the desired compaction under field conditions was generally achieved when compared to the single point density test results. Test results are attached in Appendix E3. Some of the Type F materials placed in the key trench below the liner had lower densities than the designed. This was due to the frozen condition of the fills.

4.6 Fillet Zone Materials Placement

The fillet zone is a wedge of Type C material underlined by a layer of Type F material. The upstream fillet was constructed prior to liner placement. Fillet construction is shown in Photos 10 to 11.

The Type C fillet was constructed in maximum 300 mm thick lifts using haul trucks, the CAT D5 dozer, CAT excavators, and a CAT skid steer. The compaction of the lifts of material in the fillet was performed by the CAT CS563E or CS56 compactors or the HAMM 3205 towards the top on the upstream fillet. Placement and compaction of the Type C upstream fillet was also monitored and tested by the QC personnel. The final surface of the upstream lifts of material were shaped using an excavator to provide a flat surface for the liner.

Type F fillet material was placed using CAT excavators or a skid steer in lifts of 200 mm thickness. Compaction was performed with the CAT CS563E or CS56 compactors on the fillet. Placement and compaction was monitored and tested by Tetra Tech's QC personnel as described in Section 4.5.

4.7 Key Trench Backfill

4.7.1 Type K Material

Type K material was placed on the key trench base between Stations 0+090 and 0+310 prior to placing Type F material. Lift thicknesses were a maximum of 300 mm and each was compacted with the CAT CS563E or CS56 compactors or the HAMM 3205 in locations with uneven ground that was not safe to use the 10 ton compactors on. This is described in Section 2.8 and shown in Photo 12. The placement and compaction of Type K material was monitored by Tetra Tech's QC site representatives. Test results are attached in Appendix E5.

4.7.2 Granular Fill Material (20 mm minus) – Type C

Two zones of Type C material were placed; one below and one above the liner system. The Type C material serves as the bedding layer for the liner system. The Type C material was placed in approximately 200 mm to 300 mm thick lifts using the skid steer over the base liner, CAT excavators above key trench slope liner and below dike slope liner, and CAT D5 dozer above the liner on dike slope. The compaction of the 20 mm minus material was performed by the walk-behind drum roller, HAMM 3205 packer, and/or the excavator bucket. Minimal compaction was applied to the Type C material directly over the liner to prevent damage to the liner. The first lift of Type C material over the liner was not compacted, while the second lift was compacted with a walk-behind drum roller. The first lift and second lifts of the Type B1 material were compacted with the HAMM 3205 packer while subsequent lifts were compacted with the CAT CS563E or CS56 compactors.

Various aspects of the 20 mm minus material placement are shown in Photos 13 and 14. The placement and compaction of Type C material was monitored by Tetra Tech's QC site representatives. Test results are attached in Appendix E2. Some of the Type C materials placed in the key trench below the liner during the winter had lower densities than designed. This was due to the frozen conditions of the fills with relatively higher moisture (ice) contents.

4.7.3 Transition Rockfill (150 mm minus)

Type B1 transition material was used to backfill the key trench and as superstructure material on the dike crest from approximately Stations 1+145 to 1+530. It was also placed below and above the liner system as transition above the key trench between the ROM superstructure and the Type C liner bedding material.

Transition material was placed in lifts approximately 300 mm in thickness using CAT excavators or the CAT D5 dozer. The compaction of the transition material was performed by the CAT CS563E, CAT CS56, or the HAMM 3205 packers. The placement of the transition rockfill material as dike superstructure on the crest is shown in Photos 13 and 14.

4.8 Run-of-Mine (ROM) Placement

ROM material (Types A and A1) constitutes the upstream erosion protection and downstream shell of the dike. The thermal cover above the dike is all built with Type A material. As stated in Sections 2.2 and 2.3, some of the downstream shell was constructed with Type A material instead of the designed Type A1.

The material was placed in lifts with maximum thickness of about 900 mm to 1,000 mm using the CAT D5 dozer and excavators. Care was taken during placement to avoid segregation and nesting of larger particles. Each lift was compacted with the CAT CS563E or CS56 packer (minimum of six complete passes) and haul truck traffic prior to placing the next.

The material was visually inspected by Tetra Tech's QC site representatives to verify that, in general, the particles adhered to the maximum particle size and that deleterious materials such as snow/ice or till were not present. Additionally, Tetra Tech observed that the specified lift thickness was maintained and that the material was compacted sufficiently. ROM placement and compaction are shown in Photos 15 and 16.

4.9 Type H Material Placement

Type H material, was used to construct the upstream section of the dike. This material acts as a transition material between the ROM outer shell and Type C material and as the main upstream zone to provide thermal and mechanical protection to the dike central liner system.

Type H material was placed in 300 mm thick lifts. Each lift was compacted with the CAT CS563E or CS56 packer and haul truck traffic prior to placing the next. The placement and compaction of Type H material was monitored by Tetra Tech's QC site representatives.

Upstream water in the CP1 pond, in mid-May, over-topped the 0.9 m high working platform from Station 1+170 to 1+460 as further discussed in Section 7.11. Some of the Type H material was placed in “wet” conditions and optimum compaction of the material was not possible in this situation.

Type H material placement and compaction activities are shown in Photos 17 and 18.

4.10 Liner Installation

4.10.1 Liner Installation Activities

The geomembrane liner (Coletanche ES2 and ES3) was installed by Texel. The liner was installed in two phases. The first phase consisted of placing the liner within the key trench and the second phase consisted of placing the liner on the upstream slope.

Dike D-CP1’s design called for the use of Coletanche ES3 liner for the dike. A shortage of ES3 liner resulted in ES2 liner being substituted for ES3 for all top liner panels from Station 1+521 to 1+570 and intermittent ES2/ES3 panels from Station 1+570 to 585. The shortage was because of a deeper and wider key trench. These changes were surveyed and are shown in the as-built drawings.

The first phase of the liner placement included placing the liner panels within the key trench. The liner extended out of the key trench to a hinge point as shown in Photos 19 and 20. The liner hinge point was covered with sheets of plywood and 20 mm minus material placed on the plywood to protect the liner while construction continued.

The first phase (bottom) of the liner hinge was uncovered and inspected for damage prior to placing the second phase (top). The liner flap had an approximately 0.5 m horizontal tie-in length at the hinge.

In the week of April 24, 2017 concerns were raised about the potential for an early freshet which may compromise Phase 2 liner placement and possibilities of water seeping into the key trench. Following discussions with the DRE, Agnico Eagle, and MTKSL personnel, a change to the construction sequencing for the dike was made to accommodate the potential for an early freshet. Downstream material placement was halted at approximately 66 m elevation between Stations 1+100 and 1+560 and Phase 2 liner installed and welded to Elevation 66 m. This was to permit upstream materials to be placed to approximately Elevation 66 m to reduce seepage into the key trench during construction. The remaining downstream materials (Types A1, B, and C) were placed from Elevation 66 m to design elevation (~67.5 m). The liner was flipped and laid on the constructed upstream material (Types C and H) as shown in Photos 21 and 22 while construction of the remaining downstream materials to final design elevation took place. Once the construction of the downstream materials was finalized, the liner was flipped back and welded to final elevation as shown on Photo 23. Damage to the liner in the form of excessive deep wrinkling as a result of this practice was observed and corrected from Stations 1+025 to 1+100. MTKSL was instructed to take greater care in minimizing liner damage moving forward.

On May 6, 2017, the northern section of the collection channel was blasted and fly rock/tundra was thrown over a significant portion of the northern dike crest. Fly rock punctured the installed liner in at least twenty (20) locations from approximate Stations 1+300 to 1+370 before the liner cover was placed. Although the majority of these punctures occurred on “excess” liner placed over the dike crest (above about 66 m elevation), at least eight of the punctures occurred on the slope and hinge point. A thorough examination was completed by Texel and the DRE. The damaged liner areas were repaired.

Liner installation quality assurance was carried out by the DRE and quality control testing by Texel. Quality control testing and monitoring was carried out following the QC plan developed by Texel. The QA/QC procedure that was executed each day when liner was installed was as follows:

- DRE reviewed survey as-built for the sub-grade to confirm it was built to design;
- DRE reviewed subgrade fill material placement QC monitoring and testing results to make sure design specifications were achieved;

- A subgrade inspection was carried out about 30 minutes before the planned installation time by the DRE, Texel's foreman, and Texel's QC technician to verify the subgrade was free of deleterious substances, snow and ice, and an adequate liner base was present;
- Test welding was performed by a Texel welder on a piece of liner beside or in the key trench about 30 minutes before planned installation time;
- An ultrasonic test was performed on the test strip by Texel's QC technician;
- Three samples for tensile resistance were taken from the test strip and tested by the Texel QC technician; and
- If all three test strips tested had results above the minimum required 86 lb/in (15 kN/m) for ES3 or 74 lb/in (13 kN/m) for ES2, the DRE approved liner placement.

The DRE observed the process of liner installation and all qualification welding tests, seam welding, and ultrasonic tests along seams. The DRE also witnessed all liner repairs and testing. Elements of the liner system were generally installed according to the requirements in the design documents and liner QC test results met specifications. The liner installation quality control report is presented in Appendix F.

4.10.2 Wrinkles in Coletanche ES3

Severe wrinkling was noted on the bottom liner between Stations 0+205 and 245 (Panels 44 to 53) and between Stations 0+285 and 0+310 (Liner Panels 62 to 66) during an inspection on February 27, 2017. It was noted that the liner which was installed the previous day had wrinkles on it which resulted from the storage in sea cans as shown in Photos 52 and 53. Additional wrinkling occurred as a result of backfilling methods employed by the contractor. Type C was placed over the liner material on the slope prior to placement on the floor, causing the liner to slide slightly downhill and compounding the wrinkling problem. Photo 54 shows wrinkles observed on Panels 62 to 66.

Severely wrinkled liner was either heated and patched or cut and new pieces installed and welded to the existing. Patches were made on minor defects by heating and welding on the spots. The mitigation measures were as follows:

- Four (4) patches were applied to wrinkles deemed unacceptable on Panels 48 (Patch R3) and 52 (Patches R4, R5, and R6 shown in Photo 55). Two of the patches (R3 and R4) were applied after cutting the liner in the longitudinal direction to alleviate the wrinkling. The remaining patches were applied after heating the wrinkled liner and reshaping it;
- Two (2) patches were applied to wrinkles deemed unacceptable on Panel 53 (Patches R7 and R8). Both patches were applied after cutting the liner in the longitudinal direction to alleviate the wrinkling;
- Seven (7) patches were applied to minor wrinkle defects observed on Panels 64 to 66 (Patches R9 to R15);
- Liner Panels 62 and 63 were cut out and removed from the D-CP1 key trench, with two new panels (67 and 68) installed in their place. To compensate for the required overlap of the seams, approximately 1 m of Panel 63 was left in place; and
- Ultrasonic testing of each patch was completed by the Texel QC personnel and witnessed by the DRE.

To alleviate the storage related wrinkling, an empty sea can was brought to site and frost fighters were used to heat it. Warped/bent Coletanche ES2 and ES3 rolls were offloaded from the storage sea cans and placed in the heated sea can overnight with the intent to heat the material and remove the wrinkles. This appeared to be successful and helped remove the wrinkles prior to liner installation.

Tetra Tech QC representatives continued to observed the placement by MTKSL of earthen construction backfill material over the liner. This material was placed using the recommended bottom-up methodology.

4.11 Downstream Water Collection Channel and Sump

4.11.1 Water Collection Channels

Two water collection channels (North and South Channels) that feed into a sump were constructed approximately 5 m away from the downstream slope toe of D-CP1.

Construction activities for the North Channel started on May 8, 2017. The ground was still frozen at that time of the year so the channel's footprint was drilled and blasted. Significant over blasting occurred, with the average depth from original ground being 1.2 m and as high as 2.2 m in some locations. MTKSL blasted and began excavation of the channel but then left construction until permafrost degradation began. Excavating started from the north end working towards the sump. MTKSL was instructed to backfill the over excavated zone with Type A material to design grade since a stable material was required. The required volumes of Type A and transition material used in place of riprap needed to stabilize the area was therefore larger than designed.

Transition material (Type B) was used in place of riprap for the channel. Geotextile was placed on the Type A material and the transition material placed on the geotextile. Types A and B material placement and compaction was executed with CAT excavators. When feasible, the 10-ton compactor was used to compact the Type A material below the geotextile. Geotextile was placed by hand.

The South Channel was excavated in June 2017. At that time the ground had thawed. The channel was dug with CAT excavators. Geotextile was placed at the base and backfilled with transition material using the CAT excavators. Channel construction activities are shown in Photos 24 to 27.

4.11.2 Water Collection Sump

The sump constructed on the downstream side of D-CP1 will collect intercepted water seeping through the dike. The channels collect the water along the dikes alignment and channel it into the sump where it is pumped back to CP1 on an as-needed basis.

The sump's footprint was drilled and blasted in the first week of May 2017 when the ground was still frozen. Similar to the North Channel, significant over blasting occurred, with the average depth from original ground being 1.2 m and as high as 2.0 m in some locations. Mucking was executed mid-June 2017 using a CAT excavator (Photo 28). The over excavated zone was backfilled with Type A material. Geotextile was placed on the Type A material and transition material placed on it and compacted by a CAT excavator. The completed sump is shown in Photo 29.

Transition material (Type B) was used in place of the designed riprap which was not available. The over excavation resulted in the required volumes of Types A and B materials needed to stabilize the area being larger than designed. However, the overall performance of the water collection sump is not expected to be negatively impacted.

Construction record drawings showing the sump and channels are attached in Appendix B. The survey data used for producing construction record drawings was provided by MTKSL.

5.0 INSTRUMENTATION

5.1 General

Ground Temperature Cables (GTCs) and survey monitoring points were installed in Dike D-CP1 for performance monitoring purposes. Horizontal Ground Temperature Cables (HGTCs) were installed in the key trench and Vertical Ground Temperature Cables (VGTCs) were installed on the upstream and downstream sides of the key trench. Survey monitoring points were installed above the liner system close to the center of the dike crest. The ground temperature cables and the survey monitoring points are discussed in the following sections.

5.2 Ground Temperature Cables

Locations of the ground temperature cables are shown on the construction record drawings in Appendix B.

Five (5) horizontal HGTCs (HGTC-1, HGTC-2, HGTC-3, HGTC-4, and HGTC-5) were installed above the liner along the key trench base covering the areas shown in Table 5-1. Note that HGTC-1 was originally installed between Stations 1+117 to 1+167 but damaged after its installation during snow removal activities. As a result, HGTC-5 was installed between Stations 1+117 to 1+158. The damaged cable from the original HGTC-1 location was repaired and later installed between Stations 1+513 to 1+562. The cables monitor the ground temperatures in the key trench. The cables were carefully inserted in 25 mm I.D. flush coupled threaded PVC pipes.

Table 5-1: HGTC Installation Locations

HGTC	Area Covered by HGTC in the Key Trench
HGTC-5	Station 1+117 to 1+158
HGTC-2	Station 1+254 to 1+304
HGTC-3	Station 1+343 to 1+394
HGTC-4	Station 1+432 to 1+482
HGTC-1	Station 1+513 to 1+562

Five (5) vertical VGTCs (VGTC-1, VGTC-2, VGTC-3, VGTC-4, and VGTC-5) were installed in selected locations on the upstream and downstream sides of the key trench as follows;

- VGTC-1 and VGTC-3 are installed through the dike, upstream of the liner system and key trench at Stations 1+278 and 1+461 respectively to monitor temperatures in the upstream portion of the dike and its foundation;
- VGTC-5 is installed over the upstream surface of the Phase 2 liner around Station 1+300 to monitor temperatures on the top liner and hinge point; and
- VGTC-2 and VGTC-4 are installed through the dike, downstream of the liner system and key trench at Stations 1+280 and 1+460 respectively to monitor temperatures in the downstream portion of the dike and its foundation.

Cable locations were carefully selected to avoid any damage to the liner system while drilling the holes to install VGTCs.

VGTC holes were drilled with a Hydra-Trac 400 RAB drill rig operated by McCaw South, except for VGTC-1, which was drilled with Canadrill's drill rig. The holes were cased with a thick walled PVC pipe for about 1 m through the fill material to prevent the holes from caving in. A 25 mm I.D. flush coupled threaded PVC pipe was lowered down each of the cased boreholes and the GTCs installed inside the pipe. After the cable installation, the holes were backfilled with sand.

Photos 30 to 34 show GTC installations. The GTC connectors were placed inside a protective thick-walled 100 mm I.D. PVC pipe with an end cap as shown in Photo 32.

Manual ground temperature readings were taken before and immediately after installations to confirm that the thermistor beads were working and several times later to allow the ground temperatures to equilibrate after backfilling/drilling. Tetra Tech's site personnel continued taking readings at least once a week during the remaining construction stage. Readings taken by Tetra Tech site representatives during the construction period and those taken by Agnico Eagle and sent to Tetra Tech prior to writing this report have been used to plot the ground temperature profiles presented in Appendix C. Readings from the GTCs indicate frozen ground conditions within the critical zones of the key trench and below it, as designed.

The locations of the GTCs are shown on As-Built Construction Drawing 65-685-230-211 to 212.

Coordinates of GTC beads are included in Appendix C.

5.3 Survey Monuments

Six (6) settlement survey monuments (M-1, M-2, M-3, M-4, M-5, and M-6) were installed in the central area of the dike and located immediately above the liner crest to monitor any settlements of the liner crest. The survey monuments consist of a 1.4 m long, 25 mm diameter metal rod welded to a 500 mm square steel plate. A thick-walled 50 mm I.D. PVC pipe is inserted around the metal rod as a protective casing. Monuments M-1, M-2, and M-3 are shown in Photo 35. A 16" pile was installed directly west of the south abutment. The hole for the pile was drilled 1 m into bedrock and grouted in place to serve as a control point for the survey monuments.

The survey points are to be used in determining how much dike settlement is occurring. The location of the survey points are shown on As-Built Construction Drawing 65-685-230-212.

6.0 QUALITY ASSURANCE AND QUALITY CONTROL

6.1 Dike Resident Engineer (DRE)

Tetra Tech provided a DRE who was on site on a full time basis (dayshift only) during the construction of the dikes.

The DRE's role on site is summarized as follows:

- Performed QA activities and examine dike construction issues first hand and refer to Design Engineer if needed;
- Oversaw and monitored QC activities, including field and laboratory testing;
- Approved or rejected the materials and construction done at critical stage gates;
- Tracked, reported, and followed up with any non-conformance reports;
- Observed and approved any QC activities (including both earthworks and liner);
- Reviewed, approved, or rejected QC testing results;
- Verified the QC teams met calibration requirements for the testing facilities, equipment, and devices;
- Visually inspected materials hauled to the dike for conformance with contract or construction specifications;
- Compiled and maintained QA/QC results;
- Oversaw the installation of instrumentation;
- Prepared and distributed daily and weekly activity QA reports, documenting dike construction and QA/QC activities;
- Received and reviewed as-built survey data/drawings provided by the surveyor and ensured the as-built survey data/drawings met specified requirements; and
- Conducted other QA tasks related to dike construction, as directed by Agnico Eagle.

6.2 Quality Control

6.2.1 Earthworks Quality Control

Tetra Tech provided earthworks QC services for dikes construction. Tetra Tech provided field engineers and technologists who performed laboratory and field testing on construction materials and verified the key trench foundation conditions. The earthworks QC field personnel were onsite on a full time basis (day and night shifts) for a majority of the dike's construction duration. Earthworks QC engineers and technologists activities during dike construction are summarized as follows:

- Tested and confirmed the acceptance of the construction materials;
- Observed key trench excavation;
- Confirmed if key trench foundation depth met design requirements;
- Observed various fill material placement (lift thicknesses, segregation etc.) and compaction efforts;
- Completed in situ testing such as density testing and compaction testing using a nuclear densometer or the "modified" sand cone method;
- Conducted soil laboratory testing (sieve, moisture content, moisture-density relationship, jar test, bentonite swell test);
- Ensured proper calibrations and use of laboratory and field testing equipment; and
- Prepared and distributed daily activity and earthworks QC reports.

6.2.2 Liner Quality Control

Liner QC work was conducted by a technician from Texel. Prior to the start of liner installation, the project team reviewed and modified the Texel QC plan. The liner QC technician's activities during liner installation are summarized as follows:

- Checked liner panels and made sure they were free of punctures and wrinkles prior to installation;
- Observed the liner installation works and ensured the liner was installed according to the construction specifications and manufacturer's recommendation;
- Performed QC testing on liner installed as per the specifications and Texel's QC plan; and
- Prepared and distributed daily activity and liner QC testing reports.

6.3 Earthworks Quality Assurance and Quality Control Testing

6.3.1 Run-of-Mine Rockfill (600 mm minus)

The material was visually inspected by Tetra Tech's QC site representatives to verify that, in general, the particles adhered to the maximum particle size and that deleterious materials such as snow or till were not present. Additionally, Tetra Tech observed that the specified lift thickness was maintained during placement and that the material was compacted sufficiently.

No QA/QC testing was conducted on ROM Type A or Type A1 materials.

6.3.2 Transition Rockfill (150 mm minus) Material

6.3.2.1 Particle Size Analysis

Samples of transition material were taken after and during crushing operations. Samples that were taken after crushing were from the stockpiles crushed in September and October 2016 prior to the QC personnel's arrival on site. Samples obtained from the crusher were taken off the jaw crusher discharge belt. Particle size analyses conducted on eleven (11) samples of transition material produced from September 2016 to April 2017 indicated that average particle size distribution was generally within the limits presented in the design specifications. Results of particle size analysis for the produced transition material are presented in Appendix E1.

6.3.2.2 Moisture content

The moisture contents of the samples used for particle size analyses were also determined. Results are reported in the particle size analyses reports presented in Appendix E1 and summarized in Table E1.1.

6.3.2.3 Compaction Monitoring

Transition material placement and compaction was observed and monitored by Tetra Tech's QC site representatives. They verified transition material was placed in lifts approximately 300 mm in thickness. The material was generally handled properly to avoid segregation and each lift subjected to at least 6 passes with the smooth drum vibratory CAT CS56 or CS563E compactors. The lift thicknesses were reduced to a 200 mm maximum and the HAMM 3205 packer was used with a minimum of 10 passes made when it was not possible to use the 10 ton CAT compactors because of safety concerns.

6.3.3 Granular Fill (Type C) Material

6.3.3.1 Particle Size Analysis

Particle size analyses were conducted on Type C (20 mm minus) material produced at the crusher and used for the dike construction to verify compliance with the design specifications. A total of fifty seven (57) tests were conducted in the site laboratory from October 2016 to May 2017 during the dike construction. Two QA samples were tested in Tetra Tech's Edmonton laboratory in October and November 2016 during the early stage of dike construction. Particle size analyses for Type C material indicated that the average gradation was within the specified limits. A detailed summary of the analyses is presented in Appendix E2.

6.3.3.2 Moisture Content

The moisture contents of the samples used for particle size analyses were also determined. Moisture contents of stockpile materials were determined prior to their use when visually the material appeared to contain snow or had a high fines content. Results are reported in the particle size analyses reports presented in Appendix E2 and summarized in Table E2.1.

6.3.3.3 Moisture Density Testing (ASTM 698)

Moisture-density relationship test (ASTM 698) was performed on seven (7) samples in the site laboratory and two (2) samples in Tetra Tech's Edmonton laboratory.

The field single point frozen soil density test (single point density test) was conducted outside the laboratory under the ambient air temperature by using a frozen soil sample taken from either the stockpile or construction site and by following the standard moisture-density test (ASTM 698) procedure without thawing the soil or adding water. This test was performed because the aggregate temperatures were generally well below freezing during construction making it unrealistic to compare field densities with results from standard moisture-density tests to assess compaction. Using this approach effectively evaluated if the material had been compacted to near the maximum achievable density in the frozen state.

Nine (9) single point frozen density tests were performed on material from Type C stockpiles during dike construction. Moisture-density relationship test results are presented in Appendix E2. Single point density test results for Type C material are summarized in Table E2.2. Results from the normal and single point density tests were used to assess the level of compaction of Type C material.

6.3.3.4 Field Density Testing

Type C material placement and compaction was monitored by Tetra Tech's QC site representatives. Density testing was carried out using a nuclear densometer and/or using a "modified" sand cone method. As aggregate temperatures were generally well below freezing and ambient temperatures at times as low as -35°C during construction from December 2016 to March 2017, the accuracy of field density values from the nuclear densometer was suspect. The "modified" sand cone method which involved the use of bentonite with a predetermined bulk density instead of sand was introduced to remedy this shortfall. Results obtained from density tests were compared with single point density test results to estimate the compaction. From the test results and field observations, the compaction under the field conditions for the available materials was generally achieved when compared to the single point density test results. Photos 36 and 37 show density testing on a lift of Type C material. Test results are attached in Appendix E2.

Some of the field density tests indicated that some lifts of Type C placed in the key trench had relatively low density due to high native ice content (moisture content) in the frozen material that was compacted in cold winter conditions. This would increase the risk of potential high thaw settlement should the Type C materials with low density thaw during the dike operation.

6.3.4 Bentonite-Augmented Material (Type F)

6.3.4.1 Moisture Content

Moisture contents of six (6) samples of Type F material taken from the dike or the mixing station were determined. Results are summarized in Table E3.1.

6.3.4.2 Swell Test

Type F material production was monitored by Tetra Tech's QC site representatives. Regular visual swell assessment on samples of placed Type F material was performed (Photos 39 and 40) and the results confirmed the presence of bentonite in the material.

6.3.4.3 Moisture Density Testing (ASTM 698)

The presence of bentonite in this material made it not possible to do a standard moisture density relationship test on the material. Seven (7) frozen single point density tests were performed on the material. The single point density tests on Type F material under field conditions were performed without adding water. Test results were used to assess the field compaction. Single point density test results for Type F material are summarized in Table E3.2.

6.3.4.4 Field Density Testing

Type F material placement and compaction was monitored by Tetra Tech's QC site representatives. Density testing was carried out using a nuclear densometer and/or using a "modified" sand cone method. Results obtained from density tests were compared with frozen single point density test results to estimate the compaction. The compaction under the field conditions was generally achieved when compared to the frozen single point density results. Test results are attached in Appendix E3.

6.3.5 Type H Material

6.3.5.1 Particle Size Analysis

Particle size analyses were conducted on Type H (75 mm minus) material produced at the crusher and used for the dike construction to verify compliance with design specifications. A total of thirty two (32) tests were conducted in the site laboratory from November 2016 to June 2017. Test results are attached in Appendix E4.

Most of the Type H material used for the construction of D-CP1 was produced in April and May 2017 out of mainly frozen esker sand and gravel. Concerns of introducing frozen chunks with finer particles, and high ice content (excess water) in the material produced and placed were raised. The Design Engineer recommended that Tetra Tech's QC team perform particle size analysis tests on frozen and non-frozen (thawed) material. Some samples were therefore split into two and a gradation test performed on one of the split samples without drying and washing. The other sample was dried in the oven, washed, dried again, and sieved. Both results were then compared to determine the amount of frozen chunks in the original sample. Based on the test results, some samples had frozen chunks. This generally occurred when the samples had either a higher moisture contents >10% or a higher than specified (>10%) fines content. Such material were stockpiled separately and not used for dike construction.

MTKSL was asked by QA/QC personnel to continue sorting the material to avoid the silty/fine sandy frozen chunks which may raise the fines content and/or the moisture content to >10%.

6.3.5.2 Moisture Content

The moisture contents of the samples used for particle size analyses were also determined. Moisture contents of stockpile materials were determined prior to their use when visually the material appeared to contain snow or a high fines content. Results are reported in the particle size analyses reports presented in Appendix E4 and summarized in Table E4.1.

6.3.5.3 Moisture-Density Testing (ASTM 698)

Moisture-density relationship tests were performed on four (4) samples in the site laboratory. Two (2) single point density tests were performed on material from Type H stockpiles during dikes construction. The single point density tests were performed on frozen aggregate because the aggregate temperatures were generally well below freezing during construction making it unrealistic to compare field densities with results from standard moisture-density relationship tests to assess compaction. Standard moisture-density relationship test results are presented in Appendix E4. Single point density test results for Type C material are summarized in Table E4.2.

Results from the standard moisture-density relationship and single point density tests were used to assess the level of compaction of Type H material.

6.3.5.4 Field Density Testing

The Type H material was placed in 300 mm thick lifts. Each lift was compacted with the CAT CS563E or CS56 packer and haul truck traffic prior to placing the next. The placement and compaction of Type H material was monitored by Tetra Tech's QC site representatives. Density testing was carried out using a nuclear densometer (Photo 38) and/or using the "modified" sand cone method. From the test results and field observations, the specified compaction under the field conditions was generally achieved. Test Results are attached in Appendix E4.

6.3.6 Type K Material

6.3.6.1 Moisture Content

The moisture content and temperatures of Type K material was constantly monitored to make sure the material was nearly saturated (a water-saturation of 85% to 95%) prior to placement. Samples were taken from the mixing pit and at the key trench when the material was dumped from the trucks. A total of twenty three (23) samples were tested between November 2016 and January 2017 after which time it was not possible to continue making and placing this material. Test results are summarized and attached in Appendix E5.

6.3.6.2 Field Density Testing

The placement and compaction of Type K material was monitored by Tetra Tech's QC site representatives. Density testing on material placed was carried out using a nuclear densometer (Photo 41). Based on the test results and field observations, achieving the specified compaction was quite challenging which supported the recommendations provided in RFI No. 6515-C-230-007_018. Test results are attached in Appendix E5.

6.3.7 Native Till at Bottom of Key Trench

Native till material at the base of the key trench was taken for jar tests (simple indication of ice content) and moisture content to verify the quality of the foundation. The criteria for base of key trench excavation was stipulated in Appendix A of the specifications and summarized as follows:

- Minimum excavation depth 1.4 m below existing ground; and
- Key trench depth to be extended to greater than 1.4 m below existing ground surface, until a point where material at the base consists of "ice-saturated" or approved bedrock, but not "ice-rich or icy-soil". If the key trench was excavated to a depth of 2.8 m from the original ground surface and no icy soils were found at the bottom of the key trench, the key trench excavation was terminated at 2.8 m. The key trench was excavated to a maximum depth of 3.2 m.

Tetra Tech QC site representatives took samples for jar and moisture tests from the base of the key trench once a 1.4 m depth was attained and approximately every 0.5 m below that. Samples were obtained by coring with a concrete core drill or by ripping with an excavator.

The jar tests is a simple test performed on ice-rich frozen soil to estimate its volumetric ice content. The test was generally performed using an approximately 10 cm long frozen soil core sample put into a graduated glass beaker and allowed to thaw. When it was not possible to take cores with the concrete drill, disturbed samples ripped with an excavator were used. The thawed saturated soil was then thoroughly mixed and allowed to settle (Photos 42 and 43). Volumes of sediment and supernatant water are recorded to estimate excess ice content as a percent of the sample volume. Following the criteria set in Appendix A of the specifications, key trench base material was classified as either:

- Ice-saturated – having a minimum of 90% ice saturation (or a minimum of 82% of water saturation) and less than 10% free water by volume of thawed soil sample in the jar and acceptable as key trench base;
- Ice-rich – More than 10% but less than 30% free water by volume of thawed soil sample in the jar and not acceptable as key trench base; and
- Icy–soil – More than 30% free water by volume of thawed soil sample in the jar and not acceptable as key trench base.

Jar and moisture content tests results from the key trench base are attached in Appendix E6; as a summarized Table E6, and displayed on the chart in Figure E6.

6.4 Liner Quality Control Testing

Texel conducted QC testing during liner installation. The results of this program are presented in their Construction Report, which is presented in Appendix F. Photographs were taken during some of the testing (Photos 44 to 47). Liner QC activities involved the following:

- An ultrasonic test for each roll (64 m of Coletanche ES3 and 79 m of Coletanche ES2) of liner installed or one test per shift per welder when the liner is installed;
- An ultrasonic test on all patches;

- Trowel test and visual observations on the length of all seams and repairs; and
- Final visual tests to check for punctures or wrinkles on the liner placed.

6.5 Liner Quality Assurance

Liner quality assurance was performed by the DRE. The DRE conducted visual inspections throughout liner construction and observed seam welding and non-destructive tests which included the qualification welding tests, ultra-sonic tests on patches/repairs and on seams. Punctures were identified during some inspections. Texel was informed and repairs carried out following specifications. Some punctures identified during inspection and repairs effected on them are shown in selected photos (Photos 48 to 51).

Two samples (one from the top liner and one from bottom liner) were taken from completed liner seams for destructive testing. Samples were taken by Texel from locations designated by the DRE. The samples were approximately 700 mm x 300 mm each. Destructive sample locations were repaired and tested by Texel following specifications. The samples are currently stored on site and may be sent to an external laboratory for tensile shear strength and ultrasonic tests for further confirmation of performance if required.

7.0 VARIATIONS FROM DESIGN DOCUMENTS

7.1 Nearly Saturated Backfill (Type K)

Type K material which is basically nearly-saturated Type C material was designed to be used to backfill excavated zones of key trench below 1.8 m depth from the existing ground surface. Excavations below 1.8 m from ground surface were required to remove ice-rich or icy-soils following the criteria described in Appendix A of the specifications.

Type K material was placed between Stations 0+090 and 0+310. MTKSL had several unsuccessful attempts at mixing and placing Type K material from December 2016 to January 2017. This was due to an inadequate mixing method (mixing in a cold pit in the natural ground that was open to cold ambient air temperatures), no facility to pre-heat Type C material prior to mixing, the frozen nature of Type C material with relatively high natural ice contents, and low ambient temperatures. RFI No. 6515-C-230-007_018 was issued in January 2017 which suspended this material's use for the dike's construction. The RFI provided alternatives to backfilling over-excavated zones in the key trench bottom.

Rather than placing Type K material from the base of the key trench excavation up to a 1.8 m depth from original ground as recommended in the specifications, a minimum 0.15 m thick layer of Type F material was placed directly on the base of the key trench from Station 0+310 to 0+585. The liner was lowered to accommodate this change and the key trench excavation geometry adjusted as described in Section 7.2 below. The change does not negatively affect the design intent, quality of the key trench, and the expected dike overall performance as a whole.

7.2 Key Trench Excavation Geometry and Volume Increase

The key trench excavation geometry had to be adjusted to meet design requirements based on the elimination of Type K material discussed in Section 7.1. Following the elimination of Type K material and consequently the lowering of the liner to depths below 1.8 m below the existing ground surface, additional excavation in the key trench downstream side was required to comply with design liner slope criteria and required width in the key trench base.

Depth of foundation preparation was greater than anticipated (>2.8 m) in the design in some sections of the key trench. This was due to difficulty to controlling ripping with the excavator rock breaker.

Massive ground ice was encountered in the key trench upstream side between Stations 0+435 and 0+455 and between Stations 0+492 to 0+507. Following directions from the Design Engineer, the ice was excavated and removed by cutting approximately 3 m from the crest towards the upstream side for the length of the massive ground

ice. An as-built survey of this section was carried out and is shown on the drawings attached in Appendix B. Some localized ice wedges were observed in the upper portion of the downstream key trench side wall. Since they were relatively remote away from the liner system and assessed to be a low risk to the dike overall performance, further excavation of the ice wedges were not conducted.

The as-built key trench geometry and depth meets the design intent of the dike. The consequence of these variations was an increase in excavation volume, additional liner required, and more backfill materials (Type B, Type F (including bentonite), and Type C).

7.3 Shortage of "Clean" Run-of-Mine Rockfill (Type A1)

Type A1 rockfill (clean ROM from the saline pond excavation) was to be used to construct Dike D-CP1's downstream zone over the key trench area and the downstream shell as per the design. The design intent was to reduce the risk of potential salts that may be introduced in the dike's zone around the key trench and its foundation if Type A rockfill from underground operations was used. In December 2016, Agnico Eagle's Construction team and MTKSL noted that the volume of Type A1 material left in the stockpile would not be adequate to complete the construction of Dikes D-CP1 and D-CP5 as designed. The shortage was due to the presence of 15% to 40% of oversized boulders in the Type A1 stockpile that could not be used for the dike construction. As a result, RFI No: 6515-C-230-007_014 was generated which authorised the use of Type A ("saline" ROM) in the uppermost sections and away from the key trench of both dikes.

The consequence of the shortage of Type A1 material was the use of Type A material to construct portions of the dike's downstream zone over the key trench and parts of the downstream shell. The location of the Type A material is shown on the as-built drawings in Appendix B. Type A material has the potential for salts to be leached from it into the key trench and dike foundations. The salts would lower the freezing point depressions of the affected soils. Since the Type A material was used in the less critical zones that were away from the key trench, its potential effect on the dike overall performance is judged to be relatively low and tolerable. Any surface runoff during rainfall events from the Type A material will be collected in the downstream sump/channels for pumping back into CP1.

7.4 Shortage of "Clean" Transition Material (Type B1)

Dike D-CP1's design assumed that "clean" ROM from the saline pond (Type A1) would be crushed to produce transition rockfill material (which was referred to in the design drawings and report as Type B). Following the material volume increases resulting from the changes discussed in Section 7.2 and the shortage of Type A1 as discussed in Section 7.3, a portion of the transition material used for the dike's construction was produced from "saline" ROM (Type A material from underground operations). The change was authorized in RFI No: 6515-C-230-007_024. Transition material produced from Type A material was placed above the top liner (from approximately elevation 67.0 m to 68.6 m based on Tetra Tech QA/QC personnel field notes and daily reports). This information was not provided in MTKSL as-built survey data.

Type B material produced from Type A is not ideal. Type A material contains salts that increase the pore water salinity of the dike fills. Since most of the Type B material was used in the less critical zones above the top liner, its potential effect on the dike overall performance is judged to be relatively low and tolerable.

7.5 Use of Coletanche ES2 Liner

As discussed in Sections 2.9 and 4.10, a shortage of ES3 liner resulted in ES2 liner being substituted for ES3 for top liner panels from Station 1+521 to 1+570 and intermittent ES2/ES3 panels from Station 1+570 to 585.

The potential risk and mitigation measures of using the ES2 liner in D-CP1 were extensively discussed among Agnico Eagle, Tetra Tech, and Texel prior to the substitution. Field trial welding indicated that the seams between ES3 and ES2 liners could be welded. It was agreed that using ES2 in the relatively short section of the dike was acceptable.

7.6 Bottom Liner Depth from Original Ground Surface

To accommodate eliminating Type K material from the base of the key trench (RFI_6515-C-230-007_018), the bottom liner had to be lowered below 1.8 m from original ground in some parts of the dike. Based on design specifications, the liner was designed to be installed at a maximum depth of ~1.8 m below original ground surface. As indicted in the as-built drawings, the liner was installed at depths >2 m from the original ground surface from Stations 0+325 to 0+575.

The as-built liner depths meet or exceed the design intent and requirements of the dike. The consequence of this variation was an increase in the liner quantity required to complete the dike.

7.7 Top Liner Key-In at Crest

During a meeting attended by the members of the Dike Review Committee, the Dike Designer, and Agnico Eagle on October 28, 2016, it was suggested that changes be made to the designed top liner key-in at the crest to avoid sharp corners when anchoring the liner over the dike crest. These modifications were made by the Dike Designer and documented in ECN # 6515-C-235-007-ECN-002_RA.

As per the ECN, these changes were made during Construction and shown in the as-built drawings. This change is not expected to affect the dike's performance.

7.8 Type F Material on Top Liner from Hinge Point to Elevation 64.7 m

Following Dike D-CP1's design, Type F material had to be placed on the key trench base and below and above the liner at the hinge point. ECN No. 6515-C-235-007-ECN-003_R0 was initiated in mid-April 2017 by the Dike Review Committee and the Design Engineer requesting that Type F material be placed from the hinge point up to Elevation 64.7 m from Station 1+132 to 1+551 on the top liner. Calculations confirmed that sufficient bentonite quantity was available at the site to implement this change. This change also had little or no impact on the construction schedule. The Type F material was substituted for the originally specified Type C material. The request was executed as per a sketch attached to the ECN. The changes are shown in the as-built drawings.

The design change will provide additional robustness and reduce the risk of potential seepage through the most critical section of the liner overlying the thickest section of Type C material within and above the upstream portion of the key trench. The variation is beneficial to the dikes performance and does not affect its design intent.

7.9 Seepage into Hinge Point and Type H Material Placement

7.9.1 Observations

- On May 11, 2017, water was observed seeping from the upstream CP1 pond through Type F material and made its way under the hinge point liner from Station 1+390 to 1+430 (Photo 56).
- On May 13, 2017 water levels in the CP1 pond was high enough to over-top the 0.9 m high working platform from Station 1+170 to 1+460 (Photo 57).

7.9.2 Mitigation Measures

- Type F material placed below and above the hinge point liner from Station 1+390 to 1+430 was removed and replaced with non-saturated material on May 11, 2017.
- Mass bulking in of Type H material and an over-build of upstream Type A material was carried out on May 13, 2017. Although attempts were made to control lift heights and maintain some compaction, the focus was to place as much material as possible as quickly as possible, rather than on maintaining strict quality control

measures. As a result, “wet” placement of material was observed and optimum compaction of the material was not possible.

The seepage into the Type F material temporarily affected the thermal conditions of the material during construction. It is expected that this would have negligible effect on the dike’s long-term performance.

Less compaction of the Types H and A materials placed during that period may result in increased future settlement of the dike’s upstream shell. If this is the case, more materials can be placed above the water line to compensate for the settlement if required based on future dike monitoring and inspection.

7.10 Dike Dimensions

7.10.1 Observations

Comparison of the as-built drawings with the design indicates that some sections of the dike have as-built dimensions slightly less than designed. Table 7-1 summarizes the stations where the upstream crest widths, as shown in the as-built drawings, are less than designed. Table 7-2 summarizes the stations where the as-built thermal cover crest widths are less than designed. The deficiencies are not critical and therefore will not affect the dike overall stability and safety of the dike. Further discussions are presented in Section 7.10.2.

Table 7-1: Stations with Shorter As-Built Upstream Crest Widths

Station Shown in As-Built Drawings	As-Built Width (m)	Designed Width (m)	Difference (m)
1+175	15.8	16.3	-0.5
1+250	17.2	17.5	-0.3
1+350	17.3	17.5	-0.2
1+375	16.9	17.5	-0.6
1+499	17.1	17.5	-0.4
1+425	17.1	17.5	-0.4
1+450	17.3	17.5	-0.2
1+475	16.6	17.1	-0.5
1+500	16.5	16.7	-0.2

Table 7-2: Stations with Shorter As-Built Thermal Cover Crest Widths

Station Shown in As-Built Drawing	As-Built Width (m)	Designed Width (m)	Difference (m)
1+025	6.9	8.0	-1.1
1+050	6.9	8.0	-1.1
1+125	9.9	10.5	-0.6
1+150	10.2	10.5	-0.3
1+475	10.1	10.5	-0.4
1+500	10.0	10.5	-0.5
1+550	8.3	9.8	-1.5

The majority of the as-built liner crest elevations are equal to or higher than the design elevation of 67.5 m, with exception that the as-built liner crest elevations in the zone from Stations 1+310 to 1+360 are slightly lower than designed. The as-built minimum liner crest elevation is approximately 67.37 m at the location around Station 1+342. This elevation is about 0.13 m lower than the design elevation of 67.5 m.

The as-built crest elevations of Type H are lower than the design elevation of 66.2 m around Stations from 1+310 to 1+565. The lowest as-built Type H elevation is about 66.0 m around Stations 1+330 to 1+370, which is 0.2 m lower than designed. This was due to a shortage of Type H material during construction.

The as-built top elevations of the Type F material placed over the liner above the original ground in areas around Stations 1+090 to 1+150, 1+280, 1+335 to 1+415, 1+430 to 1+475 are lower than the design minimum elevation of 64.7 m. The lowest as-built elevation of the Type F is 64.59 m around Station 1+464, which is 0.11 m lower than designed.

7.10.2 Mitigation Measures

The deficiencies discussed in Section 7.10.1 are not critical and not expected to affect the dike overall stability. The reduced dimensions may have a minor impact on the thermal behavior in localized areas.

Dike performance must be regularly monitored during its service life. Further mitigation measures can be established should dike inspection and monitoring observations indicate any concerns of the dike performance.

The design maximum water elevation under the inflow design flood (IDF) for D-CP1 is 66.6 m, which is 0.77 m lower than the as-built minimum liner crest elevation of 67.37 m. Dike crest settlement survey monitoring will confirm the final liner crest elevation during and after future settlement of the dike structure. This is expected to be completed within several years of dike construction.

7.11 Fill Material Density

7.11.1 Observations

Some of the Type C and Type F materials placed in the key trench below the liner during the winter had lower densities than designed. This was due to the frozen conditions of the fill materials with higher moisture (ice) contents. Some lifts of the Type H material was placed in “wet” conditions and optimum compaction of the material was not possible.

7.11.2 Mitigation Measures

After the observation of the lower density of the Type C and Type F during the QC tests, the QC team monitored the moisture content of the Types C and F materials. Materials with excess moisture content were rejected.

The potential consequence of the localized fills with low density would increase the risk of thaw settlement. As discussed in Section 7.8, ECN No. 6515-C-235-007-ECN-003_R0 was implemented so that the Type F material (instead of Type C material) was placed from the hinge point up to Elevation 64.7 m from Station 1+132 to 1+551 on the top liner. This design change reduces the potential risk of seepage through localized patches of damaged liner that would be resulted from any thaw settlement of the low-density fills below the liner during the dike operation.

Lower than desired densities in some of the Type H material may result in increased future settlement of the dike’s upstream shell. If this occurs, additional material can be placed to compensate the settlement, if required based on future dike monitoring and inspection.

Dike performance will be regularly monitored during its service life. Further mitigation measures can be established should dike inspection and monitoring observations indicate any concerns of the dike performance.

7.12 Construction Schedule and Material Production

It was assumed in the dike design that the key trench excavation and backfill would be completed from mid-September to November 2016. This was not achieved. As a result, challenges were encountered when completion of the key trench excavation and backfill occurred under cold winter conditions. In addition, the majority of the Type H material and some of the Type C material were produced from drilled and blasted frozen natural esker

source materials during the winter construction period, instead of the summer-stockpiled unfrozen materials without excess moisture content. This increased the variability of the materials.

8.0 MATERIAL QUANTITIES

8.1 General

The material quantities used for Dike D-CP1, the downstream channels and downstream sump construction are presented in Tables 8-1 and 8-2. The material quantities have been calculated from the as-built survey data. The design volumes presented in the design documents are also presented in Tables 8-1 and 8-2 for comparative purpose.

Table 8-1: Summary of Construction Material Quantities Dike D-CP1

Material Type	Dike D-CP1 Design Quantity	Dike D-CP1 As-Built Quantity
Total Key Trench Excavation (m^3)	10,450	23,018
Total Run-of-Mine Rockfill – Type A (m^3)	19,840	24,896
Total Run-of-Mine Rockfill – Type A1 (m^3)	21,635	18,347
Total Transition Rockfill – Type B1 (m^3)	10,055	10,274
Total Transition Rockfill – Type B (m^3)	0	2,690
Total Granular Fill – Type C (m^3)	9,880	12,930
Total Bentonite Augmented Material – Type F (m^3)	1,970 to 2,920	4,256
Total Sand and Gravel Fill – Type H (m^3)	15,140	14,961
Total Saturated Granular Fill – Type K (m^3)	Depend on excavation	1,127
Total Geomembrane Liner – Coletanche ES2 (m^2)	0	555
Total Geomembrane Liner – Coletanche ES3 (m^2)	12,395	14,319

Table 8-2: Summary of Construction Material Quantities for Downstream Sump and Channels

Material Type	Design Quantity	As-Built Quantity
Sump Excavation (m^3)	1,635	1,575
Rip Rap for Sump	290	0
ROM Rockfill (600 mm minus) and Transition Material (150 mm minus) for Sump (m^3)	0	280
Geotextile for Sump (m^2)	820	895
Channels Excavation (m^3)	780	1,598
Rip Rap for Channels (m^3)	410	0
ROM Rockfill (600 mm minus) and Transition Material (150 mm minus) for Sump (m^3)	0	1,450
Geotextile for Channels (m^2)	1,615	1,542

Referencing Table 8-1, the majority of the difference can be attributed to the additional volume required for the key trench excavation and backfill as discussed in Section 7.2. Further details are presented in the following section.

8.2 Discussions on Quantities

The as-built key trench excavation exceeded the design estimate by approximately 120%. The increased volume is mainly attributed to the following:

- Over 60% of the key trench was excavated to depths ranging from 2.3 m to 3 m from original ground surface because of ice-rich ground conditions; and
- Widening of the key trench to satisfy conditions discussed in Section 7.2.

The as-built Type A material volume exceeded the design estimate by approximately 25%. The increased volume of Type A material is primarily due to the shortage of Type A1 material discussed in Section 7.3. This shortage resulted in the use of Type A material to construct portions of the dike's downstream zone over the key trench and parts of the downstream shell. The over excavation of the key trench as discussed in Section 7.2 increased the width and consequently more ROM material was required.

The as-built Type A1 material volume is less than the design estimate by approximately 15%. The decreased volume of Type A1 material is primarily due to the material shortage discussed in Section 7.3.

Following the dike's design, Type B transition material was not to be used for construction. As a result of the shortage discussed in Section 7.4 some portions of the dike that were to be constructed with Type B1 material were constructed with Type B.

The total as-built volume of transition material (Types B and B1) exceeded the design estimate by approximately 29%.

The as-built Type C material volume exceeded design estimates by approximately 30%. The increased volume of Type C material is primarily due to the key trench over excavation discussed in Section 7.2.

The as-built Type F material volume exceeded design estimates by approximately 46%. The increased volume of Type F material is primarily due to the key trench over excavation discussed in Section 7.2. More Type F material was also required to fill pockets in the bedrock between Station 0+005 and 0+250.

ES2 liner was used for the construction of parts of D-CP1 because of the shortage of ES3 liner as discussed in Section 7.5. The total as-built liner (ES2 and ES3) exceeded design estimates by approximately 20%. This is due to the increases in the key trench depth and width and construction waste-age of the material.

The construction material volume increases will not affect the expected dike performance.

9.0 LONG-TERM MONITORING

9.1 Purpose

Performance monitoring is an integral part of the operation of any water retention structure. The performance of Dike D-CP1 will need to be monitored throughout its operating life.

Permafrost exists beneath the footprint of D-CP1. The design intent is to maintain the original permafrost foundation beneath the liner in the key trench in a frozen condition over the life of the dike. Long-term monitoring of D-CP1 should include the following:

- Monitor thermal regime to confirm thermal prediction;
- Monitor settlement and movements of the dike;
- Conduct routine visual inspections of the dike; and
- Satisfy regulatory requirements for the dike performance monitoring.

9.2 Thermal Monitoring

Ground temperature cables installed in D-CP1 must be read on a regular basis. Tetra Tech recommends that the cables be read twice per month during the months of June and July and on a monthly basis during the remaining months for the service life of the dike. The reading frequency can be adjusted as required. The data will be used to confirm the thermal predictions used to design the dike and identify any potential concerns in dike performance during its operation. The monitoring data should be forwarded to the Engineer of Record for assessment.

9.3 Survey Monitoring

The survey monitoring points installed in D-CP1 must be surveyed on a regular basis. Tetra Tech recommends that a survey be performed on a monthly basis for the first two years and reduced to quarterly thereafter during the service life of the dike. The survey frequency can be adjusted when required. Each survey should note northings, eastings, and elevations. Elevation measurements must be performed with a total station with a high accuracy. In addition, the dike upstream and downstream water elevations should be regularly surveyed when changes in the water elevation are observed. When required, a complete survey of the dike external surface can be conducted. Monitoring data should be sent to the Engineer of Record for assessment.

9.4 Routine Dike Visual Inspection

Dike inspection by Agnico Eagle's site field engineer or technician must be done regularly to monitor the dike conditions and performance. The frequency of the dike inspection should be at least once every two weeks during the open water seasons and monthly during the winter season. The inspection should include visual inspections for any signs of slope instability, seepage, settlements, cracks, sink holes, and lateral deformations. This inspection can be taken together with the thermal and survey monitoring activities for the dike. Any unusual observations or concerns during the routine dike inspections should be documented and forwarded to the Engineer of Record for further assessment.

9.5 Formal Annual Inspection

An annual site inspection is required to fulfil the Type "A" Water Licence (No. 2AM-MEL1631) requirements. The annual site inspection should be carried out by the design team to formally evaluate the performance of Dike D-CP1. An annual inspection report shall be produced following each inspection.

The inspection will typically take place at the end of summer when the maximum annual thaw has developed. The annual inspection will include the following, but not limited to:

- Inspection of the upstream and downstream slopes for any signs of distress or instability;
- Inspection of the dike crest for any sign of transverse cracking or excess deformations;
- Inspection of the abutments and downstream toe for any evidence of seepage;
- Review of documents generated from routine dike visual inspections by Agnico Eagle's on-site technical staff; and
- A review of GTCs and survey monument data collected.

10.0 CLOSURE

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

Respectfully submitted,
Tetra Tech Canada Inc.

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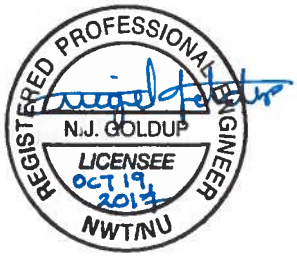

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TETRA TECH CANADA INC.
Signature
Date Oct. 19, 2017
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

REFERENCES

Tetra Tech EBA, 2016a. Design Report for Dike D-CP1, Meliadine Gold Project, NU. AEM Document Number: 6515-132-007-132-REP-003, Version 0, prepared by Tetra Tech EBA and submitted to Agnico Eagle Mines Ltd., August 15, 2016.

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FIGURES

Figure 1 General Project Location Plan
Figure 2 General Site Plan Showing Dike D-CP1 Location
Figure 3 General Section of D-CP1 Design Concept
Figure 4 Organization Chart

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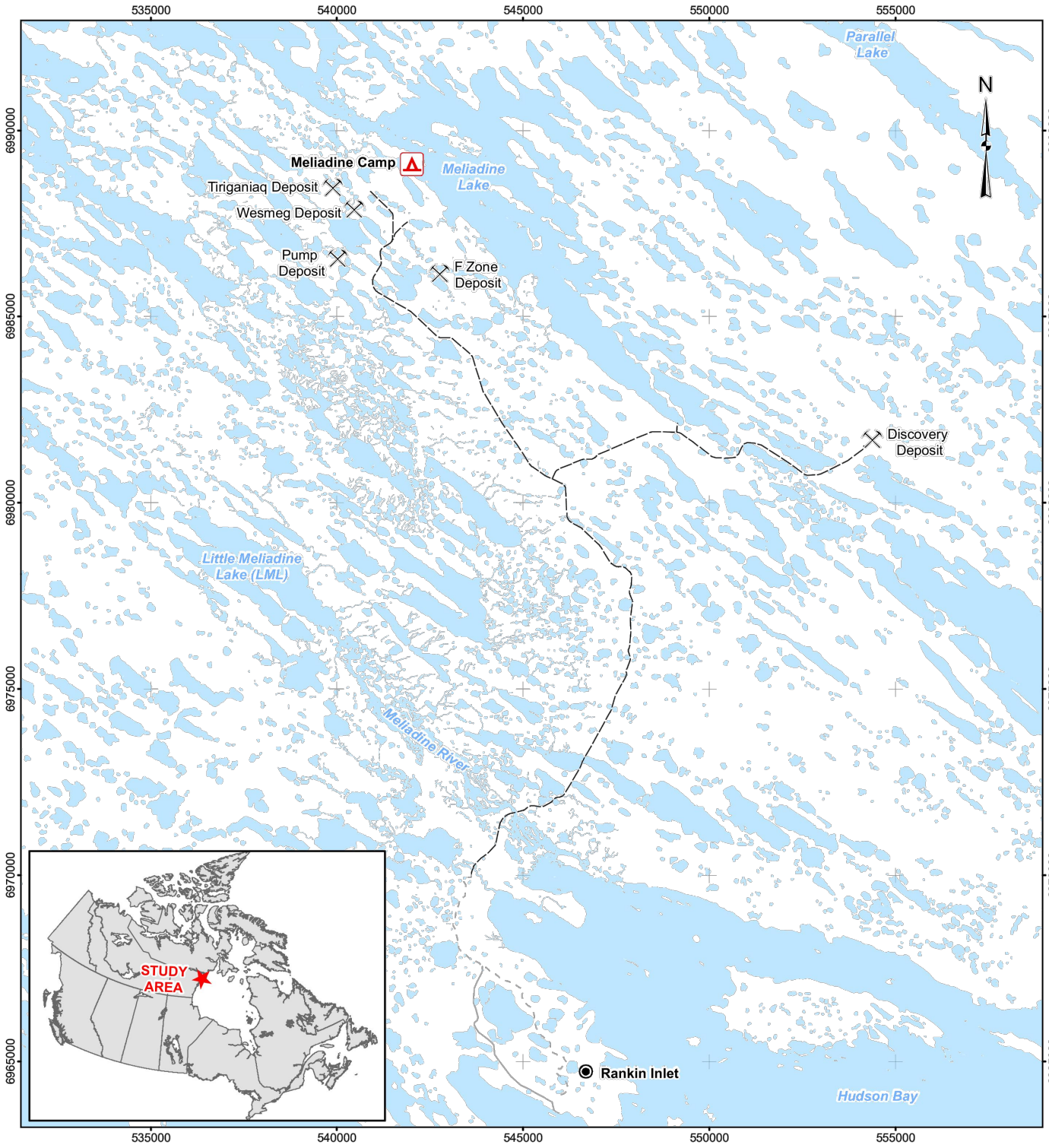

LEGEND

- Camp
- Proposed Mine Site
- All-weather Access Road (AWAR)
- Road - New
- Road - Existing
- Watercourse
- Waterbody

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FIGURE 1 GENERAL PROJECT LOCATION PLAN

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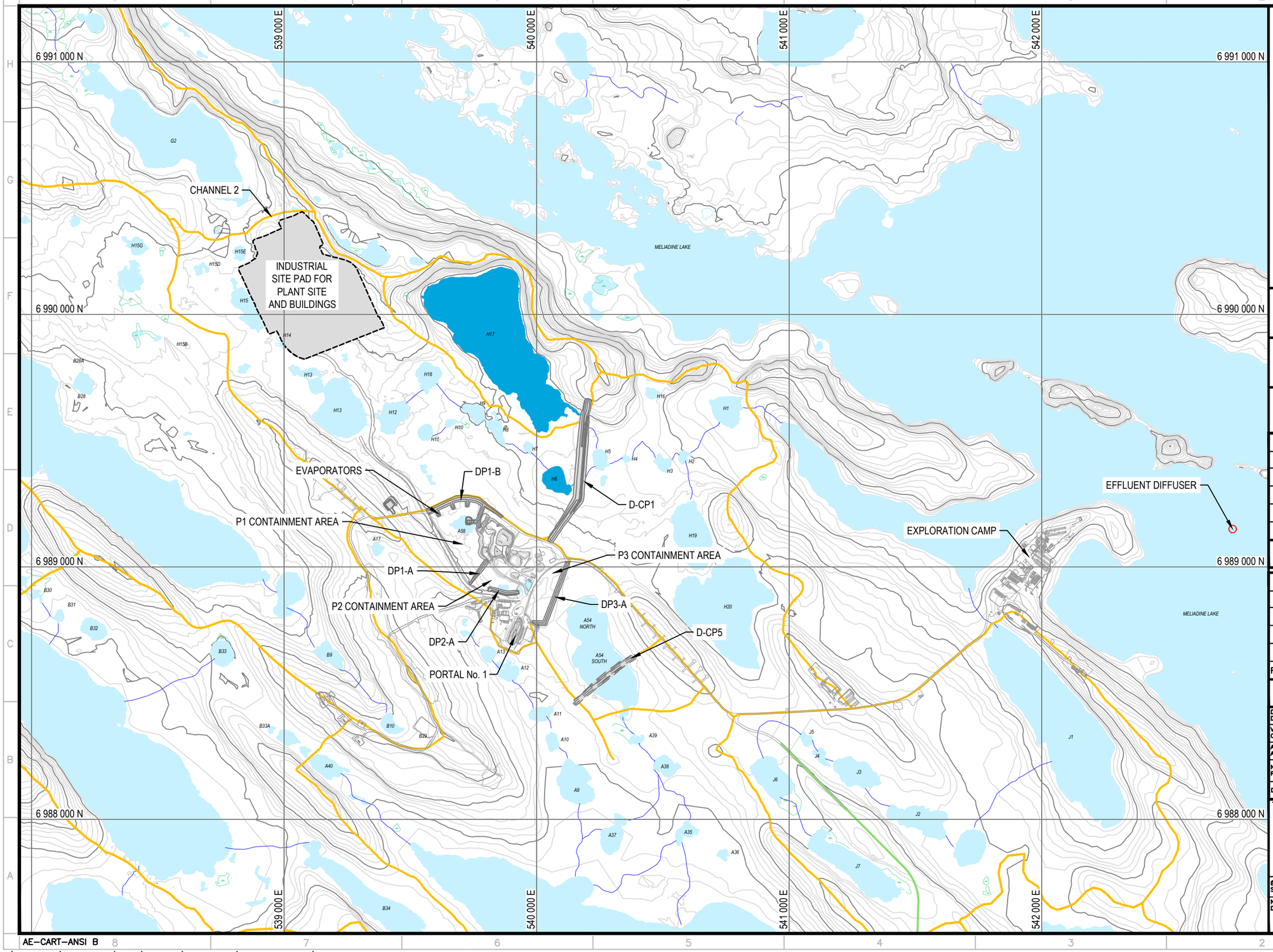

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AGNICO EAGLE MELIADINE GOLD PROJECT

FIGURE 2
GENERAL SITE PLAN SHOWING
DIKE D–CP1 LOCATION

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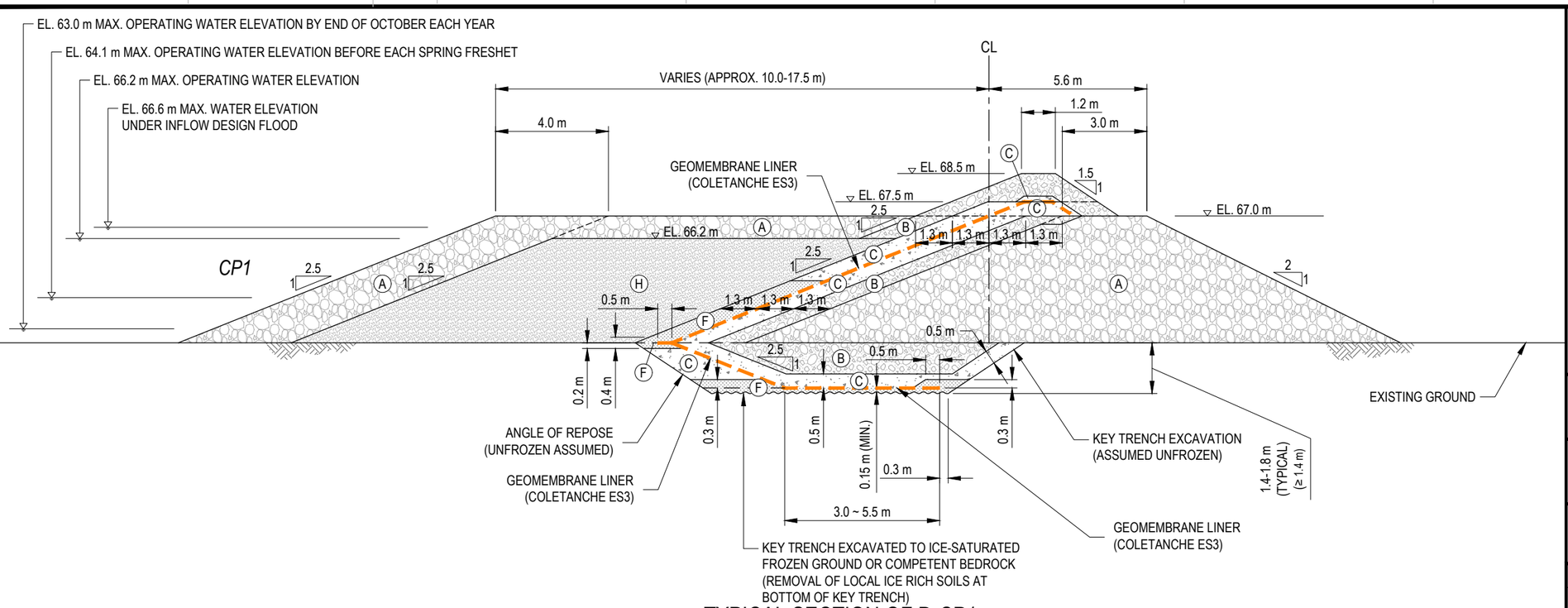
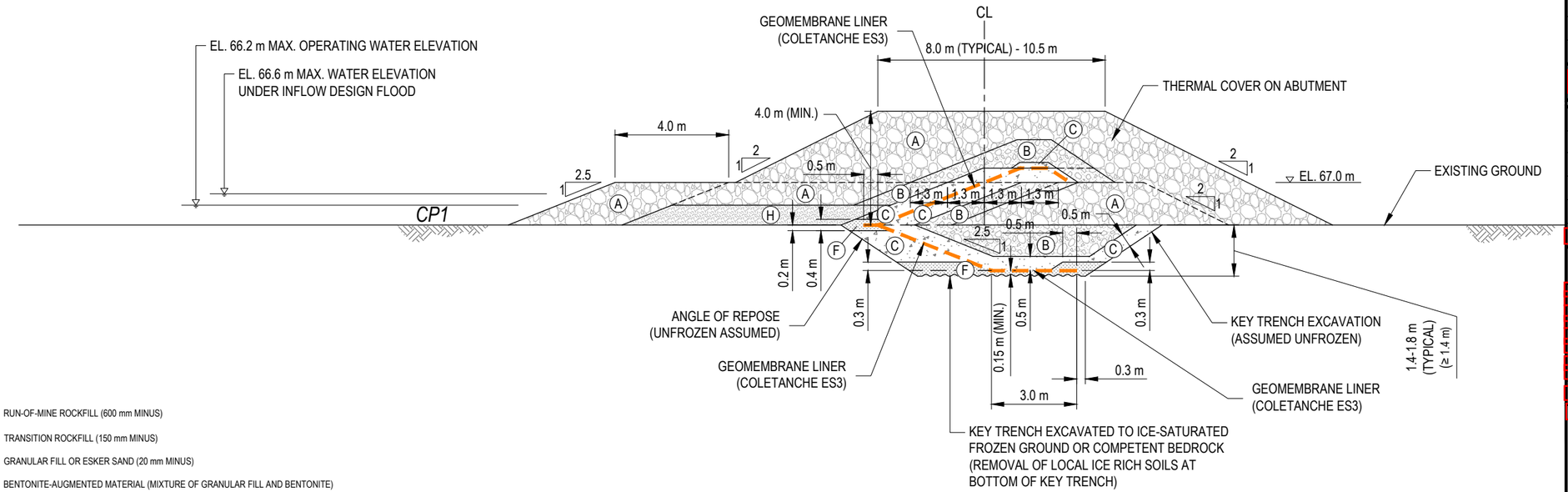


TYPICAL SECTION OF D-CP1



TYPICAL SECTION OF D-CP1 NEAR ABUTMENT

- (A) RUN-OF-MINE ROCKFILL (600 mm MINUS)
- (B) TRANSITION ROCKFILL (150 mm MINUS)
- (C) GRANULAR FILL OR ESKER SAND (20 mm MINUS)
- (F) BENTONITE-AUGMENTED MATERIAL (MIXTURE OF GRANULAR FILL AND BENTONITE)
- (H) ESKER SAND AND GRAVEL (75 mm MINUS)
- GEOMEMBRANE LINER (COLETANCHE ES3)

- ASSUMED KEY TRENCH EXCAVATION AND BACKFILL TO BE CONSTRUCTED FROM SEPTEMBER 2016 TO NOVEMBER 2016.
- THE SELECTION AND USE OF THE COLETANCHE LINER TYPE FOR D–CP1 AND D–CP5 WERE MADE BY AGNICO EAGLE MINES LIMITED.

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AGNICO EAGLE MELIADINE GOLD PROJECT

GENERAL SECTION OF DIKE D–CP1 DESIGN CONCEPT

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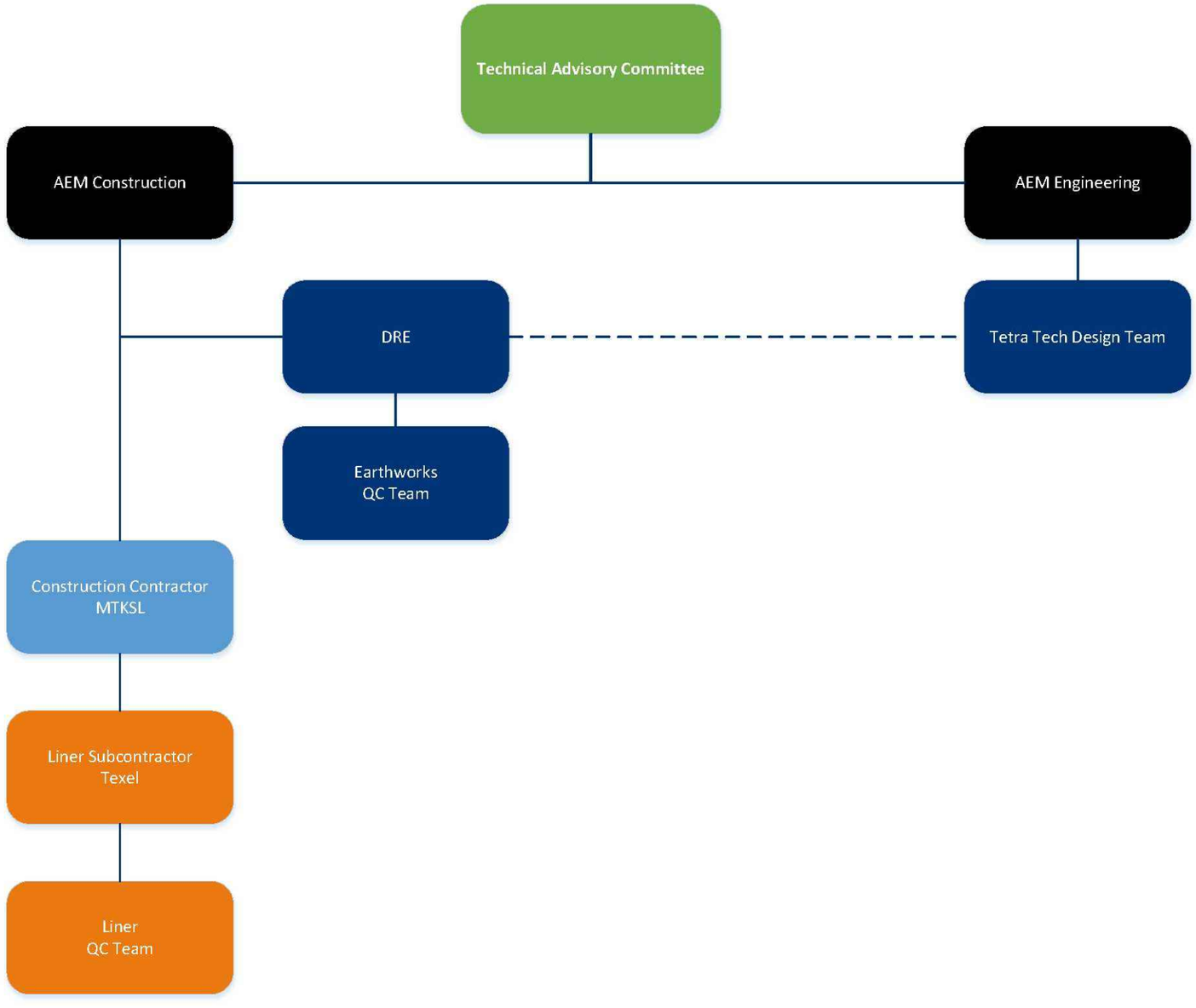

OPERATIONAL PARAMETERS FOR
D-CP1 AND D-CP5 DIKE CONSTRUCTION

ORGANIZATION CHART

CLIENT: AGNICO EAGLE

TETRA TECH

PROJECT NO.	DWN	CKD	REV
ENG.EARC03076-01	EL	GZ	A

OFFICE	DATE
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FIGURE 4

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PHOTOGRAPHS

Photo 1	Working platform foundation snow clearing, view from Station 1+225
Photo 2	Placing Type H material on upstream working platform and Type A material on downstream
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Photo 53 Deformed Coletanche ES3 liner panel pulled out of shipping/storage sea can
Photo 54 Excessive wrinkling on Liner Panels 63 to 66
Photo 55 Finalizing Patches R4, R5, and R6
Photo 56 Water ponding at under liner hinge point, view at Station 1+390
Photo 57 Water breach over Type H upstream material on working platform
Photo 58 View of completed Dike D-CP1 from Station 1+585 facing downstream side
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Photo 1: Working platform foundation snow clearing
View from Station 1+225 facing up chainage

Photo 2: Placing Type H material along the upstream working platform, Type A material on downstream side
View from Station 1+300 facing down chainage

Photo 3: Compacting a lift of Type H material on up stream working platform
View from Station 1+280 facing down chainage

Photo 4: Key trench excavation activities
View from Station 0+550 facing down chainage

Photo 5: Key trench bottom and slopes final dental cleaning prior to Type F placement
View from Station 0+585 facing down chainage

Photo 6: Key trench excavation—massive ground ice on the upstream slope being excavated
Between Station 0+492 and 0+507

Photo 7: Placing Type F material along key trench bottom around Station 0+470

Photo 8: Compacting Type F material placed between Stations 0+450 and 0+475

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View from Station 1+210 facing up chainage

Photo 10: Upstream fillet zone construction - Placing a lift of Type C material
View from Station 1+570 facing down chainage

Photo 11: Placing Type F downstream fillet material on liner
View from Station 0+050 facing down chainage

Photo 12: Compacting a lift of Type K material placed on key trench base
View from Station 0+250 facing down chainage

Photo 13: Placing and compacting a lift of transition material in the key trench
View from Station 0+200 facing down chainage

Photo 14: Placing transition material and compacting downstream 20 mm minus fillet zone
View from Station 0+545 facing up chainage

Photo 15: Placing and compacting a lift of Type A downstream shell
View from Station 1+360 facing down chainage

Photo 16: Sloping Type A downstream shell from Elevation 66 m to final elevation (~67 m)
View from Station 1+250 facing up chainage

Photo 17: Type H material placement and compaction activities
View from Station 1+300 facing up chainage

Photo 18: Compacting a lift of Type H material
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Photo 19: Deploying Phase 1 liner (within the key trench) from Station 0+522 to 0+532
View from Station 0+545 facing down chainage

Photo 20: Looking at Phase 1 liner placed between Station 0+545 and 0+585
View from Station 0+585 facing down chainage

Photo 21: Previously placed Phase 2 liner that was welded to Elev. 66 m being flipped to finalise the construction of downstream material to final elevation
View from Station 1+490 facing down chainage

Photo 22: Placing downstream materials (Types A1, B and C) to final elevation for liner panels to be flipped back and placed on it and welded to top.
View from Station 1+500 facing down chainage

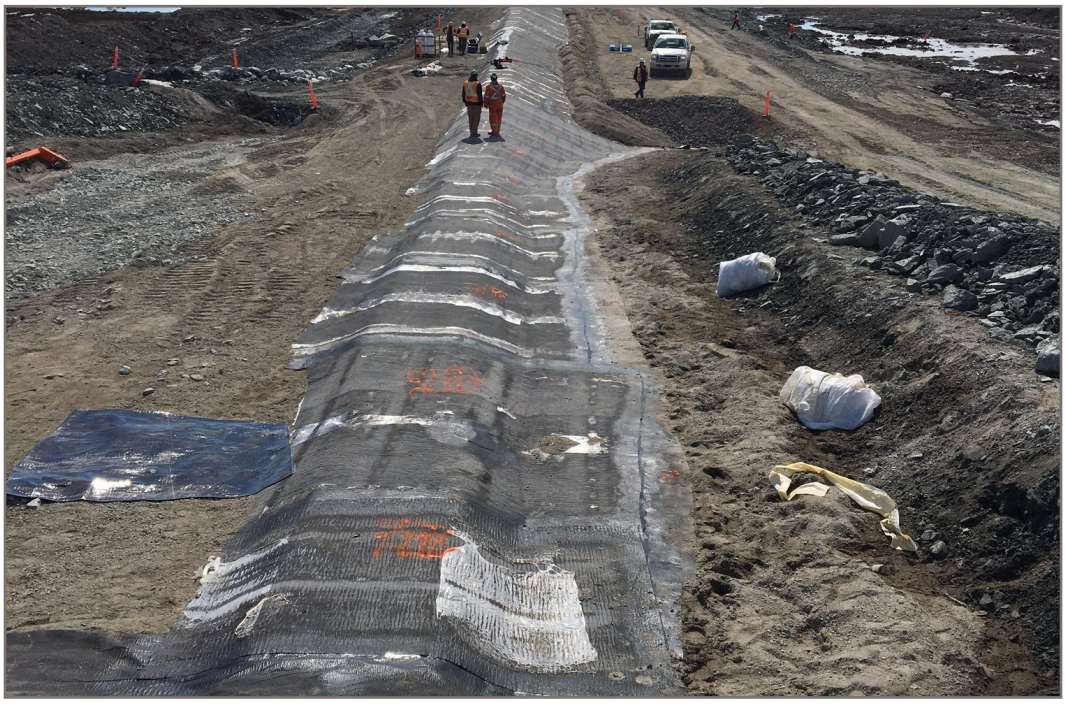

Photo 23: Phase 2 liner flipped back on downstream materials and welded to design elevation
View from Station 1+585 facing down chainage

Photo 24: Mucked out north water collection channel
View from Station 4+050 facing up chainage

Photo 25: Compacted Type A material along North water collection channel alignment
View from Station 4+060 facing up chainage

Photo 26: Placing transition material (150 mm minus) on geotextile along North channel
View from Station 4+180 facing up chainage

Photo 27: Finalizing construction on South collection channel
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Photo 28: Mucking sump area
View from dike

Photo 29: Completed sump
View facing northeast

Photo 30: Installing HGTC-4 , cable being inserted in 25 mm ID PVC pipe lying on liner between Station 0+420 and 0+470

Photo 31: HGTC-2 is in the 25 mm I.D. PVC pipe shown– terminal out of the key trench downstream side at Station 0+290

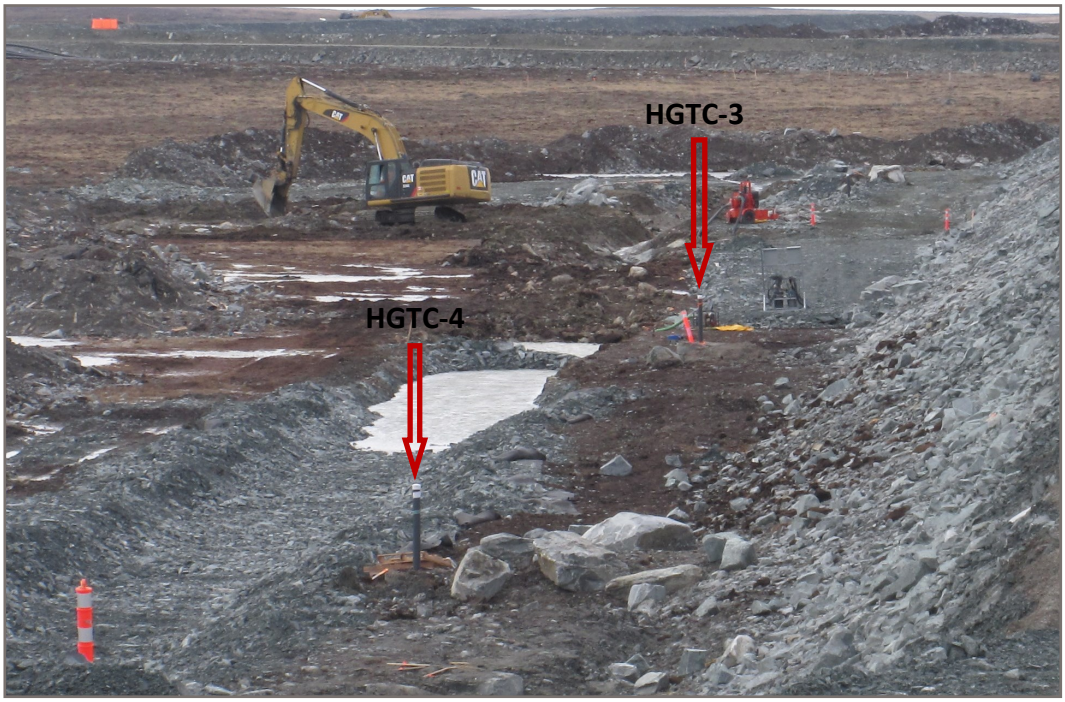

Photo 32: Arrows pointing at terminals for HGTC-3 and HGTC-4

Photo 33: VGTC-1 Installed prior to finishing details

Photo 34: Drilling to install VGTC-3

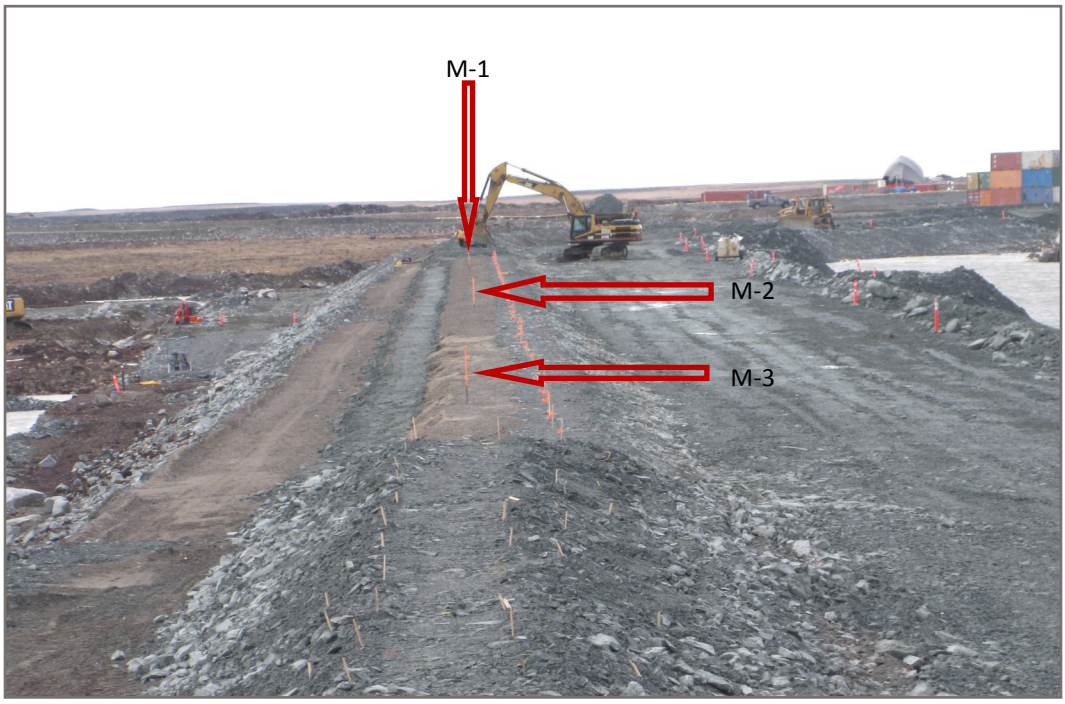

Photo 35: Survey Monuments M-1, M-2 and M-3

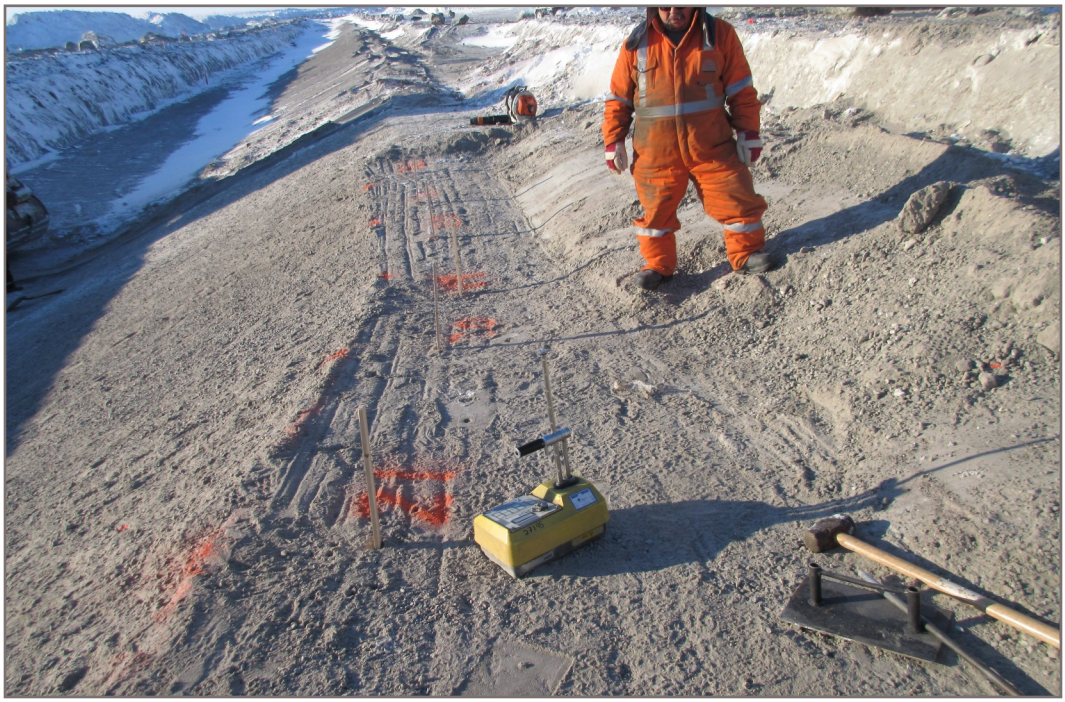

Photo 36: Densometer test on final lift of Type C material on upstream fillet at Station 0+560

Photo 37: Modified sand cone test on final lift of Type C material on upstream fillet at Station 0+560

Photo 38: Compaction test on a lift of Type H material around Station 1+565

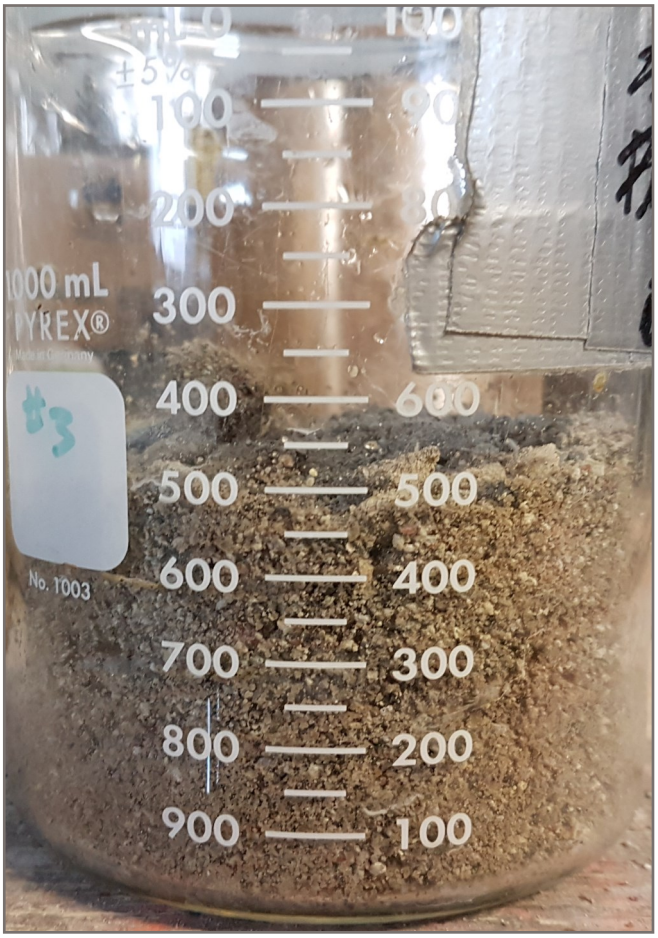

Photo 39: Type F material swell test
Before adding water

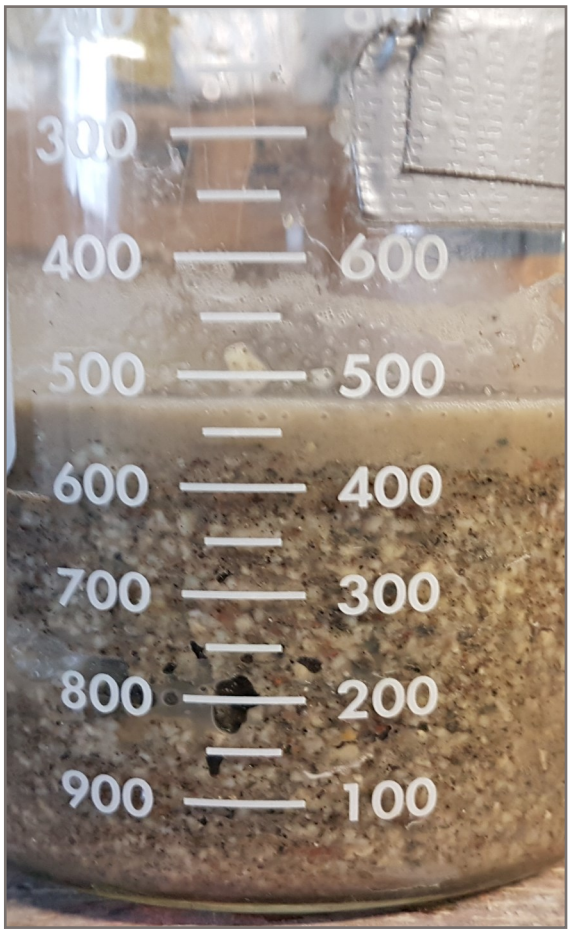

Photo 40: Type F material swell test
After adding water

Photo 41: Compaction test on a lift of Type K material placed between Station 0+200 and 0+310

Photo 42: Jar tests on Samples SA134 to SA138
Before thaw

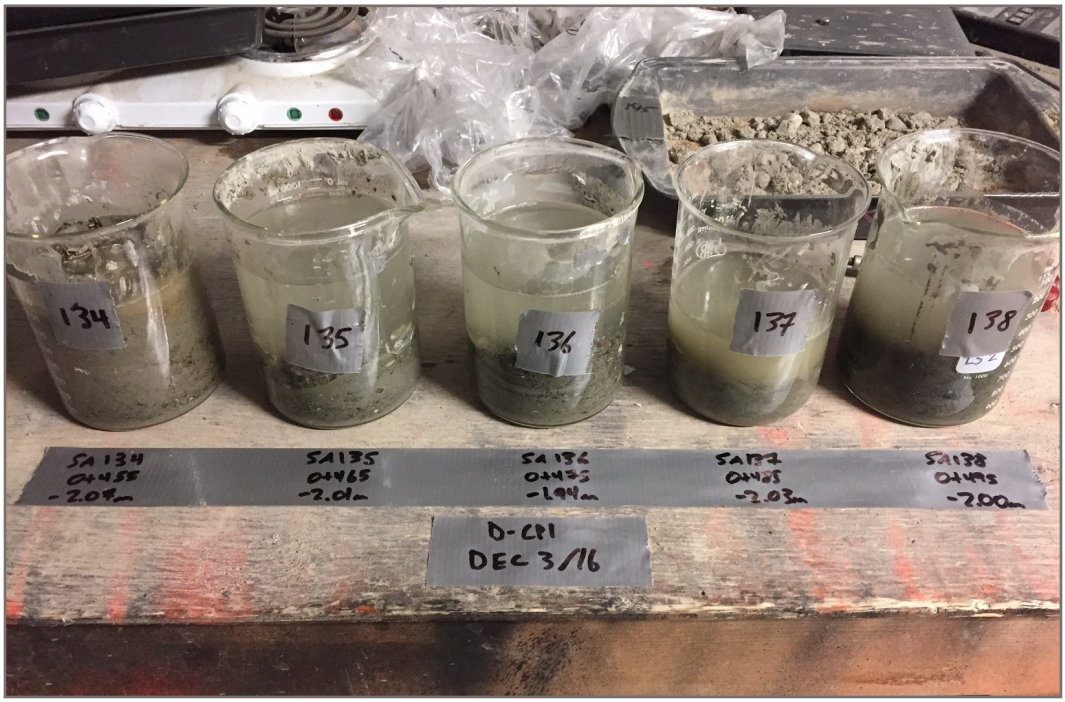

Photo 43: Jar tests on Samples SA134 to SA138
After thaw

Photo 44: Tensile resistance samples cut from test weld strip

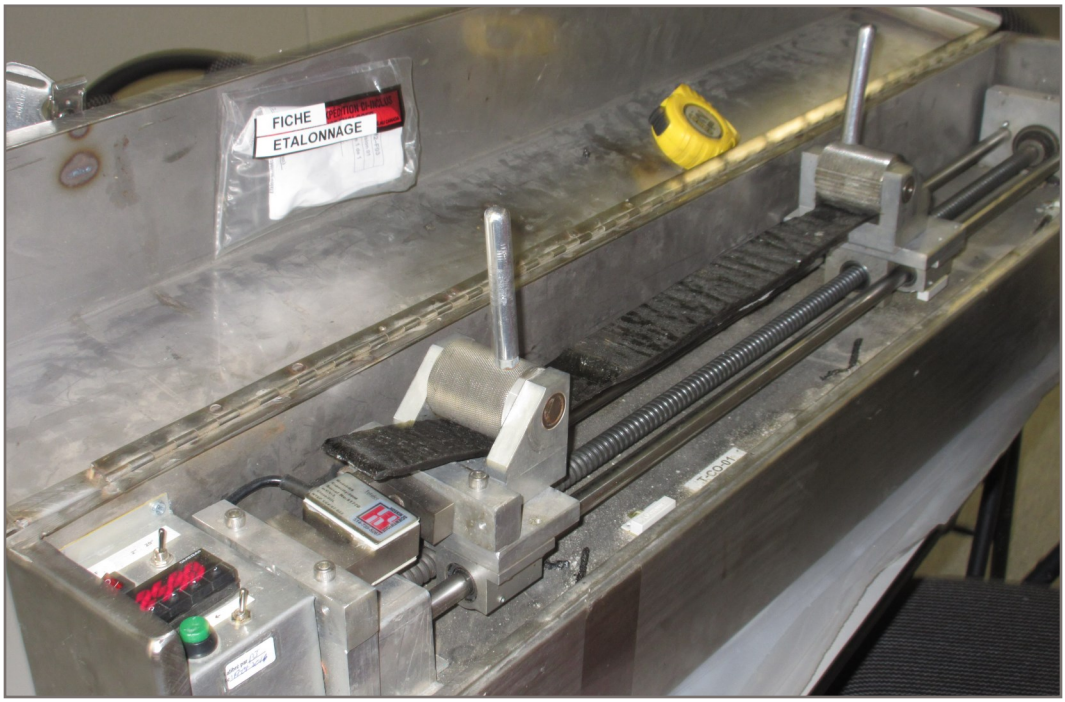

Photo 45: Tensile resistance test running

Photo 46: Trowel test and visual inspection along a welded liner seam

Photo 47: Liner Patch R3 on Panel #47 being surveyed and tested with ultrasonic device Panel #47 is between Stations 0+215 and 0+220

Photo 48: Orange circles indicate punctures caused by fly rock on Top Liner following blast at downstream sump, Station 1+320

Photo 49: Close look at one of the punctures caused by fly rock on Top lLner at Station 1+320

Photo 50: Top Liner punctured by excavator while placing Type C material; Station 1+040

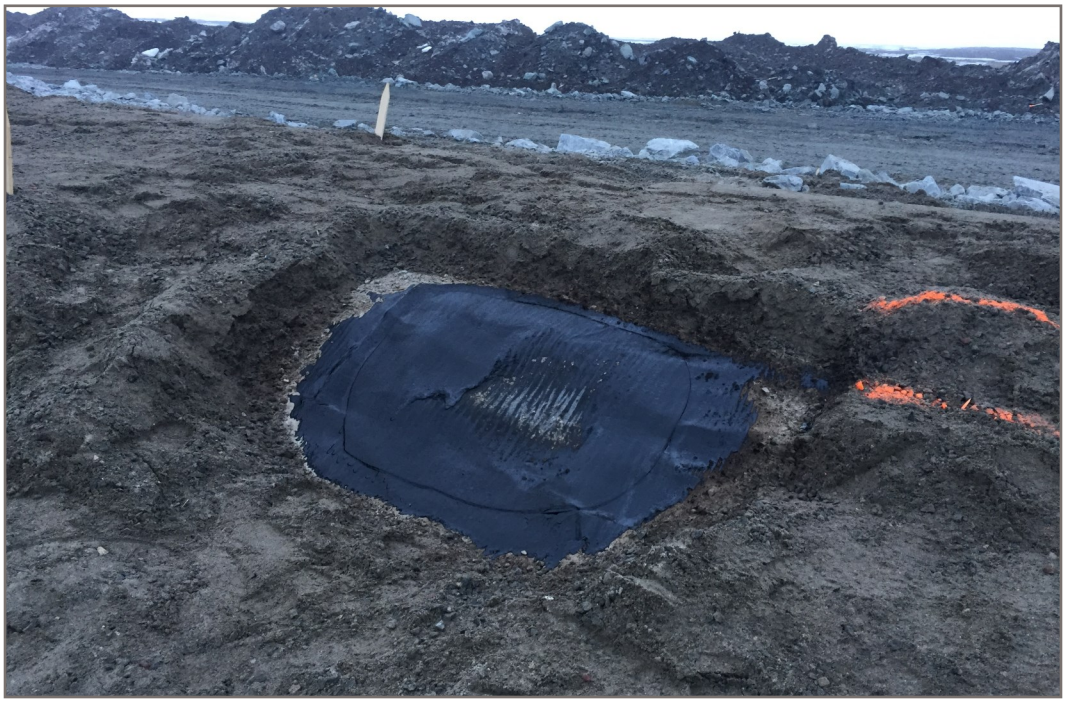

Photo 51: Patch completed on punctured Top Liner at Station 1+040

Photo 52: Coletanche ES3 liner panels in a shipping/storage sea can

Photo 53: Deformed Coletanche ES3 liner panel pulled out of shipping/storage sea can

Photo 54: Excessive wrinkling on Liner Panels 62 to 66

Photo 55: Finalizing Patches R4, R5 and R6

Photo 56 Water ponding at under liner hinge point
View at Station 1+390

Photo 57: Water breach over Type H upstream material on working platform
View from Station 1+400 facing down chainage

Photo 58: View of completed Dike D-CP1 from Station 1+585 facing downstream side

Photo 59: View of completed Dike D-CP1 from Station 1+585 facing upstream side

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOTECHNICAL

1.1 USE OF DOCUMENT AND OWNERSHIP

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

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

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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

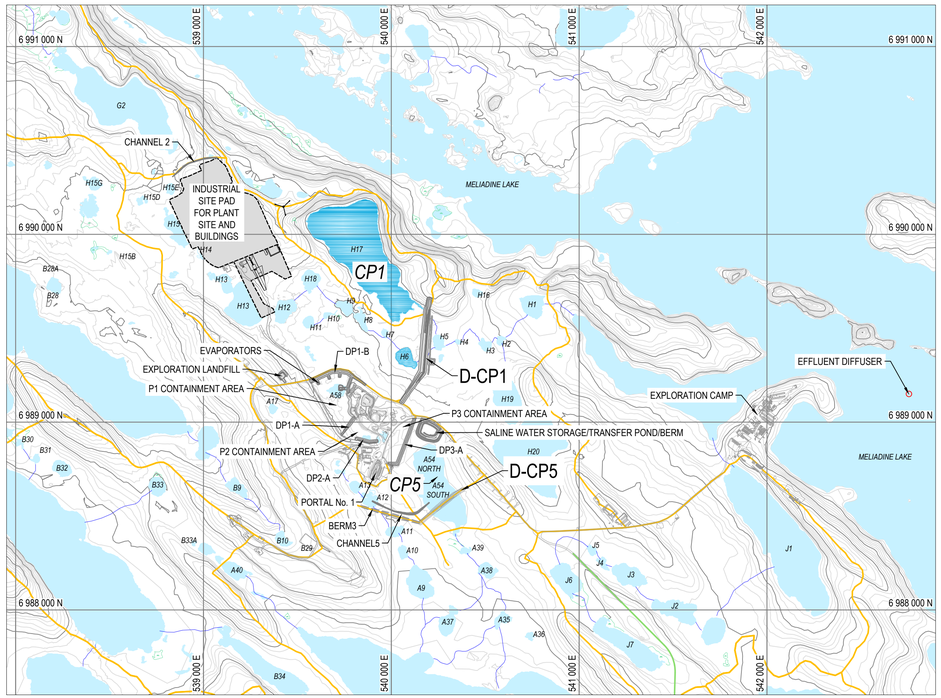
TETRA TECH will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

APPENDIX B

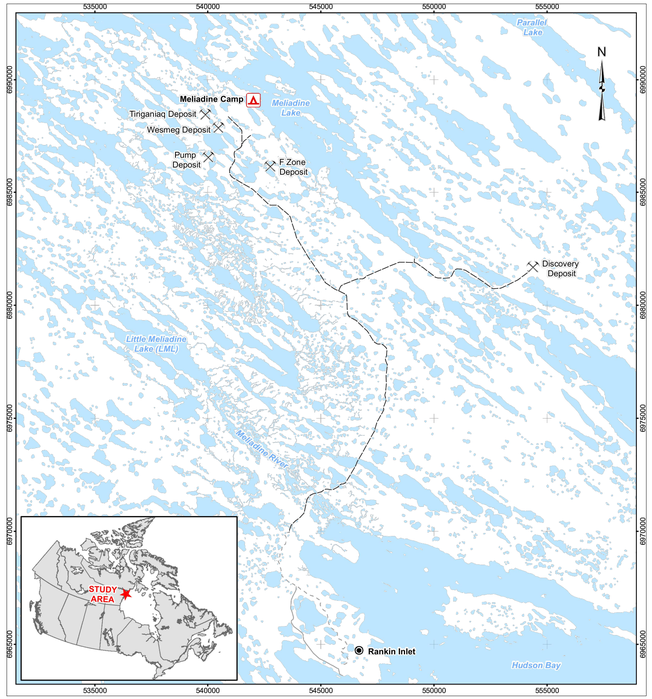
CONSTRUCTION RECORD DRAWINGS

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

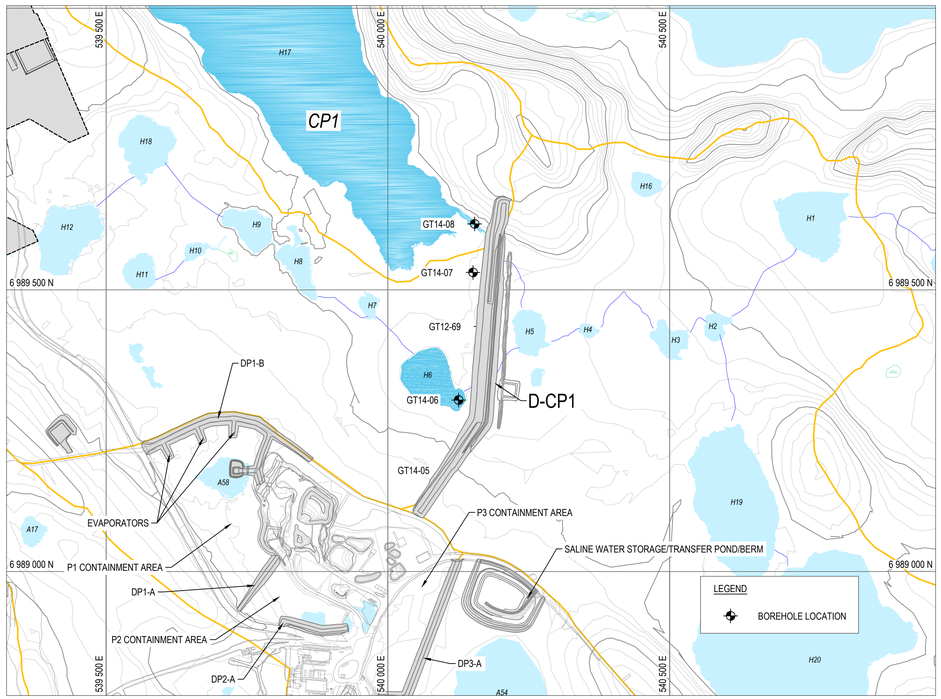
FORMAT ARCHD



GENERAL SITE LOCATION
SCALE: 1:15,000



LOCATION MAP
SCALE: N.T.S.



