Defence Construction Canada on behalf of the Department of National Defence

Water Use Licence Amendment
DYE-M, Cape Dyer Landfill Monitoring

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1.0 Post Construction Monitoring Program

1.1 Introduction

DYE-M is a former Distant Early Warning Line (DEW Line) site, located at Cape Dyer, Nunavut, on the Cumberland Peninsula on the easternmost point of Baffin Island. It is bordered by Davis Strait and Coronation Gulf, at 66° 40' N, 61° 21' W. The DYE-M station is currently operated by Canada's Department of National Defence (DND) as a North Warning System (NWS) long-range radar (LRR) site.

The landscape at DYE-M is variable in makeup consisting of a narrow coastal region along the southwest perimeter of the map area; broad glacial U-shaped valleys and broad, sub-rounded hills within the interior; and boulder-covered volcanic and metamorphic uplands, bound, in part, by sheer cliff walls along the eastern coast. Extensive patterned ground, particularly evident within the valley till sheets and frost shattered bedrock, common at higher elevations, are among the more prominent periglacial features (UMA, 1991).

The elevation varies from less than 300 m to over 500 m above sea level. The station is about 15 km inland from the Sunneshine Fiord shore. The site is divided into three areas: Upper Site, Lower Site and Beach Area. The main site facilities (the Upper Site) are located a top a summit, approximately 16 km east-northeast of the Airstrip and Lower Site Area.

The main DEW Line site is connected by road to the Lower Site where petroleum, oil, and lubricants (POL) storage, vehicle maintenance, and airstrip facilities were located. The Beach Area facilities consist of POL storage facilities, and open storage areas. The DYE-M site is currently operated as a North Warning Long Range Radar (LRR) site.

1.2 Background

The former DEW Line site was comprised of communications, accommodations and maintenance facilities. In 1993, when the site was upgraded to an unmanned LRR site as part of the NWS, much of the station infrastructure was no longer required, and most buildings were subsequently abandoned. Only those structures required to support the site and house the remotely operated communications systems are still in use.

The initial clean-up of DYE-M took place over a period of six years from 2004 to 2009. The Part II Remediation and continued clean-up of DYE-M took place over a period of three years, from 2011 to 2013.

There are 13 landfill sites at the DYE-M that are included in this landfill monitoring program.

- Lower Site Tier II Disposal Facility
- Lower Site Non-Hazardous Waste Landfill
- Lower Site Powerhouse Landfill

- Lower Site Crossroads Landfill
- Lower Site Foundation Landfill
- Lower Site NWS Landfill
- Upper Site Tier II Disposal Facility
- Upper Site Non-Hazardous Waste Landfill
- Upper Site Helipad Regrade
- Upper Site NWS Landfill
- Upper Site South Landfill West
- Upper Site West Landfill
- Upper Site Pallet Line Landfill

1.3 Objective

The objective of the landfill monitoring program is to collect sufficient information to assess the performance of the landfills from a geotechnical and environmental perspective. The landfill monitoring plan specifies the requirements for visual inspection, and chemical and thermal monitoring of landfills at the DEW Line sites under DND's jurisdiction.

2.0 Program Components

The post-construction landfill monitoring program consists of four main components to measure the performance of the landfills, depending on the remediation plan for each landfill. These components are visual, soil, groundwater and thermal monitoring. Details on each of the monitoring components are provided below.

2.1 Visual Monitoring

The physical integrity of the landfill is inspected and reported using hand-drawn sketches. The documented observations include:

- settlement
- erosion
- frost action
- animal burrows
- vegetation reestablishment on surface
- staining
- vegetation stress
- seepage points or ponded water
- debris exposure

2.2 Soil and Groundwater Monitoring

The soil and groundwater program consists of baseline/background assessment and contaminant evaluation. Background conditions represent soil and water quality from an area not impacted by the landfill. Background (naturally occurring) values are obtained from samples collected from areas that were not directly influenced by activities at the DEW Line site, but are indicative of the prevailing geochemistry. These samples are taken hydraulically up-gradient and at some distance from the landfill.

Soil and groundwater samples (where required) are collected prior to construction/closure of a landfill, to represent background as well as baseline conditions. The results of subsequent landfill monitoring events are compared to these baseline and background values to evaluate any potential changes in environmental conditions.

In general, at least one monitoring well is installed up-gradient and two to three wells are installed down-gradient of the landfill during the construction phase. Using water elevation data from a minimum of three wells allows assessment of the hydraulic gradient and flow velocities. Review of analytical data from water samples collected from wells up and down-gradient allows evaluation of potential impacts associated with the landfill. Soil samples are collected from the toe of the landfill, generally from the same locations as the monitoring wells. Contamination in soil samples at the toe of the landfill reflects chronic input from water that may have infiltrated the landfill, and is an important factor of contaminated leachate.

2.2.1 Soil Sampling

The soil monitoring program has the following requirements:

- Soil samples are to be collected from 0 to 15 cm depth and at 40 to 50 cm depth, at the locations as indicated on the Drawings. If the specified sampling depth cannot be achieved, a sample shall be collected at or near the zone of refusal.
- When collecting soil samples at monitoring well locations, the soil samples are to be collected within a 2 • 4 metre radius of the monitoring well. Samples are not to be collected immediately adjacent to the well.
- Soil samples are to be collected with contaminant free utensils and stored in contaminant free containers that are appropriate for subsequent analytical use. Sampling utensils are to be thoroughly cleaned between each sampling episode and rinsed with distilled water. Alternatively, single use sampling utensils may be used.
- Soil samples are to be analyzed for the following constituents:
  - PCBs (polychlorinated biphenyls – Total Aroclor analysis);
  - Total Petroleum Hydrocarbons (TPH), as represented as the total of F1 (nC6 to C10), F2 (nC10 to nC16) and F3 (nC16 to C34) as defined by CCME Tier I Method – Rev. 5 Analysis of Petroleum Hydrocarbons in Soil; and
  - Inorganic elements: arsenic, cadmium, chromium, cobalt, copper, lead, nickel, zinc, and mercury.

2.2.2 Groundwater Sampling

The groundwater monitoring program has the following requirements:

- Monitoring wells are to be purged prior to sampling, maintaining a purge rate at 100 mL/min or less.
- Conductivity, pH, and temperature are to be monitored during purging. Groundwater samples are to be collected when values for these parameters have stabilized and at least one well volume has been purged.
- Final conductivity, pH, temperature and turbidity are to be recorded prior to collection of the groundwater sample.
- Sample bottles are to be filled during a single collection event.
- Groundwater samples are to be collected at the well locations as indicated on the Figures.
- The following groundwater analyses are required. It should be noted that where well volumes do not meet minimum requirements for sample volumes, the sampling is prioritized in the following order:
  - Inorganic elements – total concentrations: arsenic, cadmium, chromium, cobalt, copper, lead, nickel, zinc and mercury. Samples are not to be filtered.
  - PCBs (polychlorinated Biphenyls – Total Aroclor analysis).
  - Total Petroleum Hydrocarbons (TPH) Carbon Range C6 to C34.

2.3 Thermal Monitoring

Geothermal analysis are carried out as part of the design to predict the length of time required for permafrost aggradation through landfills requiring leachate containment, including the Tier II Soil Disposal Facility. These analyses also provided information on the long and short term thermal regime in the ground, and the depth of the active layer in the cover material.

A thermal monitoring system provides measurement of subsurface ground temperatures, which allows comparison to and verification of the predicted ground temperatures. The thermal monitoring system consists of installation of thermistor strings, with thermistor beads at selected intervals to provide ground temperature profiles at various locations within the landfill. The thermistor strings are attached to automated dataloggers that allow for remote data collection. In general, a minimum of three thermistors are installed at each landfill where permafrost aggradation through the landfill contents is an integral part of the design.
The following are the requirements of the thermal monitoring program:

- The data is to be retrieved from the ground temperature data using a personal computer equipped with the appropriate software and the programming file from the specific datalogger. The programming file will be supplied by DND.
- The data is to be translated and view in the field to ensure completeness.
- Manual readings of the thermistor using a digital readout that is compatible with the thermistors or a multimeter and a switch box are to be collected.
- For the first monitoring event completed by the Consultant, the distance of the thermistor cable above ground is to be measured.
- A sketch to indicate the location of each cable is to be prepared.
- The datalogger memory will be reset memory to zero and restart readings. The system will be monitored using the personal computer to verify that thermistors are being measured.

2.4 Frequency

The landfill monitoring program consists of three phases, as described in detail below.

2.4.1 Phase I

Phase I involves monitoring of conditions to confirm that equilibrium is achieved. The frequency of monitoring events during Phase I monitoring is dependent on the closure or remediation design at specific landfills. The five year term was selected on the basis that ground temperature thermal regimes at specific landfills will require three to five years to reach equilibrium. Typically, the remaining landfills are not required to be monitored every year in the first five years; however, because the Tier II Disposal Facility requires yearly monitoring, it is only prudent to complete the monitoring of the other landfills while on site.
An evaluation of all Phase I data is carried out at the end of five years to confirm that thermal and chemical equilibrium is achieved, and that no stability issues are identified. The Phase I monitoring program may be extended, if required, to provide sufficient data to establish equilibrium conditions.
The first year of the Phase I post construction monitoring is completed by the Environmental Sciences Group (ESG) of the Royal Military College of Canada, who are part of the DEW Line Clean-Up Project Team. Subsequent landfill monitoring events are carried out by independent contractors, who successfully win the competitive tender.

2.4.2 Phase II

Phase II monitoring is the verification of equilibrium conditions established in Phase I. The monitoring frequency in Phase II is downgraded from Phase I and will be carried out according to the following schedule: year 7, 10, 15 and 25. Year 25 marks the end of Phase II monitoring.

2.4.3 Phase III

Phase III involves the monitoring for longterm issues such as liner integrity, permafrost stability and significant storm events. At the end of the Phase II program, 25 years after construction, a re-evaluation of the landfill monitoring program will be carried out prior to initiating any Phase III program. The scope of the Phase III monitoring program is not included here, but is anticipated to be based on a 10 year monitoring interval.

2.5 Review and Evaluation Process

An Environmental Working Group (EWG) was established to provide a technical report and to support the DLCU Steering Committee. This working group is comprised of qualified engineering and environmental scientists with expertise in environmental remediation and clean-up in northern climates. The EWG has four designated representatives, two from each of the Owner (DND) and the Inuit (through the NTI), respectively.

During the monitoring program, the EWG reviews the results of the monitoring program in accordance with the methodology as described previously. The results of the review and any recommendations regarding changes to the monitoring plan and/or remediation requirements are reported to the DND/NTI Steering Committee.

The requirement for further monitoring after 25 years is evaluated. Monitoring may be terminated if the performance of the landfill was satisfactory over the period of monitoring from an environmental, geotechnical and thermal perspective, as appropriate. The assessment of satisfactory performance is carried out jointly by the NTI and DND.

3.0 Detailed Landfill Monitoring Requirements

The following sections provide a summary and the detailed monitoring requirements for each landfill at DYE-M.

DYE-M Landfill Monitoring Requirements – Table 1.

Landfill	Visual inspection	Soil sampling	Groundwater sampling	Thermal monitoring
Lower Site Tier II Disposal Facility	✓	✓	✓	✓
Lower Site NHWL	✓	✓	✓	✓
Lower Site Powerhouse Landfill	✓	✓	✓	✓
Lower Site Crossroads Landfill	✓	✓		
Lower Site Foundation Landfill	✓	✓		
Lower Site NWS Landfill	✓	✓		
Upper Site Tier II Disposal Facility	✓	✓	✓	✓
Upper Site NHWL	✓	✓	✓	✓
Upper Site Helipad Regrade	✓	✓		
Upper Site NWS Landfill	✓	✓		
Upper Site South Landfill West	✓	✓		
Upper Site West Landfill	✓	✓		
Upper Site Pallet Line Landfill	✓	✓		

DYE-M Monitoring Schedule – Table 2.

Monitoring Schedule – DYE-M Cape Dyer		
No. of Years After Construction	Monitoring Event Number	Year
Prior to/During:	Baseline	
1	1	2014
2	2	2015
3	3	2016
4	4	2017
5	5	2018
7	6	2020
10	7	2023
15	8	2028
25	9	2038

Monitoring Frequency and Parameters as it pertains to Sample Type – Table 3.

Sample Type	**Frequency**	**Parameters**
Visual	Once per year in years 5, 7, 10, 15, 25 postconstruction	N/A
Groundwater	Once per year in years 5, 7, 10, 15, 25 postconstruction	Total Arsenic
		Total Cadmium
		Total Chromium
		Total Cobalt
		Total Copper
		Total Lead
		Total Nickel
		Total Zinc
		Total Mercury
		PCB's
		Total Petroleum Hydrocarbons(TPH)(C_6-C_{32})
Soil	Once per year in years 5, 7, 10, 15, 25 postconstruction	PCB's
		TPH as F1(C_6-C_{10})
		TPH as F2(C_{10}-C_{16})
		TPH as F3(C_{16}-C_{34})
		Arsenic

		Cadmium
		Chromium
		Cobalt
		Copper
		Lead
		Nickel
		Zinc
		Mercury

3.1 Lower Site Tier II Disposal Facility

The Lower Site (LS) Tier II Disposal Facility is located northwest of the crossroad area, along the road to the LS North Warning System (NWS) Landfill. The facility was designed to contain contaminated soil exceeding DLCU Tier II criteria excavated from the lower site areas. The design of this facility was based on the characteristics of the contaminants in the soil, the geothermal properties of the area, and the local permafrost regime. Permafrost provides the primary containment barrier: both the Tier II-contaminated soil in the facility and the wet, silty gravel perimeter berms were designed to be continuously frozen. The monitoring program at the Tier II Disposal Facility consists of visual inspection of physical features, soil and groundwater sampling, as well as collection of thermal data.

Lower Site Tier II Disposal Facility Sampling Locations – Table 4.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
MW05-13 (soil and groundwater)	7388341.9	561968.6	331.3
MW05-15 (soil and groundwater)	7388319.1	561788.8	328.5
MW05-16 (soil and groundwater)	7388147.7	561876.5	337.5
MW12-01(soil and groundwater)	7388361.7	561888.3	328.6
VT-1 (temperature)	7388321.9	561880.9	336.3
VT-2 (temperature)	7388235.5	561836.6	339.4
VT-3 (temperature)	7388281.8	561927.1	339.4
VT-4 (temperature)	7388184.4	561861.4	340.4

3.2 Lower Site Non-Hazardous Waste Landfill

The Lower Site NWS Landfill was created during DEW Line operations. The landfill is located approximately 1.5 km northwest of the lower camp facilities, 100 m west of the lower camp

road. The primary toe of the landfill is less than 20 m from a river that flows north into Exeter Bay. The overall gradient of the surrounding area tends to descend towards the southwest, in the direction of the river and Exeter Bay. The landfill and the disturbed area immediately around the landfill have sparse vegetation (<20%). The landfill is underlain by sand and gravel down to boulders and bedrock at varying depths. The landfill was assessed as posing a low environmental risk, and the remediation design was to regrade the surface with clean fill; this was completed in 2008.

Lower Site Non-Hazardous Waste Landfill Sampling Locations – Table 5.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
MW05-09 (soil and groundwater)	7387070.2	563034.5	372.6
MW05-12 (soil and groundwater)	7387075.3	563106.6	371.7
MW09-26 (soil and groundwater)	7386910.8	563062.9	373.8
MW09-27 (soil and groundwater)	7386963.5	562926.1	373.0
MW09-28 (soil and groundwater)	7387018.0	562933.5	373.1

3.3 *Lower Site Powerhouse Landfill*

The Lower Site Powerhouse Landfill was created during DEW Line operations. It is located northwest of the lower camp hangar and southeast of the Foundation Landfill. Soils consist of sand and gravel to frozen ground (ESG 2002a). The Powerhouse Landfill was assessed as posing a moderate environmental risk and the remediation design consisted of installation of a leachate containment liner and capping of the surface with clean granular material.

Lower Site Powerhouse Landfill Sampling Locations – Table 6.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
MW05-09 (soil and groundwater)	7387070.2	563034.5	372.6
MW05-05 (soil and groundwater)	7387493.0	562718.8	364.1
MW-05-06 (soil and groundwater)	7387511.2	562779.2	363.7
MW-05-07 (soil and groundwater)	7387471.1	562811.4	364.5
MW05-08 (soil and groundwater)	7387401.8	562748.1	365.5
VT-5 (temperature)	7387478.1	562757.9	368.0
VT-6 (temperature)	7387454.4	562755.9	369.5
VT-7 (temperature)	7387448.9	562789.8	367.6

3.4 Lower Site Crossroads Landfill and Lower Site Foundation Landfill

The Lower Site Crossroads Landfill was created during DEW Line operations. The landfill is located northwest of the lower camp hangar, in an area of tundra southeast of the landfarm and east of the Lower Site access road. The area has moderate (<50%) vegetation cover. The area is underlain by sand and gravel to frozen ground (ESG 2002a). The landfill was assessed as posing a low environmental risk and was regraded in 2007.

The Lower Site Foundation Landfill was created during DEW Line operations. The landfill is located southeast of the Crossroads Landfill, and north of the Powerhouse Landfill. The surrounding tundra has a moderate amount of vegetation (50 to 60%) with poorly defined drainage. The area is underlain by sand and gravel to frozen ground (ESG 2002a). The landfill was assessed as posing a low environmental risk and the remediation design was to regrade the surface of the landfill by adding clean fill. The landfill was
regraded in 2008.

Lower Site Crossroads Landfill and Lower Site Foundation Landfill Sampling Locations – Table 7.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
DM-01 (soil)	562645.028	7387618	
DM-02 (soil)	562572.659	7387637	
DM-03 (soil)	562597.642	7387678	
DM-04 (soil)	562762.668	7387533	
DM-05 (soil)	562704.511	7387597	
DM-06 (soil)	562762.264	7387622	
DM-01 (soil)	562645.028	7387618	
DM-02 (soil)	562572.659	7387637	

3.5 Lower Site NWS Landfill

The Lower Site NWS Landfill was created during DEW Line operations. The landfill is located approximately 1.5 km northwest of the lower camp facilities, 100 m west of the lower camp road. The primary toe of the landfill is less than 20 m from a river that flows north into Exeter Bay. The overall gradient of the surrounding area tends to descend towards the southwest, in the direction of the river and Exeter Bay. The landfill and the disturbed area immediately around the landfill have sparse vegetation (<20%). The landfill is underlain by sand and gravel down to boulders and bedrock at varying depths. The landfill was assessed as posing a low environmental risk, and the remediation design was to regrade the surface with clean fill; this was completed in 2008.

Lower Site NWS Landfill Sampling Locations – Table 8.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
DM-07 (soil)	561374.396	7388950	
DM-08 (soil)	561453.094	7388941	
DM-09 (soil)	561459.603	7388905	
DM-10 (soil)	561419.871	7388888	

3.6 Upper Site Tier II Disposal Facility

The Upper Site (US) Tier II Disposal Facility is located on the south side of the road to the Upper Site, approximately 600 m west of the Pallet Line Landfill (ESG 2002b). The facility was designed to contain contaminated soil exceeding DLCU Tier II criteria excavated from the upper site areas. The design of this facility was based on the characteristics of the contaminants in the soil, the geothermal properties of the area, and the local permafrost regime. Permafrost provides the primary containment barrier: both the Tier II-contaminated soil in the facility and the wet, silty gravel perimeter berms were designed to be continuously frozen.

Upper Site Tier II Disposal Facility Sampling Locations – Table 9.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
MW07-22 (soil and groundwater)	7394674.6	571164.7	648.5
MW07-23 (soil and groundwater)	7394521.5	571120.1	638.2
MW08-24 (soil and groundwater)	7394583.7	571023.4	636.1
MW08-25 (soil and groundwater)	7394664.9	571009.6	635.1
MW12-02 (soil and groundwater)	7394707.4	571095.9	642.3
VT-8 (temperature)	7394615.5	571051.5	645.4
VT-9 (temperature)	7394558.0	571088.7	645.5
VT-10 (temperature)	7394609.0	571121.0	648.2
VT-11 (temperature)	7394655.5	571132.2	648.9
VT-BU (temperature)	7394470.7	571142.6	636.9

3.7 Upper Site Non-Hazardous Waste Landfill

The Upper Site Non-hazardous Waste Landfill (US NHWL) is located on the north side of the road to the Upper Site, adjacent to the NWSO warehouse. The NHWL was built for the disposal of non-hazardous demolition materials and wastes generated during the cleanup operations at the upper site.