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

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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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2017-10-19	ISSUED FOR RECORD	WTH	NG	
1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
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

AE-CART-ARCH D

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

NO. DESSIN
DRAWING NO. 65-685-230-205_R2

FORMAT ARCHD

D-CP1 KEY TRENCH LAYOUT POINTS

STATION	EASTING	NORTHING	ELEVATION
0+007.28	540053.88	6989110.60	66.70
0+025	540062.98	6989125.10	66.74
0+050	540077.33	6989145.42	66.02
0+075	540091.49	6989165.96	65.59
0+100	540105.33	6989186.76	65.10
0+125	540119.51	6989207.28	64.60
0+150	540132.87	6989228.40	63.86
0+175	540146.16	6989249.56	62.93
0+187.74	540153.33	6989260.05	62.89
0+200	540157.97	6989271.09	64.05
0+213.50	540160.30	6989284.32	64.17
0+225	540161.37	6989295.76	62.88
0+250	540163.61	6989320.43	62.62
0+275	540164.97	6989345.33	62.43
0+300	540166.96	6989370.24	62.59
0+325	540169.47	6989395.09	62.56
0+350	540171.72	6989419.92	62.44
0+362.58	540172.12	6989432.44	62.86
0+375	540172.77	6989444.81	62.52
0+389.01	540173.27	6989458.80	62.23
0+400	540174.28	6989469.71	62.52
0+413.15	540176.88	6989482.25	62.82
0+425	540177.63	6989494.06	62.95
0+450	540173.93	6989517.63	64.18
0+475	540180.78	6989540.04	64.28
0+500	540178.61	6989563.92	64.45
0+513.42	540179.61	6989577.29	64.88
0+525	540186.34	6989585.77	63.86
0+539.17	540188.15	6989599.65	64.13
0+550	540191.75	6989609.63	64.98
0+559.53	540195.57	6989618.28	66.28
0+566.21	540197.85	6989624.56	66.88
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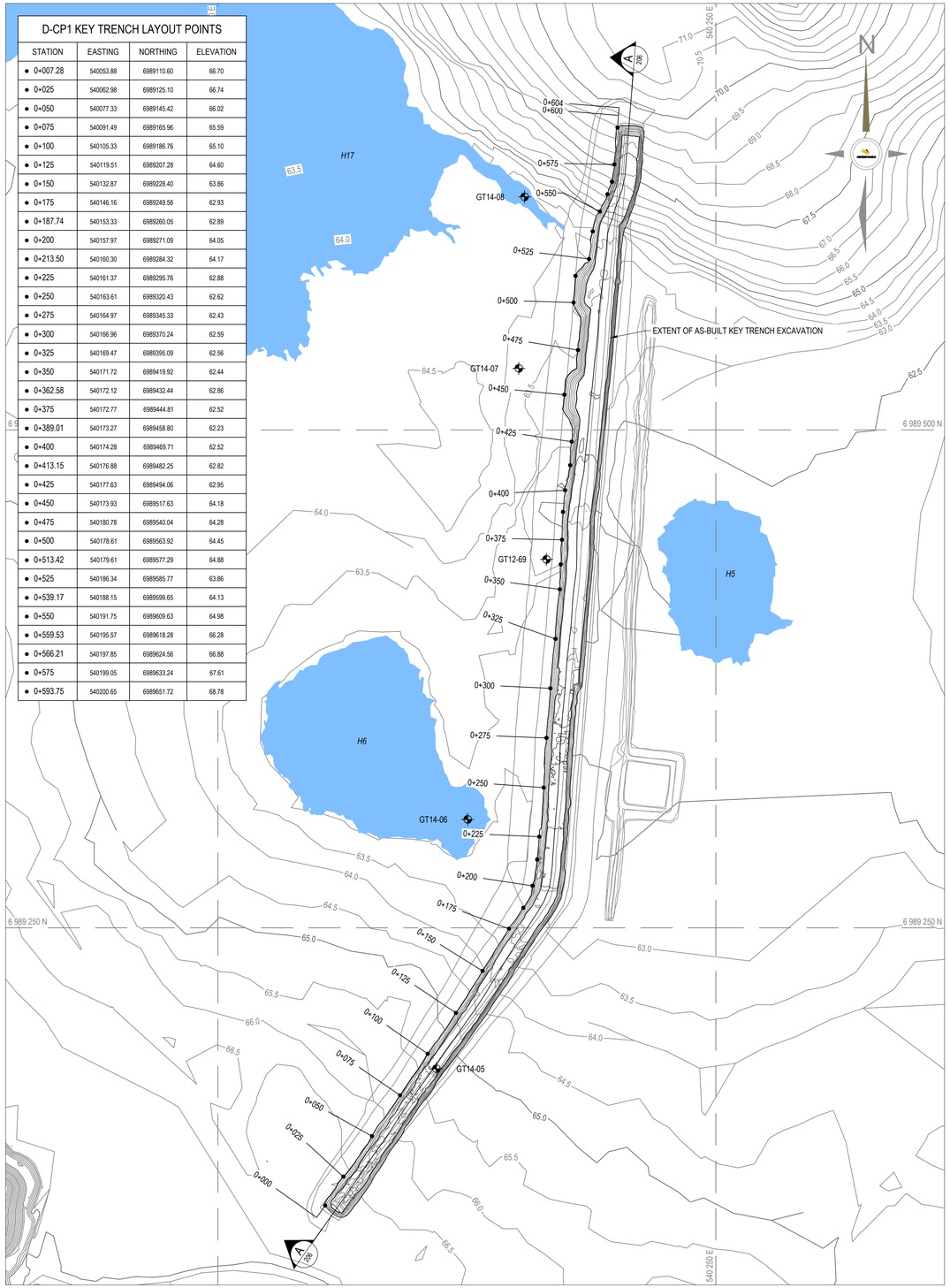
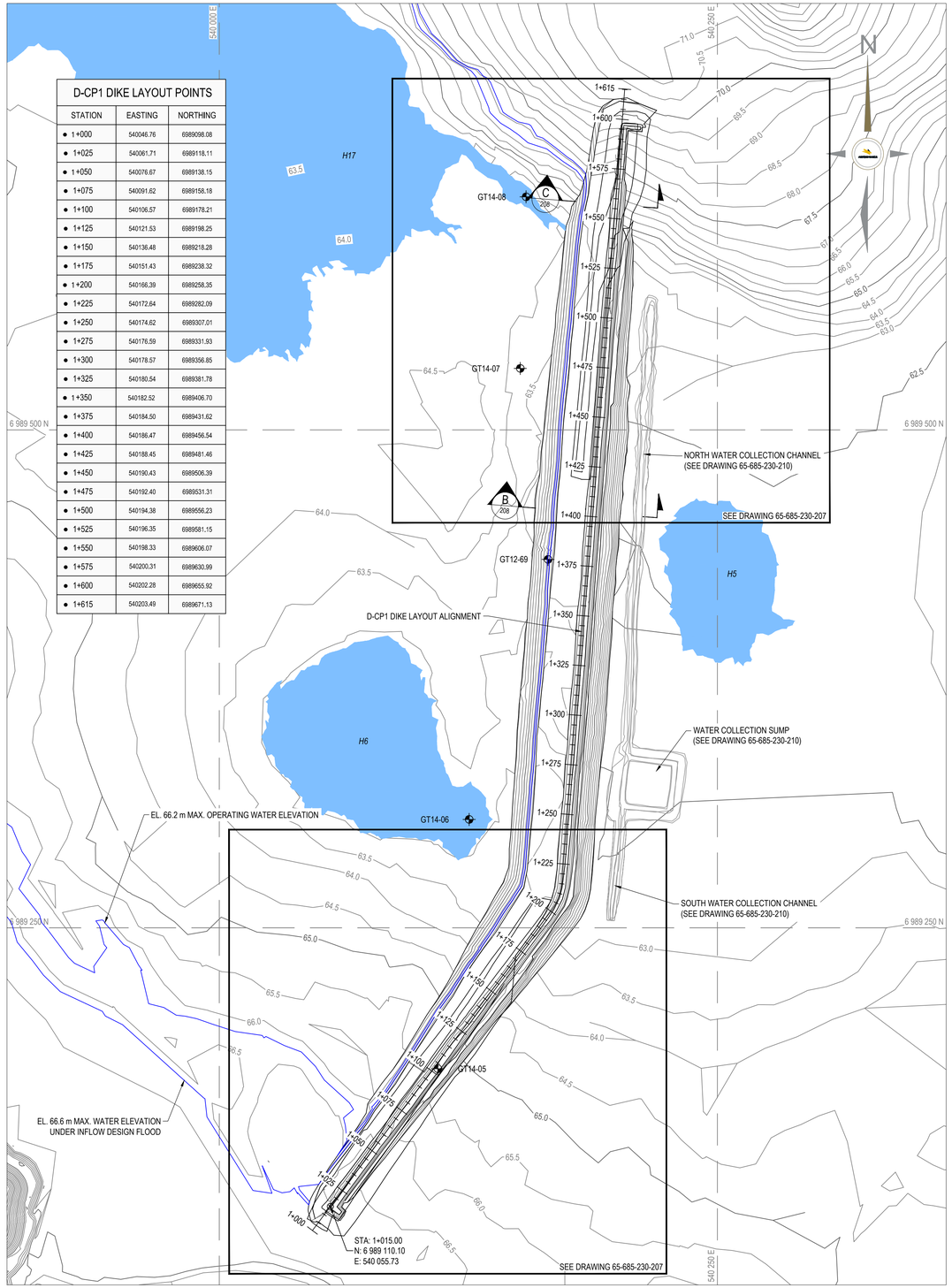


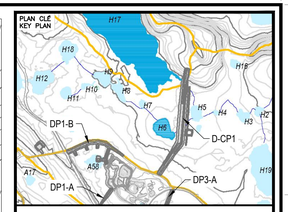
D-CP1 KEY TRENCH PLAN VIEW
SCALE: 1:1250

D-CP1 DIKE LAYOUT POINTS

STATION	EASTING	NORTHING
1+000	540046.76	6989098.08
1+025	540061.71	6989118.11
1+050	540076.67	6989138.15
1+075	540091.62	6989158.18
1+100	540106.57	6989178.21
1+125	540121.53	6989198.25
1+150	540136.48	6989218.28
1+175	540151.43	6989238.32
1+200	540166.39	6989258.35
1+225	540172.64	6989282.09
1+250	540174.62	6989307.01
1+275	540176.59	6989331.93
1+300	540178.57	6989356.85
1+325	540180.54	6989381.78
1+350	540182.52	6989406.70
1+375	540184.50	6989431.62
1+400	540186.47	6989456.54
1+425	540188.45	6989481.46
1+450	540190.43	6989506.39
1+475	540192.40	6989531.31
1+500	540194.38	6989556.23
1+525	540196.35	6989581.15
1+550	540198.33	6989606.07
1+575	540200.31	6989630.99
1+600	540202.28	6989655.92
1+615	540203.49	6989671.13



D-CP1 PLAN VIEW
SCALE: 1:1250



TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

LEGEND

BOREHOLE

0 50m
Scale: 1:1,250

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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TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2017-10-19	ISSUED FOR RECORD	WTH	NG	
1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
A	2016-08-05	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF THE NWT — W.T. HORNE — LICENSEE — NWT
ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF THE NWT/NU — G. ZHANG — LICENSEE — NWT/NU

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP1 AS-BUILT
KEY TRENCH AND DIKE LAYOUT PLAN

DESSINÉ PAR / DRAWN BY	EL	DATE 2017-10-06
VERIFIÉ PAR / CHECKED BY	WTH	2017-10-06
APPROUVÉ PAR / APPROVED BY	NG	2017-10-06
ÉCHELLE / SCALE	1:1250	DATE 2017-10-06
NO. DESSIN / DRAWING NO.	65-685-230-205	
NO. PROJET / PROJECT NO.	6515	REVISION 2 / FEUILLE / SHT 2 / 12

AE-CART-ARCH D

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FILE NO. 65-685-230-205_R2.dwg

NO. DESSIN
DRAWING NO. 65-685-230-206_R2

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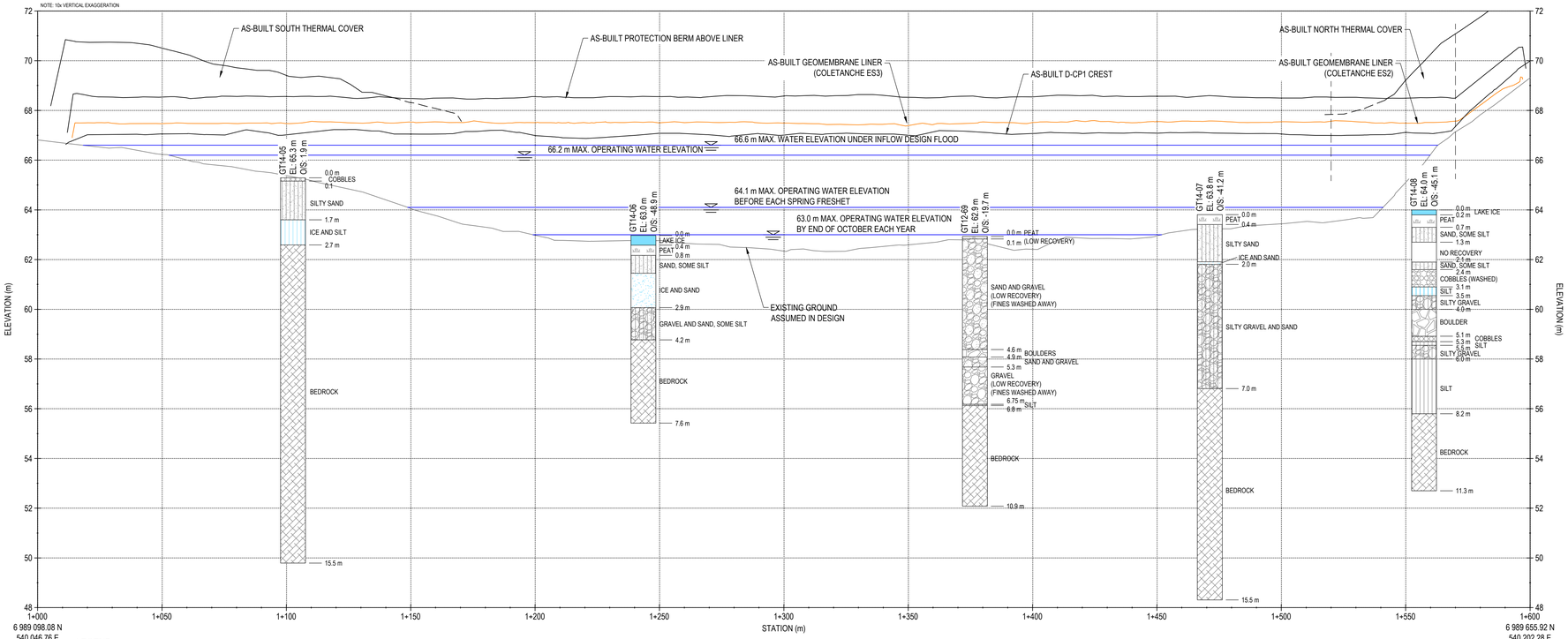
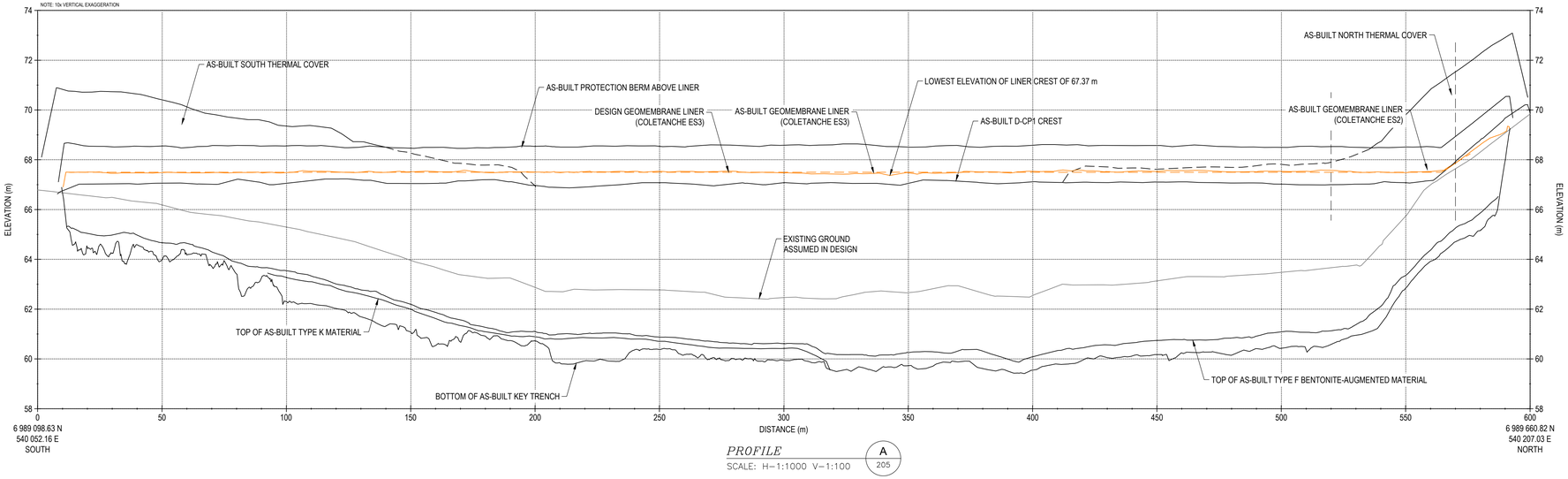


D-CP1 PROFILE
SCALE: H-1:1000 V-1:100

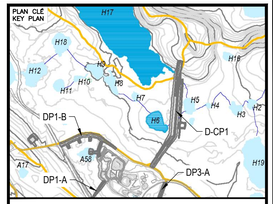
LEGEND

- LAKE ICE
- PEAT
- SAND / ICE RICH SAND
- GRAVEL AND SAND
- GRAVEL
- SILT / ICE RICH SILT
- COBBLES
- BOULDERS
- BEDROCK
- NO RECOVERY



PROFILE
SCALE: H-1:1000 V-1:100

A
205



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

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

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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
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0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
A	2016-08-05	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

PROFESSIONAL ENGINEER W.T. HORNE LICENSEE N.W.T. 2017

PROFESSIONAL ENGINEER G. ZHANG LICENSEE NWT/NU 2017

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP1 AS-BUILT PROFILES

DESSINÉ PAR DRAWN BY	EL	DATE 2017-10-06
VERIFIÉ PAR CHECKED BY	WTH	2017-10-06
APPROUVÉ PAR APPROVED BY	NG	2017-10-06
ÉCHELLE SCALE	1:1000	DATE 2017-10-06
NO. DESSIN DRAWING NO.	65-685-230-206	
NO. PROJET PROJECT NO.	6515	REVISION 2
		FEUILLE / SHT 3 / 12

AE-CART-ARCH D

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FILE NO. 65-685-230-206_R2.dwg

NO. DESSIN
DRAWING NO. 65-685-230-207_R2

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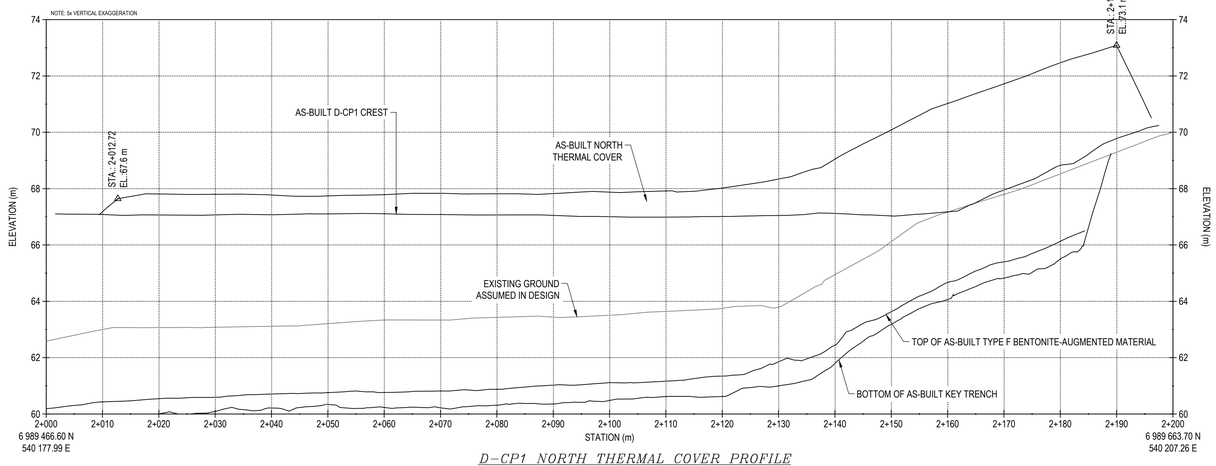
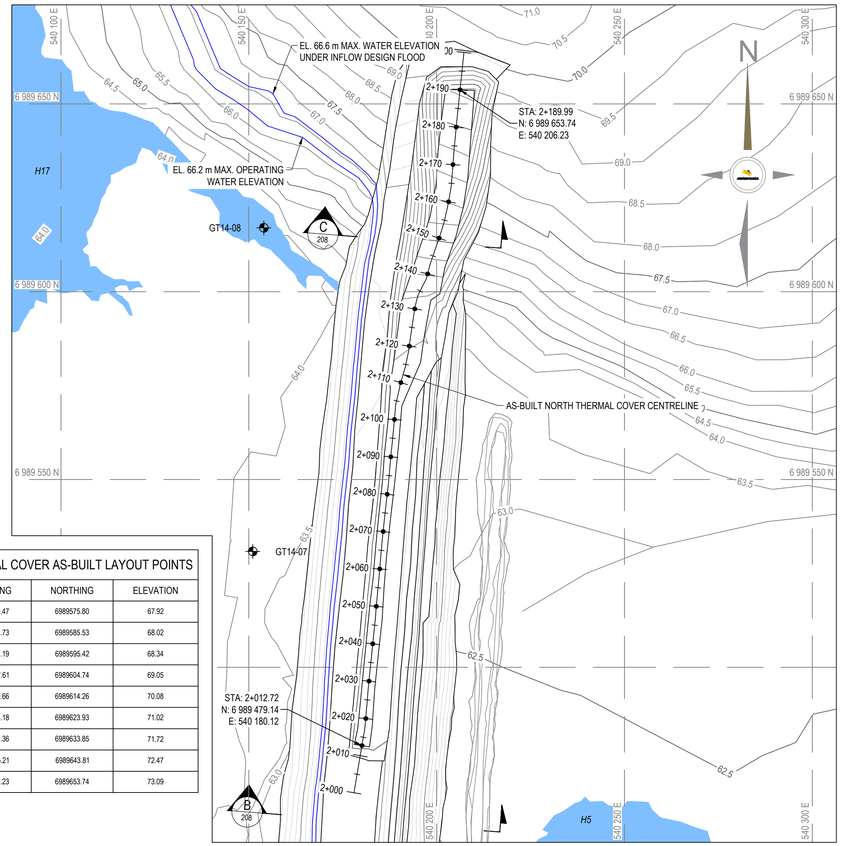


D-CP1 NORTH THERMAL COVER PROFILE
SCALE: H-1:500 V-1:100



D-CP1 NORTH THERMAL COVER AS-BUILT LAYOUT POINTS			
STATION	EASTING	NORTHING	ELEVATION
• 2+012.72	540180.12	6989479.14	67.64
• 2+020	540181.14	6989486.34	67.81
• 2+030	540181.99	6989496.31	67.80
• 2+040	540183.00	6989506.25	67.77
• 2+050	540183.95	6989516.21	67.74
• 2+060	540184.86	6989526.17	67.79
• 2+070	540185.78	6989536.12	67.84
• 2+080	540186.85	6989546.07	67.82
• 2+090	540187.81	6989556.02	67.82
• 2+100	540188.79	6989565.97	67.87

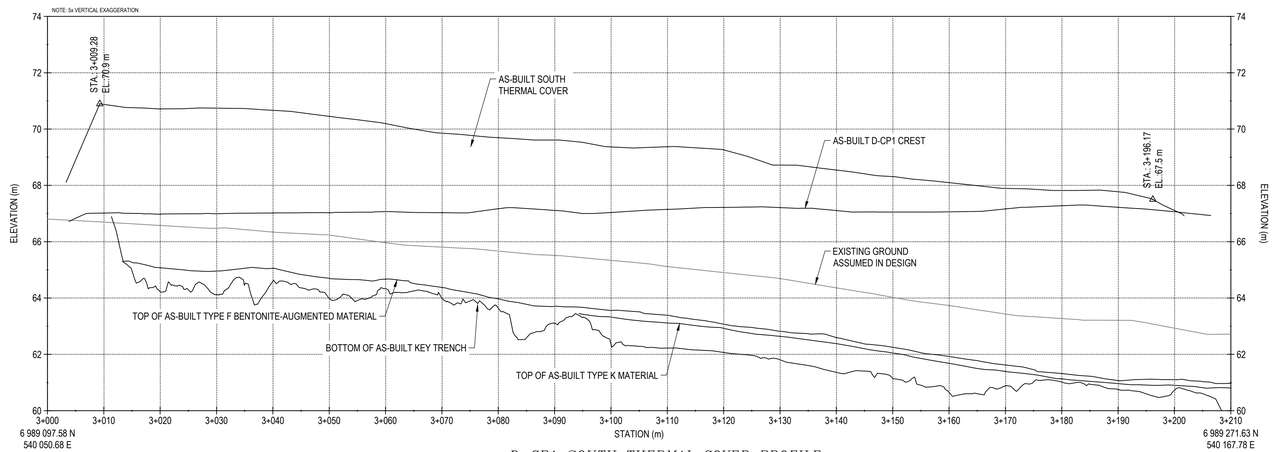
D-CP1 NORTH THERMAL COVER AS-BUILT LAYOUT POINTS			
STATION	EASTING	NORTHING	ELEVATION
• 2+110	540190.47	6989575.80	67.92
• 2+120	540192.73	6989585.53	68.02
• 2+130	540194.19	6989595.42	68.34
• 2+140	540197.61	6989604.74	69.05
• 2+150	540200.66	6989614.26	70.08
• 2+160	540203.18	6989623.93	71.02
• 2+170	540204.36	6989633.85	71.72
• 2+180	540205.21	6989643.81	72.47
• 2+189.99	540206.23	6989653.74	73.09

D-CP1 NORTH THERMAL COVER
SCALE: 1:750

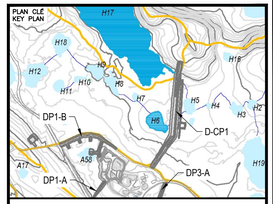
D-CP1 SOUTH THERMAL COVER AS-BUILT LAYOUT POINTS			
STATION	EASTING	NORTHING	ELEVATION
• 3+009.28	540056.25	6989105.00	70.89
• 3+010	540056.68	6989105.58	70.88
• 3+020	540062.64	6989113.60	70.72
• 3+030	540068.27	6989121.87	70.74
• 3+040	540073.91	6989130.13	70.66
• 3+050	540079.64	6989138.32	70.45
• 3+060	540085.16	6989146.66	70.19
• 3+070	540090.64	6989155.02	69.85
• 3+080	540096.26	6989163.29	69.69
• 3+090	540102.05	6989171.44	69.61
• 3+100	540107.81	6989179.62	69.37
• 3+110	540114.07	6989187.40	69.37
• 3+120	540119.91	6989195.51	69.26
• 3+130	540125.24	6989203.97	68.72

D-CP1 SOUTH THERMAL COVER AS-BUILT LAYOUT POINTS			
STATION	EASTING	NORTHING	ELEVATION
• 3+140	540130.91	6989212.20	68.54
• 3+150	540136.38	6989220.57	68.31
• 3+160	540141.19	6989229.33	68.10
• 3+170	540146.00	6989238.09	67.89
• 3+180	540151.63	6989246.36	67.82
• 3+190	540157.19	6989254.67	67.77
• 3+196.17	540160.46	6989259.90	67.50

D-CP1 SOUTH THERMAL COVER
SCALE: 1:750



D-CP1 SOUTH THERMAL COVER PROFILE
SCALE: H-1:500 V-1:100



TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

LEGEND

BOREHOLE

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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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2017-10-19	ISSUED FOR RECORD	WTH	NG	
1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
A	2016-08-05	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS — W.T. HORNE — LICENSEE — N.W.T. — 2017
ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS — G. ZHANG — LICENSEE — NWT/NU — 2017

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP1 AS-BUILT THERMAL COVER
LAYOUT PLAN AND PROFILES

DESSINÉ PAR / DRAWN BY	EL	DATE 2017-10-06
VERIFIÉ 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. 65-685-230-207

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6515	2	4 / 12

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FILE NO. 65-685-230-207_R2.dwg

NO. DESSIN
DRAWING NO. 65-685-230-208_R0

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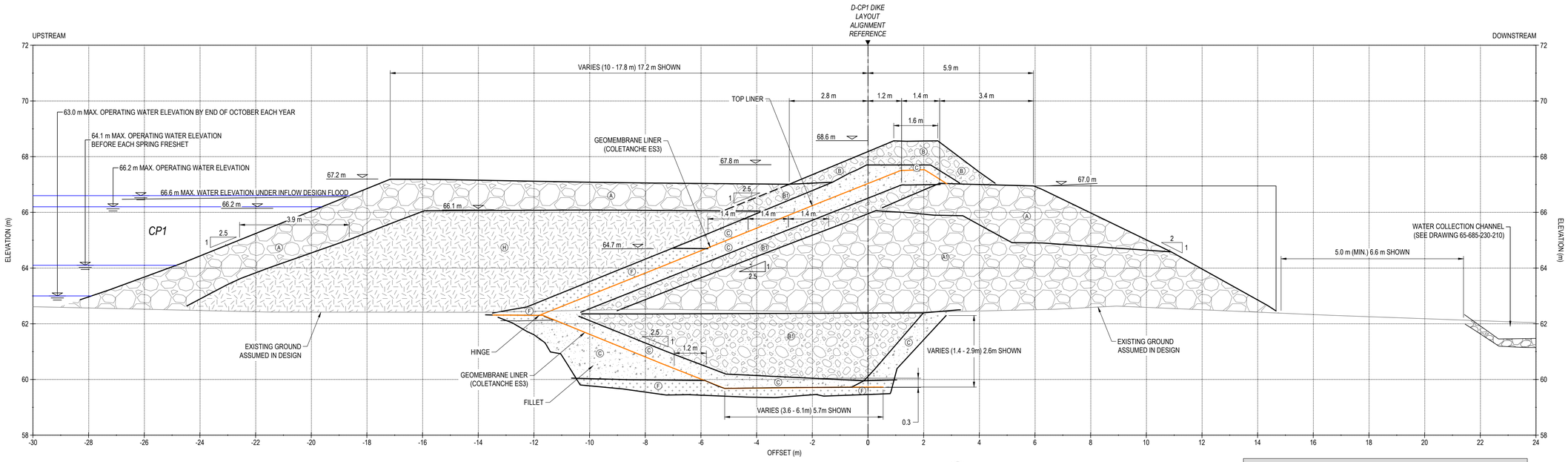
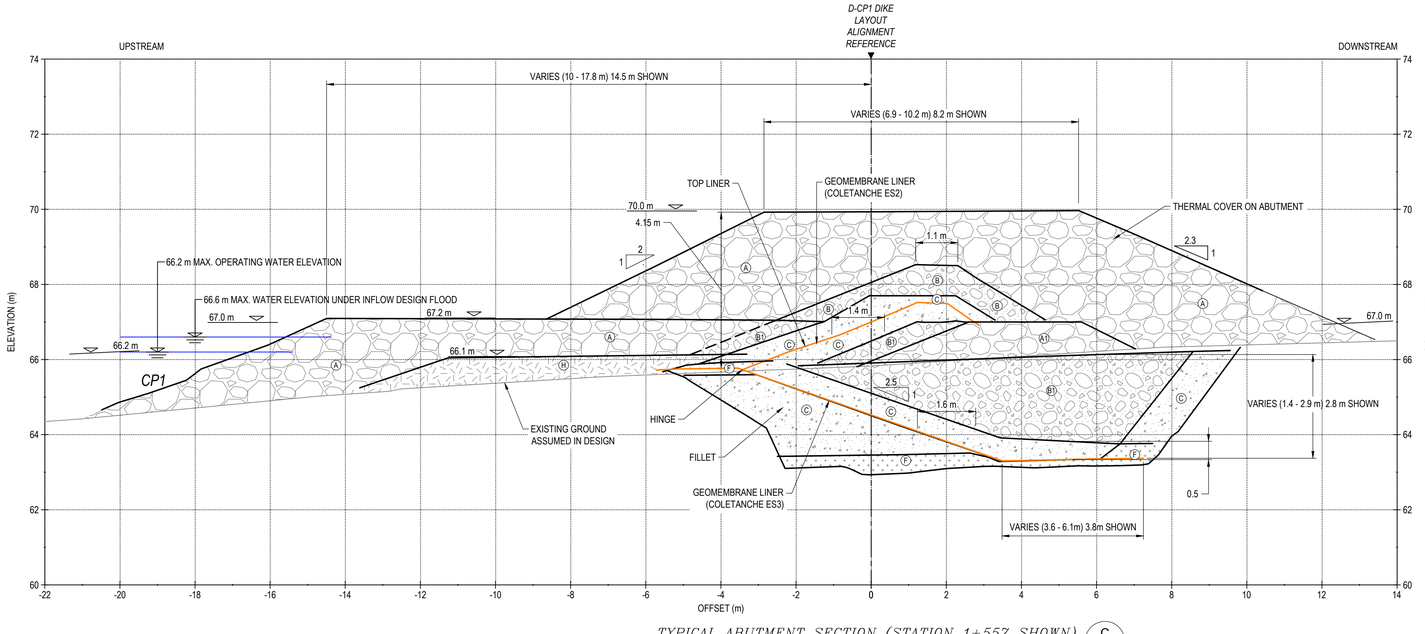


TYPICAL SECTION (STATION 1+402 SHOWN)
SCALE: 1:75

B
205



TYPICAL ABUTMENT SECTION (STATION 1+557 SHOWN)
SCALE: 1:75

C
205

ESTIMATED IN-PLACE MATERIAL QUANTITIES FOR CONSTRUCTION OF D-CP1			
	ITEM	UNIT	AS-BUILT QUANTITY [a]
(A)	RUN-OF-MINE ROCKFILL (600 mm MINUS) IN DIKE UPSTREAM AND FOR THERMAL COVER	m³	24,896
(A1)	RUN-OF-MINE ROCKFILL (600 mm MINUS) IN DIKE DOWNSTREAM	m³	18,347
(B)	TRANSITION ROCKFILL (150 mm MINUS)	m³	2,690
(B1)	TRANSITION ROCKFILL (150 mm MINUS)	m³	10,274
(C)	GRANULAR FILL OR ESKER SAND (20 mm MINUS)	m³	12,930
(F)	BENTONITE-AUGMENTED MATERIAL	m³	4,256
(H)	ESKER SAND AND GRAVEL (75 mm MINUS)	m³	14,961
(K)	NEARLY-SATURATED BACKFILL (20 mm MINUS)	m³	1,127
	GEOMEMBRANE LINER (COLETANCHE ES3) (INCLUDING PORTION OF ES2)	m³	14,874
	KEY TRENCH EXCAVATION	m³	23,018

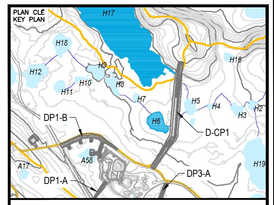
[a] MATERIAL QUANTITIES WERE BASED ON SURVEY DATA PROVIDED BY AGNICO EAGLE ON AUGUST 2017

NOTE

THE DESIGN MINIMUM LINER CREST ELEVATION WAS 67.50 m.
THE DESIGN MINIMUM LINER CREST ELEVATION IS 67.37 m.

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

PLAN CLÉ
KEY PLAN



TETRA TECH

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
- (B) TRANSITION ROCKFILL (150 mm MINUS)
- (B1) TRANSITION ROCKFILL (150 mm MINUS)
- (C) GRANULAR FILL OR ESKER SAND (20 mm MINUS)
- (F) BENTONITE-AUGMENTED MATERIAL (MIXTURE OF BENTONITE AND TYPE C MATERIAL)
- (H) ESKER SAND AND GRAVEL (75 mm MINUS)
- (K) NEARLY-SATURATED BACKFILL (20 mm MINUS)

DASHED LINES REFER TO NO AS-BUILT DATA BUT ESTIMATED BASED ON FIELD VISUAL OBSERVATION

COLETANCHE ES2 LINER WAS USED FOR ABOVE ORIGINAL GROUND PORTION OF THE LINER FOR STATIONS 1+520 TO 1+570

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

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AGNICO EAGLE

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1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
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A	2016-08-05	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

PROFESSIONAL ENGINEER W.T. HORNE LICENSEE N.W.T. 14.19
REGISTERED PROFESSIONAL ENGINEER G. ZHANG LICENSEE N.W.T/NU 14.19

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP1 AS-BUILT
TYPICAL SECTIONS AND QUANTITIES

DESSINÉ PAR DRAWN BY	EL	DATE	2017-09-22
VÉRIFIÉ PAR CHECKED BY	WTH		2017-09-22
APPROUVÉ PAR APPROVED BY	NG		2017-09-22
ÉCHELLE SCALE	1:75	DATE	2017-09-22
NO. DESSIN DRAWING NO.	65-685-230-208		
NO. PROJET PROJECT NO.	6515	REVISION	2
		FEUILLE / SHT	5 / 9

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FILE NO. 65-685-230-208_R0.dwg

NO. DESSIN
DRAWING NO. 65-685-230-209_R2

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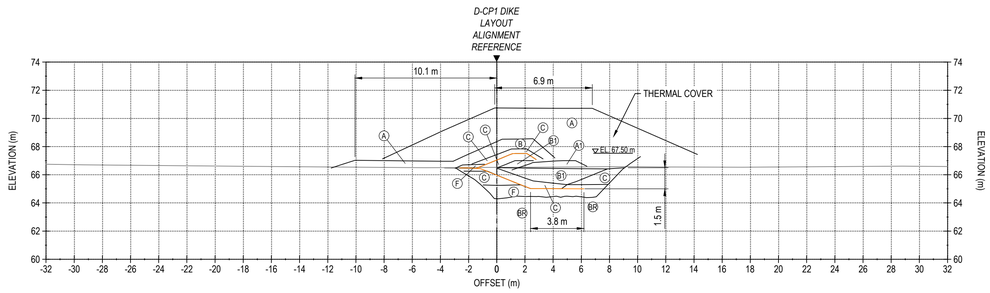
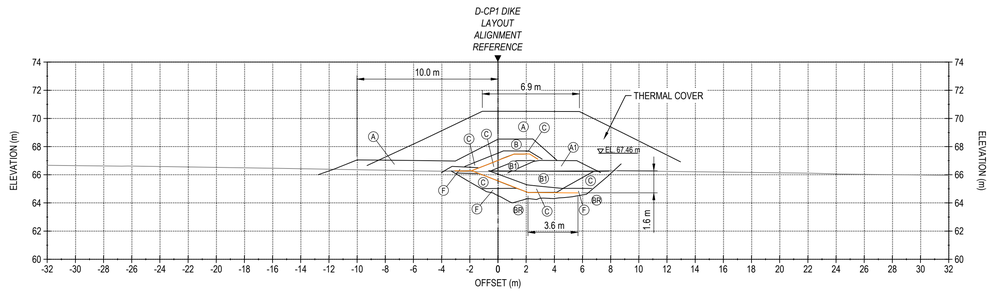
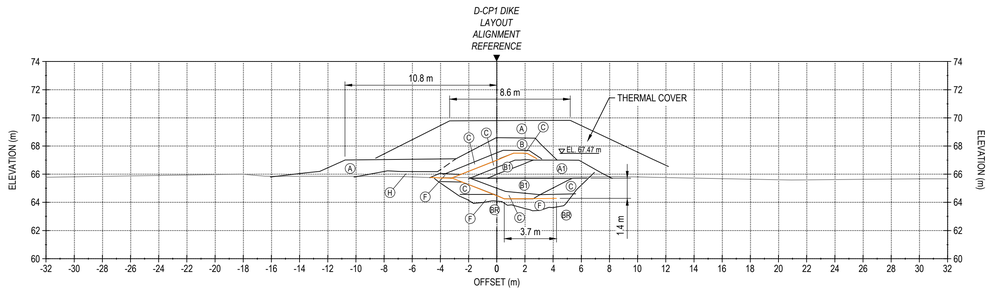


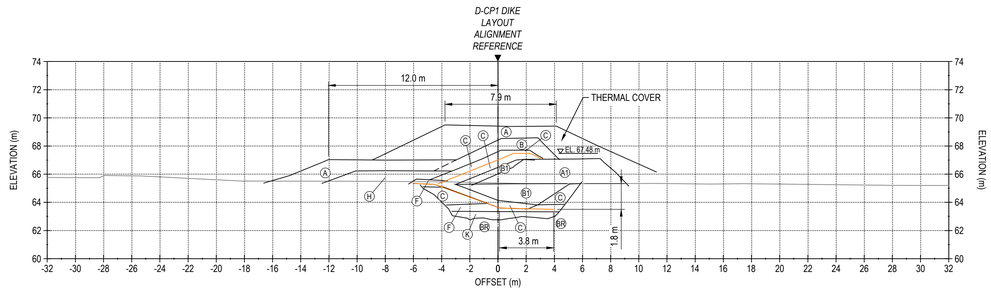
STATION 1+025



STATION 1+050



STATION 1+075



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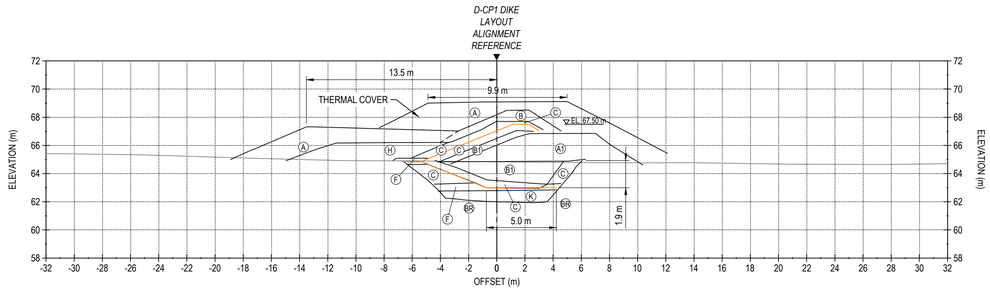

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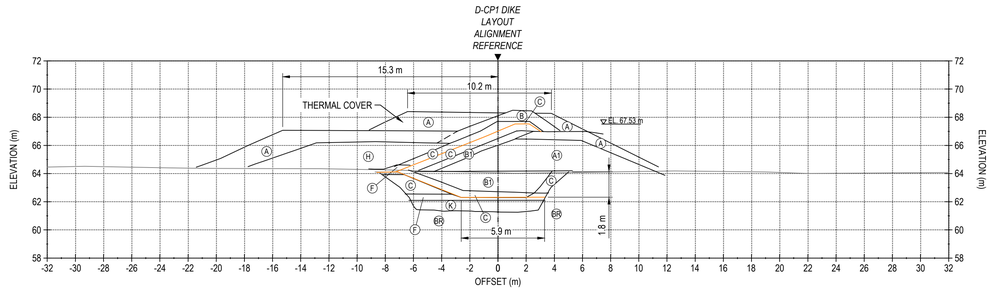

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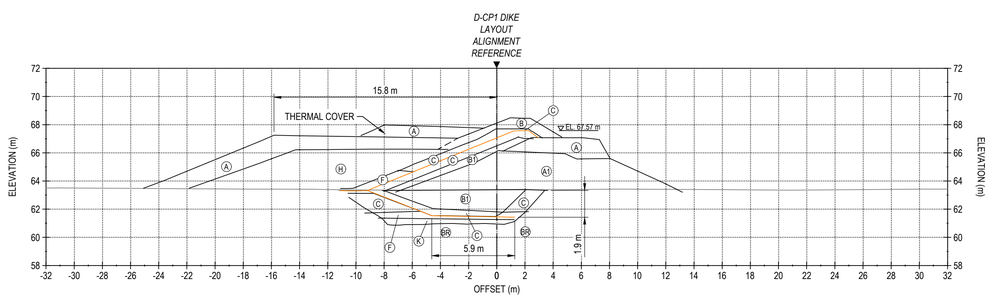

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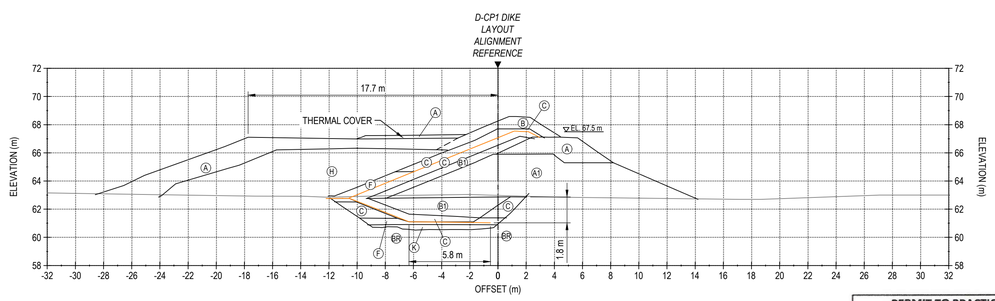
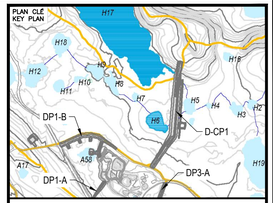


STATION 1+200

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

PLAN CLÉ
KEY PLAN



TETRA TECH

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
- (B) TRANSITION ROCKFILL (150 mm MINUS)
- (B1) TRANSITION ROCKFILL (150 mm MINUS)
- (C) GRANULAR FILL OR ESKER SAND (20 mm MINUS)
- (F) BENTONITE-AUGMENTED MATERIAL (MIXTURE OF BENTONITE AND TYPE C MATERIAL)
- (H) ESKER SAND AND GRAVEL (75 mm MINUS)
- (K) NEARLY-SATURATED BACKFILL (20 mm MINUS)

DASHED LINES REFER TO NO AS-BUILT DATA BUT ESTIMATED BASED ON FIELD VISUAL OBSERVATION

(BR) BEDROCK

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

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2017-10-19	ISSUED FOR RECORD	WTH	NG	
1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
0	2016-08-16	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
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 SECTIONS
STATION 1+025 TO 1+200

DESSINÉ PAR / DRAWN BY	EL	DATE	2017-10-06
VERIFIÉ PAR / CHECKED BY	WTH		2017-10-06
APPROUVÉ PAR / APPROVED BY	NG		2017-10-06
ÉCHELLE / SCALE	1:200	DATE	2017-10-06

NO. DESSIN / DRAWING NO. 65-685-230-209-001

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6515	2	6 / 12

AE-CART-ARCH D

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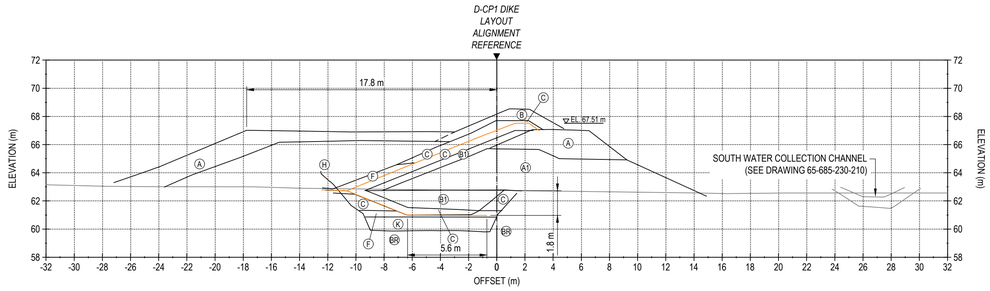
FILE NO. 65-685-230-209_R2.dwg

NO. DESSIN
DRAWING NO. 65-685-230-209_R2

FORMAT ARCHD



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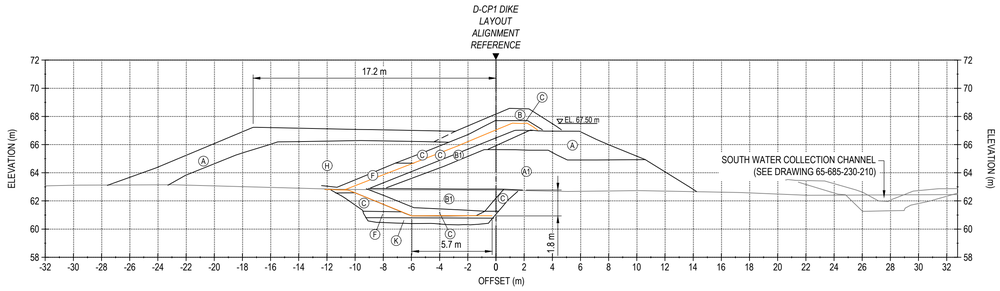

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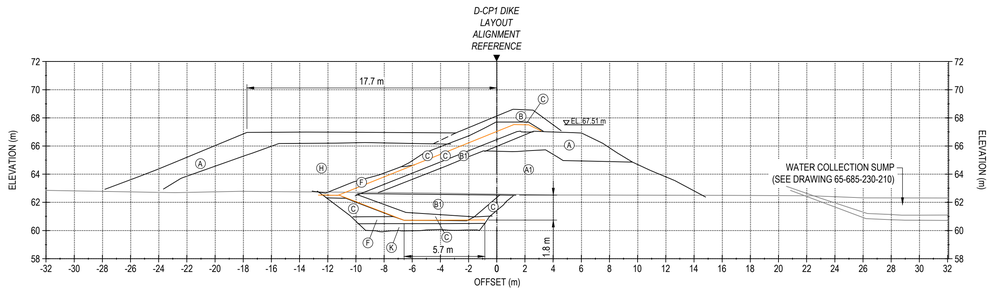
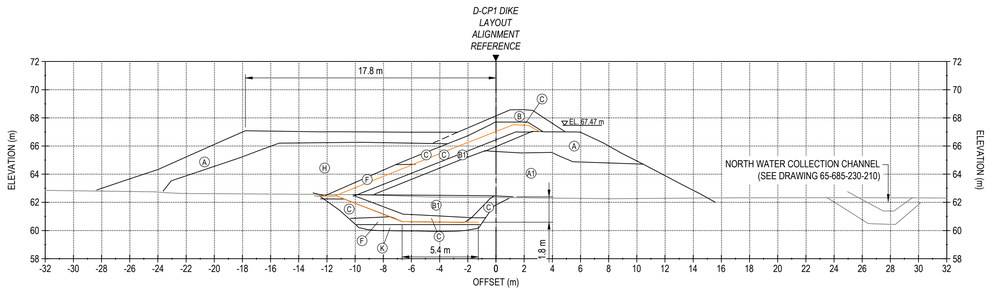


STATION 1+275



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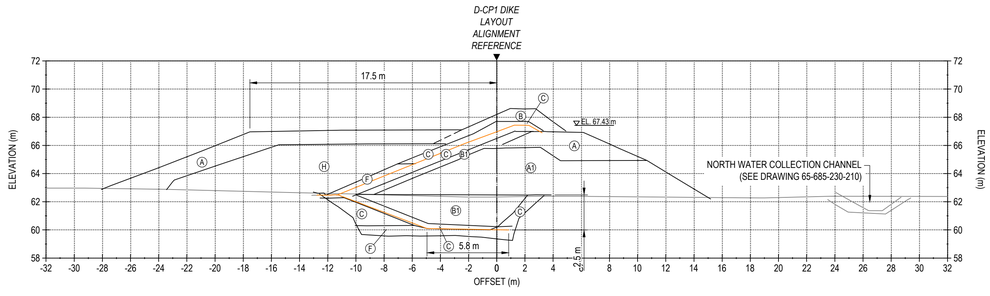

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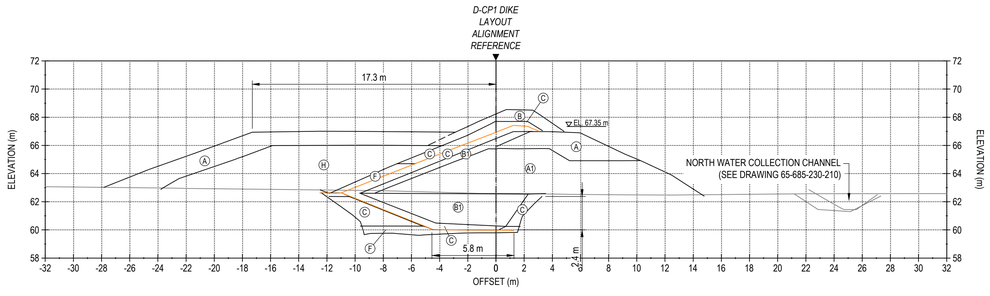

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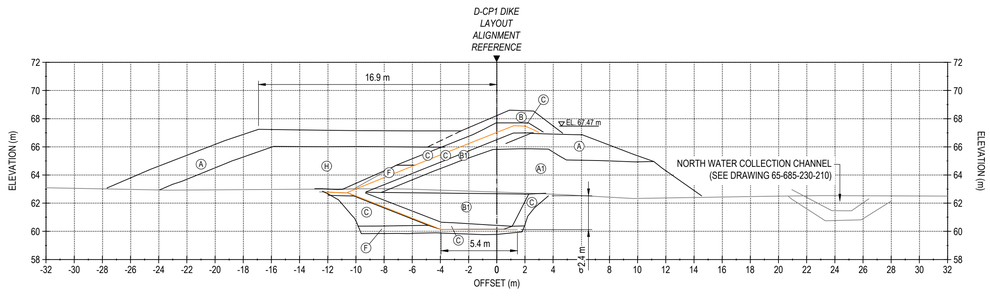

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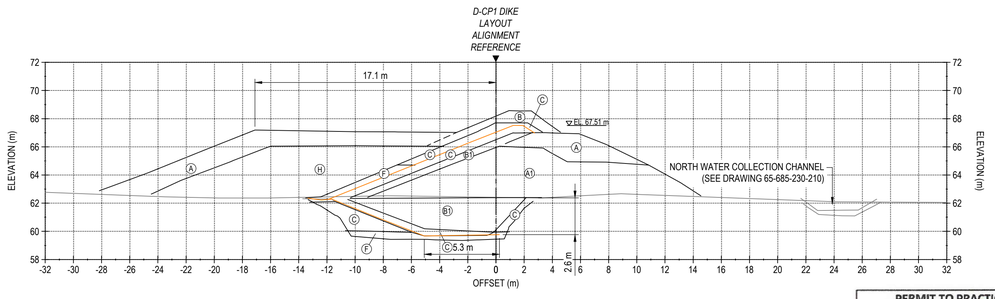
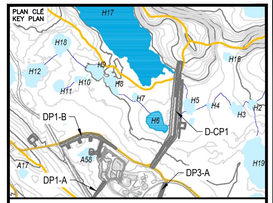


STATION 1+400

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

PLAN CLÉ
KEY PLAN



TETRA TECH

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
- (B) TRANSITION ROCKFILL (150 mm MINUS)
- (B1) TRANSITION ROCKFILL (150 mm MINUS)
- (C) GRANULAR FILL OR ESKER SAND (20 mm MINUS)
- (F) BENTONITE-AUGMENTED MATERIAL (MIXTURE OF BENTONITE AND TYPE C MATERIAL)
- (H) ESKER SAND AND GRAVEL (75 mm MINUS)
- (K) NEARLY-SATURATED BACKFILL (20 mm MINUS)

DASHED LINES REFER TO NO AS-BUILT DATA BUT ESTIMATED BASED ON FIELD VISUAL OBSERVATION

- (BR) BEDROCK

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

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TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2017-10-19	ISSUED FOR RECORD	WTH	NG	
1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
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 SECTIONS
STATION 1+225 TO 1+400

DESSINÉ PAR / DRAWN BY	EL	DATE	2017-10-06
VERIFIÉ PAR / CHECKED BY	WTH		2017-10-06
APPROUVÉ PAR / APPROVED BY	NG		2017-10-06
ÉCHELLE / SCALE	1:200	DATE	2017-10-06
NO. DESSIN / DRAWING NO.	65-685-230-209-002		
NO. PROJET / PROJECT NO.	6515	REVISION	2
		FEUILLE / SHT	7 / 12

AE-CART-ARCH D

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FILE NO. 65-685-230-209_R2.dwg

NO. DESSIN
DRAWING NO. 65-685-230-209_R2

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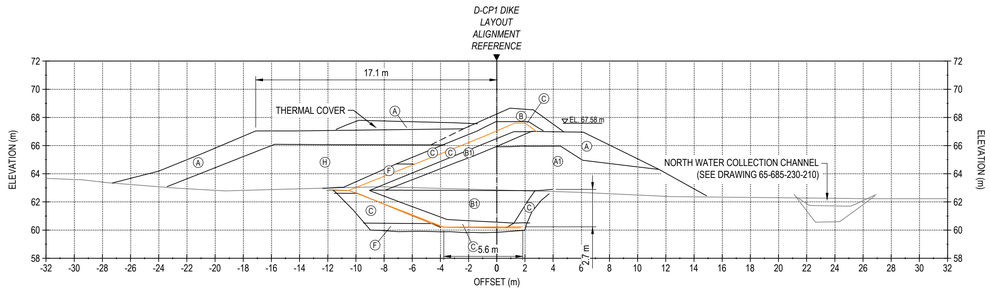
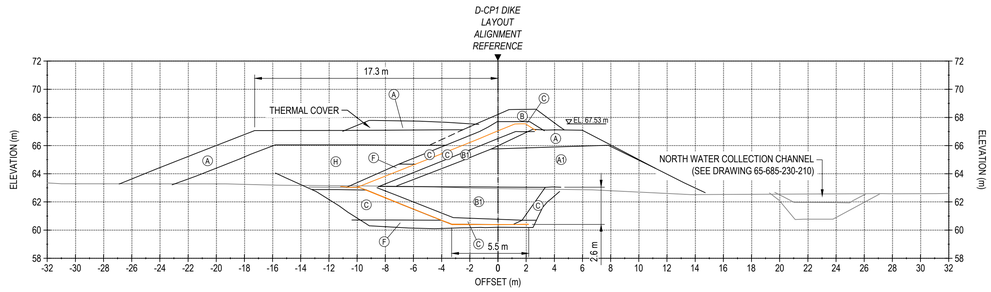


STATION 1+425



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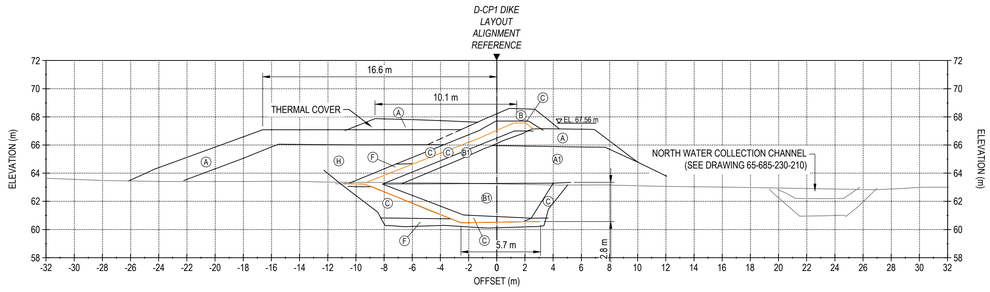

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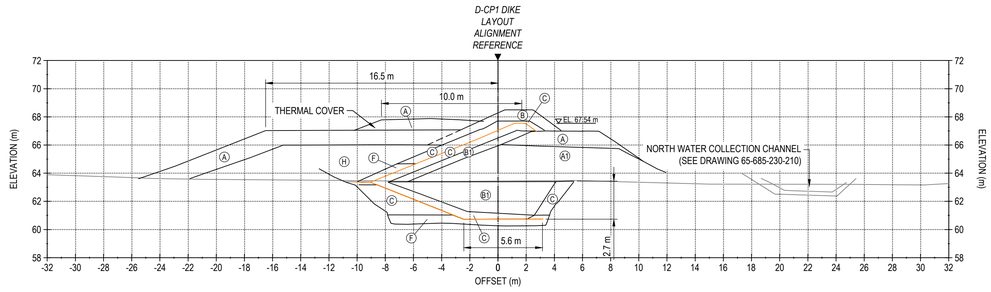

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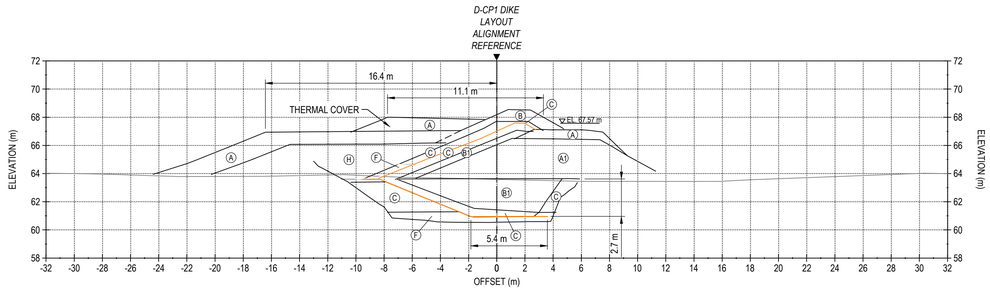

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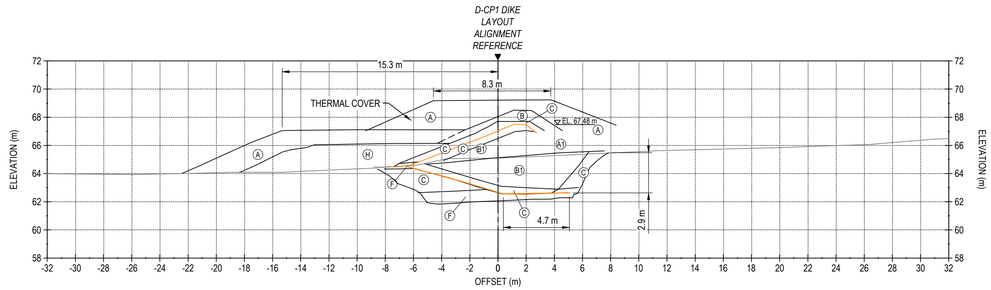

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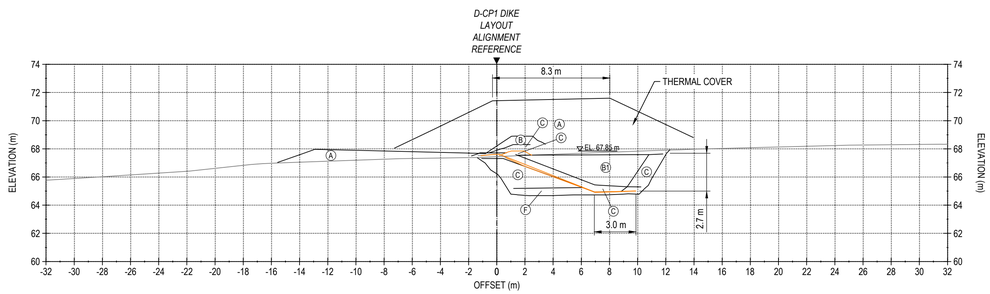
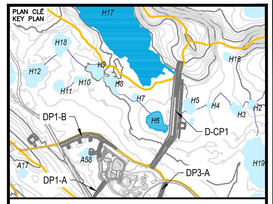


STATION 1+575

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



TETRA TECH

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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- (K) NEARLY-SATURATED BACKFILL (20 mm MINUS)

DASHED LINES REFER TO NO AS-BUILT DATA BUT ESTIMATED BASED ON FIELD VISUAL OBSERVATION

- (BR) BEDROCK

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

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TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2017-10-19	ISSUED FOR RECORD	WTH	NG	
1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
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 SECTIONS
STATION 1+425 TO 1+575

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	1:200	DATE	2017-10-06

NO. DESSIN / DRAWING NO. 65-685-230-209-003

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6515	2	8 / 12

AE-CART-ARCH D

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FILE NO. 65-685-230-209_R2.dwg

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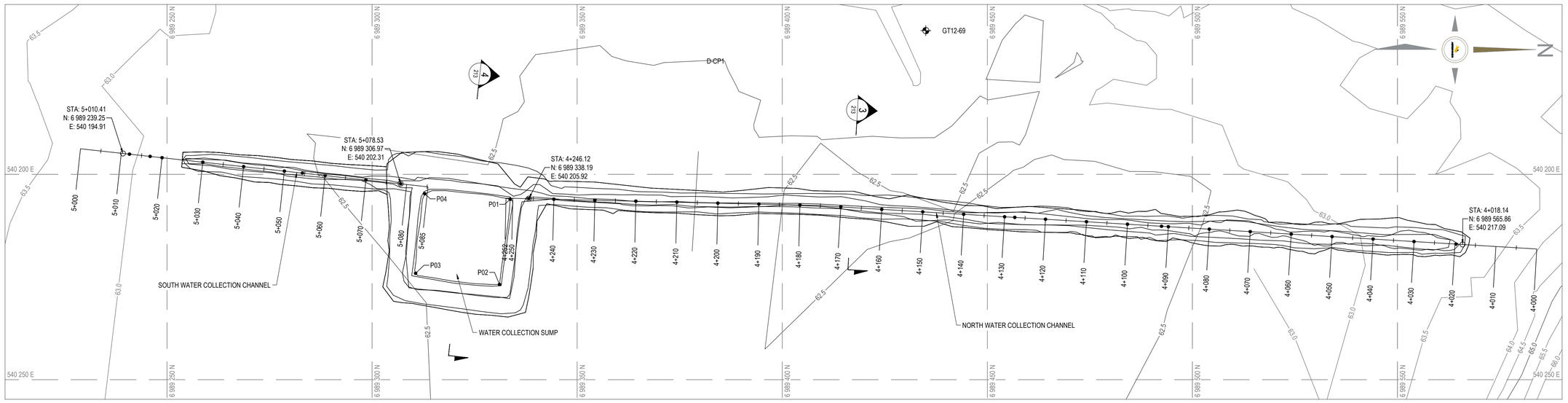

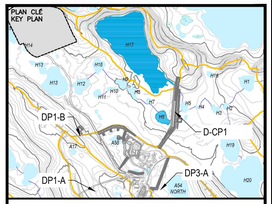

TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

LEGEND

BOREHOLE

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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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
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1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
A	2017-09-28	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

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

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

D-CP1 AS-BUILT
DOWNSTREAM WATER COLLECTION CHANNEL
AND SUMP LAYOUT PLAN AND PROFILES

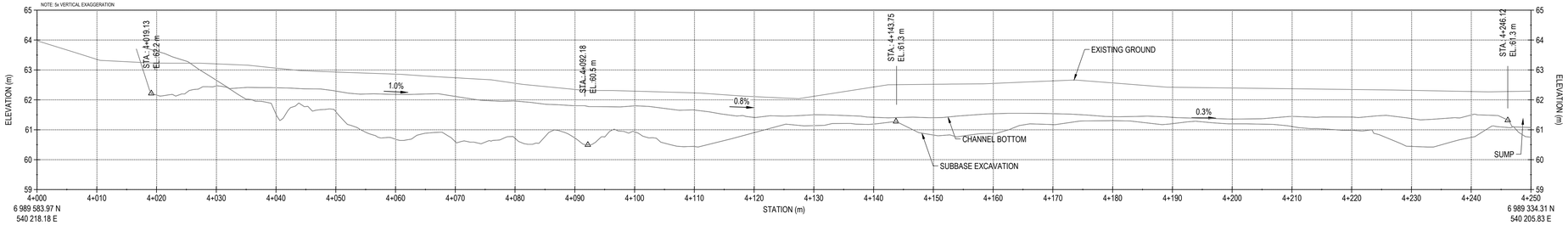
DESSINÉ PAR DRAWN BY	EL	DATE 2017-10-06
VÉRIFIÉ PAR CHECKED BY	GZ	2017-10-06
APPROUVÉ PAR APPROVED BY	GZ	2017-10-06
ÉCHELLE SCALE	AS SHOWN	DATE 2017-10-06
NO. DESSIN DRAWING NO.	65-685-230-210	
NO. PROJET PROJECT NO.	6515	REVISION 2 / FEUILLE / SHT 9 / 12

D-CP1 AS-BUILT NORTH WATER COLLECTION CHANNEL CENTRELINE LAYOUT POINTS			
STATION	EASTING	NORTHING	ELEVATION (SUBBASE EXCAVATION)
• 4+019.73	540216.99	6989564.28	62.18
• 4+030	540216.37	6989554.03	62.46
• 4+040	540215.77	6989544.04	61.52
• 4+050	540215.17	6989534.06	61.61
• 4+060	540214.56	6989524.08	60.68
• 4+070	540213.96	6989514.10	60.60
• 4+080	540213.36	6989504.12	60.72
• 4+090	540212.75	6989494.14	60.73
• 4+091.68	540212.65	6989492.46	60.50

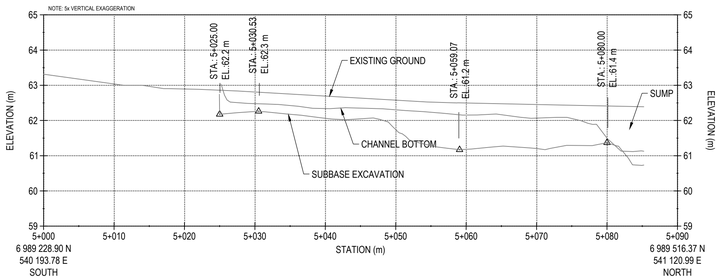
D-CP1 AS-BUILT NORTH WATER COLLECTION CHANNEL CENTRELINE LAYOUT POINTS			
STATION	EASTING	NORTHING	ELEVATION (SUBBASE EXCAVATION)
• 4+100	540212.15	6989484.15	60.93
• 4+110	540211.55	6989474.17	60.44
• 4+120	540210.95	6989464.19	60.90
• 4+127.51	540210.49	6989456.69	61.15
• 4+130	540210.34	6989454.21	61.14
• 4+140	540209.74	6989444.23	61.19
• 4+150	540209.14	6989434.24	60.82
• 4+160	540208.53	6989424.26	60.87
• 4+170	540207.93	6989414.28	61.17

D-CP1 AS-BUILT NORTH WATER COLLECTION CHANNEL CENTRELINE LAYOUT POINTS			
STATION	EASTING	NORTHING	ELEVATION (SUBBASE EXCAVATION)
• 4+180	540207.49	6989404.29	61.30
• 4+190	540207.26	6989394.30	61.20
• 4+200	540207.02	6989384.30	61.20
• 4+210	540206.78	6989374.30	61.11
• 4+220	540206.54	6989364.30	60.98
• 4+230	540206.31	6989354.31	60.44
• 4+240	540206.07	6989344.31	60.75
• 4+246.12	540205.92	6989338.19	61.08

D-CP1 SOUTH WATER COLLECTION CHANNEL CENTRELINE LAYOUT POINTS			
STATION	EASTING	NORTHING	ELEVATION (SUBBASE EXCAVATION)
• 5+012	540195.09	6989240.83	62.39
• 5+017.08	540195.64	6989245.88	62.31
• 5+020	540195.96	6989248.78	62.28
• 5+030	540197.04	6989258.72	62.26
• 5+040	540198.13	6989268.66	62.06
• 5+050	540199.21	6989278.61	61.74
• 5+054.44	540199.69	6989283.01	61.31
• 5+060	540200.30	6989288.55	61.18
• 5+070	540201.39	6989298.49	61.20
• 5+078.53	540202.31	6989306.97	61.31



D-CP1 AS-BUILT NORTH WATER COLLECTION CHANNEL PROFILE
SCALE: H-1:400 V-1:80



D-CP1 AS-BUILT SOUTH WATER COLLECTION CHANNEL PROFILE
SCALE: H-1:400 V-1:80

D-CP1 AS-BUILT WATER COLLECTION SUMP LAYOUT POINTS			
POINT No.	EASTING	NORTHING	ELEVATION (SUBBASE EXCAVATION)
• P01	540206.06	6989333.67	60.72
• P02	540226.83	6989331.06	60.72
• P03	540224.11	6989310.61	60.83
• P04	540204.73	6989312.84	60.70

AE-CART-ARCH D

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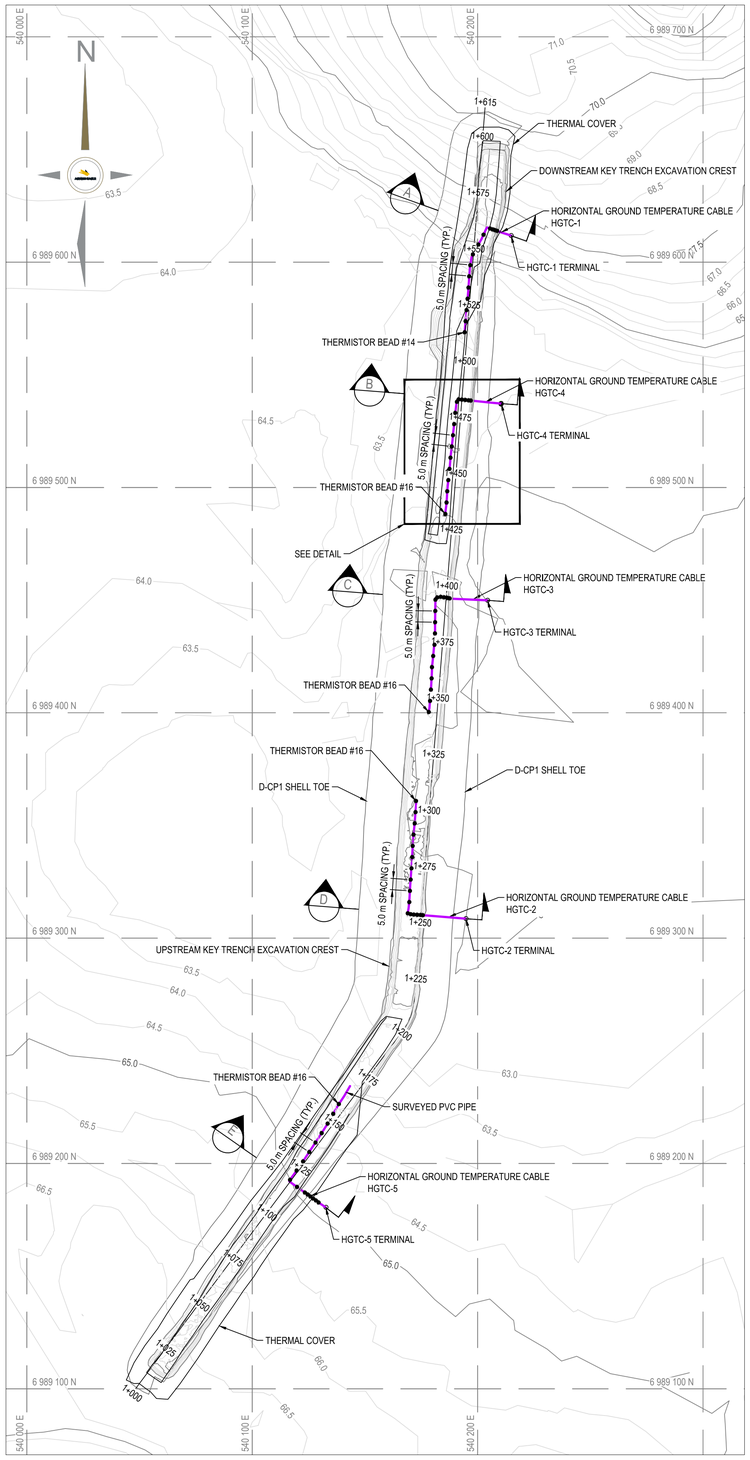
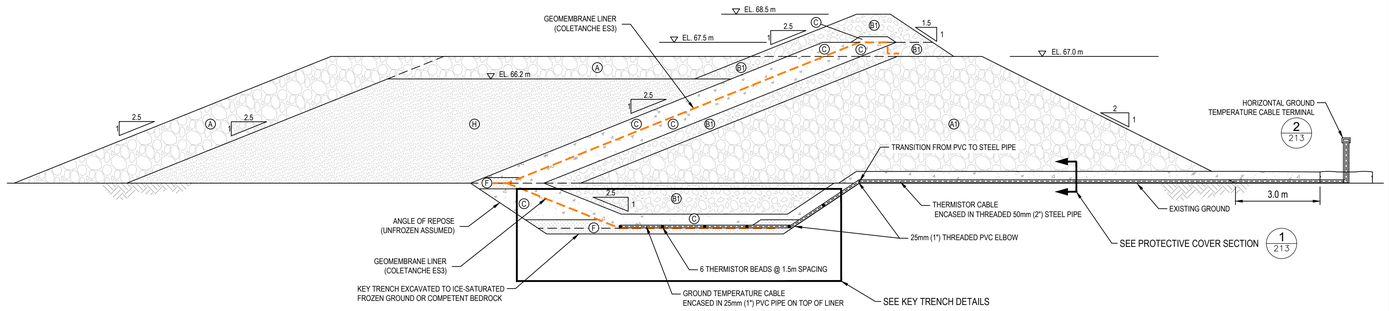
FILE NO. 65-685-230-210_R2.dwg

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

FORMAT ARCHD



D-CP1 AS-BUILT HORIZONTAL GROUND TEMPERATURE CABLE LAYOUT
SCALE: 1:1250



D-CP1 HORIZONTAL GROUND TEMPERATURE CABLE - DESIGN TYPICAL SECTION
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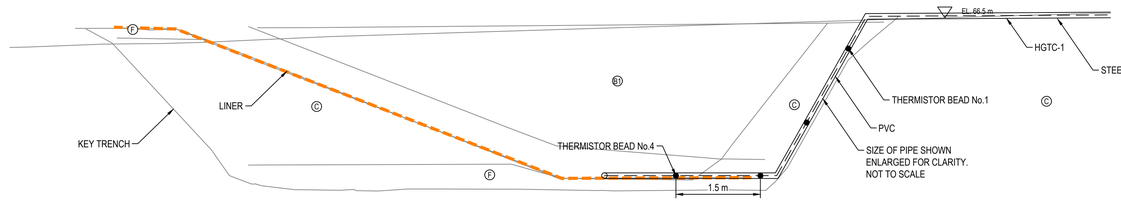
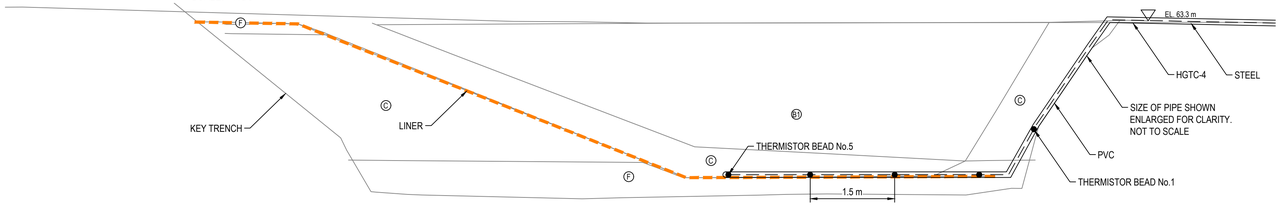
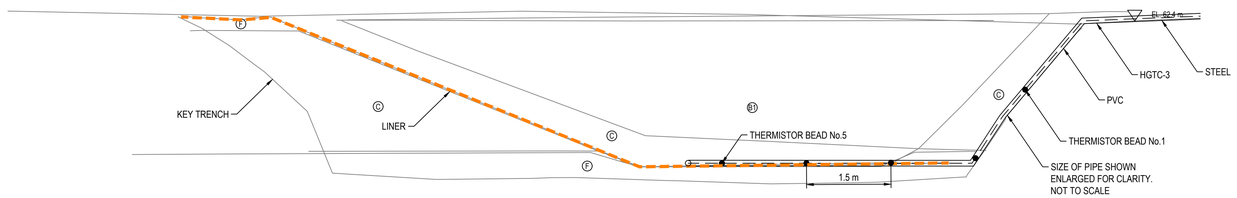


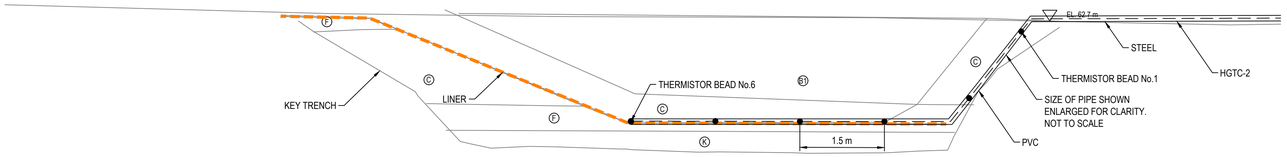
D-CP1 AS-BUILT - SECTION A - HORIZONTAL GROUND TEMPERATURE CABLE - KEY TRENCH DETAIL THROUGH STATION 1+562
SCALE: 1:50



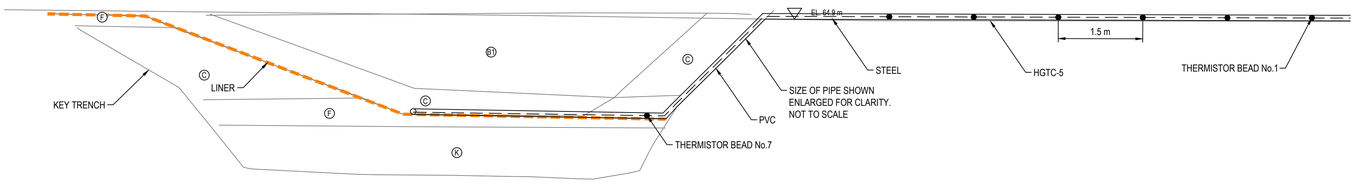
D-CP1 AS-BUILT - SECTION B - HORIZONTAL GROUND TEMPERATURE CABLE - KEY TRENCH DETAIL THROUGH STATION 1+482
SCALE: 1:50



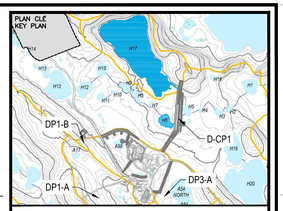
D-CP1 AS-BUILT - SECTION C - HORIZONTAL GROUND TEMPERATURE CABLE - KEY TRENCH DETAIL THROUGH STATION 1+394
SCALE: 1:50



D-CP1 AS-BUILT - SECTION D - HORIZONTAL GROUND TEMPERATURE CABLE - KEY TRENCH DETAIL THROUGH STATION 1+254
SCALE: 1:50



D-CP1 AS-BUILT - SECTION E - HORIZONTAL GROUND TEMPERATURE CABLE - KEY TRENCH DETAIL THROUGH STATION 1+117
SCALE: 1:50



TETRA TECH

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
- (B) TRANSITION ROCKFILL (150 mm MINUS)
- (B1) TRANSITION ROCKFILL (150 mm MINUS)
- (C) GRANULAR FILL OR ESKER SAND (20 mm MINUS)
- (F) BENTONITE-AUGMENTED MATERIAL (MIXTURE OF BENTONITE AND TYPE C MATERIAL)
- (H) ESKER SAND AND GRAVEL (75 mm MINUS)
- (K) NEARLY-SATURATED BACKFILL (20 mm MINUS)

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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1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
A	2016-08-05	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-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

AE-CART-ARCH D

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

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

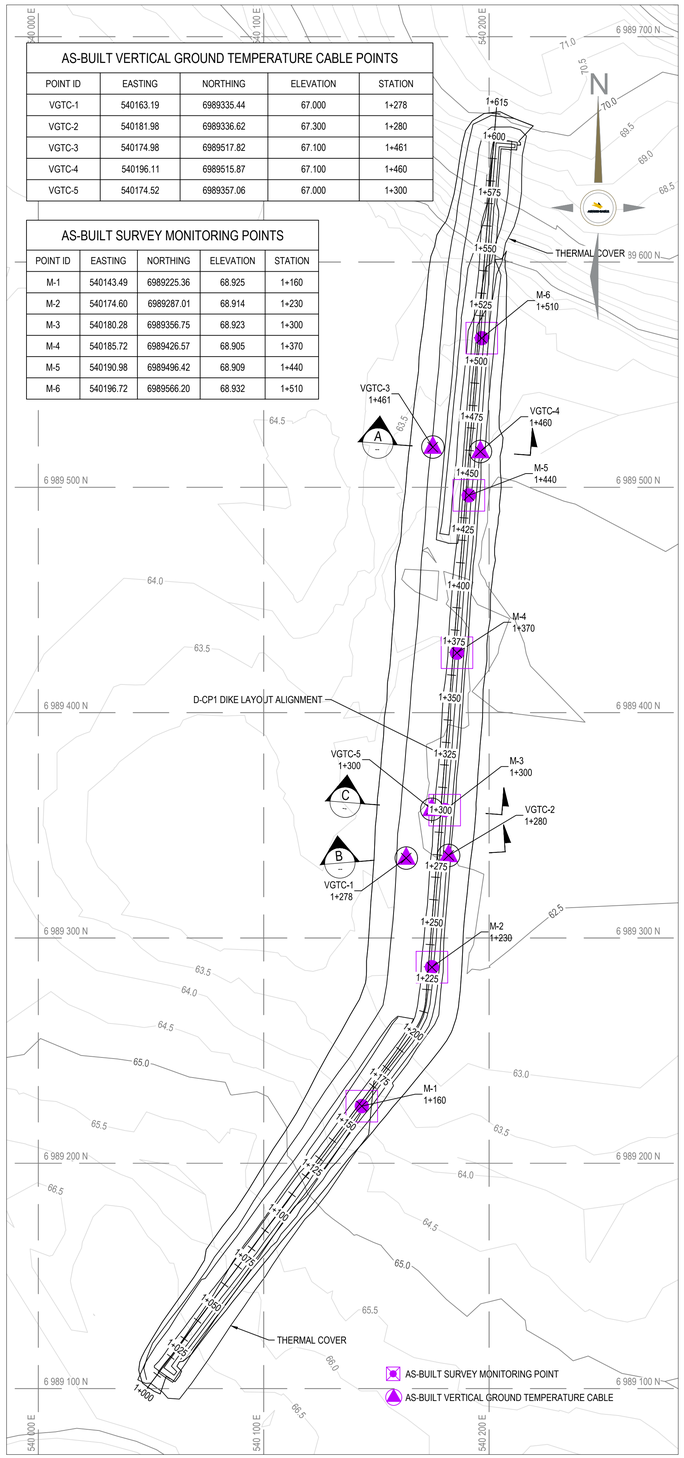
FORMAT ARCHD

AS-BUILT VERTICAL GROUND TEMPERATURE CABLE POINTS

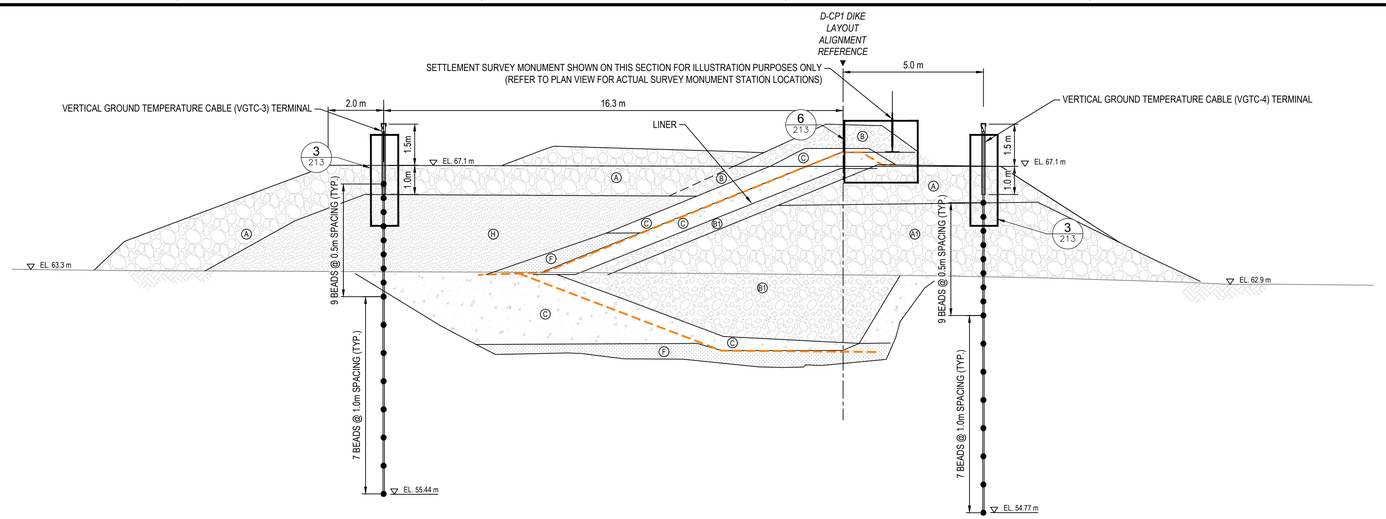
POINT ID	EASTING	NORTHING	ELEVATION	STATION
VGTC-1	540163.19	6989335.44	67.000	1+278
VGTC-2	540181.98	6989336.62	67.300	1+280
VGTC-3	540174.98	6989517.82	67.100	1+461
VGTC-4	540196.11	6989515.87	67.100	1+460
VGTC-5	540174.52	6989357.06	67.000	1+300

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
SCALE: 1:1250



D-CP1 - AS-BUILT - SECTION A - VERTICAL GROUND TEMPERATURE CABLE - STATION 1+460
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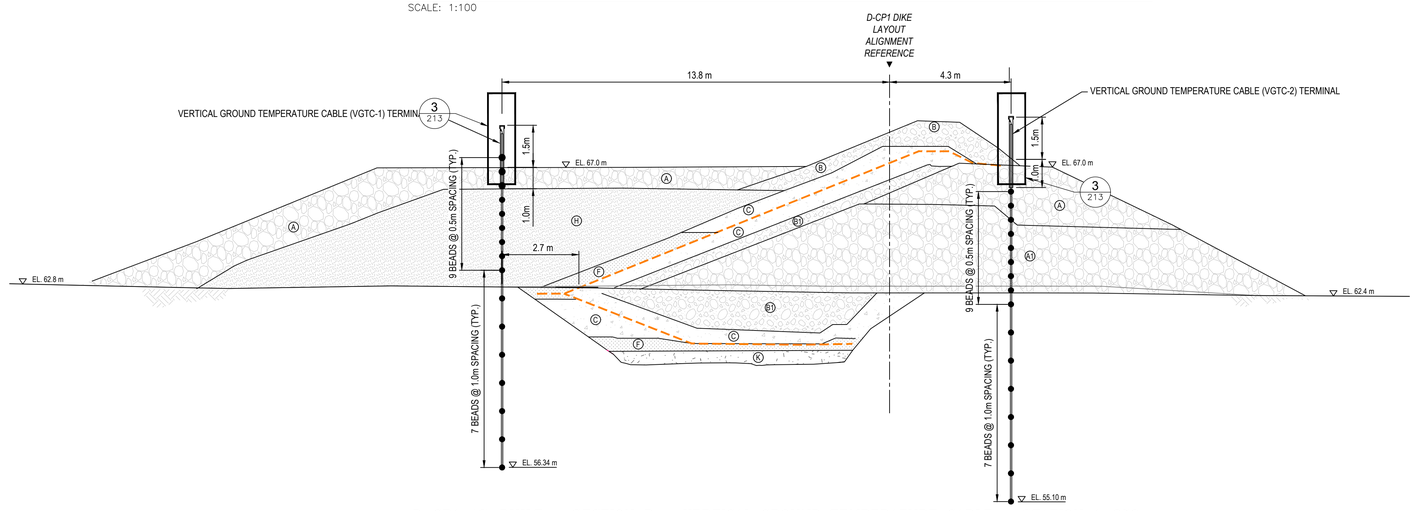

D-CP1 AS-BUILT - SECTION B - VERTICAL GROUND TEMPERATURE CABLE - STATION 1+279
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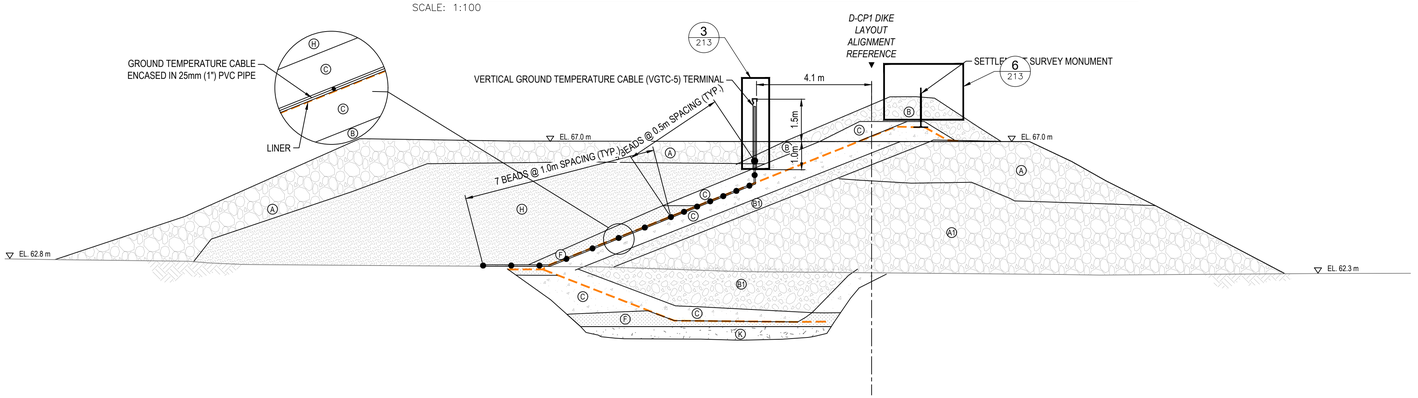

D-CP1 - AS-BUILT - SECTION C - VERTICAL GROUND TEMPERATURE CABLE - STATION 1+300
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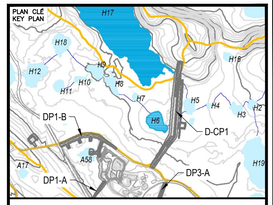

TETRA TECH

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
- (B) TRANSITION ROCKFILL (150 mm MINUS)
- (B1) TRANSITION ROCKFILL (150 mm MINUS)
- (C) GRANULAR FILL OR ESKER SAND (20 mm MINUS)
- (F) BENTONITE-AUGMENTED MATERIAL (MIXTURE OF BENTONITE AND TYPE C MATERIAL)
- (H) ESKER SAND AND GRAVEL (75 mm MINUS)
- (K) NEARLY-SATURATED BACKFILL (20 mm MINUS)

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	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
A	2016-08-05	ISSUED FOR REVIEW	GZ	KJ	

REVISIONS

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
6515	2	11 / 12

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NO. DESSIN
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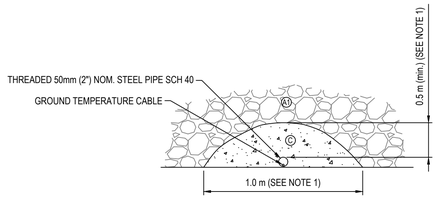
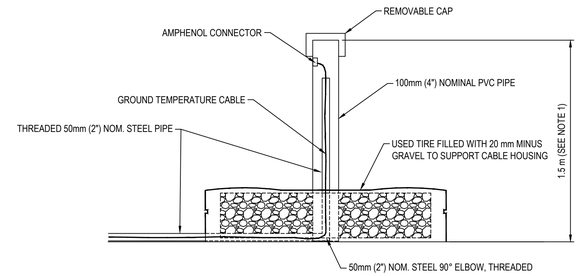
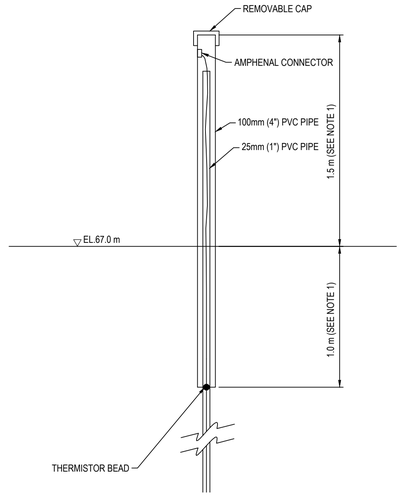


TEMPERATURE CABLE – PROTECTIVE COVER SECTION 1/211
SCALE: NTS



TEMPERATURE CABLE – TERMINAL SUPPORT DETAIL 2/211
SCALE: NTS



D-CP1 TYPICAL VERTICAL GROUND TEMPERATURE CABLE TERMINAL DETAIL 3/212
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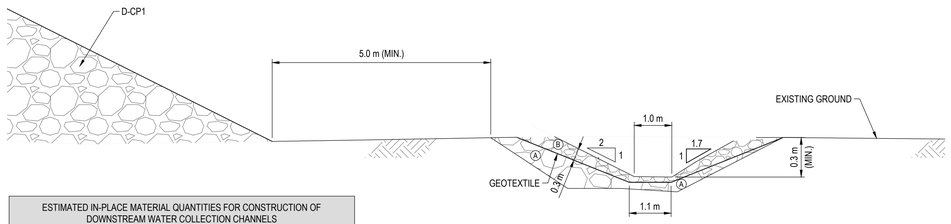
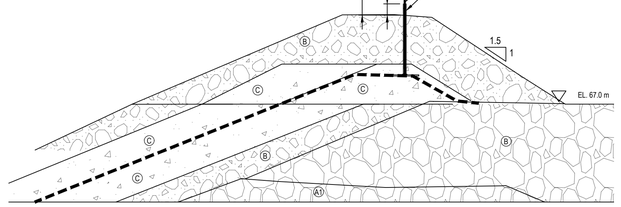


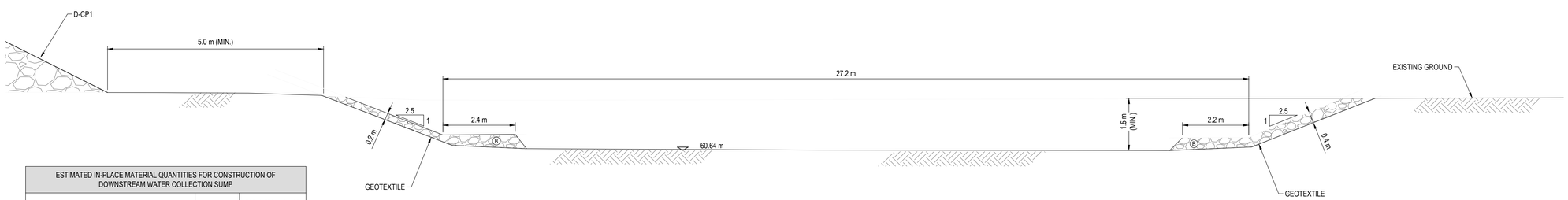
ESTIMATED IN-PLACE MATERIAL QUANTITIES FOR CONSTRUCTION OF DOWNSTREAM WATER COLLECTION CHANNELS

ITEM	UNIT	ESTIMATED IN-PLACE QUANTITY AFTER COMPACTION AND INSTALLATION
CHANNEL EXCAVATION	m³	1,598
CHANNEL MATERIAL B TRANSITION ROCKFILL (150 mm MINUS)	m³	930
CHANNEL MATERIAL A RUN OF MINE ROCKFILL (600 mm MINUS)	m³	520
CHANNEL GEOTEXTILE LINER	m²	1,542

D-CP1 AS-BUILT WATER COLLECTION CHANNEL DETAIL 4/210
NOT TO SCALE



D-CP1 AS-BUILT SETTLEMENT SURVEY MONUMENT DETAIL 6/212
SCALE: 1:50



ESTIMATED IN-PLACE MATERIAL QUANTITIES FOR CONSTRUCTION OF DOWNSTREAM WATER COLLECTION SUMP

ITEM	UNIT	ESTIMATED IN-PLACE QUANTITY AFTER COMPACTION AND INSTALLATION
SUMP EXCAVATION	m³	1,575
SUMP MATERIAL B TRANSITION ROCKFILL (150 mm MINUS)	m³	280
SUMP GEOTEXTILE LINER	m²	895

D-CP1 AS-BUILT WATER COLLECTION SUMP DETAIL 5/210
NOT TO SCALE

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Date Oct 19, 2017
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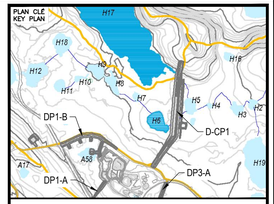
PLAN CLÉ
KEY PLAN



TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

LEGEND

- (A1) RUN-OF-MINE ROCKFILL (600 mm MINUS) IN DIKE DOWNSTREAM
- (B) TRANSITION ROCKFILL (150 mm MINUS)
- (C) GRANULAR FILL OR ESKER SAND (20 mm MINUS)
- (F) BENTONITE-AUGMENTED MATERIAL (MIXTURE OF BENTONITE AND TYPE C MATERIAL)
- (H) ESKER SAND AND GRAVEL (75 mm MINUS)

NOTE 1: NO SURVEY DATA AVAILABLE. BASED ON DESIGN AND FIELD OBSERVATIONS

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DATE : 2017-10-19

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1	2016-09-26	ISSUED FOR CONSTRUCTION	GZ	KJ	
0	2016-08-15	ISSUED FOR CONSTRUCTION	GZ	KJ	
B	2016-08-11	ISSUED FOR REVIEW	GZ	KJ	
A	2016-08-05	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-CP1 AS-BUILT DOWNSTREAM WATER COLLECTION CHANNEL AND SUMP PROFILES AND INSTRUMENTATION DETAILS

DESSINÉ PAR DRAWN BY	EL	DATE 2017-10-06
VÉRIFIÉ PAR CHECKED BY	GZ	2017-10-06
APPROUVÉ PAR APPROVED BY	GZ	2017-10-06
ÉCHELLE SCALE	N.T.S.	DATE 2017-10-06
NO. DESSIN DRAWING NO.	65-685-230-213	
NO. PROJET PROJECT NO.	6515	REVISION 2 / FEUILLE / SHT 12 / 12

AE-CART-ARCH D

Q:\Edmonton\Engineering\E141\Projects_MELIADINE\As-Built D-CP1\65-685-230-213_R2.dwg-2017-10-06 16:35:54

FILE NO. 65-685-230-213_R2.dwg

APPENDIX C

GROUND TEMPERATURE PROFILES

Table 4: DCP-1 Horizontal Ground Temperature Cables (HGTCs) Bead Locations

Point ID	Bead Number	Easting (m)	Northing (m)	Point Elevation (m)	Station
HGTC1-1	1	540208.64	6989613.85	66.33	1+562
HGTC1-2	2	540207.75	6989614.13	65.32	1+562
HGTC1-3	3	540206.78	6989614.44	64.22	1+562
HGTC1-4	4	540205.60	6989614.87	63.66	1+562
HGTC1-5	5	540202.58	6989612.18	63.28	1+556
HGTC1-6	6	540200.30	6989607.76	62.8	1+552
HGTC1-7	7	540197.87	6989603.41	62.34	1+547
HGTC1-8	8	540196.71	6989598.64	61.82	1+542
HGTC1-9	9	540196.25	6989593.67	61.45	1+537
HGTC1-10	10	540195.91	6989588.69	61.18	1+532
HGTC1-11	11	540195.50	6989583.71	61.04	1+527
HGTC1-12	12	540195.06	6989578.73	60.96	1+523
HGTC1-13	13	540194.62	6989573.77	60.88	1+518
HGTC1-14	14	540194.23	6989568.89	60.81	1+513
HGTC-2-1	1	540175.66	6989310.18	62.15	1+254
HGTC-2-2	2	540174.76	6989310.28	61.06	1+254
HGTC-2-3	3	540173.19	6989310.34	60.95	1+254
HGTC-2-4	4	540171.69	6989310.45	60.97	1+254
HGTC-2-5	5	540170.32	6989310.59	60.99	1+254
HGTC-2-6	6	540168.98	6989311.04	60.99	1+254
HGTC-2-7	7	540169.65	6989315.99	60.94	1+259
HGTC-2-8	8	540169.93	6989320.98	60.87	1+264
HGTC-2-9	9	540170.25	6989325.97	60.83	1+269
HGTC-2-10	10	540170.62	6989330.96	60.77	1+274
HGTC-2-11	11	540170.92	6989335.95	60.71	1+279
HGTC-2-12	12	540171.17	6989340.94	60.68	1+284
HGTC-2-13	13	540171.54	6989345.93	60.64	1+289
HGTC-2-14	14	540172.04	6989350.90	60.65	1+294
HGTC-2-15	15	540172.40	6989355.89	60.63	1+299
HGTC-2-16	16	540172.77	6989360.87	60.62	1+304
HGTC-3-1	1	540187.57	6989450.77	60.83	1+394
HGTC-3-2	2	540186.52	6989450.96	60.03	1+394
HGTC-3-3	3	540185.05	6989451.22	59.93	1+394
HGTC-3-4	4	540183.56	6989451.35	59.90	1+394
HGTC-3-5	5	540182.07	6989451.19	59.90	1+394
HGTC-3-6	6	540181.28	6989450.18	59.95	1+393
HGTC-3-7	7	540181.18	6989445.19	60.07	1+388
HGTC-3-8	8	540181.11	6989440.19	60.22	1+383
HGTC-3-9	9	540181.07	6989435.19	60.22	1+379
HGTC-3-10	10	540180.71	6989430.21	60.22	1+373
HGTC-3-11	11	540180.26	6989425.23	60.19	1+368
HGTC-3-12	12	540179.70	6989420.25	60.15	1+363
HGTC-3-13	13	540179.55	6989415.26	60.13	1+359
HGTC-3-14	14	540179.26	6989410.27	60.05	1+353
HGTC-3-15	15	540178.86	6989405.28	60.08	1+349
HGTC-3-16	16	540178.29	6989400.32	59.99	1+343
HGTC-4-1	1	540196.97	6989538.56	61.67	1+482
HGTC-4-2	2	540196.00	6989538.66	60.66	1+482
HGTC-4-3	3	540194.51	6989538.83	60.63	1+482
HGTC-4-4	4	540193.02	6989538.98	60.63	1+482
HGTC-4-5	5	540191.52	6989539.10	60.63	1+482
HGTC-4-6	6	540190.78	6989538.04	60.62	1+481
HGTC-4-7	7	540190.06	6989533.09	60.58	1+477
HGTC-4-8	8	540189.58	6989528.12	60.56	1+472
HGTC-4-9	9	540189.04	6989523.15	60.56	1+467
HGTC-4-10	10	540188.50	6989518.17	60.59	1+462
HTGC-4-11	11	540187.94	6989513.21	60.59	1+457
HGTC-4-12	12	540187.50	6989508.23	60.5	1+452
HGTC-4-13	13	540186.97	6989503.26	60.43	1+447
HGTC-4-14	14	540186.52	6989498.28	60.38	1+442
HGTC-4-15	15	540186.20	6989493.29	60.39	1+437
HGTC-4-16	16	540185.64	6989488.21	60.40	1+432
HGTC-5-1	1	540129.42	6989182.72	64.96	1+117
HGTC-5-2	2	540128.20	6989183.59	64.95	1+117
HGTC-5-3	3	540126.98	6989184.47	64.93	1+117
HGTC-5-4	4	540125.77	6989185.35	64.92	1+117
HGTC-5-5	5	540124.56	6989186.24	64.90	1+117
HGTC-5-6	6	540123.34	6989187.11	64.91	1+117
HGTC-5-7	7	540119.82	6989189.60	63.21	1+117
HGTC-5-8	8	540116.75	6989192.78	63.23	1+117
HGTC-5-9	9	540119.66	6989196.84	63.03	1+123
HGTC-5-10	10	540122.53	6989200.93	62.90	1+128
HGTC-5-11	11	540125.28	6989205.10	62.74	1+133
HGTC-5-12	12	540128.01	6989209.29	62.62	1+138
HGTC-5-13	13	540130.76	6989213.47	62.53	1+143
HGTC-5-14	14	540133.42	6989217.69	62.35	1+148
HGTC-5-15	15	540135.89	6989222.04	62.21	1+153
HGTC-5-16	16	540138.42	6989226.34	62.03	1+158

Table 5: DCP-1 Vertical Ground Temperature Cables (VGTCs) Bead Locations

Cable :	VGTC1
Easting:	540163.19
Northing:	6989335.44
Station:	1+278

Bead Number	Point Elevation (m)
1	67.34
2	66.84
3	66.34
4	65.84
5	65.34
6	64.84
7	64.34
8	63.84
9	63.34
10	62.34
11	61.34
12	60.34
13	59.34
14	58.34
15	57.34
16	56.34

Cable :	VGTC2
Easting:	540181.98
Northing:	6989336.62
Station:	1+280

Bead Number	Point Elevation (m)
1	66.10
2	65.60
3	65.10
4	64.60
5	64.10
6	63.60
7	63.10
8	62.60
9	62.10
10	61.10
11	60.10
12	59.10
13	58.10
14	57.10
15	56.10
16	55.10

Cable :	VGTC3
Easting:	540174.98
Northing:	6989517.82
Station:	1+460

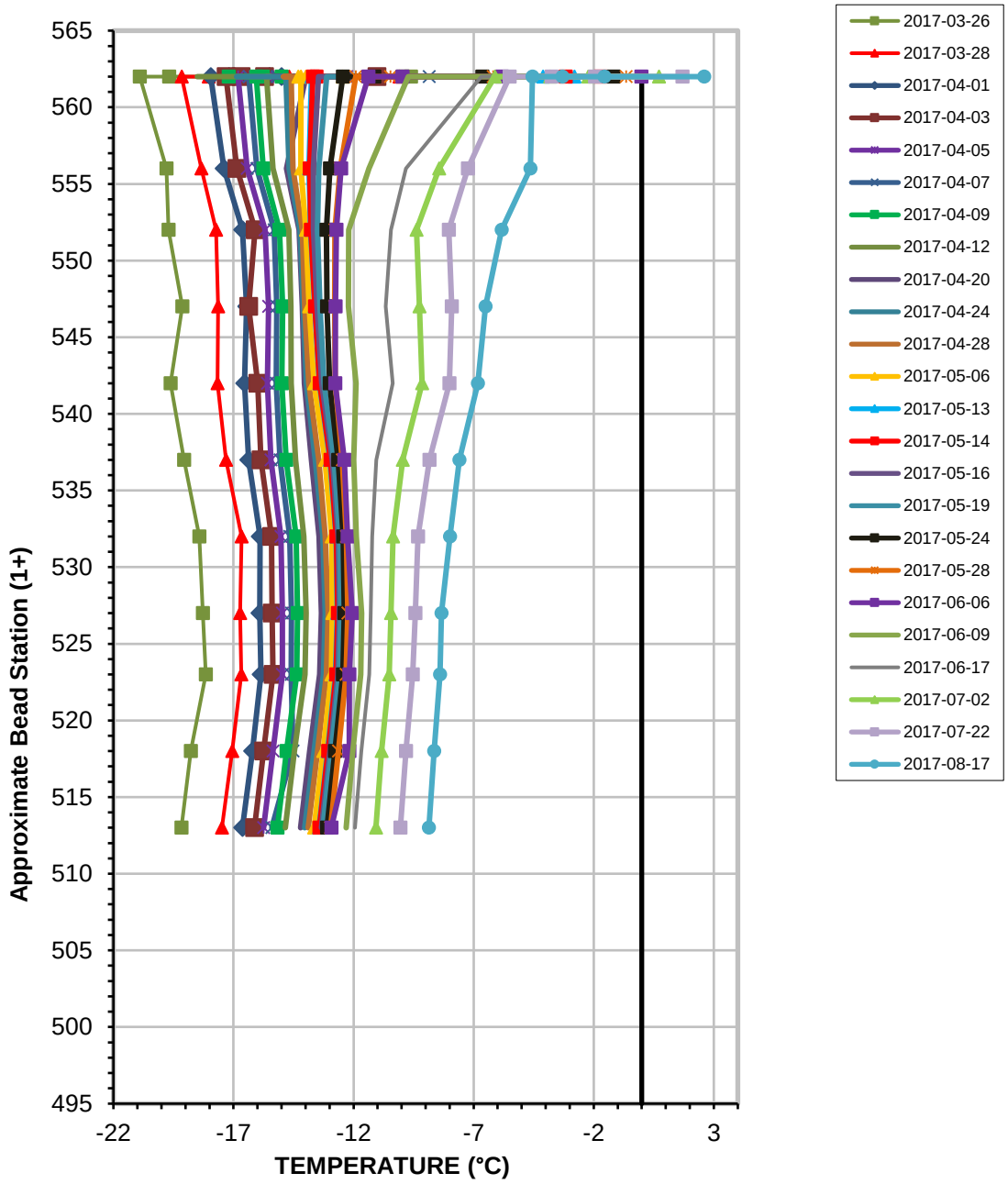
Bead Number	Point Elevation (m)
1	66.44
2	65.94
3	65.44
4	64.94
5	64.44
6	63.94
7	63.44
8	62.94
9	62.44
10	61.44
11	60.44
12	59.44
13	58.44
14	57.44
15	56.44
16	55.44

Cable :	VGTC4
Easting:	540196.11
Northing:	6989515.87
Station:	1+460

Bead Number	Point Elevation (m)
1	65.77
2	65.27
3	64.77
4	64.27
5	63.77
6	63.27
7	62.77
8	62.27
9	61.77
10	60.77
11	59.77
12	58.77
13	57.77
14	56.77
15	55.77
16	54.77

Cable :	VGTC5
Easting:	540174.52
Northing:	6989357.06
Station:	1+300

Bead Number	Point Elevation (m)
1	66.31
2	65.81
3	65.43
4	65.24
5	65.06
6	64.87
7	64.68
8	64.5
9	64.31
10	63.94
11	63.57
12	63.19
13	62.82
14	62.58
15	62.58
16	62.58

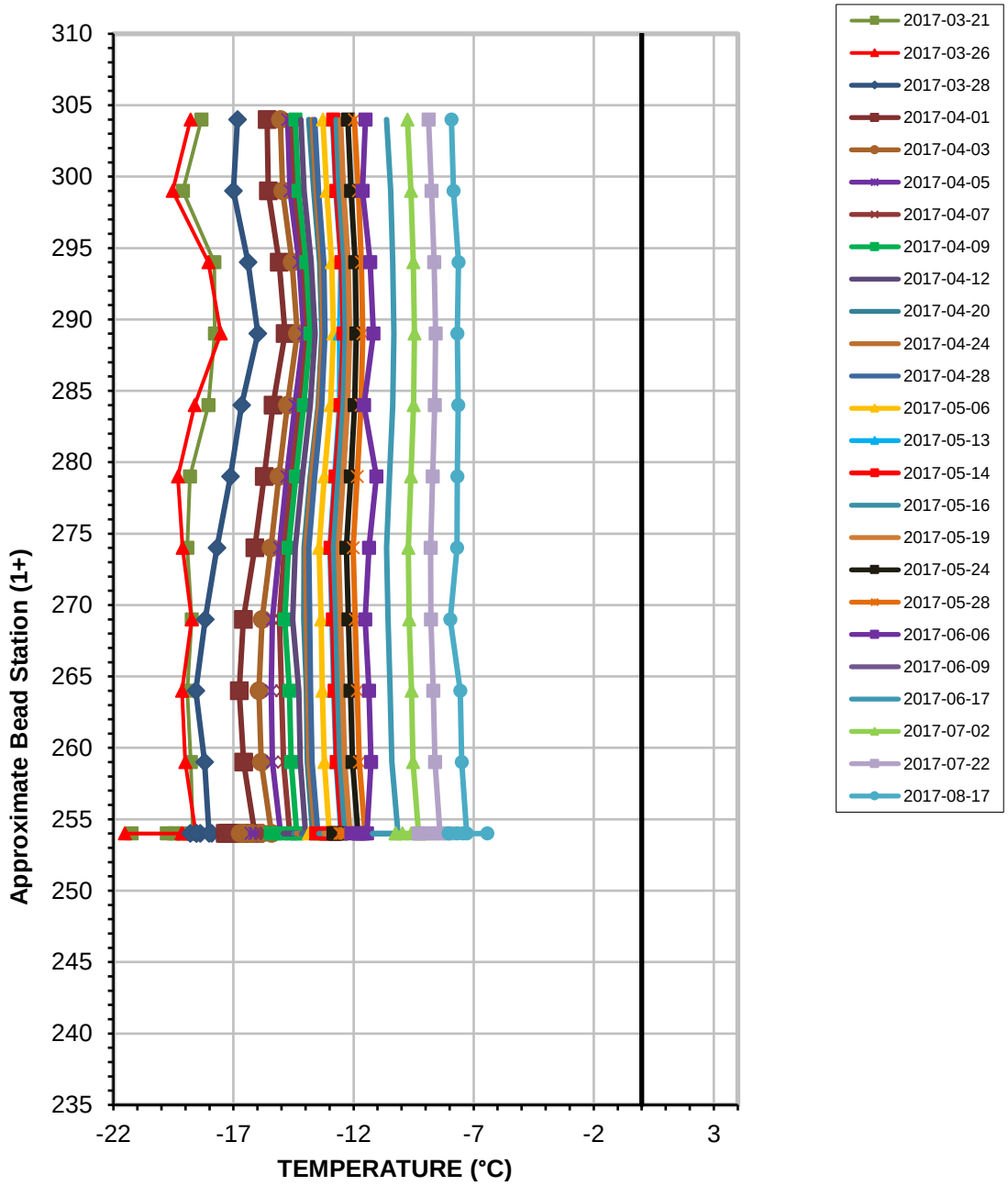


Serial No.: 2595
Date Installed: March 24, 2017

EBA File No: E14103230.01-023

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

TETRA TECH

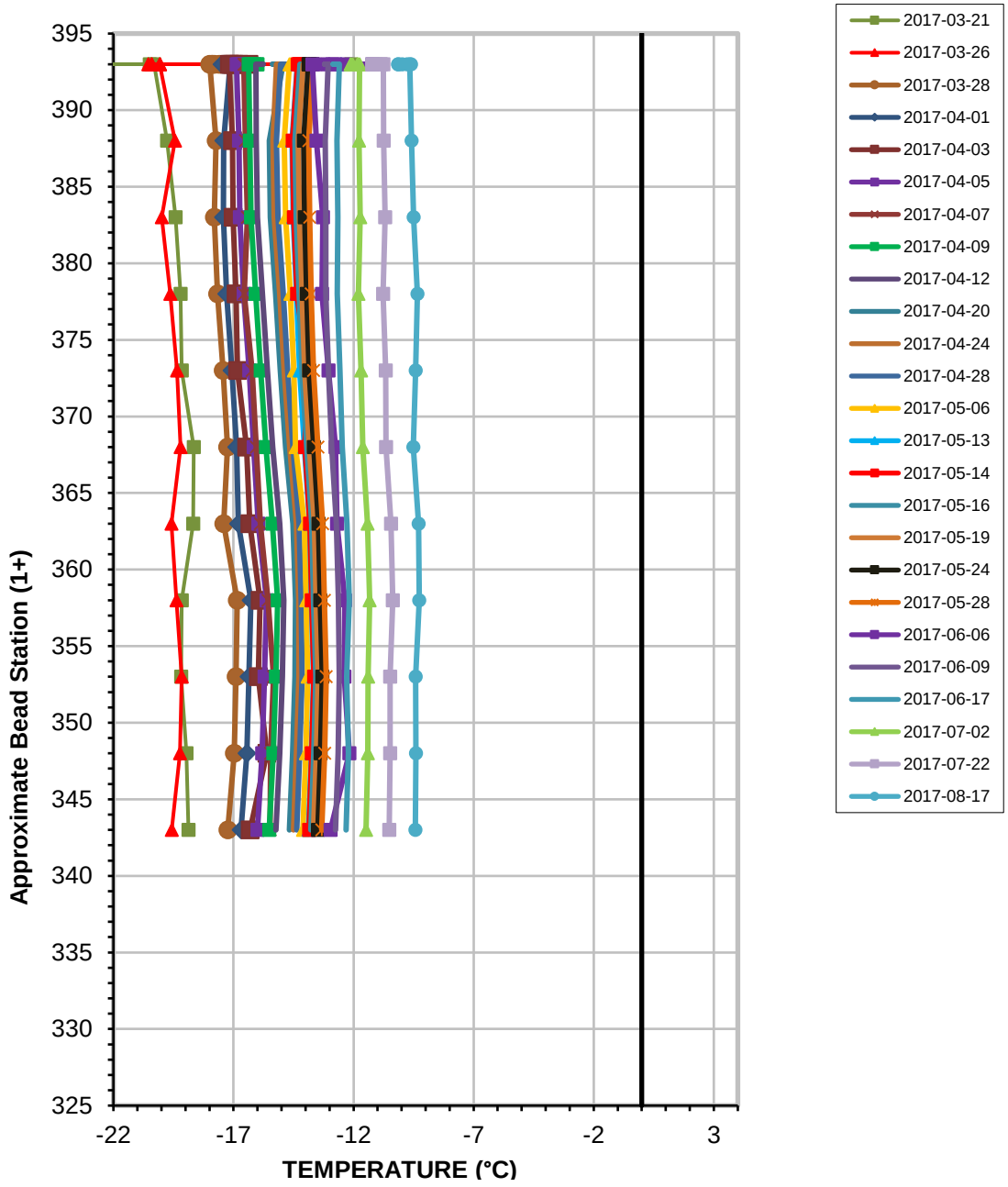


Serial No.: 2596
Date Installed: March 3, 2017

EBA File No: E14103230.01-023

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

TETRA TECH

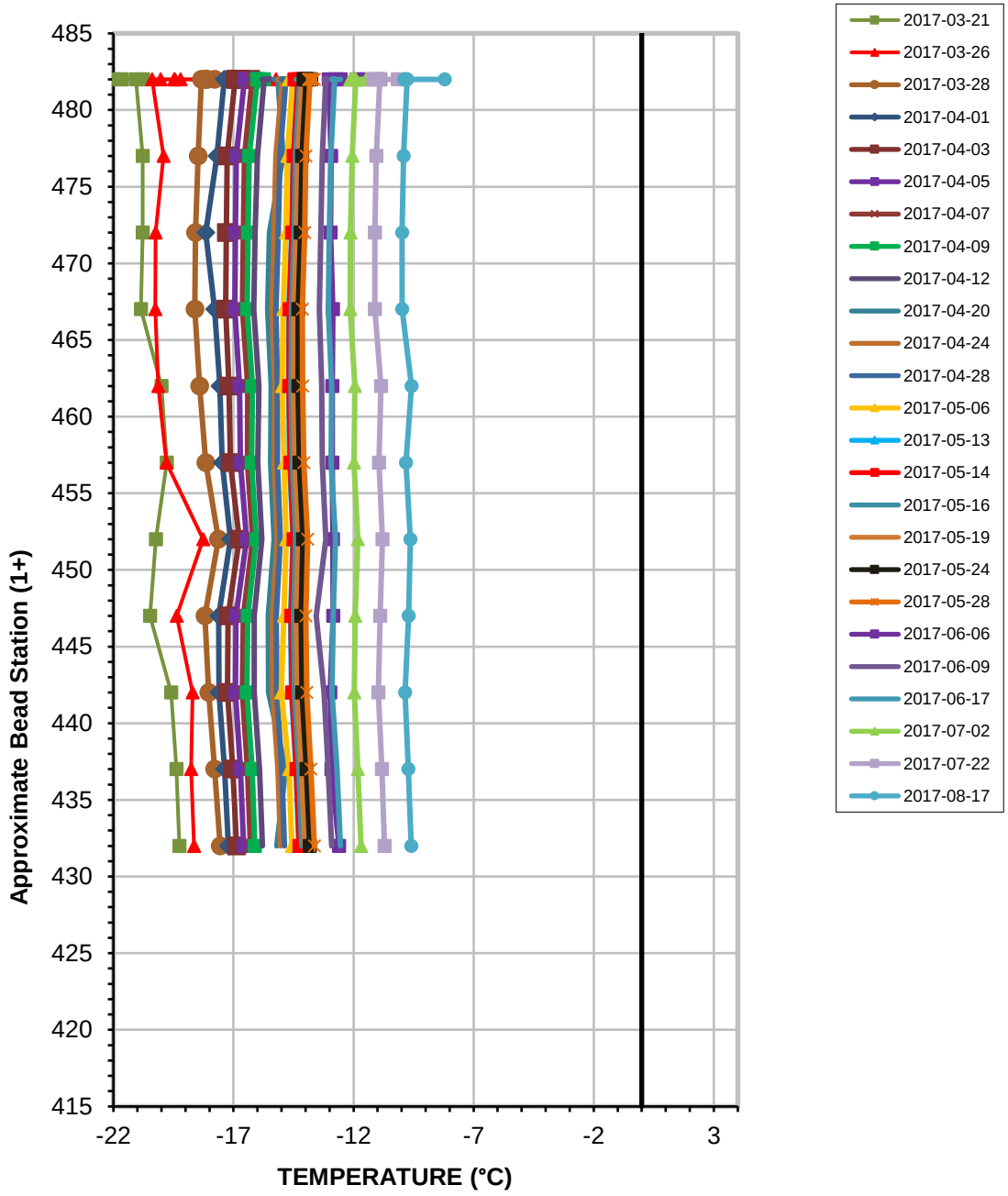


Serial No.: 2597
Date Installed: March 14, 2017

EBA File No: E14103230.01-023

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

TETRA TECH

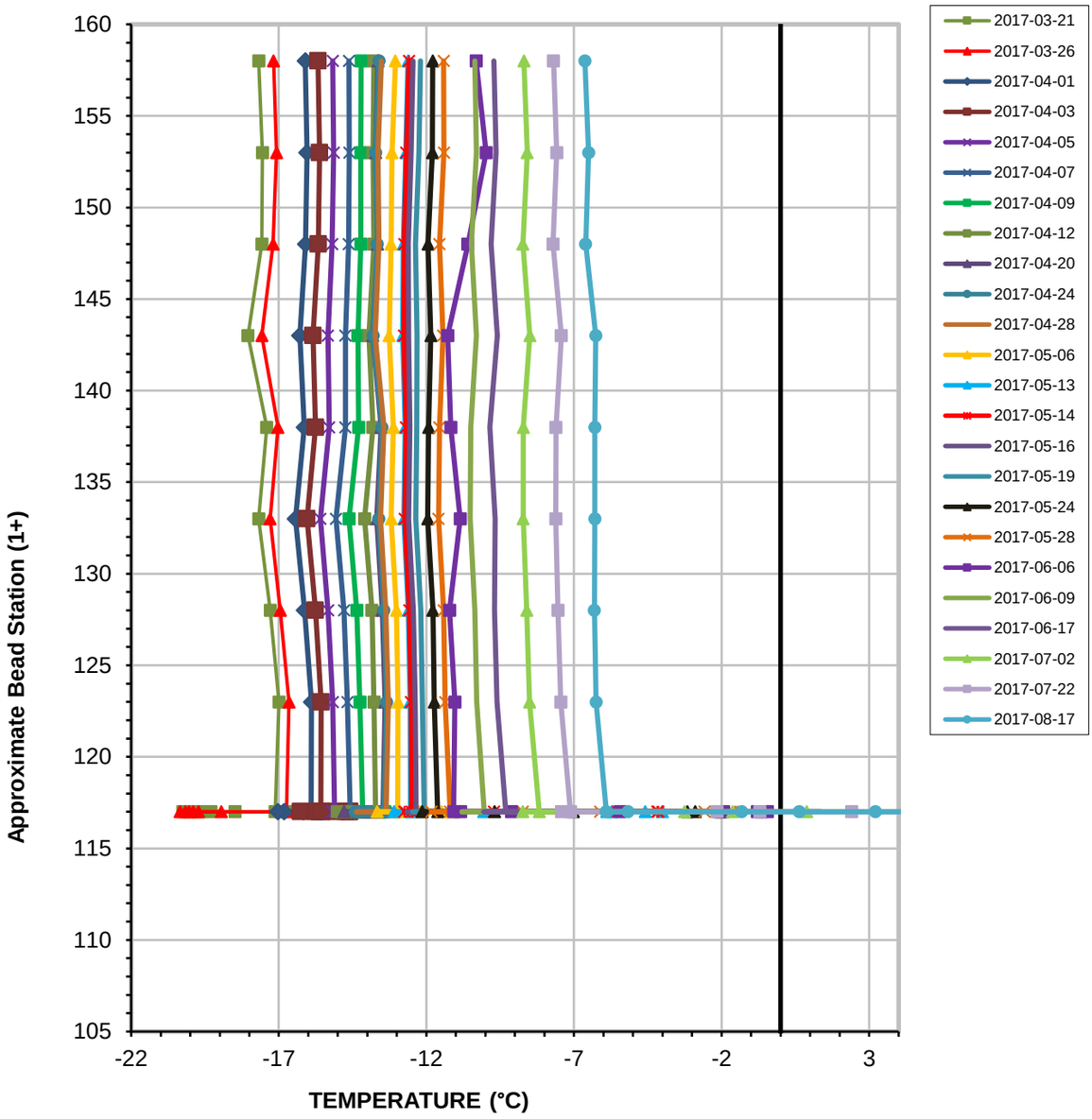


Serial No.: 2598
Date Installed: March 16, 2017

EBA File No: E14103230.01-023

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

TETRA TECH

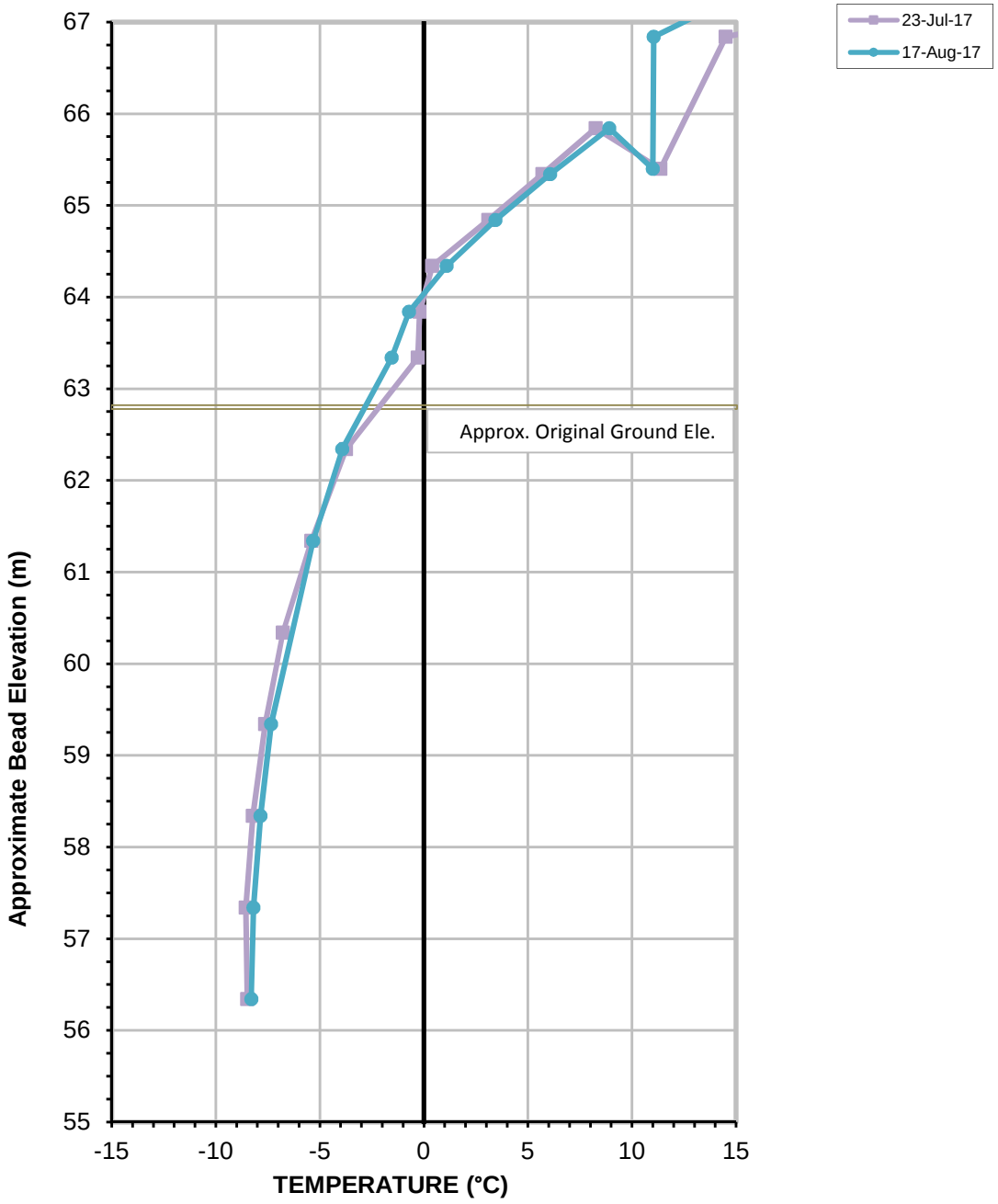


Serial No.: 2599
Date Installed: March 2, 2017

EBA File No: E14103230.01-023

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

TETRA TECH

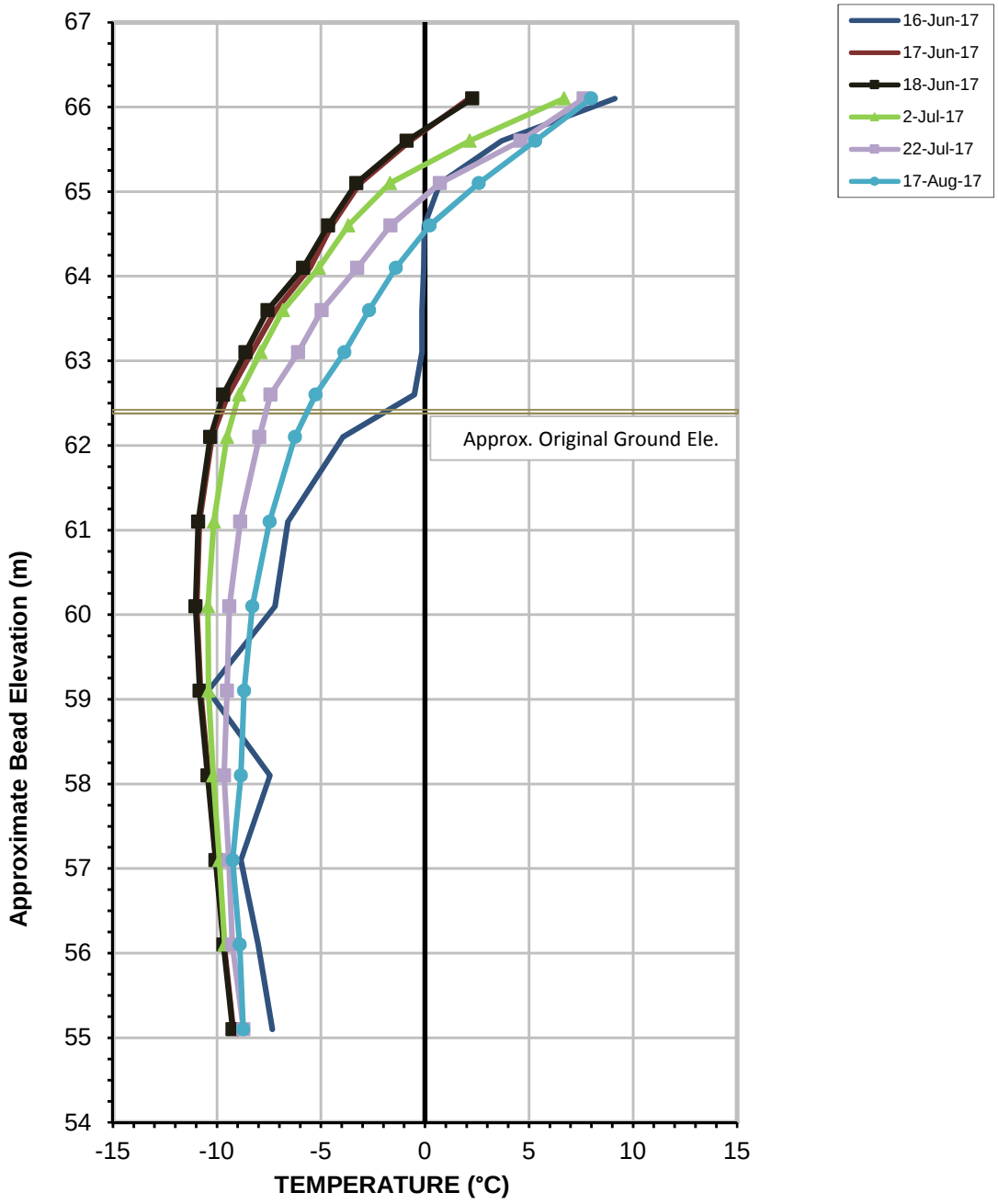


Serial No.: 2626
Date Installed: July 22, 2017

EBA File No: E14103230.01-023

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

TETRA TECH

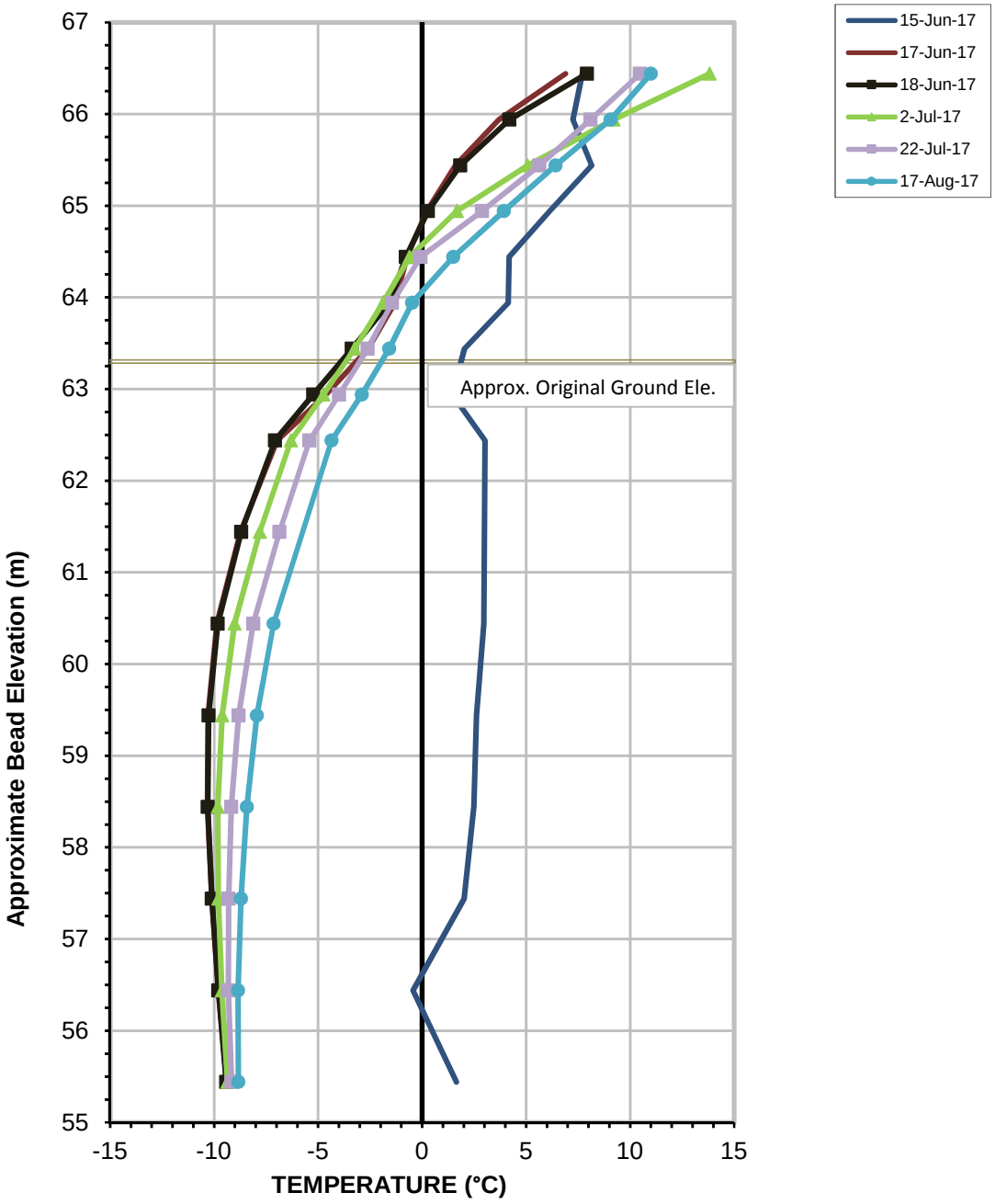


Serial No.: 2627
Date Installed: June 16, 2017

EBA File No: E14103230.01-023

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

TETRA TECH

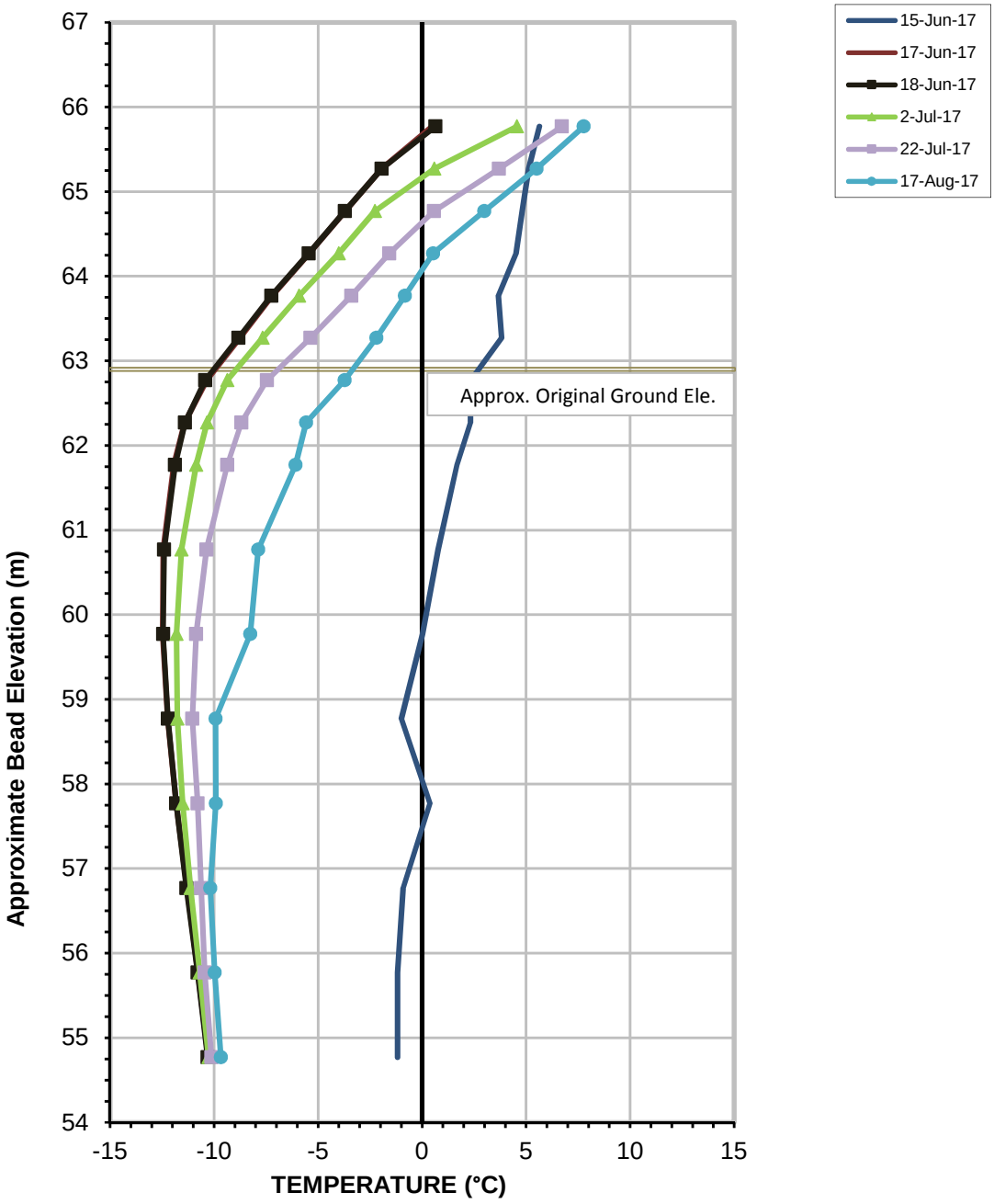


Serial No.: 2628
Date Installed: June 15, 2017

EBA File No: E14103230.01-023

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

TETRA TECH

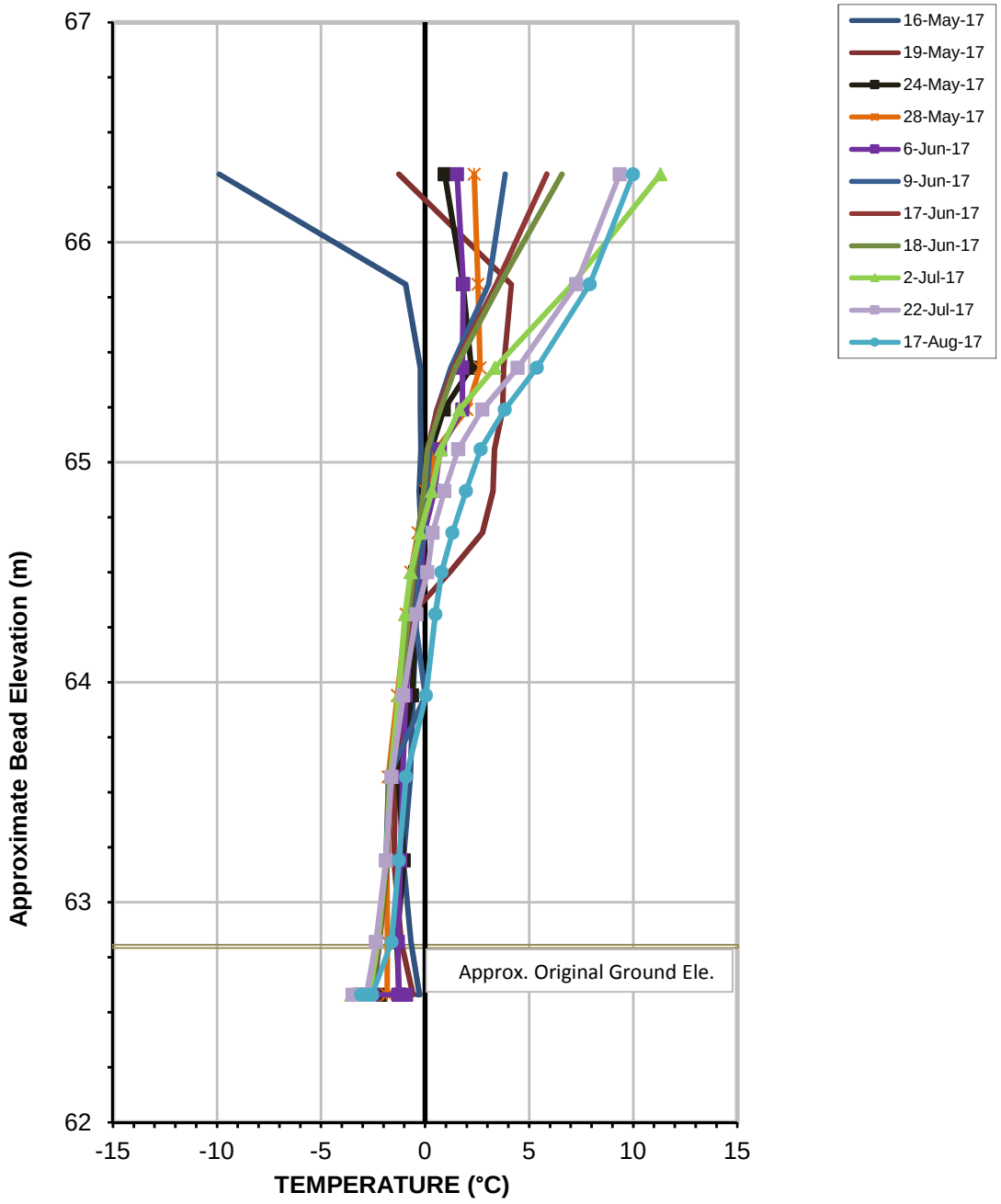


Serial No.: 2629
Date Installed: June 15, 2017

EBA File No: E14103230.01-023

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

TETRA TECH



Serial No.:
Date Installed: May 16, 2017

EBA File No: E14103230.01-023

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

TETRA TECH

APPENDIX D1

REQUEST FOR INFORMATION (RFI)

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_003 Rev: 0
Meliadine Project

Site RFI Initiator: Matt Gallant Date: 2016-10-09

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
D-CP1 Typical Sections and Quantities R1	65-685-230-208 R1	0
Geotechnical Specifications for Construction of Dike D-CP1 R0	6515-E-132-007-132-SPT-002_R0	

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND CONTRACTOR'S PROPOSED SOLUTION :

The Dike cross sections shows Type H fill on the upstream side of the dike. As per the specifications, the maximum lift thickness of the Type H fill is 300mm.

The existing ground is uneven, wet and very soft. Our concern is that we will loss the material in the tundra once we start placing fill on the tundra.

We propose changing material from Type H to CL-A for the first lift.

Prepared by: Matt Gallant Signature: Matt Gallant Date: 2016-10-09

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

It is normal and expected that some of Type H material during the first lift or even second lift of initial placement over the tundra will fill in the uneven tundra surface and may be partially lost in the soft ground. This may occur, no matter which type of the fill material is used for the initial lift over the soft unfrozen tundra.

Based on information received from Jennifer Pyliuk today, it is understood that the "CL-A" refers to the material excavated from natural borrow sites (eskers), which has a maximum particle size of 600 mm. Depending on actual particle size gradation, this material may be too coarse and has high hydraulic conductivity that may not meet the dike design intent, especially when a high percentage of large particles exist. Therefore, the "CL-A (0 to 600 mm) should not be directly used to replace Type H for the first lift over the tundra for D-CP1 construction.

We recommend to keep the Type H material as in the original design. If this is not practical or preferred, an alternative would be to use Type B (0 to 150 mm) Material in the first lift only (no more than 0.5 m thick). The Type B Material should be sourced from rock without residual salts. The second alternative would be to use the selected "CL-A" (0 to 150 mm) with the oversized particles greater than 150 mm being removed. The selected "CL-A" (0 to 150 mm) should be well graded and have a majority of smaller particles less than 75 mm (including fines) such that its hydraulic conductivity is similar to that for Type H after compaction.

It is noted that the Contractor still referred previous versions of construction drawings and specifications. The latest construction drawings and specifications for D-CP1 and D-CP5:

- Revision 1 (R1) of Construction Drawings # 65-685-230-204 to 65-685-230-213 (a total of 12 drawings) for D-CP1, issued on September 26, 2016;
- Revision 0 (R0) of Document # 6515-E-132-SPT-002 – Geotechnical specifications for construction of Dike D-CP1, issued on September 28, 2016
- Revision 0 (R0) of Construction Drawings # 65-685-230-214 to 65-685-230-222 (a total of 10 drawings) for D-CP5, issued on August 15, 2016;
- Revision 0 (R0) of Document # 6515-E-132-SPT-003 – Geotechnical specifications for construction of Dike D-CP5, issued on September 28, 2016

Please use these documents for the construction of D-CP1 and D-CP5.

Engineering : Gordon Zhang Signature: Date: October 11, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

Name	Signature	Date

Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_004 Rev: 0
Meliadine Project

Site RFI Initiator: Matt Gallant Date: 2016-10-11

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
		0

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND CONTRACTOR'S PROPOSED SOLUTION :

Please Specify the horizontal tolerances that will be acceptable for lift placement.

Prepared by: Matt Gallant Signature: Matt Gallant Date: 2016-10-11

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

In general, the acceptable horizontal tolerances are from -0.1 m to +0.1 m for fill lift placement during dike construction. However, the compacted liner bedding layer that is immediately below the liner should have smooth surface without sudden slope changes.

Engineering : Gordon Zhang Signature: Date: October 12, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

Ndofor, Fai

From: Zhang, Guangwen (Gordon)
Sent: Monday, October 17, 2016 12:01 PM
To: 'Duy Nguyen'
Cc: Jack Dutil; Pyliuk, Jennifer; Ndofor, Fai; Construction Regional; EBA.Tt.Meliadine.Block007
Subject: Responses - RE: 6515-C-230-007-RFI-005_materiel

Importance: High

Hi Duy,

Our responses to 6515-C-230-007-RFI-005 are summarized below:

1) **3D models to show all crests and surfaces**: Tetra Tech originally developed the dike drawings based on Civil3D modelling. However, based on AEM's drawing procedures, the CAD drawings to AEM should be in CAD format but not Civil3D format. To meet AEM's drawing procedures, we purposely exploded the Civil3D modelling in generating the CAD drawings submitted to AEM. As a result, all the Civil 3D features were gone after these modifications. Therefore, the CAD drawings that the Contractor received from AEM are not the right format for the Contractor to generate 3D drawings. We plan to send a complete set of dike drawings in Civil3D format to the Contractor so that they can have all 3D features including all crest lines and 3D surfaces. Before I send the drawings to you and the Contractor through our large file transfer system, could you please send me a distribution list of emails for the Civil3D drawing?
2) **Key Trench Excavation and Liner**: First of all, I do not fully understand what the Contractor is planning to do. Do they plan to over-excavate the key trench to a further 30 m wide beyond the design key trench? If this is the case. This is absolutely NO. I need to know exactly the Contractor is planning to do and need drawings or detail plans to show their proposed key trench excavation for my approval. Before the start of the key trench excavation with any changes proposed by the Contractor, I need to review their plan and make decision (approval or rejection) thereafter. I believe that the Contractor will have a better understanding on the design details of the key trench and liner installation after they receive and review our Civil3D drawings.

Regards

Gordon

Guangwen (Gordon) Zhang, Ph.D., P.Eng. | Principal Specialist, Arctic Region
Direct **+1 (780) 451-2130 x501** | Business **+1 (780) 451-2121** | Mobile **+1 (587) 985-2371** | GuangwenGordon.Zhang@tetratech.com

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From: Duy Nguyen [mailto:duy.nguyen@agnicoeagle.com]
Sent: Sunday, October 16, 2016 7:08 PM
To: Zhang, Guangwen (Gordon) <GuangwenGordon.Zhang@tetratech.com>
Cc: Jack Dutil <jack.dutil@agnicoeagle.com>; Pyliuk, Jennifer <Jennifer.Pyliuk@tetratech.com>
Subject: FW: 6515-C-230-007-RFI-005_materiel

Hi Gord,

Could you provide these answer for MT KSL,

Thank you

Duy Nguyen

From: Yan Bergeron [mailto:Yanb@nunalogistics.com]
Sent: Friday, October 14, 2016 2:23 PM
To: Duy Nguyen
Subject: RE: 6515-C-230-007-RFI-005_materiel

For example
I need the crest of type h materiel because I don't know where it start it's between cross section 1+050 and 1+075. And I don't know where the direction change for the crest, we don't have the line for each materiel on the plan view, we just have the final slope of the dyke and the key trench.
It's the same for each materiel. For the type B I need to have crest point because I don<t have the information where to adjust, because I always start from the alignment.
I know that we are going to adjust the liner in the field to have the liner to be the most straight at possible, because we can't have it moving to mush to make the welding possible.
We plane to excavate may be 30 m further to correct the slope before install the liner.

You can call me at 3973 and we can discuss with the pdf.

Yan Bergeron
Project coordinator
Meliadine
Site 819-759-3555 ext 3973

Kivalliq Services Ltd.
19– 41 Street South, PO Box 809
NUNA LOGISTICS LIMITED
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From: Duy Nguyen [mailto:duy.nguyen@agnicoeagle.com]
Sent: Friday, October 14, 2016 12:58 PM
To: Yan Bergeron <Yanb@nunalogistics.com>
Subject: RE: 6515-C-230-007-RFI-005_materiel

Could you send me a pdf what you want to build so I can help

Duy Nguyen, MPM, MBA, Eng.
Concrete, Civil and Structural Lead
C: 819 355 0425
T: 819.759.3555 Ext 8067
Agnico Eagle Mines Limited
1075, 3e Avenue Est

Val D'Or, Québec, Canada
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AGNICO EAGLE

From: Yan Bergeron [mailto:Yanb@nunalogistics.com]
Sent: Friday, October 14, 2016 1:39 PM
To: Duy Nguyen
Cc: Mike Price; Boyd Barstad; Jack Dutil; Mark Long; Gramoz Rexhepi; Michael Love; Larry Chabot; Sylvain Chartier; Greg Smith; Daniel Seguin; Matt Gallant
Subject: RE: 6515-C-230-007-RFI-005_materiel

Hi Duy

I forgot to send you the explanation

I try to build 3d model with the cross section and I have not enough information on the plan to do it, and the cross section are at each 25 m, so I can just made straight line between each cross section

Yan Bergeron
Project coordinator
Meliadine
Site 819-759-3555 ext 3973

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From: Yan Bergeron
Sent: Friday, October 14, 2016 12:16 PM
To: 'Duy Nguyen' <duy.nguyen@agnicoeagle.com>
Cc: Mike Price <mikepr@nunalogistics.com>; Boyd Barstad <boydb@nunalogistics.com>; 'Jack Dutil' <jack.dutil@agnicoeagle.com>; 'Mark Long' <mark.long@agnicoeagle.com>; Gramoz Rexhepi <GramozR@nunalogistics.com>; Michael Love <MichaelLove@nunalogistics.com>; 'Larry Chabot' <larry.chabot@agnicoeagle.com>; 'Sylvain Chartier' <sylvain.chartier@agnicoeagle.com>; Greg Smith <GregS@nunalogistics.com>; 'Daniel Seguin' <daniel.seguin@agnicoeagle.com>; Matt Gallant <mattg@nunalogistics.com>
Subject: 6515-C-230-007-RFI-005_materiel

Hi Duy,
See attached RFI.

Yan Bergeron
Project coordinator
Meliadine
Site 819-759-3555 ext 3973

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AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_006 Rev: 0
Meliadine Project

Site RFI Initiator: Mike Price Date: 2016-10-24

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
Geotechnical Specifications for Construction of Dike D-CP1	6515-E-132-SPT-002	0

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND CONTRACTOR'S PROPOSED SOLUTION :

The specifications for Nearly –Saturated Backfill (Type –C) call for 85% - 95% saturation after its placement and compaction. MTKSL has concern that the Type C material properties will not allow for the level of saturation specified to be achieved following placement and compaction.

Please confirm / advise;

- Has the mix design been validated to ensure that the saturation level of sandy material (0.20mm) can be maintained during placement and compaction as per multi-lift construction methods?
- Has testing been conducted on the Type C material to verify that this is achievable?
- If the properties of the Type C material do not allow for the level of saturation to be achieved is it foresee that blending of materials or an alternate material will be required?

Prepared by: Mike Price Signature: Mike Price Date: 2016-10-24

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

So far no confirmation or validation testing has been conducted on the Nearly-Saturated Backfill. This confirmation or validation testing is better to be conducted in the field conditions by the Contractor, before starting the backfilling operation using the Nearly-Saturated Backfill in the key trench. Nevertheless, 20 mm minus materials with similar specified gradation limits of Type C material had been successfully used in the past for construction of nearly-saturated cores of frozen core dikes/dams in the Arctic. Therefore, if Type C meets the specified gradation and placed in relatively thin, horizontal lifts over relatively level surfaces, the required saturation after compaction is likely achievable.

It is strongly recommended that trial mixing (Type C material and hot water), placing and compacting testing of the Nearly-Saturated Backfill be conducted in the field by the Contractor to confirm whether the required saturation can be maintained after its placement and compaction. This trial program should be done well ahead of the backfilling operation.

If the field trial testing indicates that the required saturation cannot be maintained after the placement and compaction of the Nearly-Saturated Backfill, one of the following alternative source materials can then be used to produce the Nearly-Saturated Backfill, instead of using the originally specified Type C material with 4% to 10% of a fines content:

1) Option 1: using rejected Type C (20 mm minus) that has a higher fines (<0.075 mm) content of 15% to 30%;
2) Option 2: using rejected natural esker sand and gravel with higher fines content (15% to 30%) as a source for crusher feed to produce the 20 mm minus material having a final fines content of 15% to 30%; or
3) Option3: using selected natural till material (with a fines content of 20% to 50%) as a source for crusher feed to produce the 20 mm minus till, and then blending it with the originally specified Type C to produce a targeted material having a final fines content of 15% to 30%.

We are updating the construction specifications for D-CP1 and D-CP5 to include additional sections for the Nearly-Saturated Backfill. The updated construction specifications will be available this week.

Engineering : Gordon Zhang Signature: _____ Date: November 7, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

1Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_008 Rev: 1
Meliadine Project

Site RFI Initiator: Matt Gallant Date: 2016-10-30

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
D-CP1 Profiles	65-685-230-206	1

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND CONTRACTOR'S PROPOSED SOLUTION :

Please confirm that the top crest of the liner is meant to slope up from Elevation 67.5 m to 69.5 m at the North end of the dike (Station 1+560 to 1+590).

Rev: 1

The contractor proposes to modify stations 1+560 to 1+590 and beyond to match the horizontal reflection of the design from stations 1+000 to 1+030, utilizing the intersection of the max, water elevation and the original ground as critical alignment points.

The reflected design would be inclusive of the key trench, thermal cover and all other associated information design.

See attached sketch.

Prepared by: Matt Gallant Signature: Matt Gallant Date: 2016-11-01

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

There are major differences between the north abutment and the south abutment of D-CP1. The north abutment is on a small hill with relatively steep slope. We purposely designed to "over-excavate" the key trench further into the abutment to increase the seepage path for the north abutment. The dike south abutment is located on a flat ground on both the upstream and downstream sides; therefore, the natural seepage path is long so we do not need to extend. By the way, we have already reached the highest original ground location on the south end. In addition, we have limited space on the south end of the D-CP1 because there will be a haul road immediately on the south end.

In summary, we CANNOT adopt the south abutment dike design and use it for the north abutment design. They are different.

Engineering : Gordon Zhang Signature: Date: November 2, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

Name Signature Date

Superintendent:			
c.c. Contract Administrator:			

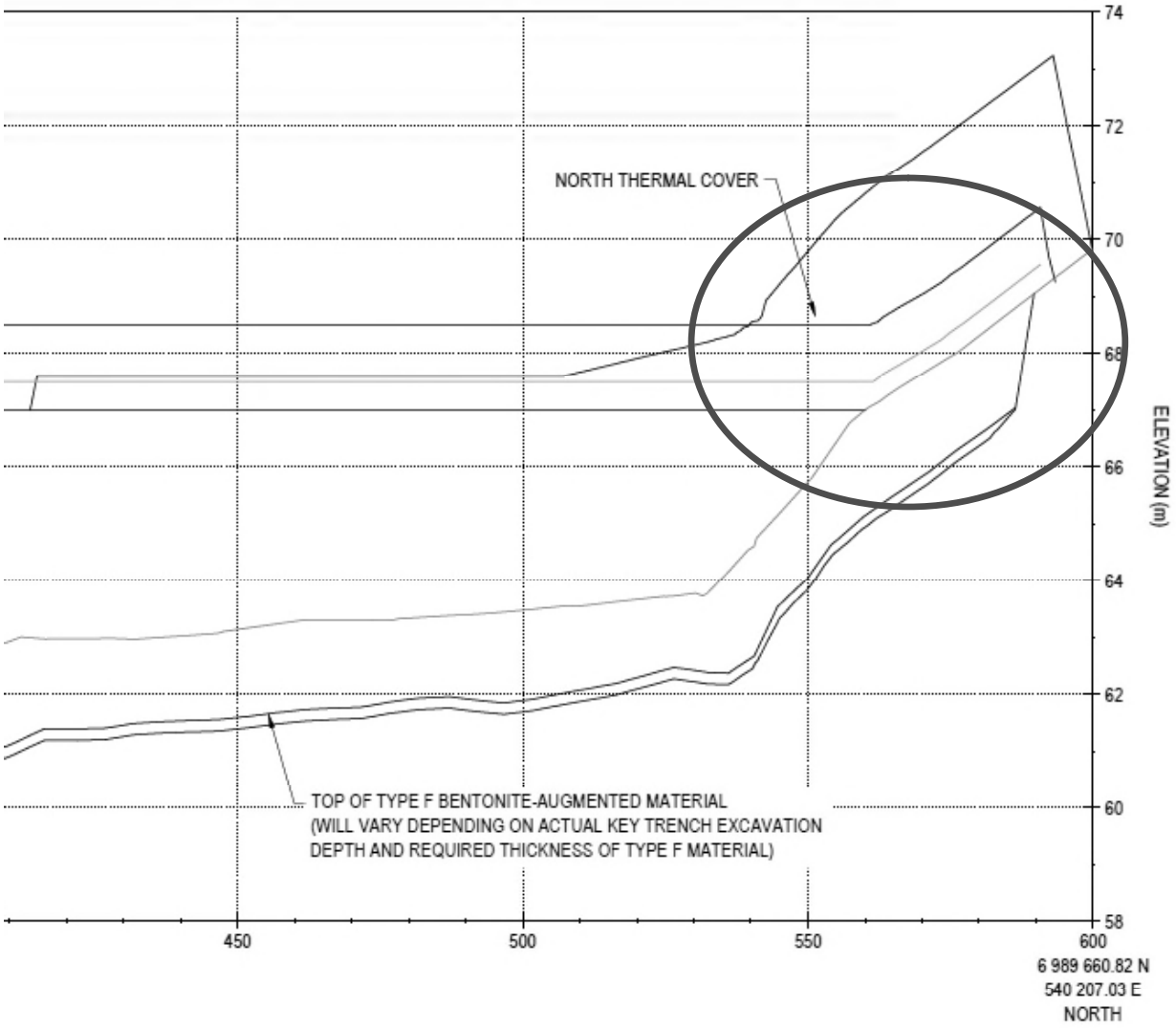


Figure 1- Drawing 65-685-230-206

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_009 Rev: 0
Meliadine Project

Site RFI Initiator: David Morley Date: 2016-11-01

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
Geotechnical Specifications for Construction of Dike D-CP1, Meliadine Gold Project, NU, September 28,2016	AEM Document Number: 6515-E-132-SPT-002	0

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND CONTRACTOR'S PROPOSED SOLUTION :

Section 1006: General Fill Placement
1.1.7 reads:

"All fills shall be placed and compacted in horizontal lifts from the bottom up over the slope."

The contractor proposes to modify this section to read as follows:
"All fills shall be placed and compacted in horizontal lifts from the bottom up over the slope, with the exception of the Type B and Type C material under the Geomembrane Liner, and the Type C material over the Geomembrane liner, which may be placed parallel to the Geomembrane Liner as shown in the attached sketches."

Please see attached sketches.

Prepared by: David Morley Signature: David Morley Date: 2016-11-01

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

If the Contractor can properly place the Type C and Type B materials under the geomembrane liner from bottom up over the 2.5:1 slope for each lift without material segregation, and compact each lift of the materials to meet the required density, it is OK to construct the Type C and Type B materials under the geomembrane liner in lifts that are parallel to the 2.5:1 slope, as proposed by the Contractor. However, for each lift, the Type C or Type B material should be placed from bottom up. The materials should not be dumped on the top and pushed down over the slope.

We do NOT agree with the construction method proposed by the Contractor for the Type C layer above the geomembrane liner (Dike Construction Part2 – Place Type C in parallel lifts to the Coletanche). To protect the geomembrane liner from damage during construction, no direct mechanical compaction of the Type C layer above the liner is required. The Type C should be placed from bottom up and in horizontal lifts slightly ahead of the placement of the upstream Type H and Type A lifts. The Type C material will be indirectly compacted when the nearby Type H lifts are compacted.

In summary, we agree ""All fills shall be placed and compacted in horizontal lifts from the bottom up over the slope, with the exception of the Type B and Type C material under the Geomembrane Liner, which may be placed from bottom up in each lift that can be parallel to the slope, as long as the materials meet the specifications after placement and compaction."

AGNICO EAGLE

Request For Information

Engineering : Gordon Zhang	Signature:	Date: November 2, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

	Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_010 Rev: 0
Meliadine Project

Site RFI Initiator: David Morley Date: 2016-11-01

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
Definitions for D-CP1 and D-CP5 Construction	"To AEM_Definitions and Key Trench Excavation Details for D-CP1 and D-CP5 Construction_Sep07_2016.pdf"	0

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND CONTRACTOR'S PROPOSED SOLUTION :

MTKSL is requesting further clarification on Scenario 3B & 3C: Key Trench Excavation (2.8m, Ice Rich Soil)

Proposed Solution:

In areas where excavation depth greater than 1.8 m is required, MTKSL is proposing to sub-excavate to the required depth with vertical walls from the design 1.8m trench toes (see attached sketch).

Please confirm that this approach for sub-excavation is acceptable.

Prepared by: Matt Gallant Signature: Matt Gallant Date: 2016-11-04

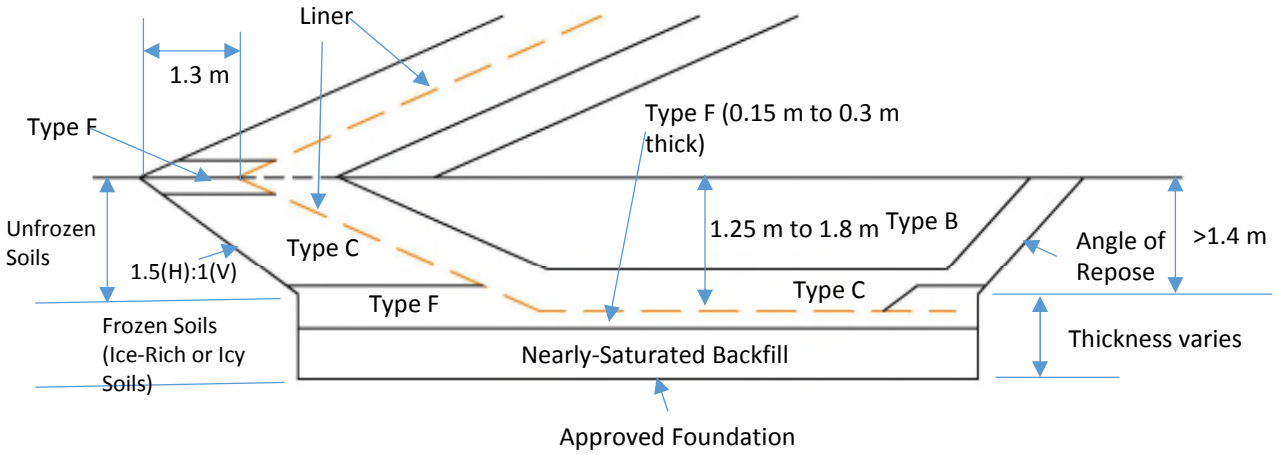
3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

We do NOT agree with the upstream side slope of 2.5(H):1(V) for the key trench that was proposed by the Contractor. This slope is too flat and is not consistent with the design intent.

The designed key trench side slopes (both upstream and downstream) were "angle of repose". In the construction drawings, the key trench side slopes with "angle of repose" were assumed to be 1.5(H):1(V). Based on the current field conditions, the actual "angle of repose" is steeper than 1.5(H):1(V). To reduce overall key trench excavation and backfill, we propose the following:

1) 1.5(H):1(V) for upstream key trench side slope, which is the same as shown in the construction drawings; it is also acceptable if the upstream key trench side slope is slightly steeper than 1.5(H):1(V).
2) The actual "angle of repose" for the downstream key trench side slope, which is steeper than 1.5(H):1(V), as proposed by the Contractor.
3) Nearly vertical wall excavation below the toes of the upstream and downstream key trench slopes within the unfrozen active layer zone (1.4 to 1.8 m). This is generally consistent with the plan proposed by the Contractor.

The sketch below presents the general key trench excavation and backfill concept for D-CP1 and D-CP5:



Please see other details (liner, liner bedding, Type F, etc.) in the construction drawings and specifications.

Engineering : Gordon Zhang Signature: Date: November 8, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_011 Rev: 0
Meliadine Project

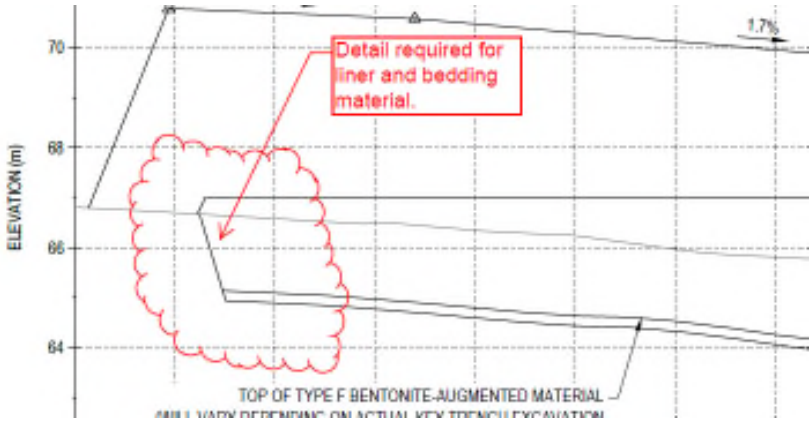
Site RFI Initiator: Mike Price Date: 2016-11-16

1. Reference Documents :

Title(s):	*Number:*	*Revision:*
D-CP1 and D-CP5 IFC Drawings Package		

2. Description , Justification of the RFI and Contractor's Proposed Solution :

MTKSL is requesting tie in details for the termination points at either end of the key trench for DCP 1 and 5, more specifically related to requirements for the liner and bedding material in the area.



Prepared by: Mike Price Signature: Mike Price Date: 2016-11-016

3. Technical Response from Engineering and/or Validation of Proposed Solution :

For either end of the key trench for D-CP1 and D-CP5, the following construction details should be followed:

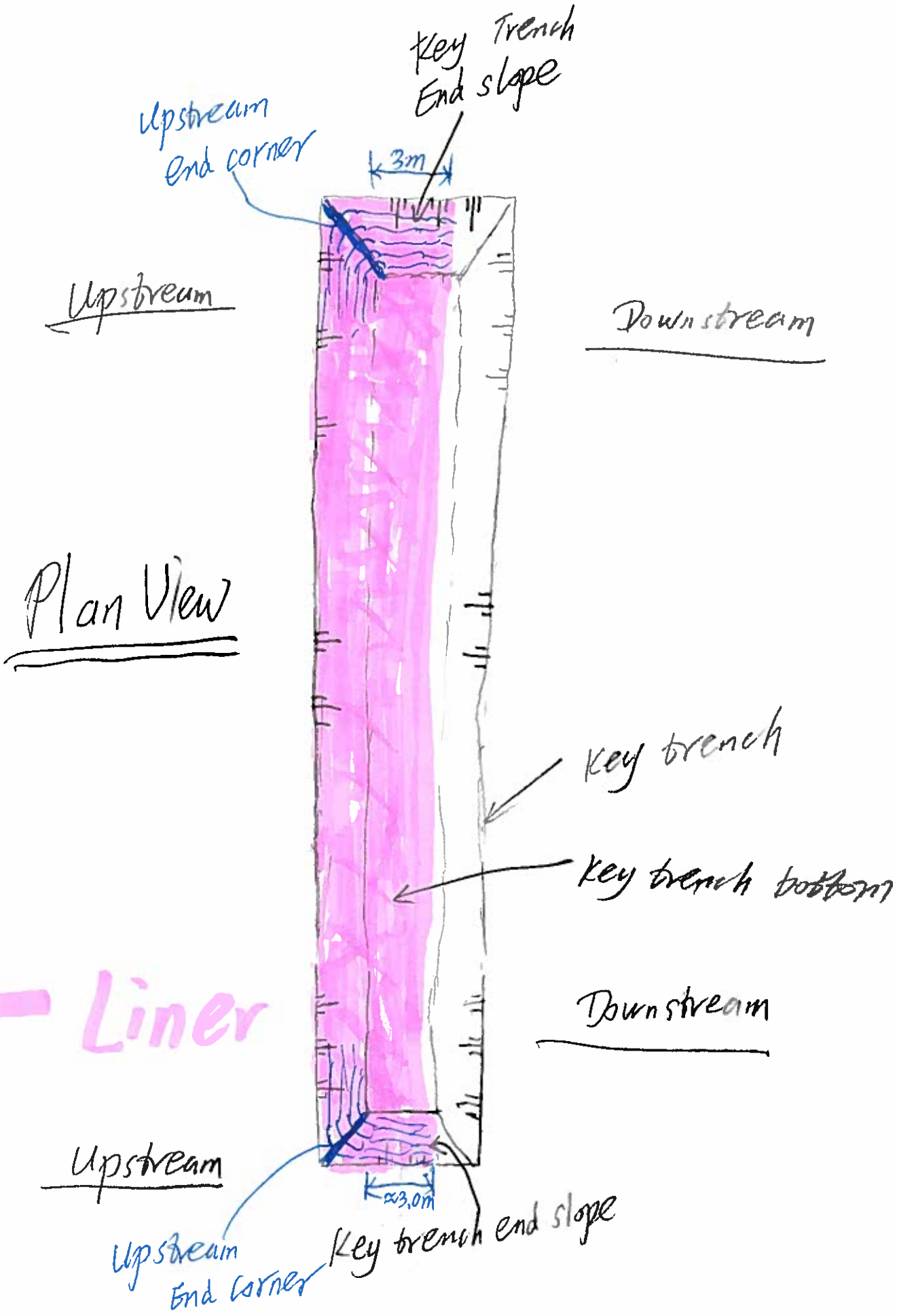
1) Place a liner bedding layer of Type F (mixture of Type C and bentonite) over the entire excavated slope at the end of the key trench and compact the Type F layer to form a smooth surface for liner installation over the end slope. The minimum thickness of the compacted Type F over the key trench end slope would be 0.2 m;
2) Place and compact extra Type F over the key trench (upstream side) end corner to form a rounded corner for liner installation;
3) Extend the typical liner in the key trench towards the key trench (upstream side) end corner, curve (wrap) over the key trench (upstream side) end corner, and then further extend a minimum of 3 m downstream over the compacted Type F layer on the end slope of the key trench. The liner over the key trench end slope should be welded together with the liner at the key trench bottom;
4) Place a layer of Type C as an upper bedding over the completed liner area at the end of the key trench. The thickness (perpendicular to the slope) of Type C should be about 0.5 m. No mechanical compaction is required for the Type C layer immediately over the liner; and
5) Backfill the remaining key trench end area with Type B, similar to the typical section.

A hand sketch is attached for information.

Engineering : Gordon Zhang Signature: Date: November 17, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

		Deviation Request: ☐ No ☐ Yes	
	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			


Key Trench End slope
Upstream End corner
3m
Upstream
Downstream
Plan View
Key trench
Key trench bottom
Liner
Downstream
Upstream
≈3,0m
Upstream End corner
Key trench end slope

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_012 Rev: 0
Meliadine Project

Site RFI Initiator: Matt Gallant Date: 2016-11-29

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
D-CP1 and D-CP5 Material Specifications		

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND CONTRACTOR'S PROPOSED SOLUTION :

MTKSL is requesting Confirmation of Material Acceptance for all the materials produced to date from contract 6515-C-235-003 for the Water Management Dikes will be suitable for construction of the D-CP1 and D-CP5.

Specifically:

- Type B1: Transition Rockfill (150mm Minus) produced by processing material obtained from the saline pond excavation.
- Type C: Granular Fill or Esker Sand (20mm Minus) produced by processing material obtained from the esker borrow sources
- Type H: Esker Sand and Gravel (75mm Minus) produced by processing material obtained from the esker borrow sources.

Prepared by: Matt Gallant Signature: Matt Gallant Date: 2016-11-29

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

Type B1: a total of 4 sieve tests were conducted by the dike earthwork QC team during the period of November 9 to 13, 2016. The results (a summary table and a chart) are attached with this file. The average gradation of Type B1 produced so far generally meets the requirements. The percentages passing a sieve size of 5 mm for the last three tests slightly exceed the specifications but is tolerable.

Type C: a total of 40 sieve tests were conducted by the dike earthwork QC team during the period of October 22 to December 5, 2016. The results (a summary table and a chart) are attached with this file. The average gradation of Type C produced so far generally meets the requirements, except for 6 samples that were significantly outside of the specifications. The 6 out-of-spec samples included three samples with higher fines content (<0.08 mm) of 18% to 23% and three samples with higher percentage passing 0.63 mm sieve (48% to 77%). After the tests, the dike QA/QC team had instructed the Contractor to stockpile the rejected Type C in a separate area for other site uses. It is also noted that the recently produced Type C had high natural moisture content of up to 14.4% because the esker source reached the permafrost table. This is not acceptable. The source esker should be excavated well above the permafrost table to have a relatively low natural moisture content. It is understand that more Type C will be produced for the dike construction. It is strongly recommended that the esker source for Type C should be excavated in shallow depths well above the permafrost table to have a relatively low natural moisture content.

Type H: a total of 5 sieve tests were conducted by the dike earthwork QC team during the period of October 22 to December 1, 2016. The results (a summary table and a chart) are attached with this file. The average gradation of Type H produced so far generally meets the requirements. . It is understand that very limited quantity of Type H has been produced so far and a significant volume of Type H is to be produced for the dike construction. It is strongly recommended that the esker source for Type H should be excavated in shallow depths well above the permafrost table to have a relatively low natural moisture content.

Engineering : Gordon Zhang Signature: Date: December 9, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_013 Rev: 0
Meliadine Project

Site RFI Initiator: David Morley Date: 2016-12-01

1. REFERENCE DOCUMENTS :

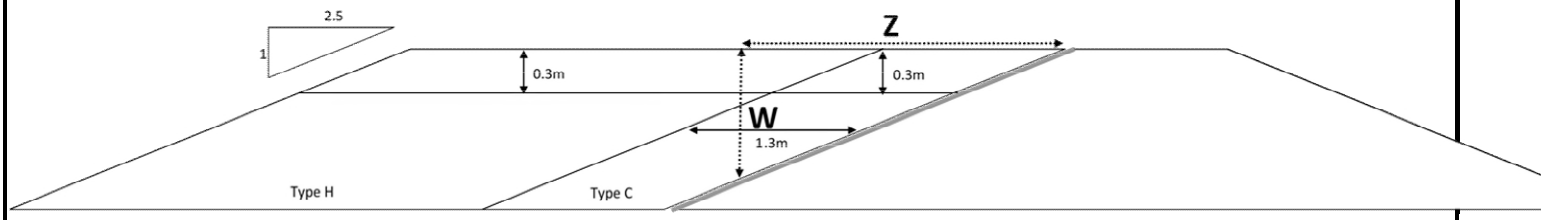
Title(s):	*Number:*	*Revision:*
D-CP1 IFC Drawings	65-685-230_DCP1	1
RFI 6515-C-230-007_009	6515-C-230-007_009	0
Geotechnical Specifications for Construction of Dike D-CP1	6515-E-132-007-132-SOT-002	1

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND CONTRACTOR'S PROPOSED SOLUTION :

The contractor has concerns that packing the Type H material to the downstream edge (the point of contact with type C) as lifts are installed may result in damage to the Coletanche liner.

As the specified lift thickness of Type H is 300mm, the vertical distance from the liner at the downstream edge of the type H material is only 0.52 m. As Type H requires a minimum of 98% density the contractor believes that utilizing a 10 ton roller will be required.

Please clarify the minimum vertical distance (shown as W) below that is needed to be maintained from the 10 ton roller. This is turn will result in a horizontal offset (shown as Z) that will not be compacted by the roller. This zone will be compacted indirectly be the compaction of upper lifts.



Prepared by: David Morley Signature: David Morley Date: 2016-12-01

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

As suggested by Duy in his email to Matt on Dec. 2, it is a good idea that the Contractor checks with liner supplier and installation team to get a recommendation. Otherwise, the following suggestions for the 10 ton compactor (CAT CS563) used at the site can be followed:

1) Without vibration (static load only) turning on of the compactor, a minimum vertical fill thickness (W) of 0.6 m above the liner should be fine. Based on 2.5:1 slope of the liner, this is equivalent to a minimum horizontal distance (Z) from the liner of 1.5 m or the minimum horizontal distance of 0.2 m to the interface of Type H and Type C (1.3 m horizontal width of Type C).
2) It is recommended that vibration feature of the compactor be turned on when the vertical fill thickness (W) above the liner is more than 1.5 m or the horizontal distance (Z) from the liner is more than 3.8 m.

Engineering : Gordon Zhang	Signature:	Date: December 9, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

	Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_014 Rev: 0
Meliadine Project

Site RFI Initiator: Jennifer Pyliuk Date: 2016-12-09

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
D-CP1 Typical Section and Quantities	65-685-230-208	1
D-CP5 Typical Section and Quantities	65-685-230-218	1
Geotechnical Specifications for Construction of DCP-1 (Tetra Tech EBA, Issued for Use November 9, 2016)	6515-E-132-007-132-SPT-002	1
Geotechnical Specifications for Construction of DCP-5 (Tetra Tech EBA, Issued for Use November 9, 2016)	6515-E-132-007-SPT-003	1

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND PROPOSED SOLUTION :

The estimated material quantities of Type A1 (sourced from Saline Water Pond) required to complete construction of both dikes (in place plus the recommended 25% to account for material wasting, overbuild, bulking factor and potential foundation settlement) are 27,044 m3 (D-CP1) and 3,850 m3 (D-CP5), for a total of 30,894 m3.

Current placed quantities of Type A1 material are 4,985 m3 (D-CP1) and 1,071 m3 (D-CP5), for a total of 6,056 m3. When the placed quantities are subtracted from the estimated required amounts, the remaining quantities are 22,059 m3 (D-CP1) and 2,779 m3 (D-CP5), for a total of 24,838 m3.

The latest stockpile survey of Type A1 material (conducted November 13) by Hamel Arpentage calculated volume of 28,550 m3. However, this volume does not account for the presence of oversize material within the stockpile, believed to be in the range of 15% to 40%. The total remaining volume of Type A1 material is expected to be in the range of 24,268 m3 (15% oversize in pile) to 17,130 m3 (40% oversize). It is therefore highly probable that there will not be sufficient quantities of Type A1 material to complete the construction of both dikes to design.

Possible design solutions to optimize the remaining quantities of Type A1 material are proposed to include elimination of further Type A1 material at D-CP5; placement of only two lifts (1.8 m) of Type A1 at D-CP1 and strategic placement of remaining Type A1 around most critical key trench locations of D-CP-1 based on encountered ground conditions within the key trench (ie. where no bedrock encountered). An examination of the design placement of the Type A1 material is requested in order to appropriately use the expected remaining quantities.

Prepared by: Jennifer Pyliuk Signature: _____ Date: 2016-12-09

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

Instead of using Type A rockfill (waste rock from underground operation), Type A1 rockfill (clean rockfill from saline pond excavation) was designed to be used in the dike downstream zone over the key trench area for each of D-CP1 and D-CP5. The design intent was to reduce the risk of potential salts from the Type A rockfill to get into the key trench and increase the pore water salinity of the soils in the key trench and underneath foundations.

If all of the rock (without oversize issue) from the saline pond excavation could be used for the dike construction, the rock quantity would be adequate for the Type A1 rockfill to be used for both D-CP1 and D-CP5 construction. Unfortunately, poor blasting operation during the saline pond excavation generated 15% to 40% of oversized boulders that cannot be used as Type A1 rockfill.

At this stage of dike construction, opening a new quarry to obtain additional clean rockfill is not feasible, which leaves one practical option – using the Type A rockfill to balance the material quantity for the dike construction. Of course, this will increase the risk of the potential salts from the Type A rockfill to get into the key trench and underneath foundations. The potential consequence would be that the risk of the seepage through the dike foundation soils could be increased.

To minimize the risk, the Type A rockfill can be used in the less critical dike (D-CP5) and less sensitive zone (higher elevation away from the key trench) in the dikes. Table below presents the overall plan, depending on the percentage of the oversize boulders in the Type A1 stockpile:

Type A1 Stockpile Volume (m3)	Percentage of Oversize Boulders (%)	Useable Type A1 for Dike Construction (m3)	Balance of Type A1 to be Used for D-CP1 (m3)	Balance of Type A1 to be Used for D-CP5 (m3)	Additional Type A to be Used for D-CP1 (m3)	Additional Type A to be Used for D-CP5 (m3)
28,550	15%	24,268	22,059	2,209	0	571
28,550	20%	22,840	22,059	781	0	1,998
28,550	25%	21,413	21,413	0	647	2,779
28,550	30%	19,985	19,985	0	2,074	2,779
28,550	35%	18,558	18,558	0	3,502	2,779
28,550	40%	17,130	17,130	0	4,929	2,779

The overall plan is to place as much as possible of Type A1 in the bottom zone of D-CP1 (high priority) or D-CP5 until no more useable Type A1 is available; and then place the balance of the required Type A in the upper zone over the placed Type A1, if applicable. This plan is easy for construction.

For example, for the 30% oversize case, the Type A1 rockfiil can be placed to an estimated top elevation of 66.2 m for the entire dike length in the design Type A1 zone of D-CP1. After that only a final lift of Type A material can be placed in the upper zone from 66.2 m to 67.0 elevations over the placed Type A1 zone. Similarly, for the extreme 40% oversize case, the Type A1 rockfill can be placed to an estimated elevation of 65.5 m for the entire dike length in the design Type A1 zone of D-CP1. The remaining upper zone from 65.5 m to 67.0 m can be placed using Type A material.

Engineering : Gordon Zhang Signature: Date: December 22, 2016

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

Name | Signature | Date

Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Meliadine Project	Contract No: C-007	RFI No: 6515-C-230-007_016	Rev: 0
Site RFI Initiator: Michael Love		Date: Jan 5, 2017	

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
Geotechnical Specifications for Construction of DCP-1 (Tetra Tech EBA, Issued for Use November 9, 2016)	6515-E-132-007-132-SPT-002	R1

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND PROPOSED SOLUTION :

On Dec 20, 2016 Type C was mixed with heated water from Orbit's water heating system in a mixing pit at the south end of DCP-1 to produce Type K. Due to the winter conditions the material was frozen before it reached the key trench excavation of DCP-1 (3 loads of Type K mixed using this method were placed at DCP-1 and had to be removed).

This demonstrates our current methodology for producing Type K is insufficient in temperatures at -36C and below. Type K was previously manufactured using this methodology successfully in temperatures ranging from -2C to -15C from Nov 26, 2016 to Dec 5, 2016 (with an average temperature of -6C). Forecasted temperatures are approximately -30C over the next 14 days and MTKSL do not believe our current methodology will achieve acceptable results in those temperatures.

During preliminary discussions on site with AEM and Tetra Tech between Dec 20 and 23 mention was made of heating the aggregate. MTKSL do not believe the infrastructure is available to support this method of producing Type K in a manner which supports productive placement.

We suggest placing the Type C in specified lift thicknesses, adding the required amount of heated water to achieve "Nearly Saturated Backfill" and compacting the "Nearly Saturated Backfill" immediately after the heated water is applied. Similar material was placed successfully using this method in similar temperatures last March - during construction of the P1 Dikes at Meliadine. This would require a variance to the specification as Section 1005 1.4.7.b states:

"The Type K material shall be pre-mixed with water and Type C material or other approved material (20 mm minus) before being placed and compacted. It is preferred that pre-mixing be done in a pug mill. If not available, pre-mixing in a dedicated pit or container close to the construction site can be done after approval from the Engineer. It is not allowed that in situ mixing of the Type K material is done in the area where the material is to be placed."

Be advised Type K placement is presently our only available work front and until a plan is in place – or other work fronts become available – we will not be remobilizing our dike construction crews to site.

Prepared by: Michael Love Signature: Michael Love Date: Jan 5, 2017

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

Unsuccessful Past Experience for In-situ Mixing to Produce Nearly-saturated Backfill

As I know, our Edmonton Arctic Group has involved in the design and construction QA/QC for the majority (if not all) of the frozen core dikes/dams that have been constructed in Northern Canada. Similar to the Type K material (nearly-saturated backfill) for the dike (D-CP1) construction at the Meliadine site, unfrozen nearly-saturated backfill was used to construct the frozen cores of these dikes/dams in cold winter conditions. During the early stage of construction for some of the frozen cores, trials with in-situ mixing to produce nearly-saturated backfill proved to be unsuccessful. As a result, the in-situ mixing method was not adopted in construction of these frozen cores. The major issues with the in-situ mixing include the following:

- Water ponding on the lift surface and not being able to penetrate down to the bottom of the lift before the water froze; as a result, ice layers formed on the surface and the under-saturated bottom lift had low ice/water saturation;
- Difficulty in controlling final water content of the material; tending to generate either ice-rich or under-saturated material with various saturation conditions, which does not meet the design intent and requirements;
- Under cold air temperatures, sprayed water tended to freeze quickly before mixing and compaction.

Based on this past experience, we specified in the D-CP1 Construction Specifications that in-situ mixing method should be avoided for mixing the Type K Material.

Regarding the "frozen core" construction of the P1 Area temporary dikes (DP1-A, DP1-B, DP2-A and DP3-A) at the Meliadine site, the "frozen core" construction of the P1 Area temporary dikes cannot be referred to justify using the in-situ mixing method for the D-CP1 dike Type K material for the following reasons:

- The P1 Area dikes were constructed to temporarily control the water in the P1 area during the 2016 spring freshet and had much less stringent engineering requirements than those for the permanent dikes (D-CP1 and D-CP5);
- Many unsuccessful trials using the in-situ mixing method were made during the early stage of the "frozen core" construction, which resulted in loss of some valuable construction time and partially led to final cancellation of using nearly-saturated fill as construction material for the dike cores. In the end, only several lifts of the bottom cores in DP1-A and DP3-A were constructed using the nearly-saturated backfill. The remaining majority of the cores in DP1-A and DP3-A were constructed using the 0 – 30 mm material only – no mixing with water. The entire cores for DP1-B and DP2-A were constructed using the 0 – 30 mm material only – no mixing with water. Therefore, the P1 Area temporary dikes are not "frozen core" dikes.
- The core construction for the P1 Area dikes started on March 26, 2016 when the air temperatures ranged from -10°C to -25°C. Under these relatively mild temperatures, I would say that pre-mixing in a pit may achieve a better result.
- The core material for the P1 Area dikes was the crushed 0-30 mm rockfill, which had low natural ice/water content (about 3%), which is different from the Type C (0-20mm) used for the D-CP1 construction. The latter (Type C) has a high natural moisture content of 7% to 14%, which would need more heat to thaw the existing ice during mixing.

Construction Schedule and Plan

As noted in Construction Drawing 65-685-230-208 for Dike D-CP1, it was assumed during the design that the key trench excavation and backfill would be conducted from late September to November 2016 for D-CP1 to avoid the extreme cold temperatures in December to February. Unfortunately, this was not achieved due to the late start of the D-CP1 construction and slow progress in construction.

It is understood that the Contractor together with AEM is responsible for developing proper construction schedules/plans and adopting relevant construction techniques and methodology to meet the design intent and final completion schedule of D-CP1 and D-CP5.

The following preliminary construction plan is provided for further consideration and discussion:

- Focus on excavation of the key trenches for D-CP1 and D-CP5 during the extreme cold weather period;
- Temporarily suspend the Type K material placement during the extreme cold weather period;
- Further re-adjust the current in-pit mixing method to produce unfrozen Type K material under cold weather conditions; consideration can be given to increasing the water temperature for mixing, selecting the Type C material with less natural moisture content as the source for mixing, pre-heating the Type C material before mixing, stockpiling the selected Type C in a warming tent, pre-heating the mixing pit, or covering the mixing pit with a heated tent, etc.

Based on the discussions mentioned earlier, it is not recommended to adopt the in-situ mixing method that was proposed by the Contractor. Nevertheless, if the Contractor together with AEM would like to take time and effort to investigate the in-situ mixing method, they can first conduct a trial mixing/placement in a test strip at a selected site away from the dike key trench:

- Remove snow/ice and other non-suitable surface material to form a relatively level base for the trial mixing;
- Place the Type C in a loose lift (no compaction) with a maximum lift thickness of 75 mm or 100 mm;
- Spray hot water uniformly over the lift surface to target the desired water saturation after compaction;
- Compact the Type C before the water freezing;
- Take several core samples from the test strip to determine the water saturation and its variation over depth.

If the trail mixing and test results suggest that the in-situ mixing is working, the Contractor may conduct more trials to develop final procedures to be used for mixing and placing the Type K material for the dike construction:

- Follow the procedures developed during the trial mixing;
- Take core samples after compaction to verify the water saturation and its variation over depth for each lift;
- If the placed Type K does not meet the design requirements, the lift should be removed.

Engineering : Gordon Zhang Signature: Date: January 9, 2017

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_018 Rev: 0
Meliadine Project

Site RFI Initiator: Fai Ndofor Date: 2017-01-19

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
D-CP1 Typical Section and Quantities	65-685-230-208	1
Geotechnical Specifications for Construction of DCP-1 (Tetra Tech EBA, Issued for Use November 9, 2016)	6515-E-132-007-132-SPT-002	1

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND PROPOSED SOLUTION :

Since the unsuccessful attempt at mixing/placing Type K material occurred on December 20, 2016, two further attempts to mix/place Type K within the key trench at D-CP1 have been made. A summary of the QA/QC observations from these attempts is as follows:

1. January 17: Ambient temperature = -12°C; Mix water temperature = ~40°C; Aggregate temperature = -35°C; Temperature of Type K after mixing = -6°C to -8°C; Amount of aggregate = 6 level 345 buckets; Amount of added water = 13 minutes (approximately 2,200 L); Mix time = 5 minutes. The mix moisture content was 14.2%, it was observed as dry and frozen and was not placed within the key trench.
2. January 18:

- Mix water temperatures = ~63°C; Aggregate temperature = -24°C; Temperature of Type K after mixing = -7°C to -8°C; Amount of aggregate = 6 level 345 buckets; Amount of added water = 19 minutes (approximately 3,150 L); Mix time = 5 minutes. The mix moisture content was 17.5%, it was observed as damp, frozen and was not placed within the key trench. The mix was spread in a 200 mm thick lift close to the mix station and compacted (2 static and 5 vibrating passes) with the 10 ton compactor. Cracks and loose material were observed on most of the compacted surface indicating non-saturated and frozen material.
- Heating aggregate will not be possible until mid-February at the earliest using the on-site batch plant facilities.
- Recommend placing 0.15 to 0.30 m thick Type F directly on base of key trench at the approved depths (approximately 2.8 m) and lowering the liner for remainder of D-CP1 from Stations 0+310 to 0+580 – all other overliner design elements will remain.
- This will increase liner, Type B, Type F (bentonite mix) and Type C materials quantities. The changes in materials quantities have not been quantified to date.

Prepared by: Fai Ndofor Signature: Fai Ndofor Date: 2017-01-19

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

It is understood that the Contractor could not produce the Type K material (nearly-saturated backfill by mixing the Type C with hot water) that meets the required specifications under the current climate conditions and available facilities at the site:

1) The maximum water temperature for mixing is limited to about 60 C and could not be higher due to limitation of the available water heating facility;
2) Cold temperature (as cold as -35 C) of the Type C material for mixing;
3) Relatively high natural ice content in the Type C material for mixing;
4) No facility or equipment is available to pre-heat the Type C for mixing;
5) Cold air temperatures in January; and
6) Mixing in a cold pit in the natural ground that is open to cold ambient air temperatures.

The option to lower the liner bottom elevation in the key trench is a technically feasible solution to eliminate the use of the Type K material in the remaining portion of the D-CP1 key trench. This option will result in the following changes and associated construction cost increases:

a) Additional liner is required and may need to be shipped in by air;
b) Additional excavation in the key trench downstream side is required to meet the design liner bottom length in the key trench; and
c) More backfill materials (Type B, Type F (including bentonite), and Type C) are required.

Sketches to compare the original design and the option are attached with this file.

Based on the sketches (typical sections with 2.8 m key trench depth), the material quantity changes are roughly estimated for planning, assuming the changes for the option will be applied to Stations 0+310 to 0+580 (about 270 m):

Estimated in-place quantity changes:

Type B: 2,940 m3 (increase);
Type C: 1,690 m3 (increase);
Type F: 210 m3 (increase); therefore, bentonite increase: approximately 42 tonnes
Type K: -2,170 m3 (decrease); therefore, the total Type C will slightly decrease (1690+210-2170 = -270 m3);
Liner (ES3): 909 m2 (increase), including overlapping; and
Key trench excavation: 2,670 m3 (increase).