Upper Site Non-Hazardous Waste Landfill Sampling Locations – Table 10.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
MW06-18	7395066.5	572282.3	725.6
MW06-19	7395142.0	572112.7	722.5
MW06-20	7395203.3	572222.0	720.6
MW07-21	7395177.9	572300.7	721.7

3.8 Upper Site Helipad Regrade

The Upper Site Helipad Regrade Area is located between the existing helipad and the south side of the station pad. It is a former landfill that was created during DEW Line operations. The Upper Site Helipad Regrade Area was determined to pose a low environmental risk and was regraded with clean fill in 2008 during the remediation of DYE-M.

Upper Site Helipad Regrade Sampling Locations – Table 11.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
DM-11 (soil)	572704.268	7394825	
DM-12 (soil)	572750.11	7394843	
DM-13 (soil)	572757.098	7394815	
DM-14 (soil)	572733.231	7394791	
DM-15 (soil)	572710.699	7394764	
DM-16 (soil)	572684.356	7394776	
DM-17 (soil)	572654.283	7394798	

3.9 Upper Site NWS Landfill

The Upper Site NWS Landfill is located southwest of the Station Area, on the west side of the road. The Upper Site NWS Landfill was created during DEW Line operations. The area has very little vegetative cover (<20%) (ESG 2002b). The Upper Site NWS Landfill was assessed as posing a low environmental risk and was regarded with clean fill in 2008 during the remediation of DYE-M.

Upper Site NWS Landfill Sampling Locations – Table 12.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
DM-18 (soil)	572599.06	7394733	
DM-19 (soil)	572597.69	7394632	
DM-20 (soil)	572561.12	7394659	
DM-21 (soil)	572522.622	7394689	
DM-22 (soil)	572492	7394701	

3.10 Upper Site South Landfill West

The Upper Site South Landfill West is located 60 m south and downgradient of the Upper Site NWS Landfill. The Upper Site South Landfill West was created during DEW Line operations. The landfill was assessed as posing a low environmental risk and was regraded with clean fill in 2008 during the remediation of DYE-M.

Upper Site South Landfill West Sampling Locations – Table 13.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
DM-23 (soil)	572576.232	7394632	
DM-24 (soil)	572616.992	7394547	
DM-25 (soil)	572564.604	7394550	
DM-26 (soil)	572518.255	7394548	
DM-27 (soil)	572481.628	7394519	
DM-28 (soil)	572450.218	7394547	
DM-29 (soil)	572453.717	7394591	
DM-30 (soil)	572493.067	7394618	

3.11 Upper Site West Landfill

The Upper Site West Landfill is located 800 m west of the Station Area on the north side of the road. The Upper Site West Landfill was created during DEW Line operations. The surface of the landfill was covered with s and gravel. Vegetative cover on the surface and in the surrounding area is sparse (ESG 2002b). The West Landfill consisted originally of six lobes: West Lobe RA-11, West Lobe RA-12, West Lobe RA-13, Centre Lobe RA-14, East Lobe RA-15 and East Lobe RA-16. The landfill was assessed as posing a low environmental risk and was regraded with clean fill between 2008 and 2012, and additional work completed in 2013. Excavation of two areas of

West Lobe RA-12 took place in 2009, and excavation of all of West Lobe RA-13 took place in 2011 and 2012.

Upper Site West Landfill Sampling Locations – Table 14.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
West Landfill – West Lobe			
DM-31 (soil)	571167.754	7394956	
DM-32 (soil)	571095.353	7394900	
DM-33 (soil)	571075.602	7394960	
DM-34 (soil)	571141.83	7395021	
DM-35 (soil)	571361.62	7394934	
DM-36 (soil)	571282.671	7394933	
DM-37 (soil)	571202.845	7394924	
DM-38 (soil)	571236.698	7395054	
DM-39 (soil)	571356.89	7395039	
West Landfill – Centre Lobe, Centre Lobe A, and East Lobe			
DM-40 (soil)	571548.633	7395002	
DM-41 (soil)	571450.69	7395000	
DM-42 (soil)	571389.451	7395042	
DM-43 (soil)	571427.371	7395083	
DM-44 (soil)	571480.852	7395114	
DM-45 (soil)	571556.452	7395113	
DM-46 (soil)	571623.577	7395113	
DM-47 (soil)	571694.121	7395054	
DM-48 (soil)	571671.568	7395124	
DM-49 (soil)	571733.413	7395108	
DM-50 (soil)	571697.759	7394986	
DM-51 (soil)	571627.827	7394974	

3.12 Upper Site Pallet Line Landfill

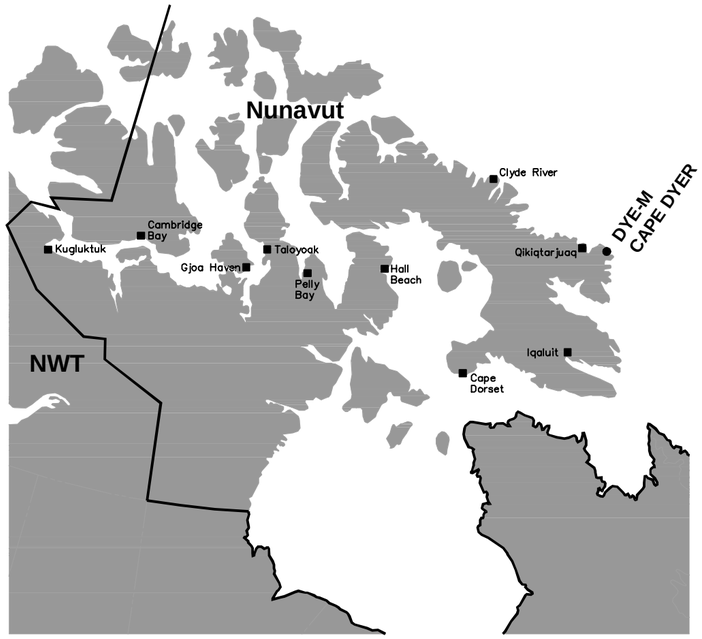
The Upper Site Pallet Line Landfill is located approximately 800 m west of the Station Area and on the southern side of the road from the West Landfill. The Upper Site Pallet Line Landfill was created during DEW Line operations. The area was a flat sand and gravel pad (ESG 2002b). The Upper Site Pallet Line Landfill consists of multiple lobes (Lobes 1–5 and the Abandoned Lobe), which were assessed as posing a low environmental risk and were regraded with clean fill in

2008 and 2009 during the remediation of DYE-M. The monitoring program consists of soil monitoring. Lobe 5 does not require monitoring.

Note: monitoring locations DM-50 and DM-51 overlap between the Upper Site Pallet Line Landfill, and the West Landfill.

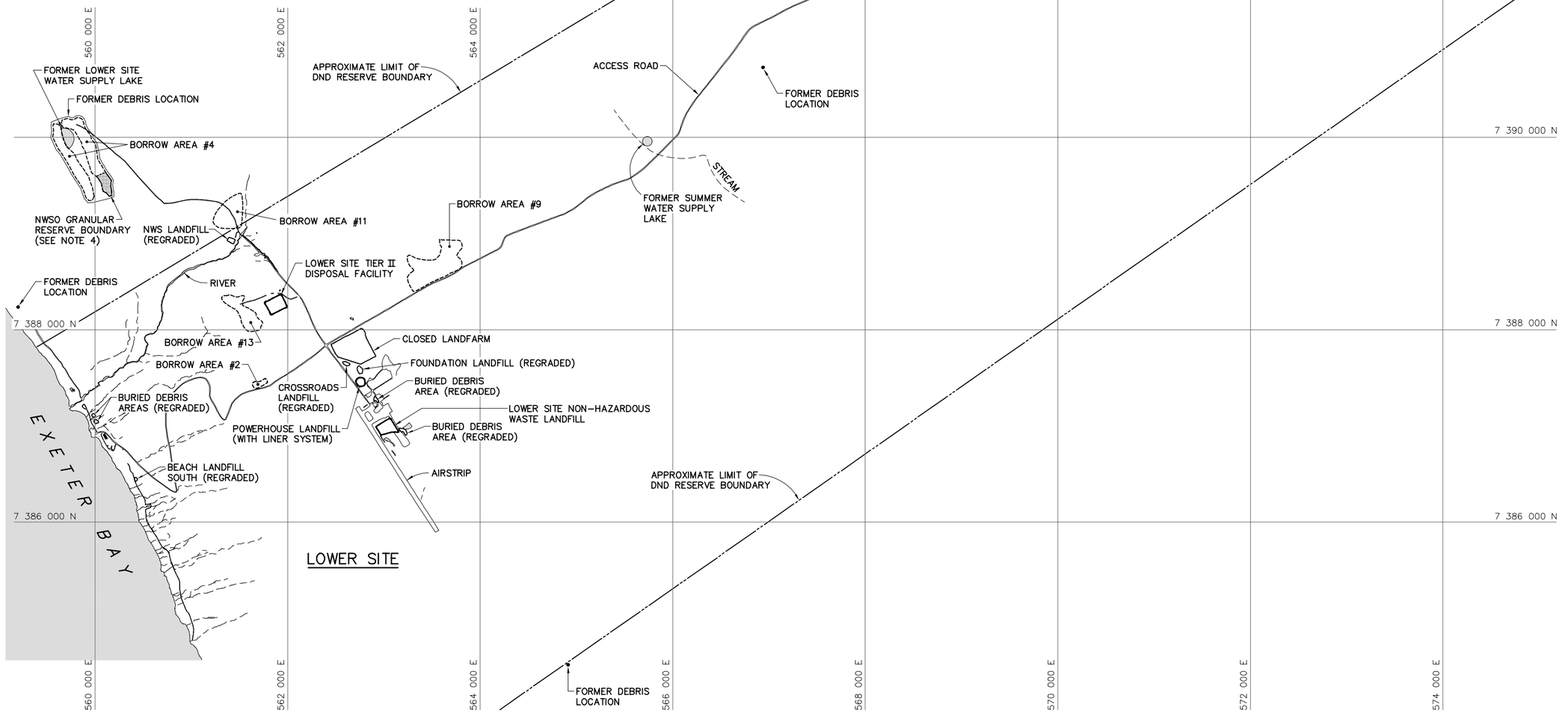
Upper Site Pallet Line Landfill Sampling Locations – Table 15.

	Coordinates[1]		Elevation
Landfill Designation/Monitoring Locations	**North (m)**	**East (m)**	**(masl)**
DM-52 (soil)	571644.612	7395024	
DM-53 (soil)	571759.44	7394991	
DM-54 (soil)	571668.174	7394853	
DM-55 (soil)	571545.453	7394827	
DM-56 (soil)	571530.238	7394764	
DM-57 (soil)	571588.149	7394753	
DM-58 (soil)	571730.936	7394774	
DM-59 (soil)	571793.514	7394751	
DM-60 (soil)	571935.96	7394953	
DM-61 (soil)	571874.745	7394822	
DM-62 (soil)	571858.082	7394767	



LOCATION OF CAPE DYER WITHIN NUNAVUT TERRITORY

SCALE: NTS



General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL NON-HAZARDOUS DEBRIS REMOVED WITHIN THE PLAN AREA WAS PLACED IN THE NON-HAZARDOUS WASTE LANDFILLS.
4. ALL POL LINES, POWER CABLES, COMMUNICATION CABLES AND ASSOCIATED MARKERS FROM THE BEACH AREA TO THE UPPER SITE AREA WERE REMOVED.
5. NWSO GRANULAR RESERVE WAS NOT AVAILABLE FOR USE BY THE CONTRACTOR.
6. ALL LONG RANGE RADAR (LRR) FACILITIES WERE OPERATIONAL AND NOT DISTURBED.

Legend:

- APPROXIMATE LOCATION OF PROPERTY BOUNDARIES
- APPROXIMATE EXTENT OF BORROW AREAS
- BODY OF WATER

National Defence / Défense nationale

Headquarters
Quartier général

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 400 200 0 400 800 1200m

PROJECT – PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2014-04-23

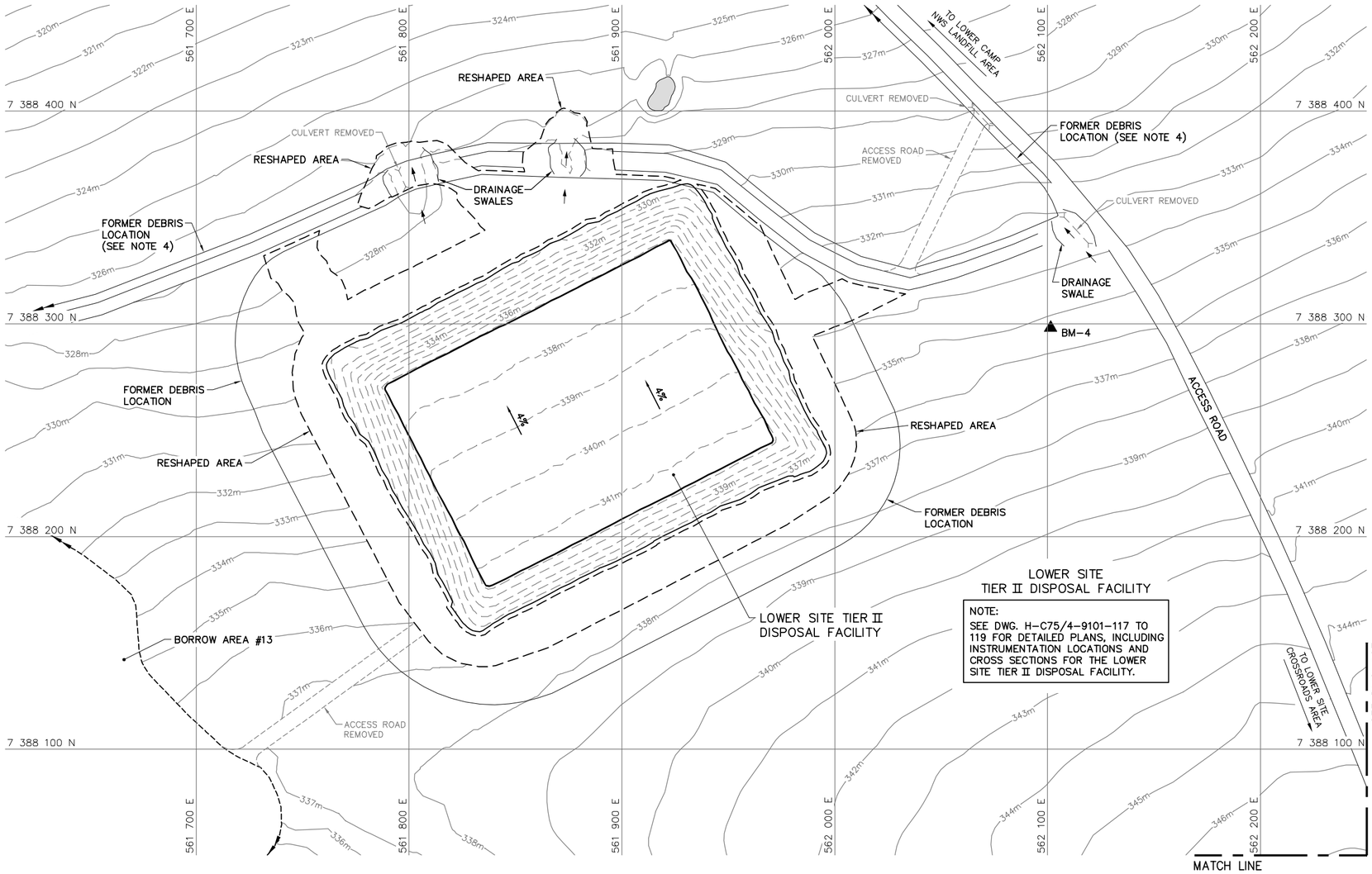
SUBJECT – SUJET

OVERALL SITE PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H-C75/4-9101-101

Canada



SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-4	7 388 298.061	562 101.426	335.054	PERMANENT BENCHMARK

NOTE:
CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAIL, SEE DWG. H-C75/4-9101-191.
4. FOR ENTIRE DEBRIS AREA LIMITS, SEE DWG. H-C75/4-9101-103.
5. GRANULAR FERTILIZER WAS APPLIED TO THE FINISHED SURFACE OF THE TIER II DISPOSAL FACILITY.

Legend:

- ▲BM-4 — PERMANENT BENCHMARK LOCATION (1)
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE - ECHELLE 20 10 0 20 40 60m

PROJECT - PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

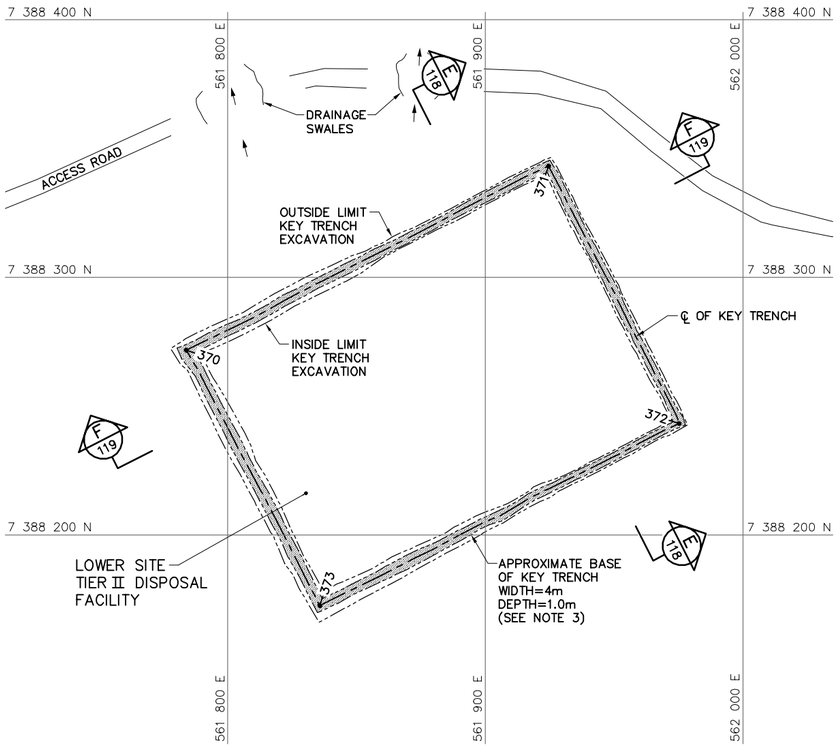
TRADE - METIER	DATE
SITING	2014-04-23

SUBJECT - SUJET
LOWER SITE
TIER II DISPOSAL FACILITY AREA
SITE PLAN

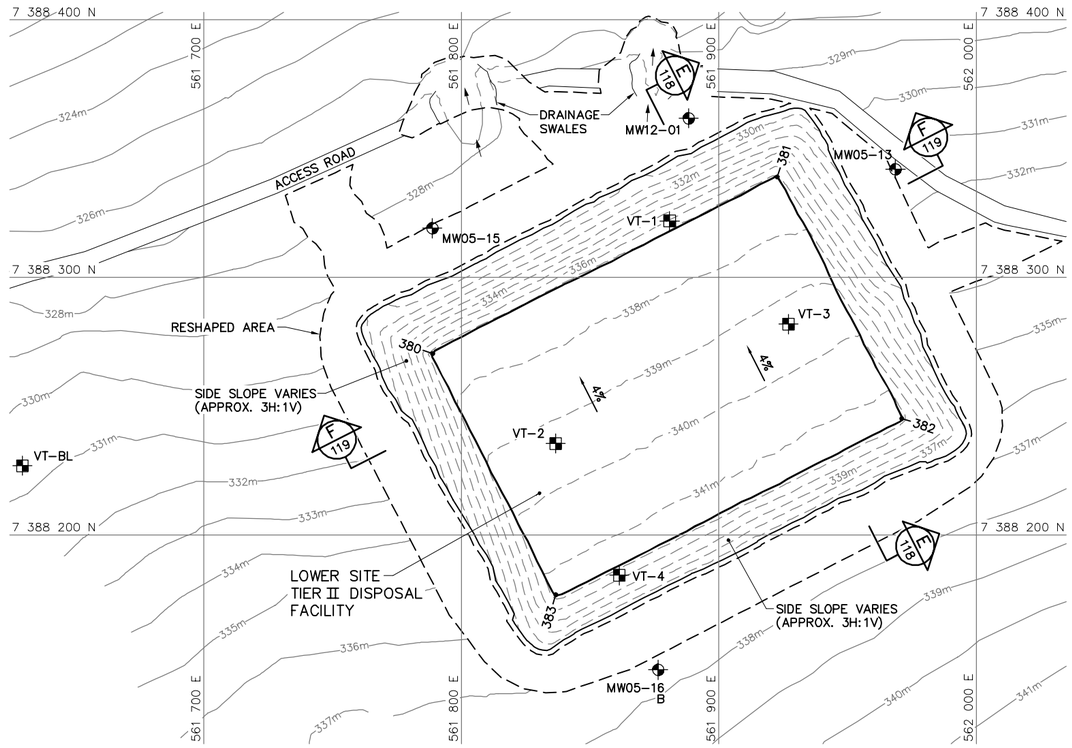
PRODUCTION	CONCURRENCE - ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED - REVU	