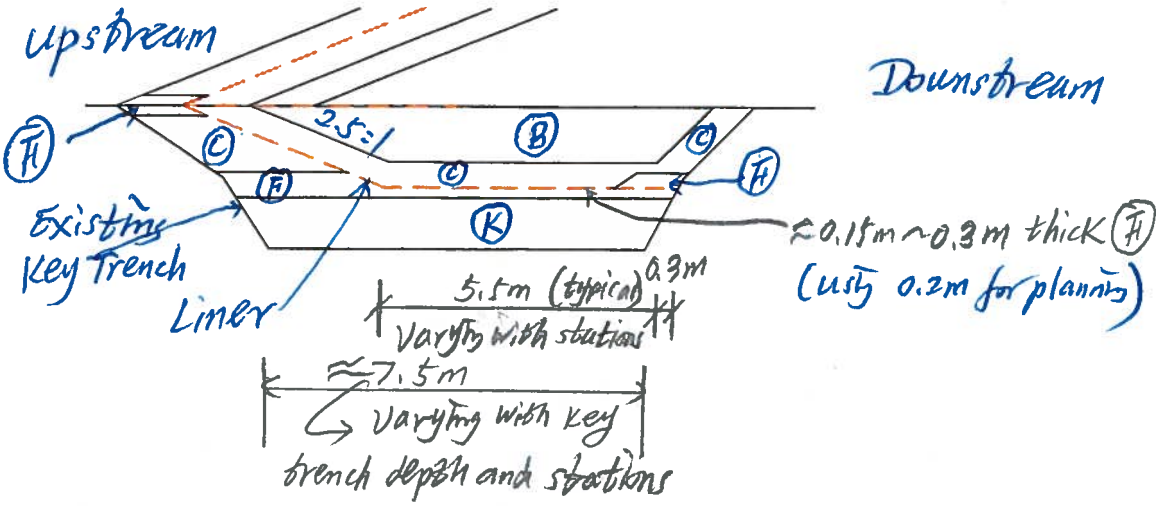
The estimated quantity changes are provided for AEM's planning and decision making. The actual quantities will depend on the actual construction details and could be different.

Prepared by:	Gordon Zhang	Signature:		Date:	January 20, 2017

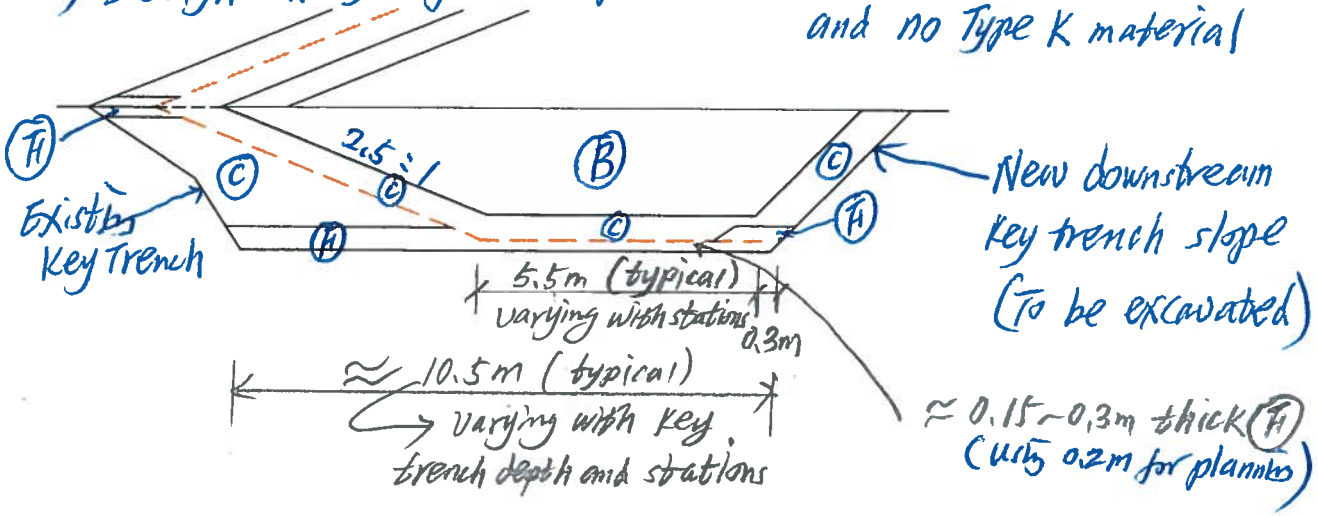
4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

		Deviation Request: ☐ No ☐ Yes	
	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

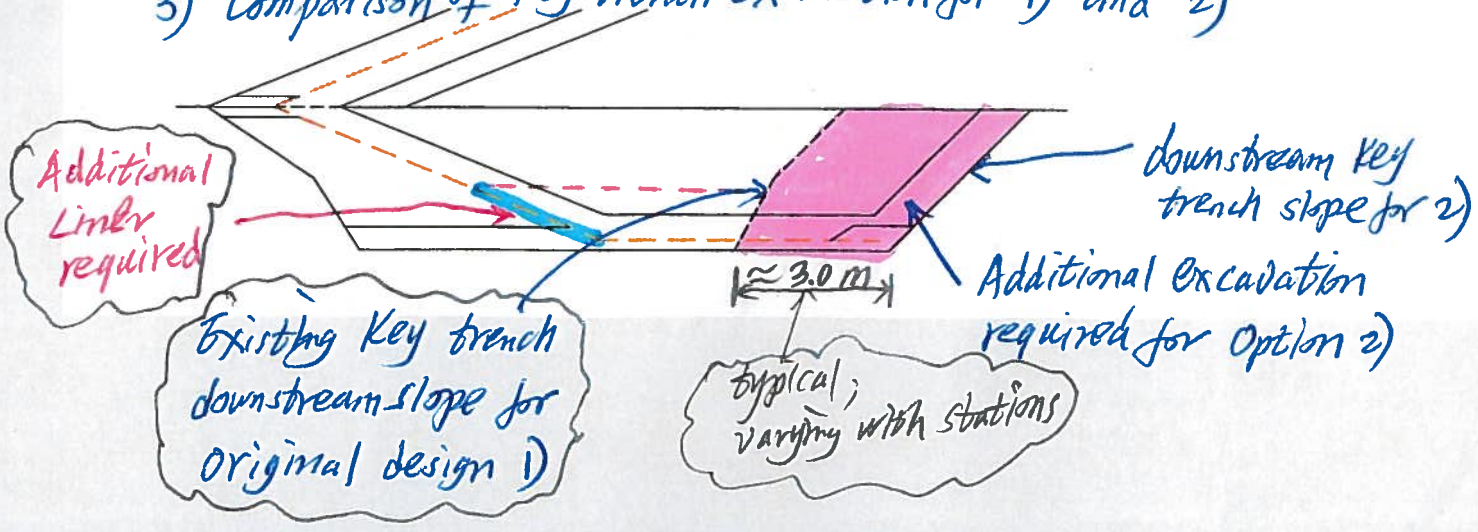
1) Original Design in Dike Key Trench for D-CP1



2) Design Changes for the option with lower Liner bottom elevation and no Type K material



3) Comparison of Key trench excavation for 1) and 2)



AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_019 Rev: 0
Meliadine Project
Site RFI Initiator: Michael Price Date: Jan 22, 2017

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
RFI No: 6515-C-230-007_018		

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND PROPOSED SOLUTION :

The original volume MTKSL calculated and provided for the additional excavation required to incorporate lowering the liner at DCP01 was based on the assumption that the vertical box cut would be held from -2.8 to -1.8m and the 1:1 slope would begin from that point. Upon review of RFI 018 response the details appear to have a 1:1 slope projected back from the new toe location. The attached detail outlines the additional volumes associated with the different slope options, proceeding with the 1:1 slope from the new toe location would result in an increase of approximately 550m^3 and 4 days of duration to the excavation activity.

Please confirm the required slope for the DS face of the additional excavation.

- Option 1 = 1:1 slope down to -1.8m transition to box cut down to final toe.
- Option 2 = 1:1 Slope beginning at the new toe location.

Prepared by: Michael Price Signature: Mike Price Date: Jan 22, 2017

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

The Option 2 (downstream slope beginning at the new toe location) was shown in the sketch in the responses to the RFI 018 to illustrate the general concept of lowering the liner in the key trench of D-CP1. This is just a preferred option that has a uniform downstream slope. Nevertheless, other excavation options, such as Option 1 proposed by MTKSL, can be considered.

Instead of a uniform sloping wall, Option 1 adopts a vertical downstream side wall in the lower portion (from -1.8 m to the final bottom) of the downstream key trench, which would result in less key trench excavation/backfill. Since Option 1 would result in lower dike construction cost and still meet the overall dike design intent, this option is acceptable.

Engineering : Gordon Zhang Signature: Date: January 22, 2017

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_020 Rev: 0
Meliadine Project
Site RFI Initiator: Michael Love Date: Jan 23, 2017

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
RFI No: 6515-C-230-007_018 RFI No: 6515-C-230-007_019		

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND PROPOSED SOLUTION :

Does RFI 18 and the pending response to RFI 19 apply to DCP-5 also?

Prepared by: Michael Love Signature: Michael Love Date: Jan 23, 2017

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

Engineering : _____ Signature: _____ Date: _____

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_021 Rev: 0
Meliadine Project
Site RFI Initiator: Michael Price Date: Jan 24, 2017

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
RFI No: 6515-C-230-007_018		

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND PROPOSED SOLUTION :

In an effort to reduce duration and costs associated with the path forward to lower the liner elevation within D-CP01 MTKSL has prepared the below scenarios for consideration;

With the current design the additional excavation required = 1500m^3

Option 1: Reduce liner horizontal distance along the bottom of the key trench from the design width of 5.5m

- 5.0m would result in a reduction of 275 m^3 of excavation, requiring a total additional excavation volume of 1225m^3
- 3.52m would eliminate the need for any excavation.

Option 2: Revise lower liner slope from the design slope of 2.5:1

- A slope of 2.0:1 would result in a reduction of 987 m^3 of excavation, requiring a total additional excavation volume of 513m^3

Option 3: Revise lower liner slope from the design slope of 2.5:1 and reduce liner horizontal distance along the bottom of the key trench from the design width of 5.5m.

- A slope of 2.0:1 and a width of 5.15 would eliminate the need for any excavation.

Note distances and changes in all options were taken as a starting point to identify potential savings, any possible reduction between design and what we have outline here would be a welcome change to reduce both duration and cost.
Please advise if any or a combination of these options are an acceptable alternative for the construction of D-CP01.

Prepared by: Michael Price Signature: Mike Price Date: Jan 24, 2017

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

MTKSL proposed these options in trying to reduce the downstream key trench excavation quantity of D-CP1. Actually, similar options had been previously considered but rejected when we initially designed the dike and again recently prepared the responses to the RFI 018.

Yes. Reducing the bottom liner width or steepening the liner slope would reduce the excavation quantity. However, these changes would not meet the dike design intent and requirements. The liner bottom width of 5.5 m (in areas with low original ground elevation for D-CP1) was selected based on the design water head. Reducing the liner bottom width will proportionally increase the seepage gradient and potential risk of high seepage rate through the foundation. The design geomembrane liner slope of 2.5 (H):1 (V) was adopted based on our past design and construction experience for lined dikes/dams in permafrost regions. Steeper liner slope (such as 2:1) would make the installation and welding of the liner more difficulty, be detrimental to liner performance due to increased risk of liner panel shifting and movement during installation and welding, and increase the risk of slipping and falling of the liner installer, especially during current icy winter conditions. In addition, steepening the liner slope will also negatively decrease the Type C material thickness below the liner in the upstream key trench slope area.

In summary, we recommend to keep the original design liner bottom width and slope unchanged and not to adopt any of the options proposed.

Engineering : Gordon Zhang	Signature:	Date: January 25, 2017

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

	Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515 Contract No: C-007 RFI No: 6515-C-230-007_022 Rev: 0
Meliadine Project

Site RFI Initiator: Michael Price Date: Jan 27, 2017

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND PROPOSED SOLUTION :

For areas of D-CP05 where the excavation is required to extend down to -2.8m, please confirm that the upstream slope will continue at the slope of 1.5:1.

As an alternate option to reduce the excavation and Type F quantity MTKSL is proposing to use the existing minimum cover and slope parameters from the IFC design to create a step in the slope at the 1.8m elevation where the design key trench floor was planned to be encountered. (per attached detail) potential saving = 1.1m3/Ln.m of excavation and 0.5 m3/Ln.m Type F.

Please confirm approved up stream slope detail for D-CP05.

Prepared by: Michael Price Signature: Mike Price Date: Jan 26, 2017

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

First of all, none of the final key trench depths for the stations excavated so far at D-CP5 has reached 2.8 m from the original ground surface. Actually, almost all of the final key trench depths that have been approved by the QA/QC team are around 1.8 m or less:

Stations 0+000 to 0+020: final depth around 1.8 m (see daily report on January 24);

Stations 0+140 to 0+200: bedrock encountered at 1.3 m to 1.8m (see daily report on January 24);

Stations 0+070 to 0+080: positive results from jar test results at 1.8 m; may be approved after the QA inspection today.

Based on the two boreholes drilled in the 2016 geotechnical site investigation, shallow bedrock (about 1.5 m from ground surface) was encountered in areas around Station 0+170 and Station 0+220. Note that the D-CP5 is shorter and key trench is about 290 m (0+000 to 0+0290).

In summary, with possibly no or limited length of the D-CP5 key trench that needs to be excavated beyond a depth of 1.8 m, the potential saving of excavation for the scheme proposed by MTKSL is limited.

Technically, we do not recommend the key trench excavation option that was proposed by MTKSL in this RFI for the following reasons:

1) If the key trench needs to be excavated below 1.8 m to up to 2.8 m, that means the foundation soils below the 1.8 m depth must be either ice-rich or icy soils. If these soils are thawed, potential thaw induced settlements would be relatively great.
2) To reduce the potential risk of detrimental thaw settlement below the critical portion of the line, the ice-rich or icy soils below the critical portion of the liner system should be removed and replaced with thaw-stable backfill.

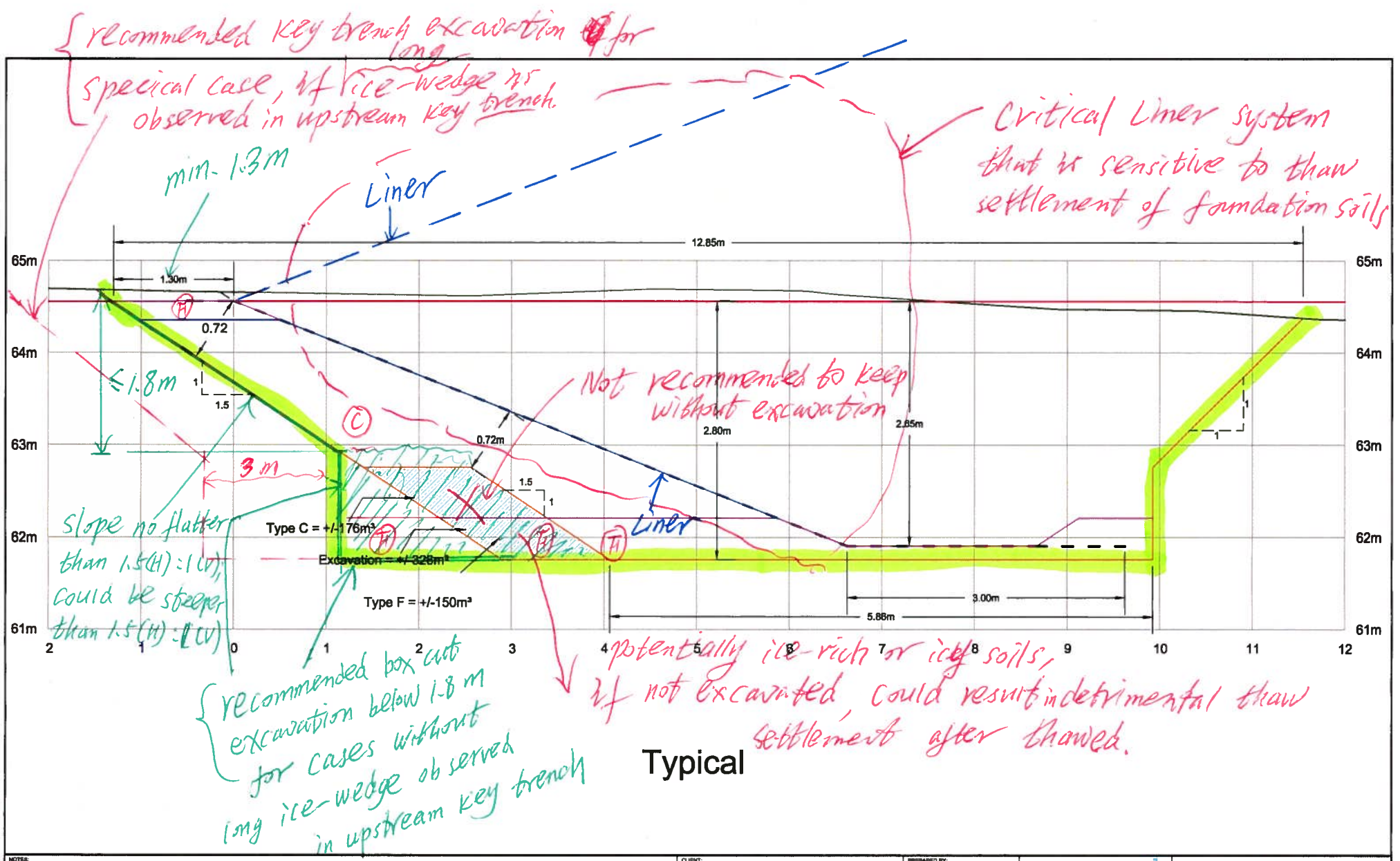
Based on MTKSL's original sketch, notes are made in the attached sketch to show the recommended excavation plan for the case with a required key trench depth of up to 2.8 m.

Engineering : Gordon Zhang	Signature:	Date: January 27, 2017

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

	Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			



NOTES:

Type F — Original Ground
Type C — Hinge Point Elevation
Excavation — Liner

CLIENT: AGNICO EAGLE Meliadine Gold Project

PROJECT: Agnico Eagle Meliadine Civil Works Dike Construction 2016-2017

PREPARED BY: MTKSL Contracting Joint Venture 19-41 Street South PO Box 809 Rankin Inlet, Nunavut X0C 0G0

MTKSL CONTRACTING JOINT VENTURE

DRAWN BY: JLR | SCALE: NTS | DATE: Jan 23 2017

Work Area

DRAWING TITLE: DCP 5 Excavation Proposal 2

DRAWING NAME (YYMMDD): CA 170121 D5 KT Excavation.dwg

AGNICO EAGLE

Request For Information

Project No: 6515 Meliadine Project	Contract No: C-007	RFI No: 6515-C-230-007_023	Rev: 0
Site RFI Initiator: Michael Price		Date: Jan 28, 2017	

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
Geotechnical Specifications for Construction of DCP-1 (Tetra Tech EBA, Issued for Use November 9, 2016)	6515-E-132-007-132-SPT-002	1

2. DESCRIPTION , JUSTIFICATION OF THE RFI AND PROPOSED SOLUTION :

Type H material specification currently require that the material particle size distribution fall between 0 and 75 mm. Is there an opportunity to relax this specification and increase the particle size to between 0 and 125mm? Doing so will allow the material to be produced with the Jaw only, removing the need for the cone crusher that has shown to be more problematic with the esker material in winter conditions due to material freeze / build ups within the unit. These conditions were not originally planned for during the production of this material as it was originally schedule to take place prior to cold temperatures setting in. Considering the tight schedule for production it would be best to remove the potential for further delay.

In addition with recent changes to the liner elevation it has been noted that if Type B quantities become exhausted Type H will be used in its place. Where Type H material replaces Type B can the material gradation of H be increased to that of B, 0-150mm?

Prepared by: Michael Price Signature: Mike Price Date: Jan 28, 2017

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

Background Information

During the dike design stage, Agnico Eagle indicated that there were a lot of natural esker sand and gravel materials that are available for the dike construction and would be sourced from many esker borrow sites at the Meliadine site. The esker sand and gravel materials were referred as "Type H" Material in the D-CP1 dike specifications and drawings. Based on some available previous sieve test results for unfrozen esker sand and gravel samples taken from various borrow sites at the Meliadine site, the particle size distribution limits for Type H were established. Therefore, it is expected that the unfrozen natural esker sand and gravel materials excavated from the borrow sites during the summer time would generally meet the required specifications with no or little processing (crushing) requirement. As specified in the dike Construction Specifications, the esker sand and gravel materials should be stockpiled in summer to drain the excess in situ moisture before it is used as Type H for winter construction, and frozen chunks of Type H should not be directly used as fill for the dike construction before the ice bonding of the particles is broken by mechanical means.

Unfortunately, little quantity of the Type H material was produced in the summer time last year. The majority of the Type H material for the D-CP1 construction has not been produced so far and will be produced from the frozen esker sand and gravel to be excavated from the borrow sites in this cold winter period. Two major potential issues are associated with the winter production of the Type H material: 1) frozen chunks of finer particles, which cannot be directly used for the dike construction, and 2) high ice content (excess water cannot be drained in the winter time), especially for the fully ice-saturated materials excavated from the permafrost ground below the active layer.

MTKSL's Option to Increase the Maximum Particle Size for Type H from 75 mm to 125 mm

Because the Type H will be sourced from the natural esker sand and gravel materials that would have a low percentage of boulders greater than 75 mm in size, increase in the maximum allowable particle size to 125 mm would have little impacts on its final overall particle size distribution.

It is OK to increase the maximum particle size of the Type H from 75 mm to 125 mm as long as the following conditions are met:

1) The allowable particle size of up to 125 mm is only applicable to any individual boulder but not applicable to any frozen chunk of finer particles;
2) No frozen chunks of finer particles are allowed in the final Type H for the dike construction;
3) The fines (<0.076 mm) content in the Type H (based on laboratory sieve tests in its unfrozen state) should be no greater than 10%;
4) The particle distribution for the final Type H in both its frozen and unfrozen conditions should be similar and be well graded; and
5) The Type H should be sourced from the esker material with a natural moisture content (based on laboratory moisture content tests) of no greater than 10% to limit its ice content and potential thaw settlement.

Note that the cone crusher may be still required to crush the frozen chunks of finer particles even though the maximum allowable particle size for boulders is increased to 125 mm.

Type H to Replace a Portion of Type B in Key Trench Backfill

The option to replace a portion of Type B with Type H is mainly applicable to the key trench backfill for D-CP5 after Type B quantities become exhausted. The use of Type H to replace Type B for the D-CP1 key trench backfill should be minimized. The Type B zone between the Type C and Type A1 (or Type A) below the upper liner system that is above the key trench should not be replaced with Type H for either D-CP1 or D-CP5.

Similar to the comments mentioned above in response to "MTKSL's Option to Increase the Maximum Particle Size for Type H from 75 mm to 125 mm", it is OK to increase the maximum particle size to 150 mm as long as the similar conditions mentioned above are met. Again, because the Type H will be sourced from the natural esker sand and gravel materials that are generally much finer than Type B, simply increasing the maximum allowable particle size to 150 mm for Type H would have little impacts on its final overall particle size distribution; and therefore, the Type H (without any frozen chunks of finer particles) would be generally finer than Type B.

Engineering : Gordon Zhang	Signature:	Date: January 30, 2017

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

	Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

AGNICO EAGLE

Request For Information

Project No: 6515	Contract No: C-007	RFI No: 6515-C-230-007_024	Rev: 0
Meliadine Project			
Site RFI Initiator: Michael Price		Date: Feb 20, 2017	

1. REFERENCE DOCUMENTS :

Title(s):	*Number:*	*Revision:*
Geotechnical Specifications for Construction of D-CP1 (Tetra Tech EBA, Issued for Use November 9, 2016)	6515-E-132-007-132-SPT-002	1

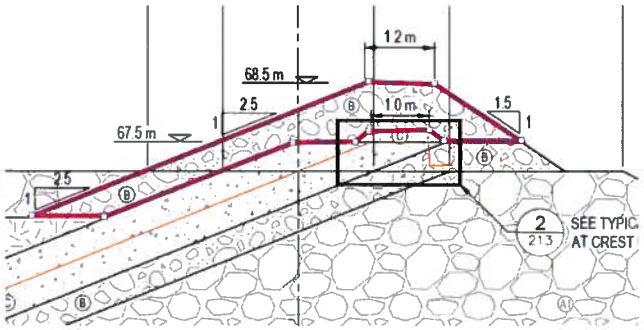
2. DESCRIPTION , JUSTIFICATION OF THE RFI AND PROPOSED SOLUTION :

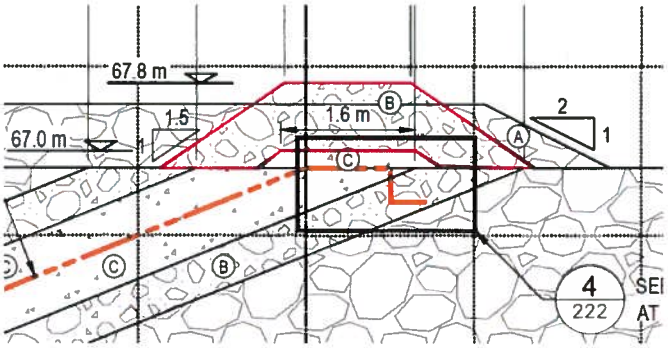
Based on survey data and approved design changes MTKSL has calculated the neat line volume of Type B to be 16,191 m^3. This volume considers D-CP1 to be constructed with no substitutions where Type B is required (including the additional excavation) and D-CP5 to maintain Type B as per design above OG and a minimum thickness of 300mm from OG down within the Key Trench. The remainder of D-CP5 Key Trench Type B will be substituted with Type H.

The current stockpile of Type B = 15,100 m^3 leaving us short of material which would require the substitution of Type H within the D-CP01 Key Trench. The current supply of Type H material on hand is not acceptable for the key due to high moister content and the production of additional Type H is delayed pending a blasting program to produce the feed material as ripping will not produce material in the time frame required.

In an effort to prevent any delay MTKSL is proposing / requesting one of 3 options;

1. Replace the Type B material within the very top cover portion of the Dikes with Type B material produced from UG ROM as this location is already adjacent to Type A material. (see below)
2. Replace the Type B material within the very top cover portion of the Dikes with the 0-125mm Type H (see below)
3. Produce an additional quantity of clean Type B from the A1 supply which is not ideal as the quantities are already tight for this material.





Prepared by: Michael Price Signature: Mike Price Date: Feb 20, 2017

3. TECHNICAL RESPONSE FROM ENGINEERING AND/OR VALIDATION OF PROPOSED SOLUTION :

As indicated by MTKSL, Option 3 to produce Type B from Type A1 (ROM from the saline pond excavation) is not practical because of a shortage of qualified Type A1 due to a large percentage of oversized boulders produced during the saline pond excavation. Depending on the percentage of oversized boulders in the Type A1 ROM, the estimated quantity of the actual Type A1 (after removing oversized boulders) that is currently available at the site may not be adequate for the required quantity of Type A1 for construction of D-CP1 and D-CP5. Therefore, Option 3 is not feasible.

Option 2 to replace Type B with Type H (esker sand and gravel) has two issues. The esker sand and gravel (Type H) is susceptible to surface erosion and therefore, is not a suitable material to be placed over the dike crest. Secondly, the majority of Type H required for construction of D-CP1 has not been produced at this stage. The availability of additional, qualified Type H is uncertain.

Option 1 to use the UG ROM to produce an alternative of Type B is not ideal but is a practical option. The UG ROM contains salts that would increase the pore water salinity of the dike fills. Nevertheless, since the material will be placed over the dike crest (as shown within the red lines in MTKSL's sketches above) that is relatively away from the critical component (key trench) of the dikes, the potential risk of the salt impacts to the dike's overall performance is manageable. Option 1 is a practical solution since the UG ROM quantity is adequate and readily available at site.

In summary, Option 1 is the most practical option among the three options proposed by MTKSL. At this stage and tight construction schedule, we have no other practical alternatives but to adopt Option 1.

It should be emphasized that the Type B using the UG ROM as a source should be only placed within the dike crest zones as shown within the red lines in MTKSL's sketches above. The Type B in other dike zones should use the rockfill without salts (from the saline pond excavation).

Engineering : Gordon Zhang	Signature: Gordon Zhang	Date:	February 21, 2017

4. IF NOT TECHNICAL RFI VALIDATION OF PROPOSED SOLUTION BY SITE SUPERVISION

	Deviation Request: ☐ No ☐ Yes

	Name	Signature	Date
Superintendent:			
c.c. Contract Administrator:			

APPENDIX D2

ENGINEERING CHANGE NOTICES (ECNS)

AGNICO EAGLE

MELIADINE GOLD MINE PROJECT

ENGINEERING CHANGE NOTICE

Contract No: OL-459893-L Contract Title: Block 007 - Water Management Infrastructure

Contractor: Tetra Tech EBA Inc. Date: 10-Nov-16

ECN No: 6515-C-235-007-ECN-001_RA ECN Title: Revision 1 for Construction Specifications of D-CP1 and D-CP5

ECN Description:

We have updated the construction specifications (from Revision 0 into Revision 1) for D-CP1 and D-CP5 to include additional information for clarification:

1) Add a new section for dike instrumentation installation
2) Add additional details for material preparation and placement for Nearly-Saturated Backfill
3) Add additional details for liner QC/QA testing and reporting for the liner installation

Justification:

To add more details and increase clarifications for construction specifications of D-CP1 and D-CP5

List of Deleted, Revised or Added Documents (*Add a page to list more if needed*)

Item	Document Number	Rev
1	6515-E-132-007-132-SPT-002	R1
1	6515-E-132-007-132-SPT-003	R1

Item	Document Number	Rev

Potential Impacts:

On Schedule: Yes ☑ No ☐ On Cost: Yes ☑ No ☐

Action Record	TITLE	NAME	Signature	Date
Prepared by:	Package Engineer			
Reviewed by:	Lead Discipline	Duy Nguyen		
Accepted by:	Engineering Manager	Daniel Seguin		
Accepted by:	Project Manager	Jean Routhier		

Notes:

1	Contractor has 10 days to return the Impact on Cost (on the attached Price Breakdown) and Schedule			
2	Contractor is not to proceed with any work until authorized to do so			
Contractor Acknowledment				
Received by:	Contractor Repres.			

Attachments Forming Part of This Specification:

Section	Rev.	Title of Section
General Specification Section		
6515-C-235-007-230-MTX-001	R2	Documents and Drawings Index
6515-C-235-007-230-SOW-001	R2	Summary of Work
6515-E-132-007-132-SPT-002	R1	Specifications for Dike D-CP1
6515-E-132-007-132-SPT-003	R1	Specifications for Dike D-CP5
6515-C-235-007-230-VDT-001	R1	Vendor Data Requirements Table
Standard Datasheet Section		
N/A		
Standard Specification Section		
Drawing No.	**Rev.**	**Title**
6515-GGD-03	R0	Site Information and Design Coefficients
6515-000-133-VDR-001	R0	Vendor Data Requirements

Drawings Forming Part of This Specification:

Drawing No.	Rev.	Title
65-685-230-204	R1	D-CP1 GENERAL LOCATION PLAN
65-685-230-205	R1	D-CP1 KEY TRENCH AND DIKE LAYOUT PLAN
65-685-230-206	R1	D-CP1 PROFILES
65-685-230-207	R1	D-CP1 THERMAL COVER LAYOUT PLAN AND PROFILES
65-685-230-208	R1	D-CP1 TYPICAL SECTIONS AND QUANTITIES
65-685-230-209-01	R1	D-CP1 SECTIONS STATION 0+025 TO 0+200
65-685-230-209-02	R1	D-CP1 SECTIONS STATION 0+225 TO 0+400
65-685-230-209-03	R1	D-CP1 SECTIONS STATION 0+400 TO 0+575
65-685-230-210	R1	D-CP1 DOWNSTREAM WATER COLLECTION CHANNEL AND SUMP LAYOUT PLAN AND PROFILES
65-685-230-211	R1	D-CP1 INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES
65-685-230-212	R1	D-CP1 INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES AND SETTLEMENT SURVEY MONUMENT POINTS
65-685-230-213	R1	D-CP1 TYPICAL DETAILS
65-685-230-214	R0	D-CP5 GENERAL LOCATION PLAN
65-685-230-215	R0	D-CP5 KEY TRENCH AND DIKE LAYOUT PLAN

65-685-230-216	R0	D-CP5 PROFILES
65-685-230-217	R0	D-CP5 THERMAL COVER LAYOUT PLAN AND PROFILES
65-685-230-218	R0	D-CP1 TYPICAL SECTIONS AND QUANTITIES
65-685-230-219-01	R0	D-CP5 SECTIONS STATION 0+030 TO 0+170
65-685-230-219-02	R0	D-CP5 SECTIONS STATION 0+170 TO 0+310
65-685-230-220	R0	D-CP5 INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES
65-685-230-221	R0	D-CP5 INSTRUMENTATION PLAN AND DETAILS FOR GROUND TEMPERATURE CABLES AND SETTLEMENT SURVEY MONUMENT POINTS
65-685-230-222	R0	D-CP5 TYPICAL DETAILS
65-000-230-212	R3	CIVIL WORKS 2016 – PLAN VIEW
65-417-230-207	RA	JETTY CP1 – PLAN / CROSS SECTION
65-417-230-208	RA	JETTY CP5 – PLAN / CROSS SECTION
65-695-265-200	R4	PUMPING STATION CP1 – PLAN, ELEVATION, DETAILS
65-695-265-203	R4	PUMPING STATION CP5 – PLAN, ELEVATION, DETAILS

2016-11-10	2	For review	G. Zhang	G. Zhang	G. Zhang	
2016-08-26	1	For Review	M. Ricard	G. Zhang	G. Zhang	D. Nguyen
2016-06-13	0	For Tender	M. Ricard	G. Zhang	G. Zhang	S. Guay
Date	**Rev.**	**Status**	**Prepared By**	**Checked By**	**Approved By**	**Approved By**
						Client

END OF SECTION

AGNICO EAGLE

MELIADINE GOLD MINE PROJECT

ENGINEERING CHANGE NOTICE

Contract No: OL-459893-L
Contract Title: Block 007 - Water Management Infrastructure
Contractor: Tetra Tech EBA Inc.
Date: 10-Nov-16

ECN No: 6515-C-235-007-ECN-002_RA
ECN Title: Design Change of Dike Liner Key-in Detail at Crest for D-CP1 and D-CP5

ECN Description:

In the meeting with Luciano and Duy on October 28, 2016, Luciano suggested some changes to avoid sharp corners of the liner in anchoring the liner over the dike crest. As directed, we have prepared two drawings (see attached) to show the proposed design changes for your review:

1) Proposed dike crest design change No.1 for D-CP1.
2) Proposed dike crest design change No.1 For D-CP5.

Justification:

As suggested by the extremal reviewer (Luciano), minor changes to the dike liner key-in at crest were made to avoid sharp corners of the liner in anchoring the liner over the dike crest.

List of Deleted, Revised or Added Documents (*Add a page to list more if needed*)

Item	Document Number	Rev
1	Proposed Design Change No1 for D-CP1	RA
1	Proposed Design Change No1 for D-CP5	RA

Item	Document Number	Rev

Potential Impacts:

On Schedule: Yes ☑ No ☐ On Cost: Yes ☑ No ☐

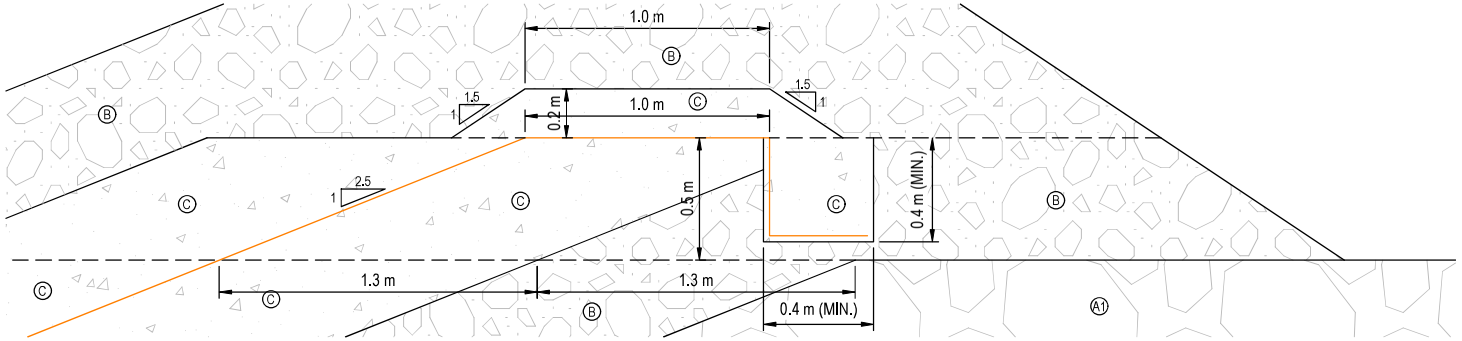
Action Record	TITLE	NAME	Signature	Date
Prepared by:	Package Engineer	Gordon Zhang	Gordon Zhang	NOV. 14/2016
Reviewed by:	Lead Discipline	Duy Nguyen	Duy Nguyen	
Accepted by:	Engineering Manager	Daniel Seguin		
Accepted by:	Project Manager	Marcel Beaudoin		

Notes:

1	Contractor has 10 days to return the Impact on Cost (on the attached Price Breakdown) and Schedule				
2	Contractor is not to proceed with any work until authorized to do so				
Contractor Acknowledgment					
Received by:	Contractor Repres.				

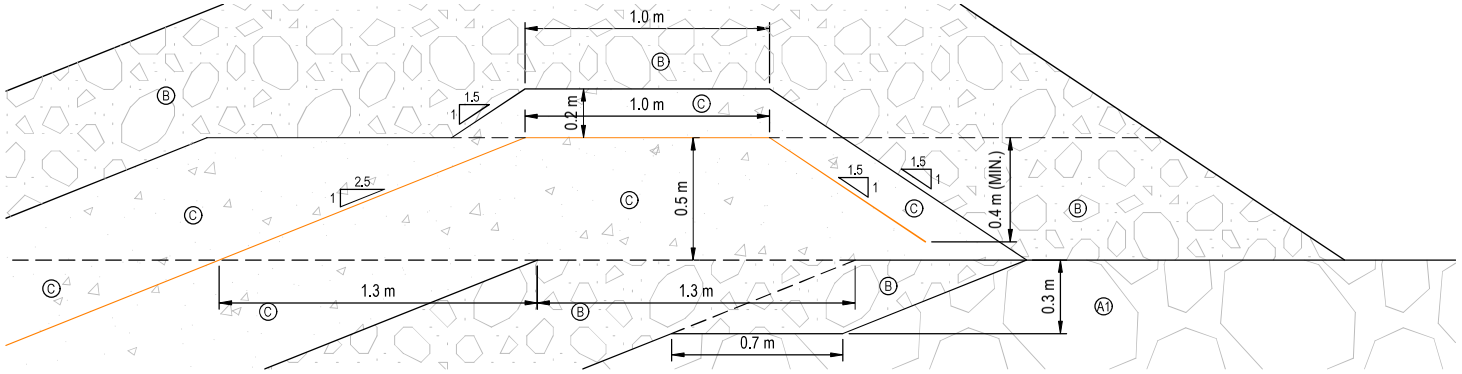
NO. DESSIN
DRAWING NO.

FORMAT ANSI B–11x17



TYPICAL LINER KEY–IN AT CREST – PREVIOUS DESIGN 2/208 (65–685–230–213 R1)

NOT TO SCALE



TYPICAL LINER KEY–IN AT CREST – REVISED DESIGN 2/208

NOT TO SCALE

NOTE:
ADDITIONAL MATERIAL 'C' CROSS-SECTIONAL AREA = 0.335 m²
ADDITIONAL MATERIAL 'B' CROSS-SECTIONAL AREA = 0.210 m²

NE PAS UTILISER POUR CONSTRUCTION
NOT FOR CONSTRUCTION
DATE : 2016–10–28

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
- (B) TRANSITION ROCKFILL (150 mm MINUS)
- (C) GRANULAR FILL OR ESKER SAND (20 mm MINUS)
- (F) BENTONITE-AUGMENTED MATERIAL (MIXTURE OF BENTONITE AND TYPE C MATERIAL)

AGNICO EAGLE

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TITRE / TITLE	# DWG

DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	PAR BY

REVISIONS

DESSINÉ PAR DRAWN BY	DATE
VÉRIFIÉ PAR CHECKED BY	
APPROUVÉ PAR APPROVED BY	
No. PROJET PROJECT NO.	
DATE	

TITRE / TITLE

AGNICO EAGLE – DIVISION

PROPOSED DESIGN CHANGE No.1 FOR D–CP1

ÉCHELLE/ SCALE	FICHIER FILE .DWG		
No. DESSIN/ DRAWING NO.		REVISION	FEUILLE/SHT
X		X	1 / 1

AE–CART–ANSI B

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NO. DESSIN
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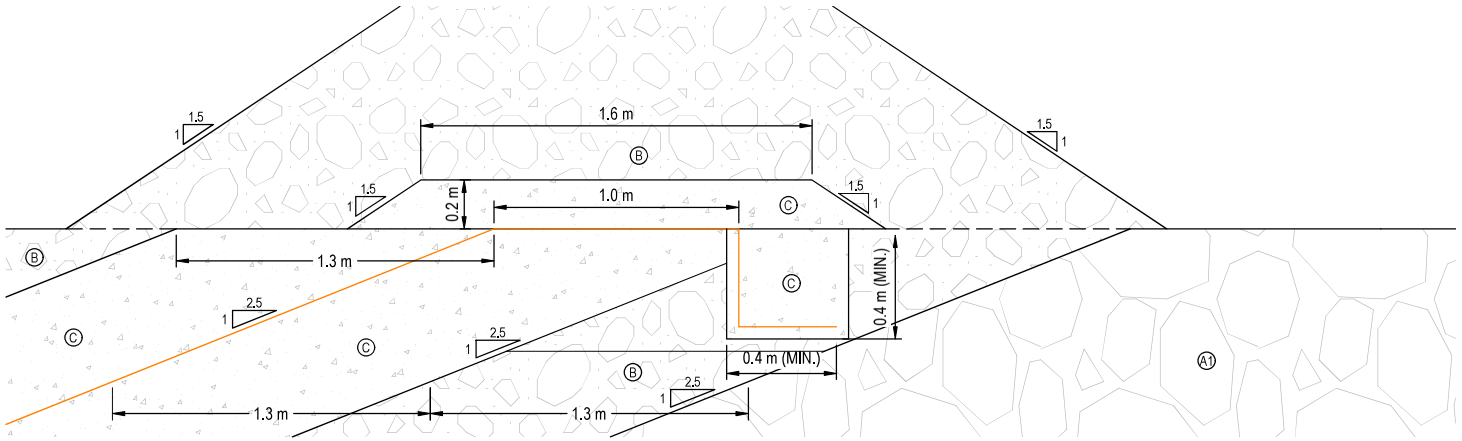
FORMAT ANSI B–11x17

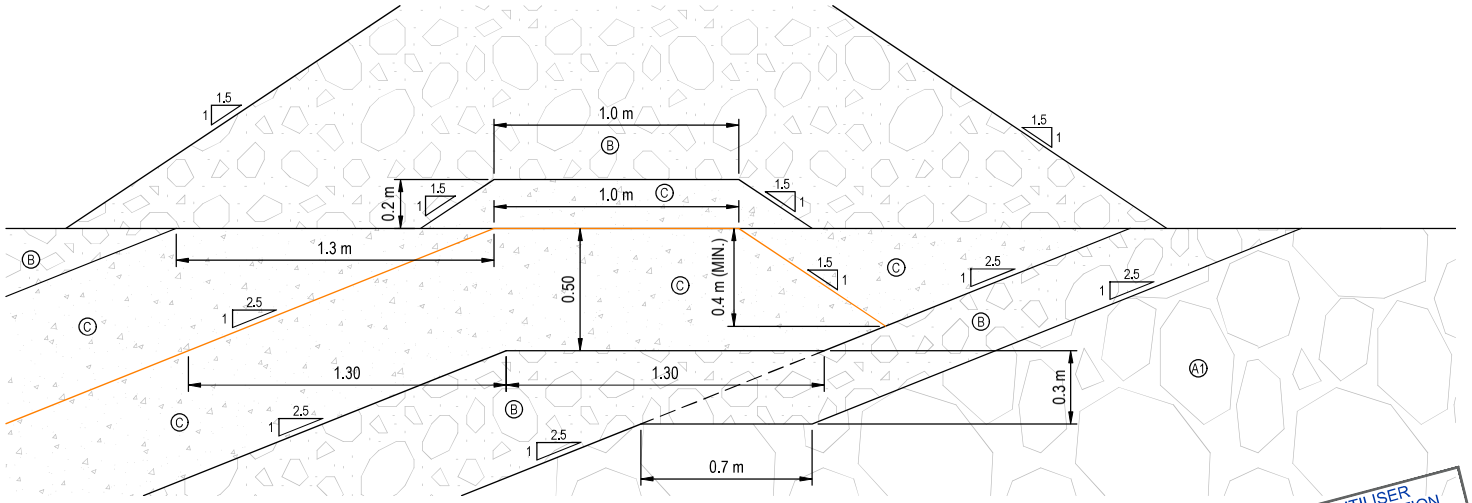


TYPICAL LINER KEY–IN AT CREST – PREVIOUS DESIGN

NOT TO SCALE

4
218

(65–685–230–222 R0)



TYPICAL LINER KEY–IN AT CREST – REVISED DESIGN

NOT TO SCALE

4
218

NOTE:
ADDITIONAL MATERIAL 'C' CROSS-SECTIONAL AREA = 0.330 m²
ADDITIONAL MATERIAL 'B' CROSS-SECTIONAL AREA = 0.110 m²

NE PAS UTILISER POUR CONSTRUCTION
NOT FOR CONSTRUCTION
DATE : 2016-10-28

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
- (B) TRANSITION ROCKFILL (150 mm MINUS)
- (C) GRANULAR FILL OR ESKER SAND (20 mm MINUS)
- (F) BENTONITE-AUGMENTED MATERIAL (MIXTURE OF BENTONITE AND TYPE C MATERIAL)

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TITRE / TITLE	# DWG

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REV	DESCRIPTION	DATE	PAR BY

REVISIONS

DESSINÉ PAR DRAWN BY	DATE
VÉRIFIÉ PAR CHECKED BY	
APPROUVÉ PAR APPROVED BY	
No. PROJET PROJECT NO.	
DATE	

TITRE / TITLE

AGNICO EAGLE – DIVISION

PROPOSED DESIGN CHANGE No.1 FOR D–CP5

ÉCHELLE/ SCALE	FICHIER FILE .DWG		
No. DESSIN/ DRAWING NO.	X	REVISION X	FEUILLE/SHT 1 / 1

AE–CART–ANSI B

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MELIADINE GOLD MINE PROJECT

AGNICO EAGLE

ENGINEERING CHANGE NOTICE

Contract No:	OC-581138	Contract Title:	Dike Construction Support -Block 007 Water Management Infrastructure
Contractor:	Tetra Tech Canada Inc.	Date:	17-Apr-17
ECN No:	6515-C-235-007-ECN-003_R0	ECN Title:	Design Change of Dike D-CP1 Over-Liner Bedding (replacing a zone of Type C with Type F)

ECN Description:

The liner area with most risk is considered to be the area overlying the thickest section of the Type C fill within and above the upstream portion of the key trench. The winter-placed frozen Type C with low densiy and high ice content may undergo thaw settlement during dike operation. Excess settlement may distress or even locally rupture the liner above. Accordingly, Tetra Tech proposes to replace the highlighted zone (shown on the attached figure) of Type C with Type F (mix Type C and bentonite) over the liner area along the main portion of dike (not applied to top abutments) of D-CP1.

A draft sketch showing the proposed design change concept was submitted to Duy on March 30, 2017 for review. Follwing Duy's review and suggestion, a teleconfernce call was held to discuss the design change concept with the dike Advisor team (Luciano, Fiona, and Thomas) on April 3. The design change was finalized after the April 3 meeting and sent to Jack and Mark on the same day for comments on its impacts on construction schedule and cost. A meeting with Mark (AEM), the dike QA team (Jennifer and Fai), and Gordon was held in the morning of April 12 at the Meliadine site to discuss the proposed design change. The team concluded that this design change will have little or no impact on the construction schedule and result in only minor cost increase due to mixing the Type C with bentonite. Therefore, Mark directed the QA team (Fai and Jennifer) to inform the contractor to implement the design change on April 12 while a formal ECN is being prepared.

Justification:

This design change will reduce the risk of potential seepage through the most critical liner area in D-CP1. This design change will have little or no impact on the construction schedule and result in only minor cost increase due to mixing the Type C with bentonite.

List of Deleted, Revised or Added Documents (*Add a page to list more if needed*)

Item	Document Number	Rev
1	Figure 1 of Design Change ECN 003 for D-CP1	R0

Item	Document Number	Rev

Potential Impacts:

On Schedule: Yes ☐ No ☑ On Cost: Yes ☑ No ☐

Action Record	TITLE	NAME	Signature	Date
Prepared by:	Package Engineer	Gordon Zhang	Gordon Zhang	17-Apr-17
Reviewed by:	Lead Discipline	Duy Nguyen		
Accepted by:	Engineering Manager	Daniel Seguin		
Accepted by:	Project Manager	Marcel Beaudoin		

Notes:

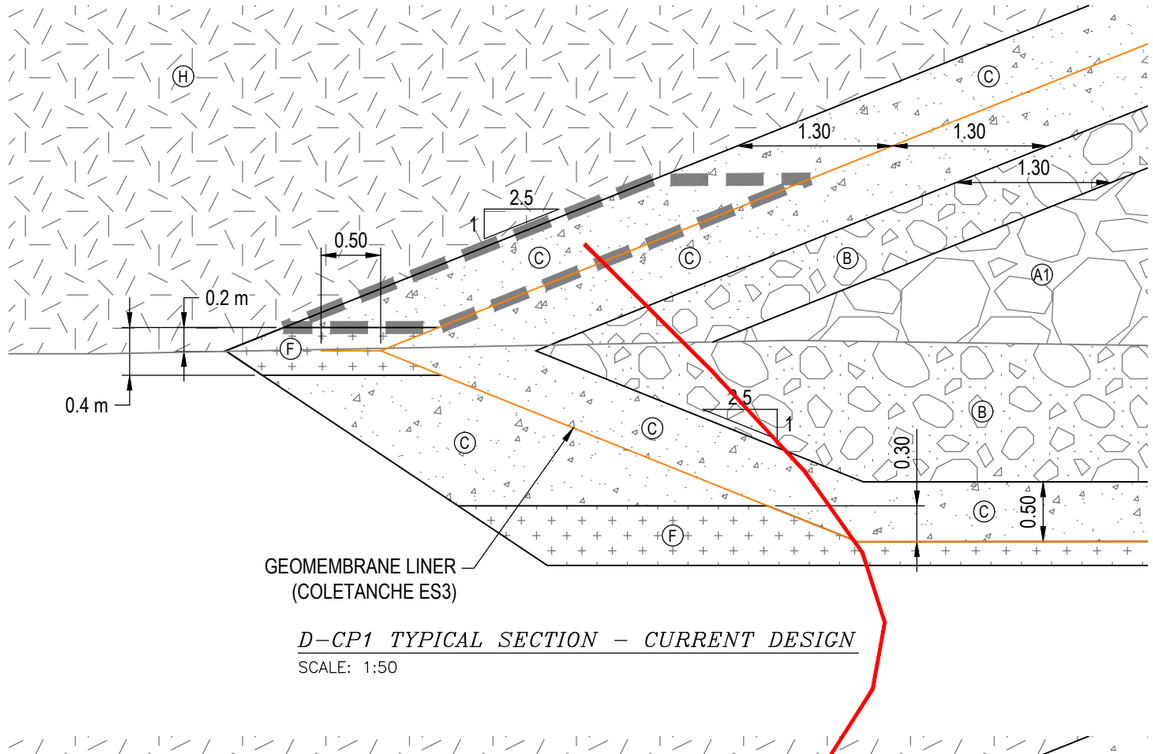
1	Contractor has 10 days to return the Impact on Cost (on the attached Price Breakdown) and Schedule
2	Contractor is not to proceed with any work until authorized to do so

Contractor Acknowledgment

Received by:	Contractor Repres.			

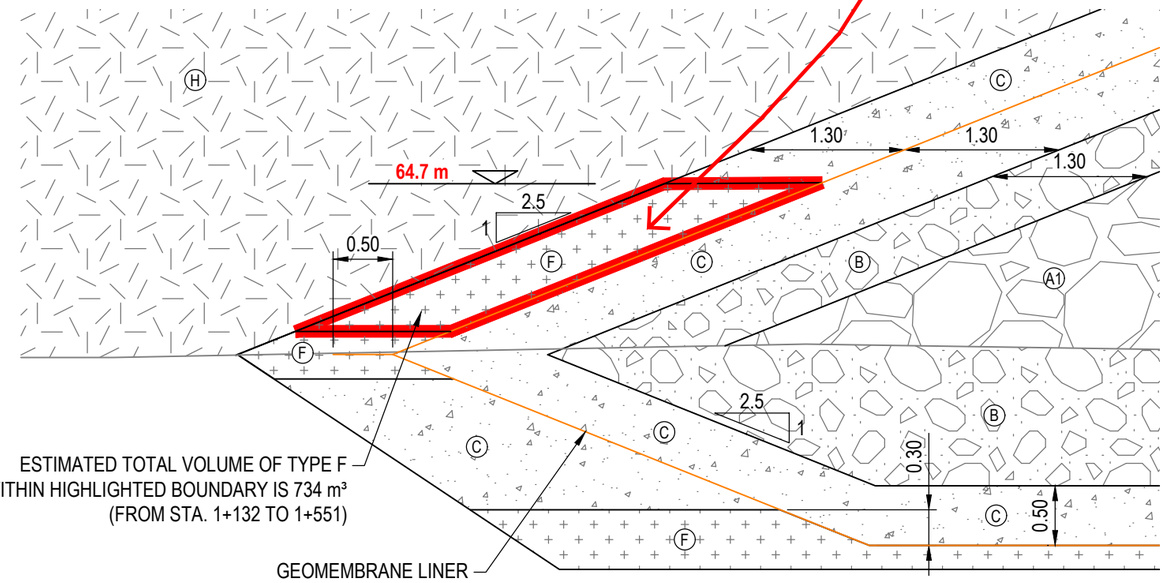
NO. DESSIN
DRAWING NO.

FORMAT ANSI B–11x17



D–CP1 TYPICAL SECTION – CURRENT DESIGN

SCALE: 1:50



D–CP1 TYPICAL SECTION – PROPOSED DESIGN CHANGE

SCALE: 1:50

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
Signature
Date APRIL 17, 2017
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

NOTES:
- APPROVED BY AGNICO EAGLE ON APRIL 12, 2017.

REGISTERED PROFESSIONAL ENGINEER
G. ZHANG
LICENSEE
APR. 17, 2017
NWT/NU

REGISTERED PROFESSIONAL ENGINEER
KEVIN W. JONES
APR. 17, 2017
LICENSEE
N.W.T.

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TITRE / TITLE	# DWG

DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	PAR BY
0	ISSUED FOR CONSTRUCTION	17–04–2017	
A	ISSUED FOR REVIEW	03–04–2017	

REVISIONS

DESSINÉ PAR DRAWN BY	EL	DATE 17–04–2017
VÉRIFIÉ PAR CHECKED BY	GZ	17–04–2017
APPROUVÉ PAR APPROVED BY	KJ	17–04–2017
No. PROJET PROJECT NO.	6515	
DATE	17–04–2017	

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT

FIGURE 1 OF DESIGN CHANGE ECN 003 FOR D–CP1

ÉCHELLE/ SCALE	FICHIER FILE .DWG		
No. DESSIN/ DRAWING NO. Figure 1		REVISION 0	FEUILLE/SHT 1 / 1

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2017-02-02

AE–CART–ANSI B

Q:\Edmonton\Engineering\E141\Projects\E14103230_Block007_Meliadine Detail Design\Modelling\Production Drawings\D–CP1\D–CP1 Typical Section–Design Change ECN 003.dwg–2013–02–19 14:03:29

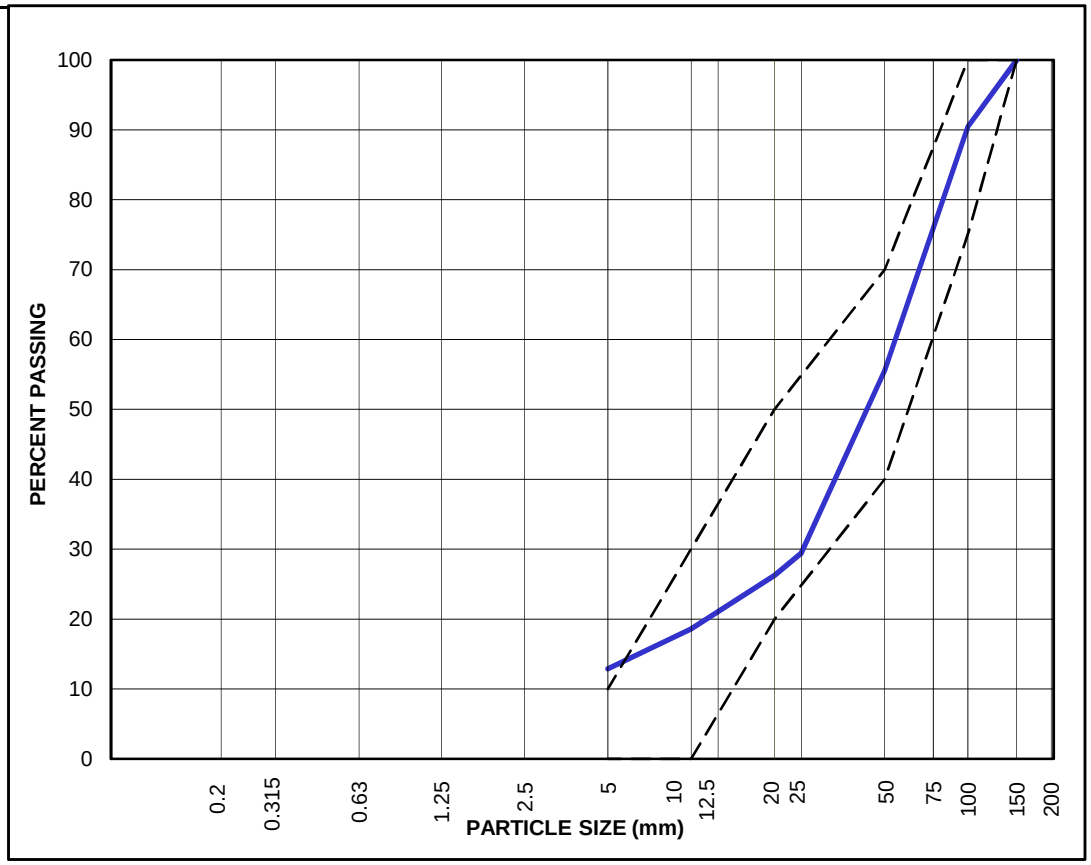
APPENDIX E1

TRANSITION MATERIAL PARTICLE SIZE ANALYSIS RESULTS

PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA01
		SAMPLE DESCRIPTION:	150 mm minus from stockpile
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	5.2%
DATE SAMPLED:	Nov 09/16 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
150	100
20	26
10	19
5	13



Remarks:

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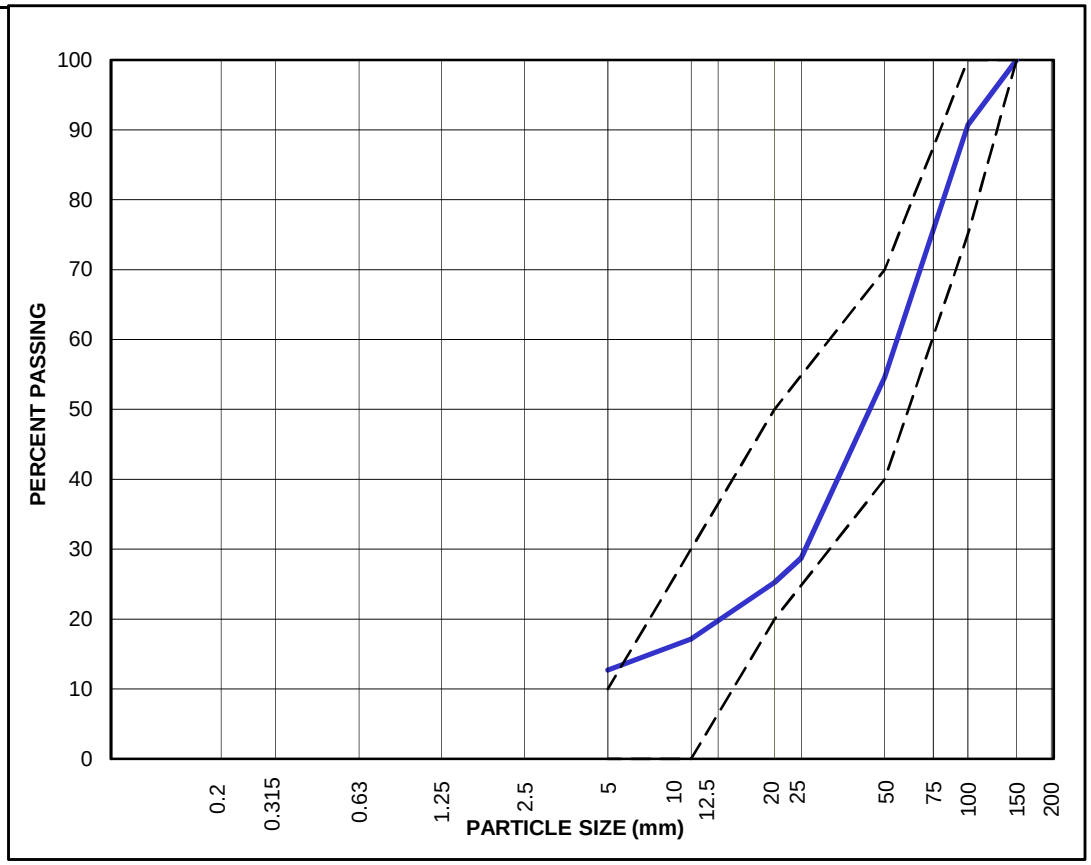
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA02
		SAMPLE DESCRIPTION:	150 mm minus from stockpile
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	4.3%
DATE SAMPLED:	Nov 09/16 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
150	100
20	25
10	17
5	13



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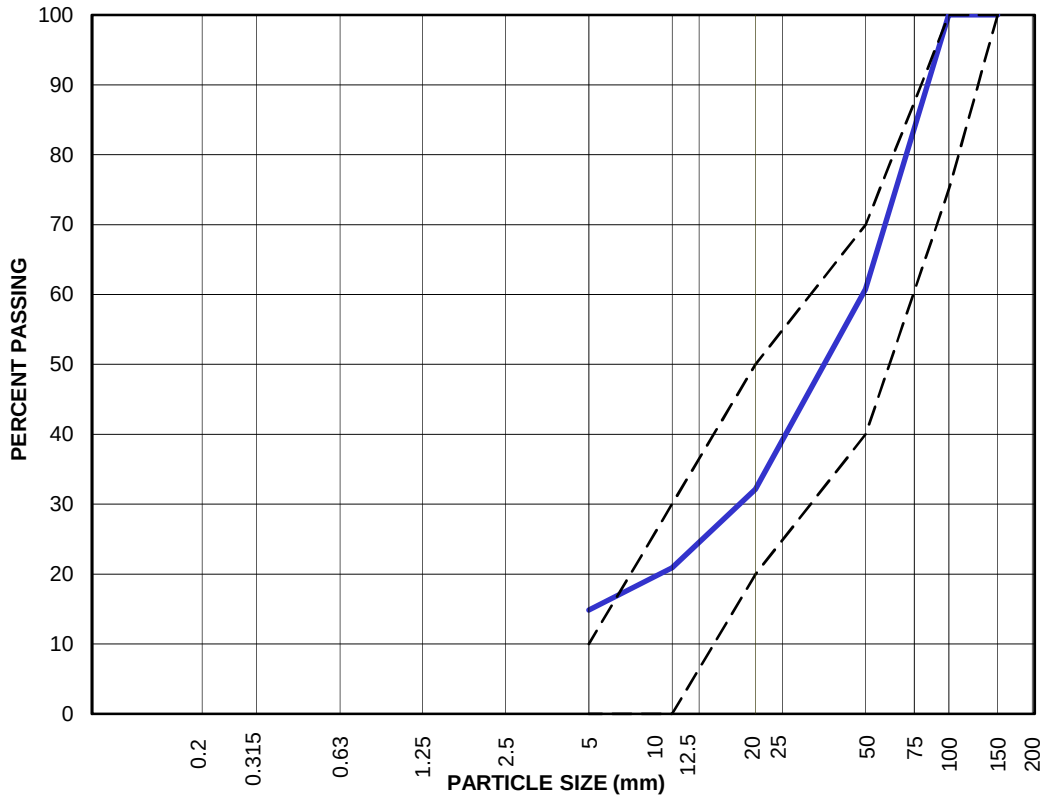
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA03
		SAMPLE DESCRIPTION:	Type B - 150 mm Minus Transition Rock
ADDRESS:	Meliadine Gold Project, NU.		Sampled From Stockpile
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	1.3%
DATE SAMPLED:	Nov 11/16 By: IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
150	100
100	100
50	61
20	32
10	21
5	15



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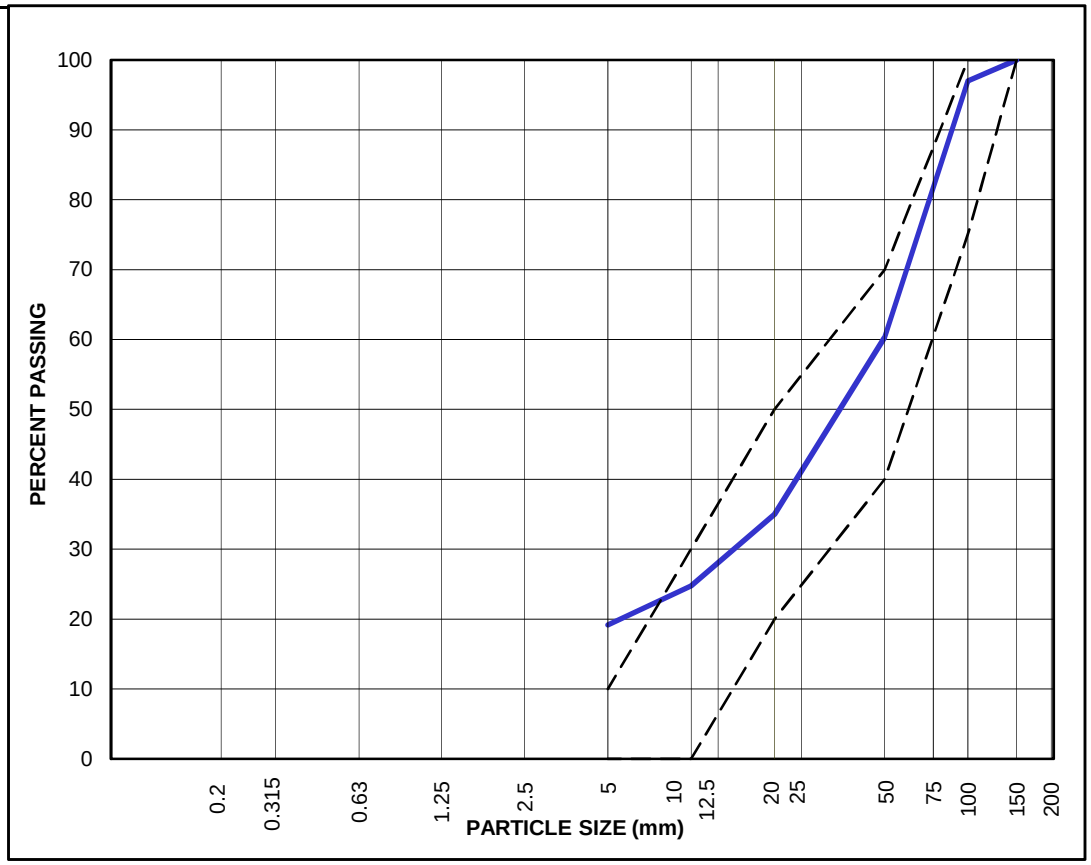
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA04
		SAMPLE DESCRIPTION:	Type B - 150 mm Minus Transition Rock
ADDRESS:	Meliadine Gold Project, NU.		Sampled From Stockpile
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	2.8%
DATE SAMPLED:	Nov 13/16 **By:** IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
150	100
100	97
50	60
20	35
10	25
5	19



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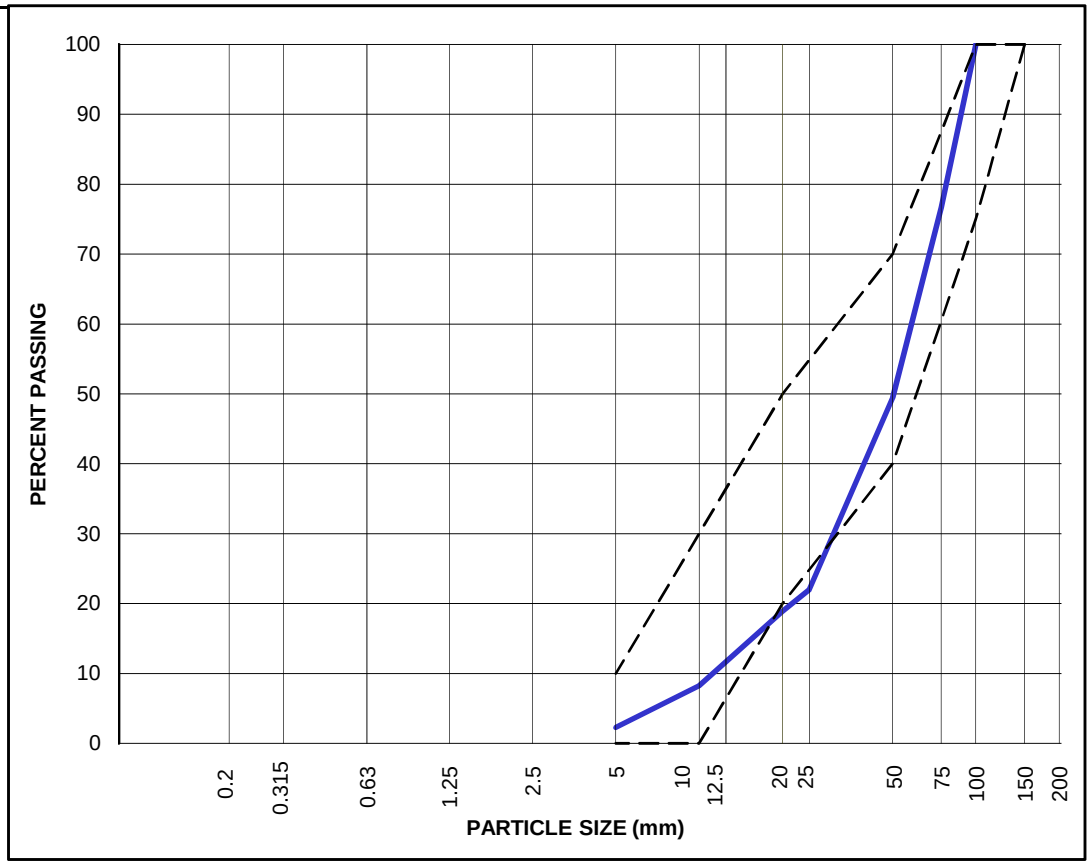
PARTICLE SIZE ANALYSIS REPORT

PROJECT: Meliadine Dike Construction
ADDRESS: Meliadine Gold Project, NU.
PROJECT NO: E14103230-01.023
DATE SAMPLED: Dec 15/16 **By:** CC
CLIENT: Agnico Eagle Mines Ltd.
ATTENTION: Mr. Duy Nguyen

SAMPLE NO: SA05
SAMPLE DESCRIPTION: Type B - 150 mm minus
Sampled from stockpile
MOISTURE CONT. : 8.6%
BULK REL DENSITY: n/a
BULK REL. DENSITY (SSD): n/a
APPARENT REL. DENSITY: n/a
ABSORPTION: n/a

PARTICLE SIZE	PERCENT PASSING
150	100
100	100
50	49
20	19
10	8
5	2



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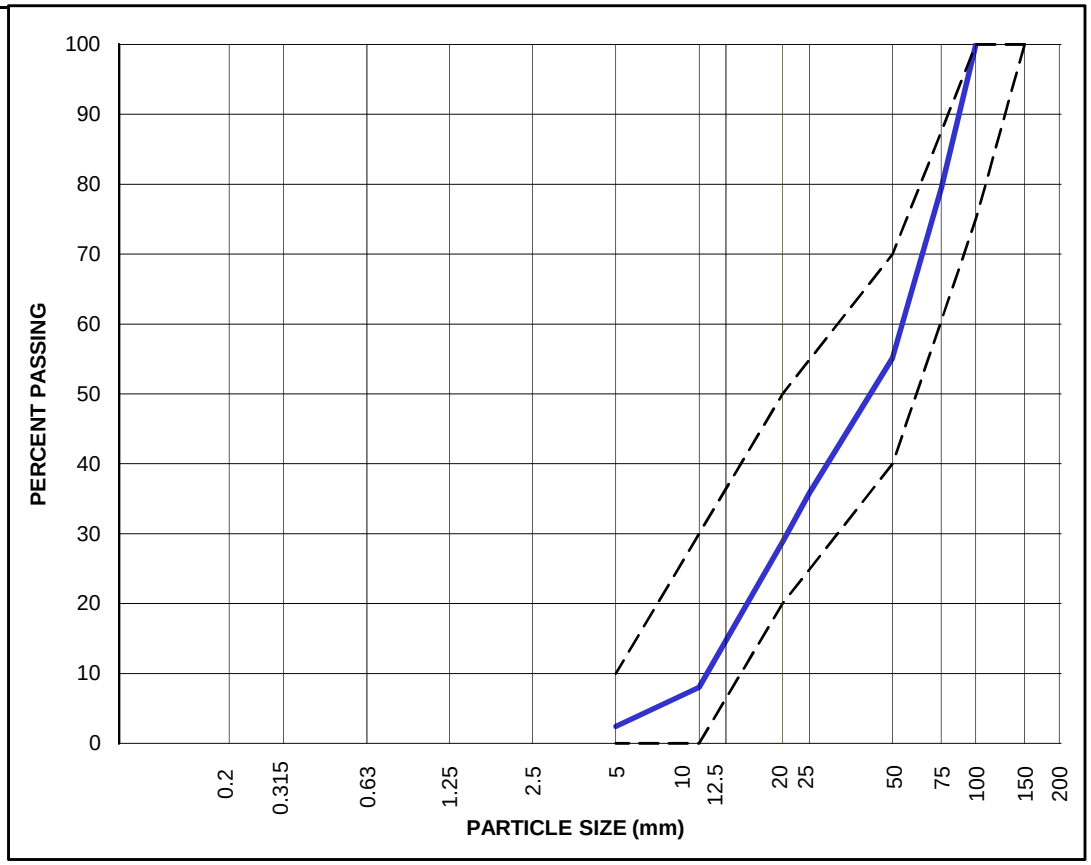
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	**Meliadine Dike Construction**	**SAMPLE NO:**	**SA06**
		SAMPLE DESCRIPTION:	**Type B - 150 mm minus**
			Sampled from stockpile
ADDRESS:	**Meliadine Gold Project, NU.**		
PROJECT NO:	**E14103230-01.023**	**MOISTURE CONT. :**	**8.1%**
DATE SAMPLED:	**Mar 01/17** **By: TW**		
CLIENT:	**Agnico Eagle Mines Ltd.**	**BULK REL DENSITY:**	**n/a**
ATTENTION:	**Mr. Duy Nguyen**	**BULK REL. DENSITY (SSD):**	**n/a**
		APPARENT REL. DENSITY:	**n/a**
		ABSORPTION:	**n/a**

PARTICLE SIZE	PERCENT PASSING
150	100
100	100
50	55
20	29
10	8
5	2



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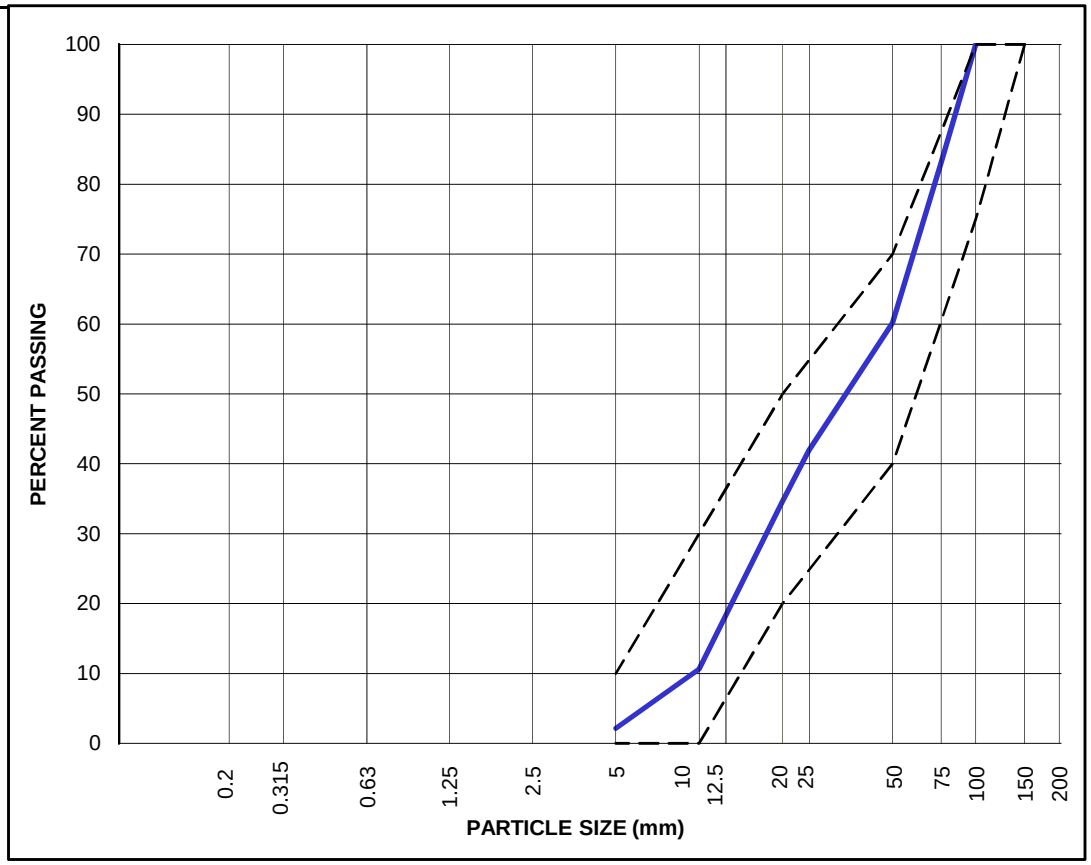
PARTICLE SIZE ANALYSIS REPORT

PROJECT: Meliadine Dike Construction
SAMPLE NO: SA07
SAMPLE DESCRIPTION: Type B - 150 mm minus
Sampled from stockpile
ADDRESS: Meliadine Gold Project, NU.
PROJECT NO: E14103230-01.023
MOISTURE CONT. : 8.7%
DATE SAMPLED: Mar 01/17 **By:** TW
CLIENT: Agnico Eagle Mines Ltd.
BULK REL DENSITY: n/a
ATTENTION: Mr. Duy Nguyen
BULK REL. DENSITY (SSD): n/a
APPARENT REL. DENSITY: n/a
ABSORPTION: n/a

PARTICLE SIZE	PERCENT PASSING
150	100
100	100
50	60
20	35
10	11
5	2



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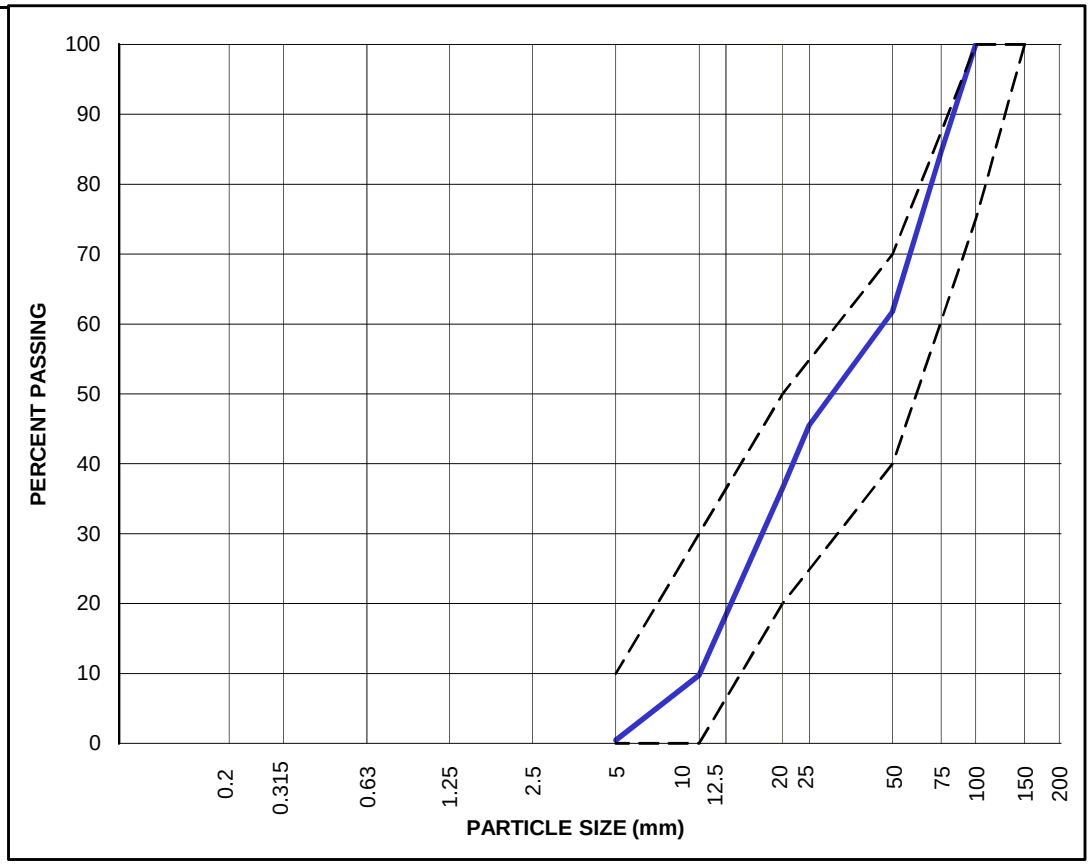
PARTICLE SIZE ANALYSIS REPORT

PROJECT: Meliadine Dike Construction
SAMPLE NO: SA08
SAMPLE DESCRIPTION: Type B - 150 mm minus
Sampled from stockpile
ADDRESS: Meliadine Gold Project, NU.
PROJECT NO: E14103230-01.023
MOISTURE CONT. : 7.2%
DATE SAMPLED: Mar 02/17 **By:** TW
CLIENT: Agnico Eagle Mines Ltd.
BULK REL DENSITY: n/a
ATTENTION: Mr. Duy Nguyen
BULK REL. DENSITY (SSD): n/a
APPARENT REL. DENSITY: n/a
ABSORPTION: n/a

PARTICLE SIZE	PERCENT PASSING
150	100
100	100
50	62
20	37
10	10
5	0



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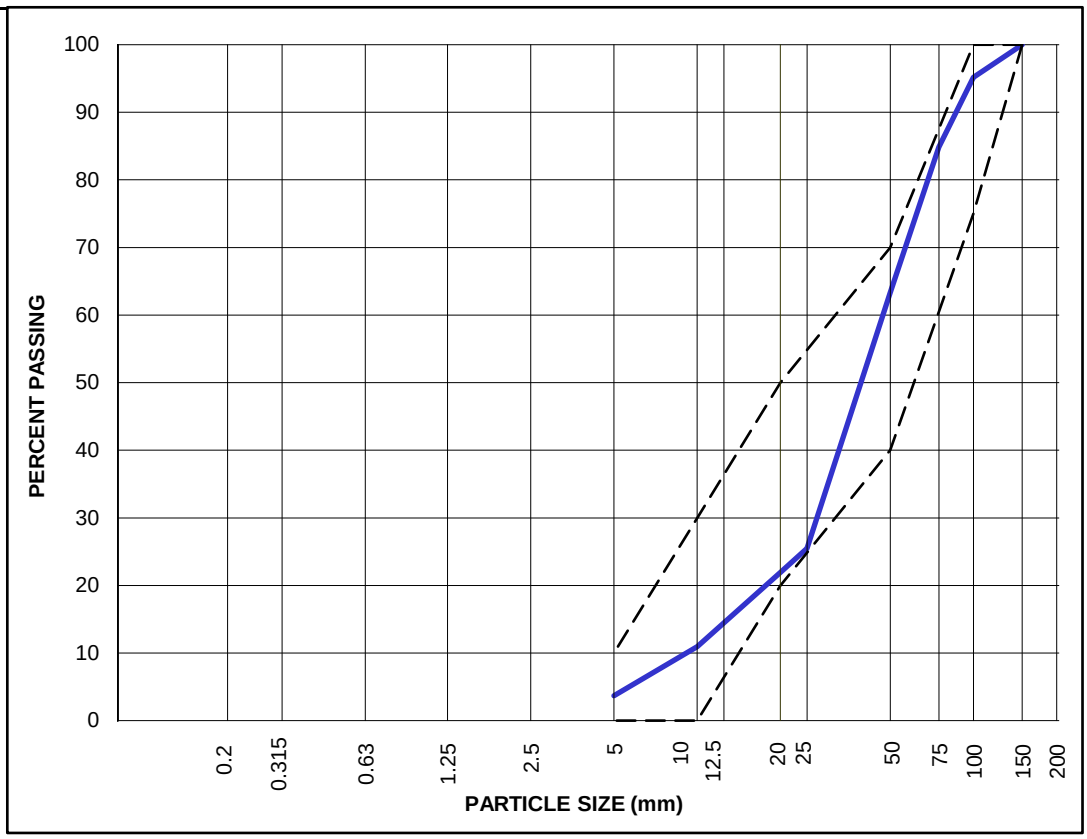
PARTICLE SIZE ANALYSIS REPORT

PROJECT: Meliadine Dike Construction
ADDRESS: Meliadine Gold Project, NU.
PROJECT NO: E14103230-01.023
DATE SAMPLED: Mar 29/17 **By:** IM/TW
CLIENT: Agnico Eagle Mines Ltd.
ATTENTION: Mr. Duy Nguyen

SAMPLE NO: SA09
SAMPLE DESCRIPTION: Type B1 - 150 mm minus
Sampled from Key Trench Stn. 0+455 at O.G. elev.
MOISTURE CONT. : 6.1%
BULK REL DENSITY: n/a
BULK REL. DENSITY (SSD): n/a
APPARENT REL. DENSITY: n/a
ABSORPTION: n/a

PARTICLE SIZE	PERCENT PASSING
150	100
100	95
50	63
20	22
10	11
5	4



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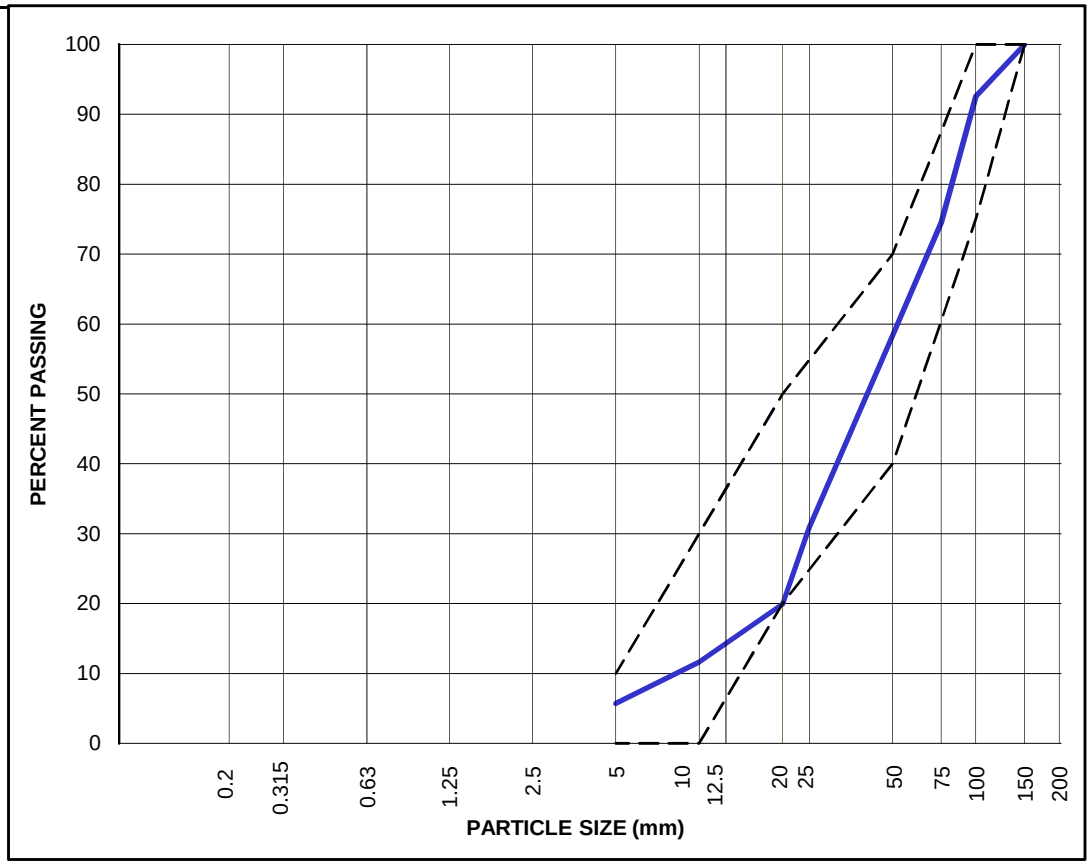
PARTICLE SIZE ANALYSIS REPORT

PROJECT: Meliadine Dike Construction
SAMPLE NO: SA10
SAMPLE DESCRIPTION: Type B1 - 150 mm minus
Sampled from Key Trench Stn. 0+455 at O.G. elev.
ADDRESS: Meliadine Gold Project, NU.
PROJECT NO: E14103230-01.023
MOISTURE CONT. : 6.1%
DATE SAMPLED: Mar 30/17 **By:** TW/WW
CLIENT: Agnico Eagle Mines Ltd.
BULK REL DENSITY: n/a
ATTENTION: Mr. Duy Nguyen
BULK REL. DENSITY (SSD): n/a
APPARENT REL. DENSITY: n/a
ABSORPTION: n/a

PARTICLE SIZE	PERCENT PASSING
150	100
100	93
50	58
20	20
10	12
5	6



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PARTICLE SIZE ANALYSIS REPORT

PROJECT: Meliadine Dike Construction
ADDRESS: Meliadine Gold Project, NU.
PROJECT NO: E14103230-01.023
DATE SAMPLED: Apr 02/17 **By:** WW
CLIENT: Agnico Eagle Mines Ltd.
ATTENTION: Mr. Duy Nguyen

SAMPLE NO: SA11
SAMPLE DESCRIPTION: Type B1 - 150 mm minus
Sampled from stockpile
MOISTURE CONT. : 6.5%
BULK REL DENSITY: n/a
BULK REL. DENSITY (SSD): n/a
APPARENT REL. DENSITY: n/a
ABSORPTION: n/a

PARTICLE SIZE	PERCENT PASSING
150	100
100	90
50	46
20	16
10	9
5	6

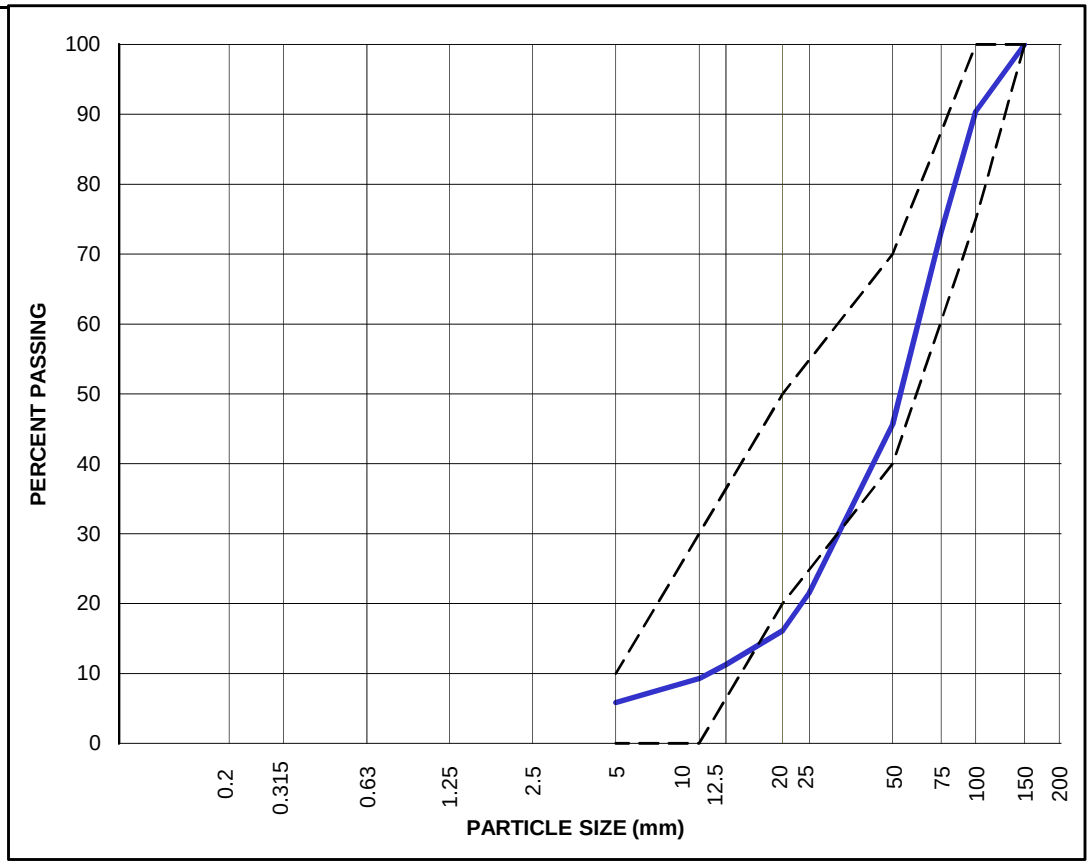

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Table E1.1: Moisture Content Results for Transition (150 mm minus) Material - Types B and B1

Sample No.	Date Tested	Moisture Content (%)	Sample Source
SA01	9-Nov-16	5.2	Sampled from Type B1 stockpile
SA02	9-Nov-16	4.3	Sampled from Type B1 stockpile
SA03	11-Nov-16	1.3	Sampled from Type B1 stockpile
SA04	13-Nov-16	2.8	Sampled from Type B1 stockpile
SA05	19-Dec-16	8.6	Sampled from Type B1 stockpile
SA06	1-Mar-17	8.1	Sampled from Type B stockpile
SA07	1-Mar-17	8.7	Sampled from Type B stockpile
SA08	2-Mar-17	7.2	Sampled from Type B stockpile
SA09	29-Mar-17	6.1	Sampled from Type B1 stockpile
SA10	30-Mar-17	6.1	Sampled from Type B1 stockpile
SA11	2-Apr-17	6.5	Sampled from Type B1 stockpile

Average Moisture Content	5.9%

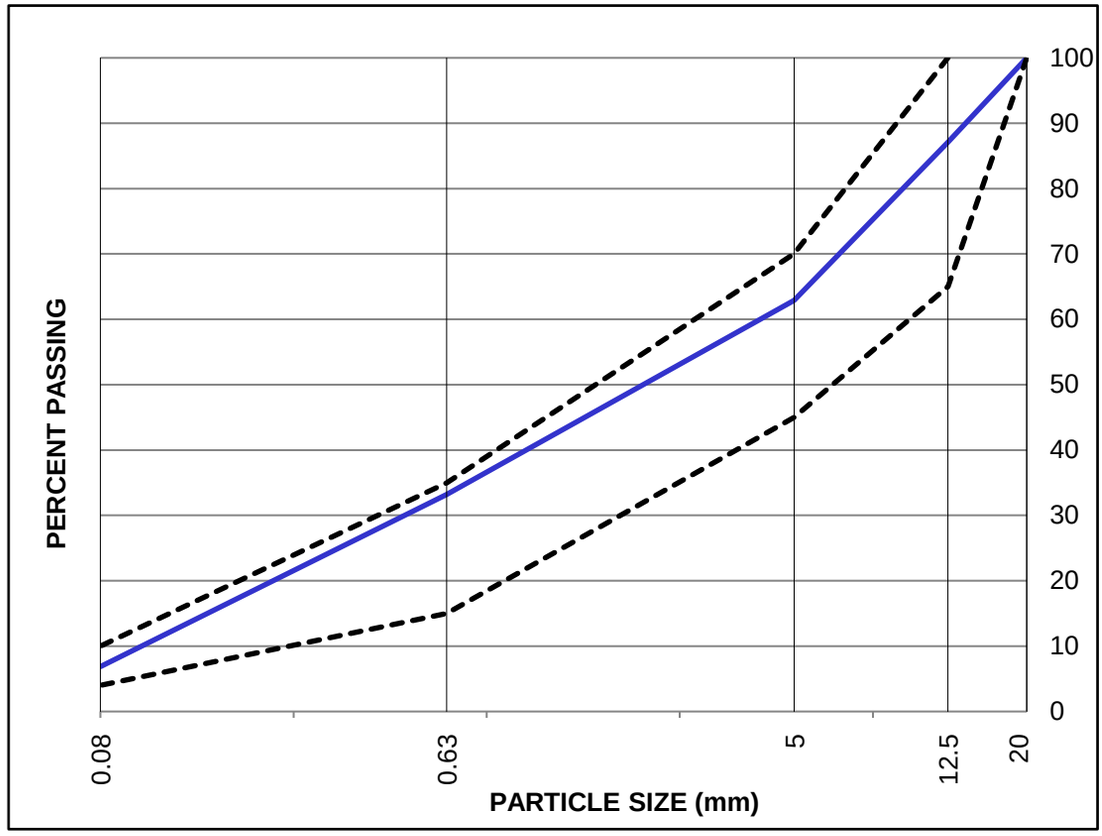
APPENDIX E2

TYPE C MATERIAL QA/QC TEST RESULTS

PARTICLE SIZE ANALYSIS REPORT

PROJECT:	DCP-1/DCP-5	**SAMPLE NO:**	SA01 to SA53
ADDRESS:	Meliadine	**SAMPLE DESCRIPTION:**	
PROJECT NO:	E14103230-01, Task 23	Type C (20 mm minus)	
UP TO DATE:	May 15/17 By: Tetra Tech	Overall Material Average, (%)	
CLIENT:	Agnico Eagle	**NAT. MOISTURE CONT (%).:**	8.2%
		Test Req'ments = 1 sample/500 m3 production	
ATTENTION:	Duy Nguyen		

PARTICLE SIZE, mm	PERCENT PASSING
20	100.0
12.5	87.1
5	62.9
0.63	33.2
0.08	6.9



Remarks: All samples taken from Meliadine Esker.

Type C gradation specs as per Geotechnical Specifications Rev 1 Table 3 (Tetra Tech, November 9, 2016)

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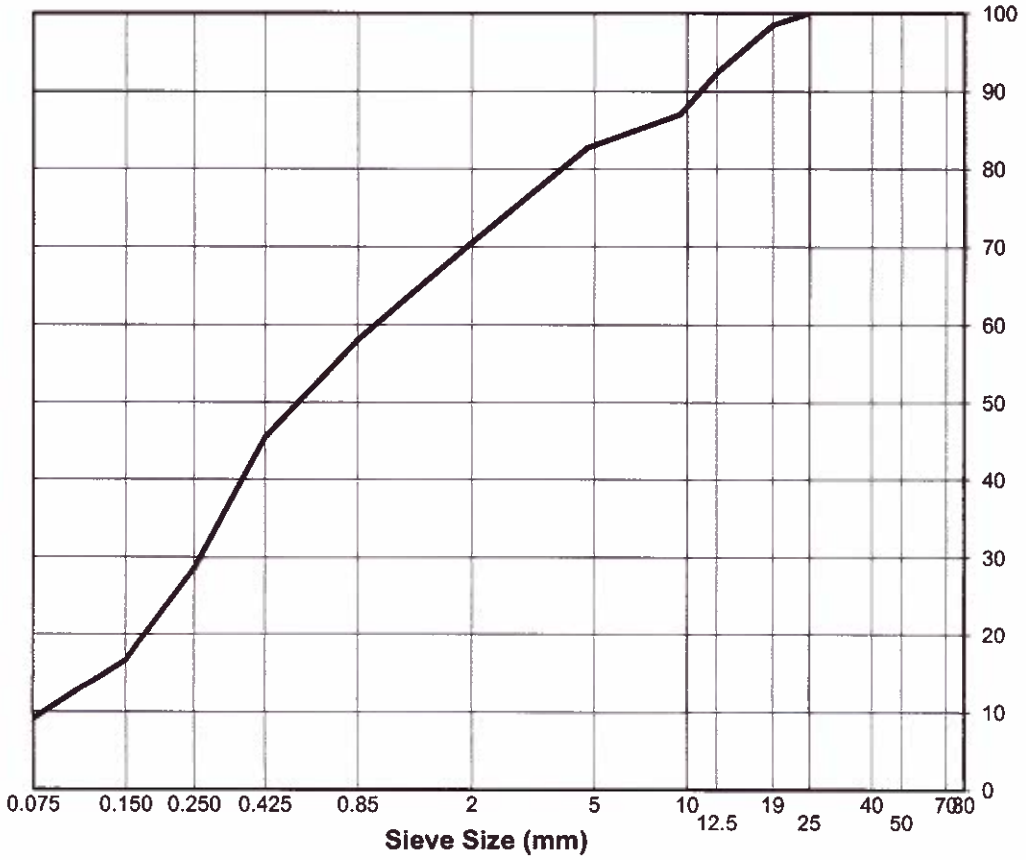
SIEVE ANALYSIS REPORT

Washed Sieve: ASTM C136 and C117

Project No.:	Meliadine Gold Project	Sample No.:	Type C Sample No 1
Project:	E14103230-01.023	Date Received:	October 26, 2016
Client:	Agnico Eagle Mines Ltd	Sampled by:	Dike QC Team
Attention:		Date Tested:	October 26, 2016
Email:		Tested by:	JH Office: Edmonton
Description:	SAND, some gravel, trace silt, brown	Moisture Content (as received):	3.0%
		No. Crushed Faces:	Two (2) or Three (3)
Source:	Meliadine Project, Dike Construction	By Particle Mass:	
Supplier:			
Sample Location:	Type C Stockpile		
Specification:			

Sieve Size	Percent Passing
25	100
19	98
12.5	92
10	87
5	83
2.0	71
0.85	58
0.425	45
0.250	29
0.150	17
0.075	9.1



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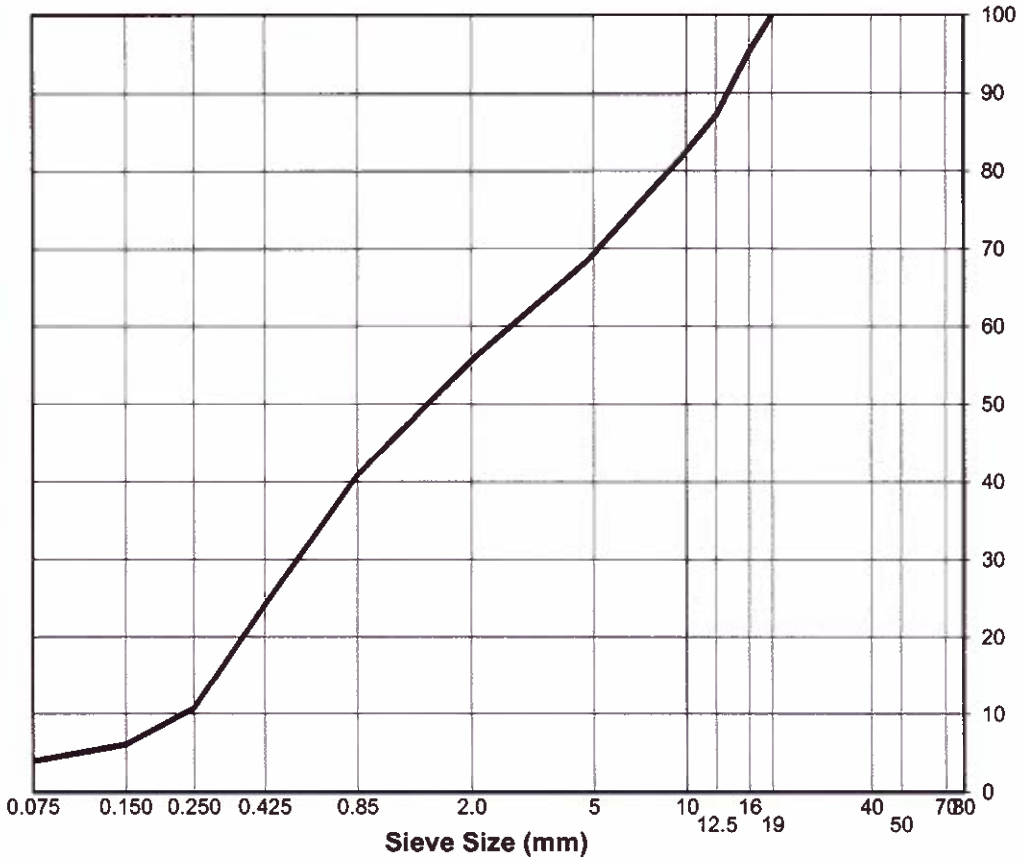
SIEVE ANALYSIS REPORT

Washed Sieve: ASTM C136 and C117

Project No.:	Meliadine Gold Project	Sample No.:	Type C Sample No 2
Project:	E14103230-01.023	Date Received:	November 21, 2016
Client:	Agnico Eagle Mines Ltd	Sampled by:	Dike QC Team
Attention:		Date Tested:	November 23, 2016
Email:		Tested by:	MC Office: Edmonton
Description:	SAND, gravelly, trace silt, grey	Moisture Content (as received):	2.1%
		No. Crushed Faces:	Two (2) or Three (3)
Source:	Meliadine Project, Dike Construction	By Particle Mass:	
Supplier:			
Sample Location:	Type C Stockpile		
Specification:			

Sieve Size	Percent Passing
19	100
16	95
12.5	87
10	81
5	68
2.0	56
0.85	41
0.425	24
0.250	11
0.150	6
0.075	3.9



Remarks:

Reviewed By: _____ P.Eng.

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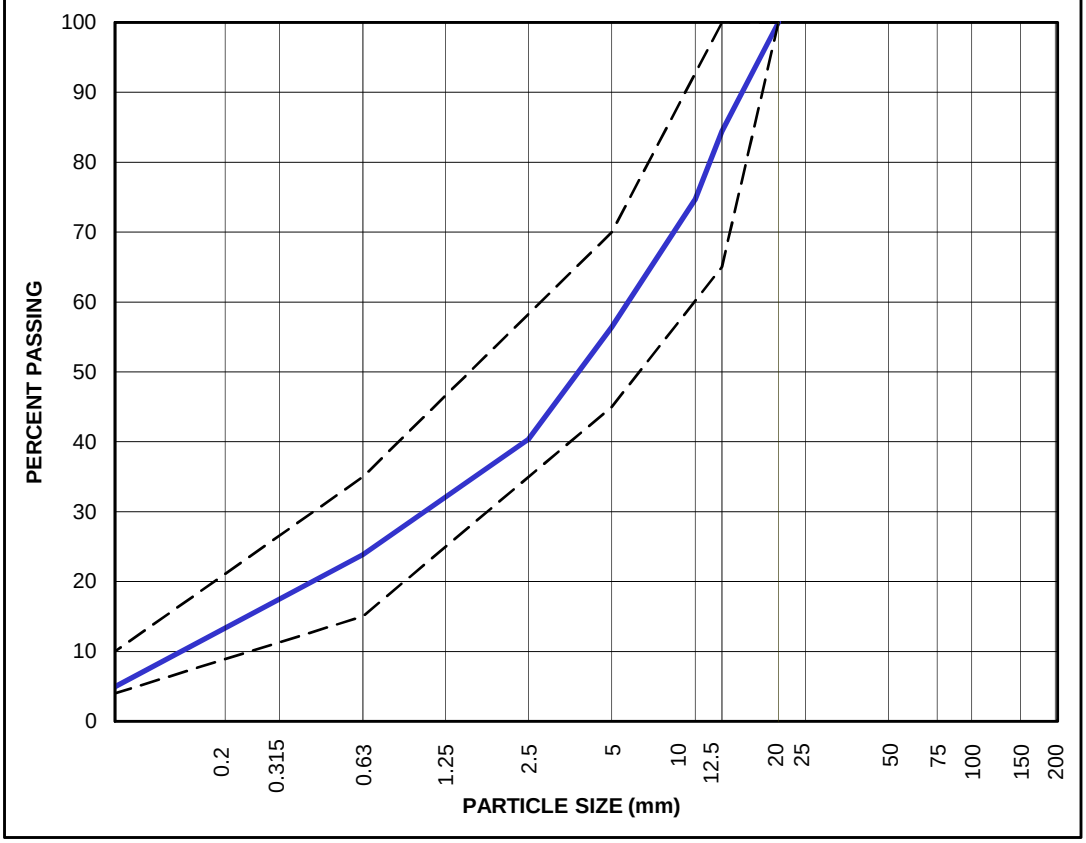
TETRA TECH

PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA02
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	7.1%
DATE SAMPLED:	Oct 22/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	84
10	75
5	56
2.5	40
0.63	24
0.08	5



Remarks: 20 mm minus particle size distribution limits shown

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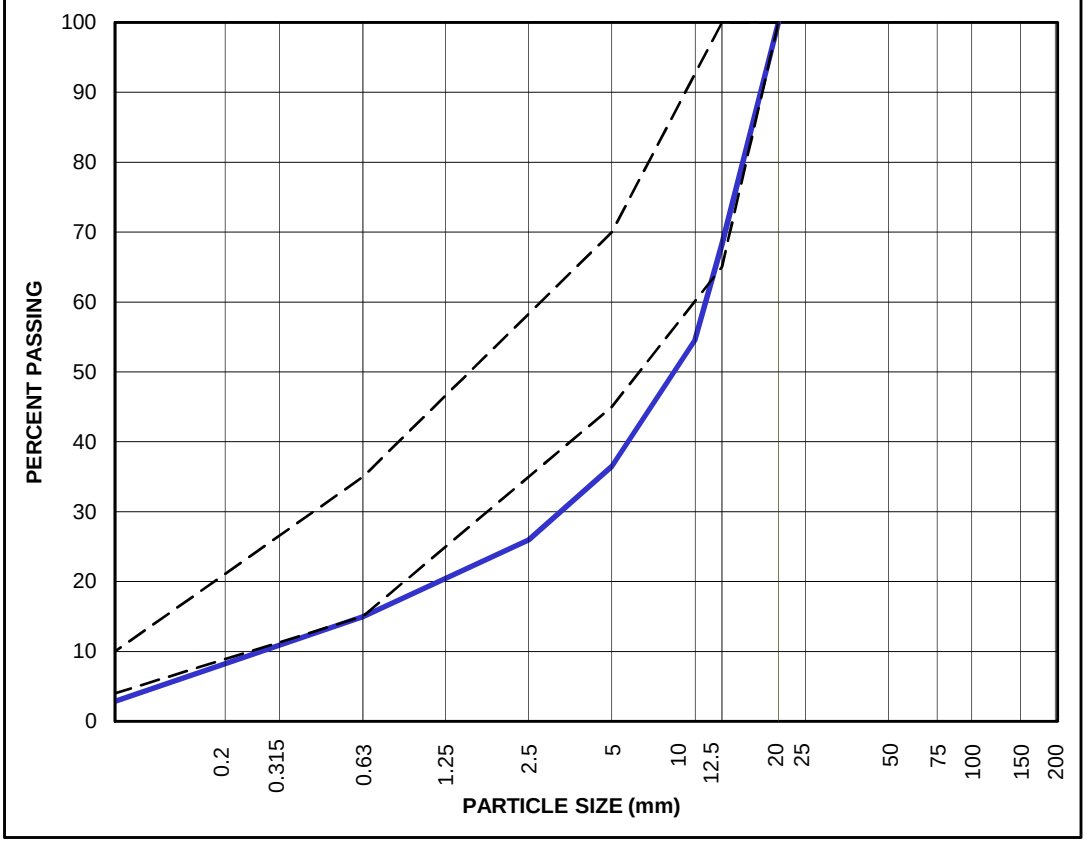
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA03
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	5.4%
DATE SAMPLED:	Oct 22/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	68
10	55
5	36
2.5	26
0.63	15
0.08	3



Remarks: 20 mm minus particle size distribution limits shown

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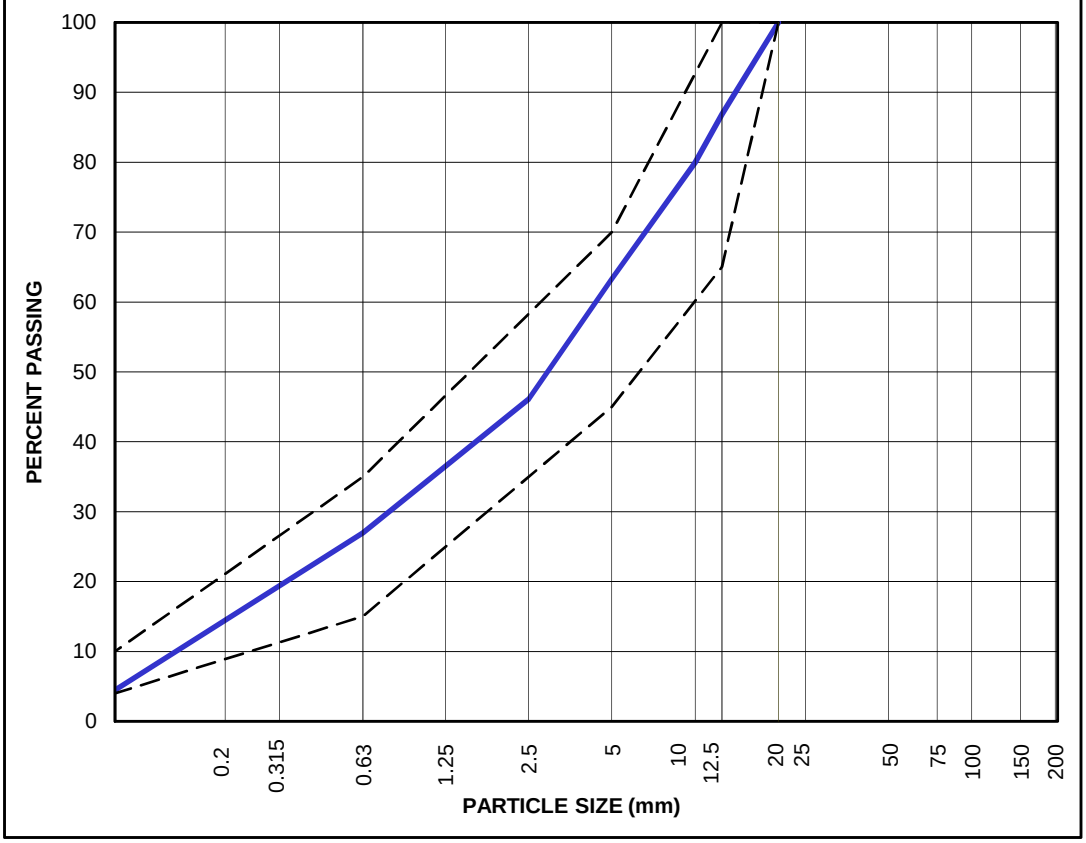
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA04
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	8.7%
DATE SAMPLED:	Oct 22/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	87
10	80
5	63
2.5	46
0.63	27
0.08	4



Remarks: 20 mm minus particle size distribution limits shown

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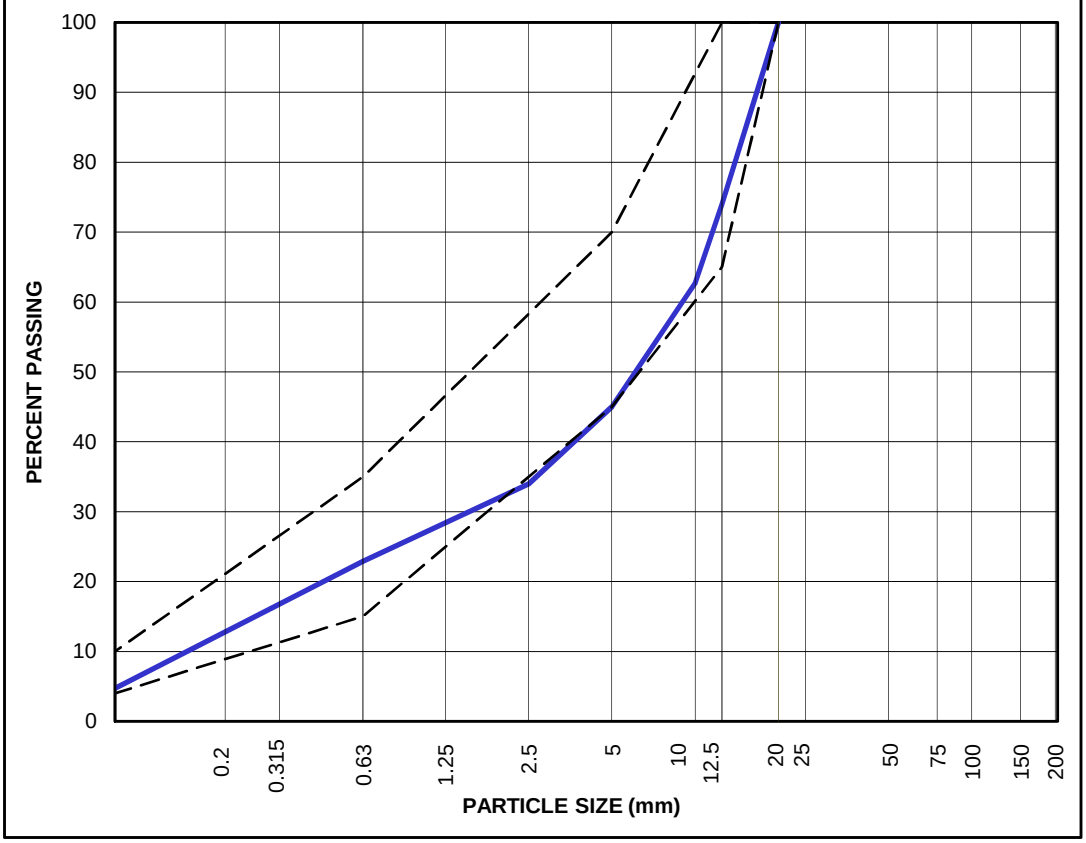
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA05
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	6.0%
DATE SAMPLED:	Oct 22/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	74
10	63
5	45
2.5	34
0.63	23
0.08	5



Remarks: 20 mm minus particle size distribution limits shown

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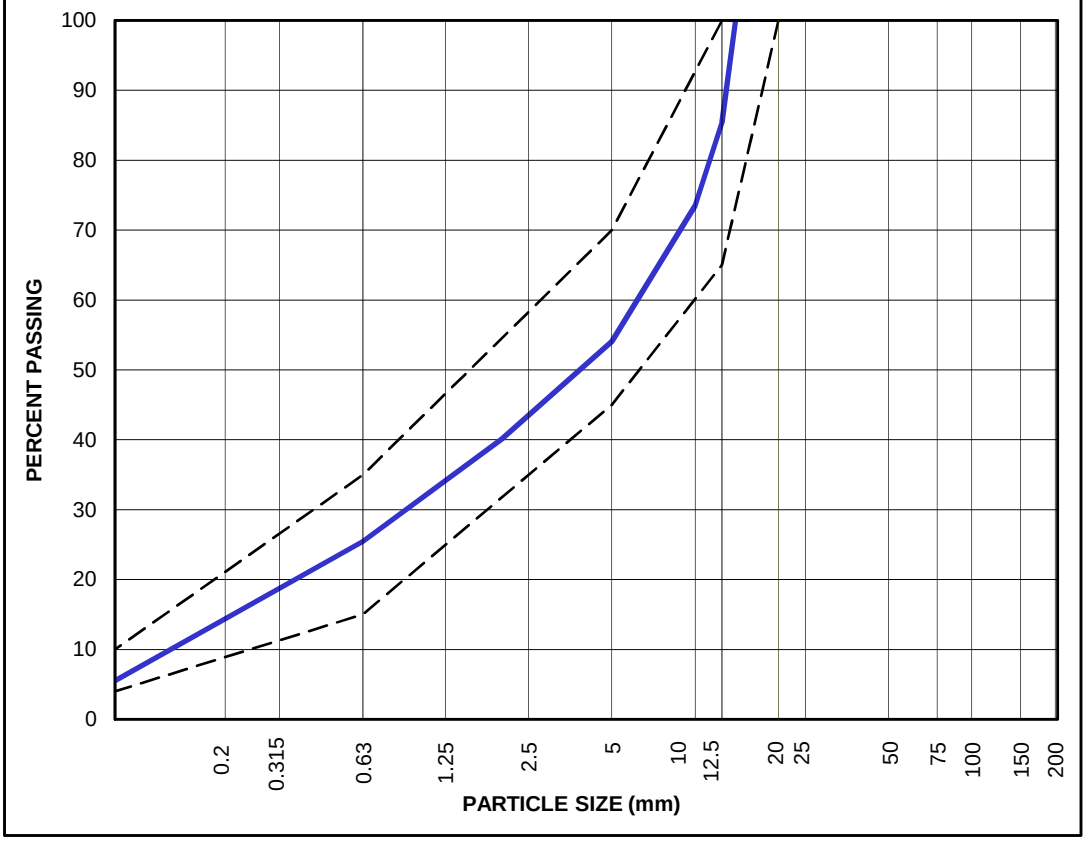
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA06
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	5.5%
DATE SAMPLED:	Oct 24/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
12.5	85
10	74
5	54
2	40
0.63	25
0.08	6



Remarks: 20 mm minus particle size distribution limits shown

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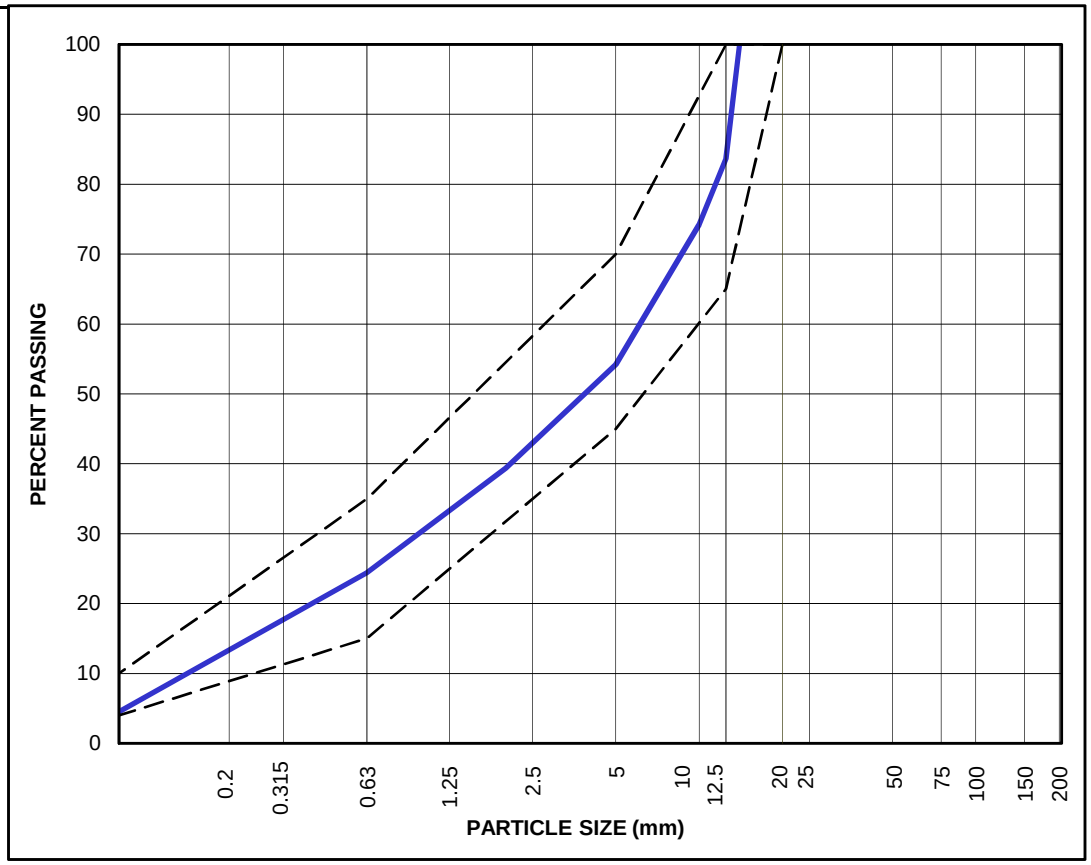
PARTICLE SIZE ANALYSIS REPORT

PROJECT: Meliadine Dike Construction
ADDRESS: Meliadine Mine
PROJECT NO: E14103230-01
DATE SAMPLED: Oct 24/16 **By:** TW
CLIENT: Agnico Eagle
ATTENTION:

SAMPLE NO: SA07
SAMPLE DESCRIPTION: 20 mm minus sampled from belt
MOISTURE CONT. : 6.3%
BULK REL DENSITY: n/a
BULK REL. DENSITY (SSD): n/a
APPARENT REL. DENSITY: n/a
ABSORPTION: n/a

PARTICLE SIZE	PERCENT PASSING
12.5	84
10	74
5	54
2	39
0.63	24
0.08	5



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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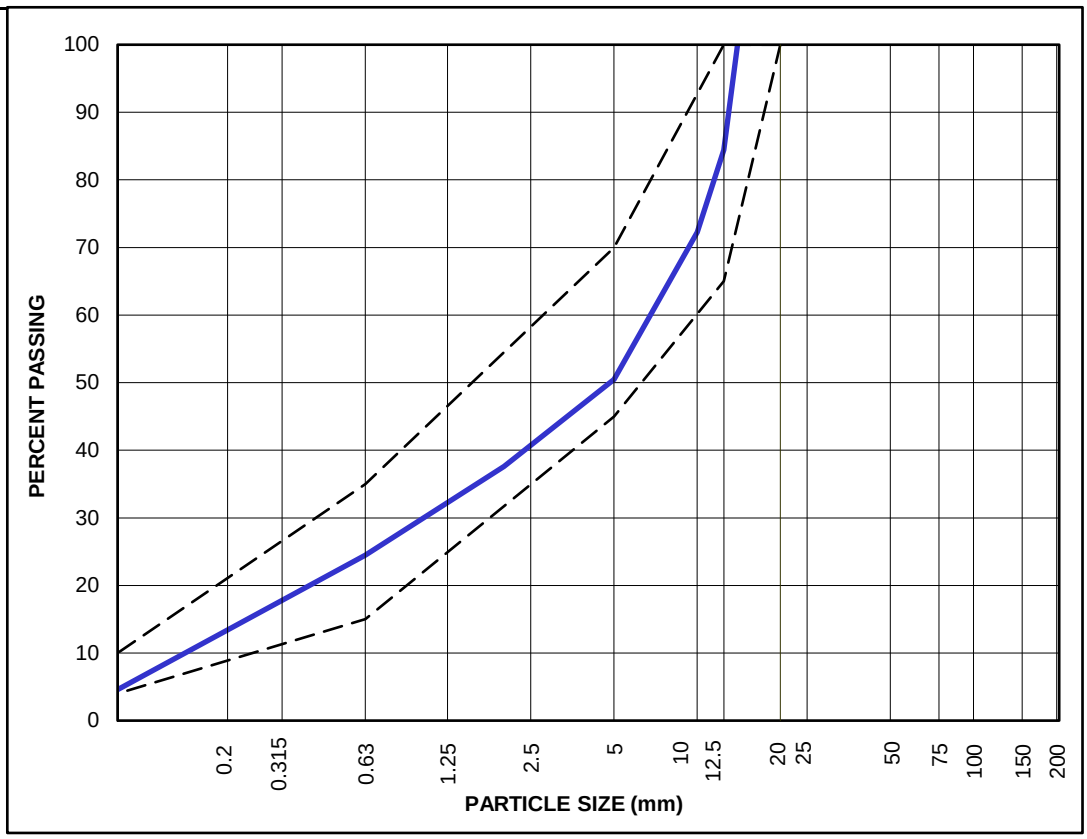
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA08
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	5.0%
DATE SAMPLED:	Oct 25/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
12.5	84
10	72
5	50
2	38
0.63	24
0.08	5



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Geo.

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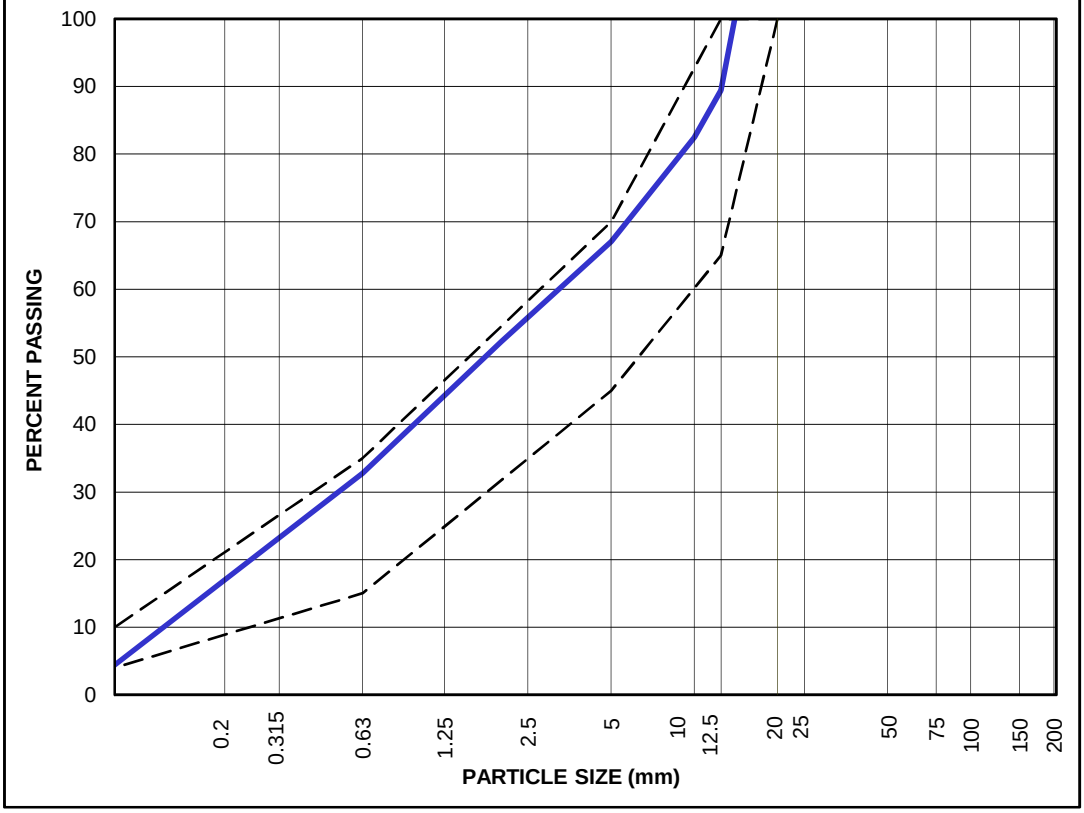
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA09
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	8.4%
DATE SAMPLED:	Oct 26/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
12.5	89
10	83
5	67
2	52
0.63	33
0.08	4



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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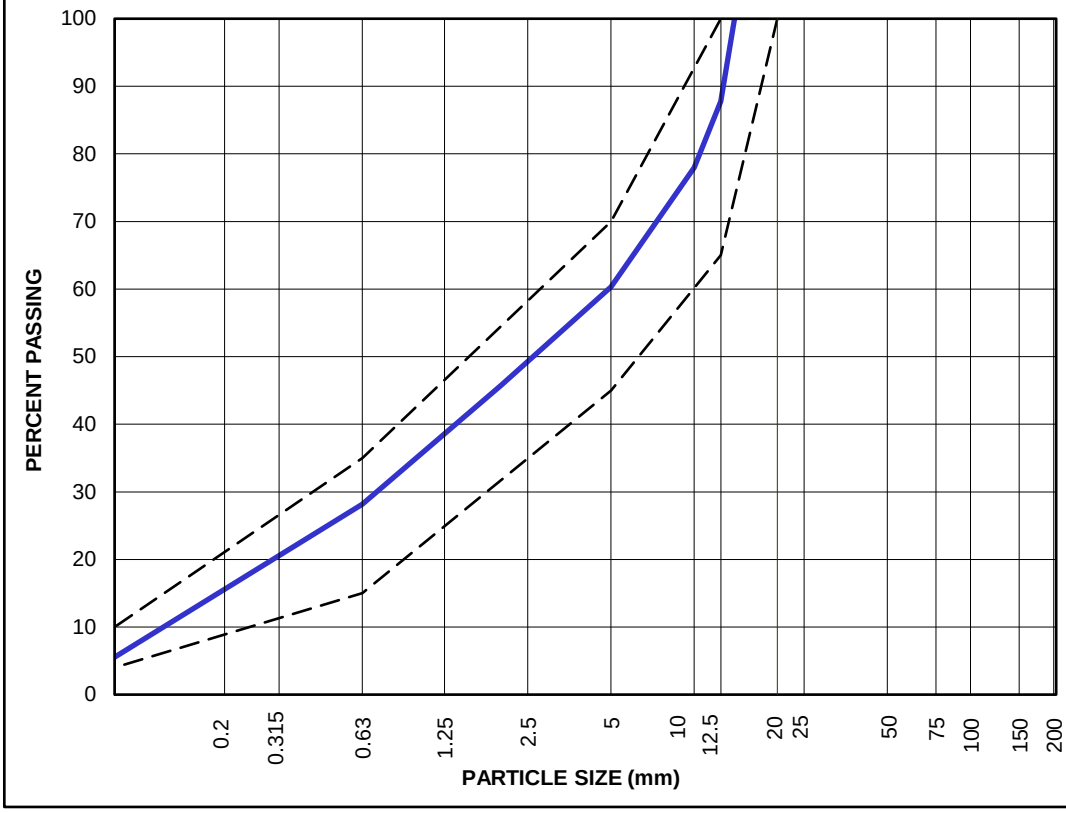
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA10
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	7.1%
DATE SAMPLED:	Oct 27/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
12.5	88
10	78
5	60
2	46
0.63	28
0.08	6



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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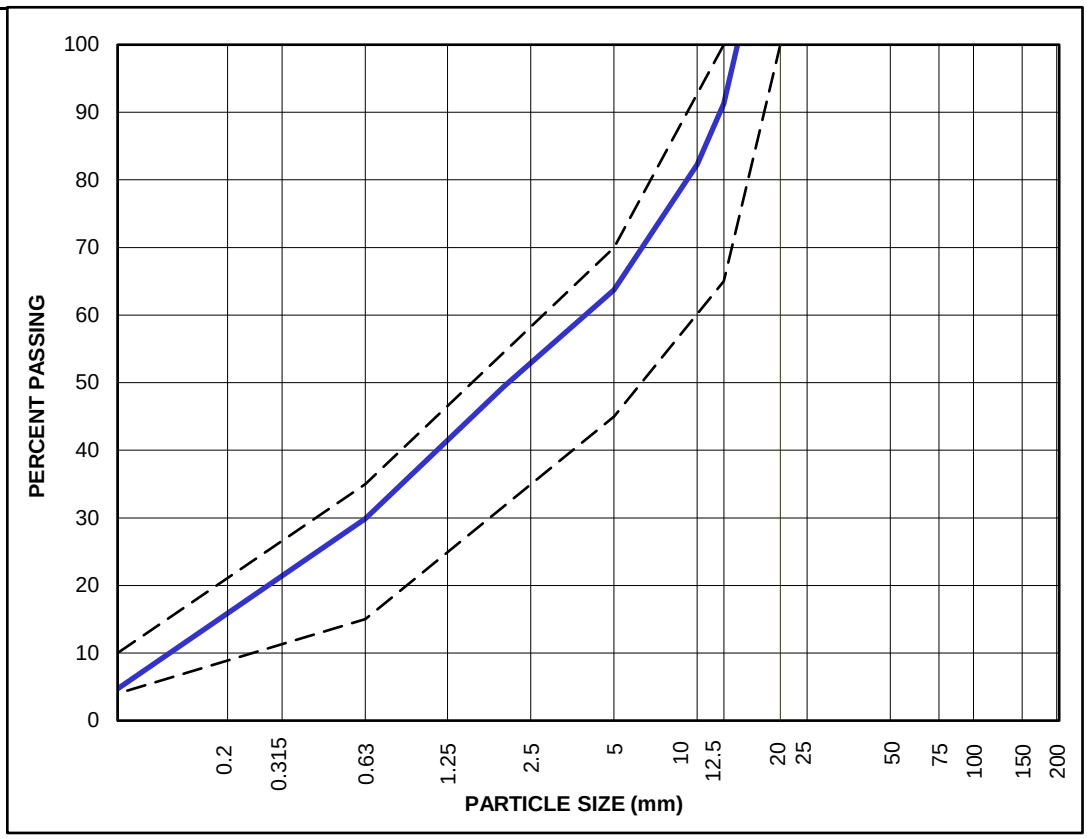
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA11
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	6.1%
DATE SAMPLED:	Oct 29/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
12.5	91
10	82
5	64
2	49
0.63	30
0.08	5



Remarks: 20 mm minus particle size distribution limits shown

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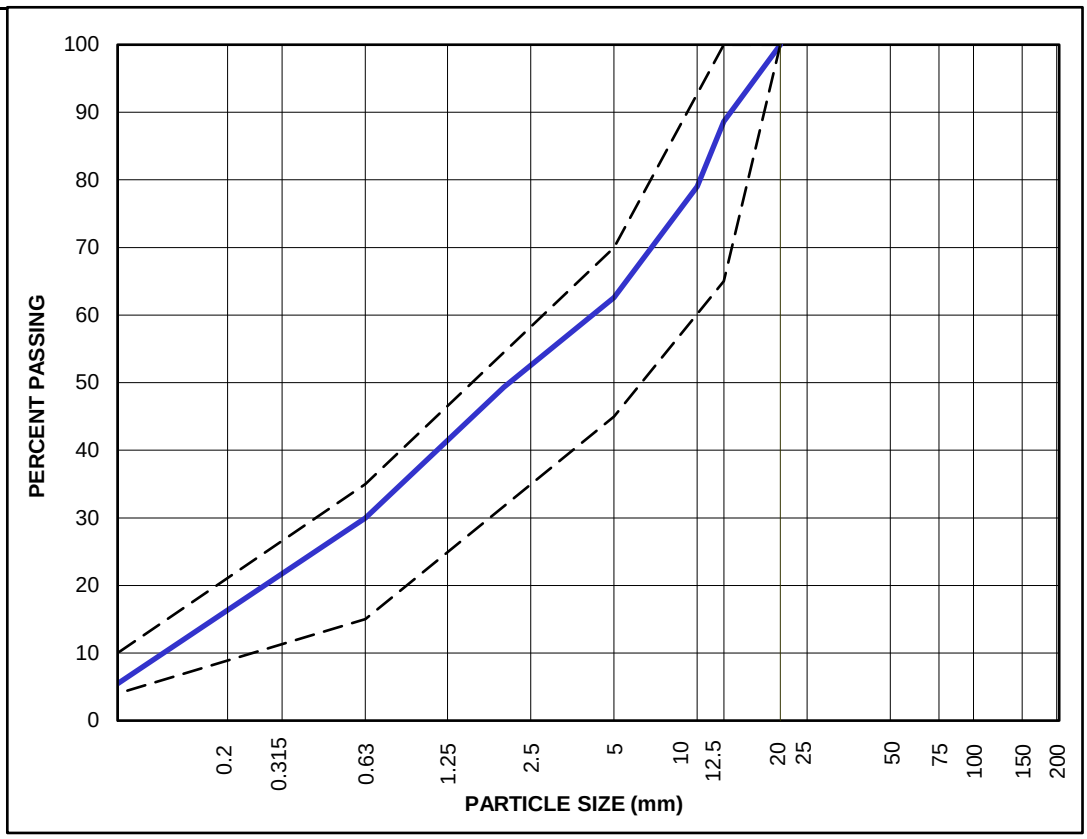
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA12
		SAMPLE DESCRIPTION:	20 mm minus sampled from belt
ADDRESS:	Meliadine Mine		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	7.6%
DATE SAMPLED:	Nov 01/16 **By:** TW		
CLIENT:	Agnico Eagle	**BULK REL DENSITY:**	n/a
ATTENTION:		**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	89
10	79
5	63
2	49
0.63	30
0.08	5



Remarks: 20 mm minus particle size distribution limits shown

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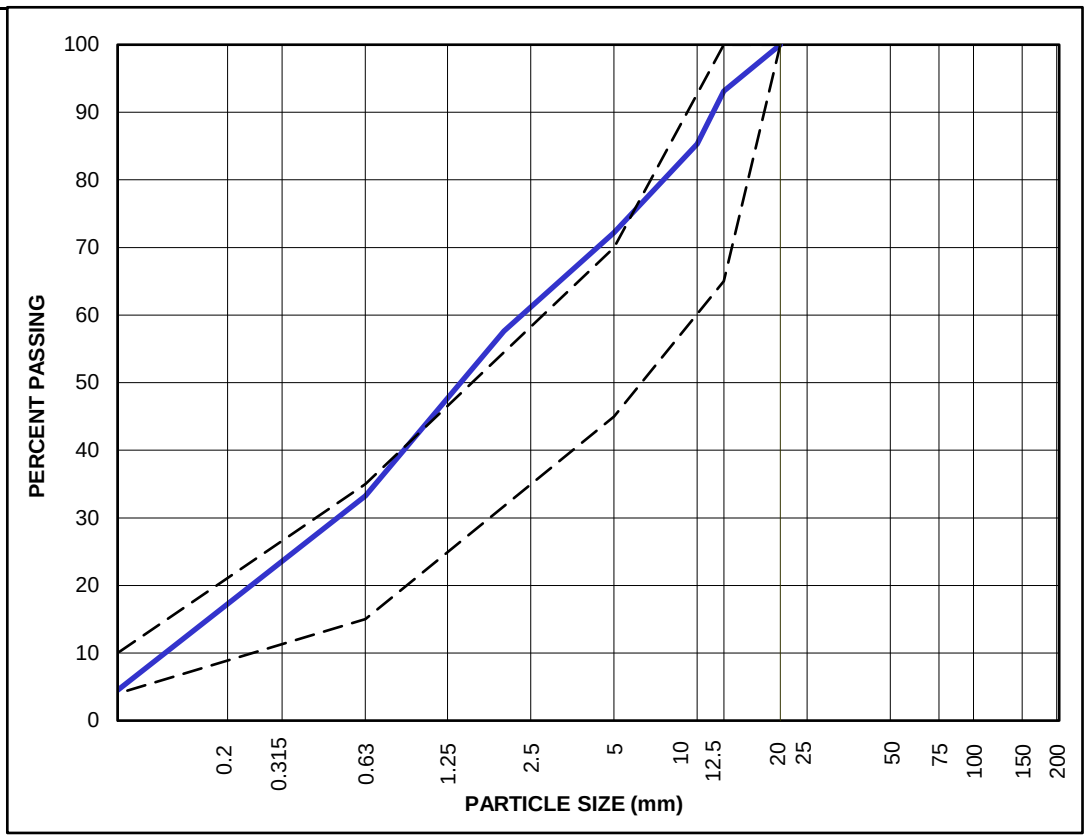
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA13
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	11.0%
DATE SAMPLED:	Nov 02/16 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	93
10	85
5	72
2	58
0.63	33
0.08	4



Remarks: 20 mm minus particle size distribution limits shown

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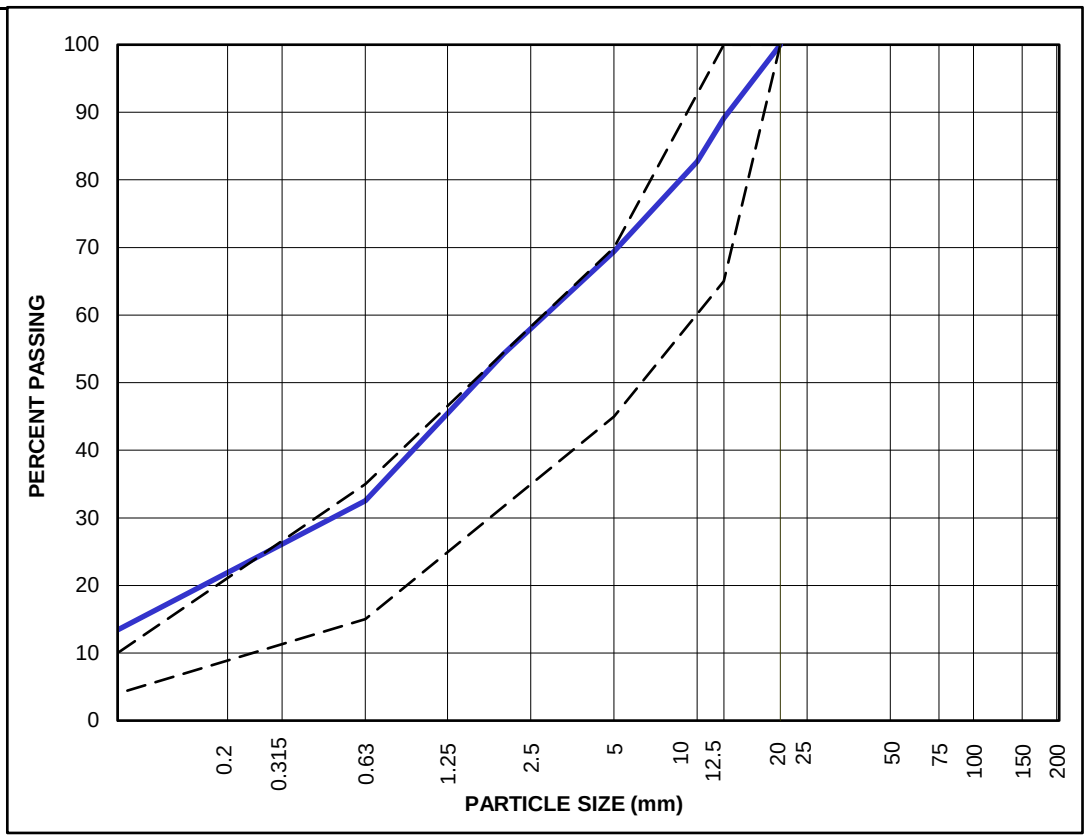
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA14
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	5.3%
DATE SAMPLED:	Nov 03/16 By: TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	89
10	83
5	69
2	54
0.63	33
0.08	13



Remarks: 20 mm minus particle size distribution limits shown

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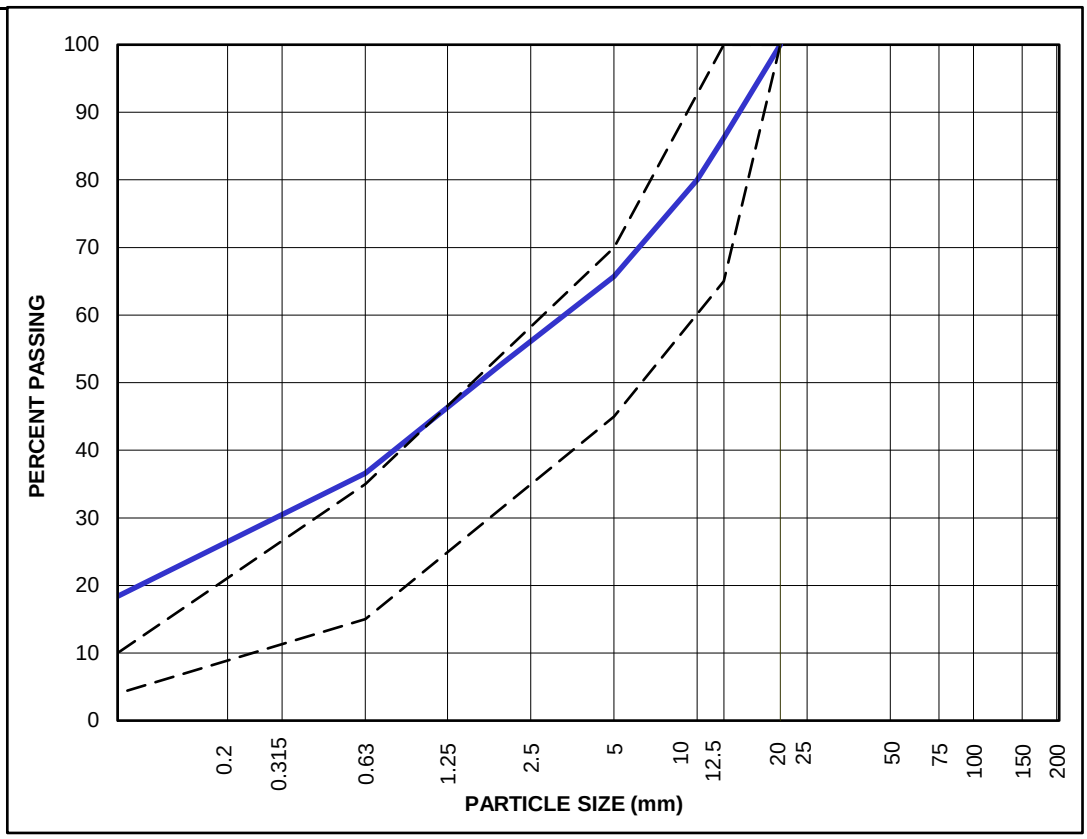
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA15
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	4.2%
DATE SAMPLED:	Nov 05/16 By: TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	86
10	80
5	66
2	53
0.63	37
0.08	18



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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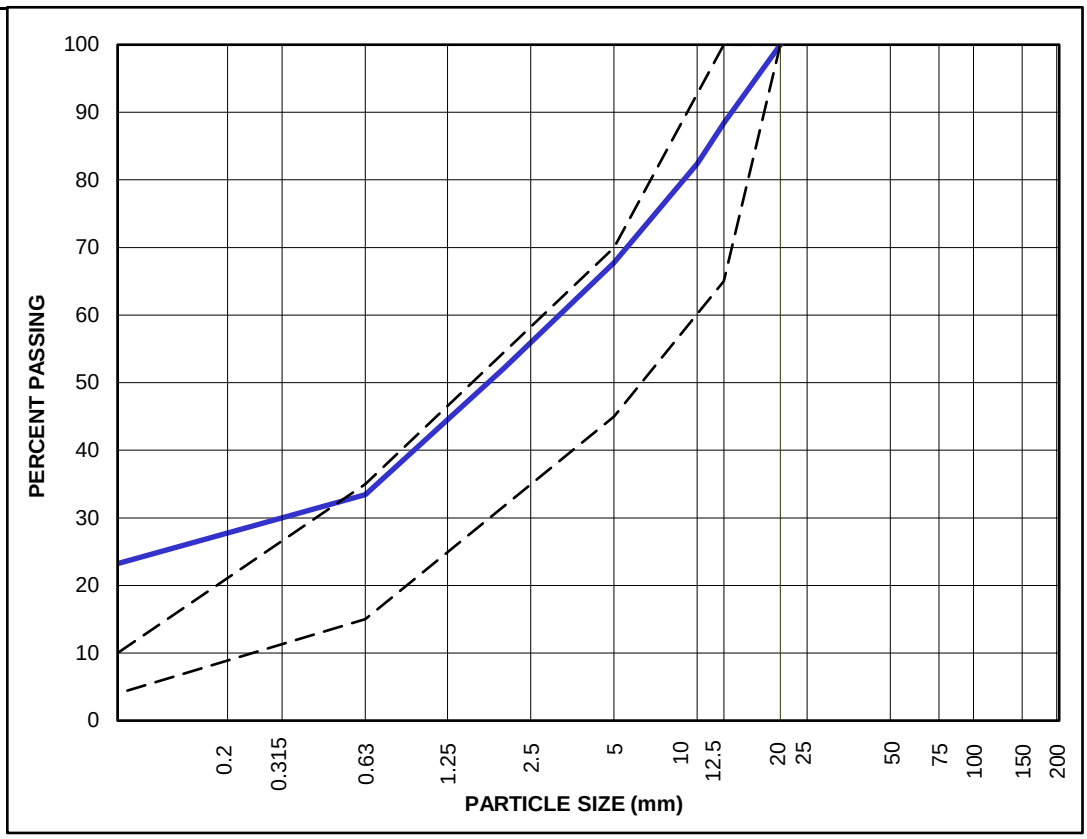
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA16
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	4.9%
DATE SAMPLED:	Nov 06/16 By: TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	88
10	82
5	68
2	52
0.63	33
0.08	23



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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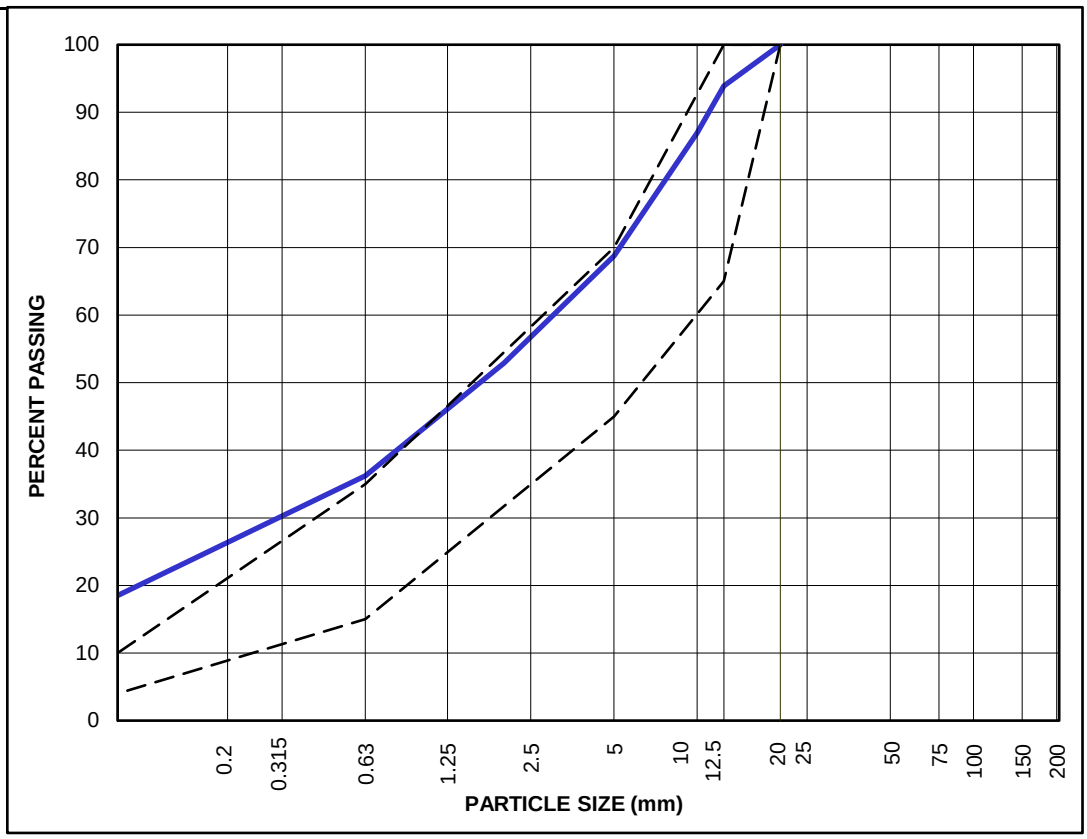
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA17
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	8.0%
DATE SAMPLED:	Nov 07/16 By: TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	94
10	87
5	69
2	53
0.63	36
0.08	19



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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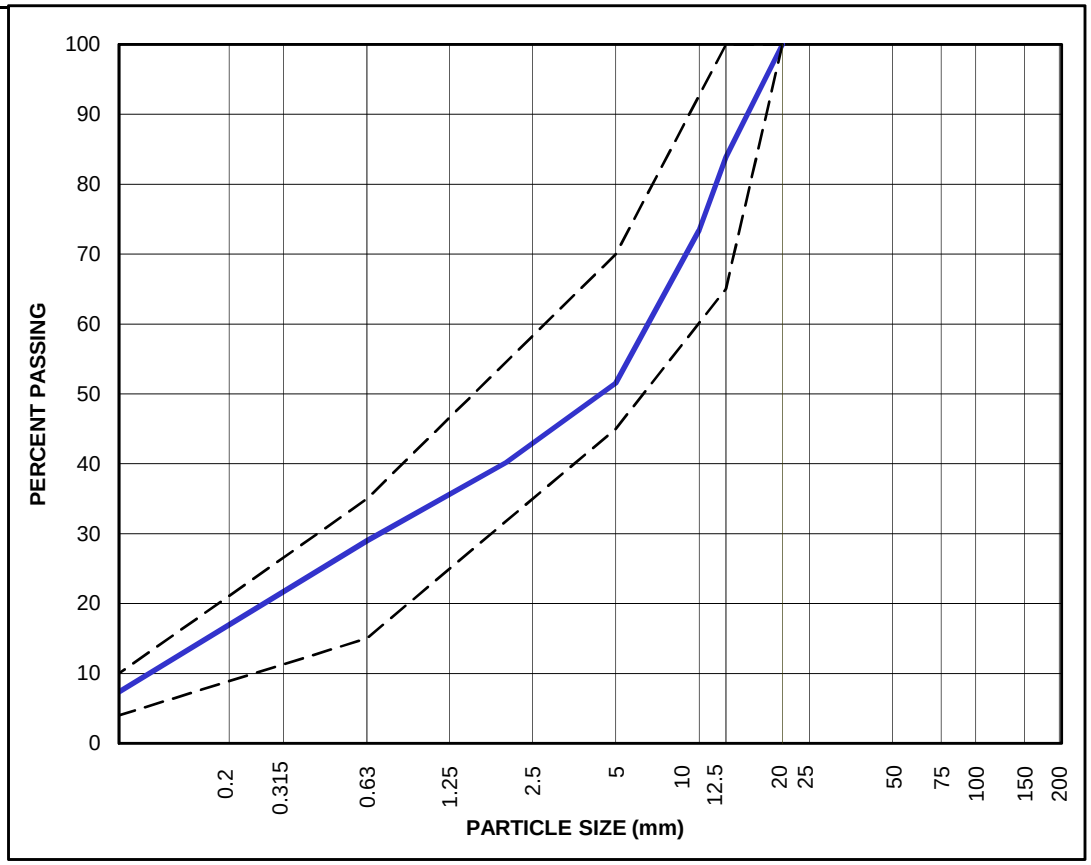
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA18
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	4.5%
DATE SAMPLED:	Nov 08/16 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	84
10	73
5	52
2	40
0.63	29
0.08	7



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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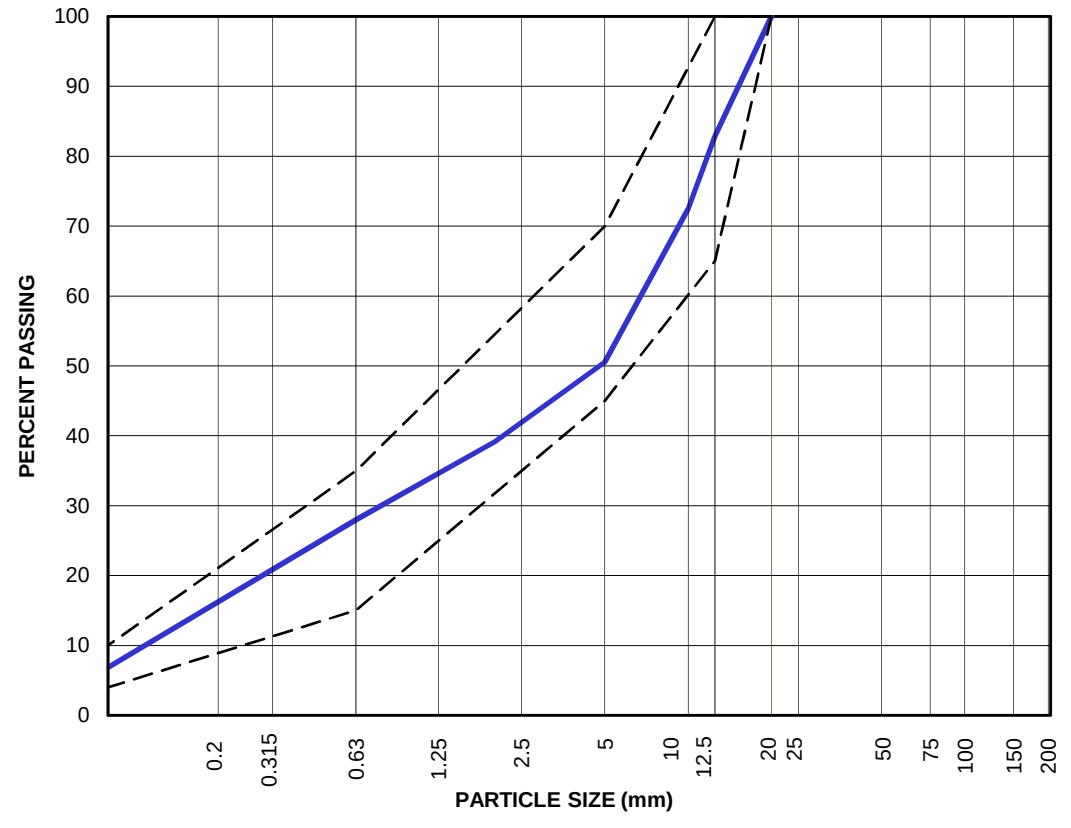
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA19
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	5.4%
DATE SAMPLED:	Nov 09/16 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	83
10	72
5	51
2	39
0.63	28
0.08	7



Remarks: 20 mm minus particle size distribution limits shown

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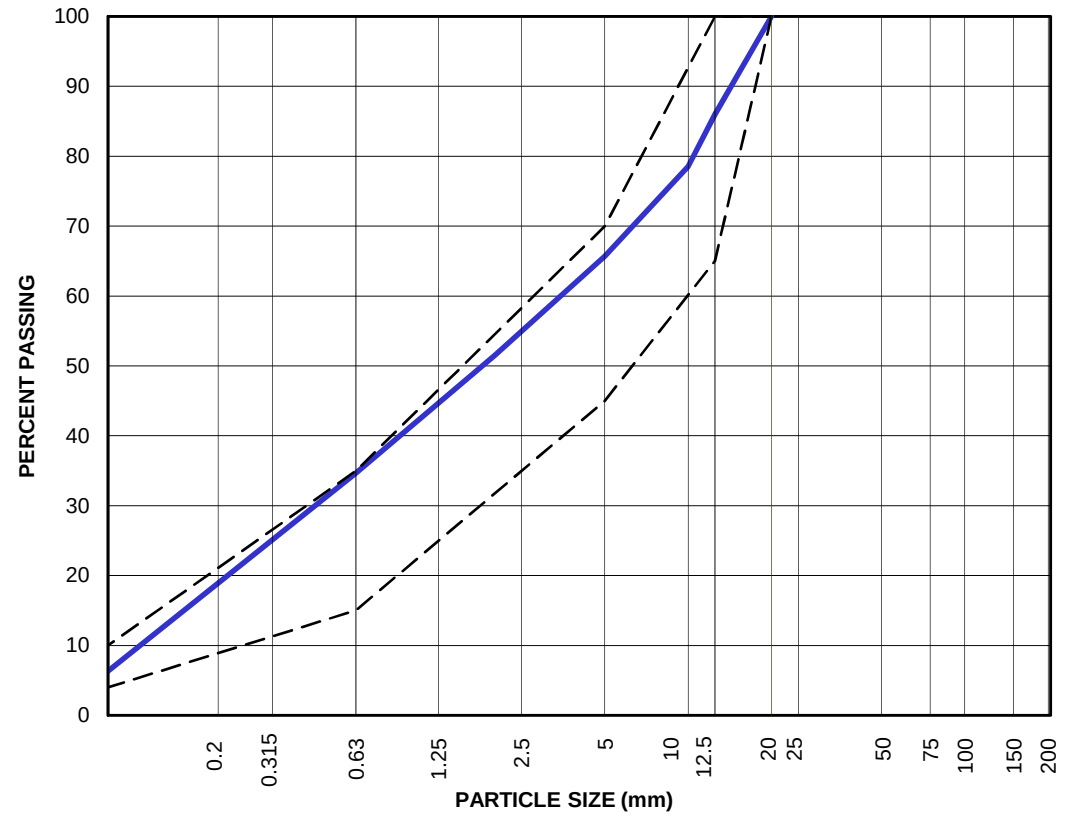
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA20
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	9.4%
DATE SAMPLED:	Nov 10/16 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	86
10	79
5	66
2	51
0.63	35
0.08	6



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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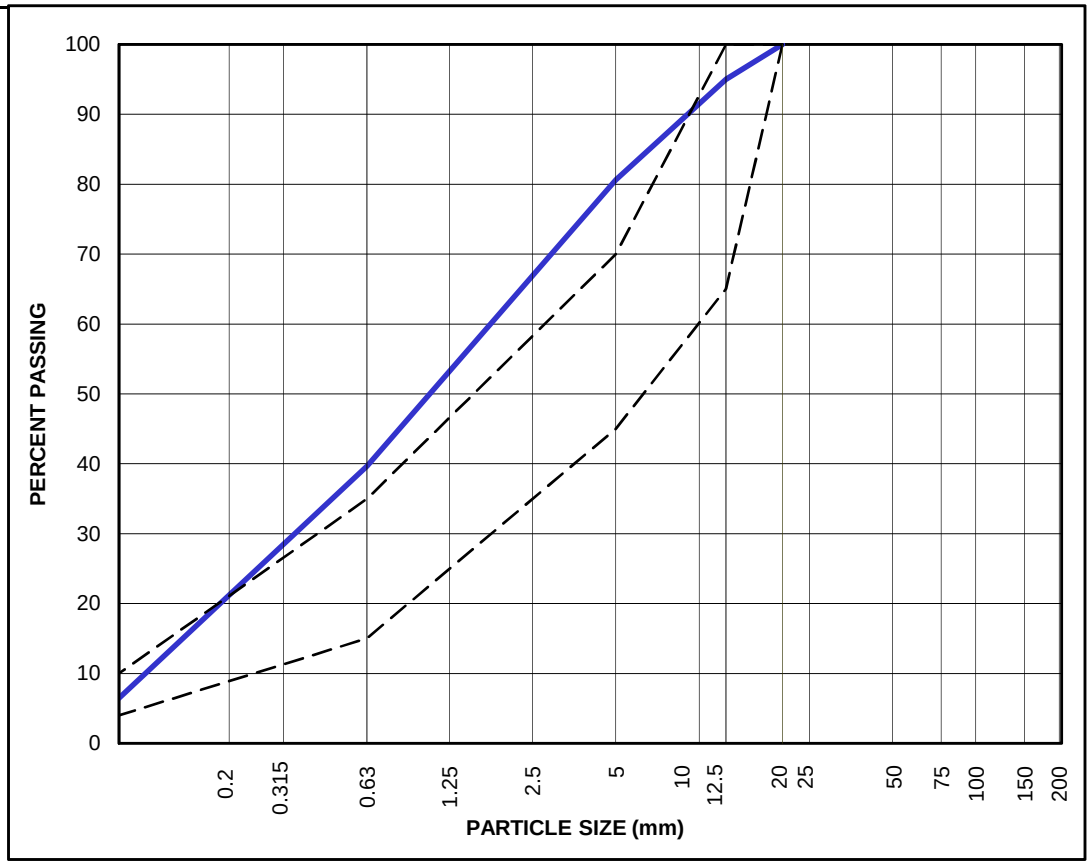
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA21
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	10.0%
DATE SAMPLED:	Nov 12/16 **By:** IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	95
5	81
0.63	40
0.08	6



Remarks:

Reviewed by: _____ P.Eng.

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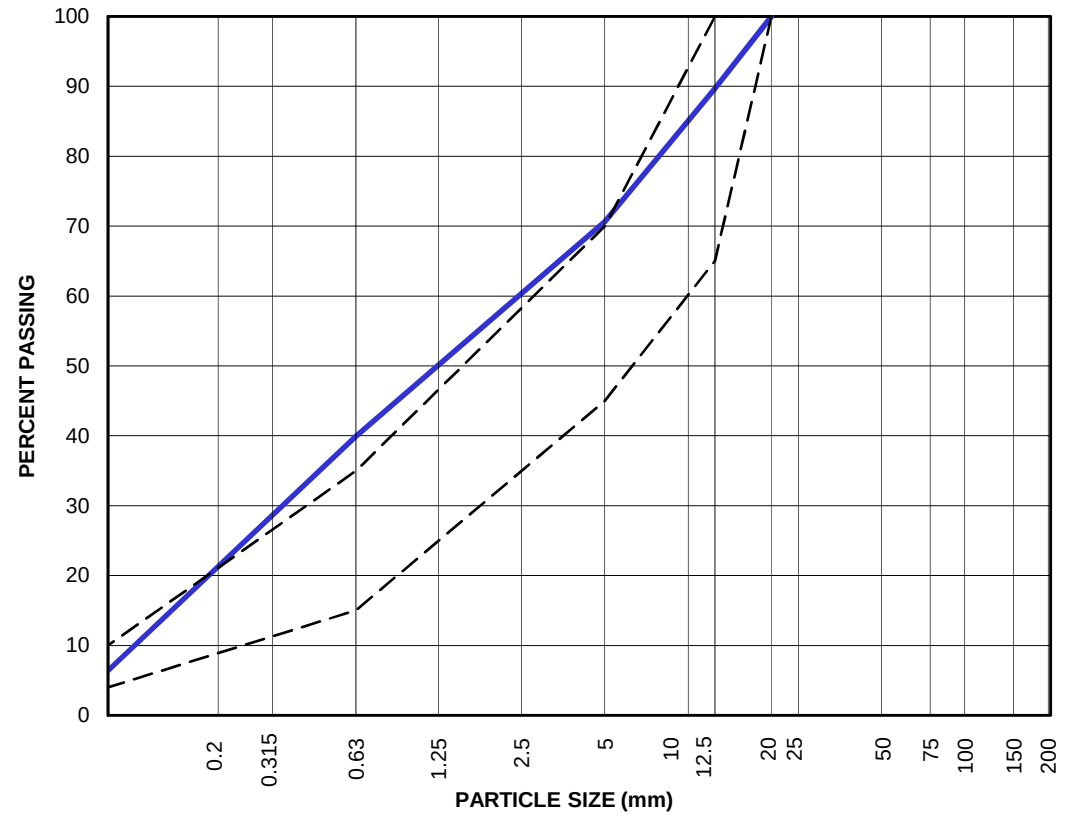
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA22
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	9.9%
DATE SAMPLED:	Nov 13/16 **By:** IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	90
5	71
0.63	40
0.08	6



Remarks: Sampled at 22:00.

Reviewed by: _____ P.Eng.

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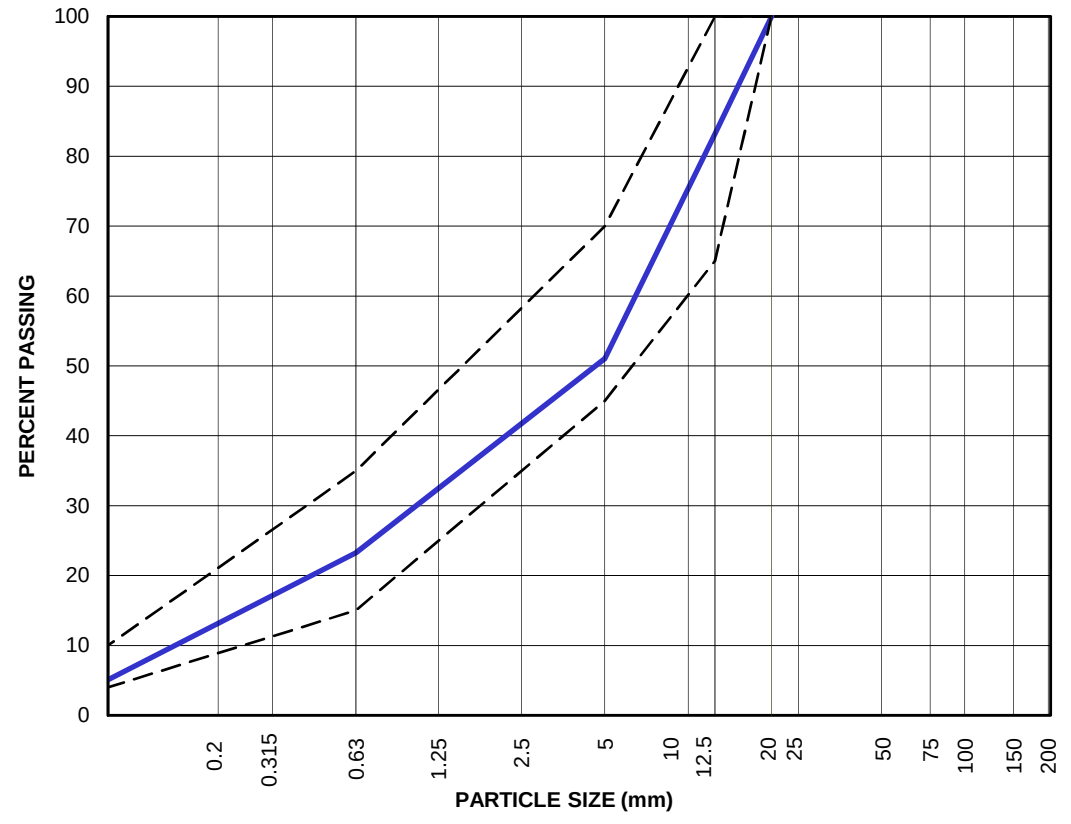
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA23
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	5.1%
DATE SAMPLED:	Nov 14/16 **By:** IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	83
5	51
0.63	23
0.08	5



Remarks: Sampled at 17:00.

Reviewed by: _____ P.Eng.

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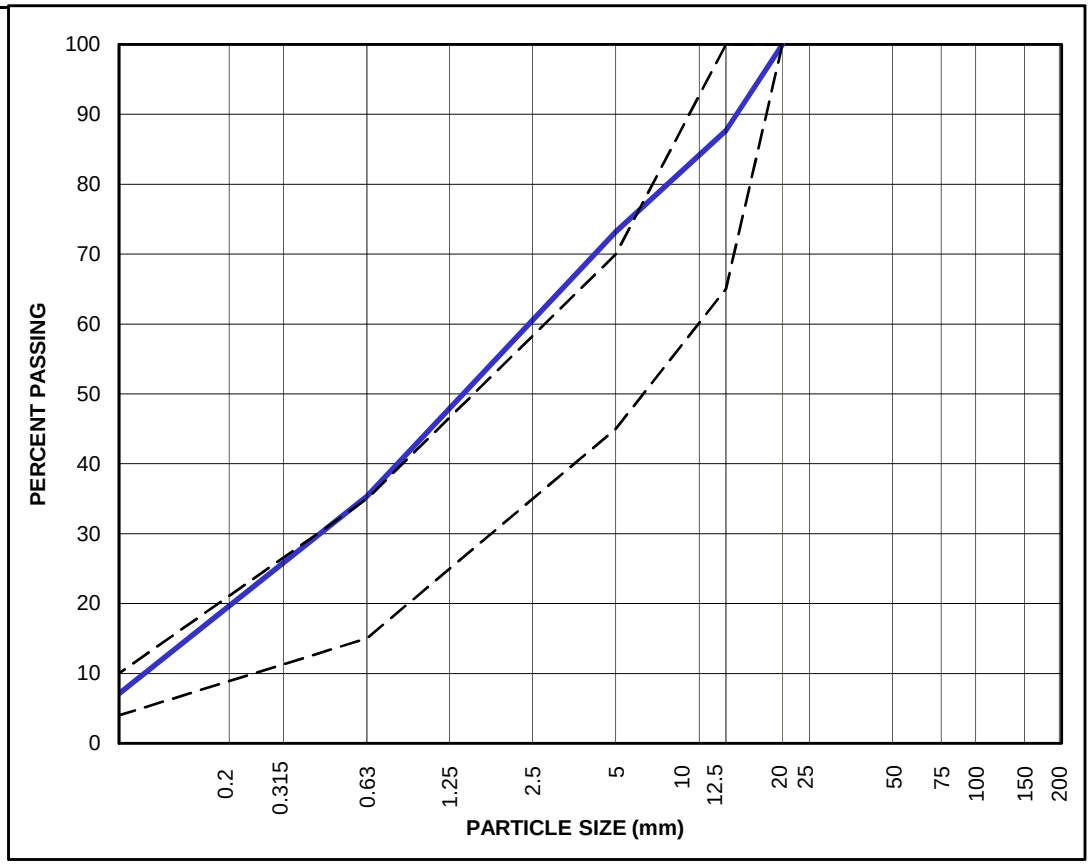
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	**Meliadine Dike Construction**	**SAMPLE NO:**	**SA24**
		SAMPLE DESCRIPTION:	**20 mm minus (Type C Mat.) Sampled from belt**
ADDRESS:	**Meliadine Gold Project, NU.**		
PROJECT NO:	**E14103230-01.023**	**MOISTURE CONT. :**	**8.2%**
DATE SAMPLED:	**Nov 17/16** **By: IM**		
CLIENT:	**Agnico Eagle Mines Ltd.**	**BULK REL DENSITY:**	**n/a**
ATTENTION:	**Mr. Duy Nguyen**	**BULK REL. DENSITY (SSD):**	**n/a**
		APPARENT REL. DENSITY:	**n/a**
		ABSORPTION:	**n/a**

PARTICLE SIZE	PERCENT PASSING
20	**100**
12.5	**88**
5	**73**
0.63	**35**
0.08	**7**



Remarks: Sampled at 19:00.

Reviewed by: _____ P.Eng.

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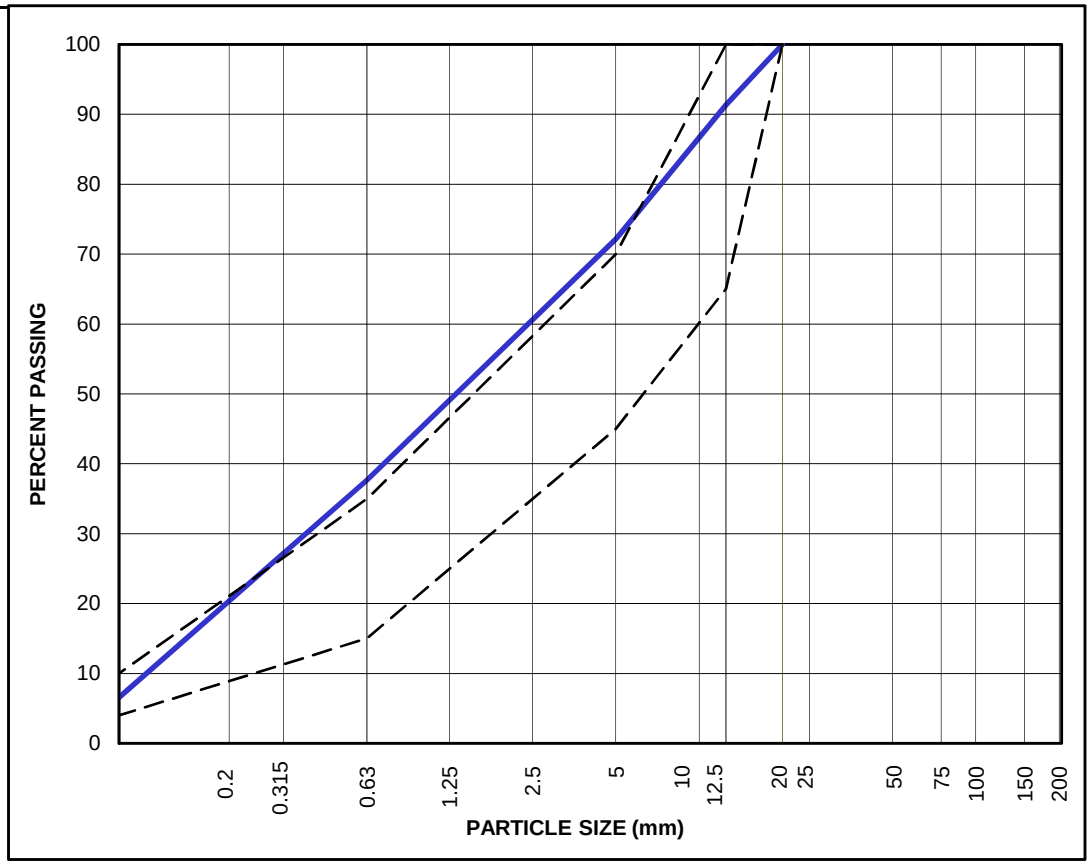
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA25
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from stockpile
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	12.4%
DATE SAMPLED:	Nov 17/16 **By:** IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	91
5	72
0.63	38
0.08	7



Remarks: Sampled at 19:00. Layers of snow noted in stockpile.

Reviewed by: _____ P.Eng.

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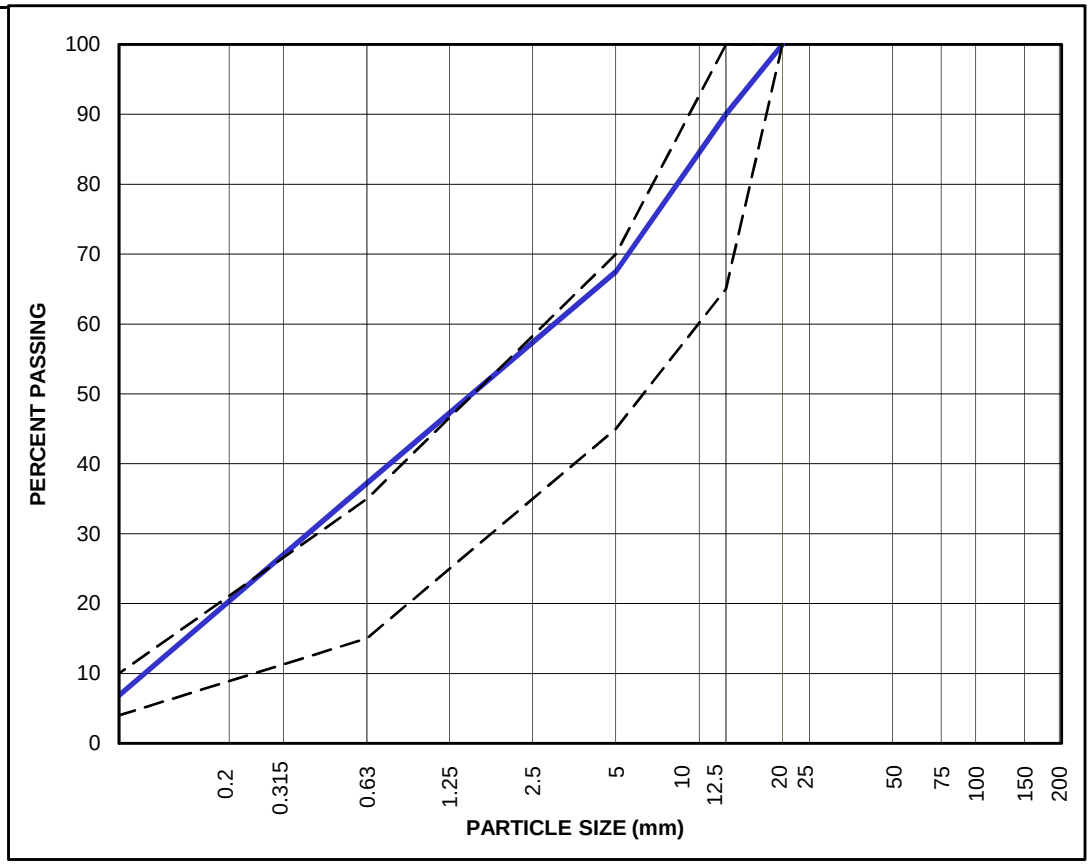
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA26
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from stockpile
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	11.5%
DATE SAMPLED:	Nov 17/16 **By:** IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	90
5	67
0.63	37
0.08	7



Remarks: Sampled at 19:00. Layers of snow noted in stockpile.

Reviewed by: _____ P.Eng.

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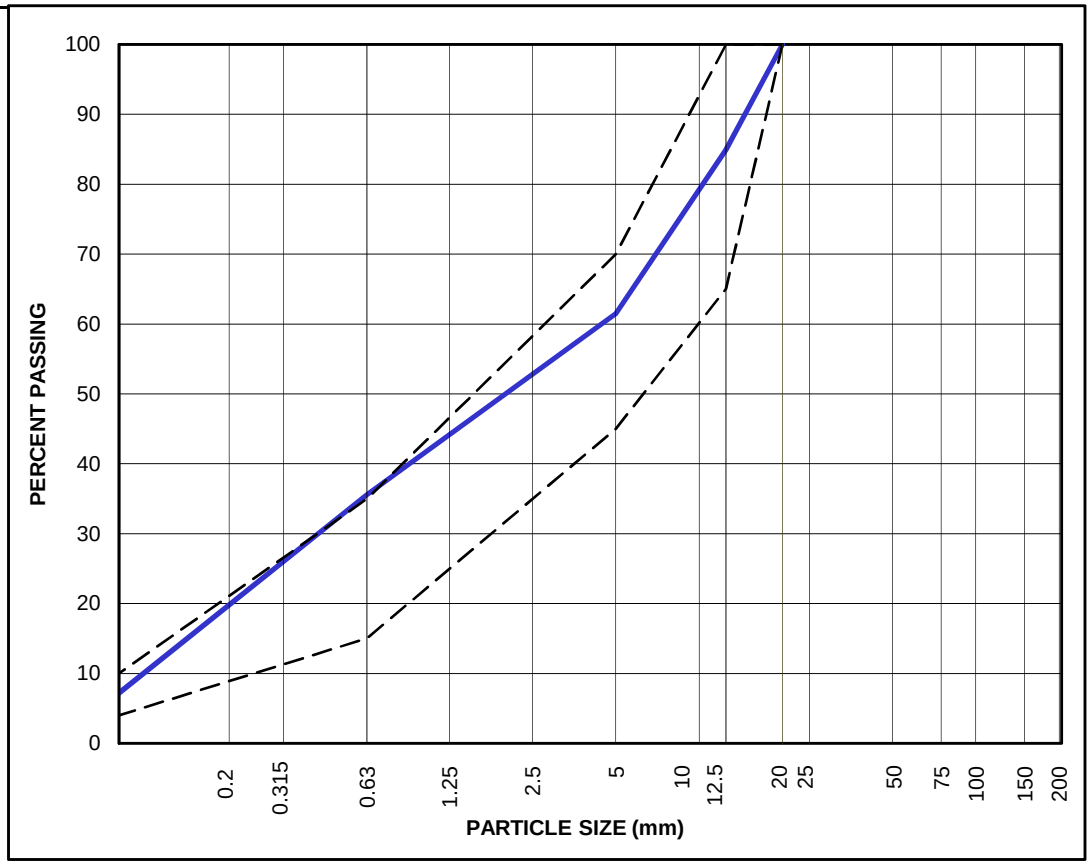
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA27
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from stockpile
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	11.2%
DATE SAMPLED:	Nov 19/16 **By:** SH		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	85
5	61
0.63	36
0.08	7



Remarks:

Reviewed by: _____ P.Eng.

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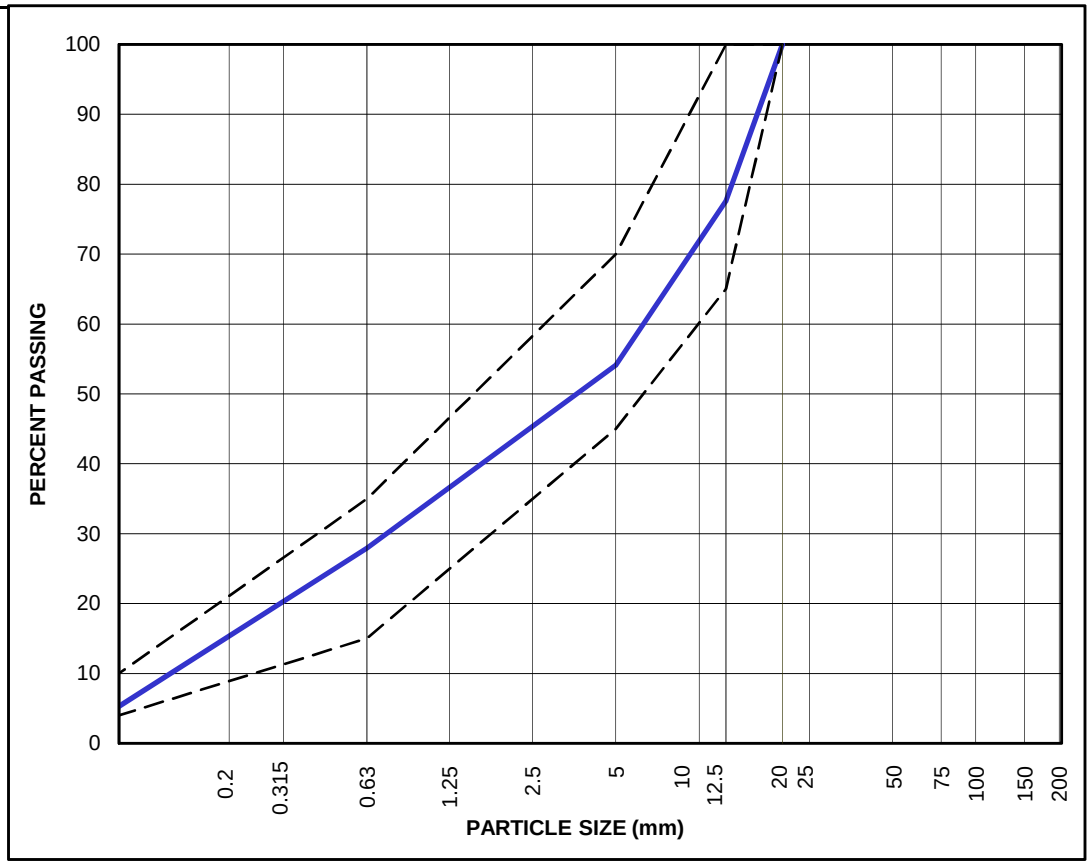
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA28
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from stockpile
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	9.2%
DATE SAMPLED:	Nov 19/16 **By:** SH		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	78
5	54
0.63	28
0.08	5



Remarks:

Reviewed by: _____ P.Eng.

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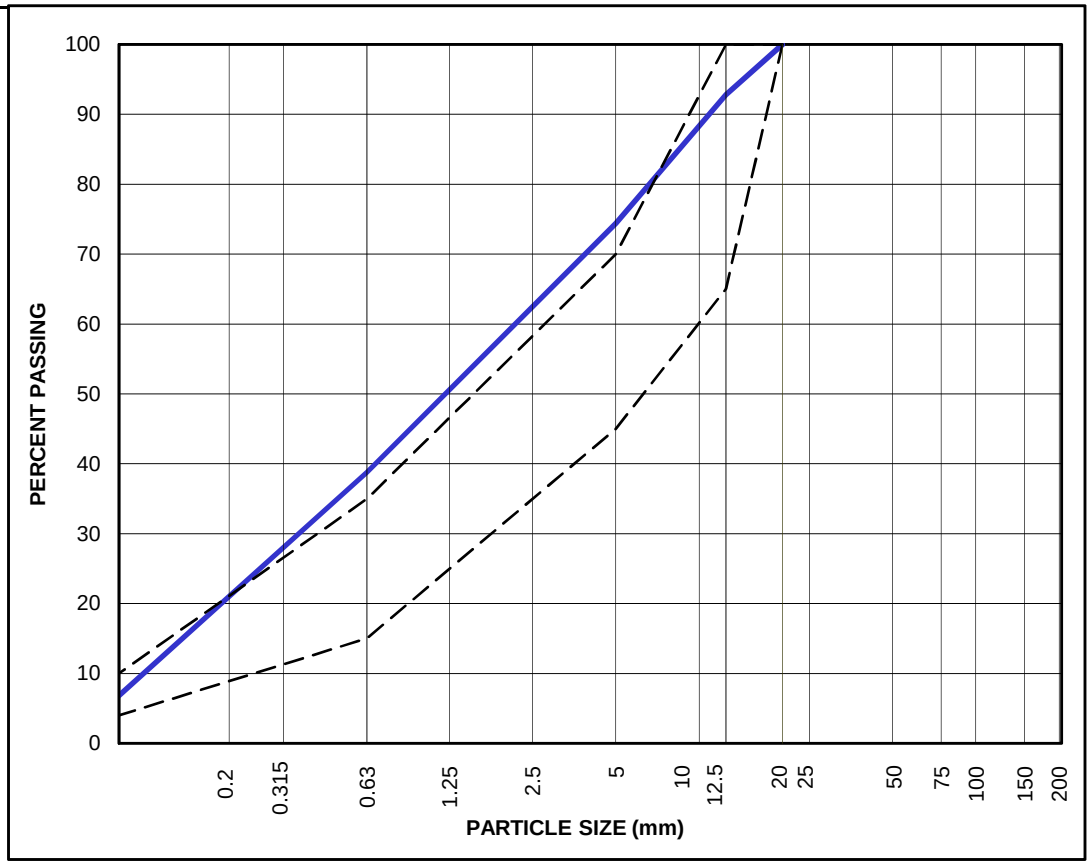
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA29
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.)
			Sampled after belt (mixed by loader)
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	11.9%
DATE SAMPLED:	Nov 19/16 **By:** SH		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	93
5	74
0.63	39
0.08	7



Remarks:

Reviewed by: _____ P.Eng.

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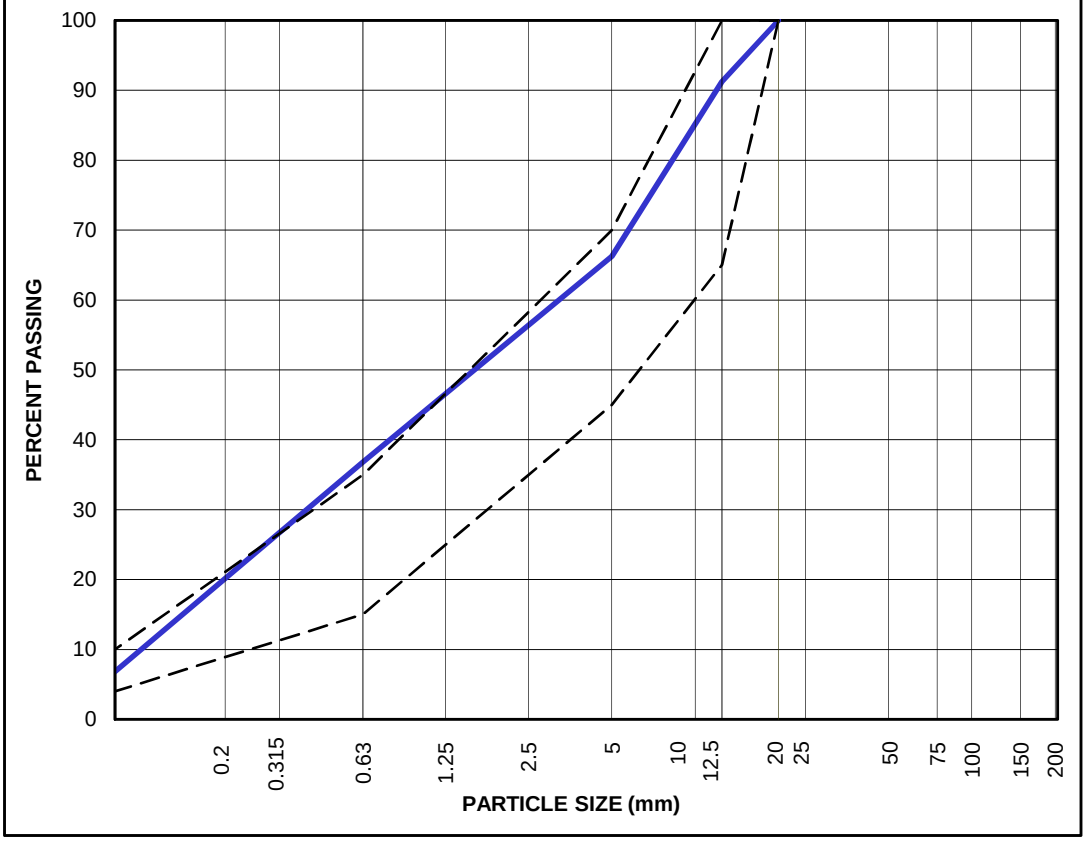
PARTICLE SIZE ANALYSIS REPORT

PROJECT: Meliadine Dike Construction
SAMPLE NO: SA30
SAMPLE DESCRIPTION: 20 mm minus (Type C Mat.)
Sampled after belt (mixed by loader)
ADDRESS: Meliadine Gold Project, NU.
PROJECT NO: E14103230-01.023
MOISTURE CONT. : 11.1%
DATE SAMPLED: Nov 21/16 **By:** SH
CLIENT: Agnico Eagle Mines Ltd.
BULK REL DENSITY: n/a
ATTENTION: Mr. Duy Nguyen
BULK REL. DENSITY (SSD): n/a
APPARENT REL. DENSITY: n/a
ABSORPTION: n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	91
5	66
0.63	37
0.08	7



Remarks:

Reviewed by: _____ P.Eng.

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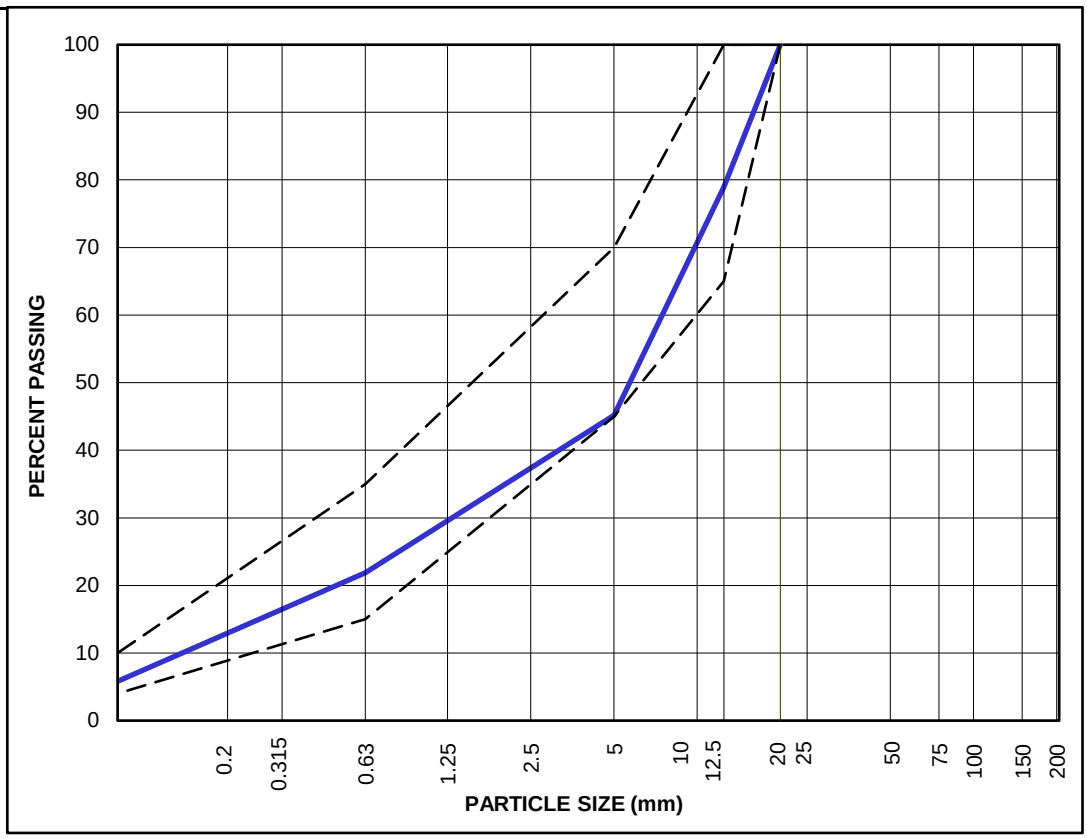
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA31
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.)
			Sampled after belt (mixed by loader)
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	4.5%
DATE SAMPLED:	Nov 23/16 **By:** SH/IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	79
5	45
0.63	22
0.08	6



Remarks:

Reviewed by: _____ P.Eng.