DWG. NO. - DESSIN NO.
H-C75/4-9101-111

Canada



KEY TRENCH EXCAVATION PLAN



FINAL GRADING/INSTRUMENTATION PLAN

LOWER SITE TIER II DISPOSAL FACILITY KEY TRENCH EXCAVATION (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
370	7 388 271.8	561 783.9	329.0
371	7 388 343.2	561 924.5	328.3
372	7 388 243.3	561 975.2	334.1
373	7 388 172.6	561 835.7	335.3

NOTE:
CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

LOWER SITE TIER II DISPOSAL FACILITY FINAL GRADING (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
380	7 388 270.4	561 788.9	337.4
381	7 388 339.0	561 922.7	337.2
382	7 388 245.2	561 971.0	341.4
383	7 388 176.9	561 836.7	341.4

LOWER SITE TIER II DISPOSAL FACILITY MONITORING WELLS (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
MW05-13	7 388 341.9	561 968.6	331.3
MW05-15	7 388 319.1	561 788.8	328.5
MW05-16	7 388 147.7	561 876.5	337.5
MW12-01	7 388 361.7	561 888.3	328.6

LOWER SITE TIER II DISPOSAL FACILITY GROUND TEMPERATURE CABLES (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
VT-1	7 388 321.9	561 880.9	336.3
VT-2	7 388 235.5	561 836.6	339.4
VT-3	7 388 281.8	561 927.1	339.4
VT-4	7 388 184.4	561 861.4	340.4
VT-BL	7 388 226.9	561 629.6	330.4

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

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2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. KEY TRENCH EXCAVATED TO SATURATED GROUND, ICE SATURATED PERMAFROST OR SOUND BEDROCK. EXCAVATION DEPTH WAS FIELD CONFIRMED BY THE SITE ENGINEER.
4. FOR MONITORING WELL INSTALLATION DETAILS, SEE DWG. H-C75/4-9101-191.
5. FOR VERTICAL GROUND TEMPERATURE CABLE INSTALLATION DETAILS, SEE DWG. H-C75/4-9101-190.
6. GRANULAR FERTILIZER WAS APPLIED TO THE FINISHED SURFACE OF THE TIER II DISPOSAL FACILITY.

Legend:

- 370 — COORDINATE POINT
- MONITORING WELL LOCATION (3)
- B — BACKGROUND MONITORING WELL LOCATION (1)
- VERTICAL GROUND TEMPERATURE CABLE LOCATION (5)

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE - ECHELLE 20 10 0 20 40 60m

PROJECT - PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

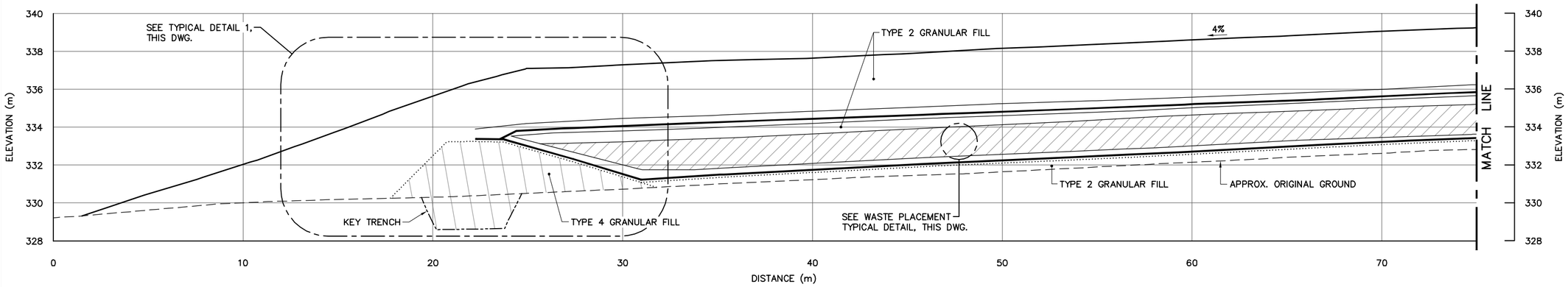
TRADE - METIER: SITING
DATE: 2014-04-23

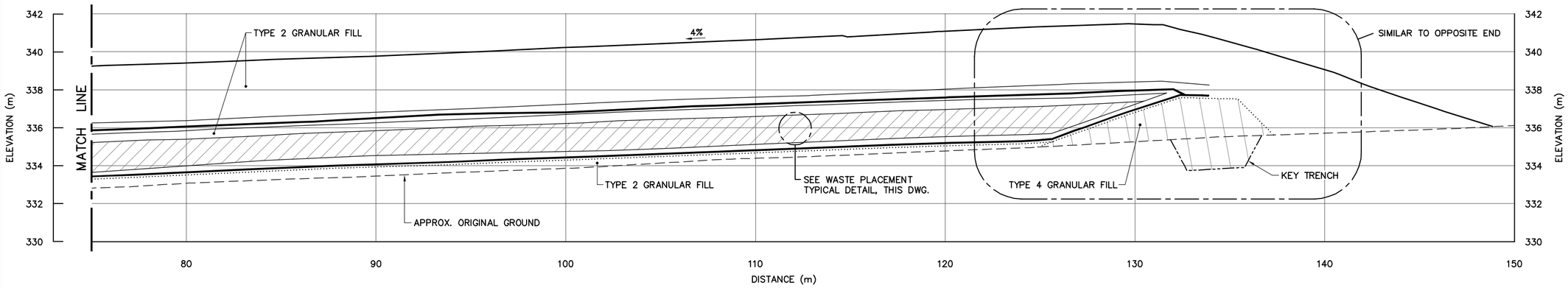
SUBJECT - SUJET
LOWER SITE TIER II DISPOSAL FACILITY KEY TRENCH EXCAVATION PLAN & GRADING/INSTRUMENTATION PLAN

PRODUCTION	CONCURRENCE - ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED - REVU	

DWG. NO. - DESSIN NO.
H-C75/4-9101-117

Canada

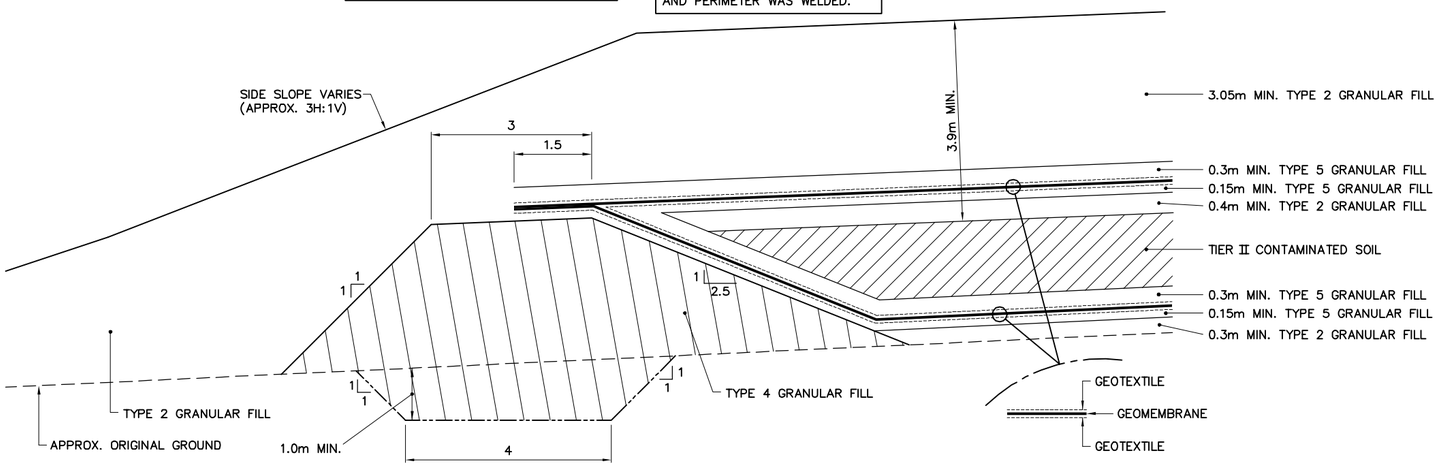




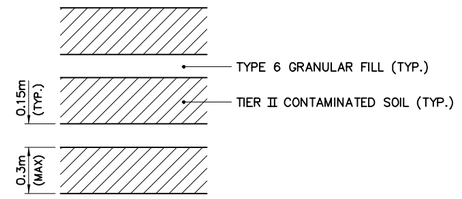
SECTION E 117

NOTE:
GEOMEMBRANE LINERS WERE PROTECTED DURING INTERIM CONSTRUCTION.

NOTE:
LINERS WERE IN CONTACT WITH EACH OTHER OVER TOP OF BERM AND PERIMETER WAS WELDED.



TYPICAL DETAIL 1
SCALE: NTS



WASTE PLACEMENT TYPICAL DETAIL
SCALE: NTS

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. KEY TRENCH EXCAVATED TO SATURATED GROUND, ICE SATURATED PERMAFROST OR SOUND BEDROCK. EXCAVATION DEPTH WAS FIELD CONFIRMED BY THE SITE ENGINEER.

Legend:

- GENERATED BASED ON FINAL AS-BUILT SURVEY INFORMATION
- GENERATED BASED ON ORIGINAL SURVEY INFORMATION
- CONSTRUCTED AS PER DESIGN, NO AS-BUILT SURVEY INFORMATION

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 2 1 0 2 4 6m

PROJECT – PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

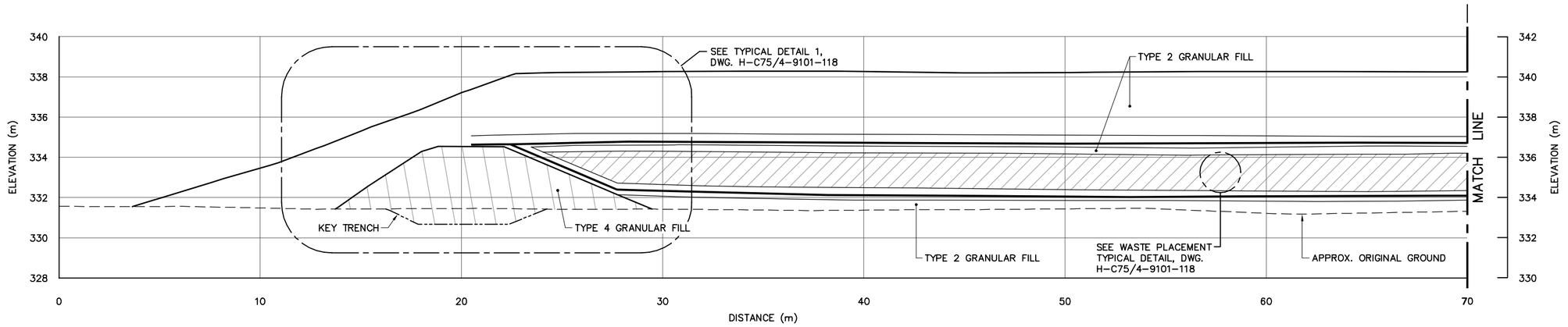
TRADE – METIER	DATE
SITING	2014-04-23

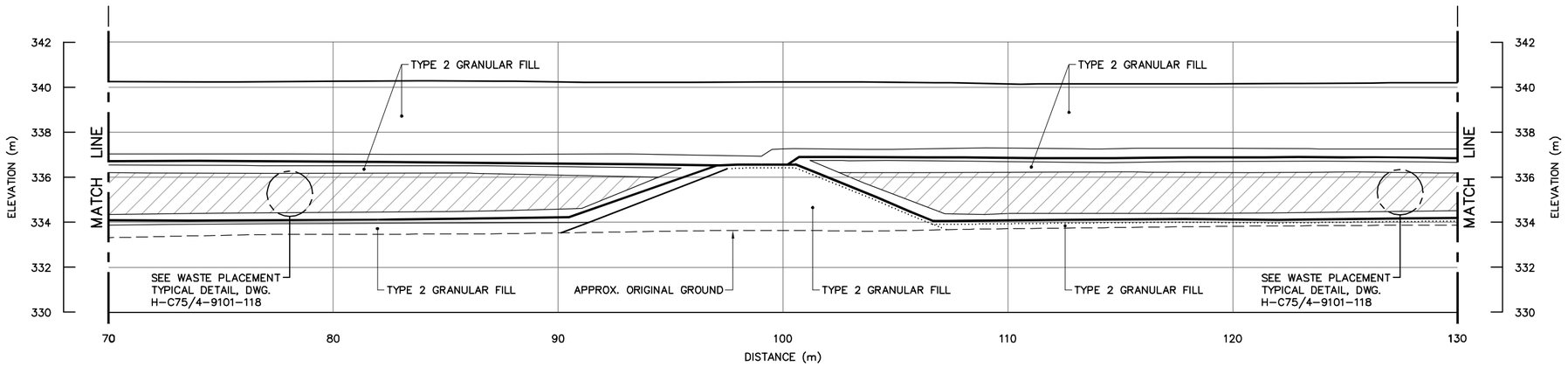
SUBJECT – SUJET
LOWER SITE
TIER II DISPOSAL FACILITY
CROSS SECTION AND DETAILS

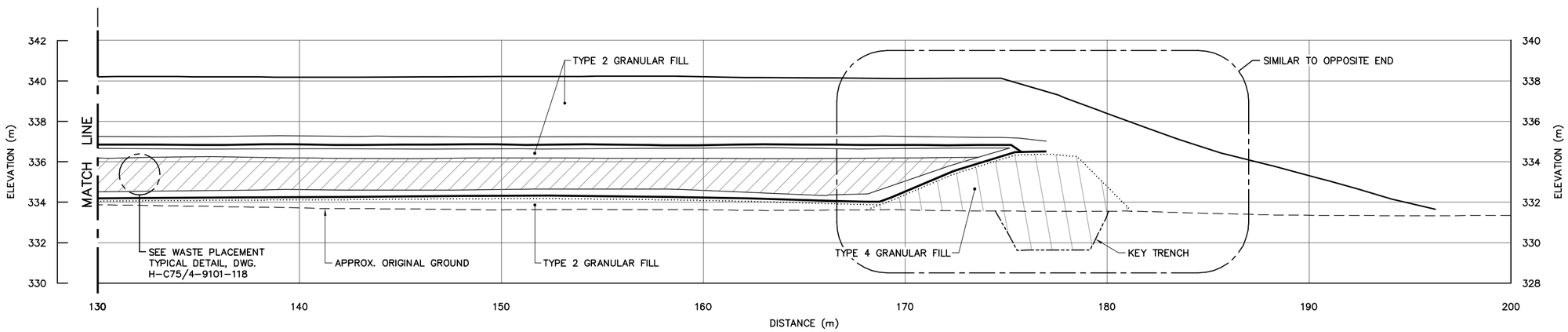
PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H-C75/4-9101-118

Canada







SECTION F 117

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. KEY TRENCH EXCAVATED TO SATURATED GROUND, ICE SATURATED PERMAFROST OR SOUND BEDROCK. EXCAVATION DEPTH WAS FIELD CONFIRMED BY THE SITE ENGINEER.

Legend:

- GENERATED BASED ON FINAL AS-BUILT SURVEY INFORMATION
- GENERATED BASED ON ORIGINAL SURVEY INFORMATION
- CONSTRUCTED AS PER DESIGN, NO AS-BUILT SURVEY INFORMATION

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 2 1 0 2 4 6m

PROJECT – PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

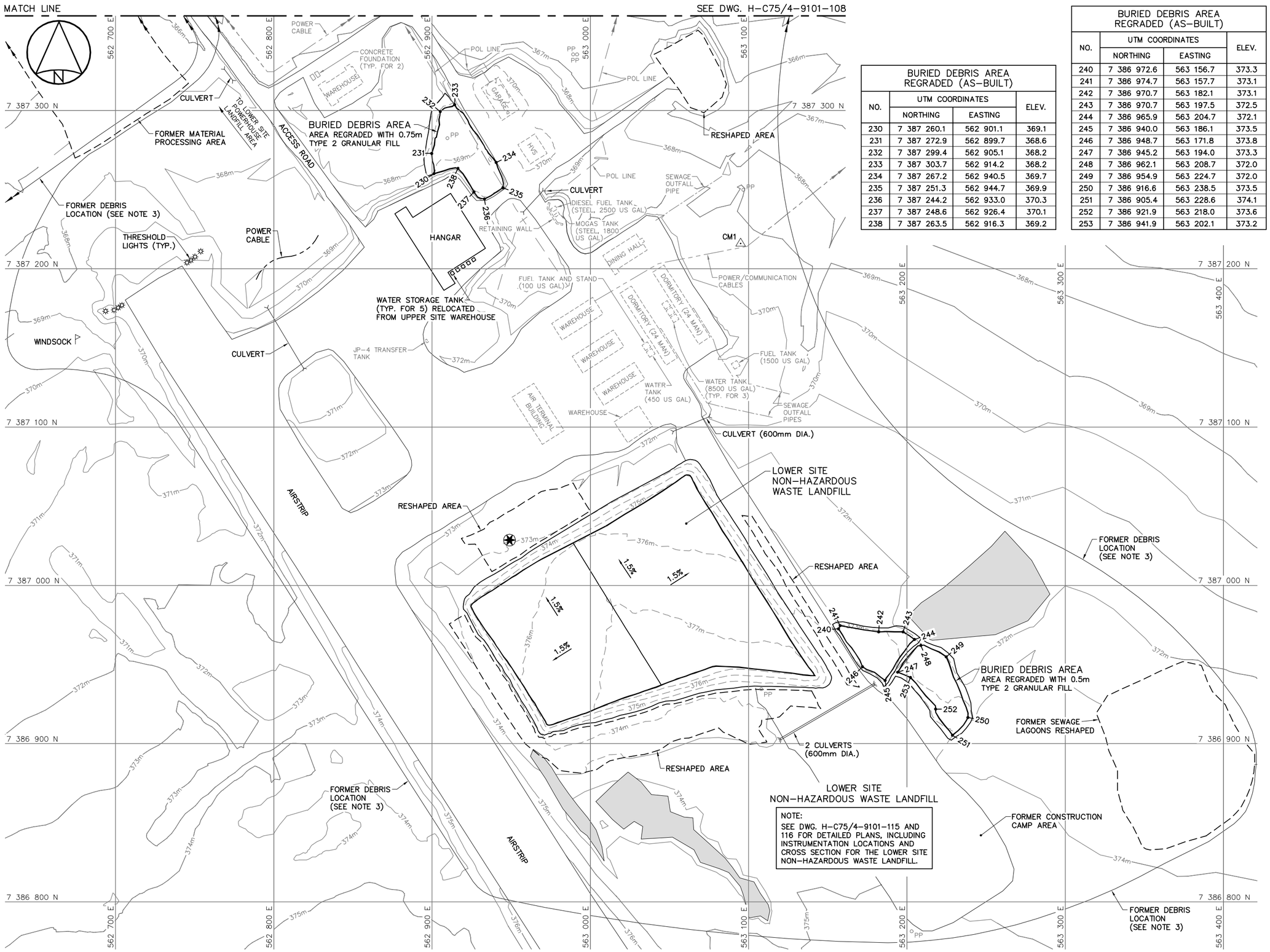
TRADE – METIER	DATE
SITING	2014-04-23

SUBJECT – SUJET
LOWER SITE
TIER II DISPOSAL FACILITY
CROSS SECTION

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H-C75/4-9101-119

Canada



BURIED DEBRIS AREA REGRADED (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
230	7 387 260.1	562 901.1	369.1
231	7 387 272.9	562 899.7	368.6
232	7 387 299.4	562 905.1	368.2
233	7 387 303.7	562 914.2	368.2
234	7 387 267.2	562 940.5	369.7
235	7 387 251.3	562 944.7	369.9
236	7 387 244.2	562 933.0	370.3
237	7 387 248.6	562 926.4	370.1
238	7 387 263.5	562 916.3	369.2

BURIED DEBRIS AREA REGRADED (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
240	7 386 972.6	563 156.7	373.3
241	7 386 974.7	563 157.7	373.1
242	7 386 970.7	563 182.1	373.1
243	7 386 970.7	563 197.5	372.5
244	7 386 965.9	563 204.7	372.1
245	7 386 940.0	563 186.1	373.5
246	7 386 948.7	563 171.8	373.8
247	7 386 945.2	563 194.0	373.3
248	7 386 962.1	563 208.7	372.0
249	7 386 954.9	563 224.7	372.0
250	7 386 916.6	563 238.5	373.5
251	7 386 905.4	563 228.6	374.1
252	7 386 921.9	563 218.0	373.6
253	7 386 941.9	563 202.1	373.2

NOTE:
CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

LOWER SITE STATION AREA MONITORING WELLS REMOVED		
NO.	UTM COORDINATES	
	NORTHING	EASTING
MW-NWSO (A)	7 387 074.5	563 131.6
MW-NWSO (B)	7 386 951.7	563 220.5
MW-NWSO (C)	7 386 784.9	563 200.0

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
CM1	7 387 216.050	563 094.868	369.117	GSC REF. MONUMENT 749187

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

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2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR ENTIRE DEBRIS AREA LIMITS, SEE DWG. H-C75/4-9101-103.
4. GRANULAR FERTILIZER WAS APPLIED TO THE FINISHED SURFACE OF THE LOWER SITE NON-HAZARDOUS WASTE LANDFILL.