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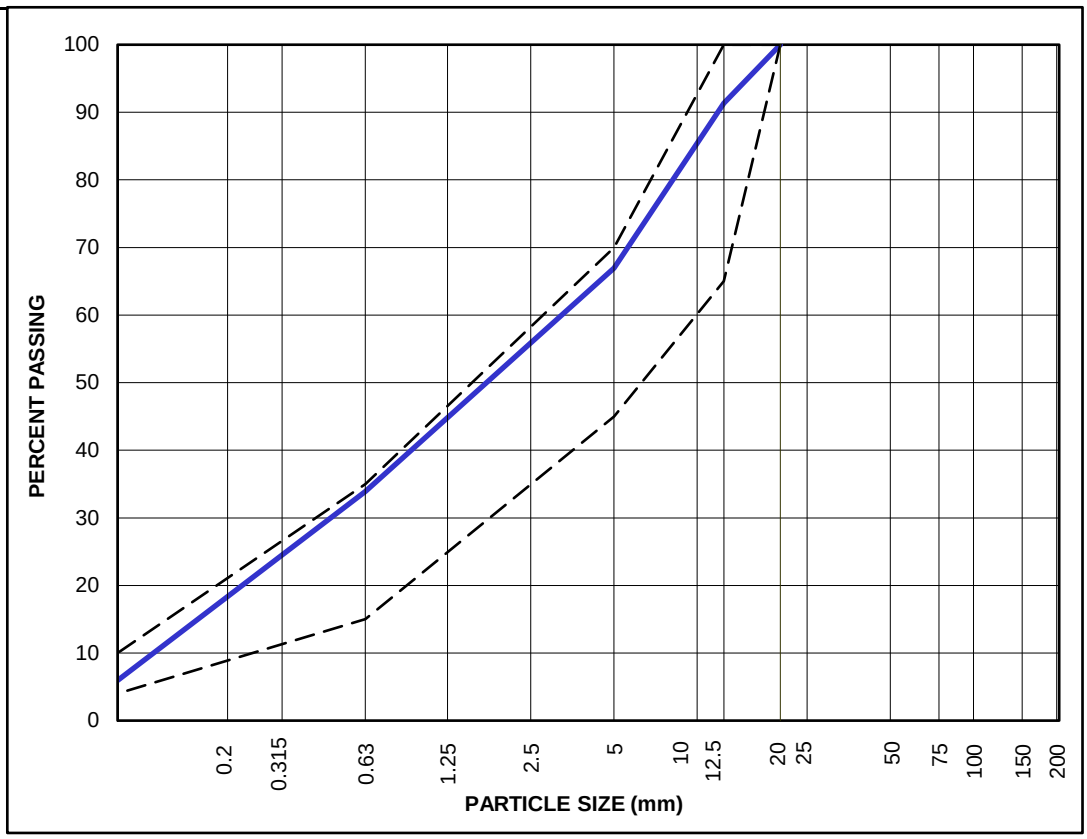
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA32
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.)
			Sampled after belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	10.3%
DATE SAMPLED:	Nov 23/16 By: SH/IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	91
5	67
0.63	34
0.08	6



Remarks:

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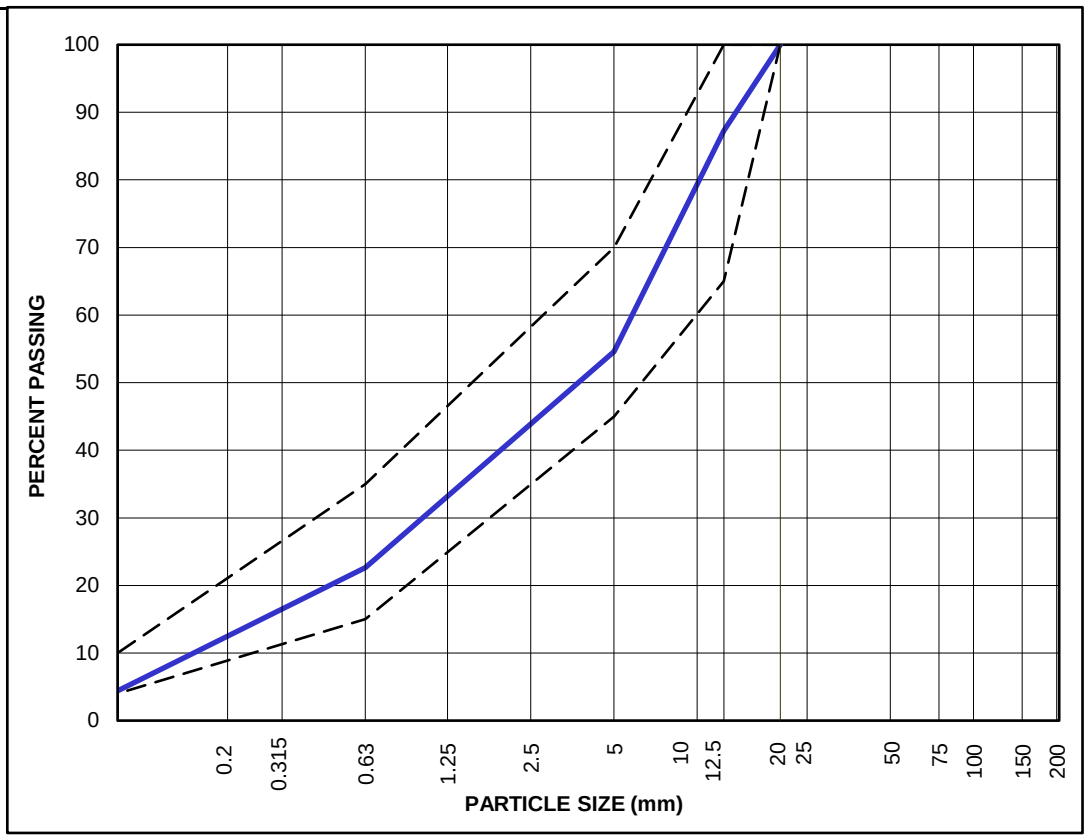
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA33
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled from Dayshift Stockpile
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	7.5%
DATE SAMPLED:	Nov 26/16 **By:** SH/IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	87
5	55
0.63	23
0.08	4



Remarks:

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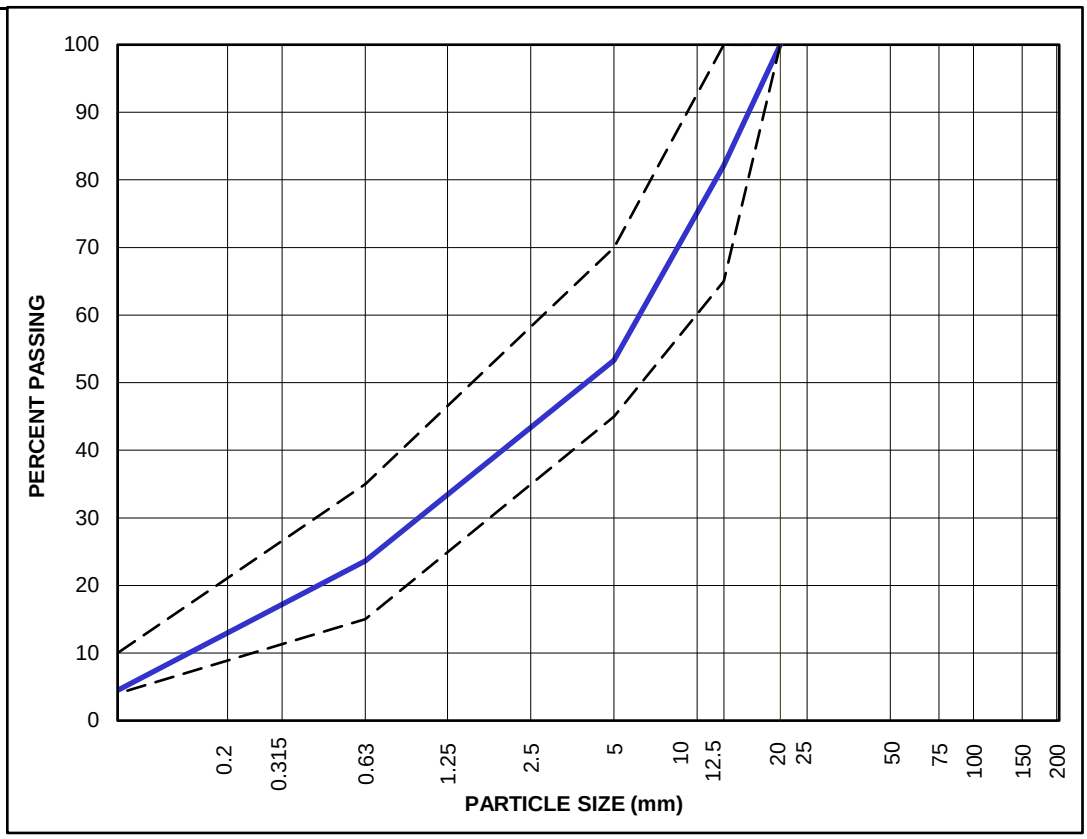
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA34
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled after belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	6.7%
DATE SAMPLED:	Nov 26/16 By: SH		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	82
5	53
0.63	24
0.08	4



Remarks:

Reviewed by: _____ P.Eng.

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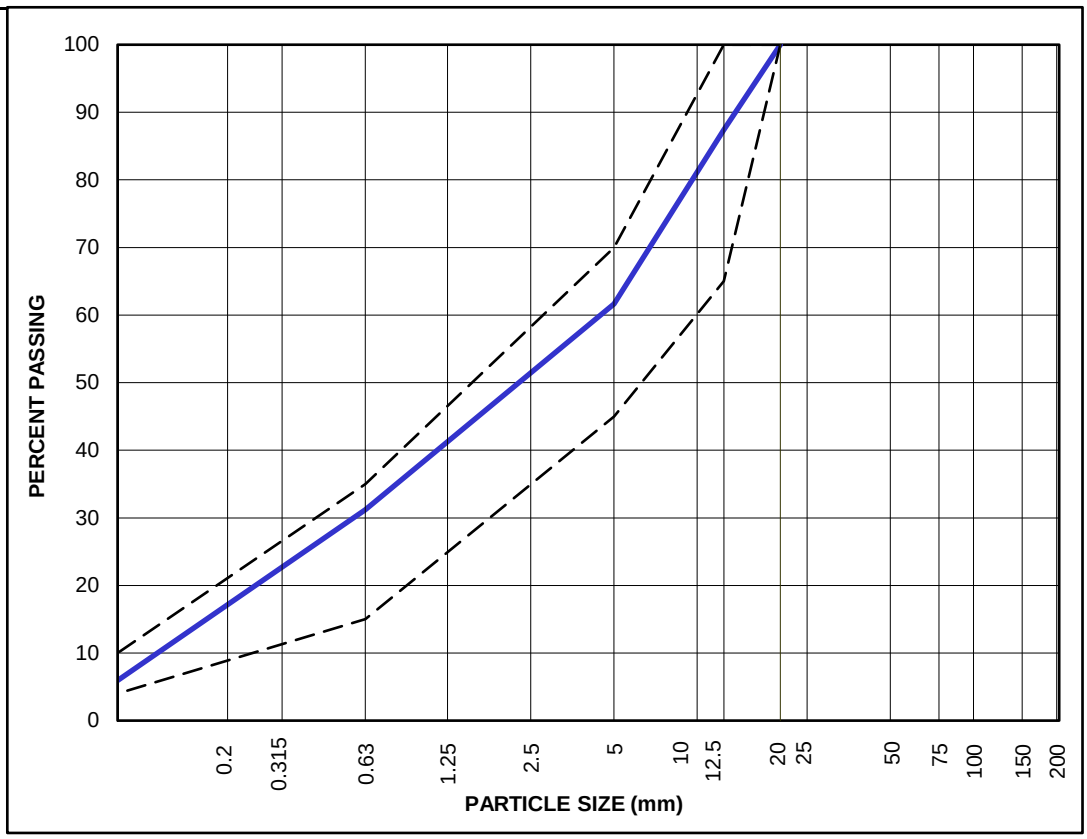
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA35
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled from Dayshift Stockpile
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	8.0%
DATE SAMPLED:	Nov 26/16 **By:** SH/IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	87
5	62
0.63	31
0.08	6



Remarks:

Reviewed by: _____ P.Eng.

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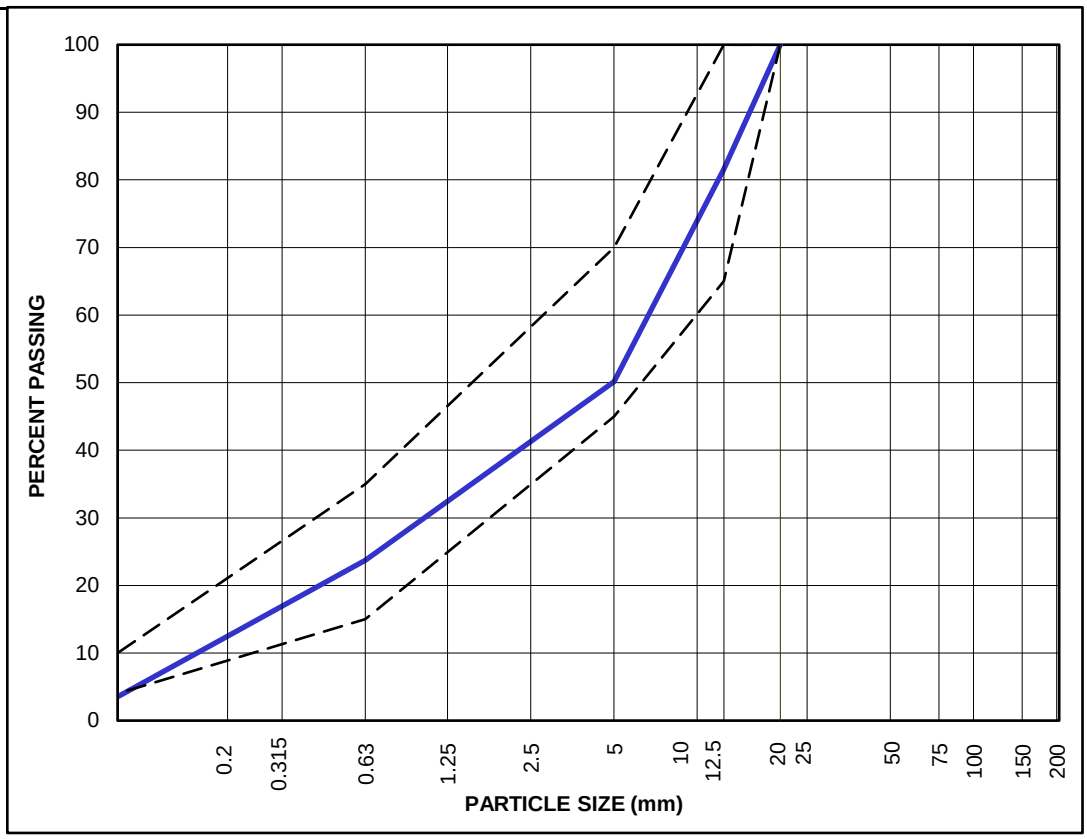
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA36
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled November 29 N/S
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	7.1%
DATE SAMPLED:	Nov 29/16 **By:** SH/IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	82
5	50
0.63	24
0.08	4



Remarks:

Reviewed by: _____ P.Eng.

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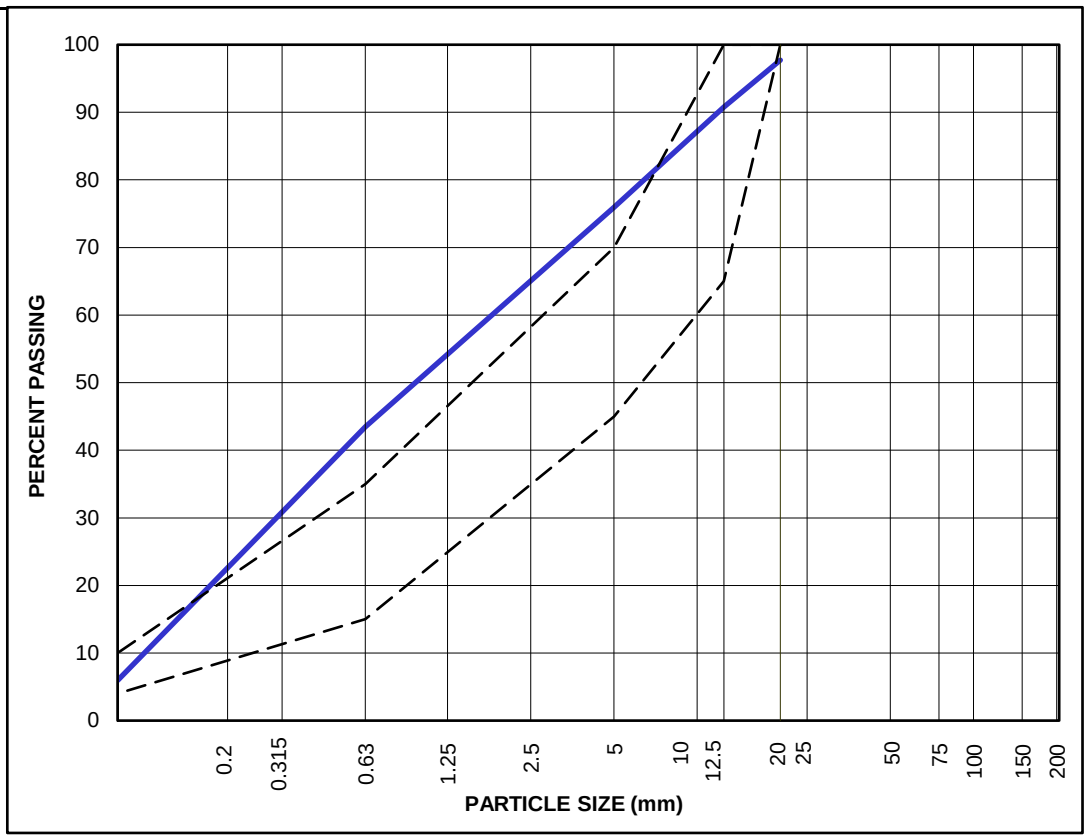
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA37
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled from Belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	14.3%
DATE SAMPLED:	Nov 30/16 **By:** SH/IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	98
12.5	91
5	76
0.63	43
0.08	6



Remarks:

Reviewed by: _____ P.Eng.

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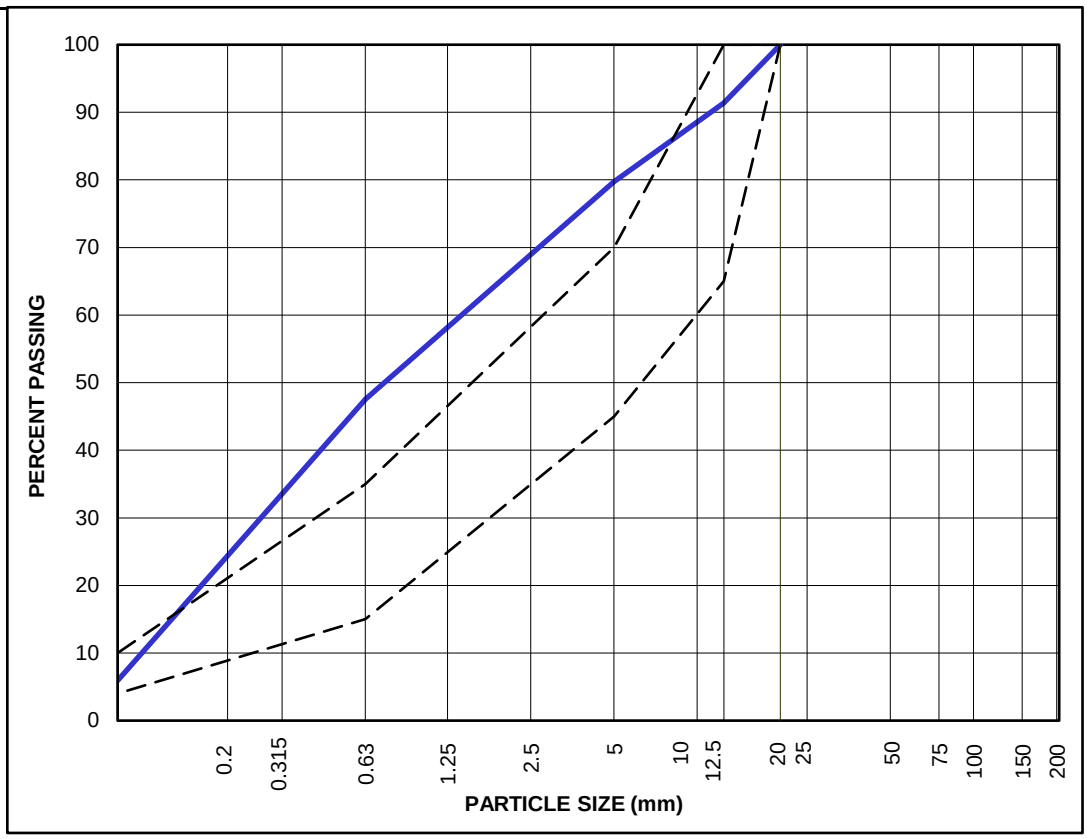
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA38
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled from Belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	13.3%
DATE SAMPLED:	Dec 02/16 **By:** SH/IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	91
5	80
0.63	48
0.08	6



Remarks:

Reviewed by: _____ P.Eng.

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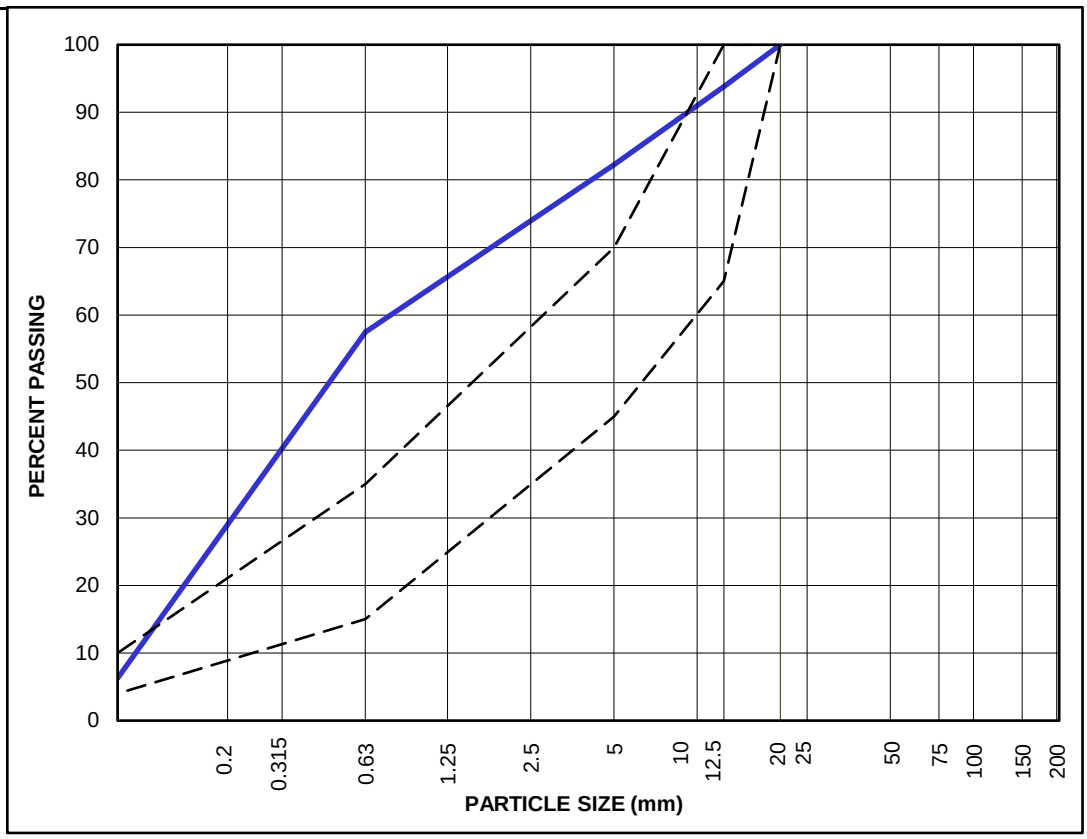
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA39
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled from Belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	13.8%
DATE SAMPLED:	Dec 03/16 **By:** IM/SH		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	94
5	82
0.63	57
0.08	6



Remarks: Sampled at 02:00 (Night shift)

Reviewed by: _____ P.Eng.

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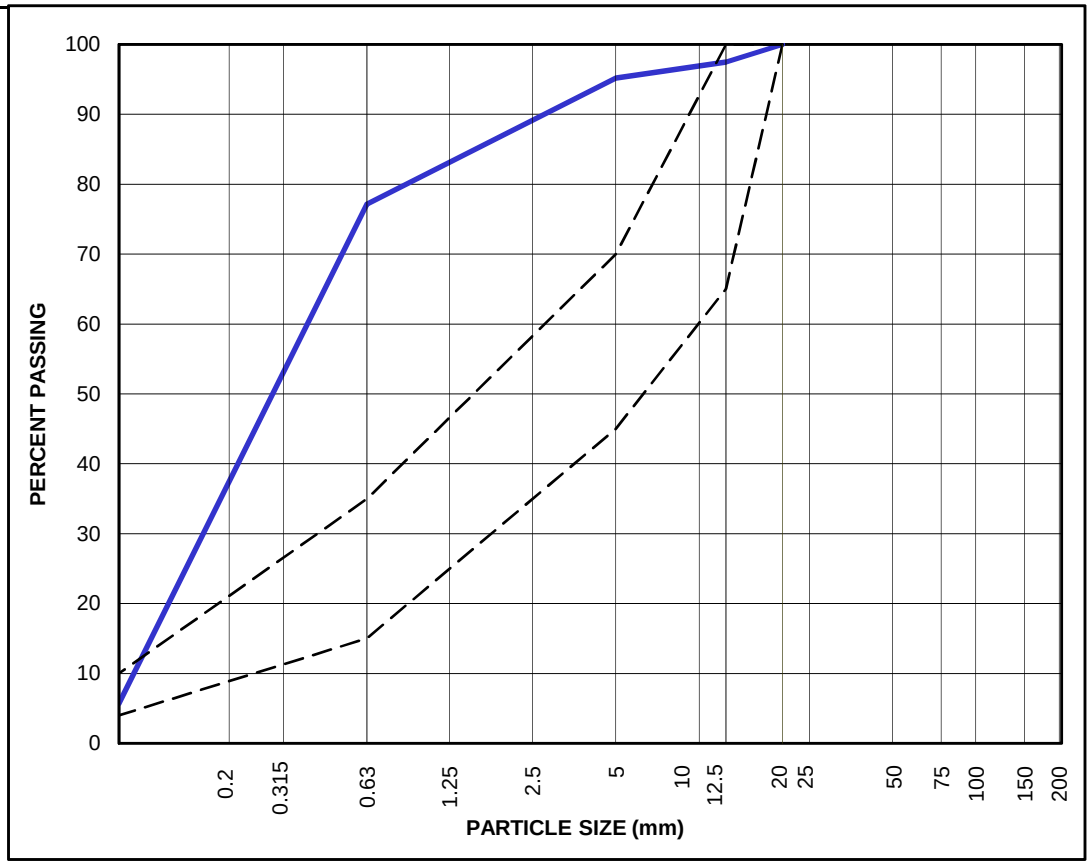
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA40
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled from Belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	14.4%
DATE SAMPLED:	Dec 05/16 **By:** IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	97
5	95
0.63	77
0.08	6



Remarks: Sampled at 03:00 (Night shift)

Reviewed by: _____ P.Eng.

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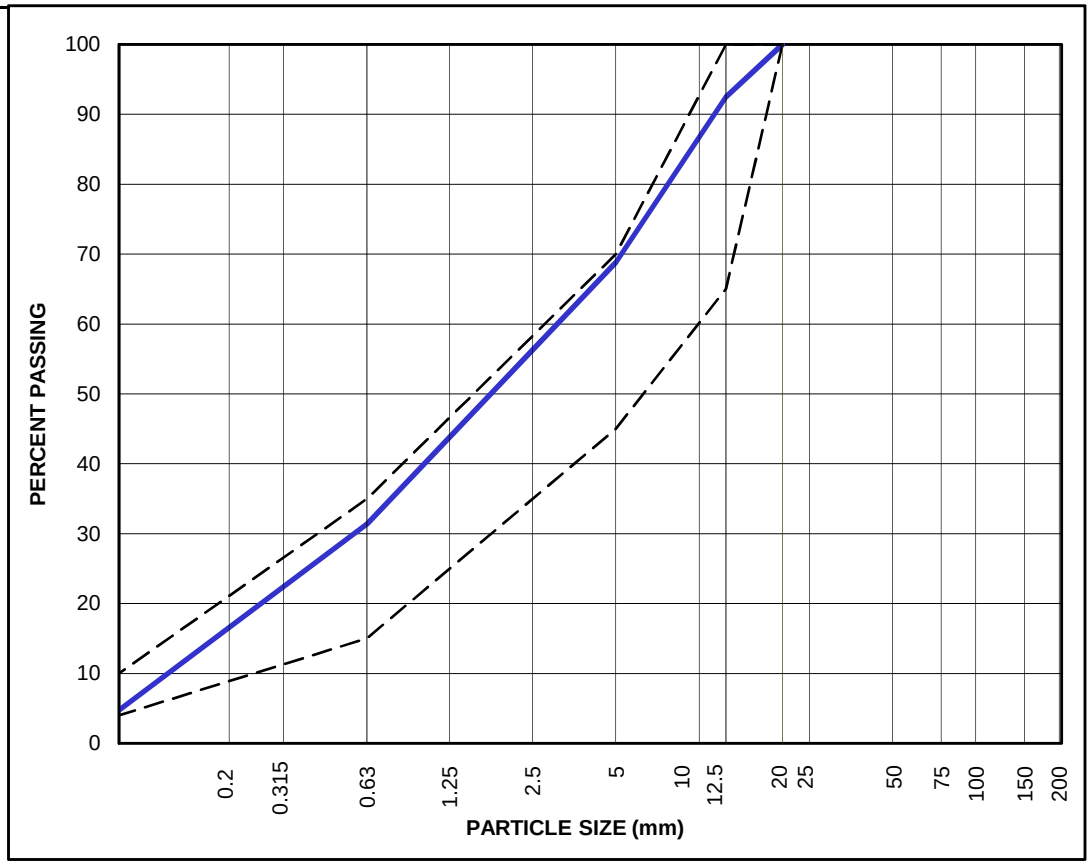
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA41
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled from stockpile
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	6.7%
DATE SAMPLED:	Mar 11/17 **By:** SH		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	92
5	69
0.63	31
0.08	5



Remarks: Sampled at 02:00 (Night shift)

Reviewed by: _____ P.Eng.

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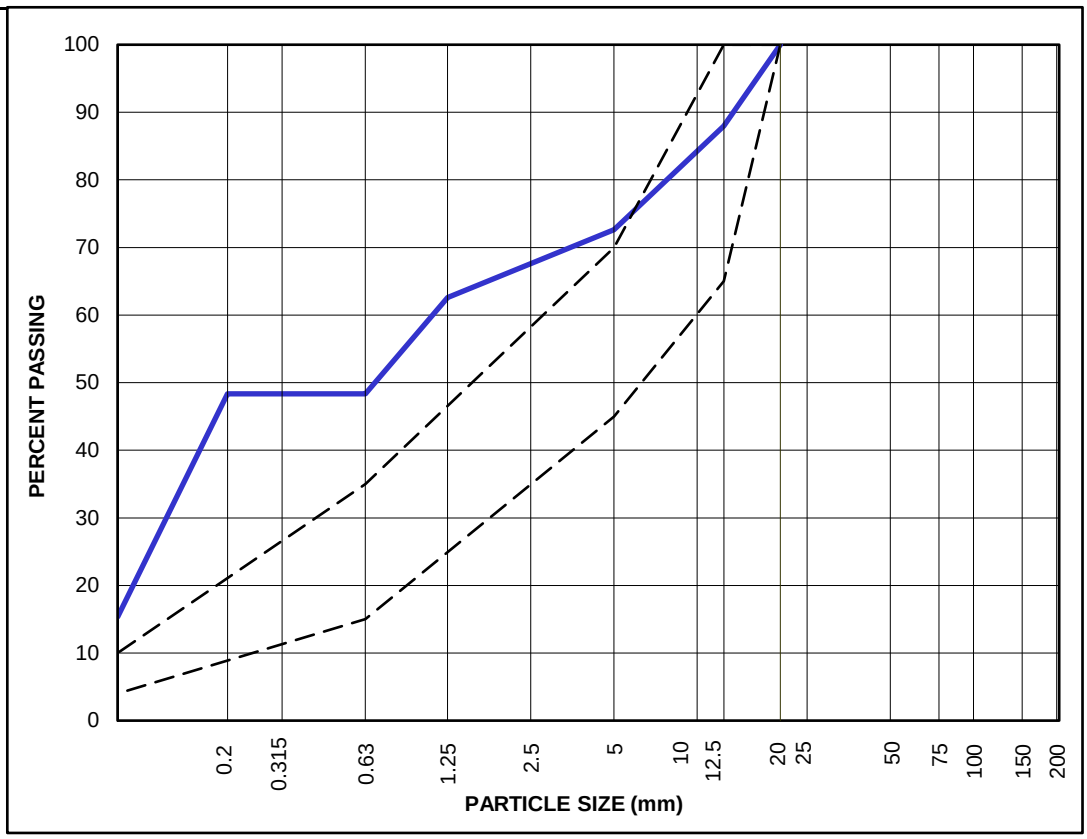
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA43
		SAMPLE DESCRIPTION:	Type C - 20 mm
			Sampled from u/s Type C fillet ~0+280 @ D-CP5
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01.023	**MOISTURE CONT. :**	11.5%
DATE SAMPLED:	Apr 18/17 **By:** WW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	88
5	73
1.25	63
0.63	48
0.315	48
0.2	48
0.08	15



Remarks: Sampled from u/s Type C fillet ~0+280 @ D-CP5

Reviewed by: _____ P.Geo.

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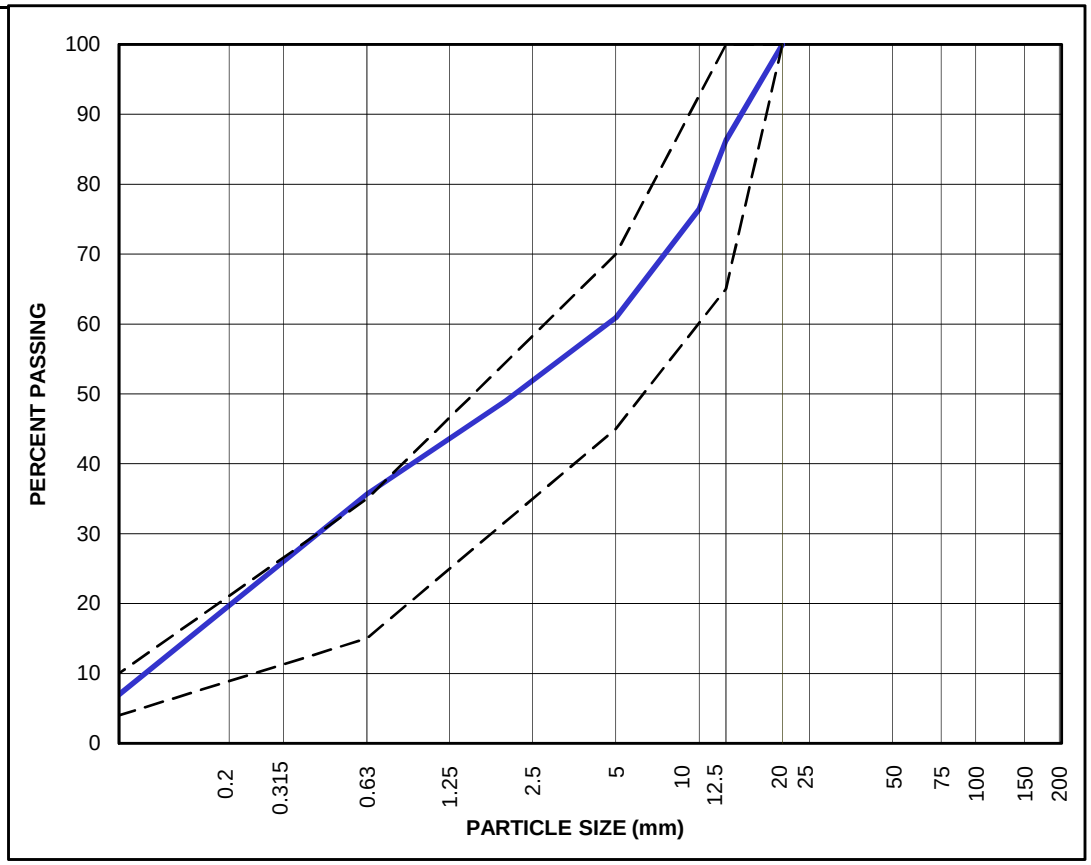
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA44
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	8.5%
DATE SAMPLED:	Apr 29/17 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	86
10	76
5	61
2	49
0.63	36
0.08	7



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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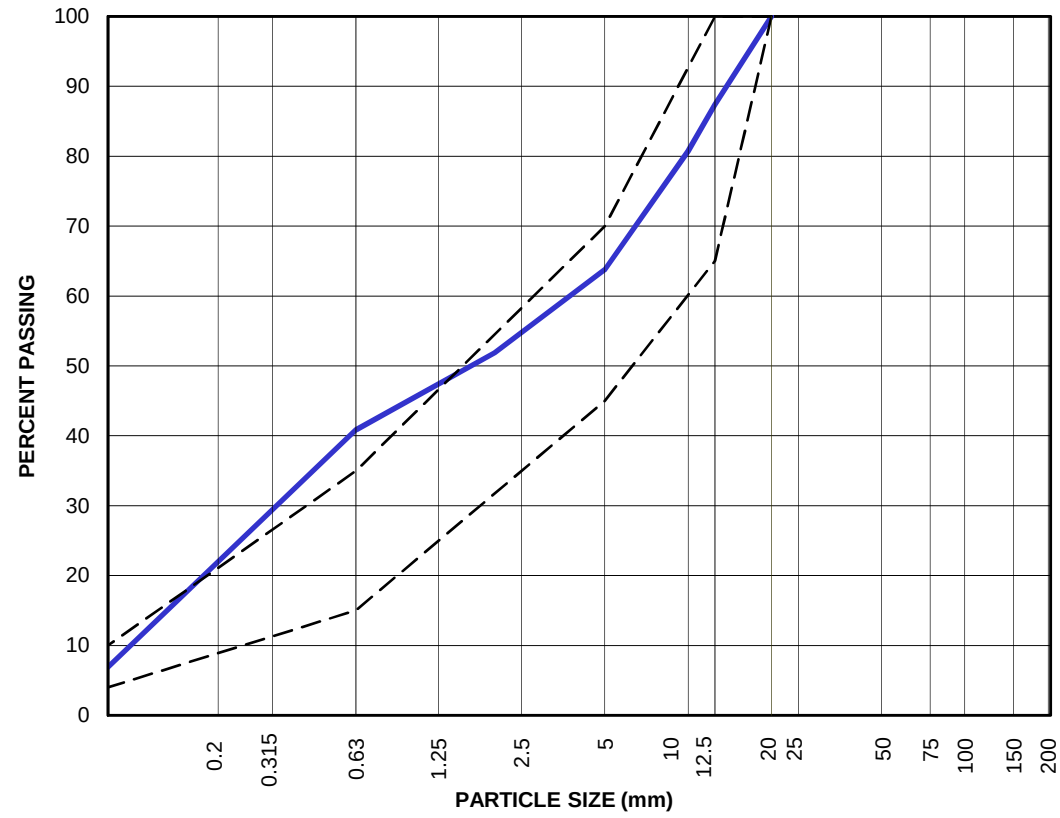
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA45
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	7.8%
DATE SAMPLED:	Apr 29/17 **By:** IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	87
10	81
5	64
2	52
0.63	41
0.08	7



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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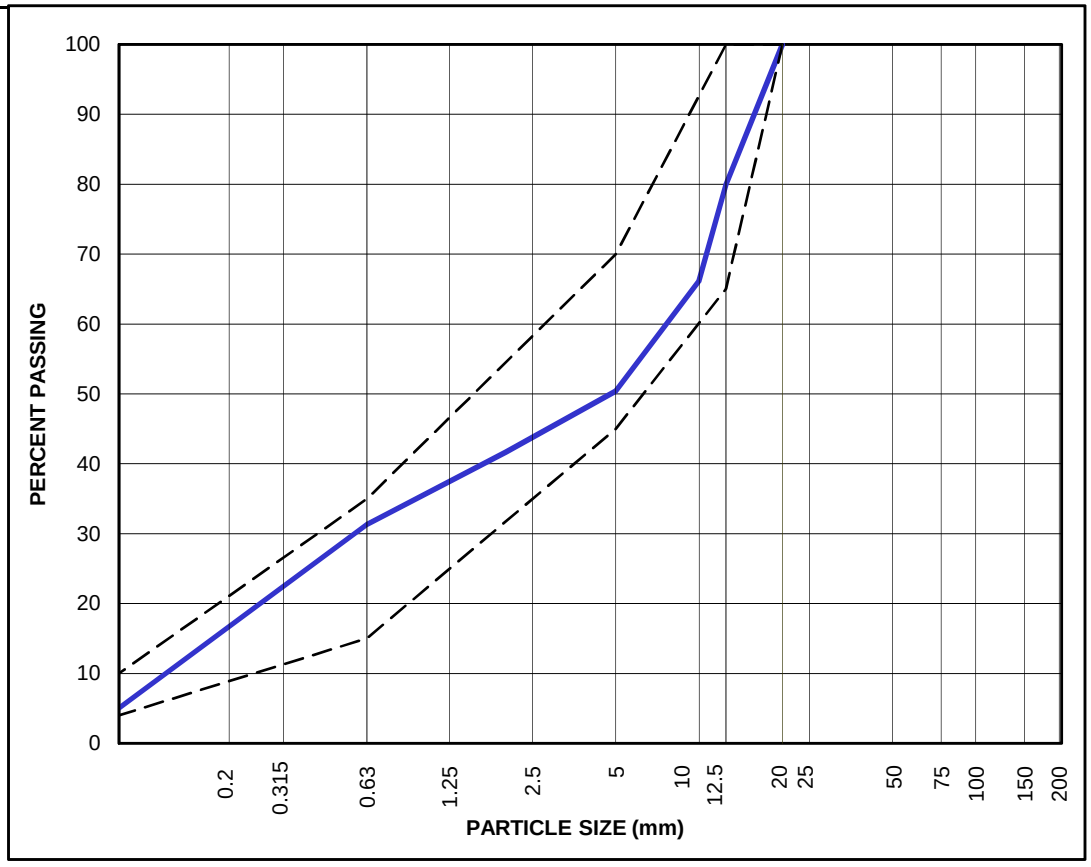
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA47
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	10.9%
DATE SAMPLED:	Apr 30/17 **By:** IM		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	80
10	66
5	50
2	42
0.63	31
0.08	5



Remarks: 20 mm minus particle size distribution limits shown
Sampled on Night Shift at 02:00

Reviewed by: _____ P.Eng.

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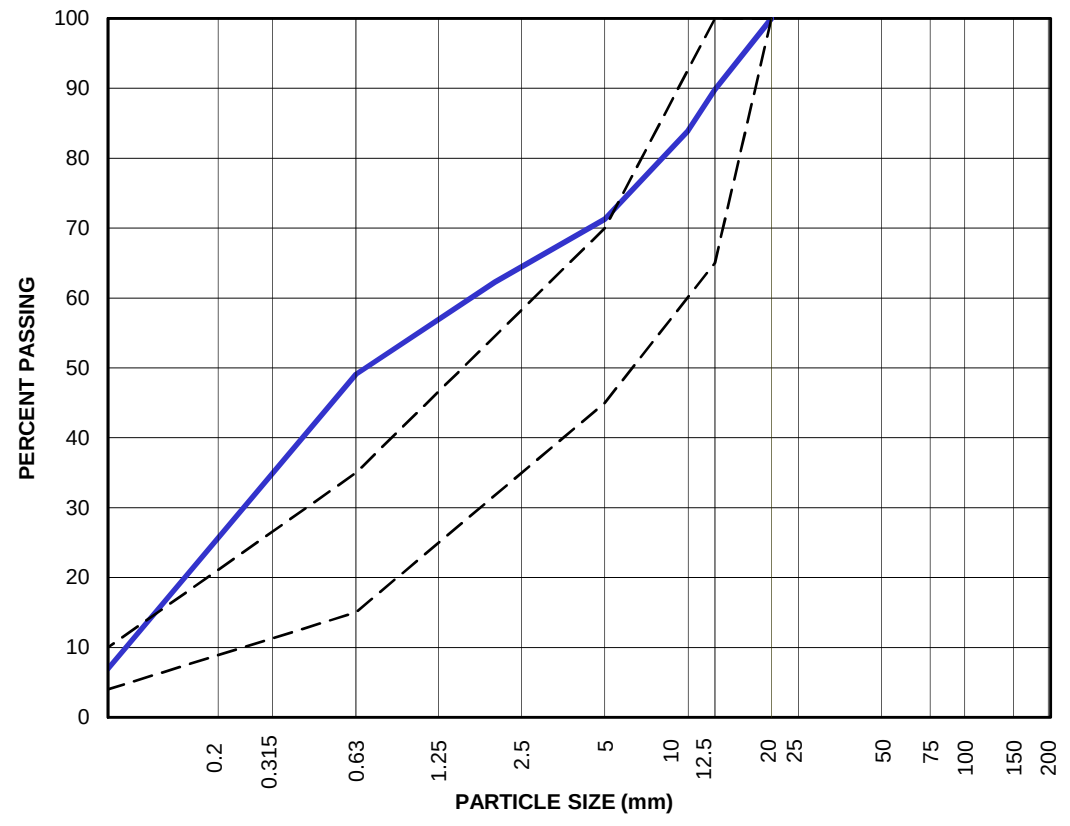
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA46
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	12.6%
DATE SAMPLED:	May 01/17 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	90
10	84
5	71
2	62
0.63	49
0.08	7



Remarks: 20 mm minus particle size distribution limits shown

The moisture content of 12.6% is higher than the maximum moisture content of 10% specified.

Reviewed by: _____ P.Eng.

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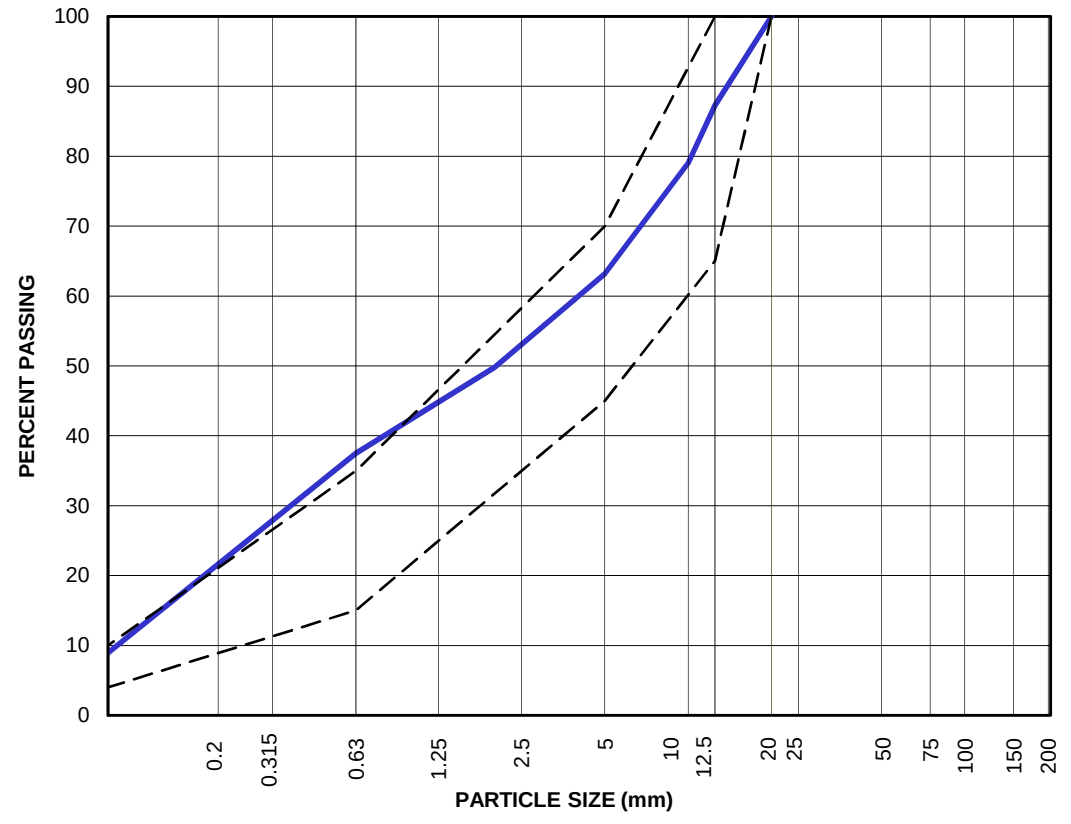
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA49
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	5.6%
DATE SAMPLED:	May 01/17 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	87
10	79
5	63
2	50
0.63	38
0.08	9



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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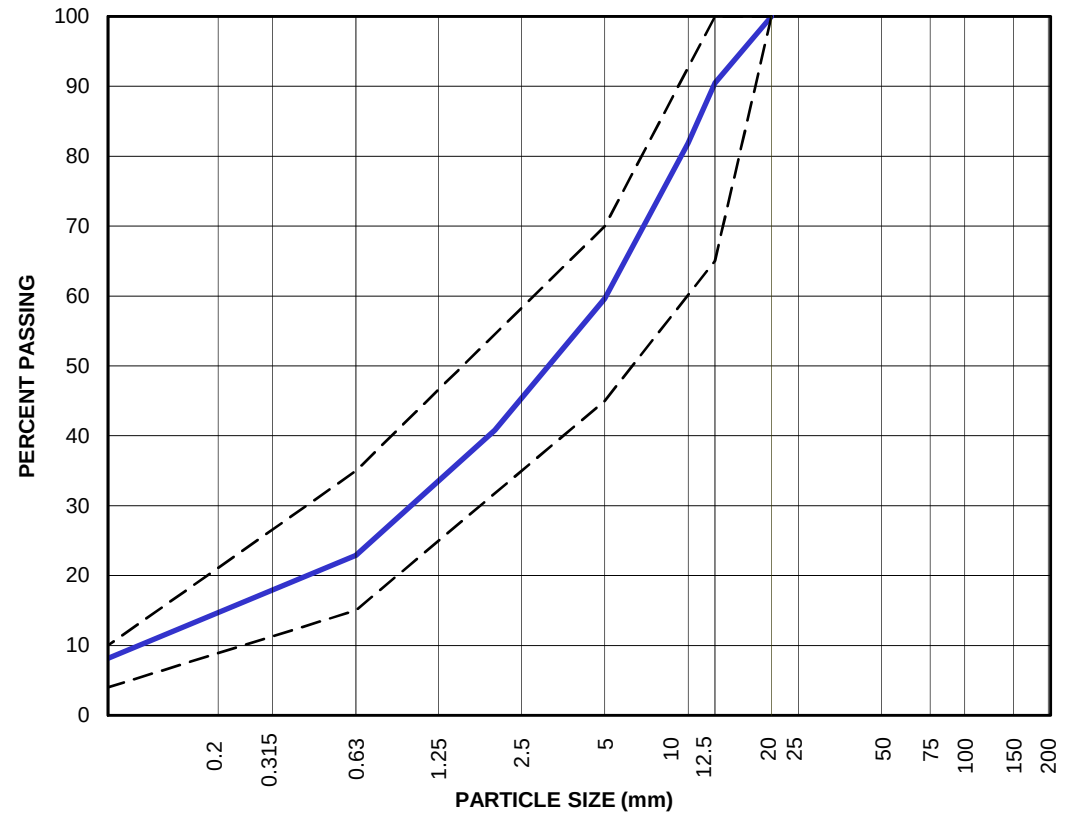
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA50
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	2.4%
DATE SAMPLED:	May 09/17 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	90
10	82
5	60
2	41
0.63	23
0.08	8



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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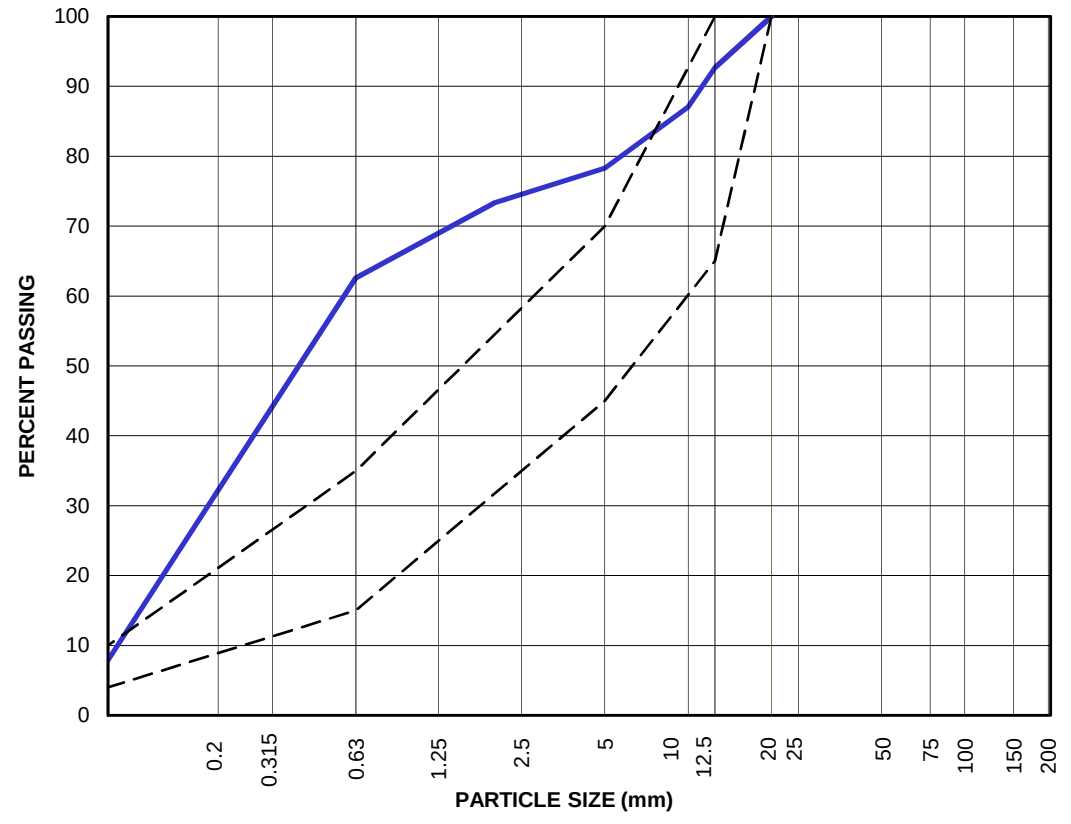
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	Meliadine Dike Construction	**SAMPLE NO:**	SA51
		SAMPLE DESCRIPTION:	20 mm minus (Type C Mat.) Sampled from belt
ADDRESS:	Meliadine Gold Project, NU.		
PROJECT NO:	E14103230-01	**MOISTURE CONT. :**	14.1%
DATE SAMPLED:	May 10/17 **By:** TW		
CLIENT:	Agnico Eagle Mines Ltd.	**BULK REL DENSITY:**	n/a
ATTENTION:	Mr. Duy Nguyen	**BULK REL. DENSITY (SSD):**	n/a
		APPARENT REL. DENSITY:	n/a
		ABSORPTION:	n/a

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	93
10	87
5	78
2	73
0.63	63
0.08	8



Remarks: 20 mm minus particle size distribution limits shown

Reviewed by: _____ P.Eng.

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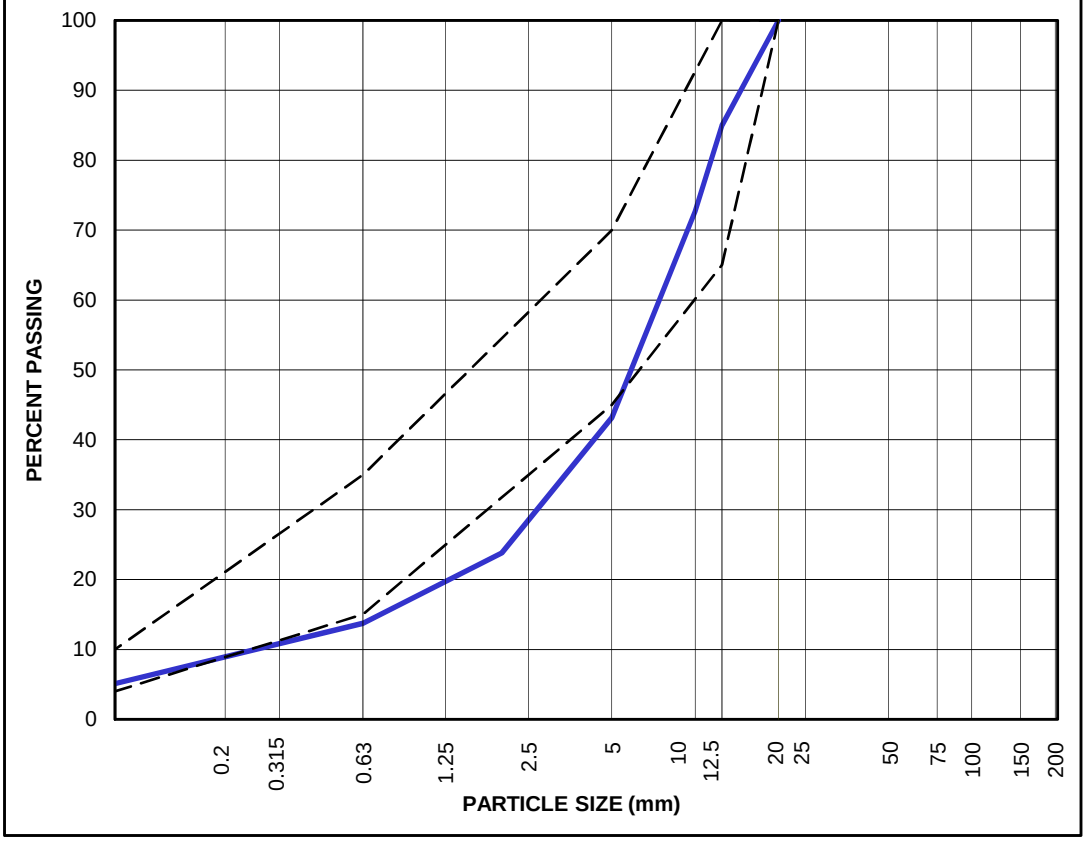
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	**Meliadine Dike Construction**	**SAMPLE NO:**	**SA52**
		SAMPLE DESCRIPTION:	**20 mm minus (Type C Mat.)**
ADDRESS:	**Meliadine Gold Project, NU.**		
PROJECT NO:	**E14103230-01**	**MOISTURE CONT. :**	**1.4%**
DATE SAMPLED:	**May 14/17** **By: IM**		
CLIENT:	**Agnico Eagle Mines Ltd.**	**BULK REL DENSITY:**	**n/a**
ATTENTION:	**Mr. Duy Nguyen**	**BULK REL. DENSITY (SSD):**	**n/a**
		APPARENT REL. DENSITY:	**n/a**
		ABSORPTION:	**n/a**

PARTICLE SIZE	PERCENT PASSING
20	**100**
12.5	**85**
10	**73**
5	**43**
2	**24**
0.63	**14**
0.08	**5**



Remarks: 20 mm minus particle size distribution limits shown

Sampled from Stockpile Under Belt

Note - Produced during dayshift

Reviewed by: _____ P.Eng.

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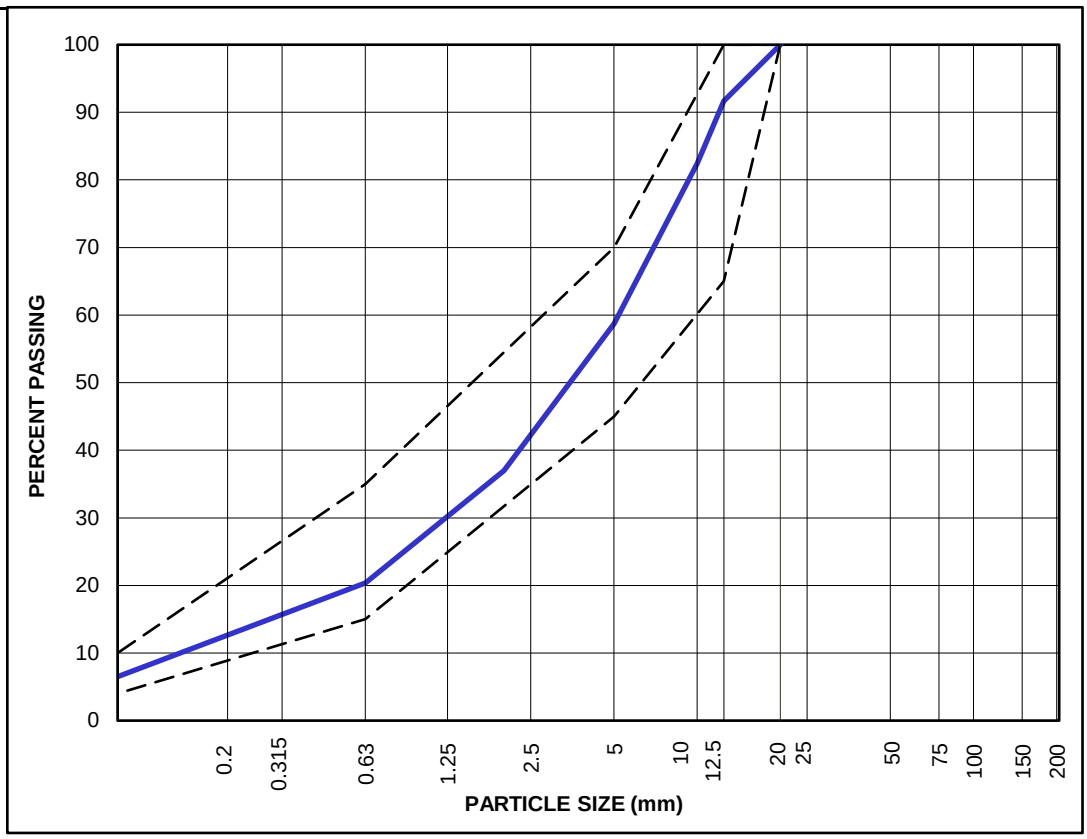
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	**Meliadine Dike Construction**	**SAMPLE NO:**	**SA53**
		SAMPLE DESCRIPTION:	**20 mm minus (Type C Mat.)**
ADDRESS:	**Meliadine Gold Project, NU.**		
PROJECT NO:	**E14103230-01**	**MOISTURE CONT. :**	**2.1%**
DATE SAMPLED:	**May 15/17** **By: IM**		
CLIENT:	**Agnico Eagle Mines Ltd.**	**BULK REL DENSITY:**	**n/a**
ATTENTION:	**Mr. Duy Nguyen**	**BULK REL. DENSITY (SSD):**	**n/a**
		APPARENT REL. DENSITY:	**n/a**
		ABSORPTION:	**n/a**

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	92
10	82
5	59
2	37
0.63	20
0.08	6



Remarks: 20 mm minus particle size distribution limits shown

Sampled from Stockpile

Note - Produced during dayshift

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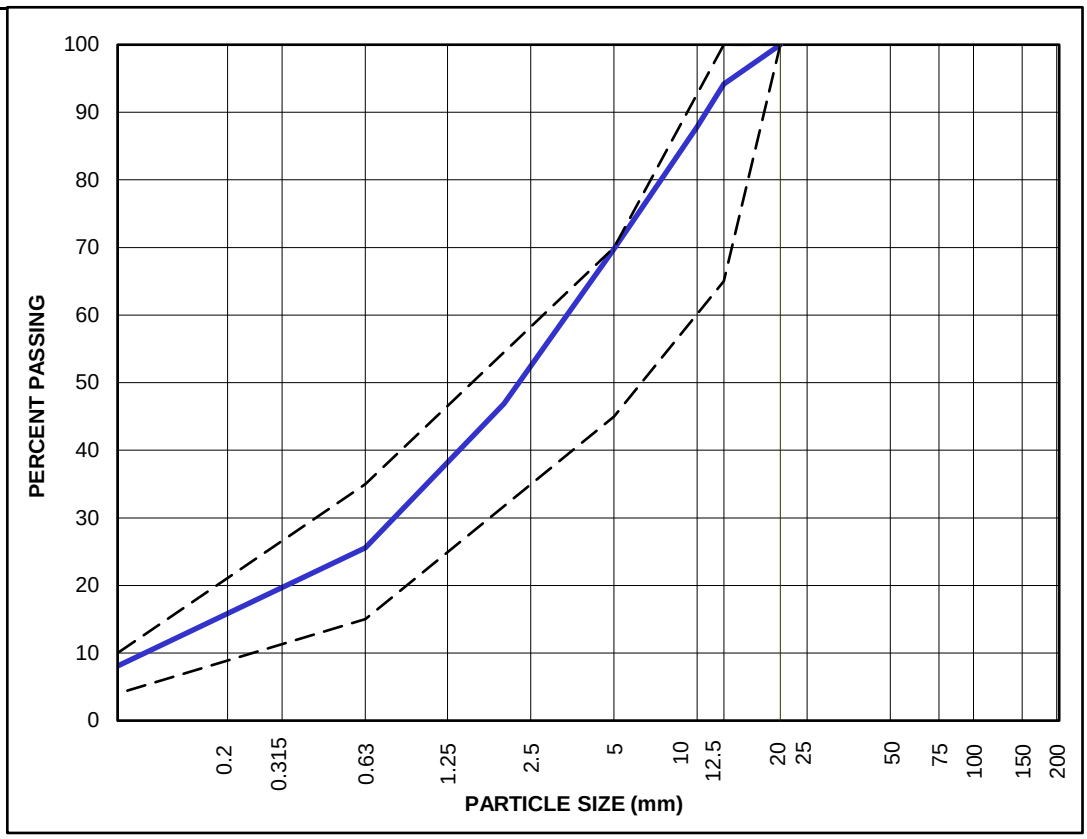
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	**Meliadine Dike Construction**	**SAMPLE NO:**	**SA54**
		SAMPLE DESCRIPTION:	**20 mm minus (Type C Mat.)**
ADDRESS:	**Meliadine Gold Project, NU.**		
PROJECT NO:	**E14103230-01**	**MOISTURE CONT. :**	**2.1%**
DATE SAMPLED:	**May 16/17** **By: IM**		
CLIENT:	**Agnico Eagle Mines Ltd.**	**BULK REL DENSITY:**	**n/a**
ATTENTION:	**Mr. Duy Nguyen**	**BULK REL. DENSITY (SSD):**	**n/a**
		APPARENT REL. DENSITY:	**n/a**
		ABSORPTION:	**n/a**

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	94
10	88
5	70
2	47
0.63	26
0.08	8



Remarks: 20 mm minus particle size distribution limits shown

Sampled from Stockpile

Note - Produced during dayshift

Reviewed by: _____ P.Eng.

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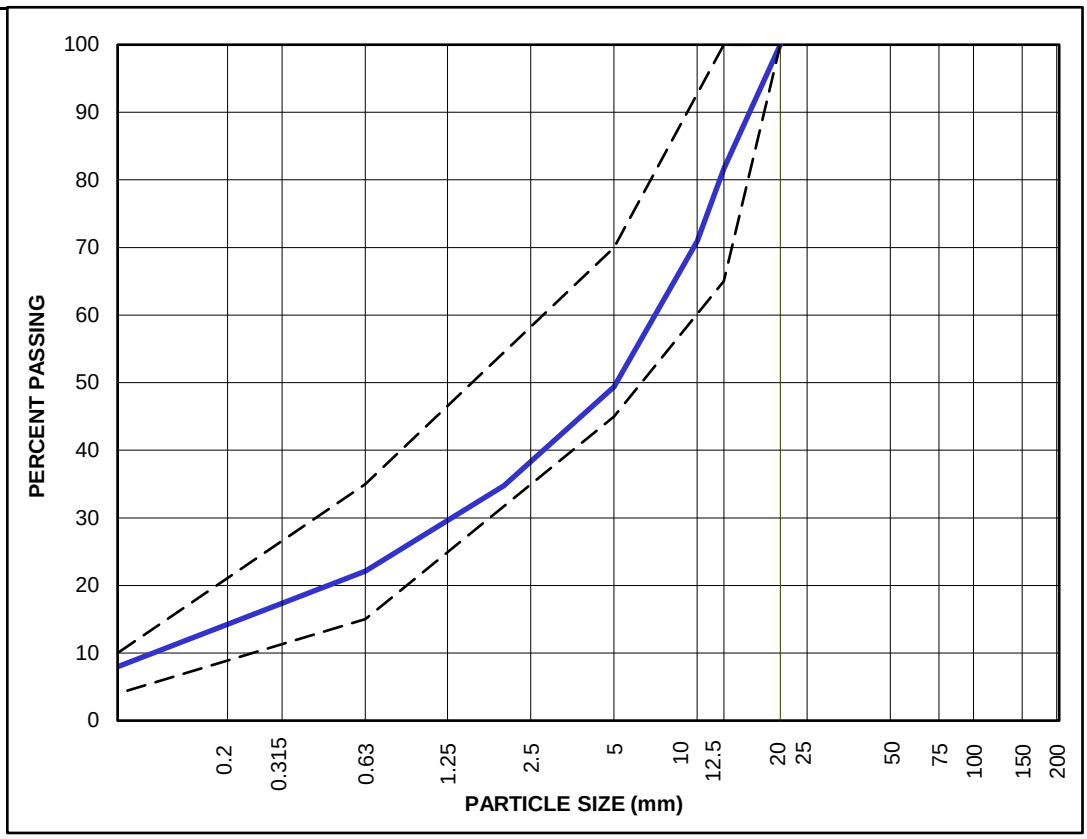
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	**Meliadine Dike Construction**	**SAMPLE NO:**	**SA55**
		SAMPLE DESCRIPTION:	**20 mm minus (Type C Mat.)**
ADDRESS:	**Meliadine Gold Project, NU.**		
PROJECT NO:	**E14103230-01**	**MOISTURE CONT. :**	**2.7%**
DATE SAMPLED:	**May 18/17** **By: IM**		
CLIENT:	**Agnico Eagle Mines Ltd.**	**BULK REL DENSITY:**	**n/a**
ATTENTION:	**Mr. Duy Nguyen**	**BULK REL. DENSITY (SSD):**	**n/a**
		APPARENT REL. DENSITY:	**n/a**
		ABSORPTION:	**n/a**

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	82
10	71
5	49
2	35
0.63	22
0.08	8



Remarks: 20 mm minus particle size distribution limits shown

Sampled from Stockpile

Note - Produced during nightshift

Reviewed by: _____ P.Eng.

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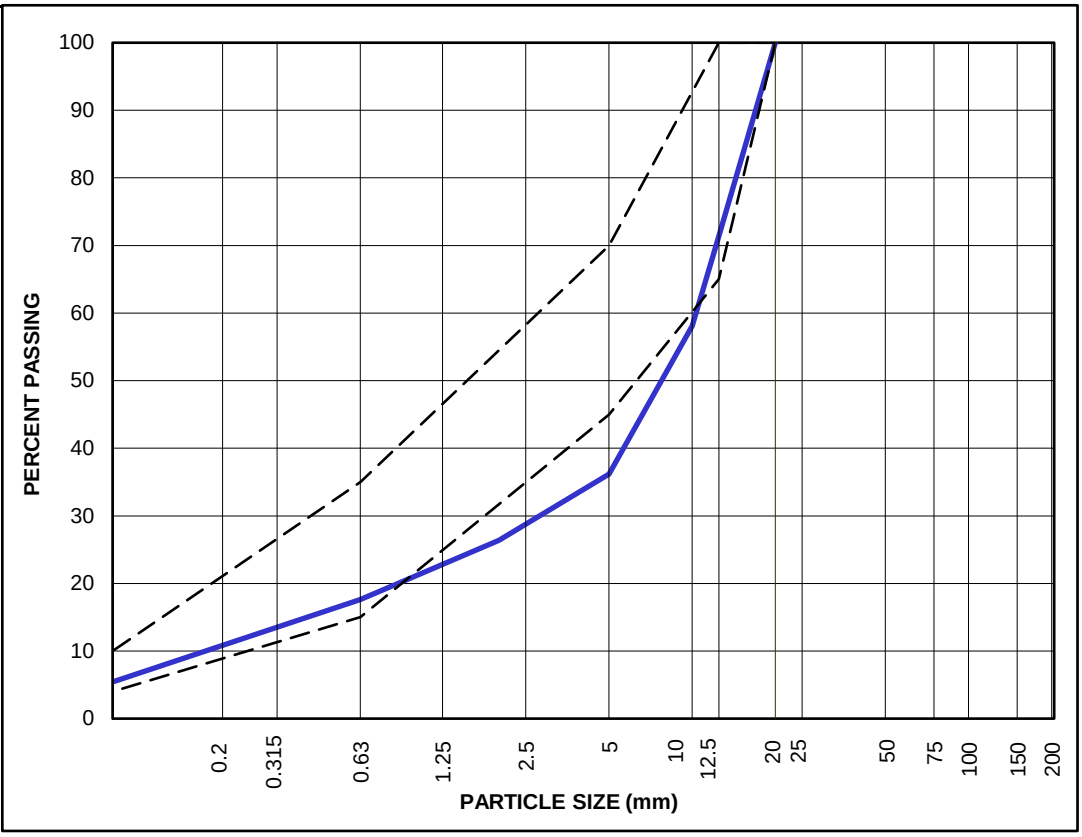
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	**Meliadine Dike Construction**	**SAMPLE NO:**	**SA56**
		SAMPLE DESCRIPTION:	**20 mm minus (Type C Mat.)**
ADDRESS:	**Meliadine Gold Project, NU.**		
PROJECT NO:	**E14103230-01**	**MOISTURE CONT. :**	**2.8%**
DATE SAMPLED:	**May 19/17** **By: IM**		
CLIENT:	**Agnico Eagle Mines Ltd.**	**BULK REL DENSITY:**	**n/a**
ATTENTION:	**Mr. Duy Nguyen**	**BULK REL. DENSITY (SSD):**	**n/a**
		APPARENT REL. DENSITY:	**n/a**
		ABSORPTION:	**n/a**

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	71
10	58
5	36
2	26
0.63	18
0.08	5



Remarks: 20 mm minus particle size distribution limits shown

Sampled from Stockpile

Note - Produced during dayshift

Reviewed by: _____ P.Eng.

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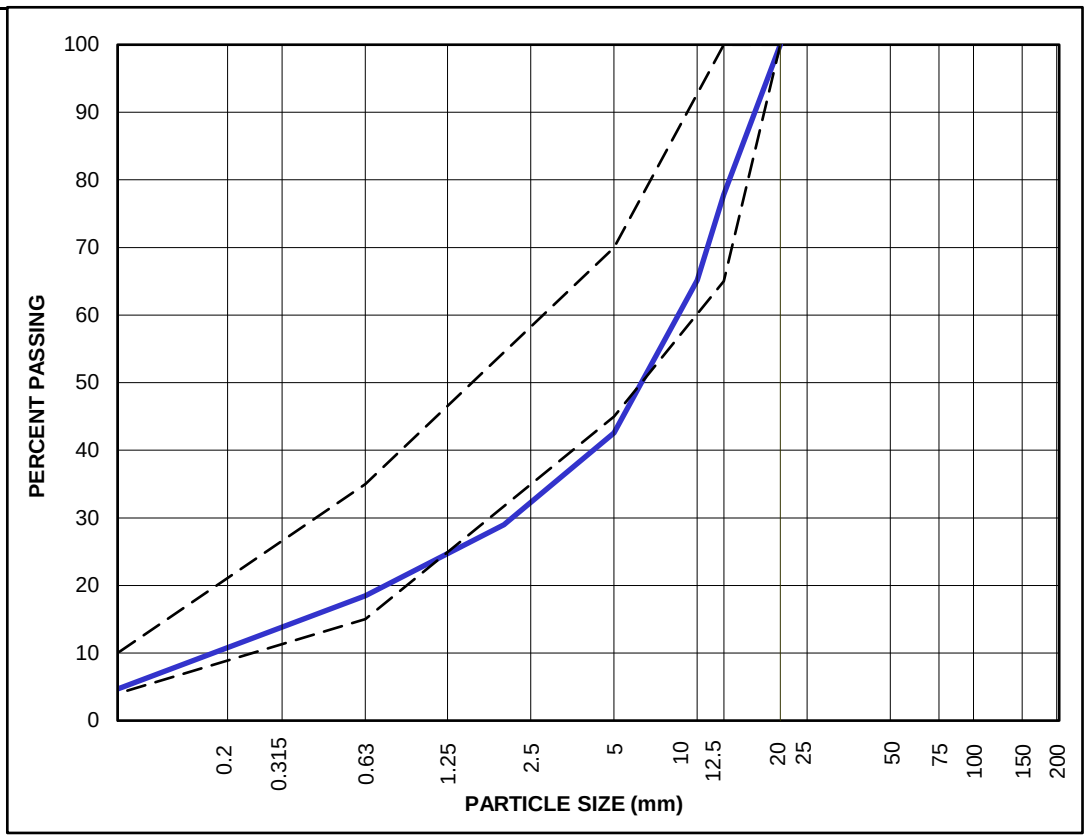
PARTICLE SIZE ANALYSIS REPORT

PROJECT:	**Meliadine Dike Construction**	**SAMPLE NO:**	**SA57**
		SAMPLE DESCRIPTION:	**20 mm minus (Type C Mat.)**
ADDRESS:	**Meliadine Gold Project, NU.**		
PROJECT NO:	**E14103230-01**	**MOISTURE CONT. :**	**3.9%**
DATE SAMPLED:	**May 20/17** **By: IM**		
CLIENT:	**Agnico Eagle Mines Ltd.**	**BULK REL DENSITY:**	**n/a**
ATTENTION:	**Mr. Duy Nguyen**	**BULK REL. DENSITY (SSD):**	**n/a**
		APPARENT REL. DENSITY:	**n/a**
		ABSORPTION:	**n/a**

PARTICLE SIZE	PERCENT PASSING
20	100
12.5	78
10	65
5	43
2	29
0.63	18
0.08	5



Remarks: 20 mm minus particle size distribution limits shown
Sampled from Stockpile
Note - Produced during dayshift

Reviewed by: _____ P.Eng.

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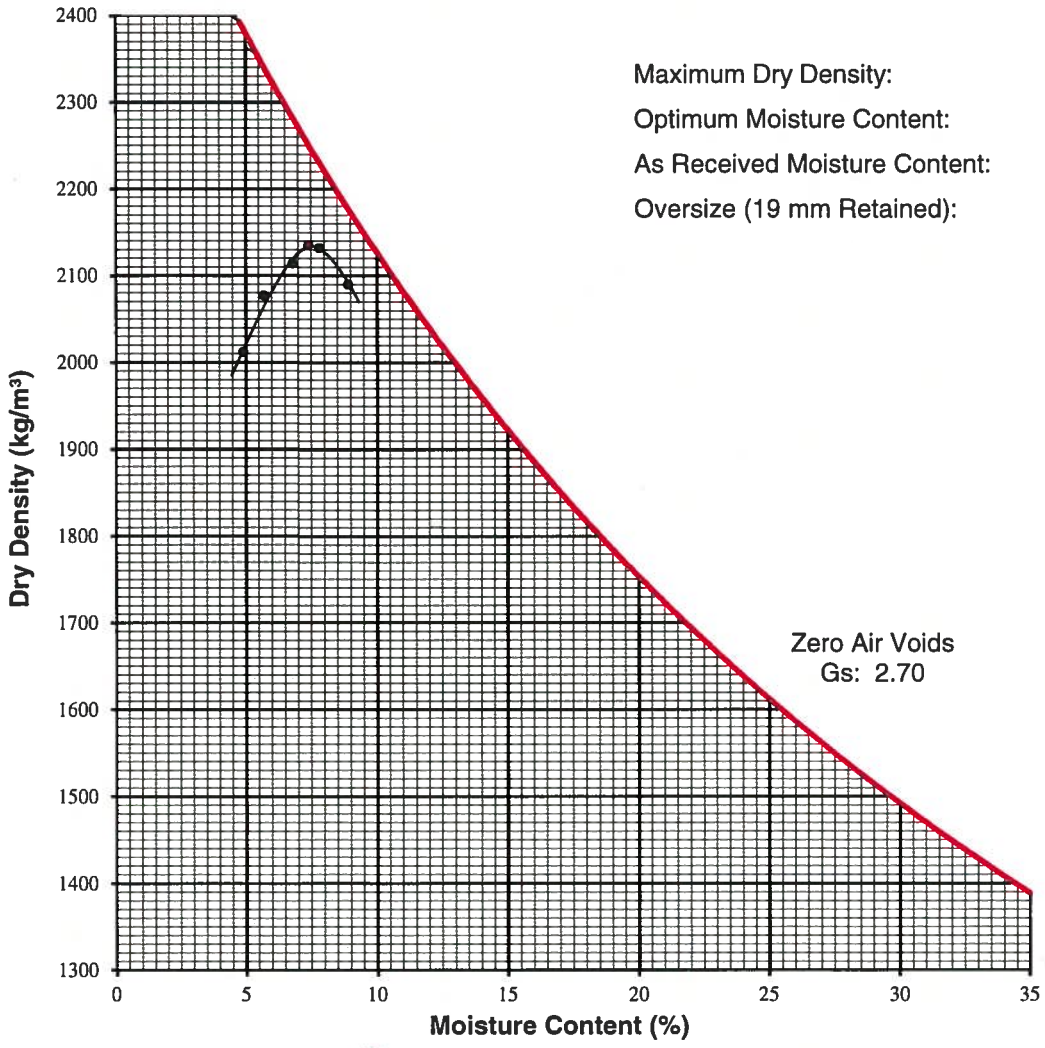
MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 (Standard Proctor)

Project:	Meliadine Gold Project	Sample No.:	Type C, Sample No 1
Project No.:	E14103230-01.023	Sampled By:	Dike QC Team
Client:	Agnico Eagle Mines Ltd	Date Received:	7-Mar-17
Attention:		Test Date:	9-Mar-17
E-mail:		Test By:	MA
Source:	Meliadine Project, Dike Construction	Test Method:	C (Manual)

Sample Location: Type C Stockpile

Sample Description: SAND, some gravel, trace silt, brown



Maximum Dry Density:	**2135**	kg/m³
Optimum Moisture Content:	**7.4**	%
As Received Moisture Content:	3.0	%
Oversize (19 mm Retained):	0	%

Remarks:

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TETRA TECH

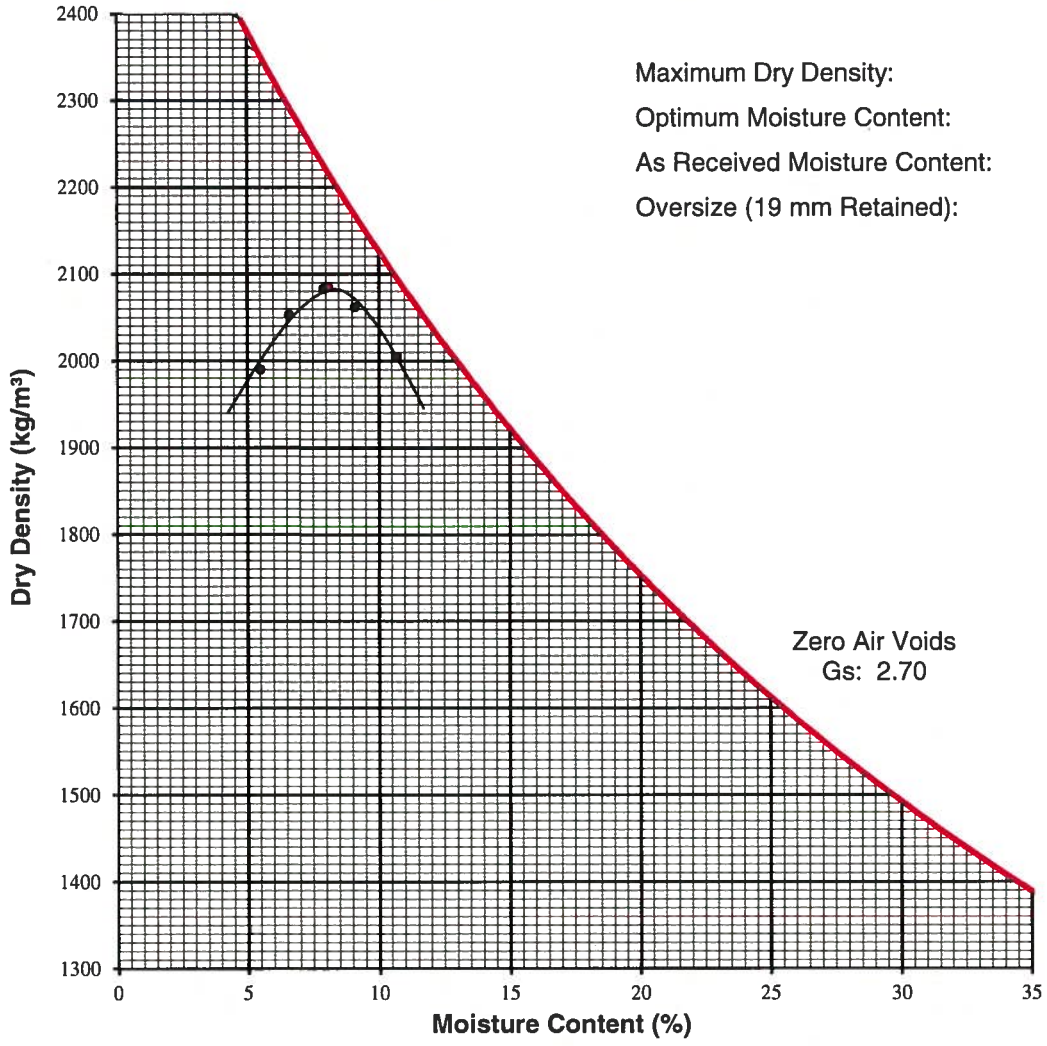
MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 (Standard Proctor)

Project:	Meliadine Gold Project	Sample No.:	Type C, Sample No 2
Project No.:	E14103230-01.023	Sampled By:	Dike QC Team
Client:	Agnico Eagle Mines Ltd	Date Received:	7-Mar-17
Attention:		Test Date:	9-Mar-17
E-mail:		Test By:	MA
Source:	Meliadine Project, Dike Construction	Test Method:	C (Manual)

Sample Location: Type C Stockpile

Sample Description: SAND, some gravel, trace silt, brown



Maximum Dry Density:	**2085**	kg/m³
Optimum Moisture Content:	**8.1**	%
As Received Moisture Content:	2.1	%
Oversize (19 mm Retained):	0	%

Remarks:

Reviewed By: _____ P.Eng.

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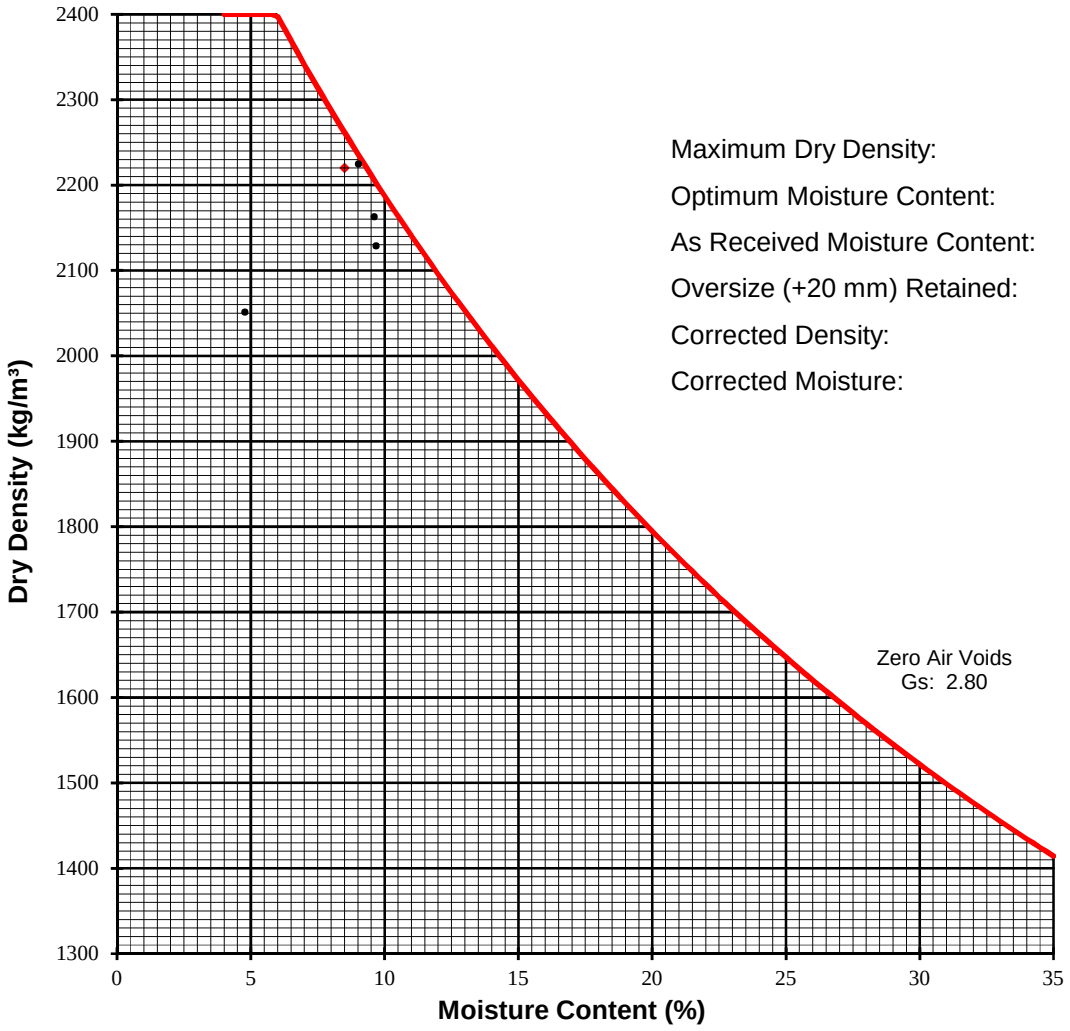
TETRA TECH

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Meliadine Dike Construction	Sample No.:	SA01
Client:	Agnico Eagle	Sampled By:	TW
Attention:		Sample Date:	October 23, 2016
Project No.:	E14103230-01	Test Date:	October 23, 2016
Description:	20mm minus	Preparation:	Moist
Source:	On-Site Stockpile	Compaction:	Manual



Maximum Dry Density:	**2220**	kg/m³
Optimum Moisture Content:	**8.5**	%
As Received Moisture Content:	**5.0**	%
Oversize (+20 mm) Retained:		%
Corrected Density:		%
Corrected Moisture:	**8.5**	%

Remarks:

Reviewed By: _____ C.E.T.

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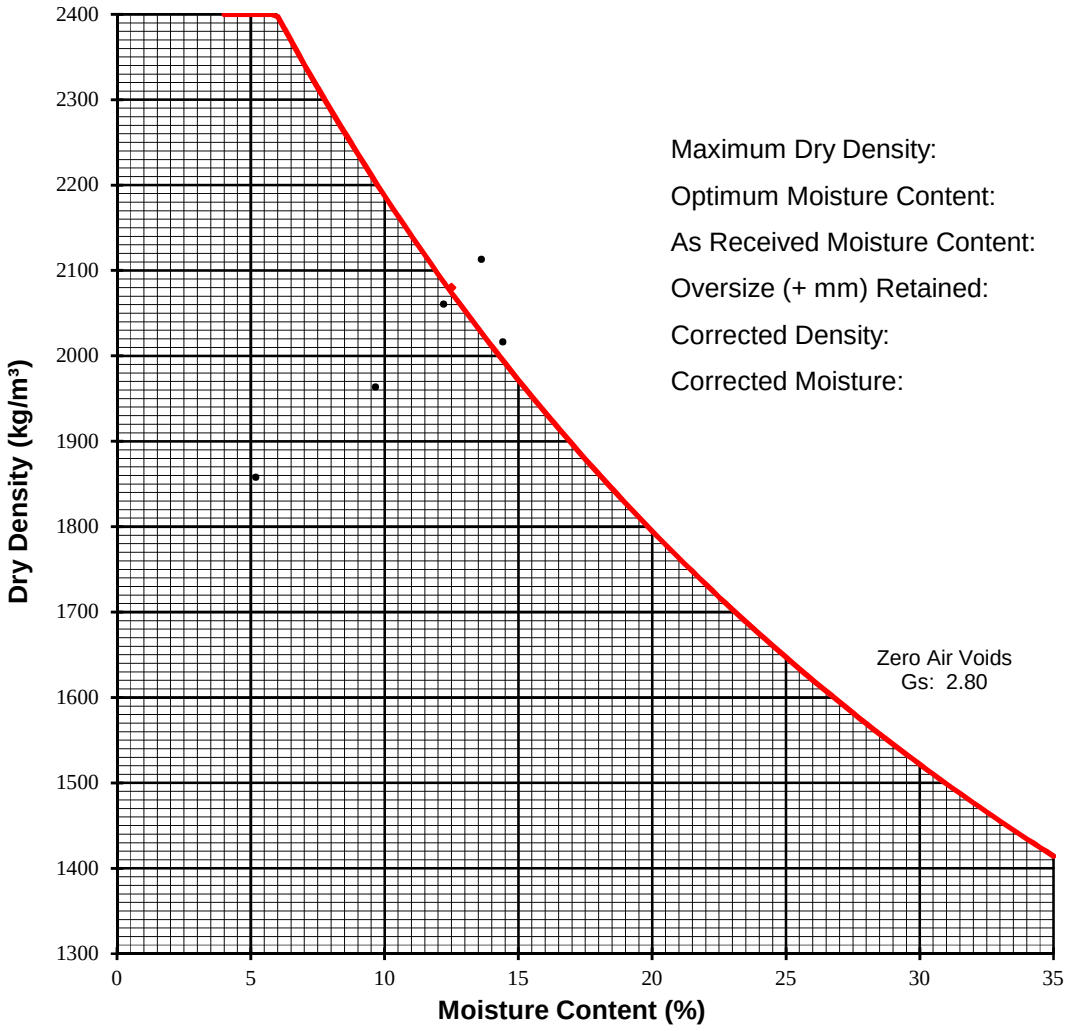
TETRA TECH

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Meliadine Dike Construction	Sample No.:	SA02
Client:	Agnico Eagle	Sampled By:	TW
Attention:	Duy Nguyen	Sample Date:	November 8, 2016
Project No.:	E14103230-01	Test Date:	November 8, 2016
Description:	Type C (20mm agg.)	Preparation:	Moist
Source:	Crusher	Compaction:	Manual



Maximum Dry Density:	**2080**	kg/m³
Optimum Moisture Content:	**12.5**	%
As Received Moisture Content:		%
Oversize (+ mm) Retained:		%
Corrected Density:	**2080**	%
Corrected Moisture:	**12.5**	%

Remarks:

Reviewed By: _____ C.E.T.

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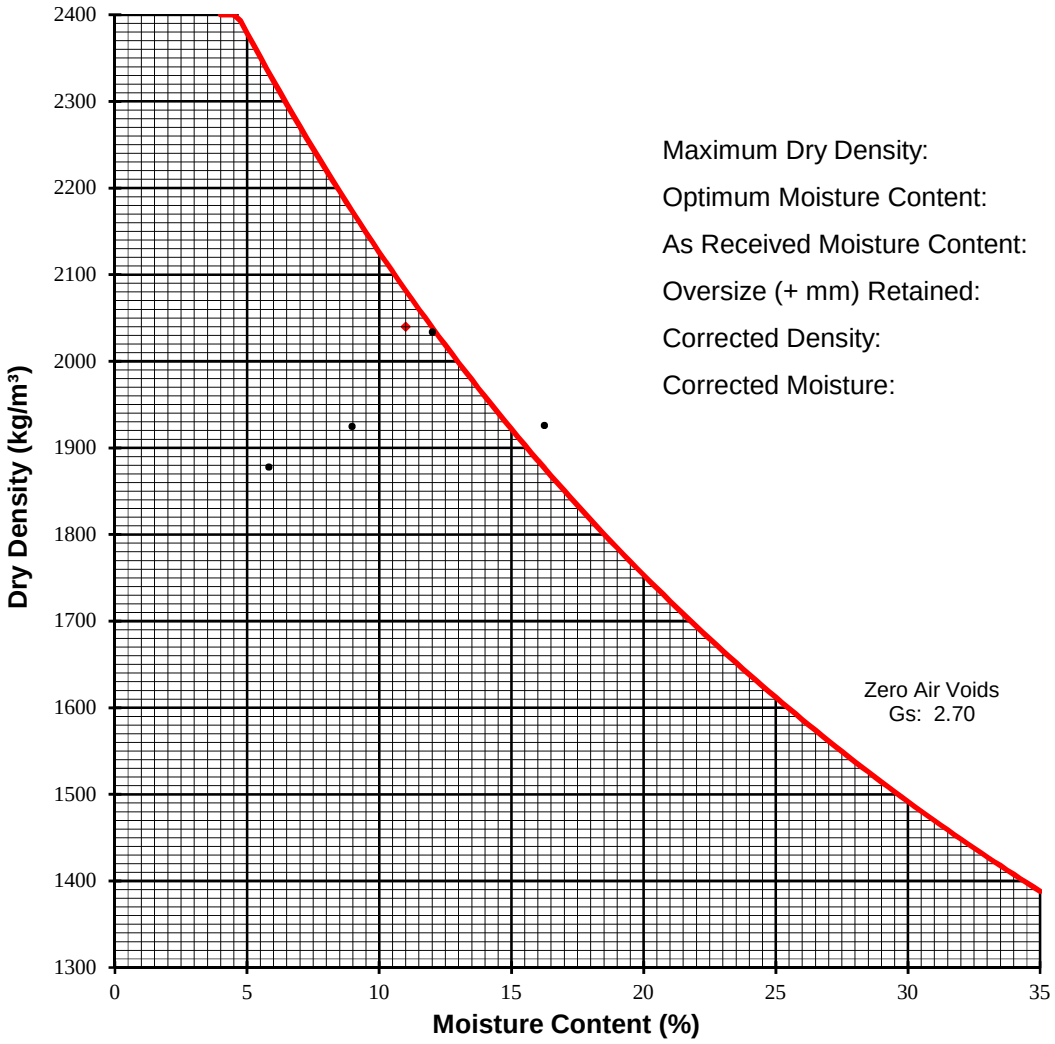
TETRA TECH

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Meliadine Dike Construction	Sample No.:	SA03
Client:	Agnico Eagle	Sampled By:	IM
Attention:	Duy Nguyen	Sample Date:	November 30, 2016
Project No.:	E14103230-01.023	Test Date:	November 30, 2016
Description:	Type C (20 mm agg.)	Preparation:	Moist
Source:	Crusher	Compaction:	Manual



Maximum Dry Density:	**2040**	kg/m³
Optimum Moisture Content:	**11.0**	%
As Received Moisture Content:	**14.3**	%
Oversize (+ mm) Retained:		%
Corrected Density:		%
Corrected Moisture:	**11.0**	%

Remarks: Same material used for Sieve Sample SA37

Reviewed By: _____ C.E.T.

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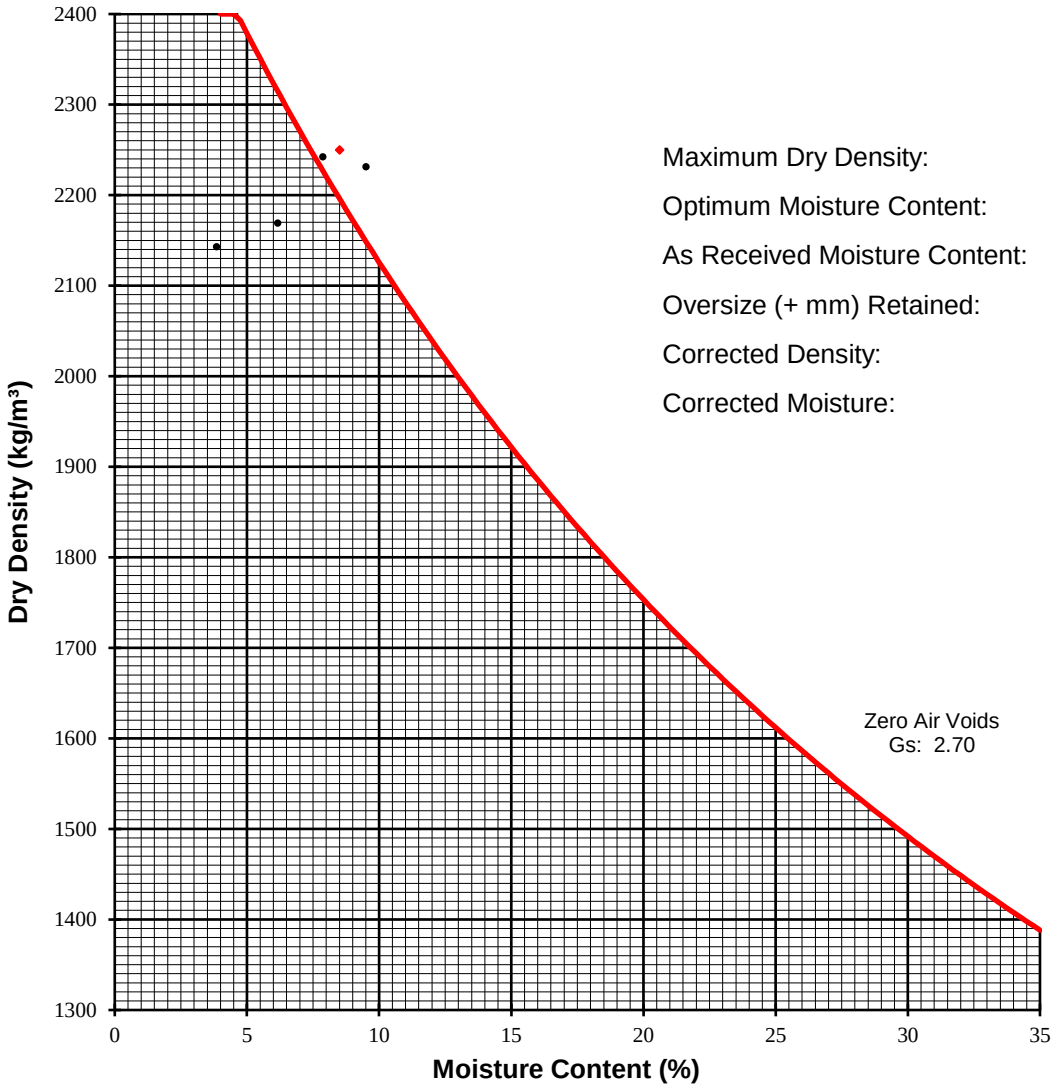
TETRA TECH

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Meliadine Dike Construction	Sample No.:	SA04
Client:	Agnico Eagle	Sampled By:	TW
Attention:	Duy Nguyen	Sample Date:	March 29, 2017
Project No.:	E14103230-01	Test Date:	March 29, 2017
Description:	Type C (20mm agg.)	Preparation:	Moist
Source:	Stockpile	Compaction:	Manual



Maximum Dry Density:	**2250**	kg/m³
Optimum Moisture Content:	**8.5**	%
As Received Moisture Content:		%
Oversize (+ mm) Retained:		%
Corrected Density:	**2080**	%
Corrected Moisture:	**8.5**	%

Remarks:

Reviewed By: _____ C.E.T.

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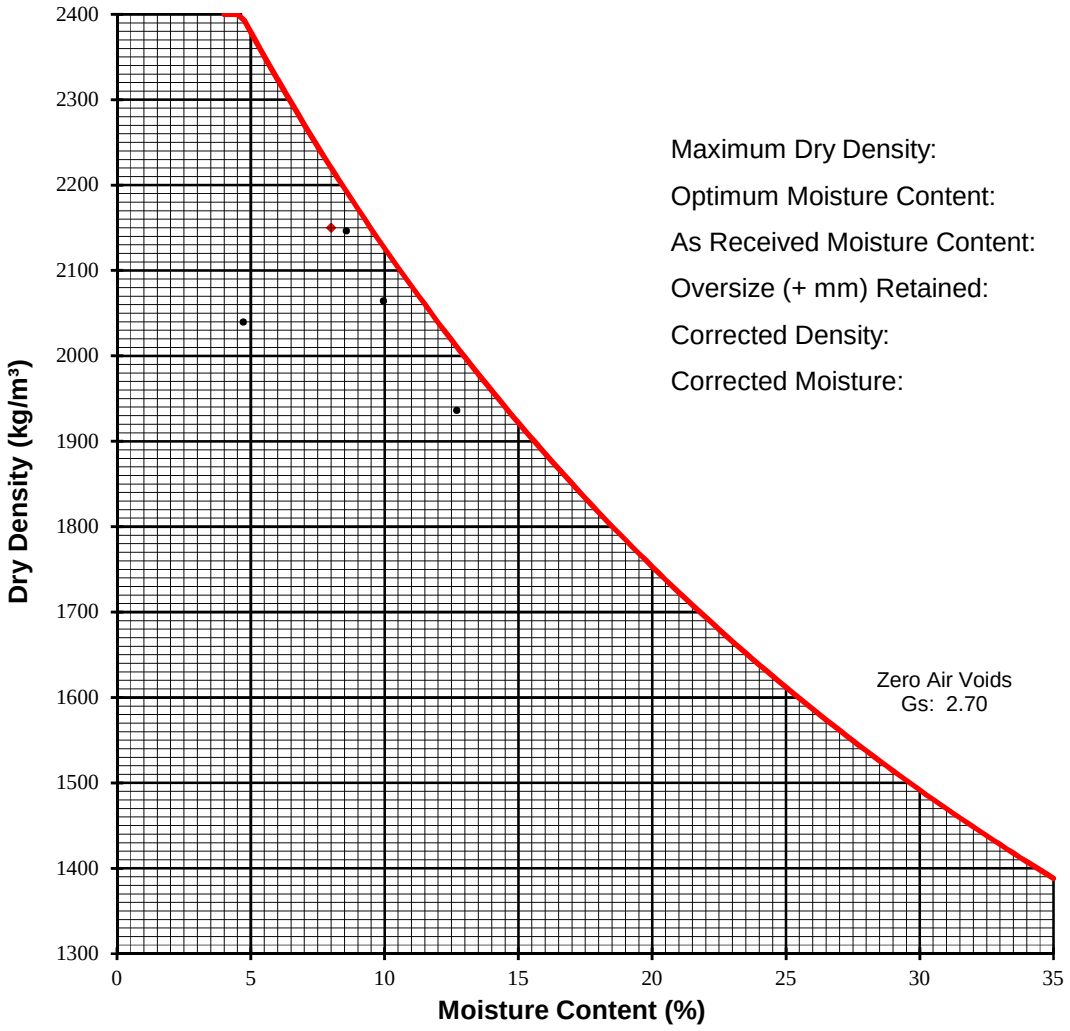
TETRA TECH

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Meliadine Dike Construction	Sample No.:	SA07
Client:	Agnico Eagle	Sampled By:	TW
Attention:	Duy Nguyen	Sample Date:	May 1, 2017
Project No.:	E14103230-01 Task 023	Test Date:	May 1, 2017
Description:	Type C (20mm minus)	Preparation:	Moist
Source:	Type C Stockpile	Compaction:	Manual



Maximum Dry Density:	**2150**	kg/m³
Optimum Moisture Content:	**8.0**	%
As Received Moisture Content:	**12.7**	%
Oversize (+ mm) Retained:		%
Corrected Density:		%
Corrected Moisture:		%

Remarks:

Reviewed By: _____ C.E.T.

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Table E2.1: Moisture Content Results for Granular Fill (20 mm minus) Material - Type C

Sample No.	Date Tested	Moisture Content (%)	Sample Source
SA01	22-Oct-16	9.3	sampled from belt
SA02	22-Oct-16	7.1	sampled from belt
SA03	22-Oct-16	5.4	sampled from belt
SA04	22-Oct-16	8.7	sampled from belt
SA05	22-Oct-16	6.0	sampled from belt
SA06	24-Oct-16	5.5	sampled from belt
SA07	24-Oct-16	6.3	sampled from belt
SA08	25-Oct-16	5.0	sampled from belt
SA09	26-Oct-16	8.4	sampled from belt
SA10	27-Oct-16	7.1	sampled from belt
SA11	29-Oct-16	6.1	sampled from belt
SA12	1-Nov-16	7.6	sampled from belt
SA13	2-Nov-16	11.0	sampled from belt
SA14	3-Nov-16	5.3	sampled from belt
SA15	5-Nov-16	4.2	sampled from belt
SA16	6-Nov-16	4.9	sampled from belt
SA17	7-Nov-16	8.0	sampled from belt
SA18	8-Nov-16	4.5	sampled from belt
SA19	9-Nov-16	9.4	sampled from belt
SA20	10-Nov-16	9.4	sampled from belt
SA21	12-Nov-16	10.0	sampled from belt
SA22	13-Nov-16	9.9	sampled from belt
SA23	14-Nov-16	5.1	sampled from belt
SA24	17-Nov-16	8.2	sampled from belt
SA25	17-Nov-16	12.4	sampled from stockpile
SA26	17-Nov-16	11.5	sampled from stockpile
SA27	19-Nov-16	11.2	sampled from stockpile
SA28	19-Nov-16	9.2	sampled from stockpile
SA29	19-Nov-16	11.9	sampled from belt
SA30	21-Nov-16	11.1	sampled from belt
SA31	23-Nov-16	4.5	sampled from belt
SA32	23-Nov-16	10.3	sampled from belt
SA33	26-Nov-16	7.5	sampled from stockpile
SA34	26-Nov-16	6.7	sampled from belt
SA35	26-Nov-16	8.0	sampled from stockpile
SA36	29-Nov-16	7.1	sampled from belt
SA37	30-Nov-16	14.3	sampled from belt
SA38	2-Dec-16	13.3	sampled from belt
SA39	3-Dec-16	13.8	sampled from belt
SA40	5-Dec-16	14.4	sampled from belt
SA41	11-Mar-17	6.7	sampled from stockpile
SA42	12-Mar-17	8.2	sampled from belt
SA43	18-Apr-17	11.5	sampled from spread
SA44	29-Apr-17	8.5	sampled from belt
SA45	29-Apr-17	7.8	sampled from belt
SA46	30-Apr-17	6.9	sampled from belt
SA47	30-Apr-17	10.9	sampled from belt
SA48	1-May-17	12.6	sampled from belt
SA49	1-May-17	5.6	sampled from belt

SA50	9-May-17	2.4	sampled from belt
SA51	10-May-17	14.1	sampled from belt
SA52	14-May-17	1.4	sampled from belt
SA53	15-May-17	2.1	sampled from stockpile
SP1	16-Jan-17	15.3	Sampled from stockpile at Mix Pit
SP2	16-Jan-17	15.5	Sampled from stockpile at Mix Pit
SP3	16-Jan-17	8.4	Sampled from North Crusher Stockpile
SP4	16-Jan-17	5.6	Sampled from North Crusher Stockpile
SP5	16-Jan-17	4.2	Sampled from North Crusher Stockpile
SP6	16-Jan-17	6.4	Sampled from North Crusher Stockpile
SP7	16-Jan-17	5.7	Sampled from North Crusher Stockpile
SP8	16-Jan-17	5.3	Sampled from North Crusher Stockpile
SP9	16-Jan-17	16.3	Sampled from Middle Crusher Stockpile, North End
SP10	16-Jan-17	6.2	Sampled from Middle Crusher Stockpile, North End
SP11	16-Jan-17	6.9	Sampled from South Crusher Stockpile
SP12	16-Jan-17	9.4	Sampled from South Crusher Stockpile
SP13	16-Jan-17	8.2	Sampled from South Crusher Stockpile
SP14	16-Jan-17	13.3	Sampled from East Crusher Stockpile
SP15	16-Jan-17	8.7	Sampled from East Crusher Stockpile
SP16	18-Jan-17	6.3	Sampled from Type K Mixing Station
SP17	18-Jan-17	6.8	Sampled from Type K Mixing Station
SP18	18-Jan-17	7.3	Sampled from Type K Mixing Station
SP19	29-Jan-17	10.2	Sampled from reject pile North of Type F Mixing Station
SP20	29-Jan-17	16.9	Sampled from reject pile North of Type F Mixing Station
SP21	29-Jan-17	16.3	Sampled from reject pile North of Type F Mixing Station
SP22	30-Jan-17	7.7	Sampled from stockpile North of Type F Mixing Station
SP23	30-Jan-17	6.3	Sampled from stockpile North of Type F Mixing Station
SP24	31-Jan-17	7.7	Sampled from stockpile used for Type F
SP25	31-Jan-17	7.0	Sampled from stockpile used for Type F
SP26	1-Feb-17	8.2	Sampled from stockpile North of Type F Mixing Station
SP27	11-Feb-17	6.7	Dike D-CP1 fillet zone Station 0+300, -0.3 m
SP28	11-Feb-17	7.4	Dike D-CP1 fillet zone Station 0+340, -0.3 m
SP29	11-Feb-17	6.9	Dike D-CP1 fillet zone Station 0+380, -0.3 m
SP30	16-Mar-17	8.3	Dike D-CP1 first lift over liner Station 0+425
SP31	5-Apr-17	8.2	Recyled Type C from Stockpile
SP32	5-Apr-17	9.0	Recyled Type C from Stockpile
SP33	5-Apr-17	9.1	Recyled Type C from Stockpile
SP34	7-Apr-17	9.2	Recyled Type C from Stockpile
SP35	7-Apr-17	11.8	Recyled Type C from Stockpile
SP36	8-Apr-17	11.4	Recyled Type C from Stockpile
SP37	8-Apr-17	11.5	Recyled Type C from Stockpile
SP38	9-Apr-17	9.2	Recyled Type C from Stockpile
SP39	9-Apr-17	8.6	Recyled Type C from Stockpile
SP40	2-May-17	8.2	Sampled from Type C Stockpile 1
SP41	2-May-17	7.9	Sampled from Type C Stockpile 1
SP42	2-May-17	9.3	Sampled from Type C Stockpile 5
SP43	2-May-17	16.2	Sampled from Type C Stockpile 3 - Material Rejected
SP44	2-May-17	19.8	Sampled from Type C Stockpile 3 - Material Rejected
SP45	5-May-17	6.9	Sampled from Type C stockpile floor
SP46	5-May-17	6.5	Sampled from Type C stockpile floor
SP47	5-May-17	8.4	Sampled from Type C stockpile floor

SP48	13-May-17	5.4	Sampled from Type C stockpile
SP49	13-May-17	4.2	Sampled from Type C stockpile
SP50	13-May-17	3.3	Sampled from Type C stockpile
SP51	13-May-17	4.0	Sampled from Type C stockpile

Average Moisture Content	**8.6%**

Table E2.2: Frozen / In-situ Single Point Proctors for Type C Material

Date/Shift	Material Type	Sample	Mass of Soil in Mold (g)	Mold Volume (cm2)	Frozen Compacted Density (kg/m3)	Mass of Weight Soil and Tare (g)	Mass of Tare (g)	Mass of Dry Soil and Tare (g)	Moisture Content (%)	Dry Density (kg/m3)	Comments
Nov 26, 2016 / NS	Type C	SA01	4056.8	2122.5	1911	3701.3	1650.9	3568.8	6.9	1788	
Mar 5, 2017 / DS	Type C	SA02	3844.0	2122.5	1811	410.8	15.8	382.6	7.7	1682	Type C stockpile at Type F mixing station
Mar 7, 2017 / DS	Type C	SA03	3712.0	2122.5	1749	417.0	16.7	383.7	9.1	1603	Type C stockpile at Type F mixing station
Mar 11, 2017 / DS	Type C	SA04	3874.0	2122.5	1825	670.6	16.9	629.3	6.7	1710	Type C stockpile at Type F mixing station
Mar 12, 2017 / DS	Type C	SA05	3794.0	2122.5	1788	361.5	15.8	332.5	9.2	1638	Type C stockpile at Type F mixing station
April 5, 2017 / NS	Type C	SA06	3858.9	2122.5	1818	3509.4	1651.2	3377.4	7.6	1689	Type C used at DCP5 for U/S fillet
April 17, 2017 / DS	Type C	SA07	3890.0	2122.5	1833	5508.0	1634.0	5130.0	10.8	1654	Type C used at DCP 5 for U/S fillet between Stations 0+210 and 0+270
April 18, 2017 / DS	Type C	SA08	3694.0	2122.5	1740	4334.0	690.0	3934.0	12.3	1549	Sampled from U/s Type C fillet at D-CP5; Station ~0+280
April 30, 2017 / NS	Type C	SA09	3759.0	2126.6	1768	3562.5	695.5	3281.6	10.9	1594	Sampled from crusher belt

D-CP1 Type C Material Field Density Testing (Nuclear Densometer) Summary

Date	Density Test #	Tech	Probe Depth (mm)	Station	Depth from OG (m)	Wet Density (kg/m3)	Moisture Content (%)	Dry Density (kg/m3)	Single Point Frozen Proctor Dry Density - SPFPDD (kg/m3)	% SPFPDD	Standard Proctor Maximum Dry Density - SPMDD (kg/m3)	% SPMDD	Comments
14-Feb-17	1	SH	150	0+420	0.2	1976	6.6	1834	1685	108.8	2100	87.3	Top of Type C u/s fillet (below liner, below Type F hinge point lifts)
14-Feb-17	2	SH	150	0+440	0.2	1934	6.5	1815	1685	107.7	2100	86.4	Top of Type C u/s fillet (below liner, below Type F hinge point lifts)
14-Feb-17	3	SH	150	0+460	0.2	1967	6.7	1844	1685	109.4	2100	87.8	Top of Type C u/s fillet (below liner, below Type F hinge point lifts)
23-Feb-17	4	TW	150	0+512	0.85	1577	10.8	1423	1685	84.5	2100	67.8	5th lift the the Type C u/s fillet (below liner, conducted for Sand Cone Test) Frozen.
23-Feb-17	5	TW	150	0+510	0.85	1635	10.5	1480	1685	87.8	2100	70.5	5th lift the the Type C u/s fillet (below liner, conducted for Sand Cone Test) Frozen.
23-Feb-17	6	TW	150	0+511	0.85	1520	10.5	1376	1685	81.7	2100	65.5	5th lift the the Type C u/s fillet (below liner, conducted for Sand Cone Test) Frozen.
23-Feb-17	7	TW	150	0+567	0.85	1603	9.4	1465	1685	86.9	2100	69.8	5th lift the the Type C u/s fillet (below liner, conducted for Sand Cone Test) Frozen.
23-Feb-17	8	TW	150	0+565	0.85	1564	9.3	1431	1685	84.9	2100	68.1	5th lift the the Type C u/s fillet (below liner, conducted for Sand Cone Test) Frozen.
23-Feb-17	9	TW	150	0+566	0.85	1583	8.7	1457	1685	86.5	2100	69.4	5th lift the the Type C u/s fillet (below liner, conducted for Sand Cone Test) Frozen.
19-Mar-17	10	TW	200	0+519	0.2	1797	5.8	1699	1685	100.8	2100	80.9	Final lift of Type C material u/s fillet, frozen
19-Mar-17	11	TW	200	0+520	0.2	1796	6.6	1685	1685	100.0	2100	80.2	Final lift of Type C material u/s fillet, frozen
19-Mar-17	12	TW	200	0+521	0.2	1837	6.2	1729	1685	102.6	2100	82.3	Final lift of Type C material u/s fillet, frozen
22-Mar-17	13	TW	200	0+531	0.2	1814	6.8	1698	1685	100.8	2100	80.9	Final lift of Type C material u/s fillet, frozen
22-Mar-17	14	TW	200	0+531	0.2	1784	6.8	1670	1685	99.1	2100	79.5	Final lift of Type C material u/s fillet, frozen
22-Mar-17	15	TW	150	0+532	0.2	1747	6.1	1647	1685	97.7	2100	78.4	Final lift of Type C material u/s fillet, frozen
22-Mar-17	16	TW	200	0+530	0.2	1792	6.5	1683	1685	99.9	2100	80.1	Final lift of Type C material u/s fillet, frozen
23-Mar-17	17	TW	200	0+570	0.2	1784	5.7	1689	1685	100.2	2100	80.4	Final lift of Type C material u/s fillet, frozen
23-Mar-17	18	TW	200	0+570	0.2	1780	6.1	1680	1685	99.7	2100	80.0	Final lift of Type C material u/s fillet, frozen
23-Mar-17	19	TW	200	0+571	0.2	1760	5.8	1663	1685	98.7	2100	79.2	Final lift of Type C material u/s fillet, frozen
23-Mar-17	20	TW	200	0+570	0.2	1759	6.2	1656	1685	98.3	2100	78.9	Final lift of Type C material u/s fillet, frozen
28-Mar-17	21	TW	200	0+260	1.45	1783	8.3	1646	1685	97.7	2100	78.4	3rd lift of the D/S Fillet -frozen
28-Mar-17	22	TW	200	0+280	1.45	1807	7.8	1677	1685	99.5	2100	79.9	3rd lift of the D/S Fillet -frozen
28-Mar-17	23	TW	200	0+300	1.45	1788	7.2	1668	1685	99.0	2100	79.4	3rd lift of the D/S Fillet -frozen
28-Mar-17	24	TW	200	0+370	1.15	1794	6.6	1683	1685	99.9	2100	80.1	4th lift of the D/S Fillet -frozen
28-Mar-17	25	TW	200	0+400	1.15	1742	6.5	1636	1685	97.1	2100	77.9	4th lift of the D/S Fillet -frozen
28-Mar-17	26	TW	200	0+420	1.15	1762	5.6	1669	1685	99.1	2100	79.5	4th lift of the D/S Fillet -frozen
28-Mar-17	27	TW	200	0+450	1.15	1777	7.2	1658	1685	98.4	2100	79.0	4th lift of the D/S Fillet. Used as a control strip (8 passes with 10t) -frozen
28-Mar-17	28	TW	200	0+450	1.15	1779	6.8	1665	1685	98.8	2100	79.3	4th lift of the D/S Fillet. Used as a control strip (12 passes with 10t) -frozen
28-Mar-17	29	TW	200	0+450	1.15	1812	6.9	1696	1685	100.7	2100	80.8	4th lift of the D/S Fillet. Used as a control strip (16 passes with 10t) -frozen
29-Mar-17	30	IM	200	0+360	0 (O.G)	1861	6.1	1754	1685	104.1	2100	83.5	7th Lift of D/S Fillet - Min. 8 Passes with CS563E 10t - Frozen.
29-Mar-17	31	IM	200	0+340	0 (O.G)	1848	6.6	1733	1685	102.8	2100	82.5	7th Lift of D/S Fillet - Min. 8 Passes with CS563E 10t - Frozen.
29-Mar-17	32	IM	200	0+320	0 (O.G)	1789	9.7	1631	1685	96.8	2100	77.7	7th Lift of D/S Fillet - Min. 8 Passes with CS563E 10t - Frozen.
30-Mar-17	33	TW	200	0+460	0 (O.G)	1823	7.2	1700	1685	100.9	2100	81.0	7th Lift of D/S Fillet - Min. 8 Passes with CS563E 10t - Frozen.
30-Mar-17	34	TW	200	0+485	0 (O.G)	1854	6.2	1746	1685	103.6	2100	83.1	7th Lift of D/S Fillet - Min. 8 Passes with CS563E 10t - Frozen.
30-Mar-17	35	TW	200	0+520	0 (O.G)	1844	7.3	1718	1685	102.0	2100	81.8	7th Lift of D/S Fillet - Min. 8 Passes with CS563E 10t - Frozen.
30-Mar-17	36	TW	200	0+528	0 (O.G)	1911	5.1	1819	1685	108.0	2100	86.6	7th Lift of D/S Fillet - Min. 8 Passes with CS563E 10t - Frozen.
31-Mar-17	37	WW	200	0+260	0 (O.G)	1823	6.1	1718	1685	102.0	2100	81.8	7th Lift of D/S Fillet - Min. 8 Passes with CS563E 10t - Frozen.
31-Mar-17	38	WW	200	0+280	0 (O.G)	1676	6.4	1574	1685	93.4	2100	75.0	7th Lift of D/S Fillet - Min. 8 Passes with CS563E 10t - Frozen.
26-Apr-17	39	TW	200	1+466	65.5 elev	1799	8.5	1658	1685	98.4	2100	79.0	4th lift of Type C material on U/S slope (below liner) -Frozen
26-Apr-17	40	TW	200	1+490	65.5 elev	1833	9.5	1674	1685	99.3	2100	79.7	4th lift of Type C material on U/S slope (below liner) -Frozen
26-Apr-17	41	TW	200	1+490	65.5 elev	1803	9.5	1647	1685	97.7	2100	78.4	4th lift of Type C material on U/S slope (below liner) -Frozen
26-Apr-17	42	TW	200	1+490	65.5 elev	1796	8.9	1649	1685	97.9	2100	78.5	4th lift of Type C material on U/S slope (below liner) -Frozen
26-Apr-17	43	TW	200	1+490	65.5 elev	1810	9.3	1656	1685	98.3	2100	78.9	4th lift of Type C material on U/S slope (below liner) -Frozen
26-Apr-17	44	TW	200	1+510	65.5 elev	1809	9.6	1651	1685	98.0	2100	78.6	4th lift of Type C material on U/S slope (below liner) -Frozen
26-Apr-17	45	TW	200	1+360	63.5 elev	1788	9.0	1640	1685	97.4	2100	78.1	1st lift of Type C on U/S slope (below liner) -Thawing
26-Apr-17	46	TW	200	1+400	63.5 elev	1841	9.8	1677	1685	99.5	2100	79.8	1st lift of Type C on U/S slope (below liner) -Thawing
26-Apr-17	47	TW	200	1+460	65.8 elev	1914	8.2	1769	1685	105.0	2100	84.2	5th lift of Type C on U/S slope (below liner -Thawing
26-Apr-17	48	IM	200	1+455	64.6 elev	1844	9.2	1689	1685	100.2	2100	80.4	Material Frozen, adequate and consistent compactive effort applied
26-Apr-17	49	IM	200	1+425	64.3 elev	1664	9.4	1521	1685	90.3	2100	72.4	Material Frozen, adequate and consistent compactive effort applied
26-Apr-17	50	IM	200	1+423	64.3 elev	1801	9.8	1640	1685	97.3	2100	78.1	Material Frozen, adequate and consistent compactive effort applied
26-Apr-17	51	IM	200	1+405	64 elev	1814	7.7	1684	1685	100.0	2100	80.2	Material Frozen, adequate and consistent compactive effort applied
26-Apr-17	52	IM	200	1+345	63.1 elev	1792	9.3	1640	1685	97.3	2100	78.1	Material Frozen, adequate and consistent compactive effort applied
26-Apr-17	53	IM	200	1+300	62.8 elev	1669	10.1	1516	1685	90.0	2100	72.2	Material Frozen, adequate and consistent compactive effort applied
27-Apr-17	54	TW	200	1+315	63.88 elev	1820	8.8	1673	1685	99.3	2100	79.7	Material Frozen, adequate and consistent compactive effort applied
27-Apr-17	55	TW	200	1+290	63.88 elev	1866	9.6	1703	1685	101.0	2100	81.1	Material Frozen, adequate and consistent compactive effort applied
27-Apr-17	56	TW	200	1+245	63.55 elev	1823	9.7	1662	1685	98.6	2100	79.1	Material Frozen, adequate and consistent compactive effort applied
27-Apr-17	57	TW	200	1+218	63.55 elev	1825	9.8	1662	1685	98.6	2100	79.1	Material Frozen, adequate and consistent compactive effort applied
27-Apr-17	58	IM	200	1+475	65.4 elev	1839	9.3	1683	1685	99.9	2100	80.1	Material Frozen, adequate and consistent compactive effort applied
27-Apr-17	59	IM	200	1+410	65.1 elev	1749	7.6	1625	1685	96.5	2100	77.4	Material Frozen, adequate and consistent compactive effort applied
27-Apr-17	60	IM	200	1+430	65.15 elev	1918	8.9	1761	1685	104.5	2100	83.9	Material Frozen, adequate and consistent compactive effort applied
27-Apr-17	61	IM	200	1+335	64.9 elev	1833	8.0	1697	1685	100.7	2100	80.8	Material Frozen, adequate and consistent compactive effort applied
28-Apr-17	62	TW	200	1+200	63.86 elev	1791	7.3	1669	1685	99.1	2100	79.5	Material Frozen, adequate and consistent compactive effort applied
28-Apr-17	63	TW	200	1+150	63.86 elev	1835	9.3	1679	1685	99.6	2100	79.9	Material Frozen, adequate and consistent compactive effort applied
28-Apr-17	64	TW	200	1+515	65.7 elev	1770	8.3	1634	1685	97.0	2100	77.8	Material Frozen, adequate and consistent compactive effort applied
28-Apr-17	65	TW	200	1+450	65.7 elev	1866	7.8	1731	1685	102.7	2100	82.4	Material Frozen, adequate and consistent compactive effort applied
29-Apr-17	66	IM	200	1+085	65.9 elev	1845	7.7	1713	1685	101.7	2100	81.6	Material Frozen, adequate and consistent compactive effort applied
29-Apr-17	67	IM	200	1+065	66.5 elev	1842	8.6	1696	1685	100.7	2100	80.8	Material Frozen, adequate and consistent compactive effort applied
28-May-17	68	IM	200	1+230	67.5 m	2138	3.5	2066	1685	122.6	2100	98.4	Top lift of Type C under liner
28-May-17	69	IM	200	1+255	67.5 m	2162	3.6	2087	1685	123.9	2100	99.4	Top lift of Type C under liner
28-May-17	70	IM	200	1+280	67.5 m	2127	4.9	2028	1685	120.3	2100	96.6	Top lift of Type C under liner
28-May-17	71	IM	200	1+350	67.5 m	2165	3.6	2090	1685	124.0	2100	99.5	Top lift of Type C under liner

Dike D-CP1 Type C Material Sand Cone Tests Summary

Date	Material Type	Station	Dry Density (Densometer Avg.) (kg/m3)	Densometer Moisture Content (% Avg.)	Bentonite placed (g)	Bentonite Bulk Density (kg/m3)	Pit Volume (m3)	Soil Weight (g)	Soil Bulk Density (kg/m3)	Moisture Content (%)	Soil Dry Density (kg/m3)	Comments
23-Feb-17	Type C	0+565	1426.3	10.6	3642	1056	0.00345	5412	1569.2	11.9	1402.3	TW- Type C Material was frozen
23-Feb-17	Type C	0+510	1451	9.1	4908	1056	0.00465	8132	1749.7	9.4	1599.3	TW- Type C Material was frozen
19-Mar-17	Type C	0+520	1704	6.2	5480	1056	0.00519	11268	2171.4	7.6	2018.0	TW/IM- Type C Material was frozen
22-Mar-17	Type C	0+530	1675	6.6	4868	1056	0.00461	8778	1904.2	8.1	1761.5	TW/FN- Type C Material was frozen
23-Mar-17	Type C	0+570	1672	5.95	5092	1056	0.00482	9772	2027	7.3	1888.7	TW- Type C Material was frozen
26-Apr-17	Type C	1+490	1660	9	3090	1064	0.00290	6446.0	2220	10.5	2008.7	TW- 4th lift of Type C on U/S slope (below liner) Elev. 65.5m approx.

APPENDIX E3

TYPE F MATERIAL QA/QC TEST RESULTS

Table E3.1: Moisture Content Results for Bentonite Augmented Material - Type F

Sample No.	Date Tested	Moisture Content (%)	Sample Source
SA01	29-Jan-17	8.2	20 mm minus mixed with bentonite
SA02	30-Jan-17	7.2	20 mm minus mixed with bentonite
SA03	31-Jan-17	8.4	20 mm minus mixed with bentonite
SA04	31-Jan-17	7.4	20 mm minus mixed with bentonite
SA05	1-Feb-17	8.0	20 mm minus mixed with bentonite
SA06	18-Feb-17	6.4	20 mm minus mixed with bentonite

Average Moisture Content	7.6%

Table E3.2: Frozen / In-situ Single Point Proctors for Type F Material

Date/Shift	Material Type	Sample	Mass of Soil in Mold (g)	Mold Volume (cm3)	Frozen Compacted Density (kg/m3)	Mass of Wet Soil and Tare (g)	Mass of Tare (g)	Mass of Dry Soil and Tare (g)	Moisture Content (%)	Dry Density (kg/m3)	Comments
Nov 20, 2016 / NS	Type F	SA01	3847.6	2122.5	1813	4024.1	1643.7	3850.6	7.9	1681	
Nov 26, 2016 / NS	Type F	SA02	3879.6	2122.5	1828	1961.1	681.6	1839.4	10.5	1654	
Jan 31, 2017 / DS	Type F	SA03	3662.3	2122.5	1725	2690.7	696.7	2536.2	8.4	1592	
Jan 31, 2017 / DS	Type F	SA04	3712.4	2122.5	1749	2675.5	694.8	2539.3	7.4	1629	
Jan 31, 2017 / NS	Type F	SA05	3704.5	2122.5	1736	2783.5	693.2	2629.5	8.0	1608	
Feb 1, 2017 / DS	Type F	SA06	3707.0	2122.4	1747	2965.8	697.6	2814.9	7.1	1631	
Feb 1, 2017 / NS	Type F	SA07	3704.5	2122.5	1736	2783.5	693.2	2629.5	8.0	1608	
March 14, 2017 / DS	Type F	SA08	3865.4	2122.5	1821	160.2	4.3	148.2	8.3	1681	Mixing station - sampled from batch after mixing
April 10, 2017 / DS	Type F	SA09	3804.0	2122.5	1792	1438.6	690.3	1363.0	11.2	1611	

Dike D-CP1 Type F Material Density Tests by Densometer Summary Results

Date	Density Test #	Probe Depth (mm)	Station	Depth from OG (m)	Wet Density (kg/m3)	Moisture Content (%)	Dry Density (kg/m3)	Single Point Frozen Proctor Dry Density - SPFPDD (kg/m3)	% SPFPDD	Standard Proctor Maximum Dry Density - SPMDD (kg/m3)	% SPMDD	Comments
Dec 3/16	001	150	0+110	1.8	1765	8.8	1622	1632	99.4	Not Tested	Not Tested	SH - Top of Type F below liner - frozen
Dec 3/16	002	150	0+117	1.8	1881	5.5	1783	1632	109.2	-	-	SH - Top of Type F below liner - frozen
Dec 3/16	003	150	0+155	1.8	1919	6.3	1805	1632	110.6	-	-	IM - Top of Type F below liner - frozen
Dec 3/16	004	150	0+140	1.8	1896	6.4	1782	1632	109.2	-	-	IM - Top of Type F below liner - frozen
Dec 3/16	005	150	0+125	1.8	1886	6.3	1774	1632	108.7	-	-	IM - Top of Type F below liner - frozen
Dec 11/16	006	150	0+245	-	1833	6.0	1729	1632	106.0	-	-	IM - Top of Type F at U/S hinge point below liner - Frozen
Dec 11/16	007	150	0+260	-	1862	6.3	1752	1632	107.3	-	-	IM - Top of Type F at U/S hinge point below liner - Frozen
Dec 11/16	008	150	0+275	-	1893	5.9	1788	1632	109.5	-	-	IM - Top of Type F at U/S hinge point below liner - Frozen
Feb 20/17	009	200	0+545	G	1734	7.3	1616	1632	99.0	-	-	TW- Top of Type F (below liner) SPMDD based on single point proctor avg.-Frozen
Feb 20/17	010	200	0+555	G	1727	7.5	1607	1632	98.4	-	-	TW- Top of Type F (below liner) SPMDD based on single point proctor avg.-Frozen
Feb 20/17	011	200	0+575	G	1802	7.6	1675	1632	102.6	-	-	TW- Top of Type F (below liner) SPMDD based on single point proctor avg.-Frozen
Feb 20/17	012	200	0+515	G	1879	8.7	1729	1632	105.9	-	-	TW- Top of Type F (below liner) SPMDD based on single point proctor avg.-Frozen
March 06/17	013	100	0+284		1790	7.8	1660	1632	101.7	-	-	TW- First lift of Type F fillet (above liner) between 0+290 & 0+313.-Frozen
March 06/17	014	100	0+285		1788	6.5	1679	1632	102.9	-	-	TW- First lift of Type F fillet (above liner) between 0+290 & 0+313.-Frozen
March 06/17	015	100	0+286		1782	6.8	1669	1632	102.2	-	-	TW- First lift of Type F fillet (above liner) between 0+290 & 0+313.-Frozen
March 06/17	016	150	0+304		1834	7.2	1711	1632	104.8	-	-	TW- Second lift of Type F fillet (above liner) between 0+290 & 0+313. -Frozen
March 06/17	017	150	0+305		1821	7.1	1700	1632	104.2	-	-	TW- Second lift of Type F fillet (above liner) between 0+290 & 0+313. -Frozen
March 06/17	018	150	0+305		1795	6.5	1685	1632	103.3	-	-	TW- Second lift of Type F fillet (above liner) between 0+290 & 0+313. -Frozen
March 22/17	019	150	0+542	G	1817	5.9	1716	1632	105.1	-	-	TW- Top of Type F hingepoint (below liner) between 0+525 & 0+545 -Frozen
March 22/17	020	150	0+542	G	1802	6.4	1694	1632	103.8	-	-	TW- Top of Type F hingepoint (below liner) between 0+525 & 0+545 -Frozen
March 22/17	021	150	0+543	G	1822	5.5	1727	1632	105.8	-	-	TW- Top of Type F hingepoint (below liner) between 0+525 & 0+545 -Frozen
March 22/17	022	150	0+543	G	1827	6.3	1719	1632	105.3	-	-	TW- Top of Type F hingepoint (below liner) between 0+525 & 0+545 -Frozen

Dike D-CP1 Type F Sand Cone Density Tests Summary

Date	Material Type	Dry Density (Densometer Avg.) (kg/m3)	Densometer Moisture Content (% Avg.)	Bentonite placed (g)	Bentonite Bulk Density (kg/m3)	Pit Volume (m3)	Soil weight (g)	Soil Bulk Density (kg/m3)	Moisture Content (%)	Soil Dry Density (kg/m3)	Comments
6-Mar-17	Type F	1669	7	4282	1056	0.0041	8386	2068.1	5.9	1952.9	
6-Mar-17	Type F	1699	6.9	5682	1056	0.0054	10278	1910.2	4.0	1836.7	
22-Mar-17	Type F	1714	6	5074	1056	0.0048	9662.0	2010.9	7.3	1874.0	

APPENDIX E4

TYPE H MATERIAL QA/QC TEST RESULTS

Table E4.1: Moisture Content Results for Type H Material

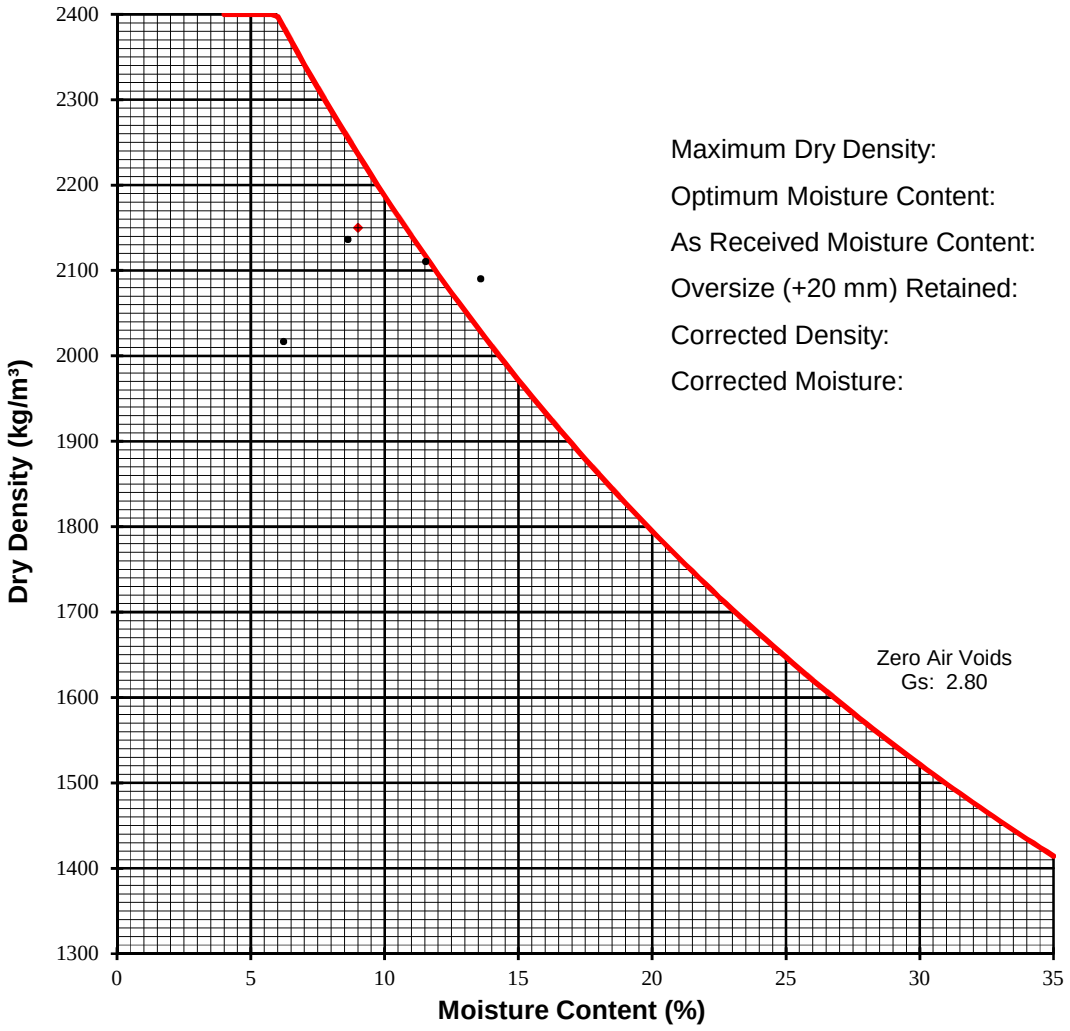
Sample No.	Date Tested	Moisture Content (%)	Sample Source
SA01	22-Oct-16	4.1	Sampled from Type H stockpile
SA02	22-Oct-16	3.7	Sampled from Type H stockpile
SA03	26-Oct-16	3.3	Sampled from Type H stockpile
SA04	26-Oct-16	3.3	Sampled from Type H stockpile
SA05	01-Dec-16	10.2	Sampled from Type H stockpile
SA06	09-Dec-16	11.2	Sampled from Type H stockpile
SA07	10-Dec-16	12.6	Sampled from Type H stockpile - rejected
SA08	11-Dec-16	9.2	Sampled from Type H stockpile
SA09	11-Dec-16	11.1	Sampled from Type H stockpile
SA10	12-Dec-16	11.3	Sampled from Type H stockpile
SA11	04-Apr-17	11.5	Sampled from Type H stockpile
SA12	04-Apr-17	15.6	Sampled from Type H stockpile - rejected
SA13	06-Apr-17	12.9	Sampled from recycled Type H stockpile - rejected
SA14	06-Apr-17	9.4	Sampled from Type H stockpile
SA15	19-Apr-17	14.1	Sampled from Type H stockpile
SA16	19-Apr-17	2.5	Sampled from Type H stockpile - rejected
SA17	19-Apr-17	10.2	Sampled from Type H stockpile
SA18	20-Apr-17	8.1	Sampled from Type H stockpile
SA19	21-Apr-17	15.8	Sampled from Type H stockpile - rejected
SA20	22-Apr-17	10.5	Sampled from Type H stockpile
SA21	23-Apr-17	9.2	Sampled from Type H stockpile
SA22	26-Apr-17	8	Sampled from Type H stockpile
SA23	27-Apr-17	12.2	Sampled from Type H stockpile
SA24	02-May-17	7.2	Sampled from Type H stockpile
SA25	03-May-17	3.7	Sampled from Type H stockpile
SA26	04-May-17	3.4	Sampled from Type H stockpile
SA27	05-May-17	3.4	Sampled from Type H stockpile
SA28	18-May-17	3.3	Sampled from Type H stockpile
SA29	19-May-17	5.6	Sampled from Type H stockpile
SA30	20-May-17	4.7	Sampled from Type H stockpile
SA31	01-Jun-17	5.3	Sampled from Type H stockpile
SA32	01-Jun-17	4.2	Sampled from Type H stockpile

Average Moisture Content	8.2%

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Meliadine Dike Construction	Sample No.:	SA01
Client:	Agnico Eagle	Sampled By:	TW
Attention:		Sample Date:	October 23, 2016
Project No.:	E14103230-01	Test Date:	October 23, 2016
Description:	75mm minus	Preparation:	Moist
Source:	On-Site Stockpile	Compaction:	Manual



Maximum Dry Density:	**2150**	kg/m³
Optimum Moisture Content:	**9.0**	%
As Received Moisture Content:	**6.2**	%
Oversize (+20 mm) Retained:	**40**	%
Corrected Density:	**2320**	%
Corrected Moisture:	**5.8**	%

Remarks:

Reviewed By: _____ C.E.T.

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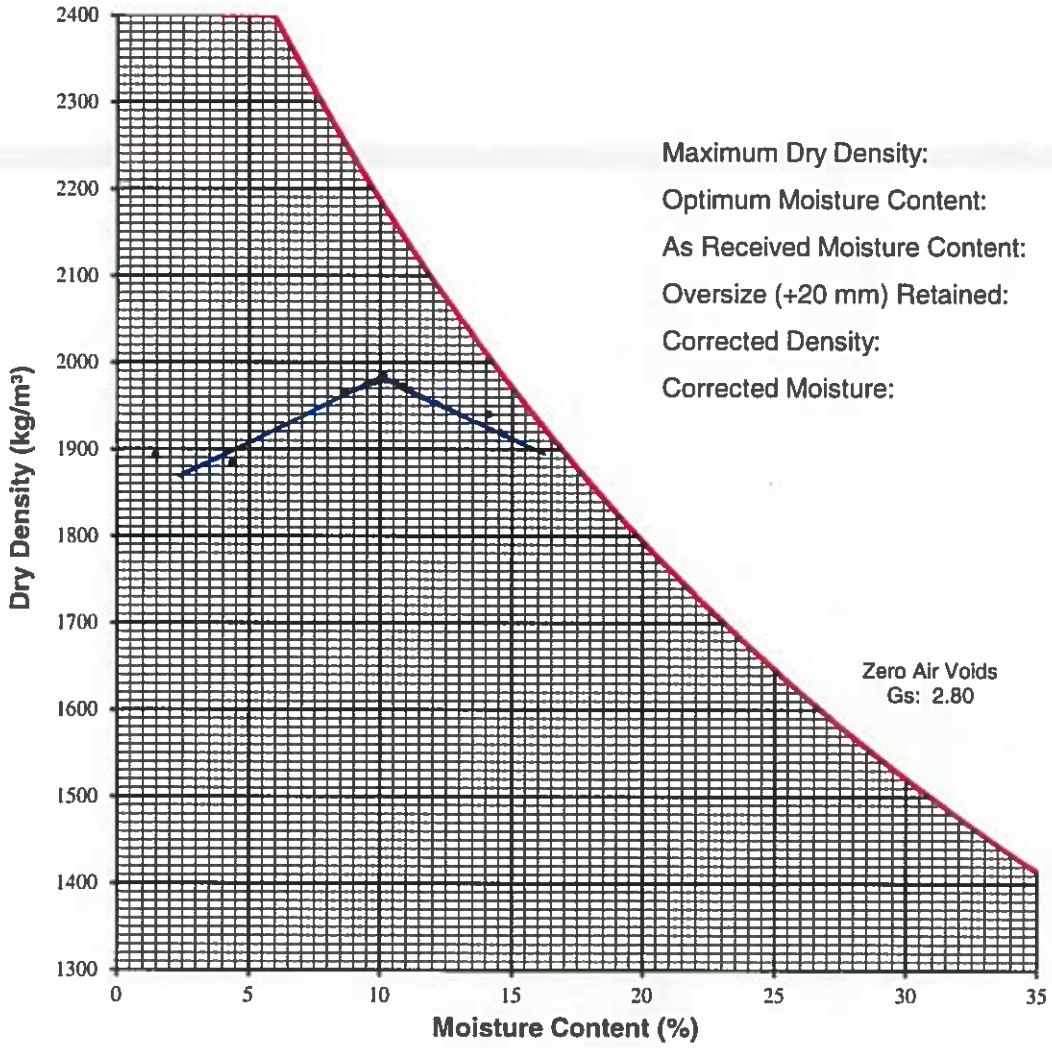
TETRA TECH

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Meliadine Dike Construction	Sample No.:	SA02
Client:	Agnico Eagle	Sampled By:	TW
Attention:		Sample Date:	March 26, 2017
Project No.:	E14103230-01	Test Date:	March 26, 2017
Description:	75 mm minus (Type H Material)	Preparation:	Moist
Source:	On-Site Stockpile	Compaction:	Manual



Maximum Dry Density:	**1980**	kg/m³
Optimum Moisture Content:	**10.0**	%
As Received Moisture Content:	**8.9**	%
Oversize (+20 mm) Retained:	**35**	%
Corrected Density:	**2170**	%
Corrected Moisture:	**6.9**	%

Remarks: Sampled from Type H material stockpile produced in December 2016

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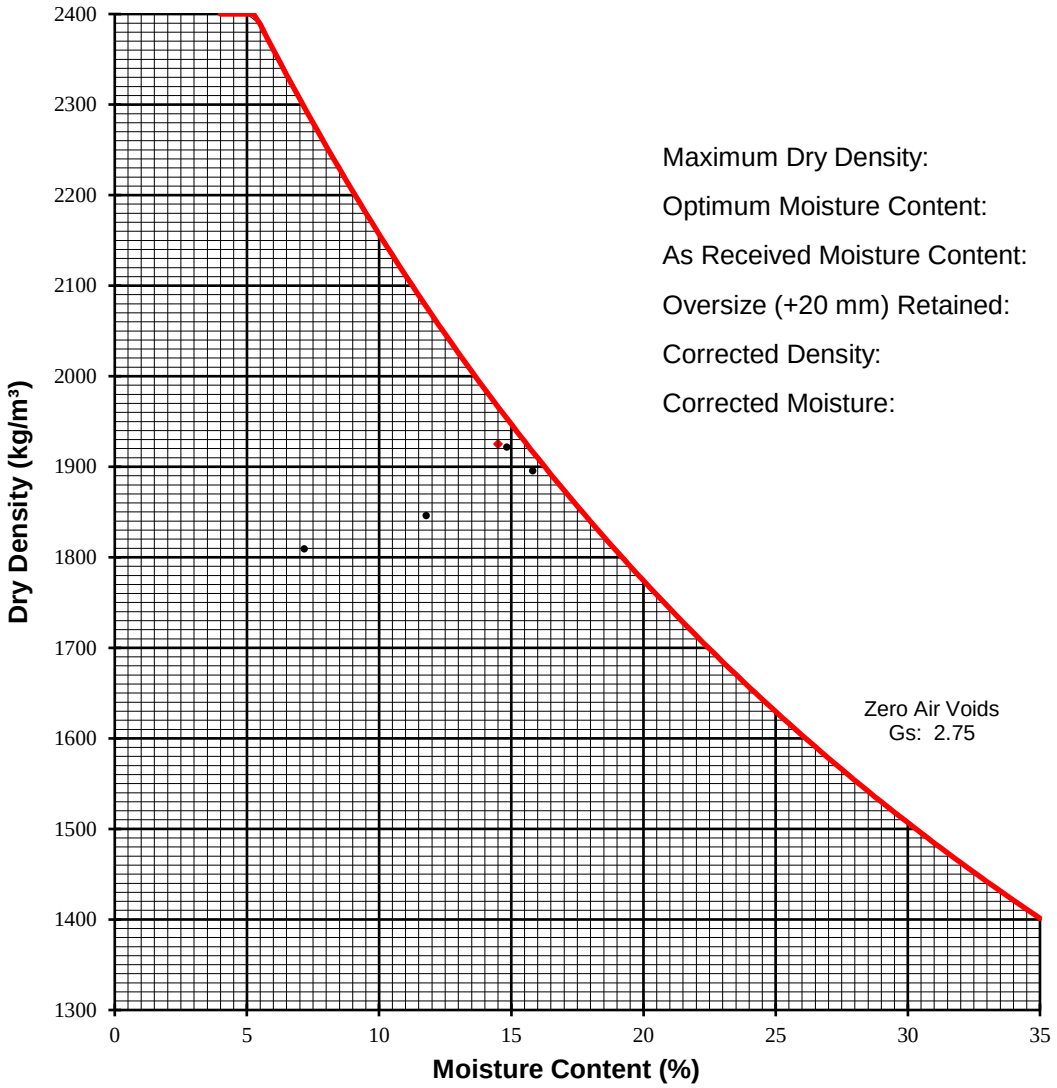
MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Meliadine Dike Construction	Sample No.:	SA03
Client:	Agnico Eagle	Sampled By:	TW
Attention:		Sample Date:	April 27, 2017
Project No.:	E14103230-01 Task 023	Test Date:	April 27, 2017
Description:	75 mm minus (Type H Material)	Preparation:	Moist
Source:	On-Site Stockpile	Compaction:	Manual



Maximum Dry Density:	**1925**	kg/m³
Optimum Moisture Content:	**14.5**	%
As Received Moisture Content:	**11.8**	%
Oversize (+20 mm) Retained:	**50**	%
Corrected Density:	**2230**	%
Corrected Moisture:	**7.8**	%

Remarks: Sampled from Type H material stockpile produced on April 27, 2017

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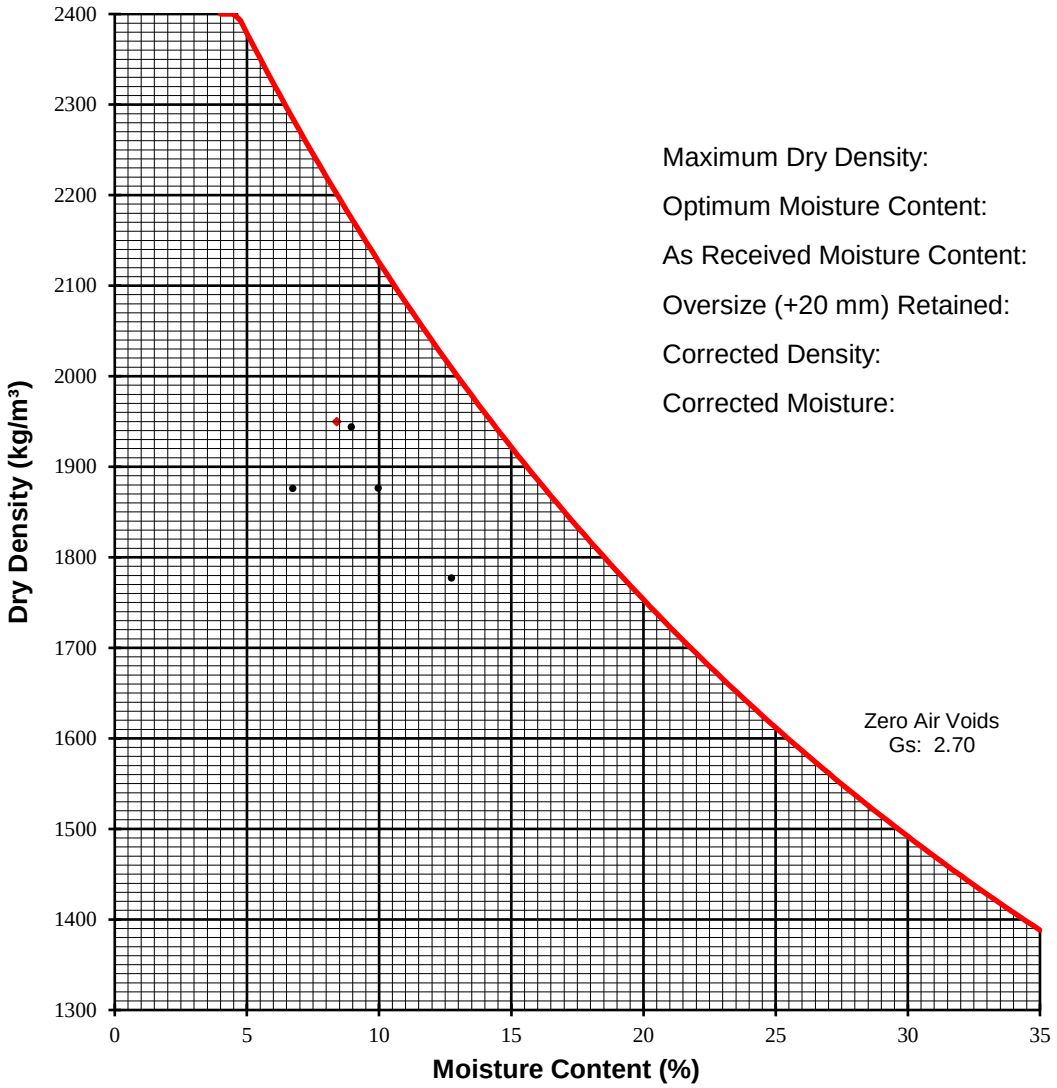
MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Meliadine Dike Construction	Sample No.:	SA04
Client:	Agnico Eagle	Sampled By:	TW
Attention:		Sample Date:	May 10, 2017
Project No.:	E14103230-01	Test Date:	May 11, 2017
Description:	75 mm minus (Type H Material)	Preparation:	Moist
Source:	On-Site Stockpile	Compaction:	Manual



Maximum Dry Density:	**1950**	kg/m³
Optimum Moisture Content:	**8.4**	%
As Received Moisture Content:	**11.8**	%
Oversize (+20 mm) Retained:	**40**	%
Corrected Density:	**2180**	%
Corrected Moisture:	**5.4**	%

Remarks: Sampled from Type H material stockpile

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Table E4.2: Frozen / In-situ Single Point Proctors for Type H Material

Date/Shift	Material Type	Sample	Mass of Soil in Mold (g)	Mold Volume (cm3)	Frozen Compacted Density (kg/m3)	Mass of Weight Soil and Tare (g)	Mass of Tare (g)	Mass of Dry Soil and Tare (g)	Moisture Content (%)	Dry Density (kg/m3)	Oversize Corrected Dry Density (kg/m3)	Comments
March 26, 2017 DS	Type H	SA01	3510.0	2122.5	1654	4010.3	703.3	3748.0	8.6	1523	1789	Sampled from Stockpile
March 28, 2017 DS	Type H	SA02	3614.0	2122.5	1703	3605	706.3	3346.0	9.8	1551	1814	Sampled from Stockpile

Dike D-CP1 Type H Material Density Tests by Densometer Summary Results

Date	Density Test #	Probe Depth (mm)	Station	Depth from OG (m)	Wet Density (kg/m3)	Moisture Content (%)	Dry Density (kg/m3)	Single Point Frozen Proctor Dry Density - SPFPDD (kg/m3)	% SPFPDD	Standard Proctor Maximum Dry Density - SPMDD (kg/m3)	% SPMDD	Comments
26-Mar-17	1.000	200	0+499		1764	11.7	1579	1789	88.3	2172.0	72.7	TW- Second lift of Type H Material in the ice wedge between 0+495 & 0+513
26-Mar-17	2.000	200	0+500		1732	12.1	1545	1789	86.4	2172.0	71.1	TW- Second lift of Type H Material in the ice wedge between 0+495 & 0+513
26-Mar-17	3.000	200	0+495		1828	9.8	1665	1789	93.1	2172.0	76.7	TW- Second lift of Type H Material in the ice wedge between 0+495 & 0+513
26-Mar-17	4.000	200	0+505		1832	11.5	1643	1789	91.8	2172.0	75.6	TW- Second lift of Type H Material in the ice wedge between 0+495 & 0+513
26-Mar-17	5.000	200	0+455		1839	11.2	1654	1789	92.4	2172.0	76.1	TW- Final lift of Type H Material in the ice wedge between 0+435 & 0+455
26-Mar-17	6.000	200	0+449		1879	12.7	1667	1789	93.2	2172.0	76.8	TW- Final lift of Type H Material in the ice wedge between 0+435 & 0+455
26-Mar-17	7.000	200	0+442		1830	11.6	1640	1789	91.7	2172.0	75.5	TW- Final lift of Type H Material in the ice wedge between 0+435 & 0+455
26-Mar-17	8.000	200	0+437		1818	14.3	1591	1789	88.9	2172.0	73.2	TW- Final lift of Type H Material in the ice wedge between 0+435 & 0+455
10-May-17	9.000	200	1+160		1996	6.6	1872	1789	104.7	2172.0	86.2	TW- 2nd lift of Type F Material (overliner) Control Strip-12 full passes
10-May-17	10.000	200	1+180		1982	6.8	1856	1789	103.7	2172.0	85.4	TW- 2nd lift of Type F Material (overliner)
16-May-17	11.000	200	1+500	64.9	2006	5.6	1900	1789	106.2	2200.0	86.3	
16-May-17	12.000	200	1+450	64.8	1994	5.7	1886	1789	105.4	2200.0	85.7	
16-May-17	13.000	200	1+400	64.8	2027	7.2	1891	1789	105.7	2200.0	85.9	
21-May-17	14.000	200	1+520	66.2	2119	4.5	2028	1789	113.3	2200.0	92.2	
21-May-17	15.000	200	1+475	65.7	2128	4.0	2046	1789	114.4	2200.0	93.0	
21-May-17	16.000	200	1+425	65.7	2168	3.4	2097	1789	117.2	2200.0	95.3	
21-May-17	17.000	200	1+375	65.6	2103	7.6	1954	1789	109.2	2200.0	88.8	
21-May-17	18.000	200	1+320	65.6	2119	5.2	2014	1789	112.6	2200.0	91.6	
21-May-17	19.000	200	1+320	G	2166	9.9	1971	1789	110.2	2200.0	89.6	

Dike D-CP1 Type H Sand Cone Density Tests Summary

Date	Material Type	Station	Dry Density (Densometer Avg.) (kg/m3)	Densometer Moisture Content (% Avg.)	Bentonite placed (g)	Bentonite Bulk Density (kg/m3)	Pit Volume (m3)	Soil weight (g)	Soil Bulk Density (kg/m3)	Moisture Content (%)	Soil Dry Density (kg/m3)	Comments
26-Mar-17	Type H	0+500	1608	11.3	3652	1056	0.0035	7972	2305.2	8	2134.4	

APPENDIX E5

TYPE K MATERIAL QA/QC TEST RESULTS

MOISTURE CONTENT TEST RESULTS

ASTM D2216

Project:	Meliadine Project, NU	Borehole No.:	Dike D-CP1 Type K Material
Project No.:	E14103230.01-023	Date Tested:	Nov/Dec 2016, Jan 2017
Client:	Agnico Eagle Mines Ltd.	Tested By:	SH/IM
Attention:	Mr. Duy Nguyen	Page:	

Date	Sample Number	Moisture Content (%)	Comments
11/26/2016	K1	19.8	Sampled from DCP1 mixing station
11/26/2016	K2	20.2	Sampled from DCP1 mixing station
11/27/2016	K3	13.8	Sampled from crusher mixing station
11/27/2016	K4	12.8	Sampled from crusher mixing station
11/27/2016	K5	14.6	Sampled from crusher mixing station
11/27/2016	K6	15.1	Sampled from crusher mixing station
11/28/2016	K7	16.7	Sampled from crusher mixing station
11/29/2016	K8	10.4	Sampled in key trench at 0+160
11/29/2016	K9	20.2	Sampled from DCP1 mixing station
11/30/2016	K10	17.4	Sampled in key trench at 0+200
11/30/2016	K11	15.9	Sampled in key trench at 0+205
12/1/2016	K12	17.3	Sampled in key trench at 0+145 -2.30
12/2/2016	K13	15.9	Sampled in key trench at 0+210 -2.45
12/2/2016	K14	19.1	Sampled in key trench at 0+160 -2.1 m
12/3/2016	K15	16.2	Sampled in key trench at 0+280
12/5/2016	K16	22.4	Sampled in key trench at 0+280 -1.8 m
12/5/2016	K17	25.9	Sampled in key trench at 0+285, -1.8 m
1/17/2017	K20	14.2	Sample from DCP-1 mixing station
1/18/2017	K21	16.8	Sample from DCP-1 mixing station
1/18/2017	K22	17.8	Sample from DCP-1 mixing station
1/18/2017	K23	17.9	Sample from DCP-1 mixing station

* Non-standard sample size

Reviewed By: _____ P.Eng.

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TETRA TECH

D-CP1 Type K Material Densities and Water Saturation Summary

Note: Densities and saturation are based on Nuclear Gauge results which may not be accurate for frozen aggregate

Date	Density Test #	Probe Depth (mm)	Station	Depth from OG (m)	Wet Density (kg/m3)	Moisture Content (%)	Dry Density (kg/m3)	SPMDD (kg/m3)	% SPMDD	Water Saturation (%)	Comments
Nov 27/16	001	200	0+125	2.28	1677	11.3	1507	2020	74.6	38.5	IM - Frozen - Placed during previous shift.
Nov 27/16	002	200	0+120	2.34	1642	12.6	1458	2020	72.2	40.0	IM - Frozen - Placed during previous shift.
Nov 27/16	003	200	0+115	2.37	1591	11.0	1433	2020	71.0	33.6	IM - Frozen - Placed during previous shift.
Nov 27/16	004	200	0+110	2.32	1646	10.5	1490	2020	73.7	34.9	IM - Frozen - Placed during previous shift.
Nov 27/16	005	200	0+105	2.3	1711	12.4	1522	2020	75.4	43.3	IM - Frozen - Placed during previous shift.
Nov 27/16	006	150	0+135	2.56	2054	17.0	1756	2020	86.9	85.3	IM - Control Strip - 6 passes. Unfrozen to Partially frozen
Nov 27/16	007	150	0+135	2.56	2008	16.3	1727	2020	85.5	78.1	IM - Control Strip - 12 passes. Unfrozen to partially frozen
Nov 29/16	008	100	0+102	2.1	1969	18.8	1657	2020	82.0	80.7	IM - Partially Frozen.
Nov 29/16	009	200	0+102	2.1	1853	18.7	1561	2020	77.3	69.2	IM - Partially Frozen.
Nov 29/16	010	100	0+105	2.12	1982	18.7	1670	2020	82.7	81.8	IM - Partially Frozen.
Nov 29/16	011	100	0+105	2.12	1973	19.5	1651	2020	81.7	82.9	IM - Control strip (after 6 passes). Partially Frozen.
Nov 29/16	012	100	0+105	2.12	1970	17.5	1677	2020	83.0	77.4	IM - Control strip - after 12 passes. Partially Frozen.
Nov 29/16	013	100	0+105	2.25	2030	19.8	1694	2020	83.9	90.1	IM - Control strip - additional 4 passes w/ 10 tonne. Partially Frozen.
Nov 29/16	014	100	0+115	2.25	1997	22.1	1636	2020	81.0	91.7	IM - 6 Passes with 10 tonne. Partially Frozen.
Nov 30/16	015	150	0+105	2.25	2041	19.3	1711	2020	84.7	90.1	SH - 6 passes with 10 tonne. Partially frozen
Nov 30/16	016	150	0+119	2.25	1960	19.9	1635	2020	80.9	82.4	SH - 6 passes with 10 tonne. Partially frozen
Nov 30/16	017	150	0+175	2.08	1978	17.3	1686	2020	83.5	77.7	IM - Partially Frozen.
Nov 30/16	018	150	0+175	2.08	2009	19.0	1688	2020	83.6	85.6	IM - Partially Frozen. Offset 4 m D/S
Nov 30/16	019	150	0+173	2.07	2091	18.4	1766	2020	87.4	93.9	IM - Partially Frozen.
Nov 30/16	020	150	0+173	2.07	2016	14.9	1755	2020	86.9	74.7	IM - Partially Frozen.
Nov 30/16	021	150	0+173	2.07	2118	15.6	1832	2020	90.7	88.9	IM - Partially Frozen.
Nov 30/16	022	150	0+175	2.02	2066	18.8	1739	2020	86.1	91.9	IM - Partially Frozen.
Nov 30/16	023	150	0+175	2.02	2117	17.7	1799	2020	89.0	95.4	IM - Partially Frozen. Offset 4 m U/S
Nov 30/16	024	150	0+180	2.09	2169	16.7	1859	2020	92.0	99.6	IM - Partially Frozen.
Nov 30/16	025	150	0+190	2.09	1936	22.3	1583	2020	78.4	85.3	IM - Partially Frozen.
Dec 1/16	026	150	0+135	2.3	1978	15.8	1708	2020	84.6	73.5	SH - Moist surface, somewhat compact
Dec 1/16	027	150	0+155	2.3	1885	23.4	1528	2020	75.6	82.3	SH - Wet surface. Not compact. Requested more passes
Dec 1/16	028	150	0+175	2.3	2052	21.1	1694	2020	83.9	96.0	SH - Moist surface, compact
Dec 1/16	029	150	0+155	2.3	1898	24.3	1527	2020	75.6	85.4	SH - Tested after area re-packed
Dec 1/16	030	150	0+215	2.25	1951	24.2	1571	2020	77.8	90.9	IM - Recommended slight reduction in water for compaction.
Dec 1/16	031	150	0+215	2.25	1890	25.6	1505	2020	74.5	87.0	IM - Recommended slight reduction in water for compaction.
Dec 1/16	032	150	0+225	2.25	1878	25.9	1492	2020	73.8	86.3	IM - Recommended slight reduction in water for compaction.
Dec 1/16	033	150	0+240	2.1	1947	15.6	1684	2020	83.4	69.8	IM - >10 passes with CS563 10 ton packer
Dec 1/16	034	150	0+230	2.1	1973	22.9	1605	2020	79.5	90.7	IM - >10 passes with CS563 10 ton packer
Dec 1/16	035	150	0+220	2.2	1952	27.0	1537	2020	76.1	96.3	IM - >10 passes with CS563 10 ton packer
Dec 1/16	036	150	0+210	2.2	1946	23.8	1572	2020	77.8	89.5	IM - >10 passes with CS563 10 ton packer
Dec 2/16	037	150	0+110	2.1	1938	19.4	1623	2020	80.4	78.9	IM - >10 passes w/CS563 - unable to pound pin past 150 mm. -2°C when placed
Dec 2/16	038	150	0+100	2.1	1993	19.4	1669	2020	82.6	84.8	IM - >10 passes w/CS563 - unable to pound pin past 150 mm. -2°C when placed
Dec 2/16	039	100	0+95	2.1	1800	16.4	1546	2020	76.6	59.4	IM - >10 passes w/CS563 - unable to pound pin past 100 mm. -2°C when placed
Dec 2/16	040	150	0+120	2.1	1966	17.7	1670	2020	82.7	77.5	IM - >10 passes w/CS563 - unable to pound pin past 100 mm. -2°C when placed
Dec 2/16	041	150	0+130	2.1	1984	17.8	1684	2020	83.4	79.7	IM - >10 passes w/CS563 - unable to pound pin past 150 mm. -2°C when placed
Dec 2/16	042	150	0+140	2.1	1890	16.2	1627	2020	80.5	66.3	IM - >10 passes w/CS563 - unable to pound pin past 150 mm. -2°C when placed
Dec 2/16	043	150	0+160	2.1	1896	16.8	1623	2020	80.4	68.4	IM - >10 passes w/CS563 - unable to pound pin past 150 mm. -2°C when placed
Dec 2/16	044	100	0+150	2.1	1816	19.4	1521	2020	75.3	67.6	IM - >10 passes w/CS563 - unable to pound pin past 100 mm. -2°C when placed
Dec 4/16	045	150	0+203	2	1943	23.6	1572	2020	77.8	88.8	IM - >8 passes w/CS563. Material just above 0°C when placed
Dec 4/16	046	150	0+212	2	1948	22.3	1593	2020	78.9	86.6	IM - >8 passes w/CS563. Material just above 0°C when placed
Dec 4/16	047	150	0+220	2	1925	22.6	1570	2020	77.7	84.8	IM - >8 passes w/CS563. Material just above 0°C when placed
Dec 4/16	048	150	0+227	1.9	1960	18.7	1651	2020	81.7	79.5	IM - >8 passes w/CS563. Material just above 0°C when placed
Dec 4/16	049	200	0+210	1.8	1922	27.6	1506	2020	74.6	94.0	IM - >8 passes w/CS563. High moisture content discussed with KSL
Dec 4/16	050	200	0+220	1.8	1877	29.4	1451	2020	71.8	92.2	IM - >8 passes w/CS563. High moisture content discussed with KSL
Dec 5/16	051	100	0+280	1.8	1793	23.8	1448	2020	71.7	74.4	IM - > 8-10 passes with CS563, trace to some gravel, awaiting proctor
Dec 5/16	052	100	0+280	1.8	1745	24.2	1405	2020	69.6	70.9	IM - > 8-10 passes with CS563, trace to some gravel, awaiting proctor
Dec 5/16	053	100	0+286	1.8	1769	28.6	1376	2020	68.1	80.2	IM - > 8-10 passes with CS563, trace to some gravel, awaiting proctor
Dec 5/16	054	100	0+285	1.8	1748	30.6	1338	2020	66.3	81.2	IM - > 8-10 passes with CS563, trace to some gravel, awaiting proctor
Dec 5/16	055	100	0+291	1.8	1849	23.5	1497	2020	74.1	79.0	IM - > 8-10 passes with CS563, trace to some gravel, awaiting proctor
Dec 5/16	056	100	0+298	1.8	1880	21.3	1550	2020	76.7	77.5	IM - > 8-10 passes with CS563, trace to some gravel, awaiting proctor

APPENDIX E6

KEY TRENCH BASE MATERIAL JAR AND MOISTURE CONTENT TEST RESULTS

TABLE E6: DIKE D-CP1 KEY TRENCH JAR TEST SUMMARY RESULTS

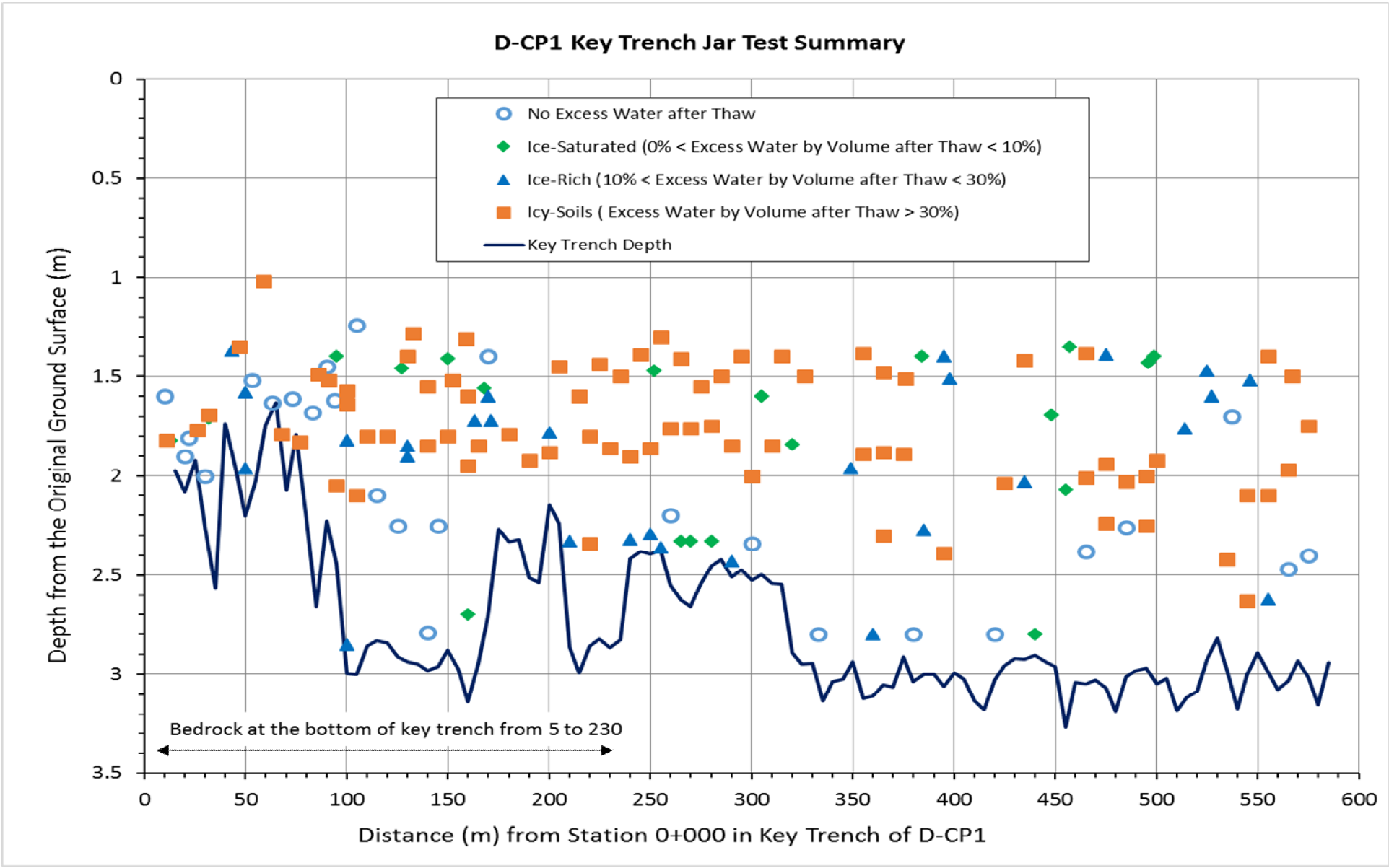
Sample #	Date Tested	Sample Type	Survey Data		Jar Test Results							Soil Description
			Approx. Station	Sample Depth (m)	Height of Supernatant Water (mm)	Height of Saturated Sediment (mm)	Percentage of Excess Supernatant Water in Thawed Soil Sample (by volume) (%)	Moisture Content (%)	Bulk Density (kg/m3)	Ice Content Description	Material Acceptance	
1	29-Oct-16	Disturbed	0+011	1.82	48	82	36.9			Icy Soil	Not Acceptable	
2	29-Oct-16	Disturbed	0+047	1.35	37	30	55.2			Icy Soil	Not Acceptable	
3	29-Oct-16	Disturbed	0+100	1.57	65	63	50.8			Icy Soil	Not Acceptable	
4	29-Oct-16	Disturbed	0+159	1.31	52	70	42.6	72.4		Icy Soil	Not Acceptable	
5	29-Oct-16	Disturbed	0+209	1.20	No Sample Obtained							
6	29-Oct-16	Disturbed	0+252	1.47	10	95	9.5	27.1		Ice-Saturated Soil	Acceptable	
7	29-Oct-16	Disturbed	0+294	1.58	No Sample Obtained							
8	29-Oct-16	Disturbed	0+349	1.96	15	57	20.8	38.0		Ice-Rich Soil	Not Acceptable	
9	29-Oct-16	Disturbed	0+398	1.51	20	75	21.1	58.3		Ice-Rich Soil	Not Acceptable	
10	29-Oct-16	Disturbed	0+448	1.69	10	95	9.5	2.7		Ice-Saturated Soil	Acceptable	
11	29-Oct-16	Disturbed	0+496	1.43	7	78	8.2	16.3		Ice-Saturated Soil	Acceptable	
12	29-Oct-16	Disturbed	0+546	1.52	23	95	19.5	35.1		Ice-Rich Soil	Not Acceptable	
13	04-Nov-16	Disturbed	0+022	1.81	0	75	0.0	9.2		Not Ice-Saturated	Not Acceptable	
14	04-Nov-16	Disturbed	0+032	1.71	3	45	6.3	11.3		Ice-Saturated Soil	Acceptable	
15	04-Nov-16	Disturbed	0+043	1.37	16	80	16.7	42.4		Ice-Rich Soil	Not Acceptable	
16	04-Nov-16	Disturbed	0+053	1.52	0	60	0.0	8.3		Not Ice-Saturated	Not Acceptable	
17	04-Nov-16	Disturbed	0+063	1.63	0	90	0.0	8.5		Not Ice-Saturated	Not Acceptable	
18	04-Nov-16	Disturbed	0+073	1.61	0	115	0.0	11.7		Not Ice-Saturated	Not Acceptable	
19	04-Nov-16	Disturbed	0+083	1.68	0	120	0.0	5.4		Not Ice-Saturated	Not Acceptable	
20	04-Nov-16	Disturbed	0+094	1.62	0	165	0.0	7.5		Not Ice-Saturated	Not Acceptable	
21	05-Nov-16	Disturbed	0+013	1.82	4	63	6.0	14.1		Ice-Saturated Soil	Aceptable	
22	05-Nov-16	Disturbed	0+026	1.77	28	30	48.3	66.9		Icy Soil	Not Acceptable	
23	05-Nov-16	Disturbed	0+032	1.69	34	36	48.6	69.7		Icy Soil	Not Acceptable	
24	06-Nov-16	Disturbed	0+050	1.58	9	50	15.3	24.6		Ice-Rich Soil	Not Acceptable	
25	06-Nov-16	Disturbed	0+059	1.02	28	42	40.0	123.1		Icy Soil	Not Acceptable	
26	06-Nov-16	Disturbed	0+068	1.79	47	28	62.7	100.7		Icy Soil	Not Acceptable	
27	06-Nov-16	Disturbed	0+077	1.83	18	41	30.5	44.1		Icy Soil	Not Acceptable	
28	06-Nov-16	Disturbed	0+086	1.49	30	35	46.2	53.8		Icy Soil	Not Acceptable	
29	06-Nov-16	Disturbed	0+095	1.40	6	55	9.8	19.4		Ice - Saturated Soil	Acceptable	
30	06-Nov-16	Disturbed	0+105	1.24	0	110	0.0	4.5		Not Ice-Saturated	Not Acceptable	
31	06-Nov-16	Disturbed	0+127	1.46	6	55	9.8	26.6		Ice - Saturated Soil	Acceptable	

32	06-Nov-16	Disturbed	0+133	1.28	41	34	54.7	84.2		Icy Soil	Not Acceptable	
33	06-Nov-16	Disturbed	0+152	1.52	32	38	45.7	60.8		Icy Soil	Not Acceptable	
34	06-Nov-16	Disturbed	0+163	1.72	17	49	25.8	29.6		Ice-Rich Soil	Not Acceptable	
35	06-Nov-16	Disturbed	0+168	1.56	3	73	3.9	8.3		Ice - Saturated Soil	Acceptable	
36	09-Nov-16	Disturbed	0+170	1.60	8	54	12.9	19.5		Ice-Rich Soil	Not Acceptable	
37	10-Nov-16	Disturbed	0+050	1.96	18	54	25.0	48.3		Ice-Rich Soil	Not Acceptable	
38	10-Nov-16	Disturbed	0+090	1.45	0	70	0.0	12.2		Not Ice-Saturated	Not Acceptable	
39	10-Nov-16	Disturbed	0+100	1.64	60	20	75.0	149.0		Icy Soil	Not Acceptable	
40	10-Nov-16	Disturbed	0+091	1.52	44	33	57.1	97.4		Icy Soil	Not Acceptable	
41	10-Nov-16	Disturbed	0+130	1.40	32	20	61.5	107.4		Icy Soil	Not Acceptable	
42	10-Nov-16	Disturbed	0+140	1.55	48	21	69.6	152.8		Icy Soil	Not Acceptable	
43	10-Nov-16	Disturbed	0+150	1.41	2	53	3.6	11.4		Ice-Saturated Soil	Acceptable	
44	10-Nov-16	Disturbed	0+160	1.60	35	25	58.3	83.5		Icy Soil	Not Acceptable	
45	10-Nov-16	Disturbed	0+170	1.40	0	95	0.0	7.6		Not Ice-Saturated	Not Acceptable	
46	11-Nov-16	Disturbed	0+100	1.82	15	45	25.0	29.8		Ice-Rich Soil	Not Acceptable	
47	11-Nov-16	Disturbed	0+130	1.90	11	58	15.9	20.9		Ice-Rich Soil	Not Acceptable	
48	11-Nov-16	Disturbed	0+140	1.85	32	35	47.8	70.7		Icy Soil	Not Acceptable	
49	11-Nov-16	Disturbed	0+150	1.80	28	34	45.2	59.5		Icy Soil	Not Acceptable	
50	11-Nov-16	Disturbed	0+160	1.95	34	28	54.8	84.7		Icy Soil	Not Acceptable	
51	11-Nov-16	Disturbed	0+165	1.85	31	36	46.3	65.1		Icy Soil	Not Acceptable	
52	12-Nov-16	Disturbed	0+130	1.85	5	20	20.0	27.3		Ice-Rich Soil	Not Acceptable	
53	12-Nov-16	Disturbed	0+120	1.80	14	28	33.3	39.2		Icy Soil	Not Acceptable	
54	12-Nov-16	Disturbed	0+110	1.80	25	23	52.1	75.8		Icy Soil	Not Acceptable	
55	12-Nov-16	Disturbed	0+030	2.00	0	75	0.0	8.9		Not Ice-Saturated	Not Acceptable	
56	12-Nov-16	Disturbed	0+020	1.90	0	110	0.0	4.5		Not Ice-Saturated	Not Acceptable	
57	12-Nov-16	Disturbed	0+010	1.60	0	115	0.0	11.9		Not Ice-Saturated	Not Acceptable	
58	13-Nov-16	Disturbed Core	0+095	2.05	20	30	40.0	35.7		Icy Soil	Not Acceptable	
59	13-Nov-16	Disturbed Core	0+105	2.10	20	25	44.4	47.3		Icy Soil	Not Acceptable	
60	13-Nov-16	Disturbed Core	0+115	2.10	0	60	0.0	7.1		Not Ice-Saturated	Not Acceptable	
61	13-Nov-16	Disturbed Core	0+125	2.25	0	40	0.0	11.0		Not Ice-Saturated	Not Acceptable	
62	13-Nov-16		0+135	2.70	No Sample Obtained (Bedrock)							
63	13-Nov-16	Disturbed Core	0+145	2.25	0	40	0.0	0.3		Not Ice-Saturated	Not Acceptable	
64	15-Nov-16	Core	0+205	1.45	95	65	59.4	75.6	1474	Icy Soil	Not Acceptable	SILT sandy some gravel to gravelly

65	15-Nov-16	Core	0+215	1.60	40	50	44.4	70.3	1395	Icy Soil	Not Acceptable	fine SAND, trace silt
66	15-Nov-16	Core	0+225	1.44	40	55	42.1	50.5	1318	Icy Soil	Not Acceptable	SAND some gravel, some silt
67	15-Nov-16	Core	0+235	1.50	70	80	46.7	78.5	1656	Icy Soil	Not Acceptable	fine SAND, trace silt
68	15-Nov-16	Disturbed Core	0+245	1.39	30	32	48.4	84.2		Icy Soil	Not Acceptable	fine SAND, some silt
69	15-Nov-16	Core	0+255	1.30	58	68	46.0	90.3	1674	Icy Soil	Not Acceptable	SAND silty trace gravel
70	15-Nov-16	Core	0+265	1.41	89	34	72.4	253.4	1295	Icy Soil	Not Acceptable	fine SAND, silty
71	16-Nov-16	Disturbed Core	0+326	1.50	34	22	60.7	123.1		Icy Soil	Not Acceptable	SAND silty, gravelly
72	16-Nov-16	Core	0+315	1.40	76	30	71.7	223.4	1012	Icy Soil	Not Acceptable	SAND, silty, trace gravel
73	16-Nov-16	Core	0+305	1.60	14	138	9.2	25.8	2011	Ice-Saturated Soil	Acceptable	SAND, trace to some silt
74	16-Nov-16	Disturbed Core	0+295	1.40	37	26	58.7	130.9		Icy Soil	Not Acceptable	SAND silty
75	16-Nov-16	Disturbed Core	0+285	1.50	31	27	53.4	27.1		Icy Soil	Not Acceptable	SILT sandy, gravelly, - cobble noted
76	16-Nov-16	Disturbed Core	0+275	1.55	39	46	45.9	82.0		Icy Soil	Not Acceptable	SAND silty
77	17-Nov-16	Core	0+200	1.78	32	109	22.7	43.3	1401	Icy Soil	Not Acceptable	fine SAND, trace silt
78	17-Nov-16	Core	0+220	1.80	34	44	43.6	56.8	1575	Icy Soil	Not Acceptable	SAND, silty, some gravel
79	17-Nov-16	Disturbed Core	0+230	1.86	69	61	53.1	72.8		Icy Soil	Not Acceptable	SAND, silty, gravelly
80	17-Nov-16	Core	0+240	1.90	76	20	79.2	340.0	1018	Icy Soil	Not Acceptable	fine SAND, some silt to silty
81	17-Nov-16	Broken Core	0+250	1.86	59	41	59.0	59.1	1424	Icy Soil	Not Acceptable	SAND, trace silt, + cored through cobble
82	17-Nov-16	Broken Core	0+260	1.76	69	43	61.6	140.2	1049	Icy Soil	Not Acceptable	SAND, trace silt
83	18-Nov-16	Broken Core	0+270	1.76	49	67	42.2	69.0	1480	Icy Soil	Not Acceptable	SAND, some silt, trace gravel; fine grained sand
84	18-Nov-16	Core	0+280	1.75	29	68	29.9	37.8	1618	Icy Soil	Not Acceptable	SAND, gravelly, some silt
85	18-Nov-16	Broken Core	0+290	1.85	42	59	41.6	32.2	1538	Icy Soil	Not Acceptable	SAND, gravelly, some silt
86	18-Nov-16	Disturbed Core	0+300	2.00	35	13	72.9	437.3		Icy Soil	Not Acceptable	SAND, some silt, some gravel
87	18-Nov-16	Core	0+310	1.85	39	60	39.4	63.4	1471	Icy Soil	Not Acceptable	SAND, some silt; poorly graded fine sand
88	18-Nov-16	Broken Core	0+320	1.84	12	120	9.1	30.2	1956	Ice-Saturated Soil	Acceptable	SAND, trace to some silt
89	20-Nov-16	Disturbed Core	0+171	1.72	11	26	29.7	43.1		Ice-Rich Soil	Not Acceptable	SAND, silty / SILT, sandy - some gravel
90	20-Nov-16	Disturbed Core	0+180	1.79	28	14	66.7	20.0		Icy Soil	Not Acceptable	SAND, silty / SILT, sandy - some gravel
91	20-Nov-16	Disturbed Core	0+190	1.92	23	20	53.5	100.8		Icy Soil	Not Acceptable	SILT, some sand, trace gravel
92	20-Nov-16	Core	0+200	1.88	19	30	38.8	48.7	1770	Icy Soil	Not Acceptable	SAND, gravelly, some silt
93	21-Nov-16	Core	0+100	2.85	10	75	11.8	7.5	2219	Ice-Rich Soil	Not Acceptable	SAND, silty, gravelly
94	21-Nov-16		0+120		No Sample Obtained (Bedrock)							
95	21-Nov-16	Disturbed Core	0+140	2.79	0	100	0.0	2.9		Not Ice-Saturated	Not Acceptable	SAND, silty, some gravel
96	21-Nov-16	Core	0+160	2.70	5	60	7.7	11.4	2026	Ice-Saturated Soil	Acceptable	SAND, silty, trace gravel; fine sand
97	22-Nov-16		0+170	2.25	No Sample Obtained (Bedrock)							
98	22-Nov-16		0+180	2.18	No Sample Obtained (Bedrock)							
99	22-Nov-16		0+190	2.35	No Sample Obtained (Bedrock)							

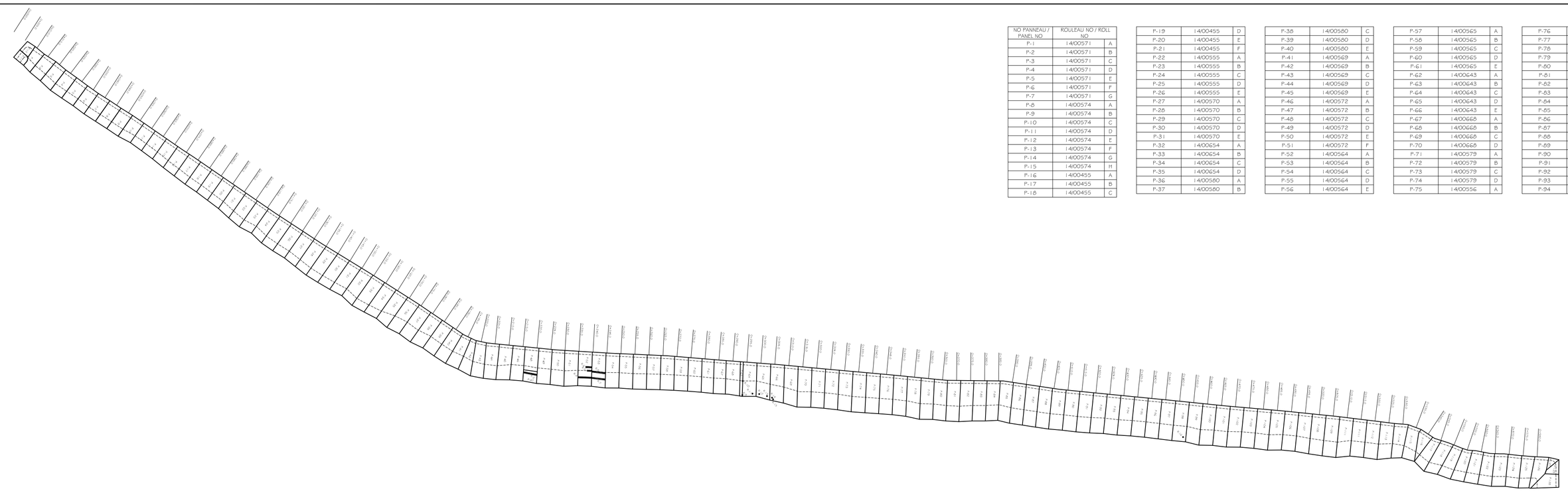
100	22-Nov-16		0+200	2.20	No Sample Obtained (Bedrock)							
101	22-Nov-16	Core	0+210	2.33	10	29	25.6	38.7	1184	Ice-Rich Soil	Not Acceptable	SAND, some silt
102	22-Nov-16	Core	0+220	2.34	35	30	53.8	80.1	1442	Icy Soil	Not Acceptable	SAND and SILT, some gravel
103	22-Nov-16		0+230	2.30	No Sample Obtained (Bedrock)							
104	22-Nov-16	Core	0+240	2.32	15	84	15.2	37.1	1987	Ice-Rich Soil	DRE/DE Acceptable	SAND, trace silt to silty
105	22-Nov-16	Core	0+250	2.29	14	53	20.9	25.6	2004	Ice-Rich Soil	DRE/DE Acceptable	SAND, silty, some gravel
106	22-Nov-16	Disturbed Core	0+260	2.20	0	60	0.0	7.9		Not Ice-Saturated	Confirmatory test required	SAND, trace to some silt - Appears to be bedrock at bottom of core
107	22-Nov-16	Disturbed Core	0+270	2.33	6	51	10.5	19.1		Ice-Saturated Soil	DRE/DE Acceptable	SAND, silty, gravelly
108	22-Nov-16	Disturbed Core	0+280	2.33	4	37	9.8	10.0		Ice-Saturated Soil	Acceptable	SAND, gravelly, silty
109	22-Nov-16	Disturbed Core	0+290	2.43	5	29	14.7	13.0		Ice-Rich Soil	DRE/DE Acceptable	SAND, silty, gravelly, - possible piece of bedrock
110	22-Nov-16	Core	0+300	2.34	0	110	0.0	13.2	1941	Not Ice-Saturated	DRE/DE Acceptable	SAND, trace silt - Appears to be bedrock at bottom of core
111	23-Nov-16	Broken Core	0+255	2.36	14	84	14.3	30.4	1187	Ice-Rich Soil	DRE/DE Acceptable	SAND, silty, some gravel
112	23-Nov-16	Core	0+265	2.33	0	150	0.0	21.1	2016	Ice-Saturated Soil	Acceptable	SAND, some silt; medium to fine grained sand
113	24-Nov-16	Core	0+355	1.38	32	20	61.5	139.5	1240	Icy Soil	Not Acceptable	SAND, trace to some silt, trace to some gravel
114	24-Nov-16	Broken Core	0+365	1.48	40	22	64.5	59.9	1666	Icy Soil	Not Acceptable	SAND (fine), some silt to silty, cored through cobble / boulder
115	24-Nov-16	Disturbed Core	0+376	1.51	25	33	43.1	57.8		Icy Soil	Not Acceptable	SAND, silty / SILT, sandy - some gravel
116	24-Nov-16	Broken Core	0+384	1.40	4	39	9.3	17.2	1900	Ice-Saturated Soil	Acceptable	SAND, some silt to silty, trace gravel
117	24-Nov-16	Core	0+395	1.40	29	96	23.2	34.7	1910	Ice-Rich Soil	Not Acceptable	SAND, some silt to silty, some gravel gravel to gravelly
118	24-Nov-16	Bedrock	0+405	1.38								
119	25-Nov-16		0+355	1.89	43	17	71.7	201.7	1239	Icy Soil	Not Acceptable	SAND silty / SILT sandy, trace to some gravel
120	25-Nov-16		0+365	1.88	44	16	73.3	205.6	1256	Icy Soil	Not Acceptable	SILT, some sand to sandy, trace gravel
121	25-Nov-16		0+375	1.89	41	38	51.9	63.6	1618	Icy Soil	Not Acceptable	SILT, some sand to sandy, some gravel to gravelly
122	26-Nov-16	Rocky	0+425	1.44								
123	26-Nov-16		0+435	1.42	35	35	50.0		1463	Icy Soil	Not Acceptable	SILT, sandy, bottom of core was rock
124	27-Nov-16	Broken Core	0+365	2.30	17	30	36.2	35.6	1760	Icy Soil	Not Acceptable	SILT, sandy, gravelly - NOTE VERY SMALL SAMPLE
125	27-Nov-16	Rocky	0+375	2.29								
126	27-Nov-16	Disturbed Core	0+385	2.27	12	32	27.3	23.3		Ice-Rich Soil	Not Acceptable	SILT, sandy, gravelly - NOTE VERY SMALL SAMPLE
127	27-Nov-16	Disturbed Core	0+395	2.39	15	24	38.5	38.3		Icy Soil	Not Acceptable	SAND (med-coarse, poorly grded), sm gravel, sm silt - VERY SMALL SAMPLE
128	27-Nov-16	Rocky	0+405	2.20								
129	28-Nov-16	Broken Core	0+457	1.35	5	66	7.0	17.6	2143	Ice Saturated Soil	Acceptable	SAND (medium to coarse, well graded), some gravel, trace silt - seashell incl.
130	28-Nov-16	Disturbed Core	0+465	1.38	11	11	50.0	61.2		Icy Soil	Not Acceptable	SAND, some silt to silty, trace gravel - NOTE VERY SMALL SAMPLE
131	28-Nov-16	Disturbed Core	0+475	1.39	8	21	27.6	27.7		Ice Rich	Not Acceptable	SAND (medium to coarse, poorly graded), some gravel, trace silt - seashell incl.
132	28-Nov-16	Disturbed Core	0+425	2.04	24	14	63.2	168.1		Icy Soil	Not Acceptable	SAND, some silt to silty, trace gravel - NOTE VERY SMALL SAMPLE

133	28-Nov-16	Disturbed Core	0+435	2.03	5	25	16.7	15.0		Ice-Rich Soil	Not Acceptable	Appears to be broken bedrock with cuttings
134	03-Dec-16	Broken Core	0+455	2.07	11	90	10.9	21.0	1977	Slightly Ice-Rich Soil	Acceptable	SAND (med to coarse), trace to some silt, trace gravel - seashells throughout
135	03-Dec-16	Broken Core	0+465	2.01	68	53	56.2	107.6	1129	Icy Soil	Not Acceptable	SAND, silty, to SILT, sandy - seashells throughout
136	03-Dec-16	Broken Core	0+475	1.94	59	58	50.4	83.9	1356	Icy Soil	Not Acceptable	SAND, silty, to SILT, sandy - seashells throughout
137	03-Dec-16	Disturbed Core	0+485	2.03	31	45	40.8	53.5	-	Icy Soil	Not Acceptable	SAND, silty, to SILT, sandy - seashells throughout
138	03-Dec-16	Disturbed Core	0+495	2.00	48	59	44.9	107.9	-	Icy Soil	Not Acceptable	SAND, silty, to SILT, sandy - seashells throughout
139	04-Dec-16	No Sample	0+455	2.25	Sample Not Taken							
140	04-Dec-16	Broken Core	0+465	2.38	0	--	0	24.1	2022	Not Ice-Saturated	Not Acceptable	SAND, some silt, trace gravel, organics, brown subrounded predominately coarse grained sand; large quantity (20%) shells
141	04-Dec-16	Broken Core	0+475	2.24	34	77	30.6	57.3	1709	Icy Soil	Not Acceptable	SAND, silty, trace gravel, organics, brownish grey; medium and fine grained sand with silt; 5% shells
142	04-Dec-16	Broken Core	0+485	2.26	0	--	0	38.5	-	Not Ice-Saturated	Not Acceptable	SILT, sandy, trace gravel, organics, grey, predominately fine sand and silt, shells (10%)
143	04-Dec-16	Broken Core	0+495	2.25	60	74	44.8	92.5	1449	Icy Soil	Not Acceptable	SILT, sandy, trace gravel, organics; brownish grey, 10% shells
144	06-Dec-16	Broken Core	0+537	1.70	0	--	0	13.6	-	Not Ice-Saturated	Not Acceptable	SAND - coarse, gap graded, tr. silt, tr. gravel, organics, bedrock at core bottom
145	06-Dec-16	Broken Core	0+555	1.40	33	38	46.5	57.5	-	Icy Soil	Not Acceptable	SILT, sandy (fine), some gravel to gravelly
146	06-Dec-16	Broken Core	0+567	1.50	30	61	33.0	36.9	-	Icy Soil	Not Acceptable	SILT, sandy (fine), some gravel to gravelly
147	12-Dec-16	Broken Core	0+360	2.80	24	55	30.4	31.2		Ice-Rich-Soil	Not Acceptable	SAND, silty, some gravel
148	12-Dec-16	Disturbed Core	0+333	2.80	0	--	0.0	10.5		Not Ice-Saturated	Not Acceptable	SAND, gravelly, silty
149	12-Dec-16	Disturbed Core	0+380	2.80	0	--	0.0	8.2		Not Ice-Saturated	Not Acceptable	SAND, trace to some silt
150	12-Dec-16	Disturbed Core	0+400	2.80	0	--	0.0	3.0		Not Ice-Saturated	Not Acceptable	SAND, silty, some gravel
151	12-Dec-16	Disturbed Core	0+420	2.80	0	--	0.0	8.9		Not Ice-Saturated	Not Acceptable	SAND, trace to some silt
152	12-Dec-16	Disturbed Core	0+440	2.80	4	56	6.7	13.1		Ice-Saturated Soil	Acceptable	SAND, silty, gravelly
153	12-Dec-16	Core	0+527	1.60	21	66	24.1	69.3	1477	Ice Rich	Not Acceptable	SILT, sandy / SAND silty, trace gravel, seashells throughout
154	12-Dec-16	Core	0+545	2.10	35	46	43.2	53.6	1655	Icy Soil	Not Acceptable	SAND, gravelly, silty, cored through cobble
155	12-Dec-16	Core	0+555	2.10	27	47	36.5	26.2	1864	Icy Soil	Not Acceptable	SAND, gravelly, silty, cored through cobble
156	12-Dec-16	Disturbed Core	0+565	1.97	53	79	40.2	44.8	-	Icy Soil	Not Acceptable	SILT, sandy, some gravel to gravelly
157	12-Dec-16	Disturbed Core	0+575	1.75	41	93	30.6	38.8	-	Icy Soil	Not Acceptable	SILT, sandy, some gravel to gravelly
158	17-Dec-16	Disturbed Core	0+535	2.42	35	30	53.8	101.9	-	Icy Soil	Not Acceptable	SAND, silty, to SILT, sandy
159	17-Dec-16	Disturbed Core	0+545	2.63	29	36	44.6	50.2	-	Icy Soil	Not Acceptable	SAND, silty / SILT, sandy - some gravel
160	17-Dec-16	Disturbed Core	0+555	2.62	15	55	21.4	26.4	-	Icy Soil	Not Acceptable	SAND, gravelly, silty
161	17-Dec-16	Disturbed Core	0+565	2.47	0	0	0.0	13.8	-	Not Ice-Saturated	Not Acceptable (Bulk density NA)	SAND - coarse, gap graded, tr. silt, tr. gravel
162	17-Dec-16	Disturbed Core	0+575	2.40	0	0	0.0	11.0	-	Not Ice-Saturated	Not Acceptable (Bulk density NA)	SAND, silty, trace gravel; fine sand
163	17-Jan-17	Core	0+499	1.40	5	88	5.4	35.0	1184	Ice-Saturated	Not Acceptable (high moisture content, low bulk density)	SAND, some silt to silty, some gravel gravel to gravelly
164	17-Jan-17	Core	0+525	1.47	15	70	17.6	78.0	1760	Ice Rich Soil	Not Acceptable	SILT sandy some gravel to gravelly
165	26-Jan-17	Core	0+500	1.92	40	28	58.8	178.0	1289	Icy Soil	Not Acceptable	SAND, some silt to silty, trace gravel
166	26-Jan-17	Core	0+514	1.76	19	47	28.8	278.0	1234	Ice Rich Soil	Not Acceptable	SAND, Silty, Tr Gravel