Legend:

- CM1 — SURVEY CONTROL MONUMENT (1)
- 230 — COORDINATE POINT
- APPROXIMATE LOCATION OF COMMEMORATIVE PLAQUE
- PP — FORMER UTILITY POLE
- FORMER BUILDING, STRUCTURE OR TANK LOCATION

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE - ECHELLE 20 10 0 20 40 60m

PROJECT - PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

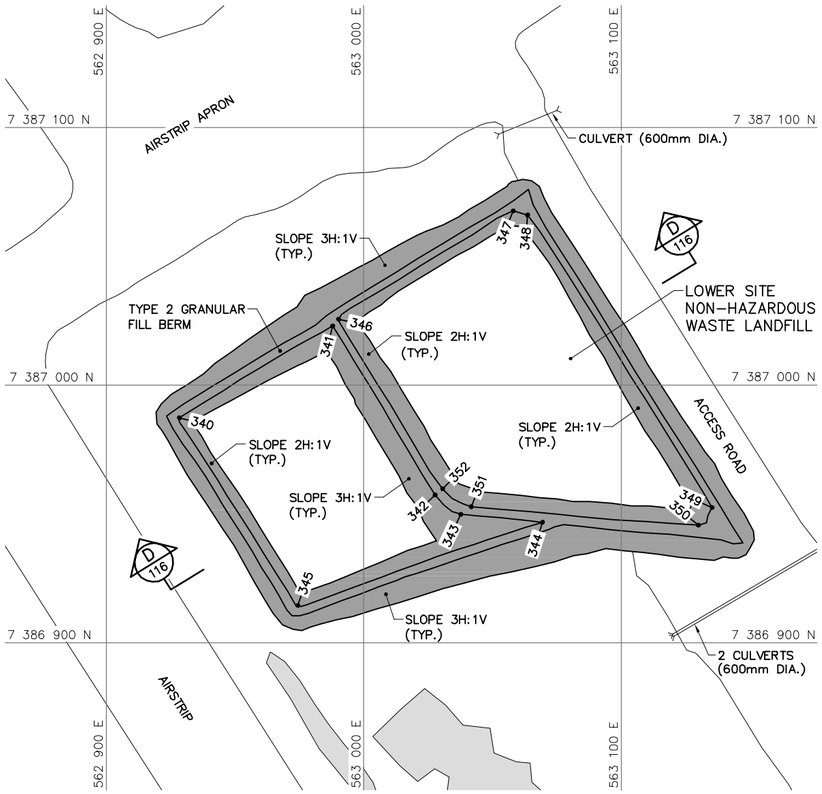
TRADE - METIER: SITING
DATE: 2014-04-23

SUBJECT - SUJET
LOWER SITE
STATION AREA
SITE PLAN

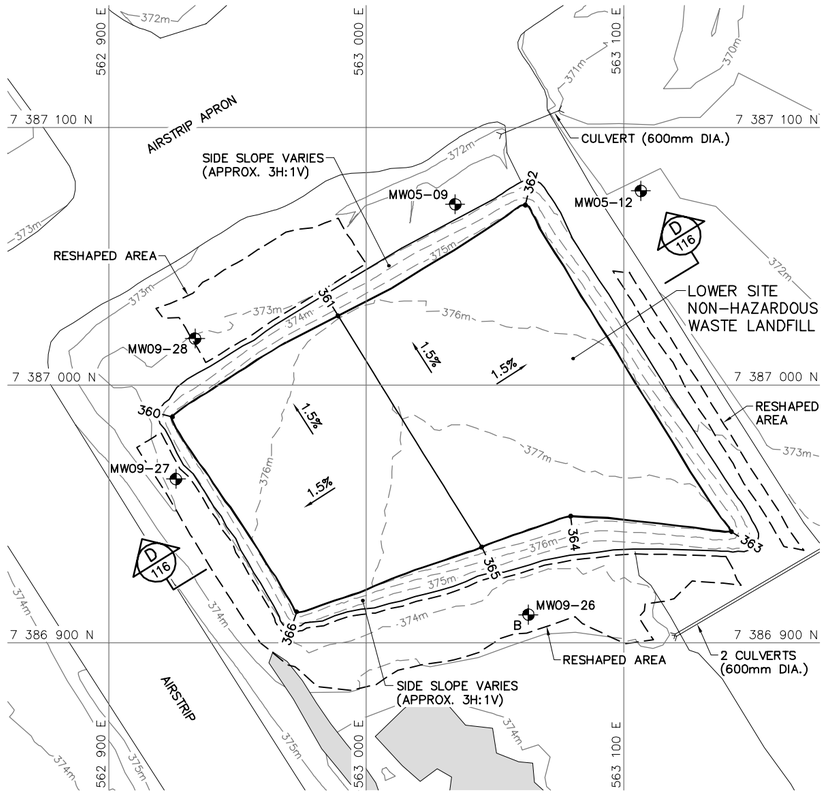
PRODUCTION		CONCURRENCE - ASSENTIMENT	
DESIGNED ETUDIE	DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE	IC		SECT HD CHEF SECT
CHECKED VERIFIE	BWF		DES MGR GEST CONCEPT
COORDINATION	RRM	REVIEWED - REVU	

DWG. NO. - DESSIN NO.
H-C75/4-9101-109

Canada



BERM CONSTRUCTION PLAN



FINAL GRADING/INSTRUMENTATION PLAN

LOWER SITE
NON-HAZARDOUS WASTE LANDFILL
BERM CONSTRUCTION (AS-BUILT)

NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
340	7 386 987.3	562 928.4	374.9
341	7 387 022.9	562 987.9	374.9
342	7 386 957.3	563 027.7	376.4
343	7 386 949.8	563 037.7	376.3
344	7 386 946.7	563 069.4	377.5
345	7 386 914.4	562 974.4	375.5
346	7 387 025.5	562 990.2	375.2
347	7 387 067.6	563 058.0	374.0
348	7 387 066.0	563 063.6	373.9
349	7 386 952.4	563 135.2	376.1
350	7 386 945.6	563 129.9	376.0
351	7 386 952.8	563 041.7	376.5
352	7 386 959.7	563 030.6	376.4

NOTE:
CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

LOWER SITE
NON-HAZARDOUS WASTE LANDFILL
FINAL GRADING (AS-BUILT)

NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
360	7 386 987.6	562 924.7	375.2
361	7 387 026.8	562 989.0	375.8
362	7 387 069.9	563 061.7	375.0
363	7 386 943.1	563 141.7	377.0
364	7 386 949.1	563 079.3	377.5
365	7 386 937.1	563 044.8	377.7
366	7 386 912.0	562 972.9	376.5

LOWER SITE
NON-HAZARDOUS WASTE LANDFILL
MONITORING WELLS (AS-BUILT)

NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
MW05-09	7 387 070.2	563 034.5	372.6
MW05-12	7 387 075.3	563 106.6	371.7
MW09-26	7 386 910.8	563 062.9	373.8
MW09-27	7 386 963.5	562 926.1	373.0
MW09-28	7 387 018.0	562 933.5	373.1

LOWER SITE
NON-HAZARDOUS WASTE LANDFILL
MONITORING WELL REMOVED

NO.	UTM COORDINATES	
	NORTHING	EASTING
MW05-10	7 386 992.1	562 974.0

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

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2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR MONITORING WELL INSTALLATION DETAILS, SEE DWG. H-C75/4-9101-191.
4. GRANULAR FERTILIZER WAS APPLIED TO THE FINISHED SURFACE OF THE LOWER SITE NON-HAZARDOUS WASTE LANDFILL.

Legend:

- 340 — COORDINATE POINT
- MONITORING WELL LOCATION (4)
- B — BACKGROUND MONITORING WELL LOCATION (1)

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

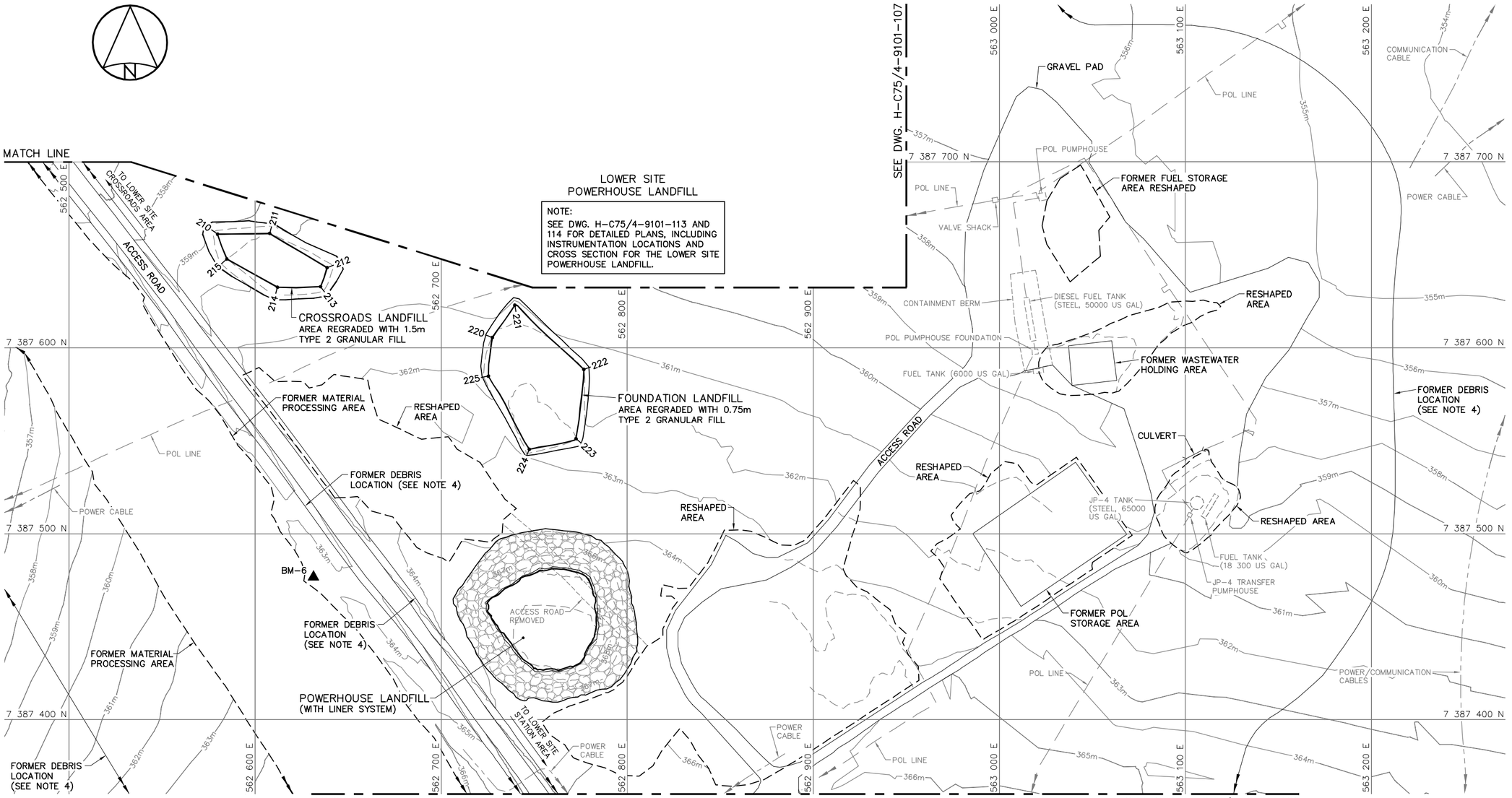
TRADE – METIER: SITING
DATE: 2014-04-23

SUBJECT – SUJET
LOWER SITE NON-HAZARDOUS WASTE LANDFILL BERM CONSTRUCTION PLAN & GRADING/INSTRUMENTATION PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT
DESIGNED – ETUDIE: DTM	DES OFF – AGENT CONCEPT
DRAWN – DESSINE: IC	SECT HD – CHEF SECT
CHECKED – VERIFIE: BWF	DES MGR – GEST CONCEPT
COORDINATION: RRM	REVIEWED – REVU

DWG. NO. – DESSIN NO.
H-C75/4-9101-115

Canada



SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-6	7 387 476.806	562 631.270	363.205	PERMANENT BENCHMARK

CROSSROADS LANDFILL REGRADED (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
210	7 387 661.2	562 579.7	360.5
211	7 387 661.6	562 607.7	361.1
212	7 387 643.2	562 638.6	361.6
213	7 387 633.0	562 635.1	361.7
214	7 387 632.7	562 611.9	361.9
215	7 387 647.9	562 584.7	361.0

FOUNDATION LANDFILL REGRADED (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
220	7 387 605.6	562 727.4	362.1
221	7 387 623.0	562 739.5	361.4
222	7 387 588.5	562 776.6	362.0
223	7 387 551.3	562 772.4	363.0
224	7 387 545.5	562 747.3	363.4
225	7 387 584.9	562 725.3	362.6

NOTE:
CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAIL, SEE DWG. H-C75/4-9101-191.
4. FOR ENTIRE DEBRIS AREA LIMITS, SEE DWG. H-C75/4-9101-103.
5. GRANULAR FERTILIZER WAS APPLIED TO THE FINISHED SURFACE OF THE CROSSROADS AND FOUNDATION LANDFILLS.

Legend:

- BM-6 — PERMANENT BENCHMARK LOCATION (1)
- 210 — COORDINATE POINT
- FORMER BUILDING, STRUCTURE OR TANK LOCATION
- TYPE 1 GRANULAR FILL

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE - ECHELLE 20 10 0 20 40 60m

PROJECT - PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

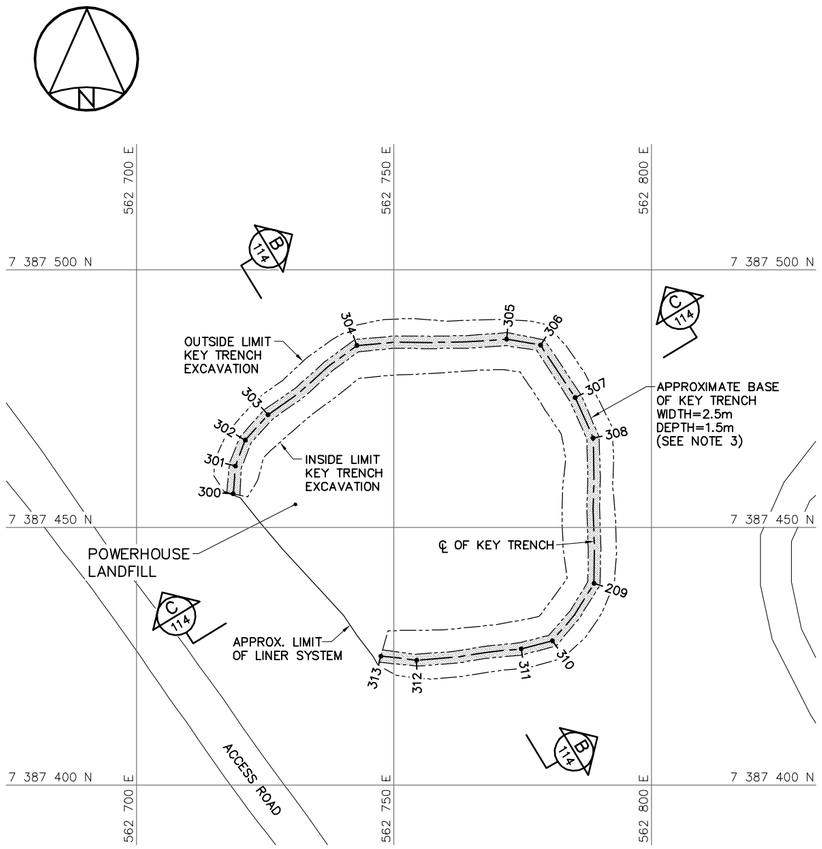
TRADE - METIER	DATE
SITING	2014-04-23

SUBJECT - SUJET
LOWER SITE
STATION AREA-NORTH
SITE PLAN

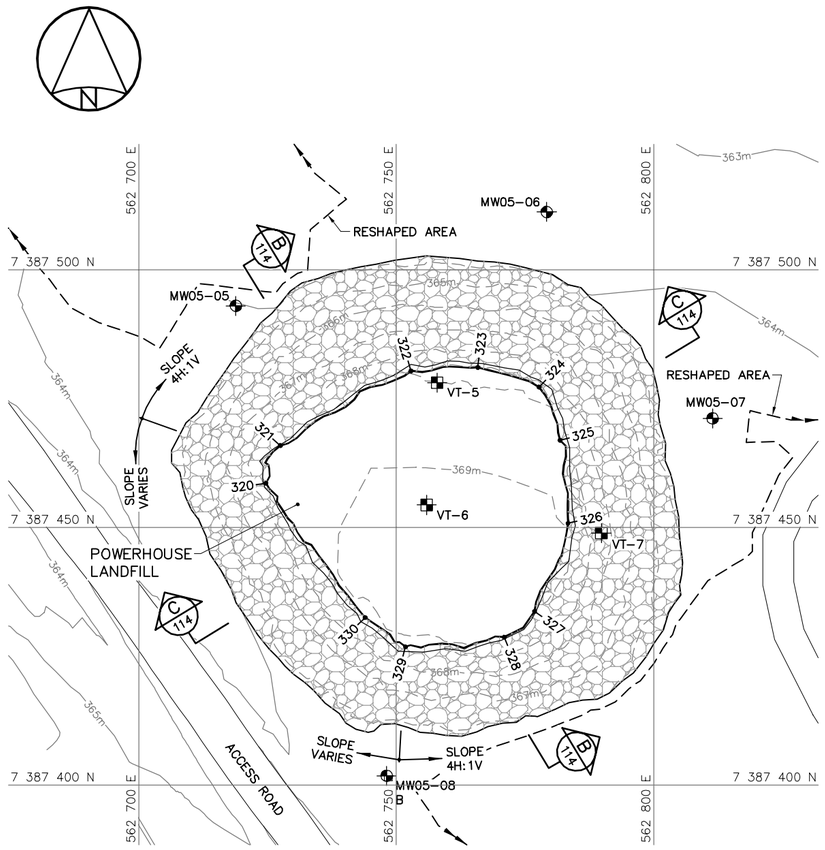
PRODUCTION		CONCURRENCE - ASSENTIMENT	
DESIGNED ETUDIE	DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE	IC		SECT HD CHEF SECT
CHECKED VERIFIE	BWF		DES MGR GEST CONCEPT
COORDINATION	RRM	REVIEWED - REVU	