D-CP1 Key Trench Jar Test Summary
No Excess Water after Thaw
Ice-Saturated (0% < Excess Water by Volume after Thaw < 10%)
Ice-Rich (10% < Excess Water by Volume after Thaw < 30%)
Icy-Soils (Excess Water by Volume after Thaw > 30%)
Key Trench Depth
Depth from the Original Ground Surface (m)
0
0.5
1
1.5
2
2.5
3
3.5
Bedrock at the bottom of key trench from 5 to 230
0
50
100
150
200
250
300
350
400
450
500
550
600
Distance (m) from Station 0+000 in Key Trench of D-CP1

APPENDIX F

GEOMEMBRANE LINER INSTALLATION QC REPORTS



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P-3	14005711	C
P-4	14005711	D
P-5	14005711	E
P-6	14005711	F
P-7	14005711	G
P-8	14005744	A
P-9	14005744	B
P-10	14005744	C
P-11	14005744	D
P-12	14005744	E
P-13	14005744	F
P-14	14005744	G
P-15	14005744	H
P-16	14004554	A
P-17	14004554	B
P-18	14004554	C
P-19	14004554	D
P-20	14004554	E
P-21	14004554	F
P-22	14005551	A
P-23	14005551	B
P-24	14005551	C
P-25	14005551	D
P-26	14005551	E
P-27	14005701	A
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P-34	14006541	C
P-35	14006541	D
P-36	14005801	A
P-37	14005801	B
P-38	14005801	C
P-39	14005801	D
P-40	14005501	E
P-41	14005691	A
P-42	14005691	B
P-43	14005291	C
P-44	14005691	D
P-45	14005691	E
P-46	14005721	A
P-47	14005721	B
P-48	14005721	C
P-49	14005721	D
P-50	14005721	E
P-51	14005721	F
P-52	14005641	A
P-53	14005641	B
P-54	14005641	C
P-55	14005641	D
P-56	14005641	E
P-57	14005651	A
P-58	14005651	B
P-59	14005651	C
P-60	14005651	D
P-61	14005651	E
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P-66	14006431	E
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P-124	14005591	A
P-125	14005591	B
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P-127	14005591	D
P-128	14005591	E
P-129	14005591	F

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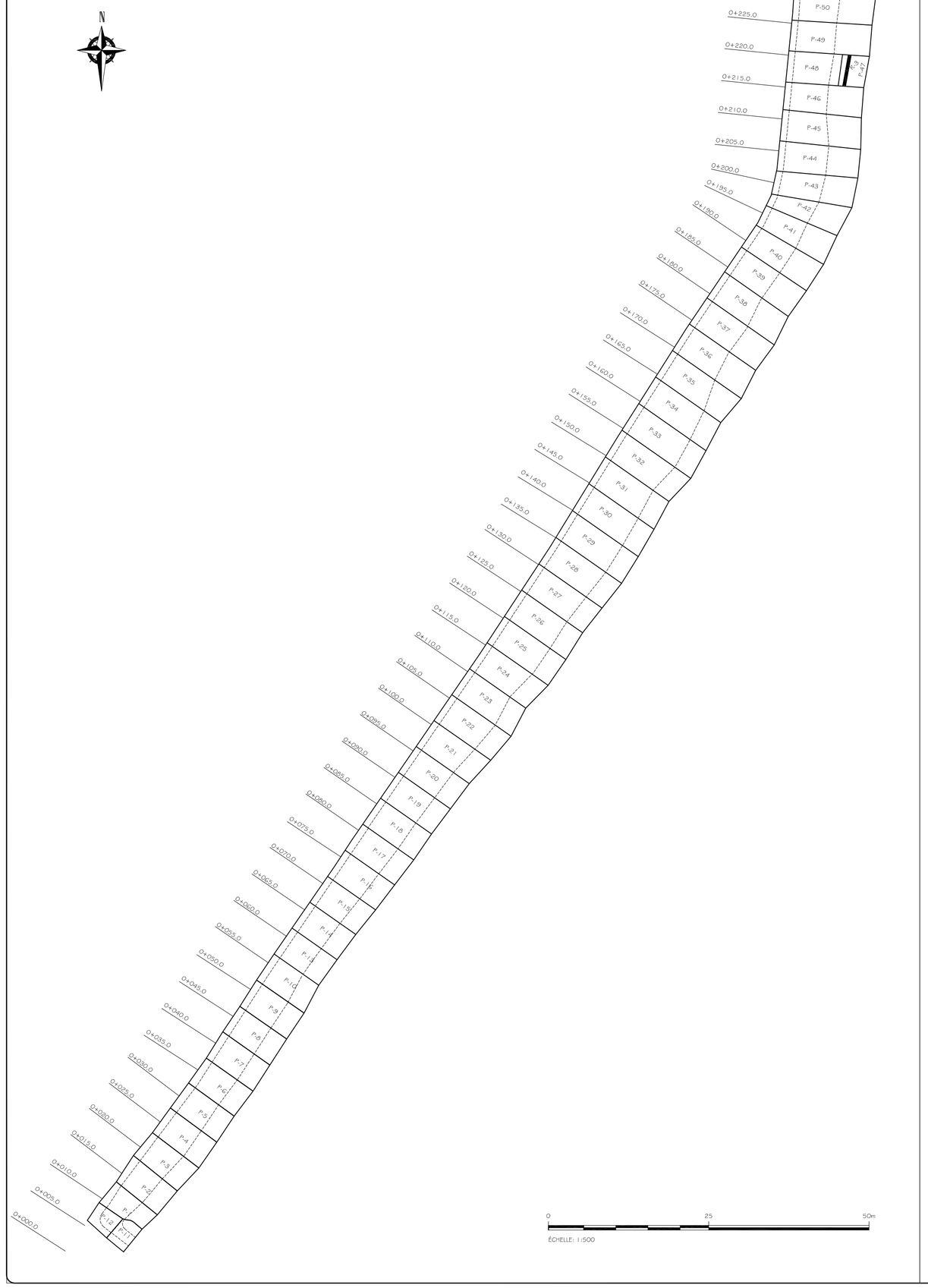
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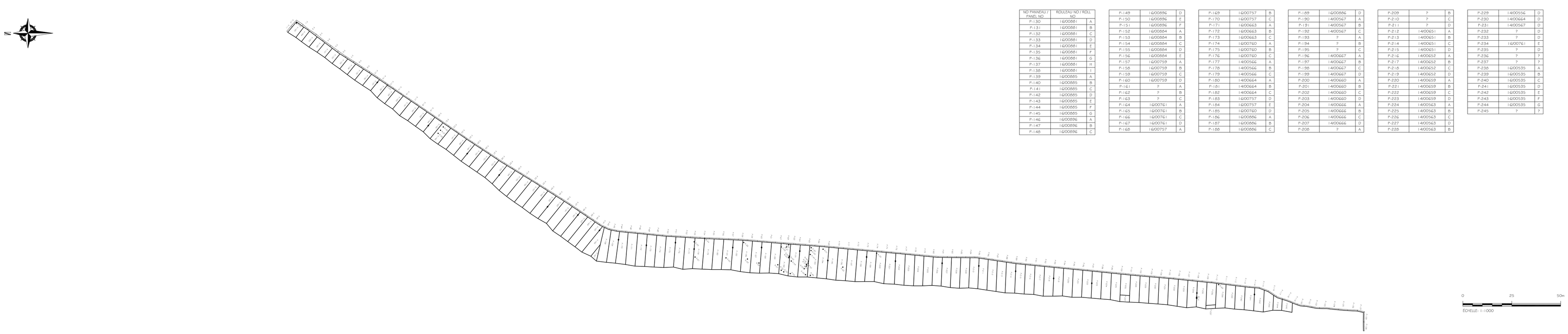

NO PANNEAU / PANEL NO	ROULEAU NO / ROLL NO	
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P-132	I-G00881	C
P-133	I-G00881	D
P-134	I-G00881	E
P-135	I-G00881	F
P-136	I-G00881	G
P-137	I-G00881	H
P-138	I-G00881	I
P-139	I-G00885	A
P-140	I-G00885	B
P-141	I-G00885	C
P-142	I-G00885	D
P-143	I-G00885	E
P-144	I-G00885	F
P-145	I-G00885	G
P-146	I-G00896	A
P-147	I-G00896	B
P-148	I-G00896	C

P-149	I-G00896	D
P-150	I-G00896	E
P-151	I-G00896	F
P-152	I-G00884	A
P-153	I-G00884	B
P-154	I-G00884	C
P-155	I-G00884	D
P-156	I-G00884	E
P-157	I-G00759	A
P-158	I-G00759	B
P-159	I-G00759	C
P-160	I-G00759	D
P-161	?	A
P-162	?	B
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P-167	I-G00761	D
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P-207	I-400665	D
P-208	?	A

P-209	?	B
P-210	?	C
P-211	?	D
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P-213	I-400651	B
P-214	I-400651	C
P-215	I-400651	D
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P-229	I-400556	D
P-230	I-400664	D
P-231	I-400567	D
P-232	?	D
P-233	?	D
P-234	I-G00761	E
P-235	?	D
P-236	?	F
P-237	?	F
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P-239	I-G00535	B
P-240	I-G00535	C
P-241	I-G00535	D
P-242	I-G00535	E
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P-244	I-G00535	G
P-245	?	F

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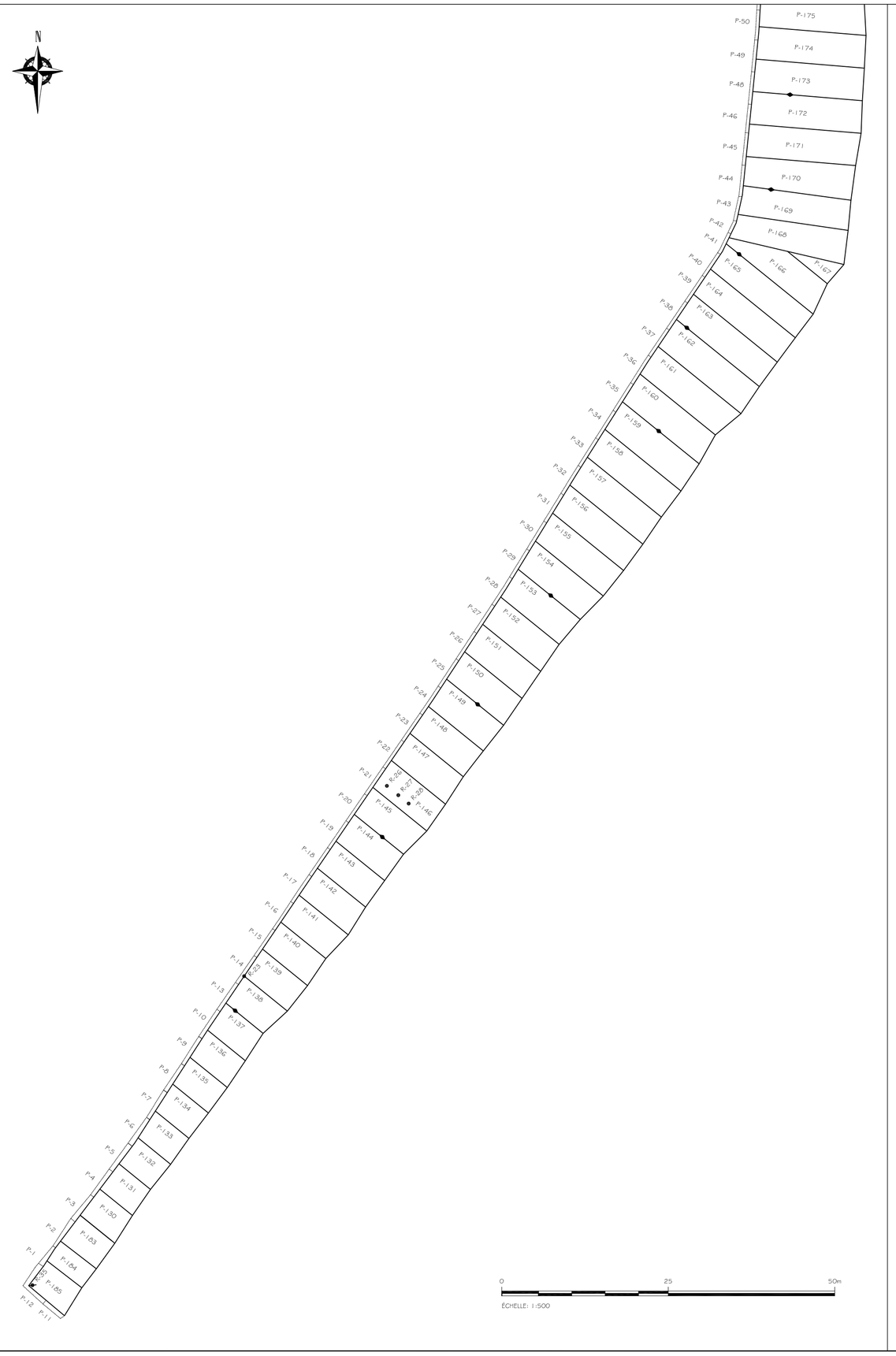

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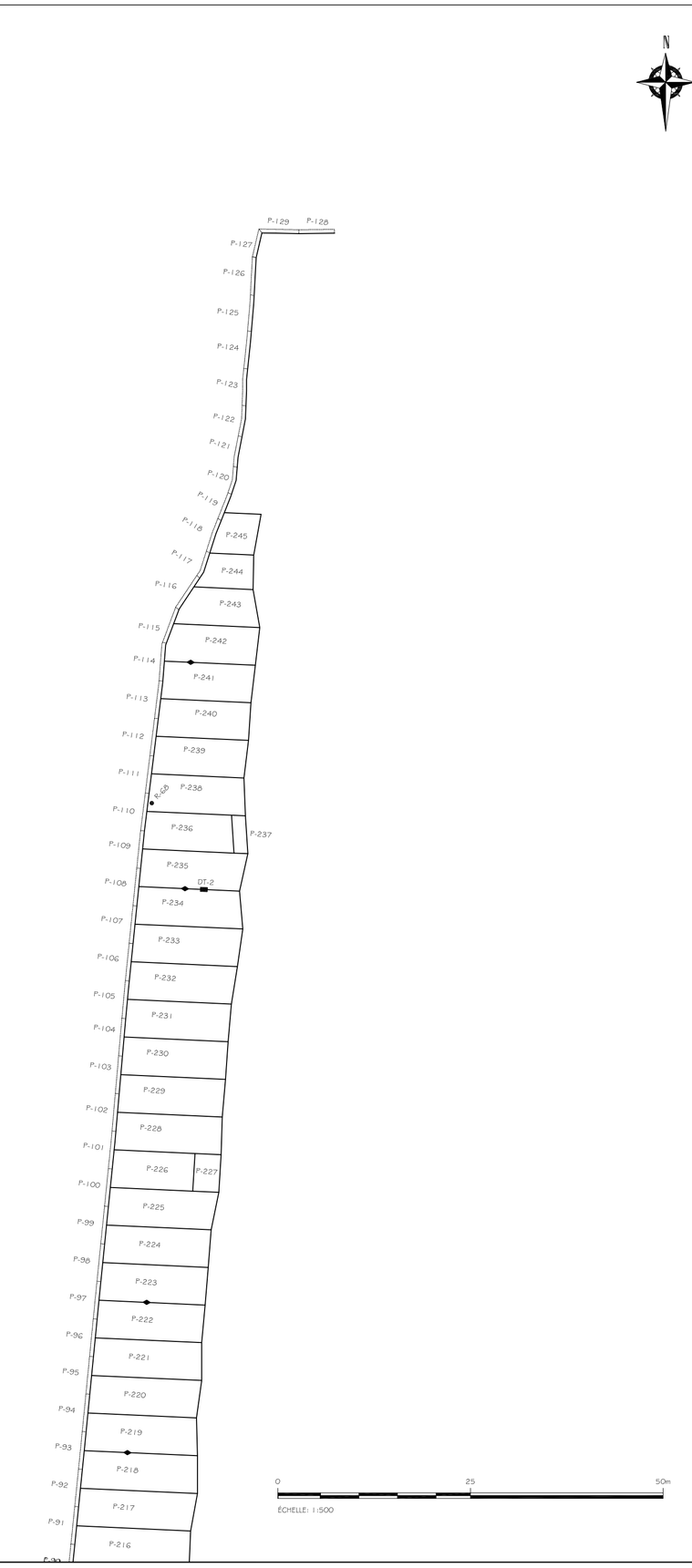
0 25 50m

ÉCHELLE: 1:500



0 25 50m

ÉCHELLE: 1:500

INGÉNIEUR / ENGINEER :

TETRA TECH

LÉGENDE / LEGEND:

- EMPIÈCEMENT / PATCH
- MANCHON TUYAU / PIPE BOOT
- DESTRUCTIF / DESTRUCTIVE
- SOUDURE EXTRUSION / EXTRUSION WELD
- PANNEAU NO. / PANEL NO.
- I-30474 ROULEAU NO. / ROLL NO.
- TEST ULTRASONS / ULTRASOUND TEST
- SOUDURE EXISTANTE / EXISTING SEAM

CLIENT / CUSTOMER:

NUNA LOGISTICS

TYPE DE PRODUIT INSTALLÉ / PRODUCT TYPE INSTALLED

ES3 COLETANCHE

TYPE DE PROJET / PROJECT TYPE

COLETANCHE DIKE
TEL QUE CONSTRUIT / AS-BUILT

NOM DU PROJET / PROJECT NAME

MELIADINE DIKE
(DCP-1, STAGE 2, DIKE RAISE)

1300, 2e Rue, Parc industriel
Sainte-Marie, QC, Canada
G 6 V 4T2

NO. PROJET / PROJECT NO.:	C1-6203
FICHIER AUTOCAD: AUTOCAD FILE:	C1-6203.dwg
DATE (j-mm-aa): DATE (dd-mm-yy):	15/09/17
DESSINÉ PAR / DRAWN BY:	M-G
VÉRIFIÉ PAR / VERIFIED BY:	M-G
APPROUVÉ PAR / APPROVED BY:	P-A
ÉCHELLE / SCALE:	N/A
DESSIN NO / DRAWING NO:	1/7

MELIADINE DIKE DCP-1

P-1	4.1	4.9	20.09
P-2	8.5	4.9	41.65
P-3	8.95	4.9	43.855
P-4	9.05	4.9	44.345
P-5	8.9	4.9	43.61
P-6	8.85	4.9	43.365
P-7	8.95	4.9	43.855
P-8	8.95	4.9	43.855
P-9	8.95	4.9	43.855
P-10	8.75	4.9	42.875
P-11	3.6	4.5	16.2
P-12	4.5	4.5	20.25
P-13	8.5	4.9	41.65
P-14	8.6	4.9	42.14
P-15	8.9	4.9	43.61
P-16	9.25	4.9	45.325
P-17	9.55	4.9	46.795
P-18	9.7	4.9	47.53
P-19	9.8	4.9	48.02
P-20	10	4.9	49
P-21	10.45	4.9	51.205
P-22	10.95	4.9	53.655
P-23	10.9	4.9	53.41
P-24	11.15	4.9	54.635
P-25	11.65	4.9	57.085
P-26	11.65	4.9	57.085
P-27	11.8	4.9	57.82
P-28	12.25	4.9	60.025
P-29	12.5	4.9	61.25
P-30	12.45	4.9	61.005
P-31	12.25	4.9	60.025
P-32	12.6	4.9	61.74
P-33	12.95	4.9	63.455
P-34	12.6	4.9	61.74
P-35	12.75	4.9	62.475
P-36	12.85	4.9	62.965
P-37	12.7	4.9	62.23
P-38	12.45	4.9	61.005
P-39	12.15	4.9	59.535
P-40	12.1	4.9	59.29
P-41	0	4.9	54.25
P-42	0	4.9	45.39
P-43	0	4.9	54.63
P-44	0	4.9	57.95
P-45	12.5	4.9	61.25
P-46	0	4.9	60
P-47	4.1	4.9	20.09
P-48	8.3	4.9	40.67
P-49	0	4.9	60.87
P-50	0	4.9	61.99
P-51	12.55	4.9	61.495
P-52	12.25	4.9	60.025
P-53	12.35	4.9	60.515
P-54	12.4	4.9	60.76
P-55	12.35	4.9	60.515
P-56	12.35	4.9	60.515
P-57	12.25	4.9	60.025
P-58	12.15	4.9	59.535
P-59	12.05	4.9	59.045
P-60	12	4.9	58.8
P-61	12.05	4.25	51.2125
P-62	12	4.9	58.8 TAKE OFF
P-63	12.15	0.95	11.5425
P-64	12.1	4.9	59.29
P-65	12.05	4.9	59.045
P-66	12.85	4.9	62.965
P-67	12.2	4.3	52.46
P-68	12.15	5.1	61.965
P-69	14	4.9	68.6
P-70	14.3	4.9	70.07
P-71	14.05	4.9	68.845

QUANTITÉ HEBDO		
DATE	PANEL	M²
before 19-dec	P-1 to P-26	1138.95
19-déc	P-27 TO P-33	425.32
20-déc	P-34 TO P-35	124.215
SOUS	TOTAL	1688.485
24-fev	P-36 TO P-45	578.495
25-fev	P-46 TO P-55	546.93
26-fev	P-56 to P-66 (P-62 take off P-61 and P-63 are reduced)	541.975
SOUS	TOTAL	1667.4
05-mars	P-67, P-68	114.425
06-mars	P-69, P-70	138.67
13-mars	P-71 to P-78	557.375
14-mars	P-79 to P-90	847.8125
15-mars	P-91 to P-99	626.71
16-mars	P-100 to P-104	353.535
18-mars	P-105 to P-109	348.39
19-mars	P-110 to P-112	200.655
22-mars	P-113 to P-118	306
24-mars	P-119 to P-129	468.9725
SOUS	TOTAL	3962.545
	TOTAL	7318.43

	P-72	14.05	4.9	68.845
	P-73	14.25	4.9	69.825
	P-74	14.35	4.9	70.315
	P-75	14.25	4.9	69.825
	P-76	14.15	4.9	69.335
	P-77	14.15	4.9	69.335
	P-78	14.5	4.9	71.05
	P-79	14.6	4.9	71.54
	P-80	14.45	4.9	70.805
	P-81	14.6	4.9	71.54
	P-82	14.55	4.9	71.295
	P-83	14.3	4.8	68.64
	P-84	14.15	4.8	67.92
	P-85	14.35	4.85	69.5975
	P-86	14.6	4.9	71.54
	P-87	14.6	4.9	71.54
	P-88	14.6	4.9	71.54
	P-89	14.5	4.9	71.05
	P-90	14.45	4.9	70.805
	P-91	14.45	4.9	70.805
	P-92	14.25	4.9	69.825
	P-93	14.15	4.9	69.335
	P-94	14.1	4.9	69.09
	P-95	14	4.9	68.6
	P-96	14.05	4.9	68.845
	P-97	14.15	4.9	69.335
	P-98	14.2	4.9	69.58
	P-99	14.55	4.9	71.295
	P-100	14.7	4.9	72.03
	P-101	14.55	4.9	71.295
	P-102	14.4	4.9	70.56
	P-103	14.2	4.9	69.58
	P-104	14.3	4.9	70.07
	P-105	14.15	4.9	69.335
	P-106	13.9	4.9	68.11
	P-107	14.1	4.9	69.09
	P-108	14.4	4.9	70.56
	P-109	14.55	4.9	71.295
	P-110	14.05	4.9	68.845
	P-111	13.45	4.9	65.905
	P-112	13.45	4.9	65.905
	P-113	12.95	4.9	63.455
	P-114	12.2	4.4	53.68
	P-115			52.58
	P-116			30.46
	P-117	12	3.95	47.4
	P-118	12.3	4.75	58.425
	P-119	11.9	4.35	51.765
	P-120	11.7	4.2	49.14
	P-121	11.6	4.5	52.2
	P-122	11.65	4.5	52.425
	P-123	11.6	4.85	56.26
	P-124	11.55	4.8	55.44
	P-125	11.45	4.25	48.6625
	P-126			43.38
	P-127			8.5
	P-128			36.46
	P-129			14.74
			TOTAL	7318.43

FLIP MEMBRANE AND AD PANEL AT THE END

MELIADINE DIKE DCP-5 stage 2 dike raise

P-144	3.95	4.8	18.96
P-145	4.25	4.9	20.825
P-146	4.35	4.9	21.315
P-147	4.15	4.9	20.335
P-148	4.15	4.9	20.335
P-149	4.3	4.9	21.07
P-150	4.4	4.9	21.56
P-151	4.65	4.9	22.785
P-152	4.6	4.9	22.54
P-153	4.6	4.9	22.54
P-154	5.375	4.9	26.3375
P-155	6.025	4.9	29.5225
P-156	6.5	4.9	31.85
P-157	6.9	4.9	33.81
P-158	6.95	4.8	33.36
P-159	6.9	4.9	33.81
P-160	6.9	4.9	33.81
P-161	7.1	4.9	34.79
P-162	7.2	4.9	35.28
P-163	7.05	4.9	34.545
P-164	6.95	4.9	34.055
P-165	6.7	4.9	32.83
P-166	3.25	4.9	15.925
P-167	7.7	3.8	14.63
P-168	7.65	4.9	37.485
P-169	6.9	4.9	33.81
P-170	7	4.9	34.3
P-171	7.2	4.9	35.28
P-172	7.35	4.9	36.015
P-173	7.25	4.9	35.525
P-174	7.05	4.9	34.545
P-175	6.9	4.9	33.81
P-176	7.15	4.9	35.035
P-177	7.35	4.9	36.015
P-178	7.15	4.9	35.035
P-179	7.1	4.9	34.79
P-180	7	4.9	34.3
P-181	6.9	4.9	33.81
P-182	6.75	4.9	33.075
P-183	0	4.9	0
P-184	0	4.9	0
P-185	0	4.9	0
P-186	6.55	4.9	32.095
P-187	6.45	4.9	31.605

P-188	6.3	4.9	30.87
P-189	6.15	4.9	30.135
P-190	6.4	4.9	31.36
P-191	7	4.9	34.3
P-192	7.15	4.9	35.035
P-193	7.2	4.9	35.28
P-194	7.15	4.9	35.035
P-195	6.95	4.9	34.055
P-196	6.95	4.9	34.055
P-197	6.95	4.9	34.055
P-198	6.95	4.9	34.055
P-199	6.5	4.9	31.85
P-200	6.85	4.9	33.565
P-201	7.5	4.9	36.75
P-202	7.45	4.9	36.505
P-203	7.3	4.9	35.77
P-204	6.55	4.9	32.095
P-205	6	4.9	29.4
P-206	5.85	4.9	28.665
P-207	5.7	4.9	27.93
P-208	5.75	4.9	28.175
P-209	5.75	4.9	28.175
P-210	5.6	4.9	27.44
P-211	5.55	4.9	27.195
P-212	5.8	4.9	28.42
P-213	5.85	4.9	28.665
P-214	5.85	4.9	28.665
P-215	5.95	4.9	29.155
P-216	5.9	4.9	28.91
P-217	5.85	4.9	28.665
P-218	5.7	4.9	27.93
P-219	5.4	4.9	26.46
P-220	5.4	4.9	26.46
P-221	5.45	4.9	26.705
P-222	5.5	4.9	26.95
P-223	5.7	4.9	27.93
P-224	5.75	4.9	28.175
P-225	4.25	4.9	20.825
P-226	2.6	4.9	12.74
P-227	0	4.9	0
P-228	4.15	4.9	20.335
P-229	5.8	4.9	28.42
P-230	5.65	4.9	27.685
P-231	5.5	4.9	26.95
P-232	5.55	4.9	27.195
P-233	5.7	4.9	27.93

P-234	5.2	4.9	25.48
P-235	3.35	4.9	16.415
P-236	2.1	4.9	10.29
P-237	1.05	4.9	5.145
P-238	2.85	4.9	13.965
P-239	3.65	4.9	17.885
P-240	3.5	4.9	17.15
P-241	3.5	4.9	17.15
P-242	3.7	4.9	18.13
P-243	2.85	4.9	13.965
P-244	2	4.9	9.8
P-245	2	4.9	9.8
P-246	6.95	4.9	34.055
P-247	5.5	4.9	26.95
P-248	4.35	4.9	21.315
P-249	3.65	4.9	17.885
P-250	3.45	4.9	16.905
P-251	3.5	4.9	17.15
P-252	3.35	4.9	16.415
P-253	3.1	4.9	15.19
P-254	2.9	2.5	7.25
P-255	2.05	5	10.25
P-256	2.4	4.7	11.28
		TOTAL	2920.09

QUANTITÉ HEBDO		
DATE	PANEL	M²
27-mai	p-144 to p-171	777.695
28-mai	p-172 to p-225	1601.32
29-mai	p-226 to p-256	541.075
SOUS	TOTAL	2920.09

Trial Tests
Calibration

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Trial Test No. No. de Calibration	Date (mm/dd/yy)	Time Heure	Ambient Temp. Temp. Ambiante	Ultrasons	Shear Test Essais en Cisaillement	Shear Resistance Résist. Cisaillement (ppi)	Shear Type of Break Type de Brisure	Approved (Yes/No) Approuvé (Oui/Non)	Tech.-Welder Soudeur	Tensiometer No. No. Tensiomètre
DCP-1, Stage 1										
C-1	12-12-16	AM	-31 °C	X	X	223	BRK	Y	E.B.	T-CO-1
C-2	12-19-16	PM	-38 °C	X	X	429	BRK	Y	E.B.	T-CO-1
C-3	12-20-16	PM	-36 °C	X	X	247	BRK	Y	E.B.	T-CO-1
C-4	02-24-17	AM	-27 °C	X	X	278	BRK	Y	S.J.	T-CO-1
C-5	02-25-17	AM	-24 °C	X	X	283	BRK	Y	L.P.	T-CO-1
C-6	02-26-17	AM	-25 °C	X	X	255	BRK	Y	L.P.	T-CO-1
C-7	03-02-17	PM	-40 °C	X	X	295	BRK	Y	L.P.	T-CO-1
C-8	03-03-17	AM	-40 °C	X	X	331	BRK	Y	L.P.	T-CO-1
C-9	03-05-17	PM	-33 °C	X	X	357	BRK	Y	L.P.	T-CO-1
C-10	03-06-17	PM	-24 °C	X	X	296	BRK	Y	L.P.	T-CO-1
"	"	"	"	"	"	314	BRK	Y	"	"
"	"	"	"	"	"	339	BRK	Y	"	"
C-11	03-13-17	AM	-24 °C	X	X	372	BRK	Y	L.P.	T-CO-1
"	"	"	"	"	"	413	BRK	Y	"	"
"	"	"	"	"	"	384	BRK	Y	"	"
C-12	03-14-17	AM	-29 °C	X	X	394	BRK	Y	L.P.	T-CO-1
"	"	"	"	"	"	373	BRK	Y	"	"
"	"	"	"	"	"	309	BRK	Y	"	"

Trial Tests
Calibration

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Trial Test No. No. de Calibration	Date (mm/dd/yy)	Time Heure	Ambient Temp. Temp. Ambiante	Ultrasons	Shear Test Essais en Cisaillement	Shear Resistance Résist. Cisaillement (ppi)	Shear Type of Break Type de Brisure	Approved (Yes/No) Approuvé (Oui/Non)	Tech.-Welder Soudeur	Tensiometer No. No. Tensiomètre
C-13	03-15-17	AM	-22 °C	X	X	366	BRK	Y	L.P.	T-CO-1
"	"	"	"	"	"	359	BRK	Y	"	"
"	"	"	"	"	"	372	BRK	Y	"	"
C-14	03-16-17	AM	-15 °C	X	X	331	BRK	Y	L.P.	T-CO-1
"	"	"	"	"	"	310	BRK	Y	"	"
"	"	"	"	"	"	321	BRK	Y	"	"
C-15	03-18-17	AM	-26 °C	X	X	360	BRK	Y	L.P.	T-CO-1
"	"	"	"	"	"	404	BRK	Y	"	"
"	"	"	"	"	"	370	BRK	Y	"	"
C-16	03-19-17	AM	-21 °C	X	X	375	BRK	Y	L.P.	T-CO-1
"	"	"	"	"	"	379	BRK	Y	"	"
"	"	"	"	"	"	383	BRK	Y	"	"
C-17	03-22-17	PM	-22 °C	X	X	342	BRK	Y	L.P.	T-CO-1
"	"	"	"	"	"	331	BRK	Y	"	"
"	"	"	"	"	"	369	BRK	Y	"	"
C-18	03-24-17	AM	-30 °C	X	X	257	BRK	Y	L.P.	T-CO-1
"	"	"	"	"	"	325	BRK	Y	"	"
"	"	"	"	"	"	309	BRK	Y	"	"

Trial Tests
Calibration

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Trial Test No. No. de Calibration	Date (mm/dd/yy)	Time Heure	Ambient Temp. Temp. Ambiante	Ultrasons	Shear Test Essais en Cisaillement	Shear Resistance Résist. Cisaillement (ppi)	Shear Type of Break Type de Brisure	Approved (Yes/No) Approuvé (Oui/Non)	Tech.-Welder Soudeur	Tensiometer No. No. Tensiomètre
DCP-1, Stage 2										
C-19	05-02-17	PM	-13 °C	X	X	218	BRK	Y	P.A /O.B	T-CO-1
"	"	"	"	"	"	238	BRK	Y	"	"
"	"	"	"	"	"	308	BRK	Y	"	"
C-20	05-03-17	AM	-18 °C	X	X	300	BRK	Y	P.A /O.B	T-CO-1
"	"	"	"	"	"	313	BRK	Y	"	"
"	"	"	"	"	"	260	BRK	Y	"	"
C-21	05-04-17	AM	-13 °C	X	X	382	BRK	Y	P.A /O.B	T-CO-1
"	"	"	"	"	"	394	BRK	Y	"	"
"	"	"	"	"	"	328	BRK	Y	"	"
C-22	05-05-17	AM	-22 °C	X	X	364	BRK	Y	P.A /O.B	T-CO-1
"	"	"	"	"	"	341	BRK	Y	"	"
"	"	"	"	"	"	299	BRK	Y	"	"
C-23	05-06-17	AM	-17 °C	X	X	335	BRK	Y	P.A /O.B	T-CO-1
"	"	"	"	"	"	349	BRK	Y	"	"
"	"	"	"	"	"	333	BRK	Y	"	"
C-24	05-09-17	AM	-10 °C	X	X	318	BRK	Y	P.A /O.B	T-CO-1
"	"	"	"	"	"	316	BRK	Y	"	"
"	"	"	"	"	"	319	BRK	Y	"	"
C-25	05-10-17	AM	-3 °C	X	X	315	BRK	Y	P.A /O.B	T-CO-1
"	"	"	"	"	"	342	BRK	Y	"	"
"	"	"	"	"	"	355	BRK	Y	"	"

Trial Tests
Calibration

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Trial Test No. No. de Calibration	Date (mm/dd/yy)	Time Heure	Ambient Temp. Temp. Ambiante	Ultrasons	Shear Test Essais en Cisaillement	Shear Resistance Résist. Cisaillement (ppi)	Shear Type of Break Type de Brisure	Approved (Yes/No) Approuvé (Oui/Non)	Tech.-Welder Soudeur	Tensiometer No. No. Tensiomètre
C-26	05-11-17	AM	-2 °C	X	X	301	BRK	Y	P.A /O.B	T-CO-1
"	"	"	"	"	"	294	BRK	Y	"	"
"	"	"	"	"	"	302	BRK	Y	"	"
C-27	05-11-17	PM	2 °C	X	X	296	BRK	Y	P.A /O.B	T-CO-1
Trial with ES2/ES3			"	"	"	287	BRK	Y	"	"
"	"	"	"	"	"	321	BRK	Y	"	"
C-28	05-27-17	AM	-1 °C	X	X	257	BRK	Y	M.G /O.B	T-CO-1
"	"	"	"	"	"	215	BRK	Y	"	"
"	"	"	"	"	"	196	BRK	Y	"	"
C-29	05-28-17	AM	-2 °C	X	X	208	BRK	Y	M.G /O.B	T-CO-1
"	"	"	"	"	"	224	BRK	Y	"	"
"	"	"	"	"	"	238	BRK	Y	"	"
C-30	05-29-17	AM	2 °C	X	X	201	BRK	Y	M.G /O.B	T-CO-1
"	"	"	"	"	"	184	BRK	Y	"	"

Trial Tests
Calibration

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Trial Test No. No. de Calibration	Date (mm/dd/yy)	Time Heure	Ambient Temp. Temp. Ambiante	Ultrasons	Shear Test Essais en Cisaillement	Shear Resistance Résist. Cisaillement (ppi)	Shear Type of Break Type de Brisure	Approved (Yes/No) Approuvé (Oui/Non)	Tech.-Welder Soudeur	Tensiometer No. No. Tensiomètre
"	"	"	"	"	"	207	BRK	Y	"	"

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
DCP-1, Stage 1														
1-2	11-24-16	PM	-15°C	8.2	N/A	E.B.	11-24-16	PM			X		Full seam	Y
2-3	11-24-16	PM	-15°C	8.8	N/A	E.B.	11-24-16	PM			X		Full seam	Y
3-4	11-24-16	PM	-15°C	9.1	N/A	E.B.	11-24-16	PM			X		Full seam	Y
4-5	11-24-16	PM	-15°C	9	N/A	E.B.	11-24-16	PM			X		Full seam	Y
5-6	11-25-16	PM	-15°C	8.8	N/A	E.B.	11-25-16	PM	X		X		Ultrasound at 0.5m of WEOS	Y
6-7	11-25-16	PM	-15°C	8.9	N/A	E.B.	11-25-16	PM			X		Full seam	Y
7-8	11-25-16	PM	-15°C	9	N/A	E.B.	11-25-16	PM			X		Full seam	Y
8-9	11-25-16	PM	-15°C	8.9	N/A	E.B.	11-25-16	PM			X		Full seam	Y
9-10	11-25-16	PM	-15°C	9	N/A	E.B.	11-25-16	PM	X		X		Ultrasound at 0.5m of EEOS	Y
1-11	11-25-16	PM	-15°C	3.6	N/A	E.B.	11-25-16	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
1-12	11-25-16	PM	-15°C	4.5	N/A	E.B.	11-25-16	PM			X		Full seam	Y
11-12	11-25-16	PM	-15°C	4.5	N/A	E.B.	11-25-16	PM			X		Full seam	Y
10-13	11-28-16	PM	-15°C	8.5	N/A	E.B.	11-28-16	PM			X		Full seam	Y
13-14	11-28-16	PM	-15°C	8.5	N/A	E.B.	11-28-16	PM			X		Full seam	Y
14-15	11-28-16	PM	-15°C	8.7	N/A	E.B.	11-28-16	PM			X		Full seam	Y
15-16	11-28-16	PM	-15°C	9.1	N/A	E.B.	11-28-16	PM			X		Full seam	Y
16-17	11-28-16	PM	-15°C	9.4	N/A	E.B.	11-28-16	PM	X		X		Ultrasound at 0.5m of EEOS	Y
17-18	12-12-16	AM	-31°C	9.7	C-1	E.B.	12-12-16	PM			X		Full seam	Y
18-19	12-12-16	AM	-31°C	9.7	C-1	E.B.	12-12-16	PM			X		Full seam	Y
19-20	12-12-16	AM	-31°C	9.9	C-1	E.B.	12-12-16	PM			X		Full seam	Y
20-21	12-12-16	AM	-31°C	10.1	C-1	E.B.	12-12-16	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
21-22	12-12-16	AM	-31°C	10.8	C-1	E.B.	12-12-16	PM			X		Full seam	Y
22-23	12-12-16	AM	-31°C	11.3	C-1	E.B.	12-12-16	PM	X		X		Ultrasound at the first meter of WEOS	Y
23-24	12-12-16	PM	-26°C	10.7	C-1	E.B.	12-12-16	PM			X		Full seam	Y
24-25	12-12-16	PM	-26°C	11.6	C-1	E.B.	12-12-16	PM			X		Full seam	Y
25-26	12-12-16	PM	-26°C	11.7	C-1	E.B.	12-12-16	PM			X		Full seam	Y
26-27	12-19-16	PM	-38°C	11.6	C-2	E.B.	12-19-16	PM			X		Full seam	Y
27-28	12-19-16	PM	-38°C	12	C-2	E.B.	12-19-16	PM	X		X		Full seam	Y
28-29	12-19-16	PM	-38°C	12.5	C-2	E.B.	12-19-16	PM			X		Full seam	Y
29-30	12-19-16	PM	-38°C	12.5	C-2	E.B.	12-19-16	PM			X		Full seam	Y
30-31	12-19-16	PM	-38°C	12.4	C-2	E.B.	12-19-16	PM			X		Full seam	Y
31-32	12-19-16	PM	-38°C	12.1	C-2	E.B.	12-19-16	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
32-33	12-19-16	PM	-38°C	13.1	C-2	E.B.	12-19-16	PM			X		Full seam	Y
33-34	12-20-16	PM	-36°C	12.8	C-3	E.B.	12-20-16	PM	X		X		Ultrasound at 0.5m of WEOS	Y
34-35	12-20-16	PM	-36°C	12.4	C-3	E.B.	12-20-16	PM			X		Full seam	Y
35-36	02-24-17	PM	-27°C	13.1	C-4	S.J.	02-24-17	PM			X		Full seam	Y
36-37	02-24-17	PM	-27°C	12.6	C-4	S.J.	02-24-17	PM			X		Full seam	Y
37-38	02-24-17	PM	-27°C	12.8	C-4	S.J.	02-24-17	PM			X		Full seam	Y
38-39	02-24-17	PM	-27°C	12.1	C-4	S.J.	02-24-17	PM			X		Full seam	Y
39-40	02-24-17	PM	-27°C	12.2	C-4	S.J.	02-24-17	PM			X		Full seam	Y
40-41	02-24-17	PM	-27°C	12.2	C-4	S.J.	02-24-17	PM	X		X		Ultrasound at 0.5m of WEOS	Y
41-42	02-24-17	PM	-27°C	12	C-4	S.J.	02-24-17	PM			X		Full seam	Y
42-43	02-24-17	PM	-27°C	12.8	C-4	S.J.	02-24-17	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
43-44	02-24-17	PM	-27°C	12.7	C-4	S.J.	02-24-17	PM			X		Full seam	Y
44-45	02-24-17	PM	-27°C	12.7	C-4	S.J.	02-24-17	PM	X		X		Ultrasound at 0.5m of WEOS	Y
45-46	02-25-17	PM	-24°C	12.3	C-5	L.P.	02-25-17	PM			X		Full seam	Y
46-47	02-25-17	PM	-24°C	4	C-5	L.P.	02-25-17	PM			X		Full seam	Y
46-48	02-25-17	PM	-24°C	8.2	C-5	L.P.	02-25-17	PM			X		Full seam	Y
47-48	02-25-17	PM	-24°C	4.9	C-5	L.P.	02-25-17	PM			X		Full seam	Y
47-49	02-25-17	PM	-24°C	4.2	C-5	L.P.	02-25-17	PM			X		Full seam	Y
48-49	02-25-17	PM	-24°C	8.4	C-5	L.P.	02-25-17	PM			X		Full seam	Y
49-50	02-25-17	PM	-24°C	12.5	C-5	L.P.	02-25-17	PM			X		Full seam	Y
50-51	02-25-17	PM	-24°C	12.8	C-5	L.P.	02-25-17	PM			X		Full seam	Y
51-52	02-25-17	PM	-24°C	12.3	C-5	L.P.	02-25-17	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
52-53	02-25-17	PM	-24°C	12.2	C-5	L.P.	02-25-17	PM	X		X		Ultrasound at 0.5m of WEOS	Y
53-54	02-25-17	PM	-24°C	12.5	C-5	L.P.	02-25-17	PM			X		Full seam	Y
54-55	02-25-17	PM	-24°C	12.3	C-5	L.P.	02-25-17	PM			X		Full seam	Y
55-56	12-26-16	AM	-25°C	12.4	C-6	L.P.	02-26-17	AM			X		Full seam	Y
56-57	12-26-16	AM	-25°C	12.3	C-6	L.P.	02-26-17	AM			X		Full seam	Y
57-58	12-26-16	AM	-25°C	12.2	C-6	L.P.	02-26-17	AM			X		Full seam	Y
58-59	12-26-16	AM	-25°C	12.1	C-6	L.P.	02-26-17	AM			X		Full seam	Y
59-60	12-26-16	AM	-25°C	12	C-6	L.P.	02-26-17	AM			X		Full seam	Y
60-61	12-26-16	AM	-25°C	12	C-6	L.P.	02-26-17	AM			X	X	At 0.5m of WEOS	Y
61-62	12-26-16	PM	-25°C	12.1	C-6	L.P.	02-26-17	PM			X		Full seam	Y
62-63	12-26-16	PM	-25°C	11.9	C-6	L.P.	02-26-17	PM	X		X		Ultrasound at 0.2m of WEOS	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

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QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
63-64	12-26-16	PM	-25°C	12.3	C-6	L.P.	02-26-17	PM			X		Full seam	Y
64-65	12-26-16	PM	-25°C	11.9	C-6	L.P.	02-26-17	PM			X		Full seam	Y
65-66	12-26-16	PM	-25°C	12.2	C-6	L.P.	02-26-17	PM	X		X		Ultrasound at 0.1m of WEOS	Y
61-67	03-05-17	PM	-33°C	12.1	C-9	L.P.	03-05-17	PM	X		X		Ultrasound at 0.3m of WEOS	Y
67-68	03-05-17	PM	-33°C	12.3	C-9	L.P.	03-05-17	PM			X		Full seam	Y
68-63	03-05-17	PM	-33°C	12	C-9	L.P.	03-05-17	PM			X		Full seam	Y
66-69	03-06-17	PM	-24°C	13.5	C-10	L.P.	03-06-17	PM	X		X		Ultrasound at 4.0m of EEOS	Y
69-70	03-06-17	PM	-24°C	14.5	C-10	L.P.	03-06-17	PM			X		Full seam	Y
70-71	03-13-17	AM	-24°C	14.1	C-11	L.P.	03-13-17	AM			X		Full seam	Y
71-72	03-13-17	PM	-24°C	14	C-11	L.P.	03-13-17	PM			X		Full seam	Y
72-73	03-13-17	PM	-24°C	14.1	C-11	L.P.	03-13-17	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
73-74	03-13-17	PM	-24°C	14.4	C-11	L.P.	03-13-17	PM			X		Full seam	Y
74-75	03-13-17	PM	-24°C	14.3	C-11	L.P.	03-13-17	PM	X		X		Ultrasound at 0.1m of WEOS	Y
75-76	03-13-17	PM	-24°C	14.2	C-11	L.P.	03-13-17	PM			X		Full seam	Y
76-77	03-13-17	PM	-24°C	14.1	C-11	L.P.	03-13-17	PM			X		Full seam	Y
77-78	03-13-17	PM	-24°C	14.2	C-11	L.P.	03-13-17	PM	X		X		Ultrasound at 0.2m of WEOS	Y
78-79	03-14-17	AM	-29°C	14.8	C-12	L.P.	03-14-17	AM			X		Full seam	Y
79-80	03-14-17	AM	-29°C	14.4	C-12	L.P.	03-14-17	AM			X		Full seam	Y
80-81	03-14-17	AM	-29°C	14.5	C-12	L.P.	03-14-17	AM			X		Full seam	Y
81-82	03-14-17	AM	-29°C	14.7	C-12	L.P.	03-14-17	AM			X		Full seam	Y
82-83	03-14-17	AM	-29°C	14.4	C-12	L.P.	03-14-17	AM	X		X		Ultrasound at 2.5m of WEOS	Y
83-84	03-14-17	AM	-29°C	14.2	C-12	L.P.	03-14-17	AM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
84-85	03-14-17	AM	-29°C	14.1	C-12	L.P.	03-14-17	AM			X		Full seam	Y
85-86	03-14-17	AM	-29°C	14.6	C-12	L.P.	03-14-17	AM			X		Full seam	Y
86-87	03-14-17	PM	-29°C	14.6	C-12	L.P.	03-14-17	PM	X		X		Ultrasound at 0.3m of WEOS	Y
87-88	03-14-17	PM	-29°C	14.6	C-12	L.P.	03-14-17	PM			X		Full seam	Y
88-89	03-14-17	PM	-29°C	14.6	C-12	L.P.	03-14-17	PM			X		Full seam	Y
89-90	03-14-17	PM	-29°C	14.4	C-12	L.P.	03-14-17	PM	X		X		Ultrasound at 0.2m of WEOS	Y
90-91	03-15-17	AM	-22°C	14.5	C-13	L.P.	03-15-17	AM			X		Full seam	Y
91-92	03-15-17	AM	-22°C	14.4	C-13	L.P.	03-15-17	AM			X		Full seam	Y
92-93	03-15-17	AM	-22°C	14.1	C-13	L.P.	03-15-17	AM			X		Full seam	Y
93-94	03-15-17	AM	-22°C	14.2	C-13	L.P.	03-15-17	AM	X		X		Ultrasound at 0.2m of WEOS	Y
94-95	03-15-17	AM	-22°C	14	C-13	L.P.	03-15-17	AM			X		Full seam	Y

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Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
95-96	03-15-17	AM	-22°C	14	C-13	L.P.	03-15-17	AM			X		Full seam	Y
96-97	03-15-17	PM	-22°C	14.1	C-13	L.P.	03-15-17	PM			X		Full seam	Y
97-98	03-15-17	PM	-22°C	14.2	C-13	L.P.	03-15-17	PM	X		X		Ultrasound at 2.0m of EEOS	Y
98-99	03-15-17	PM	-22°C	14.2	C-13	L.P.	03-15-17	PM			X		Full seam	Y
99-100	03-16-17	AM	-15°C	14.9	C-14	L.P.	03-16-17	AM			X		Full seam	Y
100-101	03-16-17	PM	-8°C	14.5	C-14	L.P.	03-16-17	PM			X		Full seam	Y
101-102	03-16-17	PM	-8°C	14.6	C-14	L.P.	03-16-17	PM			X		Full seam	Y
102-103	03-16-17	PM	-8°C	14.2	C-14	L.P.	03-16-17	PM			X		Full seam	Y
103-104	03-16-17	PM	-8°C	14.2	C-14	L.P.	03-16-17	PM	X		X		Ultrasound at 3.0m of EEOS	Y
104-105	03-18-17	PM	-26°C	14.4	C-15	L.P.	03-18-17	AM			X		Full seam	Y
105-106	03-18-17	PM	-26°C	13.9	C-15	L.P.	03-18-17	AM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
106-107	03-18-17	PM	-26°C	13.9	C-15	L.P.	03-18-17	AM			X		Full seam	Y
107-108	03-18-17	PM	-26°C	14.3	C-15	L.P.	03-18-17	AM	X		X		Ultrasound at 3.0m of EEOS	Y
108-109	03-18-17	PM	-26°C	14.5	C-15	L.P.	03-18-17	AM			X		Full seam	Y
109-110	03-19-17	AM	-21°C	14.6	C-16	L.P.	03-19-17	AM			X		Full seam	Y
110-111	03-19-17	AM	-21°C	13.5	C-16	L.P.	03-19-17	AM	X		X		Ultrasound at 3.0m of EEOS	Y
111-112	03-19-17	AM	-21°C	13.4	C-16	L.P.	03-19-17	AM			X		Full seam	Y
112-113	03-22-17	AM	-22°C	13.5	C-17	L.P.	03-22-17	PM			X		Full seam	Y
113-114	03-22-17	PM	-22°C	12.4	C-17	L.P.	03-22-17	PM			X		Full seam	Y
114-115	03-22-17	PM	-22°C	12	C-17	L.P.	03-22-17	PM	X		X		Ultrasound at 3.0m of EEOS	Y
115-116	03-22-17	PM	-22°C	11.8	C-17	L.P.	03-22-17	PM			X		Full seam	Y
116-117	03-22-17	PM	-22°C	11.4	C-17	L.P.	03-22-17	PM			X		Full seam	Y

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Seaming Procedures
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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
117-118	03-22-17	PM	-22°C	12.6	C-17	L.P.	03-22-17	PM			X		Full seam	Y
118-119	03-24-17	PM	-30°C	12	C-17	L.P.	03-24-17	PM			X		Full seam	Y
119-120	03-24-17	PM	-30°C	11.8	C-17	L.P.	03-24-17	PM			X		Full seam	Y
120-121	03-24-17	PM	-30°C	11.6	C-18	L.P.	03-24-17	PM			X		Full seam	Y
121-122	03-24-17	PM	-30°C	11.6	C-18	L.P.	03-24-17	PM			X		Full seam	Y
122-123	03-24-17	PM	-30°C	11.7	C-18	L.P.	03-24-17	PM			X		Full seam	Y
123-124	03-24-17	PM	-30°C	11.5	C-18	L.P.	03-24-17	PM			X		Full seam	Y
124-125	03-24-17	PM	-30°C	11.6	C-18	L.P.	03-24-17	PM			X		Full seam	Y
125-126	03-24-17	PM	-30°C	11.3	C-18	L.P.	03-24-17	PM	X		X		Ultrasound at 3.0m of EEOS	Y
126-127	03-24-17	PM	-30°C	4.6	C-18	L.P.	03-24-17	PM	X		X		Ultrasound at 0.2m of WEOS	Y
126-128	03-24-17	PM	-30°C	7.3	C-18	L.P.	03-24-17	PM			X		Full seam	Y

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Seaming Procedures
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Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
127-129	03-24-17	PM	-30°C	5.8	C-18	L.P.	03-24-17	PM			X		Full seam	Y
128-129	03-24-17	PM	-30°C	4.9	C-18	L.P.	03-24-17	PM			X		Full seam	Y
129-126	03-24-17	PM	-30°C	1.4	C-18	L.P.	03-24-17	PM			X		Full seam	Y
DCP-1, Stage 2														
137-138	05-02-17	PM	-13°C	7.2 / 3	C-19	P.A/O.B	05-02-17	PM	X		X		Full seam Ultrasound at 5.4m EEOS	Y
136-137	05-02-17	PM	-13°C	7.3 / 3.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
135-136	05-02-17	PM	-13°C	7.2 / 3.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
134-135	05-02-17	PM	-13°C	6.9 / 2.9	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
133-134	05-02-17	PM	-13°C	6.5 / 2.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
132-133	05-02-17	PM	-13°C	6.3 / 2.2	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
131-132	05-02-17	PM	-13°C	6.1 / 2.3	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y

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Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
130-131	05-02-17	PM	-13°C	6.3 / 2.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
14-138	05-02-17	PM	-13°C	1.45	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
13-138	05-02-17	PM	-13°C	3.45	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
13-137	05-02-17	PM	-13°C	1.5	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
10-137	05-02-17	PM	-13°C	3.45	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
10-136	05-02-17	PM	-13°C	1.45	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
9-136	05-02-17	PM	-13°C	3.5	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
9-135	05-02-17	PM	-13°C	1.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
8-135	05-02-17	PM	-13°C	3.5	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
8-134	05-02-17	PM	-13°C	1.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
7-134	05-02-17	PM	-13°C	3.55	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
7-133	05-02-17	PM	-13°C	1.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
6-133	05-02-17	PM	-13°C	3.55	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
6-132	05-02-17	PM	-13°C	1.25	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
5-132	05-02-17	PM	-13°C	3.6	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
5-131	05-02-17	PM	-13°C	1.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
4-131	05-02-17	PM	-13°C	3.6	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
4-130	05-02-17	PM	-13°C	1.3	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
3-130	05-02-17	PM	-13°C	3.6	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
138-139	05-02-17	PM	-13°C	8.35 / 3.8	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
139-140	05-02-17	PM	-13°C	8.7 / 4.3	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
140-141	05-02-17	PM	-13°C	8.7 / 4.8	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
141-142	05-02-17	PM	-13°C	9.5 / 5.7	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
14-139	05-02-17	PM	-13°C	3.1	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
15-139	05-02-17	PM	-13°C	1.5	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
15-140	05-02-17	PM	-13°C	3.6	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
16-140	05-02-17	PM	-13°C	1.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
16-141	05-02-17	PM	-13°C	3.5	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
17-141	05-02-17	PM	-13°C	1.45	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
17-142	05-02-17	PM	-13°C	3.4	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
18-142	05-02-17	PM	-13°C	1.5	C-19	P.A/O.B	05-02-17	PM			X		Full seam	Y
142-143	05-03-17	AM	-18°C	9.3 / 5.3	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
143-144	05-03-17	AM	-18°C	9.4 / 5.5	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y

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Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
144-145	05-03-17	AM	-18°C	9.5 / 5.5	C-20	P.A/O.B	05-03-17	AM	X		X		Full seam Ultrasound at 5.4m WEOS	Y
145-146	05-03-17	AM	-18°C	10.4 / 5.9	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
146-147	05-03-17	AM	-18°C	10.45 / 6.2	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
147-148	05-03-17	AM	-18°C	10.3 / 6.2	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
18-143	05-03-17	AM	-18°C	3.6	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
19-143	05-03-17	AM	-18°C	1.4	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
19-144	05-03-17	AM	-18°C	3.5	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
20-144	05-03-17	AM	-18°C	1.4	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
20-145	05-03-17	AM	-18°C	3.5	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
21-145	05-03-17	AM	-18°C	1.45	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
21-146	05-03-17	AM	-18°C	3.6	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y

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22-146	05-03-17	AM	-18°C	1.35	C-20	P.A/O.B	05-03-17	AM			X		Full seam	Y
22-147	05-03-17	AM	-18°C	3.45	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
23-147	05-03-17	AM	-18°C	1.5	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
23-148	05-03-17	AM	-18°C	3.45	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
24-148	05-03-17	AM	-18°C	1.5	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
148-149	05-03-17	PM	-15°C	10.6 / 6.4	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
149-150	05-03-17	PM	-15°C	11 / 6.6	C-20	P.A/O.B	05-03-17	PM	X		X		Full seam Ultrasound at 6m of WEOS	Y
150-151	05-03-17	PM	-15°C	11.1 / 6.7	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
24-149	05-03-17	PM	-15°C	3.5	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
25-149	05-03-17	PM	-15°C	1.7	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
25-150	05-03-17	PM	-15°C	3.55	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y

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26-150	05-03-17	PM	-15°C	1.45	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
26-151	05-03-17	PM	-15°C	3.65	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
27-151	05-03-17	PM	-15°C	1.35	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
151-152	05-03-17	PM	-15°C	11.2 / 6.3	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
152-153	05-03-17	PM	-15°C	11.3 / 7	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
153-154	05-03-17	PM	-15°C	12 / 7.1	C-20	P.A/O.B	05-03-17	PM	X		X		Full seam Ultrasound at 6.3m of WEOS	Y
154-155	05-03-17	PM	-15°C	13.1 / 7.3	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
155-156	05-03-17	PM	-15°C	13.7 / 7.5	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
27-152	05-03-17	PM	-15°C	3.5	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
28-152	05-03-17	PM	-15°C	1.5	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
28-153	05-03-17	PM	-15°C	3.3	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y

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QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
29-153	05-03-17	PM	-15°C	1.6	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
29-154	05-03-17	PM	-15°C	3.4	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
30-154	05-03-17	PM	-15°C	1.6	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
30-155	05-03-17	PM	-15°C	3.45	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
31-155	05-03-17	PM	-15°C	1.55	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
31-156	05-03-17	PM	-15°C	3.5	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
32-156	05-03-17	PM	-15°C	1.5	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
156-157	05-03-17	PM	-15°C	14.1 / 7.3	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
157-158	05-03-17	PM	-15°C	14.3 / 7.3	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
158-159	05-03-17	PM	-15°C	14.7 / 7.8	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
159-160	05-03-17	PM	-15°C	14.8 / 7.9	C-20	P.A/O.B	05-03-17	PM	X		X		Full seam Ultrasound at 7m of WEOS	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
32-157	05-03-17	PM	-15°C	3.9	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
33-157	05-03-17	PM	-15°C	1	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
33-158	05-03-17	PM	-15°C	3.7	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
34-158	05-03-17	PM	-15°C	1.3	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
34-159	05-03-17	PM	-15°C	3.7	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
35-159	05-03-17	PM	-15°C	1.35	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
35-160	05-03-17	PM	-15°C	3.55	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
36-160	05-03-17	PM	-15°C	1.4	C-20	P.A/O.B	05-03-17	PM			X		Full seam	Y
160-161	05-04-17	AM	-13°C	15.3 / 8.4	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
161-162	05-04-17	AM	-13°C	16 / 8.7	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
162-163	05-04-17	AM	-13°C	16 / 8.9	C-21	P.A/O.B	05-04-17	AM	X		X		Full seam Ultrasound at 2m of WEOS	Y

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Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
36-161	05-04-17	AM	-13°C	3.5	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
37-161	05-04-17	AM	-13°C	1.4	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
37-162	05-04-17	AM	-13°C	3.55	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
38-162	05-04-17	AM	-13°C	1.45	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
38-163	05-04-17	AM	-13°C	3.5	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
39-163	05-04-17	AM	-13°C	1.4	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
163-164	05-04-17	AM	-13°C	16.2 / 9.2	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
164-165	05-04-17	AM	-13°C	16.4 / 9.5	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
39-164	05-04-17	AM	-13°C	3.45	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
40-164	05-04-17	AM	-13°C	1.55	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
40-165	05-04-17	AM	-13°C	3.2	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y

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Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
41-165	05-04-17	AM	-13°C	1.8	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
165-166	05-04-17	AM	-13°C	16.8 / 9.3	C-21	P.A/O.B	05-04-17	AM	X		X		Full seam Ultrasound at 2.5m of WEOS	Y
166-168	05-04-17	AM	-13°C	9	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
168-169	05-04-17	AM	-13°C	16.7 / 9.8	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
41-166	05-04-17	AM	-13°C	1	C-21	P.A/O.B	05-04-17	AM			X		Full seam	Y
41-168	05-04-17	AM	-13°C	1.1	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
42-168	05-04-17	AM	-13°C	2.8	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
43-168	05-04-17	AM	-13°C	1	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
43-169	05-04-17	AM	-13°C	3.2	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
44-169	05-04-17	AM	-13°C	1.65	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
169-170	05-04-17	PM	-8°C	16.6 / 9.7	C-21	P.A/O.B	05-04-17	PM	X		X		Full seam Ultrasound at 4.2m of WEOS	Y

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
170-171	05-04-17	PM	-8°C	16.9 / 9.8	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
171-172	05-04-17	PM	-8°C	16.8 / 9.5	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
172-173	05-04-17	PM	-8°C	16.5 / 9.1	C-21	P.A/O.B	05-04-17	PM	X		X		Full seam Ultrasound at 5.6m of WEOS	Y
44-170	05-04-17	PM	-8°C	3.6	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
45-170	05-04-17	PM	-8°C	1.3	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
45-171	05-04-17	PM	-8°C	3.7	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
46-171	05-04-17	PM	-8°C	1.3	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
46-172	05-04-17	PM	-8°C	3.2	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
48-172	05-04-17	PM	-8°C	1.8	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
48-173	05-04-17	PM	-8°C	3.3	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
49-173	05-04-17	PM	-8°C	1.7	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y

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Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
173-174	05-04-17	PM	-8°C	16.3 / 9.2	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
174-175	05-04-17	PM	-8°C	16.1 / 9.1	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
175-176	05-04-17	PM	-8°C	15.5 / 8.7	C-21	P.A/O.B	05-04-17	PM	X		X		Full seam Ultrasound at 3m of WEOS	Y
49-174	05-04-17	PM	-8°C	3.1	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
50-174	05-04-17	PM	-8°C	1.8	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
50-175	05-04-17	PM	-8°C	2.8	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
51-175	05-04-17	PM	-8°C	2.1	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
51-176	05-04-17	PM	-8°C	3	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
52-176	05-04-17	PM	-8°C	2.2	C-21	P.A/O.B	05-04-17	PM			X		Full seam	Y
176-177	05-05-17	PM	-10°C	16,4 / 8,9	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
177-178	05-05-17	PM	-10°C	15,7 / 8,5	C-22	P.A/O.B	05-05-17	PM	X		X		Full seam Ultrasound at 5,7m of WEOS	Y

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Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
178-179	05-05-17	PM	-10°C	15,7 / 8,6	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
179-180	05-05-17	AM	-20°C	15,7 / 8,6	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
180-181	05-05-17	AM	-20°C	15,5 / 8,6	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
181-182	05-05-17	AM	-20°C	15,4 / 8,5	C-22	P.A/O.B	05-05-17	PM	X		X		Full seam Ultrasound at 4m WEOS	Y
52-177	05-05-17	PM	-10°C	3.05	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
53-177	05-05-17	PM	-10°C	1.9	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
53-178	05-05-17	PM	-10°C	3.1	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
54-178	05-05-17	PM	-10°C	1.85	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
54-179	05-05-17	PM	-10°C	2.9	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
55-179	05-05-17	PM	-10°C	2.1	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
55-180	05-05-17	AM	-20°C	2.8	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
56-180	05-05-17	AM	-20°C	2.4	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
56-181	05-05-17	AM	-20°C	2.8	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
57-181	05-05-17	AM	-20°C	2.2	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
57-182	05-05-17	AM	-20°C	2.7	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
58-182	05-05-17	AM	-20°C	2.3	C-22	P.A/O.B	05-05-17	PM			X		Full seam	Y
130-183	05-06-17	AM	-15°C	6.7	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
183-184	05-06-17	AM	-15°C	6.8	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
184-185	05-06-17	AM	-15°C	6.6	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
3-183	05-06-17	AM	-15°C	1.1	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
2-183	05-06-17	AM	-15°C	3.9	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
2-184	05-06-17	AM	-15°C	1	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y

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Seaming Procedures
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Project Name / Nom de Projet: **Meliadine dike - DCP-1**

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
1-184	05-06-17	AM	-15°C	2.4	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
1-185	05-06-17	AM	-15°C	1.8	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
12-185	05-06-17	AM	-15°C	7.1	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
11-185	05-06-17	AM	-15°C	3.6	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
182-186	05-06-17	AM	-15°C	16,1 / 9,5	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
186-187	05-06-17	AM	-15°C	16,3 / 9,8	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
187-188	05-06-17	AM	-15°C	16,1 / 9,7	C-23	P.A/O.B	05-06-17	AM	X		X		Full seam Ultrasound at 2,9m of WEOS	Y
188-189	05-06-17	AM	-15°C	15,6 / 9,4	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
189-190	05-06-17	AM	-15°C	15,3 / 9,2	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
190-191	05-06-17	AM	-15°C	16,3 / 9,6	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
191-192	05-06-17	AM	-15°C	16,5 / 9,2	C-23	P.A/O.B	05-06-17	AM	X		X		Full seam Ultrasound at 3,2m of WEOS	Y

Seaming Procedures
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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
58-186	05-06-17	AM	-15°C	2.8	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
59-186	05-06-17	AM	-15°C	2.2	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
59-187	05-06-17	AM	-15°C	2.6	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
60-187	05-06-17	AM	-15°C	2.3	C-23	P.A/O.B	05-06-17	AM			X		Full seam	Y
60-188	05-06-17	AM	-15°C	2.65	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
61-188	05-06-17	AM	-15°C	2.4	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
61-189	05-06-17	AM	-15°C	2.4	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
67-189	05-06-17	AM	-15°C	2.7	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
67-190	05-06-17	AM	-15°C	1.5	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
68-190	05-06-17	AM	-15°C	3.4	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
68-191	05-06-17	AM	-15°C	1.8	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y

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Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
63-191	05-06-17	AM	-15°C	1.1	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
64-191	05-06-17	AM	-15°C	2.2	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
64-192	05-06-17	PM	-6°C	2.9	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
65-192	05-06-17	PM	-6°C	2.2	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
192-193	05-06-17	PM	-6°C	16,1 / 9	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
193-194	05-06-17	PM	-6°C	16,2 / 8,8	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
194-195	05-06-17	PM	-6°C	16,2 / 9,3	C-23	P.A/O.B	05-06-17	PM	X		X		Full seam Ultrasound at 6,8m of WEOS	Y
195-196	05-06-17	PM	-6°C	16,5 / 9,5	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
65-193	05-06-17	PM	-6°C	2.8	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
66-193	05-06-17	PM	-6°C	2.2	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
66-194	05-06-17	PM	-6°C	2.85	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
69-194	05-06-17	PM	-6°C	2.15	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
69-195	05-06-17	PM	-6°C	2.9	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
70-195	05-06-17	PM	-6°C	2.2	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
196-197	05-06-17	PM	-6°C	16,3 / 9,4	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
197-198	05-06-17	PM	-6°C	16,3 / 9,3	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
198-199	05-06-17	PM	-6°C	15,8 / 8,9	C-23	P.A/O.B	05-06-17	PM	X		X		Full seam Ultrasound at 3,2m of WEOS	Y
70-196	05-06-17	PM	-6°C	2.9	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
71-196	05-06-17	PM	-6°C	2.2	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
71-197	05-06-17	PM	-6°C	2.85	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
72-197	05-06-17	PM	-6°C	2.2	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
72-198	05-06-17	PM	-6°C	2.9	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y

Seaming Procedures
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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
73-198	05-06-17	PM	-6°C	2.15	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
73-199	05-06-17	PM	-6°C	2.8	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
74-199	05-06-17	PM	-6°C	2.2	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
199-200	05-06-17	PM	-6°C	15,2 / 9,1	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
200-201	05-06-17	PM	-6°C	16 / 8,4	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
201-202	05-06-17	PM	-6°C	15,8 / 8,4	C-23	P.A/O.B	05-06-17	PM	X		X		Full seam At 4m of WEOS	Y
202-203	05-06-17	PM	-6°C	15,9 / 8,4	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
74-200	05-06-17	PM	-6°C	2.8	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
75-200	05-06-17	PM	-6°C	2.35	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
75-201	05-06-17	PM	-6°C	2.8	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
76-201	05-06-17	PM	-6°C	2.1	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y

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Seaming Procedures
Procédures de Soudures

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
76-202	05-06-17	PM	-6°C	3	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
77-202	05-06-17	PM	-6°C	2	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
77-203	05-06-17	PM	-6°C	3	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
78-203	05-06-17	PM	-6°C	1.95	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
203-204	05-06-17	PM	-6°C	15,7 / 8,6	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
78-204	05-06-17	PM	-6°C	2.8	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
79-204	05-06-17	PM	-6°C	2.1	C-23	P.A/O.B	05-06-17	PM			X		Full seam	Y
142-143	05-09-17	AM	-10°C	4	C-24	P.A/O.B	05-06-17	PM			X		EEOS to 4m	Y
141-142	05-09-17	AM	-10°C	3.8	C-24	P.A/O.B	05-06-17	PM			X		EEOS to 3,8m	Y
140-141	05-09-17	AM	-10°C	3.9	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 3,9m	Y
139-140	05-09-17	AM	-10°C	4.4	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 4,4m	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
138-139	05-09-17	AM	-10°C	4.55	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 4,55m	Y
137-138	05-09-17	AM	-10°C	4.2	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 4,2m	Y
136-137	05-09-17	AM	-10°C	3.9	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 3,9m	Y
135-136	05-09-17	AM	-10°C	3.8	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 3,8m	Y
134-135	05-09-17	AM	-10°C	4	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 4m	Y
133-134	05-09-17	AM	-10°C	4.1	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 4,1m	Y
132-133	05-09-17	AM	-10°C	4.1	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 4,1m	Y
131-132	05-09-17	AM	-10°C	3.8	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 3,8m	Y
130-131	05-09-17	AM	-10°C	3.9	C-24	P.A/O.B	05-09-17	AM			X		EEOS to 3,9m	Y
204-205	05-09-17	PM	-3°C	15,1 / 9,1	C-24	P.A/O.B	05-09-17	PM			X		Full seam	Y
205-206	05-09-17	PM	-3°C	14,6 / 8,6	C-24	P.A/O.B	05-09-17	PM			X		Full seam	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
79-205	05-09-17	PM	-3°C	2.7	C-24	P.A/O.B	05-09-17	PM			X		Full seam	Y
80-205	05-09-17	PM	-3°C	2.4	C-24	P.A/O.B	05-09-17	PM			X		Full seam	Y
80-206	05-09-17	PM	-3°C	2.6	C-24	P.A/O.B	05-10-17	AM			X		Full seam	Y
81-206	05-09-17	PM	-3°C	2.3	C-24	P.A/O.B	05-10-17	AM			X		Full seam	Y
206-207	05-10-17	AM	-3°C	14,6 / 8,9	C-25	P.A/O.B	05-10-17	AM	X		X		Full seam Ultrasound at 3m of WEOS	Y
81-207	05-10-17	AM	-3°C	2.9	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
82-207	05-10-17	AM	-3°C	2.1	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
207-208	05-10-17	AM	-3°C	14,7 / 9	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
208-209	05-10-17	AM	-3°C	15,4 / 9,6	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
209-210	05-10-17	AM	-3°C	15,7 / 10	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
210-211	05-10-17	AM	-3°C	15,5 / 10	C-25	P.A/O.B	05-10-17	AM	X		X		Full seam Ultrasound at 4m WEOS	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
82-208	05-10-17	AM	-3°C	2.7	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
83-208	05-10-17	AM	-3°C	2.3	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
83-209	05-10-17	AM	-3°C	2.6	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
84-209	05-10-17	AM	-3°C	2.3	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
84-210	05-10-17	AM	-3°C	2.4	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
85-210	05-10-17	AM	-3°C	2.5	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
85-211	05-10-17	AM	-3°C	2.6	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
86-211	05-10-17	AM	-3°C	2.3	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
211-212	05-10-17	AM	-3°C	15,7 / 10	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
212-213	05-10-17	AM	-3°C	15,7 / 9,7	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
213-214	05-10-17	AM	-3°C	15,7 / 10	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y

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214-215	05-10-17	AM	-3°C	15,1 / 9,1	C-25	P.A/O.B	05-10-17	AM	X		X		Full seam Ultrasound at 3,9m of WEOS	Y
86-212	05-10-17	AM	-3°C	2.8	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
87-212	05-10-17	AM	-3°C	2.1	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
87-213	05-10-17	AM	-3°C	2.6	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
88-213	05-10-17	AM	-3°C	2.3	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
88-214	05-10-17	AM	-3°C	2.5	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
89-214	05-10-17	AM	-3°C	2.4	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
89-215	05-10-17	AM	-3°C	2.6	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
90-215	05-10-17	AM	-3°C	2.5	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
215-216	05-10-17	AM	-3°C	15,1 / 9,2	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
216-217	05-10-17	AM	-3°C	14,8 / 8,9	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y

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Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
217-218	05-10-17	AM	-3°C	15,2 / 9,4	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
218-219	05-10-17	AM	-3°C	14,7 / 9,1	C-25	P.A/O.B	05-10-17	AM	X		X		Full seam Ultrasound at 5,6m of WEOS	Y
90-216	05-10-17	AM	-3°C	2.5	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
91-216	05-10-17	AM	-3°C	2.5	C-25	P.A/O.B	05-10-17	AM			X		Full seam	Y
91-217	05-10-17	AM	-3°C	2.4	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
92-217	05-10-17	AM	-3°C	2.6	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
92-218	05-10-17	AM	-3°C	2.3	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
93-218	05-10-17	AM	-3°C	2.6	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
93-219	05-10-17	AM	-3°C	2	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
94-219	05-10-17	AM	-3°C	2.8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
219-220	05-10-17	AM	-3°C	14,1 / 8,9	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
220-221	05-10-17	AM	-3°C	14,3 / 8,7	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
221-222	05-10-17	PM	2°C	13,8 / 8,5	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
222-223	05-10-17	PM	2°C	13,8 / 8,1	C-25	P.A/O.B	05-10-17	PM	X		X		Full seam Ultrasound at 6,2m of WEOS	Y
223-224	05-10-17	PM	2°C	13,7 / 8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
224-225	05-10-17	PM	2°C	13,6 / 7,8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
94-220	05-10-17	AM	-3°C	2.2	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
95-220	05-10-17	AM	-3°C	2.7	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
95-221	05-10-17	AM	-3°C	2.3	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
96-221	05-10-17	AM	-3°C	2.6	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
96-222	05-10-17	PM	2°C	2.2	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
97-222	05-10-17	PM	2°C	2.7	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
97-223	05-10-17	PM	2°C	2.2	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
98-223	05-10-17	PM	2°C	2.8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
98-224	05-10-17	PM	2°C	2.3	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
99-224	05-10-17	PM	2°C	2.7	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
99-225	05-10-17	PM	2°C	2.2	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
100-225	05-10-17	PM	2°C	2.8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
225-226	05-10-17	PM	2°C	10,7 / 8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
226-227	05-10-17	PM	2°C	5	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
226-228	05-10-17	PM	2°C	10,5 / 8	C-25	P.A/O.B	05-10-17	PM	X		X		Full seam Ultrasound at 3m of WEOS	Y
100-226	05-10-17	PM	2°C	2.2	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
101-226	05-10-17	PM	2°C	2.8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y

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101-228	05-10-17	PM	2°C	2.1	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
102-228	05-10-17	PM	2°C	2.9	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
228-229	05-10-17	PM	2°C	13,6 / 7,8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
229-230	05-10-17	PM	2°C	13,6 / 7,8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
230-231	05-10-17	PM	2°C	13,5 / 8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
231-232	05-10-17	PM	2°C	13,5 / 8	C-25	P.A/O.B	05-10-17	PM	X		X		Full seam Ultrasound at 4m of WEOS	Y
102-229	05-10-17	PM	2°C	2.1	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
103-229	05-10-17	PM	2°C	2.9	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
103-230	05-10-17	PM	2°C	2.1	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
104-230	05-10-17	PM	2°C	2.9	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
104-231	05-10-17	PM	2°C	2.1	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
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105-231	05-10-17	PM	2°C	2.8	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
105-232	05-10-17	PM	2°C	2.1	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
106-232	05-10-17	PM	2°C	2.9	C-25	P.A/O.B	05-10-17	PM			X		Full seam	Y
232-233	05-11-17	AM	-2°C	13,8 / 8,2	C-26	P.A/O.B	05-11-17	AM			X		Full seam	Y
233-234	05-11-17	AM	-2°C	14 / 8,2	C-26	P.A/O.B	05-11-17	AM			X		Full seam	Y
106-233	05-11-17	AM	-2°C	2.4	C-26	P.A/O.B	05-11-17	AM			X		Full seam	Y
107-233	05-11-17	AM	-2°C	2.6	C-26	P.A/O.B	05-11-17	AM			X		Full seam	Y
107-234	05-11-17	AM	-2°C	2.35	C-26	P.A/O.B	05-11-17	AM			X		Full seam	Y
108-234	05-11-17	AM	-2°C	2.6	C-26	P.A/O.B	05-11-17	AM			X		Full seam	Y
234-235	05-11-17	AM	-2°C	13,1 / 8,5	C-26	P.A/O.B	05-11-17	AM	X		X		Full seam Ultrasound at 6m of WEOS	Y
108-235	05-11-17	AM	-2°C	2.4	C-26	P.A/O.B	05-11-17	AM			X		Full seam	Y

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109-235	05-11-17	AM	-2°C	2.6	C-26	P.A/O.B	05-11-17	AM			X		Full seam	Y
235-236	05-11-17	PM	4°C	10,8 / 8,7	C-26	P.A/O.B	05-11-17	PM			X		Full seam	Y
236-237	05-11-17	PM	4°C	4.9	C-26	P.A/O.B	05-11-17	PM			X		Full seam	Y
109-236	05-11-17	PM	4°C	2.3	C-26	P.A/O.B	05-11-17	PM			X		Full seam	Y
110-236	05-11-17	PM	4°C	2.6	C-26	P.A/O.B	05-11-17	PM			X		Full seam	Y
236-238	05-11-17	PM	4°C	11 / 8,9	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
238-239	05-11-17	PM	4°C	12 / 8,4	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
239-240	05-11-17	PM	4°C	12 / 8,3	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
240-241	05-11-17	PM	4°C	11,7 / 8,4	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
241-242	05-11-17	PM	4°C	11,8 / 8,1	C-27	P.A/O.B	05-11-17	PM	X		X		Full seam Ultrasound at 3,4m of WEOS	Y
242-243	05-11-17	PM	4°C	11,2 / 7,5	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
243-244	05-11-17	PM	4°C	7,7 / 5,7	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
110-238	05-11-17	PM	4°C	2.4	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
111-238	05-11-17	PM	4°C	2.6	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
111-231	05-11-17	PM	4°C	2.2	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
112-239	05-11-17	PM	4°C	2.5	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
112-240	05-11-17	PM	4°C	2.4	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
113-240	05-11-17	PM	4°C	2.6	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
113-241	05-11-17	PM	4°C	2.5	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
114-241	05-11-17	PM	4°C	2.5	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
114-242	05-11-17	PM	4°C	2.5	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
115-242	05-11-17	PM	4°C	2.4	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
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115-243	05-11-17	PM	4°C	2.4	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
116-243	05-11-17	PM	4°C	2.7	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
116-244	05-11-17	PM	4°C	2.3	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
117-244	05-11-17	PM	4°C	3.3	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
244-245	05-11-17	PM	4°C	4.9	C-27	P.A/O.B	05-11-17	PM			X		Full seam	Y
143-144	05-27-17	AM	-1°C	3.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
144-145	05-27-17	AM	-1°C	3.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
145-146	05-27-17	AM	-1°C	4	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
146-147	05-27-17	AM	-1°C	4.5	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
147-148	05-27-17	AM	-1°C	4.2	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
148-149	05-27-17	AM	-1°C	4.1	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y

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149-150	05-27-17	AM	-1°C	4.2	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
150-151	05-27-17	AM	-1°C	4.4	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
151-152	05-27-17	AM	-1°C	4.4	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
152-153	05-27-17	AM	-1°C	4.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
153-154	05-27-17	AM	-1°C	4.3	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
154-155	05-27-17	AM	-1°C	4.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
155-156	05-27-17	AM	-1°C	5.85	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
156-157	05-27-17	AM	-1°C	6.2	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
157-158	05-27-17	AM	-1°C	6.8	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
159-158	05-27-17	AM	-2°C	7	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
159-160	05-27-17	AM	-2°C	6.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y

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160-161	05-27-17	AM	-2°C	6.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
161-162	05-27-17	AM	-2°C	6.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
162-163	05-27-17	AM	-2°C	7.3	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
163-164	05-27-17	AM	-2°C	7.1	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
164-165	05-27-17	AM	-2°C	7	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
165-166	05-27-17	AM	-2°C	6.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
166-167	05-27-17	AM	-2°C	7.7	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
167-168	05-27-17	AM	-2°C	8.4	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
168-169	05-27-17	AM	-2°C	6.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
169-170	05-27-17	AM	-2°C	6.9	C-28	M.G /O.B	05-27-17	AM			X		Full seam	Y
170-171	05-27-17	AM	-2°C	7.1	C-28	M.G /O.B	05-27-17	AM	X		X		Full seam Ultrasound at 2m of EEOS	Y

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171-172	05-28-17	AM	-2°C	7.3	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
172-173	05-28-17	AM	-2°C	7.4	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
173-174	05-28-17	AM	-2°C	7.1	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
174-175	05-28-17	AM	-2°C	7	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
175-176	05-28-17	AM	-2°C	6.8	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
176-177	05-28-17	AM	-2°C	7.5	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
177-178	05-28-17	AM	-2°C	7.2	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
178-179	05-28-17	AM	-2°C	7.1	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
179-180	05-28-17	AM	-2°C	7.1	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
180-181	05-28-17	AM	-2°C	6.9	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y
181-182	05-28-17	AM	-2°C	6.9	C-29	M.G /O.B	05-28-17	AM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
182-186	05-28-17	PM	-2°C	6.6	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
186-187	05-28-17	PM	-2°C	6.5	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
187-188	05-28-17	PM	-2°C	6.4	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
188-189	05-28-17	PM	-2°C	6.2	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
189-190	05-28-17	PM	-2°C	6.1	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
190-191	05-28-17	PM	-2°C	6.7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
191-192	05-28-17	PM	-2°C	7.3	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
192-193	05-28-17	PM	-2°C	7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
193-194	05-28-17	PM	-2°C	7.4	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
194-195	05-28-17	PM	-2°C	6.9	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
195-196	05-28-17	PM	-2°C	7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
196-197	05-28-17	PM	-2°C	6.9	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
197-198	05-28-17	PM	-2°C	7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
198-199	05-28-17	PM	-2°C	6.9	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
199-200	05-28-17	PM	-2°C	6.1	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
200-201	05-28-17	PM	-2°C	7.6	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
201-202	05-28-17	PM	-2°C	7.4	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
202-203	05-28-17	PM	-2°C	7.5	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
204-205	05-28-17	PM	-2°C	7.1	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
205-206	05-28-17	PM	-2°C	6	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
206-207	05-28-17	PM	-2°C	6	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
207-208	05-28-17	PM	-2°C	5.7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
208-209	05-28-17	PM	-2°C	5.7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
209-210	05-28-17	PM	-2°C	5.8	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
210-211	05-28-17	PM	-2°C	5.7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
211-212	05-28-17	PM	-2°C	5.5	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
212-213	05-28-17	PM	-2°C	5.6	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
213-214	05-28-17	PM	-2°C	6	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
214-215	05-28-17	PM	-2°C	5.7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
215-216	05-28-17	PM	-2°C	6	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
216-217	05-28-17	PM	-2°C	5.9	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
217-218	05-28-17	PM	-2°C	5.9	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
218-219	05-28-17	PM	-2°C	5.8	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
219-220	05-28-17	PM	-2°C	5.6	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
220-221	05-28-17	PM	-2°C	5.2	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
221-222	05-28-17	PM	-2°C	5.6	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
222-223	05-28-17	PM	-2°C	5.3	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
223-224	05-28-17	PM	-2°C	5.7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
224-225	05-28-17	PM	-2°C	5.7	C-29	M.G /O.B	05-28-17	PM			X		Full seam	Y
225-226	05-29-17	AM	2°C	5.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
226-227	05-29-17	AM	2°C	2.7	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
227-228	05-29-17	AM	2°C	2.5	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
228-229	05-29-17	AM	2°C	5.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
229-230	05-29-17	AM	2°C	5.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

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QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
230-231	05-29-17	AM	2°C	5.5	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
231-232	05-29-17	AM	2°C	5.5	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
232-233	05-29-17	AM	2°C	5.6	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
233-234	05-29-17	AM	2°C	5.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
234-235	05-29-17	AM	2°C	4.6	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
235-236	05-29-17	AM	2°C	2.1	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
235-237	05-29-17	AM	2°C	1.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
237-238	05-29-17	AM	2°C	1.8	C-30	M.G /O.B	05-29-17	AM	X		X		Full seam Ultrasound at 1m of EEOS	Y
236-238	05-29-17	AM	2°C	2.1	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
238-239	05-29-17	AM	2°C	3.6	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
239-240	05-29-17	AM	2°C	3.7	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

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QC Inspector / Inspecteur CQ: **Michael Gilbert**

Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
240-241	05-29-17	AM	2°C	3.3	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
241-242	05-29-17	AM	2°C	3.7	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
242-243	05-29-17	AM	2°C	3.7	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
243-244	05-29-17	AM	2°C	2	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
244-246	05-29-17	AM	2°C	5.7	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
245-246	05-29-17	AM	2°C	2	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
246-247	05-29-17	AM	2°C	6.2	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
247-248	05-29-17	AM	2°C	4.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
248-249	05-29-17	AM	2°C	3.9	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
249-250	05-29-17	AM	2°C	3.4	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
250-251	05-29-17	AM	2°C	3.5	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
251-252	05-29-17	AM	2°C	3.5	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
252-253	05-29-17	AM	2°C	3.2	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
246-118	05-29-17	AM	2°C	4.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
246-119	05-29-17	AM	2°C	0.3	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
247-119	05-29-17	AM	2°C	3.4	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
247-120	05-29-17	AM	2°C	1.7	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
248-120	05-29-17	AM	2°C	2	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
248-121	05-29-17	AM	2°C	3	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
249-121	05-29-17	AM	2°C	1	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
249-122	05-29-17	AM	2°C	3.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
250-122	05-29-17	AM	2°C	0.3	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y

Texel GEOSOL

Seaming Procedures
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Seaming Procedures / Procédures de Soudures							Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
250-123	05-29-17	AM	2°C	4.7	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
251-124	05-29-17	AM	2°C	4.9	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
252-125	05-29-17	AM	2°C	4.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
252-126	05-29-17	AM	2°C	0.2	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
253-126	05-29-17	AM	2°C	4.2	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
254-126	05-29-17	AM	2°C	0.7	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
254-127	05-29-17	AM	2°C	1.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
255-127	05-29-17	AM	2°C	1.7	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
255-129	05-29-17	AM	2°C	5	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
256-129	05-29-17	AM	2°C	0.3	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
256-128	05-29-17	AM	2°C	4.4	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y

Seaming Procedures
Procédures de Soudures

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Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Temperature Température (°C)	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Ultrasons	Vacuum Box Boîte à Vide	Visual Inspection Inspection visuelle	Destructive test Essai destructif	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
254-253	05-29-17	AM	2°C	3	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
254-255	05-29-17	AM	2°C	2.8	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y
255-256	05-29-17	AM	2°C	2.4	C-30	M.G /O.B	05-29-17	AM			X		Full seam	Y

Total Seam Length 2673.0

Texel GEOSOL

Repair Report
Rapport de Réparation

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Repair No. / No. Réparation	Type & Dimensions / Type et Dimensions			Location of Repair / Localisation de la Réparation				Temperature (°C) / Température (°C)	Date Repaired (mm/dd/yy) / Date Réparée (mm/jj/aa)	Date Repair Verified / Date Réparée Vérifiée (mm/dd/yy)	Approved (Yes/No) / Approuvé (Oui/Non)
	Patch / Empiècement	Extrusion Weld or Bead / Soudure Extrusion	Pipe Boot / Manchon d'étanchéité	On Panel No. / Sur Panneau No.	On Seam No. / Sur Soudure No.	Intersection of Panels / Intersection des Panneaux	Sample Location / Localisation de l'échantillon				
DCP-1, Stage 1											
R-2	P2				60-61		At 0.5m of WEOS	-25 °C	02-26-17	02-26-17	Y
R-3	P3			47			(0.5m x 5.1m) At 3m of Est	-40 °C	03-02-17	03-02-17	Y
R-4	P3			52			(0.5m x 5.1m) At 3m of Est	-40 °C	03-02-17	03-02-17	Y
R-5	P3			52			(0.5m x 2.2m) At 5.5m of Est	-40 °C	03-02-17	03-02-17	Y
R-6	P3			52			(0.5m x 1.7m) At 7m of Est	-40 °C	03-02-17	03-02-17	Y
R-7	P3			53			(0.5m x 1.7m) At 3m of Est	-40 °C	03-03-17	03-03-17	Y
R-8	P3			53			(0.5m x 1.7m) At 5m of Est	-40 °C	03-03-17	03-03-17	Y
R-9	P3				63-64		At 0.5m of EEOS	-24 °C	03-06-17	03-06-17	Y
R-10	P3				63-64		At 0.5m of EEOS	-24 °C	03-06-17	03-06-17	Y
R-11	P2			64			At 1m of the East at 1.3m of the North	-24 °C	03-06-17	03-06-17	Y
R-12	P2			65			At 1.1m of the East at 1.1m of the South	-24 °C	03-06-17	03-06-17	Y
R-13	P2			65			At 1.1m of the East at 1m of the North	-24 °C	03-06-17	03-06-17	Y
R-14	P2			66			At 1m of the East at 0.8m of the South	-24 °C	03-06-17	03-06-17	Y
R-15	P2			66			At 0.5m of the East at 1.2m of the South	-24 °C	03-06-17	03-06-17	Y
R-16	P2			98			At 1.6m of the East at 1m of the North	-22 °C	03-15-17	03-15-17	Y
R-18	P2			15			At 2.2m of S14/15 and 1.4m of WEOP	-13 °C	05-02-17	05-02-17	Y
R-19	P3			16			At 1m of S16/17 and 1.4m of WEOP	-13 °C	05-02-17	05-02-17	Y
R-20	P2			18			At 1m of S18/19 and 1.3m of WEOP	-13 °C	05-02-17	05-02-17	Y
R-21	P2			22			At 1m of S21/22 and 1.5m WEOP	-13 °C	05-02-17	05-02-17	Y
R-22	P2			22			At 1m of S22/23 and 1.5m of WEOP	-13 °C	05-02-17	05-02-17	Y
R-23	P3					14-138-139		-18 °C	05-03-17	05-03-17	Y
R-24	P1				23-24		At 1.5m of WEOS	-18 °C	05-03-17	05-03-17	Y
R-25	P3			25			At 1.5m of WEOP and 2.9m of 24-25	-18 °C	05-03-17	05-03-17	Y
R-26	P2			146			At 1.6m of WEOP at 1.5m of 145-146	-18 °C	05-03-17	05-03-17	Y
R-27	P2			146			At 3.8m of WEOP at 1.5m of 145-146	-18 °C	05-03-17	05-03-17	Y

Texel GEOSOL

Repair Report
Rapport de Réparation

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Repair No. / No. Réparation	Type & Dimensions / Type et Dimensions			Location of Repair / Localisation de la Réparation				Temperature (°C) / Température (°C)	Date Repaired (mm/dd/yy) / Date Réparée (mm/jj/aa)	Date Repair Verified / Date Réparée Vérifiée (mm/dd/yy)	Approved (Yes/No) / Approuvé (Oui/Non)
	Patch / Empiècement	Extrusion Weld or Bead / Soudure Extrusion	Pipe Boot / Manchon d'étanchéité	On Panel No. / Sur Panneau No.	On Seam No. / Sur Soudure No.	Intersection of Panels / Intersection des Panneaux	Sample Location / Localisation de l'échantillon				
R-28	P2			146			At 5.8m of WEOP at 1.5m of 145-146	-18 °C	05-03-17	05-03-17	Y
R-29	P2			33			At 1.6m of WEOP at 2.1m of 32-33	-15 °C	05-03-17	05-03-17	Y
R-30	P2			34			At 1.55m of WEOS and 0.6m of 34-35	-15 °C	05-03-17	05-03-17	Y
R-31	P3			41			At 1.5m of WEOP and 0.2m of 41-42	-13 °C	05-04-17	05-04-17	Y
R-32	P2			50			At 1.6m of WEOP and 0.2m of 50-51	-8 °C	05-04-17	05-04-17	Y
DCP-1, Stage 2											
R-33	P2			177			At 0,3m of 177-178 and 2m WEOP	-20 °C	05-05-17	05-05-17	Y
R-34	P2					54-178-179		-20 °C	05-05-17	05-05-17	Y
R-35	P3			185			South West corner (0,8m x 2,2m)	-14 °C	05-06-17	05-06-17	Y
R-36	P2			186			At 0,5m 182-186 and 1,1m of WEOP	-14 °C	05-06-17	05-06-17	Y
R-37	P3			190			At 1,6m of WEOP and 2m of 190-191	-14 °C	05-06-17	05-06-17	Y
R-38	P2			190			At 0,4m of WEOP and 1m of 190-191	-14 °C	05-06-17	05-06-17	Y
R-39	P2				199-200		At 0,9m of int. 74-199-200	-14 °C	05-06-17	05-06-17	Y
R-40	P1			196		Damage by the blast	At 1,9m of 196-197 and 9,5m of WEOP	-10 °C	05-07-17	05-09-17	Y
R-41	P1			194		Damage by the blast	At 2m of 193-194 and 1,3m of WEOP	-10 °C	05-07-17	Cover by Kivalliq	Y
R-42	P1			193		Damage by the blast	At 0,8m of 192-193 and 1m WEOP	-10 °C	05-07-17	Cover by Kivalliq	Y
R-43	P1			193		Damage by the blast	At 0,8m of 192-193 and 2,5m of WEOP	-10 °C	05-07-17	Cover by Kivalliq	Y
R-44	P1			193		Damage by the blast	At 0,6m of 192-193 and 4,5m of WEOP	-10 °C	05-07-17	Cover by Kivalliq	Y
R-45	P1			192		Damage by the blast	At 0,1m of 192-193 and 8m of WEOP	-10 °C	05-07-17	05-09-17	Y
R-46	P1			192		Damage by the blast	At 0,2m of 192-193 and 9m of WEOP	-10 °C	05-07-17	05-09-17	Y
R-47	P1			192		Damage by the blast	At 1m of 192-193 and 10,7m of WEOP	-10 °C	05-07-17	05-09-17	Y
R-48	P1			193		Damage by the blast	At 1m of EEOP and 1,5m of 192-193	-10 °C	05-07-17	05-09-17	Y
R-49	P1			192		Damage by the blast	At 1m of 192-193 and 1,1m of EEOP	-10 °C	05-07-17	05-09-17	Y
R-50	P1			192		Damage by the blast	At 1,9m of of 192-193 and 4,1m EEOP	-10 °C	05-07-17	05-09-17	Y
R-51	P1			192		Damage by the blast	At 1m of 192-193 and 9,6m of WEOP	-10 °C	05-07-17	05-09-17	Y
R-52	P1			192		Damage by the blast	At 10m of WEOP and 0,8m of 192-193	-10 °C	05-07-17	05-09-17	Y

Texel GEOSOL

Repair Report
Rapport de Réparation

Project Name / Nom de Projet: **Meliadine dike - DCP-1**

Project No. / No. de Projet: **C-16203**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Repair No. No. Réparation	Type & Dimensions Type et Dimensions			Location of Repair Localisation de la Réparation				Temperature (°C) Température (°C)	Date Repaired (mm/dd/yy) Date Réparée (mm/jj/aa)	Date Repair Verified Date Réparée Vérifiée (mm/dd/yy)	Approved (Yes/No) Approuvé (Oui/Non)
	Patch Empiècement	Extrusion Weld or Bead Soudure Extrusion	Pipe Boot Manchon d'étanchéité	On Panel No. Sur Panneau No.	On Seam No. Sur Soudure No.	Intersection of Panels Intersection des Panneaux	Sample Location Localisation de l'échantillon				
R-53	P1			191		Damage by the blast	At 1m of 190-191 and 1,3m of EEOP	-10 °C	05-07-17	05-09-17	Y
R-54	P1			191		Damage by the blast	At 1m of 190-191 and 8,6m of WEOP	-10 °C	05-07-17	05-09-17	Y
R-55	P1			190		Damage by the blast	At 2,4m of 190-191 and 1,5m EEOP	-10 °C	05-07-17	05-09-17	Y
R-56	P1			190		Damage by the blast	At 1,2m of 189-190 and 2m of EEOP	-10 °C	05-07-17	05-09-17	Y
R-57	P1			189		Damage by the blast	At 0,8m of 189-190 and 4,5m EEOP	-10 °C	05-07-17	05-09-17	Y
R-58	P1			187		Damage by the blast	At 0,7m of 187-188 and 5,2m of EEOP	-10 °C	05-07-17	05-09-17	Y
R-59	P1			186		Damage by the blast	At 1,8m of 186-187 and 9,4m of WEOP	-10 °C	05-07-17	05-09-17	Y
R-60	P1			181		Damage by the blast	At 1,9m of 180-181 and 6m of EEOP	-10 °C	05-07-17	05-09-17	Y
R-61	P1			178		Damage by the blast	At 0,8m of 177-178 and 4,3m of EEOP	-10 °C	05-07-17	05-09-17	Y
R-62	P1			190		Damage by the blast	At 0,2m of 189-190 and 1,8m of WEOP	-10 °C	05-07-17	05-09-17	Y
R-63	P1			190		Damage by the blast	At 0,1m of 190-191 and 6,1m of WEOS	-8 °C	05-09-17	05-09-17	Y
R-64	P1			190		Damage by the blast	At 0,3m of 190-191 and 6,5m of WEOS	-8 °C	05-09-17	05-09-17	Y
R-65	P1			190		Damage by the blast	At 0,5m of 190-191 and 7m WEOS	-8 °C	05-09-17	05-09-17	Y
R-66	P1			87		Damage by the blast	At 0,1m of 87-88 and 0,9m of WEOP	-8 °C	05-09-17	05-10-17	Y
R-67	P1			117		Damage by the blast	At 1,4m of WEOP and 1,5m of 117-118	2 °C	05-11-17	05-11-17	Y
R-68	P2			238		Damage by the blast	At 1,1m of 236-238 and 0,5m of WEOP	2 °C	05-11-17	05-11-17	Y
R-69	P2			156			At 0.5m of P-157 at 5m of EEOP	-1 °C	05-27-17	05-27-17	Y
R-70	P3				178-179		At 7.1m of EEOS (2.8m x 0.5m)	-2 °C	05-28-17	05-28-17	Y
R-71	P3			170			At 6.9m of EEOP at 0.1m of P-190 (2m x 0.5)	-2 °C	05-28-17	05-28-17	Y
R-72	P3			189			At 2m of P-188 (6.4m x 0.5m) begin at 6.4m of EEOP to EEOP	-2 °C	05-28-17	05-28-17	Y
R-73	P1			253			At 1,2m of NEOP and 1,7m of EEOP	2 °C	05-29-17	05-29-17	Y
R-74	P1				123-250		At 1.4m of NEOS	2 °C	05-29-17	05-29-17	Y
R-75	P3					238-239-240-241	Patch (19.6m x 1.1m) patch at EEOP	2 °C	05-29-17	05-29-17	Y

CHARTE/CHART : Empièсement/Patch (**P1** 0.3m à/to 0.6m; **P2** 0.6m à/to 1m; **P3** over 1m et plus), Extrusion (**E**), Embout/Pipe Boot (**B**), Cap strip (**CS**), Doublure/Reinforcement (**DB**) et/and Reconstruction