DWG. NO. - DESSIN NO.
H-C75/4-9101-108

Canada



KEY TRENCH EXCAVATION PLAN



FINAL GRADING/INSTRUMENTATION PLAN

POWERHOUSE LANDFILL KEY TRENCH EXCAVATION (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
300	7 387 456.5	562 718.8	364.2
301	7 387 461.9	562 719.2	363.1
302	7 387 466.9	562 721.1	363.1
303	7 387 471.9	562 725.6	363.1
304	7 387 485.3	562 742.8	362.6
305	7 387 486.5	562 771.9	362.2
306	7 387 485.4	562 778.5	362.2
307	7 387 475.2	562 785.2	362.6
308	7 387 467.4	562 788.7	363.0
309	7 387 439.1	562 788.9	363.8
310	7 387 428.0	562 780.8	364.3
311	7 387 426.4	562 774.7	364.3
312	7 387 424.2	562 754.4	364.0
313	7 387 425.0	562 747.5	364.5

NOTE:
CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

POWERHOUSE LANDFILL FINAL GRADING (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
320	7 387 458.6	562 724.7	368.0
321	7 387 465.9	562 727.5	368.1
322	7 387 480.4	562 752.9	368.0
323	7 387 481.1	562 765.8	367.7
324	7 387 477.2	562 777.7	367.8
325	7 387 466.9	562 781.8	368.3
326	7 387 450.8	562 783.4	368.9
327	7 387 433.7	562 776.9	369.7
328	7 387 428.7	562 771.0	369.4
329	7 387 426.8	562 751.8	368.6
330	7 387 432.5	562 744.0	368.7

POWERHOUSE LANDFILL MONITORING WELLS (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
MW05-05	7 387 493.0	562 718.8	364.1
MW05-06	7 387 511.2	562 779.2	363.7
MW05-07	7 387 471.1	562 811.4	364.5
MW05-08	7 387 401.8	562 748.1	365.5

POWERHOUSE LANDFILL GROUND TEMPERATURE CABLES (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
VT-5	7 387 478.1	562 757.9	368.0
VT-6	7 387 454.4	562 755.9	369.5
VT-7	7 387 448.9	562 789.8	*367.6

*NOTE:
ELEVATION IS TO FINAL GRADE OF TYPE 2 GRANULAR FILL PRIOR TO PLACEMENT OF TYPE 1 GRANULAR FILL.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. KEY TRENCH EXCAVATED TO SATURATED GROUND, ICE SATURATED PERMAFROST OR SOUND BEDROCK. EXCAVATION DEPTH WAS FIELD CONFIRMED BY THE SITE ENGINEER.
4. FOR MONITORING WELL INSTALLATION DETAILS, SEE DWG. H-C75/4-9101-191.
5. FOR VERTICAL GROUND TEMPERATURE CABLE INSTALLATION DETAILS, SEE DWG. H-C75/4-9101-190.

Legend:

- 300 — COORDINATE POINT
- MONITORING WELL LOCATION (3)
- B — BACKGROUND MONITORING WELL LOCATION (1)
- VERTICAL GROUND TEMPERATURE CABLE LOCATION (3)
- TYPE 1 GRANULAR FILL

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE - ECHELLE 10 5 0 10 20 30m

PROJECT - PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

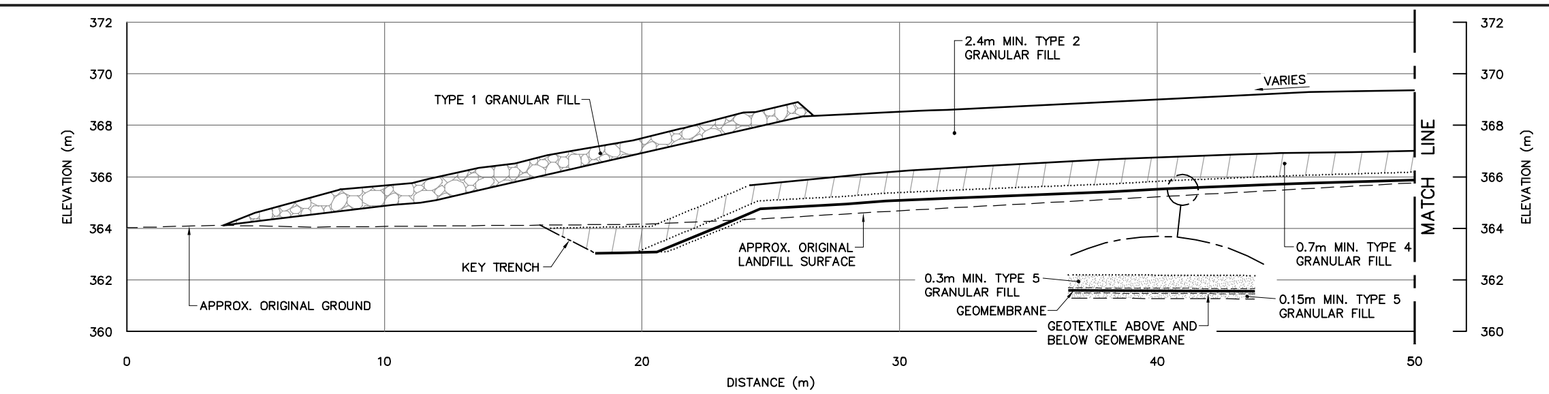
TRADE - METIER: SITING
DATE: 2014-04-23

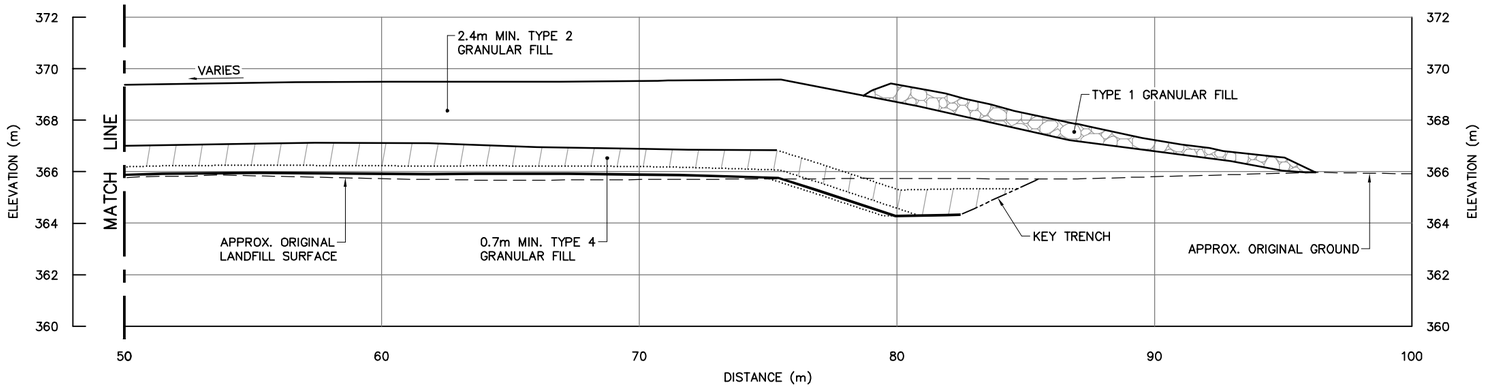
SUBJECT - SUJET
LOWER SITE POWERHOUSE LANDFILL KEY TRENCH EXCAVATION PLAN & GRADING/INSTRUMENTATION PLAN

PRODUCTION	CONCURRENCE - ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED - REVU	

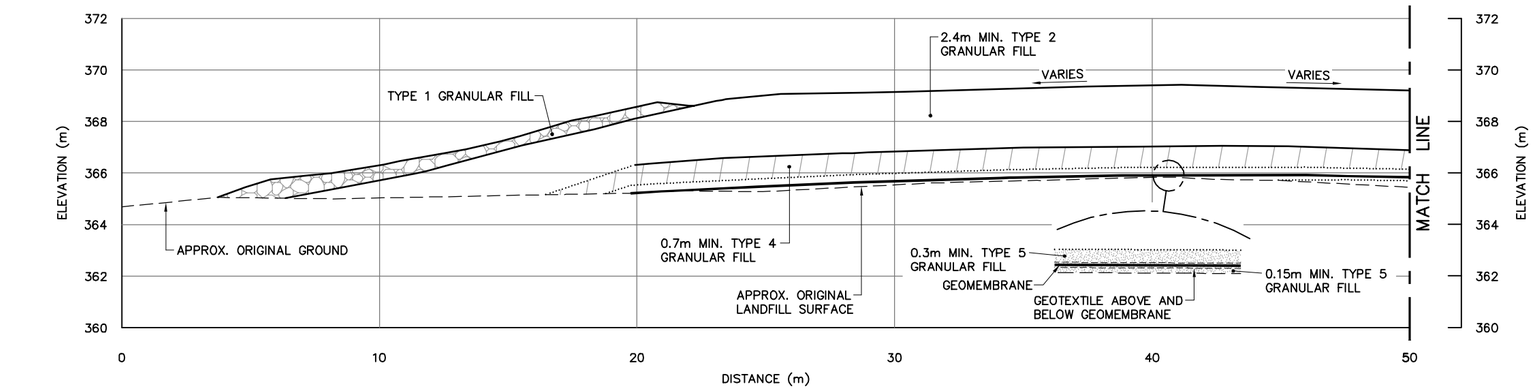
DWG. NO. - DESSIN NO.
H-C75/4-9101-113

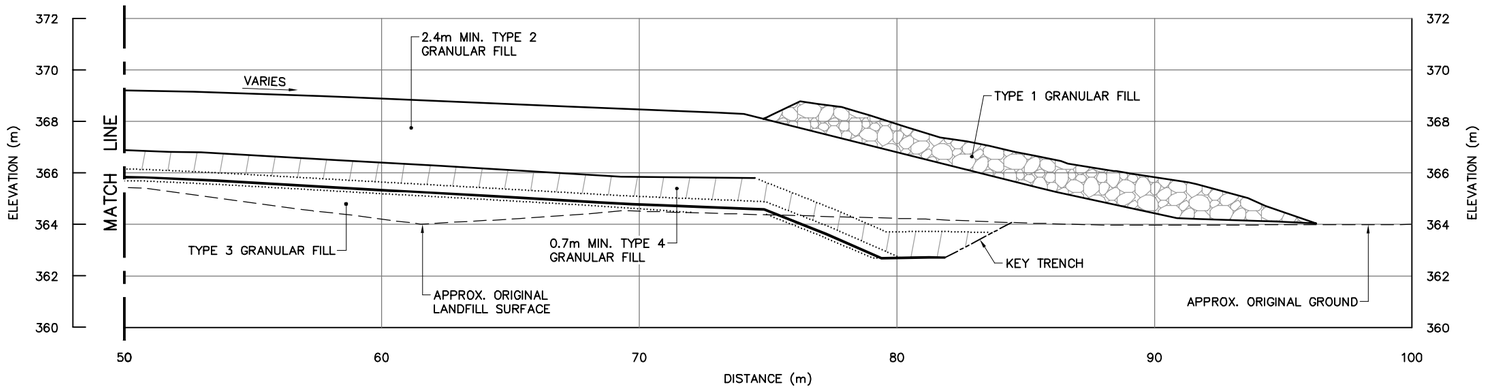
Canada





SECTION B 113





SECTION C 113

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. KEY TRENCH EXCAVATED TO SATURATED GROUND, ICE SATURATED PERMAFROST OR SOUND BEDROCK. EXCAVATION DEPTH WAS FIELD CONFIRMED BY THE SITE ENGINEER.

Legend:

- GENERATED BASED ON FINAL AS-BUILT SURVEY INFORMATION
- GENERATED BASED ON ORIGINAL SURVEY INFORMATION
- CONSTRUCTED AS PER DESIGN, NO AS-BUILT SURVEY INFORMATION

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 2 1 0 2 4 6m

PROJECT – PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

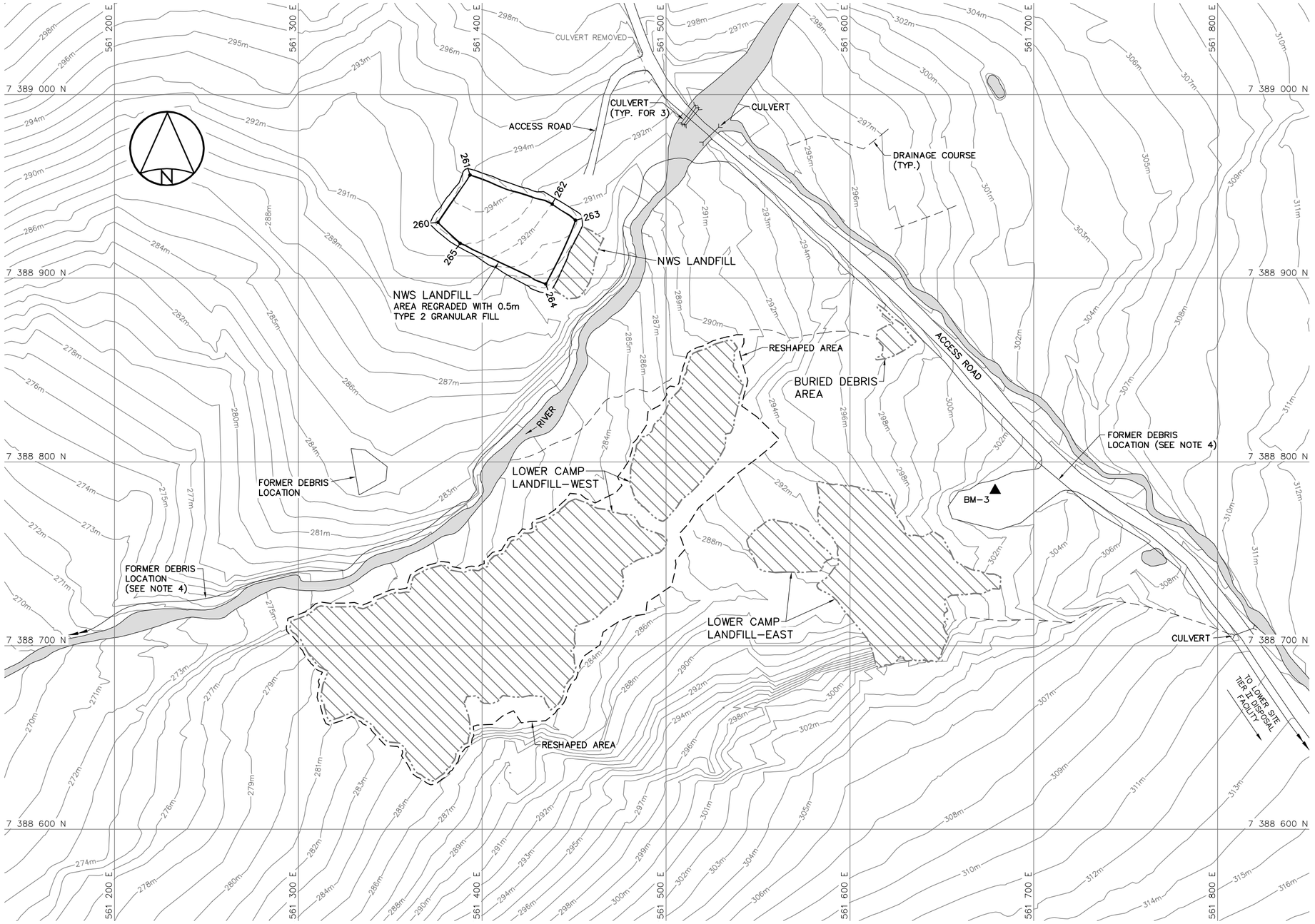
TRADE – METIER	DATE
SITING	2014-04-23

SUBJECT – SUJET
LOWER SITE
POWERHOUSE LANDFILL
CROSS SECTIONS

PRODUCTION		CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE	DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE	IC		SECT HD CHEF SECT
CHECKED VERIFIE	BWF		DES MGR GEST CONCEPT
COORDINATION	RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H-C75/4-9101-114

Canada



NWS LANDFILL REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
260	7 388 930.4	561 376.0	293.3
261	7 388 956.2	561 393.3	294.6
262	7 388 940.4	561 438.1	292.0
263	7 388 931.6	561 450.7	291.1
264	7 388 896.9	561 434.5	289.2
265	7 388 919.0	561 388.0	293.0

NOTE:
CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM–3	7 388 784.458	561 678.997	303.149	PERMANENT BENCHMARK

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAIL, SEE DWG. H–C75/4–9101–191.
4. FOR ENTIRE DEBRIS AREA LIMITS, SEE DWG. H–C75/4–9101–103.
5. GRANULAR FERTILIZER WAS APPLIED TO THE FINISHED SURFACE OF THE NWS LANDFILL AND LOWER CAMP LANDFILLS EAST AND WEST.

Legend:

- ▲BM–3 — PERMANENT BENCHMARK LOCATION (1)
- 260 — COORDINATE POINT
- COMPLETED LANDFILL OR BURIED DEBRIS EXCAVATION
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.
0	14–04–23	AS–BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
DYE–M CAPE DYER

DEW LINE CLEAN UP

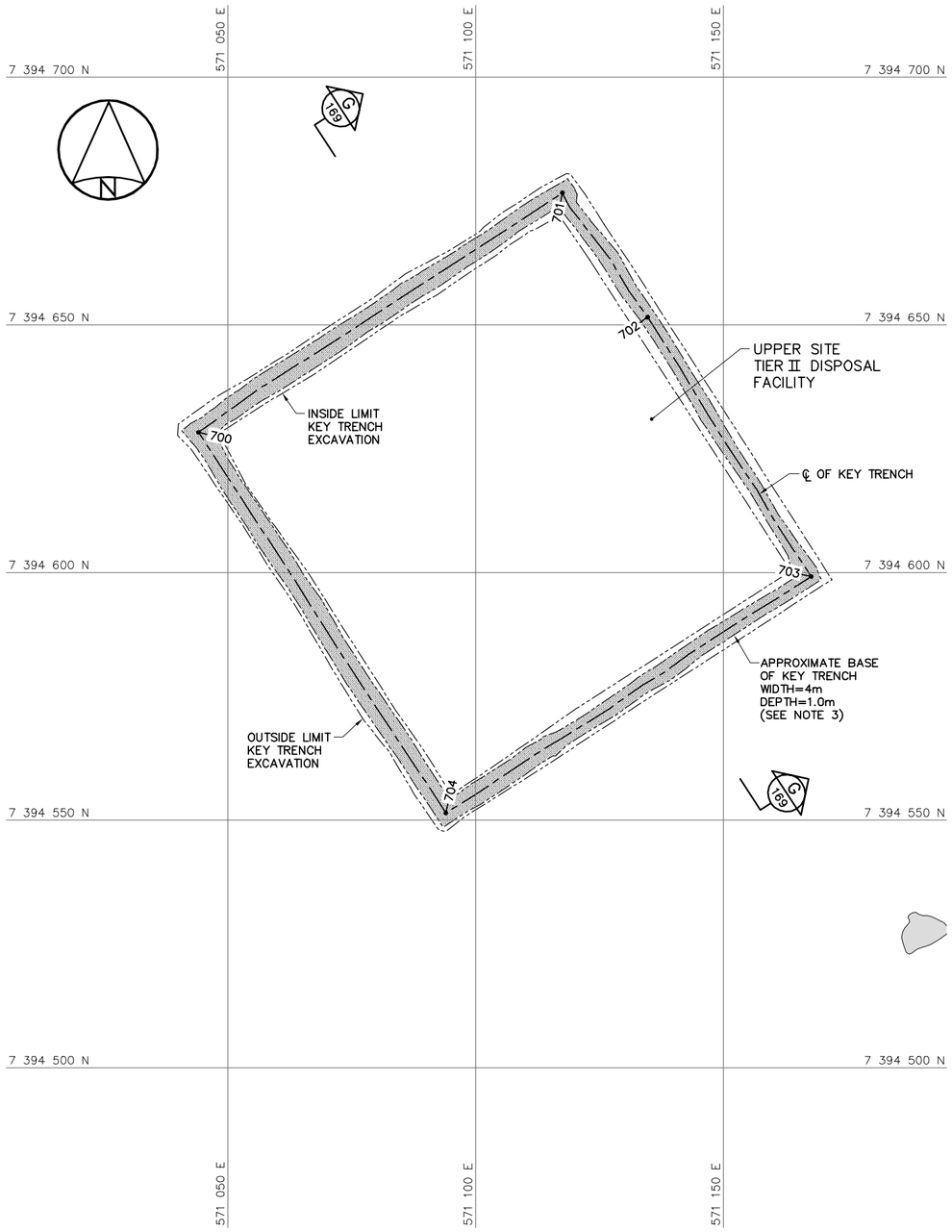
TRADE – METIER	DATE
SITING	2014–04–23

SUBJECT – SUJET
LOWER SITE
LOWER CAMP LANDFILL AREA
SITE PLAN

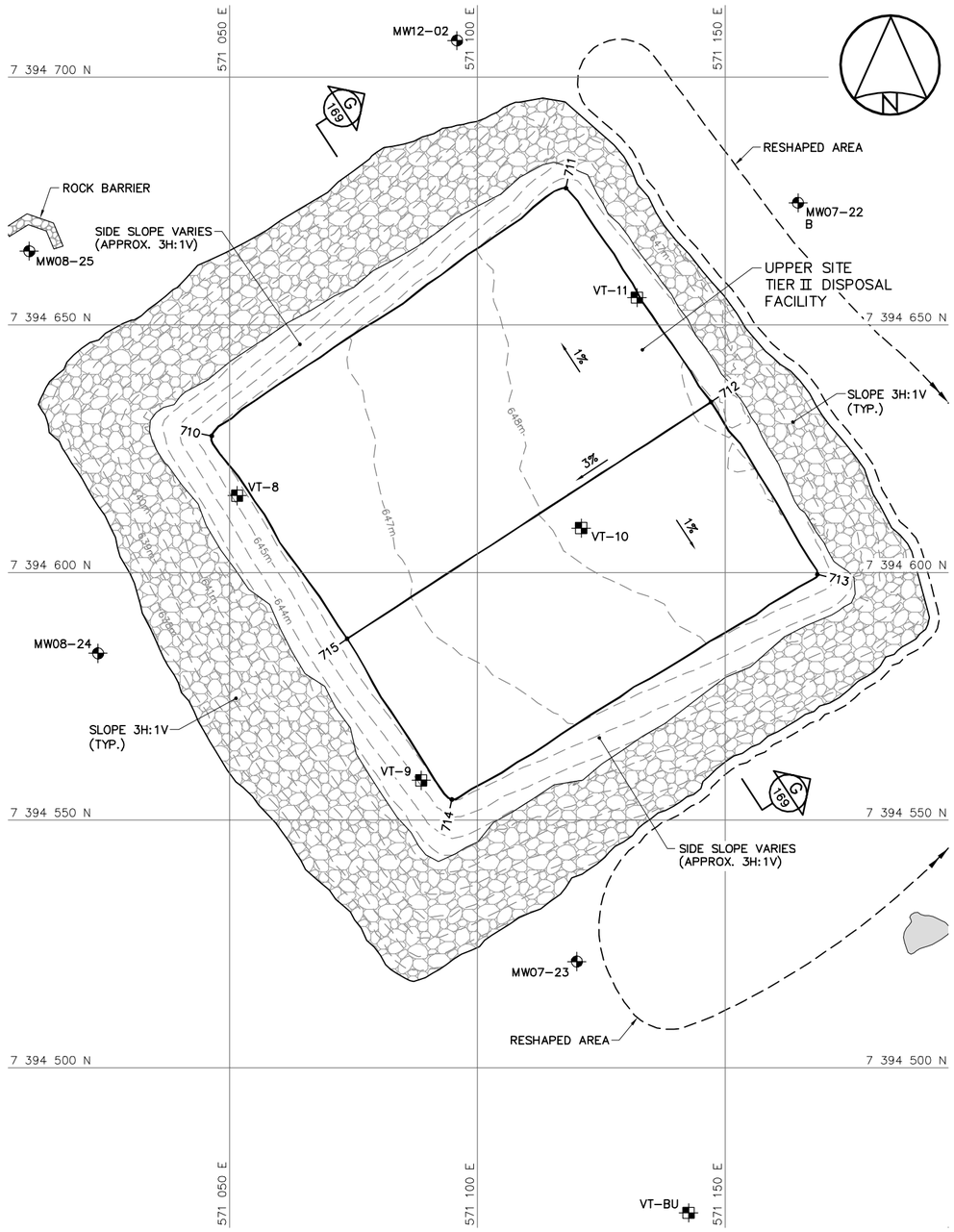
PRODUCTION	CONCURRENCE – ASSENTIMENT
DESIGNED ETUDIE DTM	DES OFF AGENT CONCEPT
DRAWN DESSINE IC	SECT HD CHEF SECT
CHECKED VERIFIE BWF	DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED – REVU

DWG. NO. – DESSIN NO.
H–C75/4–9101–110

Canada



KEY TRENCH EXCAVATION PLAN



FINAL GRADING/INSTRUMENTATION PLAN

UPPER SITE
TIER II DISPOSAL FACILITY
KEY TRENCH EXCAVATION (AS-BUILT)

NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
700	7 394 628.3	571 044.1	637.5
701	7 394 676.7	571 117.5	642.4
702	7 394 651.6	571 134.8	644.0
703	7 394 599.2	571 167.7	642.4
704	7 394 551.5	571 094.0	637.3

NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

NOTE:
CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

UPPER SITE
TIER II DISPOSAL FACILITY
FINAL GRADING (AS-BUILT)

NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
710	7 394 627.6	571 046.4	646.0
711	7 394 677.6	571 117.9	648.6
712	7 394 634.4	571 147.2	649.1
713	7 394 599.6	571 168.6	648.8
714	7 394 554.2	571 094.9	646.0
715	7 394 586.6	571 073.7	646.6

UPPER SITE
TIER II DISPOSAL FACILITY
MONITORING WELLS (AS-BUILT)

NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
MW07-22	7 394 674.6	571 164.7	648.5
MW07-23	7 394 521.5	571 120.1	638.2
MW08-24	7 394 583.7	571 023.4	636.1
MW08-25	7 394 664.9	571 009.6	635.1
MW12-02	7 394 707.4	571 095.9	642.3

UPPER SITE
TIER II DISPOSAL FACILITY
GROUND TEMPERATURE CABLES (AS-BUILT)

NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
VT-8	7 394 615.5	571 051.5	645.4
VT-9	7 394 558.0	571 088.7	645.5
VT-10	7 394 609.0	571 121.0	648.2
VT-11	7 394 655.5	571 132.2	648.9
VT-BU	7 394 470.7	571 142.6	636.9

UPPER SITE
TIER II DISPOSAL FACILITY
TEMPORARY MONITORING WELL REMOVED

NO.	UTM COORDINATES	
	NORTHING	EASTING
MW09-22A	7 394 677.2	571 162.4

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

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2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. KEY TRENCH EXCAVATED TO SATURATED GROUND, ICE SATURATED PERMAFROST OR SOUND BEDROCK. EXCAVATION DEPTH WAS FIELD CONFIRMED BY THE SITE ENGINEER.
4. FOR MONITORING WELL INSTALLATION DETAILS, SEE DWG. H-C75/4-9101-191.
5. FOR VERTICAL GROUND TEMPERATURE CABLE INSTALLATION DETAILS, SEE DWG. H-C75/4-9101-190.

Legend:

- 700 — COORDINATE POINT
- MONITORING WELL LOCATION (4)
- B — BACKGROUND MONITORING WELL LOCATION (1)
- VERTICAL GROUND TEMPERATURE CABLE LOCATION (5)
- TYPE 1 GRANULAR FILL
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE - ECHELLE 10 5 0 10 20 30m

PROJECT - PROJET
DYE-M CAPE DYER

DEW LINE CLEAN UP

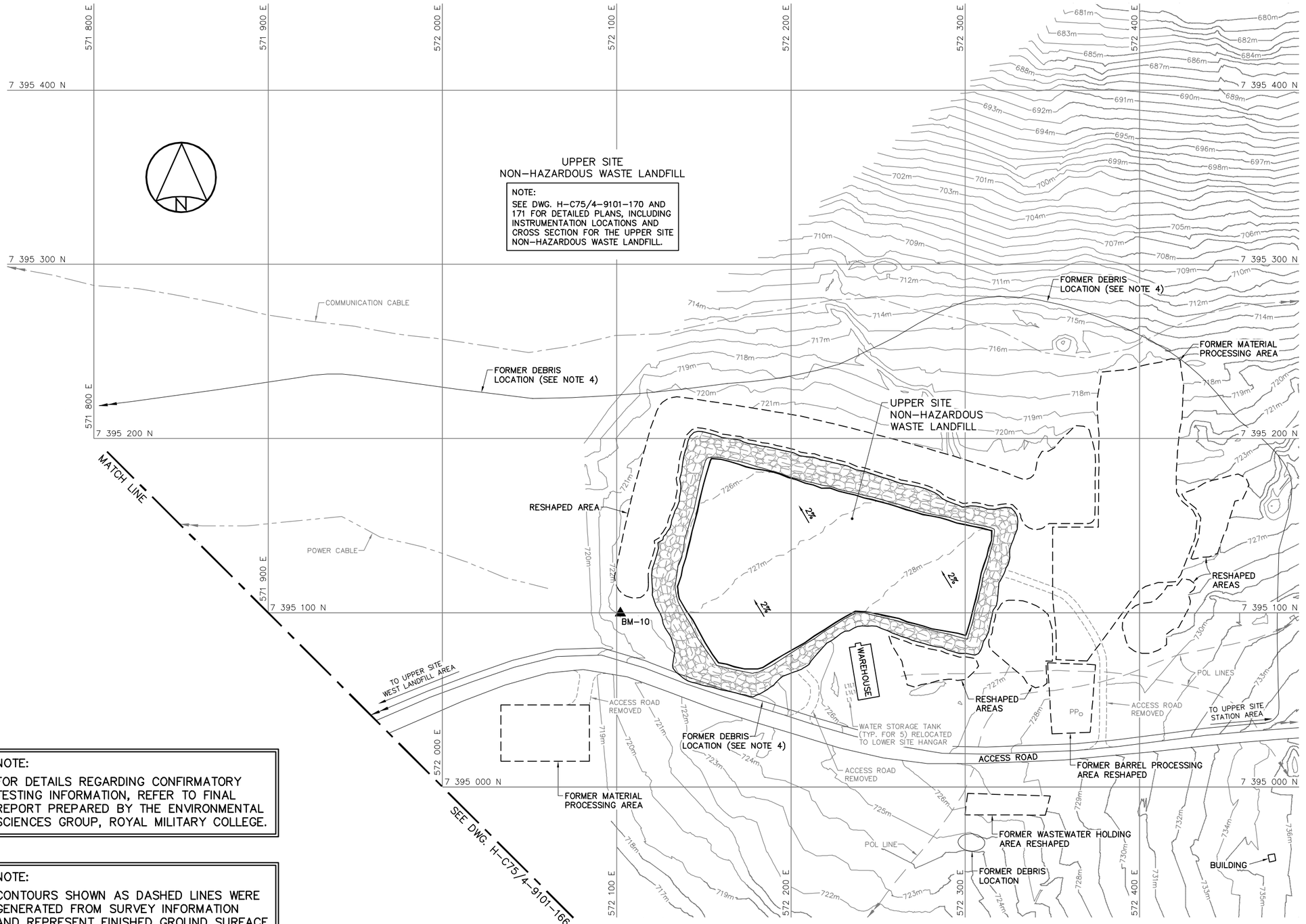
TRADE - METIER: SITING
DATE: 2014-04-23

SUBJECT - SUJET
UPPER SITE TIER II DISPOSAL FACILITY
KEY TRENCH EXCAVATION PLAN & GRADING/INSTRUMENTATION PLAN

PRODUCTION		CONCURRENCE - ASSENTIMENT	
DESIGNED ETUDIE	DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE	IC		SECT HD CHEF SECT
CHECKED VERIFIE	BWF		DES MGR GEST CONCEPT
COORDINATION	RRM	REVIEWED - REVU	

DWG. NO. - DESSIN NO.
H-C75/4-9101-168

Canada



NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

NOTE:
CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

SURVEY CONTROL MONUMENTS

NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM–10	7 395 099.840	572 102.072	721.812	PERMANENT BENCHMARK

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAIL, SEE DWG. H–C75/4–9101–191.
4. FOR ENTIRE DEBRIS AREA LIMITS, SEE DWG. H–C75/4–9101–160.

Legend:

- ▲BM–10 — PERMANENT BENCHMARK LOCATION (1)
- PP — FORMER UTILITY POLE
- FORMER BUILDING, STRUCTURE OR TANK LOCATION
- TYPE 1 GRANULAR FILL

No.	DATE	REVISION	REVISION	APPR.
0	14–04–23	AS–BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
DYE–M CAPE DYER

DEW LINE CLEAN UP

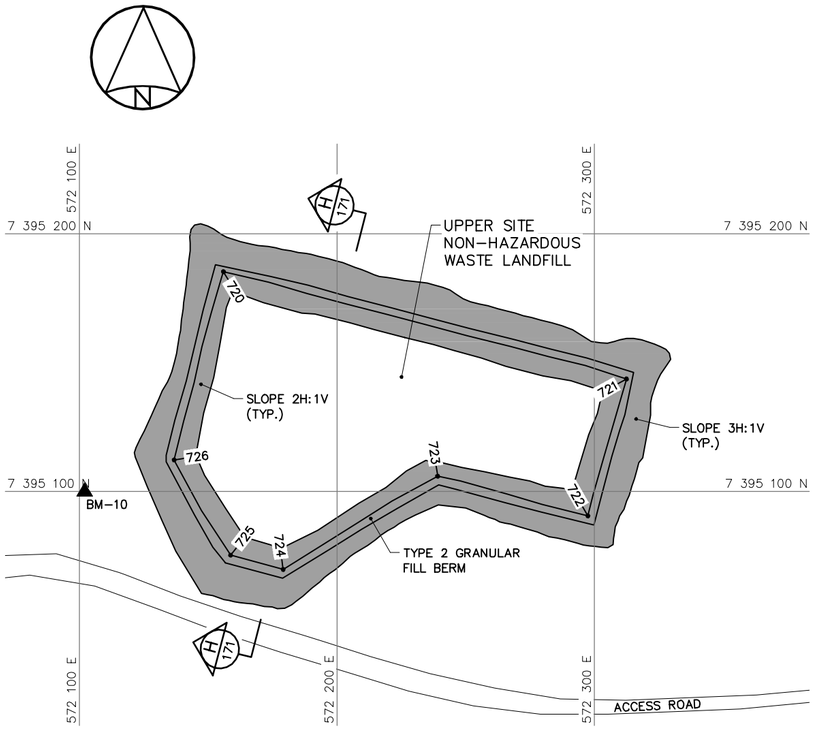
TRADE – METIER	DATE
SITING	2014–04–23

SUBJECT – SUJET
UPPER SITE
WEST OF STATION AREA
SITE PLAN SHEET 3

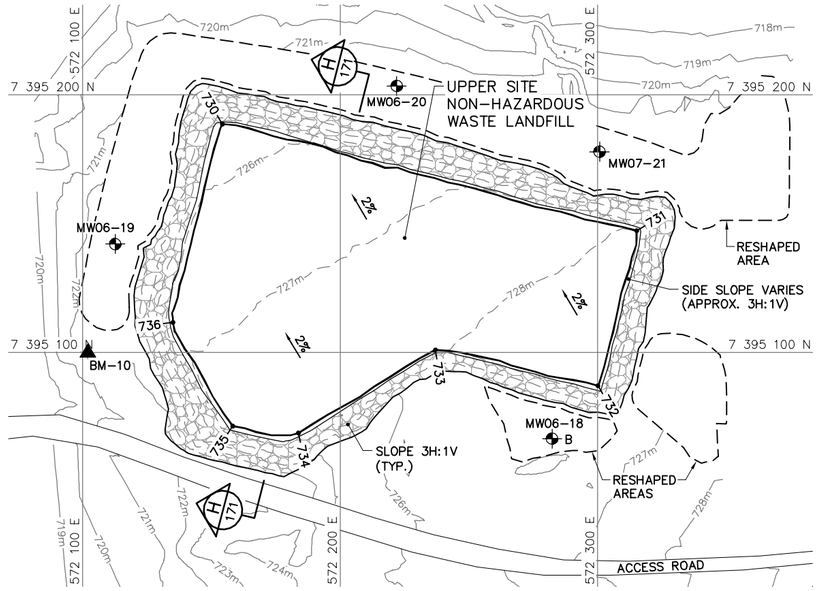
PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–C75/4–9101–167

Canada



BERM CONSTRUCTION PLAN



FINAL GRADING/INSTRUMENTATION PLAN

UPPER SITE NON–HAZARDOUS WASTE LANDFILL BERM CONSTRUCTION (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
720	7 395 185.2	572 156.0	725.3
721	7 395 143.6	572 312.4	727.6
722	7 395 090.5	572 297.5	728.3
723	7 395 105.8	572 239.1	727.6
724	7 395 069.7	572 179.1	727.4
725	7 395 075.2	572 158.7	727.2
726	7 395 112.2	572 136.8	726.4

NOTE:

FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

NOTE:

CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

UPPER SITE NON–HAZARDOUS WASTE LANDFILL FINAL GRADING (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
730	7 395 188.6	572 154.3	725.6
731	7 395 147.2	572 315.1	728.0
732	7 395 087.0	572 300.1	728.8
733	7 395 100.9	572 237.0	727.9
734	7 395 068.7	572 183.8	728.0
735	7 395 071.3	572 158.4	727.7
736	7 395 111.6	572 135.1	726.7

UPPER SITE NON–HAZARDOUS WASTE LANDFILL MONITORING WELLS (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
MW06–18	7 395 066.5	572 282.3	725.6
MW06–19	7 395 142.0	572 112.7	722.5
MW06–20	7 395 203.3	572 222.0	720.6
MW07–21	7 395 177.9	572 300.7	721.7

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM–10	7 395 099.840	572 102.072	721.812	PERMANENT BENCHMARK

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Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR MONITORING WELL INSTALLATION DETAILS, SEE DWG. H–C75/4–9101–191.
4. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAIL, SEE DWG. H–C75/4–9101–191.

Legend:

- BM–10 — PERMANENT BENCHMARK LOCATION (1)
- 720 — COORDINATE POINT
- MONITORING WELL LOCATION (3)
- B — BACKGROUND MONITORING WELL LOCATION (1)
- TYPE 1 GRANULAR FILL

No.	DATE	REVISION	REVISION	APPR.
0	14–04–23	AS–BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
DYE–M CAPE DYER

DEW LINE CLEAN UP

TRADE – METIER: SITING
DATE: 2014–04–23

SUBJECT – SUJET
UPPER SITE NON–HAZARDOUS WASTE LANDFILL BERM CONSTRUCTION PLAN & GRADING/INSTRUMENTATION PLAN

PRODUCTION		CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE	DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE	IC		SECT HD CHEF SECT
CHECKED VERIFIE	BWF		DES MGR GEST CONCEPT
COORDINATION	RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–C75/4–9101–170

Canada

NWS LANDFILL REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
430	7 394 739.9	572 508.8	730.1
431	7 394 750.8	572 538.1	733.3
432	7 394 748.2	572 554.1	734.0
433	7 394 726.1	572 596.3	733.9
434	7 394 708.5	572 604.0	733.8
435	7 394 692.1	572 623.2	733.1
436	7 394 676.8	572 625.8	730.8
437	7 394 638.9	572 625.2	727.2
438	7 394 637.2	572 597.5	727.5
439	7 394 648.6	572 578.2	727.7
440	7 394 663.6	572 578.4	728.8
441	7 394 674.8	572 560.2	728.2
442	7 394 678.5	572 540.1	727.1
443	7 394 689.6	572 530.6	727.2
444	7 394 701.4	572 534.9	728.7
445	7 394 710.6	572 530.5	729.4
446	7 394 717.5	572 510.1	729.0
447	7 394 716.8	572 540.5	733.0
448	7 394 703.3	572 573.8	733.5
449	7 394 692.9	572 581.1	733.1
450	7 394 685.1	572 596.9	733.0
451	7 394 685.1	572 614.0	733.1

SOUTH LANDFILL–WEST REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
460	7 394 578.0	572 454.4	712.2
461	7 394 612.9	572 495.9	719.0
462	7 394 628.8	572 532.8	724.1
463	7 394 632.2	572 549.7	725.5
464	7 394 622.5	572 568.1	725.1
465	7 394 613.0	572 604.2	725.0
466	7 394 603.5	572 626.1	724.3
467	7 394 566.8	572 627.0	720.5
468	7 394 573.3	572 586.9	720.7
469	7 394 572.3	572 584.7	720.6
470	7 394 561.0	572 582.4	718.9
471	7 394 560.1	572 569.8	718.3
472	7 394 567.6	572 569.6	719.5
473	7 394 565.8	572 541.4	718.8
474	7 394 561.5	572 539.1	718.2
475	7 394 548.8	572 538.5	717.0
476	7 394 559.3	572 522.5	716.9
477	7 394 548.9	572 494.5	713.5
478	7 394 528.6	572 488.5	711.2
479	7 394 533.2	572 473.0	710.8
480	7 394 532.9	572 448.0	707.6
481	7 394 534.6	572 446.4	707.4
482	7 394 536.8	572 460.6	709.9
483	7 394 538.9	572 464.8	710.5
484	7 394 557.7	572 462.1	711.4

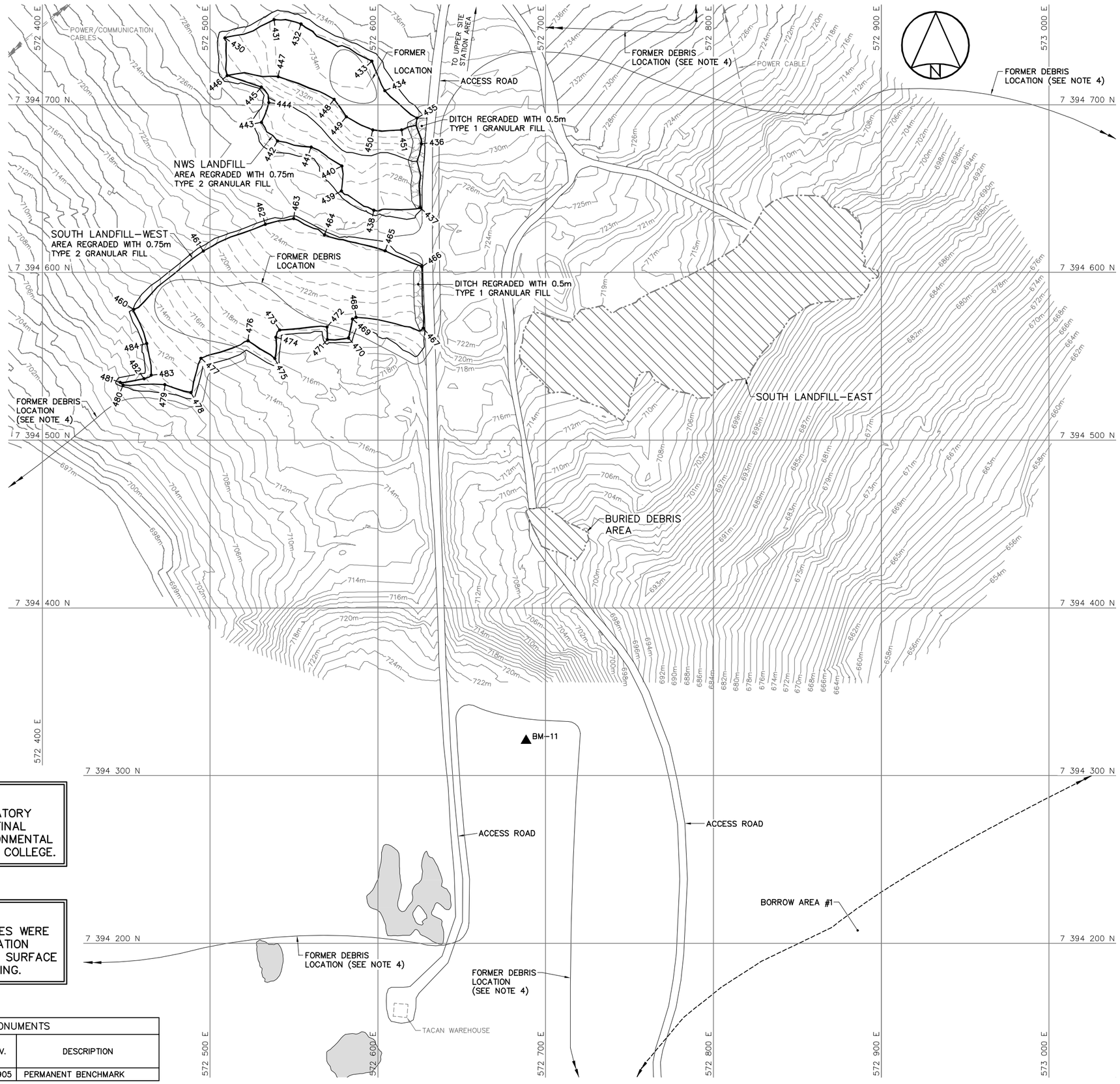
NOTE:

FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

NOTE:

CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM–11	7 394 320.996	572 688.263	722.905	PERMANENT BENCHMARK



National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAIL, SEE DWG. H–C75/4–9101–191.
4. FOR ENTIRE DEBRIS AREA LIMITS, SEE DWG. H–C75/4–9101–160.

Legend:

- BM–11 — PERMANENT BENCHMARK LOCATION (1)
- 430 — COORDINATE POINT
- COMPLETED LANDFILL OR BURIED DEBRIS EXCAVATION
- FORMER BUILDING, STRUCTURE OR TANK LOCATION
- TYPE 1 GRANULAR FILL
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.
0	14–04–23	AS–BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
DYE–M CAPE DYER

DEW LINE CLEAN UP

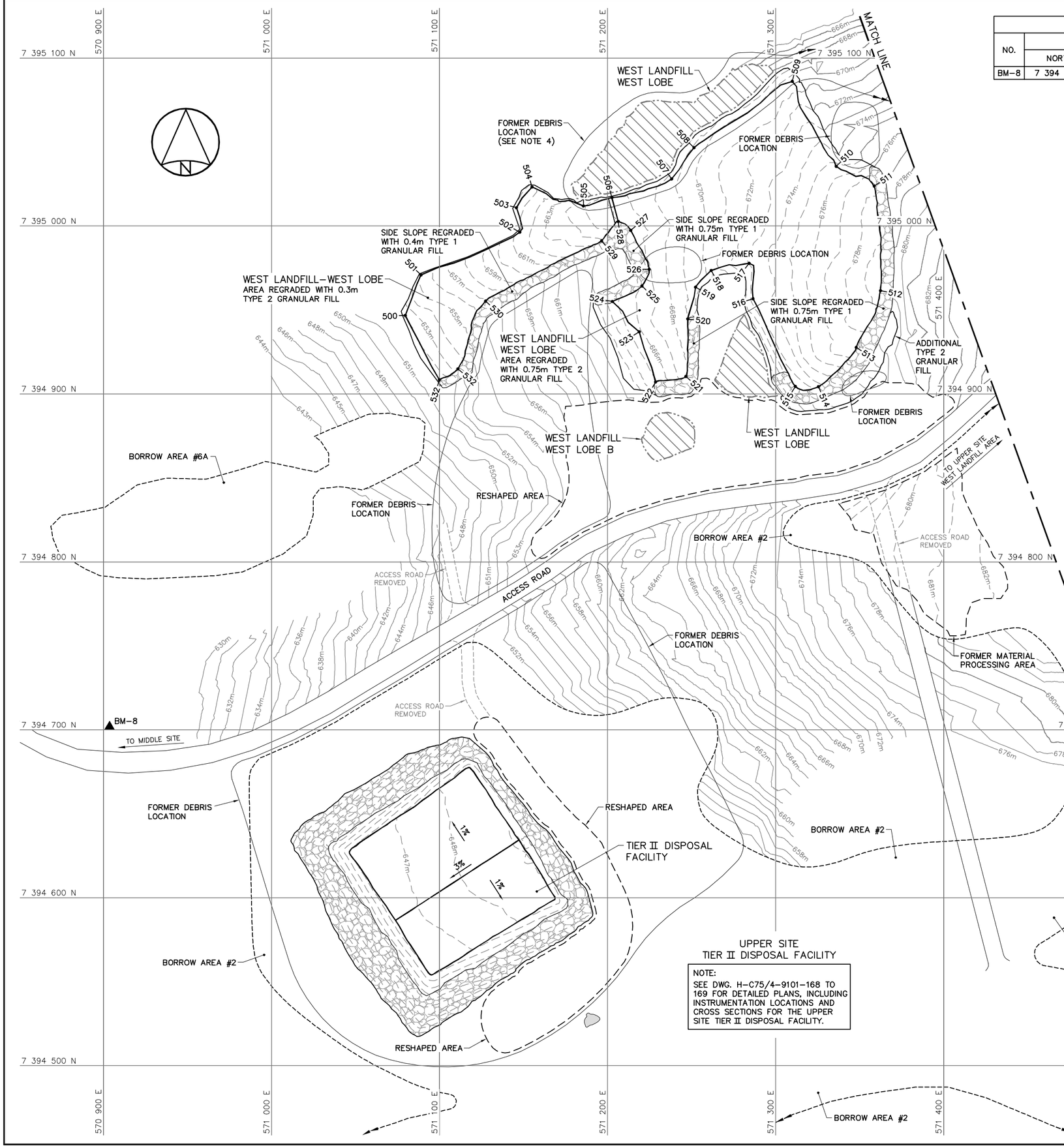
TRADE – METIER	DATE
SITING	2014–04–23

SUBJECT – SUJET
UPPER SITE
SOUTH LANDFILL AREA
SITE PLAN

PRODUCTION		CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE	DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE	IC		SECT HD CHEF SECT
CHECKED VERIFIE	BWF		DES MGR GEST CONCEPT
COORDINATION	RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–C75/4–9101–164

Canada



UPPER SITE
TIER II DISPOSAL FACILITY

NOTE:
SEE DWG. H–C75/4–9101–168 TO 169 FOR DETAILED PLANS, INCLUDING INSTRUMENTATION LOCATIONS AND CROSS SECTIONS FOR THE UPPER SITE TIER II DISPOSAL FACILITY.

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM–8	7 394 701.849	570 903.508	623.679	PERMANENT BENCHMARK

NOTE:
FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

NOTE:
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WEST LANDFILL–WEST LOBE REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
500	7 394 946.8	571 079.6	652.3
501	7 394 970.9	571 088.9	655.3
502	7 394 996.4	571 147.7	661.3
503	7 395 011.0	571 145.7	660.5
504	7 395 023.3	571 155.0	660.6
505	7 395 012.0	571 185.6	664.9
506	7 395 017.0	571 202.5	666.2
507	7 395 028.1	571 238.0	668.7
508	7 395 046.7	571 251.4	669.3
509	7 395 086.2	571 309.8	670.5
510	7 395 035.6	571 336.0	675.3
511	7 395 023.9	571 358.6	678.3
512	7 394 961.5	571 362.4	679.5
513	7 394 927.8	571 347.9	677.6
514	7 394 904.4	571 325.4	673.5
515	7 394 904.6	571 311.6	672.0
516	7 394 956.8	571 286.4	673.4
517	7 394 977.9	571 284.2	673.0
518	7 394 973.6	571 261.6	670.3
519	7 394 963.7	571 252.3	669.4
520	7 394 944.7	571 247.6	669.0
521	7 394 910.5	571 246.5	667.6
522	7 394 907.1	571 228.5	664.8
523	7 394 937.1	571 218.8	665.8
524	7 394 955.1	571 202.8	664.5
525	7 394 964.3	571 220.4	666.2
526	7 394 974.3	571 224.8	666.8
527	7 394 997.5	571 213.7	666.2
528	7 395 002.8	571 206.2	666.0
529	7 394 991.2	571 196.4	663.9
530	7 394 955.4	571 127.3	656.8
531	7 394 915.0	571 110.8	653.4
532	7 394 908.5	571 099.8	651.5

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

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2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAIL, SEE DWG. H–C75/4–9101–191.
4. FOR ENTIRE DEBRIS AREA LIMITS, SEE DWG. H–C75/4–9101–160.

Legend:

- ▲BM–8 PERMANENT BENCHMARK LOCATION (1)
- 500 COORDINATE POINT
- COMPLETED LANDFILL OR BURIED DEBRIS EXCAVATION
- TYPE 1 GRANULAR FILL

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS–BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
DYE–M CAPE DYER

DEW LINE CLEAN UP

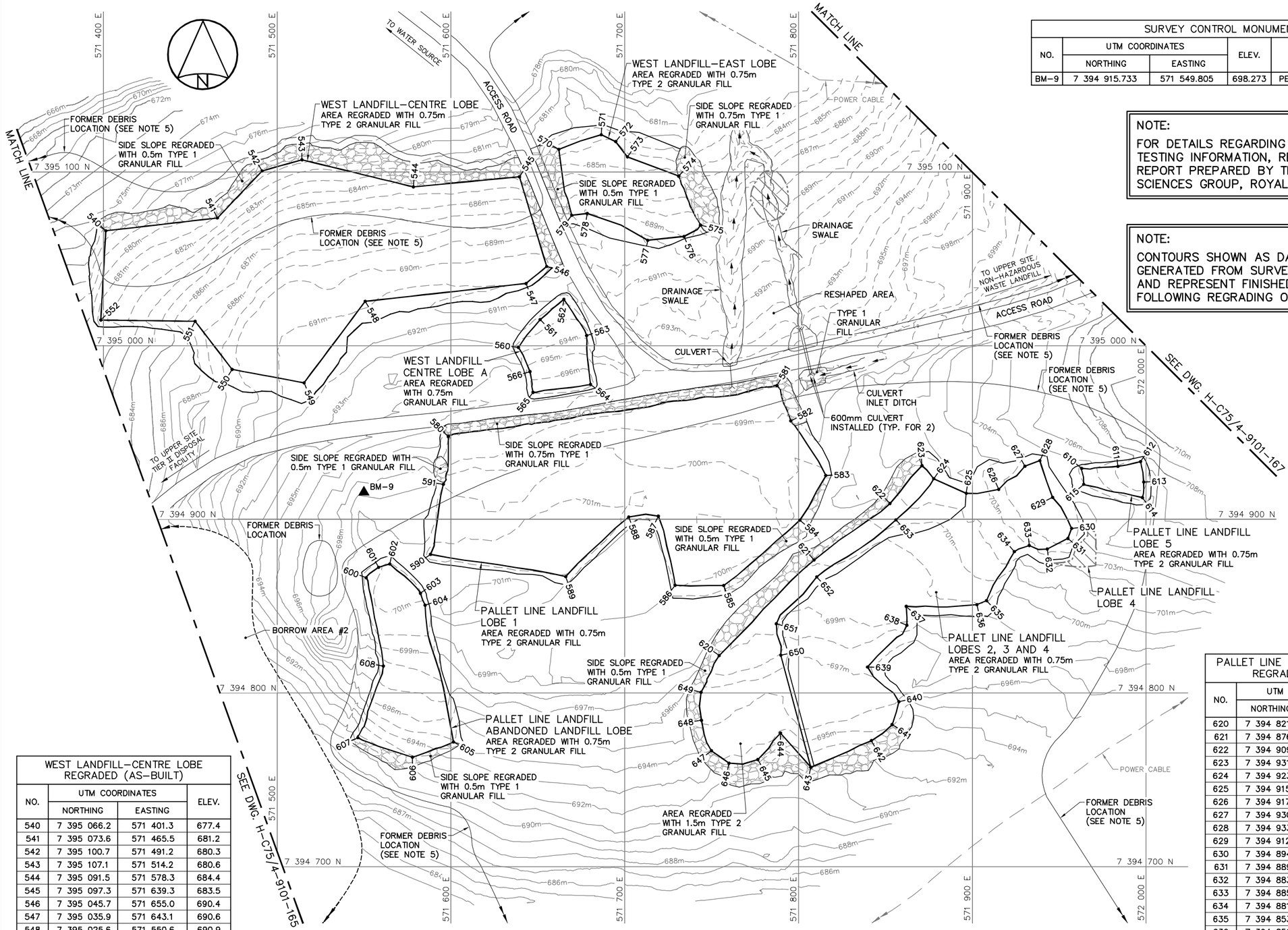
TRADE – METIER: SITING
DATE: 2014–04–23

SUBJECT – SUJET
UPPER SITE
WEST OF STATION AREA
SITE PLAN SHEET 1

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–C75/4–9101–165

Canada



SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM–9	7 394 915.733	571 549.805	698.273	PERMANENT BENCHMARK

NOTE:

FOR DETAILS REGARDING CONFIRMATORY TESTING INFORMATION, REFER TO FINAL REPORT PREPARED BY THE ENVIRONMENTAL SCIENCES GROUP, ROYAL MILITARY COLLEGE.

NOTE:

CONTOURS SHOWN AS DASHED LINES WERE GENERATED FROM SURVEY INFORMATION AND REPRESENT FINISHED GROUND SURFACE FOLLOWING REGRADING OR RESHAPING.

General Notes:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 20N. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAIL, SEE DWG. H–C75/4–9101–191.
5. FOR ENTIRE DEBRIS AREA LIMITS, SEE DWG. H–C75/4–9101–160.

Legend:

- ▲BM–9 PERMANENT BENCHMARK LOCATION (1)
- 540 COORDINATE POINT
- COMPLETED LANDFILL OR BURIED DEBRIS EXCAVATION
- TYPE 1 GRANULAR FILL

WEST LANDFILL–CENTRE LOBE REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
540	7 395 066.2	571 401.3	677.4
541	7 395 073.6	571 465.5	681.2
542	7 395 100.7	571 491.2	680.3
543	7 395 107.1	571 514.2	680.6
544	7 395 091.5	571 578.3	684.4
545	7 395 097.3	571 639.3	683.5
546	7 395 045.7	571 655.0	690.4
547	7 395 035.9	571 643.1	690.6
548	7 395 025.6	571 550.6	690.9
549	7 394 978.7	571 515.4	692.0
550	7 394 986.4	571 474.0	689.7
551	7 395 014.1	571 452.7	687.3
552	7 395 014.8	571 398.4	681.6

WEST LANDFILL–CENTRE LOBE A REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
560	7 394 999.1	571 638.7	693.5
561	7 395 015.1	571 651.3	692.5
562	7 395 026.8	571 664.9	691.7
563	7 395 005.9	571 678.0	693.8
564	7 394 977.8	571 680.2	696.2
565	7 394 973.2	571 647.2	696.1
566	7 394 985.1	571 645.4	695.5

WEST LANDFILL–EAST LOBE REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
570	7 395 113.1	571 662.0	683.5
571	7 395 121.5	571 686.4	683.9
572	7 395 117.6	571 694.7	683.9
573	7 395 108.8	571 701.4	684.2
574	7 395 097.7	571 731.0	685.6
575	7 395 069.5	571 743.5	688.8
576	7 395 063.0	571 734.0	688.9
577	7 395 060.7	571 713.1	690.1
578	7 395 076.2	571 678.3	689.0
579	7 395 075.1	571 669.4	688.0

PALLET LINE LANDFILL–LOBE 1 REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
580	7 394 947.7	571 598.4	696.8
581	7 394 977.1	571 787.5	697.8
582	7 394 956.8	571 795.4	699.1
583	7 394 925.3	571 815.6	700.1
584	7 394 899.6	571 800.7	700.0
585	7 394 862.0	571 756.9	699.7
586	7 394 862.2	571 728.9	700.2
587	7 394 901.9	571 719.3	701.0
588	7 394 901.4	571 702.2	700.9
589	7 394 867.1	571 666.0	700.9
590	7 394 879.9	571 588.2	701.5
591	7 394 920.3	571 595.5	700.0

PALLET LINE LANDFILL–ABANDONED LANDFILL LOBE REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
600	7 394 866.5	571 551.1	700.6
601	7 394 872.4	571 558.3	700.9
602	7 394 874.4	571 564.7	701.2
603	7 394 857.5	571 582.4	701.1
604	7 394 850.7	571 585.1	700.8
605	7 394 772.0	571 601.4	694.9
606	7 394 763.2	571 577.7	692.9
607	7 394 774.4	571 546.4	691.6
608	7 394 815.7	571 561.0	697.7

PALLET LINE LANDFILL–LOBE 5 REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
610	7 394 929.4	571 962.8	705.3
611	7 394 930.6	571 983.7	707.1
612	7 394 933.4	571 996.8	707.9
613	7 394 921.6	571 998.5	707.4
614	7 394 912.6	571 997.8	706.6
615	7 394 920.3	571 964.0	705.0

PALLET LINE LANDFILL–LOBES 2,3,4 REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
620	7 394 821.6	571 754.3	698.8
621	7 394 876.7	571 808.9	700.1
622	7 394 909.2	571 852.5	701.6
623	7 394 931.0	571 870.9	702.7
624	7 394 923.5	571 877.7	702.9
625	7 394 915.1	571 896.4	702.4
626	7 394 917.3	571 915.1	703.8
627	7 394 930.7	571 930.2	704.5
628	7 394 933.9	571 938.8	704.9
629	7 394 912.7	571 946.1	704.4
630	7 394 894.9	571 957.1	704.4
631	7 394 889.1	571 954.9	704.4
632	7 394 883.0	571 943.0	703.3
633	7 394 885.0	571 932.7	702.6
634	7 394 881.5	571 924.1	702.6
635	7 394 853.3	571 908.1	700.1
636	7 394 850.9	571 902.5	700.0
637	7 394 850.1	571 861.8	699.7
638	7 394 839.1	571 862.2	698.6
639	7 394 815.1	571 839.6	697.1
640	7 394 795.1	571 857.7	695.9
641	7 394 781.9	571 853.8	695.1
642	7 394 772.7	571 841.8	694.4
643	7 394 757.4	571 807.0	693.2
644	7 394 777.1	571 789.5	694.9
645	7 394 761.8	571 776.5	694.4
646	7 394 759.7	571 759.9	694.6
647	7 394 766.9	571 749.9	695.3
648	7 394 784.4	571 744.1	696.1
649	7 394 800.5	571 743.8	696.8
650	7 394 821.9	571 789.7	697.9
651	7 394 840.0	571 787.1	699.3
652	7 394 867.0	571 810.4	699.7
653	7 394 899.8	571 856.0	701.4

National Defence / Défense nationale

Headquarters
Quartier général

No.	DATE	REVISION	REVISION	APPR.
0	14–04–23	AS–BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
DYE–M CAPE DYER

DEW LINE CLEAN UP

TRADE – METIER: SITING
DATE: 2014–04–23

SUBJECT – SUJET
UPPER SITE
WEST OF STATION AREA
SITE PLAN SHEET 2

PRODUCTION		CONCURRENCE – ASSENTIMENT	
DESIGNED / ETUDIE	DTM		DES OFF / AGENT CONCEPT
DRAWN / DESSINE	IC		SECT HD / CHEF SECT
CHECKED / VERIFIE	BWF		DES MGR / GEST CONCEPT
COORDINATION	RRM	REVIEWED – REVU	

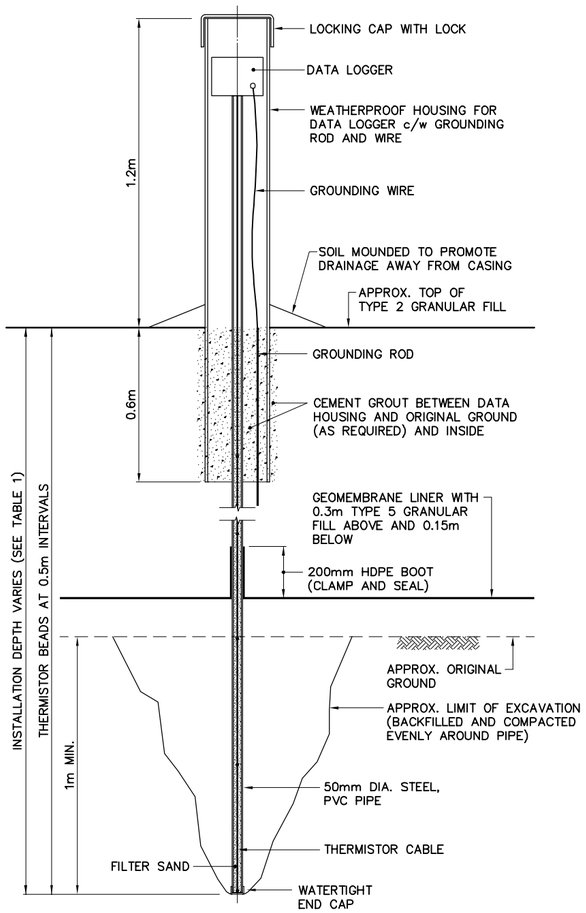
DWG. NO. – DESSIN NO.
H–C75/4–9101–166

Canada

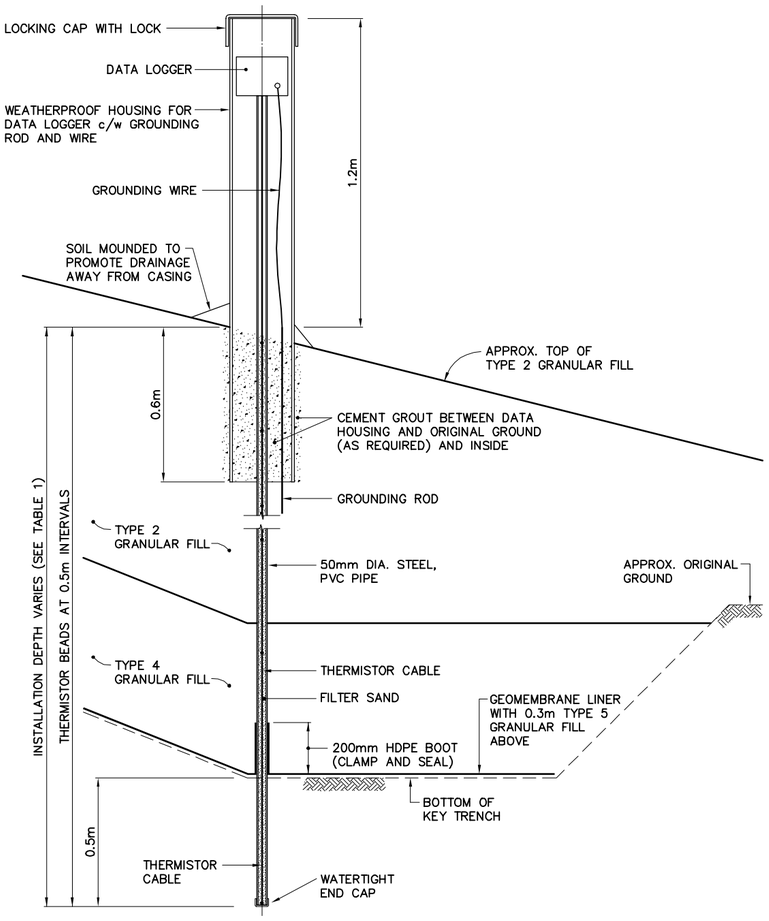
TABLE 1 VERTICAL GROUND TEMPERATURE CABLE INSTALLATION		
INSTRUMENT No.	APPROXIMATE DEPTH BELOW FINAL GRADE (m)	COMMENTS
LOWER SITE – TIER II DISPOSAL FACILITY		
VT–1	7.70	INSTALLED THROUGH CENTERLINE BERM TO INVERT OF KEY TRENCH
VT–2	3.42	INSTALLED TO 1m ABOVE ELEVATION OF BOTTOM LINER
VT–3	3.07	INSTALLED TO 1m ABOVE ELEVATION OF BOTTOM LINER
VT–4	5.24	INSTALLED THROUGH CENTERLINE BERM TO INVERT OF KEY TRENCH
LOWER SITE – POWERHOUSE LANDFILL		
VT–5	4.10	INSTALLED ON PLATEAU OF LANDFILL
VT–6	4.35	INSTALLED ON PLATEAU OF LANDFILL
VT–7	* 4.55	INSTALLED IN TRENCH, 0.5m BELOW LINER
UPPER SITE – TIER II DISPOSAL FACILITY		
VT–8	6.55	INSTALLED THROUGH CENTERLINE BERM TO INVERT OF KEY TRENCH
VT–9	7.61	INSTALLED THROUGH CENTERLINE BERM TO INVERT OF KEY TRENCH
VT–10	4.54	INSTALLED TO 1m ABOVE ELEVATION OF BOTTOM LINER
VT–11	4.53	INSTALLED THROUGH CENTERLINE BERM TO INVERT OF KEY TRENCH

*NOTE:
DEPTH IS BELOW FINAL GRADE OF TYPE 2 GRANULAR FILL PRIOR TO PLACEMENT OF TYPE 1 GRANULAR FILL.

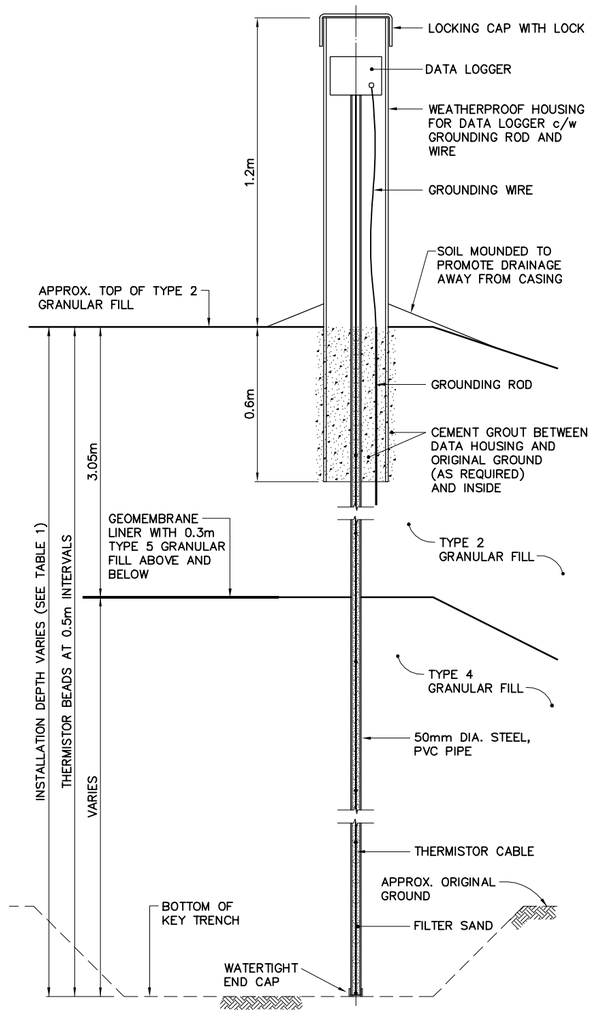
TABLE 2 VERTICAL GROUND TEMPERATURE CABLE INSTALLATION		
INSTRUMENT No.	APPROXIMATE DEPTH BELOW FINAL GRADE (m)	COMMENTS
LOWER SITE – TIER II DISPOSAL FACILITY		
VT–BL	8.20	BACKGROUND MONITORING LOCATION UNDISTURBED TUNDRA
UPPER SITE – TIER II DISPOSAL FACILITY		
VT–BU	8.80	BACKGROUND MONITORING LOCATION UNDISTURBED TUNDRA



TYPICAL VERTICAL GROUND TEMPERATURE CABLE INSTALLATION – PLATEAU
SCALE: NTS
VT–2, VT–3, VT–5, VT–6 AND VT–10



TYPICAL GROUND TEMPERATURE CABLE INSTALLATION – KEY TRENCH
SCALE: NTS
VT–7



TYPICAL VERTICAL GROUND TEMPERATURE CABLE INSTALLATION – KEY TRENCH
SCALE: NTS
VT–1, VT–4, VT–8, VT–9 AND VT–11

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. LOCATIONS OF INSTRUMENTATION ARE SHOWN ON THE DRAWINGS, INCLUDING COORDINATE TABLES.

Legend:

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS–BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET: DYE–M CAPE DYER

DEW LINE CLEAN UP

TRADE – METIER: SITING
DATE: 2014–04–23

SUBJECT – SUJET: MISCELLANEOUS DETAILS SHEET 1

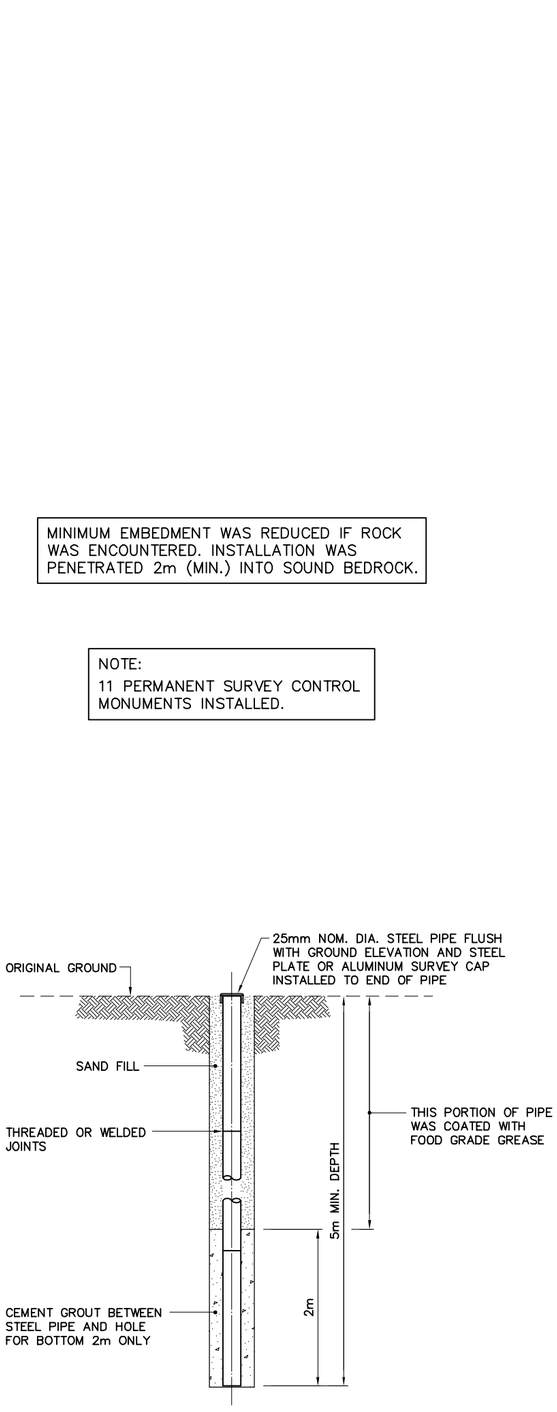
PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–C75/4–9101–190

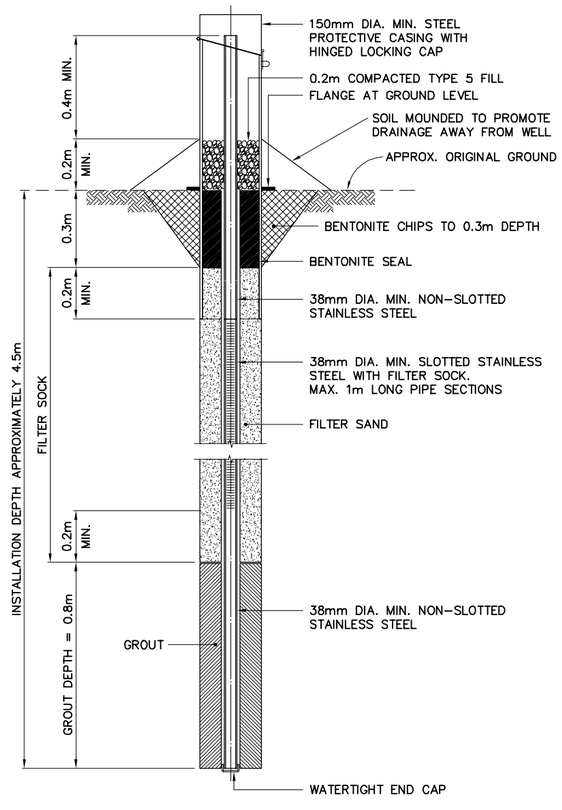
Canada

MINIMUM EMBEDMENT WAS REDUCED IF ROCK WAS ENCOUNTERED. INSTALLATION WAS PENETRATED 2m (MIN.) INTO SOUND BEDROCK.

NOTE:
11 PERMANENT SURVEY CONTROL MONUMENTS INSTALLED.



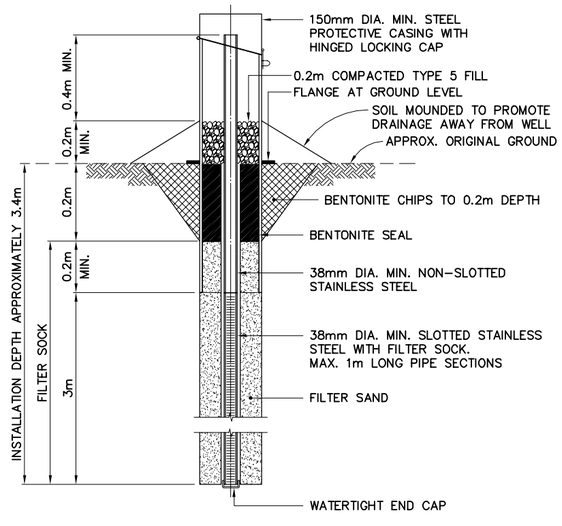
TYPICAL PERMANENT SURVEY CONTROL MONUMENT (BENCHMARK)
SCALE: NTS



TYPICAL MONITORING WELL/
BACKGROUND MONITORING WELL
SCALE: NTS
FOR BEDROCK DEPTH > 0.7m

IF SOUND BEDROCK WAS ENCOUNTERED, A 2.5m (MIN.) OF SCREEN AND 0.5m (MIN.) OF EMBEDMENT WAS REQUIRED INTO SOUND BEDROCK.

NOTE:
22 MONITORING WELLS REMAINING.
16 MONITORING WELLS REMOVED.



TYPICAL MONITORING WELL/
BACKGROUND MONITORING WELL
SCALE: NTS
FOR BEDROCK DEPTH < 0.7m

National Defence / Défense nationale

Headquarters
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Legend:

No.	DATE	REVISION	REVISION	APPR.
0	14-04-23	AS-BUILT DRAWING		RRM

DRAFT

AECOM HATCH

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET
DYE–M CAPE DYER

DEW LINE CLEAN UP

TRADE – METIER: SITING
DATE: 2014–04–23

SUBJECT – SUJET
MISCELLANEOUS DETAILS
SHEET 2

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE DTM		DES OFF AGENT CONCEPT
DRAWN DESSINE IC		SECT HD CHEF SECT
CHECKED VERIFIE BWF		DES MGR GEST CONCEPT
COORDINATION RRM	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–C75/4–9101–191

Canada